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Produced by the NASA Center for Aerospace Information (CASI)
NASA Technical Memorandum 86336

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

JANUARY 1985
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
<table>
<thead>
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<th>Title of conference</th>
<th>Date</th>
<th>Langley contacts</th>
<th>Langley</th>
<th>Non-Langley</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>
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<td>2. Opportunity Through Technology Workshop</td>
<td>Mar. 27</td>
<td>J. Samos and L. J. Rose</td>
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<td>3. NASA 5th NTA Region II Technical Student Symposium</td>
<td>Mar. 30-31</td>
<td>G. M. Darden and G. A. Haynes</td>
<td>0</td>
<td>33</td>
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<td>4. A New Direction in Structural Analysis</td>
<td>Apr. 11-12</td>
<td>W. J. Stroud</td>
<td>1</td>
<td>30</td>
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<tr>
<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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<tr>
<td>6. Integrated Digital/Electric Aircraft (IDEA) Systems Studies Contracts Final Oral Reviews</td>
<td>May 1-2</td>
<td>C. R. Spitzer</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>
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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>
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<td>L. J. Williams</td>
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<td>12. Computational Structural Mechanics Workshop</td>
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<td>13. Workshop on Theoretical Approaches to Turbulence</td>
<td>Oct. 10-12</td>
<td>D. L. Dwyer</td>
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<td>16. SAE/NASA 2nd Aircraft Interior Noise Meeting</td>
<td>Oct. 18-19</td>
<td>J. S. Mixson</td>
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<td>17. Second Symposium on Welding, Bonding, and Fastening</td>
<td>Oct. 23-25</td>
<td>J. D. Buckley B. A. Stein</td>
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<td>18. Large Space Antenna Systems Technology-1984 Conference</td>
<td>Dec. 4-6</td>
<td>C. A. Lightner</td>
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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, Technical 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\(^1\) 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).

\(^1\) Those 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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<td>Formal Reports</td>
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<td>5285 Port Royal Road</td>
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<td>Contractor Reports</td>
<td>Springfield, VA 22161</td>
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<td>NASA Scientific and Technical Information Facility (STIF)</td>
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<td>NASA Industrial Applications Centers (IAC)</td>
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NASA LANGLEY RESEARCH CENTER
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)

   (Avail: NTIS Subject Category 59 RTOP 505-31-83)

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


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(Avail: NTIS Subject Category 66 RTOP 505-31-83)


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


(Avail: NTIS Subject Category 80)


(Avail: NTIS Subject Category 02 RTOP 505-31-83)


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


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.
PUBLICATIONS FOR AERONAUTICAL SYSTEMS OFFICE

Formal Reports


Quick-Release Technical Memorandums


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

Contractor Reports

   (Avail: STIF Subject Category 02 RTOP 533-01-43)
   (Avail: NTIS Subject Category 05 RTOP 505-43-43)
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Journal Articles and Other Publications

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Technical Talks

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(Subject Category 05 RTOP 505-43-43)

(Subject Category 99 RTOP 505-43-43)

Computer Programs

(Subject Category 02)

Tech Briefs


Patents

(Subject Category 05)
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


(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

(Avail: NTIS Subject Category 24 RTOP 534-06-13)

(Avail: STIF Subject Category 24 RTOP 534-06-13)

## Quick-Release Technical Memorandums

(Avail: IAC Subject Category 24 RTOP 534-06-13)

(Avail: NTIS Subject Category 01 RTOP 534-01-13)

## Contractor Reports

(Avail: IAC Subject Category 24 RTOP 534-01-13)

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(Avail: IAC Subject Category 01 RTOP 505-45-63)

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Journal Articles and Other Publications

(Subject Category 24 RTOP 534-06-13)

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Meeting Presentations

(Subject Category 02 RTOP 534-01-13)

Technical Talks

No technical talks.
Computer Programs

No computer programs.

Tech Briefs


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


Quick-Release Technical Memorandums


Contractor Reports


Journal Articles and Other Publications


Meeting Presentations


Technical Talks


Computer Programs


Tech Briefs


Patents

No patents.
PUBLICATIONS FOR INSTRUMENT RESEARCH DIVISION

Formal Reports


Quick-Release Technical Memorandums


Contractor Reports


Journal Articles and Other Publications


   (Subject Category 33 RTOP 506-58-13)

   (Subject Category 24 RTOP 505-43-90)

   (Subject Category 24 RTOP 506-53-23)

   (Subject Category 74 RTOP 506-54-13)

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   (Subject Category 71 RTOP 505-31-33)

Meeting Presentations

   (Subject Category 71 RTOP 505-33-23)

   (Subject Category 71 RTOP 505-33-23)


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


PUBLICATIONS FOR FLIGHT DYNAMICS AND CONTROL DIVISION

Formal Reports


Quick-Release Technical Memorandums


Contractor Reports


Journal Articles and Other Publications


(Subject Category 08 RTOP 505-34-03)


(Subject Category 13 RTOP 506-57-13)


(Subject Category 13 RTOP 506-57-13)


(Subject Category 02 RTOP 505-41-13)


(Subject Category 08 RTOP 505-34-33)


(Subject Category 18 RTOP 506-57-13)

Meeting Presentations


(Subject Category 08 RTOP 505-34-03)


(Subject Category 05 RTOP 505-34-03)


(Subject Category 63 RTOP 506-57-13)


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)

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

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<tr>
<td>335</td>
<td>Meredith, B. D.</td>
<td>Communication Protocols for a Fault Tolerant, Integrated Local Area Network for Space Station Applications.</td>
<td>NASA TM-86304, September 1984, 50 p.</td>
<td>NTIS</td>
<td>Available</td>
<td>Subject Category 62</td>
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<td>337</td>
<td>Stanley, W. D.; Hearn, C. P.; and Williams, J. B.</td>
<td>Theoretical and Experimental Studies of Error in Square-Law Detector Circuits.</td>
<td>NASA TM-86307, September 1984, 74 p.</td>
<td>NTIS</td>
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<td>Croswell, W. F. (Editor); Vanstrum, M. D.; Schrimpf, R. J.; Taylor, R. G.; and Moye, R. L.</td>
<td>Hoop/Column Antenna - RF Verification Model, Volume I - Test Results.</td>
<td>(NAS1-15763 Harris Corporation.) NASA CR-172412, August 1984, 322 p.</td>
<td>NTIS</td>
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<td>Croswell, W. F. (Editor); Vanstrum, M. D.; Schrimpf, R. J.; Taylor, R. G.; and Moye, R. L.</td>
<td>Hoop/Column Antenna - RF Verification Model, Volume II - Analysis and Correlation.</td>
<td>(NAS1-15763 Harris Corporation.) NASA CR-172413, August 1984, 77 p.</td>
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Journal Articles and Other Publications


**Meeting Presentations**


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.


Patents

Formal Reports


Quick-Release Technical Memorandums


(Avail: NTIS Subject Category 47 RTOP 505-34-13)

(Avail: NTIS Subject Category 65 RTOP 505-34-13)

(Avail: NTIS Subject Category 47 RTOP 505-34-13)

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

(Avail: NTIS Subject Category 08 RTOP 505-34-13)

(Avail: NTIS Subject Category 04 RTOP 505-35-13)

(Avail: NTIS Subject Category 04 RTOP 505-45-33)

(Avail: NTIS Subject Category 06 RTOP 505-45-33)

Contractor Reports

(Avail: STIF Subject Category 08 RTOP 505-43-02)

(Avail: NTIS Subject Category 06 RTOP 505-35-23)


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

   (Avail: NTIS Subject Category 54 RTOP 505-35-33)

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   (Avail: NTIS Subject Category 06 RTOP 505-35-13)

   (Avail: NTIS Subject Category 04 RTOP 505-34-13)

   (Avail: NTIS Subject Category 05 RTOP 505-35-13)

   (Avail: NTIS Subject Category 59 RTOP 505-34-13)

   (Avail: NTIS Subject Category 08 RTOP 505-45-73)

   (Avail: STIF Subject Category 08 RTOP 505-45-73)

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No formal reports.

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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)

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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)

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<td>Hergenrother, P. M.: Thermally Curable Oligomers and High Temperature Polymers Therefrom.</td>
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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)


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863. Bell, V. L.: Research on High Performance Polyimides at NASA's Langley Research Center. Presented at the Central Research Institute, Mitsui Toatsu Chemical Company, April 3, 1984, Yokohama, Japan. (Subject Category 27 RTOP 505-33-33)


865. Deaton, J. W.: Residual Strength of Repaired Graphite/Epoxy Laminates After One Year of Outdoor Exposure. 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 24 RTOP 505-33-33)

866. Dexter, H. B.: Composite Applications to Aircraft. Presented at the Mississippi State University Short Course on 2nd Applied Composite Structure Design and Fabrication, June 10-15, 1984, Mississippi State, Mississippi. (Subject Category 24 RTOP 505-33-33)

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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)


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916. *Hodges, W. T.; and St. Clair, T. L.: Ultrasonic Mixing of Epoxy Curing
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918. Pike, R. A. (United Technologies Corporation): Water Soluble Thermoplastic
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919. Royster, D. M.; and Shearin, W. A., Jr.: J-Channel Locks Potting to
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920. St. Clair, A. K.; and St. Clair, T. L.: Colorless Polyimide Film Containing

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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.

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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)

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   (Subject Category 71 RTOP 505-31-33)

   (Subject Category 71 RTOP 505-31-33)

Meeting Presentations

   (Subject Category 71 RTOP 505-33-53)


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. (Subject Category 71 RTOP 535-03-12)


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)

*Army Structures Laboratory (AVSCOM)


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)


1023. Smith, C. D.; and Silcox, R. J.: An Experimental Investigation of Active Noise Control in Ducts. 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. 91. (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.
PUBLICATIONS FOR TRANSonic AERODYNAMICS DIVISION

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)

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


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Meeting Presentations


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)


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)


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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 Supersonic 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): TWINTM4: 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)
Formal Reports


1165. Morris, D. J.; Croom, C. C.; Van Dam, C. P.; and Holmes, B. J.: An Experimental and Theoretical Investigation of Deposition Patterns From an Agricultural Airplane. NASA TP-2348, September 1984, 155 p. (Avail: NTIS Subject Category 02 RTOP 505-45-43)


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(Subject Category 02 RTOP 505-31-03)


(Subject Category 03 RTOP 505-45-13)

*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)
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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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PUBLICATIONS FOR OFFICE OF DIRECTOR FOR SPACE

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(Sub Cat 47 RTOP 146-10-06)

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(Sub Cat 46 RTOP 176-20-02)

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1367. Devi, V. M.; Rinsland, C. P.; and Benner, D. C.: Absolute Intensity Measurements of CO$_2$ 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)


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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 μ. 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)

1418. Benner, D. C.; and Rinsland, C. P.: Identification and Intensities of the 'Forbidden' 03\(^3\)O \(<\ 00\(^0\)0 Band of \(^{12}\)C\(^{16}\)O\(_2\). Presented at the Ohio State University 39th Annual Symposium on Molecular Spectroscopy, June 11-15, 1984, Columbus, Ohio. Abstract in Proceedings, p. 53. (Subject Category 45 RTOP 147-44-02)


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


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(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.
PUBLICATIONS FOR SPACE SYSTEMS DIVISION

Formal Reports


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

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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)


Meeting Presentations


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)


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

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.
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
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.
PUBLICATIONS FOR FABRICATION DIVISION

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.

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No computer programs.

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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

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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 OPERATIONS SUPPORT DIVISION

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No formal reports.

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No quick-release technical memorandums.

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No contractor reports.

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Computer Programs

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Patents

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No quick-release technical memorandums.

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No technical talks.

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Patents

No patents.
APPENDIX

INDUSTRIAL APPLICATIONS CENTERS

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

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

NASA Industrial Applications Center
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
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
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