



STEVEN L. MORRIS, Ph.D., P.E., FRAeS
PRINCIPAL

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Dr. Morris is an aeronautical/mechanical engineer, and Principal of the Firm for Engineering Systems Inc. (ESi). He has over 40 years of experience in aeronautical and mechanical engineering, including theoretical, computational, and experimental investigations. Dr. Morris' consulting work includes the determination of aircraft maneuvers and performance characteristics from recorded radar data; on-board systems; accident reconstruction; flight data recorder analysis; static, dynamic, and aerodynamic performance of vehicles and fixed objects; load estimation; aircraft ice accretion predictions; and other aeronautical engineering analyses.

Dr. Morris served over 24 years as an officer in the U.S. Air Force with duties including teaching and directing a wide variety of courses in aeronautics and engineering design at the U.S. Air Force Academy and Air Force Test Pilot School. He retired in the grade of Lieutenant Colonel. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA) and Fellow of the Royal Aeronautical Society (RAeS). Dr. Morris has taught and published more than 30 papers and reports and has co-authored a book titled "An Introduction to Aircraft Flight Mechanics: Performance, Static Stability, Dynamic Stability, and Classical Feedback Control" that is currently being used as a textbook at the U.S. Air Force Academy, as well as other universities, and was winner of the AIAA Summerfield Book Award.

Areas of Specialization

Airplane and Helicopter Accident Reconstruction
Aircraft Flight Path Reconstruction
Aircraft Design, Flight Dynamics and Simulation, Radar Data Analysis
Aerodynamics, Experimental and Computational Fluid Dynamics
Aircraft Icing
Thermodynamics and Lasers
Space-Based Navigational Systems

Education

Ph.D., Aerospace Engineering, Texas A & M University, 1989
M.S., Aeronautical Engineering, Air Force Institute of Technology, 1980
B.S., Engineering Sciences, USAF Academy, 1975

Licensed Professional Engineer (P.E.)

State of Colorado License No. 39816

May 2023

Professional Affiliations/Honors

American Institute of Aeronautics and Astronautics (AIAA)

Associate Fellow
Applied Aerodynamics Technical Committee
Atmospheric Flight Mechanics Technical Committee
AIAA Corporate Member Committee
Region V Deputy Director for Education
Region V Deputy Director for Precollege Outreach

Society of Automotive Engineers (SAE)

Member
AC-9C Aircraft Icing Technology Committee Member, 2004-Present
AC-9C Aircraft Icing Technology Committee Secretary, 2009-2011
AC-9C Aircraft Icing Technology Committee Vice Chair, 2011-2013
AC-9C Aircraft Icing Technology Committee Chair, 2013-2015

Royal Aeronautical Society (RAeS)

Fellow

International Society for Air Safety Investigators (ISASI)

Member

Outstanding Young Men in America (1981)

USAF Academy's 1991 Outstanding Military Educator in Aeronautics

"Robert L. Wenning Outstanding Academic Instructor Award," USAF Test Pilot School, Class 91B (1992)

"Robert L. Wenning Outstanding Academic Instructor Award," USAF Test Pilot School, Class 92B (1993)

"Daniel H. Daley Award" for Outstanding Member of the Department of Aeronautics, USAF Academy (1994)

Department of Aeronautics Advisory Panel, USAF Academy

Member, 1999 - Present

American Institute of Aeronautics and Astronautics Sustained Service Award (2005)

2006 Summerfield Book Award – presented for best book recently published by the American Institute of Aeronautics and Astronautics (2006)

Marquis' "Who's Who in the West"

Marquis' "Who's Who in America"

Marquis' "Who's Who in the World"

Marquis' "Who's Who in Science and Engineering"

Strathmore's Who's Who Registry

International Who's Who

Tau Beta Pi – National Engineering Honor Society

Sigma Gamma Tau – National Aerospace Engineering Honor Society

Positions Held

Engineering Systems Inc., Colorado Springs, Colorado

Principal, 2019 – Present

Principal and Manager of Colorado Operations, 2018 – 2019

Senior Managing Consultant and Manager of Colorado Operations, 2012 – 2018

Senior Consultant and Regional Office Manager- Colorado, 2011 – 2012

Senior Consultant, 2000 – 2010

SRS Technologies, Colorado Springs, Colorado

Senior Engineering Specialist, 1999 – 2000

Department of Aeronautics, USAF Academy, Colorado

Associate Professor and Deputy Department Head, 1996 – 1999

HQ U.S. Space Command, Colorado Springs, Colorado

Chief, Force Enhancement Branch, Plans Directorate, 1994 – 1996

Department of Aeronautics, USAF Academy, Colorado

Associate Professor and Deputy Department Head, 1989 – 1994

Department of Aeronautics, USAF Academy, Colorado

Assistant Professor and Resource Manager, 1984 – 1986

USAF Weapons Laboratory, Kirtland AFB, New Mexico

Chief, Chemical Laser Weapons Systems Group, 1980 –1984

USAF 6585th Test Group, Holloman AFB, New Mexico

Group Test Engineer, 1976 – 1978

Continued Education

Basic Aircraft Accident Investigation Course, US Department of Transportation, Transportation and Safety Institute, March 16-25, 2009, Oklahoma City, OK.

Publications

Books

Yechout, T.R., **Morris, S.L.**, Bossert, D.E., and Hallgren, W.F., An Introduction to Aircraft Flight Mechanics: Performance, Static Stability, Dynamic Stability, and Classical Feedback Control, American Institute of Aeronautics and Astronautics, ISBN: 1-56347-577-4, May 2003.

Papers

Jung, T., **Morris, S.**, Slane, J., Winn, R, Brandt, S., Greene,K., “Use of Specific Excess Power in Aviation Accident Analysis,” American Institute of Aeronautics and Astronautics, SciTech Forum, AIAA-2021-1337, 15 January 2021.

Morris, S. and Winn, R., “Unconventional Sources of Data for Accident Reconstructions,” American Bar Association, Aviation and Space Law, Committee News, Summer 2019.

Fox, C., Lucek, J., **Morris, S.**, Winn, R., and Kenner, M., “The Use of Virtual Reality in Aviation Accident Analysis and Reconstruction,” SMU Air Law Symposium, Dallas, TX, March 2019.

Winn, R., Fox, C., **Morris, S.**, Kenner, M., Lucek, J., “Aviation Accident Reconstruction Using Virtual Reality and Other New Technologies,” DRI 2019 Product Liability Seminar, Austin, TX, February 2019.

Jung T., **Morris, S.**, and Winn, R., “The Use of Virtual Reality in Accident Reconstruction,’ ATS-2018 American Institute of Aeronautics and Astronautics Rocky Mountain Section Annual Technical Symposium, October 2018.

Slane, J., Butler, R., **Morris, S.**, “Using GPS and Accelerometer Data to Reconstruct Aircraft Flight Parameters,” AIAA-2008-7032, Honolulu, HI, August, 2008.

- Morris, S.**, Butler, R., Slane, J., McLaughlin, T., Gamble, C., and Martin, J., “Analysis of a Hoverwing in Ground Effect,” AIAA-2008-0431, Reno NV January, 2008.
- Butler, R., Winn, R., **Morris, S.**, Slane, J., Turnquist D., and Wooddell, M., “Using GPS-based Data Acquisition to Evaluate Vehicle and Driver Performance,” AIAA-2008-1146, Reno NV, January, 2008.
- Slane, J.H., Butler, R.J., Emmerling, J.J., **Morris, S.L.**, Winn, R.C., Kumley, K.B. “Evaluation of a General Aviation Flight Data Recorder,” AIAA 2007-6365, Hilton Head SC, August 2007.
- Winn, R.C., Slane, J. H., and **Morris, S.L.**, “Aerodynamic Effects in the Milwaukee Baseball Stadium Heavy-Lift Crane Collapse,” AIAA 2005-24272, Reno NV, January 2005.
- Winn, R.C. and **Morris, S.L.**, “Compensating for the Lag in Flammable Vapor Concentration Meters,” 1st International Energy Conversion Engineering Conference, Portsmouth, VA, August 2003.
- Winn, R.C., Slane, J.H., and **Morris, S.L.**, “Assessment of the Accuracy of Flight Path Reconstruction from ATC Radar Data Using Various Smoothing and Reconstruction Techniques,” AIAA 2002-0391, Reno, NV, January 2002.
- Yechout, T.R. and **Morris, S.L.**, “One Approach to Developing a ‘Hands On’ Flight Mechanics Program,” ASEE Technical Paper, 1998 ASEE Rocky Mountain Section Conference, Denver, CO, Apr 1998.
- Yechout, T.R. and **Morris, S.L.**, “Flight Simulation and Aeronautical Education – Ten Years of Experience,” SAE/AIAA Technical Paper 975635, 1997 SAE/AIAA World Aviation Congress, Anaheim, CA, Oct 1997.
- Stiles, R.J., Hallgren, W.F., **Morris, S.L.** Smith, M.L. and Gilliam, F.T., “Thriving on Change at the Air Force Academy,” Session 1202, ASEE 1994 Annual Conference, Edmonton, Alberta, Canada, Jun 1994.
- Morris, S.L.** and Hallgren, W.F., “The Air Force Academy’s Use of Flight Simulator in its Aeronautics Curriculum,” Session 0402, ASEE 1994 Annual Conference, Edmonton, Alberta, Canada, Jun 1994.
- Morris, S.L.**, “Use of Projects and Demonstrations in the Flight Mechanics Curriculum at the USAF Academy,” presented at the AIAA Atmospheric Flight Mechanics Conference, Aug 1993.
- Morris, S.L.** and Ward, D.T., “A Video-Based Experimental Investigation of Wing Rock,” AIAA Paper 89-3349CP, presented at the AIAA Atmospheric Flight Mechanics Conference. Aug 1989.
- Morris, S.L.**, Ward, D.T., Macolm, G.N., and Lewis, L.C., “Nonintrusive Measurements of Vortex Flows on Delta Wings in a Water Tunnel,” AIAA Paper 88-2595CP, presented at AIAA 6th Applied Aerodynamics Conference, Aug 1988.

Morris, S.L., and Ward, D.T., "Space Shuttle Hatch Jettison Wind Tunnel Study," Poster Board Session, 11th Annual American Astronautical Society (AAS) Guidance and Control Conference, Jan-Feb 1988.

Morris, S.L., and Ward, D.T., "Vortex Flow Tests," Poster Board Session, 11th Annual American Astronautical Society (AAS) Guidance and Control Conference, Jan-Feb 1988.

Reports

Winn, R.W. and **Morris, S.L.**, "Analysis of the Ice Accretion on the Ejector of the Really Quiet Hush Kit for the Gulfstream II and III," REALLY Quiet LLC, Report No. 10719C-1, December 2001.

Winn, R.C. and **Morris, S.L.**, "Ice Accretion Analysis on a UAV Wing – Part 4," Israel Aircraft Industries Report 8454C-4, May 2001.

Winn, R.C. and **Morris, S.L.**, "Ice Accretion Analysis on a UAV Wing – Part 3," Israel Aircraft Industries Report 8454C-3, March 2001.

Winn, R.C. and **Morris, S.L.**, "Ice Accretion Analysis on a UAV Wing – Part 2," Israel Aircraft Industries Report 8454C-2, March 2001.

Winn, R.C. and **Morris, S.L.**, "Ice Accretion Analysis on a UAV Wing," Israel Aircraft Industries Report 8454C, December 2000.

Morris, S.L., "A Video-Based Experimental Investigation of Wing Rock," Ph.D. Dissertation, Texas A&M University, 1989.

Morris, S.L., Ward, D.T., and Pham, L., "Final Report: Space Shuttle Hatch Jettison Wind Tunnel Study," AERO TR-88-6, Texas A&M University, 1988.

Macolm, G.N., Lewis, L.C. Ward, D.T., and **Morris, S.L.**, "An Innovative Approach to Nonintrusive Qualitative Measurements of Vortex Flows," Eidetics TR 88-101, 1988.

Morris, S.L., "A Diagnostic Study of Flow in the Wake of a Disk Using a Photon Correlation Laser Velocimeter," Masters Degree Thesis, Air Force Institute of Technology, 1980.

Presentations

Morris, S.L., "The Use of Virtual Reality in Accident Reconstruction", ATS-2018 American Institute of Aeronautics and Astronautics Rocky Mountain Section Annual Technical Symposium, October 2018.

Morris, S.L., "New Tools in Aircraft Accident Reconstruction to Assist the Insurer," presented at Aviation Insurance Association (AIA) Annual Conference, Colorado Springs, Colorado, May 2015.

Morris, S.L., “Analyzing In-Flight Breakups and other Underwriting Nightmares”, presented at Aviation Insurance Association (AIA) Annual Conference, Miami, Florida, May 2011.

Morris, S.L., “Icing Analysis on Unmanned Aerial Vehicles” presented to SAE AC-9C Aircraft Icing Subcommittee, Orlando, FL, April 2005.

Morris, S.L., “Flight Simulators and Handling Qualities,” presented at short course at NASA Langley, June 2002.

Morris, S.L., “Aircraft Icing Overview,” presented at short course at NASA Langley, June 2002.

Morris, S.L., “Aircraft Accident Reconstruction,” presented at short course at NASA Langley, June 2002.

Courses Taught (while at ESI)

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, Wichita, KS, 6-10 March 2023.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, Virtual Course to Wright-Patterson AFB 2-5 February 2021.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, Virtual Course, 17 September 2020 – 13 October 2020.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, Virtual Course to Redstone Arsenal, 8-11 September 2020.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, Seattle, WA, 8-11 April 2019.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, FAA, Oklahoma City, OK, 29 October – 1 November 2018.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, San Diego, CA, 18-21 Sept. 2018.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, NAVAIR, Patuxent River, MD, 30 July – 2 August 2018.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, Lucerne, Switzerland, 25-28 September 2017.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, Seattle, WA, 24-27 April 2017.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, San Diego, CA, 13-16 September 2016.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, FAA Technical Center, Atlantic City, NJ, 27-30 June 2016.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, Seattle, WA, 21-24 April 2015.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, Las Vegas, NV, 4-7 March 2014.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, Orlando, FL, 12-15 November 2013.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, Seattle, WA, 24-27 April 2012.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, University of Kansas, Lawrence, KS, 19-23 December 2011.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, San Diego, CA, 13-16 September 2011.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, Bombardier Inc, Montreal, Quebec, Canada, 9-12 May 2011.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, San Diego, CA, 21-24 September 2010.

Aircraft Icing: Meteorology, Protective Systems, Instrumentation, and Certification, University of Kansas Continuing Education Program, San Diego, CA, 21-24 September 2009.