

The Challenge of Emergency and Abnormal Situations in Aviation

Regarding Berman (An Analysis of an Accident) Presentation:

- Captain explicit verbalization of crew assignments may be company procedures. If crew has already adopted roles, why is it necessary? If captain is busy, he needs only to “maintain” crew performance
 - 2 person “monitoring” pilot (pf) brought in explicitly can often interrupt primary task
 - Transport category aircraft are all certified under 14 CFR Part 25. There should be a means to standardize the terminology and procedures for the most common and most severe situations.
 - Pilots have been trained to be checklist and automation dependent. If you want something else, define it and train it.
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- We should train flight crews to think out of the box and discuss when to depart from the checklist.

Regarding the FedEx accident report:

- I wonder how much is getting lost on a checklist with interruptions, this could be handled by a simple pen checkmark on the page.

A thought:

- We need to train captains to develop a game plan, execute it, and direct the action to minimize distractions. In your example it could be:
 - Land ASAP, so start descent and fly to an airfield.
 - Request vector to FAF from ATC, then request radio silence except when safety is an issue.
 - Handle the non normal to “save” the jet.
 - Handle the routine for landing (approach brief/landing data)
 - The bottom line is: train the thought process, not the procedure
- Issues where young, less experienced captains are making decisions contrary to the QRH - For example: after takeoff, a leading edge device is not fully retracted. The QRH directs pilots to determine if the LED is extended - if so, return to airport for maintenance, or in case the LED is not fully retracted, continue to their destination. Captains are deciding to return to the airport because something is abnormal (LED light) and how unsafe could it be to simply return to the airport? How hard can a Chief Pilot be on a pilot who uses “safety” to return to the airport when the QRH directs them to continue. This situation was procedural and/or system specific but yet the decision to return is contrary to the very device/tool used to help with decision making. Basically, inexperienced decision making that could cause secondary problems (overweight landing/runway overruns etc.) versus trusting the QRH and understanding the actual situation/problem.

- It's important to develop a mindset to cope with both normal and emergency procedures.
 - For example - High speed RTOs: at what point to continue ? It's defined by V1. Likewise, in normal operations when on final approach and unstable, when do you decide to continue or execute a go-around?
 - Also, we are currently dealing with a dynamic industry in which furloughs and displacements cause crews to change aircraft often. Memory items can be confused between aircraft types. Do we need them? Should they be standardized?

Design systems for abnormal situations:

- Anticipate information requirements and decision process and respond times.
 - Do not depend on training to resolve problems in system design.
 - Problem Scope should include design of culture, organizational structure, work environment, management systems, and use of technology. It is a big problem space, and multi dimensional - a system view is required to solve problems. What are industry practices for design of useable procedures beyond the style guides?
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- What is the role of the ECAM in the "situation" vs. "procedure" dilemma?
 - In the accident covered, ECAM would have been a big benefit. The point is, that with the new generation airplanes the scope of the problem is still applicable but there is a change in the study scenario someway.
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- The lack of understanding, of on-board proceedings by the flight crew creates communication and application of rules and/or procedures.
 - Re-instatement of jump seat authorization of crew responsibility, an application of company/FAA procedures would be of great help.
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- Time/Space and Event Management
 - What does the stress of emergencies due to managing and monitoring?
 - Training for skills, to cue to skill (unreadable)
 - Training for others management
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- More investigation needed of global cognitive aspects of emergency, abnormal, unusual, rare, unexpected, novel, and normal events.
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- What is the role of dispatch in pressuring flight crew?
 - Pilots are becoming so reliant on automation that in some cases they try to reprogram after a minor failure (i.e. non essential bus failure) at a critical flight regime.

- Someone brought up cultural differences. In the maintenance manual world, the ATA Simplified English dictionary is used to write procedures. Maybe a similar approach could be used for flight manuals.

- FedEx 1460 – FLT Eng LED (188 hrs)
 - Duty time effect
 - Ages effect
 - Jumpseaters' qualifications

- I'm interested in discussion regarding low fidelity (classroom) training techniques to countermeasure human limitations in abnormal and emergency situations.
- Expand the discussion to consider other risks when situations are mishandled:
 - Risk of scaring passengers with a bad ride
 - Risk of legal problems and losing career
 - Risk of not making money
 - For example: Evacuations that were not required and were caused by crew stress reaction.

- What is to be done about institutional impediments to proper emergency checklist design, e.g., procedures/information intentionally omitted due to 2 man cockpit certification issues of the B747-300 vs. B747-400?
- I have had a cockpit fire on a B-747-400 and had to rely on my experience from B-747-300 since there was insufficient/erroneous information in the B-747-400 QRH.

- I spend so much time on trivial FAA tasking that it detracts from my dealing with true safety issues.