Safety Management System (SMS) Manual
Selected Tools and Guidance
Volume 2

Version 1.0
1 Mar 2011

Presented to:

Todd Dalsing
Acting Airport Manager
Dubuque Regional Airport (DBQ)
Dubuque, IA

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QUALITY ASSURANCE AND VERSION TRACKING

Authorization

Title	Dubuque Regional Airport - SMS Manual / Selected Guidance Tools	
Document number	SMS 1-1-1 Vol. 2	
Version	1.0	
Prepared by	Applied Research Associates, Inc	
Approved by		

Version tracking

Version	Action	By	Date
1.0	Preparation	ARA	03/01/2011

PREFACE

This document has been structured in two volumes:

- Volume 1 is the DBQ Safety Management System (SMS) Manual; and
- Volume 2 includes selected SMS policies, tools, checklists, and forms.

The SMS Manual contains the proposed SMS structure, roles, responsibilities and processes required to manage the SMS, It does not include all the procedures, tools and outputs from those processes. Selected tools, checklists, guidance and procedures have been included in Volume 2. Additional supporting procedures and tools will be developed during the SMS implementation process. This SMS manual was produced by ARA.

SMS MANUAL CONTROL NUMBER

SMS.1.1-1

VOLUME 2

DBQ SMS Manual / Selected Tools and Guidance

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VOLUME 2

DUBUQUE REGIONAL AIRPORT

SAFETY MANAGEMENT SYSTEM MANUAL
SELECTED TOOLS AND GUIDANCE

AUTHORIZATION

This document is approved for use by:

…… [*Signature & seal*]…….

Airport Manager

This document is endorsed by:

…… [*Signature & seal*]…….

Supervisor of Operations and Maintenance

…… [*Signature & seal*]…….

Supervisor of FBO Operations

…… [*Signature & seal*]…….

Supervisor of Administration

DISTRIBUTION LIST

Copy No.	Holder (Position Title)	Signature (of Holder)
1	Airport Board of Directors	
2	Airport Manager	
3	Supervisor of Operations and Maintenance	
4	Supervisor of FBO Operations	
5	Supervisor of Administration	
6	SMS Coordinator	
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AMMENDMENT RECORD SHEET

Revision No.	1.0		
Amendment No.	**Affected section**	**Affected pages**	**Date**

SMS MANUAL - SELECTED TOOLS AND GUIDANCE

This document supports the Dubuque Regional Airport (DBQ) Safety Management System Manual. It is compatible with the guidelines established in the FAA Advisory Circular AC 150/5200-37 (02/28/2007), Introduction to Safety Management Systems (SMS) for Airport Operators, and contains DBQ Safety and Reporting policies, as well as selected tools, checklists, guidance and procedures. This material has been included in a separate volume from the SMS Manual because its content is subject to periodic reviews and modifications.

A. DBQ SAFETY COMMITMENT AND PHILOSOPHY

DUBUQUE REGIONAL AIRPORT (DBQ) SAFETY POLICY

We all have the responsibility for working in a safe manner. The application of an effective safety management system is integral to all our aviation activities with the objective of achieving the highest levels of safety standards and performance. As such our commitment is to:

- continuously promote a safety culture across all our activities that recognizes the importance of safety and the value of effective safety management;
- ensure that all staff are aware of their accountabilities and responsibilities in the execution of and participation in the safety management program;
- proactively manage the risks associated with accidents or incidents to a point which is as low as reasonably practicable/ achievable;
- verify that all externally supplied systems and services that impact upon the safety of our operations meet appropriate local, national and contractual safety standards;
- perform our safety procedures and processes in conformance with recognized established standards;
- comply with and wherever possible exceed legislative and regulatory requirements and standards;
- provide all our staff with adequate and appropriate safety information and training, to ensure that they are competent in the performance of their duties;
- only assign tasks to our staff that are commensurate with their skills and available resources;
- provide sufficient skilled and trained personnel and other resources as necessary to ensure the effectiveness of our safety management system;
- measure our safety performance against objectives and/ or targets on a regular basis, and take corrective actions to improve safety when appropriate;
- strive for the highest levels of safety standards and performance in all our activities;
- continually improve our safety performance; conduct safety and management reviews; and ensure relevant actions are taken.

…… [*Signature & seal*]…….

Airport Manager

DUBUQUE REGIONAL AIRPORT (DBQ) NON-PUNITIVE REPORTING POLICY

DBQ is committed to safe airport operations. To achieve this, it is imperative that we encourage uninhibited reporting of all incidents and occurrences which may compromise the safe conduct of our operations. To this end, every employee is responsible for communicating any information that may affect the integrity of airport operations. Such communication by DBQ staff is completely free of any form of reprisal;

DBQ will not take disciplinary action against any DBQ employee who discloses an incident or occurrence involving airport operations;

This policy shall not apply to information received by the DBQ from a source other than the employee involved in the event, or which involves an illegal act, or a deliberate or willful disregard of promulgated regulations or procedures;

Our method of collecting, recording and disseminating information obtained from Safety Reports has been developed to protect, to the extent permissible by law, the identity of any person who provides safety information;

I urge all staff to use our Safety Reporting program to help DBQ become a leader in providing our customers and employees with the highest level of safety.

…… [*Signature & seal*]…….

Airport Manager

B. DBQ SAFETY OBJECTIVES

Organization Wide Safety Objectives

1. Provide effective training;
2. Promote SMS awareness within the organization as a whole;
3. Encourage safety reporting; and
4. Benchmark number of incidents and accidents within DBQ.

Specific Safety Goals

Objective: Ensure that all personnel within DBQ organization receive basic SMS training.
Metrics: Percentage of employees that received basic SMS training.

Objective: Implement corrective or risk mitigation actions within 15 days from date a hazard was identified.
Metrics: Number of hazards identified, and number of days taken to implement a Corrective Action Plan.

SMS Coordinator Goals

Objective: Develop an SMS Awareness campaign that includes all DBQ staff and all airport employees dealing with airside operations.
Metrics: Number of sessions performed.

Objective: Set up a database to record safety significant events, incidents and accidents
Metrics: Number of incidents and accidents identified and recordedd.

Objective: Set up an SMS database and keep records of reports received.
Metrics: Number of reports received

Objective: Provide feedback to reports received through the Safety Reporting within 7 days
Metrics: Average number of days taken to provide feedback for reports received.

C. LIST OF APPLICABLE REGULATIONS TO DBQ

- Statutory Materials—United States Code, Title 49:
  - Chapters 401 (General Provisions), 417 (Operations of Carriers), 449 (Security), 461 (Investigations and Proceedings), 471 (Airport Development), 475 (Noise).
- Regulations—Code of Federal Regulations (C.F.R.), Title 14 and Title 49Aviation Laws:
  - 14 C.F.R. Part 139 (Certification of airports);
  - 14 C.F.R. Part 1 (Definitions and abbreviations);
  - 14 C.F.R. Part 13 (Investigative and enforcement procedures);
  - 14 C.F.R. Part 16 (Rules of practice for federally assisted airport enforcement proceedings);
  - 14 C.F.R. Part 21 (Certification procedures for products and parts)
  - 14 C.F.R. Part 36 (Noise standards: Aircraft type and airworthiness certification);
  - 14 C.F.R. Part 71 (Designation of class A, B, C, D, and E airspace areas: air traffic service routes; and reporting points);
  - 14 C.F.R. Part 77 (Objects affecting navigable airspace);
  - 14 C.F.R. Part 91 (General operating and flight rules);
  - 14 C.F.R. Part 150 (Airport noise compatibility planning);
  - 14 C.F.R. Part 157 (Notice of construction, alteration, activation, and deactivation of airports);
  - 14 C.F.R. Part 161 (Notice and approval of airport noise and access restrictions);
  - 14 C.F.R. Part 300 (Rules of conduct in DOT proceedings under this chapter);
  - 14 C.F.R. Part 302 (Rules of practice in proceedings);
  - 49 C.F.R. Part 18 (Uniform Administrative Requirements for Grants and Cooperative Agreement to State and Local Governments);
  - 49 C.F.R. Part 1520 (Protection of sensitive security information);
  - 49 C.F.R. Part 1540 (Civil aviation security: general rules);
  - 49 C.F.R. Part 1542 (Airport security);
- FAA Regulations and Policies;
- FAA Orders and Notices;
- FAA Advisory Circulars;
- FAA Policy and Guidance;
- FAA Environmental Records of Decision;
- FAA Airport Noise and Land Use Information;
- IOWA Administrative Regulations, Department of Transportation ;
- Other FAA Documents:
  - CertAlerts;
  - Engineering Briefs (EBs);
  - Signs and Marking Supplement (SAMS).
- TSA Security Directives
- NOTAMs for DBQ.

D. LIST OF RECORDS TO BE MAINTAINED

All Documents as identified in 14 CFR Part 139.301. They include:

- All Emergency Personnel training: 24 months;
- Airport fuel provider inspection records: 12 months;
- Fuel provider personnel training records: 12 months;
- Self inspection records: 12 months;
- Movement area and safety area training records: 24 months;
- Accident and incidents occurring in the movement and safety areas: 60 months;
- Airport condition reports: 12 months;
- Training records; 60 months.

E. COMMON AIRSIDE HAZARDS

- Airside Construction;
- Foreign Object Debris (FOD);
- Runway incursions;
- Wildlife;
- Miscommunication;
- Vehicles striking aircraft and/or people:
    - Traffic rules governing such issues as speed limits, especially on approach to aircraft and in the vicinity of people;
    - Correct vehicle maintenance, especially of safety critical components such as brakes and steering;
    - Driver training and refresher training;
    - Driving standards;
    - Competence/attitude of drivers;
    - Apron management;
    - Markings.
- Hazards to passengers on the apron;
- Moving aircraft:
    - Taxi;
    - Pushback;
    - Power back;
    - Tows;
    - Markings;
    - Aircraft parking;
- Markings and limits of aircraft per stand.
- Signs, Markings and guidance;
- Live aircraft engines:
    - Blast;
    - Fumes;
    - Designated run up engine areas;
    - Suction ingestion;
    - Propellers.
- Falls and falling objects;
- Operation of jet bridges and other servicing equipment;
    - Standard Operating Guidelines (SOG);
    - Markings;
    - Training.
- Ground Support (GSE) and other airside equipment;
- Hazardous substances and Dangerous Goods;
    - Hydraulic and other equipment fluids;
    - Toilet waste;

  - Container leaks;
  - Cleaning products;
  - Flammable.
- Inadequate lighting, glare or confusing lights;
- Adverse weather conditions (including winter operations):
  - Strong winds;
  - Low visibility;
  - Electrical storms.
- Electrical hazards:
  - Ground Power Unit (GPU);
  - Lighting (apron and airfield);
  - Power supplies;
  - Etc.
- Faults and Defects.

F. SAFETY REPORT TEMPLATE

SAFETY MANAGEMENT SYSTEMS
REPORTING FORM – PART A

VOLUNTARY HAZARD REPORTING FORM

This form should be used to report any airside hazard that has caused or could cause an accident or incident. Send to the DBQ SMS Coordinator as soon as possible after the hazard has been identified.

EVENT DESCRIPTION
(To be completed by person reporting the event)

DATE:……./……./……. **TIME: ………. AM/PM**

LOCATION:………………………………………………………………………………………..

DESCRIPTION:…………………………………………………………………………….……..

…………………………………………………………………………………………………..….

……………………………………………………………………………………………….…….

………

(To SMS Coordinator: Tear here and discard securely before processing)

Your Name………………………………………………………………………………………

Your Organization/Position…………………………………………………………………

Contact number/e-mail address………………………………………………………………

Confidentiality Commitment

You can submit the form anonymously (if you so chose) by omitting relevant details. If you do provide your name, it will only be used by the SMS Coordinator to enhance the understanding of the event with follow-up actions should that be required; and under no circumstances will your identity be disclosed to any person or organization without your express permission. Please be aware that, under the Freedom of Information Act 2000 (FOIA), there is a statutory Code of Practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence.

SAFETY MANAGEMENT SYSTEMS
REPORTING FORM – PART B

REPORT PROCESSING
(To be completed by the SMS Coordinator)

DATE that report was received:……./……./…….

Level of Risk Assessed at:……...

Referred to:

Appropriate DBQ Manager: Y / N Name/Dept…….……

Ramp Safety Committee : Y / N Name/Organization…….

Entered into Airside Safety Risk Database:
Date…… /……/…… Signature…….

Actions required……

…….

…….

Person responsible ……

Completion Date estimated: ……./…...../……

Feedback:

If reporter known:
Person making the report advised of outcome on: Date:.../…./….

If reporter unknown

Event and action communicated on: Date:.../…./….
Through: **□ Safety Bulletin**
□ Safety meeting
□ DBQ meetings minutes
□ Other Safety event (describe):……

G. AVIATION HAZARD IDENTIFICATION BRAINSTORMING TOOL

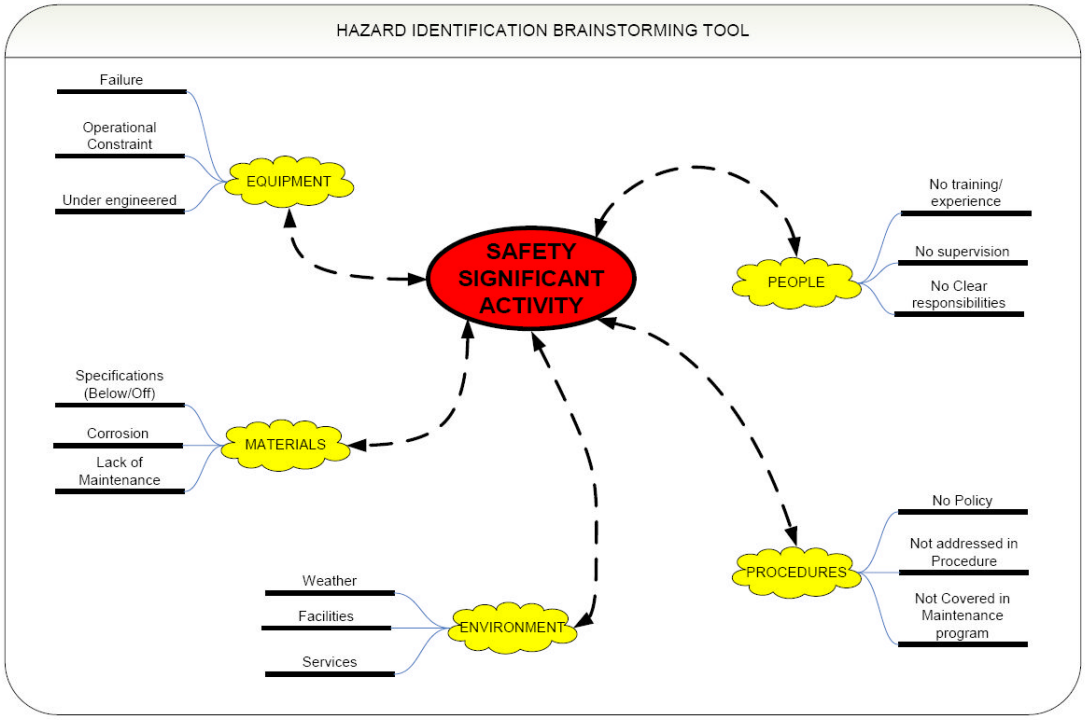


Figure 1 - Hazard Identification Brainstorming Session

Aviation Hazard Identification Brainstorming Worksheets

Date: dd/mm/aaaa		
Department	Operations □	Airport Ops □
		FBO Ops □
	Administration □	Adm □
Safety Significant Activity	……..	

Risk Summary

What Can go Wrong?		Associated Risk	Risk Value
Event	Hazard		

Corrective Action Development Worksheet

Date: dd/mm/aaaa

Hazard	Risk Value	Corrective Action	OPI	Completion (dd/mm/aaaa)	Priority

H. DBQ SAFETY SIGNIFICANT ACTIVITIES

The following table presents the safety significant activities at Dubuque Regional Airport.

Table 1- DBQ Safety Significant Activities.

Department	Main Activity	Safety Significant Activity
Operations and Maintenance	Identification and Training	Issue SIDA badge New employees training Recurrent training
	Monitor and Control	Perform daily airside and other inspections Access to runway and other maneuvering areas
	Administration and Management	Allocate Gates and Parking stands
		Establish and Issue Airside Operating Procedures
		Issue NOTAMS
		Issue ACM and Airport Information
	Maintenance	Perform maintenance of critical airside infrastructure (Jet Bridges, Runway/Taxiway lights, Movement Areas surfaces, etc)
		Provide and maintain aircraft service infrastructure (ground power, air conditioning, surface markings, etc)
		Wildlife Control
	Coordination	NAVAIDS maintenance coordination
	Construction/renovation	Construction of new facilities
		Overseeing and Control of contractors (new personnel, hot asphalt paving, storage, creation of dust, FOD, etc))
FBO Operations	Approval of new operators	New Tenant Agreements
		Authorizations of unusual equipment (cranes, vehicles, etc)
		Authorization of users facilities (constructions)
	Operations	Hangaring and towing
		Refueling
Administration	Marketing and Business	Issuance of Tenders
		Award of contracts

I. RISK ASSESSMENT MATRIX

Table 1 - FAA Severity Definitions

Hazard Severity Classification				
Minimal 5	**Minor 4**	**Major 3**	**Hazardous 2**	**Catastrophic 1**
No damage to aircraft but minimal injury or discomfort of little consequence to passenger(s) or workers	- Minimal damage to aircraft, or - Minor injury to passengers, or - Minimal unplanned airport operations limitations (i.e. taxiway closure), or - Minor incident involving the use of airport emergency procedures	- Major damager to aircraft and/or minor injury to passenger(s)/worker (s), or - Major unplanned disruption to airport operations, or - Serious incident, or - Deduction on the airport's ability to deal with adverse conditions-	- Severe damage to aircraft and/or serious injury to passenger(s)/ worker(s) or - Complete unplanned airport closure, or - Major unplanned operations limitations (i.e.. runway closure), or - Major airport damage to equipment and facilities-	- Complete loss of aircraft and/or facilities or fatal injury in passenger(s)/ worker(s); or - Complete unplanned airport closure and destruction of critical facilities; or - Airport facilities and equipment destroyed

Table 2 - FAA Likelihood Levels

Frequent A	Expected to occur more than once per week or every 2500 departures, whichever occurs sooner
Probable B	Expected to occur about once every month or 250,000 departures, whichever occurs sooner
Remote C	Expected to occur about once every year or 2.5 million departures, whichever occurs sooner
Extremely Remote D	Expected to occur once every 10-100 years or 25 million departures, whichever occurs sooner
Extremely Improbable E	Expected to occur less than every 100 years

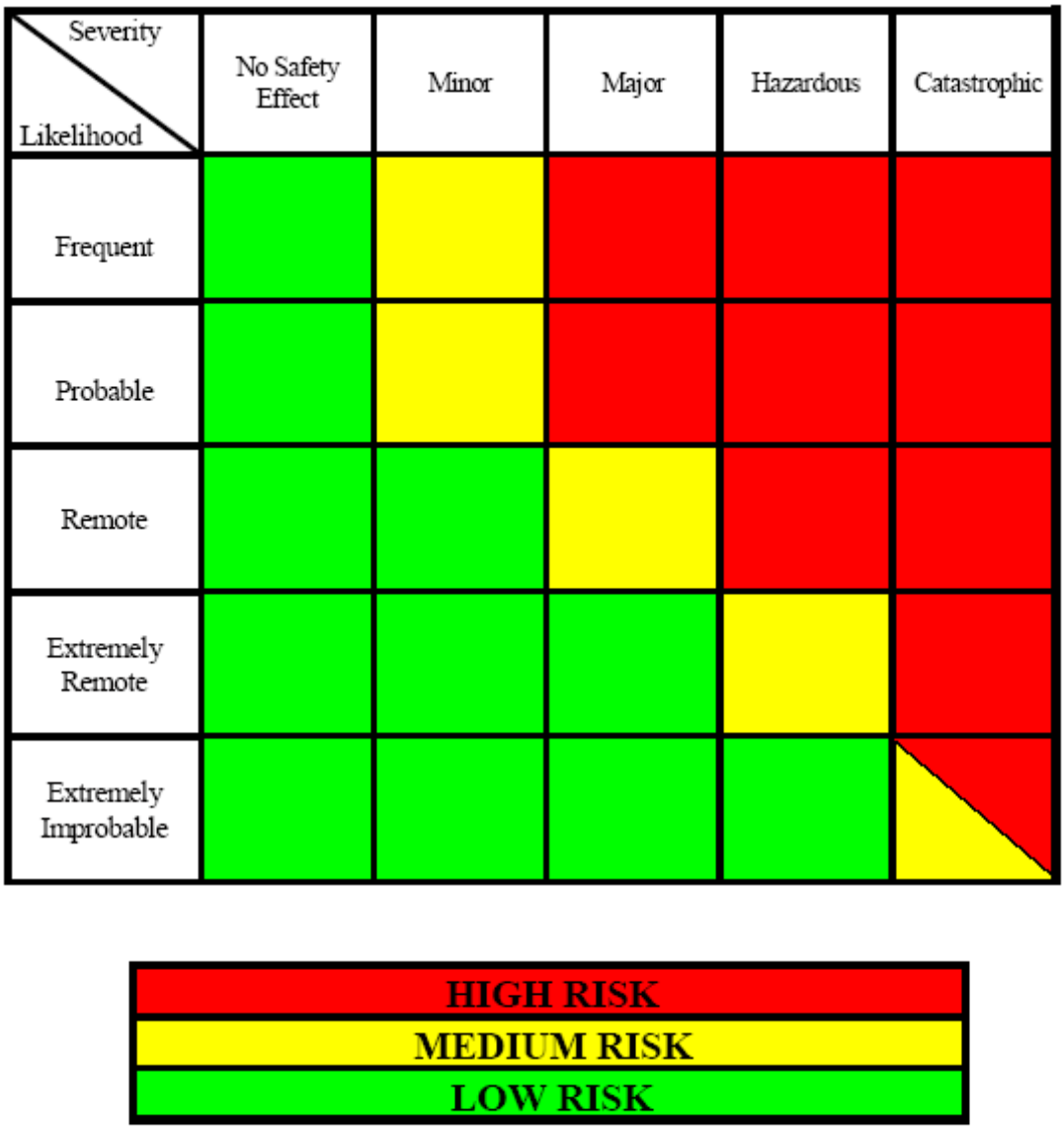


Figure 2 - FAA Risk Matrix

Risk Ranking Log

	Assessment Value	Action Level Required

Corrective Action Plan Log

	Action Level Required	SHORT TERM ACTION	LONG TERM ACTION

J. INVESTIGATION TECHNIQUES

Investigation and analysis follows reporting, hazard identification or high risk concerns. Usually this is done by a team of knowledgeable people who bring their expertise to the table. The objective of any investigation is to focus on "Fact Finding" and not "Fault Finding" so that it becomes a key link in the continuous improvement process. It is often the case in safety incidents that the person is blamed and the underlying reasons on why the person behaved as they did is ignored. There are two commonly used techniques to try to understand the underlying causes of incidents. These are the "Fishbone Analysis" and the other is the *"5 Whys"*.

Fishbone Analysis

The analysis is used in more complex investigations and is particularly useful when many experts are gathered. Typically each will have their own particular expertise and concerns and the fishbone analysis focuses all participants in the investigation to defined aspects of the operation. An outline of the technique is shown in the figure below.

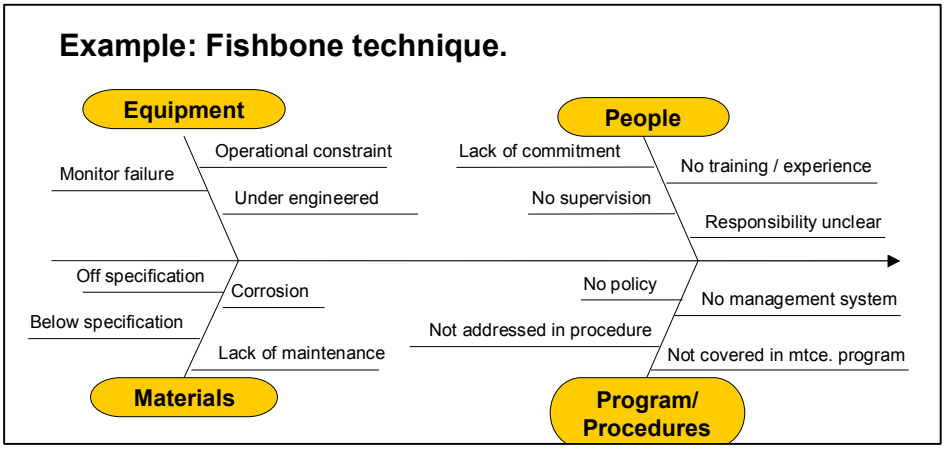


Figure 3 - Fishbone Investigation Process

In the example above all participants are asked to focus on issues related to defined topics. These are Equipment, People, Materials, and Programs/Procedures. Each is discussed in turn and concerns for each are written on to the diagram. Other defined topics may be added at the discretion of the investigating team. At the end of the analysis the resultant fishbone will look somewhat like the example shown.

Each of the concerns identified are then investigated in detail in order to get to the underlying root causes of the issue. It can clearly be seen that this technique will allow many root causes to be permitted ranging from mechanical to human and organizational factors.

5 Whys

The example below is a simple example of the questioning technique used in the 5 Whys. In the example below the "No Maintenance" could be due to a purchasing issue in getting the wrong part or it could be a design issue on the seal. The important point is that the investigation is discussing issues that would preclude repeats of the problem.

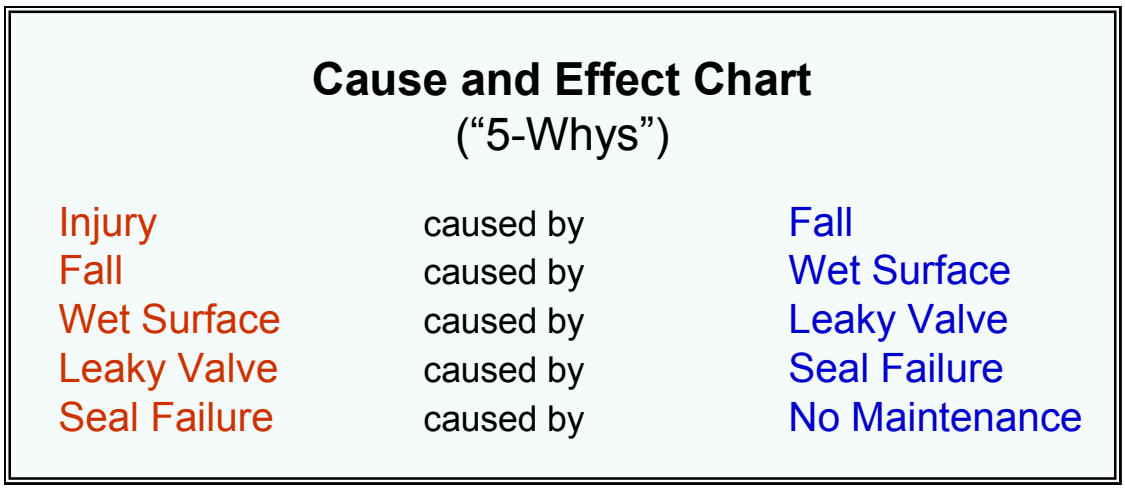


Figure 4 - "5-Whys" Investigation Process

Typically once the issues in the fishbone have been identified the "5 Whys" technique is applied to each in an attempt to find the root causes of each. These techniques allow a skilled team to focus in turn on different aspects of an issue so that all the underlying causes can be addressed. It ensures that no one person is able to dominate the discussion with preconceived ideas and it also allows both hard engineering issues as well as the human factors issues to be drawn out equally in discussions. It is not normal for people to want to make mistakes and so these techniques try to ask why the person found themselves in the position to make the error in the first place.

K. SMS KEY PERFORMANCE INDICATORS

The following are the safety performance indicators set for 2011:

- Number of airside accidents;
- Number of airside incidents;
- Number of incidents involving wildlife; and
- Number of aircraft towing accidents and incidents

L. DOCUMENT AND RECORD MANAGEMENT AND CONTROL SYSTEM

Document Control and Revisions

All SMS relevant documents will be maintained by the SMS Coordinator. The SMS Coordinator will retain the master document and have sole access for changes.

When changes are required, the initial draft of documents will be submitted to the affected personnel for comments. All comments received will be incorporated into the document or discussed until a resolution is reached.

The final draft will be submitted to the AE or Supervisor for review, revisions, and final signature.

The final signed document will be dated, converted to a PDF file, and saved for distribution.

Documents may be reviewed annually for updates or as regulations or conditions change. The same process described above will be utilized for document revisions. The version number will be indicated on the document number as described above.

When appropriate, each document will contain a Revision Record, a Document Control Table and a Distribution Control Table as depicted in the examples below:

REVISION RECORD

Document: SMS Manual – SMS.1.1-1			
DATE	**REVISION NUMBER**	**PAGES REVISED**	**INITIALS**

Every safety-related document must be accessible, stored appropriately and, if required, will have a distribution list to assure information control and dissemination. Relevant documents will be periodically reviewed and the SMS Coordinator will remind and make sure the revisions are actually carried out.

The SMS Coordinator will keep a Distribution Control Table containing summary information available for every SMS document.

DISTRIBUTION CONTROL TABLE

Document: SMS Manual – SMS.1.1-1					
NAME	**# COPIES**	**FROM (version)**	**TO (version)**	**DATE**	**NOTES**
Operations	1	1.0	1.0	06/01/2008	First issue, controlled

The SMS Coordinator will keep a Document Control Table listing each SMS document, as depicted below.

DOCUMENT CONTROL TABLE

DOC	DATE	COMPILED BY	CHECKED BY	AUTHORIZED BY
SMS.1.1-1		ARA		

Document Status

Document status will be controlled by the SMS Coordinator and will define if the document is current and to whom it has been distributed, the review time and review date.

Some documents will be reviewed annually for destruction if new versions have been approved. If it is determined the document needs to be retained, the SMS Coordinator will reassign a destruction date. The table below shows the information that will be included in the Document Status List

DOCUMENT STATUS LIST

DOC #	TITLE	STATUS	DISTRIB.	REVIEW TIME	REVIEW DATE
SMS.1.1-1	SMS Manual	current	AE, SMS Coordinator	1 yr	

Safety records will be appropriately stored and updated and Supervisors will ensure the data is collected, updated and that information is passed to the SMS Coordinator. SMS records will be kept organized to demonstrate due diligence, conformance with the SMS, achievement of objectives and targets, and regulatory compliance.

Records will be legible, identifiable, meaningful, traceable, readily retrievable, and protected against damage. Record retention times will be established by the SMS Coordinator.

M. EXAMPLE OF SAFETY RISK MANAGEMENT

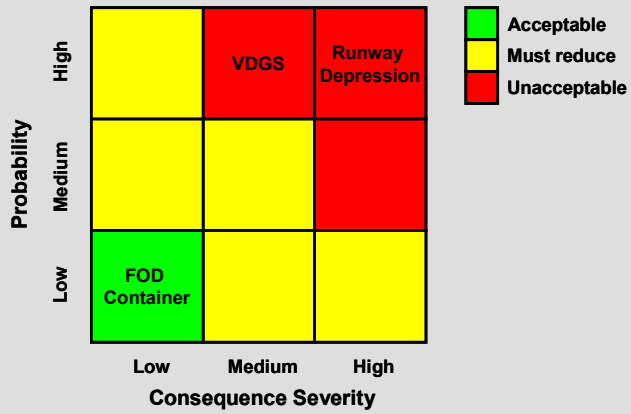
Example

Step #1 – Hazard Identification

During a self inspection (3.1.1) at the airport, the following hazards (2.1.1) were identified:

1) The container provided at the gate to dispose of FOD is old and rusty
2) The Visual Docking Guidance System (VDGS) is not working properly.
3) There is a large depression on the runway surface.

Hazard	Associated Risk
Rusty FOD container	Container can break and release all FOD contents onto gate area
VDGS out of order	Aircraft collision with air bridge or equipment. Low speed likely to cause medium aircraft damage only.
Runway surface depression	Water can accumulate and cause aircraft to hydroplane and loose control, possibly departing the runway with catastrophic consequences



Step #2 – Risk Assessment

Hazard	Associated Risk	Probability	Severity	Classification of Risk
Rusty FOD container	Container can break and release FOD contents onto gate area	Low	Low	Acceptable
VDGS out of order	Aircraft collision with air bridge or equipment	High	Medium	Unacceptable
Runway surface depression	Water can cause aircraft hydroplaning and loss of control during operation	High	High	Unacceptable

Hazard	Associated Risk	Category of Risk	Risk mitigation type	Risk mitigation action
VDGS out of order	Aircraft collision with air bridge or equipment	Unacceptable	Operating procedure/ Corrective Action	Require Marshaller for gating operations / Re-calibrate VDGS
Runway surface depression	Water can cause aircraft hydroplaning and loss of control during operation	Unacceptable	Operating Procedure	*Short-term*: Issue NOTAM to warn pilots, restrict operations during heavy rains, *Long-term*: plan, design and execute runway surface correction
Rusty FOD container	Container can break and release FOD onto gate area	Acceptable	Corrective Action	Replace container

Step #3 – Risk Mitigation