



Technical Guidance Material for implementation of Safety Management System for Aerodromes Advisory Circular

Subject: **TECHNICAL GUIDANCE MATERIAL FOR IMPLEMENTATION OF SAFETY
MANAGEMENT SYSTEM FOR AERODROMES**

Date: **28 July 2011**

APPLICABILITY:

To all aerodrome operators, who intend to document and implement safety management system within an aerodrome.

This document is applicable to South African aerodromes that operate from category 4 and above.

PURPOSE:

1. The purpose of this document is to assist the Aerodrome operator with the development and implementation of a "Safety Management System" and in setting up a "Safety Management System Manual", as well as at the same time ensure uniformity in the development of such manual/s.
2. It is not intended that this manual guidelines limit or regulate the Aerodrome's operations.

REGULATORY REFERENCES CODES:

- ICAO Doc 9859: Safety Management Manual,
- ICAO Annex 14, Chapter 1, 1.4.6,
- Civil Aviation Regulations - Part 139.01.7,
- Human Factors Digest No.16 – Cross Cultural Factors in Aviation Safety (Cir 302),
- Human Factors Guidelines for Safety Audits Manual (Doc 9806),
- Human Factors Training Manual (Doc 9683).

ISSUED BY:

Section: Aerodrome Safety Infrastructure
Department: Aerodromes & Facilities
Division Air Safety Infrastructure

FOREWORD

The implementation of safety management systems represents a fundamental shift in the way we all do business. Safety management systems require organizations' to adopt the elements detailed in this document and to incorporate them into their everyday business practices. In effect, safety becomes an integral part of the everyday operations of the organization and is no longer considered an adjunct function belonging to the safety office.

With the predicted increase in air transportation, it is probable that this will bring with it an attendant increase in the accident rate. We clearly cannot afford such incident/accident increases. To remain successful we must constantly challenge ourselves to improve the safety standard and work towards achieving a positive shift in the accident rate.

In response to this challenge, it is essential to establish a safety management system (SMS) that is to be integrated throughout the entire company. This guidance material provides clarification regarding the intent and application of the proposed regulatory requirements. It is designed as a practical guide for the development and implementation of a safety management system within flight operations.

The following information is not intended as a prescriptive formula for the development of a company's safety management system. The material contained herein is for explanatory purposes only. Where existing systems or components have been referenced, the example is used for the purpose of clarity and to demonstrate that there are existing systems available. It is not the intention of the SACAA to advocate that any one particular system be used. In keeping with performance based regulations, this guide is intended to provide details of the various SMS regulatory requirements and to offer examples of possible ways these elements can be enabled.

WHAT IS A SAFETY MANAGEMENT SYSTEM?

A safety management system is a systematic, explicit and comprehensive process for the management of safety risks that integrates operations and technical systems with financial and human resource management, for all activities related to an air operator or an approved maintenance organization's certificate.

A safety management system is a businesslike approach to safety. In common with all management systems a safety management system provides for goal setting, planning, and measuring performance. It concerns itself with organizational safety rather than the conventional health and safety at work concerns. A company's SMS defines how it intends the management of air safety to be conducted as an integral part of the company's business management activities. A Safety Management System is woven into the fabric of an organization. It becomes part of the culture; the way people do their jobs.

The organizational structures and activities that make up a safety management system are found throughout an organization. Every employee in every department contributes to the safety health of the organization. In some departments safety management activity will be more visible than in others, but the system must be integrated into "the way things are done" throughout the establishment. This will be achieved by the implementation and continuing support of a safety program based on a coherent policy that leads to well-designed procedures.

The safety management system is a requirement of ICAO, and is documented in ICAO Doc 9859

SECTION 1

1.1. Key Generic Features of the SMS Approach

There is no definitive meaning attached to the term “safety management system”, every organization, and industry, for that matter, has its own interpretation of what it is. From the Civil Aviation Authority perspective there are five features that characterize a safety management system. These are:

- a. A comprehensive systematic approach to the management of aviation safety within the aircraft operating company, including the interfaces between the company and its suppliers, sub-contractors and business partners.
- b. A principal focus on the hazards of the business and their effects upon those activities critical to safety.
- c. The full integration of safety considerations into the business, via the application of management controls to all aspects of the business processes critical to safety.
- d. The use of active monitoring and audit processes to validate that the necessary controls identified through the hazard management process are in place and to ensure continuing active commitment to safety.
- e. The use of Quality Assurance principles, including improvement and feedback mechanisms.

In searching for ways to enable the aforementioned features, an organization may choose to utilize a commercial “off-the-shelf” system. Whilst this might be appropriate for some companies, the program should be tailored to meet the requirements of the individual organization rather than assuming that one size fits all. Attention should also be given to the linkages between the individual components; they should be linked in a systematic way, rather than appearing to be stand-alone units.

1.2. Key Features Specific To The Regulatory Requirements:

- a. A safety management plan;
- b. Clear authorities, responsibilities and accountabilities for safety at all levels within the organization.
- c. Occurrence and Hazard reporting,
- d. Data collection procedures
- e. Incident analysis
- f. Hazard identification and risk management
- g. Documentation
- h. Safety management training requirements
- i. Emergency response plan

1.3. Safety Manager

The appointment of a safety manager is the first task in the establishment of the safety management system. Accompanying this appointment is:

- a. A job description,
- b. A suitably equipped office, and
- c. Dependent on organization size, support staff.

1.3.1 Dimension:

The Safety Manager acts independently of other parts of the organization. The position demands a meticulous approach, the highest degree of integrity and the ability to cope with the rapid changing circumstances in varying situations entirely without supervision. The position holder is responsible to inform and advise the CEO on all matters relating to the safe operation of the aerodrome. Tact and diplomacy are therefore prerequisite. Assignments must be taken with little or no notice in irregular and unsociable hours.

1.3.2 Nature and Scope

The Safety Manager must interact with Apron personnel, maintenance engineers, stakeholders, visitors, goods delivery companies, contractors and other General Managers/Departmental Heads throughout the Company to encourage and achieve integration of all activities involving safety regardless of an individual's status and job discipline.

The main functional contact points within the company on a day-to-day basis are:

- a. Training Manager;
- b. Engineering Managers;
- c. Quality Manager;
- d. Head of Security;
- e. Maintenance/Technical Managers;
- f. All company employees of general status.

Contact points outside the company are/may be:

- a. The State's Regulatory Authority;
- b. Government Accident Investigation Authorities;
- c. Safety Departments from other Aerodrome's locally;
- d. Foreign Airport Authorities;
- e. Foreign Government air safety and regulatory authorities;
- f. Aircraft and Equipment manufacturers;
- g. Contractors;
- h. Visitors;
- i. Stakeholders

1.3.3 Terms of Reference

To enable the Safety Manager to implement and control the safety management programme, the post holder must have access to all departments at all levels. The primary responsibility is to provide information and advice on safety matters to the CEO.

The Safety Manager is responsible for:

- a. The safety reporting occurrence database.
- b. Monitoring corrective actions.
- c. Liaising with all the departmental heads regarding safety matters;
- d. Acting as Chairperson of the Safety Committee Meetings, arranging such meetings and keeping records of such meetings.
- e. Disseminating safety related information.
- f. If instructed by the CEO and authorized by the Regulatory Authority of the State, assist with the investigation of apron accidents.
- g. Carry out safety audits and inspections – this can be part of an integrated audit that

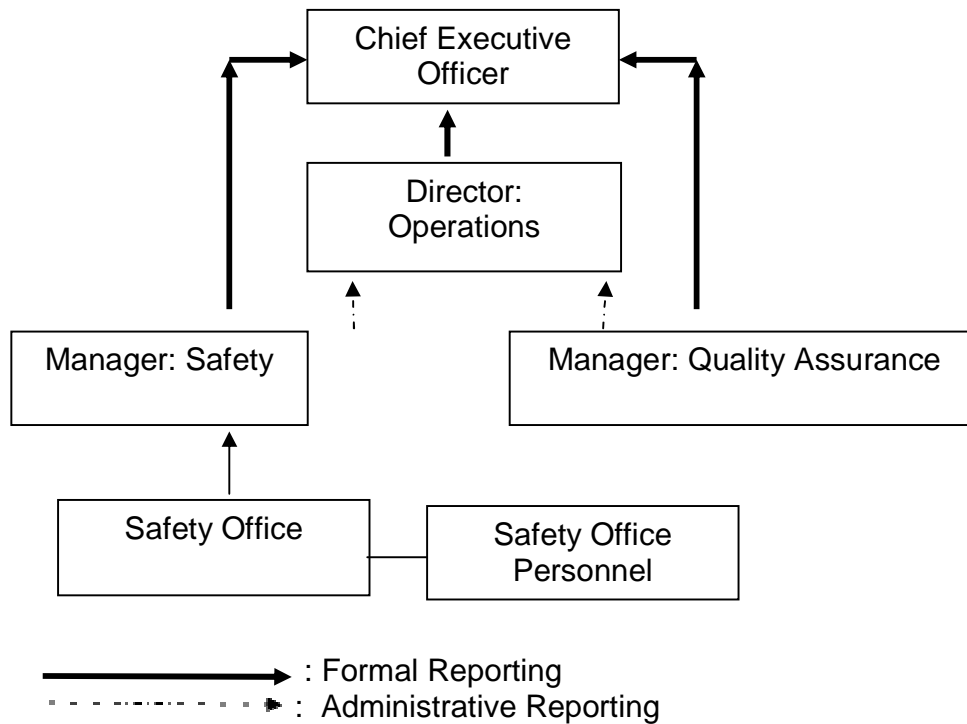
<p>involves security and quality.</p> <p>h. Planning and controlling the Company's safety budget.</p>
<p>1.4. Safety Management Plan An operator's safety management plan should contain three principle things. This includes:</p>
<p>1.4.1. A safety policy that clearly defines what the company's philosophical approach to safety and the performance goals it has established for itself.</p> <p>An operator's safety policy should clearly state the company's intentions, management principles and aspirations for continuous improvements in the safety level. This can be achieved through documented policies describing what organizational processes and structures it will use to achieve the safety management system. This should also contain a statement outlining the company's objectives and the outcomes it hopes to achieve through its safety management system. It is recommended that the safety policy include a description of each element of the system as required by ICAO. This would resemble the description of other systems as detailed in an Aerodrome Operations Manual (AOM). As per ICAO Doc 9859, a safety policy must clearly state:</p> <ul style="list-style-type: none"> a. The overall objective of the organization; b. The commitment of senior management to the goal of ensuring that all aspects of the operation meet safety performance targets; c. A commitment by the organization to provide the necessary resources for the effective management of safety; d. A commitment by the organization to make the maintenance of safety its highest priority; e. The organizations policy concerning responsibility and accountability for safety at all levels of the organization; f. Compliance with ICAO, CAR's, CATS and the Occupational Health and Safety Act 85 of 1993.
<p>1.4.1.1 Safety Objectives The safety objectives of the safety process must state that:</p> <ul style="list-style-type: none"> a. ALL levels of management will be clearly committed to safety; b. The organization will have clear employee safety metrics, with clear accountability; c. The organization will have open safety communications; d. The organization will involve all relevant staff in the decision-making process; e. The organization will provide the necessary training to build and maintain meaningful safety leadership skills; <p>The safety of the employees, customers and suppliers will be a strategic issue of the organization.</p>
<p>a. Mission Statement.</p>
<p>The safety objectives of the organization should provide a starting point for the company's safety policy. It should be accompanied by top level statement regarding the company's commitment to achieving improvements in safety and should be widely publicized and distributed. For example, The management of ABC Aerodrome's mission is to <i>develop and administer policies, procedures and services for the best possible Aerodrome system - one that is safe, efficient, affordable, integrated and environmentally friendly.</i></p>
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<p>A similar type of pronouncement should be made by the organization. A typical statement outlining the objectives of a safety management program could read:</p>
<p><i>The safety management program aims to continually improve the safety of ABC aerodrome's operations by identifying, eliminating or mitigating any deficiencies in conditions, policies and procedures, and by ensuring that staff consider at all times the safety implications of their own actions, and those of their colleagues.</i></p>
<p>It is important to ensure that the stated objectives are achievable and clearly define the limits within which the company will operate. They should be unambiguous, well documented, and readily accessible and should be reviewed on a regular basis.</p>
<p>b. Safety Goals</p>
<p>Goal setting is vital to an organization's performance. All organizations have their own ways of setting and expressing goals. In some organizations the goals are not stated very explicitly. Other organizations set goals formally and document the process. Regardless of how management goals are set, few organizations are good at developing safety goals. The most common weakness in setting safety goals is focusing on outcomes. This usually means counting accidents, but we know that safe companies can have accidents while less safe operations can be lucky and avoid accidents. Although the ultimate goal is 'no accidents', there are more precise and useful ways of measuring safety, especially in a safe system, than counting accidents.</p>
<p>1.5 Clearly defined roles and responsibilities for all personnel involved in safety.</p>
<p>An organization should document and define the roles and responsibilities of all personnel in the safety management system. Furthermore, a statement should be made attesting that everyone has a responsibility for safety. This includes a commitment on the part of top management to be accountable for safety within the company. The dedication and involvement of top management towards safety and safety practices should be clearly visible. It is important that senior management is seen to provide a strong and active leadership role in the safety management system. This includes a commitment to provide the resources necessary to attain the strategic safety objectives established by the organization. The following is a list of activities that demonstrate top management's active commitment to SMS, these include:</p>
<p>a. Putting safety matters on the agenda of meetings, from the Board level downwards;</p>
<p>b. Being actively involved in safety activities and reviews at both local and remote sites;</p>
<p>c. Allocating the necessary resources, such as time and money, to safety matters;</p>
<p>d. Setting personal examples in day-to-day work;</p>
<p>e. Receiving and acting on safety reports submitted by employees;</p>
<p>f. Promoting safety topics in company publications.</p>
<p>The ideal safety culture embodies a spirit of openness and should also demonstrate support for staff and the systems of work. Senior Management should be accessible and dedicated to making the changes necessary to enhance safety. They should be available to discuss emerging trends and safety issues identified through the System. A positive safety culture reinforces the entire safety achievement of the company and is critical to its success.</p>
<p>1.5.1 Documentation of Roles and Responsibilities</p>
<p>The following guidelines highlight some of the key areas that should be documented:</p>
<p>a. The safety responsibilities for each position and task</p>
<p>b. The competencies required for each position</p>
<p>c. The line of responsibility for ensuring all staff are competent and trained for their duties and for ensuring that training takes place, and</p>
<p>d. The responsibilities of the manager responsible for externally supplied services. All</p>

approved contracting companies should meet the company's own SMS standards or an equivalent to them.

Figure 1 demonstrate one possible organizational scenario that would meet the organizational requirements and reporting relationships. The solid lines represent reporting relationships, whilst the broken line represents lines of communication

Figure 1: Sample of SMS structure



This diagram shows where existing organizational bodies, such as the safety office, fit into the safety management system. To put this in the current context, in many organizations the safety office is considered to be a stand-alone entity equal to any other operational body. The functions specific to the safety management system are concentrated within this silo and are not distributed throughout the organization. Safety management is a business function comparable to any other function in the operation. In the same way that financial considerations are integrated into the organization, so should safety management considerations. In SMS, safety is considered to be everyone's responsibility and is not unique to the safety office.

1.5.2 Individual Roles and Responsibilities

The effective management of safety requires a clear delineation of all lines of authority within the organisation. There should be a clear understanding of the accountability, responsibility and authority of all individuals involved in the system. An effort should be made to document and distribute the structure throughout the company, thereby promoting a common understanding of everyone's role in the safety management system. Figure 1 offers an example of how the lines of responsibility might be established. In this diagram the safety management system functions are performed by the quality assurance manager and the

<p>safety manager. In other organizations, these functions might be dispersed throughout the technical or operational area, thereby providing a safety management system that is fully integrated into all line activities.</p>
<p>Management's role, responsibilities and accountabilities for the SMS and organizational deficiencies identified through the system should be well defined and the lines of authority clearly understood. As stated in the proposed regulatory requirements, these requirements include:</p>
<p>a. The accountable executive is responsible for establishing and maintaining the safety management system;</p>
<p>b. The functional area, that is the area of direct responsibility, maintenance for example, is responsible for the safety program;</p>
<p>c. Everyone is responsible for safety in the organization. This includes operations and maintenance personnel as well as individuals in other non-technical areas such as marketing and customer service;</p>
<p>d. An individual employed within the operational area in which he/she works must exercise SMS specific functions. The exception to this rule is in cases where the size of the operation, reasonably precludes the application of dedicated resources to this activity;</p>
<p>e. The person responsible for the affected functional area, the Director of Operations or Maintenance for example, is accountable for determining and implementing appropriate comprehensive corrective actions. The reason for this is threefold:</p>
<p>i. The functional director, that is the person with direct line responsibility for the affected area, is directly involved in the decision making process. In most cases, he/she has the knowledge and expertise to recommend effective corrective and preventative actions and has the authority to assign the appropriate resources where required.</p>
<p>ii. The functional director must assume responsibility for safety within his/her 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.</p>
<p>iii. A quality assurance function is provided because event investigations and corrective actions are separate activities. This eliminates the potential for conflict of interest because the person who identifies the problem is not the person who determines what the corrective action is. This does not preclude discussion of safety findings within a safety committee environment; however, the final say on any remedial action reside with the responsible functional director.</p>
<p>The development of a positive safety culture is predicated on the involvement of all facets of the organization in the safety process. The objective of this requirement, therefore, is to involve all parties in the safety management system, thereby fostering a companywide commitment to safety management.</p>
<p>1.5.3 Delegation Of Tasks To Effectively Operate the Safety Management System</p>
<p>To ensure that the SMS operates effectively it is essential that the following tasks be delegated to company personnel as appropriate. The roles, responsibilities and accountabilities of each individual/position should be well defined and the lines of responsibility clearly understood. As stated in the proposed regulatory requirements, he/she is responsible for:</p>
<p>a. Establishing and maintaining a reporting system to collect safety related data;</p>
<p>b. Conducting hazard identification and risk management analysis;</p>
<p>c. Conducting periodic reviews to determine the effectiveness of the program;</p>
<p>d. Developing and evaluating the results of safety initiatives;</p>
<p>e. Monitoring industry monitor industry safety concerns that could affect the organization;</p>

f. Determining the adequacy of training programs, and
g. Advising reporters of the results of event analyses.
1.6 Safety Office
There is no regulatory requirement to have a safety office. It is recognized, however, that larger organizations may choose to employ a safety office as a consultative or administrative body. In these cases, the safety office may act as a repository for safety related reports and information, occupational health and safety issues, as well as provide risk assessment and data analysis expertise to the functional managers. The safety office may provide data directly to the accountable executive regarding major safety issues identified by the system. It should be noted that the responsibility for informing the accountable executive of major safety deficiencies identified within their responsible area remains with the appropriate functional director. Furthermore, whilst the safety office may be involved in discussions regarding possible corrective action, it is the responsibility of the functional director to determine what the corrective action will be and to ensure the outcome is monitored and evaluated. The safety office does not have the authority to overturn operational decisions related to safety issues identified by the system or the safety management system itself.
1.7 Safety Committee
The use of a safety committee in larger, more complex organizations can provide benefits to the organization. Safety committees provide a forum for discussing safety related issues from a cross-functional perspective and may lead to the inclusion of issues that look at safety from a broader viewpoint. Conventional health and safety at work concerns are a good example of this. Frequently, safety issues are not limited to one specific area and require inputs and expertise from a variety of different fields. Safety committees provide a forum for this dialogue and can be utilized to assess the effectiveness of the system from a “big picture” perspective. They also provide a means by which safety achievements can be reviewed and safety information broadcast.
The safety office may coordinate and provide administrative assistance to the safety committee. It can also be a stand-alone entity; meaning, one can exist without the other. The accountable executive could be the chair of this committee and all parts of the organization must be represented. This does not preclude the existence of sub-committees with specific areas of responsibility.
The core function of the safety committee must be to:
a. Act as a source of expertise and advice on safety matters to senior management;
b. Review the progress of identified hazards and actions taken following accidents and incidents;
c. Make safety recommendations to address safety hazards;
d. Review internal safety audit reports;
e. Review and approve the audit response and the actions taken;
f. Encourage lateral thinking about safety issues;
g. Help identify hazards and defences; and
h. Prepare and review safety reports to be presented to the CEO.
1.8 Employee Involvement in the Development and Implementation of the System
A successful safety management system requires a focused sense of ownership throughout the system. Whilst it is essential that top management commit to doing whatever it takes to improve safety, it is equally important that all employees feel they have a system that values their input and is responsive to their contributions and ideas. In order to achieve this, all employees should have the opportunity to contribute to the development and implementation of the safety management system. Employees are ideally placed to understand the most

efficient and appropriate safety management mechanisms for their work environment. Their involvement in the decision-making process not only fosters ownership of the system, it also promotes a positive safety culture.

In effect, the organization is striving to create a shared vision. As such, it is not sufficient for the accountable executive to make a safety policy statement outlining what the organization is committing to, without first acquiring feedback from all employees. The problem with top down vision statements is that they reflect management’s vision and do not always build on the individual’s personal vision. The result can be an authoritarian statement that does not inspire the achievement of a common goal – in this case safety. When people truly share a common vision they are united in a common aspiration, they have a common identity and they have ownership in the system.

1.9 A description of the safety management system components.

1.9.1 Safety Performance Monitoring

The safety performance of the operation needs to be monitored, proactively and reactively, to ensure that the key safety goals continue to be achieved. Monitoring by audit forms a key element of this activity and should include both a quantitative and qualitative assessment. The results of all safety performance monitoring should be documented and used as feedback to improve the system.

It is widely acknowledged that accident rates are not an effective measurement of safety. They are purely reactive and are only effective when the accident rates are high enough. Furthermore, relying on accident rates as a safety performance measure can create a false impression; an assumption that nil accidents indicate the organization is safe. In reality, there will always be latent conditions within the system that might, if left unattended, lead to an accident. A more effective way to measure safety might be to address the individual areas of concern. For example, an assessment of the improvements made to work procedures might be far more effective than measuring accident rates.

Performance measurement should be integrally linked to the company’s stated overall objectives. This requires two things: 1 - the development and implementation of a coherent set of safety performance measures; and, 2 - a clear linkage between the safety performance measures and the organization’s business performance measures. This shows a clear relationship between the company’s safety objectives and the achievement of its organizational and business goals. A simple example is given in the table below

	Safety Performance measures
<i>Business Objective:</i> Reduce Costs	Reduction in insurance rates
<i>Safety Objective:</i> Decrease number and severity of hangar incidents	Total number of events Number of damage-only events Number of near-miss accidents Lessons learned from event analyses Number of corrective action plans developed and implemented

1.9.2 Non-Punitive Disciplinary Policies

The company should strive to develop a non-punitive, disciplinary policy as part of its safety management system. Employees are more likely to report events and cooperate in an investigation when some level of immunity from disciplinary action is offered. When considering the application of a non-punitive disciplinary policy, the company might want to consider whether the event involved willful intent on the part of the individual involved and the

<p>attendant circumstances. For example, has the individual been involved in an event like this before and did the individual participate fully in the investigation.</p>
<p>A typical disciplinary policy might include the following statements:</p>
<p>Safe operations are ABC aerodrome's most important commitment. To ensure that commitment, it is imperative that we have uninhibited reporting of all incidents and occurrences that compromise the safety of our operations. We ask that each employee accept the responsibility to communicate any information that may affect the integrity of flight safety. Employees must be assured that this communication will never result in reprisal, thus allowing a timely, uninhibited flow of information to occur. All employees are advised that ABC aerodrome's management will not initiate disciplinary actions against an employee who discloses an incident or occurrence involving flight safety. This policy cannot apply to criminal, international or regulatory infractions. ABC aerodrome's management has developed Safety Reports to be used by all employees for reporting information concerning flight safety. They are designed to protect the identity of the employee who provides information. These forms are readily available in your work area. We urge all employees to use this program to help ABC aerodrome continue its leadership in providing our customers and employees with the highest level of flight safety.</p>
<p>A non-punitive approach to discipline does not preclude the use of a general progressive approach to discipline in cases where an employee is involved in similar, recurrent events. This might involve the following steps:</p>
<p>i. First offense-Verbal warning</p>
<p>ii. Second offense-Formal written warning</p>
<p>iii. Third offense-final written warning (may include suspension)</p>
<p>iv. Fourth offense-Termination.</p>
<p>Written warnings can remain active for one year, after which a letter of recognition for positive change will be written and attached to the Formal Written Warning in the personnel file by the individual's direct supervisor.</p>
<p>1.9.3 Documentation</p>
<p>Up to date documentation is essential if the company is to operate in a safe and efficient manner in accordance with current aviation safety regulations, standards and exemptions. For this reason an operator's Safety Management System must address the four following documentary requirements:</p>
<p>1.9.3.1 The identification of applicable aviation safety regulations;</p>
<p>The company must have a process for documenting the regulations, standards and exemptions by which it is regulated for the various activities it conducts. A policy must govern this identification and can be a simple statement such as:</p>
<p>"This company is governed by the following aviation safety regulations, standards and exemptions... (List as appropriate)."</p>
<p>The company must provide employees with access to all pertinent technical and regulatory information. This can be accomplished by having appropriate documentation and the control thereof on site, or by having access to the information through other appropriate means that provides the same accessibility as on site documentation.</p>
<p>1.9.3.2 Consolidated documentation describing the systems for each component of the safety management system;</p>
<p>The requirement for a description of each component of the safety management system was discussed as an element of the safety management plan. Consolidated documentation describing each component of the system is essential if company personnel, and the</p>

regulator, are to understand how the whole system is integrated.
For air operators, this documentation must reside in the company operations manual. Current regulation requires that air operators have a description of their operational quality control systems. The requirement for safety management system components could be addressed in the same fashion.
1.9.3.3 The implementation of changes to company documentation required by changes to aviation safety regulations, standards and exemptions;
When changes to company documentation are required the company must have a process in place to ensure these changes are implemented. It is recommended that an individual is designated with the appropriate knowledge as responsible for receiving any incoming correspondence of a regulatory nature i.e. AIP's, AIC's, AIP amendments, etc., to take responsibility for the activity and the procedure to be followed. The process should provide for early identification of amendments. This will allow the company to be proactive in addressing any required changes to company documents and procedures. These would be reviewed to identify any changes pertinent to the company operation. If changes were necessary the process would allow for a trigger to commence the amendment process to company documentation as necessary.
1.9.3.4 The maintenance of current, applicable and effective documentation
It is the company's responsibility to maintain current regulatory and company documentation. This includes regulations, standards and exemptions as well as the Aerodrome Operations Manual, Emergency Response Manual, Safety Management System manual, etc. Any changes in SMS documentation, if this is contained in a stand-alone manual, should also be included.
Activities that cause company documentation to become outdated are mainly due to changes within the company itself or changes to regulatory information. To address these occurrences the company must have processes in place to:
a. Identify any changes within the organization that could affect company documentation;
b. Periodically review regulatory information to ensure the most current information is available;
c. Periodically review documentation such as the Maintenance Policy Manual, Aerodrome Operations Manual or Safety Management Program documentation to ensure compliance with current regulations.
Accompanying 8.3.4(a) above, is a documented and implemented procedure to
i. Protect records;
ii. Maintain records;
iii. Retrieve records
iv. Dispose of records;
v. Clarify the retention times of different records;
vi. Control, distribute and amend the safety management system document and any subordinate document.
A process to address changes within the organization could consist of a trigger to review company documentation at any time a change to the company operations or structure occurs or is planned to occur.
Specific events or dates could trigger processes for periodic reviews of regulatory information and company documentation. These dates could be selected to augment other company activities.

1.10 Safety Oversight
Safety oversight is fundamental to the safety management process. A principal of safety management policies, principles and procedures requires an organization to critically review its existing operations, proposed operational changes and additions or replacements, for their safety significance. This is achieved through two principal means:
Reactive - Occurrence/hazard reporting, and
Proactive – Safety assessments.
1.10.1 Reactive Risk Management.
a. Occurrence and Hazard Reporting
Every event is an opportunity to learn valuable safety lessons. The lessons will only be understood, however, if the occurrence is analyzed so that all employees, including management, understand not only what happened, but also why it happened. This involves looking beyond the event and investigating the contributing factors, the organizational and human factors within the organization that played a role in the event.
To achieve this, the company should maintain procedures for the internal reporting and recording of occurrences, hazards and other safety related issues. The collection of timely, appropriate and accurate data will allow the company to react to information received, and apply the necessary corrective action to prevent a recurrence of the event.
The key to accomplishing this is to have a reporting system that meets the needs of the people who will be using it – the employees. As such, employee input into the development of the system is vital. A safety reporting system is worthless if no one uses it; the importance of the employee in the whole process, therefore, should not be minimized. An attendant non-punitive discipline policy, and a real and demonstrated commitment by management to achieve the company's safety goals, will help to foster the development of a reporting culture within the company.
An operator's safety reporting system should encompass the following fundamental elements:
Systems for reporting hazards, events or safety concerns;
Systems for analyzing data, safety reports and any other safety related information;
Methods for the collection, storage and distribution of data;
Corrective action and risk reduction strategies;
On-going monitoring, and
Confirmation of the effectiveness of corrective action.
b. Systems for Reporting Hazards, Events and Safety Concerns
Employees must have a means of reporting all events and emerging hazards to an appropriate manager, as identified in the company manual. The manager will then forward it to the data bank for processing. The reporting system should be simple, confidential and convenient to use and should be complemented with a non-punitive disciplinary policy. These attributes, accompanied by efficient follow-up mechanisms acknowledging to the reporter that a report has been received, investigated and acted upon, will encourage the development of a reporting culture. The results should be distributed to the individual involved and the population at large.
There are many reporting programs in place for all types of operations. It is important to establish a system that suits the size and technology level of the operational environment. In smaller operations, reporting might be achieved through a simple written form deposited in a conveniently situated, secure box. Larger organizations may employ a more sophisticated, on-line safety reporting system. Under certain conditions it may be more expedient to submit

a verbal report; without exception, however, this should be augmented with a written report.
At a minimum, report forms should allow for a full description of the event and provide space for the reporter to offer suggestions as to possible solutions to the problem being reported. Reports should employ a common and clearly understood taxonomy for error classification. Simply put, this is the division of error types into ordered groups or categories. It is important that reporters and investigators share a familiar language to explain and understand the types of errors that are contributing to events. This will facilitate more accurate data inputs and trend analysis.
No matter what reporting system is utilized, its effectiveness will depend on four things:
<ul style="list-style-type: none"> • Employees clearly understand what they should report; • All reports are confidential; • Individuals are provided feedback on their reports in a timely fashion; • The company has a non-punitive disciplinary policy in place.
c. Why report?
All events require appropriate investigation in order to:
Establish their root cause, that is the underlying initial contributing factor(s) that caused the event, and identify actions to minimize the chance of recurrence;
Satisfy any regulatory requirements for reporting and investigation as per the South African Civil Aviation Regulations;
Provide a factual record of the circumstances of the event or hazard to allow others to learn from the situation; and
Categorize the underlying causes and establish the appropriate remedial and continuous improvement action.
d. What should be reported?
Knowing what to report plays a key role in an active reporting program. As a general rule, any event or hazard with the potential to cause damage or injury should be reported. Examples of these issues are:
<ul style="list-style-type: none"> • Excessive duty times; • Crews rushing through checks; • Inadequate tool or equipment control; • Unruly passengers; • Emergency exit paths blocked; • Incorrect or inadequate procedures, and a failure to adhere to standard operating procedures; • Poor communication between operational areas; • Lack of up to date technical manuals; • Poor shift changeovers; • Runway incursions; • Lack of adequate training and recurrent training.
e. Report Investigation and analysis
Every event should be investigated. The extent of the investigation will depend on the actual and potential consequences of the occurrence or hazard. This can be determined through a risk assessment. Reports that demonstrate a high potential should be investigated in greater depth than those with low potential.
The investigative process should be comprehensive and should attempt to address the

<p>factors that contributed to the event, rather than simply focusing on the event itself - the active failure. Active failures are the actions that took place immediately prior to the event and have a direct impact on the safety of the system because of the immediacy of their adverse effects. They are not, however, the root cause of the event; as such, applying corrective actions to these issues may not address the real cause of the problem. A more detailed analysis is required to establish the organizational factors that contributed to the error.</p>
<p>The investigator, or team of investigators must be technically competent and either possess or have access to background information, so the facts and events are interpreted accurately. The investigator should have the confidence of the staff and the investigation process should be a search to understand how the mishap happened, not a hunt for someone to blame.</p>
<p>f. Investigation</p>
<p>There are many tools that can be utilized to investigate events. An initial risk assessment may help determine the type of investigation that is conducted, or a company may employ a predetermined event investigation format regardless of the event. It is up to the individual company to determine which the most appropriate method for their organization is.</p>
<p>1.11 Pro-Active: Safety Assessment</p>
<p>For a safety management system to transition from a reactive to a proactive, it must actively seek out potential safety hazards and evaluate the associated risks. This can be achieved through a safety assessment. A safety assessment allows for the identification of potential hazards and then applies risk management techniques to effectively manage the hazard.</p>
<p>A document holder's safety assessment system should encompass the following basic elements:</p>
<p>Systems for identifying potential hazards</p>
<p>Risk management techniques</p>
<p>On-going monitoring/quality assurance.</p>
<p>a. Hazard Identification</p>
<p>Hazard identification is the act of identifying any condition with the potential of causing injury to personnel, damage to equipment or structures, loss of material, or reduction of the ability to perform a prescribed function. In particular, this includes any conditions that could contribute to the release of an un-airworthy aircraft or to the operation of aircraft in an unsafe manner. This can be achieved through internal reporting mechanisms, such as flight data monitoring programs, or through an assessment of the processes used to perform a specific operation. This involves an on-going assessment of the functions and systems, and any changes to them, and the development of a safety case to proactively manage safety. Safety assessments are a core process in the safety management construct and provide a vital function in evaluating and maintaining the system's safety health.</p>
<p>Understanding the hazards and inherent risks associated with everyday activities allows the organization to minimize unsafe acts and respond proactively, by improving the processes, conditions and other systemic issues that lead to unsafe acts. These include - training, budgeting, procedures, planning, marketing and other organizational factors that are known to play a role in many systems-based accidents. In this way, safety management becomes a core-business function and is not just an adjunct management task. It is a vital step in the transition from a reactive culture - one in which the organization reacts to an event, to a proactive culture, in which the organization actively seeks to address systemic safety issues before they result in an active failure.</p>
<p>b. Assessment frequency</p>
<p>A safety assessment should be undertaken, at a minimum:</p>

During implementation of the safety management system and then at regular intervals;
When major operational changes are planned;
If the organization is undergoing rapid change, such as growth and expansion, offering new services, cutting back on existing service, or introducing new equipment or procedures; and
When key personnel change.
1.11.1 Information Sources for Determining Potential Risks
Assessing potential risk is often perceived as resource intensive and unduly burdensome. It doesn't have to be. There are numerous sources of readily accessible information that can be utilized to better understand potential risk within an organization. The following list details some of the possible resources:
a. Company Experience – Existing safety reports detailing events and near misses. Minutes of safety meetings and committee meetings can also reveal potential areas of concern.
b. Line management Judgment – All line managers will have perceptions of where the greatest risks are in their areas of accountability.
c. Workplace opinions – Actively seek the input of the workforce. This can be achieved through focus groups, consulting employee representatives and conducting structured vulnerability analyses with subordinate managers and supervisors.
d. Audit Reports – The Company's internal audit system should contain a structured record of areas of concern in a prioritized format. A review of audit reports and remedial action plans (including an assessment of follow-up action completions) should be conducted. Corporate memories are often much shorter than the current incumbents realize and research beyond 5 to 10 years could reveal important information.
e. Corporate hazard analysis – Records of previously conducted formal hazard analyses may reveal risk exposures, which did not appear very significant at the time, but do now, in light of the changed circumstances.
f. Industry generic hazard register – Hazards/risks identified by other organizations might trigger concerns that should be addressed by the company.
g. Safety data recording systems – Mandatory occurrence reporting programs and industry safety data exchange programs can be consulted.
1.11.2 Active Monitoring Techniques
There are several active monitoring methods that can be employed in safety assessment, these include:
a. Inspections - Determines adherence to requirements, plans and procedures by inspection of premises, plant and equipment or activities. Usually achieved through detailed inspection of actual specific target area activities against planned methods of procedures. Tends to be focused at the task level.
b. Management safety inspections – Determines the effectiveness of systems and demonstration of line commitment. Usually achieved through examination of managers or teams that focus on people's activities and the system they use.
c. Audits – Verifies conformance with established guidelines and standards. Usually achieved through systematic independent review of an organization's systems personnel, facilities, etc., using a predetermined targeted scope of coverage. Tends to be focused at the process level.
d. Process and practice monitoring – Identifies whether the procedure in use is relevant and actively used and the practices employed are in line with the

requirements of the procedures.
e. Review – Provides an overview of the processes involved in a work area or system for their effectiveness and appropriateness. Resource allocation is often a target of a review.
1.11.3 Checklist Usage
In most quality assurance systems, audit checklists are used to collect data related to the system. The same type of checklist should be utilized to provide a safety assessment of the company. This will allow the company to develop a safety case, an analysis of safety issues within the organization that adequately portrays the safety level of the company.
1.11.4 Safety Risk Profiling
Once potential risks have been identified, it is useful to fully understand the impact that they might have if they remain unchecked. In order to determine this, a full risk assessment should be conducted. This process is described in Common Elements below and should be applied to both the reactive investigations and pro-active safety assessments an organization conducts.
Safety risk profiling should look at the entire organization and identify levels of risk within the company. Examples of areas that should be considered are:
a. Operational factors, such as weather information and approach aids;
b. Technical factors, such as parts interchangeability and aircraft type;
c. Human factors, such as availability of equipment, working environment and human resources.
1.11.4.1 Common Elements
Occurrence and hazard reporting, and safety assessment are two individual functions within the safety management system. Once a report has been submitted, however, the process flow is the same. The following represent common element in both elements that should be considered when developing a safety management system.
1.11.4.2 Reporting Procedures
The process for reporting an event or a hazard should be as simple as possible. Report submission procedures should be well documented and should include details of where and to whom reports should be submitted. This will reduce confusion over where safety reports go and will ensure that all events are brought to the attention of the appropriate person. When designing a safety report form it is important to consider that the form may be used to submit information regarding events and hazards. The form should be structured in such a manner that it can accommodate both the reactive and proactive type of reporting. Sufficient space should be allowed for reporters to identify suggested corrective actions related to the issue they are reporting.
There are many possible ways in which a report can be submitted. The size and complexity of the organization will determine how sophisticated the system is. In some cases this might involve having a locked postbox on the hangar floor; in other cases it might be more effective to submit reports directly to the safety office. It is up to the individual organization to determine the most suitable method.
1.11.4.3 Data Collection
When producing an occurrence or hazard report every effort should be made to ensure that the form is easy to understand and user friendly. The company should strive to make all reporting forms compatible for each area of the operation. This will facilitate data sharing, trend analysis and will also make the occurrence or hazard investigation process easier.
Depending on the size of the organization, the most expedient data collection method might
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be to utilize existing paperwork, such as flight and maintenance reports. The use of hand written reports or the information derived from verbal reports is equally acceptable. As previously stated, however, verbal accounts should always be followed-up with a written report.

1.11.4.4 Proactive Risk Management

Proactive risk management is an activity that looks at the risks associated with identified hazards and assists in selecting actions to maintain an appropriate level of safety when faced with these hazards.

Once hazards have been identified, either through occurrence/hazard reporting, or a safety assessment the risk management process begins. Risk management is an evaluation of the potential for injury or loss due to a hazard and the management of that probability. This concept includes both the likelihood of a loss and the magnitude. The basic elements of a risk management process are:

a. Risk Analysis

Risk Analysis is the first element in the risk management process. It encompasses risk identification and risk estimation. Once a hazard has been identified the risks associated with the hazard must be identified and the amount of risk estimated.

b. Risk Assessment

Risk Assessment takes the work completed during the risk analysis and goes one step further by conducting a risk evaluation. Here the probability and severity of the hazard are assessed to determine the level of risk.

There are a number of examples of risk assessment and classification matrixes and their definitions available. Some of these utilize economic indicators such as dollar figures to define the level of acceptable risk.

c. Risk Control

Risk Control addresses any risks identified during the evaluation process that require an action to be taken to reduce the risks to an acceptable level. It is here that a corrective action plan is developed.

d. Monitoring

Monitoring is essential to ensure that once the corrective action plan is in place, it is effective in addressing the stated issues or hazards.

Commercially available Software Programs. There are a number of software programs, which advertise a risk analysis component, available to operators. Some are directly focused on the safety management aspect within aviation and others are more generic in nature, but may meet individual company requirements. Information on these programs is readily available on the internet.

1.11.4.5 Corrective Action Plan

Once a safety event report has been investigated and analyzed, or a hazard identified, a safety report outlining the occurrence, and if available, the results of a hazard assessment, should be given to the appropriate director for determination of corrective or preventative action. The functional director should develop a corrective action plan (CAP), a plan submitted in response to findings, outlining how the company proposes to correct the deficiencies documented in the findings. Depending on the findings, the CAP might include short-term and long-term corrective actions. As an example:

a. Short-Term Corrective Action - This action corrects the specific issue specified in the audit finding and is preliminary to the long-term action that prevents recurrence of the

problem. Short-term corrective action should be completed by the date/time specified in the corrective action plan.

b. Long-Term Corrective Action - Long-term corrective action has two components. The first element involves identifying the root cause of the problem and indicating the measures the audited will take to prevent a recurrence. These measures should focus on a system change. The second component is a timetable for implementation of the long-term corrective action. Long-term corrective action should include a proposed completion date.

Some long-term corrective actions may require time periods in excess of the company's established acceptable timeframe, for example where major equipment purchases are involved. Where applicable, the company should include milestones or progress review points not exceeding the established timeframe leading up to the proposed completion date. Where the short-term corrective action taken meets the requirements for long-term corrective action, this should be stated in the long-term corrective action section on the corrective action form.

1.11.4.6 On-Going Monitoring

In order to ensure the effectiveness of the remedial measures, the corrective actions should be monitored and evaluated on a regular basis. Follow-up activity should be conducted through the internal audit process. This should include comprehensive documentation of audit findings, corrective actions and follow-up procedures.

1.11.4.7 Information Dissemination

All safety related information should be disseminated throughout the organization. Keeping current on safety provides better background for understanding aspects of the organization's safety condition and developing novel solutions to difficult problems. This can be accomplished by subscribing to safety related programs, making relevant safety reports available, and encouraging staff to participate in safety related training, seminars and workshops. Manufacturers can also provide important safety information and reliability data related to the company's specific needs.

Another aspect of information dissemination is feedback on safety reports submissions. Employees should be notified when a safety report is received or when a potential safety threat is discovered. Further information should be provided pursuant to investigation, analysis and corrective action. Information dissemination can also be achieved through the publication of a company magazine or through the company website. The company should endeavor to inform all employees as to where safety related information could be found. In this way the entire company becomes aware of safety issues and understands that the company is actively seeking to address these issues.

1.11.4.7 Training

In order for employees to comply with all safety requirements, they need the appropriate information, skills and training. To effectively accomplish this, the company should document the training requirements for each area of work within the company. The type of training to be offered is already mandated via regulation for certain positions in the company. This includes initial, recurrent and update training requirements and, where required, training specific to the operation of the safety management system. These regulations will provide a good starting point to identify what training is required.

It is recommended that a training file be developed for each employee, including management, to assist in identifying and tracking employee-training requirements.

1.12 Quality Assurance/Quality Control

a. Quality Control and Quality Assurance are important concepts, yet most managers have only a vague understanding of the meanings and the differences between these

two terms.
b. What is Quality Control? Quality control is a technical function that includes all the scientific precautions, such as calibrations and duplications that are needed to acquire data of known and adequate quality. Quality control is all about conformance to requirements.
c. What is Quality Assurance? Quality assurance is a management or oversight function; it deals with setting policy, and running an administrative system of management controls that cover planning, implementation and review of data collection activities and the use of data in decision-making.
Note: An auditor cannot tell you if the system you use is acceptable or not, however, he/she can tell you that based on the analysis of findings that the processes used in your system, is not acceptable and must be reviewed and/or changed.
d) What is a Quality System? A quality system is the means by which an organization manages its quality aspects in a systematic, organized manner and provides a framework for planning, implementing and assessing work performed by an organization and for carrying out required quality assurance and quality control activities. It encompasses a variety of technical and administrative elements, including:
i. Policies and Objectives,
ii. Organizational Authority,
iii. Responsibilities,
iv. Accountabilities, and
v. Procedures and Practices.
A quality assurance system (QAS) defines and establishes an organization's quality policy and objectives. It also allows an organization to document and implement the procedures needed to attain these goals. A properly implemented QAS ensures that procedures are carried out consistently, that problems can be identified and resolved, and that the organization can continuously review and improve its procedures, products and services. It is a mechanism for maintaining and improving the quality of products or services so that they consistently meet or exceed the organizations implied or stated needs and fulfill their quality objectives.
In a safety management system, these elements are applied to an understanding of the human and organizational issues that can impact safety. In the same way that a QAS measures quality and monitors compliance, the same methods are used to measure safety within the organization. In the SMS context, this means quality assurance of the safety management system, which in effect includes the entire operation.
An effective quality assurance system should encompass the following elements:
i. Well-designed and documented procedures for product and process control
ii. Inspection and testing methods
iii. Monitoring of equipment including calibration and measurement
iv. Internal and external audits
v. Monitoring of corrective and preventive action(s), and
vi. The use of appropriate statistical analysis, when required.
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Quality assurance is based on the principle of the continuous improvement cycle. In much the same way that SMS facilitates continuous improvements in safety, quality assurance ensures process control and regulatory compliance through constant verification and upgrading of the system. These objectives are achieved through the application of similar tools: internal and independent audits, strict document controls and on-going monitoring of corrective actions.

1.12.1 Audits

The use of audit functions, to verify compliance and standardization, is an integral part of the quality assurance system. An initial audit, covering all activities, should be conducted, followed by a recurring cycle of further internal audits. Detailed records of audit findings, including issues of compliance and non-compliance, corrective actions and follow-up inspections should be kept. The results of the audit should be communicated throughout the company.

Depending on the size of the organization, these functions may be performed by individuals within the company or assigned to external agents. Wherever practical, having regard to the size of the organization, these functions should be undertaken by persons who are not responsible for, and have not been involved in, the certification or performance of the tasks and functions being audited. In this way, the quality assurance function system remains neutral and is independent from the operational aspects of the organization.

1.12.2 Checklists

Audit checklists should be employed to identify all of the technical functions controlled by the Maintenance Procedure Manual, or the Aerodrome Operations Manual. These should be sufficiently detailed to ensure that all of the technical functions performed by the organization are covered. Accordingly, the extent and complexity of these checklists will vary from company to company.

In the case of a quality audit on a company's safety management system, the checklist should provide a detailed account of the following areas:

- i. Safety policy
- ii. Safety standards
- iii. Safety culture
- iv. Contractor's safety organization
- v. Structure of safety accountabilities
- vi. Hazard management arrangements
- vii. Safety assessment, and
- viii. Safety monitoring

1.12.3 Existing Systems

There are many existing quality assurance standards. The most appropriate system depends on the size and complexity of the organization and will be tailored to meet these requirements. ISO 9000, a series of international standards developed by quality experts from around the world, is one example. ISO 9000 is for use by companies that either wants to implement their own in-house quality systems or to ensure that suppliers have appropriate quality systems in place. The standards were developed under the auspices of the International Organization for Standardization (ISO).

The current series, ISO 9000:2000, was developed to assist all types and size of organization, to implement and operate effective quality management systems. ISO standards are intended to be generic and not specific to any product or industry. They are intended to document the elements required for an effective quality system, however, they do

not specify the technology requirements to be utilized. ISO 9000:2000 works on the principal that, to successfully operate an organization, it is necessary to direct and control it in a systematic and transparent manner. The objective is to continually improve performance whilst addressing the needs of all interested parties.
The ISO 9000:2000 standards are composed of a set of eight-quality management principles that contribute to improved performance:
i. Customer Focus – Understanding what the customer wants and needs. In aviation some of these requirements are a safe, reasonably priced flight that departs on time.
ii. Leadership – Leaders set the goals and purpose of the organization. They should establish and maintain the internal environment in which the individual becomes fully involved in attaining the organization’s objectives.
iii. Involvement of people – Safety is everyone’s responsibility. It is incumbent on all employees therefore to involve themselves and utilize their abilities for the organization’s benefit.
iv. Process Approach – A managed approach is applied to activities and related resources.
v. System Approach to Management – Identifying, understanding and managing interconnected processes as a system contributes to the organization’s effectiveness and efficiency in achieving its objectives.
vi. Continual Improvement – Continual improvement of the organization’s overall performance should be a fixed objective of the organization.
vii. Factual Approach to Decision Making – Decisions are made utilizing available information and current data.
viii. Mutually Beneficial Supplier Relations – Given that an organization and its suppliers are interdependent, a mutually beneficial relationship enhances the ability of both to create value.
There are several steps and organization must take to ensure a successful implementation of ISO standards. The organization must clearly understand what it hopes to achieve and what the expectations of the stakeholders are. Furthermore, it must identify the gap between where it is now and where it hopes to be in the future. A plan must be developed to close these gaps and it must be monitored to ensure effectiveness. This consists of both internal and external audits.
1.13 Emergency Management System
An Aerodrome operator’s emergency management system is an integral part of the SMS and must be easily understood by everyone directly and indirectly involved during an emergency. It must contain the following items:
i. Aerodrome Policy relating to emergency management
ii. Aerodrome Operator Mobilization And Agencies Notification
iii. Passenger and Crew Welfare
iv. Casualty and Next Of Kin Coordination
v. Accident Investigation On Behalf Of The Aerodrome Operator
vi. Aerodrome Operator Team’s Response To The Accident Site
vii. Preservation Of Evidence
viii. Media Relations
ix. Claims And Insurance Procedures
x. Aircraft Wreckage Removal

xi. Emergency Response Training
The Aerodrome emergency response plan must be written to facilitate the identification of subject matter pertinent to the local aerodrome and community conditions.
The emergency response plan shall be issued under the instruction of the Aerodrome authority, which will define and negotiate responsibilities of all agencies and personnel on and off the airport.
SECTION 2
SMS EVALUATION
Now you have documented and implemented your Safety Management System. CAR 139.02.4(f) requires a procedure for management analysis and overview, thus the following might be of assistance
Your Safety Management System: is it working?
An introductory guide to evaluation of Safety Management Systems suitable for Aerodromes
A successful business needs to be operated safely, not only to meet legal requirements and social responsibilities but also to be profitable. Accidents and incidents threaten all of these. A safety management system can help you identify, classify and manage the underlying and immediate risks to your business.
To check that your safety management system is working, you need to gather information to build on strengths, modify the system and address weaknesses before they lead to an accident or incident.
Evaluation is inseparable from management. It makes good safety sense and good business sense for all operators, regardless of the size and type of their organization. Although a designated person in your organization may be responsible for evaluation, all staff should be mobilized in the effort.
Like the rest of the safety management system, evaluation requires some investment of time, personnel and money. The cost need not be high, and the benefits outweigh the investment.
This guide outlines what evaluation is, the reasons for doing it, the processes and systems that you should evaluate and ways to use the crucial information generated.
This section is not a “how-to” manual, rather a general guide to the principles of evaluation. The SACAA urges you to use this guide to apply those principles to your own organization.
2.1 Why Evaluate?
Evaluation is a set of techniques for monitoring and reviewing the adequacy of your SMS. It helps you to make decisions about safety controls in your organization.
a. Direct benefits
Evaluation helps you to determine:
i. The casual factors leading to accidents and incidents;
ii. The source of deficiencies in the SMS;
iii. Areas that require improvement;
iv. Whether procedures are effective and applicable;
v. Areas of non-compliance with the organizational operating procedures;
vi. Areas of non-compliance with regulatory requirements;
vii. What corrective actions are required?

Evaluation answers the following questions:
i. What are the outcomes of the SMS?
ii. Are objectives being met?
iii. Are there and what are the shortcomings in the SMS?
iv. Is the SMS implemented and documented correctly?
v. Have there been any positive or negative spin-offs?
b. Indirect benefits
i. Workplace relations: positive safety evaluation can enhance relations with staff by demonstrating that the organization's management is acting in the interest of employee safety;
ii. Marketing and Public Relations: You can use your evaluation results as a positive marketing and public relations tool to show customers you are working to prevent accidents and incidents.
iii. Winning contracts: The demonstration of a successful safety management system could be the difference between winning and losing a business contract.
iv. Insurance: A demonstrated reduction in accidents and incidents may deliver lower insurance premiums.
v. Industry leadership: A good safety record will enhance your standing in the aviation industry, and encourage competitors to improve their standards to meet or exceed yours.
vi. Freeing up funds for expansion: accidents and incidents cost money, so by reducing them releases funds for business expansion.
2.2. What to evaluate
a. Fact finding
Evaluation activities need to build into an organization's management practices, not added on. You must be clear on what information you require before you start evaluating.
Evaluation should cover the 10 steps of your SMS as they apply to each area of your operations including:
i. Flying Operations;
ii. Maintenance;
iii. Management;
iv. Equipment;
v. Passenger handling;
vi. Facilities;
vii. Employee training;
viii. Employee qualifications;
ix. Manuals;
x. Defect reporting;
xi. Record keeping.
b. Evaluation should consider your product, people, processes, services and contractors. These are integral to quality management. For example, scheduling problems could turn into safety problems.
Product/ service:
i. Did you run the correct number of scheduled flights?
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ii. Were the flights on time?
iii. Did the flights meet the prescribed weight limits?
iv. Were the aircraft serviceable?
v. Was maintenance performed on time?
People:
How did your staff perform at?
i. Check in?
ii. Baggage handling?
iii. Cockpit or cabin?
iv. Maintenance?
Processes:
i. Do your processes achieve the planned results?
ii. Is the correct number of steps in place?
iii. Is the sequence correct?
iv. Is the process complete?
v. Is the process applicable?
vi. Is there any redundancy?
Services:
i. Do your services live up to your planned objectives?
ii. Are they needed?
iii. Are they efficient and profitable?
Contractors:
External contractors may include maintenance organizations, persons accepting cargo on behalf of the operator and aerodrome operator personnel. Before employing a contractor, you need answers to the following questions:
i. Does the contractor have a safety management system?
ii. Are you required to inspect the contractor's work premises? If so, how will you evaluate them?
iii. Are the contractors able to provide the service?
2.3 When to evaluate
a. Choosing the time
Evaluation of your business should take place regularly. It is an ongoing process and can be reviewed either at fixed intervals or as required.
Audits and evaluation may take place annually, in sync with the financial year. Safety audits may take place more frequently. Evaluation can be planned or performed as required.
Planned evaluation, or proactive evaluation, is performed before a task is undertaken, or in the planning phase of the task. It establishes the baseline data for future measurements, and can pinpoint gaps in your system. However, you can perform it more frequently; daily (through talks with staff), weekly (at staff meetings), or monthly (at safety committee or management meetings). You can also perform it before or after you make a change or at the end of a specific task.
b. Proactive evaluation measures:

i.	Changes in passenger loads on particular routes.
ii.	Changes in the number of safety reports being submitted.
iii.	The number of staff undertaking scheduled training.
iv.	Communication strategies.
c.	Interactive evaluation draws information from staff to verify that corrective actions were reviewed and effective. It should be carried out daily, often through informal talks with staff.
d.	Reactive evaluation is performed after an event to identify shortcomings in your safety management system. It can be driven by external concerns, identified
2.4	How to evaluate
Evaluation has four steps: planning; data collection, data presentation, and action.	
a.	Planning data collection
When planning your evaluation program, consider what information you need and the resources available. The drivers for evaluation may be ongoing complaints, unmet needs of clients or customers, changes in regulations, or a need to check that your safety goals are being achieved.	
When designing an evaluation program, consider:	
i.	Purpose;
ii.	Who the intended audience is;
iii.	The kind of information you need.
iv.	What sources you will use.
v.	How you will collect the information.
vi.	When the information is needed.
vii.	The resources available to collect the information.
Hint: Draw a flow chart to reflect the purpose of evaluation, who will be involved, and the expected costs and time scales.	
b.	Collecting the data
The methods you use to measure and assess your safety management system must be valid. They must produce results that are repeatable and consistent with results obtained using other tools.	
Ways of getting the information you need include:	
i.	Observation.
Observation, including informal site inspections, may highlight safety problems missed by other means of investigation.	
Advantages:	
➤	Quick to perform.
➤	Can prompt fast follow up action.
Disadvantages:	
➤	Difficulty in interpreting behavior.
➤	Difficulty in categorizing observations.
➤	Observation can influence the behavior of those being observed.
ii.	Surveys and questionnaires.
Safety surveys or questionnaires provide an in-depth analysis of an activity.	
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They can be conducted on or distributed to:
➤ All staff.
➤ Specific staff.
➤ Customers.
Advantages:
➤ Can be completed anonymously.
➤ Cheap to administer.
➤ Generates results that are easy to compare.
➤ Can generate a large amount of data.
➤ Can utilize proforma surveys and questionnaires.
Disadvantages:
➤ May not draw considered feedback.
➤ Wording can bias answers.
➤ Are impersonal
➤ May require statistical sampling expertise;
➤ Responses may not give the full story
iii. Interviews.
Formal and informal interviews are conducted one to one and are an important way of getting information. Interviews can be held with:
➤ Clients.
➤ Staff.
➤ Other service providers.
The interviews can be structured, with all respondents asked the same questions, or tailored to the individual.
Advantages:
➤ Draws a full range and depth of information.
➤ Develop a relationship with respondents.
➤ Flexibility.
Disadvantages:
➤ Time consuming.
➤ Difficult to analyze and compare.
➤ Costly;
➤ Interviewer can bias responses.
iv. Focus groups.
Focus groups bring six to eight workers together to discuss their workplace. Normally, an outside facilitator leads the discussion. This elicits candid comments, which go to the evaluator in transcript for analysis.
Advantages:
➤ Quick and reliable pointer to common impressions.
➤ Produces a wide range and depth of information.
➤ Convey key information about the organization.
Disadvantages:
➤ Difficulties in analyzing.
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➤ Requires a good facilitator.
➤ Difficulties in getting six to eight people together at once.
➤ Pressure to answer questions without much time for thought.
v. Complaint forms or suggestion boxes.
Suggestion boxes for workers or customers can be a useful source of information about the environment, services or people within your organization.
Advantages:
➤ Anonymous.
➤ Suggestions are often more honest.
➤ Easy to administer.
Disadvantages:
➤ Open to abuse.
➤ Contents must be monitored constantly.
vi. Audits.
An audit is a “microscopic” examination of every component of a total system.
Advantages:
➤ Provides clear directions.
➤ May be more objective.
➤ Form part of a planned process.
Disadvantages:
➤ Considers requirements of standards only.
➤ Limited perspective.
Data presentation, interpretation and reporting
Electronic databases enable you to process data to analyze trends. They point to ways to eliminate or counter problems. The easiest way to interpret your evaluation results is to represent them graphically as:
➤ Flow charts.
➤ Pie charts.
➤ Bar graphs.
➤ Scatter grams.
➤ Checklists.
How you report your evaluation data depends on why you collected it, and your audience. For example, was the evaluation done to upgrade your safety management system, to investigate an incident, or to demonstrate compliance with regulations?
In most cases, the data will be compiled and analyzed in a report. Staff will then have the opportunity to review the information.
The SACAA suggest you present the report in the following format.
➤ Title page.
➤ Table of contents.
➤ Executive summary.
➤ Purpose of the report.
➤ Organizational background and what is being evaluated.
a. Previous safety records (12 months).

b. Program description.
i. Statement of the problem.
ii. Overall goal.
iii. Outcomes.
iv. Staffing.
➤ Overall evaluation goals.
➤ Methodology.
➤ Interpretations and conclusions.
➤ Recommendations.
➤ Appendices.
Action
If the evaluation data turn up a recurring operational problem, you will be able to use this information as a basis for change. Discuss the problem and recommended action with relevant staff and communicate decisions to everyone involved.

10 Steps to evaluate your SMS
Step 1: Establish senior management commitment
While safety management encourages the involvement of all staff, without commitment from senior management your safety system will not be effective. Management commitment is hard to measure, but evidence of it includes:
i. Allocation of time to safety management.
ii. Allocation of time for staff training.
iii. Participation in staff training.
iv. Provision of information and advice.
v. Provision of adequate safety management resources.
vi. Written safety policy objectives.
vii. Determination of OH&S objectives and strategy.
viii. Communication with staff on safety issues.
ix. Action to ensure staff knows their responsibilities.
Check:
Is management committed to the safety management program?
Step 2: Set safety management policies and objectives
The purpose of developing safety management policies and objectives is to set out what your organization is striving to achieve and how it is going to get there.
Checklist:
i. Are there written aviation safety policies, signed by the CEO?
ii. Are the policies and objectives workable, knowable and measurable?
Step 3: Appoint a safety officer (if applicable)
The safety officer's outcomes can be measured against the responsibilities of the job laid out in the organization operations manual.
For example, one responsibility of the safety officer is to monitor the progress of safety reports and ensure that hazards are eliminated or minimized promptly.
Hint: To check that this has been done, you could track safety reports and follow-up action.

Evaluation should identify reasons why any report was not resolved, and point to ways of averting the problem. Reasons could range from time constraints to a lack of resources.
Checklist:
i. Are safety reports being prepared promptly?
ii. Are hazards being eliminated or reduced promptly?
iii. Is the safety officer receiving enough support from the organization?
iv. Is the safety officer credible?
v. Is there a mechanism by which the safety officer can report to the CEO and make recommendations for change or action?
Step 4: Set up a safety committee (if applicable)
The work of the safety committee should be evaluated against the functions and responsibilities set out in the organization operations manual.
The percentage of reports actioned and the number of hazards identified or eliminated are examples of statistics you can use to evaluate the committee's performance.
Checklist:
i. Are hazards being eliminated or reduced?
ii. Is there a mechanism by which the safety committee can report to the CEO and make recommendations for change or action?
Step 5: Establish a process to manage risks
Risk management focuses on identifying hazards, analyzing the risks, ranking them according to their probability and likelihood, and setting priorities for action.
Checklist:
i. Is there an effective ongoing hazard identification program?
ii. Is there a system to rank hazards by their risk potential and prioritize them for action?
iii. Are the defences against the hazards identified?
Step 6: Set up a reporting system to record hazards, risks and actions taken
The reporting system is the easiest part of the safety management system to evaluate. You can sort your reports by type and compare them with the previous year's results to find out whether incident frequencies have changed.
Hint: If you use an electronic database to record and track your safety information and reports, it is easy to extract specific information and produce a graph or report for discussion.
Checklist:
i. Is there a reporting system for hazards and risks?
ii. Does the reporting system cover contractors?
Step 7: Train and educate staff
Training can be evaluated in several ways.
Keep records of staff annual training requirements, such as renewal of ratings, to ensure they are equipped with the latest information relevant to their tasks.
Hint: It is more efficient to resolve training inadequacies immediately, as they could compromise safety.
Keep records of the following:
i. The type of training.

ii. The frequency of training.
iii. The application of training to the workplace.
Monitor the skills level of staff to undertake annual refresher courses.
Checklist:
i. Is there a formal system to ensure all staff meets the minimum regulatory requirements for their job?
ii. Is staff training, including annual renewal ratings, up to date?
Step 8: Audit your organization and investigate incidents and accidents
Audits, often performed by outside agencies, are critical to evaluation. You need them to manage your business finance, and you will extract quality safety information from them. They follow a set format and are measured against specific rules or regulatory requirements.
Checklist:
i. Do your audit criteria match your operating procedures?
ii. Have all incidents and accidents been investigated adequately?
Step 9: Set up a system to control documentation and data
Documentation is an auditable trail of action to minimize risk. It can provide evidence if you need to defend your actions.
Keep records of:
i. Hazard assessments.
ii. Safety reports issued or received.
iii. Safety recommendations.
iv. Remedial actions.
Hint: Measure the control of documentation against the document requirements laid out in your operations manual. Check documentation against the requirements within the safety management system. If evaluation prompts you to change the reporting or documentation systems, let your staff know.
Checklist:
i. Are files maintained and kept for the prescribed length of time? ~Are records of meetings and safety incident reports easily retrieved?
ii. Does staff know how to use the reporting system?
Step 10: Evaluation
The evaluation process itself can be reviewed and improved upon where necessary.
Checklist:
i. Is your evaluation process giving you the answers you need?
ii. Is your evaluation system identifying gaps in your safety management
Conclusion
If SMS is to be a success in the industry the SACAA regulate, the SACAA must establish a disciplinary/enforcement policy that promotes and rewards the behaviors the SACAA are striving to achieve. SMS involves a transferal of some of the responsibility for aviation safety issues, from the regulator to the individual organization. A role shift, in which the regulator oversees the effectiveness of the safety management system and withdraws from a day-to-day involvement in the companies' it regulates. The day-to-day issues are discovered, analyzed and corrected internally, with minimal intervention from the SACAA. From the company perspective the success of the system will hinge on the development of a safety culture that promotes open reporting, through non-punitive disciplinary policies and continual
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improvement through, proactive safety assessments and quality assurance. The safety management system philosophy requires that responsibility and accountability for safety be retained within the management structure of the organization. The directors and senior management are ultimately responsible for safety, as they are for other aspects of the enterprise. The responsibility for safety, however, resides with every member of the organization; in safety management everyone has a role to play.

DEVELOPED BY:		
	SAM MOKGOTSANE	
SIGNATURE OF MANAGER: AERODROME SAFETY INFRASTRUCTURE	NAME IN BLOCK LETTERS	DATE
REVIEWED & VALIDATED BY:		
	NELSON NKABITI	
SIGNATURE OF SENIOR MANAGER: AERODROMES & FACILITIES DEPARTMENT	NAME IN BLOCK LETTERS	DATE
APPROVED BY:		
	GAWIE BESTBIER	
SIGNATURE OF GENERAL MANAGER: AIR SAFETY INFRASTRUCTURE DIVISION	NAME IN BLOCK LETTERS	DATE

END