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# NASA Technical Memorandum 87655

## Scientific and Technical Information Output of the Langley Research Center for Calendar Year 1985

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CENTER FOR CALENDAR YEAR 1985 (NASA)	277 p	
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NASA Technical Memorandum 87655

**Scientific and Technical Information  
Output of the Langley Research Center  
for Calendar Year 1985**

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

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**Langley Research Center**  
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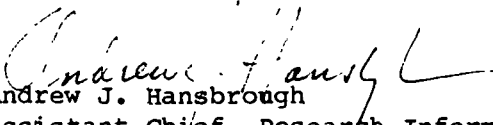
## FOREWORD

This report contains a listing of Langley Research Center's scientific and technical research output for calendar year 1985.

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 the calendar year 1985, Langley's contributions to NASA and non-NASA literature included 167 NASA Formal Reports, 144 Quick-Release Technical Memorandums, 302 Contractor Reports, 265 Journal Articles and Other Publications, 599 Meeting Presentations, 238 Technical Talks, 15 Computer Programs, 66 Tech Briefs, and 23 Patents. In addition, during the year 13 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.

  
Andrew J. Hansbrough  
Assistant Chief, Research Information  
and Applications Division

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CONFERENCES SPONSORED OR COSPONSORED BY LANGLEY AND HELD LOCALLY IN 1985

Title of conference	Date	Langley contacts	Langley		Non-Langley	
			Speakers	Attendees	Speakers	Attendees
1. 0.3-m TCT User Miniworkshop on Airfoil WIAC Procedure	Feb. 6	P. A. Newman	4	21	1	5
2. Mini-Workshop on the Development and Application of Wind Tunnel Seeding Systems for Laser Velocimeters	Mar. 19-20	W. W. Hunter, Jr. C. E. Nichols	6	32	14	30
3. Government/Industry Controlled Impact Demonstration (CID)	Apr. 10	R. J. Hayduk	5	11	8	70
4. Langley Symposium on Aerodynamics	Apr. 23-25	S. H. Stack	48	134	0	182
5. SATA 21st Annual Meeting	May 14-16	Z. T. Applin F. E. Sabo	5	33	21	57
6. Workshop on Computational Methods for Structural Mechanics and Dynamics	June 19-21	W. J. Stroud	2	51	26	87
7. Symposium on Vortex Dominated Flows	July 9-10	M. D. Salas R. G. Voigt	1	72	0	53
8. Symposium on the LaRC Space Commercialization Program	July 18	F. O. Allamby C. S. Hoffman	0	45	8	125
9. Review of CFD Contractors and Grantees--1985	Aug. 13-15	J. D. Keller	0	31	70	50
10. Control of Flexible Structures (COFS) Workshop	Aug. 27-28	C. S. Hoffman	0	63	0	73
11. Symposium on Vortex Flow Aerodynamics	Oct. 8-10	J. F. Campbell	11	67	21	55
12. First International DIAL Data Collection and Analysis Workshop	Nov. 18-21	E. V. Browell	1	14	21	36
13. Workshop on Interfacial Aspects of Adhesion to Carbon Fibers	Dec. 10-12	J. A. Hinkley	0	6	9	15
Total . . . . .			83	580	199	838



## 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 1985 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. 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 1985.

The NASA Tech Briefs cited have either been published<sup>1</sup> or submitted in 1985 for publication in "NASA Tech Briefs," a quarterly 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 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 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).

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<sup>1</sup>Those submitted in 1984 (and therefore listed in the 1984 issue of this document) but published in 1985 have not been listed.

Publication of some journal articles was not known at press time for the 1984 issue of this document. These articles are therefore listed in the 1985 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) 112 Barrow Hall 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

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NASA LANGLEY RESEARCH CENTER  
Hampton, Virginia

CALENDAR YEAR 1985

PUBLICATIONS FOR OFFICE OF THE DIRECTOR

Formal Reports

1. Burke, J.; Bergman, J.; and Asimov, I.: The Impact of Science on Society. NASA SP-482, 1985, 102 p.  
(Avail: NTIS Subject Category 99)

Quick-Release Technical Memorandums

2. Anon.: Langley Aeronautics and Space Test Highlights - 1984. NASA TM-87585, September 1985, 88 p.  
(Avail: NTIS Subject Category 99)
3. Anon.: Research and Technology - 1985 Annual Report of the Langley Research Center. NASA TM-87623, November 1985, 113 p.  
(Avail: NTIS Subject Category 99)

Contractor Reports

4. Abarbanel, S.; and Gottlieb, D.: Information Content in Spectral Calculations. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172558, February 1985, 14 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
5. Abarbanel, S.; Gottlieb, D.; and Tadmor, E.: Spectral Methods for Discontinuous Problems. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-177974, August 1985, 31 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
6. Adams, L.: Reordering Computations for Parallel Execution. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-177961, July 1985, 19 p.  
(Avail: NTIS Subject Category 61 RTOP 505-31-83)
7. Alaghband, G.; and Jordan, H. F.: Multiprocessor Sparse L/U Decomposition With Controlled Fill-In. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178016, October 1985, 38 p.  
(Avail: NTIS Subject Category 61 RTOP 505-31-83)
8. Anon.: Cumulative Reports and Publications Through December 31, 1984. (NAS1-17070, NAS1-17130, NAS1-15810, NAS1-16394, NAS1-14101, and NAS1-14472 Institute for Computer Applications in Science and Engineering.) NASA CR-172569, March 1985, 39 p.  
(Avail: NTIS Subject Category 59 RTOP 505-31-83)

9. Anon.: Semi-Annual Report, October 1, 1984 Through March 31, 1985.  
(NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172610, May 1985, 59 p.  
(Avail: NTIS Subject Category 59 RTOP 505-31-83)
10. Anon.: Semi-Annual Report - April 1, 1985 Through October 2, 1985.  
(NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-178020, November 1985, 64 p.  
(Avail: NTIS Subject Category 59 RTOP 505-31-83)
11. Banks, H. T.: On a Variational Approach to Some Parameter Estimation Problems. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-177935, June 1985, 39 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
12. Banks, H. T.; and Rosen, I. G.: A Galerkin Method for the Estimation of Parameters in Hybrid Systems Governing the Vibration of Flexible Beams With Tip Bodies. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172537, February 1985, 48 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
13. Bayliss, A.; Maestrello, L.; Parikh, P.; and Turkel, E.: Numerical Simulation of Boundary Layer Excitation by Surface Heating/Cooling. (NAS1-16394, NAS1-17070, and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172575, March 1985, 23 p.  
(Avail: NTIS Subject Category 34 RTOP 505-31-83)
14. Bayliss, A.; Maestrello, L.; Parikh, P.; and Turkel, E.: Wave Phenomena in a High Reynolds Number Compressible Boundary Layer. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178025, November 1985, 25 p.  
(Avail: NTIS Subject Category 34 RTOP 505-31-83)
15. Bayliss, A.; Maestrello, L.; and Turkel, E.: On the Interaction of a Sound Pulse With the Shear Layer of an Axisymmetric Jet, III. Nonlinear Effects. (NAS1-15810, NAS1-16394, NAS1-17070, and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172512, January 1985, 23 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
16. Bayliss, A.; Parikh, P.; Maestrello, L.; and Turkel, E.: A Fourth-Order Scheme for the Unsteady Compressible Navier-Stokes Equations. (NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-177994, October 1985, 25 p.  
(Avail: NTIS Subject Category 02 RTOP 505-31-83)
17. Berger, M. J.; and Bokhari, S. H.: A Partitioning Strategy for Non-Uniform Problems on Multiprocessors. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178024, November 1985, 30 p.  
(Avail: NTIS Subject Category 59 RTOP 505-31-83)

18. Bokhari, S. H.: Partitioning Problems in Parallel, Pipelined and Distributed Computing. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178023, November 1985, 33 p.  
(Avail: NTIS                      Subject Category 59                      RTOP 505-31-83)
19. Brandt, A.; and Ta'asan, S.: Multigrid Method for Nearly Singular and Slightly Indefinite Problems. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178026, November 1985, 37 p.  
(Avail: NTIS                      Subject Category 59                      RTOP 505-31-83)
20. Brandt, A.; and Ta'asan, S.: Multigrid Solutions to Quasi-Elliptic Schemes. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-177973, May 1985, 22 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
21. Brewer, D. W.; and Gibson, J. S.: Parameter Identification for a Robotic Manipulator Arm. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178002, September 1985, 25 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
22. Burns, J. A.; and Powers, R. K.: Factorization and Reduction Methods for Optimal Control of Distributed Parameter Systems. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178033, November 1985, 103 p.  
(Avail: NTIS                      Subject Category 59                      RTOP 505-31-83)
23. Cox, C. L.; and Fix, G. J.: On the Accuracy of Least Squares Methods in the Presence of Corner Singularities. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172552, February 1985, 27 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
24. Davis, S. F.: Shock Capturing. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172592, April 1985, 23 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
25. Drummond, J. P.; Hussaini, M. Y.; and Zang, T. A.: Spectral Methods for Modeling Supersonic Chemically Reacting Flow Fields. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172578, March 1985, 41 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-83)
26. Dutt, P.: Stable Boundary Conditions and Difference Schemes for Navier-Stokes Equations. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-177984, August 1985, 89 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
27. Fix, G. J.; and Suri, M.: Three-Dimensional Mass Conserving Elements for Compressible Flows. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172513, January 1985, 28 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)



28. Fleming, P. J.: SUBOPT - A CAD Program for Suboptimal Linear Regulators. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172536, February 1985, 17 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 505-31-83)
29. Goglia, G. (Compiler): NASA/American Society for Engineering Education (ASEE) Summer Faculty Fellowship Program - 1985. (NGT 47-003-029 Old Dominion University.) NASA CR-177972, September 1985, 158 p.  
(Avail: NTIS                      Subject Category 80)
30. Gottlieb, D.; and Tadmor, E.: Recovering Pointwise Values of Discontinuous Data Within Spectral Accuracy. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172535, January 1985, 21 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
31. Grosch, C. E.: Adapting a Navier-Stokes Code to the ICL-DAP. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178034, December 1985, 41 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-83)
32. Hall, P.: An Asymptotic Investigation of the Stationary Modes of Instability of the Boundary Layer on a Rotating Disc. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-177977, September 1985, 30 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-83)
33. Hall, P.: Instability of Time-Periodic Flows. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178009, October 1985, 30 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-83)
34. Hall, P.: Taylor-Görtler Instabilities of Tollmien-Schlichting Waves and Other Flows Governed by the Interactive Boundary Layer Equations. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178010, October 1985, 29 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-83)
35. Harabetian, E.: A Convergent Series Expansion for Hyperbolic Systems of Conservation Laws. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172557, February 1985, 89 p.  
(Avail: NTIS                      Subject Category 59                      RTOP 505-31-83)
36. Harabetian, E.: Matched Asymptotic Expansions to Similarity Solutions of Shock Diffraction. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178022, November 1985, 32 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-83)
37. Hariharan, S. I.: Absorbing Boundary Conditions for Exterior Problems. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-177944, July 1985, 34 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)

38. Hossain, M.; Vahala, G.; and Montgomery, D.: Forced MHD Turbulence in a Uniform External Magnetic Field. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172576, March 1985, 40 p.  
(Avail: NTIS                      Subject Category 75                      RTOP 505-31-83)
39. Israeli, M.: Marching Iterative Methods for the Parabolized and Thin Layer Navier-Stokes Equations. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178028, December 1985, 27 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-83)
40. Ito, K.; and Powers, R. K.: Chandrasekhar Equations for Infinite Dimensional Systems. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172515, January 1985, 37 p.  
(Avail: NTIS                      Subject Category 67                      RTOP 505-31-83)
41. Jordan, H. F.: Parallel Computation With the Force. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-177999, October 1985, 13 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 505-31-83)
42. Kreiss, G.; and Kreiss, H-O.: Convergence to Steady State of Solutions of Burgers' Equation. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178017, December 1985, 30 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
43. Lakin, W. D.: Differentiating Matrices for Arbitrarily Spaced Grid Points. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172556, January 1985, 25 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
44. LeVeque, R. J.: Intermediate Boundary Conditions for LOD, ADI, and Approximate Factorization Methods. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172591, March 1985, 25 p.  
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45. Maday, Y.: Analysis of Spectral Operators in One-Dimensional Domains. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172573, February 1985, 27 p.  
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46. Maestrello, L.; Parikh, P.; Bayliss, A.; and Turkel, E.: Active Control of Compressible Flows on a Curved Surface. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178018, November 1985, 28 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-83)
47. Majda, G.: A New Theory for Multistep Discretizations of Stiff Ordinary Differential Equations: Stability With Large Step Sizes. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-177941, June 1985, 71 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)



58. Saltz, J.; and Naik, V. K.: Towards Developing Robust Algorithms for Solving Partial Differential Equations on MIMD Machines. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-177979, September 1985, 52 p.  
(Avail: NTIS Subject Category 59 RTOP 505-31-83)
59. Shih, K-G.; and Antman, S. S.: Qualitative Properties of Large Buckled States of Spherical Shells. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-177980, September 1985, 75 p.  
(Avail: NTIS Subject Category 31 RTOP 505-31-83)
60. Speziale, C. G.: Second-Order Closure Models for Rotating Turbulent Flows. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178005, October 1985, 25 p.  
(Avail: NTIS Subject Category 34 RTOP 505-31-83)
61. Swanson, R. C.; and Turkel, E.: A Multistage Time-Stepping Scheme for the Navier-Stokes Equations. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172527, February 1985, 36 p.  
(Avail: NTIS Subject Category 34 RTOP 505-31-83)
62. Tadmor, E.: Complex Symmetric Matrices With Strongly Stable Iterates. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172542, February 1985, 23 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
63. Tadmor, E.: The Numerical Viscosity of Entropy Stable Schemes for Systems of Conservation Laws. I. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-178021, November 1985, 30 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
64. Tal-Ezer, H.: The Eigenvalues of the Pseudospectral Fourier Approximation to the Operator  $\sin(2x)\frac{\partial}{\partial x}$ . (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172538, February 1985, 11 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
65. Tal-Ezer, H.: Spectral Methods in Time for Parabolic Problems. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172539, February 1985, 20 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
66. Trefethen, L. N.; and Halpern, L.: Well-Posedness of One-Way Wave Equations and Absorbing Boundary Conditions. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172619, June 1985, 24 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
67. Turkel, E.: Algorithms for the Euler and Navier-Stokes Equations for Supercomputers. (NAS1-16394 and NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172543, February 1985, 28 p.  
(Avail: NTIS Subject Category 61 RTOP 505-31-83)

68. Turkel, E.: Accuracy of Schemes With Nonuniform Meshes for Compressible Fluid Flows. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-177988, September 1985, 49 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
69. Turkel, E.; Yaniv, S.; and Landau, U.: Accuracy of Schemes for the Euler Equations With Non-Uniform Meshes. (NAS1-17070 and NAS1-18107 Institute for Computer Applications in Science and Engineering.) NASA CR-178038, December 1985, 21 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)
70. Voigt, R. G.: Where Are the Parallel Algorithms? (NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.) NASA CR-172516, January 1985, 15 p.  
(Avail: NTIS                      Subject Category 59                      RTOP 505-31-83)
71. Zang, T. A.; and Hussaini, M. Y.: A Three-Dimensional Spectral Algorithm for Simulations of Transition and Turbulence. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172561, March 1985, 40 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-31-83)
72. Zang, T. A.; and Hussaini, M. Y.: On Spectral Multigrid Methods for the Time-Dependent Navier-Stokes Equations. (NAS1-17070 Institute for Computer Applications in Science and Engineering.) NASA CR-172613, May 1985, 25 p.  
(Avail: NTIS                      Subject Category 64                      RTOP 505-31-83)

#### Journal Articles and Other Publications

73. Hearth, D. P.; and Boyer, W. J.: Flexibility of Space Structures Makes Design Shaky. Aerospace America, Volume 23, No. 5, May 1985, p. 100-103.  
(Subject Category 15)
74. Petersen, R. H.; and Driver, C.: Readyng Technology for a Super SST. Aerospace America, Volume 23, No. 7, July 1985, p. 56-59.  
(Subject Category 01                      RTOP 505-43-43)

#### Meeting Presentations

75. Petersen, R. H.: Computer-Aided Analysis at NASA Langley Research Center: Looking Toward the 1990's. Presented at the Purdue University Third National Conference on University Programs in Computer Aided Engineering, Design and Manufacturing (UPCAEDM) '85, July 8-10, 1985, Lafayette, Indiana. In Proceedings, p. 17-20.  
(Subject Category 59)
76. South, J. C., Jr.: Recent Advances in Computational Transonic Aerodynamics. Presented at the AIAA 23rd Aerospace Sciences Meeting, January 14-17, 1985, Reno, Nevada. AIAA Paper No. 85-0366.  
(Subject Category 02                      RTOP 505-31-03)

77. South, J. C., Jr.; Doria, M. L.; and Green, L. L.: Finite-Volume Scheme for Transonic Potential Flow About Airfoils and Bodies in an Arbitrarily-Shaped Channel. Presented at the NASA Langley Symposium on Aerodynamics, April 23-25, 1985, Hampton, Virginia. In NASA CP-2397, Volume 1.  
(Subject Category 02 RTOP 505-31-03)

#### Technical Talks

78. Petersen, R. H.; and Driver, C.: The Advanced Supersonic Transport - Status. Presented at the 1985 AIAA Annual Meeting and International Aerospace Exhibit, April 9-11, 1985, Washington, DC.  
(Subject Category 01 RTOP 505-43-43)
79. Petersen, R. H.; Harris, R. V., Jr.; and Stack, S. H.: Applied Aerodynamics at NASA Langley - An Overview. Presented at the AIAA 3rd Applied Aerodynamics Conference, October 14-16, 1985, Colorado Springs, Colorado.  
(Subject Category 02 RTOP 505-61-41)

#### Computer Programs

No computer programs.

#### Tech Briefs

No tech briefs.

#### Patents

No patents.

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR PROJECTS

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

80. Wright, H. T.: Project Management Within NASA. Presented at the FGIPC, IRAC, et al., Government Computer Expo 85, June 10-14, 1985, Washington, DC. In Proceedings.  
(Subject Category 81           RTOP 023-10-01)

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

PUBLICATIONS FOR AERONAUTICAL SYSTEMS OFFICE

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

81. Bantle, J. W.: An Experimental and Analytical Study of the Aerodynamic Interference Effects Between Two Sears-Haack Bodies at Mach 2.7. NASA TM-85729, April 1985, 185 p.  
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82. Coen, P. G.; and Foss, W. E., Jr.: Computer Sizing of Fighter Aircraft. NASA TM-86351, January 1985, 21 p.  
(Avail: NTIS                      Subject Category 01                      RTOP 505-43-43)
83. Fetterman, D. E., Jr.: Preliminary Sizing and Performance of Aircraft. NASA TM-86357, July 1985, 114 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 505-43-43)
84. Gall, P. D.: Study of an Efficient Long-Range Mach 2.7 Supersonic Transport Configuration Concept. NASA TM-86414, July 1985, 52 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 505-43-43)
85. Gall, P. D.; and Smith, H. C.: Study of Winglets Applied to Biplanes. NASA TM-86350, January 1985, 20 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 505-43-43)
86. Liu, G. C.; and Hsu, C-H.: Numerical Studies of Interacting Vortices. NASA TM-86325, January 1985, 15 p.  
(Avail: NTIS                      Subject Category 34                      RTOP 505-43-43)
87. Nguyen, H. Q.: Design Considerations for High-Altitude, Long-Endurance, Microwave-Powered Aircraft. NASA TM-86403, April 1985, 135 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 505-43-43)
88. Spearman, M. L.: Effects of Body Shape on the Aerodynamics of a Body of Revolution at Mach Numbers From 1.6 to 4.6. NASA TM-86345, January 1985, 22 p.  
(Avail: NTIS                      Subject Category 01                      RTOP 505-43-43)
89. Spearman, M. L.: Some Fighter Aircraft Trends. NASA TM-86352, January 1985, 37 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-43)
90. Spearman, M. L.: The Application of Some Lifting-Body Reentry Concepts to Missile Design. NASA TM-86394, March 1985, 30 p.  
(Avail: NTIS                      Subject Category 02                      RTOP 505-43-43)



91. Spearman, M. L.: Supersonic Aerodynamic Characteristics of Some Reentry Concepts for Angles of Attack to 90°. NASA TM-87645, November 1985, 31 p.  
(Avail: NTIS Subject Category 15 RTOP 505-69-41)
92. Spearman, M. L.: Some Comparisons of US and USSR Aircraft Design Developments. NASA TM-87611, December 1985, 35 p.  
(Avail: NTIS Subject Category 03 RTOP 505-69-41)

#### Contractor Reports

93. Beck, W. E., Jr.; and Bochary, E.: Aerodynamic and Acoustic Performance of an Axisymmetric Supersonic Inlet With Auxiliary Inlets Operating at Low Speed. (NAS1-16048 Lockheed-California Company.) NASA CR-177962, October 1985, 304 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-43)
94. Miley, S. J.; and Von Lavante, E.: Propeller Propulsion System Integration - State of Technology Survey. (NAG1-214 Texas A&M University.) NASA CR-3882, March 1985, 186 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-43)
95. Powell, A. G.; Frasca, R. L.; and Pellino, A. G.: Technology Study for Advanced Supersonic Cruise Vehicles Inlet Technology. (NAS1-16147 McDonnell Douglas Corporation.) NASA CR-172602, February 1985, 55 p.  
(Avail: STIF Subject Category 02 RTOP 505-43-43)
96. Robins, A. W.; Beissner, F. L., Jr.; Domack, C. S.; and Swanson, E. E.: Preliminary Performance of a Vertical-Attitude Takeoff and Landing, Supersonic-Cruise Aircraft Concept Having Thrust Vectoring Integrated Into the Flight Control System. (Kentron International, Inc.) NASA CR-172530, February 1985, 39 p.  
(Avail: NTIS Subject Category 05 RTOP 505-43-43)
97. Scott, S. J.; Nicks, O. W.; and Imbrie, P. K.: Effects of Leading-Edge Devices on the Low-Speed Aerodynamic Characteristics of a Highly-Swept Arrow-Wing. (L-69215B TEKWORLD Company.) NASA CR-172531, February 1985, 66 p.  
(Avail: NTIS Subject Category 02 RTOP 505-43-43)

#### Journal Articles and Other Publications

98. Spearman, M. L.: Guided Missile. Encyclopedia of Science and Technology, 5th Edition, McGraw-Hill Book Company, Volume 6, 1985, p. 409-412.  
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#### Meeting Presentations

99. Coen, P. G.; and Foss, W. E., Jr.: Computer Sizing of Fighter Aircraft. Presented at the AIAA 23rd Aerospace Sciences Meeting, January 14-17, 1985, Reno, Nevada. AIAA Paper No. 85-0212.  
(Subject Category 05 RTOP 505-43-43)

100. Dollyhigh, S. M.; and Foss, W. E., Jr.: The Impact of Emerging Technology on Fighter Aircraft Requirements. Presented at the SAE Aerospace Technology Conference and Exposition, October 14-17, 1985, Long Beach, California. SAE Paper No. 851841.  
(Subject Category 05 RTOP 505-43-43)
101. Gall, P. D.; and Smith, H. C.: Study of Winglets Applied to Biplanes. Presented at the AIAA 23rd Aerospace Sciences Meeting, January 14-17, 1985, Reno, Nevada. AIAA Paper No. 85-0279.  
(Subject Category 05 RTOP 505-43-43)
102. Johnson, V. S.: Computer Methods for the Design and Analysis of Aircraft. Presented at the 1985 Annual Meeting of the Virginia Academy of Science, May 14-17, 1985, Williamsburg, Virginia. Abstract to be published in the Virginia Journal of Science.  
(Subject Category 05 RTOP 505-43-43)
103. Johnson, V. S.: A Computer-Assisted Process for Supersonic Aircraft Conceptual Design. Presented at the AIAA, AHS, ASEE Aircraft Design, Systems and Operations Meeting, October 14-16, 1985, Colorado Springs, Colorado. AIAA Paper No. 85-4027.  
(Subject Category 05 RTOP 505-43-43)
104. Spearman, M. L.: Some Comparisons of US and USSR Aircraft Design Developments. Presented at the AIAA, AHS, ASEE Aircraft Design, Systems and Operations Meeting, October 14-16, 1985, Colorado Springs, Colorado. AIAA Paper No. 85-3060.  
(Subject Category 01 RTOP 505-43-43)
105. Spearman, M. L.: Reform of General Education and Vocational Training in the U.S.S.R. Presented at the AIAA, AHS, ASEE Aircraft Design Systems and Operations Meeting, October 14-16, 1985, Colorado Springs, Colorado. AIAA Paper No. 85-3082.  
(Subject Category 99 RTOP 505-43-43)
106. Spearman, M. L.: Aerospace Vehicles - Past Progress and Future Possibilities. Presented at the 1985 Annual Meeting of the Virginia Academy of Science, May 14-17, 1985, Williamsburg, Virginia. Abstract to be published in the Virginia Journal of Science.  
(Subject Category 01 RTOP 505-43-43)
107. Spearman, M. L.: Soviet Union Views on the Influence of Science and Technology. Presented at the 1985 Annual Meeting of the Virginia Academy of Science, May 14-17, 1985, Williamsburg, Virginia. Abstract to be published in the Virginia Journal of Science.  
(Subject Category 99 RTOP 505-43-43)
108. Spearman, M. L.: Supersonic Aerodynamic Characteristics of Some Reentry Concepts for Angles of Attack to 90°. Presented at the AIAA 12th Atmospheric Flight Mechanics Conference, August 19-21, 1985, Snowmass, Colorado. AIAA Paper No. 85-1795-CP.  
(Subject Category 02 RTOP 505-43-43)

109. Spearman, M. L.: The Application of Some Lifting-Body Reentry Concepts to Missile Design. Presented at the AIAA 23rd Aerospace Sciences Meeting, January 14-17, 1985, Reno, Nevada. AIAA Paper No. 85-0497.  
(Subject Category 01 RTOP 505-43-43)

#### Technical Talks

110. Driver, C.: The Impact of Emerging Technologies on an Advanced Supersonic Transport. Presented at the Air Traffic Control Association (ATCA) Fall Conference, September 27 - October 3, 1985, Arlington, Virginia.  
(Subject Category 02 RTOP 505-43-43)
111. Koenig, R. W.: NASA Technology for Advanced Commuters. Presented at the AIAA, ASCE, et al., International Air Transportation Conference, June 26-28, 1985, Norfolk, Virginia.  
(Subject Category 02 RTOP 505-43-43)
112. Koenig, R. W.: Advanced Technology for Commuter Aircraft. Presented at the 1985 SAE General Aviation Aircraft Meeting and Exposition, April 15-19, 1985, Wichita, Kansas.  
(Subject Category 05 RTOP 505-43-43)
113. Liu, G. C.; and Liu, C-H.: Computations of Vortex Flows. Presented at the National Tsing Hua University, January 9, 1985, Hsinchu, Taiwan.  
(Subject Category 02 RTOP 505-43-43)
114. Maglieri, D. J.; Dean, H.; and Densmore, J.: Status and Outlook on Sonic Boom. Presented at the 1985 AIAA Annual Meeting and International Aerospace Exhibit, April 9-11, 1985, Washington, DC.  
(Subject Category 02 RTOP 505-43-43)
115. Spearman, M. L.: Tactical Missiles. Presented at the AIAA Soviet Threat Technology, April 17-18, 1985, Albuquerque, New Mexico.  
(Subject Category 02 RTOP 505-43-43)

#### Computer Programs

No computer programs.

#### Tech Briefs

116. Maksymiuk, C. M. (Langley Research Center); and Viken, S. A. W. (University of Kansas Center for Research, Inc.): Aerodynamic Characteristics of NACA 16-Series Airfoils. NASA Tech Brief LAR-13355.

#### Patents

No patents.

PUBLICATIONS FOR SPACE TECHNOLOGY FLIGHT EXPERIMENTS OFFICE

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

117. Crumbly, K. H.: Space Technology Experiments Platform (STEP). Presented at the NASA Symposium on the LaRC Space Commercialization Program, July 18, 1985, Hampton, Virginia.  
(Subject Category 14 RTOP 542-03-44)

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

PUBLICATIONS FOR SCOUT PROJECT OFFICE

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

118. Harris, C. G.; and Harris, D. K.: User's Operating Procedures, Volume I - Scout Project Information Programs. (NAS1-18000 PRC Kentron, Inc.) NASA CR-177948, July 1985, 271 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 563-22-68)
119. Harris, C. G.; and Harris, D. K.: User's Operating Procedures, Volume II - Scout Project Financial Analysis Program. (NAS1-18000 PRC Kentron, Inc.) NASA CR-177949, July 1985, 171 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 563-22-68)
120. Harris, C. G.; and Harris, D. K.: User's Operating Procedures, Volume III - Projects Directorate Information Programs. (NAS1-18000 PRC Kentron, Inc.) NASA CR-177950, July 1985, 239 p.  
(Avail: NTIS                      Subject Category 61                      RTOP 563-22-68)

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

tech briefs.

Patents

o patents.

PUBLICATIONS FOR SPACE FLIGHT EXPERIMENT DEFINITION AND INTEGRATION OFFICE

Formal Reports

121. Boyer, W. J. (Compiler): Large Space Antenna Systems Technology - 1984.  
NASA CP-2368, Part 1, April 1985, 479 p.  
(Avail: NTIS                      Subject Category 15                      RTOP 506-62-23)
122. Boyer, W. J. (Compiler): Large Space Antenna Systems Technology - 1984.  
NASA CP-2368, Part 2, April 1985, 499 p.  
(Avail: NTIS                      Subject Category 15                      RTOP 506-62-23)

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 AIRCRAFT ENERGY EFFICIENCY PROJECT OFFICE

Formal Reports

123. ACEE Composites Project Office (Compiler): NASA/Aircraft Industry Standard Specification for Graphite Fiber/Toughened Thermoset Resin Composite Material. NASA RP-1142, June 1985, 57 p.  
(Avail: NTIS                      Subject Category 24                      RTOP 534-06-13)
124. Middleton, D. B.; Bartlett, D. W.; and Hood, R. V.: Energy Efficient Transport Technology - Program Summary and Bibliography. NASA RP-1135, September 1985, 54 p.  
(Avail: NTIS                      Subject Category 05                      RTOP 534-02-13)

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

125. Bunin, B. L.: Critical Joints in Large Composite Primary Aircraft Structures, Volume II - Technology Demonstration Test Report. (NAS1-16857 McDonnell Douglas Corporation.) NASA CR-172587, June 1985, 221 p.  
(Avail: IAC                      Subject Category 24                      RTOP 534-03-13)
126. Bunin, B. L.: Critical Joints in Large Composite Primary Aircraft Structures, Volume I - Technical Summary. (NAS1-16857 McDonnell Douglas Corporation.) NASA CR-3914, September 1985, 64 p.  
(Avail: IAC                      Subject Category 24                      RTOP 534-03-13)
127. Bunin, B. L.; and Sagui, R. L.: Critical Joints in Large Composite Primary Aircraft Structures, Volume III - Ancillary Test Results. (NAS1-16857 McDonnell Douglas Corporation.) NASA CR-172588, June 1985, 341 p.  
(Avail: IAC                      Subject Category 24                      RTOP 534-03-13)
128. Griffin, C. F.; and James, A. M.: Fuel Containment, Lightning Protection, and Damage Tolerance in Large Composite Primary Aircraft Structures. (NAS1-16856 Lockheed-California Company.) NASA CR-3875, May 1985, 42 p.  
(Avail: IAC                      Subject Category 24                      RTOP 534-06-13)
129. Johnson, R. W.; Thomson, L. W.; and Wilson, R. D.: Study on Utilization of Advanced Composites in Fuselage Structures of Large Transports. (NAS1-17417 Boeing Commercial Airplane Company.) NASA CR-172406, February 1985, 153 p.  
(Avail: IAC                      Subject Category 24                      RTOP 534-06-13)
130. Lineberger, L. B.: Structural Tests and Development of a Laminar Flow Control Wing Surface Composite Chordwise Joint. (NAS1-17487 Lockheed-Georgia Company.) NASA CR-172462, December 1984 (Released 1985), 199 p.  
(Avail: IAC                      Subject Category 24                      RTOP 505-45-63)



131. Pearce, W. E.; McNay, D. E.; and Thelander, J. A.: Laminar Flow Control Leading Edge Glove Flight Test Article Development. (NAS1-16220 McDonnell Douglas Corporation.) NASA CR-172137, November 1984 (Released 1985), 109 p.  
(Avail: IAC                      Subject Category 02                      RTOP 505-45-63)
132. Sandifer, J. P.; Denny, A.; and Wood, M. A.: Fuel Containment and Damage Tolerance in Large Composite Primary Aircraft Structures, Phase II - Testing. (NAS1-16856 Lockheed-California Company.) NASA CR-172519, April 1985, 283 p.  
(Avail: IAC                      Subject Category 24                      RTOP 534-06-13)
133. Staff of Boeing Commercial Airplane Company: Integrated Application of Active Controls (IAAC) Technology to an Advanced Subsonic Transport Project--Test ACT System Validation. (NAS1-15325 Boeing Commercial Airplane Company.) NASA CR-172525, August 1985, 130 p.  
(Avail: IAC                      Subject Category 05                      RTOP 505-45-63)
134. Watts, D. J.; Sumida, P. T.; Bunin, B. L.; Janicki, G. C.; Walker, J. V.; and Fox, B. R.: A Study of the Utilization of Advanced Composites in Fuselage Structures of Commercial Aircraft. (NAS1-17416 McDonnell Douglas Corporation.) NASA CR-172405, January 1985, 188 p.  
(Avail: IAC                      Subject Category 24                      RTOP 534-06-13)

#### Journal Articles and Other Publications

No journal articles and other publications.

#### Meeting Presentations

135. Bohon, H. L.: Composites in Today's and Tomorrow's U.S. Airliners. Presented at the NOWEA 3rd International Aircraft Maintenance Engineering Exhibition (AIRMEC 85), February 26 - March 1, 1985, Dusseldorf, Germany.  
(Subject Category 24                      RTOP 534-06-13)
136. Braslow, A. L.; and Fischer, M. C.: Design Considerations for Application of Laminar Flow Control Systems to Transport Aircraft. Presented at the AGARD von Karman Institute for Fluid Dynamics, Lecture Series on Aircraft Drag Prediction and Reduction, May 20-24, 1985, Brussels, Belgium. AGARD Report No. 723.  
(Subject Category 02                      RTOP 505-45-63)
137. Maddalon, D. V.; and Wagner, R. D.: Operational Considerations for Laminar Flow Aircraft. Presented at the NASA, SAE, et al., Laminar Flow Aircraft Certification Workshop, April 15-16, 1985, Wichita, Kansas. NASA CP pending.  
(Subject Category 05                      RTOP 505-45-63)
138. Wagner, R. D.: Laminar Flow Systems Integration-Flight Test Status and Plans. Presented at the NASA Langley Symposium on Aerodynamics, April 23-25, 1985, Hampton, Virginia. In NASA CP-2397, Volume 1.  
(Subject Category 02                      RTOP 505-45-63)

### Technical Talks

139. Bohon, H. L.: The Application of Composites to Large Transport Aircraft. Presented at the Society of Manufacturing Engineers Composites in Manufacturing 4 Conference and Exposition, January 8-10, 1985, Anaheim, California.  
(Subject Category 24      RTOP 534-06-13)
  
140. Davis, J. G., Jr.: NASA/Aircraft Industry Standard Specification for Graphite Fiber/Toughened Resin Composite Material. Presented at the Institute for Defense Analyses (IDA) Workshop on Test Methods for Composite Materials - Development and Standardization, February 27, 1985, Alexandria, Virginia.  
(Subject Category 24      RTOP 534-06-13)
  
141. Wagner, R. D.: Development of Laminar Flow Technology for Transport Aircraft. Presented at the AIAA, ASCE, et al., International Air Transportation Conference, June 26-28, 1985, Norfolk, Virginia.  
(Subject Category 02      RTOP 505-45-63)

### 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.

PUBLICATIONS FOR ANALYSIS AND COMPUTATION DIVISION

Formal Reports

142. Fay, T. H.; and Shoosmith, J. N. (Compilers): Computational Geometry and Computer-Aided Design. NASA CP-2379, June 1985, 135 p.  
(Avail: NTIS Subject Category 59 RTOP 505-31-83)
143. Schiess, J. R.; and Matthews, C. G.: Spline Methods for Approximating Quantile Functions and Generating Random Samples. NASA TP-2389, January 1985, 32 p.  
(Avail: NTIS Subject Category 65 RTOP 505-31-83)

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144. Craidon, C. B. (Compiler): A Description of the Langley Wireframe Geometry Standard (LaWGS) Format. NASA TM-85767, February 1985, 44 p.  
(Avail: NTIS Subject Category 05 RTOP 505-37-23)
145. Earnest, B. M.: Guidelines for Developing Structured FORTRAN Programs. NASA TM-86407, March 1985, 34 p.  
(Avail: NTIS Subject Category 61 RTOP 992-16-05)
146. Kaylor, J. T.; Simmons, H. I.; Naftel, P. B.; Houck, J. A.; and Grove, R. D.: The Mission Oriented Terminal Area Simulation Facility. NASA TM-87621, October 1985, 62 p.  
(Avail: NTIS Subject Category 62 RTOP 505-45-33)
147. Taylor, N. L.; Randall, D. P.; Matthews, C. G.; Gates, R. L.; Bowen, J. T.; Jones, K. H.; von Ofenheim, W. H.; Gooden, A. L.; Johnson, M. M.; Everton, E. L.; and Roland, V. R.: Graphics Mini Manual. NASA TM-87622, September 1985, 71 p.  
(Avail: NTIS Subject Category 60 RTOP 505-60-01)

Contractor Reports

148. DeLoatch, S. J.: MACSYMA Usage at Langley. (NAS1-16921 Norfolk State University Foundation.) NASA CR-172518, February 1985, 67 p.  
(Avail: NTIS Subject Category 59 RTOP 340-00-00)
149. Evans, A. B.; and Lee, L. L.: Magnetic Tape User Guide. (NAS1-17300 System Development Corporation.) NASA CR-177993, September 1985, 57 p.  
(Avail: NTIS Subject Category 62 RTOP 505-60-01)
150. Hurst, P. W.: Executive Control Systems in the Engineering Design Environment. (NAG1-242 University of Virginia.) NASA CR-172582, May 1985, 107 p.  
(Avail: NTIS Subject Category 62 RTOP 505-36-33)

151. Irvine, L. D.: Minimal Norm Constrained Interpolation. (NAG1-363 Old Dominion University.) NASA CR-178001, September 1985, 108 p.  
(Avail: NTIS Subject Category 64 RTOP 505-31-83)
152. Naftel, P. B.: MAVEC, A Fully-Manual Terminal Area Model. (NAS1-17743 Research Triangle Institute.) NASA CR-178000, September 1985, 51 p.  
(Avail: STIF Subject Category 60 RTOP 505-45-33)
153. Saunders, B. V.: Algebraic Grid Generation Using Tensor Product B-Splines. (NGT 47-003-802 Old Dominion University.) NASA CR-177968, September 1985, 152 p.  
(Avail: NTIS Subject Category 59 RTOP 505-31-83)

#### Journal Articles and Other Publications

No journal articles and other publications.

#### Meeting Presentations

154. Park, S. K.: Digital Image Fidelity: An End-To-End Analysis. Presented at the SPSE 25th Fall Symposium - Imaging, November 17-22, 1985, Arlington, Virginia. In Proceedings, p. 157-161.  
(Subject Category 36 RTOP 506-54-73)
155. Park, S. K.: Information Extraction From Multi-Spectral Images. Presented at the Center for Advanced NDE Review of Progress in Quantitative NDE, June 23-28, 1985, Williamsburg, Virginia. Proceedings pending.  
(Subject Category 59 RTOP 505-37-23)
156. Schiess, J. R.: Composite Statistical Method for Modeling Wind Gusts for Aircraft Simulation. Presented at the AIAA Flight Simulation Technologies Conference, July 22-24, 1985, St. Louis, Missouri. AIAA Paper No. 85-1750.  
(Subject Category 08 RTOP 505-31-83)
157. Smith-Taylor, R.: Designing a Priority Driven Multi-Frame Rate Flight Executive. Presented at the AIAA 23rd Aerospace Sciences Meeting, January 14-17, 1985, Reno, Nevada. AIAA Paper No. 85-0309.  
(Subject Category 61 RTOP 505-45-33)
158. Smith-Taylor, R.: A Color Graphics Environment in Support of Supercomputer Systems. Presented at the IEEE First International Conference on Supercomputing Systems, December 16-20, 1985, St. Petersburg, Florida. IEEE Paper No. 114.  
(Subject Category 61 RTOP 505-37-23)
159. Smith-Taylor, R.; and Noland, M. S.: Designing a Configuration Control Mechanism for a Flight Software Validation Facility. Presented at the AIAA, NASA, et al., Computers in Aerospace V Conference, October 21-23, 1985, Long Beach, California. AIAA Paper No. 85-6012-CP.  
(Subject Category 61 RTOP 505-45-33)

160. Taylor, N. L.; Fedors, E. G.; and Pinelli, T. E.: Computer Graphics and the Graphic Artist. Presented at the Society for Technical Communication 32nd International Technical Communication Conference (ITCC), May 19-22, 1985, Houston, Texas. In Proceedings, A Mission to Communicate, 1985, p. VC-7 - VC-10.  
(Subject Category 82      RTOP 505-37-23)

#### Technical Talks

161. Schiess, J. R.: Statistical Approach to Modeling and Simulating Wind Gusts. Presented at the Society for Computer Simulation 1985 Eastern Simulation Conferences, March 3-8, 1985, Norfolk, Virginia.  
(Subject Category 08      RTOP 505-31-83)

#### Computer Programs

162. Computer Science and Applications Branch: VPS-32 Mathematics Library.  
Program No. LAR-13520.
163. Lakeotes, C. J. (Computer Sciences Corporation): VPS-32 Utilities IDUMP, TPVPS, and STRACE. Program No. LAR-13521.

#### Tech Briefs

164. Barker, L. K.; and Houck, J. A. (Langley Research Center); and Carzoo, S. W. (Sperry Corporation): Translational Control of Robot Arm That Overcomes Joint Singularity. NASA Tech Brief LAR-13415.

#### Patents

No patents.

PUBLICATIONS FOR INSTRUMENT RESEARCH DIVISION

Formal Reports

165. Hunter, W. W., Jr.; and Nichols, C. E., Jr. (Compilers): Wind Tunnel Seeding Systems for Laser Velocimeters. NASA CP-2393, October 1985, 273 p.  
(Avail: NTIS Subject Category 35 RTOP 505-31-53)
166. Meyers, J. F.; Hunter, W. W., Jr.; Reubush, D. E.; Nichols, C. E., Jr.; \*Hepner, T. E.; and Lee, J. W.: Performance Test of Laser Velocimeter System for the Langley 16-Foot Transonic Tunnel. NASA TP-2502, AVSCOM TR 85-B-4, December 1985, 36 p.  
(Avail: NTIS Subject Category 36 RTOP 505-31-53)
167. Singh, J. J.; Sprinkle, D. R.; and Puster, R. L.: New Method for Measuring Heats of Combustion of Gaseous Hydrocarbons. NASA TP-2531, December 1985.  
(Avail: NTIS Subject Category 35 RTOP 141-20-10)
168. Tripp, J. S.: Rapid Estimation of Frequency Response Functions by Close-Range Photogrammetry. NASA TP-2471, November 1985, 29 p.  
(Avail: NTIS Subject Category 35 RTOP 505-31-53)
169. Zuckerwar, A. J.; and Mazel, D. S.: Sound Speed Measurements in Liquid Oxygen-Liquid Nitrogen Mixtures. NASA TP-2464, September 1985, 20 p.  
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PUBLICATIONS FOR FLIGHT ELECTRONICS DIVISION

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1160. Anders, J. B., Jr.; and Watson, R. D.: Airfoil Large-Eddy Breakup Devices for Turbulent Drag Reduction. Presented at the AIAA Shear Flow Control Conference, March 12-14, 1985, Boulder, Colorado. AIAA Paper No. 85-0520.  
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1194. Kumar, A.: Numerical Simulation of Flow Through Scramjet Inlets Using a Three-Dimensional Navier-Stokes Code. Presented at the AIAA 18th Fluid Dynamics, Plasma Dynamics, and Lasers Conference, July 16-18, 1985, Cincinnati, Ohio. AIAA Paper No. 85-1664.  
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1196. McClinton, C. R.; and Northam, G. B.: Comparison of Combustion Characteristics of Hydrogen and Gaseous Hydrocarbon Fuels in a Mach 2 Flow. Presented at the 22nd JANNAF Combustion Meeting, October 7-11, 1985, Pasadena, California. Proceedings pending.  
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1197. McGinley, C. B.; and Beeler, G. B.: Large-Eddy Substitution Via Vortex Cancellation for Wall-Turbulence Control. Presented at the AIAA Shear Flow Control Conference, March 12-14, 1985, Boulder, Colorado. AIAA Paper No. 85-0549. (Subject Category 34 RTOP 505-31-13)
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1202. Napolitano, M.; and Walters, R. W.: An Incremental Block-Line-Gauss-Seidel Method for the Navier-Stokes Equations. Presented at the AIAA 23rd Aerospace Sciences Meeting, January 14-17, 1985, Reno, Nevada. AIAA Paper No. 85-0033. (Subject Category 02 RTOP 505-31-03)
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1213. Weinstein, L. M.; Beeler, G. B.; and Lindemann, A. M.: High-Speed Holographic Velocimeter for Studying Turbulent Flow Control Physics. Presented at the AIAA Shear Flow Control Conference, March 12-14, 1985, Boulder, Colorado. AIAA Paper No. 85-0526.  
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1214. Wilkinson, S. P.: Wall Turbulence Control. Presented at the NASA Langley Symposium on Aerodynamics, April 23-25, 1985, Hampton, Virginia. In NASA CP-2397, Volume 1.  
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1219. Zang, T. A.; and Hussaini, M. Y.: Numerical Experiments on the Stability of Controlled Shear Flows. Presented at the AIAA 18th Fluid Dynamics, Plasma Dynamics, and Lasers Conference, July 16-18, 1985, Cincinnati, Ohio. AIAA Paper No. 85-1698. (Subject Category 02 RTOP 505-31-03)
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#### Technical Talks

1221. Anders, J. B., Jr.: Low Reynolds Number Airfoils in a Turbulent Boundary Layer. Presented at the Office of Naval Research, NASA, et al., Conference on Low Reynolds Number Airfoil Aerodynamics, June 17-19, 1985, Notre Dame, Indiana. (Subject Category 34 RTOP 505-31-13)
1222. Anders, J. B., Jr.: Low Reynolds Number LEBU Performance. Presented at the Air Force, NASA, Navy Drag Reduction and Boundary Layer Control Symposium, October 22-25, 1985, Washington, DC. (Subject Category 34 RTOP 505-60-31)
1223. Antcliff, R. R.; and Jarrett, O., Jr.: CARS System for Simultaneous Measurement of Temperature and Nitrogen and Oxygen Densities. Presented at the Third Gordon Research Conference on the Physics and Chemistry of Laser Diagnostics in Combustion, July 15-19, 1985, New London, New Hampshire. (Subject Category 25 RTOP 505-43-83)

1224. Beach, H. L., Jr.; and Coltrin, R. E.: Propulsion Capabilities for a Future Hypersonics Research Program: NASA's Views. Presented at the 1985 SAE Aerospace Vehicle Requirements Conference, May 20-23, 1985, Washington, DC. (Subject Category 02 RTOP 505-43-83)
1225. Beckwith, I. E.; Creel, T. R., Jr.; and Morrisette, E. L.: Effects on Transition of Roughness Elements on Swept Cylinders and Wall Waviness on Cones in a Mach 3.5 Quiet Wind Tunnel. Presented at the Air Force, NASA, Navy Drag Reduction and Boundary Layer Control Symposium, October 22-25, 1985, Washington, DC. (Subject Category 34 RTOP 505-60-31)
1226. Beeler, G. B.; and Weinstein, L. M.: Holographic Velocimeter for Turbulent Flow Diagnostics. Presented at the Air Force, NASA, Navy Drag Reduction and Boundary Layer Control Symposium, October 22-25, 1985, Washington, DC. (Subject Category 34 RTOP 505-60-31)
1227. Bushnell, D. M.: Turbulent Drag Reduction in External Flows. Presented at the SAE Aerospace Technology Conference and Exposition, October 14-17, 1985, Long Beach, California. (Subject Category 34 RTOP 505-31-13)
1228. Gatski, T. B.: A Second-Order Closure Model for Flows With Strong Streamline Curvature. Presented at the Air Force, NASA, Navy Drag Reduction and Boundary Layer Control Symposium, October 22-25, 1985, Washington, DC. (Subject Category 34 RTOP 505-60-31)
1229. Gatski, T. B.: Surface Drag Calculations in Unsteady Flow Fields Using a Vorticity-Velocity Numerical Solution Algorithm. Presented at the Pennsylvania State University Computational Fluid Dynamics Seminar Series, October 7-9, 1985, University Park, Pennsylvania. (Subject Category 34 RTOP 505-31-13)
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1231. McGinley, C. B.: Direct Vorticity Control Downstream of Intersections. Presented at the Air Force, NASA, Navy Drag Reduction and Boundary Layer Control Symposium, October 22-25, 1985, Washington, DC. (Subject Category 34 RTOP 505-60-31)
1232. Pellett, G. L.; and Adams, B. R.: Kinetics of Methylperoxy Radical Destruction by NO, Using DFMS. Presented at the National Bureau of Standards International Conference on Chemical Kinetics, June 17-19, 1985, Gaithersburg, Maryland. (Subject Category 25 RTOP 505-43-83)
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1234. Walsh, M. J.; and Anders, J. B., Jr.: Riblets Optimized for Flight Application. Presented at the Air Force, NASA, Navy Drag Reduction and Boundary Layer Control Symposium, October 22-25, 1985, Washington, DC. (Subject Category 34 RTOP 505-60-31)
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1236. Wilkinson, S. P.: Turbulent Flow Measurements Over a Flat Plate With Various Near-Wall Flow-Aligned Elements. Presented at the Air Force, NASA, Navy Drag Reduction and Boundary Layer Control Symposium, October 22-25, 1985, Washington, DC. (Subject Category 34 RTOP 505-60-31)
1237. Zang, T. A.; and Hussaini, M. Y.: Spectral Multigrid Methods for the Time-Dependent Navier-Stokes Equations. Presented at the USAF, Office of Scientific Research, et al., Second Copper Mountain Conference on Multigrid Methods, April 1-3, 1985, Copper Mountain, Colorado. (Subject Category 02 RTOP 505-31-03)

#### Computer Programs

1238. Darden, C. M. (Langley Research Center); and Ting, L. (New York University): MMOC--Modified Method of Characteristics Sonic Boom Extrapolation. Program No. LAR-13473.
1239. Dillenius, M. F. E. (Nielsen Engineering and Research, Inc.): LRCDM2--Improved Aerodynamic Prediction Program for Supersonic Canard-Tail Missiles With Axisymmetric Bodies. Program No. LAR-13527.
1240. Kumar, A.: NASCRIN--Numerical Analysis of Scramjet Inlet (Scalar Version, FORTRAN). Program No. LAR-13559.
1241. Shankar, V.; and Szema, K. Y. (Rockwell International Corporation): Nonlinear Supersonic Full Potential Analysis Program. Program No. LAR-13413.

#### Tech Briefs

1242. Adams, B. R. (Kentron International, Inc.): Low Cost Hardware/Software Expansion of Tektronix 4010-1 Display Terminal and CPU. NASA Tech Brief LAR-13350.
1243. Carlson, H. W.; and Walkley, K. B. (Kentron International, Inc.): WINGDES--Design of Wing Surfaces at Subsonic or Supersonic Speeds. NASA Tech Brief LAR-13315.
1244. Clever, W. C. (Rockwell International Corporation): Second Order Potential Analysis and Optimization. NASA Tech Brief LAR-13314.

- 1245. Mendenhall, M. R.; and Perkins, S. C., Jr. (Nielsen Engineering and Research, Inc.): Prediction of Vortex Shedding From Circular and Noncircular Bodies in Supersonic Flow. NASA Tech Brief LAR-13375.
- 1246. Shankar, V.; and Szema, K. Y. (Rockwell International Corporation): Nonlinear Supersonic Full Potential Analysis. NASA Tech Brief LAR-13413.
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- 1248. Weinstein, L. M.: Ice Detector. NASA Tech Brief LAR-13403.

#### Patents

- 1249. Weinstein, L. M.: Continuous Laminar Smoke Generator. U.S. Patent 4,493,211. Issued January 15, 1985.  
(Subject Category 09)

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR SPACE

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

1250. Nunamaker, R. R.: Orbit-on-Demand--Prospects and Opportunities. Presented at the SAE Aerospace Technology Conference and Exposition, October 14-17, 1985, Long Beach, California.  
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Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

PUBLICATIONS FOR SPACE STATION OFFICE

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

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No technical talks.

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No computer programs.

#### Tech Briefs

No tech briefs.

#### Patents

No patents.

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#### Meeting Presentations

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#### Computer Programs

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#### Tech Briefs

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#### Patents

No patents.

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1418. Crisp, V. K.; Rehder, J. J.; and Schwing, J. L.: Intersection of Three-Dimensional Geometric Surfaces. NASA TP-2454, July 1985, 31 p.  
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Formal Reports

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Quick-Release Technical Memorandums

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Contractor Reports

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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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#### Patents

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No computer programs.

#### Tech Briefs

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#### Patents

No patents.

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.

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- 1775. Zumbrun, H. N.; and Croom, D. R., Jr.: Extended Nozzle for Safety Air Gun. NASA Tech Brief LAR-13366.

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1804. Pride, J. D., Jr.: Preflight Hardware Tests-Development, Flight Acceptance and Qualification. Presented at the NASA Government/Industry Controlled Impact Demonstration (CID) Workshop, April 10, 1985, Hampton, Virginia. (Subject Category 08 RTOP 505-33-53)

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1806. Eichelberger, C. P.; and Alfaro-Bou, E. (Langley Research Center); and Fasanella, E. L. (Kentron International, Inc.): Energy Absorbing Passenger Seat for Transport Aircraft. NASA Tech Brief LAR-13385.
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#### Patents

No patents.

PUBLICATIONS FOR FACILITIES ENGINEERING 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

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Technical Talks

No technical talks.

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

1812. Poupard, C. A.: Portable Test and Monitoring System. NASA Tech Brief  
LAR-13405.

Patents

No patents.

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR MANAGEMENT OPERATIONS

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

1813. Research Information and Applications Division (Compiler): Scientific and Technical Information Output of the Langley Research Center for Calendar Year 1984. NASA TM-86336, January 1985, 246 p.  
(Avail: NTIS Subject Category 82)

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

1814. Glassman, M.; and Pinelli, T. E.: Scientific Inquiry and Technical Communication: An Introduction to the Research Process. Technical Communication, Volume 32, Number 4, 1985, pp. 8-13.  
(Subject Category 82)

Meeting Presentations

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1816. Pinelli, T. E.; Cordle, V. M.; and McCullough, R.: Typography and Layout of Technical Reports--Survey of Current Practices. Presented at the Society for Technical Communications 32nd International Technical Communication Conference (ITCC), May 19-22, 1985, Houston, Texas. In Proceedings, p. 115-118.  
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(Subject Category 82)

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.

PUBLICATIONS FOR AEROSTRUCTURES DIRECTORATE, USAARTA (AVSCOM)

Formal Reports

1818. Bowman, L. M.: Effect of Measured Material Properties on the Finite Element Analysis of an OH-58 Composite Tail Boom. NASA TM-86430, AVSCOM TR 85-B-5, October 1985, 25 p.  
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Quick-Release Technical Memorandums

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(Avail: NTIS                      Subject Category 39                      RTOP 505-42-39)

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

1820. Smith, R. P.; Leonard, W. A.; and Kelley, H. L.: Limited Flight Investigation of Strakes Mounted on a Helicopter Tail Boom. Presented at the ARO/AHS International Conference on Rotorcraft Basic Research, February 19-21, Research Triangle Park, North Carolina. In Proceedings. (Subject Category 02                      RTOP 505-42-23)

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.



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 Kinkead Hall  
Lexington, KY 40506-0057  
(606) 257-6322

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