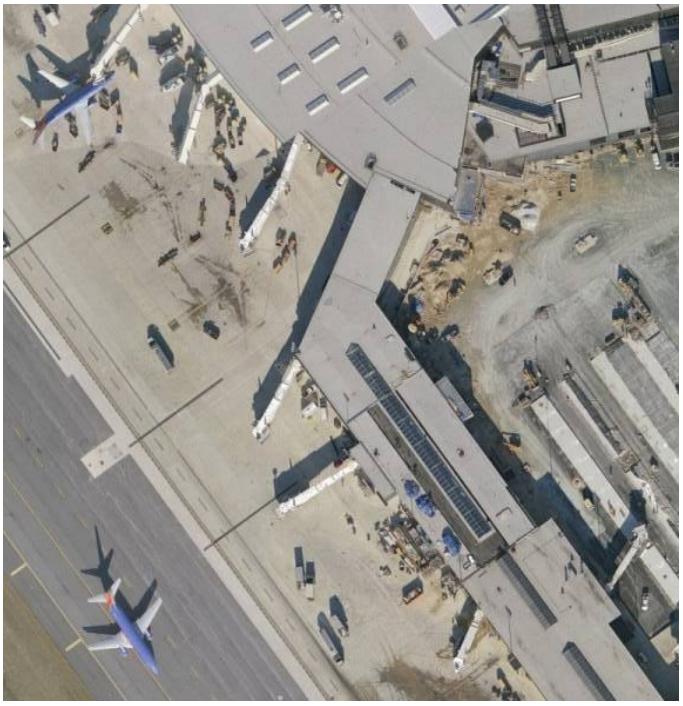
Safety Management System PILOT Study - Task 2610
Safety Program Manual (FINAL DRAFT)



Prepared by:

URS Corporation and Airport Design Consultants, Inc.

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND AVIATION ADMINISTRATION
May 2008

TABLE OF CONTENTS

SECTIONS:

I. SAFETY POLICY

II. INTRODUCTION

III. GAP OVERVIEW

IV. OFFICE OF SAFETY AND TRAINING (OST)

V. SAFETY POLICY OVERVIEW

VI. ORGANIZATION AND RESPONSIBILITIES

VII. SMS TRAINING

VIII. SMS COMMUNICATION PROCESS

IX. SAFETY RISK MANAGEMENT PROCESS

X. SAFETY ASSURANCE

XI. SAFETY PROMOTION

XII. SCHEDULE FOR IMPLEMENTATION

XIII. ESTIMATED COSTS FOR IMPLEMENTATION

XIV. SUMMARY

XV. EXHIBITS

XVI. APPENDICES

SECTION I – SAFETY POLICY

SECTION I. SAFETY POLICY

1.1.0. **Policy Statement**

Maryland Aviation Administration
Safety Policy Statement

The Maryland Aviation Administration (MAA) is committed to providing a safe and secure airport to the traveling public. As a result of our commitment to safety, we will abide, enforce, audit, and train according to our following safety policy.

1.2.0. **Safety Policy:**

"Baltimore/Washington International Thurgood Marshall Airport will strive to achieve a safe environment for our employees, passengers, and the public by our commitment to the principles of safety management and enforcement."

MAA will endeavor to the following safety goals:

- Implement a Safety Management System (SMS) at BWI Marshall Airport
- Continue developing safety improvements for airport operations
- Encourage employees to report safety issues
- Request appropriate human and financial resources as determined to promote safety
- Prioritize the practices that promote enhancements to safety

Timothy Campbell, A.A.E
Executive Director

Wayne Pennell, C.M.
Deputy Executive Director
Operations and Maintenance

Paul Shank, P.E.
Deputy Executive Director
Facilities Development and Engineering

Ned Carey
Deputy Executive Director
Airport Technology & Community Affairs

James Walsh, A.A.E
Deputy Executive Director
Business Mgmt. & Administration

1.3.0 **Safety Goals**

As listed in the policy statement, MAA will establish basic safety goals that provide a realistic scenario of improved safety and achievement at the airport. The safety goals are incorporated into the policy statement signed by the airport executives to provide the highest level of commitment to implementing the overall SMS policy and the individual tasks associated with improving and maintaining the SMS program. The Safety Director (SD) must understand the safety goals for the airport are consistent with both the accountability and responsibility associated with the execution of the SMS plan. SD responsibilities are outline further is this manual.

1.4.0 **Policy Responsibilities**

Responsibilities based on the policy for SMS shall be discussed in Section VI – Organization and Responsibilities.

SECTION II – INTRODUCTION

SECTION II. INTRODUCTION

2.1.0 General

An airport's approach to safety is one of the most critical functions of management for the organization or authority having jurisdiction. An effective approach implemented at many existing airports, both domestically and internationally, is a Safety Management System or hereon referred to as "SMS". As of November 2005, the International Civil Aviation Organization (ICAO) is requiring that all member states establish an SMS to be certificated under ICAO regulation. As a member state of ICAO, the United States is regulated by the Federal Aviation Administration (FAA) and is supportive of the integration of SMS applications with the current Title 14 Code of Federal Regulations (CFR) Part 139 Airport Certification Manual (ACM) to gain consistency with the international standards.

As part of this integration of standards, FAA issued Advisory Circular 150-5200/37, Introduction to Safety Management Systems (SMS) for Airport Operators for guidance on the SMS implementation at U.S. Part 139 airports. Airports will be required to utilize the circular to implement the SMS approach in preparation for the issuance of a Notice of Proposed Rulemaking (NPRM) for public comment in 2008. In preparation of the proposed regulatory requirement, the FAA approached 21 airports and requested that they develop what is termed a SAFETY PROGRAM MANUAL (SPM) for implementation of their SMS program. This document is the SPM and at a minimum will describe the following:

- Implementation procedures for the SMS at BWI Marshall by the Maryland Aviation Administration (MAA).
- Primary elements of the SMS as defined in the FAA's guidance and anticipated to be regulated.
- "Gaps" or lack of existing practices and regulations that are required elements of an SMS.
- Refining of the MAA infrastructure to facilitate SMS implementation.
- Schedule for SMS implementation
- Order of Magnitude cost and resource impact of the SMS at BWI Marshall

2.2.0 SMS Primary Elements

As defined in the FAA AC 150-5200/37, there are four primary elements to describe the SMS program. They include:

- Safety Policy and Objectives
- Safety Risk Management
- Safety Assurance
- Safety Promotion

The above-mentioned elements are the backbone of the SMS plan and are addressed in detail in this manual. Execution of these elements for the MAA shall occur in the Office of Safety and Training or "OST".

2.3.0 Office of Safety and Training (OST)

Included in this manual will be a description of the responsibilities, objectives, and requirements for the OST. This office is created to implement and manage the policies and compliance procedures necessary for an effective SMS plan. A detailed description of the OST's organization, responsibilities, procedures and resources is included in Section IV. The OST's director will have guidance from this manual on how to execute the elements of SMS and the responsibilities and coordination with other parts of the administration for execution of the policy. The available staff and resources within the OST will be outlined in this manual.

This SMS SPM document will clearly define the SMS implementation for the MAA for BWI Marshall to meet the anticipated regulatory requirements for SMS at U.S. Airports as proposed by the FAA. The document's use, interpretation, and implementation will have to be in accordance with the current Airport Certification Manual (ACM), Airport Emergency Plan (AEP), current FAA regulated documents and practices and other applicable federal, state, and local laws, rules, and regulations.

2.4.0 SPM Document Section Introduction

Each section is developed to make the components of the SMS implementation easy to understand. The sections in this manual are listed below:

- Section I – Safety Policy
- Section II – Introduction
- Section III – Gap Overview
- Section IV – Office of Safety and Training (OST)
- Section V – Safety Policy Overview
- Section VI – Organization and Responsibility
- Section VII – Training
- Section VIII – Communication
- Section IX – Safety Risk Management Process
- Section X – Safety Assurance
- Section XI – Safety Promotion

- Section XII – Schedule for Implementation

- Section XIII – Cost for Implementation
- Section XIV – Conclusions
- Section XV – Exhibits
- Section XVI – Appendices

2.5.0 **Acronyms**

Prior to reading through this document, it is important to understand all acronyms and terms presented. The following terms will be referred to in this document:

AC – Advisory Circular
ACM – Airport Certification Manual
AEP – Airport Emergency Plan
AOA – Air Operations Area
AOM – Airport Operations Manager
ARFF – Aircraft Rescue and Fire Fighting
ASC – Airport Safety Committee
ATCT – Air Traffic Control Tower
CDR – Commercial Drivers License
CFR – Code of Federal Regulations
DED – Deputy Executive Director
ED – Executive Director
EMT – Executive Management Team
FAA – Federal Aviation Administration
FAR – Federal Aviation Regulation
FOD – Foreign Object Debris/Damage
GSE – Ground Service Equipment
HEMT – Heavy Equipment Maintenance Technician
HR – Human Resources
ICAO – International Civil Aviation Organization
LMS – Learning Management System
MAA – Maryland Aviation Administration
MDE – Maryland Department of the Environment
MOSHA – Maryland Occupational Safety and Health Administration
MTCP – Maryland Training Certification Program
NFPA – National Fire Protection Agency
NIMS – National Incident Management System
NOTAM – Notice to Airmen
NPRM – Notice of Proposed Rule Making
NTSB – National Transportation Safety Board
OFA – Object-Free Area (Runway, Taxiway or Taxilane)
OPS – Office of Airport Operations
PIN – Position Identification Number

OSHA – Occupational Safety and Health Administration
OST – Office of Safety and Training
RSA – Runway Safety Area
SD – Safety Director
SMS – Safety Management System
SPM – Safety Policy Manual
SR – Safety Representative
SRM – Safety Risk Management
STS – Skill Trade Specialist
TSA – Transportation Security Administration
VSR – Vehicle Service Road

SECTION III – GAP OVERVIEW

SECTION III. GAP OVERVIEW

3.1.0 General

In order to implement the SMS elements and activities, one must understand where there were "gaps" or lack of procedures and activities that facilitate the components of an SMS. Based on both the review of existing documentation and interviews with the MAA's staff, these gaps were identified to document the differences between the SMS elements as defined by the FAA and the current practices utilized by the MAA.

In the recent gap analysis submitted to the FAA, several gaps were discovered, including actual elements of the SMS and aspects of the procedures that underpin these elements. Some of the gaps are more acute, and some are ambiguous or subjective. Nevertheless, these gaps were missing from the current infrastructure and existing practices. Two steps were taken to identify gaps. Utilizing the first method of reviewing official MAA documents, gaps were revealed on policies on safety, emergency response and day-to-day airport operations. The second method was to perform interviews with MAA staff, which provided information on various aspects of communication, training, enforcement and consistency for the promotion of safety. Many of the questions asked were about information not found in the documents that were reviewed.

Each gap is linked to the Primary Elements of SMS. They are:

1. Safety Policy and Objectives
2. Safety Risk Management
3. Safety Assurance
4. Safety Promotion

Twelve (12) gaps were discovered. Many of the gaps were similar to those of other airports performing the pilot study, and are not listed in any order of importance. The gaps are in relevance to a shortage or lack of:

1. **Safety Policy Statement** – An all-encompassing comprehensive safety statement for the MAA (including BWI Marshall and Martin State Airport) does not exist today.

2. **Communication** – Communication of safety activities and responsibilities lacks a consistency of understanding from the staff based on interview responses.

3. **Training** – Safety related training throughout the organization is not structured or comprehensively tracked and disseminated to all personnel. Training is localized to each individual office and is not comprehensive.

4. **Formal Safety Risk Management (SRM) Process** – A formal process for identification of hazards and risks does not exist in the current practices.

5. **Utilization of Resources** – Although resources may be available, they are not used for dissemination of safety related information and contribute to the lack of communication of policies.

6. **Internal/External Auditing** – Most offices within the MAA do not perform audits to track safety performance.

7. **Record Documentation** – Airfield accidents and incidents (with or without involvement of aircraft) are not kept in centralized locations and are not easily accessible by all authorized staff.

8. **Trend Analysis** – Due to lack of record documentation, identification of trends in incidents is difficult. Experienced MAA personnel have often recalled incidents from memory and determined trends based on personal "intuition".

9. **Responsibility Matrix/Role Definition** – Some MAA officials are unclear on what their roles are based on lack of position descriptions. Although other directors and managers are aware of their responsibilities, many have differing definitions of safety because they work in different environments and have varying roles (i.e. airfield vs. the office).

10. **Organizational Structure** – The official Safety Director position within the MAA organizational chart is currently vacant and the SMS approach to prioritizing safety within the organization is not clear.

11. **Global Consistency** – The interviews revealed that many individuals within the organization have different interpretations on safety responsibilities and requirements and are unaware of the documents that define their responsibilities such as the ACM.

12. **Non-Punitive Reporting** – A formal written non-punitive system does not exist within the MAA, although many felt that it is understood. SMS encourages a defined non-punitive reporting system to promote reporting safety related hazards and risks.

The gap items indicate the level of restructuring and adjustments required to truly implement an effective SMS program. Many of the activities and discussions that follow will be based on eliminating these gaps in the current organization and creating activities to address and mitigate the above-listed gaps to ultimately improve on the safety at the facility. BWI Marshall's SPM activities are listed in the following section with detail on the approach and implementation to transition the facility into an SMS program.

SECTION IV – OFFICE OF SAFETY AND TRAINING (OST)

SECTION IV. OFFICE OF SAFETY AND TRAINNG (OST)

4.1.0 Introduction

In order to implement and manage all of the requirements of the proposed SMS policies for BWI Marshall, MAA will create the Office of Safety and Training (OST) and integrate its function into the Administration. OST will be primarily responsible for the following activities that are defined in the sections listed below:

Section I: **SAFETY POLICY**: Develop and establish the safety policy and culture of the organization for the airport as described below.

Section VI: **ORGANIZATION AND RESPONSIBILITIES**: Define related responsibilities and manage all staff accountability towards safety to reach the safety goals.

Section VII: **SMS TRAINING**: Conduct all training and education including safety critical training for the airport.

Section VIII: **SMS COMMUNICATION PROCESS**: Promote communication between the offices and personnel to increase the level of safety at the airport.

Section IX: **SRM PROCESS:** Conduct and manage the Safety Risk Management Process as described below.

Section X: **SAFETY ASSURANCE**: Maintain Safety Assurance measures for SMS effectiveness and prevention of incidents as described below.

Section XI: **SAFETY PROMOTION**: Promote Safety awareness through proactive activities.

Ultimately, OST will initiate the above-mentioned activities and be responsible for:

- Compliance with all FAA regulated SMS activities.
- Management and coordination of the Airport Safety Committee (as described below).
- Reporting to the Executive Management Team (EMT) on SMS performance and activities for BWI Marshall.
- Consolidated/Comprehensive Record Documentation.

4.2.0 Office Creation – Safety and Training (OST) Safety Director (SD)

OST will be an MAA Office directly under the Deputy Executive Director for Operations and Maintenance with a direct line of communication to the Executive Director for matters of Safety that are of the utmost importance. A Safety Director (SD) shall be appointed to manage and coordinate activities for the OST. There will be safety representatives appointed from each of the other three (3) departments within the MAA that will coordinate with OST to convey matters of safety from the other MAA offices and divisions and to make sure these items have corrective actions as necessary. These safety representatives are existing employees within the MAA that will be assigned as representatives for each group on the Airport Safety Committee (ASC) as discussed below.

The SD must have the following qualifications and knowledge to execute the program:

- Operational Expertise
- Training in SMS procedures and hazard analysis techniques
- Adequate knowledge of documentation processes and how they are most effective
- Understanding of all Federal and State regulated training requirements
- Experience with large commercial air carrier airports and safety programs utilized at these airports
- Complete understanding of the MAA organization

SD responsibilities are described in Section VI – Organization and Responsibilities.

4.3.0 Airport Safety Committee

The SD through OST will create an Airport Safety Committee that includes representation of all departments and pertinent parties (consisting of existing employees) involved with Safety at the airport. The committee shall formally meet a minimum of once per month and discuss the following:

- Upcoming activities (construction, airline, tenants, etc.)
- Identify potential hazards/risks (assist in execution of the SRM Process)
- Analyze previous accidents/incidents
- Update and identify necessary training activities for the administration
- Assist with analyzing performance indicators for the airport
- Make safety recommendations
- Author and approve corrective actions
- Follow-up with performance and update the EMT on success

The committee will consist of a minimum of 4 representatives including the SD, who will act as chair, and a safety representative (SR) from each of the three (3) other departments. However, others may be added to the committee as deemed necessary by the SD to maintain the most accurate information with regards to airfield activities. The Safety policies

implemented by the committee shall be executed by all tenants at the airport. The representatives from each department shall assist with the following implementation:

- SR (Facilities Development and Engineering) – Pavement management and construction activities as well as mitigation activities that involve engineered solutions. Update the group on upcoming construction projects and schedule for design of mitigation projects.

- SR (Business Management and Administration) – Tenant coordination and inclusion of corrective actions in the signed lease agreements. HR coordination and tracking of training activities. Relay impacts of safety activities to stakeholders and tenants.

- SR (Technology and Community Affairs) – Software and hardware coordination; Learning Management System (LMS) usage for documentation; emergency system preparation; and network requirements.

The committee members will represent their appropriate departments while the SD will represent Operations and Maintenance unless further personnel are required, and will report all committee activities to the EMT.

4.4.0 FAA – SMS Regulation Compliance

It is anticipated that the FAA will begin to regulate the implementation of SMS programs throughout the country in the near future. OST shall maintain and record all required documentation, conduct the trend analysis, coordinate corrective actions, follow-up with executive management, and enforce all approved safety policies as necessary to meet the regulated requirements.

OST, at a minimum, shall conduct the activities listed above to meet all FAA regulated items. The SD will have responsibility to confirm that all activities are documented and mitigation activities are shown with director follow-up. Fourteen (14) CFR Part 139 requirements are anticipated to be regulated separately, for the time being, and the SD-OST must coordinate overlapping activities with the Director of Operations for the Part 139 certification.

The SD will liaison with the FAA representatives to confirm that all SMS requirements are met and will ensure that BWI Marshall meets certification requirements pursuant to Part 139. The SD will also make sure that State regulated (OSHA/MOSHA) requirements are met as a part of the regulated process. The following sections (Section V – Section XII) discuss each responsibility for the OST and how to implement the SMS activities. The Sections that should be used to guide the SD in everyday operations are provided following this section.

SECTION V – SAFETY POLICY OVERVIEW

SECTION V. SAFETY POLICY OVERVIEW

5.1.0. General

Gap Item Mitigated: Comprehensive Policy Statement for the Airport.

The MAA will adopt a safety policy statement to describe and identify all of the goals and objectives of the administration to achieve the SMS implementation. MAA's safety policy statement will illustrate the overall executive commitment required to initiate the SMS from the top of the infrastructure down throughout the administration.

Airport executive management will implement and enforce the safety policy statement and OST will develop the methods for how this safety policy statement and its applications are to all employees. The statement must contain executive level commitment to establishing a safe environment and to providing the resources necessary to achieve it. Executive management appoints the Safety Director (SD) and the OST to be responsible for developing, articulating, and communicating safety philosophy and policies. The four departments, through their safety representatives, will also address specific safety policies that affect the employees and responsibilities of their departments. Executive management is responsible for responding to these needs and for oversight of the OST to insure that the policies are being communicated as required by the OST. They will ensure that adequate resources are channeled to provide for implementation. The OST is responsible for oversight and coordination of these efforts, and it will use this policy statement as their mission statement. The policy statement is shown in Section I.

SECTION VI – ORGANIZATION AND RESPONSIBILITIES

SECTION VI. ORGANIZATION AND REPSPONSIBILTIES

6.1.0 General

BWI Marshall is owned and operated by the State of Maryland. Airport management is accomplished by the Maryland Aviation Administration (MAA), a mode of the Maryland Department of Transportation.

The key MAA personnel with responsibility for BWI Marshall are:

- The Executive Director
- The Deputy Executive Director of Airport Technology & Community Affairs
- The Deputy Executive Director of Operations and Maintenance
- The Deputy Executive Director of Facilities Development and Engineering
- The Deputy Executive Director of Business Management and Administration

As part of the SMS implementation, MAA will revise the existing structure and create an OST within the Operations and Maintenance group as discussed in this manual. While the executive director will still be the accountable executive, the Deputy Executive Director of Operations and Maintenance will have direct oversight of the Office of Safety and Training. OST will be managed by the ***Safety Director***. The other departments will have safety representatives that will serve on the Airport Safety Committee (ASC).

The revisions in the existing organizational structure are related to relocation of existing staff rather than the hiring of new staff. The SD should come from within the organization and the training staff responsibilities will come from other staff positions currently located in individual offices. The safety representatives will be appointed by the appropriate Deputy Executive Director and will be from within the organization.

6.2.0 MAA Staff Accountability

The Executive Director (ED) is ultimately accountable to the State of Maryland and the Maryland Department of Transportation (MDOT) for the safe management of the airport. However, the Deputy Executive Director of Operations and Maintenance will oversee the SMS implementation and compliance for the ED. The DED will identify the SD, or individual that manages the OST, as the party held accountable for the operational management of the SMS airport plan.

6.3.0 **Responsibilities**

6.3.1 Executive Director: The ED will be responsible for the following components with regard to the SMS plan:

- Ensuring a Safety Management System (SMS) is implemented at BWI Marshall.
- Acting in a leadership role to promote commitment throughout the organization towards SMS practices.
- Ensuring that the EMT is aware of its responsibilities with regard to safety and is held accountable for its performance.
- Confirming that MAA and BWI Marshall have been compliant with all regulatory requirements for SMS from the FAA, in addition to all other federal and state requirements in regard to safety.
- Allocation of resources for the development, implementation, and administration of OST to fit the needs to operate the SMS as defined by the SMS Plan.

6.3.2. Deputy Executive Director, Operations and Maintenance: The DED will be responsible for the following components with regard to the SMS plan:

- Organizing and creation of OST to manage the SMS Plan.
- Allocating of resources for the development, implementation, and administration of the OST to fit the needs to operate the SMS as defined by the SMS Plan.
- Providing a leadership role in promoting commitment from OST to the Safety policy and SMS requirements.
- Identifying any contraindicative elements in the prescribed safety activities and resolving the conflicts.
- Assisting with, advising in, and leading the implementation of the SMS policy and safety related issues.
- Confirming the oversight and auditing of OST and SMS to maintain performance and compliance objectives.
- Ensuring that appropriate liaison is conducted between other divisions and stakeholders to maintain SMS activities for the safe operations at BWI Marshall.
- Reporting to and advising the executive director and/or EMT on SMS Issues.

6.3.3 OST Safety Director: The OST Director, along with the supporting staff, will be responsible for:

- Overseeing and managing the Office of Safety and Training.
- Establishing the leadership role to ensure commitment from the MAA to the Safety Policy intent and SMS requirements.
- Managing and executing the SRM process and documents mitigation results.
- Ensuring that OST is aware of and maintaining all regulated requirements of the SMS system as defined by the FAA.
- Ensuring provisions for adequately trained and competent staff for safe operational management of the airport.
- Creating and establishing safety standards for the airport in accordance with the SMS goals.
- Managing the safety related training matrix and tracking of staff training for coordination with Human Resources.
- Chairing of Airport Safety Committee (ASC) that organizes, presides over, and documents the meeting for distribution to MAA staff.
- Managing the record documentation process by defining the mechanism of incident documentation and collection as well as distribution as discussed in the sections to follow.
- Conducting safety and compliance inspections with the FAA for all regulated SMS requirements.
- Managing all internal and external auditing related to SMS performance and documents results.
- Initiating all communication related to SMS with the MAA through the established network in the OST.

6.3.4 All other MAA Staff: All employees of the MAA are responsible for:

- Complying with all Executive Management and OST established safety requirements and procedures.
- Complying with the BWI Marshall ACM, SPM, AEP, and any other FAA regulations.

- Obtaining the appropriate training as defined in the matrix for SMS related requirements.

- Advising next level of upper management of any safety occurrence or procedural failure in the operations.

- Identifying and reporting any situation or potential risk or concern affecting system safety through supervisors, meetings, SD-OST, and/or EMT.

- Responsibly participating in safety audits to identify deficient activities and procedures.

SECTION VII – SMS TRAINING

SECTION VII. SMS TRAINING

Gap Item Mitigated: Training and Communication

7.1.0 General

A critical component of the SMS system will be the proposed training program to establish, promote, and track the regulated and non-regulated components of safety to improve on the MAA's performance with regard to accidents and incidents. Although the MAA currently has established training practices with regard to safety and legal requirements associated with airport practices, the new training program will be ***reorganized and improved to provide a coordinated and consolidated effort*** where trained personnel will be identified and records maintained to ensure a structured approach to airport safety. The numerous training curriculum subjects established by the airport are included as an attachment in Exhibit 1. The following list in Section 7.2.0 (also in Exhibit 1) identifies the majority of required training needed as part of the SMS and will likely evolve and grow as new needs are identified.

The reorganization and modified method of training personnel could be implemented in a reasonable period of time. As part of the implementation, each category for the SMS plan will be identified and implemented as part of the team training matrix to ensure that all MAA employees are identified and meet all applicable criteria regarding SMS. As identified as one of the primary gap items, a coordinated training program was found to be lacking. There were often times when training requirements were not enforced because they were compartmentalized, and overall, the effort has been ineffective for the size and scope of this administration.

7.2.0 Curriculum and Resources

This Manual for the SMS Program includes a plan for the SMS indoctrination and training of all airport personnel. Exhibit 1 provides a matrix of training for the MAA. The SD will define and assign all training aspects to the available MAA training personnel and identify needs. The matrix of training will include but not be limited to the following:

7.2.1 Introductory SMS Training:

- Basics of SMS management
- BWI Marshall Safety Policy and organizational infrastructure
- Reporting Accidents/Incidents and Safety Hazards
- MAA Safety Responsibilities and Chain of Communication
- Record Documentation
- SRM Process and Mitigation

7.2.2 Regulatory:

- National Incident Management System (NIMS)
  - IS-100 Incident Command System
  - IS-200 ICS for Single Resources
  - IS-700 National Incident Command, An Introduction
  - IS-300 Intermediate ICS
  - IS-400 Advanced ICS
  - IS-800 National Response Plan

- 14 CFR Part 139 – Certification of Airports
- AC 150/5370-2E Operational Safety on Airports during Construction
- All Current FAA Circulars
- ACM Section 327 – Airport Self Inspection
- ***SMS indoctrination and follow-up training***

7.2.3 Mandatory Safety (OSHA) and MAA Procedures:

- Stress Management
- Customer Service- Difficult Customer Alert
- Personal Protective Equipment (PPE)
- Environmental Awareness
- First Aid/CPR
- Accident Investigation Process
- Office Safety
- Hazard Communication
- Walking Working Surfaces
- Office Ergonomics
- Fire Extinguishers
- Back Safety

7.2.4 Fire/Life Safety (OSHA):

- Asbestos/Lead Awareness
- Compressed Gas Cylinder
- Aerial Work Platform – Power Platform
- Scissor Lifts
- Fork Trucks
- Material Handling Storage of LP Gas
- Temperature Extremes
- Excavations
- Welding
- Welding, Cutting and Brazing
- Electrical Safety – AC/DC and D/C

- Scaffolding
- Ladders
- Process Safety Management
- Hazardous Waste Operations
- Emergency Procedures
- Hearing Protection
- Hand and Power Tool Safety
- Slips, Trips, and Falls/Walking Working Surfaces
- Fire Protection – Extinguisher
- Respiratory Protection
- Fall Protection
- Lock Out/Tag Out
- Confined Space Awareness
- Confined Space Supervisor
- Confined Space Entrant
- Confined Space Attendant
- Machine Guarding
- Bloodborne Pathogens

7.2.5 Craft Specific:

- HEMT I Certification
- HEMT II Certification

7.2.6 Snow:

- Fuel Tanker
- Tow Behind Brooms
- Vammas
- Epoke Chemical Spreaders

7.2.7 MTCP Certification:

- Backhoe
- Runway Broom/Blower
- Bucket Truck
- Skid Steerloader
- Tandem Dump w/Snow Plow
- Front End Loader
- Street Sweeper
- 2 ½ Ton Dump Truck
- CDL

7.3.0 MAA Organization for Training

Many of the items in the training matrix currently have certified trainers (in regard to safety) who are located within different divisions and offices of the MAA organization. As part of the creation of the OST, these identified trainers will be ***relocated to the OST*** to create a more centralized approach to training and build a simplified responsibility path for the MAA to solidify the training programs and needs. In this scenario, all safety training will be managed and performed as part of the OST.

Position descriptions, both within the OST and the MAA (as they relate to safety) will be reviewed periodically and updated if necessary. Also, as technology of the tools used for good safety practice evolves, new methodologies for addressing issues with regard to various positions will be documented.

The SD will obtain specialized trainers on a time to time basis to facilitate certain areas that require additional expertise. The SD must keep the training program in constant development and ensure that all employees are being trained to accommodate the designated needs of the administration. The SMS training curriculum will include material specific to each of the four departments and the OST, which has oversight responsibility. The OST will also conduct an initial indoctrination for SMS to make all MAA employees familiar with the SMS implementation and procedures.

The OST will define a process for documenting and determining SMS training requirements so that needs of the employees are met to create a more informed operational staff. All training material that is developed should include definitions, safety policies, objectives, and promote an understanding of the interdependence of functions on the airfield and how they relate to an overall safe airfield environment.

Currently, Part 139 training requirements provide a beginning for this effort. SMS training adjustments will bring a more comprehensive and pro-active effort and ensure that training emphasizes safety. The following are additional items that should be incorporated by the OST as part of the training requirements.

- *Human Resources*. This Office is critical not only to filling positions but also in **determining training needs** and changes in position duties. Implementation of SMS will require position/job descriptions to reflect what each airport employee is responsible and accountable for, so that SMS training requirements can be established. The Safety Director will initiate and maintain this effort.

- Additionally, OST will include a program to ensure continuity in job understanding and performance (i.e., to match a new hire with an experienced employee or a recurrent training program to ensure that employees are updated/trained on new technology, equipment, or methodologies that affect SMS).

- Each group will have a training program assigned to them as it relates to SMS. Employee training in each group with relationship to this program will be managed

by OST and trainers will be assigned to promote safety principles specific to the offices and divisions within that group. OST will track and manage to preclude contraventions and/or inappropriate overlaps. The current required training for many areas affected by Part 139 should contain some of the items that would be applicable to SMS. However, discrete SMS training is an identified requirement in the Pilot Program.

7.4.0 Identification for Training Requirements

The SD will coordinate the requirements for training with the human resources staff and top management. After this coordination, the OST will complete a comprehensive list and will prioritize the list as follows:

- New Employee indoctrination and training
- SMS indoctrination and training for all employees
- Training for MAA management staff
- Training for Operations, Maintenance, and Transportation and Terminal Services

Training manuals will identify elements that are to be included to meet requirements in the SMS Program. Part 139 training requirements currently are involved in many operations and functions at BWI Marshall. The required SMS elements can be integrated with existing Part 139 requirements, with the objective of meeting the more advanced level that SMS implies, (i.e., acknowledging the interdependence of airfield operations and systems).

7.5.0 Training Effectiveness

Assessment of the effectiveness of training will rest with the recurrent training approach. A training program, to have value, must prove itself. SMS training and indoctrination are on-going efforts. Employee feedback will be critical to confirming the effectiveness of the program. OST should conduct periodic audits in accordance with regulatory requirements with the FAA. Recurrent training should start with confirmation that basic principles are understood and have been learned as part of the initial training.

SECTION VIII – SMS COMMUNICATION PROCESS

VIII. SMS COMMUNICATION PROCESS

GAP Items: Communication and Responsibility

8.1.0 General

Communication is arguably the most important vehicle for implementing SMS. The aspects of training, auditing results, consistency, awareness and understanding, and enforcement, as they are all aspects of safety, are often direct results of the level of communication. Communication can mean something as simple as the verbal expressing or relaying of information from one party to another. However, the process of communication for SMS will be structured and consistent.

Safety Policy and Objectives and SMS initiatives will be communicated from the OST by means of training, auditing for compliance and quality control (QC). The OST must understand that communication is a two way street and both the sender and receiver share a responsibility in delivery and retention of the message. The SD must constantly revisit and update the measures of communication utilized to convey the SMS activities. The defined procedure shall be strictly enforced by the executive management team for the MAA to ensure that all training is being performed and all safety protocol is being followed.

OST will be the catalyst for ensuring that safety procedures are communicated throughout the organization. It is imperative that communication is a two-part process. The first part is the sharing of information, ideas and policies by means of email, phone calls, internet postings, hard copy mail, postings and face-to-face dialogue (email will most likely be the first line of communication). The OST must utilize technology to assist in dissemination of the information to all appropriate parties. In order to facilitate this dissemination of this information, the OST shall utilize the following procedures:

- An **Airport Safety Committee (ASC)** meeting shall be held a minimum of once per month with mandatory participation of selected representatives from each group. A portion of this meeting will be utilized to update staff on any particular safety issues or concerns. The SD will act as the chair of OST and summarize the discussion and conclusions for distribution by email or by meeting minutes on hard copy.

- The airports **Learning Management System (LMS)** shall be utilized to train and confirm completion of training for particular procedures as determined by the OST. The LMS system can quickly and efficiently connect personnel to the latest requirements and confirm review and completion of the training in an effective manner. The SD must coordinate with the Office of HR and Information Technology division to appropriately confirm that the LMS is available and for use.

The second part of the aspect of communication is follow-up and enforcement to ensure that any direction or training given to MAA employees is properly executed or that messages are understood. If it is speculated that employees are not responsive to safety communication efforts, it shall be reported to the executive management team in which the deputy director

for the particular department at hand will be responsible for enforcing the issue. Tracking of the training participation will assist in confirmation of staff understanding of the procedural requirements for SMS.

Direction for and information on training, for example, will be communicated by the method the safety director determines is most effective (i.e. email, inter-office mail, etc.), with periodic reminders. Employee response shall consist of LMS usage and participation in the training courses. When training is complete and understood in a satisfactory manner, human resources personnel shall document it in their records to ensure that an employee has officially completed a particular training course. After a certain period, there will be follow-up with the employee by a more direct means of communication to ensure that the employee fulfils his/her obligation. If the employee still fails to fulfill his/her training obligation, then it will be documented and reported to the executive management team, particularly to the deputy in charge of the division that the employee is in. This deputy will then be prompted to address the situation.

Communication by lower level employees should be encouraged by executives and the OST by means of a non-punitive reporting system (discussed later in this section). Incentives such as immunity from disciplinary action are intended to encourage employees, as long as they work in good faith, to report concerns and information on issues arising in the work environment. The path of communication should allow access to executive management if the issue is not properly addressed or ignored.

MAA will improve on its communication by pursuing the following adjustments to current policies:

- Centralized training for all regulatory requirements for the Administration. OST will act as a "one stop" shop for safety related training.

- Software improvements to the internal intranet system to confirm receipt and observation of training. Recommendations of software will be coordinated with the IT safety representative.

- Dissemination of proactive activities and corrective actions.

- Published responsibility matrix with regards to safety, risk management, corrective actions, and follow-up on effectiveness so that all employees know their responsibilities to critical issues.

Effectiveness of the adjusted communication practices will be confirmed through follow up interviews of MAA personnel for understanding of the SMS system. Feedback from employees must constantly be utilized by the OST to make adjustments in the system to improve communication practices.

8.2.0 Non-Punitive Reporting System

SMS policy advocates for airports to establish an incident reporting system in order to facilitate the collection of information of actual or potential safety deficiencies. Non-punitive systems improve on the record documentation available at all airports. All airport personnel are encouraged to submit voluntary safety deficiency reports no matter how small the issue. BWI Marshall will need to establish a written non-punitive reporting system since there is currently none in use at the airport although somewhat understood. The Safety Director will develop a system that accomplishes the following:

- An anonymous mechanism for reporting safety deficiencies such as a drop box or website link.
- A policy towards immunity regarding safety issues for all levels of the administration and opening avenues for personnel responsible for the reporting of safety issues.
- The ability to follow up and mitigate an issue without identification of the person responsible for reporting it.
- An improved communication and reporting system for incidents.

The reports should aid the collection of information for the incident reporting system, should be non-punitive, and should afford protection to the sources of information without fear of reprisal.

Using a non-punitive reporting system has many benefits to airport management, employees, and tenants. This type of correction system builds trust through safety between management and the workforce and encourages a preventive rather than a reactive response through teamwork. Confidential reporting will provide a strong incentive to report safety concerns and will reveal a more accurate view of the safety of airport operations. It will also establish a direct-line of communication of safety information to managers. The voluntary, confidential, and non-punitive model for the reporting of safety events is a significant tool assisting in risk management efforts. This system is a disciplined approach to solving problems that promotes the cooperation and accountability between departments and provides better utilization of safety resources.

The program implemented will:

- Handle safety reports received with an appropriate level of confidentiality as far as the names and identities of the sources of the information are concerned
- Use a standard reporting form
- Be thoroughly investigated, analyzed and entered into a database for trend projection and cause-effect analysis

- Provide feedback to senior airport management

The non-punitive reporting system offers a corrective action approach for accident/incident prevention. It is cost-effective in that it reduces hearings, legal expenses, representational expenses, and investigative expenses. The non-punitive reporting system promotes the industry-wide sharing of information, ensures FAA, OSHA, and airport compliance through proactive identification and corrective actions, and assists the FAA and National Transportation Safety Board (NTSB) with proactive recommendations.

SECTION IX – SAFETY RISK MANAGEMENT PROCESS

SECTION IX. SAFETY RISK MANAGEMENT PROCESS

Gap Items Mitigated: SRM Process, Trend Analysis, Record Documentation

9.1.0 General

BWI Marshall Airport currently has an Office assigned to a Risk Manager. However, there is no formal Risk Management Program. The current office's practices and program can be a foundation for the development of a Risk Management process and program, which is described in this section. OST will manage and develop the SRM process and the SD will have sole responsibility for oversight of the analysis and mitigation of the hazards and risks. The fundamental goals of the SRM process are as follows:

1. Integrate SRM into all decision making relevant to the activities of MAA airport operations.

2. Develop, train and motivate all MAA employees to manage risk in all aspects of their professional occupation.

3. Identify opportunities to increase overall productivity at the least possible cost.

4. Ensure all levels of management integrate SRM principles, techniques, and tools into company policy, planning, and training to induce application by employees at all levels and in all functional areas.

Risk Management, according to the Pilot Study Participant Guide, is a process that must be addressed formally by the SMS Program. In the Advisory Circular (AC) 150/5200-37, *Introduction of Safety Management Systems (SMS) for Airport Operators,* this fundamental approach embraces:

- Determining associated risks[1]; identifying the severity and probability of occurring risks; developing mitigation strategies;

- Applying, tracking, and monitoring the mitigating strategies; and

- Assessing and modifying the strategies as necessary.

Safety Risk Management (SRM) is a systematic, explicit, and comprehensive approach for managing safety risk at all levels throughout the airport. The protective layers that are created to lessen risk involve the elimination of gaps. However, gaps are not static, especially where human factors are involved. The protective layers are intended to prevent a succession of gaps, which, if lined up, can result in a mishap.

---

[1] The AC defines "hazard" as a condition, object, or activity with the potential for causing damage, loss, or injury. A "risk" is the chance of loss or injury measured in terms of severity and probability.

The role of the executive team and top-down approach for SRM is described below.

A. *Executive Director*

1. Oversees the overall cross-functional integration effort of SRM into the MAA.

2. Approves the designation of an overall MAA SRM Program Manager or risk management manager. This would either be the SD or Risk Manager within the OST.

3. Provides guidance and oversight of all matters pertaining to the formulation, review, and execution of policies, plans, and programs relative to the MAA SRM program.

B. *Deputy Executive Director of Operations and Maintenance:*

1. Tailors SRM applications and techniques to accommodate the unique needs of the MAA.

2. Develops and maintains SRM implementation and sustainment plans for the OST within Operations and Maintenance.

3. Influences SRM into all operational decision-making processes.

4. Coordinates SRM Process with the Office of Operations.

C. *Safety Director (SD) of OST:*

1. Responsible party for integration of the SRM process, principles, and techniques into daily activities where possible.

D. All MAA Personnel should apply SRM principles, concepts, and techniques to assess the risks associated with their daily activities. They are encouraged to apply them to all other activities.

Hazard identification and risk assessment are, de facto, on-going efforts; therefore, the SD must facilitate the use of SRM whenever deemed necessary and triggered by the following situations:

- Initial SMS implementation
- Organizational changes or reallocation of infrastructure
- Construction or introduction of new facilities or airfield areas
- Acquisition and utilization of new equipment
- Revisions and introduction to procedures and policies
- Changes to key personnel that impact operations
- Budget adjustments

The SD must use his/her judgment for initiating new SRM processes when the current infrastructure has impacts that affect operations. At a minimum, the SRM should be evaluated twice a year. When initiating the process, the SD should use the following discussion to guide the process.

9.2.0 **SRM Guidance**

9.2.1 Introduction: This system considers the overarching mission of MAA and includes operations, equipment, people, and procedures necessary to successfully complete the stated objectives. In order to fully understand the system, all levels of management must identify the characteristics of the organization necessary to fulfill MAA's purpose. Several characteristics must exist in order for a "system" to operate. Therefore basic assumptions have been made in regards to the MAA organization.

A. Assumptions:

- The MAA cannot operate without the existence of all employees and existing organizational structure.
- The MAA will receive a thorough organizational restructuring, if deemed necessary, to ensure that the SRM can be achieved (i.e. establish SRM responsibilities).
- Management conducts a climate assessment to fully ascertain the operational environment and fluidity of its existing management system, including policies and procedures, and implements necessary change to implement the SRM Process.
- Management addresses identified challenges as outlined in the Gap Analysis.
- Management implements an organizational restructuring to ensure the overall stability of operations. Stability can be achieved through interactions, feedback, and adjustments of policies, procedures and the organizations personnel and divisions.
- Management ensures the organization implements a process where feedback is continually analyzed and if necessary serves as a catalyst for a change in behavior of the overall system.
- Management reorganizes to better identify patterns of events, versus the singling out of individual events.

9.2.2 Understanding the MAA System:

A. *Events, Patterns and Structure* - The structure of MAA is defined by the *interrelationships* of management, departments, and employees as well as the multitude of BWI Marshall tenants, contractors, and subcontractors, not the tangible presence of stated stakeholders. Analysis of the MAA organizational structure provides a context in which to examine the events and trends that occur and their effect(s) on the entire organization and conditions on the airfield.

Events: Performance of the gap analysis indicates that current activity is, essentially, in a reactive mode. There is a focus on individual events rather than a search for the causes of events with the objective of preventing them. There is no focus on how the events impact a larger pattern. In addition, the information provided is anecdotal/subjective information for meeting future events. In effect, such "solutions" to events are short-lived and do not have high success to alter the fundamental structure that caused the event. *For example*, a fuel truck rams into a guard shack causing an explosion and igniting a fire. The reaction to this event is that ARFF responds to extinguish the fire. This is a necessary and essential action. However, if it is the *only* action ever taken by management, it is inadequate from a systems perspective. It only solved the immediate problem but has not changed the underlying structure that caused the fire, which may have been inadequate staffing, resulting in an overworked, fatigued fuel truck driver, whose reaction times were impaired. A number of other reasons, such as poor location of equipment or poor refueling routes, inadequate space for the operations might also have contributed to the event. Until the event is properly investigated and reasons identified, this event may occur again.

Patterns: Events are like snapshots, a picture of a single moment in time. However, patterns allow an organization to understand the event at a deeper level. Patterns are trends, or changes in events over time. If there is an increase in runway/taxiway incursions or an increase in employee fatigue, and a pattern can be detected it is possible to place the event in context of other similar events. MAA can explore the *series* of events and can ultimately change the pattern and prevent the cause of the event. In order to anticipate events, management must shift to thinking about the structure of events.

Structure: In the example above, management might investigate possible causes of the event or in other words, the structure behind the pattern, by asking what caused the event. In this example, the cause of the fuel truck hitting the gate shack was that the driver had been on continuous duty for over 18 hours due to limited staff. However, let's suggest that this was not the first incident of this type. In this example, let's suggest that low morale caused an increase in truck driver call outs, or an increase in employee turnover, thus causing an increase in employee workloads and increased fatigue. Morale continues to degrade thereby causing a decrease in available manpower, a further decrease in employee morale, a further increase in employee fatigue and an increase in vehicle mishaps. This is what management

experts consider a "vicious cycle". Thinking at the structural level means thinking in terms of causal connections; it is the structural level that holds the key to lasting, high-leverage change.

- In the example of the fire caused by the fuel truck accident, to fight the fire at the event level would simply be for the ARFF to quell the fire as soon as possible. To fight the fire at the pattern level, management may anticipate examine, through good record-keeping, where or who caused other vehicle accidents so that it is possible to anticipate how or where they will most likely occur. Management may note that certain vehicle drivers cause more vehicle mishaps than other vehicle drivers (including tugs and other equipment). Because the cause can be isolated based on past patterns, management can effect change by adapting to the patterns observed. Actions taken at this level are creative because they assist management and shape a different outcome, one that increases morale and productivity while reducing vehicle mishaps and accidents and ultimately overall risk.

- The art of thinking at the systemic structure level comes with knowing when to address a problem at the event, pattern, or structural level and when to use an approach that combines all three.

Figure 1. Levels of Understanding.

	Action Mode	Time Orientation	Way of Perceiving	Questions to Ask?
Events	React	Present	Witness Event	Whats the fastest way to react to the event now?
Patterns	Adapt		Measure or track patterns of events	What kinds of trends or patterns of events seem to be recurring
Structure	Create change	Future	Dynamic thinking tools (causal loop diagrams, behavior over time graphs Systems archetypes). Requires a trained facilitator	What structures are in place that cause these patterns?

Complex Systems. In the aforementioned example, it would be easy to map out a graphical depiction of the cause of the event. However, organizations such as MAA demonstrate a more complex system of behavior. Complex systems pose special challenges and typically encounter four types of problems:

1) Conflicting goals,
2) Centralization vs. decentralization,
3) Distorted feedback,
4) Loss of predictability.

For the MAA, it is not uncommon for its divisions (i.e., airport operations and airport maintenance) to have goals that compete directly with or diverge from the goals of the overall system. For instance, an organization may advocate for local decision-making, only to discover local decisions conflict with the goals of the overall organization. Using the example of the fuel truck accident, the single decision of allowing fuel truck drivers to work continuous overtime increased driver fatigue and thereby increased the overall risk of a potential accident. Therefore, in order for MAA to apply the SRM process to the overall decision making process, it must conduct the following steps before it can evolve to an organization with the ability to promote change and maximize efficiency, productivity, safety and security:

- First, refine the overall mission of the MAA; establish short-term and long-term goals for the organization as a whole. Implement a policy to promote overall SMS and task SRM roles and responsibilities to appropriate personnel and organizations (i.e., risk management office).

- Next, conduct a systems analysis of individual departments and identify problems and scenarios that could potentially disrupt the overall purpose of the MAA. In general, each department within MAA must think of the big picture, balance short-term and long term objectives of the overall organization with individual departmental objectives.

- Then, each group must consider and identify mutually supporting systems and identify measurable and non-measurable factors that could impact the overall operation of the organization as well as fully analyze the influence of supporting departments even as the influence occurs.

Using this information, the administration must implement a process to identify patterns and estimate risk based on the risk matrix shown below. As dictated in the SRM process, in order to continually evolve as an organization, management must seamlessly integrate the SRM model into daily operations. The next section illustrates four (4) case studies in which the SRM process is applied for mitigation. *These case studies are fictitious and are not necessarily based on actual events that have occurred at BWI Marshall, nor are the exact corrective actions necessarily what airport operations would do for mitigation. However, these types of events could realistically happen if the proper safety measures are not taken.*

Sample Risk Matrix

SEVERITY			PROBABILITY				
			Frequent	Likely	Occasional	Seldom	Unlikely
			A	B	C	D	E
	Catastrophic	I	AI	BI	CI	DI	EI
	Critical	II	AII	BII	CII	DII	EII
	Moderate	III	AIII	BIII	CIII	DIII	EIII
	Negligible	IV	AIV	BIV	CIV	DIV	EIV
			RISK LEVELS				

	Extremely High	AI, AII, BI
	High	AIII, BII, CI, CII, DI
	Medium	AIV, BIII, CIII, DII
	Low	BIV, CIV, DIII, DIV, EI, EII, EIII, EIV

9.3.0. **Risk Matrix Samples**

9.3.1 Case Study #1:

An aircraft is damaged by a loose piece of ground equipment. The ground equipment, which is stairs, had faulty brakes, thus allowing itself to roll with a gust of high wind. The stairs roll right onto the taxiway and collide with the aircraft.

The following is the risk management application process and how it may apply to this situation before the hazard results in an incident:

Phase 1. Describe the System:

- Terminal gate located in close proximity to the movement area (i.e. a taxiway)
- Portable stairs for servicing aircraft located on the apron that are in need of repair or replacement
- Adjacent taxiway with aircraft traffic
- Airline ramp operations or ground service contractor training programs
- Windy conditions

Phase 2. Identify the Hazards:

- Stairs rolling out into the movement area due to high gusts of winds and faulty breaks

Phase 3. Determine the Risk:

- Aircraft or ground service vehicle striking the stairs on the taxiway

Phase 4. Assess and Analyze the Risk:

- This is an unacceptable situation. Based on the risk matrix shown, the safety committee may determine that there is an **occasional** chance that stairs may be blown in the path of aircraft movement due to brakes that are either defective or have not been locked due to negligence of the ramp operator(s). The aircraft parking area is also extremely close to the taxiway frequented by aircraft and stairs typically do not have a designated location where they are secured or fastened to a more stable structure.

- If the stairs collide with the aircraft, it could cause extensive damage to the aircraft fuselage and even the engine, requiring the flight to be cancelled for a mandatory inspection. This could result in millions of dollars of cost to repair, although there is a good chance that there will be no fatalities. The committee may see the result as **critical**.

- A hazard with an occasional chance of happening, coupled with a critical result if it happens, creates a risk that is **high (CII)**.

Sample Risk Matrix

			PROBABILITY				
			Frequent	Likely	Occasional	Seldom	Unlikely
			A	B	C	D	E
SEVERITY	Catastrophic	I	AI	BI	CI	DI	EI
	Critical	II	AII	BII	**CII**	DII	EII
	Moderate	III	AIII	BIII	CIII	DIII	EIII
	Negligible	IV	AIV	BIV	CIV	DIV	EIV

RISK LEVELS

Extremely High	AI, AII, BI
High	AIII, BII, CI, CII, DI
Medium	AIV, BIII, CIII, DII
Low	BIV, CIV, DIII, DIV, EI, EII, EIII, EIV

Phase 5. Treat the Risk:

- The committee may decide to control the risk by using pad lock and chain to secure the stairs to a larger or more stable structure when they are not in use, or to enforce mandatory inspection of the stairs after each use to ensure the brakes are in use and working properly as part of the check list.

- The committee documents this situation and the decision made to mitigate it for future reference and follow-up with the SD. This remedy may also be applied to other gates with similar situations.

9.3.2 Case Study #2:

A flight has been diverted to BWI Marshall due to inclement weather to the north. Once the aircraft has landed, the ground crew has taken it upon themselves to park the aircraft where they choose, instead of seeking permission from the FAA or the MAA. They park the aircraft in a location where its wing encroaches a taxilane object-free area (OFA). In turn, the wing is hit by another aircraft maneuvering on the taxilane.

The following is the risk management application process and how it may apply to this situation before the hazard results in an incident:

Phase 1. Describe the System:

- Aircraft diverted to land at the airport with short notice
- Limited or poor communication between the flight crew and the ATCT.
- Flight operations crew training given by the airline that operates the aircraft.
- Training for ground traffic for ATCT crew
- Flight crew's familiarity with the layout of the airport
- Gate or area not designated for the size of this aircraft

Phase 2. Identify the Hazards:

- Flight crew attempting to park an aircraft in an unacceptable area without seeking permission from the ATCT or MAA Ground Operations.

Phase 3. Determine the Risk:

- Aircraft wing being struck by another aircraft wing.

Phase 4. Assess and Analyze the Risk:

- The safety committee may determine that a situation such as this one is seldom. BWI Marshall is located in the state of Maryland, which is in the northeast quadrant of the country. This is a geographic area where weather can be harsh for flying, particularly

in the winter. Due to many flights traveling up the Eastern Seaboard, it is not too unlikely that a flight traveling from a location such as Miami, FL, on its way to a location such as Boston, MA, for instance, may have to temporarily land in Baltimore due to a severe winter storm in the New England area.

- If a flight had to unexpectedly land at the airport due to inclement weather at its destination, it is unlikely, though possible that the crew lacks the training or discipline to seek guidance from the ATCT on where to park the aircraft. Furthermore, it is unlikely that the ATCT or MAA Operations will allow the aircraft to park where the flight crew chooses without emphasizing instructions. This, coupled with the flight diversion situation makes this risk to be **seldom**.

- The result of one plane clipping another on the ground while taxiing is a critical issue. Unless the collision results in a fuel spill, the committee may not consider this incident to be catastrophic, although an extensive amount of damage can be done to both planes. Therefore, the severity of the risk would be **critical**.

- A hazard with a seldom chance of happening, coupled with a critical result if it happens, creates a risk that is **medium (DII)**.

Sample Risk Matrix

			PROBABILITY				
			Frequent	Likely	Occasional	Seldom	Unlikely
			A	B	C	D	E
SEVERITY	Catastrophic	I	AI	BI	CI	DI	EI
	Critical	II	AII	BII	CII	**DII**	EII
	Moderate	III	AIII	BIII	CIII	DIII	EIII
	Negligible	IV	AIV	BIV	CIV	DIV	EIV

RISK LEVELS

Extremely High	AI, AII, BI
High	AIII, BII, CI, CII, DI
Medium	AIV, BIII, CIII, DII
Low	BIV, CIV, DIII, DIV, EI, EII, EIII, EIV

Phase 5. Treat the Risk:

- The committee may decide to control the risk by devising a policy and procedure for navigating to a safe parking location with guidance and authorization of the ATCT and MAA Ground Operations when an aircraft has to land unexpectedly at an airport. The policy should be circulated throughout the staff of the airport ATCT and MAA Ground Operations in addition to using publications available to users that travel through the mid-Atlantic.

- The committee documents this situation and the decision made to mitigate it for future reference and follow-up with the SD. This remedy can also be applied to future situations, such as this one.

9.3.3 Case Study #3:

An MAA vehicle was having difficulty seeking clearance to cross a runway, due to poor weather and lack of good communication with the tower, as the radio worked intermittently. The vehicle traveled onto an active runway, causing an emergency go-around for an approaching aircraft.

The following is the risk management application process and how it may apply to this situation before the hazard results in an incident:

Phase 1. Describe the System:

- MAA vehicle operating on an active runway.
- Poor communication with the tower
- Poor weather, low visibility
- Approaching aircraft

Phase 2. Identify the Hazards:

- Vehicle unsure of direction due to the weather and in a dangerous location.

Phase 3. Determine the Risk:

- The vehicle traveling onto the runway while an aircraft is landing simultaneously.

Phase 4. Assess and Analyze the Risk:

- With low visibility and poor communication, a vehicle located on or near a runway could easily cause an incursion. This scenario, due to the configuration and geometry of the airport may be considered frequent, especially with a lot of fog appearing in the area and below average quality communication equipment due to the budget of the administration.

- The committee may determine that this scenario is **frequent** and can easily be **catastrophic** if this vehicle collides with an aircraft, causing death to hundreds of individuals and possibly billions of dollars of property damage.

- A hazard with a frequent chance of happening, coupled with a catastrophic result if it happens, creates a risk that is **extremely high (AI)**.

Sample Risk Matrix

			PROBABILITY				
			Frequent	Likely	Occasional	Seldom	Unlikely
			A	B	C	D	E
SEVERITY	Catastrophic	I	**A1**	BI	CI	DI	EI
	Critical	II	AII	BII	CII	DII	EII
	Moderate	III	AIII	BIII	CIII	DIII	EIII
	Negligible	IV	AIV	BIV	CIV	DIV	EIV

RISK LEVELS

Extremely High	AI, AII, BI
High	AIII, BII, CI, CII, DI
Medium	AIV, BIII, CIII, DII
Low	BIV, CIV, DIII, DIV, EI, EII, EIII, EIV

Phase 5. Treat the Risk:

- The committee may decide to control the risk by enforcing strict policy and procedures during low visibility conditions. They may even enforce a policy of not traveling into the movement area unless the issue is urgent. They may also explore the option of upgrading communication equipment, although this could require additional funding.

- The committee documents this situation and the decision made to mitigate it for future reference and follow-up with the SD. This remedy can also prevent this situation from occurring in the future.

9.3.4 Case Study #4:

A 10,000 gallon Jet A fuel truck rams into a guard shack. The truck operator has been on continuous duty for over 18 hours, due to limited staff. The guard shack was destroyed and two individuals were taken to the hospital.

The following is the risk management application process and how it may apply to this situation before the hazard results in an incident:

Phase 1. Describe the System:

- Overworked fuel truck driver passing by a guard booth
- Staff working in the guard booth, easily exposed to harm

Phase 2. Identify the Hazards:

- A tired 10,000 gallon truck driver approaching a guard shack with employees inside, vulnerable to large vehicles that are out of control.

Phase 3. Determine the Risk:

- The fuel truck striking the guard booth.

Phase 4. Assess and Analyze the Risk:

- Many businesses in the aviation industry are understaffed due to limited finances. Therefore the probability of the fuel truck company being understaffed and the truck driver being overworked is likely. It is also that if he/she is not alert, he/she may easily strike a structure located adjacent to the vehicle service road (VSR) that the truck is traveling on, such as a check point guard booth. The chances of this happening are **likely**.

- If bollards are located around the guard booth, the staff working inside may be protected from impact. However if the impact causes the fuel tank of the truck to rupture, the fuel will spill and possibly explode. This result is **catastrophic**.

- A hazard with a likely chance of happening, coupled with a catastrophic result if it happens, creates a risk that is **extremely high (BI)**.

Sample Risk Matrix

			PROBABILITY				
			Frequent	Likely	Occasional	Seldom	Unlikely
			A	B	C	D	E
SEVERITY	Catastrophic	I	A1	**BI**	CI	DI	EI
	Critical	II	AII	BII	CII	DII	EII
	Moderate	III	AIII	BIII	CIII	DIII	EIII
	Negligible	IV	AIV	BIV	CIV	DIV	EIV

RISK LEVELS

Extremely High	AI, AII, BI
High	AIII, BII, CI, CII, DI
Medium	AIV, BIII, CIII, DII
Low	BIV, CIV, DIII, DIV, EI, EII, EIII, EIV

Phase 5. Treat the Risk:

- The committee may make an effort to reach out to the FAA and labor unions to examine labor policies. They should also contact the Office of Engineering and Construction to coordinate for bollard installation around all booths and to coordinate with the airlines and engineering office for the installation of a hydrant fueling line around all or more gates of the airport, if funding is available.

- The committee may also coordinate with the office of security to enforce and/or reduce speed limits for ground vehicles.

- The committee documents this situation and the decision made to mitigate it for future reference and follow-up with the SD. This remedy may also prevent this situation from occurring in the future.

SECTION X – SAFETY ASSURANCE

SECTION X. SAFETY ASSURANCE

Gap Items Mitigated: Self Auditing and Oversight

10.1.0 General

Safety Assurance is a critical component to improving the SMS system and quantifying the success of the SMS.

10.2.0 Apron Safety Management Integration into SMS

BWI Marshall currently implements and enforces the BWI Marshall Airfield Ramp Safety Program which fosters best safety practices on the airfield and ramp areas of the airport. The program promotes continuously inspecting, reviewing, evaluating, recommending, and implementing needed changes to meet the goal of maximizing efficiency and reducing incidents and accidents. The program is comprised of three modules including Ramp Safety, Driver Training, and Radio Communications.

A committee meets on a monthly basis to discuss airfield, ramp, and gate issues, construction updates, safety reports, ramp citations/violations, incidents/accidents, the wildlife report, ramp checklist, and pilot comment cards. The SD will need to integrate this practice with the Airport Safety Committee to facilitate a meeting of the safety related staff that included the Office of Operations staff involved with part 139. The SD should also be present at the Ramp Safety meeting.

Some of the existing program elements that the SD should encourage and continue are described below:

10.2.1 FOD Prevention at BWI Marshall:

Any employee who cares is welcome to join the FOD (foreign object debris/damage) team. The team's goal is to control and eliminate FOD at its source. The tenants at BWI Marshall are responsible for maintaining a safe, FOD-free airport ramp area in order to reduce costly debris hazards to aircraft. The objective of the FOD prevention training program is to increase air carrier employee awareness to the causes and effects of FOD and to promote active involvement through specific techniques.

10.2.2 Suggested FOD Prevention:

- Practice good housekeeping. Police your areas and those nearby and clean where necessary. This is a team effort.

- All contained FOD should be kept away from the movement area (i.e. runways and taxiways) to prevent incursions caused by the FOD itself or individuals attempting to retrieve it.

- Trash left on jetways or in stairwells is the responsibility of the airline utilizing the gate.

- Ramp supervisors should instruct crews to inspect the ramp area for FOD before and after each flight. Equipment should be properly stowed for existing or expected weather conditions, (i.e., marshalling wands).

- Inspect FOD buckets and receptacles daily. When full, ensure that they are emptied.

- Report any hazards or problems that employees cannot resolve to the appropriate authority (i.e., full trash compactors, pavement deterioration).

10.2.3 Procedures for Reporting/Recording Spills:

- Record date/time/location/type of spill observed and who reported spill.

- Record type of vehicle/owner/vehicle ID/BWI Marshall decal No., and driver name if available.

- Record aircraft Number/type/owner, if airplane was involved in any types of spills.

- Notify the responsible party (tenant), of their responsibility to notify proper agencies (i.e., OPS, ARFF, MDE, etc.) and to clean soiled area and repair GSE vehicle if needed. Do not advise tenant that MAA/FMX will scrub soiled area and bill tenant accordingly if tenant does not comply. (Tenant may opt for this measure instead if taking the responsibility to clean soiled area). If leaking vehicle is taken out of service by OPS, then, scrape off old BWI Marshall decal, and advise tenant that OPS must be contacted to re-inspect vehicle before returning to service.

- Record all information on OPS Ramp Soiling Report Form, located with all the other OPS back wall clipboards. These records are compiled for weekly and monthly reports. This information is used for the purpose of sending warning letters to tenants that do not comply and to repeat offenders.

- Recheck soiled area for tenant compliance within a period of 3 to 5 hours. If tenant has not complied, then have MAA/FMX scrub soiled area and bill tenant directly. If re-inspection time occurs during the next shift, then note on turnover for an OPS AOM to follow up.

10.2.4 Airport Condition Reporting/Obstruction Marking and Lighting/Obstructions to Navigation:

- Each certificate holder must follow airport condition reporting as outlined in FAR or CFR Parts 139.339, 139.313, and 139.309.

- Each certificate holder must provide for the collection and dissemination of airport condition information to air carriers and use the NOTAM system where appropriate, and other systems and procedures as authorized by the Administrator.

- Conditions that affect the safe operations of air carriers include, but are not limited to: construction/maintenance activities, surface irregularities, precipitation, and objects on movement areas, safety areas, loading ramps, and parking areas.

- Other conditions include malfunctioning of any lighting system or signs by Part. 139.311; unresolved wildlife hazards as identified in accordance with Sec. 139.337, no availability of rescue/firefighting capability required by Sec. 139.317 or 139.319; or any other condition specified in the Airport Certification Manual.

- Under FAR Part 77, the FAA considers that an object constitutes an obstruction on navigation:

- If it is 200ft above ground level or 200ft above the airport elevation (whichever is greater), up to three miles (for runway lengths greater than 3200ft) from the airport; increase 100ft for every mile up to 500ft at 6 miles from the airport reference point,

- If it is 500ft or more above ground level at the object site,

- And, if it penetrates an imaginary surface, the terminal obstacle clearance area, or the enroute obstacle clearance area.

- Whenever an obstruction that penetrates the safety clear zones at the end of any runway at BWI Marshall is observed and reported to the Airport Operations Center, the responsible owner will be requested to remove, mark, or light the obstruction. Removal, marking and lighting of an obstruction is not required if it is determined to be unnecessary by an FAA aeronautical study. Reporting Requirements: FAA Form 7460-1.

- The Airport Operations Center coordinates reports of outages with the MAA Maintenance for repair. The obstruction lights are part of the airfield self-inspection program.

- Other Apron Safety Reporting Forms as required by the FAA and included in the Ramp Safety Manual.

- The Ramp Safety Checklist can be found in the Ramp Safety Manual.

- The Pilot Discrepancy Report can be found in the Ramp Safety Manual.

- Driver Training Program

    - BWI conducts driver training on the Code of Maryland Regulation 11.03.01.04, which authorizes the operation of vehicles on the Air Operations Area (AOA).

    - The only motor vehicle operations permitted on the air operations area are those expressly authorized by the Airport Director, who shall identify the motor vehicles by registration.

    - Under the Driver training program, the following is covered:

        - Traffic control
        - Operations near aircraft
        - Designated vehicular and pedestrian routes
        - Speed limits
        - Careless driving
        - Safety equipment
        - Emergency vehicles and conditions
        - Occupants of motor vehicles
        - Tugs and trailers
        - Yielding right-of-way
        - Parking
        - Motor vehicles accidents
        - Contractor's access and use of premises
        - Vehicle identification and escort rules
        - Airfield operator's permit

10.3.0 **Movement Area Training Program/Radio Communication**

The Movement Area Training Program's goal is to teach airport employees how to understand and avoid runway incursions, to know and use the aviation phonetic alphabet, to understand proper radio technique, to understand the air traffic control tower controller instructions, to understand airfield signs and markings, and to be able to operate a vehicle safely in the movement area.

Airport rules and regulations have been developed by BWI Marshall to guide the conduct of all ground vehicle operations. An overview of those regulations are contained in the following educational media:

- Video on Runway Incursions – Signs and Marking

- Video on Surface Movement – Communication
- Video on Airfield Familiarization
- All airport tenants are expected to adhere to these rules including prescribed traffic flow, operating rules, speeds, rules of right-of-way, proximity to aircraft, etc.
- The following are helpful ways to prevent runway incursions:
- Eliminate distractions in the AOA
- Eliminate confusing call signs for vehicles operating in the AOA
- Use high visibility vehicles with high beams, flashers, beacons, and strobes turned on when operating in the AOA
- Obtain and use airport diagrams – Use the FAA runway safety website to find airport diagrams for all airports
- Use standard FAA phraseology with the air traffic control (ATC) personnel and use the full vehicle call sign in all communications
- Continuously monitor the assigned ATC frequency
- Read back all clearance and instructions received from ATC personnel and request clarification from ATC immediately if there is any doubt when receiving a clearance or instruction before action is initiated
- Contact ATC immediately when uncertain of the exact position on the airport – if the driver enters a runway or taxiway inadvertently, immediately exit the runway or taxiway
- Even when clearance has been obtained to operate on a runway, taxiway or other movement area, the driver should always be alert and continuously monitor other vehicles or aircraft

10.4.0 **Surface Movement Guidance Control System Plan**

The Surface Movement Guidance Control System Plan (SMGCS) describes low visibility airside safety enhancements made at BWI Marshall and contains procedures and actions applicable to the airport operator, air traffic control, air carriers, and other tenants of the airport and can be found in the Ramp Safety Manual.

The plan addresses both the current and future enhancements of the airport regarding low visibility takeoff, landing, and taxiing operations and will continue to evolve as the number of low visibility operations increases. The OST should confirm that the plan is consistently updated and coordinated with the ACM.

10.5.0 **Airport Quality/Risk Management Plan**

BWI Marshall does not have a formal Airport Quality Management Plan but does have an office entitled Risk Manager. This function may be helpful in establishing the risk management program, as the office is managed by an individual familiar with assessing risks and the management of risks. As part of the implementation of SMS, BWI Marshall will

develop the SRM processes and related requirements and perform their functions within the OST.

A formal SRM program, once established, will apply to all planning, design, and construction activities associated with the airport. This implies standardized terminology, language, and processes for contractual endeavors, with the objective of achieving a comprehensive SMS culture on the airport. The SD will assign a risk manager to initiate and perform these functions to meet the SMS compliance requirements.

10.6.0 **Self Auditing Processes**

Safety promotion and enforcement shall be practiced and measured in large part by self-auditing. Audits may be performed internally or externally by using a consultant. Reasons for auditing include, but are not limited too:

- Ensuring that employees, tenants and contractors complete training promptly.
- Verification that the database for documenting hazards, risks, incidents and accidents are up to date and accurate.
- The monitoring of airfield safety practices and devices.
- Confirmation that risk mitigation and emergency response practices are effective.
- Evaluation and grading of the safety management system based on practices and results.
- Completion of the compliance requirements from the FAA.

Procedures, practices and tools that should be audited include, but are not limited too:

- The tracking database for completed employee training.
- The tracking database for hazards, risks, incidents and accidents.
- Airfield driving behavior.
- The visibility and functioning of airfield marking, navigational aids.
- The condition of airfield pavement and structures.
- Emergency response practices (i.e. fire drills).
- Security measures and devices.

Audits are performed to ensure compliance with federal and state requirements. Documents that provide these requirements include, but are not limited too:

- FAA Advisory Circulars, Federal Aviation Requirments (F.A.R.) and CFR's (i.e. Part 139).

- The Airport Certification Manual (as it complies with Part 139).
- The Airport Emergency Plan. (AEP)
- The Ramp Safety Plan.
- The BWI Marshall Wildlife Management Manual.
- The Occupational Safety and Health Administration (OSHA) and the Maryland Occupational Safety Health Administration (MOSHA) manual.
- TSA regulations and requirements.
- The Maryland Department of the Environment (MDE) regulations and requirements.

The intention of the auditing process is to meet two goals. The first is to ensure that safety practices and procedures are being followed, as stated above. The second is to evaluate whether the current safety practices and procedures are the most effective and efficient possible. Official audit report forms will be used for each type of audit situation. These forms will be kept on file electronically and as hard copy files in the OST. The SD will be the responsible party for management and completion of the self- audits.

10.7.0 **Documentation of Self-Inspection Reviews and Analysis**

If auditing reveals that there is non-compliance with federal and/or state regulation, the compliance officer shall initiate corrective action and document it accordingly. If the issue is too complex for the compliance officer or SD to address, then he/she shall report to the Deputy Executive Director of Operations and Maintenance. The DED of Operations and Maintenance shall notify the DED that is responsible for addressing the issue revealed by the audit. The division responsible for resolving the issue will then have a certain period of time to mitigate the situation. Once the situation is addressed, the process shall be documented.

The safety practices of BWI Marshall shall be evaluated periodically based on what the audits revealed. These results and evaluations shall be compared with that of the previous year to determine whether improvement has been made or not. The ED will be provided a copy of all auditing results for his/her review.

SECTION XI – SAFETY PROMOTION

SECTION XI. SAFETY PROMOTION

11.1.0 Documented Plan for Competency and Continued Improvement

The SD will initiate a means to document the activities within the organization that will promote safety by the use of continuing education with training and follow-up. Included in these activities should be the following:

- Rewards or incentives for the discovery of errors
- Confirmation of understanding for safety objectives and policy through follow-up with critical management staff
- Isolated interviews with staff to identify any new or pre-existing gaps in the SMS implementation

The OST's objective with the plan will be to document staff understanding of safety objectives and improve on the proactive safety activities. The competency effort must be coordinated with the strategic training effort described above and the follow-up utilizing software and management within the OST to conclude understanding of the education objectives associated with the training.

11.2.0 Procedures to Promote Safety Awareness

BWI Marshall currently has training as required by Part 139, but limited training in safety per se. The AC provides guidance regarding Safety Promotion:

- Training and education in SMS
- Safety communication
- Safety competency and continuous improvement

The OST as established by BWI Marshall Airport management will develop a program for providing safety information and training related to issues relevant for the specific operation of the airport and as described in Section IV. This training will be given to all staff within the organization, regardless of their level, as this is an indication of management's commitment to an effective SMS. In addition to the training objectives, OST should conduct the following promotion activities:

- Provide briefings to MAA personnel from the Airport Safety Committee
- Create a safety library will all airport safety documentation

Training requirements and activities at BWI Marshall Airport will be documented for each area of activity within the organization. The SD should have an electronic training file for each employee, including management that must be maintained to assist in tracking employee training requirements and verifying that the personnel have received the planned

training. BWI Marshall is a facility with complex and highly sophisticated operation, and training under Part 139 provides a solid foundation for the complementary SMS.

The OST will be responsible for promoting and communicating the safety goals and ensuring that SMS is visible throughout the airport operation. As a good business practice, SMS should be promoted to engage airport personnel in the economic health of the airport. This can be accomplished through bulletins, briefings, and training.

11.3.0 **Process to Review Lesson Learned within the Organization**

The OST will also be responsible for ensuring that "lessons learned" from events on the airport are distributed throughout the airport community through a documented process. Since the OST is responsible for the flow of safety information throughout the organization, this process will be used to encourage staff to identify potential hazards and propose solutions. "Lessons learned" training will be part of the ongoing education program for all personnel. The Office will establish periodic safety seminars, safety letters, notices, bulletin boards, and safety reporting boxes. Updates will be communicated through email and the office will also keep an updated intranet site. Additionally, the Office of Safety will establish a method for the exchange of information with other airport organizations and operators. BWI Marshall participates in such organizations and has been a leader in this regard, cooperating with the FAA in several leading edge areas. Through the promotion of SMS, this will continue to maintain the organization in a lead position.

SECTION XII – SCHEDULE FOR IMPLEMENTATION

SECTION XII. SCHEDULE FOR IMPLEMENTATION

12.1.0 General

Implementation for the SMS program described in this document is anticipated to take approximately six (6) months to initiate. Once implemented, the system will evolve. However, documented results to meet the FAA's intent will not be available for approximately three (3) years in sequence with the FAA's compliance target date. Details of the proposed schedule are as follows:

12.2.0 Months One (1) and Two (2)

- **Create Job Descriptions, Roles and Functions**
  Responsibilities of each individual that are a part of the OST, along with general responsibilities will be determined at this point. The overall purpose and goals of the office will also be determined.

- **Selection of Personnel**
  This process involves selecting and appointing the staff for the OST.

- **Distribute the Information to all MAA Employees**
  This process will be done by email and notifying each employee of the MAA by means of memorandums. There will be phone numbers provided for employees to call if there are any questions with regard to the SMS program.

- **Finalize and Mobilize Personnel to Support the Program**
  All MAA employees, that will be a part of the OST implementation, will begin to take the necessary steps to transfer to this new office and become established and acclimated with his/her new responsibilities.

- **Identify and Select the Location of the Facility**
  The MAA will be responsible for locating an adequate and effective location for the OST. Although there are a couple of locations under review, MAA officials will inspect and evaluate various areas before determining which location to pursue.

- **Identify Operational Needs**
  MAA officials will determine what type of equipment and materials (i.e. computer software, office supplies, etc.) will be required and how much these resources will cost in order to request them from the EMT.

12.3.0 **Months Three (3) and Four (4)**

- **Coordinate IT/Communications Needs**
  The MAA Information Technology (IT) Department, and possibly an engineering consultant, will be consulted to determine the details of computer software and network upgrade requirements.

- **Start Notification Campaign**
  Meetings will be held with employees and affiliates of the MAA that are associated with BWI Marshall to brief them on the premise of the SMS program.

12.4.0 **Months Five (5) and Six (6)**

- **Start of Program Implementation**
  At this point, the staff for the OST will be settled into the office.

- **Begin Day-to-Day Process for Preparation of Fulltime Operation**
  This will start the process for official SMS implementation and enforcement with training for the officers to ensure that they are capable of their roles and responsibilities in certain situations.

- **Ensure that the IT/Communications Needs are Fulfilled and Begin Testing** practices and equipment will be examined, and trial runs will be done during this phase to ensure that the SMS program is functioning efficiently.

- **Deliver Equipment to the OST**
  All necessary computers, furniture and office supplies will be delivered to the OST, as deemed necessary by executive management.

The SD should use this schedule to guide their implementation and update the EMT on any restrictions that cause delay to the completion effort. All of the items listed in this schedule can be used to chart progress with the implementation.

SECTION XIII – ESTIMATED COSTS FOR IMPLEMENTATION

SECTION XIII. ESTIMATED COSTS OF IMPLEMENTATION

13.1.0 General

The plan for SMS indoctrination has been strategically planned to limit costs to the administration and keep the transition of staff efficient. Staff resources for the OST and SMS implementation are based on reallocation of MAA staff. The Safety Director, Risk Manager, and trainers will all be transferred from other Offices and Divisions within the organization and the PINs will be transferred to the OST. The safety representatives will be assigned additional duties.

The creation of OST will initiate a need for space and equipment. Office space will come from within the existing available space within the Administration. Equipment will include the following:

- Software: Trend analysis, record keeping, incident reporting, training tools will be aided by purchase of software. Some of the hardware and software for information dissemination (LMS) already exists and is available for usage.

- Training: Some of the personnel that will be relocated will be required to attend SMS training functions as they arise. Time and travel shall be a part of this cost function.

- Storage: Hardware will likely be necessary for consolidation of storage and records.

As part of the implementation, MAA should budget a maximum of $100,000 for costs of the above-mentioned items. It is important to keep in mind that these costs are part of a proactive approach to safety promotion. There will be cost-savings over the long term course of time, as shown in Exhibit 3.

SECTION XIV – SUMMARY

SECTION XIV. SUMMARY

14.1.0 General

This SPM should be a helpful tool in initiating the SMS program at BWI Marshall Airport. It is important to note that the manual is a guide and the Executive Director, Deputy Executive Director of Operations and Maintenance, and Safety Director – OST will ultimately have responsibility for making adjustments to the SMS implementation as they see fit to meet the ever changing needs of the airport.

The manual must be used in coordination with the ACM, AEP, and other BWI Marshall Manuals and guidance that exist to improve safety. This manual will only be effective if the entire organization, from top management to junior personnel, believes in its importance in the role of safety performance and their responsibilities to promote it. Any questions regarding the SPM should go straight to the appointed Safety Director to clarify and mitigate all issues.

SECTION XV – EXHIBITS

EXHIBIT 1 : ORGANIZATIONAL CHART
EXHIBIT 2 : BWI MARSHALL TRAINING MATRIX
EXHIBIT 3 : FAA SMS LIFE CYCLE
EXHIBIT 4 : SMS IMPLEMENTATION (COST VS. TIME)
EXHIBIT 5 : SMS IMPLEMENTATION ILLUSTRATIONS

EXHIBIT 1 - SAFETY MANAGEMENT ORGANIZATIONAL CHART

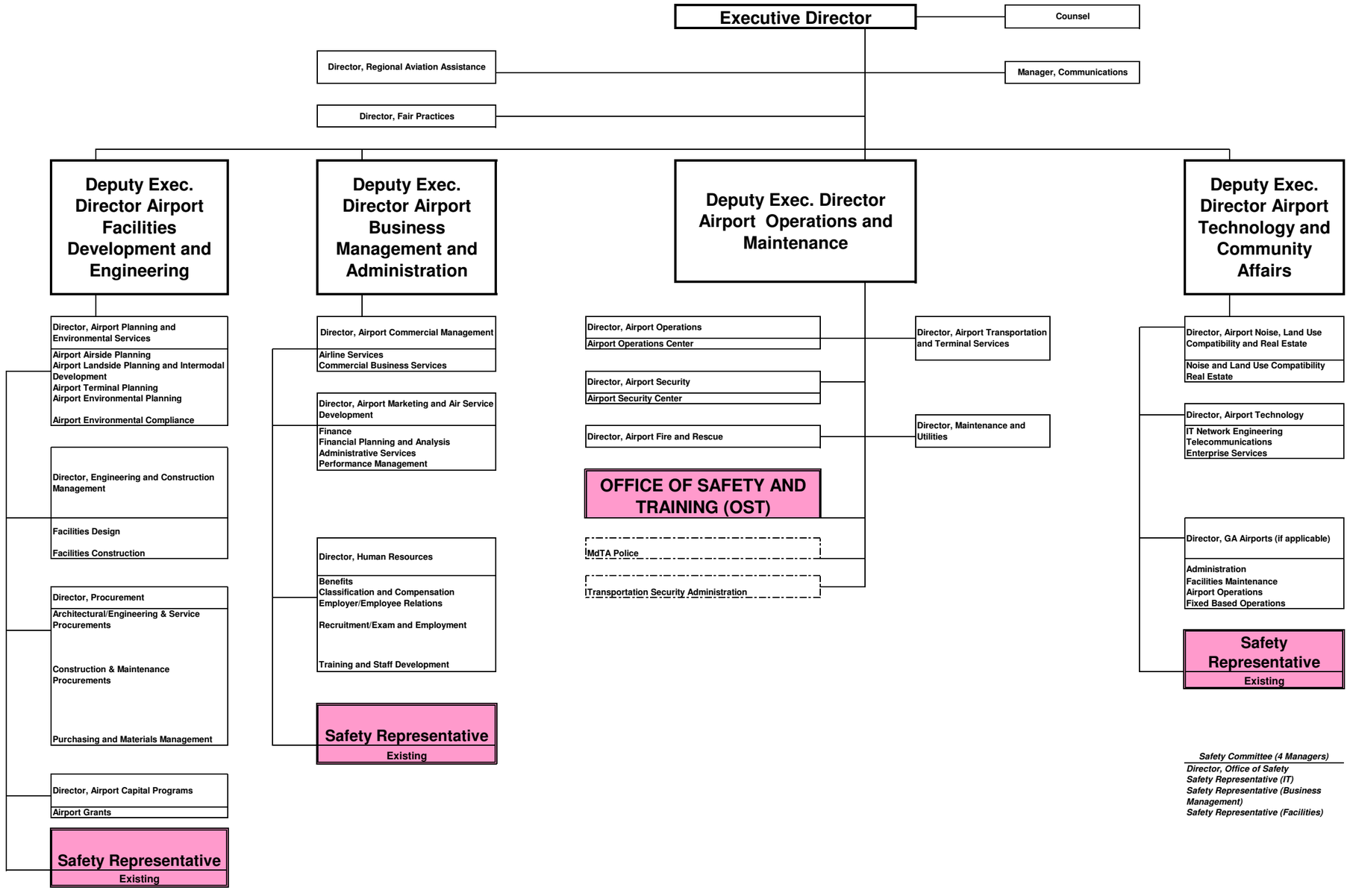


EXHIBIT 2: BWI MARSHALL TRAINING MATRIX

MANDATORY HR

	TOTAL NUMBER EMPLOYEES	NEW EMPLOYEE ORIENTATION	HAZARDOUS COMMUNICATION	PERSONAL PROTECTIVE EQUIPMENT (PPE)	PROCESS SAFETY MANAGEMENT	EMERGENCY PROCEDURES	ERGONOMIC	BACK SAFETY	RECORDKEEPING	STAIRWAYS/LADDERS	MAA SAFE ORIENTATION	SIDA	LIMITED ENGLISH PROFICIENCY	EMPLOYEE PERFORMANCE APPRAISAL	COLLECTIVE BARGAINING M.O.U.	ADA AWARENESS	SEXUAL HARASSMENT PREVENTION	CULTURAL DIVERSITY	VIOLENCE AWARENESS	SUBSTANCE ABUSE AWARENESS	DRIVER IMPROVEMENT PROGRAM
MODULE LENGTH (HRS)		3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	2	2	3	7	2	2	2	1.5	1.5	2	3
CLASSIFICATION 1 ADMINISTRATIVE AND OFFICE AND THEIR SUPERVISORS																					
ACCOUNTANT ALL LEVELS	6	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
ACCOUNTANT SUPV	1	3.5	1			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
ADMIN ASST LEVEL II - EXEC	31	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
ADMIN OFFICER LEVEL I - III	23	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
ADMIN PROGRAM MGMR IV	1	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
ADMIN SPEC III	3	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
ADMINISTRATOR LEVEL I - VII	39	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
AGENCY BUDGET SPEC SUPV	1	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
AGENCY BUYER I	1	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
AGENCY PROCUREMENT SPECIALIST II	4	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
AIR TRAFFIC MANAGER	1	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
AIRPORT MANAGEMENT ASSISTANT	7	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
AIRPORT MANAGEMENT OFFICER I - III	20.5	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
AIRPORT MANAGEMENT SPECIALIST I - II	7	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
COMMERCIAL MANAGEMENT OFFICER III	4	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
PARALEGAL II	1	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
PRINCIPAL COUNSEL	1	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
ASST ATTY GEN VI	3	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
COMPUTER NETWORK SPEC II	4	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
COMPUTER NETWORK SPEC SUPV	2	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
COMPUTER USER SUPPORT SPECIALIST II	2	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
DATA BASE SPECIALIST II	1	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
DOT EXECUTIVE ASST III	1	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
DOT EXECUTIVE IV - VI	16	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
DOT MAA EXECUTIVE	10	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
EMPLOYEE TRAINING SPECIALIST II	1	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
EQUAL OPPORTUNITY OFFICER III	1	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
EXECUTIVE ASSOCIATE I - II	6	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
FISCAL ACCOUNTS CLERK II	1	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
FISCAL ACCOUNTS TECHNICIAN I - II	5	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
FISCAL ACCOUNTS TECHNICIAN SUPERVISOR	3	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
FISCAL SERVICES ADMINISTRATOR II - V	10	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
INTERNAL AUDITOR II & SUPV	4	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
OFFICE SERVICES CLERK	2	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
PERSONNEL ADMINISTRATOR II - III	6	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
PERSONNEL ASSOCIATE III	2	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
PERSONNEL OFFICER II - III	2	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
PERSONNEL TECHNICIAN III	1	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
PROCUREMENT ADMINISTRATOR II - V	6	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
PROCUREMENT ASSOCIATE II SG - III	2	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
PUB AFFAIRS OFFICER II	2	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
PUBLIC INFORMATION ASSISTANT I - III & SUPV	23	3.5	0.5			0.5	1	1	1		2	2	3	7	2	2	2	1.5	1.5	2	3
REAL PROPERTY SPECIALIST III - IV	3	3.5	0.5			0.5	1	1	1		2	2	3			2	2	1.5	1.5	2	3
CLASSIFICATION 2 ADMINISTRATIVE/FIELD AND THEIR SUPERVISORS																					
ENGR SENIOR MECHANICAL	1	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
AIRCRAFT SERVICE WORKER	5	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
ENVIRONMENTAL ANALYST III	1	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
ENVIRONMENTAL MANAGER II	2	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
FACILITY MAINT SUPV I - II	19	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
FACILITY MAINT TECH I - IV	63	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
HOUSEKEEPING SUPV IV	4	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
PLANNER III - IV	4	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
TRANS ENGINEER V	3	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
TRANS ENGINEERING TECHNICIAN III	2	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
ARCHITECT II	1	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
CAPITAL PROJECTS ARCHITECT	1	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
WAREHOUSE ASSISTANT SUPERVISOR	2	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
WAREHOUSE SUPERVISOR	1	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
CLASSIFICATION 3 FIELD/CRAFT AND THEIR SUPERVISORS																					
HEMT I	1	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
HEMT II	5	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
HEMT III	4	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
STS II	17	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
STS III	25	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
SUPV	7	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
MANAGER	1	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
AIRPORT DEPUTY FIRE CHIEF	1	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
AIRPORT DIV FIRE CHIEF, FIRE OPERATIONS	4	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
AIRPORT DIV FIRE CHIEF, FIRE TRAINING	1	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
AIRPORT FIRE CAPTAIN	4	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3

REGULATORY / MANDATORY SAFETY MAA PROCEDURE AND CD-ROM BASED REGULATORY INSTRUCTION / MANDATORY SAFETY MAA INSTRUCTION

	NIMS IS-100 - INCIDENT COMMAND SYSTEM	NIMS IS-200 - ICS for SINGLE RESOURCES	NIMS IS-700 NATIONAL INCIDENT COMMAND	NIMS IS-300 (FY07)	NIMS IS-400 (FY07)	14 CFR PART 139 - CERTIFICATION OF AIRPORTS	AC 150/5370E - OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION	ALL CURRENT FAA CIRCULARS	ACM SECTION 327 - AIRPORT SELF-INSPECTION PROGRAMS	BACK SAFETY	FIRE EXTINGUISHERS	OFFICE ERGONOMICS	WALKING WORKING SURFACES	HAZARD COMMUNICATION	OFFICE SAFETY	ACCIDENT INVESTIGATION PROCESS	FIRST AID CPR	ENVIRONMENTAL AWARENESS	PERSONAL PROTECTIVE EQUIPMENT (PPE)	CUSTOMER SERVICE: DIFFICULT CUSTOMER ALERT	STRESS MANAGEMENT
MODULE LENGTH (HRS)	3	2	3	3	3	2	2	2	2	1	1	1	1	1	1	1	8	2	2	1	1
CLASSIFICATION 1 ADMINISTRATIVE AND OFFICE AND THEIR SUPERVISORS																					
ACCOUNTANT ALL LEVELS										1	1	1	1	1	1	1				1	1
ACCOUNTANT SUPV										1	1	1	1	1	1	1	8			1	1
ADMIN ASST LEVEL II - EXEC										1	1	1	1	1	1	1				1	1
ADMIN OFFICER LEVEL I - III										1	1	1	1	1	1	1				1	1
ADMIN PROGRAM MGMR IV										1	1	1	1	1	1	1	8			1	1
ADMIN SPEC III										1	1	1	1	1	1	1				1	1
ADMINISTRATOR LEVEL I - VII										1	1	1	1	1	1	1				1	1
AGENCY BUDGET SPEC SUPV										1	1	1	1	1	1	1	8			1	1
AGENCY BUYER I										1	1	1	1	1	1	1				1	1
AGENCY PROCUREMENT SPECIALIST II										1	1	1	1	1	1	1				1	1
AIR TRAFFIC MANAGER						2	2	2	2	1	1	1	1	1	1	1	8			1	1
AIRPORT MANAGEMENT ASSISTANT						2	2	2	2	1	1	1	1	1	1	1		2		1	1
AIRPORT MANAGEMENT OFFICER I - III						2	2	2	2	1	1	1	1	1	1	1		2		1	1
AIRPORT MANAGEMENT SPECIALIST I - II						2	2	2	2	1	1	1	1	1	1	1		2		1	1
COMMERCIAL MANAGEMENT OFFICER III										1	1	1	1	1	1	1	8	2		1	1
PARALEGAL II										1	1	1	1	1	1	1				1	1
PRINCIPAL COUNSEL										1	1	1	1	1	1	1				1	1
ASST ATTY GEN VI										1	1	1	1	1	1	1				1	1
COMPUTER NETWORK SPEC II										1	1	1	1	1	1	1				1	1
COMPUTER NETWORK SPEC SUPV										1	1	1	1	1	1	1	8			1	1
COMPUTER USER SUPPORT SPECIALIST II										1	1	1	1	1	1	1				1	1
DATA BASE SPECIALIST II										1	1	1	1	1	1	1				1	1
DOT EXECUTIVE ASST III						2	2	2	2	1	1	1	1	1	1	1				1	1
DOT EXECUTIVE IV - VI						2	2	2	2	1	1	1	1	1	1	1	8			1	1
DOT MAA EXECUTIVE						2	2	2	2	1	1	1	1	1	1	1				1	1
EMPLOYEE TRAINING SPECIALIST II						2	2	2	2	1	1	1	1	1	1	1		2		1	1
EQUAL OPPORTUNITY OFFICER III										1	1	1	1	1	1	1				1	1
EXECUTIVE ASSOCIATE I - II										1	1	1	1	1	1	1				1	1
FISCAL ACCOUNTS CLERK II										1	1	1	1	1	1	1				1	1
FISCAL ACCOUNTS TECHNICIAN I - II										1	1	1	1	1	1	1				1	1
FISCAL ACCOUNTS TECHNICIAN SUPERVISOR										1	1	1	1	1	1	1	8			1	1
FISCAL SERVICES ADMINISTRATOR II - V										1	1	1	1	1	1	1				1	1
INTERNAL AUDITOR II & SUPV										1	1	1	1	1	1	1				1	1
OFFICE SERVICES CLERK										1	1	1	1	1	1	1				1	1
PERSONNEL ADMINISTRATOR II - III										1	1	1	1	1	1	1				1	1
PERSONNEL ASSOCIATE III										1	1	1	1	1	1	1				1	1
PERSONNEL OFFICER II - III										1	1	1	1	1	1	1	8			1	1
PERSONNEL TECHNICIAN III										1	1	1	1	1	1	1				1	1
PROCUREMENT ADMINISTRATOR II - V										1	1	1	1	1	1	1				1	1
PROCUREMENT ASSOCIATE II SG - III										1	1	1	1	1	1	1				1	1
PUB AFFAIRS OFFICER II						2	2	2	2	1	1	1	1	1	1	1				1	1
PUBLIC INFORMATION ASSISTANT I - III & SUPV						2	2	2	2	1	1	1	1	1	1	1				1	1
REAL PROPERTY SPECIALIST III - IV										1	1	1	1	1	1	1		2		1	1
CLASSIFICATION 2 ADMINISTRATIVE/FIELD AND THEIR SUPERVISORS																					
ENGR SENIOR MECHANICAL						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
AIRCRAFT SERVICE WORKER						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
ENVIRONMENTAL ANALYST III						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
ENVIRONMENTAL MANAGER II						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
FACILITY MAINT SUPV I - II						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
FACILITY MAINT TECH I - IV						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
HOUSEKEEPING SUPV IV						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
PLANNER III - IV						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
TRANS ENGINEER V						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
TRANS ENGINEERING TECHNICIAN III						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
ARCHITECT II						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
CAPITAL PROJECTS ARCHITECT						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
WAREHOUSE ASSISTANT SUPERVISOR						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
WAREHOUSE SUPERVISOR						2	2	2	2	1	1	1	1	1	1	1		2	2	1	1
CLASSIFICATION 3 FIELD/CRAFT AND THEIR SUPERVISORS																					
HEMT I	3		3			2	2	2	2									2	2		1
HEMT II	3		3			2	2	2	2									2	2		1
HEMT III	3		3			2	2	2	2								8	2	2		1
STS II	3		3			2	2	2	2									2	2		1
STS III	3		3			2	2	2	2								8	2	2		1
SUPV	3	2	3			2	2	2	2								8	2	2	1	1
MANAGER	3	2	3	3	3	2	2	2	2									2	2	1	1
AIRPORT DEPUTY FIRE CHIEF	3	2	3	3	3	2	2	2	2								8	2	2	1	1
AIRPORT DIV FIRE CHIEF, FIRE OPERATIONS	3	2	3	3	3	2	2	2	2								8	2	2	1	1
AIRPORT DIV FIRE CHIEF, FIRE TRAINING	3	2	3	3	3	2	2	2	2								8	2	2	1	1
AIRPORT FIRE CAPTAIN	3	2	3	3	3	2	2	2	2								8	2	2	1	1

FIRE/LIFE SAFETY MAA PROCDURE AND REGULATORY INSTRUCTION

	BLOODBORNE PATHOGENS	MACHINE GUARDING	CONFINED SPACE ATTENDANT	CONFINED SPACE ENTRANT	CONFINED SPACE SUPERVISOR	CONFINED SPACE AWARENESS	LOCK OUT/TAG OUT	FALL PROTECTION	RESPIRATORY PROTECTION	FIRE PROTECTION-EXTINGUISHER	SLIPS, TRIPS, and FALLS / WALKING-WORKING SURFACES	HAND and POWER TOOL SAFETY	HEARING PROTECTION	EMERGENCY PROCEDURES	HAZARDOUS WASTE OPERATIONS	PROCESS SAFETY MANAGEMENT	STAIRWAYS/LADDERS	SCAFFOLDING	ELECTRICAL SAFETY -- AC/DC AND DC	WELDING, CUTTING AND BRAZING	EXCAVATIONS	TEMPATURE EXTREMES	MATERIAL HANDLING/STORAGE OF LP GAS	FORK TRUCK (PIT'S)	SCISSOR LIFTS	AERIAL WORKPLATFORM - POWERED PLATFORMS	COMPRESSED GAS CYLINDER	ASBESTOS/LEAD AWARENESS
MODULE LENGTH (HRS)	2	1	2	2	2	1	2	2	2	2	1	1	1	2	24/8	2	1	1	2	1	2	1	1	8	2	2	1	1
CLASSIFICATION 1 ADMINISTRATIVE AND OFFICE AND THEIR SUPERVISORS																												
ACCOUNTANT ALL LEVELS																												
ACCOUNTANT SUPV	2																											
ADMIN ASST LEVEL II - EXEC																												
ADMIN OFFICER LEVEL I - III																												
ADMIN PROGRAM MGMR IV	2																											
ADMIN SPEC III																												
ADMINISTRATOR LEVEL I - VII																												
AGENCY BUDGET SPEC SUPV	2																											
AGENCY BUYER I																												
AGENCY PROCUREMENT SPECIALIST II																												
AIR TRAFFIC MANAGER	2																											
AIRPORT MANAGEMENT ASSISTANT																												
AIRPORT MANAGEMENT OFFICER I - III																												
AIRPORT MANAGEMENT SPECIALIST I - II																												
COMMERCIAL MANAGEMENT OFFICER III	2																											
PARALEGAL II																												
PRINCIPAL COUNSEL																												
ASST ATTY GEN VI																												
COMPUTER NETWORK SPEC II																												
COMPUTER NETWORK SPEC SUPV	2																											
COMPUTER USER SUPPORT SPECIALIST II																												
DATA BASE SPECIALIST II																												
DOT EXECUTIVE ASST III																												
DOT EXECUTIVE IV - VI	2																											
DOT MAA EXECUTIVE																												
EMPLOYEE TRAINING SPECIALIST II																												
EQUAL OPPORTUNITY OFFICER III																												
EXECUTIVE ASSOCIATE I - II																												
FISCAL ACCOUNTS CLERK II																												
FISCAL ACCOUNTS TECHNICIAN I - II																												
FISCAL ACCOUNTS TECHNICIAN SUPERVISOR	2																											
FISCAL SERVICES ADMINISTRATOR II - V																												
INTERNAL AUDITOR II & SUPV																												
OFFICE SERVICES CLERK																												
PERSONNEL ADMINISTRATOR II - III																												
PERSONNEL ASSOCIATE III																												
PERSONNEL OFFICER II - III	2																											
PERSONNEL TECHNICIAN III																												
PROCUREMENT ADMINISTRATOR II - V																												
PROCUREMENT ASSOCIATE II SG - III																												
PUB AFFAIRS OFFICER II																												
PUBLIC INFORMATION ASSISTANT I - III & SUPV																												
REAL PROPERTY SPECIALIST III - IV																												
CLASSIFICATION 2 ADMINISTRATIVE/FIELD AND THEIR SUPERVISORS																												
ENGR SENIOR MECHANICAL						1	2	2		2	1		1	2	8	2	1	1	2	1	2	1	1		2	2	1	1
AIRCRAFT SERVICE WORKER						1	2	2		2	1		1	2	8	2	1	1	2	1	2	1	1		2	2	1	1
ENVIRONMENTAL ANALYST III						1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1				1	1
ENVIRONMENTAL MANAGER II						1	2	2	2	2	1	1	1	2		2	1	1	2	1	2	1	1				1	1
FACILITY MAINT SUPV I - II						1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1		2	2	1	1
FACILITY MAINT TECH I - IV	2					1	2	2	2	2	1	1	1	2	8	2	1	1	2	1		1	1		2	2	1	1
HOUSEKEEPING SUPV IV						1	2	2	2	2	1	1	1	2		2	2	1	2	1		1	1					1
PLANNER III - IV						1				2	1			2			2					1						1
TRANS ENGINEER V						1	2	2	2	2	1	1	1	2		2	2	1	2	1	2	1	1				1	1
TRANS ENGINEERING TECHNICIAN III						1	2	2	2	2	1	1	1	2		2	2	1	2	1	2	1	1				1	1
ARCHITECT II						1				2			1	2		2	2	2				2						1
CAPITAL PROJECTS ARCHITECT						1				2			1	2		2	2					2						1
WAREHOUSE ASSISTANT SUPERVISOR							2	2		2	1	1	1	2		2	2			1		1	1	8	2	2	1	1
WAREHOUSE SUPERVISOR							2	2		2	1	1	1	2		2	2			1		1	1	8	2	2	1	1
CLASSIFICATION 3 FIELD/CRAFT AND THEIR SUPERVISORS																												
HEMT I		1	4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1	8	2	2	1	1
HEMT II		1	4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1	8	2	2	1	1
HEMT III	2	1	4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1	8	2	2	1	1
STS II		1	4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1	8	2	2	1	1
STS III	2	1	4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1	8	2	2	1	1
SUPV	2	1	4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1	8	2	2	1	1
MANAGER			4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1	8	2	2	1	1
AIRPORT DEPUTY FIRE CHIEF	2		4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1		2	2	1	1
AIRPORT DIV FIRE CHIEF, FIRE OPERATIONS	2		4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1		2	2	1	1
AIRPORT DIV FIRE CHIEF, FIRE TRAINING	2		4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1		2	2	1	1
AIRPORT FIRE CAPTAIN	2		4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1		2	2	1	1

M.T.C.P. CERTIFICATION / SNOW / CRAFT SPECIFIC

	CDL	2 1/2 TON DUMP TRUCK (4 HRS)	STREET SWEEPER (11 HRS)	FRONT-END LOADER (12 HRS)	TANDEM DUMP W/SNOW PLOW (7 HRS)	SKID STEER LOADER (17 HRS)	BUCKET TRUCK (21 HRS)	RUNWAY BROOM/BLOWER (20 HRS)	BACKHOE (21 HRS)	EPOKE CHEMICAL SPREADERS (7 HRS)	VAMMAS (13 HRS)	TOW BEHIND BROOMS	FUEL TANKER	HEMT II CERTIFICATION	HEMT III CERTIFICATION		
MODULE LENGTH (HRS)	51	4	11	12	7	17	21	20	21								
CLASSIFICATION 1 ADMINISTRATIVE AND OFFICE AND THEIR SUPERVISORS																	
ACCOUNTANT ALL LEVELS																	
ACCOUNTANT SUPV																	
ADMIN ASST LEVEL II - EXEC																	
ADMIN OFFICER LEVEL I - III																	
ADMIN PROGRAM MGMR IV																	
ADMIN SPEC III																	
ADMINISTRATOR LEVEL I - VII																	
AGENCY BUDGET SPEC SUPV																	
AGENCY BUYER I																	
AGENCY PROCUREMENT SPECIALIST II																	
AIR TRAFFIC MANAGER																	
AIRPORT MANAGEMENT ASSISTANT																	
AIRPORT MANAGEMENT OFFICER I - III																	
AIRPORT MANAGEMENT SPECIALIST I - II																	
COMMERCIAL MANAGEMENT OFFICER III																	
PARALEGAL II																	
PRINCIPAL COUNSEL																	
ASST ATTY GEN VI																	
COMPUTER NETWORK SPEC II																	
COMPUTER NETWORK SPEC SUPV																	
COMPUTER USER SUPPORT SPECIALIST II																	
DATA BASE SPECIALIST II																	
DOT EXECUTIVE ASST III																	
DOT EXECUTIVE IV - VI																	
DOT MAA EXECUTIVE																	
EMPLOYEE TRAINING SPECIALIST II																	
EQUAL OPPORTUNITY OFFICER III																	
EXECUTIVE ASSOCIATE I - II																	
FISCAL ACCOUNTS CLERK II																	
FISCAL ACCOUNTS TECHNICIAN I - II																	
FISCAL ACCOUNTS TECHNICIAN SUPERVISOR																	
FISCAL SERVICES ADMINISTRATOR II - V																	
INTERNAL AUDITOR II & SUPV																	
OFFICE SERVICES CLERK																	
PERSONNEL ADMINISTRATOR II - III																	
PERSONNEL ASSOCIATE III																	
PERSONNEL OFFICER II - III																	
PERSONNEL TECHNICIAN III																	
PROCUREMENT ADMINISTRATOR II - V																	
PROCUREMENT ASSOCIATE II SG - III																	
PUB AFFAIRS OFFICER II																	
PUBLIC INFORMATION ASSISTANT I - III & SUPV																	
REAL PROPERTY SPECIALIST III - IV																	
CLASSIFICATION 2 ADMINISTRATIVE/FIELD AND THEIR SUPERVISORS																	
ENGR SENIOR MECHANICAL																	
AIRCRAFT SERVICE WORKER																	
ENVIRONMENTAL ANALYST III																	
ENVIRONMENTAL MANAGER II																	
FACILITY MAINT SUPV I - II																	
FACILITY MAINT TECH I - IV																	
HOUSEKEEPING SUPV IV																	
PLANNER III - IV																	
TRANS ENGINEER V																	
TRANS ENGINEERING TECHNICIAN III																	
ARCHITECT II																	
CAPITAL PROJECTS ARCHITECT																	
WAREHOUSE ASSISTANT SUPERVISOR																	
WAREHOUSE SUPERVISOR																	
CLASSIFICATION 3 FIELD/CRAFT AND THEIR SUPERVISORS																	
HEMT I	51	4												X			
HEMT II	51	4													X		
HEMT III	51	4															
STS II	51	4	11	12	7	17	21	20									
STS III	51	4	11	12	7	17	21	20	21								
SUPV																	
MANAGER																	
AIRPORT DEPUTY FIRE CHIEF																	
AIRPORT DIV FIRE CHIEF, FIRE OPERATIONS																	
AIRPORT DIV FIRE CHIEF, FIRE TRAINING																	
AIRPORT FIRE CAPTAIN																	

AIRPORT FIRE LIEUTENANT	4	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
AIRPORT FIREFIGHTER I - II	53	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
AIRPORT PARAMEDIC	15	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
AIRPORT PARAMEDIC FIREFIGHTER	1	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3			2	2	1.5	1.5	2	3
AIRPORT PARAMEDIC LIEUTENANT	4	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
SAFETY MANAGEMENT REP III	3	3.5	0.5	0.5	0.5	0.5	1	1	1	0.5	1	2	3	7	2	2	2	1.5	1.5	2	3
HOURS PER SESSION	529.5	3.5	0.5	0.5	0.5	0.5	1.0	1.0	1.0	0.5	1.0	2.0	3.0	7.0	2.0	2.0	2.0	1.5	1.5	2.0	3.0

AIRPORT FIRE LIEUTENANT	3	2	3	3	3	2	2	2	2								8	2	2	1	1
AIRPORT FIREFIGHTER I - II	3	2	3	3	3	2	2	2	2								8	2	2	1	1
AIRPORT PARAMEDIC	3	2	3	3	3	2	2	2	2								8	2	2	1	1
AIRPORT PARAMEDIC FIREFIGHTER	3	2	3	3	3	2	2	2	2								8	2	2	1	1
AIRPORT PARAMEDIC LIEUTENANT	3	2	3	3	3	2	2	2	2								8	2	2	1	1
SAFETY MANAGEMENT REP III	3	2	3	3	3	2	2	2	2								8	2	2	1	1
HOURS PER SESSION	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	8.0	2.0	2.0	1.0	1.0

AIRPORT FIRE LIEUTENANT	2		4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1		2	2	1	1
AIRPORT FIREFIGHTER I - II	2		4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1		2	2	1	1
AIRPORT PARAMEDIC	2		4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1		2	2	1	1
AIRPORT PARAMEDIC FIREFIGHTER	2		4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1		2	2	1	1
AIRPORT PARAMEDIC LIEUTENANT	2		4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1		2	2	1	1
SAFETY MANAGEMENT REP III	2	1	4	2	2	1	2	2	2	2	1	1	1	2	8	2	1	1	2	1	2	1	1		2	2	1	1
HOURS PER SESSION	2.0	1.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	2.0	8.0	2.0	1.0	1.0	2.0	4.0	2.0	1.0	1.0	8.0	2.0	2.0	1.0	1.0

AIRPORT FIRE LIEUTENANT																	
AIRPORT FIREFIGHTER I - II																	
AIRPORT PARAMEDIC																	
AIRPORT PARAMEDIC FIREFIGHTER																	
AIRPORT PARAMEDIC LIEUTENANT																	
SAFETY MANAGEMENT REP III																	
HOURS PER SESSION																	16.0

RECERTIFICATION TRAINING

		MANDATORY HR																			
	TOTAL NUMBER EMPLOYEES	NEW EMPLOYEE ORIENTATION	HAZARDOUS COMMUNICATION	PERSONAL PROTECTIVE EQUIPMENT (PPE)	PROCESS SAFETY MANAGEMENT	EMERGENCY PROCEDURES	ERGONOMIC	BACK SAFETY	RECORDKEEPING	STAIRWAYS/LADDERS	MAA SAFE ORIENTATION	SIDA (Badge Renewal)	LIMITED ENGLISH PROFICIENCY	EMPLOYEE PERFORMANCE APPRAISAL	COLLECTIVE BARGAINING M.O.U.	ADA AWARENESS	SEXUAL HARASSMENT PREVENTION	CULTURAL DIVERSITY	VIOLENCE AWARENESS	SUBSTANCE ABUSE AWARENESS	DRIVER IMPROVEMENT PROGRAM
MODULE LENGTH (HRS)		0	1	1	1	1	1	1	0	2	1	1	0	0	0	2	2	0	0	2	3
CLASSIFICATION 1 ADMINISTRATIVE AND OFFICE AND THEIR SUPERVISORS																					
ACCOUNTANT ALL LEVELS	6		0.5			0.5	1	1			1	1				2	2			2	3
ACCOUNTANT SUPV	1		0.5			0.5	1	1			1	1		7	2	2	2			2	3
ADMIN ASST LEVEL II - EXEC	31		0.5			0.5	1	1			1	1				2	2			2	3
ADMIN OFFICER LEVEL I - III	23		0.5			0.5	1	1			1	1				2	2			2	3
ADMIN PROGRAM MGMR IV	1		0.5			0.5	1	1			1	1		7	2	2	2			2	3
ADMIN SPEC III	3		0.5			0.5	1	1			1	1				2	2			2	3
ADMINISTRATOR LEVEL I - VII	39		0.5			0.5	1	1			1	1				2	2			2	3
AGENCY BUDGET SPEC SUPV	1		0.5			0.5	1	1			1	1		7	2	2	2			2	3
AGENCY BUYER I	1		0.5			0.5	1	1			1	1				2	2			2	3
AGENCY PROCUREMENT SPECIALIST II	4		0.5			0.5	1	1			1	1				2	2			2	3
AIR TRAFFIC MANAGER	1		0.5			0.5	1	1			1	1		7	2	2	2			2	3
AIRPORT MANAGEMENT ASSISTANT	7		0.5			0.5	1	1			1	1		7	2	2	2			2	3
AIRPORT MANAGEMENT OFFICER I - III	20.5		0.5			0.5	1	1			1	1		7	2	2	2			2	3
AIRPORT MANAGEMENT SPECIALIST I - II	7		0.5			0.5	1	1			1	1		7	2	2	2			2	3
COMMERCIAL MANAGEMENT OFFICER III	4		0.5			0.5	1	1			1	1		7	2	2	2			2	3
PARALEGAL II	1		0.5			0.5	1	1			1	1		7	2	2	2			2	3
PRINCIPAL COUNSEL	1		0.5			0.5	1	1			1	1		7	2	2	2			2	3
ASST ATTY GEN VI	3		0.5			0.5	1	1			1	1		7	2	2	2			2	3
COMPUTER NETWORK SPEC II	4		0.5			0.5	1	1			1	1				2	2			2	3
COMPUTER NETWORK SPEC SUPV	2		0.5			0.5	1	1			1	1		7	2	2	2			2	3
COMPUTER USER SUPPORT SPECIALIST II	2		0.5			0.5	1	1			1	1				2	2			2	3
DATA BASE SPECIALIST II	1		0.5			0.5	1	1			1	1				2	2			2	3
DOT EXECUTIVE ASST III	1		0.5			0.5	1	1			1	1				2	2			2	3
DOT EXECUTIVE IV - VI	16		0.5			0.5	1	1			1	1		7	2	2	2			2	3
DOT MAA EXECUTIVE	10		0.5			0.5	1	1			1	1		7	2	2	2			2	3
EMPLOYEE TRAINING SPECIALIST II	1		0.5			0.5	1	1			1	1		7	2	2	2			2	3
EQUAL OPPORTUNITY OFFICER III	1		0.5			0.5	1	1			1	1		7	2	2	2			2	3
EXECUTIVE ASSOCIATE I - II	6		0.5			0.5	1	1			1	1		7	2	2	2			2	3
FISCAL ACCOUNTS CLERK II	1		0.5			0.5	1	1			1	1				2	2			2	3
FISCAL ACCOUNTS TECHNICIAN I - II	5		0.5			0.5	1	1			1	1				2	2			2	3
FISCAL ACCOUNTS TECHNICIAN SUPERVISOR	3		0.5			0.5	1	1			1	1		7	2	2	2			2	3
FISCAL SERVICES ADMINISTRATOR II - V	10		0.5			0.5	1	1			1	1				2	2			2	3
INTERNAL AUDITOR II & SUPV	4		0.5			0.5	1	1			1	1		7	2	2	2			2	3
OFFICE SERVICES CLERK	2		0.5			0.5	1	1			1	1				2	2			2	3
PERSONNEL ADMINISTRATOR I - III	6		0.5			0.5	1	1			1	1		7	2	2	2			2	3
PERSONNEL ASSOCIATE III	2		0.5			0.5	1	1			1	1		7	2	2	2			2	3
PERSONNEL OFFICER II-III	2		0.5			0.5	1	1			1	1		7	2	2	2			2	3
PERSONNEL TECHNICIAN III	1		0.5			0.5	1	1			1	1		7	2	2	2			2	3
PROCUREMENT ADMINISTRATOR II - V	6		0.5			0.5	1	1			1	1				2	2			2	3
PROCUREMENT ASSOCIATE III	2		0.5			0.5	1	1			1	1				2	2			2	3
PUB AFFAIRS OFFICER II	2		0.5			0.5	1	1			1	1				2	2			2	3
PUBLIC INFORMATION ASSISTANT I - III & SUPV	23		0.5			0.5	1	1			1	1		7	2	2	2			2	3
REAL PROPERTY SPECIALIST III - IV	3		0.5			0.5	1	1			1	1				2	2			2	3
CLASSIFICATION 2 ADMINISTRATIVE/FIELD AND THEIR SUPERVISORS																					
ENGR SENIOR MECHANICAL	1		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3
AIRCRAFT SERVICE WORKER	5		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3
ENVIRONMENTAL ANALYST III	1		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3
ENVIRONMENTAL MANAGER II	2		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3
FACILITY MAINT SUPV I - II	19		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3
FACILITY MAINT TECH I - IV	63		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3
HOUSEKEEPING SUPV IV	4		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3
PLANNER III - IV	4		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3
TRANS ENGINEER V	3		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3
TRANS ENGINEERING TECHNICIAN III	2		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3
ARCHITECT II	1		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3
CAPITAL PROJECTS ARCHITECT	1		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3
WAREHOUSE ASSISTANT SUPERVISOR	2		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3
WAREHOUSE SUPERVISOR	1		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3

	REGULATORY									MANDATORY SAFETY MAA PROCEDURE AND CD-ROM BASED REGULATORY INSTRUCTION							MANDATORY SAFETY MAA INSTRUCTION				
	NIMS IS-100 - INCIDENT COMMAND SYSTEM	NIMS IS-200 - ICS for SINGLE RESOURCES	NIMS IS-700 NATIONAL INCIDENT COMMAND	NIMS IS-300 (FY07)	NIMS IS-400 (FY07)	14 CFR PART 139 - CERTIFICATION OF AIRPORTS	AC 150/53702E - OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION	ALL CURRENT FAA CIRCULARS	ACM SECTION 327 - AIRPORT SELF-INSPECTION PI	BACK SAFETY	FIRE EXTINGUISHERS	OFFICE ERGONOMICS	WALKING/WORKING SURFACES	HAZARD COMMUNICATION	OFFICE SAFETY	ACCIDENT INVESTIGATION PROCESS	FIRST AID/CPR	ENVIRONMENTAL AWARENESS	PERSONAL PROTECTIVE EQUIPMENT (PPE)	CUSTOMER SERVICE: DIFFICULT CUSTOMER ALERT	STRESS MANAGEMENT
MODULE LENGTH (HRS)	3	3	3	3	3	1	2	2	1	1	1	1	1	1	1	1	8	1	1	1	1
CLASSIFICATION 1 ADMINISTRATIVE AND OFFICE AND THEIR SUPERVISORS																					
ACCOUNTANT ALL LEVELS										1	1	1	1	1	1	1				1	1
ACCOUNTANT SUPV										1	1	1	1	1	1	1	8			1	1
ADMIN ASST LEVEL II - EXEC										1	1	1	1	1	1	1				1	1
ADMIN OFFICER LEVEL I - III										1	1	1	1	1	1	1				1	1
ADMIN PROGRAM MGMR IV										1	1	1	1	1	1	1	8			1	1
ADMIN SPEC III										1	1	1	1	1	1	1				1	1
ADMINISTRATOR LEVEL I - VII										1	1	1	1	1	1	1				1	1
AGENCY BUDGET SPEC SUPV										1	1	1	1	1	1	1	8			1	1
AGENCY BUYER I										1	1	1	1	1	1	1				1	1
AGENCY PROCUREMENT SPECIALIST II										1	1	1	1	1	1	1				1	1
AIR TRAFFIC MANAGER						1	2	2	1	1	1	1	1	1	1	1	8			1	1
AIRPORT MANAGEMENT ASSISTANT						1	2	2	1	1	1	1	1	1	1	1		1		1	1
AIRPORT MANAGEMENT OFFICER I - III						1	2	2	1	1	1	1	1	1	1	1		1		1	1
AIRPORT MANAGEMENT SPECIALIST I - II						1	2	2	1	1	1	1	1	1	1	1		1		1	1
COMMERCIAL MANAGEMENT OFFICER III										1	1	1	1	1	1	1	8	1		1	1
PARALEGAL II										1	1	1	1	1	1	1				1	1
PRINCIPAL COUNSEL										1	1	1	1	1	1	1				1	1
ASST ATTY GEN VI										1	1	1	1	1	1	1				1	1
COMPUTER NETWORK SPEC II										1	1	1	1	1	1	1				1	1
COMPUTER NETWORK SPEC SUPV										1	1	1	1	1	1	1	8			1	1
COMPUTER USER SUPPORT SPECIALIST II										1	1	1	1	1	1	1				1	1
DATA BASE SPECIALIST II										1	1	1	1	1	1	1				1	1
DOT EXECUTIVE ASST III						1	2	2	1	1	1	1	1	1	1	1				1	1
DOT EXECUTIVE IV - VI						1	2	2	1	1	1	1	1	1	1	1	8			1	1
DOT MAA EXECUTIVE						1	2	2	1	1	1	1	1	1	1	1				1	1
EMPLOYEE TRAINING SPECIALIST II						1	2	2	1	1	1	1	1	1	1	1		1		1	1
EQUAL OPPORTUNITY OFFICER III										1	1	1	1	1	1	1				1	1
EXECUTIVE ASSOCIATE I - II										1	1	1	1	1	1	1				1	1
FISCAL ACCOUNTS CLERK II										1	1	1	1	1	1	1				1	1
FISCAL ACCOUNTS TECHNICIAN I - II										1	1	1	1	1	1	1				1	1
FISCAL ACCOUNTS TECHNICIAN SUPERVISOR										1	1	1	1	1	1	1	8			1	1
FISCAL SERVICES ADMINISTRATOR II - V										1	1	1	1	1	1	1				1	1
INTERNAL AUDITOR II & SUPV										1	1	1	1	1	1	1				1	1
OFFICE SERVICES CLERK										1	1	1	1	1	1	1				1	1
PERSONNEL ADMINISTRATOR I - III										1	1	1	1	1	1	1				1	1
PERSONNEL ASSOCIATE III										1	1	1	1	1	1	1				1	1
PERSONNEL OFFICER II-III										1	1	1	1	1	1	1	8			1	1
PERSONNEL TECHNICIAN III										1	1	1	1	1	1	1				1	1
PROCUREMENT ADMINISTRATOR II - V										1	1	1	1	1	1	1				1	1
PROCUREMENT ASSOCIATE III										1	1	1	1	1	1	1				1	1
PUB AFFAIRS OFFICER II						1	2	2	1	1	1	1	1	1	1	1				1	1
PUBLIC INFORMATION ASSISTANT I - III & SUPV						1	2	2	1	1	1	1	1	1	1	1				1	1
REAL PROPERTY SPECIALIST III - IV										1	1	1	1	1	1	1		1		1	1
CLASSIFICATION 2 ADMINISTRATIVE/FIELD AND THEIR SUPERVISORS																					
ENGR SENIOR MECHANICAL						1	2	4	1	1	1	1	1	1	1	1		1	1	1	1
AIRCRAFT SERVICE WORKER						1	2	2	1	1	1	1	1	1	1	1		1	1	1	1
ENVIRONMENTAL ANALYST III						1	2	2	1	1	1	1	1	1	1	1		1	1	1	1
ENVIRONMENTAL MANAGER II						1	2	2	1	1	1	1	1	1	1	1		1	1	1	1
FACILITY MAINT SUPV I - II						1	2	2	1	1	1	1	1	1	1	1		1	1	1	1
FACILITY MAINT TECH I - IV						1	2	2	1	1	1	1	1	1	1	1		1	1	1	1
HOUSEKEEPING SUPV IV						1	2	2	1	1	1	1	1	1	1	1		1	1	1	1
PLANNER III - IV						1	2	2	1	1	1	1	1	1	1	1		1	1	1	1
TRANS ENGINEER V						1	2	2	1	1	1	1	1	1	1	1		1	1	1	1
TRANS ENGINEERING TECHNICIAN III						1	2	2	1	1	1	1	1	1	1	1		1	1	1	1
ARCHITECT II						1	2	2	1	1	1	1	1	1	1	1		1	1	1	1
CAPITAL PROJECTS ARCHITECT						1	2	2	1	1	1	1	1	1	1	1		1	1	1	1
WAREHOUSE ASSISTANT SUPERVISOR						1	2	2	1	1	1	1	1	1	1	1		1	1	1	1
WAREHOUSE SUPERVISOR						1	2	2	1	1	1	1	1	1	1	1		1	1	1	1

	FIRE/LIFE SAFETY MAA PROCDURE AND REGULATORY INSTRUCTION																											
	BLOODBORNE PATHOGENS	MACHINE GUARDING	CONFINED SPACE ATTENDANT	CONFINED SPACE ENTRANT	CONFINED SPACE SUPERVISOR	CONFINED SPACE AWARENESS	LOCK OUT/TAG OUT	FALL PROTECTION	RESPIRATORY PROTECTION	FIRE PROTECTION-EXTINGUISHER	SLIPS, TRIPS, and FALLS / WALKING-WORKING SURFACES	HAND and POWER TOOL SAFETY	HEARING PROTECTION	EMERGENCY PROCEDURES	HAZARDOUS WASTE OPERATIONS	PROCESS SAFETY MANAGEMENT	LADDERS	SCAFFOLDING	ELECTRICAL SAFETY - AC/DC AND DC	WELDING, CUTTING AND BRAZING	EXCAVATIONS	TEMPATURE EXTREMES	MATERIAL HANDLING/STORAGE OF LP GAS	FORK TRUCK (PIT'S)	SCISSOR LIFTS	AERIAL WORKPLATFORM - POWERED PLATFORMS	COMPRESSED GAS CYLINDER	ASBESTOS/LEAD AWARENESS
MODULE LENGTH (HRS)	1	0	2	2	2	1	1	1	1	2	1	1	1	2	24/8	2	1	1	1	1	1	1	1	2	1	1	1	1
CLASSIFICATION 1 ADMINISTRATIVE AND OFFICE AND THEIR SUPERVISORS																												
ACCOUNTANT ALL LEVELS																												
ACCOUNTANT SUPV	1																											
ADMIN ASST LEVEL II - EXEC																												
ADMIN OFFICER LEVEL I - III																												
ADMIN PROGRAM MGMR IV	1																											
ADMIN SPEC III																												
ADMINISTRATOR LEVEL I - VII																												
AGENCY BUDGET SPEC SUPV	1																											
AGENCY BUYER I																												
AGENCY PROCUREMENT SPECIALIST II																												
AIR TRAFFIC MANAGER	1																											
AIRPORT MANAGEMENT ASSISTANT																												
AIRPORT MANAGEMENT OFFICER I - III																												
AIRPORT MANAGEMENT SPECIALIST I - II																												
COMMERCIAL MANAGEMENT OFFICER III	1																											
PARALEGAL II																												
PRINCIPAL COUNSEL																												
ASST ATTY GEN VI																												
COMPUTER NETWORK SPEC II																												
COMPUTER NETWORK SPEC SUPV	1																											
COMPUTER USER SUPPORT SPECIALIST II																												
DATA BASE SPECIALIST II																												
DOT EXECUTIVE ASST III																												
DOT EXECUTIVE IV - VI	1																											
DOT MAA EXECUTIVE																												
EMPLOYEE TRAINING SPECIALIST II																												
EQUAL OPPORTUNITY OFFICER III																												
EXECUTIVE ASSOCIATE I - II																												
FISCAL ACCOUNTS CLERK II																												
FISCAL ACCOUNTS TECHNICIAN I - II																												
FISCAL ACCOUNTS TECHNICIAN SUPERVISOR	1																											
FISCAL SERVICES ADMINISTRATOR II - V																												
INTERNAL AUDITOR II & SUPV																												
OFFICE SERVICES CLERK																												
PERSONNEL ADMINISTRATOR I - III																												
PERSONNEL ASSOCIATE III																												
PERSONNEL OFFICER II-III	1																											
PERSONNEL TECHNICIAN III																												
PROCUREMENT ADMINISTRATOR II - V																												
PROCUREMENT ASSOCIATE III																												
PUB AFFAIRS OFFICER II																												
PUBLIC INFORMATION ASSISTANT I - III & SUPV																												
REAL PROPERTY SPECIALIST III - IV																												
CLASSIFICATION 2 ADMINISTRATIVE/FIELD AND THEIR SUPERVISORS																												
ENGR SENIOR MECHANICAL						1	1	1		2	1		1	2	8	2	1	1	1	1	1	1	1		1	1	1	1
AIRCRAFT SERVICE WORKER						1	1	1		2	1		1	2	8	2	1	1	1	1	1	1	1		1	1	1	1
ENVIRONMENTAL ANALYST III						1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1				1	1
ENVIRONMENTAL MANAGER II						1	1	1	1	2	1	1	1	2		2	1	1	1	1	1	1	1				1	1
FACILITY MAINT SUPV I - II						1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1		1	1	1	1
FACILITY MAINT TECH I - IV	1					1	1	1	1	2	1	1	1	2	8	2	1	1	1	1		1	1		1	1	1	1
HOUSEKEEPING SUPV IV						1	1	1	1	2	1	1	1	2		2	1	1	1	1		1	1					1
PLANNER III - IV						1				2	1			2			1					1						1
TRANS ENGINEER V						1	1	1	1	2	1	1	1	2		2	1	1	1	1	1	1	1				1	1
TRANS ENGINEERING TECHNICIAN III						1	1	1	1	2	1	1	1	2		2	1	1	1	1	1	1	1				1	1
ARCHITECT II						1				2			1	2		2	1	1				1						1
CAPITAL PROJECTS ARCHITECT						1				2			1	2		2	1					1						1
WAREHOUSE ASSISTANT SUPERVISOR							1	1		2	1	1	1	2		2	1			1		1	1	2	1	1	1	1
WAREHOUSE SUPERVISOR							1	1		2	1	1	1	2		2	1			1		1	1	2	1	1	1	1

	M.T.C.P. CERTIFICATION									SNOW				CRAFT SPECIFIC			
	CDL	2 1/2 TON DUMP TRUCK (4 HRS)	STREET SWEEPER (11 HRS)	FRONT-END LOADER (12 HRS)	TANDEM DUMP W/SNOW PLOW (7 HRS)	SKID STEER LOADER (17 HRS)	BUCKET TRUCK (21 HRS)	RUNWAY BROOM/BLOWER (20 HRS)	BACKHOE (21 HRS)	EPOKE CHEMICAL SPREADERS (7 HRS)	VAMMAS (13 HRS)	TOW BEHIND BROOMS	FUEL TANKER	HEMT II CERTIFICATION	HEMT III CERTIFICATION		
MODULE LENGTH (HRS)	2	1	1	1	1	1	1	1	1	1	1		1				
CLASSIFICATION 1 ADMINISTRATIVE AND OFFICE AND THEIR SUPERVISORS																	
ACCOUNTANT ALL LEVELS																	
ACCOUNTANT SUPV																	
ADMIN ASST LEVEL II - EXEC																	
ADMIN OFFICER LEVEL I - III																	
ADMIN PROGRAM MGMR IV																	
ADMIN SPEC III																	
ADMINISTRATOR LEVEL I - VII																	
AGENCY BUDGET SPEC SUPV																	
AGENCY BUYER I																	
AGENCY PROCUREMENT SPECIALIST II																	
AIR TRAFFIC MANAGER																	
AIRPORT MANAGEMENT ASSISTANT																	
AIRPORT MANAGEMENT OFFICER I - III																	
AIRPORT MANAGEMENT SPECIALIST I - II																	
COMMERCIAL MANAGEMENT OFFICER III																	
PARALEGAL II																	
PRINCIPAL COUNSEL																	
ASST ATTY GEN VI																	
COMPUTER NETWORK SPEC II																	
COMPUTER NETWORK SPEC SUPV																	
COMPUTER USER SUPPORT SPECIALIST II																	
DATA BASE SPECIALIST II																	
DOT EXECUTIVE ASST III																	
DOT EXECUTIVE IV - VI																	
DOT MAA EXECUTIVE																	
EMPLOYEE TRAINING SPECIALIST II																	
EQUAL OPPORTUNITY OFFICER III																	
EXECUTIVE ASSOCIATE I - II																	
FISCAL ACCOUNTS CLERK II																	
FISCAL ACCOUNTS TECHNICIAN I - II																	
FISCAL ACCOUNTS TECHNICIAN SUPERVISOR																	
FISCAL SERVICES ADMINISTRATOR II - V																	
INTERNAL AUDITOR II & SUPV																	
OFFICE SERVICES CLERK																	
PERSONNEL ADMINISTRATOR I - III																	
PERSONNEL ASSOCIATE III																	
PERSONNEL OFFICER II-III																	
PERSONNEL TECHNICIAN III																	
PROCUREMENT ADMINISTRATOR II - V																	
PROCUREMENT ASSOCIATE III																	
PUB AFFAIRS OFFICER II																	
PUBLIC INFORMATION ASSISTANT I - III & SUPV																	
REAL PROPERTY SPECIALIST III - IV																	
CLASSIFICATION 2 ADMINISTRATIVE/FIELD AND THEIR SUPERVISORS																	
ENGR SENIOR MECHANICAL																	
AIRCRAFT SERVICE WORKER																	
ENVIRONMENTAL ANALYST III																	
ENVIRONMENTAL MANAGER II																	
FACILITY MAINT SUPV I - II																	
FACILITY MAINT TECH I - IV																	
HOUSEKEEPING SUPV IV																	
PLANNER III - IV																	
TRANS ENGINEER V																	
TRANS ENGINEERING TECHNICIAN III																	
ARCHITECT II																	
CAPITAL PROJECTS ARCHITECT																	
WAREHOUSE ASSISTANT SUPERVISOR																	
WAREHOUSE SUPERVISOR																	

CLASSIFICATION 3 FIELD/CRAFT AND THEIR SUPERVISORS																																																																																					
HEMT I	1		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3	3		3			1	2	2	1									1	1		1			2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1	2	1	1	1	1	51	4												X			
HEMT II	5		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3	3		3			1	2	2	1									1	1		1			2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1	2	1	1	1	1	51	4													X		
HEMT III	4		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3	3		3			1	2	2	1								8	1	1		1	1		2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1	2	1	1	1	1	51	4															
STS II	17		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3	3		3			1	2	2	1									1	1		1			2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1	2	1	1	1	1	51	4	11	12	7	17	21	20									
STS III	25		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3	3		3			1	2	2	1								8	1	1		1	1		2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1	2	1	1	1	1	51	4	11	12	7	17	21	20	21								
SUPV	7		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3	3	2	3			1	2	2	1								8	1	1	1	1	1		2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1	2	1	1	1	1																	
MANAGER	1		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3	3	2	3	3	3	1	2	2	1									1	1	1	1			2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1	2	1	1	1	1																	
AIRPORT DEPUTY FIRE CHIEF	1		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3	3	2	3	3	3	1	2	2	1								8	1	1	1	1	1		2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1		1	1	1	1																	
AIRPORT DIV FIRE CHIEF, FIRE OPERATIONS	4		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3	3	2	3	3	3	1	2	2	1								8	1	1	1	1	1		2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1		1	1	1	1																	
AIRPORT DIV FIRE CHIEF, FIRE TRAINING	1		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3	3	2	3	3	3	1	2	2	1								8	1	1	1	1	1		2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1		1	1	1	1																	
AIRPORT FIRE CAPTAIN	4		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3	3	2	3	3	3	1	2	2	1								8	1	1	1	1	1		2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1		1	1	1	1																	
AIRPORT FIRE LIEUTENANT	4		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3	3	2	3	3	3	1	2	2	1								8	1	1	1	1	1		2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1		1	1	1	1																	
AIRPORT FIREFIGHTER I - II	53		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3	3	2	3	3	3	1	2	2	1								8	1	1	1	1	1		2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1		1	1	1	1																	
AIRPORT PARAMEDIC	15		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3	3	2	3	3	3	1	2	2	1								8	1	1	1	1	1		2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1		1	1	1	1																	
AIRPORT PARAMEDIC FIREFIGHTER	1		0.5	0.5	0.5	0.5	1	1		2	1	1				2	2			2	3	3	2	3	3	3	1	2	2	1								8	1	1	1	1	1		2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1		1	1	1	1																	
AIRPORT PARAMEDIC LIEUTENANT	4		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3	3	2	3	3	3	1	2	2	1								8	1	1	1	1	1		2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1		1	1	1	1																	
SAFETY MANAGEMENT REP III	3		0.5	0.5	0.5	0.5	1	1		2	1	1		7	2	2	2			2	3	3	2	3	3	3	1	2	2	1								8	1	1	1	1	1		2	2	2	1	1	1	1	2	1	1	1	2	8	2	1	1	1	1	1	1	1		1	1	1	1																	
RECERT YEAR		0	1	1	1	1	1	1	0	5	1	1	0	0	0	2	2	0	0	1	0	0	0				0	1	1	0	2	1	1	2	2	2	1	2	1	2			1	0	5	5	5	5	5	5	5	5	5	5	5	1	4	1	5	5	5	5	5	1	5	5	5	5	5	5	5	3	3	3	3	3	3	3		3	3		3	0			0
HOURS PER SESSION	529.5	0.0	0.5	0.5	0.5	0.5	1.0	1.0	0.0	2.0	1.0	1.0	0.0	7.0	2.0	2.0	2.0	0.0	0.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	1.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	8.0	1.0	1.0	1.0	1.0	1.0	0.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	2.0	8.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	16.0			16.0

EXHIBIT 3 - FAA SMS LIFE CYCLE

FAA AC 150/5200-37

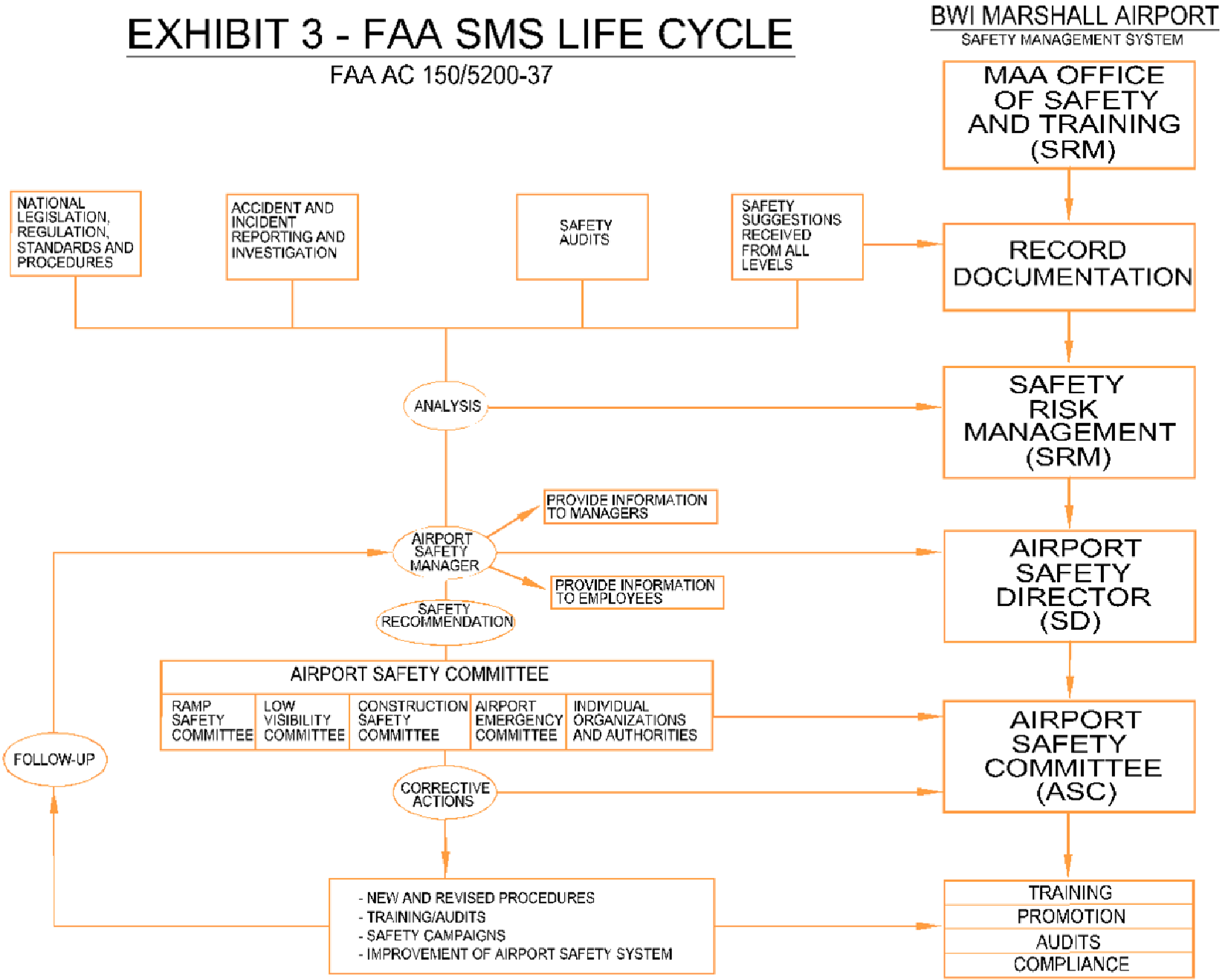


EXHIBIT 4 - SMS IMPLEMENTATION (COST VS. TIME)

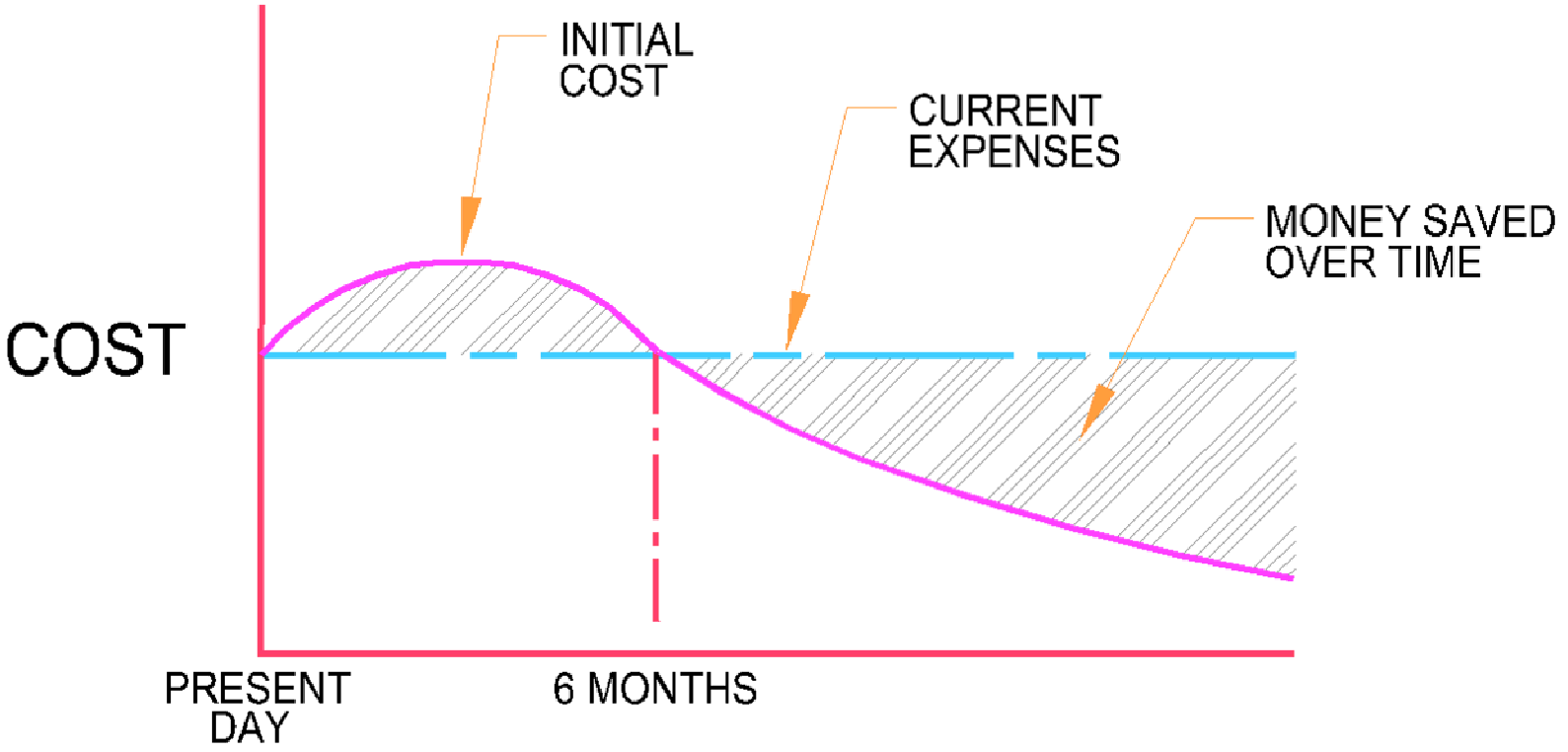
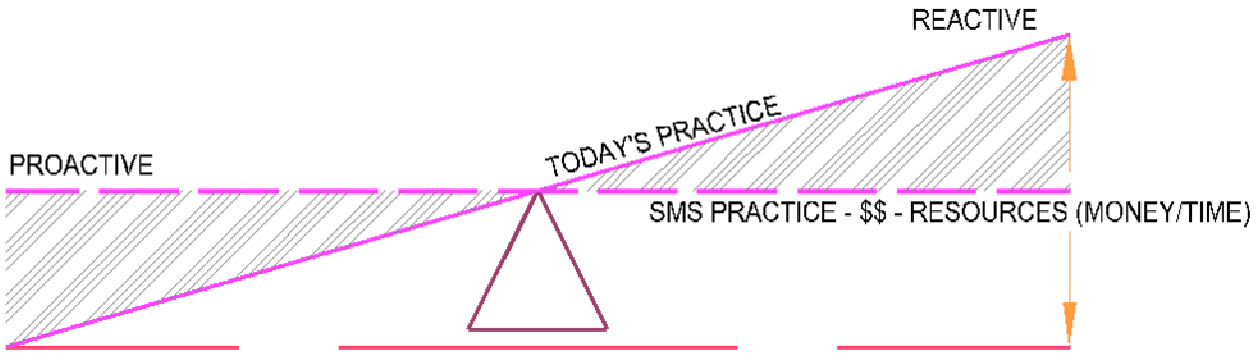
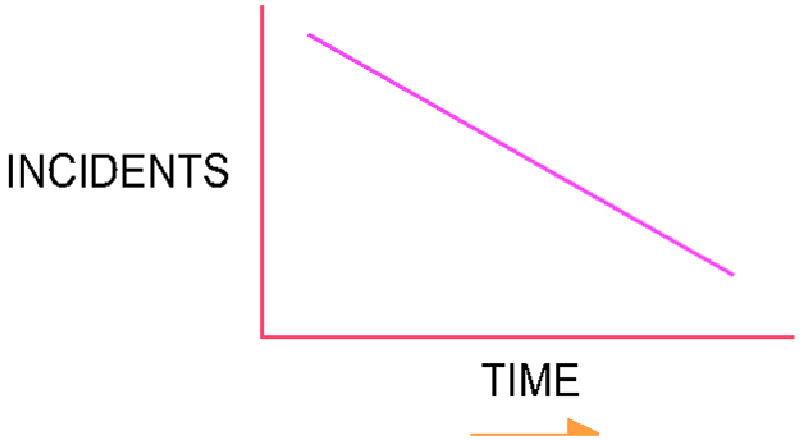


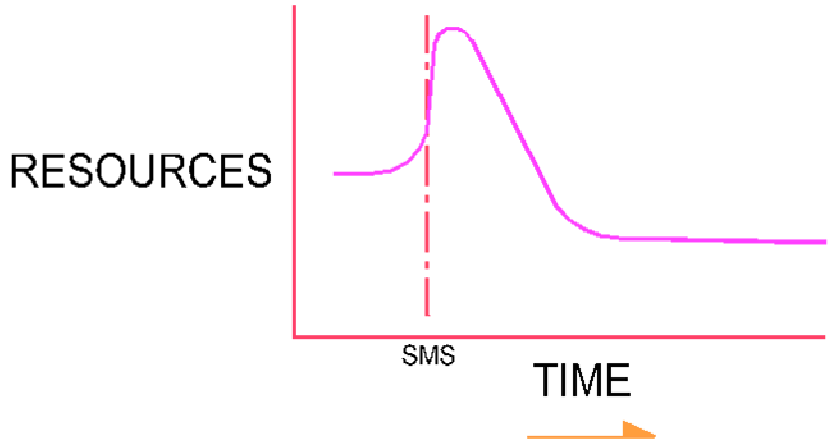
EXHIBIT 5 - SMS IMPLEMENTATION



SMS REALLOCATION



ACCIDENT/INCIDENT OCCURRENCES



MAA RESOURCES

SECTION XVI – APPENDICES

APPENDIX 1: APPLICATION OF THE 5M MODEL – SRM EXAMPLES

APPENDIX 1
APPLICATION OF THE 5M MODEL – SRM EXAMPLES

Examples of past MAA events can be utilized to illustrate the SRM process. In an effort to demonstrate how to conduct an SRM using the proposed 5-M Model, the following scenario will be used:

MAA Case Studies #3 and #5. A ground handler's tug collided with an aircraft engine nacelle (which includes the engine inlet, fan cowl, thrust reverser and exhaust nozzle). The collision caused the commercial flight to be cancelled causing customer inconvenience and extensive damage to the aircraft. After an investigation, the cause was attributed to excessive work of a critical position. The ground handler had worked their personnel over 20 hours straight due to limited staff and high turnover. Additionally, a supervisor was unavailable due to low manning.

On a separate, unrelated occasion, a 10,000 gallon jet fuel truck rammed into a guard shack. The fueler had been on continuous duty for over 18 hours due to low manning. The guard shack was destroyed and two employees were taken to the hospital.

Using these case studies, we can associate the applicability of the SRM in order to mitigate risk.

Step 1—Describe the System

The 5-M Model - The 5-M model provides a basic framework for analyzing systems and determining the relationships between composite elements that work together to perform the organization's primary purpose. The 5-M's are Man, Machine, Media, Management, and Mission. Man, Machine, and Media interact to produce a successful Mission or, sometimes, an unsuccessful one. The amount of overlap or interaction between the individual components is a characteristic of each system and evolves as the system develops. Management provides the procedures and rules governing the interactions between the various elements.

In the example above, we can deduce the following as elements of the affected system:

1) MAA Human Resources (policies and procedures)
2) MAA Airport Operations
3) MAA Airport Security
4) MAA Aircraft Rescue and Fire Fighting (ARFF)
5) MAA Maintenance and Transportation and Terminal Services
6) MAA Engineering and Facilities Planning
7) MAA Marketing
8) MAA Legal Counsel
9) MAA Fair Practices

In the event identified above, using the SRM process prior to deciding the policy of "*vehicle drivers operating in excess of standard operating hours"* could have mitigated unnecessary risk.

II. **STEP 2: Hazard Identification.**

In order to identify possible hazards in relation to "conducting flightline operations in excess of standard operating hours" we can use the 5M Model.

The following are the primary hazard areas identified by the team

(1) Man.

(a). Employees that operate machinery or equipment can affect the overall operation of the MAA. Therefore employees must be categorized to define their working hours as critical or not critical and afforded separate operational circumstances to work more than his/her standard day in order to be deemed "fit for duty". Additionally, employees in critical positions must be deemed psychologically and physically prepared for the task at hand and proficient on procedural guidance available to operate necessary equipment.

Additionally, the employee must possess a sound work ethic and reliability (drug testing, professional accountability, and necessary crew rest) to operate in the vicinity of operating aircraft, additional employees or innocent consumers of the aviation industry. Additionally, performance capability must be analyzed to ensure intact job skills, minimized stress, maximized rest and circadian rhythm. Moreover, personal factors must be considered by all levels of management including peer recognition of possible personal issues, morale issues with company, discipline issues, perceived pressure (over tasking) and communication skills.

(2) Media. Flight line obstructions such as structures, equipment, and additional manmade obstacles could impede flight line operations. Additionally, poor weather could affect user judgment of existing conditions. Moreover, vehicular/pedestrian and ground hazards could affect overall flight line operations if not considered as well as inadequate flight line training.

(3) Machine. The choice of rudimentary equipment, vehicle or process could affect the outcome of existing flight line operations.

(4) Management. Existing processes preclude the approval process of senior management (human resources) in authorizing overtime for critical positions. Crew rest of critical positions, if ignored, could affect overall operations and MAA productivity and organizational success.

(5) Mission. The desired outcome of the 5-Ms identified above is the safe and secure, preparation and execution of affected aircraft while ensuring the safety of resources,

assets, employees, and consumers while maximizing operational productivity with minimize cost.

STEP 3: Conduct Risk Assessment. During the initial risk assessment, the team attempted to evaluate the hazards and associated levels of risk. Due primarily to insufficient historical data, empirical data was not available to validate all of the risks. However, the team believes the following to be an accurate assessment of the identified hazards. The chart below identifies the hazards involved, the probability of that happening, its severity and finally the level of risk associated with all hazards considered.

HAZARD	**PROBABILITY**	**SEVERITY**	**LEVEL OF RISK**
Man	Frequent	Moderate	Medium
Media	Likely	Critical	High
Machine	Seldom	Negligible	Low
Management	Frequent	Critical	High

		Probability				
		Frequent	**Likely**	**Occasional**	**Seldom**	**Unlikely**
Severity	**Catastrophic**	Management				
	Critical		Media			
	Moderate	Man				
	Negligible					Machine
		Risk Levels				

C. STEP 4: Assess and Analyze Risk. With the hazards identified and levels of the risks assessed, the team focused on the development of the effective risk control measures, which would mitigate, or virtually eliminate the hazards. The team used a variation of the Risk Control Options Matrix to develop credible/viable risk control measures. The following is a synopsis of those risk control measures.

(1) Management

(a) Situation.

(b) Mitigation efforts and measures:

(2) Media

(a) Situation.

(b) Mitigation efforts and measures:

(3) Man

(a) Situation

(b) Mitigation Efforts and measures:

(4) Machine

(a) Situation:

(b) Mitigation efforts and measures.

d. STEP 5: Mitigate Risk. If the decision is made to continue with the allowance with overtime of critical positions, recommend the following:

(1) Ensure….

e. STEP 6: Supervise and Review. Application of the SRM Process

To get maximum benefit from this powerful tool, there are several factors to keep in mind.

A. Tips for application of SRM

1. Apply the Steps in Sequence. Each of the steps is a building block for the next step. It is important to complete each step, however briefly, before proceeding to the next step.

   For example, if the hazard identification step is interrupted to focus on control of a particular hazard before the identification step is complete, other more important hazards may be overlooked and the SRM process may be distorted. Until the hazard identification step is complete, it is not possible to properly prioritize risk control efforts.

2. Maintain Balance in the Process. All steps are important. If an hour is available to apply the SRM process, it is important not to lose sight of the total process. Spending 50 minutes of the hour on hazard identification may not leave enough time to effectively apply the other steps of the process. The result is suboptimal risk management. The idea is to assess the time and

resources available for SRM activities and allocate them to the steps in a manner most likely to produce the best overall result.

3. Apply the Process as a Cycle. Although not explicit in the SMS or advisory circular, the SRM process must feedback to generate the continuous improvement characteristics of it. When the "Supervise and Review" step establishes that some risks have been significantly reduced, the hazard identification step is reapplied to find new hazard targets. In this way, the SRM process is continually reevaluating the risks and developing creative processes encouraging process improvement at all levels.

4. Involve People Completely. The only way to assure the SRM process is supportive is to provide for the full involvement of the people actually exposed to the risks. Take the time to periodically revalidate SRM procedures and assure that they are mission supportive and are viewed by personnel as positive (Safety Assurance/ Safety Promotion)

B. The Integration of SRM

A key objective of SRM is to accomplish the SRM process as an integrated aspect of mainstream organizational processes. When SRM is integrated effectively, it quickly ceases to be consciously identifiable as a separate process. To effectively apply risk management, managers must dedicate time and resources to incorporate risk management principles into the planning processes. Risks are more easily assessed and managed in the planning stages of a process, task, or decision. Integrating risk management into planning as early as possible provides the decision maker the greatest opportunity to control risk.

C. Benefits

Risk management is a logical process of weighing potential costs of risks versus anticipated benefits. Benefits are not limited to reduced mishap rates or decreased injuries, but may actually increase efficiency or performance. Examples of potential benefits include:

1. Audacity through prudent risk taking. Bold and even risky actions may be undertaken when the benefits have been carefully weighed against the probability and severity of loss.

2. Improved ability to protect the force with minimal losses. Analysis of current practices may reduce risks that are considered acceptable.

3. Enhanced decision-making skills. Decisions are based on a reasoned and repeatable process instead of relying on intuition.

4. Improved confidence in organizations capabilities. Adequate risk analysis provides a clearer picture of the system's strengths and weaknesses.

D. Acceptability of Risk

1. Applying risk management requires a clear understanding of what constitutes "unnecessary risk," when benefits actually outweigh costs. Accepting risk is a function of both risk assessment and risk management. Risk acceptance is not as elementary a matter as it may first appear. Several points must be kept in mind.
    a. Some degree of risk is a fundamental reality.
    b. Risk management is a process of tradeoffs.
    c. Quantifying risk alone does not ensure safety.
    d. Risk is a matter of perspective.

2. Realistically, some risk must be accepted. How much is accepted, or not accepted, is the prerogative of the defined decision authority. That decision is affected by many inputs. As tradeoffs are considered and mission planning progresses, it may become evident that some of the safety parameters are forcing higher risk to enable task completion. From management's perspective, a relaxation of one or more of the established safety parameters may appear to be advantageous when considering the broader perspective of the task objective. When a manager decides to accept risk, the decision should be coordinated whenever practical with the affected personnel and organizations, and then documented so that in the future everyone will know and understand the elements of the decision and why it was made.

3. General risk management guidelines are:

- All human activity involving a technical device or complex process entails some element of risk.
- Do not panic at every hazard; there are ways of controlling them.
- Keep problems in proper perspective.
- Weigh risks and make judgments based on knowledge, experience, and mission requirements.
- Encourage others to adopt similar risk management principles.
- Operations always represent a gamble to some degree; good analysis tilts the odds in your favor.
- Hazard analysis and risk assessment do not free us from reliance on good judgment, they improve it.
- It is more important to establish clear objectives and parameters for risk assessment than to find a "cookbook" approach and procedure.
- There is no "best solution." There are normally a variety of directions to go. Each of these directions may produce some degree of risk reduction.

- To point out to an employee or supervisor how he can manage risk better is much more effective than to tell him his approach will not work.
- Complete safety is a condition that seldom can be achieved in a practical manner.
- There are no "safety problems" in task organization or design. There are only management problems that, if left unresolved, may cause mishaps.

4. Risk Management Responsibilities:

Safety Director

- Are responsible for effective management of risk.
- Select from risk reduction options provided by the staff.
- Accept or reject risk based on the benefit to be derived.
- Train and motivate supervisors and department heads to use risk management.
- If not authorized to accept high level risks, elevate to the appropriate level.

Staff:

- Assess risks and develop risk reduction options.
- Integrate risk controls into plans and orders.
- Identify unnecessary risk controls.

Supervisors:

- Apply the risk management process and direct personnel to use it both on- and off-duty.
- Consistently apply effective risk management concepts and methods to operations and tasks.
- Elevate risk issues beyond their control or authority to superiors for resolution.

Individuals:

- Understand, accept, and implement risk management processes.
- Maintain a constant awareness of the changing risks associated with the operation or task.
- Make supervisors immediately aware of any unrealistic risk reduction measures or high risk procedures.

5.4.0 Guidance on the Use of SRM and Trend Analysis

Trend analysis is heavily dependent on data accumulation, appropriate performance indicators, and accurate use of performance metrics. In each of the systems identified in Phase 1 of the SRM, the Phase 2 data are significant, as are the safety indicators associated with each section of Part 139.

The collection of these data, as well as the historic data associated with "events" that have occurred on the airport provide starting points for trend analysis. As stated above, airport management will establish a data collection and recordkeeping system to enable tracking and trend analysis, with the objective of enhancing safety, preventing the recurrence of negative events, and acquiring a "lessons learned" resource as part of the SMS Plan.

5.5.0 Defined Process for SRM Results

OST must create an avenue to use and disseminate the results of the SRM process to the appropriate parties. Mitigation of potential risks and hazards must come from all levels of the administration. The SD should utilize the Airport Safety Committee to facilitate participation from all facets of the administration to mitigate risk.

A level of documentation and coordination must be created associated with risk analysis. At a minimum, the SD must:

- Include all divisions in high and medium level risk elements with documented discussion at the ASC meetings.
- Utilize these meetings to identify new activities (construction, operational, etc) that create risk for the airport operations.
- Involve and notify stakeholders on risk conditions with Tenant Information Advisory's (TIA) and meetings.
- Communicate with MAA Operations and Planning to facilitate acknowledgement of risk and mitigation strategies with the FAA.

OST will select an electronic program to house information that is critical to SRM processes and the SMS Plan. The selection will accommodate the Security Sensitive Information (SSI) aspects of information gathering and data collection.

5.6.0 Top Management Follow-up on SRM

Safety management and risk mitigation are the responsibility of every employee, tenant and individual working at BWI Marshall. However, it is the responsibility of the executive management to ensure that these practices are being applied daily. Executive management, or top management, shall enforce all policies and procedures for safety risk management.

Once hazards and risks are documented, the Safety Office Director shall report issue(s) to the Deputy Executive Director of Operations and Maintenance if the issue is too complex to be addressed within the office. The Deputy for Operations and Maintenance will then either address the issue or relay it to the deputy of the group that should address the issue. For example, if there is an issue with severe pavement cracking on the runway, the deputy executive director for Operations and Maintenance and operations shall report to the Deputy Executive Director of Facilities Development and Engineering with the Executive Director copied in the dialogue. The information may also be relayed in the executive management team meeting. Once the issue has been reported to the Facilities Design Deputy, he/she shall assign the task of mitigating the hazard to an official in his/her division.

Depending on the magnitude of the issue, the division will have a certain period of time to assess and mitigate the hazard, with the deputy periodically reporting to the Executive Management Team and the Office of Safety. Follow-up will be done by the Executive Director, the Deputy for Operations and Maintenance and Office of Safety Director to ensure timely mitigation and to pursue new solutions if the problem cannot be addressed as originally planned. The division responsible for addressing a particular hazard or risk may hire a consultant to address the issue if the problem is typically addressed by consultants.

The official for compliance within the office of safety shall also monitor the process during mitigation to ensure that all federal and state standards are complied with (i.e. FAA Advisory Circular, OSHA, NFPA, the Maryland Department of the Environment (MDE) etc.).

Reports of each process of hazard and risk mitigation shall be created using software as approved by the DED. These reports shall be stored on a network drive accessible to authorized personnel and shall have generated hard copies located in the office of safety, accessible to authorized personnel only. The reports shall also be reviewed periodically by the Office of Safety, the Deputy of Operations and Maintenance and the Executive Director to determine trends and allocation of resources to mitigate risks. Topics of risks, based on reports, should be discussed at least once a month during the Executive Management Team meeting and during every meeting for the Office of Safety.