Safety Management System (SMS) Manual

The Talladega Municipal Airport (TMA)

Prepared for

The Talladega Municipal Airport Board
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Preface

In February 2007 the Federal Aviation Administration (FAA) issued Advisory Circular, AC 150/5200-37, *Introduction to Safety Management Systems (SMS) for Airport Operators*, to introduce the concepts of SMS. The FAA has also opened a rulemaking project to consider formal requirements for SMS at certified airports. In support of this rulemaking effort, the FAA has initiated a pilot program to assist airports in the development of an SMS specific to their situation and operations, and to share their acquired experience on SMS development and implementation with other airports and the FAA.

The Talladega Municipal Airport (TMA or Airport) has decided to take a leadership role in the development and implementation of an SMS at the Airport by participating in the FAA pilot program.

Part 139 Consideration

The objective of the pilot program is to allow airports and the FAA to gain experience by establishing airport-specific SMS plans that are customized for the individual airport. Additionally, the program will provide SMS benchmarking that the FAA can utilize as it considers whether to incorporate SMS into Title 14, Code of Federal Regulations (CFR), Part 139 (Part 139)for Class IV, unscheduled commercial aircraft with General Aviation (GA) airports services.

The goal of an SMS is to successfully identify safety hazards, ensure actions are developed to mitigate any risks and hazards, and provide continuous monitoring of the safety levels set forth by management through safety policies and objectives. To achieve the goals and policies set forth by the organization, a change in safety culture must take place, while initiating a proactive process through a non-punitive reporting.

To successfully implement an SMS process at TMA, the following manual was devised. The manual identifies the elements of the airport operator's existing practices and guidance materials that currently meet and do not meet SMS requirements. Additionally, the implementation plan provides direction as to how these practices and documents will be incorporated throughout the organization in the future for consistency with the SMS Manual.

Components of SMS Manual

TMA SMS implementation is based on established components of the SMS manual and is further divided into sub-categories for the ease of accessing relevant information.

1. *Safety Policy* – General Requirements; Policy Statement, Safety Objectives, Organizational Structure, Safety and Quality Policy; and Safety Planning;

2. *Safety Procedures* – Includes Procedures and Controls; documentation and Records Management; and Compliance;

3. *Safety Risk Management* – Includes Details System and Task Analysis; Identify Hazards; Analyze Safety Risk; Asses Safety Risk; and Control Safety Risk;

4. *Safety Assurance* - Includes General Requirements; System Description; Information Acquisition; Analysis of Data; System Assessment; Preventive/Corrective Action; and Management Review; and

5. *Safety Promotion* – Includes Communication and Training, Safety Culture; Safety Awareness; Personnel Requirements; and Safety and Lessons Learned.

Safety Management System
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RECORD OF AMENDMENTS

Amendment No.	Subject	Updated By	Date

		Signature	Date
Approved			
Reviewed			
Reviewed			
Approved			
Approved			

Any amendments and/or revisions to the following Safety Management System Manual are approved by the Airport Manager and the Airport Board. Once approved by the Airport Manager, the amendments and/or revisions may become an active part of the SMS Manual. Additionally, any questions or concerns regarding the SMS Manual must be directed to the Airport Manager.

Definitions

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

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

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

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

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

Incident – A near-miss episode, malfunction or failure without accident-level consequences that has a significant chance of resulting in accident-level consequences.

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

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

Procedure – A specified way to carry out an activity or a process.

Risk Assessment – Assessment system involve an analysis of a job, process or the interaction of activities in order to identify hazards that have been or could be "built in", this analysis could include Job Hazard Analysis, failure modes and effects, analysis, ergonomics assessments, etc. The analysis must result in improved work practices and employee communication and training as (particularly with process analysis) preventive engineering controls where hazards are discovered.

Risk Management - The identification, analysis and elimination (and/or mitigation to an acceptable or tolerable level) of those hazards, as well as the subsequent risks, that threaten the viability of an organization.

Records – Evidence of results achieved and activities performed. In this context, it is distinct from documentation because records refer to SMS outputs.

Safety – The state in which the risk of harm to persons or property damage is reduced to, and maintained below, an acceptable level through a continuing process of hazard identification and risk management.

Safety Assessment – Systematic and comprehensive evaluation of a system to check whether the safety requirements are met.

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

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

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

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

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

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

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

Safety Risk Control – Anything mitigates the safety risk of a hazard. Safety risk controls necessary to mitigate an unacceptable risk should be mandatory, measurable, and monitored for effectiveness.

Safety Risk Management (SRM) – A formal process within the SMS composed of describing the system, identifying the hazards, assessing the risk, analyzing the risk, and controlling the risk. The SRM process is embedded in the operational system; it is not a separate/distinct process.

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

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

Top Management – The person or group of people that directs and controls an organization. Sometimes this is also referred to as senior management and may be the Airport Manager, Airport Board Chairman or Administrator.

INTRODUCTION

The intent of SMS is to improve aviation safety. Traditionally, the need for safety management has been justified based on a predicted industry growth and the potential for increase in accidents as a consequence of such growth. While accident reduction will always remain a priority of aviation, there are more compelling reasons underlying the transition to a safety management environment in the air transportation industry. An elimination of aviation accidents would be the desirable result for implementing SMS; however there is no human activity or human-made system that can be guaranteed to be an absolutely safe system.

The aviation industry's future viability may well be predicated on its ability to sustain the public's perceived safety while traveling. The management of safety is therefore a prerequisite for a sustainable aviation business. Not properly managing safety or ignoring safety hazards could pave the way for an increase in the number of aviation accidents.

TMA's use of SMS at the airport can contribute to the reduction in airport related accidents and an increased likelihood that airport personnel will detect and correct safety problems before the problems result in an aviation incident or accident.

Resource Allocations

TMA's perspective of the SMS as an organizational process and a core business function places ultimate safety responsibilities for each function at the highest level of the organization (without denying the importance of individual safety responsibility for the delivery of services). Nowhere are such accountability and responsibility more evident than in the decision making process regarding allocation of resources.

Resources are essential to the core business functions of the airport that directly or indirectly support delivery of services. Therefore, resource allocation is one of the most important, if not *the* most important, of the organizational SMS processes for which the Airport Manager and Airport Board support and are held accountable.

Unless safety management is a core function and adhered to by the TMA Airport Managers, there exists the potential for competition in the allocation of resources for the Airport to conduct business directly in support of GA service delivery. There should be a balanced allocation of resources to production and protection goals that results from safety and business management decisions.

Benefits

There are many clear benefits to establishing and implementing an SMS. The benefits apply to all activities at an airport. SMS is a formal top-down business-like approach to managing safety risk that is built on basic system safety principles. Some SMS benefits include:

- A process to anticipate and address safety issues before they lead to an incident or accident that could possibly injure passengers or staff working at TMA

- The ability for Airport Management to deal effectively with accidents and incidents so that valuable lessons are learned and applied to improve safety.

Costs

The costs of a major accident at, or near, TMA, with injuries to people and damage to property could potentially threaten the financial viability of TMA. Direct costs are the costs for repairing hanger door or replacing aircraft towing equipment and Airport property, or compensating for human injuries or deaths. There are also many indirect costs which may not be as obvious, may be delayed aircraft departure, and may eventually total more than direct costs. These indirect costs, for example, could include:

- Loss of revenues if flights are cancelled or tenants cease operations at TMA

- Loss of reputation;

- Legal and damage claims;

- Cost of replacing and compensating injured employees;

- Increased insurance claims or denial of insurance coverage;

- Clean-up of the accident site; and

- Cost of internal and government investigations.

TMA has a good reputation for safety and will be able to sell itself more effectively to new customers and airlines that are considering operating at the airport in the future. An airports poor safety reputation could cause airlines to look elsewhere to ensure the safety of their passengers and their aircraft.

Legal

TMA understands that there can be legal proceedings against Airport Management as a result of accidents and incidents. However, TMA can and will continue to demonstrate that management has taken reasonable actions to eliminate or prevent accidents. The lessons learned in other countries from accidents show that, in many cases, failures in management were a key causal factor.

This document summarizes the policies, organization, systems, and processes by which airport safety will be managed.

1.   SAFETY POLICY

1.1   Policy Statement

The Airport Board and Managers of the Talladega Municipal Airport (TMA) have recognized the need for, and benefits of, an effective Safety Management System (SMS) for TMA.

Our goal is to maintain aviation safety at the highest reasonable standard of safety by identifying and minimizing risks arising from activities which could contribute to aviation accidents and incidents. Safety is the first priority in all our activities and is an integral part of the provision of our airport management system. Everyone is accountable for safety in the performance of their responsibilities. We are committed to developing, implementing, maintaining, and constantly improving strategies and processes to ensure that all our aviation activities take place under a balanced allocation of organizational resources, aimed at achieving the highest level of safety performance and meeting national, state, and internal standards.

TMA's senior management is committed to ensuring:

- All TMA employees receive proper training to do their jobs safely, and to protect themselves, other workers, passengers, aircraft, and equipment;

- Minimization of risks associated with aircraft operations to a point that is as low as reasonably practical/achievable;

- External supplies systems and services that impact the safety of operations meet appropriate safety standards;

- All TMA employees can report aviation safety concerns, issues, incidents, and accidents without fear of negative personal consequences or reprisal;

- Hazard identification and risk management processes are established for identifying safety concerns and analyzed for appropriate actions taken;

- Safety information is effectively exchanged among all key tenants and public safety agencies designated to support airport operations and other related activities;

- Continual improvement of safety performance through management processes that ensure relevant safety actions are taken and effective;

- Support of safety management through the provision of all appropriate resources, resulting in the organizational culture that fosters safe practices and encourages effective safety reporting and communication.

Top Management will sign and ensure that this Policy is available and current. This Policy will be reviewed at least annually to ensure it reflects the values adopted by the organization. This Policy will be communicated to all employees.

1.2   Safety Objectives

Objectives are a series of measurable targets that provide direction and guidance for safety management activities. The Airport Manager and staff will be responsible for working with the Airport Board to set up a series of measurable objectives for the organization as a whole, in accordance with the Safety Policy.

As a means to continuous safety improvements, Airport Management will establish annual safety objectives and monitor their performance to meet these objectives. These annual safety objectives will address (but are not be limited to):

- Safety hazards/deficiencies identified during TMA self inspections by type of hazard (e.g., pavement, lighting, markings, signage);

- Incursions of vehicles, aircraft, or pedestrians on movement and non-movement areas;

- Number of airside safety violations (by class of violation);

- Number and type of accidents and incidents on the Airport Operating Area (AOA) involving aircraft, ground vehicles, passengers and workers;

- Number of airside based employees who have received safety and SMS related training (initial and refresher training); and

- Number of safety hazards reported through non-punitive safety reports.

Objectives will be communicated to all employees.

1.3   Organizational Structure

The organizational structure at TMA is established by the size, complexity, and operational environment of a small GA organization. The Airport Manager has been identified as the owner for implementation and maintenance of the SMS program. While it would be preferable for the Airport Manager to have no other roles and responsibilities, this is not possible at TMA.

The Airport Manager is the Fixed Based Operator (FBO), which is leased to North America Testing, owned by the City of Talladega, and operated as a Class IV airport. The Airport Advisory Board is appointed by the city council in an advisory capacity. The roles and responsibilities in the organizational structure for the safety at TMA are presented in Exhibit 1-1.

The effective management of TMA safety requires a well documented delineation of all lines of authority within the organization. There must be a clear understanding of the accountability, responsibility, and authority of all individuals involved in the SMS. The organizational structure will be disseminated throughout the organization, thereby promoting a common understanding of everyone's role in TMA's SMS program.

Safety procedures are laid out by which TMA staff identifies and remedies safety risks during all activates at the airport. Safety procedures are subject to revision as circumstances change or more effective procedures are developed. It is critical that any changes be clearly communicated to affected agencies, and that the procedures are easily accessible to all for reference or continual education.

1.4   TMA Roles and Responsibilities

Management's role, responsibilities and accountabilities for the SMS should be well defined and the lines of authority clearly understood. This section describes the roles and responsibilities of key participants in TMA aviation safety.

The airport manager is accountable for establishing and maintaining the SMS program.

Designate the manager in charge of each functional area for airport operations, for example, identify who is responsible for the implementation of SMS within his/her functional area; and Maintain a list of designate functional managers in charge of identifying and correcting organizational deficiencies identified in the system.

The functional agency representatives (i.e., fire department, security, emergency response, etc) and TMA staff personnel in the organization are responsible for safety.

Designated functional agency managers are responsible for managing safety of operations because he/she has the knowledge and expertise to recommend effective, corrective, and preventive actions and has the authority to assign the appropriate resources where required.

Airport staff must assume responsibility for safety within their own area of responsibility. In this way, he/she is involved in the "safety" process and is accountable for issues that arise in his/her functional area.

The proposed TMA operational safety organizational structure is as follows:

Exhibit 1-1. TMA Operational Structure
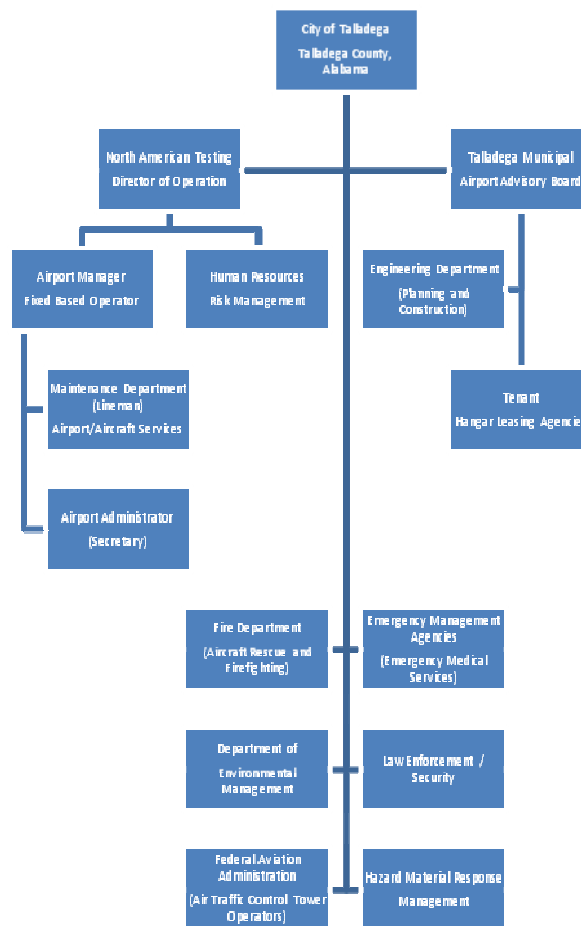
There are several Federal Government agencies that provide services to TMA in case of an emergency, aviation incident and accident (especially during race events) or any other unforeseen event. These include: The Regional Federal Aviation Administration (FAA), the Federal Bureau of Investigation (FBI), the National Transportation Board (NTSB), and the National Weather Agency.

1.4.1   TMA Airport Board

- The Airport Board endorses the SMS and the safety policies contained within the SMS; and

- Ensures that financial and resources required for proper execution of the SMS are available.

1.4.2   TMA Airport Manager

The responsibilities of the Airport Manager for SMS include:

- Approving the SMS program;

- Approving the safety policy and objectives;

- Approving periodic revisions of the SMS, safety policy, and objectives; and

- Updating the Airport Certification Manual (ACM) and ensuring that TMA personnel comply with the ACM and Part 139.

- Facilitating an informal Airport Safety Committee;

- Providing data related to TMA self-inspections, NOTAMS, condition reports, and airfield deficiency reports for trend analysis by the Airport Manager

- Establishing annual safety objectives in accordance with this SMS Manual and providing relevant performance data to the Airport Board; and

- Conducting Safety Risk Management Assessments as required per Section 3 of this SMS Manual.

- Participating in the Airport Board (Chaired by the City of Talladega elected chairman) meetings to coordinate the exchange of safety information;

- Retaining records of all safety related reports, incidents and accidents;

- Investigating accidents and incidents;

- Conducing trend analysis of accidents, incidents, and hazards;

- Providing staff advice on SMS including safety risk management the analysis of safety concerns, hazards, incidents and accidents to determine action required by the airport staff;

- Monitoring and recording actions taken by departments in response to safety concerns, hazards, incidents and accidents.

- Advising the Airport Board on the status of safety action plans;

- Developing and implementing aviation safety promotion such as newsletters and bulletins;

- Implementing the non-punitive reporting system including follow-up and response;

- Training for Airport employees and tenants located or working in the AOA including initial and recurrent training programs for airside drivers and pedestrians;

- Monitoring safety performance in relation to safety objectives and preparing an annual report on the achievement of objectives;

- Performing an annual review of the safety policy and safety objectives,

- Preparing an Annual Safety Report and making recommendations to the Airport Manager on revisions to safety policies and objectives; and

- In collaboration with appropriate TMA departments, conducting periodic reviews of the Airport SMS to recommend adjustments where required.

It should be noted that the important role and responsibilities of the Airport Manager in promoting, supporting, and implementing TMA's employee occupational health and safety in accordance with Federal Occupational Health and Safety Administration (OSHA) standards is not included as part of the SMS Manual.

1.4.3   TMA Airport Staff

The Airport Staff is responsible for key duties that have a direct impact on aviation safety; activities are listed below:

- Completing airfield runway and taxiway inspections;

- Conducting airfield lighting inspections;

- Performing fueling facility and operations inspections;

- Conducting ramp Foreign Object Debris (FOD) inspections on a continuous basis;

- Responding, removing, and documenting all FOD related notifications;

- Completing construction worksite security and safety inspections;

- Issuing NOTAMS (Notice to Airmen);

- Completing airfield condition reports (Field Reports);

- Maintaining a written log of events;

- Preparing and storing Airfield Discrepancy Reports;

- Responding to aircraft alerts and emergencies as required, Activate Emergency Contingency Plans as required;

- Completing Airport Rescue and Firefighting (ARFF); and

- Conducing periodic inspections of obstacle limitation surfaces.

The TMA staff has important responsibilities for maintenance that impact aviation directly. Staff are responsible for:

- Maintaining the pavement integrity of all runways, taxiways, and ramps to provide a high level of physical safety. In addition, this department is responsible for roads, bridges, sidewalks, and grounds outside of the AOA;

- Maintaining runway and taxiway paint markings to help in the prevention of runway incursions;

- Removing runway rubber to comply with FAA standards;

- Monitoring all runways, taxiways, and ramps for prevention of FOD accidents;

- Maintaining service roadway systems to provide easy access around the airfield without interfering with air traffic;

- Installing and replacing signs (non-illuminated) on all AOA and access roads for safety to prevent vehicle and aircraft accidents;

- Managing tree cutting, brush and weeds around the AOA to maintain clear visibility and an obstacle-free area for safe aircraft operations;

- Maintaining fence lines to prevent wildlife from entering the AOA to provide for safe aircraft operations;

- Maintaining all storm water pipelines and structures to prevent flooding and run-off that can pose a safety risk to aircraft;

- Maintaining all airfield lighting for runways, taxiways, and ramps for safe aviation operations;

- Maintaining emergency generators for airfield lighting;

- Maintaining over mobile and hand-held radios to assure constant and dependable communications;

- Maintaining all pump houses for proper fire protection;

For SMS, the staff maintenance responsibilities include:

- Establishing annual safety objectives in accordance with Section 1.3 of this manual and providing relevant performance data to the Airport Manager; and

- Assisting in conducting Safety Risk Management Assessments as required per Section 2 of this manual.

1.4.4   Other Departments

The Engineering and Construction department is responsible for managing capital improvement projects, including construction management that may occur airside such as pavement, signage, lighting, and new signage. As part of SMS, the department participates in the Airport Board.

The department is also responsible for ensuring that all capital works are in compliance with FAA regulations such as obstacle limitations and minimum clearances.

The department will ensure formal Safety Risk assessments whenever new equipment is being planned or installed, or when new facilities are being constructed that may have an impact on safety at the airport.

1.4.5   Tenants at the Airport

Tenants at the Airport have full accountability and authority for safety within their respective area of operation.

At TMA, airport staff is currently responsible for apron control.

As part of their safety responsibilities, tenants are expected to have in place safety awareness training subject to audit by TMA.

1.5 Airport Safety Committee

The Airport Safety Committee is comprised of a body of expertise and experience to address and provide advice on safety issues at the Airport. ***TMA does not have a formal safety committee***; however for special events such as race week, the organization will discuss and resolve safety matters in an informal way.

This requirement for a safety committee is an exception in accordance with the International Civil Aviation Organization (ICAO) Safety Management Manual (SMM), "a formal safety committee may not be necessary" for small organizations. However, safety performance and safety management should be a regular agenda item at the monthly general management meetings held by the North American Testing Company (NATC). The Airport Manager should participate in these meetings.

1.5.1 SMS Committee

The SMS Committee will be chaired by the Airport Manager when required. The committee provides a forum for discussing safety-related issues from a cross-functional perspective and may lead to incursion of issues that look at safety from a broader perspective. The forum provides for dialogue and can be utilized to assess the effectiveness of the system from a "big-picture" perspective.

During preparation for special events, such as the Talladega Super speedway races, specific terms of reference can help, such as:

1. Provide a forum to discuss aviation and associated safety matters affecting TMA and its users;

2. Help identify hazards and risks and advise on safety measures to improve safety, for example;

    a. Emergency response and contingency planning

    b. Apron congestion

    c. FOD damage

    d. Airside vehicle operations

3. Review safety practices and procedures and recommend any necessary changes, for example:

    a. Revised vehicle operating procedures or vehicle lanes

    b. Apron control

    c. Escorts for arriving and departing passengers

    d. Revision of training frequency and implementation of refresher training

4. Review safety rules and regulations;

5. Review reports on safety hazards/risks, incidents, and accidents and action taken, or proposed;

6. Review audit reports and action taken or proposed;

7. Provide advice on methods to develop and promote apron safety awareness initiatives, such as poster campaigns and safety presentations/exhibitions;

8. Promote airside discipline; and

9. Provide advice on safety measures to be incorporated in airport expansions or modifications.

1.5.2   Special Event Committee

The special events meeting will consist of senior managers representing their organizations with the capacity to make decisions and deploy resources. The following organizations are included:

- The Airport Manager (the Chairperson will act as the facilitator);

- Engineering and Construction Department;

- Air Carrier/Aircraft Operators;

- Airport Authority/Management;

- Communications Services;

- Emergency Management Agencies;

- Emergency Medical Services;

- Department of Environmental;

- Aircraft Rescue and Firefighting (ARFF);

- Law Enforcement/Security;

- National Weather Service Representative;

- Air Traffic Controller (FAA Tower Representative;

- Airport Tenants Representatives.

The organizational agencies/departments continue to have full accountability and authority for their mandates, achievement of their goals, and implementation of their procedures. With respect to SMS, the Airport Staff are responsible for:

1. Ensuring that their procedures consider safety and are integrated with safe practices;

2. Ensuring that equipment and facilities are in place and adequately maintained for safe airfield and ramp operations;

3. Conducting hazard and risk analysis as described in the SMS; particularly when safety hazards are identified or reported, when new or revised operating procedures are required, or new facilities or equipment or modifications are planned;

4. Participating in safety communications, promotional, and audit programs;

5. Participating in the safety reporting process; and

6. Participating in SMS Committees.

1.6   Non-Punitive Reporting System

Introducing an SMS in the TMA will require a change in culture. A positive safety culture will provide for continuous improvement in the organization's *safety health*. To achieve this, lessons must be learned from every occurrence, incident, or accident involving safety systems.

A non-punitive reporting system is instrumental in nourishing mutual trust between management and employees and in building a safety culture. To achieve this, it is imperative that TMA encourage uninhibited reporting of all incidents and occurrences that may compromise the safe conduct of all operations.

To this end, every employee is responsible for communicating any information that may affect the integrity of airport operations. Such communication must be completely free of any form of reprisal.

2.0   PROCEDURES

2.1   Identification of Safety-Critical Systems

The first step in implementing an SMS is to determine what aspects of airport operations are within the scope of the system. The FAA Pilot Study Participant's Guide[1] states that "The importance of developing an SPM is to define where 14 CFR Part 139 and associated FAA guidance material do or do not include all of the requirements of an SMS." In other words, the SPM should identify "gaps" between the Airport Certification Program and the SMS developed for the airport. The scope of the airport SMS must be clearly defined to ensure clear assignments of responsibilities without overlap with other safety programs (such as OSHA). SMS must also, at least in its initial version, have a direct relationship with the existing airport certification requirements.

While it is customary to divide airport operations into physical areas such as movement and non-movement areas, 14 CFR Part 139 requirements sometimes straddle such physical boundaries. For example, the provision and maintenance of markings, signs, and lighting encompasses both movement and non-movement areas. Similarly, wildlife control must include non-movement areas, and sometimes extend to land outside the airport boundary.

In order to resolve potential confusion and clearly establish the SMS relationship with 14 CFR Part 139, airport activities have been divided into "Safety-Critical Systems." The criteria used to identify such systems included: A list of safety-critical systems, the corresponding CFR requirement(s) and Advisory Circulars as found in Table 2.1 below.

a. There should be as little overlap as possible between systems;

b. Systems can be clearly defined;

c. Systems are under the control of the airport authority; and

d. There is a direct relationship with 14 CFR Part 139 requirements.

Safety Management System (SMS) Pilot Study Participant's Guide, April 6, 2007.

System	Sub-Systems	CFR 143 Part 139 Reference	Advisory Circular
Personnel	Staffing levels resources	139.303	
Maintenance of paved areas		139.305	150/5380-6B
Safety areas	Provision and maintenance	139.309	
Provision and maintenance of markings, signs and lighting	Markings, Signs, Lighting interference	139.311 139.323	150/5340-1J 150/5340-26A 150/5340-18D 150/5345-27D 150/5340-5C
Emergency planning ARFF	Emergency plan, Operational requirements, Index determination, Equipment and agents	139.325 139.319 139.315 139.317	150/5210-6D 150/5220-10D 150/5200-31A 150/5210-7C 150/5210-14A 150/5210-17A 150/5220-4B
Fueling operations oversight		139.321	150/5230-4A
Self-inspection program		139.327	150/5200-18C
Access airside	Training of personnel, Control of pedestrian and ground vehicles, Fencing, Entry to the movement area	139.303 139.329 139.335 139.335	150/5210-20

System	Sub-Systems	CFR 143 Part 139 Reference	Advisory Circular
Control of obstacles	Obstacle control within airport boundaries, Monitoring building heights in OCZ, Protection of NAVAIDs, Identifying, marking and lighting construction and other unserviceable areas	139.331 139.333 139.341	AC70/7460-1K
Public protection	Protection from jet blast	139.335	
Reporting		139.339 139.343	150/5200-28D
Low visibility procedures	Safety Movement Control Guidance Systems (SMGCS)		150/120-57A
Airport planning			150/5300-13
Construction project management			150/5370-2E
Control of Debris (FOD)			150/5380-5B

It should be noted that certain aspects of the Part 139, 139.301 (Records) and 139.303 (Personnel), are not singled out as safety-critical systems.

Furthermore, some critical systems are not directly related to Part 139 paragraphs.

Records and personnel are not singled out as a system because they are a vital part of each safety-critical system and represented as components of each.

Three of the safety-critical systems were included because of their significance in managing high-risk areas although they are not related to a specific Part 139 requirement. They are also identifiable as well-defined systems subject to specific advisory circulars. These are:

a. Low-visibility procedures;

b. Control of debris (FOD); and

c. Planning and construction.

While not all aspects of the non-movement areas are included in the safety-critical systems identified, TMA will continue to enforce a number of airfield operations standard operating procedures to ensure the remaining apron activities are conducted in a safe manner.

The identification of safety-critical systems will facilitate the determination of the scope of processes that will be subjected to risk management, as well as the assignment of specific responsibilities to managers.

(SMS will be phased in gradually beginning with airfield operations. At a later stage in the implementation plan, other systems may be integrated into the TMA SMS.)

2.2   References to Written Procedures

Written procedures are required at two levels: To describe how the TMA manages its SMS and to document the operational procedures applicable to safety-critical systems. The SMS is based on and directed towards Part 139 while the procedures are founded on what Part 139 covers.

Table 2.2, found below, lists the procedures applicable to the management of the TMA SMS, the entities responsible for developing and monitoring the procedure, and where the procedure is described.

Table 2.2: Procedures to Manage SMS		
Procedure Description	**Responsible Entities**	**Reference**
Conducting policy review	Airport Management Airport Board	Safety Manual
Setting management responsibilities	HR/Airport Manager	Safety Manual Job Descriptions
Risk management procedures	Airport Manager	Safety Manual
Reporting systems	Airport Manager	Safety Manual
Training	HR/Airport Manager	Training Plans
Auditing of safety-critical systems	Airport Management	Safety Manual
Auditing of SMS	Airport Management	Safety Manual
Documentation and data control	Airport Management	Safety Manual

Table 2.3 lists the procedures applicable to safety-critical systems or sub-systems, the entities responsible for developing and monitoring the procedure, and where the procedure is described. Procedures not presently available are identified as To Be Developed (TBD).

Table 2.3: Safety-Critical System Procedures

Safety-Critical System	Sub-System	Responsible Entity	Reference
Personnel	Resource, qualifications, equipment	Airfield Board Airport Manager	ACM
	Training, training records	Airport Manager Talladega Speedway	ACM
Maintenance of paved areas	Maintenance, repair and cleaning	Airport Staff	ACM
Safety areas	Provision	Airport Staff	ACM
	Maintenance	Airport Staff	ACM
Provision and maintenance of markings, signs and lighting	Markings	Airport Staff	ACM
	Signs	Airport Staff	ACM
	Lighting	Airport Staff	ACM
	Lighting interference	Airport Staff	ACM
	Index determination	Fire Chief	ACM
Emergency planning ARFF	Equipment and agents	Fire Chief	ACM
	Operational requirements	Fire Chief	ACM
	Emergency Plan	Fire Chief	ACM TMA Emergency Plan
Fuelling operations oversight	Fueling surveillance	Fire Chief	ACM
Self-inspection program	Inspection procedures	Airport Staff	ACM - TBD

Table 2.3: Safety-Critical System Procedures			
Safety-Critical System	**Sub-System**	**Responsible Entity**	**Reference**
	Inspection records	Airport Staff Management	ACM - TBD
	Training of personnel	Airport Manager Airport Staff	ACM - TBD
	Control of pedestrian and ground vehicles	Airport Staff	ACM - TBD
Access airside	Access to safety and movement area	Airport Staff	ACM – TBD
	Non-compliance	Airport manager Airport Staff	ACM - TBD
	Airport condition reporting	Airport Manager Airport Staff	ACM
Reporting	Noncompliant	Airport Manager	ACM - TBD
Low-visibility procedures	Report	Airport manager	ACM - TBD
Control of debris (FOD)	Inspection procedures	Airport Staff	ACM - TBD

Each procedure must identify who has authority over its contents (development, amendments) and who is responsible for ensuring it is carried out consistently.

2.3   Documentation

The TMA safety-related documentation is composed of the following:

1. Safety manual and SMS implementation plan;

2. Reporting system(s) documentation;

3. Hazard identification and risk management documentation;

4. Quality assurance documentation;

5. FAA requirements and Airport Certification Manual (ACM);

6. Airfield Operations documentation, including standard operating procedures (SOPs); and

7. Training records.

As part of the annual audit of TMA's SMS program, there will be a review of the SMS documentation to ensure its continuing suitability, adequacy, and effectiveness. The audit will also verify that all approved changes to TMA's safety documentation have been implemented.

As a rule, all documented record management procedures shall ensure the generation and retention of all records necessary for documenting and supporting operational requirements, and shall be in accordance with applicable regulatory requirements. They shall also provide the control processes necessary to ensure appropriate identification, legibility, storage, protection, archiving, retrieval, retention time, and disposition of records.

A widely accepted definition of SMS is that it is an organized approach to managing safety, including the necessary organizational structures, accountabilities, policies, and procedures. SMS implementation will call for the establishment of processes requiring action to be taken, reports to be prepared, and other activities to be carried out throughout different departments and levels of the organization.

Records should be documented and kept for a period of five years, with the exception of reports from the proactive and non-punitive reporting systems that should be kept for an indefinite period of time. At a minimum, electronic media records should be kept of:

a. All activities related to identification of hazards and risk assessments;

b. Results of all investigation of accidents and incidents;

c. Mitigation action taken and tracking assessments;

d. Findings of internal audits, assessments, and program review; and

e. Communication strategies and publications.

The consolidated documentation should be readily accessible by persons who need the information.

2.3.1   Safety Manual and SMS Implementation Plan

The Airport Manager is responsible for the maintenance, review, and revision of the safety manual, which describes the SMS and the interrelationship among all of its elements.

The Airport Manager is also responsible for the maintenance of the SMS implementation plan. Once the implementation plan has been completed, the Airport Manager is responsible for the tracking of all corrective actions resulting from audits of TMA's SMS.

The safety manual and SMS implementation plan will contain distribution lists of document holders deemed appropriate by the Airport Manager.

Amendments to the safety manual and SMS implementation plan will be recommended by the Airport Manager for coordination/approval by the NATC Director and Airport Board. The Airport Manager is responsible for ensuring amendments are inserted and implemented.

2.3.2   Reporting System(s) Documentation

All reports from the proactive non-punitive reporting system and the accident/incident reporting system will be recorded in an electronic database maintained by the Airport Manager.

Due to the potentially sensitive nature of this information, the SMS Committee will determine who will have access to the database. Release of any information to outside organizations will have to be approved by the Accountable Executive, who may then consult with the TMA legal department.

Since reporting documentation will be required for long-term trend analysis, it will be preserved indefinitely.

The procedures developed by the Airport Manager for this purpose will be documented and inserted into the safety manual.

2.3.3   Hazard Identification and Risk Management Documentation

The hazard identification and risk management documentation consists of all records generated as a result of the risk management process described in Chapter 4 of this safety manual.

This documentation will be preserved by whomever is responsible for carrying out the risk management process and will be made available upon request to the Airport Manager.

The archiving or destruction of any hazard identification and risk management documentation will be authorized by the Airport Manager. Release of any information to outside organizations must be approved by the Accountable Executive, who may then consult with the TMA legal department.

The procedures developed for this purpose will be documented by the Airport Manager and inserted into the safety manual.

2.3.4   FAA Requirements and ACM

FAA Part 139 requirements consist of all regulatory material applicable to TMA operations (FAR, Advisory Circulars, letters of correction, exemptions, etc.) and are reflected in the ACM.

While copies of documents may be distributed as determined by the Airport Manager in consultation with Airport Board and other related agencies, a reference library of all regulatory material will be held in a document center managed by the Airport Administration. The reference library will keep master copies up to date by inserting all necessary amendments and distributing such amendments to all document holders as per a master distribution list. The reference library manager will ensure all amendments are duly received and inserted by document holders.

Airport Staff will ensure it receives all FAA notices of proposed regulations and forwards them to the appropriate division(s) for review and comments. Consolidated TMA representation to the FAA will be coordinated by the Airport Manager.

The procedures developed by Airport Staff for this purpose will be documented and inserted into the SMS Manual.

2.3.5   Quality Assurance Documentation

The Quality Assurance (QA) documentation consists of all documents produced as a result of:

a.   Safety surveys;

b.   Internal and external safety audits;

c.   Safety trend analysis; and

d.   Tracking of corrective and preventive action(s);

The Airport Manager will retain records of all the above activities. These records consist of at least the following documents:

a.   Safety survey questionnaires and results;

b.   Internal and external audit plans;

c.   Audit findings and supporting documentation;

d.   Final audit reports;

e.   Action plans to implement recommendations and tracking thereof; and

f.   Results and recommendations from trend analysis.

2.3.6   Airfield Operations Documentation

The Airport Staff shall transmit information, instructions, guidelines, and policies and procedures through the use of manuals, memoranda, and other forms of correspondence.

2.3.7   Training Records

Training records consist of records required by Part 139 section 139.301 and records of SMS training to enable the implementation of the safety manual (hazard identification, risk management, SMS, etc.).

Training records required by Part 139.301 will be maintained by the appropriate airport staffs that are responsible for ensuring staff meets regulatory requirements.

SMS training records will be maintained by the Airport manager in a filing system accessible to airport staffs.

The implementation plan will require an evaluation of current training record management practices by the TMA to make recommendations for streamlining and use of suitable digital processes to maximize efficiency and effectiveness. The resulting documented procedure will be inserted into the safety manual.

3. SAFETY RISK MANAGEMENT

3.1 Introduction

Aviation is an activity that faces numerous risk on a daily basis. It is impossible to completely eliminate all risk; however risk can be reduced to an acceptable level through the Safety Risk Management (SRM). SRM is the core activity that supports the management of safety and contributes to others, indirectly relating to airport operations. The risks and costs inherent in aviation require a rational process for decision-making. The term of safety risk management, it is meant to convey the notion that the management of safety does not aim directly at the management of financial risk, legal risk, economic risk and so forth, but it restricts itself primarily to the management of safety risk.

Decisions are made in daily in real time, weighing the probability and severity of any adverse consequences implied by the risk against the expected gain of taking the risk. This process is known as *"risk management"*.

Risk management is considered the ongoing identification, analysis and elimination (and/or *mitigation to an acceptable or tolerable level) of those hazards, as well as the subsequent risks, that threaten airport operations.*

Safety Risk Management (SRM) is important because it can:

- Control the risk of an accident before any harm is done;

- Supply useful information for the development and implementation of measures to control safety and minimize the possibility of accidents;

- Determine if existing or planned safety measure are adequate; and

- Provide TMA management with valuable information about potential hazards and dangers that may be under estimated or overlooked in daily operations.

In other words, risk management facilitates the balancing act between assessed risks and viable risk mitigation. SRM encompasses the assessment and mitigation of the safety risks of the consequences of hazards that threaten the capabilities of an organization, to a level as low as reasonably practicable (ALARP). Risk management is an integral component of safety management and a balance of allocation of resources that involves a logical process of objective analysis, particularly in the evaluation of the risks. Actively analyzes the work and worksite, to anticipate and prevent harmful occurrences.

Thus a Safety Risk Assessment (SRA) process is the key first step towards Risk Management.

3.2 Application

A formal SRA process will be conducted when:

- There is a significant accident or incident;

- There is a negative trend in safety-related Airport inspections, safety events or safety infractions;

- When there is concern that established practices and procedures, equipment or facilities are not as safe as they could be;

- Major changes are planned, including changes to equipment, runways and taxiways, airfield systems, key personnel, ground operations, air traffic control operations, staffing levels, etc;

- The Airport is undergoing significant change such as increases in air services or contraction in services;

- When new equipment or systems are being installed; and

- When new facilities are going to be constructed.

Safety risks assessed initially falls in the *intolerable and are unacceptable* under any circumstances. The probability and/or severity of the consequence of the hazards are of such a magnitude, the damaging potential of the hazard poses such as a threat to the viability of the airport, that immediate mitigation action is required. In general, we like to bring the safety risks to the tolerable or acceptable level by the allocation of resources to reduce the exposure to and/or the magnitude of the damaging potential of the consequences of the hazards, or if mitigation is not possible, cancellation of the operation.

Safety risks assessed that fall in the tolerable and are acceptable, provide mitigation strategies already in place guarantee that, to the foreseeable extent, the probability and/or severity of the consequences of the hazard are kept under organizational controls.

The same control criteria apply to safety risks initially falling in the intolerable can be mitigated to the tolerable acceptable risk. Both must remained protected by mitigation strategies that guarantee its control and both cases a cost-benefit analysis is required. Questions that come to mind are: 1) Is there a return in the investment underlying the allocation of resources to bring the probability and/or severity of the consequences of the hazard under airport management's control; 2) Or is the allocation of resources required pose a greater threat to the viability of the airport than bringing the probability and/or severity of the situation or hazard under the airports control. ALARP describes a risk as being reduced to a reasonable level of control for appropriate risk elimination, reduction or acceptable control.

3.3   The Safety Risk Management (SRM) Process

Safety is the state in which the risk of harm to persons or property damage is reduced to, and maintained below, an acceptable level through a continuing process of hazard identification and risk management.

A good task analysis is the critical foundation for a sound risk analysis. It is a proactive method of hazard identification. It is important that the people conducting the risk analysis are a diversified team of experts, who will be involved, in different capacities, throughout the risk analysis process.

The Airport manager will take the lead role in conducting formal Safety Risk Assessment (SRA) activities. The manager will use the airport staff experience and knowledge to provide advice in SRA. The responsible senior manager will also consider enlisting other staff within his, or her, own department, other operating agencies (public safety departments), selected tenants and Air

Traffic Control tower agency representative to provide a wide perspective and expertise in the SRA process were warranted. The result is a SRA team led by the Airport manager.

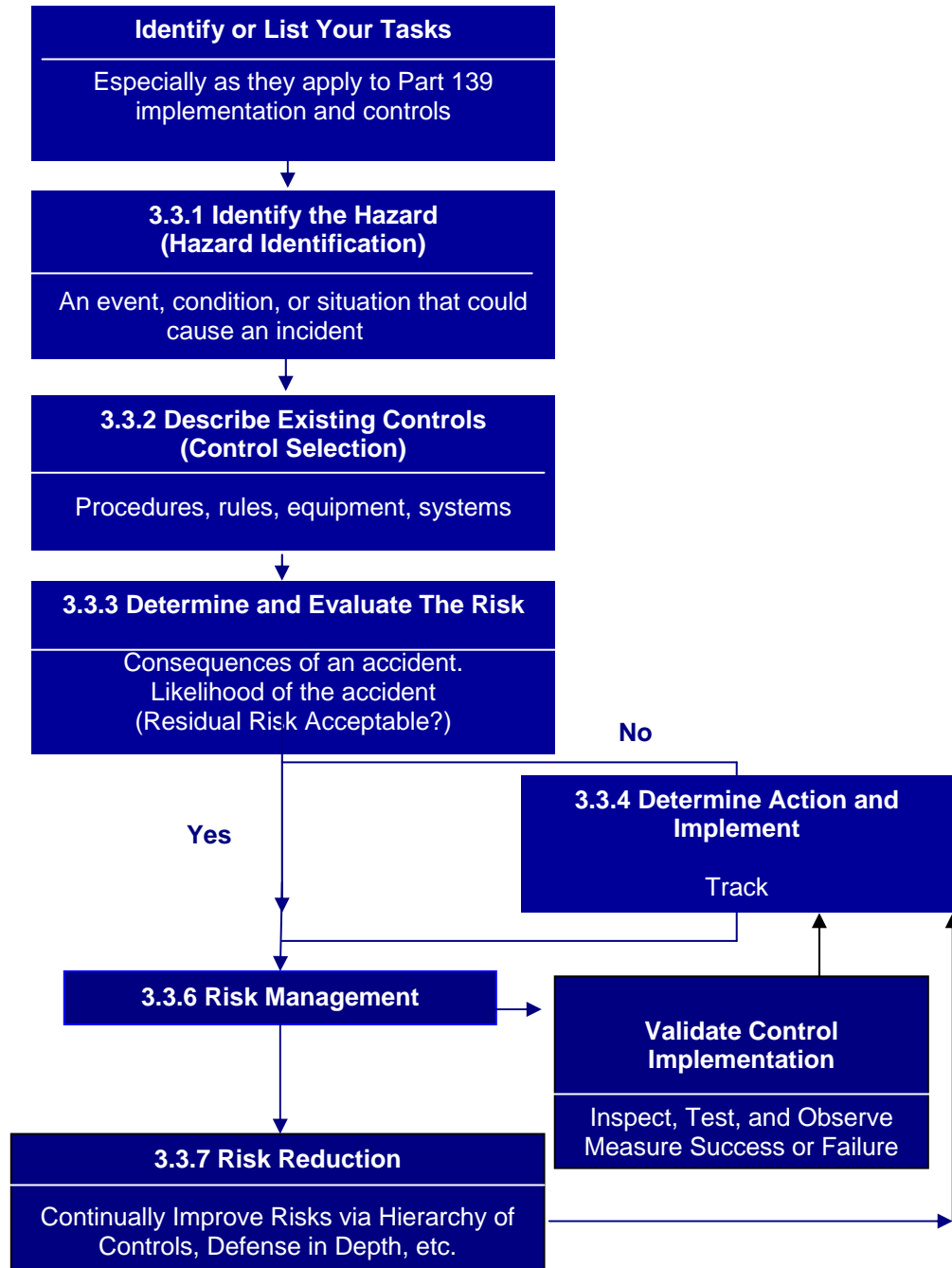SRM Process is summarized schematically in Exhibit 3.1 and described below.

Exhibit 3-1. Safety Risk Management Process

3.3.1   Identify and Hazard

The First step in SRM is to identify hazards that is faced in both operational and maintenance environments. Hazards are associated with either the tasks performed, or supposed to be performed. Many of the tasks as an Airport are regulated by FAA Part 139; therefore the performance and quality of performing these tasks directly impact the overall airport performance. Part 139, however, does not regulate all potential activities at an airport, therefore departments should determine and list the tasks they perform, and perform the risk assessment on these tasks.

A hazard is an event, condition or situation that could result in an incident involving aircraft, equipment and people. Hazard may involve any situation or condition that has the potential to cause adverse consequences.

- *Hazard.* Any existing or potential condition that can lead to an accident or incident and results in injury, illness, or death to people; damage to, or loss of, a system (hardware or software), equipment or property; and/or damage to an operating environment.

Hazards are caused by man, machines, materials, the physical environment and the methods developed by management to organize and get the tasks completed. Collectively these are known as Causal Factors. TMA require all hazards to be documented and analyzed to determine what action is required to eliminate or reduce the safety risk associated with the hazards.

The AOA of any airport can have numerous hazards that may bring about accidents or incidents if not properly mitigated or prevented. Procedures exist to ensure the review of processes and the identification and control of related hazards. Acceptable techniques include, but are not limited to Job Hazard Analysis, Failure Modes and Effects Analysis and Process Hazard Analysis.

There are three basic causes of incidents that are used in a Risk Assessment process:

- Physical
  - ◦ Facility, Equipment, Materials
- Organizational (Management Policies and Decisions)
  - ◦ Policies, decisions, behavior, experience, personal, mental, motivational and attitudinal
- Environmental
  - ◦ Weather, surroundings, etc.

The Risk Assessment Process evaluates the physical and environmental hazards, and the SMS philosophy tends to use the organization to influence and isolate as much as reasonable the potential energy for frequent and serious risk factors. Thus, Physical and Environmental Factors typically include the following questions:

- *Design factors*, including equipment and task design;
- *Procedures and operating practices*, including their documentation and checklists, and their validation under actual operating conditions;
- *Communications*, including the medium, terminology and language;
- *Personnel factors*, such as policies for recruitment, training and remuneration;

- ***Organizational factors***, such as the compatibility of operational and safety goals, the allocation of resources, operating pressures and the corporate safety culture;

- ***Work environment factors***, such as ambient noise and vibration, temperature, and lighting;

- ***Regulatory oversight factors***, including the applicability and enforceability of regulations; the certification of equipment, personnel and procedures; and the adequacy of surveillance audits; and

- ***Defenses***, including such factors as the provision of adequate detection and warning systems, the error tolerance of equipment and the extent to which the equipment is hardened against failures.

A major component of any Risk Management system is the defenses (controls). See 3.3.2.1 for Hierarchy of Control.

Exhibit 3-2 provides examples of typical potential airside scenarios. This exhibit should not be considered as a complete list of potential hazards but only as examples of some of the hazards that may occur.

Exhibit 3-2. Potential Airside Hazard Causal Factors and Related Events (Scenarios)

EQUIPMENT (Aircraft/Vehicle/Facilities)	ACTIONS OF INDIVIDUALS (Employees, Tenants, Public, etc.)	MATERIALS AND TOOLS	MATERIALS AND TOOLS (Continued…)
• Apron congestion	• Erratic driving	• Fuel Spills	• Improper storage of equipment and supplies
• Lack of protective pylons around aircraft	• Driving too fast	• Fuel in hydrant pits	• Lack of visibility of runway ends
• Lack of chocks when aircraft parks	• Improper parking	• Dangerous goods spills	• Lack of visibility for taxiway entrances to runway
• Poor apron condition	• Running on ramp	• FOD	
• Mechanical condition	• Improper marshalling	• Lack of safety protective equipment	**ENVIRONMENTAL CONDITIONS**
• Lack of hazard lights	• Blocking fuel truck when fueling	• Lack of radios or communication equipment	• Wildlife
• Lack of reverse alarms	• Leaving engine running in an unattended vehicle	• Condition of brakes, tires	• Adverse weather
	• Riding in rear of pick-up trucks	• Oil spills on apron and/or in passenger walkways	• Marking of natural hazards
ORGANIZATION CONTROLS	• Lack of coordination between vehicles during aircraft servicing	• Disposal of grooming waste	• Lighting strikes
• Lack of or weakness in Planning or Design	• Ignorance of meaning of apron markings	• Poor runway condition	
• Lack of or weakness in Implementing a program or procedure	• Smoking on ramp	• Failure of one or all runway lights	
• Lack of or weakness in Control	• Failure to yield right of way to aircraft and pedestrians	• Failure of approach lights	
• Lack of or weakness in Management Action	• Use of cell phone within 50 feet of a refueling operation	• Lack of FOD bins	
	• Throwing trash and/or equipment on apron	• Lack of fire extinguishers	
	• Failure to use FOD bins	• Poor apron marking visibility	
	• Under the influence of drugs or alcohol	• Lack of appropriate equipment for fuel/aircraft fires	
	• Individuals on airside without authority	• Lack of vehicle maintenance	
		• Improper Storage of hazardous materials	

Although the Airport Manager is responsible for conducting an SRA, the identification of hazards is not just the responsibility of any one person or organization. At TMA, there are formal procedures in place to identify hazards, such as the airport self-inspection program. Furthermore, all those working on the airside are encouraged to identify events or situations that could compromise safety. The SMS includes an employee reporting system described in Section 5. In addition, hazards are identified by the use of a task analysis and operational data trend analysis.

3.3.2   Describe Existing Controls

The identification of a hazard also identifies the controls that are currently in place associated with a hazard (e.g., driver training programs, airport self-inspections, airport markings and signage, redundant systems) to assist in determining the risks of the hazard and action strategies to reduce the risk.

3.3.2.1 Hierarchy of Control.

The process is intended to provide a systematic approach to eliminate, reduce, or control the risks of different hazards. Each step (see Table 3.1 below) is considered less effective than the one before it. It is not unusual to combine several steps to achieve an acceptable risk (defense in depth). The Severity of Risk should all be considered in determining methods of hazard elimination or control.

Achieving feasible risk reduction is based upon the following preferred order of controls:

Table 3.1 Control Selection	
Controls	**Examples**
Elimination	Eliminate human interaction Eliminate pinch point (increase clearance) Automated materials handling (robots, conveyors, etc.) Eliminate tool, material, step, or process.
Substitution	Replace with less toxic compound Replace, reduce a step, etc
Engineering Controls	Barriers, interlocks, machine guards Presence Sensing Devices (light curtain, safety mat, etc) Platforms and guard railing Lift tables, conveyors, and balancers Two hand Controls

Table 3.1 Control Selection	
Controls	**Examples**
Warnings	Signs Backup alarms Beepers Horns Labels
Administrative Controls	Safe work procedures Safety inspections Training Warnings such as Lights, beacons, and strobes Computer warnings Worker rotation Signs and labels Beepers, horns and sirens, etc
Personal Protective Equipment	Ear plugs, gloves, respirators Safety glasses, face shields Safety harness and lanyards Protective clothing

3.3.2.2 Defense in Depth.

The need for a series of defenses rather than just a single defense layer arises for the possibility that the defenses themselves may not always work perfectly. For an incident to occur in a well-designed system, gaps must develop in all the defensive layers of the system at the critical time when that defense should have been capable of detecting the earlier error or failure.

Developing a safe and error-tolerant system requires that the system contain multiple defenses to ensure that, as much as possible, no single failure or error will result that will result in an accident, and that when a failure or error occurs, it will be recognized and remedial action taken before a sequence of events leading to an incident can develop.

3.3.2.3 Determine the Risk

The Safety Risk Assessment Team (SRAT) will determine the risks of the hazard.

Likelihood is the chance (great or small) that people or aircraft will be harmed or damaged by a hazard; i.e., likelihood that an incident will happen. Likelihood is also the potential for an incident to happen, often expressed as exposure.

1. Exposure is contact with or proximity to a hazard, including duration and intensity.

Severity (consequences)

Risk is measured in terms of possible consequences of the incident (the severity of the incident) and the likelihood (probability) that the incident could happen.

2. Risk is the composite of the predicted likelihood (or probability) and the severity of each possible consequence. An estimate of the combination of likelihood of occurrence, or exposure and severity.

Risk Factor – Severity (Consequence of the potential incident)

In determining a risk, the consequences of a potential incident are assessed. The consequences used in this rating are presented below along with a guide to their application.

Table 3.2 Severity Rating	
	EXAMPLES (one or more resulting conditions)
Minor	No, or very, limited financial loss. Very limited, or no, damage to aircraft, vehicles or equipment. Minor operational delays. First aid treatment may be required.
Moderate	Repairs to damaged aircraft, equipment or vehicles. Operational delays. Medical treatment required in hospital or emergency clinic. Significant cost to individuals involved. Some media attention.
Major	Extensive repairs or replacement of aircraft, equipment or vehicles. Major operational delays. Extensive injuries to a number of people. Possible death of 1 or 2 individuals. Strong media attention, loss of public confidence.
Catastrophic	Aircraft destroyed. Multiple deaths, extensive injuries. High profile media attention. Severe loss of public confidence.

Risk Factor - Risk Likelihood (Probability)

The second consideration in risk assessment is the probability of the hazard causing an incident. There essentially is no meaningful quantitative data for conducting SRA at an airport using numerical methods. Thus, a qualitative approach using exposure potential is required. This provides a formalized and consistent approach to assessing safety risks.

The relative rankings of the probability for use in SRA analysis are given below

Table 3.3 Likelihood Rating	
	Examples
Rare	Incident not expected to happen under most normal circumstances. Improbable or remote, very unlikely. Frequency of exposure limited to a few people, not every day.
Possible	Might or could occur at some time in the future. Multiple daily exposures by either a number of personnel in one department, or across multiple departments.
Likely	Will probably occur with some certainty in the future. Multiple hourly exposure, or performed across multiple departments.

3.3.3   Evaluate the Risk

There will always be risks involved in aviation operations. Some risks can be accepted, some can be eliminated, while others can be reduced to acceptable levels.

Once the probability and the consequences of an incident have been determined, the SRAT evaluates the relative rating of the risk by using the following matrix.

		Table 3.4 Risk Estimate Matrix			
		Severity (Potential Consequences)			
		Minor	**Moderate**	**Major**	**Catastrophic**
Likelihood (Probability)	**Rare**	Low	Low	Medium	High
	Possible	Low	Medium	High	High
	Likely	Medium	Medium	High	High

The risk ratings used in the matrix are defined as follows:

High risk: A high risk is unacceptable risk. If identified, Management needs to take **immediate action** to mitigate or eliminate the hazard for an existing condition. For planned changes to equipment, systems, operations, management, etc., the change cannot be implemented unless the potential hazards are further mitigated to medium or low levels. Substitution or Engineering controls are preferred prior to assigning administrative or PPE type controls.

Medium risk: Management will react to mitigate or eliminate the hazard as expeditiously as possible within existing resource constraints. In the short term, the risk is tolerable, but may be subject to interim controls. Again, Substitution and Engineering controls are preferable; however, PPE or administrative controls are typically acceptable, especially in the interim.

Low risk: This level of risk is considered acceptable and no further action is required unless the risk can be reduced further, or eliminated, at little or no effort. PPE or administrative controls are likely to be adequate.

The above Risk matrix is a guide. The Airport Manager will provide further guidance to the SMAT in the use of this Matrix. Professional judgment, as well as historical information and published data, will be used in determining which frequency or severity category is chosen.

Factors that may be considered when evaluating risk, particularly whether a risk is acceptable are as follows:

- Managerial. Is the risk consistent with TMA's safety policy and objectives?

- Affordability. Does the risk defy cost-effective resolution?

- Legal. Does the risk conform to current FAA and other regulatory requirements?

- Cultural. How will the Airport's employees and other stakeholders view this risk?

- Market. Will TMA's competitiveness relative to other airports be compromised?

- Political. Will there be a political price to pay for not reducing or eliminating the risk?
- Public. What will be the reaction of the media or special interest groups regarding the risk?

In undertaking the evaluation of risk, the Risk Evaluation Guide provided in Appendix 2 should be used. A risk assessment must be completed for any formal assessment of risks and hazards as required in Section 3.2 above as well as to assess any reported safety hazards that are reported to the Airport Staff.

3.3.4   Determine Action and Implement

If the SRAT has determined that the risk is acceptable then no further action is required other than documenting the previous SRA steps.

If a risk is deemed high or medium, or if additional controls are identified, the accountable Airport Manager will be responsible for taking action or developing recommendations to mitigate or eliminate the hazard. The Airport Manager should consider a range of options depending upon the outcome of the risk evaluation. The responsible Manager may want to seek

advice from the SRAT if appropriate. The potential solutions should again be based on the hierarchy of controls, as well as:

- Restrictions on an individual's right and ability to work on the airside;

- Changes or modifications to equipment or maintenance programs;

- An infrastructure solution including such options as rehabilitation, reconstruction, or new facilities;

- Provision of safety information and the provision of specific safety brochures, posters, etc.;

- The issuance of Airport safety directives that could include changes to operating procedures and/or new procedures, limiting exposure to the risk, increased surveillance of the hazard or activities associated with it, improved supervision, targeted safety advice etc.; and

- Safety training which could include the provision of new on-site training programs and/or modifications to existing safety training programs.

When required, the Airport Manager will prepare a safety action plan outlining planned risk reduction measures, with specific target dates and responsibilities of key participants. If required and time allows, final approval of the plan shall be given by the Airport Board. The Airport Manager will be responsible for ensuring that the safety action plan is implemented

Where the action plan involves expenditures beyond the authority of the Airport Manager, the recommendations will be forwarded to the TMA Airport Board for consideration and action.

If a hazard and its associated risks are primarily the responsibility of a tenant, the tenant will be responsible for developing their own safety action plan when requested by the Airport Manager or the Airport Board; for example, as the result of an audit.

The Staff will monitor implementation and provide regular (at least quarterly) written updates on the status of safety action plans to the Airport Manager and the Airport Board. Formal documentation and tracking of corrective actions (who, what, when) helps ensure prompt closure for all inspections, investigations, and evaluations.

3.3.5   Documenting

The activities conducted during the SRA including any resulting safety action plans will be documented by the TMA Manager. The documentation will be maintained by the Airport Staff.

3.3.6   Safety Risk Management

Risk Management is the process of taking the information from a Risk Assessment and applying management systems principles of integration and continuous improvement. From an integration standpoint, Risk Management verifies that controls are in place and effective by integrating them into the inspection process, tracking and accountability of safety issues, and management of change.

In addition, Risk Management is the process where continuous improvement results in further risk reductions and abatement, based on incident analysis, developments in control technologies,

etc. As a result, there are two further components of Risk Management: Control Verification and Ongoing Risk Reduction.

Control Verification includes evaluation of worksite conditions through the written records of inspection reports of hazards, employee reports of hazards, and accident/incident investigations.

The Control Verification items on the organizational inspection checklists are intended to be targeted on the controls the committee personnel feel may NOT be consistently implemented. It is intended that the controls on the checklists may change, and that if controls are not consistently in place that the committee will report these to the Business Leads and record their corrective actions to help improve the overall performance of the control implementation. Once controls are consistently reported at over 95%, that control can remain on the checklist, but additional high risk controls should be added.

Risk reduction efforts should be measured periodically, to include:

1. Implementation of Elimination/Substitution controls;

2. The number of Risk Assessments performed; and

3. Trending the number of controls in place/practiced versus not implemented.

Metrics are intended to help the organizations and site communicate the status of their safety and health responsibilities, goals, and targets. Long term, it is expected that the metrics will change every year, and become more progressively aligned with leading metrics, risk reduction targets, etc. For example, action plan status resulting from any category not achieving green could be an additional metric (objective or target). The following are possible metrics:

1. ID Risk Reduction Targets: Ensure targets have been established and documented in meeting minutes for either Prioritized Risk activities or Hazard Categories based on a Risk Assessment. Typically this is based on the highest numbers on the "Prioritization" of the risk assessment.

2. Concurrence on Targets: Leadership endorses the targets and communicated this endorsement to the general workforce.

3. Target (Objective) Status: Targets are those identified by the risk assessment for risk reduction or and/or Injury and Illness statistics, or other safety data. This data is typically monitored as part of committee minutes.

4. Critical Control Verification Rate: Safety is notified and performs Risk Assessments for changes in facilities, process, tools, and equipment and safe work procedures are developed prior to operation.

Leading metrics are developed to measure the volume that critical safety programs are used to identify hazards and fixes. Metrics are collected to measure the closure rate of the hazard fixes and controls. All critical programs are including in each of the above metrics, such as: employee reports of hazards, inspections, investigations, hazard analysis, special surveys, etc.

3.3.7   Risk Reduction Efforts.

Although the absence of safety-related events (accidents and incidents) does not necessarily indicate a "safe" operation, some operations are considered to be "safer" than others. Risk reduction in an ongoing and continuous process of implementing more aggressive hierarchies of controls to reduce both severity and likelihood. As an organization undergoes changes, they continue to add defenses. However, lessons learned from incident analysis yield additional opportunities to refine and abate risk controls and risks, respectively.

4.   SAFETY ASSURANCE

4.1   Introduction

SMS Safety Assurance augments existing TMA practices and procedures including:

- The Airport's self-inspection program;

- Storage and handling of fuel;

- The airport emergency plan;

- Airport condition reporting including the issuance of NOTAMS;

- Accident and incident reporting, as part of pedestrian and ground vehicle control programs; and

- Construction Safety Plans.

The following sections of the SMS address non-punitive employee reporting, systematic safety reviews, safety oversight, and auditing.

4.2   Employee SMS Reporting System

To further enhance TMA safety by identifying safety hazards, all TMA employees working on the AOA are encouraged to report any accidents, incidents, potential hazards, or safety concerns that they observe or in which they are involved.. Examples include: a driver not stopping for passengers, FOD receptacles not emptied, vehicles left unattended on the apron, confusing signs, poor lighting, etc.

TMA employees are encouraged to prepare a written Employee Safety Report using the form provided in Appendix 2. The form is available from the Airport Administrative Office. The employee should submit the Employee Safety Report to the Airport Management. An employee may also make a verbal report to Airport Management who will assist in preparing the written Safety Report.

The Airport staff will investigate the concern or hazard and provide a response to the initiator of the report. If necessary, an SRM assessment will be conducted.

Tenants at the Airport are encouraged to use the TMA non-punitive reporting systems whereby tenant employees can report any accidents, incidents, or potential hazards to TMA and their management.

TMA Non-Punitive Reporting Policy

The purpose of any investigation of an accident, incident, or safety hazard is to establish the facts and root cause, and, where necessary, take measures to prevent further occurrences. TMA believes that free and full reporting of incidents and accidents is a primary aim and that every effort will be made to avoid action that may inhibit reporting.

TMA Management will not take any disciplinary action against an employee reporting a safety incident or accident even if a reported incident or accident indicates an unintentional mistake by the employee.

This reporting policy does not apply to criminal acts, deliberate violations of safety regulations and safe operating procedures, or gross negligence.

If requested by the employee, the Employee Safety Report will be treated in confidence. In this case, the Airport Manager will not disclose the name of the person submitting a safety report unless required to do so by law. The Manager will de-identify the Employee Safety Report before initiating any investigation or action. All personnel and organizational names will be removed from the report. Dates, times, and related information which could be used to infer an identity will be either generalized or eliminated.

4.3   Airfield Incident Reporting

The Airport Staff is usually the first responder to incidents and accidents at the Airport. Airport Staff prepare an Incident Report whenever a dispatch call to the Airport Administrative office, the Police Department, ARFF, or within Operations is warranted. These reports are prepared and distributed electronically.

The Incident Report is also used for reporting accidents and major incidents such as near misses or incursions. Appendix 2 provides a copy of the Incident Report.

The Incident Reports are an important source of identifying potential safety hazards and concerns that may require further investigation and possible application of the SRM process.

All accidents and major incidents require investigation. On behalf of TMA, the Staff will undertake an investigation of all accidents or occurrences using the Accident and Incident Analysis Form contained in Appendix 2. The Staff will enlist whatever technical expertise that is required within TMA. If necessary, the Talladega County Police Department will participate in the investigation.

TMA's investigation does not negate any regulatory requirements for accident investigation required by FAA, federal, state, or local regulations.

4.4   Systematic Reviews

Systematic reviews allow for assessing adherence to TMA's safety policy and achievement of safety objectives. Systematic reviews are the responsibility of the Airport Manager in consultation and coordination with the other TMA departments. Systematic reviews include the following activities:

- On-going trend analysis of accidents, incidents, self-inspection reports, NOTAMs, and condition reports through information provided by the Airport Staff, Employee Safety Reports, and investigation of accidents and major incidents;

- Periodic assessments of the achievement of safety objectives with data provided quarterly by the Airport Staff;

- Review of the proceedings of the SRM assessments and safety audits; and

- Preparation of an annual safety report that includes a review of the safety policy and objectives, results of safety trend analysis, SRM assessments, and audits.

Based on the lessons learned from these reviews, the outputs of the systematic reviews could include a wide range of recommendations such as: new Safety Risk Management assessments, revisions to SMS safety policies and objectives, SMS practices and responsibilities, and revisions to operational or maintenance practices, systems, facilities or equipment. The Airport Staff is responsible for preparing an annual safety report summarizing these systematic reviews and recommendations.

Recommendations based on systematic reviews can be made whenever considered appropriate.

4.5   Safety Oversight

Safety oversight is the responsibility of TMA's senior management, including the Airport Manager. Safety oversight includes periodic reviews of how well the SMS is working, whether safety policies and objectives are still relevant, if there are negative trends in safety indicators, etc.

4.6   Safety Audits

The Airport Manager will determine when safety audits are required.

There are two types of safety audits undertaken at the Airport. The first safety audit is an internal audit of the Airport AOA activities and includes the safety functions undertaken by:

- Airfield Maintenance (Facilities, equipment, and operations);

- Aircraft Refueling Operations and Services;

- Engineering and Construction and their sub-contractors; and

- Airport Rescue and Firefighting.

The other safety audits are external audits of the functions that are undertaken by the TMA public safety agencies such as the NATC Headquarters, Regional FAA, Environmental Management Department, and Fueling companies or contractors.

The above audits may be undertaken by TMA, by a specialist external auditor appointed by TMA, or by another airport operator.

Tenants may also undertake independent safety audits of their operations at the Airport. The Airport Manager should arrange with each of these organizations to be provided with copies of the audits and the relevant safety plans.

4.7   Record Keeping

The following records will be kept by the Airport Staff for at least two years:

1.   The original SMS Manual and subsequent revisions;

2.   Annual reviews of the SMS policy and safety objectives conducted by Staff;

3.   Completed Safety Risk Management assessments and associated safety action plans noting completion of action items;

4.   Completed Accident and Incident Analysis Forms;

5.   Minutes of Safety Meetings;

6.   Safety audit reports;

7.   Safety Bulletins;

8.   Description of Training Programs, who attended and when; and

9.   Description of promotional activities.

All mandatory incident and accident reports will be kept for at least ten years unless there is a legal action outstanding, or anticipated, regarding an incident or accident, and then they will be kept until the legal action is disposed of.

5.0   SAFETY PROMOTION – COMMUNICATIONS

5.1   Safety Communication Policy

TMA is committed to ensuring that all TMA personnel working airside at the Airport are informed about the safety polices and objectives, how well the Airport is meeting safety objectives, results of accident and incident investigations, new safety practices, and other matters dealing with safety.

Safety Communication will be achieved through a number of mechanisms described below.

5.2   The Airport Safety Committee (special event)

As previously described in detail, the Airport Safety Committee provides an essential partnership between Airport Management and public safety agencies to share safety information and provide advice safety in AOA operations.

5.3   SMS Manual

The SMS Manual is available for review by all TMA employees working on the AOA in their supervisor's offices. The SMS Manual will be provided to all new employees. All Airport staff and airside personnel are expected to read the document.

5.4   Safety Management Bulletins and Posters

The Staff will issue brief periodic Safety Management Bulletins. The topics of these Safety Management Bulletins will include, for example:

- Announcement of the new, or revised, SMS Manual and its highlights and where copies can be obtained or reviewed;
- Summaries of the Airport Safety meetings, particularly action items;
- Results of incident and accident investigations emphasizing lessons learned and action to be taken to reduce potential hazards;
- Announcement of new work practices and procedures; and
- New safety rules that must be followed.

The Airport Staff will issue the Safety Bulletins to each TMA employee working on the AOA.

The Staff will as appropriate, prepare and display safety posters dealing with such topics as:

- Voluntary and mandatory reporting;
- Safety rules that must not be violated; and
- Safety goals and indicators.

5.5 TMA Employee Recognition

In order to promote a safety culture at the Airport, TMA will institute an employee recognition program to honor an individual working on the AOA that makes a significant contribution to safety at the Airport. The award may be based on identifying and correcting a significant airside hazard, working over the course of the year in a safe and efficient manner, providing safety leadership to other airside employees, etc.

To be considered for this award, employees may be nominated by their peers or Airport Management. The employee's direct superior will endorse the nomination and forward to the Staff.

Nominations will be received by the Airport Manager throughout the year.

The award will be presented at the first Safety Meeting of the new year.

5.6 Annual Safety Report

An Annual Safety Report prepared by the Airport Staff will be made available for review by all TMA airside employees in their supervisor's offices. The Airport Staff will summarize relevant parts of the Annual Safety Report for inclusion in Safety Management Bulletins.

5.7 Safety Meetings

At least once per year, the Airport Manager will hold general safety meetings with all Airport airside personnel. The purpose of these meetings is to:

- Report on safety performance in meeting safety objectives;

- Summarize the initiatives and action taken, or planned, to address safety concerns and potential hazards;

- Report on lessons learned and action taken as a result of any incidents and accidents; and

- Discuss in an open forum the safety concerns that any of the participants might have.

5.8 Race Week Safety Campaign

The Airport will establish a safety campaign highlighted by Race Week where the Airport and the public safety agencies will highlight safety issues and promote reduction of the hazard as well as cultural changes with volunteer staff personnel.

To augment this two week targeted safety campaign, the Airport will also sponsor several safety awareness days during the year highlighting specific airside hazards such as FOD, fuel spills, etc.

The Staff will also sponsor FOD walks of the apron and other maneuvering surfaces after major events, such as races. Talladega Super speedway staff personnel, public safety agencies, tenants, and TMA contractors will be invited to take part.

6.0   SAFETY PROMOTION – TRAINING

6.1   Training Policy

TMA is committed through training to provide all of its employees with the skills and competencies to recognize and minimize aviation safety.

6.2   Existing Safety Training Programs

The Airport Manager provides a number of key training programs.

6.2.1   Airfield Awareness Training

All new employees of TMA, tenants and contractors who are required to drive in controlled and non-controlled movement areas receive Airfield Awareness Training. The training is computer based and was developed by AAAE. The training is not specific to TMA but does provide basic indoctrination about safety that is applicable to TMA. It includes:

- Driver training on vehicle rules and regulations;
- Physical vehicle security inspections developed;
- Basic security awareness; and
- Airfield safety and incursion prevention.

The training includes a test to assess comprehension of the trainees and the effectiveness of the training. The test requires a 100% score to pass otherwise the employee must perform retraining. The training is recorded and stored at TMA.

The TMA plans to make the Airfield Awareness Training recurrent training starting in June 2009.

6.2.2   TMA Airfield Driver Training

New TMA employees that are required to drive on the airfield in addition to Airfield Awareness Training also receive training in airport communications, airport self-inspection, introduction to Part 139, lightning warning, and general employee safety and job specific employee safety (i.e.; electrical, confined space, excavation safety, etc.).

The new TMA employee is provided with a paper copy of TMA's Airfield Driver Awareness Training which is specific to TMA. The TMA employee is required to read this material before receiving a badge and starting on-the-job training (OJT). The new employee is initially accompanied by a fully qualified driver until the new employee demonstrates that he or she is driving and communicating competently in accordance with TMA procedures and standards. OJT for the Airport Staff lasts six months. As part of the OJT, the Airport Manager has a detailed training plan to ensure the new employees are trained in all aspects of their position.

Similar to TMA, new employees of airlines, tenants, and contractors that are required to drive on the airfield are provided Airfield Driver Awareness Training. It is the responsibility of TMA's tenants to ensure that all vehicle operators are knowledgeable of all aspects of vehicle operations within their range of movement on the AOA.

The Airfield Driver Awareness Training should include:

- TMA Runway and Taxiway Designations;

- TMA Motor Vehicle Rules and Regulations;

- Runway Incursions;

- TMA ACM Section on-Pedestrians and Ground Vehicles;

- Phone numbers for Talladega Municipal Airport, Fire/Medical, Police, Security, Engineering;

- Driving on the Airport Operations Area, Airport Vehicle Operator Safety Study Guide, FAA Office of Runway Safety and Office of Airport Safety and Standards;

- Appendix 3: Enhanced Markings for Runway Holding Position, Supplement to the TMA Airfield Drivers Training Course, and

- Airfield Signs & Markings Assessment, FAA Air Traffic Organization-Safety

6.2.3   FAA Part 139 Training

Annual 139 Training is a program that all TMA employees are required to attend to retain their driving privileges. The curriculum meets all Part 139 requirements and employee safety programs. Attendees must answer multiple choice questions and answer 80% of them correctly. The Part 139 training is conducted sometime during the first year of hire and annually from that point forward. In addition to formal Part 139 training, new hires receive OJT based on a detailed training plan which covers administrative procedures (includes NOTAM and communications procedures, office procedures, airfield layout (including signage, markings, navaids, lighting, apron safety, and incursions), standards for fueling, safety and response to emergencies, and FAA regulations.

The Annual Part 139 TMA training modules include:

- Airport familiarization;

- Communications;

- Part 139 Introduction;

- Self Inspection Program which includes: Handling and Storing of Hazardous Substances and Materials, Pedestrians and Ground Vehicles, Airport Condition Reporting; and

- Specific modules related to employee occupational health and safety.

6.2.4   TMA Non-Driver Employee Training

New employees are required to read the Airport Certification Manual, take an on-line assessment, and pass by 80%.

6.2.5   ARFF Training

ARFF personnel, according to the ACM receive instruction in accordance with Part 139.319, Programs for Training Aircraft and Fire Fighting Personnel.

6.3   SMS Training

As part of the training of new TMA employees working on the AOA, the Airport Manager will provide a module addressing the SMS. The curriculum includes:

- The need for SMS;

- TMA safety policies and objectives;

- Organization for safety – role and responsibilities;

- Safety risk management – including human and organizational factors;

- Safety assurance; and

- Safety promotion.

Recurrent SMS training will be provided as part of recurrent FAA Part 139 training.

The Airport Manager will record that a training session has been given to an employee. This record will be kept by the Airport administrative staff.

Appendix 1: Risk Evaluation Guide

FORM 1

RISK EVALUATION GUIDE

Potential Hazard & Existing Controls	Potential Outcomes – Potential Accident	Likelihood	Consequences	Risk Ratings
A statement defining the hazard that has the potential to cause injury or death, or damage to aircraft, vehicles, equipment or systems. A description of existing controls for safety.	The possible direct and intermediate outcomes of a hazard that could lead to an accident.	Rare Possible Likely	Minor Moderate Major Catastrophic	Low Moderate High

Appendix 2: Forms

FORM 1

TMA EMPLOYEE SAFETY REPORT

The information supplied in this form will only be used to enhance safety.

When you have completed your part of the form, it should be given to the Airport Manager.

Name: _____

Organization Position: _____

[Name and position to be removed by the Airport Staff if requested by the employee]

PART A
TO BE COMPLETED BY THE PERSON IDENTIFYING THE HAZARD

Please fully describe the Hazard, Incident, or Accident
.
Date of occurrence: _____ Time: _____

Location: _____

Description:_____
_____
_____
_____
_____
_____
_____
_____

In your opinion, how often does this hazard exist or take place (circle one)
Not Frequently   Very Frequently

1   2   3   4   5

PART B
TO BE COMPLETED BY THE AIRPORT STAFF UPON
INVESTIGATION OF THE HAZARD

The report has been de-identified and entered into the company database

Signature: _____ Date: _____

Name_____

Based on investigation of the hazard:

Describe the hazard(s):

How frequently does the hazard exist or occur?

What are the possible sources of the hazard?

What are the possible consequences (accidents) that could result from the hazard(s)?

Minor   Moderate   Major   Catastrophic

Why?

What is the likelihood of the accident that could result from the hazard(s)?

Rare   Possible   Likely

Why?

What action is required to ELIMINATE or CONTROL the hazard and PREVENT injuries or damage?

_____
_____
_____
_____

Resources Required: _____
_____

1-1 Responsibility for action:

_____

_____

_____

Referred to _____ for further action.

Signature: _____   Date: _____

_____

Forwarded to the Airport Safety Committee for review.

Signed: _____   Date: _____

_____

Appropriate Feedback given to staff.

Signed _____   Date _____

FORM 2

INCIDENT REPORT

Type of incident: ☐ AOA ☐ Non- AOA ☐ Injury

Person completing this report**: _____**

Position and Organization: _____; Telephone Number_____

Date of Incident/Safety Violation: _____;

Time_____

Location:

_____

Date of Report: _____

Description of the Incident: Specifics of what happened-who was involved-when-where-how Remember that you are fact finding, not fault finding. Describe the sequence of events and Include any aircraft, vehicles equipment, objects, substances, or personnel that may have been involved in the incident:

Description of Any Damage or Injuries:_____

Name and telephone of witnesses (where applicable): _____

Witness Statements: _____

Action Taken:_____

FORM 3

ACCIDENT AND INCIDENT ANALYSIS FORM

To be completed by the Airport Staff for all accidents and incidents which could likely seriously endanger people, aircraft, vehicles, or equipment.

Name of person that completed this report:

Organization and Position:

Telephone number:

Date of Accident/Incident:

Time:

Location:

Date of Report:

Names of Witnesses

Witness 1

Name:

Address:

Telephone:

Witness 2

Name:

Address:

Telephone:

Witness 3

Name:

Address:

Telephone:

Details

Details of the accident/incident: Include details of people involved, aircraft, vehicles, and equipment. Include details of what took place that contributed to the accident /incident

_____

_____

_____

_____

_____

_____

_____

_____

Details of any injuries:

_____

_____

_____

Details of damage to aircraft/vehicles/equipment/facilities:

_____

_____

_____

TALLADEGA MUNICIPAL AIRPORT

ACCIDENT/INCIDENT ANALYSIS

DATE: _____

ORIGINAL REPORT: Number_____

UPDATE REPORT: Number _____

ORIGINATOR: _____

ADDRESS: _____

PHONE: _____ FAX: _____

CELL PHONE:_____ E-MAIL:_____

PLACE OF ACCIDENT: _____

TIME of ACCIDENT: _____

SECT. 1 GENERAL
Provide a short narrative description of the accident including any injuries or fatalities

DESCRIPTION OF THE ACCIDENT OR INCIDENT:
Include the events leading up to, during and resulting from the accident/ incident.

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Attach Statements of those involved, witnesses and company representatives. Attach police report if one is prepared.

SECT. 2 OPERATIONAL ACTIVITY AND RESULT

RESULT OF ACCIDENT

( ) AIRCRAFT DAMAGE

( ) VEHICLE DAMAGE

( ) EQUIPMENT DAMAGE

( ) PERSONNEL INJURY

( ) OTHER _____

IMPACT OF ACCIDENT ON OPERATIONS

( ) AIRCRAFT ARRIVAL DELAY

( ) AIRCRAFT SERVICING

( ) AIRCRAFT TURNROUND

( ) AIRCRAFT DEPARTURE DELAY

( ) VEHICLE OUT OF SERVICE

( ) AIRCRAFT DELAY

( ) EQUIPMENT OUT OF SERVICE

( ) OTHER _____

SECT. 3 CONTRIBUTING FACTORS CHECKLIST

Instructions on completing this section:

1 Tick each contributing factor.
2 For each factor not contributing, mark 'N/A'
3 Provide brief narrative for each contributing factor

A. INFORMATION

Provide copies of all relevant work cards; procedures; maintenance manuals; operation orders; instructions etc and append to this report. Determine through interviews with those involved and/or witnesses whether the information was:

( ) Not understandable

( ) Unavailable/inaccessible

( ) Incorrect

( ) Conflicting with other directions or information

( ) Other

Specify exactly what information was inadequate or led to the incident

B. EQUIPMENT/TOOLS/PARTS

Provide a list of equipment/tools in use at the time of the accident. Determine through interviews with those involved and/or witnesses whether the equipment/tools/parts were:

( ) Unsafe
( ) Inappropriate to task
( ) Inaccessible
( ) Could not be used in intended environment
( ) Unreliable
( ) No instructions for use
( ) Miscalibrated
( ) Too complicated
( ) Unavailable
( ) Incorrectly labeled
( ) Other (explain)

Specify exactly what equipment, tool, or part, failed, was inadequate or led to the incident

C. AIRCRAFT/EQUIPMENT/VEHICLE DESIGN

Determine through interviews with those involved and/or witnesses whether the aircraft/equipment/vehicle was:

( ) Too Complex
( ) Not accessible
( ) Not user friendly
( ) Was a confusing variation between models/variants
( ) Other (explain)

D. MAINTENANCE ERROR

Determine through interviews with those involved and/or witnesses what procedures were followed and compare to written maintenance instructions. Highlight any areas where tasks carried out deviated from written maintenance procedures

E. JOB/TASK/ACTIVITY

Determine through interviews with those involved and/or witnesses the actual job/task/activity underway at the time of the accident. Highlight any distractions that may have been present.

F. QUALIFICATIONS/SKILLS

Determine from interviews with those involved and /or witnesses the qualifications of the individual(s) involved in the accident. Check training records for the individual involved

G. FACTORS AFFECTING INDIVIDUAL PERFORMANCE

Determine if any of the following factors were involved in the accident

Aircraft ground equipment

( ) Improper installation
( ) Equipment not installed
( ) Wrong part installed
( ) Wrong orientation
( ) Improper location
( ) Repetitive or monotonous task
( ) Complacency
( ) Complex or confusing task
( ) Inadequate planning/prioritization
( ) New task or task change
( ) Different from similar tasks
( ) Boredom
( ) Other (explain)

Individual Qualifications

( ) Proficiency/experience level and years of experience
( ) Task knowledge
( ) Process knowledge
( ) System Knowledge
( ) Other (explain)

Individual Human Factors

( ) Physical health (including sight/hearing)

( ) Peer pressure

( ) Fatigue

( ) Body size/strength

( ) Time constraints

( ) Significant life changes

( ) Alcohol/drugs/medication

( ) Other

Explain in point form how these factors lead may have lead to the incident:_____

H. ENVIRONMENT AND FACILITIES

Determine if any of the following were present during the time leading up to the accident or at the time of the accident:

( ) High noise levels

( ) Vibration

( ) Distractions/interruptions (e.g. cell phone use) ( ) Cleanliness

( ) Hazardous/toxic substances

( ) Power sources

( ) Inadequate ventilation

( ) Dark

( ) Unsafe work area

( ) Hot

( ) Cold

( ) Humidity

( ) Rain

( ) Wind

( ) Other

Explain in point form how these factors may have lead to the incident:_____

I. ORGANISATIONAL ISSUES

Determine from interviews with those involved in the accident and their supervisor(s) the following:

( ) Amount of supervisory support provided
( ) Company policy re activities underway during the accident
( ) Morale Issues within the company
( ) Other

Explain in point form how these factors may have lead to the
incident:_____

J. SUPERVISION

Determine from discussion with individual involved/witnesses/ and the involved employee's immediate supervisor:

( ) How planning/organization of tasks was undertaken
( ) How tasks were prioritized
( ) How delegation/assignment of task was undertaken
( ) What supervisors expectations were, and if these were realistic
( ) the amount of supervision provided
( ) Other

Explain point form how these factors may have lead to the
incident:_____

K. COMMUNICATION

Determine from interviews with those involved in the accident and their company's supervisory chain of command whether the following types of communications were adequate:

( ) Between shift and supervisor
( ) Between people
( ) Between supervisor and manager
( ) Between shifts
( ) Other

Explain in point form how these factors may have lead to the
accident:_____

L. ANY OTHER FACTORS

Provide a description of any other factor not listed above that may have lead to the accident

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

SECT. 4 RECOMMENDED CORRECTIVE ACTIONS

A. CURRENT PROCEDURES /OR POLICIES:

Are there any current procedures and/or policies in ASA intended to prevent the accident, but didn't?

B. RECOMMENDED CORRECTIVE ACTIONS

List recommended corrective actions:

( ) New or modified operational instructions. Specify:

( ) New or modified company regulations. Specify:

( ) New or modified inspection schedules. Specify:

( ) New or modified engineering/maintenance/training manuals. Specify:

( ) New or modified inter-company communications procedures. Specify:

( ) Any other changes or proposed new instruction/regulation or policy document. Specify:

C. OTHER CORRECTIVE ACTIONS SUGGESTED

NOTE: This form has been adapted and amended from an example provided by the Boeing Airplane Company whose co-operation in granting permission to reproduce this item is hereby acknowledged. Boeing wishes it to be stressed that this forma, (or any adaptation of it) is not designed or intended to be used in isolation but as part of a wider based system for accident investigation and follow up.

Signature:＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿   Date:＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿