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**NASA**

National Aeronautics and  
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Langley Research Center  
Hampton, Virginia 23665



# SCIENTIFIC AND TECHNICAL INFORMATION OUTPUT

## of the Langley Research Center



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### FOR CALENDAR YEAR 1976



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SCIENTIFIC AND TECHNICAL INFORMATION OUTPUT  
OF THE LANGLEY RESEARCH CENTER  
FOR CALENDAR YEAR 1976

NASA LANGLEY RESEARCH CENTER  
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## PREFACE

This document contains a listing of the Scientific and Technical Information that the Langley Research Center has been responsible for producing during the calendar year of 1976. Included in this listing are NASA Technical Reports, Technical Notes, Technical Memorandums, Special Publications, Contractor Reports, Journal Articles, and Technical Presentations made at Society meetings. NASA formal reports included in this listing are those that have been mailed and distributed to the ultimate user. In selecting Journal Articles, only those articles which were published in a Journal during the past calendar year are included. Similarly, material presented at Society meetings was presented during the calendar year 1976.

The material presented here is listed first by Division and then under the following headings: (a) Formal Reports, (b) Contractor Reports, (c) Articles and Meeting Presentations, and (d) High Number Technical Memorandums (High TM X's). Under each heading, the material is listed by authors in alphabetical order. If a report has more than one author and these authors are from different Divisions, the report is listed only once, under the senior author's name.

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NASA LANGLEY RESEARCH CENTER  
Hampton, Virginia

CALENDAR YEAR 1976

I. PUBLICATIONS FOR ANALYSIS AND COMPUTATION DIVISION

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2. Dieudonne, James E.; Grove, Randall D.; and Steinmetz, George G.: A Simulation Study of Curved, Descending, Decelerating, Landing Approaches for Transport Aircraft. NASA TN D-8190, 1976.
3. Houck, Jacob A.; and Bowles, Roland L.: Effects of Rotor Model Degradation on the Accuracy of Rotorcraft Real-Time Simulation. NASA TN D-8378, 1976.
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5. Parrish, Russell V.; and Ashworth, Billy R.: The Effect of Digital Computing on the Performance of a Closed-Loop Control-Loading System. NASA TN D-8371, 1976.
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2. Singh, Jag J.; Khandelwal, G. S.; and Sentell, R. J.: An Investigation of Size-Dependent Concentration of Trace Elements in Aerosols Emitted From the Oil-Fired Heating Plants. NASA TM X-3401, 1976.

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1. Harris, Franklin S., Jr.: Atmospheric Aerosols: A Literature Summary of Their Physical Characteristics. NASA CR-2626, 1976. (NGR 47-003-068 Old Dominion University)
2. Lawley, Kenneth L.; Bellavance, David W.; and Reisinger, Axel R.: Narrow Spectral Width Semiconductor Laser. NASA CR-145025, 1976. (NAS1-13848 Texas Instruments, Inc.)
3. Phillips, James D.: Development of InSb Charge-Coupled Infrared Imaging Device - Linear Imager. NASA CR-145003, 1976. (NAS1-13973 Hughes Aircraft Company)
4. Schwarz, Helmut: Investigation of a Quadrupole Ultra-High Vacuum Ion Pump. NASA CR-145010, 1976. (NGL 07-009-003 Rensselaer Polytechnic Institute)
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15. Heyman, Joseph S.: A Self-Exciting Ultrasonic Reflection CW Instrument. Presented at the IEEE Ultrasonics Symposium, September 1976.
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32. Sentell, Ronald J.; Storey, Richard W.; and Chang, James J. C.: Tethered Balloon-Based Measurements of Aerosol Concentration and Meteorological Parameters. Presented at the NASA OSA Topical Meeting on Atmospheric Aerosols, Their Optical Properties and Effects, December 1976.
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3. Armstrong, Ernest S.; and Caglayan, Alper K.: An Algorithm for the Weighting Matrices in the Sampled-Data Optimal Linear Regulator Problem. NASA TN D-8372, 1976.
4. Bird, John D.; and Smith, Kathryn A.: Frequency of Encounter of Aircraft in a Random Horizontal Field. NASA TN D-8149, 1976.
5. Conway, Bruce A.; and Hendricks, R. C.: A Summary of the Skylab Crew/Vehicle Disturbances Experiment, T-013. NASA TN D-8128, 1976.
6. Coupry, Gabriel: Problems of Flight in Turbulence. (Phillips, William H., Translator). NASA TT F-16401, 1976.
7. Goode, Maxwell W.; O'Bryan, Thomas C.; Yenni, Kenneth R.; Cannaday, Robert L.; and Mayo, Marna H.: Landing Practices of General Aviation Pilots in Single-Engine Light Airplanes. NASA TN D-8283, 1976.
8. Oehman, Waldo I.: Optimal Design Considerations of a Gust Alleviator for Aircraft. NASA TN D-8152, 1976.
9. Sherman, Windsor L.: Generalization and Refinement of an Automatic Landing System Capable of Curved Trajectories. NASA TN D-8336, 1976.
10. Stewart, Eric C.: An Analytical Study and Wind Tunnel Tests of an Aeromechanical Gust-Alleviation System for a Light Airplane. NASA TN D-8234, 1976.
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4. Kaufman, Howard: Research in Digital Adaptive Flight Controllers. NASA CR-2684, 1976. (NGR 33-018-183 Rensselaer Polytechnic Institute)
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6. Mout, Michael L.; and Burgin, George H.: A Computer Program for Use of Sensitivity Analysis in Display Evaluation. NASA CR-145060, 1976. (NAS1-13734 Decision Science, Inc.)
7. Seacord, C. L.; and Vaughn, D. K.: Preliminary System Design Study for a Digital Fly-by-Wire Flight Control System for an F8-C Aircraft. NASA CR-2609, 1976. (NAS1-12956 Honeywell, Inc.)
8. Wells, William R.: Dynamics and Identification of Flexible Aircraft. NASA CR-2672, 1976. (NGR 36-004-061 University of Cincinnati)
9. Anon.: Annular Momentum Control Device (AMCD) – Volume I: Laboratory Model Development. NASA CR-144917, 1976. (NAS1-12529 Ball Brothers Research Corporation)
10. Anon.: Annular Momentum Control Device (AMCD) – Volume II: Application to a Large Space Telescope. NASA CR-144917, 1976. (NAS1-12529 Ball Brothers Research Corporation)
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5. Gera, Joseph: Design of Active Controls for the NASA F-8 Digital Fly-by-Wire Airplane. Presented at the 13th Annual Meeting of the Society of Engineering Science, November 1976.
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12. Parker, Loyd C.; and Goode, Maxwell W.: General Aviation Approach and Landing Practices. Presented at the NASA Conference on Aircraft Safety and Operating Problems, October 1976.
13. Phillips, William H.: Stability and Control of Hang Gliders. Presented at the SAE Aerospace Control and Guidance Systems Committee Meeting, September 1976.
14. Phillips, William H.; and Shaughnessy, John D.: Investigation of Longitudinal Control System for a Small Hydrofoil Boat. AIAA Journal of Hydronautics, April 1976.
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12. Feldman, Julius; and Helfant, Stephen: Sperry ASLG-15 Laser Gyro Performance and Error Model. NASA CR-145021, 1976. (NAS1-13958 The Charles Stark Draper Laboratory, Inc.)
13. Gerhart, Susan L.: Development of a Methodology for Classifying Software Errors. NASA CR-148212, 1976. (NSG-1267 Duke University)
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No formal reports.

### B. Contractor Reports

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2. Smetana, Frederick O.: Solar Assisted Heat Pumps: A Possible Wave of the Future. NASA CR-2771, 1976. (NAS1-14208 North Carolina State University)

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### D. High Number Technical Memorandums

No high number technical memorandums.



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No formal reports.

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4. Green, Charles H.: Viking Project. Presented at the AIAA Antelope Valley Section Meeting, April 1976.
5. Holt, H. Milton: Viking Project Primary Mission Results. Presented to the AIAA Engineers Club of the Virginia Peninsula Joint Meeting, December 1976.
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7. Martin, James S., Jr.: The Viking Mission to Mars: An Overview. Presented at the American Association for the Advancement of Science Annual "Viking Mars Science Experiments Expectations" Symposium, February 1976.
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21. Spitzer, Cary R.: Viking Project. Presented at the University of California-Los Angeles Student Section of ASC, April 1976.
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24. Timmons, Jesse D.: Viking Balloon Launched Decelerator Tests. Presented at the XXVIIIth International Astronautical Congress, October 1976.
25. Wright, Howard T.: Aircraft Energy Efficiency. Presented at the Joint Meeting of the IEEE and ASME, November 1976.
26. Young, A. Thomas: The Viking Strategy During the Planetary Phase. Presented at the American Association for the Advancement of Science Annual "Viking Mars Science Experiments Expectations" Symposium, February 1976.

**D. High Number Technical Memorandums**

No high number technical memorandums.

## XXVI. PUBLICATIONS FOR PROJECTS GROUP

### A. Formal Reports

1. Redish, William L.: Airborne Ballistic Camera Tracking Systems. NASA TN D-8225, 1976.

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1. Everett, H. U.; and Myler, T. R.: Satellite Lifetime Routine User's Manuals. NASA CR-144941, 1976. (NAS1-12500 LTV Aerospace Corporation)
2. Flemming, R.; and Ruddell, A.: RSRA Sixth Scale Wind Tunnel Test - Final Report. NASA CR-144964, 1976. (NAS1-13000 Sikorsky Aircraft)
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10. Kinard, William H.: The Long Duration Exposure Facility -- A Multipurpose Free-Flying Experiment Carrier. Presented at the International Meeting on Utilization of Space Shuttle and Spacelab, June 1976.
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#### D. High Number Technical Memorandums

No high number technical memorandums.