Introduction

- The aviation community is under constant pressure to reduce accident and incident rates, while optimizing operational costs to remain competitive. **Flight Data Monitoring (FDM)**, also referred to as **Flight Operations Monitoring (FOM)** or **Flight Operations Quality Assurance (FOQA)**, offers an efficient solution to this challenge. This quality assurance process, which consists of downloading and analyzing aircraft data on a routine basis, is now being used by operators throughout the world to facilitate corrective actions in a range of operational areas.
FOQA Program History

• FAA Concept Development Study: 1995-1998
  – Provided U.S. airlines with guidance on how to establish effective FOQA programs
  – Documented successes and safety benefits of U.S. airline trial FOQA programs

• Flight Safety Foundation promotions (1998)

• AC 120-82 (2004)
  – Guidance on developing FOQA program
What is FOQA?

• Technology that collects and analyzes aircraft operational parameters

• Uses flight data recorders (FDR) or quick access recorders (QAR)

• Resulting data is stored and analyzed with software to identify program defined events
What Does FOQA Measure?

- Routine downloading and systematic analysis of aircraft parameters that were recorded during flight.

- Continuous comparison of flight profile, engine and systems operation with a set of defined parameters in order to detect exceedences.

- Compilation of data to obtain an accurate overall picture of the operation and the condition of engines and systems.

- Aids diagnostics, research and incident investigation.
What Can FOQA Identify?

- Non-compliance and divergence from SOPs
- Inadequate SOPs and inadequate published procedures
- Ineffective training, and inadequate skills
- Fuel inefficiencies and environmental un-friendliness
- Aerodynamic inefficiency / Powerplant deterioration
- System deficiencies

The vast majority of information gained by FOQA cannot be found in any other way
FOQA Identified Event Examples

- Altitude deviation
- Abnormal pitch landing
- Excessive pitch attitude
- Stick shaker
- Early flap change after takeoff
- Engine overtemp
- Etc.
FOQA Output Examples
FOQA Real World Accomplishments

• Airline saved $100 million by reducing takeoff engine overtemps from 46 to 6 (discovered autothrottle flaw)

• FAA realigned airspace at Orlando International because of FOQA recorded unstabilized approaches

• Airline saved $1 million over the past year in inspections it didn't have to perform by using FOQA data to educate pilots on how to avoid flap over-speed conditions
FOQA Concerns

- Cost - installation and ongoing data processing
- Punitive action - to overcome must have a “just culture”
- Infrastructure support to process data
- False positives
Information on FOQA Implementation

• FAA guidance: AC 120-82 for airlines

• C-FOQA: Corporate FOQA data sharing program by the Flight Safety Foundation

• ICAO: (Annex 6 Part 1)
  • 3.2.7 An operator of an aeroplane of a maximum certificated take-off mass in excess of 27 000 kg shall establish and maintain a flight data analysis programme as part of its safety management system.
  • Note.— An operator may contract the operation of a flight data analysis programme to another party while retaining overall responsibility for the maintenance of such a programme.
  • 3.2.8 A flight data analysis programme shall be non-punitive and contain adequate safeguards to protect the source(s) of the data.