Flight Operations Quality Assurance (FOQA)

Risk Management Course
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What is FOQA?

Flight operational quality assurance (FOQA) is a voluntary safety program designed to improve aviation safety through the proactive use of flight-recorded data.
What is FOQA?

In other words...

It’s designed to enhance safety through the controlled, automated recording and analysis of flight data generated during routine line operations.
Objective

The reduction of aircraft accidents and incidents utilizing flight event and historical data analysis in order to identify and mitigate safety hazards.
How did we get here?
FOQA History

- FOQA programs worldwide can be traced to pioneering work by British Airways and TAP Air Portugal in the early 1960’s.
FOQA History

- FOQA in the U.S. had its origin in the use of flight data recorders as mandated by the Civil Aeronautics Administration in 1958.
FOQA History

- In 1989 digital flight data monitoring became of interest to the US airline industry.
FOQA History

- In 1992 the Flight Safety Foundation developed an industry standard and coined the term FOQA.
In 1993 the FAA initiated a 2 year Demonstration Project, and in 1995 United, US Airways, Continental and Alaska are chosen as level one participants in the FAA’s DEMOPROJ.
FOQA History

- In 2000 the FOQA NPRM was issued by the FAA.
FAA FOQA Documents


- Advisory Circular No: 120-82 Date: 4/12/04 AC Initiated By: AFS-230
  Subject: FLIGHT OPERATIONAL QUALITY ASSURANCE

- FSIMS 8900.1
  Volume 11  FLIGHT STANDARDS PROGRAMS
  Chapter 2  Voluntary Safety Programs
  Section 2  Safety Assurance System: Flight Operational Quality Assurance (FOQA)
FOQA Protections

- Federal law prohibits the disclosure of voluntarily submitted information to the FAA


2. 14 CFR Part 193 - Protection of Voluntarily Submitted Information.

3. FAA Order 8000.81 - Protection of FOQA data from public disclosure.
The FAA and the air transportation industry have sought additional means for addressing safety problems and identifying potential safety hazards. Based on the experiences of foreign air carriers, the results of several FAA-sponsored studies, and input received from government/industry safety forums, the FAA concluded that wide implementation of FOQA programs could have significant potential to reduce air carrier accident rates below current levels.
The value of FOQA programs is the early identification of adverse safety trends, which, if uncorrected, could lead to accidents. A key element in FOQA is the application of corrective action and follow up to ensure that unsafe conditions are effectively remediated.

Background

11-64 BACKGROUND. The FAA and the air transportation industry have sought additional means for addressing safety problems and identifying potential safety hazards. Based on the experiences of foreign air carriers, the results of several FAA-sponsored studies, and input received from government/industry safety forums, the FAA concluded that wide implementation of FOQA programs could have significant potential to reduce air carrier accident rates below current levels. The value of FOQA programs is the early identification of adverse safety trends, which, if uncorrected, could lead to accidents. A key element in FOQA is the application of corrective action and followup to ensure that unsafe conditions are effectively remediated.

A. FOQA is a program for the routine collection and analysis of digital flight data generated during aircraft operations. FOQA programs provide more information about, and greater insight into, the total flight operations environment. FOQA data is unique because it can provide objective information that is not available through other methods. An FOQA program can identify operational situations in which there is increased risk, allowing the operator to take early corrective action before that risk results in an incident or accident. FOQA must interface and be coordinated with the operator’s other safety programs, such as the Aviation Safety Action Program (ASAP), Advanced Qualification Program (AQP), pilot reporting systems, and Voluntary Disclosure Reporting Program (VDPR). The FOQA program must interoperate with the other safety programs.
**Key Terms**

- **Aggregate Data** - The summary statistical indices that are associated with FOQA event categories, based on an analysis of FOQA data from multiple aircraft operations.

- **Flight Data Acquisition Unit (FDAU)** - A device that acquires aircraft data via a digital data bus and analog inputs and formats the data for output to the FDR according to regulatory requirements. Additionally, many FDAUs have capability that enables them to perform additional processing and distribution of data to Aircraft Condition Monitoring Systems (ACMS), Aircraft Communications Addressing and Reporting Systems (ACARS), Engine Condition Monitoring (ECM) systems, or to a QAR for recording/storage of raw flight data. There are many varieties of FDAUs, known by a number of different acronyms, but all perform the same core functions.

- **Ground Data Replay and Analysis System (GDRAS)** - A sophisticated software application that transforms flight-recorded data into a usable form, analyzes the data, detects events, and generates reports for review.
Key Terms

- **Parameters** - Measurable variables that supply information about the status of an aircraft system or subsystem, position, or operating environment.

- **Event** - An occurrence or condition in which predetermined values of aircraft parameters are measured. If parameter values are exceeded, the Ground Data Replay and Analysis System (GDRAS) will flag the event for further analysis and record it in a database for trending.

- **FOQA Monitoring Team (FMT)** - A group of technical experts, which may include pilots, instructors, check airmen, safety personnel, and maintenance personnel, responsible for reviewing and analyzing flight and event data and identifying, recommending, and monitoring corrective actions.

- **Gatekeeper** - The FMT member who is primarily responsible for the security of identified data. If further information is needed to understand the reasons why an event occurred, the gatekeeper is the only individual who may contact a crewmember to elicit further information.
FOQA Concepts

- Proactive Safety Program.
- Focused on Aggregate Trends Rather Than Individual Flights.
- Analysis Is a Continuous Process.
- Non-punitive.
- The Sum of FOQA Is Greater Than Its Parts.
FOQA Elements

- Airborne Data Recording Systems.
- Data Transmittal Systems.
- Data Analysis Systems.
- FOQA Organizational Structure.
FOQA Elements

- Pulled every 3 to 10 days
- Mailed 1 day to 1 month after landing
- After landing
- 10-20 minutes After landing
- Analyst
FOQA

FOQA Steering Committee

- FOQA Monitoring Team
- FOQA Program Manager
- Pilot Association Gatekeeper
- FOQA Analyst

- Flight Operations
- Flight Safety
- Flight Training
- Flight Standards
- Maintenance Engineering
FOQA Implementation and Operation (I&O) Plan

An operator is not required to obtain FAA approval in order to operate an FOQA program. However, an operator who seeks the protections in §13.401 from the use of FOQA data for enforcement action must obtain FAA approval of its FOQA I&O plan.

- **FOQA Program Revisions** - Changes will occur in an operator’s program as it assimilates new technologies, modifies event definitions, and changes structures to meet its program’s growing needs. When changes occur to previously approved I&O Plan content, the I&O Plan should be revised to document those changes.
FOQA Monitoring

Once the FOQA I&O Plan is approved, the FAA should monitor the overall progress of program implementation.

- **QUARTERLY REPORTS ON SAFETY ENHANCEMENTS** - The fundamental purpose of FOQA is to enhance safety. It is therefore important to maintain an audit trail of the extent to which the program is achieving that objective. Office managers shall prepare a summary report of safety enhancements achieved each quarter by each certificate holder’s FOQA program for which they have oversight responsibility.
FOQA Enforcement

- **ENFORCEMENT POLICY** - Except for criminal or deliberate acts, data gathered under an FAA-approved FOQA program will not be used in any enforcement action against that operator or its employees. This protection is in accordance with § 13.401 and no attempt should be made by any inspector to identify individual flight crewmembers associated with any FOQA event.
What have we learned so far?

- Many flavors of data acquisition
- Authorized by FAA (if you want protection)
- Three party partnership (LOA)
  - FAA
  - Company
  - ALPA
- FMT is the group that oversees the day-to-day management of the program
Time for a Short break