

Flight Research and Analysis Group

Responsibilities

The Flight Research and Analysis Group conducts globally-recognized research for aviation safety on existing and emerging flight technologies and operational concepts. The Group enables better-informed decisions through the responsibilities listed below.

- Manages the Flight Operations Simulation Laboratory (FOSL), comprised of Boeing 737-800NG and Airbus 330/340 full flight simulators, with high-fidelity air traffic controller simulator stations for the TRACON environment, which provide real-time, realistic, dynamic virtual terminal operations to observe and evaluate pilot/controller/aircraft interface and performance data within a defined or generic environment.
- Manages the Flight Systems Laboratory, assessing the safety of new, emerging, and modified flight operational concepts and navigation systems to improve flight operations, standards, capacity, and aviation safety within the NAS.
- Develops and provides on-demand operational simulations of existing, modified, and emerging NextGen and PBN CNS technologies and procedures to support aviation safety studies, implementation research, risk assessments, and criteria development.
- Assesses the safety of new, emerging, proposed, and modified flight operational concepts, navigation, and surveillance systems to improve flight operations, standards, criteria, capacity, and aviation safety in both the NAS and international airspace.
- Develops and conducts real-time simulations and data collection efforts through computer models, ATC simulators for modeling performance characteristics using fast-time simulation tools.
- Collects HITL and flight data to meet SMS study and risk analysis requirements, to enhance the efficiency and effectiveness of flight operations, standards, capacity, and aviation safety and develop density functions for use in fast-time simulations.
- Builds and applies custom data analysis tools and visualizations enabling faster and more accurate processing from various NAS data sets.
- Provides dynamic, probabilistic models of instrument flight operational concepts using advanced analytical capabilities, and high speed simulation systems.
- Performs studies analyzing equivalent levels of safety for surveillance safety, wake turbulence, and other areas as requested.
- Establishes connectivity with the NPN to enable participation of simulators in distributive simulations with agency, academic, and industry partners already on the NPN.
- Evaluates changes and enhancements of airport rules regarding obstacles, equipment, holding and taxiing aircraft relative to their impact on the safety of instrument and visual approach, missed approach, rejected landing, and departure operations.
- Serves as the Flight Standards focal point for human factors issues relating to implementation of new flight technologies.
- Provides technical and operational expertise and analysis on use and implementation of GNSS, SBAS, and GBAS into the NAS in support of the NextGen.
- Analyzes and evaluates proposed or new navigational and surveillance concepts such as RNAV transition to precision approaches, OPD, ADS-B, FUSION, etc., for compatibility with existing or planned flight operation design criteria.

- Supports the Flight Standards Procedures Review Board and Technical Review Board review of Instrument Approach Procedures Waivers of standards and criteria by providing risk assessment of flight operations not covered by standard criteria.
- Evaluates feasibility and risks associated with operational requirements, such as multiple airport operations, multiple parallel approaches, and converging approaches.
- Provides support to: Aviation Safety, Office of NextGen, Air Traffic Organization, Airports, aviation industry, other government agencies, and the military to provide safety assessments, improve flight operations, exchange information, and advance the application of operations research techniques, collision risk methodology, and other advanced analysis techniques for instrument flight procedures, standards, and criteria.
- Provides technical advisors to US Members to ICAO Panels, such as the IFPP, the NSP, and the SASP, RTCA, SAE, SAE, Institute of Navigation, and other international aviation organizations.