NASA Technical Memorandum 89065

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

JANUARY 1987
Scientific and Technical Information Output of the Langley Research Center for Calendar Year 1986

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

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

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

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

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

Andrew J. Hansbrough
Chief, Research Information and Applications Division
## Conferences Sponsored or Co-sponsored by Langley and Held Locally in 1986

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<thead>
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<th>Title of conference</th>
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<th>Langley contacts</th>
<th>Langley Speakers</th>
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<td>1. Workshop on Turbulence Relative to Aviation, Missile, and Space Programs</td>
<td>Apr. 2-4</td>
<td>H. N. Murrow</td>
<td>2</td>
<td>14</td>
<td>13</td>
<td>60</td>
</tr>
<tr>
<td>2. Workshop on Aircraft Tire Testing Requirements</td>
<td>May 7</td>
<td>T. J. Yager</td>
<td>2</td>
<td>8</td>
<td>4</td>
<td>28</td>
</tr>
<tr>
<td>3. Sixth Conference on Atmospheric Radiation</td>
<td>May 12-16</td>
<td>B. A. Wielicki</td>
<td>14</td>
<td>28</td>
<td>73</td>
<td>110</td>
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<tr>
<td>4. &quot;SIMP&quot; Code Users Workshop</td>
<td>May 21-22</td>
<td>N. A. Talcott</td>
<td>0</td>
<td>11</td>
<td>2</td>
<td>17</td>
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<tr>
<td>5. Workshop on Conceptual Aircraft Design</td>
<td>May 28-29</td>
<td>C. E. K. Morris</td>
<td>6</td>
<td>14</td>
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<td>23</td>
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<tr>
<td>7. Eighth International Conference on Spectral Line Shapes</td>
<td>June 9-13</td>
<td>R. J. Exton</td>
<td>1</td>
<td>7</td>
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<tr>
<td>8. NASA/Royal Signals and Radar Establishment Workshop on Closed-Cycle Frequency-Stable CO₂ Laser Technology</td>
<td>June 10-12</td>
<td>G. M. Wood</td>
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<tr>
<td>9. Space Construction Conference</td>
<td>Aug. 6-7</td>
<td>J. A. Hagaman</td>
<td>5</td>
<td>69</td>
<td>12</td>
<td>90</td>
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<tr>
<td>10. Symposium on Sensitivity Analysis in Engineering</td>
<td>Sept. 25-26</td>
<td>H. M. Adelman</td>
<td>3</td>
<td>36</td>
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<tr>
<td>11. First NASA/DOD CSI Technology Conference</td>
<td>Nov. 18-21</td>
<td>R. L. Wright</td>
<td>20</td>
<td>79</td>
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<td>56</td>
<td>305</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 1986 which is processed through the Center's Research Information and Applications Division, an integral part of NASA's Agency-wide Scientific and Technical Information (STI) system. This document is intended as a reference summary for researchers and as a current awareness publication for the scientific, research, and academic community.

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

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

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

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

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

¹Those submitted in 1985 (and therefore listed in the 1985 issue of this document) but published in 1986 have not been listed.
to STAR is available from the U.S. Government Printing Office (GPO) or to qualified recipients from the NASA Scientific and Technical Information Facility (STIF).

Publication of some journal articles was not known at press time for the 1985 issue of this document. These articles are therefore listed in the 1986 issue.
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<th>Category</th>
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<td>Formal Reports</td>
<td>National Technical Information Service (NTIS)</td>
</tr>
</tbody>
</table>
| 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                             |
| Computer Programs             | Computer Software Management and Information Center (COSMIC)  
Software Information Services  
Computer Services Annex  
University of Georgia  
Athens, GA 30602                  |
| Langley Tech Briefs           | Office of Technology Utilization and Applications  
Mail Stop 139A  
NASA Langley Research Center  
Hampton, VA 23665                  |
| Patents:                      |                                                                                                                                 |
| Patent Application Specifications | National Technical Information Service (NTIS)                                                                                          |
| Printed Copies               | Commissioner of Patents and Trademarks  
U.S. Patent and Trademark Office  
Washington, DC 20231                |
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NASA LANGLEY RESEARCH CENTER
Hampton, Virginia

CALENDAR YEAR 1986

PUBLICATIONS FOR OFFICE OF THE DIRECTOR

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Quick-Release Technical Memorandums

   (Avail: NTIS Subject Category 99)

Contractor Reports

   (Avail: NTIS Subject Category 34 RTOP 505-31-83)

   (Avail: NTIS Subject Category 64 RTOP 505-90-21)

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

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   (Avail: NTIS Subject Category 34 RTOP 505-31-83)

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

   (Avail: NTIS Subject Category 64 RTOP 505-31-83)
(Avail: NTIS Subject Category 64 RTOP 505-90-21)

(Avail: NTIS Subject Category 61 RTOP 505-90-21)

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

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(Avail: NTIS Subject Category 08 RTOP 505-90-21)

(Avail: NTIS Subject Category 34 RTOP 505-31-83)


Journal Articles and Other Publications

89. Petersen, R. H.: The Status of the AST. Air World, Volume 37, No. 2, 1985, p. 19-23. (Subject Category 02 RTOP 505-69-61)

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 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.
Formal Reports


Quick-Release Technical Memorandums


Contractor Reports


Journal Articles and Other Publications


Meeting Presentations


110. Smith, R. E.; and Eriksson, L-E.: Algebraic Grid Generation. Presented at the International Association for Computational Mechanics First World Congress on Computational Mechanics, September 22-26, 1986, Austin, Texas. Abstract in proceedings, Volume 1. (Subject Category 59 RTOP 505-31-83)
Technical Talks

111. Cleveland, J. I., II; and Crawford, D. J.: Upgrading of the Time Critical Flight Simulation Facility. Presented at the VIM-45 Conference, October 20-23, 1986, Minneapolis, Minnesota. (Subject Category 09 RTOP 999-16-01)


Computer Programs


Tech Briefs


Patents

No patents.
PUBLICATIONS FOR INSTRUMENT RESEARCH DIVISION

Formal Reports


121. Snow, W. L.; Burner, A. W.; and Goad, W. K.: Improvement in the Quality of Flow Visualization in the Langley 0.3-Meter Transonic Cryogenic Tunnel. NASA TM-87730, August 1986, 22 p. (Avail: NTIS Subject Category 35 RTOP 505-61-01)

Quick-Release Technical Memorandums


(Avail: NTIS Subject Category 24 RTOP 505-63-91)

(Avail: NTIS Subject Category 24 RTOP 505-63-91)

(Avail: NTIS Subject Category 71 RTOP 141-30-30)

Contractor Reports

(Avail: NTIS Subject Category 34 RTOP 505-31-53)

(Avail: NTIS Subject Category 34 RTOP 505-61-01)

(Avail: NTIS Subject Category 34 RTOP 505-31-53)

(Avail: NTIS Subject Category 35 RTOP 141-20-10)

Journal Articles and Other Publications

(Subject Category 46 RTOP 505-31-53)

(Subject Category 25 RTOP 143-33-03)


**Meeting Presentations**


Technical Talks

171. Batten, C. E.: Analysis of Trace Organic Compounds in a Class-100 Clean Room. Presented at the Institute of Environmental Sciences 32nd Annual Technical Meeting and Equipment Exposition, May 5-9, 1986, Dallas, Texas. (Subject Category 45 RTOP 678-12-04)


173. Kern, F. A.: Transferring Measurement Accuracy From the Laboratory to the Wind Tunnel. Presented at the Region 4 Meeting of National Conference of Standards Laboratories, November 18, 1986, Kennedy Space Center, Florida. (Subject Category 35 RTOP 992-19-00)


Computer Programs


Tech Briefs


189. Singh, J. J. (Langley Research Center); Mall, G. H. (Computer Sciences Corporation); and Hoshang, C. (Old Dominion University): Measurement of Viscosity of Gaseous Mixtures at Atmospheric Pressure. NASA Tech Brief LAR-13591.


**Patents**


Formal Reports

No formal reports.

Quick-Release Technical Memorandums


Contractor Reports


Journal Articles and Other Publications


Meeting Presentations


Technical Talks


Computer Programs

No computer programs.
Tech Briefs


Patents

No patents.
PUBLICATIONS FOR CONTROL OF FLEXIBLE STRUCTURES PROJECT OFFICE

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


Technical Talks

No technical talks.
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


TECHNICAL TALKS

No technical talks.

COMPUTER PROGRAMS

No computer programs.

TECH BRIEFS


Patents

No patents.
PUBLICATIONS FOR OFFICE OF DIRECTOR FOR STRUCTURES

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


Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.
PUBLICATIONS FOR STRUCTURES AND DYNAMICS DIVISION

Formal Reports


Quick-Release Technical Memorandums


(Avail: NTIS Subject Category 39 RTOP 506-43-51)

(Avail: NTIS Subject Category 18 RTOP 506-43-41)

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(Avail: NTIS Subject Category 24 RTOP 534-06-23)

(Avail: NTIS Subject Category 39 RTOP 506-43-51)

(Avail: NTIS Subject Category 18 RTOP 506-43-41)

(Avail: NTIS Subject Category 18 RTOP 506-43-41)

(Avail: NTIS Subject Category 24 RTOP 534-06-23)

Contractor Reports


Journal Articles and Other Publications


Meeting Presentations


305. Daugherty, R. H.; and Stubbs, S. M.: Flow Rate and Trajectory of Water Spray Produced by an Aircraft Tire. Presented at the SAE 1986 Aerospace Technology Conference and Exposition, October 13-16, 1986, Long Beach, California. SAE Paper No. 86-1626. (Subject Category 05 RTOP 505-63-41)


*Aerostructures Directorate, USAARTA (AVSCOM)


317. Knight, N. F., Jr.; Starnes, J. H., Jr.; and Waters, W. A., Jr.:  
Postbuckling Behavior of Selected Graphite-Epoxy Cylindrical Panels Loaded 
in Axial Compression. Presented at the AIAA/ASME, et al., 27th Structures, 
Structural Dynamics and Materials Conference, May 19-21, 1986, San Antonio, 
Texas. AIAA Paper No. 86-0881-CP.  
(Subject Category 24      RTOP 505-33-33)

318. McComb, H. G., Jr.; and Tanner, J. A.: Topics in Landing Gear Dynamics 
Research at NASA Langley. Presented at the 15th Congress of the 
International Council of the Aeronautical Sciences (ICAS), September 7-12, 
(Subject Category 05      RTOP 505-45-14)

Research in a Full-Scale Transport Aircraft Crash Test. Presented at the 
15th Congress of the International Council of the Aeronautical Sciences 
(Subject Category 39      RTOP 505-33-53)

320. McGowan, P. E.: Considerations in the Design and Development of a Space 
Station Scale Model. Presented at the NASA Marshall Workshop on Structural 
Dynamics and Control of Large Flexible Structures, April 22-24, 1986, 
Huntsville, Alabama. Proceedings pending.  
(Subject Category 39      RTOP 505-33-53)

of a Space Station Assembled From 5 Meter Erectable Struts. Presented at 
the 37th IAF Congress on Space: New Opportunities for All People, 
October 4-11, 1986, Innsbruck, Austria. IAF Paper No. 86-35. Proceedings 
pending.  
(Subject Category 18      RTOP 506-43-41)

of a Space Station Assembled From 5-Meter Erectable Struts. Presented at 
the First NASA/DOD CSI Technology Conference, November 18-21, 1986, 
Norfolk, Virginia. NASA CP pending.  
(Subject Category 18      RTOP 506-43-41)

323. Nemeth, M. P.: Buckling Behavior of Compression-Loaded Symmetrically-
Laminated Angle-Ply Plates With Holes. Presented at the AIAA/ASME, et al., 
27th Structures, Structural Dynamics and Materials Conference, May 19-21, 
1986, San Antonio, Texas. AIAA Paper No. 86-0922-CP.  
(Subject Category 24      RTOP 505-33-33)

324. Noor, A. K.; and Storaasli, O. O.: Nonlinear Finite Element Dynamic Analysis 
on Multiprocessor Computers. Presented at the International Association 
for Computational Mechanics First World Congress on Computational 
Mechanics, September 22-26, 1986, Austin Texas. Abstract in proceedings, 
Volume 1.  
(Subject Category 39      RTOP 505-63-31)


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(Subject Category 39 RTOP 505-33-53)

(RTOP 505-63-41)

(Subject Category 39 RTOP 505-63-31)

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(Subject Category 18 RTOP 506-43-41)

(Subject Category 39 RTOP 506-43-41)

(Subject Category 05 RTOP 505-63-41)

(Subject Category 39 RTOP 506-43-51)

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343. Juang, J-N.; and Taylor, L. W., Jr.: Control Experiment Progress of Large Space Structures. Presented at the IEEE/American Automatic Control Conference Fourth IFAC Symposium on Control of Distributed Parameter Systems, June 30 - July 2, 1986, Los Angeles, California. (Subject Category 39 RTOP 506-43-51)


354. Yager, T. J.; and Daiutolo, H.: Recent Winter Runway Friction Test Findings From Joint FAA/NASA Program. Presented at the Northeast Chapter of the American Association of Airport Executives Twentieth Annual International Aviation Snow Symposium, April 28 – May 1, 1986, Allentown, Pennsylvania. (Subject Category 05 RTOP 505-45-14)


Computer Programs


Tech Briefs


Patents


PUBLICATIONS FOR LOADS AND AEROELASTICITY DIVISION

Formal Reports


Quick-Release Technical Memorandums


*Aerostructures Directorate, USAARTA (AVSCOM)


Contractor Reports


Journal Articles and Other Publications


   (Subject Category 02 RTOP 505-33-43)

   (Subject Category 02 RTOP 505-33-43)

   (Subject Category 35 RTOP 505-33-43)

   (Subject Category 64 RTOP 506-53-33)

   (Subject Category 34 RTOP 506-53-33)

   (Subject Category 64 RTOP 506-43-31)

   (Subject Category 02 RTOP 505-42-23)

Meeting Presentations

   (Subject Category 02 RTOP 505-33-43)

   (RTOP 506-43-81)

   (RTOP 502-62-81)


Technical Talks


Computer Programs

No computer programs.

Tech Briefs


Patents

No patents.
Formal Reports


Quick-Release Technical Memorandums


Contractor Reports


Journal Articles and Other Publications


*Aerostructures Directorate, USAARTA (AVSCOM)
446. Giles, G. L.: Equivalent Plate Analysis of Aircraft Wing Box Structures With
   General Planform Geometry. Journal of Aircraft, Volume 23, No. 11,
   (Subject Category 02 RTOP 505-33-53)

447. Nguyen, D. T.; and Rogers, J. L., Jr.: Optimal Design of Structures With
   Multiple Design Variables Per Group and Multiple Loading Conditions on the
   p. 179-184.
   (Subject Category 61 RTOP 505-33-53)

448. Rogers, J. L., Jr.; and Barthelemy, J-F.: An Expert System for Choosing
   Options in Program for Design. IEEE Software, Volume 3, No. 2, March 1986,
   p. 51-52.
   (Subject Category 61 RTOP 505-33-53)

449. Rogers, J. L., Jr.; and Barthelemy, J-F.: An Expert System for Choosing the
   Best Combination of Options in a General-Purpose Program for Automated
   (Subject Category 61 RTOP 505-33-53)

Meeting Presentations

450. Giles, G. L.: Equivalent Plate Analysis of Aircraft Wing Box Structures With
   General Planform Geometry. Presented at the AIAA, ASME, et al., 27th
   Structures, Structural Dynamics and Materials Conference, May 19-21, 1986,
   San Antonio, Texas. AIAA Paper No. 86-0940-CP.
   (Subject Category 02 RTOP 505-33-53)

   Derivatives and Optimization of Nodal Point Locations for Vibration
   Reduction. Presented at the NASA Langley/VPI&SU Symposium on Sensitivity
   Analysis in Engineering, September 25-26, 1986, Hampton, Virginia. NASA CP
   pending.
   (Subject Category 39 RTOP 505-61-51)

452. Sobieski, J.: Multilevel Structural Optimization. Presented at the NATO
   Advanced Study Institute on Computer Aided Optimal Design, June 29 -
   (Subject Category 59 RTOP 505-33-53)

   Presented at the NATO Advanced Study Institute on Computer Aided Optimal
   Volume 3, p. 29-42.
   (Subject Category 59 RTOP 505-33-53)

*Aerostructures Directorate, USAARTA (AVSCOM)

Technical Talks


Computer Programs


Tech Briefs

No tech briefs.

Patents

No patents.
PUBLICATIONS FOR MATERIALS DIVISION

Formal Reports

   (Avail: NTIS Subject Category 39 RTOP 506-53-23)

   (Avail: STIF Subject Category 24 RTOP 505-63-01)

   (Avail: NTIS Subject Category 24 RTOP 506-43-21)

   (Avail: NTIS Subject Category 24 RTOP 506-43-11)

   (Avail: STIF Subject Category 33 RTOP 505-33-90)

   (Avail: STIF Subject Category 24 RTOP 506-43-81)

   (Avail: NTIS Subject Category 24 RTOP 505-63-01)

   (Avail: NTIS Subject Category 26 RTOP 506-43-81)

Quick-Release Technical Memorandums

   (Avail: NTIS Subject Category 24 RTOP 505-63-11)

*Aerostructures Directorate, USAARTA (AVSCOM)


*Aerostructures Directorate, USAARTA (AVSCOM)
(Avail: NTIS Subject Category 39 RTOP 505-63-01)

(Avail: NTIS Subject Category 27 RTOP 505-63-91)

(Avail: NTIS Subject Category 39 RTOP 505-63-01)

Contractor Reports

(Avail: NTIS Subject Category 24 RTOP 506-43-21)

(Avail: STIF Subject Category 24 RTOP 505-33-33)

(Avail: NTIS Subject Category 24 RTOP 506-43-21)

(Avail: NTIS Subject Category 39 RTOP 506-43-11)

(Avail: STIF Subject Category 26 RTOP 505-69-61)

(Avail: NTIS Subject Category 24 RTOP 506-43-11)


(Avail: IAC Subject Category 24 RTOP 534-06-23)

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<td>Hinkley, J. A.</td>
<td>Small Compact Tension Specimens for Polymer Toughness Screening.</td>
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Computer Programs

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Tech Briefs


Patents

No patents.
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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No journal articles and other publications.

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No tech briefs.

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Formal Reports

No formal reports.

Quick-Release Technical Memorandums


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    (RTOP 505-62-81)

1146. Siclari, M. J.; and Miller, D. S.: Application of NCOREL to Conical Multi-
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Dillon, J. L.; Monta, W. J.; and Hogge, E. F.: Results From an Inlet Test at the Langley 20-Inch, Mach 6 Tunnel. Presented at the 66th Semiannual Supersonic Tunnel Association Meeting, October 6-7, 1986, Albuquerque, New Mexico. (Subject Category 02 RTOP 505-61-71)


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Patents

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Special Documents

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PUBLICATIONS FOR OFFICE OF DIRECTOR FOR SPACE

Formal Reports
No formal reports.

Quick-Release Technical Memorandums
No quick-release technical memorandums.

Contractor Reports
No contractor reports.

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

Meeting Presentations
No meeting presentations.

Technical Talks
No technical talks.

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No computer programs.

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No tech briefs.

Patents
No patents.
PUBLICATIONS FOR SPACE STATION OFFICE

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No formal reports.

Quick-Release Technical Memorandums


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Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations


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1192. Willshire, K. F.: Enhancing Human Productivity in the Space Station. Presented at the International Center for Transportation Studies Symposium on Human Factors Technology for Next Generation Transportation Vehicles, June 16-20, 1986, Amalfi, Italy. (Subject Category 51 RTOP 480-51-06)
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No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.
Formal Reports

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1336. Talbot, R. W.; Andreae, M. O.; Andreae, T. W.; and Harriss, R. C.: Regional Aerosol Chemistry of the Amazon Basin, Brazil. Presented at the 1986 Spring American Geophysical Union Meeting, May 19-23, 1986, Baltimore, Maryland. Abstract published in EOS Transactions, Volume 67, No. 16, April 22, 1986, p. 248. (Subject Category 45 RTOP 176-20-22)


Technical Talks

1342. Ackerman, M; Lippens, C.; Chu, W. P.; and deMuer, D.: SAGE II Aerosol Extinction and Scattering Data From Balloon-Borne Photography. Presented at the XXVI COSPAR Plenary Meeting and Associated Activities, June 30 - July 12, 1986, Toulouse, France. (Subject Category 46 RTOP 665-40-40)


1344. Benner, D. C.; Devi, V. M.; and Rinsland, C. P.: Molecular Parameters for Carbon Dioxide Absorptions in 3450 cm$^{-1}$ Spectral Region. Presented at the Ohio State University 41st Symposium on Molecular Spectroscopy, June 16-20, 1986, Columbus, Ohio. (Subject Category 71 RTOP 147-23-11)

1345. Benner, D. C.; Rinsland, C. P.; and Devi, V. M.: Air-Broadened Halfwidths in the $v_3$ Band of $^{12}$CH$_4$. Presented at the Ohio State University 41st Symposium on Molecular Spectroscopy, June 16-20, 1986, Columbus, Ohio. (Subject Category 72 RTOP 147-23-11)

1346. Callis, L. B.: Possible Climatic Effects Due to Odd Nitrogen Variations Associated With the 11-Year Solar Cycle. Presented at the Australian National Committee for the World Climatic Program/IAMAP Conference on Mechanisms of Interannual and Longer Term Climatic Variations, December 8-12, 1986, Melbourne, Australia. (Subject Category 46 RTOP 673-62-70)


1351. Flaud, J-M.; Camy-Peyret, C.; Devi, V. M.; Rinsland, C. P.; and Smith, M. A. H.: The \( v_1 \) and \( v_3 \) Bands of \( \text{H}_2\text{O}\text{O}_2 \) and \( \text{H}_2\text{O}_2\text{O}_2 \). Presented at the Ohio State University 41st Symposium on Molecular Spectroscopy, June 16-20, 1986, Columbus, Ohio. (Subject Category 72 RTOP 147-23-11)

1352. Grose, W. L.: Dynamics and Transport Processes in the Stratosphere: Comparison of Three-Dimensional Simulations With Satellite Data. Presented at the IAMAP/DMG Meeting on Verification of Theories in Atmospheric Large/Medium Scale Dynamics, June 24-26, 1986, Burghausen, Germany. (Subject Category 47 RTOP 673-64-02)


1357. Keating, G. M.; Pitts, M. C.; Brasseur, G.; and De Rudder, A.: Middle Atmosphere Response to Solar Short-Term UV Variability. Presented at the XXVI COSPAR Plenary Meeting and Associated Activities, June 30 - July 12, 1986, Toulouse, France. (Subject Category 46 RTOP 673-41-07)

1358. Keating, G. M.; and Young, D. F.: Ozone Reference Models for CIRA. Presented at the XXVI COSPAR Plenary Meeting and Associated Activities, June 30 - July 12, 1986, Toulouse, France. (Subject Category 46 RTOP 673-41-07)


1372. Thakur, K. B.; Devi, V. M.; Rinsland, C. P.; and Smith, M. A. H.: Tunable Diode Laser Measurements of Absolute Intensities and Linewidths in the v₆ Band of ¹²CH₃D Near 8.6 µm. Presented at the Ohio State University 41st Symposium on Molecular Spectroscopy, June 16-20, 1986, Columbus, Ohio. 


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PUBLICATIONS FOR SPACE SYSTEMS DIVISION

Formal Reports

(Avail: STIF Subject Category 02 RTOP 506-40-11)

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1463. Miller, C. G.; and Smith, F. M.: Langley Hypersonic Facilities Complex - Description and Application. Presented at the AIAA 14th Aerodynamic Testing Conference, March 5-7, 1986, West Palm Beach, Florida. AIAA Paper No. 86-0741-CP. (Subject Category 09 RTOP 506-40-11)


1477. Walker, G. H.; and Heinbockel, J. H.: Photovoltaic Conversion of Laser Power to Electrical Power. Presented at the 8th Space Photovoltaic Research and Technology Conference, October 7-9, 1986, Cleveland, Ohio. NASA CP pending. (Subject Category 44 RTOP 506-41-41)


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1488. Lee, J. H.; and Conway, E. J.: A Novel Closing and Opening Plasma Switch POSMI. Presented at the Space High Power Inverter Technology Workshop, September 9-10, 1986, Wright-Patterson, AFB, Ohio. (Subject Category 75 RTOP 506-41-41)


1490. Schuster, G. L.; and Robertson, S.: The Brush Cathode Discharge as a Source of Cold Ions. Presented at the American Physics Society 28th Annual Meeting, Division of Plasma Physics, November 3-7, 1986, Baltimore, Maryland. (Subject Category 01 RTOP 506-41-41)


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    Issued June 10, 1986.
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1630. Campbell, T. G.; Bailey, M. C.; and Belvin, W. K.: The Development of the 15-Meter Hoop Column Deployable Antenna System With Final Structural and Electromagnetic Performance Results. Presented at the 37th IAF Congress on Space: New Opportunities for All People, October 4-11, 1986, Innsbruck, Austria. IAF Paper No. 86-199. Proceedings pending. (Subject Category 33 RTOP 506-43-51)


Technical Talks


Arbuckle, P. D.: Functional Integration Technology Team Architecture. Presented at the West Coast Industry Tour of the 1986 LaRC Dynamics Integration Progress Reviews, August 21-29, 1986. (Subject Category 08 RTOP 505-66-71)


Murphy, P. C.: Supermaneuverability Control System Design Metrics. Presented at the West Coast Industry Tour of the 1986 LaRC Dynamics Integration Progress Reviews, August 21-29, 1986. (Subject Category 08 RTOP 505-66-01)
(Subject Category 06 RTOP 506-46-21)

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No meeting presentations.

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Indianapolis Center for Advanced Research
611 N. Capital Avenue
Indianapolis, IN 46204
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Kerr Industrial Applications Center
Southeastern Oklahoma State University
Station A, Box 2584
Durant, OK 74701
(405) 924-6822

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

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

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

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

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

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