# The FAA's *In Situ* Turbulence Reporting System

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## In Situ Turbulence Reporting System

#### •Driver:

Augment/replace subjective PIREPs with objective state-of-theatmosphere turbulence measurements.

#### •Features:

•Atmospheric turbulence metric: eddy dissipation rate (EDR).

•Position accuracy within 2-3 km vs average 50 km pireps. (peaks)

•44,000 *in situ* reports per day (UAL) vs. 300-500 pireps/day (above FL200).

- ICAO and NexGen standard.
- Can be converted into RMS-g.



### **Experimental ADDS website**





## **Recent Activities**

- Delta Airlines has implemented EDR reporting.
  (~ 70 a/c)
- Southwest Airlines will begin Q1 CY10. (> 300 a/c)
- New aspects:
  - Event-based reporting.
    - Routine reporting every 15 minutes w/ MDCRS.
    - Event triggers.
    - "Fill-in" between null MDCRS EDR reports
  - New, winds-based algorithm.
  - Improved on-board QC.





## Need for In Situ EDR

- Removes subjectivity in PIREPS.
- Removes positional and temporal errors in PIREP reporting.
- Null reports.
- Used in GTG & GTGN.
- Used for tuning of DCIT.
- Used for verification of all turbulence products.







### Delta Case Study: EDR ←→ RMS-g



Vertical accelerometer data from FDR was used to calculate RMS-g, which in turn was converted into EDR. Comparison is to downlinked *in situ* EDR.