Active Pilot Monitoring Workshop

Helena Reidemar
Director of Human Factors,
ALPA
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
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
It must become accepted that monitoring is a “core skill,” just as it is currently accepted that a good pilot must possess 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 feedback 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