



System Wide Safety

National Aeronautics and
Space Administration



Reports of Resilient Performance: Investigating Operators' Descriptions of Safety-Producing Behaviors in the Aviation Safety Reporting System

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This is a prerecorded presentation for the 21st International Symposium on Aviation Psychology

Purpose



- To learn about how operators' talk about safety-producing behaviors
 - Different ways of thinking about safety
 - No way to collect information when things go right, no common vocabulary
- Learn how safety is produced and where to focus safety training efforts

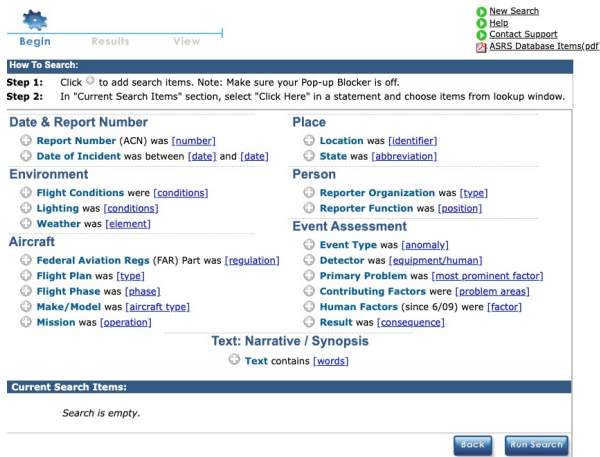
Aviation Safety Reporting System Database (ASRS)



- What, who, when & why?
- De-identified, confidential, and voluntary
- Where: <https://asrs.arc.nasa.gov>



ASRS Main page



ASRS Search page

ASRS narrative submission section

Approach & Methodology



- Every ASRS report is an example of resilience behavior
- Resilience is... (in everyday operations) described in ASRS reports
- Database search & level of analysis
- Coding strategies
 - Erik Hollnagel's framework (Hollnagel, 2015)
 - Anticipate: *knowing what to expect*
 - Monitor: *knowing what to look for*
 - Respond: *knowing what to do*
 - Learn: *knowing what happened*
 - Holbrook et al. (2019) – Resilient Performance Strategies
 - Turning points and triggers

Example from ASRS & Challenge



Example #1 (ASRS #1516535)

“...FO had checked ATIS and noted that Runway 23 was in use. He also mentioned at that time that since Runway 23 is on the ATIS we would most likely get that runway from our direction. So FMC was planned with Runway 23 during cruise...”

- The First Officer (FO) shared his knowledge with the Captain (CA), compared his experience to the current situation, and the plan was modified.
- The FO *knew what to expect* (Anticipate) and *learned from his experience* (Learn), and *knew what to do* (Respond)

Challenge: resilience that is not specifically named with key words/phrases

Example from ASRS & Challenges



Example #2 (ASRS #1516535)

“Approach saw our problem and said nicely, I’m going to spin you around and get you back on a heading to intercept localizer for 23.”

- The CA describes that ATC *knew what to look for* (Monitor), *knew what to expect* (Anticipate), and *knew what to do* (Respond).

Challenges: definitions, overlapping of categories, not mutually exclusive, interdependencies of the potentials

Example from ASRS & Challenges



Example #3 (ASRS #1741671)

“...I called for a Go Around... the Go Around was done to look at a problem...Captain decided to keep Flaps 1 .. to avoid a potential emergency gear extension procedure...Crew Established and Communicated a plan....We communicated our intentions with flight attendants and advised passengers and Dispatch. We requested delay vectors to run the required QRH Decent Checklist...”

- The CA *knew what to look for* (Monitor), and *knew what to do* (Respond) in a rapidly changing situation, and called for a go-around
- Described their motivation, processes – explicit description

Challenges: Descriptions may be implicit – need the context. Actions judged on the outcome. A go-around appropriate in one situation but may not be in the next (but capabilities can contribute to resilient performance).

Future work



- Take home: Resilient performance descriptions even in reports intended to describe something that went wrong.
- Analyze the context of event
- Who/what created opportunity for resilient performance?
- Use of search and query machine learning tools



Thank you!