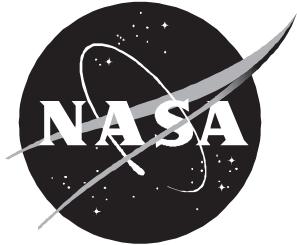


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NASA Langley Scientific and Technical Information Output—1997

*Susan H. Stewart and Harriet B. Machie, Compilers
Langley Research Center, Hampton, Virginia*

February 1998

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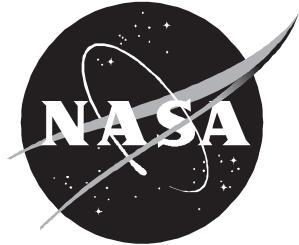
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NASA Langley Scientific and Technical Information Output—1997

*Susan H. Stewart and Harriet B. Machie, Compilers
Langley Research Center, Hampton, Virginia*

National Aeronautics and
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Preface

This report contains a listing of the NASA Langley Research Center's publicly available scientific and technical research output for C.Y. 1997.

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 C.Y. 1997, Langley's contributions to NASA and non-NASA literature included 60 NASA Formal Reports, 13 Conference Publications, 77 High-Numbered Technical Memorandums, 172 Contractor Reports, 174 Journal Articles and Book Publications, 426 Meeting Presentations, 34 Technical Talks, and 31 Patents.

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 the areas of Airframe Systems, Aerodynamics, Atmospheric Science, and Structures and Materials.

This document contains a bibliography of Langley's publicly available scientific and technical research output for 1997 which is processed through the Center's Information Systems and Services Division, an integral part of NASA's Agency-wide Scientific and Technical Information (STI) system. The results of Langley's research are disseminated in a variety of NASA and non-NASA scientific and technical media and information systems. This document is intended to be a reference summary for researchers and a current awareness publication for the scientific, research, and academic community. Details of the availability of the research references in this document are found in the section, "Availability," on page vii.

Many Langley reports are available electronically on the Langley Technical Report Server (LTRS) at <http://techreports.larc.nasa.gov/ltrs/ltrs.html> or the Institute for Computer Applications in Science and Engineering (ICASE) Technical Report Server (ITRS) at <http://www.icase.edu/docs/library/itrs.html> via the World Wide Web (WWW). The relative Uniform Resource Locators are noted below citations for reports available electronically.

The citations are grouped by the Scientific and Technical Aerospace Reports (STAR) subject categories and listed alphabetically by author or innovator. The Langley organization to which the senior author or innovator is assigned and the Research and Technology Objectives and Plans (RTOP) number are noted below citations when appropriate and included in the indexes.

Patents listed are those which were issued in 1997 and owned by Langley Research Center.

Publication of some journal articles was not known at press time for the 1996 issue of this document. These articles are therefore listed in the 1997 issue.

Availability

<u>Category</u>	<u>Source</u>
NASA Reports	NASA Center for AeroSpace Information (CASI) 800 Elkridge Landing Road Linthicum Heights, MD 21090-2934 (301) 621-0390
	National Technical Information Service (NTIS) 5285 Port Royal Road Springfield, VA 22161-2171 (703) 487-4650
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Scientific and Technical Publications

Aeronautics

Category 01 Aeronautics (General)

- 1** Abel, I.: Research and Applications in Structures at the NASA Langley Research Center. NASA TM-110311, January 1997, 26 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/tm/NASA-97-tm110311.ps.Z>
Organization DS RTOP 522-32-21

- 2** Abel, I.: Research and Applications in Structures at the NASA Langley Research Center. Presented at 37th Israel Annual Conference on Aerospace Sciences, February 26-27, 1997, Tel Aviv, Israel. In Proceedings, p. VII-1–XXV-25.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/tm/NASA-97-tm110311.ps.Z>
Organization DS RTOP 522-32-21

- 3** Burn, M.; Carey, J.; Czech, J.; and Wingrove, E. R., III: The Flight Track Noise Impact Model. (NAS2-14361 Logistics Management Institute.) NASA CR-201683, April 1997, 45 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/cr/NASA-97-cr201683.ps.Z>
Organization KC RTOP 538-08-11

- 4** Holmes, B. J.: (Re)inventing Government—Industry-University R&D Collaboration. Presented at SAE General, Corporate, and Regional Aviation Meeting and Exposition, April 29–May 1, 1997, Wichita, Kansas.
Organization KC RTOP 538-07-22

- 5** Horvath, T. J.; and Hannemann, K.: Blunt Body Near Wake Flow Field at Mach 10. Presented at 35th AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 1997, Reno, Nevada. AIAA Paper No. 97-0986.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/aiaa/NASA-aiaa-97-0986.ps.Z>
Organization DA RTOP 242-80-01

- 6** Kaplan, B. J.; Lee, D. A.; Retina, N.; Wingrove, E. R., III; Malone, B.; Hall, S. G.; and Houser, S. A.: The ASAC Flight Segment and Network Cost Models. (NAS2-14361 Logistics Management Institute.) NASA CR-201679, April 1997, 198 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/cr/NASA-97-cr201679.ps.Z>
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- 7** Lee, D. A.; Kostiuk, P. F.; Hemm, R. V.; Wingrove, E. R., III; and Shapiro, G.: Estimating the Effects of the Terminal Area Productivity Program. (NAS2-14361 Logistics Management Institute.) NASA CR-201682, April 1997, 106 p.
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- 8** Roberts, E.; and Villani, J. A.: ASAC Executive Assistant Architecture Description Summary. (NAS2-14361 Logistics Management Institute.) NASA CR-201681, April 1997, 191 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/cr/NASA-97-cr201681.ps.Z>
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- 9** Roberts, E.; Villani, J. A.; and Ritter, P.: Aviation System Analysis Capability (ASAC) Quick Response System (QRS) Test Report. (NAS2-14361 Logistics Management Institute.) NASA CR-201680, April 1997, 178 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/cr/NASA-97-cr201680.ps.Z>
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- 10** Wingrove, E. R., III; Johnson, J. P.; Sickles, R. G.; and Good, D. H.: The ASAC Air Carrier Investment Model (Second Generation). (NAS2-14361 Logistics Management Institute.) NASA CR-201678, April 1997, 77 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/cr/NASA-97-cr201678.ps.Z>
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Category 02 Aerodynamics

- 11** Alter, S. J.: Surface Modeling and Grid Generation of Orbital Sciences X34 Vehicle (Phase I). (NAS1-96014 Lockheed Martin Engineering & Sciences Company.) NASA CR-97-206243, November 1997, 117 p.
<http://techreports.larc.nasa.gov/ltrs/PDF/1997/cr/NASA-97-cr206243.pdf>
 Organization DA RTOP 242-80-01
- 12** Anderson, C. J.; Giuliano, V. J.; and Wing, D. J.: Investigation of Hybrid Fluidic/Mechanical Thrust Vectoring for Fixed-Exit Exhaust Nozzles. Presented at 33rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, July 7-9, 1997, Seattle, Washington. AIAA Paper No. 97-3148.
 Organization DA RTOP 522-21-11
- 13** Anderson, W. K.; and Bonhaus, D. L.: Aerodynamic Design on Unstructured Grids for Turbulent Flows. NASA TM-112867, June 1997, 11 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/tm/NASA-97-tm112867.ps.Z>
 Organization DF RTOP 522-31-21
- 14** Anderson, W. K.; and Venkatakrishnan, V.: Aerodynamic Design Optimization on Unstructured Grids With a Continuous Adjoint Formulation. Presented at 35th AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 1997, Reno, Nevada. AIAA Paper No. 97-0643.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/97/NASA-aiaa-97-0643.ps.Z>
 Organization DF RTOP 505-59-53

- 15** Asbury, S. C.: Internal Performance of a Fixed-Shroud Nonaxisymmetric Nozzle Equipped With an Aft-Hood Exhaust Deflector. NASA TM-97-206255, November 1997, 75 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/tm/NASA-97-tm206255.ps.Z>
Organization DA RTOP 522-25-31
- 16** Bartels, R. E.; and Edwards, J. W.: Cryogenic Tunnel Pressure Measurements on a Supercritical Airfoil for Several Shock Buffet Conditions. NASA TM-110272, September 1997, 14 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/tm/NASA-97-tm110272.ps.Z>
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- 17** Berry, S. A.; Bouslog, S. A.; Brauckmann, G. J.; and Caram, J. M.: Boundary Layer Transition Due to Isolated Roughness: Shuttle Results From the LaRC 20-Inch Mach 6 Tunnel. Presented at 35th AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 1997, Reno, Nevada. AIAA Paper No. 97-0273.
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- 18** Bibb, K. L.; Peraire, J.; and Riley, C. J.: Hypersonic Flow Computations on Unstructured Meshes. Presented at 35th AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 1997, Reno, Nevada. AIAA Paper No. 97-0625.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/aiaa/NASA-aiaa-97-0625.ps.Z>
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- 19** Blanchard, A. E.; Lachowicz, J. T.; and Wilkinson, S. P.: NASA-Langley Mach 6 Quiet Wind Tunnel Performance. *AIAA Journal*, Volume 35, No. 1, January 1997, p. 23-28.
Organization DF RTOP 505-59-50
- 20** Blanchard, R. C.; Wilmoth, R. G.; and Moss, J. N.: Aerodynamic Flight Measurements and DSMC Simulations of Blunt-Body Mars Entry Vehicles. *Journal of Spacecraft and Rockets*, Volume 34, No. 5, September–October 1997, p. 687-690.
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- 21** Buning, P. G.: Chimera Grid Development for the Space Shuttle Launch Vehicle. Presented at Advances in Flow Simulation Techniques Conference, May 3-4, 1997, Davis, California.
Organization DA RTOP 538-05-13
- 22** Carlson, J. R.: Applications of Algebraic Reynolds Stress Turbulence Models Part 2: Transonic Shock-Separated Afterbody. *Journal of Propulsion and Power*, Volume 13, No. 5, September–October 1997, p. 620-628.
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- 23** Carlson, J. R.: Applications of Algebraic Reynolds Stress Turbulence Models Part 1: Incompressible Flat Plate. *Journal of Propulsion and Power*, Volume 13, No. 5, September–October 1997, p. 610-619.
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- 24** Chen, F-J.: Application of Least-Squares Adjustment Technique to Geometric Camera Calibration and Photogrammetric Flow Visualization. Presented at ISA 43rd International Instrumentation Symposium, May 4-8, 1997, Orlando, Florida. In Proceedings, p. 659-668.
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- 25** Cler, D. L.; Lamb, M.; Farokhi, S.; Taghavi, R. R.; and Hazlewood, R. N.: Application of Pressure-Sensitive Paint in Supersonic Nozzle Research. *Journal of Aircraft*, Volume 33, No. 6, November–December 1996, p. 1109-1114.
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- 26** Cockrell, C. E., Jr.; and McMinn, J. D.: Enhanced Control Effector Designs for Airbreathing Transatmospheric Vehicles. Presented at 35th AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 1997, Reno, Nevada. AIAA Paper No. 97-0297.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/97/NASA-aiaa-97-0297.ps.Z>
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- 27** Doggett, G. P.; Chokani, N.; and Wilkinson, S. P.: Effect of Angle of Attack on Hypersonic Boundary-Layer Stability. *AIAA Journal*, Volume 35, No. 3, March 1997, p. 464-470.
Organization DF RTOP 522-31-11
- 28** Gatlin, G. M.; and McGhee, R. J.: Experimental Investigation of Semi-Span Model Testing Techniques. *Journal of Aircraft*, Volume 34, No. 4, July–August 1997, p. 500-505.
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- 29** Gile-Laflin, B. E.; Applin, Z. T.; and Jones, K. M.: Wind Tunnel Results of the Aerodynamic Performance of a 1/8-Scale Model of a Twin-Engine Transport With Multi-Element Wing. NASA TM-110304, March 1997, 128 p.
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- 30** Green, B. E.: An Approach to the Constrained Design of Natural Laminar Flow Airfoils. (NCC1-24 George Washington University, JIAFS.) NASA CR-201686, February 1997, 78 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/cr/NASA-97-cr201686.ps.Z>
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- 31** Green, B. E.; Whitesides, J. L.; Campbell, R. L.; and Mineck, R. E.: Method for the Constrained Design of Natural Laminar Flow Airfoils. *Journal of Aircraft*, Volume 34, No. 6, November–December 1997, p. 706-712.
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- 32** Huai, X.; Joslin, R. D.; and Piomelli, U.: Large-Eddy Simulation of Laminar-Turbulent Transition in a Swept-Wing Boundary Layer. Presented at 35th AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 1997, Reno, Nevada. AIAA Paper No. 97-0750.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/97/NASA-aiaa-97-0750.ps.Z>
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- 33** Hunt, J. L.; Laruelle, G.; and Wagner, A.: Systems Challenges for Hypersonic Vehicles. Presented at AGARD Interpanel Symposium on Future Aerospace Technology in Service to the Alliance, April 14-18, 1997, Paris, France.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/mtg/NASA-97-agard-jlh2.ps.Z>
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- 34** Hunt, J. L.; and McClinton, C. R.: Scramjet Engine/Airframe Integration Methodology. Presented at AGARD Interpanel Symposium on Future Aerospace Technology in Service to the Alliance, April 14-18, 1997, Paris, France.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/mtg/NASA-97-agard-jlh.ps.Z>
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- 35** Joslin, R. D.: Direct Numerical Simulation of Evolution and Control of Linear and Nonlinear Disturbances in Three-Dimensional Attachment-Line Boundary Layers. NASA TP-3623, February 1997, 39 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/97/NASA-97-tp3623.ps.Z>
Organization DF RTOP 505-59-50
- 36** Joslin, R. D.: Discussion of DNS: Past, Present, and Future. Presented at First International Conference on Direct Numerical Simulation and Large Eddy Simulation (DNS/LES), August 4-8, 1997, Ruston, Louisiana. In Proceedings, Paper No. I-01.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/mtg/NASA-97-1icdns-rdj.ps.Z>
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- 38** Kennedy, C. A.; and Carpenter, M. H.: Comparison of Several Numerical Methods for Simulation of Compressible Shear Layers. NASA TP-3484, December 1997, 62 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/tp/NASA-97-tp3484.ps.Z>
Organization DA RTOP 505-59-50
- 39** Klausmeyer, S. M.; and Lin, J. C.: Comparative Results From a CFD Challenge Over a 2D Three-Element High-Lift Airfoil. NASA TM-112858, May 1997, 50 p.
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Organization DF RTOP 522-11-51
- 40** Kleb, W. L.: Simulation of an Aerospace Vehicle Pitch-Over Maneuver. *Journal of Spacecraft and Rockets*, Volume 34, No. 2, March–April 1997, p. 254-256.
Organization DA RTOP 242-20-08

- 41** Korte, J. J.; Dunn, H. J.; Salas, A. O.; Alexandrov, N.; Follett, W. W.; Orient, G. E.; and Hadid, A. H.: Multidisciplinary Approach to Linear Aerospike Nozzle Optimization. Presented at 33rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, July 7-9, 1997, Seattle, Washington. AIAA Paper No. 97-3374.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/aiaa/NASA-aiaa-97-3374.ps.Z>
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- 42** Korte, J. J.; Salas, A. O.; Dunn, H. J.; Alexandrov, N.; Follett, W. W.; Orient, G. E.; and Hadid, A. H.: Multidisciplinary Approach to Aerospike Nozzle Design. NASA TM-110326, February 1997, 16 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/tm/NASA-97-tm110326.ps.Z>
Organization DF RTOP 522-31-41
- 43** Korte, J. J.; Weston, R. P.; and Zang, T. A.: Multidisciplinary Optimization Methods for Preliminary Design. Presented at AGARD Interpanel Symposium on Future Aerospace Technology in Service to the Alliance, April 14-18, 1997, Paris, France.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/mtg/NASA-97-agard-jjk.ps.Z>
Organization DF RTOP 505-63-50
- 44** Kumar, A.; Gnoffo, P. A.; Moss, J. N.; and Drummond, J. P.: Advances in Computational Capabilities for Hypersonic Flows. Presented at AGARD Interpanel Symposium on Future Aerospace Technology in Service to the Alliance, April 14-18, 1997, Paris, France.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/mtg/NASA-97-agard-ak.ps.Z>
Organization DA RTOP 242-80-01
- 45** Lachowicz, J. T.; Chokani, N.; and Wilkinson, S. P.: Boundary-Layer Stability Measurements in a Hypersonic Quiet Tunnel. *AIAA Journal*, Volume 34, No. 12, December 1996, p. 2496-2500.
Organization DF RTOP 522-31-11
- 46** Lin, J. C.; and Dominik, C. J.: Parametric Investigation of a High Lift Airfoil at High Reynolds Numbers. *Journal of Aircraft*, Volume 34, No. 4, July–August 1997, p. 485-491.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/jp/NASA-97-joa-jcl.ps.Z>
Organization DF RTOP 505-59-50
- 47** Mitcheltree, R. A.; and Fremaux, C. M.: Subsonic Dynamics of Stardust Sample Return Capsule. NASA TM-110329, March 1997, 19 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/tm/NASA-97-tm110329.ps.Z>
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- 48** Mitcheltree, R. A.; Moss, J. N.; Cheatwood, F. M.; Greene, F. A.; and Braun, R. D.: Aerodynamics of the Mars Microprobe Entry Vehicles. Presented at AIAA Atmospheric Flight Mechanics Conference, August 11-13, 1997, New Orleans, Louisiana. AIAA Paper No. 97-3658.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/aiaa/NASA-aiaa-97-3658.ps.Z>
Organization DA RTOP 242-80-01

- 49** Mitcheltree, R. A.; Wilmoth, R. G.; Cheatwood, F. M.; Brauckmann, G. J.; and Greene, F. A.: Aerodynamics of Stardust Sample Return Capsule. Presented at 15th AIAA Applied Aerodynamics Conference, June 23-25, 1997, Atlanta, Georgia. AIAA Paper No. 97-2304.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/aiaa/NASA-aiaa-97-2304.ps.Z>
Organization DA RTOP 242-80-01
- 50** Penland, J. A.; and Hawkins, R.: Invariance of Hypersonic Normal Force Coefficients With Reynolds Number and Determination of Inviscid Wave Drag From Laminar Experimental Results. NASA TP-3673, December 1997, 65 p.
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1997/tp/NASA-97-tp3673.ps.Z>
Organization LA RTOP 505-70-63
- 51** Phillips, W. P.; and Engelund, W. C.: Aerodynamics for a Winged, Circular-Body, Single-Stage-to-Orbit Spacecraft Configuration. *Journal of Spacecraft and Rockets*, Volume 34, No. 1, January–February 1997, p. 43-47.
Organization DA RTOP 232-01-04
- 52** Popernack, T. G., Jr.; Owens, L. R., Jr.; Hamner, M.; and Morris, M. J.: Application of Temperature Sensitive Paint for Detection of Boundary Layer Transition. Presented at 17th International Congress on Instrumentation in Aerospace Simulation Facilities, September 29–October 2, 1997, Monterey, California.
Organization DA RTOP 522-31-51
- 53** Rausch, V. L.; McClinton, C. R.; and Crawford, J. L.: Hyper-X: Flight Validation of Hypersonic Airbreathing Technology. Presented at XIII ISABE (International Society for Air Breathing Engines), September 7-12, 1997, Chattanooga, Tennessee. ISABE Paper No. 97-7024.
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