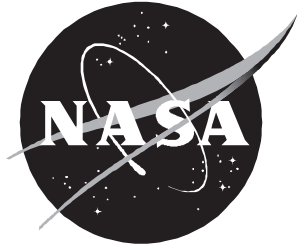


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NASA Langley Scientific and Technical Information Output—2003

*Susan H. Stewart, Compiler
Langley Research Center, Hampton, Virginia*

December 2004

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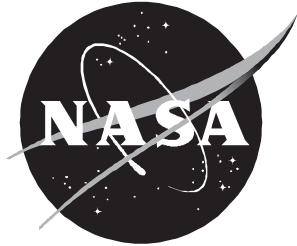
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NASA Langley Scientific and Technical Information Output—2003

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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. 2003.

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. 2003, Langley's contributions to NASA and non-NASA literature included 2 Special Publications, 18 Technical Publications, 7 Conference Publications, 71 Technical Memorandums, 38 Contractor Reports, 153 Journal Articles and Book Publications, 649 Meeting Presentations, 122 Technical Talks, and 15 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 aerospace systems, concepts, and analysis, aerodynamics, aerothermodynamics, and acoustics, structures and materials, airborne systems, atmospheric sciences, and systems engineering.

This document contains a bibliography of Langley's publicly available scientific and technical research output for CY 2003, which is processed through the Center's Office of the Chief Information Officer to become 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 vi.

Many Langley reports are available electronically on the Langley Technical Reports Server (LTRS) at <http://techreports.larc.nasa.gov/ltrs/>. The relative Uniform Resource Locators are noted below citations for reports available electronically.

The citations are grouped by the NASA Aeronautics and Space Database subject categories and listed alphabetically by author or innovator. The Langley organization to which the senior author or innovator is assigned is noted below citations and included in the indexes.

Patents listed are those which were issued in CY 2003 and owned by Langley Research Center.

Publication of some journal articles was not known at press time for the 2002 issue of this document. These articles are therefore listed in the 2003 issue.

Availability

| <u>Category</u> | <u>Source</u> |
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| NASA Reports | NASA Center for AeroSpace Information (CASI) 7121 Standard Drive Hanover, MD 21076-1320 (301) 621-0390 National Technical Information Service (NTIS) 5285 Port Royal Road Springfield, VA 22161-2171 (703) 605-6000 |
| Patents: | |
| Patent Application Specifications | NASA Center for AeroSpace Information (CASI) 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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- 1 Biess, T. J.; and Lazos, B. S.: Parametric Model Smooth-Contour Morphing Wing. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.
Organization RB
- 2 Bryant, W. H.: The NASA/DoT Volpe Transportation Center Wake Acoustic Data Collection Campaign at Denver International Airport. Presented at WakeNet2-Europe Workshop, November 11-12, 2003, London, England.
Organization OH
- 3 Chambers, J. R.: Concept to Reality: Contributions of the Langley Research Center to U.S. Civil Aircraft of the 1990s. NASA/SP-2003-4529, June 2003, 306 p.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/spec/NASA-2003-sp4529.pdf>
Organization OD
- 4 Guynn, M. D.; Croom, M. A.; Smith, S. C.; Parks, R. W.; and Gelhausen, P. A.: Evolution of a Mars Airplane Concept for the ARES Mars Scout Mission. Presented at 2nd AIAA “Unmanned Unlimited” Systems, Technologies, and Operations—Aerospace, Land, and Sea Conference and Workshop & Exhibit, September 15-18, 2003, San Diego, California. AIAA Paper No. 2003-6578.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-6578.pdf>
Organization RA
- 5 Holmes, B. J.: Innovations in 21st Century Air Transportation. Presented at Aviation Insurance Association’s 27th Annual Educational Conference, April 26-29, 2003, Orlando, Florida.
Organization OH
- 6 Holmes, B. J.: Life After Airliners. Presented at EAA AirVenture 2003, August 3, 2003, Oshkosh, Wisconsin.
Organization OH
- 7 Holmes, B. J.: Avionics Key to Enabling Aviation Transformation: The Next Twenty-Five Years in Avionics. *Aviation Week & Space Technology*, Volume 159, No. 24, December, p. 74-75.
Organization OH

- 8** Holmes, B. J.: Air Transportation System Innovation and Modern Network Theory Considerations. Presented at Old Dominion University, Aerospace Engineering Seminar, October 2, 2003, Norfolk, Virginia.
Organization OH
- 9** Holmes, B. J.: Innovations in Aviation: The Small Aircraft Transportation System Concept. Presented at 2003 Michigan Airport Conference, February 12-13, 2003, Lansing, Michigan.
Organization OH
- 10** Holmes, B. J.; Durham, M. H.; and Tarry, S.: The Small Aircraft Transportation System Concept and Technologies. Presented at AIAA/ICAS International Air & Space Symposium and Exposition, July 14-17, 2003, Dayton, Ohio. AIAA Paper No. 2003-2510.
Organization OH
- 11** Melton, L. P.; Yao, C-S.; and Seifert, A.: Active Control of Separation From the Flap of a Supercritical Airfoil. Presented at 33rd AIAA Fluid Dynamics Conference & Exhibit, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-4005.
Organization RB
- 12** Morris, A. T.; and Goode, P. W.: The Aeronautical Data Link: Decision Framework for Architecture Analysis. Presented at 3rd Integrated Communications, Navigation, and Surveillance (ICNS) Conference & Workshop, May 19-22, 2003, Annapolis, Maryland.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-3icns-atm.pdf>
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- 13** Moses, P. L.: X-43C Plans and Status. Presented at 12th AIAA International Space Planes and Hypersonic Systems and Technologies Conference, December 15-19, 2003, Norfolk, Virginia. AIAA Paper No. 2003-7084.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-7084.pdf>
Organization OK
- 14** Moses, P. L.: X-43C Flight Demonstrator Project Overview. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado. Paper No. 2C#3.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-jannaf-plm.pdf>
Organization OK
- 15** Moses, P. L.; Rausch, V. L.; Nguyen, T. T.; and Hill, J. R.: NASA Hypersonic Flight Demonstrators - Overview, Status, and Future Plans. Presented at 54th International Astronautical Congress, September 29–October 3, 2003, Bremen, Germany. In Acta Astronautica, Vol.55, 2004, p. 619-630, Paper No. IAC-03-V.6.01.
Organization OK

- 16** Newsom, J. R.; Robertshaw, H. H.; and Kapania, R. K.: Control Law Design in a Computational Aeroelasticity Environment. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1415.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1415.pdf>
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- 17** Spearman, M. L.: An Inboard-Wing Arrangement for High-Capacity Airlift and Sealift Vehicles. Presented at Applied Vehicle Technology Panel Symposium on Novel and Emerging Vehicle and Vehicle Technology Concepts, April 7-9, 2003, Brussels, Belgium.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-avtps-mls.pdf>
Organization RA
- 18** Spearman, M. L.: Aerodynamic Characteristics for Airplane Configurations Having Several Body Arrangements. Presented at AIAA's 3rd Annual Aviation Technology, Integration, and Operations Technical Forum, November 17-19, 2003, Denver, Colorado.
Organization RA

Category 02 Aerodynamics

- 19** Abdol-Hamid, K. S.; Pao, S. P.; Massey, S. J.; and Elmiligui, A.: Temperature Corrected Turbulence Model for High Temperature Jet Flow. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-4070.
Organization RB
- 20** Allison, D. O.; and Cavallo, P. A.: Static Aeroelastic Predictions for a Transonic Transport Model Using an Unstructured-Grid Flow Solver Coupled With a Structural Plate Technique. NASA/TP-2003-212156, March 2003, 51 p.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212156.pdf>
Organization RB
- 21** Amitay, M.; Washburn, A. E.; Anders, S. G.; Parekh, D. E.; and Glezer, A.: Active Flow Control on the STINGRAY UAV: Transient Behavior. Presented at 33rd AIAA Fluid Dynamics Conference & Exhibit, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-4001.
Organization RB
- 22** Atkins, H. L.; Ryan, J.; and Shu, C-W.: Application of an Accuracy Enhancing Post-Processing Method to Aeroacoustic Simulations. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina.
Organization RB
- 23** Balakumar, P.: Transition in a Supersonic Boundary-Layer Due to Roughness and Acoustic Disturbances. Presented at 33rd AIAA Fluid Dynamics Conference & Exhibit, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3589.
Organization RB

- 24** Bauer, S. X.; and Wood, R. M.: Base Passive Porosity for Vehicle Drag Reduction. U. S. Patent 6,616,218. Issued September 9, 2003.
Organization RB
- 25** Beeler, S. C.; Moerder, D. D.; and Cox, D. E.: A Flight Dynamics Model for a Small Glider in Ambient Winds. NASA/TM-2003-212665, November 2003, 20 p.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212665.pdf>
Organization RD
- 26** Berrier, B. L.; and Morehouse, M. B.: Evaluation of Flush-Mounted, S-Duct Inlets With Large Amounts of Boundary Layer Ingestion. Presented at NATO/RTA Symposium on Vehicle Propulsion Integration, October 6-9, 2003, Warsaw, Poland. Paper No. 38.
Organization RB
- 27** Bibb, K. L.; and Prabhu, R. K.: Computational Aerodynamic Characteristics of the Space Shuttle Orbiter for a Range of Damage Scenarios. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.
Organization RB
- 28** Bogue, D. R.; Tran, J. T.; Om, O.; Rivers, S. M.; Pendergraft, O. C., Jr.; and Wahls, R. A.: Scale Effect Investigation of the Stability and Control Characteristics of an Advanced Twinjet Configuration. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3401.
Organization RB
- 29** Brauckmann, G. J.; and Scallion, W. I.: Experimental Hypersonic Aerodynamic Characteristics of the Space Shuttle Orbiter for a Range of Damage Scenarios. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.
Organization RB
- 30** Bushnell, D. M.: Aircraft Drag Reduction—A Review. *Proceedings of the Institution of Mechanical Engineers, Part G—Journal of Aerospace Engineering*, Volume 217, No. G1, February 2003, p. 1-17.
Organization A
- 31** Campbell, R. L.; and Morehouse, M. B.: PAI Design of a Blended Wing Body With Boundary Layer Ingestion Nacelles. Presented at UEET Technology Forum, October 28-29, 2003, Westlake, Ohio.
Organization RB

- 32** Capone, F. J.; Hall, R. M.; Owens, D. B.; Lamar, J. E.; and McMillin, S. N.: Recommended Experimental Procedures for Evaluation of Abrupt Wing Stall Characteristics. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0922.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0922.pdf>
Organization RB
- 33** Capone, F. J.; Owens, D. B.; and Hall, R. M.: Development of a Free-To-Roll Transonic Test Capability. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0749.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0749.pdf>
Organization RB
- 34** Casper, J. H.; Farassat, F.; Mish, P. F.; and Devenport, W. J.: Broadband Noise Predictions for an Airfoil in a Turbulent Stream. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0366.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0366.pdf>
Organization RB
- 35** Chambers, J. R.; and Hall, R. M.: Historical Review of Uncommanded Lateral-Directional Motions at Transonic Conditions. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0590.
Organization RB
- 36** Chang, C-L.: The Langley Stability and Transition Analysis Codes (LASTRAC): LST, Linear & Nonlinear PSE for 2D, Axisymmetric, and Infinite Swept Wing Boundary Layers. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0974.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0974.pdf>
Organization RB
- 37** Choudhari, M. M.; and Chang, C-L.: A Computational Study of Roughness Based Supersonic Laminar Flow Control. Presented at LMS-Durham Workshop on New Developments and Applications in Rapid Fluid Flows, July 14-18, 2003, Durham, United Kingdom.
Organization RB
- 38** Choudhari, M. M.; and Khorrami, M. R.: Computational Study of Porous Treatment for Altering Flap Side-Edge Flowfield. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina. AIAA Paper No. 2003-3113.
Organization RB
- 39** Choudhari, M. M.; and Khorrami, M. R.: Control of Global Instabilities Contributing to Airframe Noise via Porous Surface Treatment. Presented at 2nd Global Flow Instability and Control Symposium, June 11-13, 2003, Crete, Greece.
Organization RB

- 40** Coen, P. G.: Configuration Shaping for Low Sonic Boom - Retrospective and Future Directions. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida.
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- 41** Cruz, J. R.; Kandis, M.; and Witkowski, A.: Opening Loads Analyses for Various Disk-Gap-Band Parachutes. Presented at 17th AIAA Aerodynamic Decelerator Systems Technology Conference and Seminar, May 19-22, 2003, Monterey, California. AIAA Paper No. 2003-2131.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-2131.pdf>
Organization RF
- 42** Cruz, J. R.; Mineck, R. E.; Keller, D. F.; and Bobskill, M. V.: Wind Tunnel Testing of Various Disk-Gap-Band Parachutes. Presented at 17th AIAA Aerodynamic Decelerator Systems Technology Conference and Seminar, May 19-22, 2003, Monterey, California. AIAA Paper No. 2003-2129.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-2129.pdf>
Organization RF
- 43** Deere, K. A.: Summary of Fluidic Thrust Vectoring Research Conducted at NASA Langley Research Center. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3800.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3800.pdf>
Organization RB
- 44** Deere, K. A.; Berrier, B. L.; Flamm, J. D.; and Johnson, S. K.: Computational Study of Fluidic Thrust Vectoring Using Separation Control in a Nozzle. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3803.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3803.pdf>
Organization RB
- 45** Engelund, W. C.; Huebner, L. D.; Robinson, J. S.; and Ferlemann, S. M.: Propulsion Airframe Integration Issues for Hypersonic Vehicle Designs. Presented at NATO/RTA Symposium on Vehicle Propulsion Integration, October 6-9, 2003, Warsaw, Poland.
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- 46** Flamm, J. D.; Larkin, M.; Favrow, L.; Cassenti, B.; Karanik, J.; and Staroselsky, A.: Variable Area Fan Nozzle Development/Shape Memory Alloy Actuator Durability Testing and SMA Modeling. Presented at UEET Technology Forum, October 28-29, 2003, Westlake, Ohio.
Organization RB
- 47** Frink, N. T.; Bonhaus, D. L.; Vatsa, V. N.; Bauer, S. X.; and Tinetti, A. F.: A Boundary Condition for Simulation of Flow Over Porous Surfaces. *Journal of Aircraft*, Volume 40, No. 4, July/August 2003, p. 692-698.
Organization RB

- 48** Frink, N. T.; and Milholen, W. E., II: Tetrahedral Grid Sensitivity on Drag Prediction for the DLR-F6 Configuration Using TetrUSS. Presented at 22nd AIAA CFD Drag Prediction Workshop, June 21-22, 2003, Orlando, Florida.
Organization RB
- 49** Frink, N. T.; Parikh, P. C.; Pirzadeh, S. Z.; Hunter, C. A.; Abdol-Hamid, K. S.; and Pandya, M. J.: TetrUSS Capabilities for S&C Applications. Presented at NASA Symposium Computational Methods for Stability and Control, September 23-25, 2003, Hampton, Virginia.
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- 50** Gatski, T. B.: Properties of the Residual Stress of the Temporally Filtered Navier-Stokes Equations. Presented at European Aeronautics Defence and Space Company, August 25, 2003, Munich, Germany.
Organization RB
- 51** Gatski, T. B.: Turbulence Modeling for Aeronautical Flows. Presented at CFD-Based Aircraft Drag Prediction and Reduction, November 3-7, 2003, Hampton, Virginia.
Organization RB
- 52** Graves, C. A.; Lockwood, M. K.; and Powell, R. W.: Use of Entry Technologies for Planetary Exploration; Past, Present, and Future. Presented at 3rd International Symposium on Atmospheric Reentry Vehicles and Systems, March 24-27, 2003, Arcachon, France.
Organization RA
- 53** Gumbert, C. R.; Hou, G. J.; and Newman, P. A.: Reliability Assessment of a Robust Design Under Uncertainty for a 3-D Flexible Wing. Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-4094.
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-4094.pdf>
Organization RA
- 54** Hall, R. M.; Fremaux, C. M.; and Chambers, J. R.: Introduction to Computational Methods for Stability and Control (COMSAC). Presented at NASA Symposium on Computational Methods for Stability and Control, September 23-25, 2003, Hampton, Virginia.
Organization RB
- 55** Hall, R. M.; Fremaux, C. M.; and Chambers, J. R.: COMSAC: Visions and Potential Program Content. Presented at NASA Symposium on Computational Methods for Stability and Control, September 23-25, 2003, Hampton, Virginia.
Organization RB
- 56** Hall, R. M.; and Woodson, S. H.: Introduction to the Abrupt Wing Stall (AWS) Program. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0589.
Organization RB

- 57** Hall, R. M.; Woodson, S. H.; and Chambers, J. R.: Accomplishments of the Abrupt Wing Stall (AWS) Program and Future Requirements. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0927.
Organization RB
- 58** Helenbrook, B.; Mavriplis, D. J.; and Atkins, H. L.: Analysis of “p” -Multigrid for Continuous and Discontinuous Finite Element Discretizations. Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-0398.
Organization RB
- 59** Hensch, M. J.: Experiences From the AIAA Drag Prediction Workshop Series: Statistical Methods and Analysis. Presented at Von Karman Institute Series: CFD-Based Aircraft Drag Prediction and Reduction, November 3-7, 2003, Hampton, Virginia.
Organization RB
- 60** Hensch, M. J.; Luckring, J. M.; and Morrison, J. H.: Quantitative Prediction of Computational Quality. Presented at NASA Symposium on Computational Methods for Stability and Control, September 23-25, 2003, Hampton, Virginia.
Organization RB
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Astronautics

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