Active Pilot Monitoring Workshop

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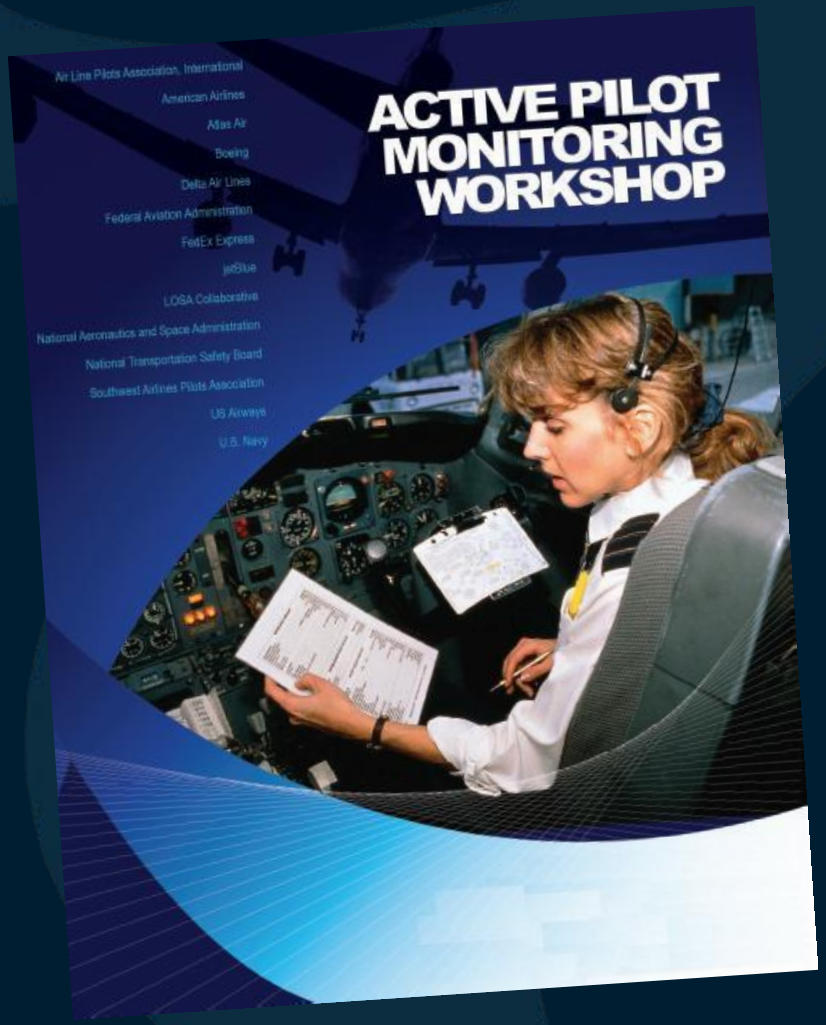
Participants



- ALPA
- Airbus
- American Airlines
- Boeing
- Delta Airlines
- FAA
- FedEx
- Flight Safety Foundation
- ICAO
- Jet Blue
- LOSA Collaborative
- NASA
- NBAA
- NTSB
- RAA
- SWAPA
- United Airlines
- US Airways

59th ASF AIR SAFETY FORUM alpa

The scope of this one year active pilot monitoring project will focus on taxi in and out, flight path management, and automation management.

Workshop Goal

- The project goal is to have specific recommendations that will be of immediate benefit to the operational community
- The report must be operationally relevant and practical
- User Friendly
- Have Measurable Results

Actively Monitor

- Pilots must “actively monitor” the aircraft.
- Monitor the flight instruments just as you would when hand flying.
  - Consistent verification process
  - Guard against fixation
  - Challenge other pilot if there is a question

Root Causes

- High-workload
- Fatigue
- Interruptions
- Complexity
- Concurrent tasks
- Rushing
- Work prioritization
- Operational changes
- Corporate culture
- Conflicting SOP‘s
- Human limitations
- Drift
- Unclear expectations

Barriers to Monitoring

- System and Ergonomic Design
- Organizational Factors
- External Environment
- Confusion Complacency
- Inattention Distraction
- Boredom
- Low Attention
- Tunneling
- Low Arousal Disorientation
- Tiredness
- Poor SA
- Stressors (workload and lack of knowledge)

Common Monitoring Mistakes

- Failure to monitor FMA, MCP, FMC (aircraft specific)
- Failing to challenge
- Failing to anticipate changes
- Failure of mental model
- Subjective perception of risk
- Poor workload management
- Failure to follow SOPs
- Failure to monitor aircraft state

Paradigm Shift

- It must become accepted that monitoring is a “core skill,” just as it is currently accepted that a good pilot must posses good “stick and rudder” and effective communicational skills.
- This will require addressing the 4 “P”s:
  - Philosophy
  - Policy
  - Procedures
  - Practices

Education

- Strategies and techniques for enhancing monitoring skills
  - Insidious effects of rushing
  - AOV's
- Improve the design of existing procedures to promote better monitoring
- Reinforce monitoring policy at set intervals to maintain vigilance and guard against safety drift
- Measure concentration; when all is smooth we stop monitoring, there is no feedback from monitoring and our processing of information is more effective when there is a feed back loop or reward

Training

- Improved automation training - shift from "switchology" to development of conceptually based mental models
  - Better working knowledge to develop a predictive/expectation of what automation will do next (verbalize mode changes)
- Formalize and proceduralize the desired behavior then develop training scenarios that promote application for the skill set

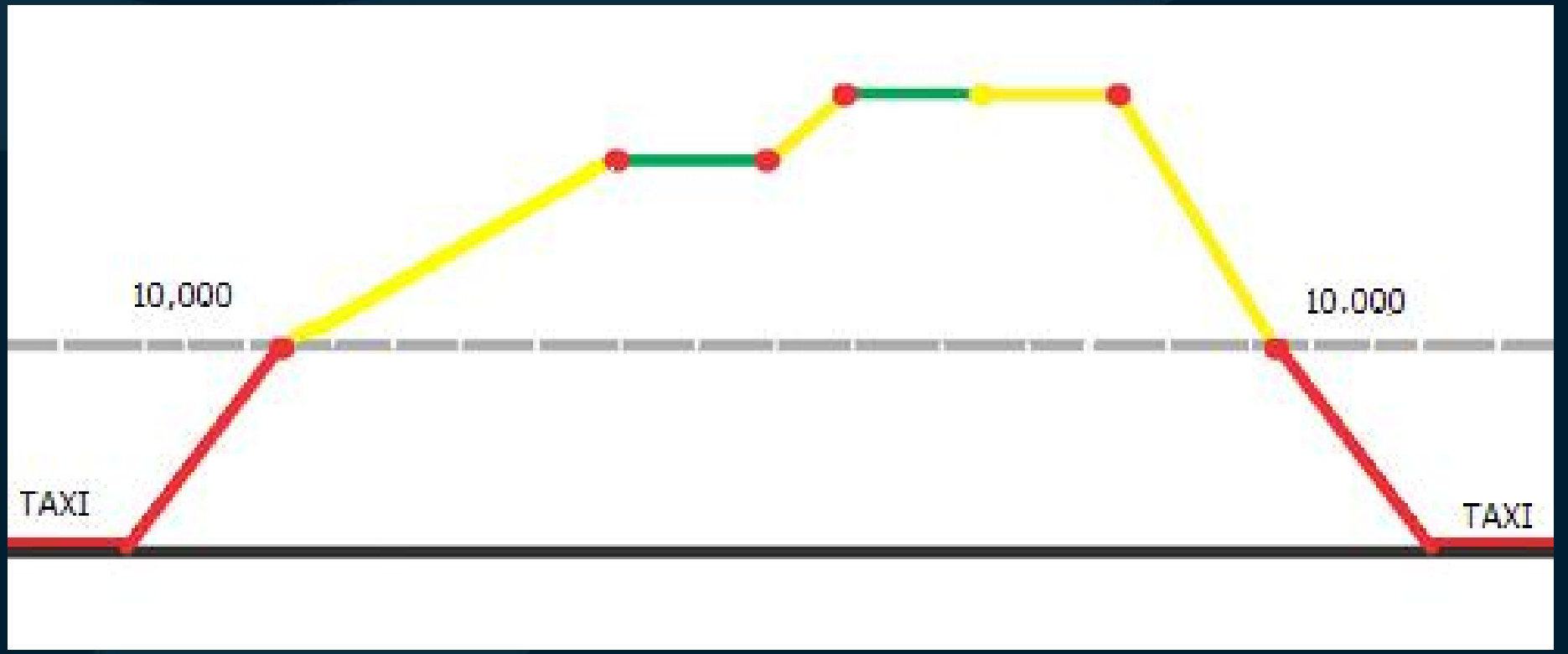
Practices

- Reinforce monitoring policy at set intervals to maintain vigilance and guard against safety drift
- Explicit guidance that both pilots have an active role to support and cross verify
  - Assure that anything one pilot does to affect flight/taxi path is verified by the other pilot
- Form/communicate/execute a plan (creates shared mental model)

Standard Operating Procedures

- Review for contradictory SOPs and avoid conflicting messages
- Develop procedures that promote good monitoring
- Simulator training of expected behaviors (realistic scenarios)
- 'Sterile Cockpit' during Area's of Vulnerability with list of acceptable actions during that time
- Match SOPs to defined PF/PM roles and responsibilities
- Ensure the Trainers/Evaluators have been thoroughly trained on optimal techniques and procedures

Area of Vulnerability



RED-High YELLOW-Medium GREEN-Low

Strategically Planning Workload

- Strategically plan workload to maximize monitoring during those areas of vulnerability (AOV)
- Pilots should recognize those flight phases where poor monitoring can be most problematic

Tools and Examples of Good Practice

- Double pointing
- Verbalizing changes
- Communicate what is anticipated
- Brief the arrival and approach prior to top of descent
- Have PM make all FMC/FMS entries
- Deviation call outs at specific values
- Repeat configuration changes

- Next Meeting October 2013
- Final report December 2013