



Safety Management System Coming Soon to an Airport Near You



January 11, 2010



Agenda

- SMS Pilot Program Overview
- Program Deliverables/Focus
- Safety Risk Management
- Airport Comparisons
- Steps to Implementation
- SMS Challenges



FAA SMS Pilot

- FAA draft AC 150/5200-37
- FAA made grants available to U.S. Airports
 - Phase 1, 20 participants (FG managed JAN and SMF)
 - Phase 2, 9 participants (class II, III, IV) (FG managed CYS)
- The Pilot Programs scheduled to be complete 6 months from receiving funds
- The goal was not just to draft an SPM but to explain the process needed
- The outcome will be used to craft a Notice of Proposed Rule Making potentially mandating SMS
 - 2010?
- It is believed SMS will become part of FAR 139



SMS Pilot Deliverable Focus

- FAA defined safety audit area
 - Ramps/Non movement
 - Outside facility walls
 - Except bag wall
 - Part 139 movement areas not included
 - Pilot Program Report
 - Process/challenges
 - Draft Safety Program Manual (SPM)
 - 4 Elements
1. Safety Policy
 2. Safety Risk Management
 - Reporting (non punitive)
 - Identify Hazards
 - Determine the Risk
 - Assess and analyze the Risk
 - Treat the risk
 3. Safety Assurance
 - Audits
 4. Safety Promotion
 - Training
 - Communication



Safety Risk Management Risk Matrix

- **Severity/Consequence:**
 - The potential/possible level of damage to equipment, disruption to the operation, and/or injuries or fatalities caused by a hazard

Versus

- **Probability:**
 - What is the likelihood/frequency this may occur, highly likely to highly unlikely
- **Equals Likelihood of Risk**



RISK MATRIX

Severity to Probability

5	Catastrophic					
4	Hazardous					
3	Major					
2	Minor					
1	Insignificant					
		<i>Extremely Improbable</i>	<i>Extremely Remote</i>	<i>Remote</i>	<i>Probable</i>	<i>Frequent</i>
		<i>Should never occur</i>	<i>Unlikely to occur, do not dismiss</i>	<i>Should be expected once</i>	<i>May occur</i>	<i>May occur often</i>
		I	II	III	IV	V

- Unacceptable risk by threat
- Reduced risk of casualties by threats
- Acceptable mitigation of risk by threat

RISK MATRIX

Severity to Probability

5	Catastrophic	Yellow	Red	Red	Red	Red
4	Hazardous	Yellow	Yellow	Red	Red	Red
3	Major	Green	Yellow	Yellow (with triangle)	Red	Red
2	Minor	Green	Green	Yellow	Yellow	Red
1	Insignificant	Green	Green	Green	Green	Yellow
		<i>Extremely Improbable</i>	<i>Extremely Remote</i>	<i>Remote</i>	<i>Probable</i>	<i>Frequent</i>
		<i>Should never occur</i>	<i>Unlikely to occur, do not dismiss</i>	<i>Should be expected once</i>	<i>May occur</i>	<i>May occur often</i>
		I	II	III	IV	V

TEST RISK: A vehicle bumps an aircraft wing causing damage to a winglet and minor disruption to the airport.

- Unacceptable risk by threat
- Reduced risk of casualties by threats
- Acceptable mitigation of risk by threat

Steps to Developing Risk Matrix

Workshop 1

- Introduce audit hazard findings
- Engaged stakeholder participation
- Other hazards identified
- Stakeholders categorized hazards (Risk)
 - Severity
 - Probability

Workshop 2

- Risk Matrix discussed
- Contributing factors discussed (root cause)
- Mitigating efforts discussed



SMF Risk Matrix



SMF Hazard/Risk Matrix

- 1) Equipment near jet blast
- 2) Perimeter Rd drop off
- 3) A-2 Breezeway no STOP
- 4) 8' headache bar not marked
- 5) Old ground pins
- 6) Gate 27 pax ground load no non-skids
- 7) B-2 Breezeway signs and stop light damage
- 8) Pax loading from Gate 31 to 40
- 9) Speeding by aircraft and buildings
- 10) Towing and aircraft damage
- 11) Jet blast during pushback and arrival
- 12) Deice ops using kitty litter on glycol
- 13) FOD
- 14) Earhart Rd crosses Twy Y and airstairs limit visual
- 15) Large vehicles backing up (fuelers, catering, etc)
- 16) ARFF traffic signal not working
- 17) Driving under jet bridges

5	Significant Incident (casualties & fatalities)					
4	Very Serious (less fatalities, many injured)			17	8	
3	Serious (few fatalities, some injured)			2,3,6,11 15	9,13,14	
2	Less Serious (few injuries)			5	4,12	
1	Insignificant				1,7	
		<i>Extremely Unlikely</i>	<i>Extremely Rare</i>	Rarely	Probable	Often
		<i>Should never occur</i>	<i>Unlikely to occur, do not dismiss</i>	Should be expected once	May occur	May occur often
		I	II	III	IV	V

- Unacceptable risk by threat
- Reduced risk of casualties by threats
- Acceptable mitigation of risk by threat

JAN Risk Matrix

1. Natural Gas Pipe Tug Road
2. Tie Downs on Ramp
3. Twy B4 Xing
4. Twy F2 N Edge Route
5. Aircraft/Equipment Impact
6. Material Storage (HAZ)
7. Aircraft Pkng Proximity
8. Aircraft Hi-Sp Short-cuts
9. Pax Gnd Load Slip/Fall
10. Escalators slip fall
11. Sliding Glass Doors/slip fall
12. Ice Parking Lot
13. Ramp Slip/Fall (Employee)
14. Fouled Bag Belt Devices
15. Injury on unfamiliar A/C
16. Human/Equipment Impacts
17. Veh – Veh Impact (speed)
18. Pax Loading Injuries (Disabled)
19. A/C stairs Slips
20. Bag Loader/Aircraft Impact
21. Equip/Equip & Equip/Bldg Impact
22. Uncontrolled Equip (Tow Break)
23. Distracted Driving (Ramp/Cell)
24. Twy D A/C Crossing Impact
25. Ramp Distraction (toys)
26. Equip/Aircraft Impct (Right of way)
27. A/C to A/C Impact or Contact (Pkng)
28. FOD (Gnd Sppt Equipment)
29. Pax Entering Ramp
30. Aircraft Veh (Unescorted Vendor)
31. Air Cargo Trash/FOD
32. Vehicle/Aircraft – Pedestrian impact (delineation of safety areas)

5	Significant Incident (casualties & fatalities)		16 17	12	25 26 32	30 27 28	3 4 7 23
4	Very Serious (less fatalities, many injured)				22 26 31		
3	Serious (few fatalities, some injured)				24 29	1 8 18	14 18 21 6 10 11
2	Less Serious (few injuries)			19 20			2
1	Insignificant						
		<i>Extremely Unlikely</i>	<i>Extremely Rare</i>	Rarely	Probable	Often	
		<i>Should never occur</i>	<i>Unlikely to occur, do not dismiss</i>	Should be expected once	May occur	May occur often	
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Defining Risk Basics

- Considerations

People

Continuity of Operation Plan (COOP)

Environmental

Perception

= PCEP

- Definitions still need vetting



Risk Severity - None

- No reportable injury
- No operational impact
- None to minimal budget impact
- No environmental impact
- Perception unchanged no public reporting



Risk Severity - Minor

- Recordable injury, first aid required
- No lost work time
- None or very limited operational delays
- Minimal budget impact
- Contained with none to limited impact
- Limited exposure to public



Risk Severity - Major

- Reportable injury 1 to 2 persons
- Lost work time less than 1 week (40 hours)
- Loss of operations less than 4 hours
- Moderate budget impact
- Non-contained but manageable/repairable within 1 day
- Public exposure by local media during less than 1 week





Risk Severity - Hazardous

- Reportable injury 3 to 49 people
- Death less than 5 persons, not Mass Casualty Incident (MCI)
- Lost work time 1 week to 1 month
- Loss of operation 4 to 12 hours
- Serious budget impact
- Non-contained, environmental impact 1 to 30 days
- Exposure by regional media 1 week to 10 days
- Limited national exposure

Risk Severity - Catastrophic

- Reportable injury greater than 50 persons
- Death greater than 5 persons, MCI
- Loss of operation 12+ hours
- Grave budget impact
- Non-contained, long term impact 30+ days
- Broad, National and Global media exposure lasting 10+ days



Risk Probability

Frequent

- Occur daily or multiple times per week
- Continuously expected to occur in the system

Probable

- Occurs multiple times per year or once monthly
- Regularly expected to occur in the system

Remote

- Once a year or multiple times from 1 year to less than 5 years
- Unlikely but possible to occur



Risk Probability

Extremely Remote

- Conceivable but highly unlikely
- Possibly once in every 5 to less than 10 years

Extremely Improbable

- Almost impossible
- Possibly only once in 10 to 100 years



CYS RISK MATRIX

Severity to Probability

5	Catastrophic					
4	Hazardous	2				
3	Major			1,3,4,5		
2	Minor					
1	Insignificant					
		<i>Extremely Improbable</i>	<i>Extremely Remote</i>	<i>Remote</i>	<i>Probable</i>	<i>Frequent</i>
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- 1) Non Secured Waste Items
- 2) Ramp Parking Markings
- 3) Pax Ground Boarding
- 4) Grates
- 5) Old Ground Pins

- Unacceptable risk by threat
- Reduced risk of casualties by threats
- Acceptable mitigation of risk by threat

Airport Pilot Similarities

- All had a 139 program safety self inspections
- Assigning a full time employee to SMS is difficult
- Budgeting will be difficult
- All had some technology that could support implementation
- Training tracking could be tied to existing SIDA/Driver's training
- All believed this was a positive program



Airport Pilot Differences

- Larger the airport the more complicated safety issues
- Governance varies
- Safety threats vary
- Larger airports have more resources for implementation
- Smaller airports can implement more easily
- Employee turnover at small airports is much lower





Steps to Implementation

- SPM formalized/approval/sign off
- Safety Risk Management process
- Safety assurance process
- Technology developed for reporting and auditing
 - SPM support forms developed electronically
- Communications plan implemented
 - Workshops
 - Website
- Safety Committees organized
- Training executed
 - Specific to those managing the program
 - General overview for all other employees

Implementing SMS

Why it Takes So Long

- Develop the plan (6 to 12 months)
- Implement the plan (12 months)
 - Not funded in pilot
- One year after implementation first base report
- Two years after implementation first comparative report to base
- Three years after implementation trends and actual accomplishments numerically visible
- Four years after implementation culture change begins



SMS Program Challenges

- Timeframe for pilot program (6 months)
- How can airports implement SMS without an FAA mandate?
- ATC has already implemented
 - 7460/Master Plan process changes
 - Risk analysis somewhat different from Airports
- SMS and Part 139 inspections/ certifications?
 - Same Inspector
 - One Inspection



SMS Program Challenges

- Airport perceptions of an SMS
 - Operational issue/owner
 - Risk/HR issue/owner
- Will SMS ever include terminal and curbside safety?
- Currently there is no airport specific SMS technology available
- Implementation can take a long time
- Financial & staff implications for airports
- How are airports expected to address language barrier issues?



SMS Program Challenges

- How will SMS Airport, Airline and ATC programs be integrated?
 - Will airlines share information?
- How can non-punitive policies be implemented by an airport?
- How do airports change employee/tenant culture?
- Will airport SMS data be protected from public disclosure?



It Is Preventable!!

