

Captain Shem Malmquist, FRAeS

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Visiting Instructor. B-777 Captain operating worldwide international routes. Safety researcher, lecturer, author, key-note speaker.

Operational Experience:

- February 2017-Present. Subject Matter Expert, Safety, Risk Analysis, Safety Engineering, Scientific and Technical Research. Supporting operations and flight safety departments as well as Air Line Pilots Association (ALPA).
- November 2015-February 2017: Aircraft Technical and Engineering Chairman, Air Line Pilots Association (ALPA) MEC.
- 2015: Interim Chairman Accident Investigation, ALPA.
- September 2009- October 2012: Aviation Safety Instructor. Taught courses and managed instructors and coordinated safety recurrent ground school classes, including program development, instructor training and scheduling and coordinating with other departments. Was part of a core team to establish the criteria and write the manuals for the SMS programs, ASAP, FOQA, LOSA. Researched and authored numerous articles for Safe Skies and other publications
- March 2009-2013: Member NTSB Operations Group, Narita accident investigation. Coordinated with legal counsel for numerous aspects, including separate police investigation. Developed concept of kinematic disconnect for large transport aircraft. Unofficially, worked as vice-party coordinator and provided oversight for all aspects of the investigation. These included operations, systems, aircraft performance. Also primary liaison to JTSB.
- March 2011 – 2016: Performance analysis for MD-11. Re-wrote landing guidance section of company Aircraft Flight Manual. Identified issue of short period Omega and Zeta function interaction in longitudinal handling qualities, validated with mathematical performance analysis.
- 1997-2004: Safety Investigator. Party Coordinator (Investigator in Charge for FPA/ALPA) on MD-11 Accident, EWR, July 31, 1997. Authored numerous Air Safety and technical articles for FPA and ALPA publication. In addition, supported several major accident investigations.

Supporting Operational Experience:

- Member of the Royal Aeronautical Society Flight Operations Group. Member of the FOG Skills Decline sub-group.
- 2018 - Present: Supported and facilitated workshop on System Theoretic Process Analysis (STAMP) in support of the Partnership for Systems Approaches to Safety and

Security (PSASS), Massachusetts Institute of Technology. Provided initial training and support to several air carriers.

- July 2015 – Present: Voting member SAE S-7 Flight Deck and Handling Qualities Standards for Transport Aircraft working group. Chair of the 2030 Aircraft Design Standards working sub-group.
- February 2010-2013: Design Team Member Commercial Aviation Safety Team Joint Safety Implementation Team – Aircraft State Awareness (CAST JSIT-ASA), representing Airlines for America (A4A). CAST was formed under the White House Commission on Aviation Safety and Security).
- 2010-2012: Coordinating and administrating “pilot” version for Flight Operational Reporting System to allow reporting and tracking of operational issues, overseeing all aspects of the project.
- March 2007-March 2009: Special projects for Flight Operations, including Flag/Domestic, Flight Delay QDM, VDR’s, SAI and EPI audits, ATOS compliance and authoring Business Justification Documents. Coordinated and supported flight delay tracking system currently in use.
- 2008: Supported FAA ATC training on weather and coordination with aircraft for convective weather avoidance procedures.
- 2004-2007: FedEx Flight Operations manager. Oversight of flight dispatch and operations for global flight operation. Special projects included CDC, Security and Volcanic Ash procedure design.
- January 2003-2004: Line Check Airman, MD-11. International Operations project to develop global international procedures. Worked on developing International website, “Airport Briefing pages” and training program.
- June 2002-November 2003: Chairman, FedEx ALPA Aircraft Design and Operations Committee, managing staff and numerous volunteers to work on research and attend numerous Industry conferences and events.
- 2001-2005: Member Joint Implementation Measurement Data Analysis Team (CAST JIMDAT). This team was tasked with advising the CAST executive committee by developing metrics to establish which safety initiatives provided the greatest reduction in accident rates per dollar spent
- 2001-2003: FPA representative to CAST-JSIT-LOC (Loss of Control). JSIT-LOC Automation and Human Factors Team Leader.
- 1997-2004: Safety Investigator. Party Coordinator (Investigator in Charge for FPA/ALPA) on FedEx MD-11 Accident, EWR, July 31, 1997. Authored numerous Air Safety and technical articles for FPA and ALPA publication. Performed operations, systems and performance analysis.
- 1997-1999: Safety Chairman. Established the FedEx Pilots Association Air Safety Committee and served as Safety Chairman, organized and managed entire safety structure, supervised and coordinated training for staff and volunteers. This included interviewing and hiring of staff, approving expenditures and working closely with legal counsel on numerous issues.

- 1995-1996. FedEx Pilots Association Steering Committee Member. Was one of 7 pilots who led the effort to organize a new union for pilots at FedEx Express.
- 1994-1995: Member ALPA National Charting and Instrument Procedures Committee, specializing in ICAO PANS-OPS.
- 1987-1990. Southern California Regional Leader, Continental Airlines ALPA organizing committee. Oversight and training for numerous volunteers working on grass-roots pilot union organizing campaign.

Recognition and Activities

- Elected Fellow of the Royal Aeronautical Society
- Member International Society of Air Safety Investigators
- Member Society of Automobile Engineers
 - S-7: Flight Deck Handling Qualities for Transport Aircraft Committee
 - G- 27: Lithium Battery Packaging Committee
 - G – 10: Aerospace Behavioral Engineering Technology Committee
 - G – 27: Modeling, Simulation, Training for AV Tech Committee
- Member Resilience Engineering Association
- Member IEEE
- Member AIAA
- Member Flight Safety Foundation
- Member Air Force Association
- Member Human Factors and Ergonomics Society

Public Speaking

- 2022. Expert witness for public hearing on Air France 447.
- 2022. Air Line Pilots Association Safety Week, Washington, D.C. *System Safety*.
- 2022. SMS Industry Forum hosted by American Airlines. *Keynote Speaker*.
- 2022. Nuclear Regulatory Commission Regulatory Information Conference. Hazard Analysis for Nuclear Automation. *Technical panelist*.
- 2020. World Aeronautical Training Summit. *Stress exposure training*.
- 2020. World Aeronautical Training Summit. *Improving Pilot Training and Completion Rates Utilizing Personality Assessment*.
- 2019. ISASI. *Investigating Accidents in Highly Automated Systems: Systemic Problems Identified through Analysis of Air France 447*.
- 2019. ISASI. *Updating the Concept of Cause in Accident Investigation*.
- 2019. World Aeronautical Training Summit. *Practical Utility of Personality in Flight Ops and Training*.
- 2019. STAMP workshop. *Analysis using STAMP of the UPS Birmingham Accident*
- 2018. ISASI SERC. *Analysis using STAMP of the UPS Birmingham Accident*.
- 2018 Flight Safety Foundation, Business Aviation Safety Summit. *A Systems Engineering Approach to Safety Performance Indicators and Accident Casualty* (with Dr. John Thomas, MIT).

- 2018 World Aviation Training Summit, Orlando, FL. *Training to Facilitate Adaptive Capacity in Automated Systems*.
- ERAU, Advanced accident investigation course, guest lecturer.
- 2017. Mid-South Aviation Weather Conference. *Shortfalls in Aviation Weather Training*.
- 2017 through 2018: FAA FFAST Team, LOC-I
- 2017. Resilience Engineering Association. Liege. *Just Culture Accident Model*.
- 2017. Keynote Speaker InfoShare Dallas, TX. *Weather Information Sharing*
- 2017. Keynote Speaker Infoshare. Dallas, TX. *The trouble with tablets*.
- 2017. ISASI annual plenary seminar, with Dr. John Thomas, MIT: *Investigating Accidents that are a Consequence of Complex Systems. A Causal Analysis using System Theory*. (with Dr. John Thomas, MIT).
- Presenter, Resilience Engineering Association, Liege, BE: *Just Culture Accident Model*.
- Lecture on Air France 447 accident, Paramus, NJ.
- Presenter ISASI SERC 2017.
- Presenter ISASI SERC 2016: *Extending Safety I to Safety II*
- Presenter ISASI SERC 2015: *A Look Back at a Closed Investigation*
- Presenter ISASI SERC 2014: *Just Culture Accident Model*
- Lectures on Air France 447 accident, Pasadena, California.
- Lecture on Air France 447 accident, Memphis, Tennessee.
- Lecture on Air France 447, Sun 'n Fun Aviation Expo, Florida.

Media

- Television and radio appearances. ABC, CBS, NBC, NPR, Fox, Spectrum News and more.
- Print media. CNN, NPR, ABC, Wall Street Journal, San Francisco Chronicle, Mercury News, Washington Post, Miami Herald and more.

Selected Publications

- Malmquist, Carstens & Dahlstrom (2022). Human Factors in Simulation and Training. *Almost like the real thing: The hidden limits in flight simulation and training*.
- Carroll & Malmquist (2021). Resilient Performance in Aviation. In *Advancing Resilient Performance* (pp. 85-95). Springer, Cham.
- Chaparro, M. E., Carroll, M., & Malmquist, S. (2020). Personality trends in the pilot population. *The Collegiate Aviation Review International*, 38(2).
- Malmquist and Rapoport (2020). Grounded: How to solve the aviation crisis.
- Malmquist, Leveson, Larard, Perry & Straker (2019). Increasing Learning from Accidents: A Systems approach.
- Leveson, Straker & Malmquist (2019). The problem with probable cause.
- Thomas & Malmquist (2017). *Learning from Accidents that are the result of complex systems*. Available from: <http://sunnyday.mit.edu/Thomas-Malmquist-ISASI.pdf>
- Rapoport & Malmquist (2017). Angle of Attack: Air France and the Future of Aviation Safety
- Malmquist, S, Vincenzi, D., & Liu, D. (2014). Kinematic Effects in Large Transport Aircraft. *International Journal of Aviation, Aeronautics, and Aerospace*, 1(3), 5.

- Just Culture Accident Model (2017). Conference paper. Resilience Engineering Association. Liege. Available from: https://www.researchgate.net/publication/320270005_Just_Culture_Accident_Model
- Authored numerous articles for in-house ALPA publications as well as Curt Lewis' Flight Safety News.
- Academic papers 2018-2019:
 - Weather information training and sharing.
 - An Analysis for LOC-I utilizing STAMP.
 - A CAST Analysis of the UPS Birmingham accident
- Additional articles can be found here: <https://airlinesafety.blog/>

Certificates and Ratings:

- ATP - Single and Multi-Engine Land, Type Ratings: B-777, MD-11, B-727, EMB-110.
- Flight Engineer - Turbojet. Served as Flight Engineer on B-727 and B-747.
- Advanced and Instrument Ground Instructor.
- CFI-MEI (expired).

Employment History:

- 2018-Present: Florida Institute of Technology: Visiting Professor, College of Aeronautics.
- 1987 - Present: Federal Express Corp. (Flying Tigers, 1987-89)
Pilot, Air Operations in the following capacities: Captain B-777, Captain MD-11, Captain B-727, F/O MD-11, F/O B-727, F/O DC-8, S/O B-747, S/O B-727. Supported development of HUD.
- 2004-2007: Flight Operations Duty Officer: Exercised management and operational control of flight dispatchers for global air operations.
- 2003-2004: Line Check Airman, MD-11
- 1986-87: WestAir Airlines
Line Captain, Training Captain and Line Check Airman, Flight Standards - EMB-110.
- 1983-85: Alpha Air
Captain Air Operations, C-402.
- 1978-1985: Cable Air
Flight Instructor for primary, instrument, multi-engine and ATP applicants
- 1977: Jenny's Flying Service
Private pilot ground instructor

Education:

- Florida Institute of Technology. Doctoral student.
- Florida Institute of Technology MSc
- University of Illinois – Urbana/Champaign
Mathematics
- Embry -Riddle Aeronautical University BSc
- Mount San Antonio College A.S.

Additional Course Work:

- NTSB Accident Investigation
- MIT System Theoretic Accident Method and Processes (STAMP) workshop