DRAFT

Australian Government
Civil Aviation Safety Authority

ADVISORY CIRCULAR 139.C-26 V1.0

Safety management systems for aerodromes

File ref: D19/133184

February 2025

DRAFT

Advisory circulars are intended to provide advice and guidance to illustrate a means, but not necessarily the only means, of complying with the Regulations, or to explain certain regulatory requirements by providing informative, interpretative and explanatory material.

Advisory circulars should always be read in conjunction with the relevant regulations.

Audience

This advisory circular (AC) applies to:

- Certified aerodrome operators.

Purpose

Regulation 139.095 of the *Civil Aviation Safety Regulation 1998* (CASR) requires certified aerodrome operators to have and maintain a Safety Management System (SMS). This AC provides guidelines for aerodrome operators to establish an SMS that complies with Part 139 of CASR and the Part 139 Manual of Standards (MOS) requirements.

For further information

For further information or to provide feedback on this AC, visit CASA's contact us page.

Status

This version of the AC is approved by the National Manager, Flight Standards Branch.

Table 1: Status

Version	Date	Details
v1.0	January 2025	This AC provides updated guidance in accordance with CASR Part 139 and its MOS which are based on ICAO Annex 19 - Safety Management and Appendix 2 - Framework for a safety management system (SMS). This AC supersedes AC 139-16(1) dated January 2013.
(1)	January 2013	This is the first amendment/revision of this AC and replaces AC 139-16(0) dated March 2005. The main objective of the revised AC is to incorporate a four component and 15 element Safety Management System Framework intended to guide development and implementation of a Safety Management System (SMS) at certified aerodromes. The 15 element framework is based on the ICAO Safety Management System Framework (ICAO Doc 9859) with an additional 3 elements included by CASA.
(0)	March 2005	This is the first AC to be written on the subject of Aerodrome Safety Management Systems.

Unless specified otherwise, all subregulations, regulations, Divisions, Subparts and Parts referenced in this AC are references to the *Civil Aviation Safety Regulations 1998 (CASR)*.

Contents

Acknowledgement of Country

The Civil Aviation Safety Authority (CASA) respectfully acknowledges the Traditional Custodians of the lands on which our offices are located and their continuing connection to land, water and community, and pays respect to Elders past, present and emerging.

Artwork: James Baban.

1 Reference material

1.1 Acronyms

The acronyms and abbreviations used in this AC are listed in the table below.

Table 2: Acronyms

Acronym	Description
AC	advisory circular
AEP	aerodrome emergency plan
ALARP	as low as reasonably practical
ARO	aerodrome reporting officer
ATSB	Australian Transport Safety Bureau
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations 1998
ERP	emergency response plan
HF	Human Factors
ICAO	International Civil Aviation Organization
IRM	immediately reportable matter
RRM	routinely reportable matter
RST	runway safety team
SMS	Safety Management System
SPI	safety performance indicator
SPT	safety performance targets
TEM	threat and error management
TNA	training needs analysis
WSO	works safety officer

1.2 Definitions

Terms that have specific meaning within this AC are defined in the table below. Where definitions from the civil aviation legislation have been reproduced for ease of reference, these are identified by 'grey shading'. Should there be a discrepancy between a definition given in this AC and the civil aviation legislation, the definition in the legislation prevails.

Table 3: Definitions

Term	Definition
accident	An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with intention of flight until such time as all such persons have disembarked, in which: 1. a person is fatally or seriously injured as a result of: a. being in the aircraft b. direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or c. direct exposure to jet blast. 2. except when the injuries are from natural causes, self-inflicted, or caused by other persons, or when injuries are to stowaways hiding outside the areas normally available to the passengers and crew 3. the aircraft sustains damage or structural failure which: a. adversely affects the structural strength, performance or flight characteristics of the aircraft, and b. would normally require major repair or replacement of the affected component, and 4. except for engine failure or damage, when the damage is limited to the engine, its cowlings or accessories; or for damage limited to propellers, wing tips, antennas, tyres, brakes, fairings, small dents or puncture holes in the aircraft skin; or the aircraft is missing or is completely inaccessible. **Notes:** 1. For statistical uniformity only, an injury resulting in death within 30 days of the date of the accident is classified as a fatal injury by ICAO. 2. An aircraft is considered missing when the official search has been terminated and wreckage has not been located.
accountable manager	A person responsible for ensuring that the aerodrome: 1. complies with the civil aviation legislation 2. is operated and maintained safely and with a reasonable degree of care and diligence; and 3. is operated and maintained in accordance with the aerodrome manual for the aerodrome.
as low as reasonably practical (ALARP)	A risk is low enough that attempting to make it lower, or the cost of assessing the improvement gained in an attempted risk reduction, would actually be more costly than any cost likely to come from the risk itself.
change management	A systematic approach to controlling changes to any aspect of processes, procedures, operations or services, both from the perspective of an organisation and individuals. Its objective is to ensure that safety risks resulting from change are reduced to as low as reasonably practicable. Change Management is sometimes also referred to as Management of Change.

Term	Definition
competency	A combination of knowledge, skills, attitudes and behaviours required to perform a task to the prescribed standard.
consequence	Outcome or impact of an event. **Notes:** 1. There can be more than one consequence from one event. 2. Consequences can range from positive to negative. 3. Consequences can be expressed qualitatively or quantitatively. 4. Consequences are considered in relation to the achievement of objectives.
error	An action or inaction by a person that leads to deviations from organisational or an individual's intentions or expectations.
hazard	A condition or an object with the potential to cause or contribute to an aircraft incident or accident.
Human Factors (HF)	Describes the many aspects of human performance which interact with their (aviation) environment to influence the outcome of events. It is a field of knowledge that involves optimising the relationship between the human operator and this environment.
incident	An occurrence, other than an accident, associated with the operation or maintenance of an aircraft which affects or could affect the safety of operation.
interfaces	Interactions between an organisation and other organisations, both internal (e.g. departments, divisions etc.) and external (service providers, contracted services, government bodies, foreign organisations etc.). This can also include, but is not limited to, ground handlers, maintenance providers, data service providers, aerodrome operators, among many others.
just culture	A key feature of a modern SMS is a 'just culture' regime that operates to protect individuals from punitive or disciplinary action for 'honest mistakes' made in the course of performing their aviation-related functions, where: • the conduct involved is voluntarily reported in accordance with the applicable safety management procedures; and • the act or omission is commensurate with an individual's experience, qualifications and training. Excluded from the scope of this kind of protection are acts involving gross negligence, recklessness, or wilful violations of applicable rules and requirements.
likelihood	Used as a general description of probability or frequency. **Note:** This can be expressed qualitatively or quantitatively.
Management of Change	A formal process to manage changes within an organisation in a systematic manner, so that changes which may impact identified hazards and risk mitigation strategies are accounted for before the implementation of such changes. Its objective is to ensure that safety risks resulting from change are managed to an acceptable level. Management of Change is sometimes also referred to as Change Management.
non-technical skills	Specific HF competencies such as critical decision-making, team communication, situational awareness and workload management.

Term	Definition
risk	The predicted probability and severity of the consequences or outcomes of a hazard.
risk assessment	The overall process of risk identification, risk analysis and risk evaluation.
risk management	The identification, assessment, and prioritisation of risks through coordinated and economical application of resources to minimise, monitor, and control the probability and/or impact of undesired events or to maximise the realisation of opportunities.
safety	The state in which risks associated with aviation activities, related to, or in direct support of the operation of aircraft, are reduced and controlled to an acceptable level.
safety culture	People's values, attitudes, beliefs and behaviours relating to safety. Organisations with a positive safety culture are characterised by a genuine commitment, by communications founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficacy of preventive measures.
safety governance	The underpinning structure of meetings, committees and functions by which an organisation is managed and controlled in relation to safety. The aim is to ensure that there is appropriate oversight to manage the organisation's risks to an acceptable level.
safety management	This may be described as managing the identification of hazards and the mitigation of risks associated with those hazards until they reach the ALARP criteria.
safety manager	A person responsible for managing all aspects of the operation of an aerodrome operator's SMS.
safety objective	Brief, high-level statements of desired achievements. These should be either process or outcome based.
safety performance	An organisation's safety achievement as defined by its safety performance targets (SPT) and safety performance indicators (SPI).
SHELL model	The SHELL model illustrates the impact and interaction of the different system components on humans and emphasises the need to consider human factors as an integrated part of safety risk management. The model represents the way the whole system influences how individuals behave. Any breakdown, disconnect or absence between components can lead to human performance problems.
SMS	The organisational structure, procedures, processes and resources needed to implement safety management throughout all activities and processes conducted by the organisation.
SPI	Any data-based parameters used to monitor and assess performance towards an organisation's safety objectives.
SPT	A defined level of desired performance set for each SPI.
stakeholders	Those people and organisations that may affect, be affected by, or perceive themselves to be affected by a decision, activity or risk.
systemic	Relating to or affecting an entire system.

Term	Definition
system safety	The application of engineering and management principles, criteria and techniques to optimise safety by the identification of safety related risks and eliminating or controlling them by design and/or procedures, based on acceptable system safety precedence.
threat	Events or errors that occur beyond the influence of an operational person, increase operational complexity and should be managed to maintain the margin of safety.
threat and error management (TEM)	The process of detecting and responding to threats with countermeasures that reduce or eliminate the consequences of threats and mitigate the probability of errors or undesired states.
training	The process of bringing a person to an agreed standard of competency by practice and instruction.
Training Needs Analysis (TNA)	The identification of training needs at employee, departmental, or organisational level, for the organisation to perform effectively.
violation	Intended or deliberate deviations from rules, regulations or operating procedures. A person committing a violation fully intends their actions. Violations can be one of four different types: 1. routine – common violations promoted by an indifferent environment, 'we do it this way all the time' 2. optimising – corner-cutting based on the path of least resistance, 'I know a better way of doing this' 3. exceptional or situational – one-off breaches of standards/regulations dictated by unusual circumstances that are not covered in procedures, 'we can't do this any other way' 4. acts of sabotage – acts of harmful intent to life, property of equipment.

1.3 References

Legislation

Legislation is available on the Federal Register of Legislation website https://www.legislation.gov.au/

Table 4: Legislation references

Document	Title
Part 139 of CASR	Aerodromes
Part 139 Manual of Standards	Aerodromes
Act	Transport Safety Investigation Act 2003
Regulation	Transport Safety Investigation Regulations 2021

International Civil Aviation Organization documents

International Civil Aviation Organization (ICAO) documents are available for purchase from http://store1.icao.int/

Many ICAO documents are also available for reading, but not purchase or downloading, from the ICAO eLibrary (https://elibrary.icao.int/home).

Table 5: ICAO references

Document	Title
ICAO Annex 14 Volume I	Aerodrome Design and Operations
ICAO Doc 9981	Procedures for Air Navigation Services - Aerodromes
ICAO Annex 19	Safety Management
ICAO Doc 9859	Safety Management Manual

Other

Table 6: Other references

Document	Title
ISO 31000	Risk management — Guidelines

Advisory material

CASA's advisory materials are available at https://www.casa.gov.au/publications-and-resources/guidance-materials

Table 7: Advisory material references

Document	Title
AC 139.C-18	Aerodrome emergency planning
AC 139.C-27	Risk management plans for aerodromes

2 General requirements of a Safety Management System

2.1 Introduction

2.1.1 The purpose of this AC is to provide guidance to the operators of certified aerodromes on the implementation of SMS. An SMS provides an organisation with a systematic capability designed to continuously monitor and improve safety performance. This AC should be read in conjunction with the 'Resource kit to develop your Safety Management System' available on the CASA website that provides practical assistance on the development of the SMS for large organisations.

1.3.1 An SMS is a systematic approach based on identifying hazards and managing risk through setting goals, capturing data, measuring performance and system refinement for managing safety risks. An SMS is woven into the fabric of an organisation that enables effective risk-based decision-making processes across the business where risks are identified and continuously managed to an acceptable level.

2.2 Underlying principles

Note: For further background information, refer to SMS for Aviation – A Practical Guide: Safety Management System Basics (Booklet 1).

2.2.1 To be effective, safety management goes beyond simple compliance with regulations; it is a business-like approach to safety, and it requires the support and ownership of the Accountable Manager.

2.2.2 It is important to recognise that although an SMS is a top-down driven system, meaning the Accountable Manager of an organisation is accountable for both the implementation and the continuing compliance of the SMS, safety is a shared responsibility across the whole of an organisation and requires the involvement of all staff.

2.2.3 Where an organisation, either solely or as part of a group, has several regulatory approvals, an overarching SMS between the group and the subsidiary internal areas may be developed, provided there is clear accountability detailed in the corporate structure for the ownership of the SMS.

2.2.4 An effective safety system can have positive flow-on effects into other areas of the business, such as reliability, quality and reputation.

3 Safety management system structure

There are 4 components with 14 elements that comprise an SMS. It is important to ensure all aspects of the SMS framework are applied. The policies, processes and procedures that underpin the SMS are to be developed in line with the size of your operations. They should reflect the size, complexity, nature of the business, and the environment in which the activities are undertaken by an organisation. The SMS must, at a minimum, address the 4-components and 14-elements in Table 6.

In accordance with Chapter 25 of the Part 139 MOS, certified aerodromes with 50,000 or more air transport passenger movements annually; or 100,000 or more aircraft movements annually; or scheduled international air transport operations are required to implement an SMS Additionally, Part 139 MOS recommends that all other certified aerodromes, that don't meet the implementation triggers, should implement and utilise an SMS, as it provides for a systematic process to manage aerodrome safety, including hazards related to aircraft operations.

The structure presented in Table 6 may serve as a template for a table of contents for an SMS, or as a checklist to ensure that all SMS components and elements relevant to aerodrome operations are duly considered.

Table 6: SMS Structure – components and elements

Components	Elements	AC section
1. Safety policy and objectives	1.1 Management commitment and the safety policy	4.1
	1.2 Safety accountabilities and responsibilities and personnel	4.2
	1.3 Appointment of key safety personnel - Safety Manager	4.3
	1.4 Third-party interfaces	4.4
	1.5 Coordination of the emergency response plan	4.5
	1.6 SMS documentation	4.6
2. Safety risk management	2.1 Hazard identification	5.1
	2.2 Safety risk assessment and mitigation	5.2
3. Safety assurance	3.1 Safety performance monitoring and measurement	6.1
	3.2 Safety investigation	6.2
	3.3 Management of change	6.3
	3.4 Continuous improvement of the SMS	6.4
4. Safety promotion	4.1 Training and education	7.2
	4.2 Safety communication	7.3

4 Safety policy and objectives

Note: For further information on safety policy and objectives refer to SMS for Aviation – A Practical Guide: Safety Policy and Objectives (Booklet 2).

4.1 Management commitment and the safety policy

4.1.1 A safety policy is a visible endorsement of the Accountable Manager's philosophy for managing safety. It is the foundation on which an organisation's SMS is built and can be readily adjusted over time to reflect changes to the current operating environment.

4.1.2 An organisation's safety policy should be clear, concise and emphasise top-level support for the safe management of its people, operations and services.

4.1.3 A safety policy communicates what an organisation will do to achieve the desired safety outcomes. Outcomes may be expressed in terms of short, medium and long-term outcomes. It serves as a reminder as to how the aerodrome conducts its business safely. The safety policy should:

- reflect organisational commitment to safety, including the promotion of a positive safety culture
- include a clear statement about the allocation of resources for the implementation of the safety policy
- include safety reporting procedures
- in the context of the aerodrome operator's aviation activities — indicate which types of behaviours are unacceptable as well as indicating circumstances under which disciplinary action would not apply
- be signed by the accountable manager
- be communicated and promoted throughout the aerodrome operator's organisation
- be periodically reviewed to ensure it remains relevant and appropriate to the operator.

4.1.4 It is the responsibility of management to communicate the safety policy throughout an organisation to ensure all personnel understand and work in accordance with the safety policy. Section 7.3 Safety communication provides further information on communicating the safety policy to aerodrome personnel, including contractors.

4.1.5 The safety policy should also refer to the safety reporting system to encourage the reporting of safety issues and inform personnel of the 'just culture' policy applied in the case of safety events or safety issues that are reported. This can be part of the safety policy, a separate policy, or integrated into an appropriate part of the SMS.

4.1.6 The 'just culture' policy is used to assess whether an error or rule breaking has occurred, taking into consideration the influence of system factors, so that an organisation can establish what corrective actions should be taken. When developing the policy, organisations can consider the involvement of personnel representatives to assist in the development of clearly defined protocols, which can aid policy 'buy-in' and endorsement by employees. To ensure the fair treatment of persons involved, it is essential that those tasked with determining whether an error or rule breaking has occurred have the necessary technical expertise so the context of the event may be fully considered.

Safety objectives

4.1.7 Safety objectives are brief, high-level statements of desired achievements and should be either process or outcome based. They give direction to an organisation and should be consistent with the safety policy. Refer paragraph 6.1.9 for SMART performance measures.

4.1.8 It is important to ensure the stated objectives are achievable and clearly define the limits within which an organisation will operate. They should be unambiguous, well-documented, readily accessible to all staff, and reviewed on a regular basis.

4.1.9 Safety objectives should:

- form the basis for safety performance monitoring and measurement
- reflect the aerodrome operator's commitment to continuously improve the effectiveness of the SMS
- be communicated and promoted throughout the organisation
- be periodically reviewed to ensure the objectives remain relevant and appropriate to the operator
- ensure the safety policy is communicated, implemented, understood and maintained at all levels
- ensure safety is a prime responsibility of managers at all levels
- ensure continuous improvement of the level of safety performance
- promote and maintain a positive safety culture
- provide the resources required to deliver safe operations and/or services
- establish and support standards for acceptable safety behaviour
- manage errors, omissions and violations in an objective, fair and accountable manner
- actively encourage safety reporting and protection of data.

4.1.10 Safety performance indicators (SPIs) and safety performance targets (SPTs) are needed to monitor the progress with regards achieving the set safety objectives and are further explained in Section 6.1 Safety performance monitoring and measurement of this AC.

4.1.11 The safety policy and safety objectives should be periodically reviewed to ensure they remain current.

4.1.12 A further element of management's commitment to, and responsibility for safety, is management's awareness of broader industry safety information, such as Australia's State Safety Program (SSP) and National Aviation Safety Plan (NASP), where this has relevance to an aerodrome operator's operations. Aerodrome operators should consider any aerodrome-related risks and SPIs as identified in the NASP. The overarching goal is for all operators to develop awareness of hazards across the broader aviation system, and if these hazards have potential to influence their operations. CASA will review this performance marker in the context of an aerodrome operator's SMS as a whole. Aerodrome operators do not need to include specific statements such as "Australia's SSP has been considered in the development of this SMS."

4.2 Safety accountabilities and responsibilities and personnel

4.2.1 The safety accountabilities of an aerodrome operator include:

- the accountable manager, irrespective of other functions, being accountable to the aerodrome operator for implementation and maintenance of an effective SMS

- establishing organisational lines of accountability for safety, including the direct accountability of specified senior management personnel
- the responsibilities of all members of the operator's organisation who, irrespective of other functions, having responsibility for safety performance
- the specific levels of management with authority to make decisions regarding safety risk tolerability.

4.2.2 The Accountable Manager is a key person who is fully responsible and accountable[1] for the SMS and who has the ultimate authority for the safe operation of an organisation.

4.2.3 Although responsibility for the day-to-day operation of the SMS can be delegated, the Accountable Manager cannot delegate accountability for the system or decisions regarding risk, specifically:

- setting acceptable safety risk limits and resourcing of necessary controls
- allocation of necessary resources for financing, acquisitions, training, and personnel
- ensuring safety policies and objectives are appropriate and communicated
- ensuring the SMS is properly implemented and performing to requirements
- recruiting a management team appropriate to the size and complexity of an organisation.

4.2.4 The Accountable Manager should have final authority:

- for the resolution of all safety matters
- over all activities covered under any certificate, authorisation or approval and the authority to stop operations or activities.

4.2.5 The Accountable Manager may further demonstrate their commitment to safety by leading regular safety meetings to actively review:

- safety objectives
- safety policy at regular intervals
- adequacy of financial and human resources provided to the SMS programme
- allocation of specific safety roles, responsibilities and accountabilities to the management team
- safety performance and the achievement of safety targets.

4.2.6 Senior management should create an organisational structure that is capable of providing adequate support to manage the SMS. Safety accountabilities, responsibilities and lines of communication for all levels of staff should be clearly described.

4.2.7 Staff at all levels should understand their safety accountabilities, authorities and responsibilities to support their processes, decisions and actions. These safety accountabilities, authorities and responsibilities should be defined and documented and made available throughout an organisation.

4.2.8 All employees should be involved in the consultation, establishment and operation of the SMS, such as. employee representation and involvement during the development of policy. The SMS principles should permeate to all levels of the operation with safety as part of the everyday language at an organisation.

[1] As per Definitions in this document, the term accountability refers to obligations which cannot be delegated; the term responsibilities refers to functions and activities which may be delegated.

4.2.9 An organisation should aim to avoid conflicts of interest between staff members' safety responsibilities and other organisational responsibilities. SMS accountabilities and responsibilities should be allocated in a way that minimises any overlaps and/or gaps.

Safety governance

4.2.10 Aerodrome operators should establish appropriate safety governance (committees or other documented meetings) that support the SMS functions across an organisation. This should include determining who should be involved in the safety governance and the frequency of the meetings.

4.2.11 The highest-level safety committee, sometimes referred to as a safety review board, includes the Accountable Manager and senior employees or managers, with the Safety Manager participating in an advisory capacity. This committee is strategic and deals with high-level issues related to safety policies, resource allocation and organisational performance. It should monitor the:

- effectiveness of the SMS
- timely response in implementing necessary safety risk control actions
- safety performance against the organisation's safety policy and objectives
- overall effectiveness of safety risk mitigation strategies.

4.2.12 Once a strategic direction has been developed by the highest-level safety committee, implementation of safety initiatives should be coordinated throughout an organisation. This may be achieved by creating safety action groups or establishing lower-level safety committees if necessary. Where established, these groups/committees normally comprise managers and front-line personnel and are chaired by a designated manager. They should:

- assess any potential safety implications relating to organisational and operational changes, and the introduction of new technologies
- monitor operational safety performance within their functional areas of the organisation
- ensure that appropriate safety management activities are carried out
- review available safety data
- identify the implementation of appropriate safety risk control strategies
- ensure employee feedback is provided
- assess the safety impact related to the introduction of operational changes or new technologies
- coordinate the implementation of any actions related to safety risk controls
- ensure that actions are taken promptly
- review achievement of safety training objectives
- review the effectiveness of specific safety risk controls.

4.2.13 Aerodrome operators should confirm not only that processes and procedures are being followed but also that collective efforts achieve, or are working towards achieving, the organisation's safety objectives. Through regular review and evaluation, management can pursue continuous improvements in safety management and ensure that the SMS remains up-to-date, effective and relevant to the operation.

4.2.14 Outcomes from safety governance activities could include:

- changes to SMS objectives
- changes to safety indicators and/or targets

- improvements to SMS processes/procedures
- design of an implementation plan for improvement changes.

Note: Also refer to Section 6.4 Continuous Improvement of the SMS.

4.3 Appointment of key safety personnel - Safety Manager

4.3.1 Appointment of a competent person or persons to fulfil the role of Safety Manager is essential to an effectively implemented and functioning SMS. The Safety Manager may be identified by different titles. For the purposes of this AC, the generic term Safety Manager is used. For international airports, the SMS must identify at least one senior management individual to be the primary person responsible for implementation, and continuous improvement, of the SMS.

Note: Depending on the size of the aerodrome and the complexity of its operations or services, responsibility for implementation and maintenance of the SMS may be assigned to one or more persons. The role of Safety Manager could be a sole function, or a function combined with other duties provided the other duties do not result in a conflict of interest or adversely affect the performance of safety duties.

4.3.2 The Safety Manager should be independent from operational areas and reports directly to the Accountable Manager. This independence gives the Safety Manager the ability to look across the operation from the safety perspective and make decisions free from potential conflicts of interest.

4.3.3 The Safety Manager is responsible for the day-to-day operation of the SMS and for ensuring the Accountable Manager is kept appropriately informed on safety matters. However, responsibility for managing safety is shared across the operation and it is not just the responsibility of the Safety Manager and their team (if in place).

4.3.4 The Safety Manager should possess sufficient safety and regulatory knowledge to ensure an organisation conducts its operation safely. They should have acquired, through formal training and/or practical experience, a sound understanding of safety management principles, relevant technical background to understand the systems that support their operations, and exposure to operational management experience. CASA recognises that experience and/or knowledge can be acquired in many different ways, and all relevant experience is valid.

4.3.5 The Safety Manager, irrespective of other duties, will have responsibility for, but not limited to:

- managing the SMS implementation plan
- maintaining SMS documentation and records
- performing/facilitating hazard identification and safety risk analysis
- coordinating the promotion of aerodrome safety requirements through induction and recurrent training
- identifying ongoing safety training requirements to support the SMS programme objectives
- ensuring that processes needed for the SMS are implemented, maintained and mature over time
- providing appropriate data so senior management can assess the performance of the SMS and the areas where improvement is required

- providing timely safety advice and assistance on safety matters to managers, employees and contractors at all levels
- promoting safety awareness and a positive safety culture
- co-operating with government agencies on safety-related issues
- liaising with third party stakeholders on safety-related issues
- researching and sharing safety related information with other key safety personnel in an organisation
- monitoring and evaluating corrective and preventative actions
- coordinating incident and accident investigations
- managing a confidential reporting system
- monitoring the progress of safety reports and ensuring that hazards are addressed in a timely manner
- overseeing the management of risks
- overseeing the internal and external SMS audit programmes
- maintaining the Emergency Response Plan (ERP).

4.3.6 The Safety Manager may be held responsible for the satisfactory administration and facilitation of the SMS itself; they should not be held accountable for the safety performance of an organisation as this is the primary accountability of the Accountable Manager.

4.3.7 The competencies for a Safety Manager may include, but should not be limited to, the following:

- understanding safety management principles
- a level of operational experience related to the product or service provided by an organisation
- a technical understanding of the systems that support operations or the product/service provided
- interpersonal skills
- analytical and problem-solving skills
- project management skills
- oral and written communications skills
- an understanding of Human Factors (HF).

4.3.8 Desirable personal traits for a Safety Manager include:

- fairness
- assertiveness
- impartiality
- trustfulness
- integrity
- communicative
- objectiveness.

4.3.9 Depending on the size, nature and complexity of an operation, nomination of a deputy Safety Manager may be appropriate. Ideally, they would hold similar qualifications, knowledge and experience to cover the Safety Manager role during any absence.

4.3.10 The number, type, skills, composition and appointment of key safety personnel will depend on the size, nature and complexity of the operation. A large organisation may have a dedicated safety department, led by the Safety Manager, supported by a team of safety specialists.

4.3.11 As a minimum, an organisation must have a Safety Manager to manage the requirements of the SMS and may identify a suitable person approved to act in the Safety Managers absence when required.

Runway safety teams

4.3.12 A runway safety team (RST) is a team of appropriate local representatives and stakeholders who work together to improve runway safety at the aerodrome. The RST should be established at each aerodrome and involve representatives from stakeholders whose operations relate to runway(s) at the aerodrome. The RST should include representatives from the aerodrome operator, air traffic service provider (where applicable), airlines and aircraft operators, pilot associations, ground handling representatives and any other group with direct involvement in runway operations at the specific aerodrome.

4.3.13 The primary role of the RST should be to develop a robust runway safety action plan, advise the aerodrome operator of potential runway safety issues and recommend strategies for hazard removal and effective mitigation of identified risks. While also providing advice and context regarding local conditions on the runway, taxiways and adjacent areas, the RST should provide advice to the aerodrome operator on other issues of concern and provide support in developing mitigating measures and solutions to identified issues.

4.3.14 RSTs also provide an avenue for hazard identification and risk management, along with safety assurance and safety promotion in support of an organisation's Safety Management System (SMS).

4.4 Third-party interfaces

4.4.1 Certified aerodrome operators are responsible for the safety performance of external organisations where there is an SMS interface. The aerodrome operator may be held accountable for the safety performance of products or services provided by external organisations supporting its activities even if the external organisations are not required to have an SMS. The aerodrome operator’s SMS must interface with the safety systems of any external organisations that contribute to the safe delivery of their product or services.

4.4.2 Third-party interfaces are often known as contractors within most organisations. However, in regard to an SMS, a third-party interface is any party that can influence your safety management. For example, at an airport, a refueller is a third party for both the airport and an aircraft operator but would only be considered a contractor to the aircraft operator. Yet the refueller can influence both the airport and aircraft operator SMS.

4.4.3 As an aerodrome operator, you will often employ contractors in areas such as refuelling, catering, ground handling, aircraft maintenance. Additionally, an aerodrome operator will often employ consultants providing Annual Technical Inspections and/or OLS surveys, pavement contractors, rubber removalists etc These contractors and consultants will be referred to as ‘third-party interfaces’ in your SMS. You have probably always had contractual arrangements with your providers. Your SMS provides an opportunity (and an obligation) to extend these contractual arrangements to include safety performance. Your SMS documentation should outline how you will manage any risks posed by using third parties, as well as how you will ensure these providers are complying with your SMS policy and procedures. While a contractor provides you with a service, you still hold overall responsibility for the safety of services they provide.

4.4.4 The safety standards specified in your SMS must not be eroded by any products and services provided by external organisations. You do not want all your hard work in implementing an SMS to be undone through negative safety behaviours or actions of your contractors when they interact with your organisation or staff. It is a good idea to investigate the third party’s previous

safety record thoroughly and establish whether they have ever breached any regulations. Checking the internet or simply asking around – talking to other organisations currently using their services, or who have used them in the past – will quickly give you a sense of how professional they are. Your positive safety culture can be negated through contract staff actions either directly, via unsafe actions, or indirectly through negative safety behaviours observed by your own staff that are seen to go unmanaged.

4.4.5 It is also important to take the time to explain to the contractor all about your SMS, and particularly what the expectations are to comply with the requirements of the SMS. When you are deciding about using their services, whether they are willing to comply with your SMS is as important a consideration as factors such as price, quality and on-time delivery. It is also important that you ensure they report all safety hazards they identify when working at your aerodrome.

4.4.6 All safety issues and risks associated with third-party interfaces should be documented and made accessible to each party involved for sharing and review. This allows for the sharing of lessons learned and pooling of safety information that will be valuable to both parties. Safety benefits can be achieved through an enhancement of safety reached by each party through a shared ownership of safety risks and responsibilities.

4.4.7 The SMS should include procedures to ensure that:

- products or services provided by any third parties to an aerodrome operator do not compromise aviation safety
- safety-critical information derived from the SMS is actively conveyed to relevant third parties
- third parties report any safety hazards they identify when working at your aerodrome.

4.5 Coordination of the emergency response plan

4.5.1 Coordination of emergency response planning refers to planning for activities that take place within a limited period of time during an unplanned aviation operational emergency situation. An ERP is an integral part of the SMS to address aviation-related emergencies, crises or occurrences. The ERP should address foreseeable emergencies as identified through the SMS and include mitigating actions, processes and controls to effectively manage aviation-related emergencies. The ERP should provide the framework to manage an orderly transition from normal to emergency status and then return to normal operations.

4.5.2 An SMS should include:

- an ERP that addresses accidents and incidents involving aircraft operations and other aviation emergencies
- procedures to ensure that the ERP is properly coordinated with the emergency response plans of those organisations with which it must interface during the operator's provision of aviation activities, operations and services.

4.5.3 Apart from the requirements for large or busy certified aerodromes to have an SMS (Chapter 25 of the Part 139 MOS), under Chapter 24 of the Part 139 MOS the same aerodromes are also required to have an aerodrome emergency plan (AEP) (also refer AC 139.C-18v1.1 Aerodrome emergency planning) and conduct aerodrome emergency exercises as follows:

- a full-scale aerodrome emergency exercise conducted at intervals not exceeding 2 years
- in each intervening year — partial emergency exercises, for example, a tabletop exercise, to ensure that any deficiencies found during the full-scale aerodrome emergency exercise have been corrected

  or

- a series of modular tests in which:

  i. all modules are tested within 3 years

ii. the interval between the test of any module and its previous test is not greater than 3 years

iii. there is a full-scale aerodrome emergency exercise, but not sooner than 3 months before the expiry of the 3 years.

4.5.4 Additionally, aerodromes with scheduled international air transport operations, or 350,000 or more air transport passenger movements annually are required to establish an aerodrome emergency committee. These same triggers are linked to the requirements for an aerodrome to have a certified and dedicated aerodrome rescue and fire fighting service (ARFFS) under Subpart 139.H of CASR.

4.5.5 The AEP should set out the responsibilities, roles and actions for the various agencies and personnel involved in dealing with emergencies. It may include checklists and contact details.

4.5.6 The overall objective of the AEP is to manage the risks associated with the accident/incident to ensure the safety of current operations and/or the orderly transition back to normal operations. Such a transition should include assignment of emergency responsibilities and delegation of authority. It includes the period of time required to re-establish normal operations following the emergency, which will vary depending on the size, nature and complexity of both the emergency and an organisation.

4.5.7 Most emergencies will require coordinated actions between different organisations, possibly with other service providers and with other external organisations, such as non-aviation-related emergency services. The AEP should be easily accessible to the appropriate key personnel, as well as to the coordinating external organisations.

4.5.8 An effective plan would anticipate circumstances, including non-aircraft related emergencies. The structure should consider:

- the purpose of the plan
- what situations would need to be controlled
- how to maintain command of the people involved
- how resources would be coordinated
- recovery and returning to normal
- exercising the plan regularly.

4.5.9 The AEP could be documented in a separate manual or incorporated into an organisation's SMS Manual. The minimum elements that should be included in an AEP are:

- trigger events that will activate the AEP
- managing the media
- orderly and efficient transition from normal to emergency operations
- delegation of emergency authority and responsibilities
- external agency interface (these may be foreign governments and agencies)
- authorisation to nominated personnel for actions contained in the plan
- release of facilities and equipment
- passenger crew and family welfare, immediate and ongoing
- casualty and next-of-kin coordination
- accident investigation
- local or remote accident site
- preservation of evidence

- claims and insurance procedures
- aircraft wreckage removal
- safe continuation of normal operations (if possible)
- emergency response training.

4.5.10 The AEP requirements under Chapter 24 of the Part 139 MOS must all be met, including contents of the AEP, emergency scenarios and records of reviews, exercises and emergencies. For further detail on emergency response planning refer to AC 139.C-18v1.0 - Aerodrome emergency planning.

4.6 SMS documentation

4.6.1 It is essential that the philosophy, processes and practices that define the SMS be documented and visibly communicated to the whole organisation. The size, nature and complexity of the operation will influence the documentation scale, as well as the number and type of records required.

4.6.2 This can be achieved as a separate SMS manual, referenced in the aerodrome manual, or integrated within the aerodrome manual itself. It is important that all personnel know where to access the documentation and when it has been updated. The SMS should be a living document that is reviewed regularly and is constantly evolving to ensure that it remains current.

4.6.3 Depending upon the size, nature and complexity of an organisation, a typical SMS manual or an integrated aerodrome manual suite should contain policies, processes and procedures, including:

- the safety policy and objectives
- the SMS requirements
- the SMS processes and procedures
- the accountabilities, responsibilities and authorities for SMS processes and procedures
- the minimum skills and knowledge required for the primary person responsible for the SMS
- safety accountabilities and key safety personnel
- management review
- safety performance monitoring and measurement
- safety reporting
- safety records handling, storage, access and preservation
- hazard identification
- risk assessment
- safety investigation
- safety audit
- change management
- safety training and communication of safety information
- coordination of emergency response planning.

4.6.4 Safety records must be retained as evidence and to support internal and external audits of the SMS. Examples of relevant safety records include:

- SMS implementation plans/gap analysis

- hazard/risk registers
- safety reports and investigations
- risk assessments and safety cases
- SMS reviews
- audit reports
- safety meeting minutes
- safety training records
- documentation of safety assurance processes (e.g. safety surveys, safety monitoring etc.).

Notes:

1. Relevant SMS operational records would include records, reviews, reports, assessments, analyses, verifications, investigations, training and communication programs, risk and hazard registers, safety cases, and details of persons who are or have been the primary persons responsible for the SMS.
2. Depending on the size of the aerodrome and the complexity of its aviation operations or services, SMS operational records may be a stand-alone collection or database, or they may be integrated with other organisational documents.

5 Safety risk management process

Note: Also refer to SMS for Aviation – A Practical Guide: Safety Risk Management (Booklet 3).

The safety risk management process systematically identifies and manages hazards and associated risks that exist within the context of an organisation's activities. Understanding the system and its operating environment is essential for this process. Hazards may be identified throughout the operational life cycle from internal and external sources. Safety risk assessments and safety risk controls will need to be continuously reviewed to ensure they remain effective. Figure 1 below provides an overview of the hazard identification and safety risk management process for an aerodrome operator.

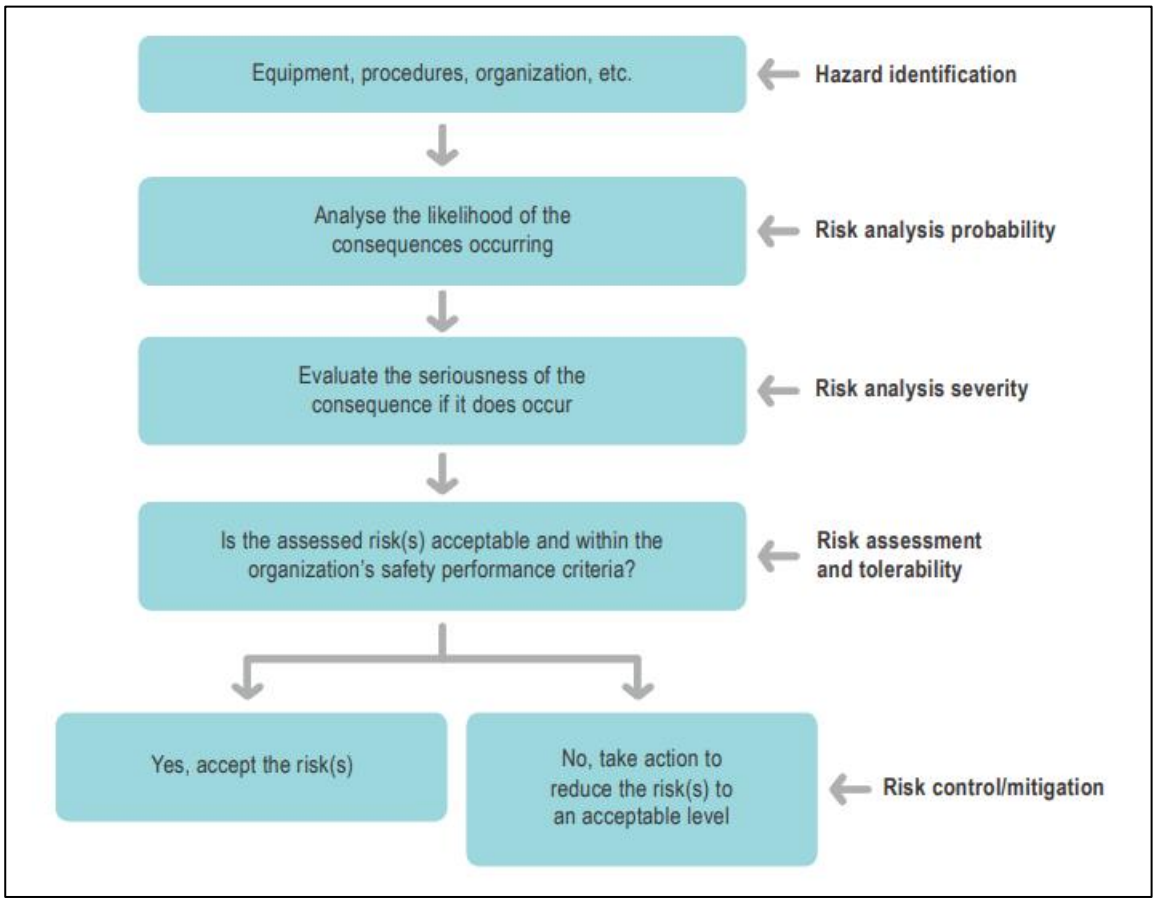

Figure 1: Hazard Identification and risk management process (Source: ICAO 9859 Edition 4 SMM 2018)

5.1 Hazard identification

5.1.1 Formal procedures need to be developed and maintained that assist in identifying hazards and assess risks in order to:

- identify hazards associated with its aviation activities, aviation operations or aviation services
- ensure that hazard identification is based on a combination of proactive and reactive methods of safety data collection

- establish methods and procedures for the management (identification/ assessment/control or mitigation) of safety hazards.

5.1.2 The starting point for the safety risk management process should be a systematic and comprehensive hazard identification process. Identifying hazards is a continuous process as some hazards will be unknowingly introduced or remain undetected and only become visible when the right circumstances present.

5.1.3 An aerodrome operator should develop and maintain a formal process to identify hazards that could impact aviation safety in all areas of its operation and activities. This includes equipment, facilities and systems. Any aviation safety-related hazard identified and controlled is beneficial for the safety of the operation. It is important to also consider hazards that may exist as a result of the SMS interfaces with external organisations.

5.1.4 Hazards should not be considered in isolation. They can present in ways where even apparently minor hazards can result in undesirable outcomes which may have catastrophic results.

5.1.5 Hazards can be identified from a range of sources including, but not limited to:

- brainstorming using experienced operational personnel
- development of risk scenarios
- monitoring of normal operations such as serviceability inspections and aerodrome technical inspections
- safety surveys and audits such as, CASA surveillance event
- feedback from training
- safety reports
- trend analysis
- investigations
- information exchange systems (e.g. similar organisations, Airservices Australia, Australian Transport Safety Bureau (ATSB), CASA etc.).

5.1.6 By communicating and consulting with relevant stakeholders at all levels, both internal and external, an organisation will establish the ideal framework to capture hazards involved in their daily tasks. Stakeholder involvement can assist with effective and accurate identification of new or changing hazards, besides providing solutions for practical and effective controls.

5.1.7 Proactive hazard identification methods analyse the performance of systems and functions for unidentified hazards and potential failures. They can include safety surveys, safety audits, and other monitoring activities. Organisations should include proactive hazard identification methods to ensure hazards are recognised and addressed before they result in an occurrence. Organisations should also consider hazards that are not only generated outside of the organisation, but also those outside the direct control of the organisation, such as extreme weather, volcanic ash or wildlife. Organisations may also identify hazards through consideration of operations in other organisations or aviation sectors.

5.1.8 One of the most useful tools in the SMS is a robust reporting capability endorsed by senior management through the safety policy and implementing a just culture. Valuable hazard reporting is made possible when employees are willing to report observations and errors because an aerodrome operator guarantees an objective, fair, accountable and learned response.

5.1.9 To enable analysis and organisational learning, an organisation should maintain procedures for the internal and external reporting and recording of occurrences, hazards and other safety-related issues. The collection of timely, appropriate and accurate data will allow an organisation to assess and develop compatible responses to control potential new or reoccurring unsafe events.

5.1.10 An organisation's reporting system is also a method for gathering valuable safety information from its employees who are usually best placed to identify a range of hazards in an organisation.

5.1.11 An organisation's reporting system should encompass the following fundamental elements:

- procedures for reporting occurrences, hazards, or safety concerns
- methods for the collection, storage and distribution of data
- data retrieval and analysis
- identification of hot spots
- production of safety reports
- trend analysis to improve hazard identification
- expert ability to track corrective actions and risk reduction strategies
- provision of safety specific information for management review meetings
- efforts to make reporting secure and confidential.

5.1.12 Reporting into the system should be available to all relevant personnel (internal and external) and be user-friendly.

5.1.13 Over time, the database of reports enables an organisation to establish a taxonomy for classifying data into human, operational and organisational factors which will assist analysis.

5.1.14 Aerodrome operators are 'responsible persons' under the *Transport Safety Investigation Act 2003* and *Transport Safety Investigation Regulations 2021* and are required to meet statutory reporting requirements. Reportable matters are categorised as Immediately Reportable Matters (IRM), e.g. an aircraft accident or serious external damage, and Routine Reportable Matters (RRM), e.g. an aircraft incident.

5.1.15 IRM and RRM are required to be reported to the ATSB. As IRM and RRM are events relating to an aircraft operation, they need to be included in an aerodrome operator's reporting system.

5.2 Safety risk assessment and mitigation

5.2.1 An aerodrome operator must develop a safety risk assessment process and procedures which will allow a consistent and systematic approach for the analysis, assessment and control of safety risks. This should include a method that will help determine what safety risks are acceptable or unacceptable, as well as prioritise actions.

5.2.2 The safety risk assessment process should use all relevant and available safety information. Once safety risks have been assessed, an aerodrome operator should engage in an evidence-based decision-making process to determine what safety risk controls are needed.

5.2.3 The main elements of the risk management process, as illustrated in Figure 2 below, are as follows:

- Establish the context:
  - This is the context in which the rest of the process will take place. Criteria against which risk will be evaluated should be established and the structure of the analysis defined.
- Communicate and consult:
  - This should be aimed at internal and external stakeholders as appropriate at each stage of the risk management process and concerning the process as a whole.
- Identify risks:
  - This should include where, when, why and how events could prevent, degrade, and/or delay the achievement of safety objectives. Sometimes referred to as a Hazard

Identification process, this encompasses a number of methodologies in identifying potential threats and past failures to determine the extent of the risks associated. Part of this process may include the establishment of a hazard/risk log/register to ensure that hazards and the associated risks are tracked and treated as part of a formal process of prioritisation, documentation and assessment.

- Analyse risks:
  - Determine consequences, the likelihood of the event, and the level of risk. Identify and evaluate existing controls (measures in place that control the hazard or reduce the likelihood of occurrence or consequence). This analysis should consider the range of potential consequences (both commercial and operational) and how these could occur. The determination may be the result of employing either qualitative, quantitative analysis techniques, or a combination of the two (semi-quantitative).
- Evaluate risks:
  - Compare estimated levels of risk against the pre-established criteria of acceptability and consider the balance between potential benefits and adverse outcomes. This enables decisions to be made about the extent and nature of treatments required and about priorities.
- Treat/Mitigate risks:
  - Develop and implement specific cost-effective strategies and action plans to increase potential benefits and reduce potential costs and losses.
- Monitor and review:
  - It is necessary to monitor the effectiveness of all steps of the risk management process. This is important for continuous improvement. Risks and the effectiveness of treatment measures need to be monitored to ensure changing circumstances do not alter priorities.

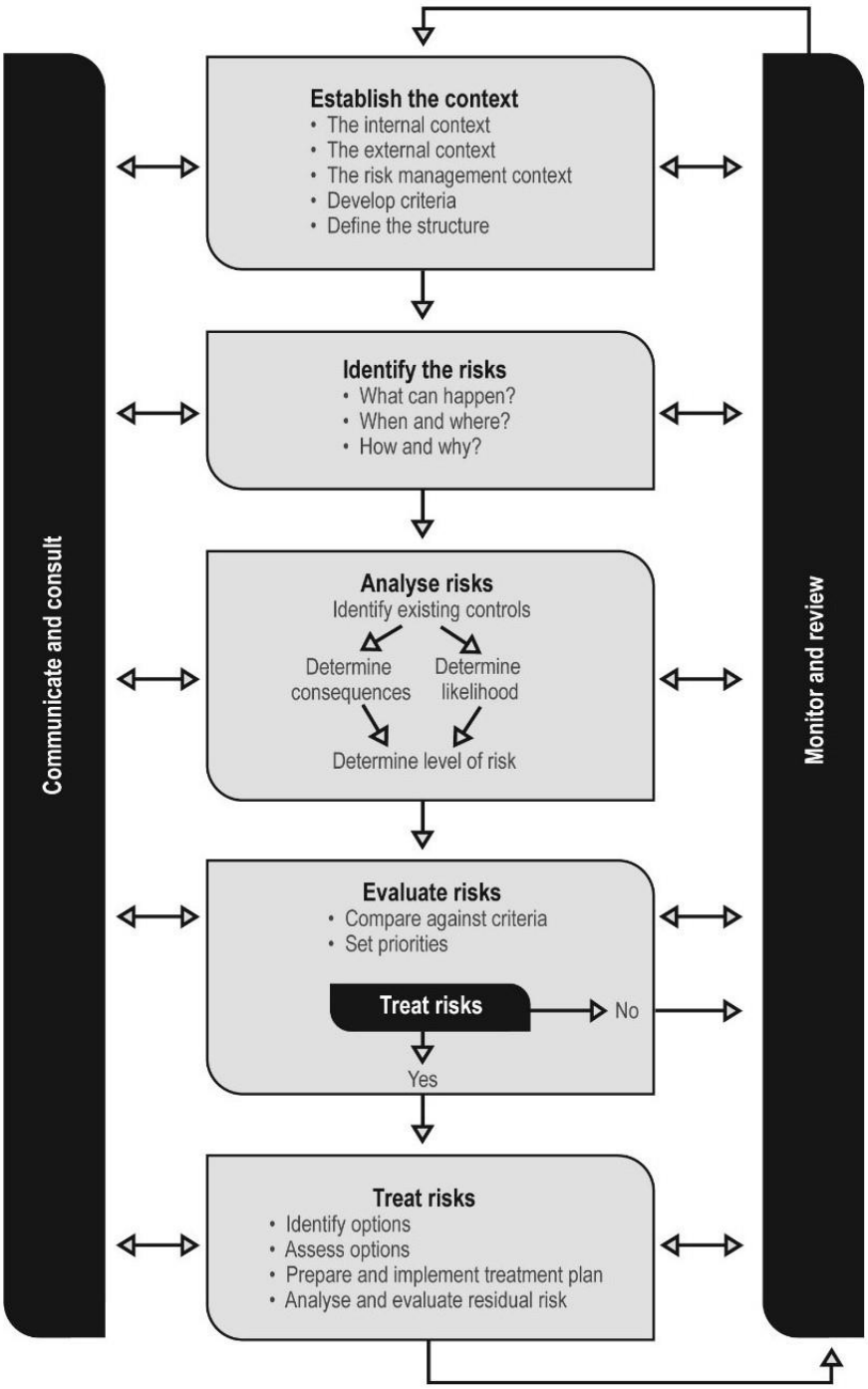

Figure 2: Risk Management Process — Overview (Source: ISO 31000:2018)

5.2.4 A formal record of each stage of the risk management process should be initiated and maintained. Assumptions, methods, data sources, analyses, results and justifications for decisions should all be documented.

5.2.5 There are various methods for conducting risk analyses that aerodrome operators may choose to use. One common way breaks down the risk into two components: the severity of an outcome (or consequence), and the probability (or likelihood) of that outcome occurring. Safety risk decision-making and acceptance is typically specified using a risk matrix. While a matrix is useful, discretion is also required. If used, an aerodrome operator should define and construct

its risk matrix appropriately for their operation, including defining the risk probability and risk severity appropriate for the organisation. This is to ensure that each organisation's safety decision tools are relevant to its environment, recognising the diversity in this area. An example of a potential matrix is shown in Figure 3:

Safety Risk		*Severity*				
Probability		*Catastrophic A*	*Hazardous B*	*Major C*	*Minor D*	*Negligible E*
Frequent	5	5A	5B	5C	5D	5E
Occasional	4	4A	4B	4C	4D	4E
Remote	3	3A	3B	3C	3D	3E
Improbable	2	2A	2B	2C	2D	2E
Extremely improbable	1	1A	1B	1C	1D	1E

Figure 3: Example of a safety risk assessment matrix (Source: ICAO 9859 Edition 4 SMM 2018)

5.2.6 Safety risk assessments sometimes must use qualitative information (expert judgement) rather than quantitative data due to the unavailability of data. Using an aerodrome operator's specific safety risk matrix allows them to express the safety risk(s) associated with the identified hazard in a quantitative format. This enables direct magnitude comparison between identified safety risks. A qualitative safety risk assessment criterion, such as frequent or improbable, may be defined by an organisation and assigned to each identified safety risk where quantitative data is not available.

5.2.7 Organisations that have operations in multiple locations with specific operating environments may find it more effective to establish local safety committees in each location to conduct safety risk assessments and safety risk control identification.

5.2.8 Aerodrome operators are required to determine which risks they consider acceptable and not acceptable and therefore require further controls. To support decisions regarding an organisations risk acceptance, organisations should develop acceptability criteria. Organisations should link their risk acceptability criteria with both their own, specific risk matrix and their risk management processes. Risk acceptability can be generally linked to the residual level of risk determined through an organisation's specific risk assessment activities.

5.2.9 Decisions regarding risk acceptability must then be made against an organisation's acceptability criteria. The acceptability criteria should also define who within an organisation may accept each level of risk and the timeframes (for plans and action) at each risk level. In general, the higher the risk, the more senior the level of management attention required, and the sooner the risk needs to be addressed. The most extreme risks would be escalated to the Accountable Manager and would need to be addressed immediately.

5.2.10 The principle of managing risk to an acceptable level is as follows:

- Risk controls should be implemented when reasonably practicable to do so, i.e. risk should be reduced until the cost of further reducing the risk is grossly disproportionate to the benefit gained. This assessment may be quantitative or based on qualitative arguments.
- An organisation should only consider a risk acceptable when it can be demonstrated that not only have all risk controls been considered, but also that all reasonably practicable risk controls are implemented, and that the level of residual risk meets the organisation's acceptability criteria.
- A risk is considered unacceptable where all controls have not been considered, where all reasonably practicable controls have not been implemented, or where the level of residual risk does not meet the organisation's acceptability criteria.

- Where a risk is found to be unacceptable, and reasonably practicable controls cannot be implemented to drive the risk to an acceptable level, the activity should not be undertaken.
- Where a risk is considered acceptable, the organisation should continue to monitor and review the risk while the risk remains relevant to ensure ongoing acceptability.

5.2.11 The matters that must always be considered when assessing whether a risk is acceptable include:

- the likelihood of the risk concerned occurring
- the degree of harm that may result if the risk eventuated
- organisational knowledge, or expected knowledge, about the risk and any means of eliminating or minimising the risk
- availability and suitability of ways to eliminate or minimise risks
- cost of eliminating or minimising the risk.

5.2.12 After safety risks have been assessed, safety risk mitigation, if necessary, must take place. This step involves designing and implementing safety risk controls. These may be additional or changed procedures, new supervisory controls, changes to training, additional or modified equipment, or any of a number of other elimination/mitigation alternatives. After the safety risk controls have been designed, but before the system is implemented, an assessment must be made whether the controls introduce new hazards to the system.

Note: Also refer to Section 6.2 The management of change.

5.2.13 How aerodrome operators prioritise their safety risk assessments and adopt safety risk controls should not only be documented, but also:

- assess and control highest safety risks
- allocate resources to highest safety risks
- effectively maintain and/or improve safety
- reach the stated and agreed safety objectives
- achieve the safety performance targets (SPTs)
- satisfy the requirements of any applicable regulations.

5.2.14 Risk treatment options are not necessarily mutually exclusive or appropriate in all circumstances. When determining appropriate controls, the hierarchy of controls pyramid can assist in decision-making:

- elimination
- substitution
- engineering controls
- administrative controls
- personal protective equipment.

5.2.15 There are three generic strategies for safety risk mitigation:

1. Avoidance:
   - The operation or activity is cancelled because safety risks exceed the benefits of continuing the operation or activity.
2. Reduction:

- The frequency of the operation or activity is reduced, or action is taken to reduce the magnitude of the consequences of the accepted risks.

3. Segregation of exposure:
   - Action is taken to isolate the effects of the consequences of the hazard, or to build in redundancy to protect against them.

5.2.16 In evaluating specific alternatives for safety risk mitigation, it must be noted that not all options have the same potential to reduce safety risks. The effectiveness of each specific alternative needs to be evaluated before a decision can be taken. It is important that the full range of possible control measures be considered and that trade-offs between measures also be considered to find an optimal solution. Each proposed safety risk mitigation option should be examined from such perspectives as:

- Effectiveness:
  - Will it reduce or eliminate the safety risks of the consequences of the unsafe event or condition? To what extent do alternatives mitigate such safety risks?
- Cost/benefit:
  - Do the perceived benefits of the mitigation outweigh the costs? Will the potential gains be proportional to the impact of the change required?
- Practicality:
  - Is the mitigation practical and appropriate in terms of available technology, financial feasibility, time to implement, administrative feasibility, governing legislation and regulations, political will etc.?
- Acceptability to each stakeholder:
  - How much buy-in (or resistance) from stakeholders can be expected? (Discussions with stakeholders during the safety risk assessment phase may indicate their preferred risk mitigation option.)
- Enforceability:
  - If new rules (standard operating procedures (SOPs), regulations etc.) are implemented, are they enforceable?
- Durability:
  - Will the mitigation withstand the test of time? Will it be of temporary benefit or will it have long-term utility?
- Residual safety risks:
  - After the mitigation has been implemented, what will be the residual safety risks relative to the original hazard? What is the ability to mitigate any residual safety risks?
- Unintended consequences:
  - Will there be any new hazards and related safety risks associated with the implementation of any mitigation alternative?

5.2.17 It is important to involve relevant stakeholders and subject matter experts in determining appropriate safety risk controls. Ensuring the right people are involved will maximise the practicality of the safety risk mitigations chosen. A determination of any unintended consequences, particularly the introduction of new hazards, should be made prior to the implementation of any safety risk controls.

5.2.18 It is important to determine why new defences are necessary, or why existing defences must be reinforced. The following questions may pertain to reaching a determination:

- Are there controls that protect against the safety risks of the consequences of the hazards?

- Do controls function as intended?
- Are the controls practical for use under actual working conditions?
- Are staff involved aware of the safety risks of the consequences of the hazards, and the controls in place?
- Are additional safety risk mitigation/control measures required?

5.2.19 Once the mitigation has been accepted, the strategies developed and deployed must, as part of the safety assurance process, be fed back into an aerodrome operator's controls, upon which the mitigation strategies are based, to ensure integrity, efficiency and effectiveness of the controls under the new operational conditions.

5.2.20 The outputs of this process should be documented. This should include the hazard and any consequences, the safety risk assessment, and any safety risk control actions taken. These are typically captured in a risk register so they can be tracked and monitored.

6 Safety assurance

Note: Also refer to SMS for Aviation – A Practical Guide: Safety Assurance (Booklet 4).

6.1 Safety performance monitoring and measurement

6.1.1 Safety performance monitoring is conducted through the collection of safety data and safety information from a variety of sources. Data availability to support informed decision-making is one of the most important aspects of the SMS. Using this data for safety performance monitoring and measurement is an essential activity that generates the information necessary for safety risk decision-making.

6.1.2 The following activities can provide sources for monitoring and measuring safety performance:

- safety data analysis (measuring safety performance)
- safety surveys
- safety audits
- findings and recommendations from safety investigations
- operational data collection systems.

6.1.3 Continuous improvement and maintenance of an aerodrome operator's safety systems is an ongoing process, similar to the ongoing efforts to manage an aerodrome operator's finances. For more in-depth information on continuous improvement, refer to Section 6.3 Continuous improvement of the SMS of this AC.

6.1.4 Monitoring operational processes will likely occur as a normal business process. Monitoring activities outlined in the SMS manual or an integrated aerodrome manual suite supplement these activities and involve reviewing data that is collected from those operations. This may also include monitoring externally sourced services and products.

6.1.5 In large/complex organisations, monitoring may involve multiple levels of management, safety professionals, such as trained auditors/analysts, as well as line managers. Operational processes may need to be coordinated across adjacent work function boundaries, so effective monitoring may also need to be coordinated.

6.1.6 The safety performance achieved is a measure of the effectiveness of the SMS. This requires an organisation to do the following:

- verify the operator's own safety performance and validate the effectiveness of risk controls
- ensure that the operator's safety performance is verified by reference to:
  - the SMS's safety objectives
  - specified safety performance indicators (SPIs)
  - defined safety performance targets (SPTs).

6.1.7 Safety objectives should be established first to reflect the strategic achievements or desired outcomes related to safety concerns specific to an organisation's operational context (also refer to Section 4.1 Management Commitment of this AC):

- SPIs are any data-based parameters used to monitor and assess performance towards an organisation's safety objectives.

- SPTs are a defined level of performance set for each SPI.

6.1.8 The relationship between safety objectives, SPIs and SPTs is shown in Figure 4 below. An example of what this could look like for an organisation has also been shown in Figure 5 below. The following paragraphs provide detailed information on establishing SPIs and SPTs.

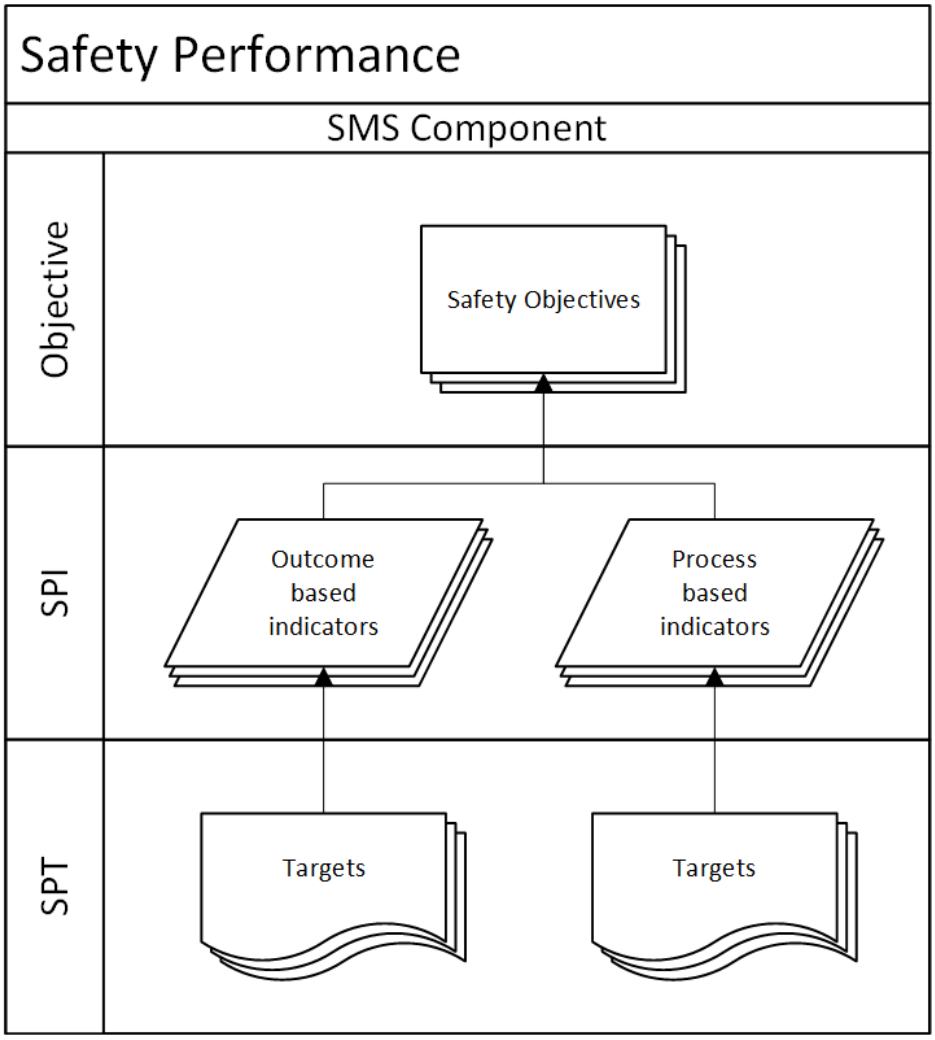

Figure 4: The relationship between safety objectives, SPIs and SPTs

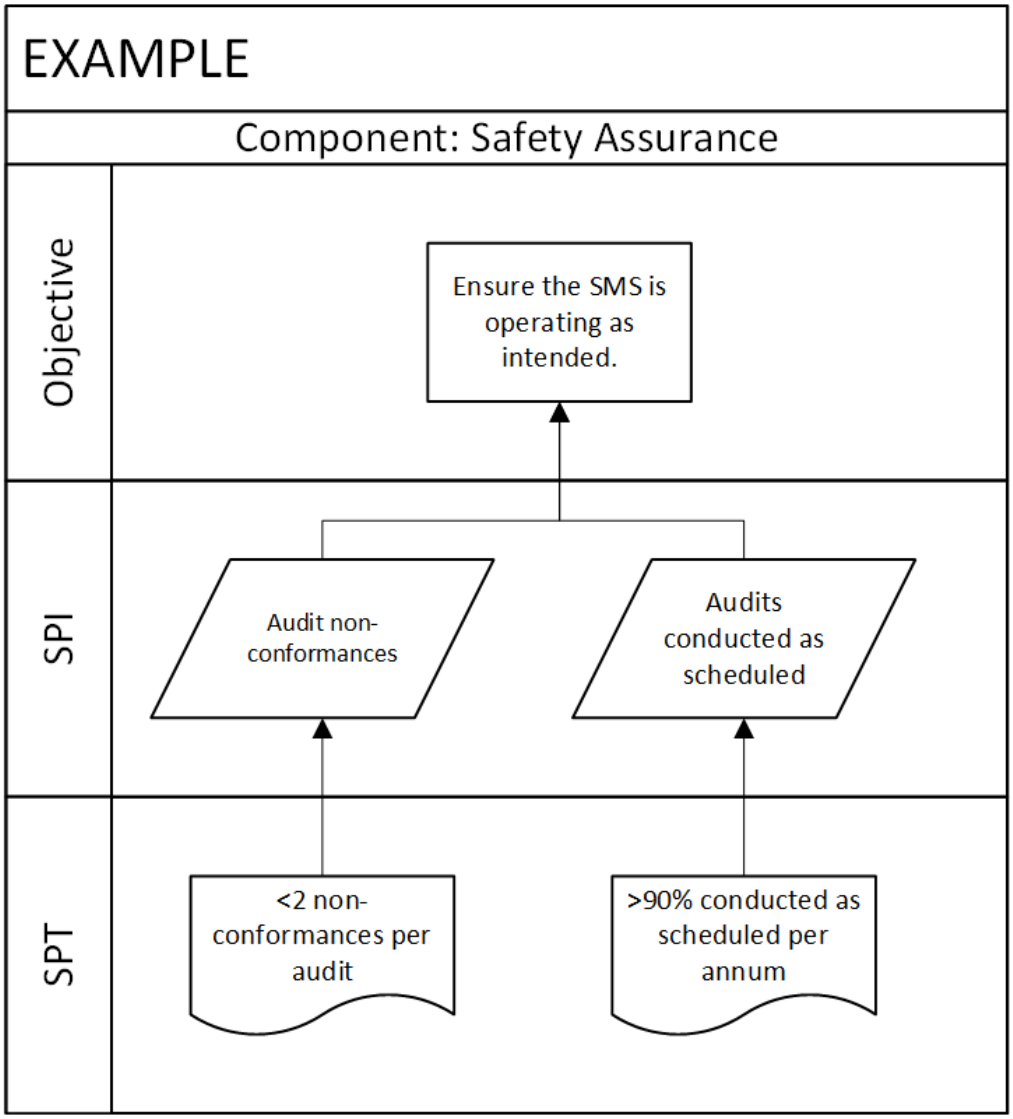

Figure 5: An example relationship between safety objectives, SPIs and SPTs

6.1.9 The combination of setting an organisation's safety objectives in conjunction with developing the associated SPIs and SPTs enable an organisation to have SMART performance measures, specifically:

- Specific – Establish a specific objective, considering how to achieve it.
- Measurable – Consider methods for effectively measuring achievement.
- Achievable – Take into consideration whether the objective is achievable.
- Relevant – Ensure targets are realistic, relate to your objectives and encourage the achievement of your objectives.
- Timely – Set timeframes for achievement of objectives.

6.1.10 Management, personnel and third parties (as necessary) should agree on safety objectives and on the resources, activities and processes required to achieve them. Once safety objectives have been set, SPIs can be established. SPIs can be used to measure the performance of the SMS (processes) and the operational safety performance (outcomes). When establishing SPIs, organisations should consider:

- What should be measured:

  - Determine the best SPIs that will show the organisation is on track to achieving its safety objectives, considering both processes and outcomes.
- Data availability:
  - If data is not available, new data collection systems may need to be established.
- Data reliability:
  - Is the data subjective, incomplete, or not fit for purpose?
- Common industry SPIs:
  - Some organisations may find it beneficial to compare performance with other similar organisations.
- State SPIs:
  - What state SPIs (from the NASP) may be relevant to the organisation.

6.1.11 Aerodrome operators should select a wide range of SPIs to enable effective assessment and monitoring of all Safety Management activities. To determine SMS effectiveness, an aerodrome operator should measure the outputs and the outcomes of processes, as well as analyse the information gathered from these activities. Examples of such methods may include:

- results from internal and external audits
- outputs from management reviews (safety governance)
- evaluation of SPIs and SPTs attained
- quality and integrity of hazard reporting
- quality and integrity occurrence reporting
- recurring events and associated errors or violations
- results of safety surveys
- outcomes from investigations
- whether known safety matters are being addressed in a timely and appropriate manner
- results from safety reviews
- customer feedback
- training and competency outcomes.

6.1.12 A common weakness in setting safety performance indicators is to only identify high-level outcomes that are easy to measure, such as counting aircraft separation breakdowns, and dismiss process-based indicators, such as attendance at safety meetings.

6.1.13 Once SPIs have been established there is a need to identify and develop appropriate SPTs and potential subsequent alert levels. SPTs should be realistic, context specific and achievable based on available resources and operational context. It is not always necessary or appropriate to set a specific number as an SPT as there may be some SPIs better for monitoring trends rather than being used to determine a target. Safety reporting is an example of when having a target could either discourage people from reporting, if your target is to not exceed a specific number of reports, or to report trivial matters to meet a target, if the target is to reach a certain number.

6.1.14 Although the ultimate objective is no accidents, there are more useful approaches to measuring safety, especially in a safety system, than only counting accidents. In many instances there may be SPIs better suited to be defined as a trend (i.e. a reduction or increase, depending on the nature of the SPI) to target continuous safety performance improvement, such as to reduce the number of events, rather than used to define an absolute target. Sound SPT-setting focusses

on identifying systemic weaknesses that may identify accident or incident precursors and should consider:

- Undesirable behaviours:
  - If organisations are too focused on achievement of the numbers as an indicator of success, they may not achieve the intended improvement in safety performance. Organisations need to, instead, understand the context around the SPI/SPT and ensure the focus remains on improving safety outcomes, not simply the numerical target
- Operational targets:
  - Too much focus on achieving operational targets (such as on time departures, reduction in overhead costs etc.) without a balance of SPTs can lead to achieving the operational targets, while not necessarily improving safety performance
- Focus on quantity rather than quality:
  - This can encourage personnel or departments to meet the target, but in doing so deliver a poor product or service
- Cap innovation:
  - Although not intended, once a target is met, this can lead to complacency and the idea that no further improvements are needed
- Organisational conflict:
  - Targets can create conflict between departments and organisations as they argue over who is responsible, rather than focusing on trying to work together.

6.1.15 An organisation should monitor and analyse the performance of established SPIs and SPTs to identify abnormal changes in safety performance and their relationship to the achievement of safety objectives. Safety performance reports should be disseminated to key internal and external stakeholders. This can then be used for improving systems and activities, allocating resources, and reassessing an organisation's SPIs and SPTs.

6.1.16 Safety data analysis uses the safety reporting data to uncover common issues or trends that might warrant further investigation. Collecting and analysing the data required for effective management and decision-making is an ongoing process. The results of data analysis may reveal that more and better data must be collected and analysed in support of the actions and decisions that an organisation needs to take.

Audit

6.1.17 Audits should be performed to assess the effectiveness of the SMS and to identify areas for potential improvement. Auditing has traditionally focused on compliance with regulations and conformance with policies and procedures. It is now recognised there is additional value in analysing the effectiveness of those policies and procedures, which is particularly important for SMS.

6.1.18 Procedures for auditing should describe responsibilities and expectations for frequency, planning, conducting, reporting and resolution of findings that result from audits. Auditors should not audit their own work but may audit that of others around them in the same department. Auditing procedures should also include external entities, such as contractors.

6.1.19 An aerodrome operator should have a documented auditing capability that includes:

- frequency of audits, considering:
  - level of risk exposure per department or area of activity
  - previous history
  - regulatory requirement

- appropriate audit schedules
- allocation of sufficient resources
- audit scope, driven primarily by the safety significance of an operational area
- objectives to be achieved by auditing a particular area
- planned audit methodologies (e.g. desktop or onsite)
- the format of documentation to be used while conducting the audit and the delivery of results.

6.1.20 Auditors should be formally trained and competent in auditing methodologies. Auditors should approach the task in an unbiased manner, disclose any potential conflict of interest, and maintain discretion. Aerodrome operators may utilise external auditors; however, an organisation must ensure that auditors are competent.

6.1.21 Aerodrome operators should monitor progress in closing previously identified non-compliances. These should be addressed through not only root-cause analysis, but also the development and implementation of corrective and preventive action plans. The results from analysis of cause(s) and contributing factors to any non-compliance should feed into an organisation's safety management processes.

Note: Also refer to Section 5 Safety Risk Management of this AC.

6.1.22 Conducting the audit and following up on results should include the following steps:

- Planning the audit using a checklist to identify the functions to be audited helps ensure areas are not missed.
- When conducting the audit, focus on how and whether the current documented procedures and practices are being followed.
- It is essential that the written content in the audit report be accurate, and that findings be supported by robust evidence that can be easily understood by the reader.
- After presenting the report to the auditee, actions to address the findings need to be tracked in a transparent and systematic manner.

6.1.23 The aerodrome operator should have procedures for managing material findings that may have an immediate impact to aircraft safety during an audit. The procedure should consider:

- who to initially report material findings and the timeframe
- immediate corrective actions/remedial actions plans
- escalations to senior management level including the Accountable Manager/Safety Manager
- assessed the matter through the SMS to identify any further latent risks/hazards
- invoking an Aerodrome Technical Inspection if required
- how to report the material finding to CASA if required.

Note: Also refer to Section 7.2 Training and Education of this AC.

6.2 Safety investigation

6.2.1 The primary objective of an investigation is to seek to understand the circumstances of an accident or incident (collectively known as occurrences) and take the relevant safety action to prevent a reoccurrence by improving safety performance.

6.2.2 The SMS should include the aerodrome operator's procedures for internal safety investigations, including procedures to:

- determine the level of investigation required for particular types of adverse events
- endeavour to establish the root cause of adverse events that are investigated
- communicate the outcome of investigations throughout the organisation.

6.2.3 Not all occurrences require an investigation to be conducted. The decision to conduct an investigation and its depth should depend on the actual or potential consequences of the occurrence. Occurrences considered to have a high-risk potential are more likely to be investigated and should be in greater depth than those with lower risk potential. Cumulative lower potential risk occurrences may contribute to the decision to investigate occurrences that otherwise may not be investigated. Aerodrome operators should use a structured decision-making approach with defined trigger points. This process should consider:

- responsibilities (e.g. Accountable Manager, Safety Manager, safety governance committee(s)) for deciding whether to investigate
- the severity or potential severity of the outcome
- regulatory or organisational requirements to carry out an investigation
- safety value to be gained
- opportunity for safety action to be taken
- risks associated with not investigating
- contribution to targeted safety programmes
- identified trends
- training benefit
- resource availability.

6.2.4 A competent safety investigator is vital to the outcome of an aerodrome operator's safety investigation. An aerodrome operator should identify training needs in relation to performing investigation activities relevant to the complexity and activities of an aerodrome operator.

6.2.5 The safety investigation should **not** focus on blame or punishment. It should focus on identified hazards, safety risks and the opportunities for improvement. The way the investigation is conducted will likely influence the safety impact, future safety reporting behaviours, future safety culture of the organisation, and the effectiveness of future safety initiatives. The results of the investigation should present clearly defined findings and recommendations that improve safety outcomes.

6.2.6 Resources (financial, human or other) should be allocated to investigations with the greatest perceived benefit in terms of potential for identifying systemic hazards and risks to the safety of flight.

6.2.7 Accountability for the management of internal safety investigations should be documented in an aerodrome operator's SMS specifically to determine:

- the scope of the investigation
- the composition of the investigation team, including specialist assistance (if required)
- that the investigation outcomes are recorded for follow-up trend analysis

- that there is a timeframe for completion.

6.2.8 The investigator should have the authority to:

- interview any manager or staff member
- access any relevant information source, unless otherwise prevented by legislation.

6.2.9 Where the ATSB conducts an investigation into an aerodrome event, the Safety Manager, or their delegate, should be the aerodrome's point of contact/coordinator for the investigation. This aims to keep the Safety Manager informed as the investigation progresses. This said, the ATSB conducting an investigation into an event, does not negate the responsibility for the aerodrome to undertake their own internal investigation as required under their SMS.

6.2.10 The extent of the investigation will depend on the actual and potential consequences of the occurrence and can be determined through an assessment. Reports that demonstrate a high-risk potential should be prioritised and investigated in greater depth than those with low-risk potential.

6.2.11 The investigative process should be comprehensive and attempt to address all the contributing factor(s) and root cause(s) that lead to the event, rather than simply focusing on the event itself or the active failures that took place immediately prior to the event. Active failures generally take place immediately prior to an event and have a direct impact on the safety of the system because of the immediacy of their adverse effects. However, they are not necessarily the only cause(s) of the event. Applying corrective action(s) to these issues may not address the contributing factors or root cause(s) of the problem to prevent recurrence. A thorough and detailed analysis is required to establish the organisational factor(s) and contributing factors or root cause(s) that lead to the event.

6.2.12 It is essential that the contribution of Human Factors is properly investigated when incidents and accidents occur. This is done so that an organisation can learn from occurrences to protect itself against the consequences of failing so as to take human limitations into consideration in the design and operation of aviation systems.

6.2.13 The Human Factors(HF) component of investigation should be based on a model or framework for systemic investigations considering human error, both at the individual and organisational levels. A number of human error models and frameworks have been developed over the last two decades to aid understanding how humans err and how accidents/incidents occur within the larger context of the systems in which such accidents/incidents take place, such as:

- SHELL model (software, hardware, environment and liveware)
- Reason's 'Swiss cheese' accident causation model
- cognitive reliability and error analysis method (CREAM)
- systems theoretic accident model and processes (STAMP).

6.3 Management of change

6.3.1 Change may influence the effectiveness of existing safety risk controls. In addition, new hazards and related safety risks may be inadvertently introduced into an operation when change occurs. Safety risks associated with the identified hazards should also be assessed and controlled as defined in an organisation's existing risk management process.

6.3.2 An aerodrome operator should identify the changes likely to occur in the business which:

- could affect the level of safety risk associated with the operator's aviation operations or services
- identify and manage the safety risks that could arise from those changes.

6.3.3 Disciplined application of change management can maximise the effectiveness of the change, engage staff, and minimise the risks inherent in change. Regardless of the magnitude of change, large or small, there must always be a predictive consideration for safety implications.

6.3.4 The magnitude of a change, its effect on safety, and its potential impact on human performance should be assessed in any change management process. Small incremental changes often go unnoticed, but the cumulative effect can be considerable. Particular attention should be given to identifying unintended consequences that can emerge by accidently introducing new hazards into the system.

6.3.5 Change is most successful if all personnel affected by the change are engaged, involved and participate in the process.

6.3.6 Change is the catalyst for an organisation to seek out hazards and understand the risks they present. An organisation should establish a list of triggers that start the formal change process. Some examples of change that may trigger the formal change process include, but are not limited to:

- organisational change such as a new company structure or new key personnel, including appointment of new senior managers or a new management team
- changes in customer requirements, expectations, or new contracts
- changes in the work environment such as new runway or taxiways at one of your operating airports/aerodromes
- changes in domestic or global trading conditions
- operational change such as a new aircraft type operating into your aerodrome, a new operational contract, introduction of a new major system
- physical change such as the addition of a new terminal or facility at the airport, moving to a new head office
- changes to operational or administrative processes or procedures
- editorial changes or amendments to the organisation's documentation
- identified inadequate skills and knowledge base, leading to new training programs
- new technology
- regulatory or procedural changes
- change in contractors and third-party providers or bringing on new contractors
- pandemics.

6.3.7 By taking a systematic approach to implementing change, organisations can gain a much clearer picture of the objectives of change and how to achieve them safely as well as complying with the regulatory change provisions. The steps in the change process are:

- Step 1: Communicate and consult to define the change
- Step 2: Develop the case, identify who and what will affected
- Step 3: Consider impact on known hazards / risk and conduct risk assessment
- Step 4: Prepare the project plan
- Step 4b: Obtain regulatory approval (if required; significant change)
- Step 5: Implement the change
- Step 6: Ongoing monitoring and review.

6.3.8 Throughout all steps in the process, there must be ongoing communication and consultations with all those involved. Further information on this issue is at Section 5.2 Hazard identification.

6.3.9 The outcome of the risk assessment conducted in Step 3 should determine the resources allocated to subsequent steps. Further information on this issue is at Section 5.3 Safety risk assessment and mitigation.

Note: Also refer to Section 5 Safety Risk Management process.

6.3.10 A Safety Case is a document that provides substantial evidence the system to which it pertains meets its safety objectives. A Safety Case is not an additional or separate requirement to an SMS, but rather documented evidence that the SMS activities associated with the change have been appropriately managed to maintain operations/activities acceptably safe.

6.3.11 A Safety Case would provide specific documented evidence that shows an organisation not only identified and implemented the appropriate change management necessary to deliver new activity/facilities/equipment, but that the associated risk assessments were also conducted in support of implementation and ongoing activities associated with that change.

6.3.12 CASA utilises Safety Cases as transitional evidence to support a regulatory application, exemption or variation. The Safety Case will include the applicable change and risk management activities in addition to revised operating procedures that will apply to the changed operations/activities. When accepted, these revisions should be incorporated into the aerodrome manual. Activities must always be conducted in accordance with the relevant aerodrome manual procedures rather than the Safety Case itself.

6.3.13 CASA may require an aerodrome operator to submit a Safety Case in the following circumstances:

- in support of an application for activities that do not fit within the current regulatory regime and/or are without existing precedent
- in support of an application for exemption/variation from current regulatory requirements
- when otherwise requested by CASA to support decisions/approvals requested
- in support of an application for a significant change to any current regulatory approvals held by the aerodrome (i.e. a significant change to the SMS).

6.3.14 Contents of a Safety Case should include:

- description of the planned change:
  - what is the change to be made
- description of the reason for the change:
  - why is the change being made
- description of the organisational context:
  - what is the broader operational context of the organisation pertinent to the change
- description of all identified hazards associated with the change:
  - consider hazards associated with the change process (transition hazards), as well as those associated with normal operations once the change has been implemented
- details of risk management activities associated with identified hazards:
  - demonstrate that any risks associated with operations will remain acceptable during (transition) and following the planned change
- description of the controls necessary to ensure the risks are managed to an acceptable level:
  - controls are any activity or process designed to mitigate a risk including equipment, process, procedures and training etc.

Note: Controls can be detailed in the risk management activities.

- project/change management plan outlining how an organisation plans to transition from current operations to the proposed future operations, taking identified hazards and risk management strategies into account.

6.3.15 The above listed information does not have to be reproduced in a specific Safety Case document. Wherever possible, a safety case submission should simply reference the applicable documentation necessary to cover the content details above. Provided the above points are covered, a Safety Case could simply be the Change Management, Risk Assessment, and revised procedures documentation provided to CASA. A Safety Case may also include any other evidence to support the submission, including training records, training materials etc.

6.3.16 Overall, a safety case should demonstrate that you have:

- systematically identified all major hazards associated with planned activities
- considered the context of these activities, including other interactions and interfaces
- used an appropriate methodology to assess risks
- acted on findings and implementing appropriate risk mitigations or controls
- set performance standards and assurance measures to monitor and evaluate risk mitigation or control effectiveness for both during the change implementation and post implementation.

6.4 Continuous improvement of the SMS

6.4.1 Maintenance and continuous improvement of the SMS is supported by a number of safety assurance activities. It should be recognised that maintaining and continuously improving the SMS is an ongoing journey as an organisation itself and the operational environment will be constantly changing.

6.4.2 Continuous improvement of the safety system has two main aspects:

- maintenance of the safety system, which is aimed at ensuring practice meets the desired level of safety, even during changing operational context
- improvement of the safety system, which is aimed at enhancing current standards.

6.4.3 Many aspects of an aerodrome operator's SMS are designed to achieve continuous improvement by maintaining or improving the safety system. An SMS is an integrated system where outputs of one part of the system provide input into other parts of the system. Examples include:

- Audits:
  - internal audits and audits carried out by external organisations (e.g. CASA)
- Assessments:
  - safety surveys, assessments of safety culture and SMS evaluations
- Monitoring occurrences:
  - recurring safety events such as accidents, incidents, errors and rule-breaking situations
- Safety governance:
  - examine safety objectives achieved by an organisation, analyse SPIs and trends. It is important that senior management review the effectiveness of the SMS. This may be carried out as one of the functions of the highest-level safety committee.

Note: Also refer to Section 4.2 Safety accountabilities and responsibilities.

7 Safety promotion

Note: Also refer to SMS for Aviation – A Practical Guide: Safety Promotion (Booklet 5).

7.1 General

7.1.1 Safety promotion is a vitally important enabler, setting the tone for aerodrome operations, and helping to develop, build and sustain a robust safety culture. Safety promotion also helps foster improved safety performance by communicating not only lessons learnt, but also broader safety information, including an organisation's safety policy and objectives. It also bolsters the safety culture within an aerodrome by distributing and standardising safety processes and procedures.

7.1.2 Safety Promotion comprised two elements: safety training, and safety communication. Both are vital to the ongoing success of an SMS. All staff at all levels need to be trained and competent to perform their roles as established in the SMS. Besides this, strong lines of communication are required at all stages of SMS implementation and maintenance.

7.2 Training and education

7.2.1 Aerodrome operators need trained and competent personnel. However, it is not a case of one size fits all; therefore, training programmes should fit the needs and complexity of an organisation. The level of safety training each employee receives depends on their involvement in the SMS. It should also be clearly understood that competency is not proven simply by issuing a certificate. By contemporary definition, it includes proof that knowledge, skills, attitudes and behaviours have been analysed and/or practiced.

7.2.2 The SMS should include the aerodrome operator’s procedures to maintain and deliver a safety training program to ensure the:

- operator’s personnel are trained and competent to perform their SMS duties
- relevant personnel of third-party service providers are provided with relevant SMS training
- scope of the SMS training is appropriate to each individual’s involvement in the SMS.

Note: CASA considers 'relevant personnel' to be persons whose role as a third party in relation to an aerodrome could affect aviation safety at the aerodrome.

7.2.3 SMS training and education may be integrated into an existing training management system.

7.2.4 Providing appropriate training to all staff, regardless of their level or role in an organisation, provides them a more in-depth understanding of the SMS and helps actively involve them in an organisation’s safety goals. Wherever possible, it is also important to include third-party contractors/service providers.

7.2.5 Third-party contractors can add to an organisation’s SMS by reporting any hazards or involved incidents through the hazard reporting system. This also shows management’s commitment to an effective SMS. The quality and effectiveness of training significantly influences the attitude and professionalism that employees are expected to demonstrate every day.

7.2.6 Prior to implementing an SMS, and in conjunction with the gap-analysis conducted, the safety training required by an organisation should be identified through a training needs analysis (TNA). This should consider the safety training requirements for management, operational safety-critical personnel, administrative non safety-critical/ personnel, as well as those indirectly involved in an organisation's activities.

7.2.7 A TNA can save time and money not only by ensuring the right things are being taught to the right people, but also by using the best training methods in the most efficient order. A TNA should consider:

- roles within an organisation that require safety training
- knowledge and competencies required for those roles
- gap analysis of existing knowledge compared to those roles
- training required to achieve and maintain desired level of knowledge and competency.

7.2.8 The results of the TNA will also help reduce unnecessary or superfluous training so that time and money is invested where it counts.

7.2.9 It is possible for training to be facilitated in-house; however, some organisations might prefer to contract external trainers for their SMS training needs. Regardless, it is still valuable to understand what process these external providers should follow and what is required.

7.2.10 Once a TNA has been conducted, Aerodrome operators should use the results to develop a training plan and associated documents, which should include:

- a listing of the personnel (staff and third-party personnel) who require SMS training
- the timing and type of each staff member's specific safety training course(s)
- safety induction course(s) for staff not previously exposed to an SMS
- SMS induction training for all third-party service providers
- recurrent safety course(s) for all operational safety critical personnel
- a means of determining when each staff member is due to undergo a specific safety training course
- a method of determining the training provided to each staff member
- a means of determining the effectiveness of the safety training provided (e.g. feedback questionnaire, course evaluations and competency assessments).

7.2.11 A register of SMS training and education should also be established and maintained. This includes individual training records so it is possible to track who has been trained, the training courses taken, what courses staff have yet to complete, and when they are due for refreshers. With some aerodrome operators, this may be part of an established training and/or records system, while, in others, this may be a previously unrealised need.

7.2.12 SMS training records should form part of the individual's employment history with the details incorporated into an aerodrome operator's document management system.

7.2.13 All staff should receive an appropriate induction course relevant to their roles and responsibilities. Issues that should be covered include:

- an aerodrome operator's safety philosophy, policy and the principles and processes of an aerodrome operator's SMS
- corporate approach to safety culture and expected behaviours
- integrated nature of safety management into other service provider's systems
- corporate safety targets and objectives
- roles and responsibilities of staff in relation to safety
- the individual's role in safety management
- HF elements supporting SMS
- how SMS principles apply to their area of operation
- lines of communication for safety matters

- corporate safety record, including areas of systemic weakness
- how to identify reportable matters, hazardous events and potential hazards, and how and when to report on them
- requirements for ongoing internal assessment of organisational safety performance (e.g. employee surveys, safety audits and assessments)
- feedback and communication methods for disseminating safety information
- safety awards programmes (if applicable)
- safety promotion and information dissemination.

7.2.14 Without real and constant commitment from senior management to the SMS, its effectiveness will be compromised. It is essential that the management team understand:

- the principles of the SMS
- risk management process
- the responsibilities and accountabilities for safety of each member of management
- their legal liabilities.

7.2.15 A number of safety-related tasks require specially trained personnel. It is important these staff receive adequate training in the special methods and techniques involved. Depending on the depth of training required and the level of existing expertise in safety management within an organisation, it may be necessary to obtain assistance from external specialists to achieve these outcomes. These tasks include:

- investigating safety events
- monitoring safety performance
- conducting risk assessments
- managing safety databases
- performing safety audits
- developing safety training programmes.

7.2.16 Training does not always have to be delivered face-to-face as there are other options. However, for small teams, face-to-face training could be an advantage as it is often easier to organise and deliver as people are on site, rosters may not be as complex, therefore making logistics easier.

7.2.17 Organisations may wish to reduce face-to-face training costs and may consider:

- engaging an intranet/on-line learning system
- providing online training via video conferencing
- using simulators (e.g. driving simulators, task-trainers etc.)
- self-paced workbooks or learning modules
- maintaining additional knowledge based educational materials or a safety library
- making external publications available on the premises.

7.2.18 Training could also consider practical methods for all employees to remain current with new techniques, technologies, system improvements and regulatory changes.

7.2.19 Table 2 outlines a basic safety training plan which covers some suggested syllabus content and assessment tailoring for safety training. It applies to management personnel, operational safety-critical personnel, non-operational safety-critical support personnel, and safety specialists. Safety training should be designed to align with the size and complexity of an organisation and its operations.

Table 7: Example safety training plan

Role and type of training	Sample syllabus content	Assessment
Non-operational safety critical personnel (with indirect, minimal or no contact with operational personnel). Online eLearning training as part of: • induction training (within 2 months of starting) • refresher training every 2 years.	Safety philosophy, safety policies and safety standards including: • approach to 'safety culture' • not apportioning blame (just culture) • difference between acceptable and unacceptable safety behaviours • internal safety investigation policy and procedures • high-level overview of the SMS framework and rationale for it • organisational roles and responsibilities of personnel in relation to safety • SPIs and SPTs • procedures for hazard and safety reporting • organisational safety management programs (e.g., reporting systems, internal audit program etc.) • requirement for ongoing internal assessment of organisational safety performance (e.g., employee surveys, safety audits and assessments) • lines of communication for safety matters • feedback and communication methods for disseminating safety information • safety awards programs (if applicable) • safety promotion and information dissemination • emergency response plans.	Knowledge and awareness assessment.
Operational safety-critical personnel. Modules tailored to specific roles i.e. aerodrome reporting officers (AROs), works safety officers (WSOs), airside drivers etc Full modular training as part of: • induction training (prior to commencing any safety-critical activities) • refresher training every 2 years.	Safety philosophy, safety policies and safety standards including: • approach to 'safety culture' • not apportioning blame (just culture) • difference between acceptable and unacceptable safety behaviours • internal safety investigation policy and procedures • high-level overview of the SMS framework and rationale for it • importance of complying with the safety policy and with the standard operating procedures that form part of the SMS • organisational roles and responsibilities of personnel in relation to safety • organisational safety record, including areas of systemic weakness • SPIs and SPTs • procedures for hazard and safety reporting	Knowledge and awareness assessment. Plus, a skills and practical application assessment tailored to role.

Role and type of training	Sample syllabus content	Assessment
Hybrid delivery method used for induction training using online eLearning supplementing classroom training. Refresher training delivered via online eLearning.	• organisational safety management programs (e.g., reporting system, internal audit program etc.) • requirements for ongoing internal assessment of organisational safety performance (e.g., employee surveys, safety audits and assessments) • lines of communication for safety matters • feedback and communication methods for disseminating safety information • safety awards programs (if applicable) • safety promotion and information dissemination • procedures for reportable matters (immediate and routinely) • specific safety initiatives, such as: threat and error management (TEM) • wildlife hazards • seasonal safety hazards and procedures (weather-related operations etc.) • emergency procedures and response • current and recent safety situations • safety promotion, communication and information dissemination.	
Management personnel. Online eLearning training as part of: • induction training (within 2 months of starting) • refresher training every 2 years.	Safety philosophy, safety policies and safety standards including: • approach to ‘safety culture’ • not apportioning blame (just culture) • difference between acceptable and unacceptable safety behaviours • internal safety investigation policy and procedures • high-level overview of the SMS framework and rationale for it • the manager’s role in shaping the safety and reporting culture, including a ‘just culture’ • manager’s responsibilities and accountabilities for safety • the safety risk management processes • SPIs and SPTs • procedures for hazard and safety reporting • manager’s legal liabilities under CASA and WHS legislation • requirements for ongoing internal assessment of organisational safety performance (e.g., employee surveys, safety audits and assessments)	Knowledge and awareness assessment.

Role and type of training	Sample syllabus content	Assessment
	• lines of communication for safety matters • feedback and communication methods for disseminating safety information • safety awards programs (if applicable) • safety committee's risk assessment and root cause analysis • safety promotion and communication and information dissemination	
Safety officer/safety personnel. Hybrid modular training as part of: • induction training (within 2 months of starting) • refresher training every 2 years. Hybrid delivery method used for induction training using online eLearning supplementing classroom training. Refresher training delivered via online eLearning.	Safety philosophy, safety policies and safety standards including: • approach to 'safety culture' • not apportioning blame (just culture) • difference between acceptable and unacceptable safety behaviours • internal safety investigation policy and procedures • high-level overview of the SMS framework and rationale for it • SPIs and SPTs • procedures for hazard and safety reporting • monitoring safety performance • conducting risk assessments • current and recent safety situations • wildlife hazards • seasonal safety hazards and procedures (weather-related operations etc.) • managing the safety information system (database) • performing safety audits • understanding the role of human performance in accident causation and prevention • procedures for reportable matters (immediate and routinely) • investigation of reportable matters and hazardous events • crisis management and emergency response planning • feedback and communication methods for disseminating safety information • safety awards programs (if applicable) • safety promotion and information dissemination.	Knowledge and awareness assessment. Plus, a skills and practical application assessment tailored to role.

7.2.20 Training content needs to address how operations are carried out at an aerodrome as part of its SMS. It does not need to address high-level theory, but it should be tied into the needs of staff at various levels depending on their roles and engagement within the aerodrome operations. Additionally, it should include HF and organisational topics, including 'just culture' and non-

technical skills aimed at reducing human error. Depending on the nature of the task, the complexity of safety management training required will vary, for example:

- initial and recurrent safety management awareness training for all staff
- training aimed at management's safety responsibilities
- specific training for operational staff (e.g. AROs, WSOs, airside drivers etc.)
- targeted training for safety specialists (e.g. the SM, Safety Representatives, and Safety Data Analysts).

7.2.21 Training should always be provided with an intended purpose or outcome; without this, valuable resources may be lost chasing an objective that may not be affected. Just as Safety Objectives must have associated indicators, which in turn should have associated targets; so too should training have some way of assessing achievements against the desired outcomes, ultimately measuring the effectiveness of the training.

7.3 Safety communication

7.3.1 Safety communication provides a mechanism through which lessons learnt from safety event investigations and other safety-related activities are made available to all affected staff. It is valuable for communicating good-to-know safety information to build a robust safety culture. It also provides a means of not only encouraging the development of a positive safety culture, but also ensuring that once it is established, it is developed and maintained.

7.3.2 Maintaining two-way communication – that is, ensuring staff are fully informed about an aerodrome operator's SMS, then capturing and acting upon feedback where appropriate – is vital to the success of an SMS. If staff report safety issues, but do not receive timely feedback or see no evidence that reporting is making a difference, it is highly likely they will stop reporting. At a minimum, safety communication should:

- ensure all staff are fully aware of the SMS to a degree commensurate with their roles
- convey safety-critical information clearly
- communicate safety accountabilities, responsibilities and authorities throughout the operator's organisation
- explain why particular actions are taken to improve safety
- explain why safety procedures are introduced or changed.
- provide timely feedback to those who make safety reports.

7.3.3 An ongoing programme of safety promotion and communication should include lessons learnt. Safety promotion is linked closely to safety training and the dissemination of safety information. It refers to those activities that an organisation carries out to ensure that employees understand:

- why SMS processes are in place
- what safety management means
- why particular safety actions are taken
- the benefits of the SMS and the importance of safety vigilance.

7.3.4 Safety communication activities are the primary means by which safety issues are communicated within an organisation. These issues may be addressed through staff training programmes or less formal mechanisms to:

- address the rationale behind current or the introduction of new procedures
- ensure the main focus is what, from a safety perspective, is going on within an organisation.

7.3.5 Employees should be encouraged to submit suggestions for promotional campaigns. Safety topics can be selected for promotional campaigns based on their potential to control and reduce losses, such as:

- the experience of past aircraft accidents or incidents, including bird strikes etc
- runway incursions, including illuminated stop bar crossing
- potential hazards
- hazards identified by analysis of data collection systems
- observations from routine internal safety audit
- experiences of external entities.

7.3.6 Employees are a critical audience; therefore, the dissemination of information needs to be conducted competently and be tailored to the employee cohort. Otherwise, it will not be effective. All methods of dissemination (spoken, written, posters, videos, slide presentations, social media platforms etc.) require resources, planning, talent, skill and experience to be effective.

7.3.7 Once a decision is made to disseminate safety information, a number of important factors should be considered, including:

- Audience. The message needs to be expressed in terms and vernacular that reflect the knowledge and culture of the audience
- Response/Reaction. What is expected to be accomplished?
- Media. Consider which form(s) of media are the most effective. Which methods do people pay attention to and how do they like to receive information? Most importantly, which method(s) have the greatest penetration and credibility? For example, print, web, multimedia etc.
- Presentation style. This may involve the use of humour, graphics, photography and other attention-getting techniques.

7.3.8 The organisational safety communication programme should be based on several different communication methods for reasons of flexibility and cost. The delivery method (the channel) must be appropriate to the needs of both sender and receiver. Typical methods available are:

- Spoken word. Perhaps the most effective method, especially if supplemented with a visual presentation. However, it is also the most expensive method, consuming time and effort to assemble the audience, aids and equipment.
- Written word. The most popular method because of speed and economy, the printed safety promotion material also competes for attention with considerable amounts of other printed material.
- Videos. While offering advantages of dynamic imagery and sound to reinforce particular safety messages efficiently, videos also have two main limitations: expense of production, and the need for special equipment for viewing.
- Electronic media. Use of the intranet and internet offers significant potential for improvement in the communication of safety, as even small companies can establish and maintain a website to disseminate safety information. This may also include an electronic newsletter (e.g. e-Newsletter), or a podcast to distribute key safety messages in a timely manner.
- Internal safety communication. This can include:
  - safety bulletins and notices
  - safety magazines, newsletters, or posters
  - videos or short electronically recorded messages
  - regular safety related meetings

- briefings or toolbox talks
- safety seminars and workshops
- refresher safety training
- e-mails or memos
- social media
- an intranet safety page.

7.3.9 Depending on the size of an organisation, some forms of communicating safety information will be more relevant than others. External safety communication can include:

- meetings, workshops and networking
- websites, online forums and e-mail distribution lists
- magazines, posters, electronic videos and other publications.

7.3.10 In some circumstances, there is a legal duty to pass on information, or to coordinate activities with others. Some communication rules are basic to all organisations, whether large or small, simple or complex.

7.3.11 To be effective, communication must be two-way. It must go up, as well as down your organisational structure to ensure all personnel understand an organisation's risk management activities. Managers must get their safety message across, and employees, who are at the coal face, must have their safety concerns heard and acted upon. In essence, the feedback loop must be closed.

7.3.12 Communication should focus on raising awareness of potential hazards and risk issues. Regular discussion about the reasons for incidents and near-misses will foster a culture that encourages learning and ongoing reporting.

7.3.13 Effective safety communication is vital in motivating employees, so that they understand and act upon safety messages. Propaganda or orders that merely tell people to avoid making errors, or to take more care – the 'bumper sticker' approach to safety – are not usually effective. Communication must be robust and relevant to both management and employees alike.

7.3.14 Safety topics for safety promotion campaigns at an organisation should be selected and based on:

- past aircraft accidents or incidents, including bird strikes etc
- identified hazards/potential hazards, especially those reported by employees, thus reinforcing the value of reporting
- observations from routine internal safety audits
- relevant ATSB reports
- safety issues common to other relevant industries.

7.3.15 The individual or department responsible for safety communication must present the message clearly, with the necessary detail, and they must have credibility. Talking about safety but not walking the talk will not help establish credibility and will reduce the effectiveness of the message.

7.3.16 Besides asking questions if some aspect is not clear, the person(s) receiving the message must be prepared and decide to listen. The aim is for the content of the message to resonate and connect, on some level, with the receiver's already-held beliefs.

7.3.17 When planning and developing safety communication, it is important to ask the what, who, why, where, when and how questions as a guide.

- What messages are you communicating?

- Who is your audience? AROs, WSOs, aerodrome engineers, technicians? What you are saying needs to be appropriate to your audience, expressed in plain English, and using terms relevant to the receiver's knowledge and culture
- Why are we doing this? What do we hope to accomplish?
- Where and when should we be doing this? What are the best venues or sites for this information, and how frequently should these messages be communicated?
- How will we communicate these safety messages? What is the best format to use to inform employees and raise awareness? A regular e-newsletter because employees work in several regional sites? A poster in the lunchroom/hangar/ operations room? Videos? Podcasts? An online safety library or a centrally located safety library? A toolbox talk, or safety briefing, face-to-face?

7.3.18 It is no use communicating a key message targeting, for example, WSOs and airside drivers via an intranet if the majority do not have access to a computer.

7.3.19 Effective communication uses both verbal and visual elements (words and pictures), working together to attract attention and highlight the message(s).

7.3.20 Usually, less is more, especially in an era when most people are all bombarded by information. Make communication simple, direct, inclusive and relevant to the target audience.