FAA Regulatory Overview: Flight Data & Locator Technology

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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.

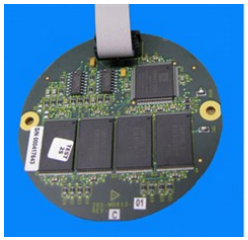
Recorder History

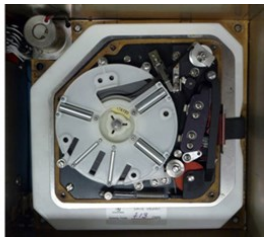
Foil Roll

Magnetic Tape

Solid State

High Capacity, Solid State Combined Voice and Data





1950 1960 1970 1980 1990 2000 2010

5 parameter crash protected data recorder regulation published

First voice recorder regulation published

13 parameter digital FDR required for new TC

11 Parameter digital FDR retrofit requirement

88 parameter data recorders

Improvements rule 91 parameters, higher data rates, solid state recorders and 2-hour voice recorders

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

- **Applicability**
  - FAA establishes recorder requirements based on aircraft seating, engines and type of operation.
  - 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 <u>voluntary adoption</u> 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.**
  - **ASIAS** – use of aggregate, protected data to proactively find safety issues, identify enhancements, and measure solutions.
  - **CAST** - *data-driven strategy to reduce risk. Contributed to 83% decrease in fatal commercial accident rate.*
  - **InfoShare** - *Biannual meeting with airlines & FAA to share safety data & lessons learned.*