FAA Regulatory Overview: Flight Data & Locator Technology

Presented at: NTSB Forum on Emerging Flight Data and Locator Technology
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Date: October 7, 2014
Rulemaking Process and Challenges

Why we do rulemaking?

- Laws passed by the U.S. Congress
- Recommendations resulting from accident investigations
- New aviation/avionics technologies
- Changes in airline operations
- Internal FAA safety analyses
- Harmonization
- Petitions for rulemaking and exemptions

What is the process?

- Governed by the Administrative Procedures Act
- Rulemaking priorities based on Safety, Operational, Environment, and Economics considerations
- Economic impact with respect to increasing the level of safety plays a significant role in determining the viability of a proposal.
Recorder History

Magnetic Tape

- Foil Roll

Solid State

- High Capacity, Solid State Combined Voice and Data

Timeline:

- 1950: 5 parameter crash protected data recorder regulation published
- 1960: First voice recorder regulation published
- 1970: 13 parameter digital FDR required for new TC
- 1980: 11 Parameter digital FDR retrofit requirement
- 1990: 88 parameter data recorders
- 2000: Improvements rule 91 parameters, higher data rates, solid state recorders and 2-hour voice recorders
- 2010: Additional information
Significant Changes Since 1997

1997 - Revisions to Digital Flight Data Recorder Rules

- Revised DFDR requirements to prescribe the 88 parameters that must be recorded on DFDRs.

2003 - DFDR Requirements – Changes to Recording Specifications and Additional Exceptions

- Expanded the recording specifications of certain data parameters for specified airplanes and excepted other airplanes from the 1997 regulations.
Significant Changes Since 1997

(Continued)

2008 - Revisions to CVR and DFDR Regulations
  - Increased recording duration/rate for certain CVR/DFDR parameters, required physical separation of the CVR/DFDR, improved the reliability of the CVR/DFDR power supplies and addressed data-link communications.

2008 - Revisions to DFDR Regulations for B-737 and for All Part 125 Airplanes
  - Required all 737s manufactured after August 18, 2000, to record three new flight recorder parameters.

2010 - Filtered Flight Data
  - Prohibited the filtering of some original flight recorder sensor signals unless a certificate holder can show that the data can be accurately reconstructed.
ICAO Considerations

ICAO Annex 6, Part I, Chapter 6.3

• Technical Requirement
  o EASA and ICAO regulations are presently aligned with FAA rules.
  o After Jan. 1, 2016 – FAA anticipates a difference with ICAO requirements for new Type Certificates.

• Applicability
  o FAA establishes recorder requirements based on aircraft seating, engines and type of operation.
  o ICAO establishes recorder requirements based on aircraft weight and engines.
Enablers for Improved Safety

The FAA has developed standards and guidance for non-required recorder equipment to support voluntary adoption of this equipment.

- **Underwater Locator Devices**
  - 90-day Recorder ULD
  - Low-frequency Airframe ULD

- **Deployable Recorders**
  - Issued TSOs
  - Support evaluation / installation of systems.

- **Image Recorders**
  - Issued TSO
  - Accomplished proof-of-concept study for aircraft
  - Support evaluation and installation of systems.
Voluntary Process and Benefits

• While accident data recovery is a high priority… *detecting the events, and understanding precursors prior to the occurrence is an opportunity to improve safety.*

• Voluntary sharing of safety information by industry has already helped lower the fatality risk on commercial flights.
  o **ASIAS** – use of aggregate, protected data to proactively find safety issues, identify enhancements, and measure solutions.
  o **CAST** - *data-driven strategy to reduce risk.* Contributed to 83% decrease in fatal commercial accident rate.
  o **InfoShare** - *Biannual meeting with airlines & FAA to share safety data & lessons learned.*