FAA ATO’s Safety Management System (SMS)

Friends and Partners in Aviation Weather

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Background

• FAA’s ATO is implementing a Safety Management System (SMS)
  – uses lessons learned from international Air Navigation Service Providers.

• Safety – a condition in which the risk of harm or damage is limited to an acceptable level.

• The SMS provides a proactive approach to safety.
FAA Safety Management System

- SMS Requirements
- SMS Responsibilities & Accountabilities
- Safety Oversight

- Safety Risk Management (SRM) - e.g., changes are safe
  - SRM Filter (what changes require SRM?)
  - SRM Guidance
  - SRM Documentation (and who approves)

- Safety Assurance and Evaluations
- Safety Data Tracking and Analysis

- Recommending Actions based on Safety Metrics
- SMS Training
- Safety Organization
  - Safety Culture
  - Safety Lessons Learned
FAA Safety Organizations

- Provide independent safety oversight of air traffic service provision
- Audit of process, not daily operations
- Can require a change to enhance safety

ATO Safety Service
- Manage SMS process
- Support safety risk management (SRM)
- Monitor/assure NAS safety through:
  - Audits/evaluations
  - Data/metric analyses
- Promote safety
- Collaborate internationally
- Primary interface with AOV

Air Traffic Organization (ATO)

Associate Administrator for Regulation & Certification (AVS)

AOV

Safety

Communications

Operations Planning

Finance

Acquisition & Bus. Services

En Route & Oceanic

Terminal

Flight Services

System Operations

Technical Operations

Administrator & Deputy Administrator

Chief Operating Officer

Air Traffic Services Subcommittee

15-Dec-05
November, 2005
Value of Safety Management

The devil is in the details.

There are many hidden risks.

What we know today!!!

SRM’s function is to find and control risk here

Cost due to changes

It costs less and can shorten deployment time to find and fix problems early.
### SMS Activities for R&D

#### Comprehensive Proactive Safety Management Approach

<table>
<thead>
<tr>
<th>R&amp;D Activities</th>
<th>SMS Products</th>
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<tbody>
<tr>
<td><strong>Concept</strong></td>
<td><strong>Operational Safety Assessment (OSA)</strong> – A hazard identification method used to develop and assess safety requirements.</td>
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<tr>
<td><strong>Trade Studies</strong></td>
<td><strong>Comparative Safety Assessment (CSA)</strong> – A safety analysis method that assesses the relative risk between the alternatives.</td>
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<tr>
<td><strong>Demonstration</strong></td>
<td><strong>Preliminary Hazard Assessment (PHA)</strong> – Initial effort in risk assessment of the selected system.</td>
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Safety Risk Management Summary

What Can Go Wrong?
- System failures
- Procedural failures
- Adverse ambient environment
  - Lightning
  - Thunderstorms
  - Electro-magnetic effects
  - Icing
- Adverse operational environment
  - Traffic density
  - Communications
- Human failures

How Big Is the Risk?
- Severity
  - Worst credible
  - Likelihood of outcome
  - Identify the risk from the risk matrix
  - Determine risk resolution date

How Can You Reduce the Risk?
- Avoid by eliminating the risk cause and/or consequence
- Control the causes or system states
- Transfer the risk
- Assume the risk level and continue on current plan
- Research and Knowledge of items that impact the risk
- Write mitigation plan

Does the Program include Mitigation?
- Change requirements to include mitigations
- Change budget to include mitigation activity
- Change planning to include mitigation events
- Communicate changes to stakeholders

Continuous Monitoring
- How are things going?
- Communicate hazards and their risk to all stakeholders
- Review mitigation actions for compliance to plan regularly
- Assess effectiveness of mitigation strategies
- Watch for new hazards through safety data

Safety Risk Management Summary

<table>
<thead>
<tr>
<th>Severity</th>
<th>Likelihood</th>
<th>Minor</th>
<th>Major</th>
<th>Hazardous</th>
<th>Catastrophic</th>
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<tbody>
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<td>Probable A</td>
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<td>Frequent B</td>
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*Unacceptable with Single Point and Common Cause Failures

High Risk

Medium Risk

Low Risk
Transition to Oversight & Next Steps

• The ATO Safety Service Unit is leading the implementation of the SMS in ATO, as documented in the FAA SMS Manual Version 1.1
  – Version 2.0 Planned for release in early FY-06

• Application of Safety Risk Management (SRM) process has begun on target programs and will expand over time.

• ICAO safety audit of FAA ATO scheduled for FY-07