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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 1982

JUNE 1983
Scientific and Technical Information
Output of the Langley Research Center
for Calendar Year 1982

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 1982.

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.


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.

Jess G. Ross
Chief, Research Information and Applications Division
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 1982 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 Periodical Literature, Technical Talks and Meeting Presentations, Computer Programs, Tech Briefs, and Patents. There is a separate section listing NASA Contractor Reports funded by the Army Structures Laboratory, USARTL (AVRADCOM). 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 1982. Those programs listed with an M accession number are available from COSMIC.

The NASA Tech Briefs cited have been released in 1982 for publication in "NASA Tech Briefs," a quarterly journal for United States industry and technology transfer agents. Subscriptions to this journal are available through the NASA Technology Utilization Program by writing to the Director, Technology Transfer Division, NASA Scientific and Technical Information, P. O. Box 8757, Baltimore/Washington International Airport, Maryland 21240.

Patents listed, which are owned in whole or in part by Langley Research Center personnel, have been published in issues of "Scientific and Technical Aerospace Reports" (STAR), a NASA announcement journal for report literature. A subscription to STAR is available from the U.S. Government Printing Office (GPO) or to qualified recipients from the NASA Scientific and Technical Information Facility (STIF).
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CONTRACTOR REPORTS

No contractor reports.

JOURNAL ARTICLES AND PERIODICAL LITERATURE

No journal articles and periodical literature.
Technical Talks and Meeting Presentations


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Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.
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Formal Reports

   (Avail: NTIS Subject Category 15 RTOP 506-62-43)

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9. Canady, John E., Jr.; and Allen, John L., Jr.: Illumination From Space With
   (Avail: NTIS Subject Category 18 RTOP 506-62-43)

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

    Space Shuttle Orbiter, Volume I - Executive Summary. (NAS1-16302 Rockwell
    (Avail: NTIS Subject Category 16 RTOP 936-34-00)

Journal Articles and Periodical Literature

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Technical Talks and Meeting Presentations

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Computer Programs

No computer programs.

Tech Briefs

11. Schedule Analysis and Control Office: Project Planning and Reporting. NASA
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Computer Programs


Tech Briefs

No tech briefs.

Patents

No patents.
PUBLICATIONS FOR SCOUT PROJECT OFFICE

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

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Journal Articles and Periodical Literature
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Tech Briefs
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Patents
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Computer Programs

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Tech Briefs

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Patents

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86. Kreitinger, Richard L.; and Middleton, David R.: Aircraft Surface Coatings Reduce Drag, May Protect Against Corrosion. Automotive Engineering, Volume 90, No. 2, February 1982, p. 73-78. (Subject Category 27 RTOP 534-02-13)

Technical Talks and Meeting Presentations


Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

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

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Journal Articles and Periodical Literature
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No technical talks and meeting presentations.

Computer Programs
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Tech Briefs
No tech briefs.

Patents
No patents.
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100. Lambiotte, J. J.; and Bokhari, S.; Hussaini, M. Y.; and Orszag, S. A.: Navier-Stokes Solution on the CYBER-203 by a Pseudospectral Technique. Presented at the 10th IMACS World Congress on Systems Simulation and Scientific Computation, August 8-13, 1982, Montreal, Canada. (Subject Category 59 RTOP 505-31-83)


Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.
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<td>Image Degradation in Langley 0.3-Meter Transonic Cryogenic Tunnel.</td>
<td>Snow, W. L.; Burner, A. W., Jr.; and Goad, W. K.</td>
<td>NASA TM-84550, November 1982, 23 p. (Avail: NTIS Subject Category 35 RTOP 505-31-63)</td>
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140. Cantrell, John H., Jr.: Characterization of Crystalline Binding From Solid Nonlinearity Parameters. Presented at the 1982 March General Meeting of the American Physical Society, March 8-12, 1982, Dallas, Texas. (Subject Category 71 RTOP 505-33-23)


143. Cantrell, John H., Jr.: Ultrasonic Characterization of Fatigue in Advanced Composite Materials. Presented at the 104th Meeting of the Acoustical Society of America, November 8-12, 1982, Orlando, Florida. (Subject Category 76 RTOP 505-33-23)


147. Ferris, Alice T.: Strain Gage Balances and Buffet Gages. Presented at the NASA Cryogenic Wind Tunnel Workshop, May 5-6, 1982, Hampton, Virginia. (Subject Category 76 RTOP 505-31-63)


155. Hendricks, Herbert D.: An Overview of NASA's Fiber Optic Programs. Presented at the Naval Research Laboratory Tri-Service Workshop on Fiber Optics Sensor and Guided Wave Technology, October 5-8, 1982, Fort Eustis, Virginia. (Subject Category 34 RTOP 506-54-63)


165. Heyman, Joseph S.; and Issler, Wolfgang: Ultrasonic Mapping of Internal Stresses. Presented at the IEEE 1982 Ultrasonic Symposium, October 27-29, 1982, San Diego, California. (Subject Category 71 RTOP 505-33-23)


170. Kern, Frederick A.: NASA's Metrology Program. Presented at the National Conference of Standards Laboratory Region III Meeting, January 28, 1982, Clarksburg, Maryland. (Subject Category 38 RTOP 992-19-00)

171. Kern, Frederick A.: General Metrology and Challenges Related to NDE at NASA. Presented at the NCSSL and PMA Symposium on Validity of NDE Measurements, February 1-3, 1982, Butler, Pennsylvania. (Subject Category 38 RTOP 992-19-00)


175. Mitchell, Michael: Electronically Scanned Pressure Measurement Application at the Langley Research Center. Presented at the 58th Meeting of Supersonic Tunnel Association, October 4-5, 1982, Ottawa, Canada. (Subject Category 72  RTOP 505-31-53)


183. Smith, Alphonso C.: Detection of Trace Quantities of Dimethylacetamide During the Curing Process of a Polyimide Film. Presented at the 14th National SAMPE Technical Conference, October 12-14, 1982, Atlanta, Georgia. (Subject Category 45 RTOP 506-53-23)


189. Vedder, Mark; Winfree, William P.; and Heyman, Joseph S.: Impact Generated Ultrasonic Waves in Plastics and Steel. Presented at the IEEE 1982 Ultrasonics Symposium, October 27-29, 1982, San Diego, California. (Subject Category 71 RTOP 505-33-23)

191. Winfree, William P.; and Cantrell, John H., Jr.: Sign Reversal of Ultrasonically Induced Static Displacement. Presented at the 1982 March General Meeting of the American Physical Society, March 8-12, 1982, Dallas, Texas. (Subject Category 71 RTOP 505-33-23)


Computer Programs

No computer programs.

Tech Briefs


Patents


PUBLICATIONS FOR FLIGHT DYNAMICS AND CONTROL DIVISION

Formal Reports


206. Riley, Donald R.; and Miller, G. Kimball, Jr.: Comparison of Analytical Predictions of Longitudinal Short-Period With Results From a Simulation Study Pilot-Induced Oscillations of the Space Shuttle Orbiter. NASA TM-83267, April 1982, 41 p. (Avail: NTIS Subject Category 05 RTOP 505-34-33)


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Tech Briefs

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Patents

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266. Birrer, I. J.; Bracalente, E. M.; Dome, G. J.; Sweet, J.; and Berthold, G.: 5° Signature of the Amazon Rain Forest Obtained From the Seasat Scatterometer. IEEE Transactions on Geoscience & Remote Sensing, Volume GE-20, No. 1, January 1982, p. 11-17. (Subject Category 43 RTOP 146-01-00)


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291. Delnore, V. E.; Jones, W. L.; Grantham, W. L.; Businger, J. A.; and Oncley, S.: Aircraft Measurements of Sea Surface Radar Cross-Section and In-Situ Wind and Stress. Presented at the Fall Meeting of the American Geophysical Union, December 7-15, 1982, San Francisco, California. (Subject Category 48 RTOP 146-40-05)

292. Dvorak, G. J.; and Johnson, W. S.: Fatigue of B-Al Laminated Plates. Presented at the 111th AIME Annual Meeting, Symposium on Failure Modes in Metal Matrix Composites, February 9-11, 1982, Dallas, Texas. (Subject Category 39 RTOP 505-33-33)


294. Hearn, Chase P.: An Experimental System to Verify the Presence of a Water-Film on Aircraft Radomes Under Heavy Rain Conditions. Presented at the 1982 Virginia IEEE Conference and Exhibit, October 28-29, 1982, Hampton, Virginia. (Subject Category 33 RTOP 506-54-23)


297. Kendall, Bruce M.: Radiometer Synoptic Survey of a Warm Core Ring. Presented at the AGU/ASLO Joint Meeting on Ocean Sciences, February 16-19, 1982, San Antonio, Texas. (Subject Category 48  RTOP 146-40-13)


301. Staton, W. L.; Klich, P. J.; and Cockrell, C. E.: Mechanical Properties of Adhesive Systems at Cryogenic and Other Temperatures. Presented at the 54th Annual Convention of the National Technical Association, August 2-7, 1982, Baltimore, Maryland. (Subject Category 27  RTOP 505-31-63)


Computer Programs

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Journal Articles and Periodical Literature


Technical Talks and Meeting Presentations


358. Kelly, James R.; and Williams, David H.: Factors Affecting In-Trail Following Using CDTI. Presented at the AFWAL 18th Annual Conference on Manual Control, June 8-10, 1982, Dayton, Ohio. (Subject Category 04 RTOP 505-35-23)

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Technical Talks and Meeting Presentations
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Computer Programs
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Tech Briefs
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Patents
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Quick-Release Technical Memorandums


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*Army Structures Laboratory, USARTL (AVRADCOM)
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(Avail: NTIS Subject Category 24 RTOP 734-01-02)

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

(Avail: NTIS Subject Category 24 RTOP 505-33-33)
403. Cushman, J. B.; and McCleskey, S. F.: Design Allowables Test Program, Celion
3000/PMR-15 and Celion 6000/PMR-15, Graphite/Polyimide Composites.
(Avail: NTIS Subject Category 24 RTOP 506-53-23)

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

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

406. Delale, F.; and Erdogan, F.: Three-Dimensional Elasticity Solution of an
Infinite Plate With a Circular Hole. (NGR 39-007-011 Lehigh University.)
(Avail: NTIS Subject Category 39 RTOP 506-53-23)

407. Delale, F.; and Erdogan, F.: The Crack Problem in a Specially Orthotropic
Shell With Double Curvature. (NGR 39-007-011 Lehigh University.) NASA
(Avail: NTIS Subject Category 39 RTOP 506-53-23)

408. Ehret, R. M.; Scanlan, P. R.; and Rosen, C. D.: Development of Design
Allowables Data for Celion 6000/LARC-160, Graphite/Polyimide Composite
Laminates. (NAS1-15183 Rockwell International.) NASA CR-165985, November
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No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Periodical Literature


Technical Talks and Meeting Presentations


Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.
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Computer Programs

No computer programs.

Tech Briefs

No tech briefs.
PUBLICATIONS FOR SPACE SYSTEMS DIVISION

Formal Reports

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Computer Programs

No computer programs.

Tech Briefs

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Patents

No patents.
PUBLICATIONS FOR OFFICE OF DIRECTOR FOR SYSTEMS ENGINEERING AND OPERATIONS

Formal Reports
No formal reports.

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

Contractor Reports
No contractor reports.

Journal Articles and Periodical Literature
No journal articles and periodical literature.

Technical Talks and Meeting Presentations
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Computer Programs
No computer programs.

Tech Briefs
No tech briefs.

Patents
No patents.
PUBLICATIONS FOR FABRICATION DIVISION

Formal Reports

(Avail: STIF Subject Category 24 RTOP 505-31-63)

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

(Avail: NTIS Subject Category 27 RTOP 141-10-10)

Journal Articles and Periodical Literature

No journal articles and periodical literature.

Technical Talks and Meeting Presentations

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Computer Programs

No computer programs.

Tech Briefs

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Formal Reports

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Contractor Reports


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1345. Pegg, Robert J.: Design Considerations of a Natural Laminar Flow Wing. Presented at the Experimental Aircraft Association Annual Convention, July 31 - August 7, 1982, Oshkosh, Wisconsin. (Subject Category 02 RTOP 505-41-13)


1347. Staton, W. L.; Klich, P. J.; and Cockrell, C. E.: Mechanical Properties of Adhesive Systems at Cryogenic and Other Temperatures. Presented at the 54th Annual Convention of the National Technical Association, August 2-7, 1982, Baltimore, Maryland. (Subject Category 27 RTOP 505-31-63)

Computer Programs

No computer programs.

Tech Briefs


Patents

PUBLICATIONS FOR FACILITIES ENGINEERING DIVISION

Formal Reports

No formal reports.

Quick-Release Technical Memorandums


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Journal Articles and Periodical Literature

   (Subject Category 39 RTOP 505-31-53)

   (Subject Category 26 RTOP 992-24-01)

Technical Talks and Meeting Presentations

   (Subject Category 35 RTOP 141-20-10)

Computer Programs

No computer Programs.

Tech Briefs

No tech briefs.

Patents

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Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Periodical Literature

No journal articles and periodical literature.

Technical Talks and Meeting Presentations

No technical talks and meeting presentations.

Computer Programs

No computer programs.

Tech Briefs


Patents

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR MANAGEMENT OPERATIONS

Formal Reports

No formal reports.

Quick-Release Technical Memorandums


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Journal Articles and Periodical Literature

No journal articles and periodical literature.

Technical Talks and Meeting Presentations

Computer Programs


Tech Briefs

No tech briefs.

Patents

No patents.
Contractor Reports


APPENDIX

INDUSTRIAL APPLICATIONS CENTERS

Aerospace Research Applications Center
Indianapolis Center for Advanced Research
1201 East 38th Street
P. O. Box 647
Indianapolis, IN 46223
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Kerr Industrial Applications Center
Southeastern Oklahoma State University
Station A, Box 2534
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
2500 Central Avenue, SE
Albuquerque, NM 87131
(505) 277-3622

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