Safety Management System (SMS) Manual
Volume 1

Version 1.0
1 Feb 2011

Presented to

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

Applied Research Associates, Inc.
An Employee-Owned Company

This page intentionally left blank

QUALITY ASSURANCE AND VERSION TRACKING

Authorization

Title	Dubuque Regional Airport - SMS Manual and Selected Guidance Tools	
Document number	SMS 1-1-1 Vol 1	
Version	1.0	
Prepared by	Applied Research Associates, Inc.	10 February 2011
Approved by		

Version tracking

Version	Action	By	Date
1.0	Preparation	ARA	10 February 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 based on documentation research, analysis and interviews conducted on site. The objective was to deliver an SMS documentation that is:

- Concise;
- Practical;
- User-friendly; and
- Builds on existing procedures and practices available at DBQ.

SMS MANUAL CONTROL NUMBER

SMS.1.1-1

VOLUME 1

DBQ SMS Manual

TABLE OF CONTENTS

VOLUME 1
DUBUQUE REGIONAL AIRPORT - SAFETY MANAGEMENT SYSTEM MANUAL

AUTHORIZATION

This document is approved for use by:

…… [*Signature & seal*]……..
Todd Dalsing
Acting Airport Manager

DISTRIBUTION LIST

Copy No.	**Holder** (Position Title)	**Signature** (of Holder)
1	Airport Board of Directors	
2	Airport Manager	
3	Supervisor, Operations & Maintenance	
4	Supervisor, FBO Operations	
5	Supervisor, Administration	
6	SMS Coordinator	
7	Chief, Operations	
8	Chief, ARRF	
9	Chief, Maintenance	
10	Chief, Mechanical	
11	Chief, Customer Services	
12	Chief, Ground Handling	
13		
14		
15		
16		
17		
18		

AMMENDMENT RECORD SHEET

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

SMS MANUAL

This document is the Dubuque Regional Airport 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 describes those processes applicable to SMS, that are an integral part of the DBQ organization business system.

PURPOSE

The purpose of the DBQ SMS Manual is to:

- Support the development and implementation of a Safety Management System at DBQ;
- Document the processes by which DBQ will manage its Safety Management System;
- Provide a ready reference to the organization's SMS program;
- Serve as a safety awareness tool for DBQ staff and other stakeholders.

CONTROL

The issuance, control and updates of this document fall under the responsibility of the SMS Coordinator. No changes or deviations shall be performed without prior authorization from this person. Questions with respect to use of this Manual or information contained herein shall be directed to the SMS Coordinator.

REVISIONS AND AMENDMENTS

All Revisions and amendments to this Manual are prepared by the SMS Coordinator and should be approved by the Airport Manager. Revised pages are distributed to all manual holders. It is required that all manual holders perform the required changes in a timely manner. A list of effective pages is provided with each revision to enable verification of currency and completeness.

MANUAL RESPONSIBILITY

Each person assigned a copy of the SMS Manual is responsible for its up keep and is required to read and be familiar with the material contained in the Manual as it relates to his/her responsibilities.

The SMS Manual shall be considered property of the DBQ and must be returned when employment is terminated.

GLOSSARY OF TERMS

Acceptable level of risk – risk that has been reduced to a level that can be endured by the organization having regard to its legal obligations and its own safety policy.

Accident – An unplanned event or series of events that results in death, injury or damage to, or loss of, equipment or property.

Accountable Executive – A single, identifiable person within the organization who will assume full accountability of the SMS; the Accountable Executive must have adequate control over financial and human resources to respond to organizational safety needs.

Apron (Ramp) – means an area on an airport prepared for the purpose of providing aircraft with parking space for the embarkation and disembarkation of passengers, the loading or unloading of mail or cargo, refueling or undergoing maintenance.

Audit – Formal reviews and verifications to evaluate conformity with policy, standards and contractual requirements; Can be an internal audit, when conducted by, or on behalf of, the organization being audited, or external audit, when conducted by an entity outside of the organization being audited

Aviation Safety – Safety of activities and processes directly related to the performance of aircraft and flying and servicing personnel

Corrective Action – Action to eliminate or mitigate the cause or reduce the effects of a detected nonconformity or other undesirable situation.

Gap Analysis – Identification of existing safety components, compared to SMS program requirements. Gap analysis provides an operator an initial SMS development plan and a roadmap for compliance.

Hazard – Any existing or potential condition that can lead to injury, illness or death to people; damage to or loss of a system, equipment or property; or damage to the environment. A hazard is a condition that is a prerequisite to an accident or incident.

Incident – An event that had the potential to lead to an accident.

Likelihood – The estimated probability or frequency, in quantitative or qualitative terms, of a hazard's effect.

Line Management – The management structure that operates the production/operational system

Maintenance – means all work done in accordance with manufacturer's recommendations and approved maintenance schedules and includes inspection, adjustments, replacements, rectification, repair, modification, overhaul, and manufacturing.

Oversight – A function that ensures the effective promulgation and implementation of safety standards, requirements, regulations and associated procedures. Safety oversight also ensures that the acceptable level of safety risk is not exceeded in the air transportation system.

Quality Assurance – means all those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for safety and quality.

Records – Evidence of results achieved and activities performed. In this context, they are distinct from documentation as what is written is permanent and does not change over time.

Risk – the consequence of accepting a hazard.

Risk Assessment – process for evaluating the level of risk and deciding whether that risk is acceptable.

Safety – The condition to which environment, health, occupational and aviation risks are managed to acceptable levels.

Safety Assessment – A systematic and comprehensive evaluation of a system to see if the safety requirements are met

Safety Assurance – SMS process management functions that systematically provide confidence that organizational products/services meet or exceed safety requirements.

Safety Culture – The product of individual and group values, attitudes, competencies and patterns of behavior that determine the commitment to, and the style and proficiency of, the organization's management of safety. Organizations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficacy of preventive measures.

Safety Management System (SMS) – The formal, top-down business-like approach to managing safety risk. It includes systematic procedures, practices, and policies for the management of safety (including safety risk management, safety policy, safety assurance, and safety promotion).

Safety Objective – Safety goals or desired outcomes, which are typically measurable.

Safety Policy – Defines the fundamental approach to managing safety that is to be adopted within an organization. Safety policy further defines the organization's commitment to safety and overall safety vision.

Safety Promotion – A combination of safety culture, training, and data sharing activities that support the implementation and operation of an SMS in an organization

Safety Risk – The composite of predicted severity and likelihood of the potential effect of a hazard As an example, the possibility of an overshoot by an aircraft landing on an icy runway (icy runway is the hazard) would be considered a safety risk.

Safety risk control – A characteristic of a system that reduces safety risk (i.e., either or both the risk of an event and its severity). Controls may include process design, equipment modification, work procedures, training or protective devices. Safety risk controls must be written in requirements language, measurable, and monitored to ensure effectiveness.

Safety Risk Management (SRM) – A formal process within the SMS composed of describing the system, identifying the hazards, assessing the risk, analyzing the risk, and controlling the risk.

The SRM process is embedded in the operational system; is not a separate/distinct process.

Self-Assessment Plan – A formal, management-approved document that describes an airport operator's self-assessment activities and how often they occur, provides a schedule for completing the assessments, and identifies the reports to be generated.

Serious Incident – an incident involving circumstances indicating that an accident nearly occurred.

Serious Injury – an injury which is sustained by a person in an accident and which: (1) requires hospitalization; (2) results in a fracture of any bone; (3) involves lacerations which cause severe hemorrhage, nerve, muscle or tendon damage; (4) involves injury to any internal organ; (5) involves second or third degree burns on more than 5% of the body; (6) involves harmful exposure to radiation.

Severity – The consequence or impact of a hazard in terms of degree of loss or harm.

SMS Output – The result or product of an SMS process; in this context, it is the result of a process, which is intended to meet a requirement described in this Manual (e.g. results of safety risk analyses, safety audits, safety investigations, and trend analysis of safety performance indicators).

System(s) – An integrated set of elements that are combined in an operational or support environment to accomplish a defined objective. These elements include people, hardware, software, firmware, information, procedures, facilities, services and other support facets.

Top Management – The person or group of people that directs and controls an organization. Sometimes it is also referred to as senior management and may be the Chief Executive Officer, Board of Directors or Airport Manager.

1. INTRODUCTION

1.1 What is SMS?

A Safety Management System (SMS) is a systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies, processes and procedures.

What does this mean?

SMS is essentially a tool that facilitates the management of safety risks associated with DBQ's operations. In part, it achieves that by including safety as an every day element of the planning and performance of any and all operational and business activities.

It materializes through a series of complementary processes and procedures aimed at identifying, measuring, controlling and eliminating or mitigating safety risks. These processes and procedures are closely coordinated and supported by a well-defined organizational structure where the safety roles and responsibilities of everyone, including top management, are clearly defined and understood by all.

1.2 Scope

The nuances and complexities of implementing a comprehensive system such as SMS have been deemed by DBQ as an effort that demands full organizational focus, including the development of specific programs, and the allocation of resources.

In this context, DBQ will initially target its efforts to support the implementation of SMS within the following boundaries:

- Following available FAA guidance and best industry practices, DBQ will initially focus SMS development and application towards airside operations, almost to the full exclusion of landside operations;

- SMS is aimed at improving aviation safety by focusing on activities related to aircraft operations. In this sense it differs from other programs currently in place at DBQ, such as Occupational Safety and Health (OSH), which focuses on personnel safety and wellbeing, regardless of the area of activities and the circumstances to which they are exposed. In spite of the many similarities of these two programs; DBQ will not pursue amalgamation of the SMS and OSH programs at this time. Both programs will be considered independent and stand alone;

As SMS evolves and matures within DBQ, consideration will be given to its possible integration with other related programs and expanded to include "all airport operations".
.

2. SAFETY POLICY & OBJECTIVES

2.1 Management Commitment and Responsibilities

DBQ management is committed to implement and support SMS. This commitment materializes through the adoption of specific activities aimed at:

- Setting the safety standards and policies for the organization;
- Encouraging participation in SMS processes;
- Facilitating the flow of information and supporting safety objectives by allocating the required resources.

Commitment to these responsibilities is a consideration during annual performance appraisals for DBQ supervisors.

2.1.1 Policy

DBQ safety policies state the unequivocal commitment of top management to SMS.

There are two fundamental safety policies at DBQ:

- **SMS Safety Policy**: the vehicle that conveys to the staff and other airport personnel the path that DBQ is taking to ensure SMS success; and

- **Non-Punitive Reporting Policy:** to facilitate the acknowledgment of hazardous situations, by removing the fear of retribution to all DBQ staff.

The DBQ Airport Manager, in his/her role as Accountable Executive (AE), is responsible to ensure that both these policies are available and current.

Under the current administrative processes at DBQ, policy statements are generated and approved by DBQ's Board of Directors. All Policies will be structured and controlled in accordance with the documentation procedures developed and maintained by DBQ.

The Airport Manager will take the initiative to establish a Safety Policy and a Non-Punitive Reporting Policy in conjunction with DBQ's Supervisors. Once completed, the policies will be brought to the attention of DBQ's Board of Directors for review and sanctioning, through the proper administrative channels established in the organization.

After the policies are approved by the Board, the AE will endorse them and make them available to all DBQ staff and other airport personnel. These policies will be communicated through the following vehicles:

- Display in prominent and highly visible areas within DBQ facilities, including tenant's leased facilities, when applicable;
- Inclusion in one of the "What's New" records produced by DBQ and posted in its website;
- Discussion in SMS and safety related training sessions;
- Discussion of the policies in safety related meetings;

- Inclusion of a copy as an Annex to this Manual

Safety policies will be reviewed in conjunction with DBQ Supervisors at least once a year to ensure that they are current and reflect the values adopted by the organization. This is done through the Management Review (4.2.7). Should this policy review exercise reveal a need for updates or modifications, the AE will once again take the initiative to bring this need to the Board of Directors, to ensure that proper modifications are implemented.

The current DBQ Safety Policy and Non-Punitive Reporting Policy are presented in Volume 2.

2.1.2 Objectives

Safety objectives are a series of measurable safety targets.

Within DBQ, the AE and Supervisors are responsible for setting safety targets:

- The AE is responsible for setting up a few measurable safety objectives for the organization as a whole, in accordance with the Safety Policy.
- Supervisors may also develop their own departmental safety targets, in support of those established by the AE.
- During the early stages of SMS at DBQ, the SMS Coordinator will set up preliminary safety targets for development and implementation of SMS.

Safety targets and strategic safety objectives will be documented and promulgated as part of the SMS Plan, and revised annually (4.2.7).

The purpose of this exercise is for all levels of management to take an active role in promoting and supporting SMS so that it becomes an integral part of DBQ's business.

The current DBQ Safety Objectives are presented in Volume 2.

2.2 Safety Accountabilities and Responsibilities

Safety accountabilities and responsibilities for each position shall be documented in the job description of each employee and be consistent with the accountabilities and responsibilities outlined below.

2.2.1 Accountable Executive (AE)

The Dubuque Regional Airport Manager or acting Airport Manager is the Accountable Executive.

In the fulfillment of his/her duties as they pertain to SMS, he/she is responsible for:

- Developing and promoting the Safety Policy;
- Providing adequate resources to ensure implementation and management of the SMS;
- Providing leadership in safety related issues by actively participating in safety significant events;
- Promoting and encouraging a positive Safety Culture within DBQ;
- Developing strategic safety objectives and reviewing them on an annual basis; and

- Ensuring ongoing effectiveness of the SMS by facilitating and participating in periodic reviews and evaluations.

2.2.2 SMS Coordinator

The responsibilities of the SMS Coordinator include:

- Providing advice to the AE and Supervisors on safety related issues;
- Providing support to Supervisors in all SMS specific processes;
- Establishing and maintaining a reporting system to collect safety related data;
- Reviewing and directing safety reports to the appropriate supervisor;
- Providing feedback to the appropriate parties on events reported;
- Coordinating hazard identification, risk management and trend analysis procedures;
- Monitoring industry safety concerns and legal requirements related to SMS that could affect the organization;
- Monitoring industry safety best practices and programs;
- Supporting the development of training curriculum and syllabus for employees, airport tenants, operators and contractors;
- Developing airport-wide safety initiatives, events and programs to promote/support an effective SMS;
- Establishing industry and airport liaison on safety matters;
- Coordinating development of safety goals and metrics for DBQ;
- Reporting unresolved hazards directly to the AE;
- Developing a safety awareness and education, and communication (promotion) program;
- Chairing and organizing airport wide safety meetings;
- Collecting and monitoring safety data;
- Developing and maintaining the SMS Manual;
- Distributing notes and safety promotion material to airport employees and tenants;
- Leading safety related investigations when appropriate; and
- When necessary, integrating SMS principles with existing operational documents and Part 139 regulatory requirements;
- Encouragement of non–punitive reporting.

2.2.3 Supervisors

Supervisors have the following responsibilities:

- Endorse the SMS Manual;
- When necessary, help the SMS Coordinator develop safety goals and metrics within his/her area of responsibility;
- Ensure that safety is a priority in all matters pertaining to DBQ operations;
- Encourage the reporting of hazards within his/her area of responsibility;
- Implement and maintain the SMS processes and activities described in this manual;
- Develop and implement effective corrective and preventative actions based on SMS hazard analysis;
- Perform reviews as necessary to ensure all hazards/aspects have been identified and effectively mitigated;
- Communicate with the SMS Coordinator regarding departmental changes that may trigger a review of SMS documentation or procedures; and
- Promote employee awareness in all matters pertaining to safety.

2.2.4 Employees

Employees at all levels are responsible for:

- Performing their duties in a safe manner;
- Reading and acknowledging their understanding of safety information provided;
- Reporting hazards in a timely manner in the accepted formats;
- Responding to requests for information including written reports and interviews in a timely manner; and
- Completing the airport SMS training program.

2.3 Safety Structure

The daily operations of the SMS are supported by the SMS Coordinator. He/she will functionally and directly report to the Director of Operations. However, this position will have unfettered and direct access to the Accountable Executive in all matters related to Safety.

The SMS organizational structure for DBQ is illustrated in **Error! Reference source not found.**.

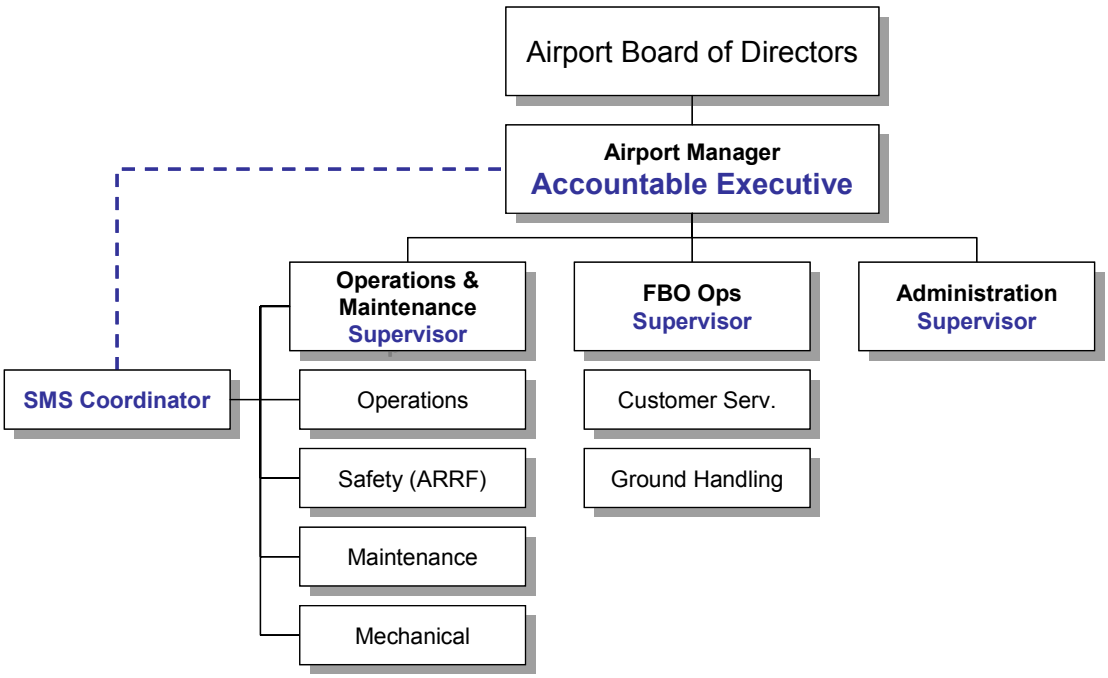

Figure 1 - DBQ SMS Organizational Structure

The SMS Coordinator role at DBQ will be shared with other airport functions, as needed.

2.4 SMS Management

Once the SMS is in place, it needs to be managed; this includes on-going monitoring of system performance, to ensure that the SMS and associated processes are working effectively to improve the level of safety at the airport. This is achieved through the activities described in section 4; which will set new objectives, when needed.

2.5 Documentation

2.5.1 Legal and Other Requirements

Operations conducted at DBQ take place in a regulated environment. Ensuring that standards and regulations are kept updated not only ensures that compliance can be met, but also allows bringing the benefits from best practices that are normally reflected in the regulations.

DBQ Supervisors are responsible to ensure that all regulatory and contractual requirements applicable to their sections are identified, updated and that the information contained in them is distributed to the appropriate users.

To ensure that this requirement is met, the following process should be followed when a change on the regulations is identified:

- Identify all those regulations and requirements applicable to the department;
- Create a list or compendium of this information;
- Document, organize and make this list available to users;
- Establish a procedure to check for updates on a periodic basis. This will include at least:
- Once a change on the regulations are identified:
    - assess the change
    - inform the parties affected that a change has occurred
    - review and revise documents as appropriate to reflect changes
    - provide training to personnel, if applicable

The frequency of the review period will be established as necessary to ensure compliance at all times; but in no case it will be longer than six months.

A list of all regulations applicable to DBQ is included in Volume 2.

2.5.2 SMS Documentation

SMS documentation includes all information kept in either written or electronic format that supports DBQ SMS. The SMS Manual is the primary document to identify the key processes that are part of the safety management system at DBQ, and also ensures that those processes are standardized across departments. Other documentation, including incident/accident reports, decisions taken, operating guidelines, agendas and minutes or notes of meetings, are also created to support the system.

The Supervisors and the SMS Coordinator will manage all SMS-related documentation that falls within their responsibility. These include all documentation produced as a result of SMS and analysis of safety significant activities. Among others they include:

i. **Supervisors:**

- Hazard Identification and Risk Management sessions and outcomes;
- Employee training programs and jobs needs analysis;
- Notes and/or reports of SMS related meetings.

ii. SMS Coordinator

- SMS Manual;
- Safety Data collection and trend analysis results;
- Safety reports;
- SMS awareness programs.

The issuance, control and updates of all documents will be processed following DBQ documentation management system and control processes.

2.5.3 Documentation and Data Control

The goal of documentation and data control is to preserve corporate memory. The AE, Supervisors and the SMS Coordinator are responsible to ensure that all documentation that falls within their authority and responsibility is managed according to the DBQ policy.

2.5.4 Records and Records Management

Records register events and actions that have taken place and are the main vehicles used at DBQ to discharge its legal and regulatory responsibilities.

All Supervisors and the SMS Coordinator are responsible to ensure all those records produced by their department are properly managed, organized and stored.

The process to be used at DBQ for records management is that described in the documentation management and control process for DBQ.

For regulated records, such as those established by Part 139, Iowa State Statutes, DBQ will comply with the established requirements. For all others, the Supervisor of Operations & Maintenance in conjunction with the SMS Coordinator will define the process and timelines for management, retention and disposal.

2.5.5 Operating Procedures and Guidelines

Supervisors are responsible for the identification, development, implementation and enforcement of the Standard Operating Procedures (SOP) and Standard Operating Guidelines (SOG) within their sections.

To ensure the success of this process, and ultimately to improve the overall safety at DBQ, the Supervisors will do the following:

- Identify, implement and enforce procedures required by the regulations and standards that DBQ adheres to;

- Identify, develop and approve, SOPs required to control hazards/aspects identified through the Safety Risk Management process;

- Review procedures and guidelines when there is a change to operations, facilities, equipment or key personnel;

- Develop and review procedures and guidelines as follows:

    - Develop and review procedures and guidelines in coordination and with the participation of airport staff and stakeholders that are knowledgeable in the area affected (i.e. personnel performing the task).
    - Document according to corporate DBQ standards.
    - Distribute new and revised procedures and guidelines to affected third parties, including the airport tenants and service providers, if applicable, for comments;
    - Produce the appropriate addendum or amendment to applicable manuals and existing DBQ documentation;
    - Communicate changes to all Manual holders, and affected parties and persons performing related tasks; and
    - Prior to implementation, ensure that adequate time is allowed for all parties to develop and provide appropriate training, if required.

3. SAFETY RISK MANAGEMENT

3.1 Overview

SMS improves safety by proactively managing risk. Risk management is an activity that evaluates the risks associated with identified hazards and assists in selecting corrective and mitigating actions to maintain an appropriate level of safety. Control measures are then used to reduce risk to an acceptable level.

This is achieved through the SRM (Safety Risk Management) process. It comprises the following steps:

Step 1 – Describing the system;

Step 2 – Proactive hazards identification;

Step 3 - Determining the nature of the risk;

Step 4 - Assessing and analyzing the risk;

Step 5 - Controlling the risk (i.e., mitigate and treat);

Step 6 - Monitoring the Corrective Action Plan (i.e. track)

The **system** is the airport environment and its activities, for which most safety-related functions are already outlined in the Airport Certification Manual (ACM). The **hazard/aspect identification** process allows for the identification of events or situations that, given certain conditions, could potentially cause injury or damage. Once hazards/aspects have been identified, the next step is to **determine and define the risks** associated with each hazard/aspect (i.e. *what can go wrong?*), and conduct **risk assessment** to evaluate and prioritize the identified risks. The **risk control process** closes the loop through development, implementation and monitoring of corrective and preventive actions that effectively mitigate the risks for the operations and persons involved from the identified hazards/aspects.

The objective of proactive risk management is to identify every hazard associated with airside activities and operations, and controlling them before an accident happens. At DBQ a systematic brainstorming process is used. This process is described in 3.2.

In addition, the following methods are used to identify hazards on an ongoing basis:

- Self-inspections
- Reporting processes
- Monitoring and analysis of trends

Supervisors are responsible for making sure the brainstorming sessions are conducted and coordinated with key personnel for their areas of responsibility. The outputs of these activities are documented to support sharing of lessons learned and provide a foundation for future risk management efforts.

3.2 Organized Brainstorming Sessions

At DBQ, brainstorming sessions are used to identify hazards associated with operational and business activities. Following the brainstorming sessions, all identified hazards are subject to the risk assessment process, and in the sequence, control measures are planned. Evidently this is a significant task requiring in depth knowledge and expertise from all areas of DBQ activities. Therefore, it is not the responsibility of just one person or group.

All supervisors are responsible for executing this process for all safety significant activities performed or managed by their section. This is done through interactive sessions with knowledgeable employees following the brainstorming process described below.

3.2.1 Proactive Hazard Identification

The first step in this process is to describe the system, or more specifically: identify the safety significant activity under review. To do this the DBQ Supervisors will conduct brainstorming sessions with staff, including those responsible for the activity. The SMS Coordinator is trained on this method and can provide support. This process will be performed as needed during DBQ's meetings.

The tools used to perform this exercise are the worksheets presented in Volume 2. The components analyzed through these sessions will cover at least the following areas: equipment, environment, people, materials and procedures.

After all safety significant activities are listed, the associated hazards for each activity will be discussed (each activity can have multiple hazards), identified and listed using the same worksheet.

At the end of this session, the outcome is a list of hazards associated with each significant activity, for each Department. Hazards identified through this process will be submitted to the risk assessment and control process described below.

An illustrative (non-inclusive) list of safety significant activities performed by DBQ is included in Volume 2.

3.2.2 Determine the Nature of the Risk

Once hazards have been identified, the brainstorming team will determine and define the risks associated with each hazard (i.e. identify w*hat can go wrong?* in each situation). This is also achieved through brainstorming sessions with operational personnel and other aviation subject matter experts (this could include the SMS Coordinator, other DBQ staff or contracted aviation safety experts). The nature of the risk is done by completing the left side of the hazard identification brainstorming worksheets started in the previous activity (see 3.2.1 above and Volume 2).

3.2.3 Risk Assessment

The risks identified in the previous step (above), are then subject to the risk assessment process. This is done by estimating the probability and severity of the identified risk, assigning risk values, and prioritizing these risks.

Supervisors supported by the SMS Coordinator are responsible for ensuring that every identified risk

is assessed and ranked. To do this, the Supervisors will convene a meeting with their immediate support staff and other subject matter experts as he/she deems necessary, using a process similar to that used for hazard identification.

During this meeting, all risks previously identified will be assessed independently for severity (of consequences), and likelihood (of occurrence), in this order. The risk is then evaluated using the risk assessment tool shown in Volume 2. Using this tool, hazards are ranked according to the severity and the likelihood of the associated risk, and placed into a region of the risk matrix identified as High (level 1), Medium (level 2) or Low (level 3) risk.

Hazards classified as High risk (level 1) receive higher priority for treatment and mitigation.

3.2.4 Risk Control

Risk Control addresses any risks identified during the evaluation process that require an action to be taken to reduce them to an acceptable level. It is here that a Corrective Action Plan (CAP) is developed.

Supervisors are responsible for the development and implementation of a CAP to address each of the hazards identified within their respective areas of jurisdiction that require treatment. This is done according to the following steps:

Step 1: Identify Risks Requiring Corrective Actions

- Level 1 risk is considered intolerable and must be mitigated before continuing operations. A corrective action plan must be developed so that risk is reduced to medium or low level. Tracking and management involvement are required, and management must approve any proposed mitigating controls.

- Level 2 risks shall be managed by incorporating risk reduction measures into the process or activity in question so that the residual risk is no greater than level 3. A corrective action plan must be developed, unless existing procedural controls effectively mitigate the risk to a lower level.

- Level 3 risks may be managed through normal management procedures. Level 3 is considered an "acceptable" level of risk for DBQ operations to continue, providing the applicable procedures and guidelines are adhered to. A corrective action plan for this level of risk is not required.

Step 2: Develop Corrective Action Plan(s)

As required by the assessed level of risk, develop a CAP that includes at least:
- Definition of one or more activities, procedures or equipment that will be utilized and applied to mitigate the identified risk;
- The designation of a person responsible for developing and implementing the corrective action(s);
- A timeline for completion; and
- A timeline for follow-up review of the implemented action(s) for effectiveness.

Supervisors are responsible for ensuring adequate mitigation of all hazards associated with non-acceptable risks, identified in their area of responsibility.

The outputs (identified hazards) will be discussed during DBQ meetings, as required. All corrective actions implemented will be recorded and logged in DBQ Work Director software.

3.2.5 Monitoring the Corrective Action Plan

All actions derived from CAP process will require a follow-up review. Monitoring is essential to ensure that the established CAP is effectively addressing the stated issues or hazards. Supervisors are responsible to ensure that a check for outcome and effectiveness is performed.

The timeline for the follow-up period will depend on the safety issue and the CAP adopted, but in no case it should exceed a period of 30 days from the date of final implementation, if feasible.

3.3 Ongoing Risk Management Processes

3.3.1 SMS Reporting Systems

Another method used by DBQ to become aware of existing hazards, is through its reporting system. The main vehicle used at DBQ for SMS hazard reporting is the **DBQ Work Director Reporting System** which allows reports to be made through submission of a report using the web.

Another alternative is calling-in by telephone or submitting an electronic message. In both cases DBQ staff receiving the report will enter the information in the Work Director.

Within the context of SMS, this program is in place at DBQ to make the organization aware of potentially hazardous situations before they translate into undesirable incidents or accidents. This includes the capture of all those events not covered by the existing mandatory reporting systems or other programs currently in place.

The SMS Coordinator is responsible for the Safety Reporting System, but every supervisor and employee also has a role to play. These roles are defined below.

The SMS Coordinator is responsible for:

- Promotion of the reporting program;
- Ensuring that the Safety Reporting system is functional;
- Collection and analysis of the reports produced;
- Ensuring the confidentiality of the reporting individuals;
- Following-up with the appropriate party for the actions necessary to control the risk associated with the hazard;
- Providing feedback on the reports submitted; and
- Managing the data collected.

Supervisors shall:

- Promote reporting;
- Ensure that reports are produced for all occurrences and identified hazards;
- Address those hazards identified by the SMS Coordinator as falling in their area of responsibility; and
- Uphold the non-punitive report policy issued by the AE.

All DBQ employees, at all levels, are responsible for:

- Reporting every hazard identified, whether during the performance of their duties or as a result of becoming aware under other circumstances.

All other persons performing, or not, duties at DBQ are encouraged to:

- Report every hazard identified, whether during the performance of their duties or as a result of becoming aware under other circumstances.

The SMS Coordinator will ensure that reports are collected from all sources available on a regular basis, but in no event longer than at 48 hrs intervals.

All hazard, incident and accident reports submitted to the SMS Coordinator office will undergo a preliminary review to asses identified hazards. The responsible party (company representative or supervisor responsible for the identified area of operations) will be notified to address the hazard through the risk management process.

Once the information about the follow-up plan is known by the SMS Coordinator, if the personal information of the individual who produced the report is available, they will be notified on a confidential manner.

If the personal information of the individual producing the report is not available, the follow-up action proposed will be disseminated by one or several of the following mediums:

- A safety bulletin;
- A posting in the safety boards; and
- A discussion and publication of safety meeting minutes.

The data contained in the report will be stored and managed in the Work Director system and it will form part of the database used for trend analysis.

The processes described here will, at this stage, only address those events reported through the safety reporting system and those that are currently not covered under any existing programs. As SMS develops and integrates further within DBQ business activities, all events, incidents and accidents reporting and investigation processes will be gradually integrated to be dealt with in a similar manner.

3.3.2 Other Reporting Mechanisms

Hazard information can originate as a result of a specific safety hazard report, as described above, or incident/accident reports, including:

- Incident reports, such as those generated in the daily self-inspections
- Pilot Reports
- Reports generated through other agencies (Airlines, Air Traffic Control, fuel providers, etc)
- Industry reports (such as those available from NASA/FAA ASRS, ICAO, IATA, ACI, Flight Safety Foundation, and publicly available reports from civil aviation organizations around the world).

All Supervisors are responsible to review, assess and share information on hazards obtained through other reports processed by their department that are relevant to SMS, and conduct a risk assessment using the processes described in this manual (see 3.2.2 through 3.2.4).

3.3.3 Monitoring and Analysis of Trends

Hazards will also be identified through the monitoring and analysis of safety data collected for DBQ. This allows for the identification of trends that could lead to hazardous situations, and permits DBQ management to take actions before they compromise safety.

The SMS Coordinator will perform monitoring and trending of data and coordinate the collection of all information needed.

Hazards identified through this process will also be submitted to the risk assessment and control process (as described in 3.2.2 through 3.2.4).

3.3.4 Self-Evaluation Processes

The periodic performance of inspections, carried out by DBQ personnel; reviews, carried out by DBQ staff; and audits, carried out by third parties, will also generate reports and data that can be used to identify hazardous situations or events. The responsibilities and process details for these activities are included in section 4.

Hazards identified through this process will be submitted to the risk assessment and control process (as described in 3.2.2 through 3.2.4).

3.3.5 Internal Safety Investigations

This process involves the study of a safety significant event. It will normally be applied following an incident or accident, although it could also be triggered by the identification of a significant hazard. The goal is to have a systematic, open and constructive process for analyzing events with the intent of improving overall safety by tackling the root causes of the event.

DBQ Supervisors and the SMS Coordinator are responsible to ensure that, when warranted, an investigation will follow up the identification of hazards, incidents and accidents that fall within their area of responsibility.

The SMS coordinator is responsible for managing, coordinating and carrying out all the steps necessary to investigate an event with the purpose of identifying its root causes.

Trigger Events

Incidents and accidents should be followed by an investigation with the objective of identifying the root causes of the event.

Reported hazards could trigger either a cursory review or a full investigation depending on the nature and circumstances of the issue, particularly when the hazard is recurrent.

Process

The investigation process will follow the steps described below:

- The Supervisor, the SMS Coordinator or their representatives will determine when an investigation is warranted or not;
- A reported accident or incident will trigger an automatic investigation;
- The SMS Coordinator will initiate the investigation as soon as practically possible, but in no event later than 48 hrs following the identification of the hazard or event;
- Based on preliminary information obtained, the SMS Coordinator will determine if there is a need to convene support from external experts to support the investigation. If so he/she will select the appropriate personnel to assist;
- The main objective of the investigation is to determine the root causes of the event, and not to focus in laying blame or finding a guilty party. To ensure this outcome, the investigation will:
    - Systematically consider the following potential contributing factors:
        - People;
        - Procedures;
        - Equipment;
        - Environment; and
        - Materials.
    - Screen the evidence collected; and
    - Provide consistent order to the evidence collected.
- The investigation will includes the consideration of Human Factors as an aid to the investigator. The main steps are:
    - Collect and review all reported information;
    - Layout the sequence of events;
    - Identify and record the critical events;
    - Identify and record the causal factors;
    - As each critical event is identified and recorded, ascertain (ask WHY?) the event occurred. The investigator must be careful to drill down far enough to uncover the underlying causes (5 Whys);
    - Identify and record the suspected root cause(s).

A sample of the investigation technique used at DBQ is included in Volume 2.

Depending on the nature of the event, a short-term action plan can be implemented as a temporary corrective action to mitigate the immediate risk until further information can be drawn from the ongoing investigation, to be followed by a definitive solution.

4. SAFETY ASSURANCE

The Safety Assurance component of SMS aims to ensure that the activities, plans and actions taken to improve safety (as discussed in the previous elements) are implemented and effective. There is also an element that evaluates how effectively the SMS is functioning as a whole.

4.1 Performance Measurement and Monitoring

Safety management activities and corrective action plans are selective measures designed to either prevent undesirable events, or effect changes to existing undesirable situations. One of the alternatives available for assessing effectiveness of implemented measures is by comparing the changes experienced through time.

This requirement aims at setting up a process to identify and select measurable parameters, collect data related to them, track and compare this information over time.

The SMS Coordinator is responsible for collecting, storing, analyzing, interpreting and monitoring the safety significant data selected for the measurement of SMS performance at DBQ.

Supervisors are responsible for collecting, storing, analyzing, interpreting and monitoring the safety significant data selected for the measurement of SMS performance that are relevant to their sections.

The process established for DBQ is the following:

- The Airport Manager, DBQ Supervisors and the SMS Coordinator are responsible for setting up measurable parameters.
- Prior to defining the proper indicators, the group will:
    - review the organizational objectives defined for the period; and
    - discuss areas that, by collective experience, are known to be a safety weak point.
- Identify the metrics that can provide the most suitable indication of safety performance;
- Set up a data collection and storage procedure for those metrics.

Metrics will be assessed, reviewed and updated on a yearly basis, or as necessary to identify trends or obtain more meaningful data.

The SMS Coordinator and Supervisors will ensure data collection and summarize this data in a suitable format that allows for the monitoring of values and trends. A list of preliminary safety performance indicators set up to measure and monitor safety performance for 2012 are included in Volume 2. This list will be updated annually.

This information will be reviewed and discussed during DBQ meetings, as required. Adjustment of parameters and further breakdown will be implemented when further exploration is needed to define the root causes of observed trends.

4.2 Inspections and Audits

A series of proactive activities are carried out by DBQ to ensure that the systems and procedures implemented are effective and potential hazards are identified immediately. They include reviews and audits of its processes, procedures, analyses, inspections and training. A summary of these activities with associated schedules is provided in Table 1.

For each of these inspections and audits, the responsible Supervisor will ensure that a copy of the results is sent to the SMS Coordinator for recording. This includes the following activities:

4.2.1 Airside Self-Inspections

Airside self-inspections are carried out daily by DBQ staff. They include runways, taxiways, aprons and safety areas in accordance with the ACM.

The results obtained from these daily checks will be reviewed by the appropriate supervisor, and corrective actions will be implemented as necessary.

4.2.2 Wildlife Inspections

At least once daily, DBQ Department of Public Safety will perform a perimeter fence and wildlife inspection in accordance with the ACM.

Should corrective actions be necessary to recuperate damaged sections of the perimeter fence, they will inform Dispatch who will send out maintenance personnel to take care of necessary repairs or other temporary corrective actions deemed necessary.

Should wildlife procedures be necessary to address safety issues, Public Safety, will take the appropriate actions, according to the ACM.

The results obtained from these daily checks will be reviewed by the appropriate supervisor, and corrective actions will be implemented as necessary to mitigate persistent events.

4.2.3 Construction Inspections

DBQ personnel will ensure that inspections of any airside construction sites and/or activities taking place at DBQ are undertaken. The inspections will ensure that contractors are compliant with their stated safety program and to ensure that activities or situations that could potentially create an airside safety hazard are prevented and discontinued. Construction inspections will focus on the Construction Safety/Security Plan established by DBQ for the project.

4.2.4 Safety Management Systems Assessment Process

The DBQ self assessment process is overseen by the SMS Coordinator.

On an annual basis, and at least one week ahead of the scheduled meeting, the SMS Coordinator will distribute a summary report of DBQ safety performance to the Airport Manager which will include at least:

- A summary of all activities that were scheduled for the year. This will include, amongst others: inspections, reviews, training sessions, corrective plans, etc. Of specific interest is a list of those activities that were planned but not realized;
- A summary of all reports filed from across DBQ, related to hazards and incidents, or pilot reports;
- A review of outstanding corrective actions;

- Safety performance trends as tracked by the SMS Coordinator;
- Summaries of findings; and
- Summary of any emerging regulations or legislation which might affect the airside operations of DBQ (supervisors are responsible to furnish data from their areas to the SMS Coordinator).

4.2.5 Process and Practices Review

Supervisors are responsible to perform a review of the processes and practices exercised by their sectors. These reviews will include the participation and feedback of line staff, as frequently as deemed necessary, but in no case at more than 12-month intervals. The feedback of the review will be incorporated as an update into the applicable SOPs and SOGs, and training will be provided or updated if applicable.

All procedures and findings are to be recorded and stored.

4.2.6 Training Syllabus Review

Supervisors are responsible to perform a review of the training programs and associated syllabus and curriculum on a periodic base. These reviews will include the participation and feedback of line staff, as frequently as deemed necessary, but in no case at more than 12-month intervals. The feedback of the review will be incorporated as an update into the applicable training programs.

4.2.7 System Review

The SMS Coordinator in conjunction with the AE and Supervisors will perform a system review once a year. The information discussed will be used as the foundation to set up goals and objectives for the following year.

4.2.8 SMS Internal Audit

DBQ will secure bilateral agreements with other regional airports to perform a thorough SMS review at least once a year. The purpose of this audit is to analyze SMS performance and effectiveness.

The internal audit to be performed will be carried out in accordance with the provisions stated in this Manual.

All documentation generated through these reviews and processes will be stored

Table 1 - Audit and Self Assessment Schedule

Activity	Location	Participants	Frequency	Method	Output
Inspections	Airside (including apron, taxiways, runways and safety areas)	Operations & Maintenance	Daily	Drive through inspections using checklists	Completed checklist
	Airside, fences and NAVAIDS	Operations & Maintenance	Daily	Drive through inspections	Report if hazards are identified
	Construction sites	Operations & Maintenance	As appropriate	Walk-through	Report if hazards are identified
System Review (Management Review)	DBQ	Airport Manager, Supervisors & SMS Coordinator	Yearly	Scheduled meeting	Goals and objectives for the following year
Process /Practices Review	Public Safety Maintenance	This self evaluation process will be achieved through the Pro-active Hazard Identification process (as detailed in the SMS Manual); by reviewing current practices against prescribed procedures and vice-versa for relevance, effectiveness and concordance.			
Training Syllabus	DBQ	Supervisors	Yearly	Document review/ analysis of efficiency	Report /Corrective Action
Internal Audit	DBQ	Other Regional Airports	Yearly	Review and Inspections	SMS Performanc e Review

4.3 The Management of Change

Major changes experienced by DBQ can potentially introduce unnoticeable hazards, even when the origin of the change is not obviously related to safety. The purpose of this requirement is to ensure that there is a mechanism in place at DBQ to identify and control hazards associated with any relevant change before it is implemented.

The individual in charge of implementing the change within DBQ is responsible to ensure that the proposed change is assessed through the hazard identification and risk management process. This applies equally to any management level and every DBQ staff.

The analysis process is applicable when a major operational change (including equipment, procedure or facility) is planned, when an expansion or other construction project is considered, or if substitution of key personnel is proposed. Some examples of such "trigger" events include:

- New operator or tenant at the airport;
- New aircraft type being operated at DBQ;
- New procedures or regulations are introduced;
- New or revised training programs are established;
- New construction or renovation of existing facilities;
- Labor disputes;
- Significant organizational changes; and
- Financial resources allocation changes.

The process to be followed is that described in section 3.2. Documentation of the process, decisions and proactive measures to control the proposed changes should be stored and managed under the Documentation Management and Control System. If applicable, training will be provided to all affected personnel.

4.4 Continuous Improvement

DBQ strives to continuously work towards making the system better: more efficient, effective, and ultimately safer. Continuous improvement is achieved through regular, periodic and planned reviews, which are conducted in light of DBQ safety processes and performance.

DBQ Top Management (AE, Supervisors and SMS Coordinator) will review the SMS system every 12 months to ensure its validity and effectiveness in terms of scope, scale and completeness. This process is known as the "Management Review".

Standing items to be addressed and reviewed by this process include:

- Safety Policy;
- Safety Objectives;
- Safety Goals;
- Performance Measurement;
- Employee safety awareness;
- Reporting Systems;
- Corrective Action Plans; and
- Changes in the organization that may affect the SMS.

The strategic objectives for continuous improvement of the DBQ SMS, its programs and procedures, will be generated during this review. A record of discussions and decisions taken will be kept.

Modifications and changes originating form this review will be reflected in the proper documentation and training programs.

5. SAFETY PROMOTION

5.1 Training and Education

5.1.1 Development

All employees must have the skills and competencies necessary to perform their duties in an effective and safe manner. Supervisors are responsible for developing a training program addressing the training needs of all personnel in their sectors. This will include an assessment of the occupational hazards faced by employees (job analysis for safety hazards), by major employee function, category and task.

Supervisors are responsible for identifying training needs for their personnel and for ensuring that these training needs are met. The SMS coordinator is responsible for identifying SMS-specific training needs, and for developing and delivering the training, either internally or with the assistance of external experts.

5.1.2 Evaluation

All training must be evaluated through:

- A post-training evaluation questionnaire given to the course participants immediately following the training; and
- A post-exercise verification of the training retention, conducted no less than two weeks after the training and no more than 30 days, through a brief interview with selected participants.

The training coordinator is responsible to ensure that this training evaluation takes place and for recording and filing the results. Instructors and departmental staff will be requested to assist in this evaluation.

5.1.3 Records

Personnel training records must be updated within two weeks of the training being completed.

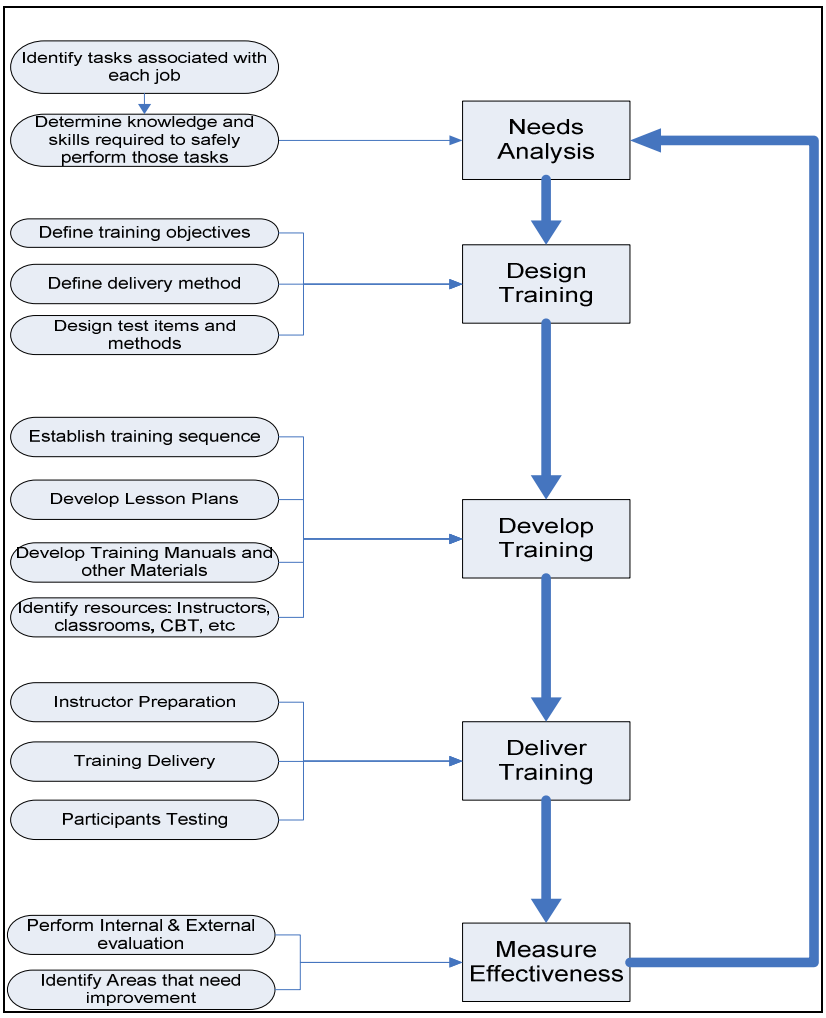

Figure 2 - Systems Approach Training (SAT)

5.1.4 Type of Training

Four specific types of training are provided:

- SMS Indoctrination;
- Job Specific; and
- SMS Skills.

SMS Indoctrination Training

All new employees will undergo corporate SMS Indoctrination Training prior to be assigned duties to the assigned department. This training will include at least:

- SMS Policies;
- General hazard recognition; and
- Non-punitive reporting.

All employees must receive a refresher training every year. The refresher training must be short and concise but cover all major policy aspects.

Job Specific

Job-specific safety training will be based on the job analysis for safety hazards. It will cover at least the following:

- Rules and Regulations;
- Main hazards on the job;
- Key safety procedures;
- Names and contact information of key safety personnel;
- Roles of key safety personnel;
- SMS awareness and processes; and
- Emergency procedures.

SMS skills training

Individuals with a direct role in the management of SMS will supplement their skills through specific training programs, which include:

- Risk management;
- Accident/Incident investigation;
- Audits; and
- Performance measurement.

5.2 Safety Communication

5.2.1 Communication

DBQ demands a free and open exchange of safety information across all levels and between all departments. This will be achieved in part through the following processes:

- Management meetings are held on a weekly basis, under the direction of the AE or a designated Director. The SMS Coordinator or delegate shall attend such meetings at least for the portion discussing safety. Safety and safety performance will be a standing agenda item.
- Supervisor meetings within each department, generally held every week, will have safety as a standing agenda item (see following subsection).

DBQ Supervisors, in cooperation with the SMS Coordinator, are to encourage interdepartmental discussions on common safety issues, whether in planning of activities or in response to safety reports or concerns. Employees shall be encouraged by the AE and supervisors to bring up safety issues. The discouragement of safety reporting and communication, whether tacit or explicit, will not be tolerated by DBQ.

5.3 Other Safety Promotion Initiatives

5.3.1 Internal Communication Strategy

The SMS Coordinator will develop and coordinate an internal communication strategy aimed at promoting safety and the safe conduct of all DBQ activities. Supervisors shall actively and demonstratively support the internal safety communication strategy. The safety communication strategy may include, for example:

- Safety boards;
- Safety newsletters;
- Safety posters;
- Safety logos;
- Safety awards; and
- Safety events.

The internal safety communication strategy must be reviewed periodically by the SMS Coordinator, in cooperation with the Airport Manager and Supervisors.

5.3.2 Safety Talks

Management and Supervisors of all departments will conduct safety talks on a regular basis; this may be integrated with other team meetings.

5.3.3 Safety Program and Events

The SMS Coordinator will develop a program or programs that support the promotion of safety. The nature of these programs will be defined and communicated to the airport community as they become available.

Special events aimed at promoting safety and encouraging employee participation, will also be organized, when feasible. The SMS Coordinator will endeavor to arrange for this kind of activity to take place at least yearly.