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Produced by the NASA Center for Aerospace Information (CASI)
Scientific and Technical Information
Output of the Langley Research Center
for Calendar Year 1984

JANUARY 1985
NASA Technical Memorandum 86336

Scientific and Technical Information
Output of the Langley Research Center for Calendar Year 1984

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

This report contains a listing of Langley Research Center's scientific and technical research output for calendar year 1984.

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 1984, Langley's contributions to NASA and non-NASA literature included 150 NASA Formal Reports, 144 Quick-Release Technical Memorandums, 277 Contractor Reports, 241 Journal Articles and Other Publications, 497 Meeting Presentations, 168 Technical Talks, 30 Computer Programs, 120 Tech Briefs, and 26 Patents. In addition, during the year 18 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
### CONFERENCES SPONSORED OR COSPONSORED BY LANGLEY AND HELD LOCALLY IN 1984

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<th>Title of conference</th>
<th>Date</th>
<th>Langley contacts</th>
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<th>Attendees</th>
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<td>1. Workshop on Technology Needs for Filament Wound Composite Structures</td>
<td>Mar. 6-8</td>
<td>B. A. Stein</td>
<td>1</td>
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<td>17</td>
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<td>2. Opportunity Through Technology Workshop</td>
<td>Mar. 27</td>
<td>J. Samos and L. J. Rose</td>
<td>2</td>
<td>22</td>
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<td>3. NASA 5th NTA Region II Technical Student Symposium</td>
<td>Mar. 30-31</td>
<td>C. M. Darden G. A. Haynes</td>
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<td>4. A New Direction in Structural Analysis</td>
<td>Apr. 11-12</td>
<td>W. J. Stroud</td>
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<td>5. NASA Recent Experiences in Multi-Disciplinary Analysis and Optimization Symposium</td>
<td>Apr. 24-26</td>
<td>J. E. Gardner</td>
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<td>6. Integrated Digital/Electric Aircraft (IDEA) Systems Studies Contracts Final Oral Reviews</td>
<td>May 1-2</td>
<td>C. R. Spitzer</td>
<td>2</td>
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<td>7. 107th Meeting of the Acoustical Society of America</td>
<td>May 6-10</td>
<td>H. H. Hubbard</td>
<td>9</td>
<td>40</td>
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<td>8. Workshop on Wind Shear/Turbulence Inputs to Flight Simulation and Systems Certification</td>
<td>May 30-June 1</td>
<td>R. L. Bowles</td>
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<td>9. High Temperature Polymers Conference</td>
<td>June 19-21</td>
<td>T. L. St. Clair</td>
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<td>10. Joint NASA/AIAA Meeting on General Aviation Technology</td>
<td>July 10-12</td>
<td>L. J. Williams</td>
<td>8</td>
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<td>11. Space Station Software Development Environment Workshop</td>
<td>Aug. 20-21</td>
<td>S. J. Voigt</td>
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<td>12. Computational Structural Mechanics Workshop</td>
<td>Sept. 5-7</td>
<td>W. J. Stroud</td>
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<td>13. Workshop on Theoretical Approaches to Turbulence</td>
<td>Oct. 10-12</td>
<td>D. L. Dwoyer</td>
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<td>34</td>
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<tr>
<td>16. SAE/NASA 2nd Aircraft Interior Noise Meeting</td>
<td>Oct. 18-19</td>
<td>J. S. Mixson</td>
<td>2</td>
<td>17</td>
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<td>68</td>
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<tr>
<td>17. Second Symposium on Welding, Bonding, and Fastening</td>
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<td>J. D. Buckley B. A. Stein</td>
<td>16</td>
<td>41</td>
<td>24</td>
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<tr>
<td>18. Large Space Antenna Systems Technology-1984 Conference</td>
<td>Dec. 4-6</td>
<td>C. A. Lightner</td>
<td>20</td>
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**Total** .......................................................... 97       534       835     2314
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 1984 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, 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 1984.

The NASA Tech Briefs cited have either been published or submitted in 1984 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).

1Those submitted in 1983 (and therefore listed in the 1983 issue of this document) but published in 1984 have not been listed.
Publication of some journal articles was not known at press time for the 1983 issue of this document. These articles are therefore listed in the 1984 issue.
## AVAILABILITY

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<th>Category</th>
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<td>Formal Reports</td>
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| Quick-Release Technical Memorandums | 5285 Port Royal Road  
Springfield, VA 22161                                               |
| Contractor Reports               | 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 (COSTIC)           |
|                                  | 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  
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Hampton, Virginia  
CALENDAR YEAR 1984  

PUBLICATIONS FOR OFFICE OF THE DIRECTOR  

Formal Reports  

No formal reports.  

Quick-Release Technical Memorandums  

(Avail: NTIS Subject Category 99)  

(Avail: NTIS Subject Category 99)  

Contractor Reports  

(Avail: NTIS Subject Category 61 RTOP 505-31-83)  

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<td>The Exponential Accuracy of Fourier and Tchebyshev Differencing Methods.</td>
<td>Tadmor, E.</td>
<td>(NAS1-17070 Institute for Computer Applications in Science and Engineering.)</td>
<td>August 1984</td>
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<td>The Well-Posedness of the Kuramoto-Sivashinsky Equation.</td>
<td>Tadmor, E.</td>
<td>(NAS1-17070 Institute for Computer Applications in Science and Engineering.)</td>
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<td>Stability of Finite Difference Models Containing Two Boundaries or Interfaces.</td>
<td>Trefethen, L. N.</td>
<td>(NAS1-17070 Institute for Computer Applications in Science and Engineering.)</td>
<td>March 1984</td>
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<td>Fast Solutions to the Steady State Compressible and Incompressible Fluid Dynamic Equations.</td>
<td>Turkel, E.</td>
<td>(NAS1-17070 and NAS1-17130 Institute for Computer Applications in Science and Engineering.)</td>
<td>June 1984</td>
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<td>Acceleration to a Steady State for the Euler Equation.</td>
<td>Turkel, E.</td>
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<td>A New Minmax Problem.</td>
<td>Vardi, A.</td>
<td>(NAS1-15810 Institute for Computer Applications in Science and Engineering.)</td>
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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 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

(Subject Category 02 RTOP 505-43-43)

Technical Talks

(Subject Category 24 RTOP 534-06-13)

Computer Programs
No computer programs.

Tech Briefs
No tech briefs.

Patents
No patents.
FORMAL REPORTS


QUICK-RELEASE TECHNICAL MEMORANDUMS


   (Avail: NTIS Subject Category 01 RTOP 505-43-43)

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Contractor Reports

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Journal Articles and Other Publications

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Meeting Presentations


Technical Talks


Computer Programs


Tech Briefs


Patents

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

106. Harris, J. E.: Space Technology Experiments Platform (STEP), an In-Space Test Facility. Presented at the NASA Large Space Antenna Systems Technology-1984 Conference, December 4-6, 1984, Hampton, Virginia. NASA CP pending. (Subject Category 15 RTOP 542-03-44)

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.
PUBLICATIONS FOR LONG DURATION EXPOSURE FACILITY PROJECT OFFICE

Formal Reports

(Avail: NTIS Subject Category 15             RTOP 542-04-13)

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


Quick-Release Technical Memorandums


Contractor Reports


Journal Articles and Other Publications


Meeting Presentations


Technical Talks

No technical talks.
Computer Programs

No computer programs.

Tech Briefs


Patents

(Subject Category 37)
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

   (Avail: NTIS Subject Category 05 RTOP 505-35-33)

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Contractor Reports

   (Avail: NTIS Subject Category 64 RTOP 505-31-83)

   (Avail: STIF Subject Category 09 RTOP 999-16-04)


Journal Articles and Other Publications


Meeting Presentations


153. Smith, R. E., Jr.; Kudlinski, R. A.; and Everett, E. A.; Algebraic Grid Generation for Wing-Fuselage Bodies. Presented at the AIAA 22nd Aerospace Sciences Meeting, January 9-12, 1984, Reno, Nevada. AIAA Paper No. 84-0002. (Subject Category 59 RTOP 505-31-83)

(Subject Category 61 RTOP 505-45-33)

Technical Talks

(Subject Category 59 RTOP 505-31-83)

Computer Programs

(Subject Category 61)

Tech Briefs


Patents

No patents.
PUBLICATIONS FOR INSTRUMENT RESEARCH DIVISION

Formal Reports

   (Avail: NTIS Subject Category 35 RTOP 505-33-53)

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   (Avail: NTIS Subject Category 24 RTOP 505-33-90)

   (Avail: NTIS Subject Category 24 RTOP 505-33-90)
Contractor Reports


Journal Articles and Other Publications


Meeting Presentations


213. Zuckerwar, A. J.; and Meredith, R. W.: Low-Frequency Sound Absorption in Air. Presented at the 107th Meeting of the Acoustical Society of America, May 7-10, 1984, Norfolk, Virginia. Published in the Journal of the Acoustical Society of America, Supplement 1, Volume 75, Spring 1984, p. 34. (Subject Category 71 RTOP 505-31-33)

Technical Talks


222. Heyman, J. S.: Characterization Problems in Laminated and Fiber-Wound Composite Structures. Presented at the University of Houston, Southwest Mechanics Lecture Series - Spring 1984, April 5, 1984, Houston, Texas. (Subject Category 71 RTOP 505-33-23)


224. Tcheng, P.: Development of a Servo Transducer at LaRC for Direct Skin Friction Measurement. Presented at the 61st Semiannual Meeting of the Supersonic Tunnel Association (STA), March 12-14, 1984, Cleveland, Ohio. (Subject Category 35 RTOP 505-31-53)


Computer Programs

No computer programs.

Tech Briefs


Patents


Formal Reports


(Avail: NTIS Subject Category 39 RTOP 505-34-03)

(Avail: NTIS Subject Category 18 RTOP 506-57-13)

Quick-Release Technical Memorandums

(Avail: NTIS Subject Category 08 RTOP 505-34-03)

(Avail: NTIS Subject Category 62 RTOP 505-37-03)

(Avail: NTIS Subject Category 18 RTOP 505-34-03)

(Avail: NTIS Subject Category 39 RTOP 506-57-13)

(Avail: NTIS Subject Category 08 RTOP 505-34-03)

(Avail: STIF Subject Category 08 RTOP 505-34-03)

(Avail: NTIS Subject Category 02 RTOP 505-34-03)

Contractor Reports

(Avail: STIF Subject Category 08 RTOP 505-34-03)
Journal Articles and Other Publications


Meeting Presentations


Technical Talks


Computer Programs

320. Jones, R. L.: IMAGES—Interactive Modal Analysis and Gain Estimation System. Program No. LAR-13334. (Subject Category 08)

Tech Briefs


Patents

No patents.
PUBLICATIONS FOR FLIGHT ELECTRONICS DIVISION

Formal Reports

(Avail: NTIS Subject Category 32 RTOP 506-58-23)

(Avail: NTIS Subject Category 43 RTOP 506-58-23)

(Avail: NTIS Subject Category 33 RTOP 506-54-23)

(Avail: NTIS Subject Category 46 RTOP 176-20-07)

(Avail: NTIS Subject Category 47 RTOP 505-45-63)

(Avail: NTIS Subject Category 47 RTOP 505-45-63)

(Avail: NTIS Subject Category 48 RTOP 146-40-05)

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354. Schryer, D. R.; Rogowski, R. S.; and Cofer, W. R., III: The Reaction of 
Nitrogen Oxides With SO2 in Aqueous Aerosols. *Atmospheric Sciences*,  
(Subject Category 25 RTOP 146-20-10)

Catalysis in the Aqueous Oxidation of SO2 by NO2 and Air. *Atmospheric 
(Subject Category 25 RTOP 176-20-09)

Meeting Presentations

356. Aanstoos, J. V.; Ruedger, W. H.; Meredith, B. D.; and Beatty, M. E., III: 
Algorithms for the Simulation of Geometric Distortion in a Satellite 
Imaging System. Presented at the IEEE 1984 International Conference on 
Acoustics, Speech, and Signal Processing, March 12-21, 1984, San Diego, 
(Subject Category 61 RTOP 506-58-13)

Systems and Technology. Presented at the Army Research Office/NASA 1st 
Annual Conference on Tunable Solid State Lasers, June 13-15, 1984, La Jolla, 
California. Proceedings pending. 
(Subject Category 76 RTOP 506-54-23)

358. Bailey, M. C.; and Jamnejad-Dailami, V.: Feed System Design Considerations 
for Single and Multiple Aperture Large Space Antenna Systems. Presented 
at the NASA Large Space Antenna Systems Technology-1984 Conference, 
December 4-6, 1984, Hampton, Virginia. NASA CP pending. 
(Subject Category 32 RTOP 506-58-23)

and Upgrade. Presented at the 1984 IEEE International Geoscience and 
Remote Sensing Symposium (IGARSS '84), August 27-30, 1984, Strasbourg, 
(Subject Category 48 RTOP 146-40-05)

360. Byvik, C. E.; and Buoncristiani, A. M.: Low Temperature Fluorescence 
Spectrum of Titanium Doped Sapphire. Presented at the 1984 Meeting of the 
Southeastern Section of the American Physical Society, October 25-27, 
1984, Memphis, Tennessee. Abstract published in APS Bulletin, Volume 29, 
No. 9, 1984, p. 1496. 
(Subject Category 36 RTOP 506-54-23)


Technical Talks


Computer Programs

No computer programs.

Tech Briefs


388. Hearn, C. P.; and Bradshaw, E. S.: Demodulator for AM and SSB-SC Signals. NASA Tech Brief LAR-12716.


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(Subject Category 06)
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(Avail: IAC Subject Category 62 RTOP 505-34-13)

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Journal Articles and Other Publications


441. Spitzer, C. R.: Digital Avionics - The Best is Yet to Come! IEEE Transactions on Aerospace and Electronic Systems, Volume AES 20, No. 4, July 1984, p. 486-492. (Subject Category 33 RTOP 505-45-73)
Meeting Presentations


450. Frost, W.; and Bowles, R. L.: Incorporation of Wind Shear Terms Into the Governing Equations of Aircraft Motion. Presented at the AIAA 22nd Aerospace Sciences Meeting, January 9-12, 1984, Reno, Nevada. AIAA Paper No. 84-0275. (Subject Category 05 RTOP 505-35-33)


462. Miller, R. M.; Schlam, E.; Robertson, J. B.; and Hatfield, J. J.: Recent Advances in Electroluminescent Displays Applicable to Future Crew-Station Interfaces. Presented at the AIAA/IEEE 6th Digital Avionics Systems Conference, December 3-6, 1984, Baltimore, Maryland. AIAA Paper No. 84-2663-CP. (Subject Category 06 RTOP 505-34-13)


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   (Subject Category 05 RTOP 505-45-14)
Computer Programs

595. Erickson, W. J.; and Gray, F. P. (Boeing Commercial Airplane Company); and Von Limbach, G. (Boeing Computer Services Company): RIM-5 Relational Information Management System (IBM VM/CMS Version). Program No. LAR-13282. (Subject Category 62)

596. Erickson, W. J.; and Gray, F. P. (Boeing Commercial Airplane Company); and Von Limbach, G. (Boeing Computer Services Company): RIM-5 Relational Information Management System (UNIVAC 1100 Version). Program No. LAR-13283. (Subject Category 62)

597. Erickson, W. J.; and Gray, F. P. (Boeing Commercial Airplane Company); and Von Limbach, G. (Boeing Computer Services Company): RIM-5 Relational Information Management System (CDC CYBER NOS/BE Version). Program No. LAR-13284. (Subject Category 62)

598. Erickson, W. J.; and Gray, F. P. (Boeing Commercial Airplane Company); and Von Limbach, G. (Boeing Computer Services Company): RIM-5 Relational Information Management System (Harris 800 Version). Program No. LAR-13296. (Subject Category 62)

599. Fulton, R. E.; and Storaasli, O. O. (Langley Research Center); and Blackburn, C. L.; Sutter, T. R.; and Fishwick, P. A. (Kentron International, Inc.): Prototype Integrated Design (PRIDE) System. Program No. LAR-13308. (Subject Category 62)

600. McGehee, J. R.: Active Gear Flexible Aircraft Takeoff and Landing Analysis (AGFATL) Digital Computer Program. Program No. LAR-13390. (Subject Category 05)

Tech Briefs


Patents

PUBLICATIONS FOR LOADS AND AEROELASTICITY DIVISION

Formal Reports


615. Cunningham, H. J.; and Desmarais, R. N.: Generalization of the Subsonic Kernel Function in the s-Plane, With Applications to Flutter Analysis. NASA TP-2292, March 1984, 37 p. (Avail: NTIS Subject Category 02 RTOP 505-33-43)


<table>
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<td>626</td>
<td>Hanson, P. W.</td>
<td>An Aeroelastician's Perspective of Wind Tunnel and Flight Experiences With Active Control of Structural Response and Stability.</td>
<td>NASA TM-85761, April 1984</td>
<td>77</td>
<td>39</td>
<td>505-33-43</td>
</tr>
</tbody>
</table>


Contractor Reports


Journal Articles and Other Publications


647. Ekstrom, C. V.; and Spain, C. V.: Experiences in the Use of Composite Material for a Wing Skin. Journal of Aircraft, Volume 20, November 1983, p. 913-919. (Subject Category 05 RTOP 505-33-53)


(Subject Category 18 RTOP 506-53-33)

(Subject Category 39 RTOP 505-33-53)

Meeting Presentations

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(Subject Category 02 RTOP 505-33-43)

(Subject Category 02 RTOP 505-33-43)

(Subject Category 02 RTOP 505-33-43)


Technical Talks

679. Bennett, R. M.: Recent Developments in Unsteady Transonic Computational Aerodynamics. Presented at the Flight Dynamics Laboratory Aeroservoelasticity Technical Specialists Meeting, October 2-3, 1984, Wright-Patterson AFB, Ohio. (Subject Category 02 RTOP 505-33-53)

680. Cazier, F. W., Jr.: Understanding Flutter - Its Causes and Cures. Presented at the 32nd Experimental Aircraft Association Convention, July 26 - August 1, 1984, Oshkosh, Wisconsin. (Subject Category 05 RTOP 505-33-43)


683. Edwards, J. W.: Experience With Transonic Unsteady Aerodynamic Calculations. Presented at the Flight Dynamics Laboratory Aeroservoelasticity Specialists Meeting, October 2-3, 1984, Wright-Patterson AFB, Ohio. (Subject Category 02 RTOP 505-33-43)


691. Wiesemann, C. D.: Methodology Using Optimization and Eigenvalue Sensitivities to Stabilize an Unstable System. Presented at the Flight Dynamics Laboratory Aeroservoelasticity Technical Specialists Meeting, October 2-3, 1984, Wright-Patterson AFB, Ohio. (Subject Category 39 RTOP 505-33-43)
(Subject Category 02   RTOP 505-33-43)

Computer Programs

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704. Rogers, J. L., Jr.: PROSSS-2: Programming System for Structural Synthesis. Program No. LAR-13408. (Subject Category 61)

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(Avail: NTIS Subject Category 39 RTOP 505-33-33)

(Avail: NTIS Subject Category 27 RTOP 534-03-13)


Journal Articles and Other Publications


*Army Structures Laboratory (AVSCOM)


780. Elber, W.: The Significance of Fatigue Crack Closure. *Current Contents--Citation Classics Section, Volume 14, No. 50, December 1983, p. 22. (Subject Category 39 RTOP 506-53-23)


Meeting Presentations


*Army Structures Laboratory (AVSCOM)*


822. Hergenrother, P. M.: Solvent Resistant Thermoplastics. Presented at the 18th Middle Atlantic Regional Meeting of the American Chemical Society, May 23, 1984, Newark, New Jersey. In Proceedings, Abstract No. 365, p. 143. (Subject Category 27 RTOP 505-33-33)


835. Newman, J. C., Jr.; and Raju, I. S.: Prediction of Fatigue Crack-Growth Patterns and Lives in Three-Dimensional Cracked Bodies. Presented at the ICF Sixth International Conference on Fracture, December 4-10, 1984, New Delhi, India. Published in Advances in Fracture Research, Volume 3, December 1984. (Subject Category 39 RTOP 505-33-23)


*Army Structures Laboratory (AVSCOM)


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   (Subject Category 24 RTOP 506-53-23)

   (Subject Category 39 RTOP 534-06-34)

   (Subject Category 24 RTOP 506-53-23)
871. *Everett, R. A., Jr.: Failure Modes of Realistic Bonded Metal to Composite Joints. Presented at the VPI&SU Center for Adhesion Science Program Review/Workshop, April 29 - May 2, 1984, Blacksburg, Virginia. (Subject Category 27 RTOP 505-33-33)


875. Hergenrother, P. M.: Status of High Temperature Adhesives. Presented at the State University of New York Short Course on Fundamentals of Adhesion, October 10-12, 1984, New Paltz, New York. (Subject Category 27 RTOP 505-33-33)

876. Hergenrother, P. M.: High Temperature Adhesives. Presented at the Plastics Institute of America Short Course on Advances in Adhesion Science and Adhesives, September 24-26, 1984, Boston, Massachusetts. (Subject Category 27 RTOP 505-33-33)

877. Hergenrother, P. M.: Status of High Temperature Polymers. Presented at the Macromolecular Research Center of the University of Michigan Seventh Annual Symposium Current Contributions in Polymer Science, October 18-19, 1984, Ann Arbor, Michigan. (Subject Category 27 RTOP 505-33-33)


879. Hinkley, J. A.: Thermoplastic Composites Research at NASA Langley. Presented at the University of Dayton Research Institute, Second Workshop on Thermoplastic Matrix Composites, November 13-14, 1984, Ft. Worth, Texas. (Subject Category 24 RTOP 505-33-33)

*Army Structures Laboratory (AVSCOM)


884. Johnson, W. S.; Mall, S.; and Mangalgiri, P. D.: Comparison of DCB and CLS Specimen Behavior. Presented at the VPI & SU Center for Adhesion Science Program Review/Workshop, April 29 - May 2, 1984, Blacksburg, Virginia. (Subject Category 27 RTOP 505-33-33)


888. Lisagor, W. B.; and Lee, T. S., III: Perspective on the Use of ASTM Standards for Measurements of Environmental Effects on Fracture. Presented at the American Society for Metals '84 WESTEC Meeting, March 21, 1984, Los Angeles, California. (Subject Category 26 RTOP 505-33-13)

*Army Structures Laboratory (AVSCOM)
Electrons on Mechanical and Molecular Properties of a Polyetherimide.
Presented at the 1984 IEEE 21st Annual Conference on Nuclear and Space
(Subject Category 24 RTOP 506-53-23)

Presented at the SESA Spring Meeting of the Society of Experimental Stress
Analysis, June 11-12, 1984, Montreal, Canada.
(Subject Category 39 RTOP 505-33-23)

891. Ohlhorst, C. W.; Rummler, D. R.; and Ransone, P. O.: The Effect of Thermal
Cycling on Carbon-Carbon Composites. Presented at the Inter-Agency
Planning Group Meeting on Protection of Carbon-Carbon Composites Against
(Subject Category 27 RTOP 506-53-23)

892. Poe, C. C., Jr.; Illg, W.; and Garber, D. P.: Residual Strength of Thick
Filament-Wound Rocket Motor Case After Low-Velocity Impacts. Presented at
the Air Force Mechanics of Composites Review, October 14-17, 1984, Dayton,
Ohio.
(Subject Category 24 RTOP 506-53-23)

893. Rummler, D. R.; Ransone, P. O.; and Ohlhorst, C. W.: Thermomechanical
Properties of ACC - Effects of Processing, Exposure, and Architecture.
Presented at the Specialists' Meeting of the Inter-Agency Planning Group
on Carbon-Carbon Composites for Gas Turbine Engines, March 1, 1984,
Arlington, Virginia.
(Subject Category 27 RTOP 506-53-33)

894. Rummler, D. R.; Ransone, P. O.; and Ohlhorst, C. W.: Carbon-Carbon
Research. Presented at the Carbon-Carbon Composites Workshop on Research
Priorities, May 24-25, 1984, Santa Barbara, California.
(Subject Category 27 RTOP 506-53-33)

895. Sarkar, B.; Brewer, W. D.; and Lisagor, W. B.: Effects of Fabrication
Techniques on Microstructure and Tensile Properties of 2124 FM Aluminum
Alloy. Presented at the 1984 TMS/AIME 113th Annual Meeting, February 26 -
March 1, 1984, Los Angeles, California.
(Subject Category 26 RTOP 505-33-13)

896. St. Clair, A. K.: Aerospace Applications for High-Temperature Polymers and
Related Spinoffs. Presented at The Materials Research Lab./State
University of New York, 1984 Summer Polymer Conference Series, June 11-15,
(Subject Category 27 RTOP 505-33-33)

897. St. Clair, T. L.: Thermosetting Polyimides. Presented at the Japan
Thermosetting Plastics Industry Association, Special Program on Thermally
Stable Polymers, November 6-7, 1984, Osaka, Japan.
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<td>898.</td>
<td>St. Clair, T. L.</td>
<td>Thermoplastic Polyimides.</td>
<td>Presented at the Society of Polymer Science, Japan, Symposium on Thermally Stable Polymers for Aircraft and Spacecraft Use, November 12, 1984, Tokyo, Japan. (Subject Category 27 RTOP 505-33-33)</td>
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<td>900.</td>
<td>St. Clair, T. L.</td>
<td>Adhesive Development at NASA Langley.</td>
<td>Presented at the VPI&amp;SU Center for Adhesion Science Program Review/Workshop, April 29 - May 2, 1984, Blacksburg, Virginia. (Subject Category 27 RTOP 505-33-33)</td>
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<td>901.</td>
<td>Stein, B. A.</td>
<td>Rapid Adhesive Bonding for Field Repair of Metals and Composites.</td>
<td>Presented at the Materials and Flight Dynamics Laboratories of the Wright Aeronautical Laboratories, Air Force Composites Repair Technology Conference, October 30 - November 1, 1984, Dayton, Ohio. (Subject Category 27 RTOP 505-33-33)</td>
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<td>Tenney, D. R.; and Dexter, H. B.</td>
<td>Advances in Composites Technology.</td>
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<td>Prediction of Compression Failure.</td>
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<td>Operation of the HP2250 With the HP9836A Using PASCAL 2.1.</td>
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908. Wiedemann, K. E.; and Unnam, J. (Analytical Services & Materials, Inc.): TIBAC - Transformation of an Intensity Band for the Analysis of Composition. Program No. LAR-13356. (Subject Category 76)

909. Wiedemann, K. E.; and Unnam, J. (Vigyan Research Associates, Inc.); and Naidu, S. V. N.; and Houska, C. R. (Virginia Polytechnic Institute and State University): SOPAD - Separation of Overlapping Peaks and Analysis of Derivatives. Program No. LAR-13276. (Subject Category 61)

Tech Briefs


*Army Structures Laboratory (AVSCOM)


929. Young, P. R.; and *Gleason, J. R. (Langley Research Center); and Chang, A. C. (Kentron International, Inc.): Prepreg Cure Monitoring Using In Situ Diffuse Reflectance-FTIR. NASA Tech Brief LAR-13335.

Patents


*Army Structures Laboratory (AVSCOM)

PUBLICATIONS FOR ACOUSTICS AND NOISE REDUCTION DIVISION

Formal Reports

(Avail: STIF  Subject Category 71  RTOP 532-06-13)

(Avail: NTIS  Subject Category 71  RTOP 535-03-12)

(Avail: NTIS  Subject Category 71  RTOP 535-03-12)

(Avail: NTIS  Subject Category 71  RTOP 505-31-33)

(Avail: NTIS  Subject Category 54  RTOP 505-09-23)

(Avail: NTIS  Subject Category 53  RTOP 505-35-13)

(Avail: NTIS  Subject Category 53  RTOP 532-06-13)

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(Avail: NTIS  Subject Category 71  RTOP 505-31-33)

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Quick-Release Technical Memorandums


Contractor Reports


*Army Structures Laboratory (AVSCOM)


   (Avail: NTIS Subject Category 71 RTOP 505-09-23)

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   (Avail: NTIS Subject Category 71 RTOP 776-33-41)

   (Avail: NTIS Subject Category 71 RTOP 505-33-53)

   (Avail: NTIS Subject Category 71 RTOP 535-03-12)

   (Avail: NTIS Subject Category 71 RTOP 505-31-33)

Journal Articles and Other Publications

   (Subject Category 71 RTOP 505-31-33)

   (Subject Category 71 RTOP 505-42-23)

   (Subject Category 71 RTOP 505-42-23)
977. Farassat, F.: Solution of the Wave Equation for Open Surfaces Involving a Line Integral Over the Edge. Journal of Spacecraft and Rockets, Volume 95, No. 1, July 8, 1984, p. 136-141. (Subject Category 71 RTOP 332-06-13)


982. Fuller, C. R.; and Silcox, R. J.: Experiments on Sound Radiation From a Duct With a Circumferentially Varying Liner. AIAA Journal, Volume 22, June 1984, p. 781-785. (Subject Category 71 RTOP 505-31-33)


   (Subject Category 71 RTOP 505-31-33)

   (Subject Category 71 RTOP 505-31-33)

   (Subject Category 71 RTOP 532-06-13)

   (Subject Category 71 RTOP 505-33-53)

   (Subject Category 71 RTOP 505-32-03)

   (Subject Category 71 RTOP 505-31-33)

   (Subject Category 71 RTOP 505-31-33)

   (Subject Category 71 RTOP 505-31-33)

Meeting Presentations

   (Subject Category 71 RTOP 505-33-53)

*Army Structures Laboratory (AVSCOM)*
996. Block, P. J. W.: The Effects of Installation on Single- and Counter- 
Rotation Propeller Noise. Presented at the AIAA/NASA 9th Aeroacoustics 
Conference, October 15-17, 1984, Williamsburg, Virginia. 
AIAA Paper No. 84-2263. 
(Subj ect Category 71 RTOP 535-03-12)

Flow Visualization Investigation. Presented at the AIAA/NASA 9th 
Aeroacoustics Conference, October 15-17, 1984, Williamsburg, Virginia. 
AIAA Paper No. 84-2307. 
(Subj ect Category 71 RTOP 505-42-23)

Presented at the AIAA/NASA 9th Aeroacoustics Conference, October 15-17, 
(Subj ect Category 71 RTOP 532-06-13)

999. Brooks, T. F.; Marcolini, M. A.; and Pope, D. S.: Airfoil Trailing Edge 
Flow Measurements and Comparison With Theory Incorporating Open Wind 
Tunnel Corrections. Presented at the AIAA/NASA 9th Aeroacoustics 
Conference, October 15-17, 1984, Williamsburg, Virginia. 
AIAA Paper No. 84-2266. 
(Subj ect Category 71 RTOP 532-06-13)

1000. Eversman, W.; Parrett, A. V.; Preisser, J. S.; and Silcox, R. J.: 
Contributions to the Finite Element Solution of the Fan Noise Radiation 
Problem. Presented at the 1984 ASME Winter Annual Meeting, December 9-14, 
1984, New Orleans, Louisiana. 
(Subj ect Category 71 RTOP 535-33-90)

1001. Farassat, F.: The Unified Acoustic and Aerodynamic Prediction Theory of 
Advanced Propellers in the Time Domain. Presented at the AIAA/NASA 9th 
Aeroacoustics Conference, October 15-17, 1984, Williamsburg, Virginia. 
AIAA Paper No. 84-2303. 
(Subj ect Category 71 RTOP 532-06-13)

1002. Farassat, F.: Theoretical Analysis of Linearized Acoustics and Aerodynamics 
of Advanced Supersonic Propellers. Presented at the AGARD Fluid Dynamics 
Panel Symposium on Aerodynamics and Acoustics of Propellers, October 1-4, 
1984, Toronto, Canada. 
(Subj ect Category 71 RTOP 535-03-12)

1003. Grandle, R. E.: Aircraft Noise Synthesis System: Computer Algorithms and 
Methods. Presented at the 107th Meeting of the Acoustical Society of 
America, May 7-10, 1984, Norfolk, Virginia. Published in the Journal of 
the Acoustical Society of America, Supplement 1, Volume 75, Spring 1984, 
p. 80. 
(Subj ect Category 45 RTOP 535-03-12)

1004. Grosveld, F. W.; and Mixson, J. S.: Noise Transmission Through an 
Acoustically Treated and Structurally Stiffened Aircraft Sidewall. 
Presented at the AIAA/NASA 9th Aeroacoustics Conference, October 15-17, 
(Subj ect Category 71 RTOP 505-33-53)


1012. McAninch, G. L.; and Rawls, J. W., Jr.: Effects of Boundary Layer Refraction and Fuselage Scattering on Fuselage Surface Noise From Advanced Turboprop Propellers. Presented at the AIAA 22nd Aerospace Sciences Meeting, January 9-12, 1984, Reno, Nevada. AIAA Paper No. 84-0249. (Subject Category 71 RTOP 535-03-12)


1020. Preisser, J. S.; Silcox, R. J.; Eversman, W.; and Parrett, A. V.: A Flight Study of Tone Radiation Patterns Generated by Inlet Rods in a Small Turbofan Engine. Presented at the 22nd Aerospace Sciences Meeting, January 9-12, 1984, Reno, Nevada. AIAA Paper No. 84-0499. (Subject Category 71 RTOP 505-31-33)


Technical Talks

1030. Grosveld, F. W.; and Mixson, J. S.: Sound Transmission Through Honeycomb Stiffened Panels. Presented at the 107th Meeting of the Acoustical Society of America, May 7-10, 1984, Norfolk, Virginia. (Subject Category 71 RTOP 505-33-53)


Computer Programs

1039. Barker, L. M. (Systems Development Corporation); and Leatherwood, J. D. (Langley Research Center): Simplified NASA Ride Comfort Model Program (RIDEQUL). Program No. LAR-13289. (Subject Category 53)

Tech Briefs


Patents

No patents.
PUBLICATIONS FOR OFFICE OF DIRECTOR FOR AERONAUTICS

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

1045. Bower, R. E.: Recent Developments in Aeronautical Technology Applicable to Civil Air Transports. Presented at the 1984 ASCE International Air Transportation Conference, June 4-6, 1984, Los Angeles, California. (Subject Category 01 RTOP 023-10-01)


Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.
Formal Reports

   (Avail: STIF Subject Category 02 RTOP 505-43-90)

   (Avail: STIF Subject Category 02 RTOP 505-40-90)

1049. Capone, F. J.; and Mason, M. L.: Interference Effects of Thrust Reversing on Horizontal Tail Effectiveness of a Twin-Engine Fighter Aircraft at Mach Numbers From 0.15 to 0.90. NASA TP-2350, October 1984, 102 p.
   (Avail: STIF Subject Category 08 RTOP 505-43-97)

   (Avail: NTIS Subject Category 02 RTOP 505-45-43)

   (Avail: NTIS Subject Category 02 RTOP 505-43-93)

   (Avail: NTIS Subject Category 02 RTOP 505-31-23)

   (Avail: NTIS Subject Category 02 RTOP 505-31-23)

   (Avail: NTIS Subject Category 02 RTOP 505-43-23)

   (Avail: NTIS Subject Category 02 RTOP 505-31-53)


Quick-Release Technical Memorandums


Contractor Reports


1083. Goodyer, M. J.: Computation of Imaginary-Side Pressure Distributions Over the Flexible Walls of the Test Section Insert for the 0.3-M Transonic Cryogenic Tunnel. (NAS1-16000 Kentron International, Inc.; Subcontractor: The University of Southampton.) NASA CR-172363, June 1984, 15 p. (Avail: NTIS Subject Category 02 RTOP 505-31-53)


<table>
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<th>No.</th>
<th>Reference</th>
<th>Details</th>
</tr>
</thead>
</table>
Meeting Presentations


1115. Cline, M. C.; and Wilmoth, R. G.: Computation of the Space Shuttle Solid
Pocket Booster Nozzle Start-Up Transient Flow. Presented at the AIAA 22nd
AIAA Paper No. 84-0462.

System for a Cryogenic Wind Tunnel. Presented at the ASME/AIChe/IIR 5th
Intersociety Cryogenics Symposium, December 9-14, 1984, New Orleans,

1117. Gloss, B. B.: Initial Research Program for the National Transonic
Facility. Presented at the AIAA 13th Aerodynamics Testing Conference,
March 5-7, 1984, San Diego, California. AIAA Paper No. 84-0585-CP.

Assessment/Correction Procedure for Airfoil Tests in the Langley 0.3-m
Transonic Cryogenic Tunnel. Presented at the AIAA 2nd Applied
AIAA Paper No. 84-2151.

1119. Hall, R. M.: Pre-existing Seed Particles and the Onset of Condensation in
Cryogenic Wind Tunnels. Presented at the AIAA 22nd Aerospace Sciences

Investigation of the Aerodynamic Effects of Distributed Spanwise Blowing
on a Fighter Configuration. Presented at the AIAA 2nd Applied
AIAA Paper No. 84-2195.

in the Settling Chamber of the Langley 0.3-Meter Transonic Cryogenic Tunnel. Presented at the AIAA 13th Aerodynamics Testing Conference,
March 5-7, 1984, San Diego, California. AIAA Paper No. 84-0596-CP.

Models in the Langley 0.3-Meter Transonic Cryogenic Tunnel. Presented at the AIAA 13th Aerodynamics Testing Conference, March 5-7, 1984, San Diego,
California. AIAA Paper No. 84-0598-CP.

1124. Pendergraft, O. C., Jr.; and Nugent, J.: Results of a Wind Tunnel/Flight Test Program to Compare Afterbody/Nozzle Pressures on a 1/12 Scale Model and a F-15 Aircraft. Presented at the 1984 SAE Aerospace Congress & Exposition, October 15-18, 1984, Long Beach, California. SAE Paper No. 841543. (Subject Category 02 RTOP 505-40-90)


1129. Saric, W. S.; and Peterson, J. B., Jr.: Design of High Reynolds-Number Flat-Plate Experiments in the NTF. Presented at the AIAA 13th Aerodynamics Testing Conference, March 5-7, 1984, San Diego, California. AIAA Paper No. 84-0588-CP. (Subject Category 02 RTOP 505-31-53)


(Subject Category 64 RTOP 505-31-03)

AIAA Paper No. 84-0170.
(Subject Category 64 RTOP 505-31-03)

(Subject Category 02 RTOP 505-31-23)

(Subject Category 02 RTOP 505-31-03)

AIAA Paper No. 84-0192.
(Subject Category 02 RTOP 505-43-23)

AIAA Paper No. 84-0431.
(Subject Category 64 RTOP 505-31-03)

AIAA Paper No. 84-1245.
(Subject Category 64 RTOP 505-31-13)

AIAA Paper No. 84-1679.
(Subject Category 02 RTOP 505-31-03)

AIAA Paper No. 84-2160.
(Subject Category 02 RTOP 505-43-93)
Technical Talks

1141. Alston, D. W.: Overview - The Data Acquisition/Reduction/Analysis System of the Langley 16-Foot Transonic Tunnel. Presented at the 56th Annual Convention of the National Technical Association, July 25-28, 1984, Cleveland, Ohio. (Subject Category 02 RTOP 505-43-33)


1143. Dress, D. A.; Lawing, P. L.; and Kilgore, R. A.: 0.3-m Transonic Cryogenic Tunnel's Insulation System. Presented at the 61st Semiannual Meeting of the Supersonics Tunnel Association, March 12-14, 1984, Cleveland, Ohio. (Subject Category 09 RTOP 505-31-53)


1147. Mineck, R. E.: Status of the Adaptive Wall Test Section for the 0.3-m Transonic Cryogenic Tunnel. Presented at the DFVLR European Mechanics Colloquium 187 on Adaptive Wall Wind Tunnels and Wall Interference Correction Methods, October 15-17, 1984, Gottingen, Federal Republic of Germany. (Subject Category 02 RTOP 505-31-53)

Computer Programs

1149. Everhart, J. L.: FLEXWAL: A Computer Program for Predicting the Wall Modifications for Two-Dimensional, Solid, Adaptive-Wall Wind Tunnels. Program No. LAR-13301. (Subject Category 09)

1150. Kemp, W. B., Jr. (Virginia Associated Research Campus): TWINTN4: A Program for Transonic Four-Wall Interference Assessment in Two-Dimensional Wind Tunnels. Program No. LAR-13394. (Subject Category 09)

Tech Briefs


1153. Frink, N. T.: Deployable Truss Member. NASA Tech Brief LAR-13219.


Patents


*Army Structures Laboratory (AVSCOM)
PUBLICATIONS FOR LOW-SPEED AERODYNAMICS DIVISION

Formal Reports

(Avail: NTIS Subject Category 05 RTOP 505-45-43)

(Avail: NTIS Subject Category 08 RTOP 505-43-13)

(Avail: NTIS Subject Category 02 RTOP 505-45-13)

(Avail: NTIS Subject Category 02 RTOP 505-45-43)

(Avail: NTIS Subject Category 02 RTOP 505-45-43)

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(Avail: STIF Subject Category 08 RTOP 505-43-13)

(Avail: NTIS Subject Category 02 RTOP 505-43-23)

(Avail: STIF Subject Category 02 RTOP 505-43-13)
Quick-Release Technical Memorandums


Contractor Reports


Journal Articles and Other Publications


Meeting Presentations


Technical Talks


*Army Structures Laboratory (AVSCOM)
1221. Patton, J. M., Jr.: General Aviation Stall/Spin Program. Presented at the EAA Experimental Aircraft Association Annual Convention, March 11-17, 1984, Lakeland, Florida. (Subject Category 02 RTOP 505-45-43)

1222. Patton, J. M., Jr.: A Decade of Spin Research. Presented at the Federal Aviation Administration Annual Designated Engineering Representative Meeting, October 10-11, 1984, Fort Worth, Texas. (Subject Category 02 RTOP 505-41-13)

1223. Patton, J. M., Jr.: Lessons Learned: A Decade of Spin Testing. Presented at the 32nd Experimental Aircraft Association Convention, July 26-August 1, 1984, Oshkosh, Wisconsin. (Subject Category 02 RTOP 505-41-13)

1224. Stough, H. P., III: Wing Design for Enhanced Spin Resistance. Presented at the 32nd Experimental Aircraft Association Convention, July 26-August 1, 1984, Oshkosh, Wisconsin. (Subject Category 02 RTOP 505-45-23)

Computer Programs

No computer programs.

Tech Briefs


Patents

No patents.

*Army Structures Laboratory (AVSCOM)
FOLLOWING FOR HIGH-SPEED AERODYNAMICS DIVISION

Formal Reports

(Avail: STIF Subject Category 07 RTOP 505-43-83)


(Avail: NTIS Subject Category 34 RTOP 505-31-13)

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AIAA Paper No. 84-1362.
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AIAA Paper No. 84-0347.
(Subject Category 34 RTOP 505-31-13)

(Subject Category 02 RTOP 505-31-03)

AIAA Paper No. 84-0424.
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(Subject Category 02 RTOP 505-43-83)

(Subject Category 02 RTOP 505-43-23)

(Subject Category 02 RTOP 505-43-23)

(Subject Category 02 RTOP 505-31-03)
Technical Talks

1322. Bradley, P. F.; Dwoyer, D. L.; and South, J. C., Jr.: Conservative Potential Solutions for Conical Flow Using Vectorized Update Schemes. Presented at the Pavia University, Institute of Numerical Analysis, July 2, 1984, Pavia, Italy. (Subject Category 02 RTOP 505-31-03)


1324. Kumar, A.: Two- and Three-Dimensional Navier-Stokes Codes for Inlets and Nozzles. Presented at the 21st JANNAF Combustion Meeting, October 1-5, 1984, Laurel, Maryland. (Subject Category 02 RTOP 505-43-83)

1325. Walsh, M. J.: Viscous Drag Reduction in Turbulent Boundary Layers. Presented at the University of Tennessee Space Institute Short Course on Boundary Layer Turbulence and Its Modeling, May 18, 1984, Tullahoma, Tennessee. (Subject Category 34 RTOP 505-31-13)

Computer Programs

1326. Carlson, H. W.; and Walkley, K. B. (Kentron International, Inc.): WINGDES - Design of Wing Surfaces at Subsonic or Supersonic Speeds. Program No. LAR-13315. (Subject Category 02)


1328. Kumar, A.: NASCRIN - Numerical Analysis of Scramjet Inlet. Program No. LAR-13297. (Subject Category 02)


1330. Rosen, B. S.; and Mason, W. H. (Grumman Aerospace Corporation): W12SC3 (Computer Program). Program No. LAR-13239. (Subject Category 02)

1331. Siclari, M. J. (Grumman Aerospace Corporation): NCOREL: Nonconical Relaxation, Full Potential Code. Program No. LAR-13240. (Subject Category 02)
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Patents

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR SPACE

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

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Tech Briefs

No tech briefs.

Patents

No patents.

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PUBLICATIONS FOR ATMOSPHERIC SCIENCES DIVISION

Formal Reports


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Contractor Reports


Journal Articles and Other Publications


1367. Devi, V. M.; Rinsland, C. P.; and Benner, D. C.: Absolute Intensity Measurements of CO₂ Bands in the 2395-2680 cm⁻¹ Region. *Applied Optics*, Volume 23, No. 22, November 15, 1984, p. 4067-4075. (Subject Category 72 RTOP 618-21-00)


1397. Rinsland, C. P.; Benner, D. C.; Richardson, D. J.; and Toth, R. A.; Absolute Intensity Measurements of the (1110)11 0000 Band of $^{12}$C$^{16}$O$_2$ at 5.2 μm. Applied Optics, Volume 22, December 1, 1983, p. 3805. (Subject Category 74 RTOP 678-14-03)


Meeting Presentations

1417. Anderson, I. C.; and Levine, J. S.: Biogenic Production of Nitric and Nitrous Oxides. Presented at the 84th Annual Meeting of the American Society for Microbiology, March 4-9, 1984, St. Louis, Missouri. Published in Abstracts of the Annual Meeting, March 1984, p. 179. (Subject Category 46 RTOP 176-20-02)


1437. Grose, W. L.: Some Recent Advances in Understanding Stratospheric Dynamics and the Application of Satellite Data to Their Interpretation. Presented at the COSPAR 25th Plenary Meeting and Associated Activities, June 25 - July 7, 1984, Graz, Austria. Paper No. 5.2.1. Publication of proceedings in COSPAR journal "Advances in Space Research" pending. (Subject Category 47 RTOP 673-64-02)


1449. Russell, J. M., III: Results From the Limb Infrared Monitor of the Stratosphere (LIMS) Experiment. Presented at the COSPAR 25th Plenary Meeting and Associated Activities, June 25 - July 7, 1984, Graz, Austria. Paper No. 5.4.1. Publication of proceedings in COSPAR journal "Advances in Space Research" pending. (Subject Category 46 RTOP 673-41-10)


1454. Smith, M. A. H.; Harvey, G. A.; Richardson, D. J.; Thompson, R. E.; and Sutton, C. H.: Measurements of Pressure Broadening by Polar Gases. Presented at the Ohio State University 39th Annual Symposium on Molecular Spectroscopy, June 11-15, 1984, Columbus, Ohio. Abstract in Proceedings, p. 49. (Subject Category 72 RTOP 678-12-03)


Technical Talks


(Subject Category 46 RTOP 176-10-05)

(Subject Category 47 RTOP 673-64-02)

(Subject Category 45 RTOP 618-22-31)

(Subject Category 92 RTOP 619-12-20)

(Subject Category 46 RTOP 176-20-02)

(Subject Category 46 RTOP 199-50-16)

(Subject Category 46 RTOP 665-10-40)

(Subject Category 45 RTOP 618-22-31)

(Subject Category 45 RTOP 199-30-26)
1468. Smith, G. L.: Deconvolution of Wide Field of View Radiometer Measurements. Theory and Results. Presented at the Goddard Space Flight Center Climate and Radiation Seminar, February 15, 1984, Greenbelt, Maryland. (Subject Category 47 RTOP 672-40-06)


Computer Programs

No computer programs.

Tech Briefs


Patents

No patents.


(Avail: NTIS Subject Category 36 RTOP 506-55-13)

(Avail: NTIS Subject Category 93 RTOP 506-55-23)

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Contractor Reports

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(Avail: NTIS Subject Category 05 RTOP 505-43-53)

(Avail: NTIS Subject Category 18 RTOP 506-62-23)

(Avail: NTIS Subject Category 16 RTOP 506-51-13)

(Avail: NTIS Subject Category 36 RTOP 506-51-13)

Journal Articles and Other Publications


1506. Eldred, C. H.: Shuttle for the 21st Century. Aerospace America, Volume 22, No. 4, April 1984, p. 82-86. (Subject Category 15 RTOP 506-63-23)


1515. Miller, C. G., III: Heating Distributions for a 0.006-Scale Shuttle Orbiter Over a Range of Hypersonic Flow Conditions. Journal of Spacecraft and Rockets, Volume 21, No. 1, January - February 1984, p. 120-122. (Subject Category 34 RTOP 506-51-13)


1523. Ware, G. M.; Spencer, B., Jr.; and Gentry, L. R.: Remotely Controlled Models Slash Tunnel Time. Astronautics and Aeronautics, Volume 22, No. 3, March 1984, p. 64-70. (Subject Category 01 RTOP 506-51-13)


1526. Wilson, J. W.; Townsend, L. W.; Bidasaria, H. B.; Schimmerling, W.; Wong, M.; and Howard, J.: Neon-20 Depth-Dose Relations in Water. Health Physics, Volume 46, No. 5, May 1984, p. 1101-1111. (Subject Category 73 RTOP 199-20-76)


(Subject Category 93  RTOP 506-55-23)

(Subject Category 93  RTOP 506-55-23)

Meeting Presentations

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(Subject Category 44  RTOP 506-55-13)
   (Subject Category 34 RTOP 506-51-13)

   (Subject Category 36 RTOP 506-55-13)

   (Subject Category 36 RTOP 506-55-73)

   (Subject Category 20 RTOP 506-55-73)

   (Subject Category 73 RTOP 199-20-76)

   (Subject Category 16 RTOP 506-63-23)

   (Subject Category 18 RTOP 506-64-13)

   (Subject Category 18 RTOP 506-64-13)

   (Subject Category 15 RTOP 506-62-23)


1578. Zoby, E. V.; Gupta, R. N.; and Simmonds, A. L.: Temperature-Dependent Reaction-Rate Expression for Oxygen Recombination at Shuttle Entry Conditions. Presented at the AIAA 22nd Aerospace Sciences Meeting, January 9-12, 1984, Reno, Nevada. AIAA Paper No. 84-0224. (Subject Category 34 RTOP 506-51-13)


Technical Talks

1580. DeYoung, R. J.: Low Threshold Long Gain Length Solar-Pumped C3F7I Laser. Presented at the American Physical Society Thirty-Seventh Gaseous Electronics Conference, October 9-12, 1984, Boulder, Colorado. (Subject Category 36 RTOP 506-55-73)


1584. Norbury, J. W.; Townsend, L. W.; and Wilson, J. W.: Fragmentation of Relativistic $^{160}$ Projectiles by $^9$Be and $^{208}$Pb Target Nuclei. Presented at the Spring 1984 Meeting of the American Physical Society, April 23-26, 1984, Washington, DC. (Subject Category 73  RTOP 199-20-76)


1591. Walberg, G. D.: NASA Perspectives in Space. Presented at the Texas A&M University Fourth Annual Texas Engineering Experiment Station Research Conference, January 11-12, 1984, College Station, Texas. (Subject Category 15  RTOP 506-51-13)


Computer Programs

No computer programs.

Tech Briefs


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
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Journal Articles and Other Publications
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No quick-release technical memorandums.

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Journal Articles and Other Publications
No journal articles and other publications.

Meeting Presentations
No meeting presentations.

Technical Talks
1603. Staton, W. L.: Test Results on Some Potential Flame Retardant Insulation Coatings for Use in a Cryogenic Wind Tunnel. Presented at the 56th Annual Convention of the National Technical Association, July 25-28, 1984, Cleveland, Ohio. (Subject Category 27 RTOP 505-31-53)

Computer Programs
No computer programs.

Tech Briefs
No tech briefs.

Patents
No patents.

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Formal Reports

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Meeting Presentations


Technical Talks

1631. Pegg, R. J.; and Youngblood, J. W.: A Novel Sun-Powered Flying Wing for High Altitude, Extended Missions. Presented at the Association for Unmanned Vehicle Systems (AUVS), Prospects for Very Long Endurance Aircraft (VLEA), September 19-20, 1984, Menlo Park, California. (Subject Category 05 RTOP 505-43-53)

Computer Programs

No computer programs.

Tech Briefs


Patents

No patents.
PUBLICATIONS FOR FACILITIES ENGINEERING DIVISION

Formal Reports

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Quick-Release Technical Memorandums


Contractor Reports

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Journal Articles and Other Publications

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Meeting Presentations

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Computer Programs

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Tech Briefs

No tech briefs.

Patents

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PUBLICATIONS FOR OPERATIONS SUPPORT DIVISION

Formal Reports

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Tech Briefs

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Patents

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PUBLICATIONS FOR ARMY STRUCTURES LABORATORY (AVSCOM)

Formal Reports

(Avail: NTIS Subject Category 39 RTOP 505-42-23)

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

(Avail: NTIS Subject Category 02 RTOP 505-42-39)

Journal Articles and Other Publications

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Durant, OK 74701
(405) 924-6822

NASA Industrial Applications Center
710 LIS Building
University of Pittsburgh
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
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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
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