

BHUTAN CIVIL AVIATION REQUIREMENT



BCAR-19

SAFETY MANAGEMENT

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Bhutan Civil Aviation Authority



Safety Management

BCAR-19

Record of amendments and corrigendum

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RECORD OF AMENDMENTS AND CORRIGENDA

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ABBREVIATIONS

Abbreviations used in this document.

Acronym	Corresponding expansion
ADREP	Accident/incident data reporting
AIS	Aeronautical information services
ATS	Air traffic service
BCAR	Bhutan Civil Aviation Requirement
CNS	Communications, navigation and surveillance
CVR	Cockpit voice recorder
MET	Meteorological services
PANS	Procedures for Air Navigation Services
SAR	Search and rescue
SARPs	Standards and Recommended Practices
SDCPs	Safety data collection and processing systems
SMM	Safety management manual
SMP	Safety management panel
SMS	Safety management System
SSP	State safety programme

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FOREWORD

ICAO Annex-19, Safety Management, which became applicable from 14 November 2013, has consolidated safety related provisions from various Annexes such 1,6,8,11,13 and 14. The ICAO provision on conventions requires the member States to adopt and implement Safety Management provision Annex 19 which is necessary for a contracting State.


In this respect, BCAR- 19 (Safety Management) has been published by Bhutan Civil Aviation Authority, pursuant to Section 87 of Civil Aviation Act of Bhutan 2016. The Regulations in this part is in line with the ICAO Annex 19- Safety Management.

The purpose of this BCAR- 19 is to implement the provision of the Annex-19 in managing aviation safety risks. Given the increasing complexity of the global air transportation system and its interrelated aviation activities required to assure the safety of operation aircrafts, this “regulation” supports the continued evolution of a proactive strategy to improve safety performance.



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CHAPTER 1: DEFINITIONS

When the following terms are used in this ‘Requirements’, for Safety Management, they have the following meanings:

Accident. An occurrence associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down, in which:

- a) A person is fatally or seriously injured as a result of:
 - being in the aircraft, or
 - direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or
 - direct exposure to jet blast,

Except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or

- b) the aircraft sustains damage or structural failure which:
 - adversely affects the structural strength, performance or flight characteristics of the aircraft, and
 - would normally require major repair or replacement of the affected component,

Except for engine failure or damage, when the damage is limited to a single engine, (including its cowlings or accessories), to propellers, wing tips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin (such as small dents or puncture holes), or for minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike (including holes in the radome); or


- c) the aircraft is missing or is completely inaccessible.

Note 1.— For statistical uniformity only, an injury resulting in death within thirty days of the date of the accident is classified, by ICAO, as a fatal injury.

Note 2.— An aircraft is considered to be missing when the official search has been terminated and the wreckage has not been located.

Note 3.— The type of unmanned aircraft system to be investigated is addressed in 5.1 of Annex 13.

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Note 4— Guidance of the determination of aircraft damage can be found in Attachment F of Annex 13

Aeroplane. A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

Aircraft. Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

Helicopter. A heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axes.

Note.— Some States use the term “rotorcraft” as an alternative to “helicopter”.

Incident. An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

Note.— The types of incidents which are of interest for safety-related studies include the incidents listed in Annex 13, Attachment C.

Industry codes of practice. Guidance material developed by an industry body, for a particular sector of the aviation industry to comply with the requirements of the International Civil Aviation Organization's Standards and Recommended Practices, other aviation safety requirements and the best practices deemed appropriate.

Note.— Some States accept and reference industry codes of practice in the development of regulations to meet the requirements of Annex 19, and make available, for the industry codes of practice, their sources and how they may be obtained.

Operational personnel. Personnel involved in aviation activities who are in a position to report safety information.

Note.— Such personnel include, but are not limited to: flight crews; air traffic controllers; aeronautical station operators; maintenance technicians; personnel of aircraft design and manufacturing organizations; cabin crews; flight dispatchers, apron personnel and ground handling personnel.


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 management system (SMS). A systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures.

Safety performance. A State or a service provider's safety achievement as defined by its safety performance targets and safety performance indicators.

Safety performance indicator. A data-based parameter used for monitoring and assessing safety performance.

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Safety performance target. The planned or intended objective for safety performance indicator(s) over a given period.

Safety risk. The predicted probability and severity of the consequences or outcomes of a hazard.

Serious injury. An injury which is sustained by a person in an accident and which:

- a) requires hospitalization for more than 48 hours, commencing within seven days from the date the injury was received; or
- b) results in a fracture of any bone (except simple fractures of fingers, toes or nose); or
- c) involves lacerations which cause severe haemorrhage, nerve, muscle or tendon damage; or
- d) involves injury to any internal organ; or
- e) involves second or third degree burns, or any burns affecting more than 5 per cent of the body surface; or
- f) involves verified exposure to infectious substances or injurious radiation.


State of Design. The State having jurisdiction over the organization responsible for the type design.

State of Manufacture. The State having jurisdiction over the organization responsible for the final assembly of the aircraft.

State of the Operator. The State in which the operator's principal place of business is located or, if there is no such place of business, the operator's permanent residence.

State safety programme (SSP). An integrated set of regulations and activities aimed at improving safety.

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CHAPTER 2: APPLICABILITY

The provisions contained in this Requirements shall be applicable to safety management functions related to, or in direct support of, the safe operation of aircraft.

Note 1.— Safety management provisions for BCAA are contained in Chapter 3 and relate to a State safety programme., Bhutan

Note 2.— Safety management provisions for specified aviation service providers and operators are in Chapter 4 and relate to safety management systems (SMSs). Supplementary safety management provisions specific to individual service providers or operators are contained in other BCARs, as referenced in this Requirements.

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CHAPTER 3: STATE SAFETY MANAGEMENT RESPONSIBILITIES

Note 1.— This chapter outlines the safety management responsibilities of the Bhutan Civil Aviation Authority (BCAA), through compliance with requirements, the conduct of its own safety management functions and the surveillance of SMS implemented in accordance with the provisions in this BCAR.

Note 2.— Safety management system provisions pertaining to specific types of aviation activities are addressed in the relevant BCAR of BCAA.

Note 3.— Basic safety management principles applicable to the medical assessment process of license holders are contained in BCAR –Personnel licensing. Guidance is available in the Manual of Civil Aviation Medicine (Doc 8984).

3.1 State Safety Programme (SSP)

3.1.1 BCAA shall establish an SSP for the management of safety in Bhutan, in order to achieve an acceptable level of safety performance in civil aviation. The SSP shall include the following components.

- a) State safety policy and objectives;
- b) State safety risk management;
- c) State safety assurance; and
- d) State safety promotion.

Note 1.— A framework for the implementation and maintenance of an SSP is contained in Attachment-A, and guidance on a State safety programme is contained in the Safety Management Manual (SMM)


3.1.2 The acceptable level of safety performance to be achieved shall be established by BCAA in accordance with the SMM Doc 9859

Note.— Guidance on defining an acceptable level of safety performance is contained in the Safety Management Manual (SMM Doc 9859)

3.1.3 As part of its SSP, Authority shall require that the following service providers under its authority implement an SMS by:

- a) approved training organizations, in accordance with BCAR-147
- b) operators of aeroplanes or helicopters in accordance with BCAR - Ops 1 & 3.
- c) approved maintenance organizations, in accordance with BCAR-145/BCAR-M, Subpart F

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d) organizations responsible for the type design or manufacture of aircraft, in accordance with BCAR-21

e) air traffic services (ATS) providers in accordance with BCAR- Air Traffic Services; and

Note.— The provision of AIS, CNS, MET and/or SAR services, when under the authority of an ATS provider, are included in the scope of the ATS provider’s SMS. When the provision of AIS, CNS, MET and/or SAR services are wholly or partially provided by an entity other than an ATS provider, the related services that come under the authority of the ATS provider, or those aspects of the services with direct operational implications, are included in the scope of the ATS provider’s SMS.

f) operators of certified aerodromes in accordance with BCAR-Aerodromes

3.1.4 As part of its SSP, the BCAA shall require that international general aviation operators of large or turbojet aeroplanes in accordance with BCAR- Operation of Aircraft, Part II, Section 3, implement an SMS.

Note.— International general aviation operators are not considered to be service providers in the context of this Rules and regulations.


3.2 State safety oversight

The BCAA establishes and implements this safety oversight system in accordance with Appendix 1.

Each entity /Service Providers under the Authority shall establish and implement this safety oversight system in accordance with Appendix 1.

The term “service provider” refers to those organizations listed in Chapter 3, 3.1.3

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CHAPTER 4 : SAFETY MANAGEMENT SYSTEM

Note 1.— Guidance on implementation of an SMS is contained in the Safety Management Manual (SMM)(Doc 9859). Note 2.— The term “service provider” refers to those organizations listed in Chapter 3, 3.1.3.

4.1 General

4.1.1 Except as required in 4.2, the SMS of a service provider shall:

- a) be established in accordance with the framework elements contained in Appendix 2; and
- b) be commensurate with the size of the service provider and the complexity of its aviation products or services.

4.1.2 The SMS of an approved training organization, in accordance with BCAR-147 that is exposed to safety risks related to aircraft operations during the provision of its services shall be made acceptable to the Authority responsible for the organization’s approval.

4.1.3 The SMS of a certified operator of aeroplanes or helicopters authorized to conduct international commercial air transport, in accordance with BCAR-Ops 1 & 3 respectively, shall be made acceptable to the Authority.

Note.— When maintenance activities are not conducted by an approved maintenance organization in accordance with BCAR-145 but under an equivalent system as in Annex 6, BCAR -M Operation of Aircraft, Part I, 8.1.2, or Part III, Section II, 6.1.2, they are included in the scope of the operator’s SMS.


4.1.4 The SMS of an approved maintenance organization providing services to operators of aeroplanes or helicopters engaged in international commercial air transport, in accordance with BCAR-OPs1 & 3 respectively, shall be made acceptable to the Authority.

4.1.5 The SMS of an organization responsible for the type design of aircraft, in accordance with BCAR-21, shall be made acceptable to the Authority.

4.1.6 The SMS of an organization responsible for the manufacture of aircraft, in accordance with BCAR-21, shall be made acceptable to the Authority.

4.1.7 The SMS of an ATS provider, in accordance with BCAR-Air Traffic Services, shall be made acceptable to the State Authority, responsible for the provider’s designation. BCAA

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Note.— The provision of AIS, CNS, MET and/or SAR services, when under the authority of an ATS provider, are included in the scope of the ATS provider’s SMS. When the provision of AIS, CNS, MET and/or SAR services are wholly or partially provided by an entity other than an ATS provider, the related services that come under the authority of the ATS provider, or those aspects of their services with direct operational implications, are included in the scope of the ATS provider’s SMS.

4.1.8 The SMS of an operator of a certified aerodrome, in accordance with BCAR- Aerodrome, shall be made acceptable to the. BCAA

4.2 International general aviation — aeroplanes


Note.— Guidance on the implementation of an SMS for general aviation is contained in the Safety Management Manual (SMM) (Doc 9859) and industry codes of practice.

4.2.1 The SMS of an international general aviation operator, conducting operations of large or turbojet aeroplanes in accordance with Annex 6, BCAR – Operation of Aircraft, Part II, shall be commensurate with the size and complexity of the operation.

4.2.2 **Recommendation:-** The SMS should as a minimum include:

- a) a process to identify actual and potential safety hazards and assess the associated risks;
- b) a process to develop and implement remedial action necessary to maintain an acceptable level of safety; and
- c) provision for continuous monitoring and regular assessment of the appropriateness and effectiveness of safety management activities.

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CHAPTER 5: SAFETY DATA COLLECTION, ANALYSIS AND EXCHANGE

Note.— The objective of these specifications is to support safety management activities by collection and analysis of safety data and by a prompt and secure exchange of safety information, as part of the SSP.

5.1 Safety data collection

Reporting systems

5.1.1 BC AA shall establish a mandatory incident reporting system to facilitate collection of information on actual or potential safety deficiencies.

5.1.2 BCAA shall establish a voluntary incident reporting system to facilitate collection of information on actual or potential safety deficiencies that may not be captured by the mandatory incident reporting system.

5.1.3 *Subject to Standard 5.3.1, the authorities responsible for the implementation of the SSP shall have access to appropriate information available in the incident reporting systems referenced in 5.1.1 and 5.1.2 to support their safety responsibilities.*

5.2 Safety data analysis

5.2.1 B C AA establish and maintain a safety database to facilitate the effective analysis of information on actual or potential safety deficiencies obtained, including that from its incident reporting systems, and to determine any actions required for the enhancement of safety.

Note.— The term “safety database” may refer to a single or multiple database(s) and may include the accident and incident database. Provisions on an accident and incident database are included in Annex 13 — Aircraft Accident and Incident Investigation. Additional guidance on a safety database is also included in the Safety Management Manual (SMM) (Doc 9859) and BCAA SMS Guidance Manual.

5.3 Safety data protection

5.3.1 A voluntary incident reporting system shall be non-punitive and afford protection to the sources of the information.


Note 1.— A non-punitive environment is fundamental to voluntary reporting.

Note 2.— Guidance related to both mandatory and voluntary incident reporting systems is contained in the Safety Management Manual (SMM) (Doc 9859).

5.4 Safety information exchange

Note.— Standardized definitions, classifications and formats are needed to facilitate data exchange. Guidance material on the specifications for such information-sharing networks are available from I CAO.

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APPENDIX 1: STATE SAFETY OVERSIGHT SYSTEM (See Chapter 3, 3.2)

Note 1.— Guidance on the critical elements of a system that enables a State to discharge its responsibility for safety oversight is contained in the Safety Oversight Manual, Part A, The Establishment and Management of a State’s Safety Oversight System (Doc 9734).

Note 3.— See Appendix 5 to Annex 6, Part I, and Appendix 1 to Annex 6, Part III, for provisions specific to the safety oversight of air operators.

Note 4.— Within the context of this appendix the term “service provider” refers to those organizations listed in Chapter 3, 3.1.3.

1. Primary aviation legislation


1.1 There shall be a comprehensive and effective aviation law, consistent with the size and complexity of the Bhutan aviation activity and with the requirements contained in the Convention on International Civil Aviation, that enables the State to regulate civil aviation and enforce regulations through the relevant authorities or agencies established for that purpose.

1.2 The aviation law shall provide the personnel performing safety oversight functions access to the aircraft, operations, facilities, personnel and associates records, as applicable, of service providers for:

- a) Regulation of civil aviation activities in the country;
- b) The regulation of aircraft and certification of commercial air carriers;
- c) Safety and security of civil aviation;
- d) Licensing of aviation personnel and organizations, and
- e) Certification of aeronautical telecommunications system, airports and aerodrome services, facilities and infrastructures.
 1. Be responsible for oversight, safety standards and implementation process through routine surveillance audits, inspection and corrective measures;
 2. Enjoy such legal status and capacity as may be necessary for the fulfillment of its objectives and the exercise of its functions and, in particular, the capacity to:
 - a) Enter into contracts;
 - b) Acquire or dispose movable and immovable property; and
 - c) Sue and be sued in its own name.

1.3 The aviation law shall provide personnel performing safety oversight functions access to the

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aircraft, operations, facilities, personnel and associated records, as applicable, of service providers.

2. Specific operating regulations

There shall be regulations to address, at a minimum, national requirements emanating from the primary aviation legislation, for standardized operational procedures, products, services, equipment and infrastructures in conformity with the Annexes to the Convention on International Civil Aviation.

Note.— The term “regulations” is used in a generic sense and includes but is not limited to instructions, rules, edicts, directives, sets of laws, requirements, policies and orders.

3. State system and functions

3.1 There shall relevant authorities or agencies, as appropriate, supported by sufficient and qualified personnel and provided with adequate financial resources. Each of such authority or agency shall have stated safety functions and objectives to fulfill its safety management responsibilities.

3.2 Reserved

3.3 The personnel performing safety oversight functions are provided with guidance that addresses ethics, personal conduct and the avoidance of actual or perceived conflicts of interest in the performance of official duties.

4. Qualified technical personnel

4.1 The minimum qualification requirements for the technical personnel performing safety oversight functions and provide for appropriate initial and recurrent training to maintain and enhance their competence at the desired level.

4.2 The system for the maintenance of training records shall be implemented.

5. Technical guidance, tools and provision of safety-critical information


5.1 There shall provide appropriate facilities, comprehensive and up-to-date technical guidance material and procedures, safety-critical information, tools and equipment, and transportation means, as applicable, to the technical personnel to enable them to perform their safety oversight functions effectively and in accordance with established procedures in a standardized manner.

5.2 The technical guidance shall be provided to aviation industry on the implementation of relevant regulations.

6. Licensing, certification, authorization and/or approval obligations

There shall be documented processes and procedures to ensure that personnel and organizations performing an aviation activity meet the established requirements before they are allowed to exercise the privileges of a license, certificate, authorization and/or approval to conduct the relevant aviation activity.

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7.Surveillance obligations


Documented surveillance processes shall be implemented, by defining and planning inspections, audits, and monitoring activities on a continuous basis, to proactively assure that aviation license, certificate, authorization and/or approval holders continue to meet the established requirements. This includes the surveillance of personnel designated by the BCAA to perform safety oversight functions on its behalf.

8.Resolution of safety issues

8.1 A documented process shall be used to take appropriate corrective actions, up to and including enforcement measures, to resolve identified safety issues.

8.2 It shall be ensure that identified safety issues are resolved in a timely manner through a system which monitors and records progress, including actions taken by service providers in resolving such issues.

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APPENDIX 2 FRAMEWORK FOR A SAFETY MANAGEMENT SYSTEM (SMS)

1. Introduction

The purpose of this document is to provide guidance materials on the implementation of Safety Management Systems (SMS) for the aviation stakeholders in Bhutan. The guidance is designed to give the reader basic information on SMS concepts and the development of management policies and processes. The guidance assumes the reader has a sound understanding of SMS principles. There is a significant amount of information giving guidance on the structure and implementation of SMS in various publications, both dealing with aviation and other industries. While organizations are encouraged to use *ICAO Document 9859 – Safety Management Manual* as their principal source of guidance on SMS.

It is important to recognize that SMS are top down driven systems, which means that the Accountable Manager of the organization is responsible for the implementation and continuing compliance of the SMS. Without the wholehearted support of the Accountable Manager an SMS will not be effective.

There is no single model of an SMS that will cater for all types of organizations. Complex SMS are likely to be inappropriate for small operators, and such operators should tailor their SMS to suit the size, nature and complexity of the operation and allocate resources accordingly. Guidance for small operators is specifically covered in this document.

2. Management Systems

2.1 Safety Management


The management system of an organization should ideally comprise two separate but complementary systems, the Quality Management System (QMS) and the SMS. The QMS and SMS should correspond to the size, nature and complexity of the organization and take account of all of the hazards and risks associated with its activities.

A Management System should describe the structure of these, available resources, staff accountabilities and responsibilities and how decisions are taken and managed throughout the organization.

2.2 Quality Management System (QMS)

The role of the QMS is to monitor compliance with and the adequacy of procedures required to ensure safe operational practices and airworthy aeroplanes. The QMS and SMS have complementary but independent functions with the QMS monitoring the SMS.

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2.3 Safety Management System

An SMS is an organized approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures. The complexity of the SMS should match the organization's requirements for managing safety. At the core of the SMS is a formal Risk Management process that identifies hazard and analyses and mitigates risk.

2.4 Safety Management System Implementation Plan

The first step, when introducing SMS into an organization, is to develop an implementation plan. This will be a realistic strategy for the implementation of SMS that meets the needs of the organization and defines the approach taken for managing safety. The contents of the plan should include:


- a) safety policy;
- b) safety planning objectives and goals;
- c) system description;
- d) gap analysis;
- e) SMS components;
- f) safety roles and responsibilities;
- g) safety reporting policy;
- h) means of employee involvement;
- i) safety communication;
- j) safety performance measurement;
- k) management review of safety performance; and
- l) Safety training.

2.5 Small Organizations

For a small organization a simplified SMS implementation plan should be developed that includes:

- a) the organization's approach to managing safety in a manner that meets its safety needs;

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- b) coordination with the SMS of other organizations with which it interfaces during the provision of services; and
- c) Endorsement by senior management and communication throughout the organization.

Note: For additional information on implementing an SMS refer to the *ICAO Safety Management Systems Implementation Evaluation Guide*.

3.The Components of a Safety Management System

An SMS should comprise the following four components

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

4. Safety Policy and Objectives

The Safety Policy outlines the methods and processes that the organization will use to achieve desired safety outcomes. The creation of a positive safety culture begins with a clear, unequivocal direction from the Accountable Manager.

In preparing a safety policy, Senior Management should consult with key staff members in charge of safety critical areas. Consultation will ensure that the safety policy and stated objectives are relevant to all staffs and that there is a sense of shared responsibility for the safety culture in the organization.

The Safety Policy and Objectives can be divided into the following five areas:


1. Management Commitment and Responsibility
2. Safety Accountabilities of Managers
3. Appointment of Key Safety Personnel
4. The Emergency Response Plan
5. Documentation

4.1 Management Commitment and Responsibility

The Accountable Manager should have full responsibility for the SMS and should have:

- a) Corporate authority for ensuring all activities can be financed and carried out to the required standard;

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- b) Full authority for ensuring adequate staffing level;
- c) Direct responsibility for the conduct of the organization's affair;
- d) Final authority over operational matters; and
- e) Final responsibility for all safety issues

Senior management should:

- a) Develop the safety policy, endorsed by the Accountable Manager
- b) Continuously promote the safety policy to all staff and demonstrate their commitment to it;
- c) Provide necessary human and financial resources; and
- d) Establish safety objectives and performance standards for the SMS. The safety objectives and performance standards should be linked to the safety performance indicators, safety performance targets and safety requirements of the SMS.

4.2 Safety Accountabilities of Managers

The organization should define the accountabilities of the Accountable Manager and the safety responsibilities of key personnel.

It is essential that safety management is seen as an integral strategic aspect of the organization's business by assigning the highest priority to safety. With this in mind, there has to be a demonstrable Board level commitment to an effective SMS.

The Accountable Manager with the Senior Management team set the standard for the organization's safety culture. Without this commitment, an SMS will be ineffective.

4.3 Appointment of Key Safety Personnel


Whilst the organizational structure of the SMS should reflect the size, nature and complexity of the organization, it should take into account the:

- a) appointment of a Safety Manager; and
- b) Creation of safety committees.

4.3.1 The Safety Manager

The Safety Manager should be a Senior Management appointment in the organization in order to provide the necessary degree of authority when dealing with safety matters and should report directly to

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the Accountable Manager of the organization.

The Safety Manager should possess:

- a) operational management experience and have a technical background sufficient to understand the systems that support the organization;
- b) people skills;
- c) analytical and problem solving skills;
- d) project management skills; and
- e) Oral and written communication skills.


It is important to note that accountability for the SMS lies with the Accountable Manager not the Safety Manager.

The Safety Manager is responsible for and is the focal point for the development, administration and maintenance of an effective SMS.

The Safety Manager should carry out at least the following functions:

- a) manage the SMS implementation plan on behalf of the Accountable Manager;
- b) facilitate the risk management process that should include hazard identification, risk assessment and risk mitigation;
- c) monitor any corrective action required in order to ensure accomplishment;
- d) provide periodic reports on safety performance;
- e) maintain safety documentation;
- f) plan and organize staff safety training;
- g) provide independent advice on safety matters;
- h) advise Senior Managers on safety matters;
- i) assist Line Managers;
- j) oversee hazard identification systems; and
- k) be involved in occurrence/accident investigations.

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4.3.2 Safety Committees

Safety Review Board

The Safety Review Board (SRB) is a high level committee which considers strategic safety functions. The board should be chaired by the Accountable Manager and should normally include the Senior Management of the organization. If required, directors of the organization should be included in the SRB.

The SRB ensures that appropriate resources are allocated to achieve the established safety performance and gives strategic direction to the Safety Action Group (SAG).

The SRB monitors:

- a) safety performance against the safety policy and objectives;
- b) effectiveness of the SMS implementation plan;
- c) effectiveness of the safety oversight of sub-contracted organizations, that necessary corrective or mitigating actions are being taken in a timely manner; and
- d) effectiveness of the auditing of the SMS.

Safety Action Group

The SAG reports to and takes strategic direction from the SRB. It comprises managers, supervisors and staff from operational areas. The Safety Manager may also be included in the SAG.


The safety action group:

- a) oversees operational safety;
- b) resolves identified risks;
- c) assesses the impact on safety of operational changes;
- d) implements corrective action plans; and
- e) ensures that corrective action is achieved within agreed time scale

The safety action group reviews:

- a) the effectiveness of previous safety recommendations; and
- b) Safety promotion.

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4.4 The Emergency Response Plan

An Emergency Response Plan (ERP) should be established that provides the actions to be taken by the organization or individuals in an emergency. The ERP should be integrated into the SMS and reflect the size, nature and complexity of the activities performed by the organization.

The ERP should ensure:


- a) an orderly and efficient transition from normal to emergency operations;
- b) designation of emergency authority;
- c) assignment of emergency responsibilities;
- d) authorization by key personnel for actions contained in the plan;
- e) coordination of efforts to resolve the emergency; and
- f) Safe continuation of operations or return to normal operations as soon as practicable.

The ERP should set out the responsibilities, roles and actions for the various agencies and personnel involved in dealing with emergencies.

An ERP should take into account such considerations as:

- a) governing policies;
- b) organization;
- c) notifications;
- d) initial response;
- e) additional assistance;
- f) Crisis Management Centre (CMC);
- g) records; accident site; news media;
- h) formal investigations;
- i) family assistance;
- j) post-critical incident stress counseling; and
- k) Post-occurrence review.

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4.5 Documentation

Documentation for an SMS should be representative of the nature, scale and complexity of the organization and normally consist of:

- a) Applicable regulations;
- b) SMS records;
- c) records management; and
- d) SMS manual.


The safety policy should include a commitment to:

- a) achieve the highest safety standards;
- b) observe all applicable legal requirements, standards and best practice;
- c) provide appropriate resources;
- d) enforce safety as one primary responsibility of all Managers; and
- e) Ensure that the policy is implemented and understood at all levels both internally and externally.

The organization's SMS manual should be the key instrument for communicating the approach to safety for the whole of the organization and should document all aspects of the SMS, including the safety policy, objectives, procedures and individual safety accountabilities. Contents should include:

- a) scope of the SMS;
- b) safety policy and objectives;
- c) safety accountabilities;
- d) key safety personnel;
- e) documentation control procedures;
- f) hazard identification and risk management schemes;
- g) safety performance monitoring;
- h) emergency response planning;

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- i) management of change;
- j) safety promotion; and
- k) Contracted activities.

4.6 Small Organizations

The SMS of a small organization may address the following items in a simplified manner:

4.6.1 Safety Accountabilities of Managers and Staff

- a) The organization should identify the accountable manager who, irrespective of other functions, should have ultimate responsibility and accountability, on behalf of the organization, for the implementation and maintenance of the SMS.
- b) The organization should also identify the safety accountabilities of all management and staff members, irrespective of other functions. Safety accountabilities and authorities should be documented and communicated throughout the organization.
- c) In a small organization one person may exercise both the accountable manager and senior management functions.

4.6.2 Appointment of Key Safety Personnel

- a) The organization should identify a manager to be the responsible individual and focal point for the implementation and maintenance of an effective SMS.
- b) In a small organization the functions of the SRB and SAG may need to be devolved to individuals rather than a committee.


4.6.3 Coordination of Emergency Response Planning

The organization should develop, coordinate and maintain an ERP that ensures orderly and efficient transition from normal to emergency operations, and return to normal operations.

4.6.4 Documentation

- a) The organization should develop and maintain SMS documentation to describe the safety policy and objectives, the SMS requirements, the SMS procedures and processes, the accountabilities, responsibilities and authorities for procedures and processes, and the SMS outputs.
- b) As part of the SMS documentation, the organization should develop and maintain a safety management manual (SMM), to communicate its approach to safety throughout the organization.
- c) The SMM may be a chapter in the organization manual.

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5. Safety Risk Management

The Safety Risk component of an SMS can be divided into three areas:

- 1) Hazard identification processes.
- 2) Risk assessment and mitigation processes.
- 3) Internal safety investigation.

Safety is a condition in which the risk of harm or damage is limited to an acceptable level. Safety management is centered on a systematic approach to hazard identification and risk management. The hazards creating risk can be identified through SMS processes. The process of moving from hazard identification to risk assessment and risk mitigation is a risk management process.

5.1 Hazard Identification Process

A hazard is any situation or condition that has the potential to cause adverse consequences. A hazard identification process is the formal means of collecting, recording, analyzing, acting on and generating feedback about hazards that affects the safety of the operational activities of the organization. In a mature SMS hazard identification is an ongoing process.

The scope of hazard identification is across the operational activities of the organization with data derived from reactive and proactive schemes. Reactive schemes include data from accidents, incidents and flight data monitoring. Proactive schemes include voluntary incident reporting, confidential reporting schemes, safety surveys, operational safety audits and safety assessments. Managed group sessions can also be used to identify hazards.

5.2 Risk Assessment and Mitigation Process

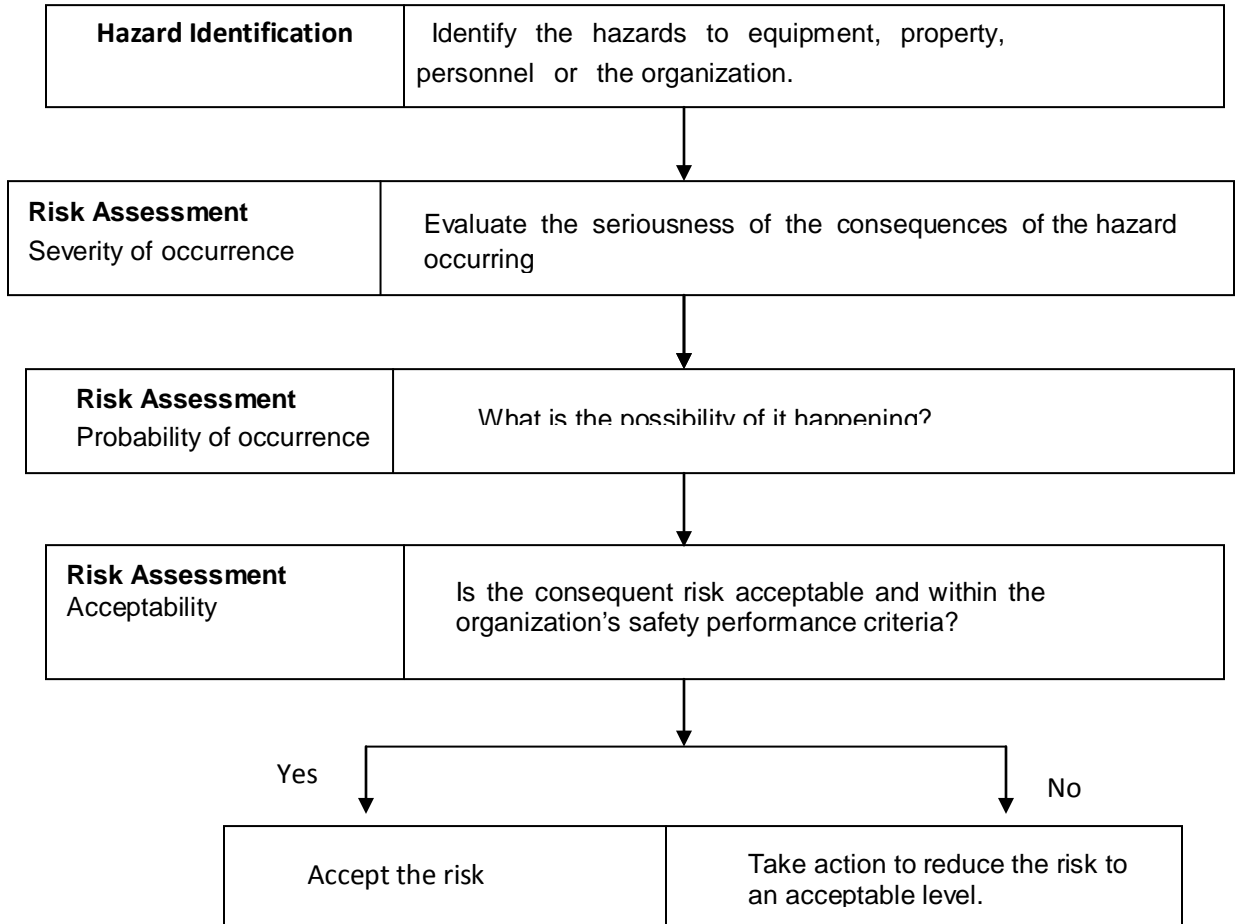
Following the identification of a hazard a form of analysis is required to assess its potential for harm or damage. This involves three considerations;

- a) Probability: The probability of the hazard adverse consequences
- b) Severity: The severity of the potential adverse consequences.
- c) Exposure: The rate of exposure to the hazard.

Risk Assessment and Mitigation Processes analyze and eliminate or mitigate to an acceptable level risks that could threaten the capabilities of an organization.

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A diagram showing the hazard analysis and risk assessment process is shown below:



A system should be developed for assessing and analyzing the data collected or derived from the actions outlined above. Information provided by analysis should be distributed to those with a responsibility for operational safety in the organization.

Confidential reporting systems should be based on established human factors principles including an effective feedback process.

5.2.1 Risk

Risk is the assessed potential for adverse consequences resulting from hazard if its potential to cause harm is realized. A hazard has the potential to cause harm, while risk is the likelihood of that harm being realized within a specific time-scale.

5.2.2 Risk Assessment


Risk Assessment involves taking into account the probability and severity of any adverse consequences resulting from an identified hazard. Mathematical models may give credible results but typically these analyses are supplemented qualitatively by subjective critical and logical analysis of the inter-related facts. A Risk Matrix is useful for assessing hazard. The severity of the consequences can be defined; the probability of occurrence may be more subjective based on the maturity of the organization's operational activities. The assessment process should be recorded at each stage to form a substantive record.

Risk Assessment Matrix Severity

Catastrophic	5	5 Review Unacceptabl	1 0 Unacceptabl	1 5 Unacceptabl	2 0 Unacceptabl	2 5 Unacceptabl
Hazardous	4	4 Acceptabl	8 Review	1 2	1 6	2 0
Major	3	3 Acceptabl	6 Review	9 Review	1 2	1 5
Minor	2	2 Acceptabl	4 Acceptabl	6 Review	8 Review	1 0
Negligible	1	1 Acceptabl	2 Acceptabl	3 Acceptabl	4 Acceptabl	5 Review
		Extremely improbable	Improbable	Remote	Occasional	Frequent
		1	2	3	4	5

Probability

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Severity of Consequences

Aviation Definition	Meaning	Value
Catastrophic	Equipment destroyed. Multiple deaths.	5
Hazardous	A large reduction in safety margins, physical distress or a workload such that organizations cannot be relied upon to perform their tasks accurately or completely. Serious injury or death to a number of people. Major equipment damage.	4
Major	A significant reduction in safety margins, a reduction in the ability of organizations to cope with adverse operating conditions as a result of an increase in workload, or as a result of conditions impairing their efficiency. Serious incident. Injury to persons.	3
Minor	Nuisance. Operating limitations. Use of emergency procedures. Minor incident.	2
Negligible	Little consequence.	1

Probability of Occurrence

Qualitative Definition	Meaning	Value
Frequent (1 to 1/1000 per Flight Hour)	Likely to occur many times.	5
Occasional (1/1000 to 1/100000 per Flight Hour)	Likely to occur sometimes.	4
Remote (1/100000 to 1/10000000 per Flight Hour)	Unlikely, but possible to occur.	3
Improbable (1/10000000 to 1/1000000000 per Flight Hour)	Very unlikely to occur.	2
Extremely improbable (<1/1000000000 per Flight Hour)	Almost inconceivable that the event will occur.	1

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Risk Classification

Acceptable	The consequence is so unlikely or not severe enough to be of concern; the risk is tolerable. However, consideration should be given to reducing the risk further to as low as reasonably practicable in order to further minimize the risk of an accident or incident.
Review	The consequence and/or probability is of concern; measures to mitigate the risk to as low as reasonably practicable should be sought. Where the risk is still in the review category after this action then the risk may be accepted, provided that the risk is understood and has the endorsement of the individual ultimately accountable for safety in the organization.
Unacceptable	The probability and/or severity of the consequence are intolerable. Major mitigation will be necessary to reduce the probability and severity of the consequences associated with the hazard.

5.2.3 Risk Mitigation

Risks should be managed to be as low as reasonably practicable. Risk must be balanced against the time, cost and difficulty of taking measures to reduce or eliminate the risk. The level of risk can be lowered by reducing the severity of the potential consequences, reducing the probability of occurrence or by reducing exposure to that risk. Corrective action will take into account any existing defenses and their inability to achieve an acceptable level of risk. Corrective action should be subject to further risk assessment as outlined, in order to determine that the risk is now acceptable and that no further risk has been introduced into operational activities.

5.3 Internal Safety Investigations

The scope of internal safety investigations should include occurrences that are not required to be investigated or reported to the BCAA. Though often of a supposed minor nature, they could be indicative of a potential hazard that would only be revealed through a systematic investigation.


5.3.1 Scope of Safety Investigations

The scale and scope of any investigation should be suitable to determine and validate the underlying hazards. A systems approach is useful to provide a broad appreciation of the context of any occurrence. Effort expended should be proportional to the perceived benefit to the organization in terms of identifying hazard and risk.

5.3.2 Investigation Methodology

Investigations follow an iterative process that may require going back and repeating steps as new data is acquired or new conclusions are reached. Information sources will include:

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- a) documentation;
- b) operational data monitoring;
- c) interviews;
- d) simulations; and
- e) Safety databases.

5.3.3 Safety Recommendations

An organization should have procedures to communicate the results of any safety investigations and where appropriate to address hazards as outlined in paragraph 5.2 above.

5.4 Small Organizations

The Safety Risk Management System for small organizations should include hazard identification, risk analysis and mitigation process, but may do so in a simplified manner.

The Hazard Identification and Risk Analysis Process may involve a risk profiling process that has been developed for activities of the type being conducted, and that leads to commonly accepted mitigation strategies which in turn are tracked by the organization to ensure that they are appropriate to the circumstances and that they are effective.

The Safety Risk Management System may also use hazard checklists or similar risk management processes, which are integrated into the activities of the organization.

6. Safety Assurance

The three aspects of safety assurance are:


- a) safety performance monitoring, measurement and review;
- b) the management of change; and
- c) Continuous improvement of the safety system.

6.1 Safety Performance Monitoring and Measurement

Safety performance monitoring and measurement should be the process by which the safety performance of the organization is verified in comparison to its safety policies and objectives. This process should include;

- a) safety reporting;
- b) safety studies;
- c) safety reviews including trends reviews;

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- d) safety audits; and
- e) Surveys.

Safety audits are used to ensure that the structure of the SMS is sound in terms of:

- a) adequate staff levels;
- b) compliance with approved procedures and instructions; and
- c) Level of competency and training to operate equipment and facilities and maintain their levels of performance.

Safety surveys examine particular elements or processes of a specific operation and may involve the use of:

- a) checklists;
- b) questionnaires; and
- c) Informal confidential interviews.

Survey information is subjective and should therefore be verified before any corrective action is initiated but may provide an inexpensive source of safety information.

6.2 The Management of Change

The Management of Change should be a formal process that identifies external and internal change that may affect established processes and services. It utilizes the organization's existing risk management process to ensure that there is no adverse effect on safety. Change can introduce new hazards that could impact the appropriateness and effectiveness of any existing risk mitigation.

6.3 Continuous Improvement of the Safety System


Continuous Improvement:

- a) Should determine the immediate causes of below-standard performance and their implications in the operation of the SMS; and
- b) Should rectify situations involving below-standard performance identified through safety assurance activities.

Continuous Improvement should be achieved through:

- a) evaluation of facilities, equipment, documentation and procedures through safety audits and surveys;
- b) evaluation of an individual's performance to verify the fulfillment of their safety

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responsibilities;

- c) reactive evaluations in order to verify the effectiveness of the system for control and mitigation of risk, e.g. incidents, accidents and investigations; and
- d) Tracking changes to ensure that they are effective.

6.4 Small Organizations

The Safety Assurance Process in a small organization may consist of periodic external safety audits that assist the organization in verifying safety performance and rectifying any identified instances of sub-standard SMS performance.

7. Safety Promotion

7.1 Training and Education

All staff should receive safety training as appropriate for their safety responsibilities. In particular all Operational Staff, Managers, Supervisors, Senior Managers and the Accountable Manager should be trained and be competent to perform their SMS duties.

Operational Staff - Operational staff should have an understanding of the organization's safety policy and an overview of the fundamentals of SMS.

Managers and Supervisors - Managers and supervisors should understand the safety process, hazard identification, risk management and the management of change.

Senior Managers - Senior Managers should understand organizational safety standards, safety assurance and the regulatory requirements for their organization.


Accountable Manager - The Accountable Manager should have an awareness of SMS roles and responsibilities, safety policy, SMS standards and safety assurance.

7.2 Safety Communication

Safety communication is an essential foundation for the development and maintenance of an adequate safety culture. The modes of communication may include:

- a) Safety policies and procedure;
- b) Newsletters;
- c) Presentations;
- d) Safety notices; and

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- e) Informal workplace meetings between staff and the Accountable Manager or Senior Manager.

Safety communication should

- a) Ensure that all staff are fully aware of the SMS and the organizations safety culture;
- b) Convey safety critical information;
- c) Explain why certain actions are taken;
- d) Explain why safety procedure are introduced or changed;
- e) Complement and enhance the organization’s safety culture;
- f) Contain a process for assessing the suitability of the safety communication and its effect on the organization.

7.3 Small Organizations

7.3.1 Training

- a) All staff should receive safety training as appropriate for their safety responsibilities.
- b) The safety training Programme may consist of e-learning or similar training provided by training service providers.

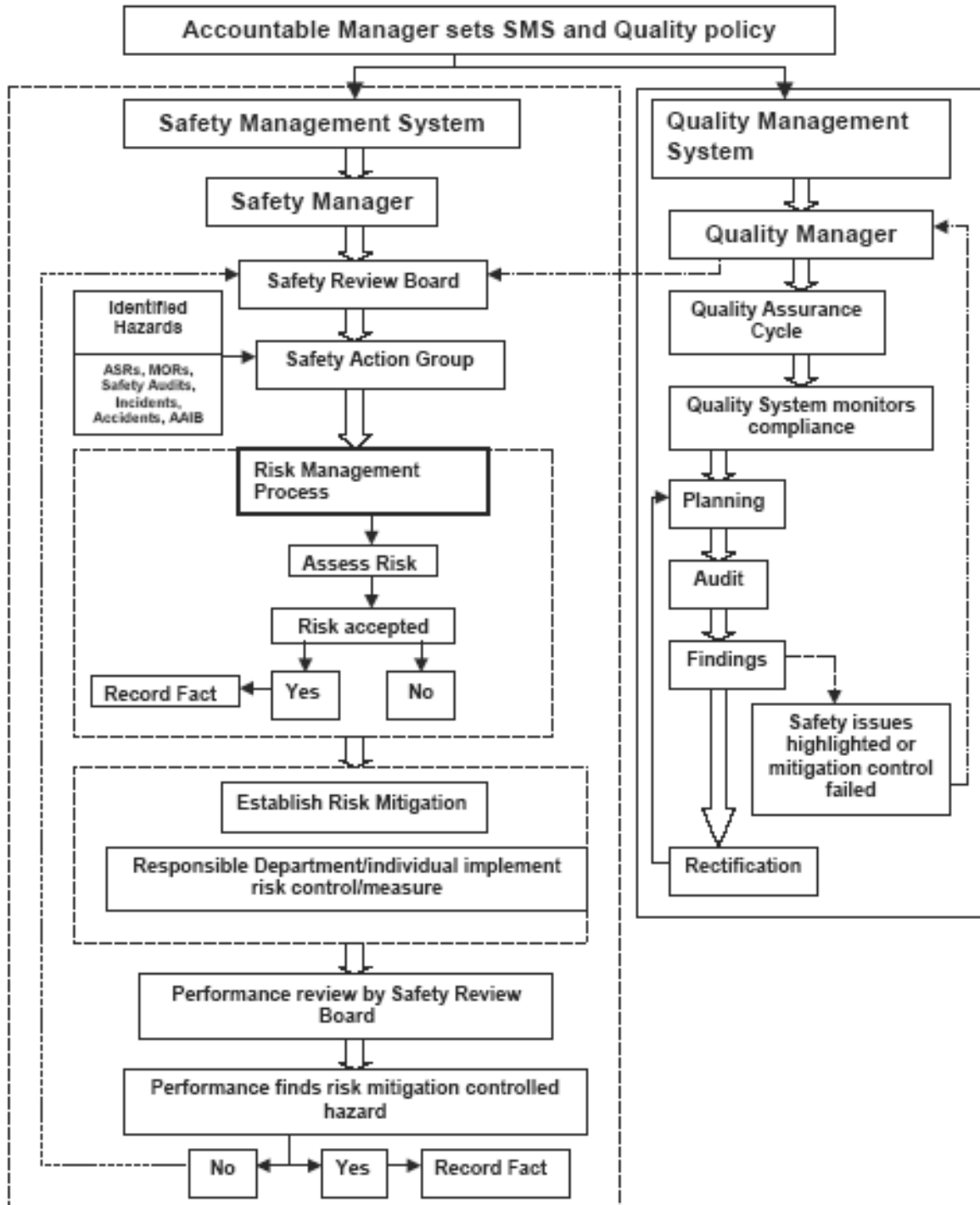
7.3.2 Communication

- a) The organization should establish communication about safety matters that:
 - i. ensures that all staff are fully aware of the SMS;
 - ii. conveys safety critical information, and especially that related to assessed risks and analyzed hazards;
 - iii. explains why particular actions are taken; and
 - iv. Explains why safety procedures are introduced or changed.
- b) Regular staff meetings where information, actions and procedures are discussed may be used for the purpose of communications on safety matters.

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APPENDIX 3 – THE MANAGEMENT SYSTEM



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