

NASA Technical Memorandum 89065

Scientific and Technical Information Output of the Langley Research Center for Calendar Year 1986

(NASA-TM-89065) SCIENTIFIC AND TECHNICAL
INFORMATION OUTPUT OF THE LANGLEY RESEARCH
CENTER FOR CALENDAR YEAR 1986 (NASA) 265 p
CSCL 05B

N87-17531

G3/82 Unclas
43802

JANUARY 1987

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NASA Technical Memorandum 89065

Scientific and Technical Information
Output of the Langley Research Center
for Calendar Year 1986

Compiled by
Research Information and Applications Division
Langley Research Center
Hampton, Virginia

NASA

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23665-5225

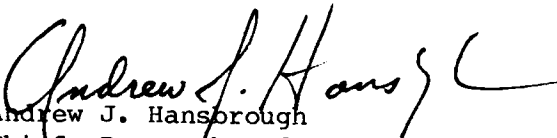
FOREWORD

This report contains a listing of the NASA Langley Research Center's scientific and technical research output for calendar year 1986.

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 calendar year 1986, Langley's contributions to NASA and non-NASA literature included 152 NASA Formal Reports, 129 Quick-Release Technical Memorandums, 234 Contractor Reports, 283 Journal Articles and Other Publications, 574 Meeting Presentations, 233 Technical Talks, 15 Computer Programs, 77 Tech Briefs, 24 Patents, and 12 Special Documents. In addition, during the year, 11 conferences, symposia, and workshops were sponsored or cosponsored by Langley and held locally.

Comments or suggestions concerning this publication should be addressed to the Research Information and Applications Division, Mail Stop 180A, NASA Langley Research Center, Hampton, Virginia 23665-5225.


Andrew J. Hansbrough
Chief, Research Information
and Applications Division

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CONFERENCES SPONSORED OR COSPONSORED BY LANGLEY AND HELD LOCALLY IN 1986

Title of conference	Date	Langley contacts	Langley		Non-Langley	
			Speakers	Attendees	Speakers	Attendees
1. Workshop on Turbulence Relative to Aviation, Missile, and Space Programs	Apr. 2-4	H. N. Murrow	2	14	13	60
2. Workshop on Aircraft Tire Testing Requirements	May 7	T. J. Yager	2	8	4	28
3. Sixth Conference on Atmospheric Radiation	May 12-16	B. A. Wielicki	14	28	73	110
4. "SIMP" Code Users Workshop	May 21-22	N. A. Talcott	0	11	2	17
5. Workshop on Conceptual Aircraft Design	May 28-29	C. E. K. Morris	6	14	1	23
6. Electronics Reliability & Measurement Technology Conference/Workshop	June 3-5	J. S. Heyman	0	20	25	80
7. Eighth International Conference on Spectral Line Shapes	June 9-13	R. J. Exton	1	7	2	115
8. NASA/Royal Signals and Radar Establishment Workshop on Closed-Cycle Frequency-Stable CO ₂ Laser Technology	June 10-12	G. M. Wood R. V. Hess	3	19	17	43
9. Space Construction Conference	Aug. 6-7	J. A. Hagaman	5	69	12	90
10. Symposium on Sensitivity Analysis in Engineering	Sept. 25-26	H. M. Adelman	3	36	21	65
11. First NASA/DOD CSI Technology Conference	Nov. 18-21	R. L. Wright	20	79	33	278
Total			56	305	203	909

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 fluid and flight mechanics, structures and materials, acoustics and noise reduction, measurement and instrumentation systems, numerical methods and techniques, data systems, electronics, physics, chemistry, and Earth and space sciences.

This publication is a compilation of Langley's scientific and technical research output for 1986 which is processed through the Center's Research Information and Applications Division, an integral part of NASA's Agency-wide Scientific and Technical Information (STI) system. This document is intended as a reference summary for researchers and as a current awareness publication for the scientific, research, and academic community.

The results of Langley's research are disseminated in a variety of NASA and non-NASA scientific and technical media and information systems. Details of the availability of the research references in this document are found in the section, "Availability," on page vii.

The citations are grouped first by Langley Directorates, then by the Langley Office or Division to which the senior author or innovator belongs. Citations are listed alphabetically by author or innovator under the following headings: Formal Reports (Technical Papers, Technical Memorandums, Conference Publications, Reference Publications, and Special Publications), Quick-Release Technical Memorandums, Contractor Reports, Journal Articles and Other Publications, Meeting Presentations, Technical Talks, Computer Programs, Tech Briefs, and Patents. Citations for Special Documents are listed under the appropriate Office or Division where applicable. If a citation has more than one author, it is listed only once under the first author's name. The subject category number used to index the citation and the Research Technology Objectives and Plans (RTOP) number are noted below citations when appropriate.

Computer Programs listed are those which were submitted by Langley to COSMIC in 1986.

The NASA Tech Briefs cited have either been published¹ or submitted in 1986 for publication in "NASA Tech Briefs," a journal for United States industry, entrepreneurs, and academia. Free subscriptions to this journal are available through the publisher, NASA Tech Briefs, 41 East 42nd Street, Suite 921, New York, New York 10017-5391 or the NASA Technology Utilization Program by writing to the Technology Utilization Office, NASA Scientific and Technical Information Facility, P. O. Box 8757, Baltimore/Washington International Airport, Maryland 21240.

Patents listed, which are owned in whole or in part by Langley Research Center personnel, have been published in issues of "Scientific and Technical Aerospace Reports" (STAR), a NASA announcement journal for report literature. A subscription

¹Those submitted in 1985 (and therefore listed in the 1985 issue of this document) but published in 1986 have not been listed.

to STAR is available from the U.S. Government Printing Office (GPO) or to qualified recipients from the NASA Scientific and Technical Information Facility (STIF).

Publication of some journal articles was not known at press time for the 1985 issue of this document. These articles are therefore listed in the 1986 issue.

AVAILABILITY

<u>Category</u>	<u>Source</u>
Formal Reports Quick-Release Technical Memorandums Contractor Reports	National Technical Information Service (NTIS) 5285 Port Royal Road Springfield, VA 22161 NASA Scientific and Technical Information Facility (STIF) P. O. Box 8757 Baltimore/Washington International Airport, MD 21240 NASA Industrial Applications Centers (IAC) (See Appendix for addresses of IAC's)
Computer Programs	Computer Software Management and Information Center (COSMIC) Software Information Services Computer Services Annex University of Georgia Athens, GA 30602
Langley Tech Briefs	Office of Technology Utilization and Applications Mail Stop 139A NASA Langley Research Center Hampton, VA 23665
Patents:	
Patent Application Specifications	National Technical Information Service (NTIS)
Printed Copies	Commissioner of Patents and Trademarks U.S. Patent and Trademark Office Washington, DC 20231

CONTENTS

FOREWORD iii

LANGLEY CONFERENCES, SYMPOSIA, AND WORKSHOPS FOR 1986 iv

INTRODUCTION v

AVAILABILITY vii

OFFICE OF THE DIRECTOR 1

OFFICE OF DIRECTOR FOR ELECTRONICS 12

 ANALYSIS AND COMPUTATION DIVISION 13

 INSTRUMENT RESEARCH DIVISION 16

 FLIGHT ELECTRONICS DIVISION 25

 CONTROL OF FLEXIBLE STRUCTURES PROJECT OFFICE 31

 LONG DURATION EXPOSURE FACILITY PROJECT OFFICE 33

OFFICE OF DIRECTOR FOR STRUCTURES 35

 STRUCTURES AND DYNAMICS DIVISION 36

 LOADS AND AEROELASTICITY DIVISION 48

 INTERDISCIPLINARY RESEARCH OFFICE 56

 MATERIALS DIVISION 59

 ACOUSTICS DIVISION 82

OFFICE OF DIRECTOR FOR AERONAUTICS 91

 AERO-SPACE PLANE OFFICE 93

 ADVANCED VEHICLES DIVISION 95

 TRANSONIC AERODYNAMICS DIVISION 99

 LOW-SPEED AERODYNAMICS DIVISION 114

 HIGH-SPEED AERODYNAMICS DIVISION 125

OFFICE OF DIRECTOR FOR SPACE 141

 SPACE STATION OFFICE 142

 ATMOSPHERIC SCIENCES DIVISION 144

 SPACE SYSTEMS DIVISION 166

OFFICE OF DIRECTOR FOR FLIGHT SYSTEMS 180

 ADVANCED TRANSPORT OPERATING SYSTEMS PROGRAM OFFICE 181

 INFORMATION SYSTEMS DIVISION 184

 GUIDANCE AND CONTROL DIVISION 191

 FLIGHT MANAGEMENT DIVISION 201

OFFICE OF DIRECTOR FOR SYSTEMS ENGINEERING AND OPERATIONS 205

 SYSTEMS SAFETY, QUALITY AND RELIABILITY DIVISION 206

 FABRICATION DIVISION 207

 SYSTEMS ENGINEERING DIVISION 209

 FACILITIES ENGINEERING DIVISION 212

 OPERATIONS SUPPORT DIVISION 214

OFFICE OF DIRECTOR FOR MANAGEMENT OPERATIONS 215

AEROSTRUCTURES DIRECTORATE, USAARTA (AVSCOM) 217

APPENDIX 219
AUTHOR INDEX 221
SUBJECT CATEGORY INDEX 240
RTOP INDEX 248

NASA LANGLEY RESEARCH CENTER
Hampton, Virginia

CALENDAR YEAR 1986

PUBLICATIONS FOR OFFICE OF THE DIRECTOR

Formal Reports

1. Anon.: Research and Technology 1986 - Annual Report of the Langley Research Center. NASA TM-89037, December 1986, 113 p.
(Avail: NTIS Subject Category 99)

Quick-Release Technical Memorandums

2. Anon.: Langley Aerospace Test Highlights - 1985. NASA TM-87703, May 1986, 98 p.
(Avail: NTIS Subject Category 99)

Contractor Reports

3. Abarbanel, S.; Bayliss, A.; and Lustman, L.: Non-reflecting Boundary Conditions for the Compressible Navier-Stokes Equations. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178068, March 1986, 27 p.
(Avail: NTIS Subject Category 34 RTOP 505-31-83)
4. Adams, L. M.; LeVeque, R. J.; and Young, D. M.: Analysis of the SOR Iteration for the 9-Point Laplacian. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178212, December 1986, 40 p.
(Avail: NTIS Subject Category 64 RTOP 505-90-21)
5. Anon.: Cumulative Reports and Publications Through December 31, 1985. (NAS1-18107, NAS1-17070, NAS1-17130, NAS1-15810, NAS1-16394, NAS1-14101, and NAS1-14472 Institute for Computer Applications in Science and Engineering.) NASA CR-178088, April 1986, 44 p.
(Avail: NTIS Subject Category 59 RTOP 505-31-83)
6. Anon.: Semi-Annual Report, October 3, 1985 Through March 31, 1986. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178119, April 1986, 57 p.
(Avail: NTIS Subject Category 59 RTOP 505-31-83)
7. Banks, H. T.; Crowley, J. M.; and Rosen, I. G.: Methods for the Identification of Material Parameters in Distributed Models for Flexible Structures. (NAS1-16394 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-178135, May 1986, 60 p.
(Avail: NTIS Subject Category 64 RTOP 505-31-83)

8. Banks, H. T.; Gates, S. S.; Rosen, I. G.; and Wang, Y.: The Identification of a Distributed Parameter Model for a Flexible Structure. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178199, October 1986, 43 p.
(Avail: NTIS Subject Category 64 RTOP 505-90-21)
9. Banks, H. T.; and Iles, D. W.: On Compactness of Admissible Parameter Sets: Convergence and Stability in Inverse Problems for Distributed Parameter Systems. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178128, June 1986, 16 p.
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
10. Banks, H. T.; and Ito, K.: A Numerical Algorithm for Optimal Feedback Gains in High Dimensional LQR Problems. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178207, November 1986, 31 p.
(Avail: NTIS Subject Category 64 RTOP 505-90-21)
11. Banks, H. T.; and Rosen, I. G.: Computational Methods for the Identification of Spatially Varying Stiffness and Damping in Beams. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178198, October 1986, 42 p.
(Avail: NTIS Subject Category 64 RTOP 505-90-21)
12. Bayliss, A.; Jordan, K. E.; LeMesurier, B. J.; and Turkel, E.: A Fourth Order Accurate Finite Difference Scheme for the Computation of Elastic Waves. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178089, April 1986, 44 p.
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
13. Bennett, J.; and Hall, P.: On the Secondary Instability of Taylor-Görtler Vortices to Tollmien-Schlichting Waves in Fully-Developed Flows. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178221, November 1986, 46 p.
(Avail: NTIS Subject Category 34 RTOP 505-90-21)
14. Bernardi, C.; Canuto, C.; and Maday, Y.: Generalized Inf-Sup Condition for Chebyshev Approximation of the Navier-Stokes Equations. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178220, December 1986, 67 p.
(Avail: NTIS Subject Category 64 RTOP 505-90-21)
15. Bokhari, S. H.: Multiprocessing the Sieve of Eratosthenes. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178131, June 1986, 26 p.
(Avail: NTIS Subject Category 61 RTOP 505-31-83)
16. Brenier, Y.; and Osher, S. J.: The Discrete One-Sided Lipschitz Condition for Convex Scalar Conservation Laws. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178225, November 1986, 33 p.
(Avail: NTIS Subject Category 64 RTOP 505-90-21)

17. Burns, J. A.; Cliff, E. M.; and Powers, R. K.: Computational Methods for the Control of Distributed Parameter Systems. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178108, May 1986, 18 p.
(Avail: NTIS Subject Category 59 RTOP 505-31-83)
18. Canuto, C.; and Quarteroni, S.: On the Boundary Treatment in Spectral Methods for Hyperbolic Systems. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178055, January 1986, 19 p.
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
19. Chen, T. F.; and Fix, G. J.: Least Squares Finite Element Simulation of Transonic Flows. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178121, May 1986, 28 p.
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
20. Dutt, P.: A Riemann Solver Based on a Global Existence Proof for the Riemann Problem. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178042, January 1986, 12 p.
(Avail: NTIS Subject Category 59 RTOP 505-31-83)
21. Dutt, P.; and Ta'asan, S.: A Spline-Based Parameter Estimation Technique for Static Models of Elastic Structures. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178193, October 1986, 33 p.
(Avail: NTIS Subject Category 64 RTOP 505-90-21)
22. Eidson, T. M.; Hussaini, M. Y.; and Zang, T. A.: Simulation of the Turbulent Rayleigh-Benard Problem Using a Spectral/Finite Difference Technique. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178027, February 1986, 43 p.
(Avail: NTIS Subject Category 34 RTOP 505-31-83)
23. Erlebacher, G.; and Hussaini, M. Y.: Incipient Transition Phenomena in Compressible Flows Over a Flat Plate. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178111, June 1986, 21 p.
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24. Gibson, J. S.; and Rosen, I. G.: Numerical Approximation for the Infinite-Dimensional Discrete-Time Optimal Linear-Quadratic Regulator Problem. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178081, March 1986, 82 p.
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25. Gibson, J. S.; and Rosen, I. G.: Shifting the Closed-Loop Spectrum in the Optimal Linear Quadratic Regulator Problem for Hereditary Systems. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178082, March 1986, 47 p.
(Avail: NTIS Subject Category 64 RTOP 505-31-83)

35. Hariharan, S. I.; and Sudharsanan, S. I.: Wave Envelope Technique for Multimode Wave Guide Problems. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178218, December 1986, 29 p.
(Avail: NTIS Subject Category 64 RTOP 505-90-21)
36. Harten, A.: On the Nonlinearity of Modern Shock-Capturing Schemes. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178206, October 1986, 62 p.
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37. Harten, A.; Engquist, B.; Osher, S. J.; and Chakravarthy, S.: Uniformly High Order Accurate Essentially Non-Oscillatory Schemes III. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178101, April 1986, 97 p.
(Avail: NTIS Subject Category 59 RTOP 505-31-83)
38. Hussaini, M. Y.: Some Recent Developments in Spectral Methods. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178178, August 1986, 19 p.
(Avail: NTIS Subject Category 34 RTOP 505-90-21)
39. Hussaini, M. Y.; Lakin, W. D.; and Nachman, A.: On Similarity Solutions of a Boundary Layer Problem With an Upstream Moving Wall. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178104, May 1986, 25 p.
(Avail: NTIS Subject Category 34 RTOP 505-31-83)
40. Hussaini, M. Y.; and Zang, T. A.: Spectral Methods in Fluid Dynamics. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178103, May 1986, 62 p.
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41. Iqbal, M. A.: Approximate Algorithms for Partitioning and Assignment Problems. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178130, June 1986, 30 p.
(Avail: NTIS Subject Category 61 RTOP 505-31-83)
42. Iqbal, M. A.; Saltz, J. H.; and Bokhari, S. H.: Performance Tradeoffs in Static and Dynamic Load Balancing Strategies. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178073, March 1986, 24 p.
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43. Jackson, T. L.: Effect of Thermal Expansion on the Stability of Two-Reactant Flames. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178168, August 1986, 13 p.
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44. Jordan, H. F.: The Force on the Flex: Global Parallelism and Portability. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178161, August 1986, 21 p.
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45. Kopriva, D. A.: A Spectral Multidomain Method for the Solution of Hyperbolic Systems. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178105, May 1986, 47 p.
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46. Kopriva, D. A.: A Practical Assessment of Spectral Accuracy for Hyperbolic Problems With Discontinuities. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178226, December 1986, 22 p.
(Avail: NTIS Subject Category 64 RTOP 505-90-21)
47. Lakin, W. D.: A Combined Integrating and Differentiating Matrix Formulation for Boundary Value Problems on Rectangular Domains. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178074, March 1986, 30 p.
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
48. Lamm, P. K.; and Murphy, K. A.: Estimation of Discontinuous Coefficients and Boundary Parameters for Hyperbolic Systems. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178133, June 1986, 39 p.
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49. Lee, T-Y; Kravaris, C.; and Seinfeld, J.: History Matching by Spline Approximation and Regularization in Single-Phase Areal Reservoirs. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178087, March 1986, 53 p.
(Avail: NTIS Subject Category 66 RTOP 505-31-83)
50. LeVeque, R. J.; and Trefethen, L. N.: Fourier Analysis of the SOR Iteration. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178191, September 1986, 9 p.
(Avail: NTIS Subject Category 64 RTOP 505-90-21)
51. Lustman, L.; and Rose, M. E.: A Three Dimensional Calculation of Elastic Equilibrium for Composite Materials. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178158, July 1986, 28 p.
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52. Ma, C. C. H.: Inherent Robustness of Discrete-Time Adaptive Control Systems. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178224, December 1986, 38 p.
(Avail: NTIS Subject Category 08 RTOP 505-90-21)
53. Maestrello, L.; Bayliss, A.; Parikh, P.; and Turkel, E.: Stability and Control of Compressible Flows Over a Surface With Concave-Convex Curvature. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178143, July 1986, 34 p.
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54. Mhuiris, N. M.: Calculations of the Stability of Some Axisymmetric Flows Proposed as a Model of Vortex Breakdown. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178124, May 1986, 36 p.
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55. Mhuiris, N. M.: The Construction and Use of Divergence Free Vector Expansions for Incompressible Fluid Flow Calculations. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178100, April 1986, 21 p.
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57. Morrison, J. H.; and Napolitano, M.: Efficient Solutions of Two-Dimensional Incompressible Steady Viscous Flows. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178197, October 1986, 44 p.
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58. Myers, T. J.; and Gokhale, M. B.: Parallel Scheduling of Recursively Defined Arrays. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178195, October 1986, 25 p.
(Avail: NTIS Subject Category 61 RTOP 505-90-21)
59. Nicol, D. M.: Optimal Partitioning of Random Programs Across Two Processors. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178159, August 1986, 26 p.
(Avail: NTIS Subject Category 62 RTOP 505-31-83)
60. Nicol, D. M.: Expected Performance of m-Solution Backtracking. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178162, August 1986, 25 p.
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61. Nicol, D. M.; and Reynolds, P. F., Jr.: Dynamic Remapping Decisions in Multi-Phase Parallel Computations. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178174, September 1986, 47 p.
(Avail: NTIS Subject Category 61 RTOP 505-90-21)
62. Nicol, D. M.; and Reynolds, P. F., Jr.: An Optimal Repartitioning Decision Policy. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178035, February 1986, 18 p.
(Avail: NTIS Subject Category 66 RTOP 505-31-83)

63. Nicol, D. M.; and Saltz, J. H.: Dynamic Remapping of Parallel Computations With Varying Resource Demands. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178150, July 1986, 55 p.
(Avail: NTIS Subject Category 61 RTOP 505-31-83)
64. Nicolaidis, R. A.: Construction of Higher Order Accurate Vortex and Particle Methods. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178132, June 1986, 20 p.
(Avail: NTIS Subject Category 34 RTOP 505-31-83)
65. Nicolaidis, R. A.; and Choudhury, S.: Iterative Methods for Elliptic Finite Element Equations on General Meshes. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178223, November 1986, 43 p.
(Avail: NTIS Subject Category 64 RTOP 505-90-21)
66. Poore, A. B.: The Expanded Lagrangian System for Constrained Optimization Problems. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178142, July 1986, 29 p.
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
67. Reed, D. A.; Adams, L. M.; and Patrick, M. L.: Stencils and Problem Partitionings: Their Influence on the Performance of Multiple Processor Systems. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178102, May 1986, 47 p.
(Avail: NTIS Subject Category 59 RTOP 505-31-83)
68. Roe, P. L.: Remote Boundary Conditions for Unsteady Multidimensional Aerodynamic Computations. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178211, November 1986, 26 p.
(Avail: NTIS Subject Category 02 RTOP 505-90-21)
69. Rosenfeld, M.; Israeli, M.; and Wolfshtein, M.: A Numerical Study of Separation on a Spheroid at Incidence. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178167, July 1986, 35 p.
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70. Saltz, J. H.; Naik, V. K.; and Nicol, D. M.: Reduction of the Effects of the Communication Delays in Scientific Algorithms on Message Passing MIMD Architectures. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178044, January 1986, 37 p.
(Avail: NTIS Subject Category 61 RTOP 505-31-83)
71. Saltz, J. H.; and Nicol, D. M.: Statistical Methodologies for the Control of Dynamic Remapping. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178129, July 1986, 37 p.
(Avail: NTIS Subject Category 61 RTOP 505-31-83)

72. Shih, K-G.: On the Existence of Solutions of an Equation Arising in the Theory of Laminar Flow in a Uniformly Porous Channel With Injection. (NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178078, March 1986, 26 p.
(Avail: NTIS Subject Category 34 RTOP 505-31-83)
73. Sidi, A.; and Israeli, M.: Numerical Quadrature Methods for Integrals of Singular Periodic Functions and Their Application to Singular and Weakly Singular Integral Equations. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178151, July 1986, 35 p.
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
74. Solomonoff, A.; and Turkel, E.: Global Collocation Methods for Approximation and the Solution of Partial Differential Equations. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178179, September 1986, 67 p.
(Avail: NTIS Subject Category 64 RTOP 505-90-21)
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Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR ELECTRONICS

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

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102. Schiess, J. R.: Composite Statistical Method for Modeling Wind Gusts. Journal of Aircraft, Volume 23, No. 2, February 1986, p. 131-135.
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Computer Programs

No computer programs.

Tech Briefs

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Patents

No patents.

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Formal Reports

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*Aerostructures Directorate, USAARTA (AVSCOM)

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*Aerostructures Directorate, USAARTA (AVSCOM)

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*Aerostructures Directorate, USAARTA (AVSCOM)

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Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

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1378. Brauckmann, G. J.: Aerodynamic Characteristics of a Maneuvering Reentry Research Vehicle at Mach 6. NASA TM-87758, November 1986, 34 p.
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Tech Briefs

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1679. Garner, H. D.: Fluidic Fuel Quantity Gage. Presented at the Airlines Electronic Engineering Committee Fuel Quantity System Subcommittee Meeting, March 4-5, 1986, Arlington, Virginia. (Subject Category 06 RTOP 505-66-11)
1680. Hatfield, J. J.: Flight Display Technology. Presented at the 1986 AIAA Annual Meeting on Educational Seminars, April 28 - May 2, 1986, Arlington, Virginia. (Subject Category 06 RTOP 505-66-11)

Computer Programs

1681. Busquets, A. M.; and Luck, W. S., Jr.: Programmable Display Pushbutton Legend Editor. NASA Tech Brief LAR-13671.

Tech Briefs

1682. Busquets, A. M.; and Hogge, T. W.: General Purpose Data Formatting I/O System. NASA Tech Brief LAR-13529.
1683. Garner, H. D.: A Simple, Low Cost Servo Amplifier. NASA Tech Brief LAR-13538.
1684. Garner, H. D.: Improved Flux-Gate Magnetometer. NASA Tech Brief LAR-13560.
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1686. Robertson, J. B.: Single-Layer, Multi-Color Electroluminescent Phosphor. NASA Tech Brief LAR-13616.

Patents

1687. Millen, E. W.: Aircraft Liftmeter. U. S. Patent 4,586,140. Issued
April 29, 1986.
(Subject Category 06)

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR SYSTEMS ENGINEERING AND OPERATIONS

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

PUBLICATIONS FOR SYSTEMS SAFETY, QUALITY AND RELIABILITY DIVISION

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

1688. Staton, W. L.: Test Results on Some Potential Flame Retardant Insulation Coatings for Use in a Cryogenic Wind Tunnel. Journal of the National Technical Association, Volume 59, No. 2, July 22, 1985, p. 109-116. (Subject Category 27 RTOP 505-31-53)

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

PUBLICATIONS FOR FABRICATION DIVISION

Formal Reports

1689. Buckley, J. D.: Metal Matrix, Carbon, and Ceramic Matrix Composites - 1986. NASA CP-2445, December 1986, 362 p.
(Avail: STIF Subject Category 24 RTOP 505-63-01)

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

1690. Buckley, J. D.; Fox, R. L.; and Tyeryar, J. R.: Seam Bonding of Graphite Reinforced Composite Panels. Presented at the Second Annual ASM/ESD Advanced Composites Conference/Exposition, November 18-20, 1986, Dearborn, Michigan. In Proceedings, p. 213-216.
(Subject Category 24 RTOP 505-63-01)
1691. Wilson, M. L.; Johnson, G. S.; and MacConochie, I. O.: A Comparison of Flexural Properties of Kevlar Reinforced Pultrusions Having Constant Fiber Volume and Varied Matrices, Pretreatments, and Postcures. Presented at the Society of Plastics Industry 41st Annual Conference on Reinforced Plastics/Composites Institute, January 27, 1986, Atlanta, Georgia.
(Subject Category 24 RTOP 506-51-13)
1692. Wilson, M. L.; MacConochie, I. O.; and Johnson, G. S.: The Pultrusion Process for Structures on Advanced Aerospace Transportation Systems. Presented at the SAWE 45th Annual International Conference on Mass Properties Engineering, May 12-14, 1986, Williamsburg, Virginia. SAWE Paper No. 1741.
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1695. Buckley, J. D.; Fox, R. L.; and Johnston, D. F.: New Repair Technologies. Presented at the American Society for Nondestructive Testing, Inc., 1986 Fall Conference, September 29 - October 3, 1986, New Orleans, Louisiana. (Subject Category 24 RTOP 505-63-01)
1696. Buckley, J. D.; Fox, R. L.; and Wilson, M. L.: Rapid Adhesive Bonding of Pultruded Composite Structures. Presented at the Second Annual ASM/ESD Advanced Composites Conference/Exposition, November 18-20, 1986, Dearborn, Michigan. (Subject Category 24 RTOP 505-63-01)

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Tech Briefs

1697. Fox, R. L.; and Tyeryar, J. R.: Field Repair of Aircraft Thermoplastic Windows and Canopies. NASA Tech Brief LAR-13525.

Patents

1698. Johnston, D. F.: Method and Apparatus for Controlling Power to an Electronic Precipitator. U.S. Patent 4,605,424. Issued August 12, 1986. (Subject Category 33)

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Quick-Release Technical Memorandums

699. Anon.: LaRC Conceptual Design of Solid Rocket Booster In-Line Bolted Joint. NASA TM-89046, December 1986, 88 p.
(Avail: NTIS Subject Category 02 RTOP 506-43-41)

Contractor Reports

700. McGehee, C. R.: Design Verification and Fabrication of Active Control Systems for the DAST ARW-2 High Aspect Ratio Wing, Part 1. (NAS1-16010 Boeing Military Airplane Company.) NASA CR-177959, January 1986, 332 p.
(Avail: STIF Subject Category 05 RTOP 505-33-43)
701. McGehee, C. R.: Design Verification and Fabrication of Active Control Systems for the DAST ARW-2 High Aspect Ratio Wing, Part 2 - Appendices. (NAS1-16010 Boeing Military Airplane Company.) NASA CR-177959, January 1986, 387 p.
(Avail: STIF Subject Category 05 RTOP 505-33-43)

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

1702. Baker, R. L.; Mauldin, L. E., III; and Russell, J. M., III: Design and Performance of the Halogen Occultation Experiment (HALOE) Remote Sensor. Presented at the SPIE 30th Annual International Technical Symposium on Optical and Optoelectronic Applied Sciences and Engineering, August 17-22, 1986, San Diego, California. SPIE Paper No. 685-26. Proceedings pending.
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1703. Bement, L. J.; and Schimmel, M. L.: Super*Zip Separation Joint Performance Investigation. Presented at the Applied Physics Laboratory of the Franklin Research Center 13th Symposium on Explosives and Pyrotechnics, December 2-4, 1986, Hilton Head Island, South Carolina. Proceedings pending.
(Subject Category 18 RTOP 927-11-01)

1704. Evans, M. J.; Neubert, V. H.; and Bement, L. J.: Measurement, Data Analysis, and Prediction of Pyrotechnic Shock from Pin-Pullers and Separation Joints. Presented at the 57th Shock and Vibration Symposium, October 14-16, 1986, New Orleans, Louisiana. Proceedings pending. (Subject Category 18 RTOP 927-11-01)
1705. Foss, R. A.: Evaluation of Thermal Control Coatings for Graphite/Epoxy Tubular Space Station Structures. Presented at the AIAA 24th Aerospace Sciences Meeting, January 6-9, 1986, Reno, Nevada. Published in AIAA 86-0059 Compendium of Open Forum Abstracts. (Subject Category 18 RTOP 481-33-13)
1706. Moore, A. S.; Mauldin, L. E., III; Stump, C. W.; Fabert, M. G.; and Reagan, J. A.: Calibration of the Halogen Occultation Experiment Sun Sensor. Presented at the SPIE 30th Annual International Technical Symposium on Optical and Optoelectronic Applied Sciences and Engineering, August 17-22, 1986, San Diego, California. SPIE Paper No. 685-27. Proceedings pending. (Subject Category 33 RTOP 678-12-04)
1707. Rogers, J. F.: ACCESS Flight Hardware Design and Development. Presented at the NASA Langley Space Construction Conference, August 6-7, 1986, Hampton, Virginia. NASA CP pending. (Subject Category 18 RTOP 482-53-43)
1708. Strganac, T. W.; and Mook, D. T.: Application of the Unsteady Vortex-Lattice Method to the Nonlinear Two-Degree-of-Freedom Aeroelastic Equations. Presented at the AIAA/ASME, et al., 27th Structures, Structural Dynamics and Materials Conference, May 19-21, 1986, San Antonio, Texas. AIAA Paper No. 86-0867-CP. (Subject Category 02 RTOP 505-31-53)

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

1709. Bement, L. J.: Redundant, Confined-Explosive Severance. NASA Tech Brief LAR-13582.
1710. Bement, L. J. (Langley Research Center); and Schimmel, M. L. (McDonnell Aircraft Company): Service Life Extension of Explosive Devices for Aircraft Escape Systems. NASA Tech Brief LAR-13462.

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711. Adams, B. R.: Chopped Molecular Beam Multiplexing System. U.S. Patent 4,568,831. Issued February 4, 1986.
(Subject Category 72)
712. Ahl, E. L., Jr.: Latching Mechanism For Deployable/Restowable Columns Useful in Satellite Construction. U.S. Patent 4,587,526. Issued May 6, 1986.
(Subject Category 37)

PUBLICATIONS FOR FACILITIES ENGINEERING DIVISION

Formal Reports

No formal reports.

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1713. Hudson, C. M.; Wright, D. B., Jr.; and Leis, B. N.: Acceptance Criteria for Welds in ASTM A106 Grade B Steel Pipe and Plate. NASA TM-89052, October 1986, 45 p.
(Avail: NTIS Subject Category 26 RTOP 323-53-71)

Contractor Reports

1714. Brown, S. J.: Pressure Systems Energy Release Protection (Gas Pressurized Systems). (NAS1-17278 Quest Engineering Development Corporation.) NASA CR-178090, May 1986, 435 p.
(Avail: NTIS Subject Category 37 RTOP 323-53-03)
1715. DSMA Engineering Corporation: Modifications to the 4 x 7 Meter Tunnel for Acoustic Research - Engineering Feasibility Study. (NAS1-17892 DSMA Engineering Corporation.) NASA CR-178079, March 1986, 85 p.
(Avail: NTIS Subject Category 71 RTOP 534-03-12)
1716. Leis, B. N.; Goetz, D. P.; and Scott, P. M.: The Influence of Defects on the Fatigue Resistance of Butt and Girth Welds in A106B Steel. (NAS1-17404 Battelle Columbus Division.) NASA CR-178114, July 1986, 107 p.
(Avail: NTIS Subject Category 26 RTOP 323-53-71)

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

1717. Dean, E. B.; Wood, D. A.; Bogart, E. H.; and Moore, A. A.: Cost Risk Analysis Based on Perception of the Engineering Process. Presented at the International Society of Parametric Analysts Eighth Annual International Conference, May 12-16, 1986, Kansas City, Missouri. In Proceedings, Volume 5, No. 1, p. 339-350.
(Subject Category 83 RTOP 546-01-11)

Technical Talks

1718. Leis, B. N.; Goetz, D. P.; and Hudson, C. M.: Fitness-for-Purpose Evaluation of Weldments in Fatigue. Presented at the ASTM Nineteenth National Symposium on Fracture Mechanics, June 30 - July 2, 1986, San Antonio, Texas.
(Subject Category 39 RTOP 323-53-71)

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

PUBLICATIONS FOR OPERATIONS SUPPORT DIVISION

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

1719. Gardner, M. R.: Continuous Linear Alignment Testing Grips. NASA Tech Brief LAR-13493.
1720. Ward, S. W.: Surface Conduction Thread-Mounted Instrumentation Thermocouple. NASA Tech Brief LAR-13475.

Patents

No patents.

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR MANAGEMENT OPERATIONS

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

1721. Research Information and Applications Division (Compiler): Scientific and Technical Information Output of the Langley Research Center for Calendar Year 1985. NASA TM-87655, January 1986, 276 p.
(Avail: NTIS Subject Category 82)

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

1722. Harris, P. R.; and Pinelli, T. E.: The Standardization of Publishing Practices: An Introduction to Organizations and the Standards Process. IEEE Transactions on Professional Communication, Volume PC-29, No. 3, September 1986, p. 31-34.
(Subject Category 82)
1723. Moore, A. T.; and Pinelli, T. E.: High-Speed Imaging - An Important Industrial Tool. Technical Photography, Volume 18, No. 5, May 1986, p. 22-25, 44.
(Subject Category 35)
1724. Pinelli, T. E.: Introduction. Journal of the Society for Technical Communication, Special Issue on Research in Technical Communication, Volume 32, No. 4, Fourth Quarter 1985, p. 6-7.
(Subject Category 82)
1725. Pinelli, T. E.; Cordle, V. M.; and McCullough, R.: A Survey of Typography, Graphic Design, and Physical Media in Technical Reports. Journal of the Society for Technical Communication, Volume 33, No. 2, Second Quarter 1986, p. 75-80.
(Subject Category 82)

Meeting Presentations

1726. McCaskill, M. K.; and Huffman, J. P.: The Use of T_eX for Technical Typesetting. Presented at the Society for Technical Communication 33rd International Technical Communication Conference (ITCC), May 11-14, 1986, Detroit, Michigan. In Proceedings, p. 81-84.
(Subject Category 60 RTOP 992-06-03)

1727. Pinelli, T. E.; and Fedors, E. G.: Effective Oral Presentations: A Visual Point of View. Presented at the Society for Technical Communication 33rd International Technical Communication Conference (ITCC), May 11-14, 1986, Detroit, Michigan. In Proceedings, p. 343-346.
(Subject Category 82)

Technical Talks

1728. Williams, W. L.: Civilian Federal Research Management - The NASA Experience. Presented at the Institute of Management Sciences National Conference, April 14-16, 1986, Los Angeles, California.
(Subject Category 81 RTOP 023-10-01)

Computer Programs

1729. Avery, D. E.; Vann, A. V.; Jones, R. H.; and Rew, W. E.: AMS--Acquisition Management Subsystem. NASA Tech Brief LAR-13588.

Tech Briefs

1730. Avery, D. E.; Vann, A. V.; Jones, R. H.; and Rew, W. E.: AMS--Acquisition Management Subsystem. NASA Tech Brief LAR-13588.

Patents

No patents.

PUBLICATIONS FOR AEROSTRUCTURES DIRECTORATE, USAARTA (AVSCOM)

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

1731. Farley, G. L.: Crash Energy Absorbing Composite Helicopter Structure. Presented at the Rensselaer Polytechnic Institute Workshop on Composite Materials and Structures for Rotorcraft, September 10-11, 1986, Troy, New York.
(Subject Category 24)
1732. Nixon, M. W.: Application of Composite Materials for Improved Rotor Blade Performance. Presented at the Rensselaer Polytechnic Institute Workshop on Composite Materials and Structures for Rotorcraft, September 10-11, 1986, Troy, New York.
(Subject Category 24)

Computer Programs

No computer programs.

Tech Briefs

1733. Noonan, K. W.: High Lift, Low Pitching Moment Airfoils. NASA Tech Brief LAR-13215.

Patents

No patents.

APPENDIX

INDUSTRIAL APPLICATIONS CENTERS

Aerospace Research Applications Center
Indianapolis Center for Advanced Research
611 N. Capital Avenue
Indianapolis, IN 46204
(317) 264-4644

Kerr Industrial Applications Center
Southeastern Oklahoma State University
Station A, Box 2584
Durant, OK 74701
(405) 924-6822

NASA Industrial Applications Center
University of Pittsburgh
823 William Pitt Union
Pittsburgh, PA 15260
(412) 624-5211

NASA Industrial Applications Center
University of Southern California
Research Annex, Room 200
3716 South Hope Street
Los Angeles, CA 90007
(213) 743-6132

New England Research Applications Center
Mansfield Professional Park
Storrs, CT 06268
(203) 486-4533

North Carolina Science and Technology Research Center
Post Office Box 12235
Research Triangle Park, NC 27709
(919) 549-0671

Technology Applications Center
University of New Mexico
Albuquerque, NM 87131
(505) 277-3622

NASA/Florida State Technology Applications Center
State University System of Florida
307 Weil Hall
Gainesville, FL 32611
(904) 392-6626

NASA/UK Technology Applications Program
University of Kentucky
109 Kinhead Hall
Lexington, KY 40506-0057
(606) 257-6322

AUTHOR INDEX

A

Abarbanel, S.: 3, 875, 1071
 Abbott, A. D.: 1394
 Abbott, K. H.: 1672
 Abbott, T. S.: 1666
 Abeyounis, W. K.: 817, 917
 Abler, S. B.: 753
 Abolhassani, J. S.: 101
 Abrahamson, A. L.: 265, 685, 719
 Ackerman, M.: 1342
 Adams, B. R.: 1711
 Adams, D. S.: 504
 Adams, L. M.: 4, 67
 Adams, L. R.: 272
 Adams, M. S.: 1111, 1131, 1186
 Adams, W. M.: 1616
 Adcock, J. B.: 828, 834
 Adelman, H. M.: 439, 442, 445, 451, 454, 455
 Ahl, E. L., Jr.: 1712
 Aidala, P. V.: 848
 Akin, D. L.: 260
 Aksel, B.: 485
 Albrecht, G. F.: 203
 Alfaro-Bou, E.: 251, 263, 337
 Allario, F.: 215, 216, 230
 Allen, C. L.: 1429
 Allen, J. G.: 1526
 Allen, J. L., Jr.: 242, 307
 Allen, J. M.: 1072, 1078, 1175
 Allison, S.: 165
 Almand, B. J.: 1531, 1532, 1533
 Althoff, S. L.: 954
 Alvarez, J. M.: 1376
 Amiet, R. K.: 703, 704
 Anders, J. B.: 1093
 Andersen, G. C.: 1429, 1430, 1431
 Anderson, C. M.: 350
 Anderson, G. Y.: 1073, 1124, 1134
 Anderson, I. C.: 1210, 1277, 1343
 Anderson, M. S.: 257, 279, 280, 297
 Anderson, W. K.: 969, 974, 1029
 Andreae, M. O.: 1278, 1279, 1336
 Andreae, T. W.: 1279, 1336
 Andrews, E. H., Jr.: 1094, 1116, 1117
 Anon.: 1, 2, 5, 6, 1193, 1699
 Antcliff, R. R.: 1095
 Applin, Z. T.: 945
 Arbiter, D.: 810
 Arbuckle, P. D.: 1653, 1654

Ard, K. E.: 594
 Armstrong, C. D.: 1647
 Armstrong, E. S.: 1577, 1610, 1623, 1634, 1646
 Ash, R. L.: 129, 130, 150, 1084, 1432
 Ashby, G. C., Jr.: 1489, 1494
 Asundi, A.: 274
 Augustsson, T. R.: 1223
 Austin, J.: 1211, 1212
 Avery, D. E.: 1729, 1730
 Avis, L. M.: 1262, 1335
 Azzazy, M.: 839

B

Badavi, F. F.: 1420, 1475
 Badi, D. M.: 1391, 1446
 Bahrs, D. L.: 1454
 Bailey, J. P.: 311
 Bailey, M. C.: 1579, 1585, 1624, 1625, 1629, 1630, 1632
 Bains, N. J. C.: 256, 331
 Bair, C. H.: 206, 222, 232
 Baker, D. J.: 551, 596
 Baker, R.: 1524
 Baker, R. L.: 1702
 Balasubramanian, R.: 1179
 Baldecchi, M. G.: 1280
 Balena, F. J.: 489
 Bales, K. S.: 258
 Bales, T. T.: 430, 552
 Banerjee, J. R.: 257
 Bangert, L. S.: 806
 Banks, D. W.: 946, 949, 1026
 Banks, H. T.: 7, 8, 9, 10, 11, 1610
 Bar-Sever, A.: 880, 908, 926
 Barber, P. G.: 1537, 1569
 Bare, E. A.: 810, 821
 Barger, R. L.: 1037, 1038, 1039, 1106, 1174
 Barker, L. K.: 1514, 1515
 Barkstrom, B. R.: 212, 1213, 1281, 1293, 1313, 1368
 Barlow, L. H.: 236
 Barnes, J. C.: 206, 222, 232
 Barnwell, R. W.: 881
 Barrett, D. J.: 482
 Barrick, J. D.: 1194
 Barthelemy, J-F.: 448, 449, 457, 458
 Bartlett, D. S.: 1214
 Bartlett, D. W.: 1013

Bartlett, K. B.: 1261, 1294
 Bascom, W. D.: 597
 Bass, R. G.: 537, 553
 Bates, B. L.: 915
 Batina, J. T.: 368, 369, 375, 383,
 391, 392, 393, 394, 400, 409
 Batten, C. E.: 140, 171
 Batterson, J. G.: 1574, 1580, 1589,
 1615
 Baucom, R. M.: 598
 Bavuso, S. J.: 1561, 1571
 Bayliss, A.: 3, 12, 53, 859, 860, 872,
 906, 907, 918
 Baysal, O.: 1096, 1097
 Beach, H. L., Jr.: 759
 Beasley, W. D.: 912
 Beatty, M. E., III: 1540
 Beck, S. M.: 1241, 1267, 1297
 Beckwith, I. E.: 1098, 1102
 Beeler, G. B.: 1074, 1154
 Beissner, F. L., Jr.: 777
 Belcastro, C. M.: 1626
 Bell, V. L.: 505, 517, 648, 649, 650
 Beltz, M.: 566
 Belvin, W. K.: 259, 284, 298, 299,
 1629, 1630, 1632
 Bement, L. J.: 1703, 1704, 1709, 1710
 Benner, D. C.: 1230, 1231, 1232, 1233,
 1234, 1256, 1344, 1345, 1369, 1370
 Bennett, J.: 13
 Bennington, D. R.: 116
 Benz, H. F.: 1545, 1551, 1558
 Berding, M. A.: 202
 Bergan, P. G.: 332, 333
 Bernardi, C.: 14
 Berrier, B. L.: 804, 805, 929
 Berry, H. M.: 394
 Berry, J. D.: 975
 Berry, R. F., Jr.: 1537, 1569
 Berry, S. A.: 840
 Bertelrud, A.: 1153
 Berthe, C. J., Jr.: 1607, 1608, 1627
 Bess, T. D.: 1215
 Beyer, T. B.: 727
 Bhatia, K. G.: 367
 Bigelow, C. A.: 459, 479, 506, 599,
 614
 Bird, R. K.: 564
 Blackburn, L. B.: 507
 Blackstock, T. A.: 1379
 Blaha, M. S.: 237
 Blair, A. B., Jr.: 1040, 1175
 Blalock, T.: 148
 Blanchard, R. C.: 1405, 1433, 1434,
 1437
 Blickenstaff, W. D.: 841
 Block, P. J. W.: 672, 673, 720, 721
 Blosser, M. L.: 401
 Blount, C. E.: 1453
 Bluck, R. M.: 357
 Blume, H. J. C.: 238
 Bobbitt, P. J.: 861, 862, 882
 Bober, L.: 1177
 Boeing Commercial Airplane Company:
 1592
 Bogart, E. H.: 1717
 Boitnott, R. L.: 300
 Bokhari, S. H.: 15, 42
 Bonetti, A.: 1280
 Bonner, E.: 1067
 Bonnice, W. F.: 1593
 Booth, E. R., Jr.: 674, 706, 722
 Bostic, S. W.: 301
 Boughner, R. E.: 1216, 1221, 1250
 Bower, R. E.: 91
 Bowker, D. E.: 205
 Bowles, D. E.: 504, 508, 542, 554, 592
 Bowles, R. L.: 1677
 Boyles, G. B., Jr.: 883
 Bradbury, C. A.: 555, 586
 Braden, J. A., Jr.: 884
 Bradley, P. F.: 1075
 Bradshaw, E. S.: 1622
 Brandl, D.: 1200, 1201
 Brandon, J. M.: 947, 976, 977
 Branstetter, J. R.: 103
 Brasseur, G.: 1244, 1308, 1357
 Brauckmann, G. J.: 1378, 1379, 1380,
 1435
 Brenier, Y.: 16
 Brentner, K. S.: 675
 Bressette, W. E.: 1309
 Brewer, D. A.: 1436, 1449
 Brewer, W. D.: 633
 Briegleb, B. P.: 1217
 Brinkley, K. L.: 661
 Brock, L. D.: 1526
 Brockman, P.: 206, 222, 232
 Brogan, F. A.: 276, 278, 296
 Brooks, D. R.: 1218, 1282, 1303, 1323
 Brooks, T. F.: 707, 708, 750
 Broussard, J. R.: 1594
 Browell, E. V.: 206, 231, 232, 1238,
 1260, 1267, 1278, 1283, 1284, 1285,
 1286, 1287, 1297, 1298, 1301, 1307,
 1334
 Brown, E. F.: 1076

Brown, K. G.: 117, 141, 188, 217, 239, 240
 Brown, L. R.: 1258, 1259, 1276, 1365
 Brown, P. W.: 902, 956, 978, 981, 984, 985, 1014, 1025
 Brown, S. J.: 1714
 Bruce, K. R.: 1510, 1513
 Bruce, R. A.: 902
 Brumfield, M. L.: 243
 Bruner, A. R.: 1568
 Brunin, B. L.: 664
 Bruton, D. B., Jr.: 1241
 Bryant, W. H.: 1586, 1645
 Bube, K. P.: 80
 Buck, G. M.: 1405, 1437, 1485
 Buck, W. W.: 1406, 1427
 Buckley, J. D.: 1689, 1690, 1694, 1695, 1696
 Buesking, K. W.: 482
 Buglia, J. J.: 1195, 1196
 Bui, M. H.: 814
 Bullock, G. F.: 1519
 Buoncristiani, A. M.: 218, 222, 233
 Burke, P. R.: 1595
 Burket, H. K.: 985
 Burks, H. D.: 509, 591, 660
 Burley, C. L.: 679, 735
 Burley, J. R., II: 806, 820, 821, 831, 833, 919, 921
 Burner, A. W.: 121
 Burns, J. A.: 17
 Burstadt, P.: 1177
 Burton, R. V.: 497
 Bush, H. G.: 268, 269, 321, 322, 357, 358, 360
 Bushnell, D. M.: 1099, 1158, 1159, 1160, 1161, 1184
 Busquets, A. M.: 1681, 1682, 1685
 Butchart, N.: 1219
 Butler, J. K.: 1525
 Butler, R. W.: 1516, 1542, 1546
 Butterfield, A. J.: 198
 Buvel, R. L.: 1410
 Byrns, E. V., Jr.: 390
 Byvik, C. E.: 218, 222, 233

C

Caglayan, A. K.: 1581, 1596, 1628
 Calise, A. J.: 1597
 Callis, L. B.: 1220, 1221, 1250, 1288, 1310, 1346, 1347
 Calloway, R. S.: 219
 Camarda, C. J.: 402, 403, 454
 Campbell, J. F.: 807, 808, 809, 920
 Campbell, R. L.: 885
 Campbell, T. G.: 1629, 1630
 Camponeschi, E. T.: 460
 Camy-Peyret, C.: 1222, 1239, 1351
 Cantrell, J. H., Jr.: 138, 142, 143, 144, 145, 146, 147, 177
 Canuto, C.: 14, 18
 Canuto, V. M.: 1223
 Capone, F. J.: 804, 810, 832, 886
 Capuano, B.: 204
 Card, M. F.: 260, 338, 339, 340
 Carden, H. D.: 300, 302
 Carli, B.: 1251, 1324
 Carlin, D. B.: 1525
 Carlson, C.: 1064
 Carlson, H. W.: 1041
 Carlson, J. R.: 806, 831, 833, 838, 916, 919, 921
 Carlson, L. A.: 487
 Carney, H. K.: 199, 200, 201
 Carney, T. A.: 1224, 1296
 Carraway, D. L.: 990, 1031
 Carreno, V. A.: 1573
 Carson, G. T., Jr.: 805
 Carter, J. E.: 846, 847
 Cary, A. M., Jr.: 1150
 Casas, J. C.: 1253
 Caslini, M.: 467, 556
 Castineras, A.: 211
 Cattany-Carnes, K. M.: 1289, 1290
 Cavalier, A.: 148
 Cazier, F. W., Jr.: 362, 364, 370, 371, 404, 405
 Cencich, T.: 1601, 1602, 1603, 1604
 Cerro, J. A.: 295
 Cerza, M. R., Jr.: 1472
 Cess, R. D.: 212, 1293, 1313
 Chakravarthy, S.: 37
 Chalk, C. R.: 1627
 Chambers, J. R.: 979, 980
 Chandrasekaran, B.: 838, 842, 916, 939
 Chang, A. C.: 550, 595
 Chang, C. K.: 1381
 Chang, J-F.: 843
 Chang, K. S.: 1004
 Chapin, W. G.: 122
 Charlock, T. P.: 1289, 1290
 Cheatwood, F. M.: 1390
 Chedin, A.: 1242
 Chegini, H.: 118, 119, 190
 Chellman, D. J.: 600
 Chen, A. B.: 202
 Chen, F-J.: 1098, 1102, 1129

Chen, T. F.: 19
 Chermahini, R. G.: 601
 Childress, O. S., Jr.: 676
 Chitsomboon, T.: 1100
 Choi, S. H.: 1401, 1487
 Choudhury, S.: 65
 Chow, P. L.: 887
 Chow, R. R.: 844, 845
 Chrisman, D. A.: 1293
 Chu, J.: 888
 Chu, L-C.: 429
 Chu, W. P.: 1225, 1275, 1291, 1311,
 1342
 Chuan, R. L.: 1348
 Chun, H. M.: 288, 289, 290
 Chung, T-S.: 657
 Clark, I. O.: 207
 Clark, L. R.: 687
 Clark, R. K.: 466, 510, 536, 543, 557,
 651
 Clarke, D. K.: 863
 Cleveland, J. I., II: 104, 111
 Clevenson, S. A.: 688
 Cliff, E. M.: 17
 Cline, J. H.: 412
 Coe, P. L., Jr.: 945, 948
 Coen, P. G.: 779, 782, 797, 798
 Cofer, W. R., III: 1226, 1227, 1228,
 1377
 Cohen, G. C.: 1526
 Cole, K. L.: 830
 Cole, S. R.: 372, 395, 406
 Collins, V. G.: 1377
 Collins, W. R.: 1566, 1567
 Colwell, G. T.: 1450
 Companion, J.: 147, 148, 149
 Compton, E. C.: 123
 Compton, H. R.: 1422
 Condon, E. P.: 209, 1253
 Connell, J. W.: 537, 553, 570
 Connor, A. B.: 680
 Connors, V. S.: 1226, 1254, 1292
 Conrad, C. L.: 1527
 Conway, B. A.: 220, 229
 Conway, E. J.: 1438, 1488
 Coogan, J. J.: 1501
 Cook, E. L.: 992
 Coombs, D. S.: 1494
 Cooper, E.: 553
 Cooper, J. E.: 212, 1293
 Cooper, P. A.: 262, 303, 304, 1591,
 1652
 Cordle, V. M.: 1725
 Cordner, L. W.: 597
 Corlett, W. A.: 762, 1044, 1053
 Coronato, P. A.: 1595
 Cotnoir, L. J.: 1301
 Couch, R. H.: 226
 Covell, P. F.: 1101
 Cox, J. W.: 226
 Craidon, C. B.: 1180
 Craven, J. C.: 1309
 Crawford, D. J.: 104, 111
 Credeur, L.: 1512, 1678
 Creel, T. R., Jr.: 1098, 1102, 1129
 Crews, J. H., Jr.: 465, 468, 469, 511,
 512, 529, 558, 602, 634, 652
 Crill, P. M.: 1294
 Cronkhite, J. D.: 386
 Croom, C. C.: 961, 990, 1015, 1016,
 1030
 Crosley, D. R.: 1197
 Crouch, R. K.: 207, 1537, 1569
 Crowley, J. M.: 7
 Cruz, C. I.: 1466
 Cucinotta, F. A.: 1383, 1388, 1400,
 1425, 1439, 1440, 1475
 Cuda, V., Jr.: 1441
 Cuddihy, W. F.: 1391, 1446
 Cunningham, M. J.: 1467
 Czarnek, R.: 274
 Czeck, E. W.: 1547

D

Dagenhart, J. R.: 862, 889
 Dahlburg, R. B.: 1077
 Daiutolo, H.: 354, 355
 Darden, C. M.: 1041, 1182
 Darnell, W. L.: 1229
 Daryabeigi, K.: 129, 130, 150
 Daugherty, R. H.: 305
 Davidson, J. B.: 1598
 Davies, R.: 1262
 Davis, D. J.: 963
 Davis, P.: 1012
 Davis, P. A.: 341
 Davis, R. C.: 415, 430, 434, 435
 Davis, R. E.: 221, 1519
 Davis, R. L.: 846, 847
 Davis, W. H., Jr.: 848
 De Rudder, A.: 1244, 1308, 1357
 De Young, R. J.: 1397, 1407, 1408,
 1409, 1442, 1497
 Dean, E. B.: 1717
 Deaton, J. W.: 559
 Debnam, W. J., Jr.: 207, 1537, 1569
 Dechaumphai, P.: 426

Deis, B. C.: 943
DeJarnette, F. R.: 1390
Delnore, V. E.: 1575
DeLoach, R.: 689, 690, 723
DeMuer, D.: 1342
Depkovich, T. M.: 1531, 1532, 1533
Derian, E. J.: 273
DeRyder, L. J.: 1188
DeShazer, L. G.: 203
Deshpande, S. M.: 1042, 1043, 1103
Deutschman, P. A.: 1383, 1385, 1386,
1410, 1411, 1412, 1413
Devi, V. M.: 1222, 1230, 1231, 1232,
1233, 1234, 1239, 1256, 1257, 1344,
1345, 1351, 1369, 1370, 1372, 1373
Dexter, H. B.: 460, 560, 603
Dezern, J. F.: 513
DiCarlo, D. J.: 981
Dillenius, M. F. E.: 1058, 1078, 1183
Dillon, J. L.: 1104, 1162, 1173
Dillon-Townes, L. A.: 124, 150
Disimile, P. J.: 698
Diskin, G. S.: 1105, 1126, 1135
Dixon, S. C.: 376
Doble, G. S.: 483
Dodbele, S. S.: 964, 982, 989, 1008
Doherty, C. M.: 1235
Dollyhigh, S. M.: 1180
Domack, C. S.: 1035
Dominek, A. K.: 1038, 1106, 1174,
1175, 1176
Dompka, R. V.: 386
Donaldson, C. D.: 1070
Donaldson, J.: 689, 690
Dorsey, J. T.: 250, 261, 262
Dove, B. L.: 1562
Downer, J. R.: 1659
Downing, D. R.: 1586, 1645
Dress, D. A.: 814, 836, 881, 925, 928
Dries, G. A.: 461, 561
Driscoll, W. C.: 96, 112
Driver, C.: 780, 781, 783, 799
Druez, P. M.: 721
Drummond, J. P.: 1079, 1100, 1107,
1108, 1109, 1110, 1112, 1155
DSMA Engineering Corporation: 1715
Duke, J. C., Jr.: 274
Duncan, C. H.: 212
Dunham, D. M.: 948
Dunham, J. R.: 1528
Dunham, R. E., Jr.: 983
Dunn, M. H.: 691
Durling, B. J.: 257
Dursch, H. W.: 484

Dutt, P.: 20, 21, 84
Dwoyer, D. L.: 1071, 1075, 1111, 1163

E

Easley, W. C.: 1499, 1500
Easterbrook, C. C.: 1535
Eckhardt, D. E., Jr.: 1538, 1548, 1563
Eckstrom, C. V.: 373, 374, 407
Edahl, R. A., Jr.: 1226, 1227, 1228
Edighoffer, H. H.: 259, 298, 299
Edwards, C. L. W.: 881
Edwards, J. W.: 408
Edwards, S. F.: 151
Eggers, J. M.: 1152
Eggleston, J. M.: 203
Egli, A. H.: 562
Egli, A. O.: 653
Eidson, T. M.: 22
Eisenhaure, D. B.: 1659
Eklund, D. R.: 1112
Eldred, C. H.: 1394, 1443, 1444, 1445,
1462
Ellerbe, D. A.: 117
Elliot, J.: 193
Elliott, J. W.: 712, 951
Ely, R. M.: 659
Emdad, H.: 965
Engler, M.: 149
Engquist, B.: 37
Entz, D. P.: 963
ERBE Science Team: 1236, 1335
Erdogan, F.: 485, 491, 492, 503
Erickson, W. D.: 970
Eriksson, L-E.: 110
Erlebacher, G.: 23, 1113
Eskins, J.: 849
Eterno, J. S.: 1609, 1648, 1649
Evans, G. A., Jr.: 131
Evans, M. J.: 1704
Everett, R. A., Jr.: 473
Everhart, J. L.: 890
Evert, T. A.: 211
Eves, J. W.: 942, 1494
Exline, J. D.: 1295
Exton, R. J.: 133, 152, 194
Ezzo, M. B.: 495

F

Fabert, M. G.: 1706
Fales, C. L.: 1552
Farassat, F.: 691, 709, 724, 725

Farley, G. L.: 514, 515, 563, 564,
1731
Farmer, C. B.: 1252, 1258, 1259, 1276,
1365
Farmer, J. T.: 1391, 1446
Farrukh, U. O.: 1207
Fasanella, E. L.: 251, 263, 306
Faulcon, N. D.: 181
Feather, F. E.: 1520, 1529, 1547
Feather, J. B.: 1502, 1503
Fedors, E. G.: 1727
Felippa, C. A.: 356
Ferebee, M. T.: 1349, 1359
Ferguson, M. W.: 565
Ferris, A. T.: 125, 923
Ferris, J. C.: 811, 930, 934
Feyock, S.: 444
Fichter, W. B.: 252, 344
Fields, J. M.: 696, 697
Fields, R. A.: 365
Findlay, J. T.: 1422
Finelli, G. B.: 1547, 1556
Fischer, M. C.: 221, 1024
Fischler, J. E.: 486, 966
Fishel, C. E.: 117, 141
Fisher, B. D.: 984, 985, 1025
Fisher, D. F.: 221, 1024
Fishman, J.: 228, 1224, 1237, 1238,
1269, 1296, 1305, 1331, 1350
Fix, G. J.: 19
Flaud, J-M.: 1222, 1239, 1351
Foldes, P.: 1599
Foley, J. S.: 1062
Fontana, A.: 307, 1631
Fortunato, R. C.: 153
Foss, J. F.: 698
Foss, R. A.: 1705
Foss, W. E., Jr.: 779
Foudriat, E. C.: 1539
Foughner, J. T., Jr.: 807, 808, 809,
861
Fowler, R.: 355.
Fox, J. C.: 1434
Fox, L.: 148
Fox, R. L.: 1690, 1694, 1695, 1696,
1697
Frank, L. S.: 1309
Freeman, W. T.: 179
Fridovich, B.: 1233
Friedl, R. R.: 1373
Fripp, A. L., Jr.: 207, 1537, 1569
Fuller, C. R.: 700, 733
Fuller, D. E.: 891
Fuller, W. H., Jr.: 226, 1273

Fulton, R. E.: 301
Funk, J. G.: 516, 560, 593

G

Gad-el-Hak, M.: 1059
Gall, P. D.: 961, 990, 1030
Gallman, J. W.: 375, 409
Garber, D. P.: 476, 533
Garcia, R. R.: 1211, 1263
Gardner, J. E.: 376
Gardner, M. R.: 1719
Garner, H. D.: 1665, 1667, 1679, 1683,
1684, 1685
Garrard, W. L.: 1616
Garrett, L. B.: 1459
Garstang, M.: 1297, 1298, 1304
Gasperich, F. J., Jr.: 1476
Gates, R. L.: 100
Gates, S. S.: 8
Gatlin, G. M.: 946, 949
Gatski, T. B.: 1114, 1148, 1164, 1165,
1171
Gentry, G. L., Jr.: 673, 948
Ghaffari, F.: 850, 864
Giallorenzi, T. G.: 1544
Gibbons, M. D.: 377, 410
Gibson, J. S.: 24, 25, 26
Gibson, W. D.: 663
Giesing, J. P.: 366
Giesy, D. P.: 1591
Gilbert, M. G.: 411
Giles, G. L.: 440, 446, 450, 457, 1139
Gille, J. C.: 1243
Gillespie, J. W., Jr.: 487
Gillian, R. E.: 356
Gilreath, M. C.: 1177
Gintoli, P. J.: 705
Glaser, B.: 1536
Glass, C. E.: 363
Glasser, M.: 1060
Glickstein, M. R.: 1061
Gloss, B. B.: 823, 942
Glover, B. J.: 1660
Glover, K. E.: 981
Gnoffo, P. A.: 1418, 1419, 1447, 1448
Goad, W. K.: 121
Godiwala, P. M.: 1581, 1596, 1628
Goetz, D. P.: 1716, 1718
Gokhale, M. B.: 27, 58
Goldberg, M.: 28
Goldman, I.: 1223
Goldstein, B.: 1525
Golub, R. A.: 726

Hoode, P. W., IV: 1549
 Hoodman, W. L.: 1080
 Horadia, S.: 892
 Hordley, L. L.: 1204, 1265
 Horee, J. G.: 344
 Hornsen, B. B.: 1338
 Hottlieb, D.: 29, 30, 75, 90, 875,
 1071
 Gracey, C.: 1647
 Grantham, W. D.: 1627, 1643, 1655
 Grantham, W. L.: 1632
 Green, R. N.: 1262, 1335
 Greene, G. C.: 865, 972
 Greene, W. H.: 264
 Gregory, G. L.: 208, 209, 228, 1240,
 1241, 1267, 1278, 1297, 1299
 Greitzer, E. M.: 704
 Gremban, K. D.: 1531, 1532, 1533
 Greve, D. W.: 1530
 Grice, S. S.: 1261
 Grizzaffi, A. M.: 1547
 Groce, J. L.: 1504, 1505, 1507
 Groman, T. C.: 1536
 Gronberg, D.: 1648
 Grosch, C. E.: 1114, 1171
 Grose, W. L.: 1198, 1249, 1263, 1300,
 1352, 1353
 Grossmann, B. E.: 1301
 Grosveld, F. W.: 713, 727
 Grunberg, D. B.: 1609
 Guerra, R.: 1136
 Gumbert, C. R.: 827
 Gunzburger, M. D.: 31, 32
 Gupta, S. K.: 1229
 Guy, R. W.: 1115, 1116, 1117
 Guynn, E. G.: 474, 621

H

Hafez, M. M.: 75, 90, 385, 428, 866,
 867, 878, 879, 893
 Haftka, R. T.: 403, 442, 443, 445,
 451, 453
 Haggard, K. V.: 1198, 1204, 1302
 Hahn, H. T.: 270, 275
 Hahne, D. E.: 950, 986
 Hajela, P.: 387
 Haley, D. C.: 1531, 1532, 1533
 Hall, J. B., Jr.: 1436, 1449, 1450,
 1472
 Hall, P.: 13, 33
 Hall, R. M.: 812, 894
 Hall, S. R.: 1593
 Halwes, D. R.: 388, 412, 436

Halyo, N.: 1293
 Hamer, H. A.: 1576
 Hamilton, H. H., II: 1390, 1392, 1451,
 1480, 1481
 Hankins, W. W., III: 1517
 Hanks, B. R.: 307
 Hardin, J. C.: 138, 677, 710, 728,
 729, 730
 Hardisky, M. A.: 1214
 Hariharan, S. I.: 34, 35
 Harries, J. E.: 1243
 Harries, W. L.: 524, 555, 577, 586,
 587, 618
 Harrington, R. F.: 1585
 Harris Corporation: 1600
 Harris, F. W.: 519, 566, 567, 655
 Harris, P. R.: 1722
 Harris, R. L., Sr.: 1660
 Harrison, E. F.: 1217, 1218, 1303,
 1323, 1368
 Harrison, F. W., Jr.: 1550, 1564
 Harriss, R. C.: 1228, 1240, 1261,
 1267, 1278, 1279, 1297, 1298,
 1304, 1336, 1341, 1354
 Hart-Smith, L. J.: 664
 Harten, A.: 36, 37
 Hartley, J. G.: 1450
 Hartman, E. R.: 1056
 Hartwich, P-M.: 987, 988, 991, 996
 Harvey, G. A.: 1257
 Harvey, W. D.: 862, 895, 908, 926
 Hassan, H. A.: 423, 863, 868, 999,
 1035, 1112
 Hassler, J. M., Jr.: 1034
 Hastings, E. C., Jr.: 989, 1001
 Hatfield, J. J.: 1668, 1680
 Haugen, P. R.: 1540
 Havens, S. J.: 517, 518, 519, 567,
 570, 571, 648, 649, 650, 654,
 655, 656, 666
 Hayduk, R. J.: 251, 253, 319
 Hayes, P. J.: 1551, 1554
 Heard, W. L., Jr.: 260, 308, 309
 Hearn, C. P.: 1585, 1622
 Heath, D. M.: 185
 Heck, M. L.: 1402
 Heck, P. W.: 1305
 Hedgepeth, J. M.: 272
 Hefner, J. N.: 758
 Heinbockel, J. H.: 1389, 1399, 1428,
 1477
 Heitman, K. E.: 711, 741
 Helfert, M. R.: 1292
 Hellbaum, R. F.: 1673, 1674

Helms, V. T., III: 1426, 1486
 Henderson, W. P.: 831, 882, 919, 922,
 944
 Hendricks, C. L.: 484
 Hendricks, H. D.: 1544
 Hendrickson, B. M.: 1544
 Hendrix, M. K.: 1434
 Henry, M. W.: 1395, 1396
 Herakovich, C. T.: 504
 Hergenrother, P. M.: 518, 519, 537,
 553, 566, 567, 568, 569, 570,
 571, 572, 604, 605, 606, 607,
 654, 655, 656, 665, 666, 667,
 668
 Herstrom, C. L.: 257
 Hertzberg, P. E.: 488
 Hess, R. A.: 1582
 Hess, R. V.: 188, 206, 222, 232, 239,
 240
 Hess, R. W.: 364
 Hesser, R. J.: 211
 Heyman, J. S.: 147, 148, 149, 153,
 154, 158, 161, 183, 184, 185, 195
 Heyson, H. H.: 800
 Higdon, N. S.: 1301
 Hill, A. S.: 814
 Hill, G. F.: 209, 227, 228, 1297
 Hill, J. S.: 1044
 Hillard, M. E.: 133, 152
 Hinkey, M. E.: 1536
 Hinkley, J. A.: 520, 528, 597, 608,
 609
 Ho, J. K.: 1506, 1508
 Hoad, D. R.: 712, 951
 Hodges, D. Y.: 139
 Hodges, W. T.: 538, 610
 Hoell, J. M., Jr.: 208, 209, 1241,
 1315
 Hoffman, L. H.: 1349, 1359
 Hogge, E. F.: 1162
 Hogge, T. W.: 1682, 1685
 Holben, M. S., Jr.: 161
 Holbrook, G. T.: 972
 Holland, J. A.: 1327
 Holloway, C. M.: 1521
 Holloway, P. F.: 92
 Holmes, B. J.: 961, 982, 990, 1001,
 1007, 1008, 1017, 1018, 1019, 1020,
 1021, 1022, 1030, 1031, 1035
 Holmes, D. C. E.: 1511
 Holmes, H. K.: 1031
 Hom, K. W.: 1045, 1046
 Hoover, J.: 1601, 1602, 1603
 Hopson, P., Jr.: 1387
 Horn, W. J.: 778
 Horne, W. B.: 281
 Horner, G. C.: 310, 311, 1452
 Horta, L. G.: 282, 283, 286, 311, 314,
 1452
 Horvath, T. J.: 896
 Hoshang, C.: 189
 Hou, T-H.: 509
 Houbolt, J. C.: 784
 Houck, J. A.: 96, 103, 112, 723, 1515
 Housner, J. M.: 265, 284, 312
 Howard, F. G.: 1184
 Howard, J.: 1492
 Howard, S. J.: 135
 Howell, W. E.: 285, 1512
 Howser, L. M.: 661
 Hsu, C-H.: 988, 991, 996
 Huang, J. K.: 1432
 Hubbard, H. H.: 678, 699, 702, 731
 Hubbartt, J. E.: 869
 Hubickyj, O.: 1223
 Huck, F. O.: 1552
 Hudson, C. M.: 1713, 1718
 Hueschen, R. M.: 1583, 1584
 Huffman, J. P.: 1726
 Humes, D. H.: 247
 Hunt, J. L.: 1048
 Hunt, L. R.: 363
 Husain, A.: 1540
 Hussaini, M. Y.: 22, 23, 38, 39, 40,
 76, 79, 479, 1079, 1092, 1109,
 1110, 1113
 Husson, N.: 1242
 Hutcheson, L. D.: 1540
 Hwang, I. H.: 1414
 Hyer, M. W.: 273
 Hypes, W. D.: 1306

 I
 Iles, D. W.: 9
 Illg, W.: 158, 462, 476, 630
 Imbert, N.: 1661
 Imhoff, C. L.: 1223
 Imlay, S. T.: 851
 Inge, A. T.: 233
 Ingogly, W. F.: 1527, 1554
 Ingram, W. C.: 992
 Iqbal, M. A.: 41, 42
 Ishii, K.: 993
 Ismail, S.: 1260, 1307
 Israeli, M.: 69, 73
 Ito, K.: 10
 Ivey, D. L.: 281

Izumi, K. H.: 1504, 1505, 1507

J

Jachimowski, C. J.: 1126
Jackels, C. F.: 134
Jackson, A. C.: 489
Jackson, C. M., Jr.: 1081, 1118
Jackson, L. R.: 295, 424, 434, 435
Jackson, T. L.: 43
Jacobs, P. F.: 923
Jafri, J. A.: 172
Jalufka, N. W.: 1382, 1453
Jarrett, O., Jr.: 1095
Jegley, D. C.: 266
Jenkins, R. V.: 813, 834, 897
Jennett, L. A.: 915
Jensen, B. J.: 571, 572, 656, 667, 668
Jensen, D. G.: 490
Johnson, B. L.: 497
Johnson, C. B.: 814, 815, 816, 898,
903
Johnson, E. R.: 254
Johnson, G. S.: 1691, 1692
Johnson, J. L., Jr.: 1032, 1036
Johnson, J. M.: 186
Johnson, K. G.: 1576
Johnson, M.: 689, 690
Johnson, P. B.: 1432
Johnson, R. R.: 357
Johnson, R. W.: 1214
Johnson, S. C.: 1522
Johnson, S. K.: 1047
Johnson, T. D., Jr.: 902
Johnson, V. S.: 773, 785
Johnson, W. G., Jr.: 898, 924
Johnson, W. S.: 470, 471, 472, 473,
521, 522, 525, 527, 573, 574,
611, 612, 613, 614, 620
Johnston, D. F.: 1694, 1695, 1698
Johnston, N. J.: 575, 597, 615, 616,
617
Johnston, P. J.: 1048, 1056, 1119,
1120, 1121
Jones, G. S.: 884, 896
Jones, J. D.: 700
Jones, K. H.: 100
Jones, K. M.: 1049, 1050, 1082, 1536
Jones, M. G.: 683, 732
Jones, R. H.: 1729, 1730
Jones, R. L.: 1212, 1243
Jones, W. L.: 213
Jones, W. R.: 1393, 1454
Jordan, H. F.: 44

Jordan, K. E.: 12
Joshi, S. M.: 1577, 1611, 1612, 1613,
1614, 1623, 1633, 1634, 1646
Juang, J-N.: 267, 282, 283, 286, 287,
288, 289, 290, 294, 313, 314, 315,
316, 326, 342, 343
Junkins, J. L.: 283

K

Kaczynski, M-A.: 105
Kahlbaum, W. M., Jr.: 113
Kandel, R. S.: 1218
Kaplan, W. A.: 1341
Karanian, A. J.: 1062
Kassel, P. C., Jr.: 247
Kaszubowski, M.: 1187
Kaya, A. C.: 491, 492
Keating, G. M.: 1244, 1308, 1309,
1355, 1356, 1357, 1358
Keckler, C. R.: 1635
Keen, J. M.: 1075
Kefauver, N.: 1601, 1602, 1603, 1604
Kehoe, M. W.: 362, 370, 371, 404, 405
Keirse, J. L.: 1173
Keirstead, M. M.: 1058
Kelley, H. L.: 959
Kelliher, W. C.: 961, 1030
Kelly, G. M.: 1402
Kelly, J. H.: 1531, 1532, 1533
Kelly, J. R.: 1510, 1513
Kemp, W. B., Jr.: 852, 853
Kennedy, D.: 257
Kennedy, J. M.: 344
Kennedy, W. R.: 542
Kent, G. S.: 1208, 1245, 1325
Kepler, C. E.: 1062
Kern, F. A.: 173, 174
Kerr, P. A.: 115
Kerridge, B. J.: 1264, 1329, 1371
Keyes, J. W.: 1051, 1052
Khan, F.: 1455
Khandelwal, G. S.: 1439, 1455
Khatun, S.: 1337
Kiehl, J. T.: 1263, 1264, 1329, 1371
Kilgore, R. A.: 835, 881, 925, 928
Kim, K. C.: 1456
Kim, K. H.: 1456
Kinard, W. H.: 246, 247, 248
King, L. L.: 562
King, P. M.: 1012
Kishoni, D.: 136, 155, 156
Kjelgaard, S. O.: 994
Klatte, R. M.: 721

Klein, V.: 1498, 1574, 1615
 Klemas, V.: 1214
 Klewicki, C. L.: 698
 Klien, F.: 148
 Knapp, M. L.: 773, 1181
 Knight, N. F., Jr.: 264, 317
 Knight, V. H., Jr.: 219
 Knox, C. E.: 1661, 1669
 Ko, W. L.: 365
 Kochhar, N. K.: 493, 494
 Koenig, R. W.: 801
 Kokta, M.: 218
 Kopia, L. P.: 210, 235, 1293
 Kopriva, D. A.: 45, 46
 Krause, E.: 995, 997
 Krauze, L. D.: 1531, 1532, 1533
 Kravaris, C.: 49
 Kreis, R. I.: 868
 Krieger, W. B.: 1053
 Kryder, M. H.: 1530
 Kubendran, L. R.: 869, 926
 Kuhn, L. T.: 488
 Kuhn, W. R.: 1316
 Kumar, A.: 56, 1054, 1083, 1100, 1122,
 1123, 1124, 1128, 1155, 1185
 Kunz, K. S.: 1534
 Kuruvila, G.: 866, 893
 Kurzeja, R. J.: 1204
 Kushnick, P. W.: 187

L

LaBarge, W. L.: 489
 Lake, M. S.: 262, 268, 271, 303
 Lakin, W. D.: 39, 47
 Lallman, F. J.: 1591, 1652
 Lamar, J. E.: 864, 888, 899, 900, 901,
 902, 927
 Lamb, M.: 817
 Lambeth, J. D.: 1221, 1250, 1310
 Lambiotte, J. J., Jr.: 114
 Lamkin, S. L.: 729, 730
 Lamm, P. K.: 48, 1610
 Lan, C. E.: 843, 965
 Lane, H. H., Jr.: 1403
 Langley NASP Conceptual Studies Team:
 763
 Lansing, D. L.: 106
 Larsen, J. C.: 214, 1247, 1311
 Laughman, L. M.: 204
 Lauterbach, L. A.: 1527
 Lawing, P. L.: 835, 903, 913, 928, 940
 Lawrence, R. W.: 1585
 Lazarus, T. L.: 1638

Lazos, B. S.: 1156, 1572
 Leatherwood, J. D.: 738
 Leavitt, L. D.: 826, 929
 LeBel, P. J.: 223
 LeCroy, S. R.: 1273
 Lederich, R. J.: 496, 658
 Lee, C. W.: 1526
 Lee, J. H.: 1414, 1456, 1457, 1470,
 1471, 1487, 1488
 Lee, L. D.: 1538, 1541, 1553, 1563
 Lee, M. H.: 1414, 1457, 1471
 Lee, R. B., III: 212, 1312, 1313,
 1349, 1359
 Lee, T-Y: 49
 Leis, B. N.: 1713, 1716, 1718
 LeMesurier, B. J.: 12
 Lempert, W. R.: 152
 Lepsch, R. A.: 1458
 Lester, H. C.: 733, 753
 Letchworth, R.: 244
 Leung, P. T.: 523, 576
 LeVeque, R. J.: 4, 50
 Levine, J. S.: 1210, 1223, 1226, 1228,
 1246, 1257, 1277, 1295, 1314, 1315,
 1316, 1317, 1343
 Lewis, B. W.: 117, 141
 Li, P.: 146, 177
 Liceaga, C. A.: 1520, 1523
 Liebst, B. S.: 1616
 Lilley, D. E.: 884
 Lin, J. C.: 1084, 1179
 Lindemann, A. M.: 1085
 Lindner, D. K.: 1637
 Lingenfelser, G.: 1198
 Linse, D. J.: 963
 Lippens, C.: 1342
 Lisagor, W. B.: 600, 633
 Liu, C-H.: 952, 971, 991, 993, 995,
 996, 997, 1004, 1011, 1023
 Liu, G. C.: 998, 1003, 1006
 Long, E. R., Jr.: 463, 524, 555, 565,
 577, 586, 587, 618
 Long, P. Y.: 1032
 Long, S. A. T.: 523, 524, 555, 565,
 576, 577, 578, 579, 586, 587, 618
 Looney, K. T.: 1554
 Looze, D. P.: 1609, 1648, 1649
 Lotts, C. G.: 356
 Louthan, M. R., Jr.: 545
 Lovelace, U. M.: 1391, 1446, 1459
 Lovell, W. A.: 777
 Loyd, B.: 1063
 Luck, W. S., Jr.: 1681
 Luckring, J. M.: 870, 904, 905

Lustman, L.: 3, 29, 30, 51
Luther, M. R.: 211, 212, 1293, 1313
Ly, U-L.: 1508
Lyle, K. H.: 734
Lynn, W. A.: 1499

M

Ma, C. C. H.: 52
Maahs, H. G.: 464, 580, 581, 585, 590,
619
Macaraeg, M. G.: 378, 379, 396, 397,
398, 413, 414, 837
MacConochie, I. O.: 1426, 1458, 1691,
1692
Madaras, E. I.: 154, 157, 158, 175
Maday, Y.: 14
Maddalon, D. V.: 962, 1024
Maestrello, L.: 53, 859, 860, 871,
872, 887, 906, 907, 918, 941
Magee, C. J.: 222
Maglieri, D. J.: 678, 783, 786
Mall, G. H.: 118, 119, 189, 190
Mall, S.: 493, 494, 521, 525, 526, 620
Mangalam, S. M.: 889, 908, 926
Mangalgi, P. D.: 472, 473, 527
Mangum, B. W.: 131
Mann, M. J.: 818, 819, 873
Manning, J. C.: 684, 742, 743, 744
Mantay, W. R.: 380
Manuel, G. S.: 961, 990, 1016, 1030
Marcolini, M. A.: 707, 708
Marconi, F.: 844
Marcum, D. C.: 762
Mardoian, G. H.: 495
Margason, R. J.: 999
Marhefka, R. J.: 1605
Marinero, R. M.: 223
Markham, C. H.: 1504, 1505
Marshall, B. T.: 1198
Martensen, A. L.: 1561
Martin, G. L.: 1035
Martin, J. A.: 1415, 1416, 1417, 1460,
1461, 1462
Martin, R. M.: 679, 680, 712, 735, 751
Mason, M. L.: 820, 832, 886
Mason, W. H.: 848
Matthews, C. G.: 100
Maudgal, S. S.: 671
Mauldin, L. E., III: 197, 198, 224,
1702, 1706
Maung, K. M.: 1410, 1411
Mayo, M. H.: 1498
Mazel, D. S.: 139

Mazur, V.: 1025
McAninch, G. L.: 714, 715, 736, 737
McAuliffe, P. S.: 415, 435
McCandless, R. S.: 1448
McCaskill, M. K.: 1726
McClellan, V. A.: 1575
McClinton, C. R.: 1125, 1126, 1166,
1186
McComb, H. G., Jr.: 318, 319, 345, 346
McConnell, J. G.: 1402
McCormick, M. P.: 1199, 1200, 1201,
1202, 1203, 1225, 1245, 1247,
1248, 1268, 1274, 1275, 1311,
1318, 1319, 1320, 1321, 1333,
1339, 1360, 1361, 1362, 1363
McCullough, R.: 1725
McCurdy, D. A.: 738
McDougal, D. S.: 209, 1241
McGary, M. C.: 692, 693
McGehee, C. R.: 1700, 1701
McGhee, R. J.: 880, 912, 930, 934
McGowan, P. E.: 244, 265, 312, 320
McGuire, P. D.: 835
McKenna, G. B.: 528
McLain, A. G.: 1135
McLuer, D. G.: 1499
McMahon, H. M.: 869
McMahon, P. E.: 657
McMaster, L. R.: 1268, 1311, 1322
McMillin, S. N.: 1055, 1127
McMullin, T.: 153
McNeal, R. J.: 1315
McWithey, R. R.: 416
Mehra, R. K.: 1606
Meintel, A. J., Jr.: 1565
Melnik, R. E.: 844
Melson, N. D.: 874
Memory, J. D.: 579
Menne, S.: 995, 997
Mercer, C. E.: 818, 819, 825, 873
Meredith, B. D.: 1518
Meschter, P. J.: 496, 658
Metcalf, V. L.: 688, 713
Meyer, R. R., Jr.: 1013
Meyers, J. A.: 1241
Meyers, J. F.: 159
Mhuiris, N. M.: 54, 55
Mikulas, M. M., Jr.: 269, 321, 322,
347, 348, 349, 358, 360, 361
Miles, T.: 1249
Millen, E. W.: 1687
Miller, C. G., III: 1418, 1419, 1463,
1486, 1489

Miller, D. S.: 1086, 1089, 1091, 1101,
 1130, 1140, 1146
 Miller, I. M.: 140, 188, 239, 240
 Miller, J. G.: 175
 Miller, K. W.: 170, 181
 Miller, W. E.: 185
 Mineck, R. E.: 829, 830
 Mineo, B.: 148
 Minnis, P.: 1217, 1218, 1237, 1303,
 1305, 1323, 1340
 Miserentino, R.: 1693
 Mitchell, J. L.: 213
 Mitcheltree, R. A.: 999
 Mixon, R. W.: 1517
 Mixson, J. S.: 681, 711, 734, 740
 Modarress, D.: 839
 Modlin, J. T.: 564
 Moerder, D. D.: 1597
 Moitra, A.: 56, 1128
 Molion, L. C. B.: 1304
 Monta, W. J.: 1162, 1173
 Monteith, J. H.: 181
 Montgomery, D.: 1077
 Montgomery, R. C.: 245, 1621, 1636,
 1637, 1638
 Montoya, R. J.: 1403
 Moody, S. E.: 203
 Mook, D. T.: 1708
 Moon, S.: 275
 Moore, A. A.: 1717
 Moore, A. S.: 1706
 Moore, A. T.: 1723
 Moore, J. A.: 705
 Moore, J. G.: 182
 Moore, T. C.: 1031
 Morello, S. A.: 1670
 Morgan, H. G.: 687, 746
 Morgan, H. L., Jr.: 884, 892, 912, 930
 Morrell, F. R.: 1581, 1628
 Morrisette, E. L.: 1129
 Morrison, J. H.: 57, 1186
 Moskovitz, C.: 1002
 Moss, J. N.: 1441, 1464, 1465
 Motyka, P.: 1593
 Muchmore, C. B.: 1012
 Mueller, A. W.: 682, 694
 Murman, E. M.: 1063, 1130, 1140
 Murphy, D.: 1492
 Murphy, K. A.: 48
 Murphy, P. C.: 1578, 1656
 Murray, N. D.: 1540
 Murray, R. C.: 246, 248
 Murri, D. G.: 953, 976, 1000, 1002,
 1033

Murri, G. B.: 474, 621
 Murrow, H. N.: 417, 418
 Murthy, A. V.: 815, 854
 Musick, J. A.: 1066
 Myers, M. K.: 724, 725
 Myers, T. D.: 1062
 Myers, T. J.: 58

N

Nachman, A.: 39
 Naftel, J. C.: 1417, 1466, 1467
 Nagaraja, K. S.: 367
 Naidu, D. S.: 1639, 1640, 1641
 Naik, R. A.: 468, 511, 512, 529, 558
 Naik, V. K.: 70
 Namkung, M.: 165
 Napolitano, M.: 57, 1087
 Natarajan, M.: 1220, 1221, 1250, 1288,
 1347
 Nataupsky, M.: 1666
 Nelms, R. R.: 230, 234
 Nelson, G. L.: 1570
 Nelson, P. E.: 1638
 Nemeth, M. P.: 254, 291, 323, 359
 Neubert, V. H.: 1704
 Neuhart, D. H.: 972
 Newcomb, A. L., Jr.: 225
 Newell, R. E.: 1235
 Newman, J. C., Jr.: 481, 526, 530,
 531, 532, 582, 583, 601, 632
 Newsom, J. R.: 419
 Newsome, R. W.: 1005, 1088, 1131, 1167
 Nguyen, D. T.: 447
 Nguyen, L. T.: 953, 976, 977
 Nguyen, T.: 1531, 1532, 1533
 Nichols, C. D.: 1554
 Nicholson, J., III: 1244, 1308, 1434
 Nicks, C. O.: 388
 Nicol, D. M.: 59, 60, 61, 62, 63, 70,
 71
 Nicolaidis, R. A.: 32, 64, 65
 Nimmo, N. A.: 279
 Nixon, M. W.: 1732
 Nomura, J. K.: 366
 Noonan, K. W.: 1733
 Noonan, R. E.: 1566, 1567
 Noor, A. K.: 324, 350
 Norbury, J. W.: 1383, 1384, 1385,
 1386, 1388, 1406, 1410, 1411,
 1412, 1413, 1420, 1421, 1425,
 1439, 1440
 Northam, G. B.: 1105, 1132, 1133,
 1134, 1135, 1136, 1152, 1168, 1169

Norton, R. H.: 1252, 1258, 1259, 1276
Norum, T. D.: 716, 739

O

O'Brien, T. K.: 467, 533, 556, 584,
622, 623, 624
O'Brien, W. F.: 1152
O'Neal, J. E.: 496, 658
Obara, C. J.: 989, 1001, 1035
Odoni, A. R.: 1664
Ogilvie, P. L.: 845
Oglevie, R. E.: 1659
Ohlhorst, C. W.: 464, 580, 585
Ohring, G.: 1206
Oleson, J. R.: 149
Olinger, F. V.: 1051, 1052
Orie, N. M.: 951
Orr, L. H.: 1495
Osborn, J.: 1601, 1602, 1603, 1604
Osborn, M. T.: 1202, 1203
Osborn, R. F.: 807, 808, 809
Osher, S. J.: 16, 37, 385, 428
Osmanski, J. T.: 1604
Ossa, W. A.: 625
Ostroff, A. J.: 1626, 1648, 1649
Outlaw, R. A.: 1387, 1389, 1428, 1496

P

Padilla, P. A.: 1520
Padula, S. L.: 439, 441, 455, 691
Palumbo, D. L.: 1542
Pao, J. L.: 855
Pao, S. P.: 747, 752
Pappa, R. S.: 287, 325, 326
Paramasivam, T.: 778
Parikh, P.: 53, 859, 872, 906, 907,
918
Paris, H. G.: 803
Paris, H. J.: 600
Park, J. H.: 1251, 1252, 1258, 1259,
1324, 1365
Park, S. K.: 106, 1552
Parker, F. R.: 155, 156, 166, 180
Parker, L.: 1340
Parker, S. L.: 1535
Parlette, E.: 867
Parrish, R. V.: 1685
Parrott, T. L.: 683, 732, 1001
Patrick, M. L.: 67
Patton, J. M., Jr.: 981
Paulin, P. A.: 117, 140
Paulson, J. W., Jr.: 949, 1026

Pearson, R. M.: 366
Peebles, L.: 460
Pegg, R. J.: 760, 761
Pei, G.: 489
Pellett, G. L.: 1135, 1136
Pendergraft, O. C., Jr.: 821, 833, 921
Pennington, J. E.: 1550, 1555
Perala, R. A.: 1535, 1556
Perez, J. E.: 175
Perez, S. E.: 285
Perkins, R.: 1544
Perrin, A.: 1222
Perry, J.: 475
Person, L. H., Jr.: 1510, 1513
Peschke, W. T.: 1062
Pesyna, K.: 1068
Petersen, P. L.: 1571
Petersen, R. H.: 89, 93
Petley, D. H.: 760, 761, 764
Phelps, A. E., III: 954
Phillips, D. G.: 1064
Phillips, D. H.: 134, 160, 172, 176
Phillips, E. P.: 583, 626
Phillips, P. S.: 885
Phillips, W. P.: 762, 1422, 1478, 1484
Pierce, J. L.: 1528, 1571
Piland, W. M.: 1394
Pinckney, S. Z.: 1126, 1137
Pinelli, T. E.: 1722, 1723, 1724,
1725, 1727
Pinson, L. D.: 327
Pipes, R. B.: 487
Pirone, V. A.: 236
Pitman, W. A.: 489
Pittman, J. L.: 1089, 1138, 1139, 1147
Pitts, B. H.: 1179
Pitts, F. L.: 1556
Pitts, M. C.: 1244, 1308, 1309, 1357
Plentovich, E. B.: 822, 823, 931, 942
Plumer, J. A.: 984
Poe, C. C., Jr.: 158, 476, 627, 628,
629, 630
Poitras, P. L.: 497
Ponton, M. K.: 684, 742, 743, 744
Poole, E. L.: 99
Poole, H. E.: 226
Poole, L. R.: 1245, 1325, 1337
Poore, A. B.: 66
Pope, D. S.: 708
Poppen, W. A., Jr.: 97, 962
Portanova, P. L.: 1394
Post, D.: 274
Poth, M.: 1277
Potter, G. L.: 1289, 1290

Potter, W. D.: 211
Powell, C. A.: 695, 719, 740
Powell, K.: 1130, 1140
Powell, M. G.: 265
Powell, R. W.: 1467
Powers, R. K.: 17
Prabhu, R. K.: 970
Pratt, J. R.: 127, 591
Price, D. B.: 1617, 1640, 1641, 1642
Price, H. E.: 178
Pride, J. D., Jr.: 902
Pritchard, E. B.: 1190
Pritchard, J. I.: 442, 451
Proctor, K. M.: 660
Progar, D. J.: 477, 478, 534, 535,
589, 631, 660
Punjabi, A.: 1337
Puster, R. L.: 117, 162, 191
Putnam, L. E.: 824, 825, 877, 922,
932, 933
Pyle, J. A.: 1243
Pyle, J. S.: 245, 1635

Q

Quarteroni, S.: 18

R

Raju, I. S.: 469, 479, 481, 498, 499,
532, 533, 602, 632, 647
Rallo, R. A.: 836
Ramana, M. V.: 160, 176
Ramanathan, V.: 1217
Randall, D. P.: 100
Raney, D.: 1426
Raney, J. P.: 1187, 1188
Rankin, C. C.: 276
Ransone, P. O.: 382, 420, 464, 580,
585
Rao, D. M.: 882, 1000, 1002, 1033,
1065
Rao, K. N.: 1373
Raper, O. F.: 1252
Raschi, W. G.: 1066
Raschke, E.: 1209, 1262
Rasky, P. H. L.: 1530
Rasmussen, J. O.: 1411
Rasmussen, R. A.: 209
Rawls, J. W., Jr.: 701
Ray, E. J.: 815
Rayborn, G. H.: 132, 135
Razavi, H. C.: 1606
Razvi, S.: 146, 177

Re, R. J.: 826
Reagan, J. A.: 1706
Reddy, J. N.: 277
Reed, D. A.: 67
Reichle, H. G., Jr.: 1235, 1237, 1253,
1254, 1292, 1306, 1326, 1327, 1364
Remsberg, E. E.: 1198, 1204, 1212,
1219, 1255, 1264, 1302, 1328,
1329, 1330, 1371
Research Information and Applications
Division: 1721
Research Triangle Institute: 1189
Reubush, D. E.: 762, 909, 944
Rew, W. E.: 1729, 1730
Reynolds, P. F., Jr.: 61, 62
Rhodes, M. D.: 328, 361
Richardson, P. F.: 1141, 1186
Ricket, J. L.: 957
Riddle, E. P.: 107
Riebe, G. D.: 762, 986
Ries, H. R.: 524, 577, 586, 587, 618
Rinsland, C. P.: 1222, 1230, 1231,
1232, 1233, 1234, 1239, 1252,
1256, 1257, 1258, 1259, 1276,
1317, 1344, 1345, 1351, 1365,
1369, 1370, 1372, 1373
Rinsland, P. L.: 214
Ritter, J.: 778
Ritter, J. A.: 1331
Roberts, A.: 1571
Roberts, L.: 233
Robertshaw, H. H.: 286
Robertson, J. B.: 1671, 1686
Robertson, S.: 1490
Robins, A. W.: 777
Robinson, M. P.: 306
Robinson, R. D.: 1032
Roe, P. L.: 68
Rogers, J. F.: 1707
Rogers, J. L., Jr.: 447, 448, 449, 458
Rogers, R. C.: 1076, 1095, 1109, 1110,
1142, 1143, 1144, 1145, 1151, 1170,
1172
Rogowski, R. S.: 161
Rose, M. E.: 51
Rose, O. J.: 1055
Rosen, I. G.: 7, 8, 11, 24, 25, 26
Rosenfeld, M.: 69
Rothschilds, R.: 487
Roussos, L. A.: 681, 741
Rowell, L. F.: 1468
Royster, D. M.: 430, 625
Rozendaal, R. A.: 967, 968
Rubin, B.: 1545

Rucker, C. E.: 741
Rudolph, T. H.: 1535, 1556
Ruhlin, C. L.: 366, 367
Rumsey, C. L.: 1003, 1027
Runyan, H. L.: 399
Russell, J. M., III: 1198, 1204, 1211,
1221, 1243, 1250, 1252, 1259, 1264,
1265, 1302, 1329, 1330, 1332, 1333,
1365, 1366, 1367, 1371, 1702
Russell, R. A.: 1188, 1191
Rustgi, M. L.: 523, 576
Rynaski, E. G.: 1607, 1608, 1643

S

Sa, J. Y.: 1004
Sachse, G. W.: 209, 227, 228, 1278,
1297, 1298
Salama, K.: 146, 177
Salas, M. D.: 827, 863, 866, 867, 875,
893, 910, 973
Salas-Roche, F.: 1664
Saltz, J. H.: 42, 63, 70, 71
Samant, S. S.: 856
Sanborn, J. C.: 1531, 1532, 1533
Sanchez, E. N.: 1644
Sarkar, B.: 633
Sarrafian, S. K.: 1607, 1608
Sasano, Y.: 1260, 1334
Satran, D. R.: 955, 972
Sawyer, J. W.: 381, 382, 401, 420
Sawyer, W. C.: 1081, 1121
Scallion, W. I.: 1478
Schaffner, P. R.: 213
Scheper, C.: 1524
Scheyhing, E. R.: 1476
Schiess, J. R.: 94, 98, 102, 108, 115
Schimmel, M. L.: 1703, 1710
Schimmerling, W.: 1492
Schirtzinger, G.: 1068
Schlinker, R. H.: 703, 704
Schmailzl, U.: 1244, 1308
Schmidt, D. K.: 1598
Schoenster, J. A.: 989, 1001
Schrage, D.: 975
Schroeder, L. C.: 213
Schryer, D. R.: 188, 239, 240
Schryer, J.: 140
Schultz, A. E.: 1104
Schuster, G. L.: 1490
Schutte, P. C.: 1672
Schwab, R. W.: 1504, 1505, 1507
Schy, A. A.: 1618, 1619, 1620
Scott, A. D., Jr.: 1430

Scott, M. A.: 1554
Scott, P. M.: 1716
Scotti, S. J.: 421, 581
Sebacher, D. I.: 1261, 1267, 1273
Sebacher, S. M.: 1261
Segall, Z. Z.: 1529, 1547
Seidel, D. A.: 383
Seiner, J. M.: 684, 717, 742, 743, 744
Seinfeld, J.: 49
Selby, G. V.: 857
Sellers, W. L., III: 994
Seltzer, S. M.: 1381
Sewall, W. G.: 934
Shamansky, H.: 1106
Shankar, V.: 1067
Sharp, G. R.: 594
Shearin, J. G.: 716, 739
Shenoy, R. N.: 536, 543
Shepherd, K. P.: 694, 695, 699, 702,
731, 738
Sher, A.: 202
Sherrill, R. T.: 1327
Shideler, J. L.: 365
Shih, K-G.: 72
Shivakumar, K. N.: 469, 601, 602, 634
Shore, C. P.: 384, 422, 431
Shuart, M. J.: 292, 329
Shull, T. A.: 214, 229
Siclari, M. J.: 1089, 1146, 1147
Sidi, A.: 73
Sidney, B. D.: 188, 217, 239, 240,
1230, 1231
Siegler, H. J. A.: 836
Siemers, P. M., III: 1395, 1396
Siewiorek, D. P.: 1523, 1529, 1547
Silcox, R. J.: 745, 753
Silverberg, L. M.: 1431
Silverstein, C. C.: 389
Simchick, R.: 1537, 1569
Simmons, J. M.: 1057
Simonich, J. C.: 703, 704
Simpson, J.: 1298
Simpson, R. W.: 1664
Singer, S. F.: 247
Singh, J. J.: 118, 119, 120, 126, 127,
162, 178, 189, 190, 191
Singh, S. N.: 1618, 1619, 1620
Singh, U. N.: 1301
Sinsky, M. S.: 537
Sisson, R. D., Jr.: 545
Sivertson, W. E., Jr.: 1432, 1469,
1519
Slemp, W. S.: 593, 659
Sliwa, N. O.: 1557, 1559

Smiley, A.: 487
 Smith, A. C.: 136
 Smith, C. D.: 694
 Smith, D. B.: 1545
 Smith, F. M.: 1463
 Smith, G. E.: 423
 Smith, G. L.: 1213, 1262, 1335, 1368
 Smith, L. A.: 828
 Smith, M. A. H.: 1222, 1230, 1231,
 1232, 1233, 1234, 1239, 1257,
 1351, 1369, 1370, 1372
 Smith, O. C.: 115
 Smith, P. J.: 500
 Smith, R. E.: 95, 101, 109, 110
 Smith, R. H.: 902
 Smith-Taylor, R.: 97
 Snow, W. L.: 121
 Sobel, D. R.: 1062
 Sober, B. E.: 175
 Sobieski, J.: 452, 453, 456, 457
 Sobieszczanski-Sobieski, J.: 443
 Sohi, M. M.: 270, 275
 Sokoloski, M. M.: 230
 Solomon, S.: 1211, 1263, 1264, 1265,
 1329, 1371
 Solomonoff, A.: 74
 Somers, D. M.: 935
 Sorensen, J. A.: 1675
 South, J. C., Jr.: 75, 76, 90, 876,
 1075
 Spady, A. A., Jr.: 1660
 Spall, J. R.: 1392
 Spall, R. E.: 1171
 Spearman, M. L.: 774, 775, 776, 787,
 788, 789, 790, 791, 792, 793, 794,
 795, 802
 Spencer, B., Jr.: 1478, 1479
 Spencer, J. H.: 77
 Speziale, C. G.: 78, 1148
 Spitzer, C. R.: 1509, 1512
 Sprinkle, D. R.: 119, 162, 190, 191
 Srinivasan, S.: 1096, 1097
 Srivatsan, R.: 1586, 1645
 St. Clair, A. K.: 480, 539, 540, 588,
 591, 635, 636, 640, 659, 669, 670
 St. Clair, T. L.: 126, 127, 480, 509,
 535, 562, 575, 588, 589, 591, 617,
 636, 637, 638, 640, 653, 660, 669,
 670, 671
 Stack, J. P.: 942
 Stack, S. H.: 756, 757, 765, 766, 767,
 768, 769, 770, 771, 772
 Stainback, P. C.: 816, 896, 898, 911,
 912
 Stallings, R. L., Jr.: 1040, 1090,
 1096, 1097
 Stanley, G. M.: 356
 Stanley, J.: 247
 Stanley, W. D.: 1585
 Starnes, J. H., Jr.: 317
 Staton, W. L.: 1688
 Staylor, W. F.: 1205, 1229, 1266
 Stehlin, P.: 276, 278, 296
 Stein, B. A.: 538, 590, 639
 Stein, M.: 254, 293, 330, 331, 351
 Stein, P. A.: 335
 Steinhoff, J.: 844
 Steinmetz, G. G.: 1662, 1666
 Stephens, D. G.: 678, 746, 754
 Stewart, E. C.: 956
 Stewart, R. M.: 659
 Stickle, J. W.: 1028
 Stoakley, D. M.: 120, 539, 591, 640
 Stock, L. V.: 1397
 Stockwell, A. E.: 264
 Stone, R. H.: 501
 Storaasli, O. O.: 324, 332, 333
 Stough, H. P., III: 980, 981
 Stoughton, J. W.: 159
 Straub, F. K.: 390
 Strett, C. L.: 79, 379, 398, 414,
 837, 936
 Strganac, T. W.: 1708
 Strikwerda, J. C.: 80
 Stroud, C. W.: 382, 420, 475, 581,
 641, 661
 Stubbs, S. M.: 255, 305
 Stump, C. W.: 1706
 Sudharsanan, S. I.: 35
 Suikat, R.: 963
 Suit, W. T.: 1587, 1588, 1589, 1657
 Sulla, J.: 1637
 Sullivan, B. M.: 694
 Sullivan, K. D.: 1292
 Sun, C. T.: 294
 Sundararajan, N.: 1577, 1621, 1646
 Supplee, F. H., Jr.: 163, 192, 196
 Suresh, R.: 1674
 Susskind, J.: 1374
 Sutter, T. R.: 262, 303, 304, 454
 Suttles, J. T.: 1206, 1218, 1262,
 1266, 1273, 1335, 1374
 Suzuki, H.: 315
 Swain, M. H.: 583
 Swanson, E. E.: 777
 Swanson, R. C.: 81
 Swissler, T. J.: 1268, 1339

Sykes, G. F., Jr.: 508, 516, 540, 592,
593
Szema, K-Y.: 1067

T

Ta'asan, S.: 21, 82, 83, 84, 479
Tabibi, B. M.: 1470, 1471
Tadmor, E.: 28, 29, 30, 85, 86
Tai, H.: 399, 541, 642
Takacs, L.: 1605
Talay, T. A.: 1491
Talbot, R. W.: 1267, 1278, 1279, 1336
Talcott, N. A., Jr.: 1050
Tam, C. K. W.: 717
Tan, P. W.: 481
Tanguy, J. S.: 1500
Tanner, J. A.: 255, 318, 334, 350
Tanzer, H. J.: 1472
Tao, W-K.: 1298
Tavantzis, J.: 971
Taylor, A. H.: 295, 415, 424, 425,
435, 437
Taylor, J. A.: 1504
Taylor, L. V.: 215, 234
Taylor, L. W., Jr.: 343, 1590, 1647
Tcheng, P.: 163, 164, 192, 193, 196
Temam, R.: 87
Tenney, D. R.: 554, 643, 644
Tennille, G. M.: 1317
Terry, J. S.: 985
Thakur, K. B.: 1234, 1257, 1370, 1372,
1373
Thames, F. C.: 868
Thayer, E. B.: 1068
Thomas, D. J.: 1434
Thomas, J. L.: 905, 969, 973, 974,
1003, 1005, 1010, 1029, 1167, 1186
Thomas, M. E.: 199, 200, 201
Thomas, M. M.: 1531, 1532, 1533
Thomas, S. R.: 1117
Thompson, J. L.: 1505, 1507
Thompson, R. A.: 1423, 1473
Thomson, L. W.: 500
Thomson, R. G.: 319
Thornton, E. A.: 426
Thurston, G. A.: 256, 296, 335, 352
Ticatch, L. A.: 1046
Timoc, C. C.: 1558
Ting, L.: 952, 971, 998, 1006, 1011,
1182
Tiwari, S. N.: 101, 1100
Tolson, R. H.: 108

Tompkins, S. S.: 461, 508, 542, 561,
594
Torres, A. L.: 1298
Townsend, J. C.: 1072
Townsend, L. W.: 1383, 1384, 1385,
1386, 1388, 1398, 1400, 1406,
1410, 1411, 1412, 1413, 1420,
1421, 1424, 1425, 1427, 1439,
1440, 1455, 1474, 1475, 1492
Tracy, M. B.: 726
Trefethen, L. N.: 50
Treppe, C. R.: 1248
Trethewey, B.: 487
Trew, R. J.: 1622
Trexler, C. A.: 1094, 1116, 1117, 1149
Trimmer, L. L.: 1150
Trimpi, R. L.: 1099, 1104
Triplett, J. A.: 1552
Trolinger, J. D.: 839
Trujillo, B.: 1013
Tuck, A. F.: 1211, 1212
Turkel, E.: 12, 53, 56, 74, 81, 88,
859, 860, 872, 906, 918, 1128
Turner, J. D.: 288, 289, 290, 316
Turner, T. L.: 1673, 1674
Turnock, D. L.: 773
Turriziani, R. V.: 1417
Tuttle, D.: 1060
Tuttle, M. H.: 829, 830
Tyeryar, J. R.: 538, 1690, 1697

U

Uchino, O.: 1268
Uenishi, K.: 1151, 1172
Unnam, J.: 466, 510, 536, 543, 557,
651, 662
Upchurch, B. T.: 135, 188, 239, 240
Urie, D.: 1060
Utrata, D.: 165

V

Vaicaitis, R.: 755
Vakili, A. D.: 913
Van Dam, C. P.: 964, 1007, 1008
Van Dam, K. P.: 982
Van Leer, B.: 969, 1010
Van Wie, D. M.: 1173
Van Overbeck, T.: 1095
Vann, A. V.: 1729, 1730
Vasquez, P.: 1494
Vatsa, V. N.: 914, 937
Vaughan, W. R.: 231, 1286

Vay, S. A.: 223
Vemaganti, G.: 426
Vemury, S.: 1374
Venable, D. D.: 1337
Vicroy, D. D.: 1675
Vidyasagar, M.: 1606
Vijgen, P. M. H. W.: 964, 982, 1008
Vogler, W. A.: 285
Voigt, S. J.: 1543
Voisinet, R. L. P.: 1150
Voland, R. T.: 1116, 1117
Von Ofenheim, W. H.: 100
Vosteen, L. F.: 249, 645
Vukovich, F. M.: 1238, 1269
Vyrostek, T. A.: 1536, 1551

W

Wade, B. A.: 80
Waggoner, E. G.: 862, 885, 915
Wagner, E.: 1593
Wagner, J. A.: 544, 545
Wagner, J. B.: 207
Wagner, R. D.: 758, 1009
Wagner, T. C.: 1152
Wakelyn, N. T.: 546, 547
Walberg, G. D.: 1476
Walker, G. H.: 1399, 1477
Wallio, H. A.: 1253, 1338
Wallis, R. R.: 522
Wallsom, R. E.: 358, 360
Walsh, J. L.: 311, 438, 454, 1452
Walsh, R. F.: 246, 248
Walters, R. W.: 1010, 1039, 1087
Wang, P-H.: 1208, 1339
Wang, Y.: 8
Ward, S. W.: 1720
Ware, G. M.: 1478, 1479
Warnaar, D. B.: 257
Warren, G. P.: 1003
Warrior, J.: 1540
Waters, W. A.: 317
Watson, J. J.: 308, 309
Watson, R. D.: 1153
Watts, D. J.: 664
Wayne, R. J.: 204
Weaver, W. R.: 1409, 1457, 1470, 1471
Weidner, E. H.: 1057, 1144, 1145
Weidner, J. P.: 796, 1047
Weilmuenster, K. J.: 1451, 1480, 1481
Weingarten, N. C.: 1607, 1608, 1627,
1643
Weinstein, L. M.: 1154
Weir, D. S.: 686, 726

Weiss, J. L.: 1609, 1648, 1649
Welch, C.: 185
Welch, R. M.: 1270, 1271, 1272
Wells, D. C.: 1663
Wells, J. G.: 1585
Wells, W. L.: 1426, 1489
Weston, R. P.: 994, 1011
Whipkey, R. R.: 884
Whipple, R. D.: 957
Whitcomb, J. D.: 548, 549
White, M. E.: 1155, 1173
White, R.: 1036
Whitfield, D. L.: 974
Whitlock, C. H.: 1273
Whitlow, W., Jr.: 377, 385, 410, 423,
428, 433
Whittaker, R. W.: 1069
Wichansky, H.: 1544
Wichorek, G. R.: 465
Widmayer, E.: 306
Wiedemann, K. E.: 466, 557, 662
Wielicki, B. A.: 1262, 1270, 1271,
1272, 1335, 1340, 1374
Wiese, M. R.: 95, 858, 1404
Wieting, A. R.: 426, 427
Wilcox, P. A.: 814
Wilder, S. E.: 1418, 1419
Wilhite, A. W.: 1466
Wilkerson, T. D.: 1301
Wilkinson, S. P.: 1156
Will, R. W.: 1559
Willard, C. M.: 1068
Williams, D. H.: 1512, 1663, 1675,
1676
Williams, F. W.: 257, 280, 297
Williams, J. G.: 270, 292
Williams, J. P.: 1632, 1638, 1650,
1651
Williams, L. J.: 958
Williams, M. H.: 377, 410
Williams, M. S.: 891
Williams, W. L.: 1728
Willshire, K. F.: 1192
Willshire, W. L., Jr.: 731, 748, 749
Wilmoth, R. G.: 877, 938
Wilson, H. E., II: 502
Wilson, J. C.: 959
Wilson, J. W.: 1381, 1388, 1389, 1397,
1398, 1400, 1406, 1424, 1425, 1427,
1428, 1455, 1475, 1482, 1492
Wilson, L. G.: 1136
Wilson, M. L.: 1691, 1692, 1693, 1696
Wilson, R. D.: 500
Wilson, R. G.: 1519

Winchester, L. W., Jr.: 235
Winebarger, R. M.: 960
Winfree, W. P.: 154, 156, 166, 179,
180, 185
Wise, M. A.: 1572
Witte, W. G., Jr.: 663
Wittlin, G.: 489
Wofsy, S. C.: 1304, 1341
Wolfe, W. J.: 1531, 1532, 1533
Wolfshtein, M.: 69
Wong, M.: 1492
Wood, D. A.: 1717
Wood, G. M., Jr.: 117, 135, 141, 167,
188, 239, 240
Wood, R. M.: 1055, 1086, 1091, 1101,
1106, 1127, 1130, 1140, 1174, 1175,
1176, 1177
Woodbury, G. E.: 1274
Woods, D. C.: 1348, 1375
Woods, P. T.: 1287
Woods, W. C.: 1380, 1483, 1484
Wornom, S. F.: 878, 879
Wortman, J.: 247
Wright, D. B., Jr.: 1713
Wright, R. E., Jr.: 1519
Wright, R. L.: 241, 1631
Wright, S. A.: 1419
Wu, J. M.: 913
Wu, K. C.: 271
Wunschel, A. J.: 917, 985
Wynne, E. C.: 364

X

Y

Yager, T. J.: 281, 334, 336, 353,
354, 355
Yahsi, O. S.: 503
Yang, T. Y.: 375, 394, 409
Yaros, S. F.: 838, 916
Yates, E. C., Jr.: 429, 432, 433
Yates, J. E.: 1070
Yeager, W. T., Jr.: 380
Yenni, K. R.: 956
Ying, L.: 657
Yip, L. P.: 992, 1012
Yoerkie, C. A.: 705
Yost, W. T.: 144, 145, 146, 147,
168, 177
Young, D. F.: 1358
Young, D. M.: 4
Young, J. C.: 1493

Young, J. W.: 303, 304, 1591, 1652
Young, K. C.: 441
Young, P. R.: 505, 513, 550, 595, 646
Young, R.: 221
Yu, J. C.: 674, 685, 706, 717
Yu, N. J.: 856
Yue, G. K.: 1275, 1339

Z

Zaepfel, K. P.: 1560
Zaman, K. B. M. Q.: 718, 880, 908
Zander, R.: 1252, 1258, 1259, 1276,
1365
Zang, T. A.: 22, 40, 1077, 1079, 1092,
1157, 1178
Zanotti, C.: 467, 556
Zavody, A. M.: 1243
Zersen, W. F. H.: 92
Zorumski, W. E.: 686, 747, 748, 749
Zuckerwar, A. J.: 128, 137, 138, 139,
169, 170

SUBJECT CATEGORY INDEX

AERONAUTICS

Category 01: Aeronautics (General)

91, 756, 757, 758, 759, 776, 779, 788, 789, 801, 952, 983, 1008, 1009, 1013, 1024, 1422, 1490

Category 02: Aerodynamics

68, 89, 364, 368, 369, 375, 376, 377, 383, 385, 390, 391, 392, 393, 394, 399, 400, 408, 410, 412, 423, 428, 429, 432, 433, 446, 450, 471, 774, 778, 780, 781, 783, 784, 785, 787, 790, 793, 794, 795, 799, 800, 802, 804, 807, 808, 809, 810, 811, 813, 814, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 832, 833, 834, 838, 840, 842, 843, 844, 845, 846, 847, 850, 854, 855, 856, 857, 858, 859, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 875, 877, 881, 882, 884, 885, 886, 887, 888, 889, 894, 895, 896, 897, 899, 900, 901, 902, 904, 906, 907, 908, 915, 916, 917, 918, 919, 920, 921, 922, 923, 926, 927, 929, 930, 931, 932, 933, 934, 935, 946, 947, 948, 949, 950, 951, 954, 955, 956, 957, 958, 959, 961, 965, 967, 968, 969, 971, 972, 973, 974, 976, 977, 979, 980, 982, 987, 988, 989, 991, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1003, 1004, 1005, 1006, 1007, 1010, 1011, 1012, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1026, 1027, 1029, 1035, 1036, 1040, 1044, 1046, 1047, 1048, 1049, 1050, 1053, 1054, 1055, 1056, 1057, 1058, 1065, 1067, 1071, 1072, 1075, 1077, 1078, 1081, 1082, 1083, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1096, 1097, 1100, 1101, 1103, 1104, 1106, 1111, 1112, 1113, 1118, 1124, 1127, 1128, 1130, 1131, 1138, 1139, 1140, 1146, 1147, 1150, 1155, 1157, 1162, 1167, 1173, 1174, 1175, 1176, 1177, 1178, 1378, 1379, 1380, 1433, 1435, 1437, 1458, 1479, 1480, 1699, 1708

Category 03: Air Transportation and Safety

103, 337, 723, 960, 984, 1014, 1028, 1575, 1663, 1672, 1677

Category 04: Aircraft Communications and Navigation

1502, 1503, 1504, 1505, 1506, 1507, 1508, 1511, 1512, 1581, 1593, 1628, 1664, 1670, 1678

Category 05: Aircraft Design, Testing and Performance

251, 281, 305, 318, 336, 341, 353, 354, 355, 362, 370, 371, 372, 373, 387, 388, 404, 405, 409, 411, 443, 456, 457, 610, 773, 777, 782, 797, 798, 848, 962, 975, 981, 985, 992, 1034, 1493, 1509, 1562, 1592, 1651, 1700, 1701

Category 06: Aircraft Instrumentation

219, 978, 1596, 1657, 1661, 1662, 1665, 1667, 1669, 1671, 1673, 1674, 1675, 1676, 1679, 1680, 1687

Category 07: Aircraft Propulsion and Power

806, 1061, 1062, 1064, 1073, 1105, 1116, 1134, 1166, 1168

Category 08: Aircraft Stability and Control

52, 102, 374, 407, 945, 953, 963, 1002, 1498, 1501, 1510, 1513, 1574, 1578,
1580, 1582, 1583, 1584, 1586, 1587, 1588, 1589, 1594, 1598, 1607, 1608, 1609,
1615, 1616, 1626, 1627, 1640, 1641, 1643, 1644, 1645, 1648, 1649, 1653, 1654,
1655, 1656

Category 09: Research and Support Facilities (Air)

104, 111, 815, 816, 829, 830, 835, 836, 849, 852, 853, 883, 890, 891, 903, 912,
924, 925, 928, 1463, 1499, 1500

ASTRONAUTICS

Category 12: Astronautics (General)

860, 1395, 1396, 1432

Category 13: Astrodynamics

1610, 1617, 1621, 1635, 1636, 1638, 1646, 1650

Category 14: Ground Support Systems and Facilities (Space)

1478

Category 15: Launch Vehicles and Space Vehicles

424, 1189, 1391, 1466, 1467, 1600, 1601, 1602, 1603, 1604, 1629, 1647

Category 16: Space Transportation

92, 98, 384, 1394, 1402, 1443, 1445, 1476, 1491

Category 17: Spacecraft Communications, Command and Tracking

1573

Category 18: Spacecraft Design, Testing and Performance

241, 242, 243, 244, 245, 250, 260, 261, 262, 268, 269, 271, 272, 295, 308, 309,
321, 322, 328, 339, 347, 348, 349, 360, 439, 1187, 1188, 1190, 1191, 1393, 1404,
1431, 1436, 1446, 1450, 1459, 1468, 1472, 1485, 1555, 1576, 1577, 1590, 1591,
1652, 1703, 1704, 1705, 1707

Category 19: Spacecraft Instrumentation

197, 198, 224, 1434

Category 20: Spacecraft Propulsion and Power

1401, 1415, 1416, 1417, 1444, 1460, 1461, 1462, 1595

CHEMISTRY AND MATERIALS

Category 23: Chemistry and Materials (General)

140, 160, 172, 176, 555, 645

Category 24: Composite Materials

126, 127, 157, 158, 178, 249, 266, 270, 274, 275, 292, 317, 323, 329, 381, 382, 420, 430, 460, 461, 462, 464, 465, 467, 468, 470, 472, 473, 474, 476, 482, 483, 484, 487, 489, 493, 494, 495, 500, 501, 502, 504, 508, 511, 512, 514, 515, 516, 522, 524, 525, 533, 542, 548, 549, 551, 554, 556, 558, 559, 560, 561, 563, 564, 565, 574, 575, 577, 578, 580, 584, 585, 586, 587, 594, 596, 597, 598, 603, 605, 609, 611, 612, 613, 614, 615, 617, 618, 619, 621, 622, 623, 624, 627, 628, 633, 641, 643, 966, 1689, 1690, 1691, 1692, 1693, 1695, 1696, 1731, 1732

Category 25: Inorganic and Physical Chemistry

117, 134, 141, 544, 970, 1136, 1142, 1169, 1170

Category 26: Metallic Materials

123, 168, 207, 466, 486, 496, 507, 510, 536, 543, 545, 557, 600, 625, 1389, 1713, 1716

Category 27: Nonmetallic Materials

120, 136, 415, 477, 478, 480, 505, 509, 513, 517, 518, 519, 520, 528, 534, 535, 537, 538, 539, 540, 541, 546, 547, 550, 553, 562, 566, 567, 568, 569, 570, 571, 572, 588, 589, 591, 592, 593, 595, 604, 606, 607, 608, 616, 620, 631, 634, 635, 636, 637, 638, 639, 640, 644, 646, 665, 666, 667, 668, 669, 670, 671, 1688

Category 28: Propellants and Fuels

1152

ENGINEERING

Category 31: Engineering (General)

1292, 1326, 1338, 1377, 1387, 1623, 1631, 1634, 1637, 1639

Category 32: Communications

195, 214, 1579, 1605, 1624, 1625, 1632

Category 33: Electronics and Electrical Engineering

164, 463, 1530, 1536, 1540, 1544, 1545, 1551, 1554, 1558, 1585, 1599, 1622, 1630,
1698, 1702, 1706

Category 34: Fluid Mechanics and Heat Transfer

3, 13, 22, 23, 33, 38, 39, 40, 53, 54, 55, 56, 57, 64, 69, 72, 78, 79, 124, 129,
130, 131, 221, 363, 378, 379, 389, 397, 403, 413, 426, 431, 812, 839, 851, 898,
911, 913, 914, 964, 990, 1042, 1043, 1059, 1066, 1070, 1074, 1076, 1079, 1080,
1084, 1085, 1093, 1098, 1099, 1102, 1108, 1109, 1110, 1114, 1129, 1135, 1144,
1148, 1151, 1153, 1154, 1156, 1158, 1159, 1160, 1161, 1164, 1165, 1171, 1172,
1392, 1405, 1418, 1419, 1423, 1426, 1441, 1451, 1464, 1465, 1481

Category 35: Instrumentation and Photography

118, 119, 121, 122, 125, 132, 135, 137, 139, 150, 151, 162, 163, 167, 173, 194,
196, 210, 211, 220, 234, 246, 395, 1095, 1193, 1469, 1519, 1552, 1723

Category 36: Lasers and Masers

159, 203, 204, 206, 215, 216, 217, 218, 222, 225, 230, 231, 232, 233, 1397, 1407,
1408, 1409, 1414, 1442, 1456, 1457, 1470, 1471, 1497, 1525

Category 37: Mechanical Engineering

361, 664, 1712, 1714

Category 38: Quality Assurance and Reliability

174, 1541

Category 39: Structural Mechanics

108, 252, 253, 254, 255, 256, 257, 258, 259, 263, 264, 265, 267, 273, 276, 277,
278, 279, 280, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 293, 294, 296,
297, 298, 299, 300, 301, 302, 303, 304, 306, 307, 310, 311, 312, 313, 314, 315,
316, 319, 320, 324, 325, 326, 327, 330, 331, 332, 333, 335, 338, 340, 342, 343,
344, 345, 346, 351, 352, 365, 366, 367, 380, 386, 406, 438, 440, 442, 445, 451,
454, 455, 459, 469, 479, 481, 485, 498, 499, 503, 506, 521, 526, 527, 529, 530,
531, 532, 573, 582, 583, 599, 601, 602, 626, 629, 630, 632, 831, 1429, 1430, 1452,
1718

GEOSCIENCES

Category 42: Geosciences (General)

1694

Category 43: Earth Resources

205, 226, 1214, 1273

Category 44: Energy Production and Conversion

1399, 1438, 1477

Category 45: Environment Pollution

171, 1226, 1227, 1228, 1240, 1241, 1258, 1259, 1261, 1267, 1276, 1299, 1306, 1336

Category 46: Geophysics

133, 208, 209, 223, 227, 228, 235, 1195, 1196, 1197, 1199, 1200, 1201, 1202,
1203, 1204, 1207, 1208, 1210, 1211, 1212, 1216, 1219, 1220, 1221, 1223, 1224,
1225, 1235, 1237, 1238, 1243, 1244, 1245, 1246, 1247, 1248, 1250, 1251, 1252,
1253, 1255, 1264, 1265, 1268, 1269, 1274, 1275, 1277, 1278, 1279, 1280, 1288,
1291, 1294, 1295, 1296, 1297, 1298, 1300, 1304, 1305, 1308, 1309, 1310, 1311,
1314, 1315, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1324, 1325, 1327, 1328,
1329, 1330, 1331, 1332, 1333, 1339, 1341, 1342, 1343, 1346, 1347, 1348, 1350,
1354, 1355, 1356, 1357, 1358, 1360, 1361, 1362, 1363, 1364, 1366, 1367, 1371,
1375

Category 47: Meteorology and Climatology

199, 200, 201, 417, 418, 1025, 1198, 1205, 1206, 1209, 1213, 1215, 1217, 1218,
1229, 1236, 1249, 1254, 1260, 1262, 1263, 1266, 1270, 1271, 1272, 1281, 1282,
1283, 1284, 1285, 1286, 1287, 1289, 1290, 1293, 1301, 1302, 1303, 1307, 1312,
1313, 1323, 1335, 1340, 1352, 1353, 1368, 1374, 1534, 1535, 1556, 1560

Category 48: Oceanography

213, 1337

LIFE SCIENCES

Category 51: Life Sciences (General)

1192

Category 52: Aerospace Medicine

175

Category 53: Behavioral Sciences

1660, 1666

Category 54: Man/System Technology and Life Support

943, 1449, 1517

MATHEMATICAL AND COMPUTER SCIENCES

Category 59: Mathematical and Computer Sciences (General)

5, 6, 17, 20, 36, 37, 43, 67, 95, 96, 101, 109, 110, 452, 453, 475, 1528, 1561

Category 60: Computer Operations and Hardware

112, 229, 1726

Category 61: Computer Programming and Software

15, 27, 41, 44, 58, 60, 61, 63, 70, 71, 97, 100, 105, 113, 114, 350, 441, 444, 447, 448, 449, 1349, 1390, 1403, 1454, 1521, 1538, 1543, 1548

Category 62: Computer Systems

59, 107, 1518, 1520, 1527, 1529, 1539, 1542, 1547, 1557, 1559

Category 63: Cybernetics

1515, 1531, 1532, 1533, 1549, 1550, 1564, 1565, 1597, 1606, 1611, 1612, 1613, 1614, 1618, 1619, 1620, 1633

Category 64: Numerical Analysis

4, 7, 8, 9, 10, 11, 12, 14, 16, 18, 19, 21, 24, 25, 26, 28, 29, 30, 32, 35, 45, 46, 47, 48, 50, 51, 65, 66, 73, 74, 75, 76, 80, 81, 82, 83, 84, 85, 86, 87, 88, 90, 94, 99, 106, 396, 398, 414, 837, 874, 876, 878, 879, 892, 893, 936, 937, 1039, 1063, 1447, 1448, 1514

Category 65: Statistics and Probability

31, 1516, 1522, 1524, 1546, 1553, 1563

Category 66: Systems Analysis

42, 49, 62, 1523, 1526

Category 67: Theoretical Mathematics

491, 492

PHYSICS

Category 70: Physics (General)

1194, 1428

Category 71: Acoustics

34, 128, 138, 142, 143, 144, 145, 146, 147, 148, 149, 153, 154, 155, 156, 165,
166, 169, 170, 177, 179, 180, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681,
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, 724, 725, 726, 727, 728, 729, 730, 731,
732, 733, 734, 735, 736, 737, 738, 739, 741, 742, 743, 744, 745, 746, 748, 749,
750, 751, 752, 753, 754, 786, 880, 1344, 1715

Category 72: Atomic and Molecular Physics

152, 523, 576, 579, 642, 1222, 1230, 1231, 1232, 1233, 1234, 1239, 1242, 1256,
1257, 1345, 1351, 1365, 1369, 1370, 1372, 1373, 1439, 1453, 1711

Category 73: Nuclear and High-Energy Physics

1381, 1383, 1384, 1385, 1386, 1388, 1398, 1400, 1406, 1410, 1411, 1412, 1413,
1420, 1421, 1424, 1425, 1427, 1440, 1455, 1474, 1475, 1482, 1492

Category 74: Optics

161, 1038, 1334

Category 75: Plasma Physics

1382, 1487, 1488

Category 76: Solid-State Physics

202, 1537

SOCIAL SCIENCES

Category 80: Social Sciences (General)

77, 791, 792

Category 81: Administration and Management

93, 1728

Category 82: Documentation and Information Science

1721, 1722, 1724, 1725, 1727

Category 83: Economics and Cost Analysis

1717

SPACE SCIENCES

Category 92: Solar Physics

212, 1359

GENERAL

Category 99: General

1, 2, 775

RTOP INDEX

RTOP 023-10-01	RTOP 161-35-04	1440, 1455, 1474, 1475, 1482, 1492
91, 92, 1728	1337	
RTOP 141-20-10	RTOP 176-10-05	RTOP 199-30-26
118, 132, 162, 178	1224, 1237, 1238, 1269, 1296, 1305, 1331	1261, 1354
RTOP 141-20-40	RTOP 176-20-02	RTOP 199-30-36
144, 175	1210, 1277, 1315, 1317, 1343	1214
RTOP 141-30-30	RTOP 176-20-03	RTOP 199-50-16
119, 128, 169	208, 209, 223	1223, 1246, 1295, 1314, 1316
RTOP 143-33-03	RTOP 176-20-09	RTOP 307-03-02
134	1197, 1279, 1294, 1304, 1341	205
RTOP 146-40-05	RTOP 176-20-21	RTOP 307-04-02
213	1240, 1241, 1299	1227
RTOP 146-74-01	RTOP 176-20-22	RTOP 307-05-01
206	1267, 1336	902, 1001
RTOP 146-74-04	RTOP 176-40-04	RTOP 307-05-02
1289, 1290	1194, 1260, 1283, 1284, 1285	161
RTOP 147-23-11	RTOP 176-40-05	RTOP 307-06-01
1230, 1231, 1232, 1233, 1234, 1242, 1257, 1344, 1345, 1351, 1370, 1372, 1373	227, 228, 1278, 1297, 1298, 1350	1692
RTOP 147-23-70	RTOP 199-20-76	RTOP 307-50-06
1369	1412	93, 917
RTOP 147-33-03	RTOP 199-22-76	RTOP 323-51-66
172	1383, 1384, 1385, 1386, 1388, 1398, 1406, 1410, 1411, 1413, 1420, 1421, 1424, 1425, 1427, 1439,	143, 147, 148, 149, 155, 156, 157, 158, 165, 166, 168, 177, 180
RTOP 147-44-02		RTOP 323-53-03
1222, 1239, 1251, 1280, 1324		1714

RTOP 323-53-71
1713, 1716, 1718

RTOP 324-01-00
964, 1606

RTOP 480-51-06
1192

RTOP 480-51-13
1188

RTOP 480-52-05
1189

RTOP 481-33-13
554, 639, 1705

RTOP 482-53-43
309, 1707

RTOP 482-53-53
265, 312

RTOP 482-54-23
1605

RTOP 482-57-13
1591, 1652

RTOP 482-58-13
1543

RTOP 483-31-03
1187

RTOP 483-32-13
1190

RTOP 483-32-33
262

RTOP 483-36-13
1449, 1450, 1472

RTOP 483-36-23
1393

RTOP 502-62-81
402, 416

RTOP 505-03-01
989

RTOP 505-31-03
756, 757, 874, 876,
878, 893, 936, 969,
971, 973, 974, 987,
1003, 1011, 1042, 1043,
1054, 1071, 1075, 1077,
1079, 1083, 1087, 1088,
1100, 1103, 1128, 1131

RTOP 505-31-13
879, 1066, 1074, 1080,
1084, 1085, 1098, 1099,
1102, 1154

RTOP 505-31-23
811, 812, 822, 823,
828, 848, 859, 860,
864, 865, 871, 881,
885, 888, 889, 890,
911, 912, 972, 1082

RTOP 505-31-33
138, 170, 679, 683,
686, 695, 703, 716,
717, 718, 736

RTOP 505-31-53
129, 131, 133, 137,
163, 544, 883, 891,
903, 1688, 1708

RTOP 505-31-83
3, 5, 6, 7, 9, 12, 15,
17, 18, 19, 20, 22, 23,
24, 25, 28, 29, 30, 32,
34, 37, 39, 40, 41, 42,
43, 44, 45, 47, 48, 49,
51, 53, 54, 55, 56, 59,
60, 62, 63, 64, 66, 67,
69, 70, 71, 72, 73, 75,
76, 78, 80, 81, 82, 83,
85, 88, 94, 95, 102,
109, 110

RTOP 505-33-13
507

RTOP 505-33-23
145, 179, 530, 531,
532, 601, 626, 632

RTOP 505-33-33
254, 291, 292, 293,
317, 323, 331, 483,
505, 511, 513, 517,
518, 520, 521, 522,
525, 527, 529, 533,
534, 535, 537, 539,
546, 547, 549, 558,
568, 573, 589, 595,
621, 634

RTOP 505-33-43
362, 364, 366, 370,
371, 391, 392, 393,
394, 395, 400, 404,
405, 406, 409, 410,
1700, 1701

RTOP 505-33-53

253, 256, 296, 301,
306, 319, 332, 333,
389, 444, 446, 447,
448, 449, 450, 452,
453, 681, 711, 734

RTOP 505-33-90

463

RTOP 505-34-03

1578, 1582

RTOP 505-34-13

1516, 1527, 1535, 1538,
1541, 1542, 1547, 1562

RTOP 505-35-13

689, 690, 696, 697,
723, 1660

RTOP 505-37-03

1539

RTOP 505-40-90

806

RTOP 505-42-23

399, 514, 515, 538,
560, 563, 564, 706,
709, 959, 1694

RTOP 505-42-39

388

RTOP 505-43-13

947, 957, 965, 970,
976, 977, 1000

RTOP 505-43-23

873, 877, 954, 1040,
1048, 1078, 1081, 1089,
1090, 1096, 1101, 1104,
1130, 1146

RTOP 505-43-33

1044, 1053

RTOP 505-43-43

625, 778, 779, 780,
783, 787, 788

RTOP 505-43-83

1046, 1073, 1105

RTOP 505-43-90

810, 817, 826, 919,
949, 1047

RTOP 505-45-10

417, 418

RTOP 505-45-13

960

RTOP 505-45-14

285, 318, 354

RTOP 505-45-23

336, 355, 981

RTOP 505-45-33

103, 1501, 1502, 1503,
1504, 1506, 1507, 1508,
1510, 1513, 1594, 1662,
1664, 1669, 1670

RTOP 505-45-43

856, 948, 955

RTOP 505-45-63

221, 1592

RTOP 505-46-23

1639

RTOP 505-53-33

510

RTOP 505-53-53

294

RTOP 505-60-01

90, 97, 100, 107, 113,
827, 837, 844, 845,
863, 866, 867, 868,
875, 910, 914, 937,
988, 997, 998, 999,
1029, 1113, 1141, 1157,
1163, 1167, 1178, 1186

RTOP 505-60-21

807, 808, 809, 839,
840, 846, 847, 850,
852, 853, 855, 857,
861, 862, 869, 870,
872, 880, 884, 887,
892, 894, 895, 896,
899, 900, 901, 904,
905, 906, 907, 908,
915, 918, 920, 923,
926, 930, 934, 935,
952, 991, 993, 995,
996, 1004, 1006, 1023

RTOP 505-60-31

701, 758, 962, 966,
967, 1009, 1013, 1024,
1059, 1070, 1092, 1093,
1111, 1114, 1129, 1148,
1153, 1156, 1158, 1159,
1160, 1161, 1164, 1165,
1171

RTOP 505-61-01

121, 122, 125, 130,
150, 152, 159, 164,
813, 814, 815, 816,
829, 830, 834, 835,
836, 849, 854, 897,
898, 913, 924, 925, 928

RTOP 505-61-04

1019

RTOP 505-61-11

684, 687, 732, 737,
739, 742, 743, 744,
746, 748, 749

RTOP 505-61-41

956, 958, 961, 963,
968, 980, 982, 990,
992, 1007, 1008, 1012,
1015, 1016, 1017, 1018,
1020, 1021, 1022, 1028

RTOP 505-61-43

337

RTOP 505-61-51

380, 386, 390, 412,
442, 451, 674, 676,
698, 704, 710, 722,
726, 728, 729, 730,
735, 750, 751, 752,
951, 975

RTOP 505-61-71

818, 819, 858, 927,
946, 950, 953, 979,
994, 1002, 1050, 1055,
1058, 1065, 1067, 1072,
1086, 1091, 1097, 1119,
1121, 1127, 1138, 1139,
1140, 1147, 1150, 1162,
1173

RTOP 505-62-81

759, 760, 761, 762,
763, 764, 765, 766,
767, 768, 769, 770,
771, 772, 796, 986,
1049, 1056, 1057, 1094,
1095, 1107, 1108, 1109,
1110, 1112, 1115, 1116,
1117, 1122, 1123, 1124,
1125, 1126, 1132, 1133,
1134, 1135, 1136, 1137,
1142, 1143, 1144, 1145,
1149, 1151, 1152, 1155,
1166, 1168, 1169, 1170,
1172

RTOP 505-62-91

471, 804, 820, 821,
824, 825, 831, 832,
833, 838, 842, 851,
882, 886, 909, 916,
921, 922, 933

RTOP 505-63-01

249, 460, 465, 479,
481, 495, 496, 498,
499, 502, 545, 551,
556, 559, 575, 596,
597, 598, 600, 603,
617, 620, 633, 1689,
1690, 1695, 1696

RTOP 505-63-11

274, 440, 441, 443,
456, 457, 467, 692,
693, 713, 727, 733,
741, 745, 753, 754

RTOP 505-63-21

367, 368, 369, 372,
373, 374, 375, 376,
377, 383, 385, 387,
407, 411, 419, 423,
428, 429, 432, 433

RTOP 505-63-31

276, 278, 324, 335,
351, 352

RTOP 505-63-33

408

RTOP 505-63-41

219, 251, 255, 258,
263, 273, 281, 300,
302, 305, 334, 341,
345, 346, 350, 353

RTOP 505-63-81

139, 415, 431

RTOP 505-63-91

120, 126, 127, 480,
588, 591, 610, 635,
636, 640, 694

RTOP 505-65-11

1521, 1548

RTOP 505-66-01

1498, 1574, 1580, 1593,
1597, 1598, 1607, 1608,
1609, 1615, 1616, 1627,
1643, 1644, 1648, 1649,
1655, 1656

RTOP 505-66-11

1665, 1667, 1668, 1671,
1673, 1674, 1679, 1680

RTOP 505-66-21

199, 200, 201, 1520,
1522, 1523, 1524, 1528,
1529, 1534, 1546, 1553,
1556, 1560, 1561, 1563,
1581, 1628

RTOP 505-66-41

96, 112, 1499, 1500,
1505, 1509, 1511, 1512,
1575, 1583, 1584, 1586,
1596, 1626, 1645, 1675,
1676, 1678

RTOP 505-66-71	RTOP 505-90-28	528, 541, 550, 553, 562, 566, 567, 569, 570, 571, 572, 574, 582, 583, 584, 599, 604, 606, 607, 611, 612, 613, 614, 622, 623, 624, 627, 631, 637, 638, 645, 646
1526, 1653, 1654	277	
RTOP 505-67-01	RTOP 505-93-83	
1663, 1666, 1672	1076	
RTOP 505-67-41	RTOP 506-13-23	RTOP 506-43-21
1677	1415, 1416, 1417	461, 482, 484, 504, 523, 524, 555, 561, 565, 576, 577, 578, 579, 586, 587, 593, 594, 618, 643, 644
RTOP 505-68-01	RTOP 506-31-11	
978, 983, 984, 985, 1014, 1025	176	
RTOP 505-68-91	RTOP 506-40-11	RTOP 506-43-31
931, 1026, 1038, 1039, 1061, 1062, 1064, 1106	98, 1378, 1390, 1392, 1402, 1404, 1419, 1423, 1426, 1433, 1441, 1444, 1451, 1458, 1460, 1463, 1464, 1473, 1479, 1480, 1486, 1489	365, 378, 379, 381, 382, 398, 403, 424, 426, 427
RTOP 505-69-41		RTOP 506-43-41
786, 800, 801		108, 250, 252, 260, 261, 264, 268, 269, 271, 308, 321, 322, 328, 338, 339, 340, 344, 348, 349, 439, 1699
RTOP 505-69-61	RTOP 506-40-21	
89, 486, 552, 777, 782	363	
RTOP 505-69-71	RTOP 506-40-81	
773, 774, 775, 776, 781, 784, 785, 789, 790, 791, 792, 793, 794, 795, 797, 798, 799, 802	1483, 1484	RTOP 506-43-51
RTOP 505-90-11	RTOP 506-41-11	124, 257, 259, 267, 286, 287, 288, 299, 313, 315, 316, 325, 326, 327, 342, 343, 1600, 1604, 1630, 1632
1063	1465	
RTOP 505-90-21	RTOP 506-41-41	RTOP 506-43-81
4, 8, 10, 11, 13, 14, 16, 21, 26, 27, 31, 33, 35, 36, 38, 46, 50, 52, 57, 58, 61, 65, 68, 74, 79, 84, 86, 87, 99, 101, 105, 106, 114	1382, 1389, 1397, 1399, 1400, 1401, 1407, 1408, 1409, 1414, 1438, 1442, 1453, 1456, 1457, 1470, 1471, 1477, 1487, 1488, 1490	123, 401, 421, 464, 466, 475, 581, 585, 590, 619, 641
RTOP 505-90-23	RTOP 506-43-11	RTOP 506-44-11
1530	136, 142, 146, 153, 154, 160, 462, 468, 469, 470, 472, 473, 474, 477, 478, 485, 487, 491, 492, 503, 509, 512, 519, 526,	229, 1536, 1544, 1545, 1551, 1554, 1558
		RTOP 506-44-13
		1540

RTOP 506-44-21	1447, 1448, 1476, 1478, 1481, 1485, 1691	RTOP 506-58-13
1525, 1579, 1585, 1599, 1624, 1625		1518
RTOP 506-45-21	414	RTOP 506-58-23
1514, 1515, 1517, 1531, 1532, 1533, 1555	RTOP 506-53-21	1601, 1602, 1603, 1622, 1629
RTOP 506-45-31	540	RTOP 506-60-01
203, 204, 215, 216, 217, 218, 220, 222, 225, 230, 232, 233	RTOP 506-53-23	104
RTOP 506-46-11	459, 506, 508, 542, 592, 1381	RTOP 506-61-73
1576, 1590, 1595, 1610, 1614, 1617, 1623, 1634, 1636, 1637, 1638, 1646, 1650, 1651	RTOP 506-53-33	214
RTOP 506-46-21	396, 397, 413, 430, 516, 536, 543, 557, 580	RTOP 506-62-23
1587, 1588, 1589, 1641, 1642, 1647, 1657	RTOP 506-53-43	1430
RTOP 506-48-11	272, 279, 282, 283, 295, 297, 298, 303, 314, 347, 420, 1693	RTOP 506-63-24
1395, 1396, 1434	RTOP 506-53-53	167, 1466, 1467
RTOP 506-48-31	280, 284, 289, 290, 438, 445, 454	RTOP 506-63-31
307, 310, 1631, 1635	RTOP 506-54-20	330
RTOP 506-49-11	1454	RTOP 506-63-43
384, 1443, 1445, 1461, 1462, 1491	RTOP 506-54-23	1405, 1437
RTOP 506-49-21	140, 202	RTOP 506-63-81
1431	RTOP 506-54-63	422, 425
RTOP 506-49-31	1557	RTOP 506-64-13
1391, 1429, 1432, 1436, 1459, 1468	RTOP 506-55-73	1403, 1446
RTOP 506-51-13	1387, 1428	RTOP 506-90-23
117, 141, 1379, 1380, 1394, 1418, 1422, 1435,	RTOP 506-57-13	455
	1577, 1612, 1613, 1618, 1619, 1620, 1621, 1633, 1640	RTOP 507-57-13
		1611
		RTOP 532-06-13
		677, 680, 685, 705, 707, 708, 714, 715

RTOP 533-02-01	RTOP 542-42-23	RTOP 619-12-20
1005, 1010, 1027	712	1208, 1275, 1335
RTOP 534-03-12	RTOP 546-01-11	RTOP 619-12-30
1715	1717	1195, 1209, 1213, 1218, 1262, 1266, 1281, 1282, 1303, 1318, 1368
RTOP 534-04-13	RTOP 546-01-31	RTOP 665-10-40
1661	320	1200, 1201, 1207, 1248, 1274, 1325, 1361, 1363
RTOP 534-06-23	RTOP 549-01-31	RTOP 665-40-40
266, 270, 275, 329, 476, 489, 493, 494, 500, 501, 548, 602, 605, 608, 609, 615, 616, 628, 629, 630, 642	1552	1199, 1245, 1291, 1311, 1322, 1339, 1342, 1360, 1362
RTOP 535-03-01	RTOP 549-01-51	RTOP 665-40-41
843, 932, 938	1549, 1550, 1559, 1564, 1565	1225
RTOP 535-03-11	RTOP 551-12-30	RTOP 665-45-20
673, 675, 688, 691, 700, 719, 720, 721, 724, 725, 738	1493	1196, 1349
RTOP 535-03-12	RTOP 569-81-01	RTOP 665-45-30
672, 945	1228	1236, 1247, 1268, 1321, 1374
RTOP 542-03-11	RTOP 618-21-00	RTOP 672-21-13
226, 234, 235, 1319, 1519	1252, 1256, 1258, 1259, 1276, 1365	1348, 1375
RTOP 542-06-11	RTOP 618-22-31	RTOP 672-21-14
241, 242, 243, 304, 311, 1452	1226, 1235, 1253, 1254, 1292, 1306, 1326, 1327, 1338, 1364	1202, 1203, 1320
RTOP 542-06-21	RTOP 618-27-23	RTOP 672-22-04
245	1469	1205, 1217
RTOP 542-06-31	RTOP 618-32-33	RTOP 672-22-10
244	231, 1193, 1286, 1287, 1301, 1307, 1334	1270, 1271, 1272, 1340
	RTOP 619-12-01	RTOP 672-40-04
	210, 212, 1293, 1312, 1313, 1359	1206, 1273, 1323

RTOP 672-40-05

1215

RTOP 672-40-06

1229

RTOP 673-41-01

1371

RTOP 673-41-07

1244, 1308, 1309, 1355,
1356, 1357, 1358

RTOP 673-41-10

1198, 1204, 1211, 1212,
1219, 1243, 1255, 1264,
1265, 1302, 1328, 1329,
1330, 1332, 1333, 1367

RTOP 673-62-02

1216, 1220, 1221, 1250,
1288, 1310, 1347

RTOP 673-62-70

1346

RTOP 673-64-02

1249, 1263, 1300, 1352,
1353

RTOP 678-12-04

171, 197, 198, 224,
1702, 1706

RTOP 678-12-14

1366

RTOP 694-80-70

207, 1537

RTOP 763-01-31

944, 1120

RTOP 763-01-41

740, 747

RTOP 776-31-41

702, 731

RTOP 776-33-41

678, 699

RTOP 871-00-00

246

RTOP 906-55-62

1191

RTOP 906-70-16

135

RTOP 916-12-01

211

RTOP 927-11-01

1703, 1704

RTOP 992-06-03

1726

RTOP 992-19-00

151, 173, 174

RTOP 999-16-01

111

Standard Bibliographic Page

1. Report No. NASA TM-89065		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Scientific and Technical Information Output of the Langley Research Center for Calendar Year 1986				5. Report Date January 1987	
				6. Performing Organization Code	
7. Author(s) Research Information and Applications Division, Compiler				8. Performing Organization Report No.	
				10. Work Unit No.	
9. Performing Organization Name and Address NASA Langley Research Center Hampton, VA 23665-5225				11. Contract or Grant No.	
				13. Type of Report and Period Covered Technical Memorandum	
12. Sponsoring Agency Name and Address National Aeronautics and Space Administration Washington, DC 20546-0001				14. Sponsoring Agency Code	
				15. Supplementary Notes Highlights of the major research accomplishments and applications made at the Langley Research Center during the past year are included in NASA TM-89037 entitled "Research and Technology 1986 - Annual Report of the Langley Research Center."	
16. Abstract This document is a compilation of the scientific and technical information that the Langley Research Center has produced during the calendar year 1986. Included are citations for Formal Reports, Quick-Release Technical Memorandums, Contractor Reports, Journal Articles and Other Publications, Meeting Presentations, Technical Talks, Computer Programs, Tech Briefs, and Patents.					
17. Key Words (Suggested by Authors(s)) Bibliographies Scientific and technical information Documentation Indexes			18. Distribution Statement Unclassified - Unlimited Subject Category 82		
19. Security Classif.(of this report) Unclassified		20. Security Classif.(of this page) Unclassified		21. No. of Pages 264	22. Price A12