SAFETY MANAGEMENT SYSTEM

GENERAL

Ghana Civil Aviation Authority (GCAA) Advisory Circulars from Aerodrome Safety and Standards (ASAS) contain information about standards, practices and procedures that the Authority has found to be an Acceptable Means of Compliance (AMC) with the associated Regulations.

An AMC is not intended to be the only means of compliance with a regulation, and consideration will be given to other methods of compliance that may be presented to the Authority.

PURPOSE

This Advisory Circular (AC) provides information and guidance to aerodrome operators on the conduct of Aeronautical Study and risk assessment where the aerodrome is unable to meet requirements and need to identify alternative means to achieve an equivalent level of safety.

REFERENCE

The Advisory Circular relates specifically to the Aerodrome GCARs and Manual of Standards (MOS).

STATUS OF THIS AC

This is the first AC to be issued on this subject.

FOREWARD

This document provides guidance to Aerodrome Operators on aerodrome mandatory occurrence reporting and investigation. An Aerodrome Operator is responsible to report to the Aerodrome Safety and Standards Section of any incident and accident occurring at the aerodrome as soon as reasonably practicable. ☐

APPROVAL

	Approved by:	
Issue No : 01	Director-General	2015

TABLE OF CONTENT

1. Definitions

Accident:- An unintended event or sequence of events that cause death, injury, environmental or material damage.

Acceptable level of safety: - is the minimum degree of safety that must be assured by a system in actual practice.

Accountable Executive: - Means member of the organisations management, having final responsibility for the effective and efficient performance of the organisation's SMS.

Active failures: - are generally the results of equipment faults or errors committed by personnel.

Change Management: - The capabilities and support required by an organisation constantly evolving in response to the changing requirements of interested parties, a dynamic business environment and the process of continual improvement. Change may also require that there be associated cultural and behavioural adjustments within an organisation. Where these are necessary they will take time and resources and must be led by management.

Critical safety information: - Is the type of information that staff and management need to be aware of, in order to do their job. Typically, this would include information like a change to a company procedure required as part of a safety risk treatment option

Defences: - Are actions or elements of a design put in place to reduce the likelihood or consequence of an event. Risk treatment will normally involve the introduction or enhancement of defences against a specific negative outcome.

Deficiency: - The result of lacking something essential; imperfect; defective. Such as hazards allowed to exist; within a system resulting to a System Deficiency.

Director/Airport Manager: - Means a person with overall operational responsibility for a particular aerodrome.

Errors: - Actions or inactions by persons that have an adverse effect.

Event: - An incident or situation which occurs in a particular place during a particular interval of time.

Facility: - means premises being used, or to be used, for the operation of an aircraft on the aerodrome. These premises may be fixed or portable, and may include communication facilities.

Gap analysis: - The implementation of an SMS requires a service provider to conduct an analysis of its system to determine which component and elements of an SMS are currently in place and which components ad elements must be added or modified to meet the implementation requirement. This analysis is known as Gap analysis, and it involves comparing the SMS requirement against the existing recourses in the service provider.

Hazard: - A source of potential harm or a situation with a potential to cause loss.

Human Factors: - Human Factors involves the study of the human's capabilities, limitations, and behaviours and the integration of that knowledge into the design of systems to enhance the safety, performance and the general well being of the operators of the systems.

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

Investigation: - An activity to determine and assess any risks associated with an event using the hazard assessment process.

Likelihood: - Used as a qualitative description of probability or frequency.

Mitigation: - The actions taken either to control, reduce or remove a hazard or to reduce the probability or the severity of a risk. It is the result of an action to make milder or less severe.

Monitor: - To check, supervise, observe critically, or record the progress of an activity or system on a regular basis in order to identify change.

Non-critical safety information: - Is the sort of safety information that staff and management only need a general awareness of as part of their job

Oversight: - Oversight is a mechanism to ensure that operators and operators maintain an acceptable level of safety in their operations.

Predictive: - Predictive navigation aids do not require a triggering event to take place in order to launch the safety data capture process. Routine operational data are continually captured, in real time. Predictive navigation aids are based upon the nation that safety management is best accomplished by trying to find trouble, not just waiting for it so show up. Therefore, predictive safety data capture systems aggressively seek safety information that may be indicative of emerging safety risks for a variety of sources.

Proactive: - Proactive navigation aids require a less serious triggering event, probably with little or no damaging consequences, to take place in order to launch the safety data capture process. Proactive navigation aids are based upon the nation that system failures can be minimized by identifying safety risks within the system before it fails, ad taking the necessary actions to mitigate such safety risks. Mandatory and voluntary reporting systems, safety audits and safety surveys are examples of proactive navigation aids.

Probability: - The likelihood of a specific outcome.

Reactive:- Reactive navigation aids require a very serious triggering event, with oftentimes considerable damaging consequences, to take place in order to launch the safety data capture process. Reactive navigation aids are based upon the nation of waiting until "something breaks to fix it". They are most appropriate for situation involving failures in technology and /or unusual events. Reactive navigation aids are an integral part of mature safety management. The contribution of reactive navigation airs to safety managements nevertheless depends on the extent to which the information they generate goes beyond the triggering causes of the event, and the allocation of blame, and includes contributory factors and findings as to safety risks. The investigation of accidents and serious incidents are examples of reactive navigation aids.

Risk: - The chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood.

Risk analysis: - A systematic use of available information to determine how often specified events may occur and the magnitude of their consequences.

Risk assessment: - The overall process of risk analysis and risk evaluation.

Risk evaluation: - The process used to determine risk management priorities by comparing the level of risk against predetermined standards, target risk levels or other criteria.

Risk identification: - The process of determining what can happen, why and how.

Risk level: - The level of risk calculated as a function of likelihood and consequence.

Risk management: - The culture, processes and structures that are directed towards the effective management of potential opportunities and adverse effects.

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

Safety assessment: - Safety assessment is post-implementation monitoring to verify that the defined level of safety continues to be met.

Safety assurance:- Safety assurance is what the State perform with regard to the safety performance of its SSP and operators/service providers perform with regard to the safety performance of their SMS, including monitoring and measurement.

Safety audit: - Safety audit is what the State performs with regard to the structure of its SSP and the operators and service providers perform with regard to the structure of their SMS.

Safety Manager: - means a person with specific safety responsibilities under Aerodrome Operator's Manual

Safety Management System: - A systemic approach to managing safety, including the necessary organisational structure, accountabilities, policies and procedures.

Safety Office:- Safety Office serves as a focal point for safety-related activities, acts as a repository for safety reports and information, and provides expertise on safety management to line managers.

Safety Performance Indicators: - are a measure (or metric) used to express the level of safety performance achieved in a system.

Safety Performance Targets: - the required level of safety performance for a system. A safety performance target comprises one or more safety performance indicators, together with desired outcomes expressed in terms of those indicators.

Safety policy:- Safety policy outlines the methods and processes that the organisation will use to achieve desired safety outcomes, and it serves as a reminder as to ``how we do business here``.

Safety Requirements: - are operational procedures, technology, systems and programmes to which measures of reliability, availability, performance and/or accuracy can be specified.

Safety risk: - Safety risk is defined as the assessment, expressed in terms of predicted probability and severity, of the consequences of a haggard, taking as

reference the worst foreseeable situation. Typically, safety risks are designated through an alphanumeric convention that allows for their measurement.

State Safety Programme: - An integrated set of regulations and activities aimed at improving safety.

Safety survey:-   Safety surveys examine particular elements or procedures of a specific operation, such as problem areas or bottlenecks in daily operations, perceptions and opinions of operational personnel and areas of dissent or confusion . Safety surveys may involve the use of checklists, questionnaires and informal confidential interviews.

Severity: -   The possible consequences of a situation of danger, taking as reference the worst foreseeable situation.

Short Term Corrective Actions: - Short term Corrective Actions are those which the Safety Manager considers can be completed within 2 months of the receipt of report.

System descriptions:-

Works Safety Officer: - means a person responsible for the safety of works undertaken on an aerodrome.

Violation: - A result of deficient or unrealistic procedures where people have developed workarounds to accomplish the task.

2. SAFETY MANAGEMENT SYSTEM

2.1 Introduction

2.1.1 A Safety Management System (SMS) shall be established by aerodrome operators for operations and maintenance of aerodromes operated, or to be certificated under GCAR Part 24

2.1.2 The aerodrome operator shall establish and implement an operating safety management system that complies with the standards and requirements specified in Part 24 of the GCARs

2.1.3 The information contained in this advisory circular is not intended to be a prescriptive formula but serves to provide basic explanation of the essential components of a SMS. An aerodrome operator should start to develop its own SMS taking into account these guidelines and any other supplementary material that GCAA may publish from time to time.

2.2 General Description

2.2.1 A SMS is a systematic, explicit and comprehensive process for the management of safety risks, one that integrates operations and technical systems with financial and human resource management. For the purpose of this AC, the SMS applies to all activities related to the requirements for aerodrome certification and for ensuring the continuous safe functioning of aerodrome operations.

2.2.2 The SMS should be one that permeates throughout the aerodrome operator organisation, and be implemented through a continuing safety program based on a coherent policy that leads to well-designed work procedures. The SMS should also extend to include interfaces between the aerodrome operator and its suppliers, sub-contractors, agents, business partners and other relevant external service providers.

2.2.3 The SMS should focus principally on the hazards associated with the operation of the aerodrome and their effects upon those activities critical to safety. It should provide for goal setting, planning and measuring performance, and should place emphasis on organisational safety rather than conventional health and safety-at-work concerns. Active monitoring and auditing processes should be applied to validate that the necessary controls identified through the hazard management process are effectively put in place so as to ensure continuing active commitment to safety and to achieve continuous improvement in safety performance.

2.2.4 An aerodrome operator's SMS defines how it intends to manage aerodrome safety as an integral part of its business management activities. The SMS should be woven into the fabric of an aerodrome operator's organisation and become part of its culture – the way people do their jobs.

2.3 Key Components

2.3.1 An SMS, where provided, should include a Safety Management Plan that covers the following key components:

Safety Policies

(a) The SMS should have a clear definition of the philosophy and fundamental approach an aerodrome operator will adopt for the management of safety within its organisation. This includes the setting of policies on the process of safety management and how they relate to the operations and maintenance processes at an aerodrome.

Safety Roles and Responsibilities

(b) The SMS should have a well-defined organisation structure, including staffing positions, lines of responsibility and clear assignment of group and individual safety accountabilities at all levels involved in the safety process within the organisation. The staff positions responsible for the safety compliance of externally supplied services should also be identified. The dedication and involvement of top management towards safety and safety practices should be clearly visible, including their commitment to provide priority to tackle safety initiatives and setting aside adequate time, financial and human resources necessary to attain the strategic safety objectives established by the organisation.

Safety Committee(s)

(b) The SMS should include forums for discussing safety-related issues from a cross-functional perspective and for streamlining the implementation of the safety management plan across the aerodrome operator organisation. This will provide a means of looking at safety from a broader viewpoint, to review safety achievements and broadcast safety information. Safety committee(s) could take the form of high-level committee(s) as well as sub-committees with specific areas of responsibility.

Safety Standards, Goals and Strategy

(d) The SMS should have a plan and strategy involving setting of safety performance targets and the establishment of a framework for controlling risks to a level as low as reasonably practicable.

Safety Assessment

(e) The SMS should comprise a proactive means to assess safety by seeking out potential safety hazards so as to enable the evaluation and sound management of the associated risks. Hazard identification is the act of

identifying any condition with the potential for causing injury to personnel, damage to equipment, structures or property, loss of material, or reduction of the ability to perform a prescribed function. Necessary tools to facilitate proper hazard reporting are provided in the appendix. Appendices A, B, F and G contain Hazard Checklist, Hazard Report Form, Hazard Assessment Form and Hazard Reporting Log respectively. Risk management involves analysing the risks associated with an identified hazard, making an assessment of its potential severity and likelihood of occurrence, and finally developing and implementing preventive or corrective actions to reduce the risks to an acceptable level. Appropriate tools/techniques for the identification of and action on critical safety areas which require a higher level of safety management integrity should also be used in the risk management process, where needed. Appendices C, D and E contain necessary tables for risk assessment. Hazard identification and risk management should be performed in the following circumstances:

(i)   Through regular reviews;

(ii)   When major operational changes are planned;

(iii)   If the organisation is undergoing rapid change, such as expansion or downsizing; introduction of new facilities or procedures; decommissioning of existing facilities or modification of procedures, etc.; and

(iv)   When key personnel change takes place.

The safety assessment should extend to the management of contracts with external service providers. Tender or proposal invitation documents should be assessed and reviewed to ensure that safety requirements are adequately defined and documented for the performance by the external service providers.

Safety Monitoring

(f)   The SMS should have built-in active safety monitoring techniques for data collection, which should include:

(i)   Routine detailed inspections of specific task areas (e.g. using safety checklists);

(ii)   Regular reviews of appropriateness and effectiveness of current modes of operation – equipment performance, process, practices and procedures;

(iii)   Internal audits of compliance with SMS requirements; and

(iv)   Examination of adequacy of SMS setup and of management and line commitment.

Safety performance records should be documented and used as feedback to improve the system.

Safety Reporting

(g)   Every event is an opportunity to learn valuable safety lessons. The lessons however, will only be understood if the occurrence is analysed so that all staff, including management, are aware of not only what happened but also why it happened. This involves looking beyond the event and investigating the contributing factors, e.g. organisational and human factors within the organisation that played a role in the event. The SMS developed and maintained by the aerodrome operator should therefore include procedures for the internal reporting and recording of occurrences, hazards and other safety related issues. The aerodrome operator should make use of appropriate, accurate and timely-collected data to identify the root cause and to apply the necessary corrective action to prevent a recurrence of the event. The aerodrome operator should also note the need to satisfy the regulatory requirements for aerodrome occurrence reporting and investigations, as detailed in GCARs and the MOS.

The safety reporting system should encompass the following fundamental elements:

(i)   System to allow staff to report hazards, events or safety concerns in a simple, convenient and non-punitive way;

(ii)   Procedures for investigating and analysing safety data, safety reports and any other safety related information;

(iii)   Methods for the collection, storage and distribution of data;

(iv)   Corrective actions and risk reduction strategies

(v)   Ongoing monitoring; and

(vi)   Validation of the effectiveness of corrective actions.

Safety Dissemination and Awareness

(h)   The SMS setup should allow all safety-related information to be disseminated throughout the organisation. An aerodrome operator should endeavour to inform all staff as to where safety related information and messages can be

found, and provide a means to keep staff notified whenever a potential safety threat is discovered. In this way, the entire organisation will become aware of safety issues and understand that the company is actively seeking to address these issues.

Safety Improvement

(i)   The SMS should encourage and allow opportunities for all staff to proactively participate in the safety process. Staff should have the opportunity to feedback and contribute to the development and implementation of the SMS. Their involvement in the decision making process fosters ownership of the system and helps to promote a positive safety culture that is geared towards continuous improvement of safety performance.

Safety Competencies

(j)   The SMS should account for staff training and competency, including review and evaluation on the adequacy of training provided to staff on safety related duties and of the certification system for testing their competency. An aerodrome operator should document the training requirements for each area of work within the organisation, including those required of external service providers. The training should include initial, recurrent and update training requirements and, where necessary, training specific to the operation of the SMS. It is recommended that a training file be developed for each operational staff, including management, to assist in identifying and tracking staff competence and training requirements.

SMS Documentation and Records

(k)   Up to date information is essential for the aerodrome operator's organisation to operate in a safe and efficient manner in accordance with current aerodrome safety regulations, standards and exemptions. The SMS developed by the aerodrome operator should have a process for documenting the regulations, standards and exemptions by which it is regulated for the various activities it conducts. Consolidated documentation describing each component of the SMS is essential if the aerodrome operator's staffs are to understand how the whole safety management system is integrated. The safety management plan should be documented in a SMS Manual, where all components of the system stipulated in this section and their interrelationships/interfaces clearly illustrated. The SMS Manual should be a controlled document, i.e. there should be a systematic process to distribute, keep track and update the SMS Manual. Safety assessments carried out, audit findings, preventive and corrective action and monitoring of

follow-up procedures should be duly recorded to facilitate easy retrieval and auditing.

Safety Culture and Promotion

(I)   The SMS should include measures for safety promotion and publication of relevant educational materials on safety initiatives and accident prevention.

Appendix – A. HAZARD CHECKLIST

Hazard Checklist

Aerodrome Name_____

Hazard Checklist for Aerodromes SMS			
Hazard No	**Hazard**	**Cause of Hazard**	**Consequence of Hazard**
F	**Aerodrome Facility**		
F-1	• Facilities do not meet legislated or safety requirements	• Applicable standard not been adopted. • Current legislation or standard references not available. • Inadequate checklist and inspection schedules. • Poor quality of material and maintenance. • Poor design, construction and installation. • Inadequate training to access deficiencies.	Aircraft Accident / Incident
A	**Aerodrome Administration**		
A-1	• Unsafe or poor operated aerodrome environment	• No formal structure. • Lack of human and other resources. • Lack of staff and management commitment. • Poor understanding of responsibilities. • Lack of training. • No clear lines of reporting • Out-dated contact details	
E	**Aerodrome Emergency Plan**		
E-1	• Inability to adequately response to an emergency	• Lack of appropriate documented procedures • Poor distribution of current procedures • Lack of appropriate communication • Lack of review of existing procedures through regular meetings, on after actual accident or incident • Lack of testing of the procedures through exercises • Lack of availability of equipment and personnel to combat an emergency situation • Response agencies not being familiar with the aerodrome environment • Remoteness of the aerodrome for response from agencies • Contact details out of date	Loss of life / Damage to infrastructure Enforced closure of aerodrome

L	**Aerodrome Lighting**		
L-1	• Failure of lighting system	• Inadequate lighting for activity • Lack of knowledge of standards applicable • Below standard non-conforming facilities provided • Poor maintenance • Lack of appropriate checklist and maintenance schedules • Unqualified or untrained personnel conducting maintenance • Environmental conditions deteriorating equipment lenses, cables, sensitive equipment • Infrequent serviceability inspections and poor reporting and remedial action arrangements • Inadequate maintenance of records to detect trends	Aircraft Accident / Incident Restriction to operations Full or partial closure of aerodrome Diversion of flights
L-2			
L-3			
L-4			
R	**Aerodrome Reporting**		
R-1	Aircraft operations being exposed to unreliable conditions	• Incomplete or incorrect information relating to the published aerodrome information • Lack of review of the documented information • Information not reported • Inadequate training of personnel responsible for the reporting arrangements • Contact details outdated	Accidents / Incidents Operational restrictions Diversions
R-2			
R-3			
R-4			
U	**Unauthorized Entry to Aerodrome**		
U-1	Potential movement area incursion	• Poor documented procedures • Lack of adequate availability of facilities to prevent access either by humans or animals • Lack of adequacy and suitability of resources • No follow-up actions taken where security breaches are detected • Poor surveillance procedures	Accident / Incident Disruption to operations Infrastructure damage
S	**Aerodrome Inspection Programme**		

S-1	Potential unsafe aerodrome facilities and conditions	• Inadequate timing of inspections • Poor inspection serviceability checklist • Inadequate training of personnel responsible for the inspection process • Poor record availability of inspections to detect trends • Outdated contact arrangements • Lack of communication • Inappropriate training • Lack of commitment by personnel responsible for the inspection function • Lack of appropriate equipment to carry out the inspection	Accident / Incident Disruption to operations Closure of movement area/s
W	**Aerodrome Works Safety**		
W-1	• Unsafe aviation operations. Potential accidents / incidents	• Lack of training of personnel associated with the works function • Poor planning of works • Heavy aircraft schedules • Poor communications • Potential runway / runway incursions • Facilities not left in a safe condition after a completed session of works • Inadequate procedures for the marking of the designated works site • Poor markings of the works equipment	
P	**Apron Management**		
P-1	• Potential aircraft damage	• Congestion due to poor apron parking planning and layout • Inappropriate provision of wingtip clearances for aircraft type • Poorly maintained apron markings • Non distribution of apron parking arrangements to operators	
P-2	• Ground services equipment damage	• Lack of adequate ground markings • Poor design	
P-3	• Passenger Safety	• Lack of adequate ground markings • Lack of supervision • Poor design • Lack of consultation with the aircraft operators	
P-4	• Jet Blast	• Poor Design • Inadequate protection to passenger and public	
V	**Airside Vehicle Control**		
V-1	• Vehicle/mobile equipment Accidents	• Lack of knowledge • Excessive speed • Poor visibility • Unsafe vehicle • Complacency • Poor documented procedures • Lack of supervision	• Injury / loss of life • Damage/ cost
V-2	• Incursions	• Lack of knowledge • Lack of / fault in communication equipment • Lack of supervision	• Aircraft Accidents • Disruption to

V-3	• Unsafe vehicles operating airside	• Lack of maintenance • Conspicuity • Non standard • Uncontrolled authority to control airside	
V-4			
B	**Bird and Animal Hazard Management**		
B-1	• Bird / Animal strikes	• Lack of adequate surveillance procedures • Poor harassment procedures /techniques • Lack of appropriately trained staff • Lack of appropriate harassment equipment • Unidentified problem sites	
O	**Obstacle Control**		
O-1	• Protected Airspace penetration	• Lack of knowledge of protected airspace requirement • Lack of adequate planning • Lack of appropriate surveillance • Lack of, or poor communication with industry of	
O-2	• Accident	• Lack of information about the location of structure • Lack of marking or lighting structure • Lack of monitoring and maintenance of	
D	**Disabled Aircraft Removal**		
D-1	Hazard on the movement area	• Lack of equipment to remove the aircraft (Obstacle) • Insufficient remaining runway for continued operations • Non reporting of the obstacle on the runway	
H	**Handling of Hazardous Materials**		
H-1	• Hazardous material not contained	• Fuel spill • Biological fuel escape • Toxic chemical leakage • Lack of / poor procedures	Fire Contamination of environment by hazardous material
H-2	• Fire	• Fuel spill • Lack of / poor procedures • Non-adherence to procedures	Death / injury Damage to plant / equipment
R	**Protection of Radar and Navigational Aids**		
R-1	• Unserviceable equipment for aircraft operations	• Encroaching into restricted areas • Unauthorized maintenance or digging in vicinity of aid • Lack of appropriate security measures- fencing, signs • Excessive vegetation growth or other obstacle	
LV	**Low Visibility Operations**		

LV-1	• Aircraft accident	• Lack of adequate documented procedures • Lack of appropriate training for personnel conducting assessment • Poor communication between assessor and ATC	
	• Runway incursions	• Lack of adequate procedures • Poor communication • Poor or lack of supervision	
N	**Notified in AIP Supplement**		
N-1	• Unsafe aircraft operation, potential damage to aerodrome facilities	• Incorrect published operational data • Inadequate training of personnel • Inadequate reporting arrangements • Inadequate documented procedures /checklist	
OH	**Other Hazards**		
OH-1			
SMS	**Safety Management System Hazards**		
SMS-1	SMS does not identify or treat safety risks	• Poorly documented SMS • Poor understanding of SMS	

APPENDIX – B. HAZARD REPORT FORM

Hazard Report Form

Note:-The information supplied in this form will only be used to enhance safety. You may choose to not provide your name. If you do provide your name, upon receipt of this form your name and position will be removed and discarded. Under no circumstances will your identity be disclosed to any person in the airport or to any other organisation, agency or person without your express permission.

When you have completed your part of the form, it should be given to the Aerodrome Safety And Standards (ASAS) Manager or the designee.

Name of Aerodrome Operator _____

Name of Submitter
(do not include if Safety Manager is
completing a confidential hazard report) _____

Position held
(do not include if Safety Manager is
completing a confidential hazard report) _____

Date of Report _____

Type of information to be collected for this Hazard Report	Record details here	Procedural Hazard	Physical Hazard	Probability[Likelihood of recurrence]	Severity of Consequences
Aerodrome Facility					
Aerodrome Administration					
Aerodrome Emergency Plan					
Aerodrome Lighting					
Aerodrome Reporting					
Unauthorized Entry to Aerodrome					
Type of information to be collected for this Hazard Report	Record details here	Procedural Hazard	Physical Hazard	Probability[Likelihood of recurrence]	Severity of Consequences
Aerodrome Inspection Programme					
Aerodrome Works Safety					
Apron Management					
Aircraft Vehicle Control					
Bird and Animal Hazard Management					
Obstacle Control					
Disabled Aircraft Removal					
Handling of Hazardous Materials					
Protection of Radar and Navigational Aids					

Low Visibility Operations					
Particular of the Aerodrome to be notified in AIP					
Safety Management System					

Note. - 1. Please indicate in the table, as per your opinion, what is the likelihood of a similar occurrence happening again, e.g.:

Likely				*Rare*
1	*2*	*3*	*4*	*5*

Note. - 2. Please indicate in the table, what you consider could be the worst possible consequence if this occurrence did happen again, e.g.:

Catastrophic				*Minor damage*
A	*B*	*C*	*D*	*E*

Recommendation as to how this hazard may be dealt with:

_

_

_

_

_

APPENDIX – C. RISK MANAGEMENT PROCESS

Risk Management Process
APPENDIX-D. RISK PROBABILITY AND SEVERITY TABLE

Table 1: Risk Probability Table

Probability of occurrence		
Qualitative definition	**Meaning (example)**	**Value**
Frequent	Likely to occur many times (has occurred frequently)	**5**
Occasional	Likely to occur some times (has occurred infrequently)	**4**
Remote	Unlikely, but possible to occur (has occurred rarely)	**3**

Improbable	Very unlikely to occur (not known to have occurred)	**2**
Extremely improbabl	Almost inconceivable that the event will occur	**1**

Table 2: Risk Severity Table

Severity of occurrences		
Aviation definition	**Meaning**	**Value**
Catastrophic	• Equipment destroyed. • Multiple deaths	**A**
Hazardous	• A large reduction in safety margins, physical distress or a workload such that the operators cannot be relied upon to perform their tasks accurately or completely. • Serious injury or death to a number of people. • Major equipment damage.	**B**
Major	• A significant reduction in safety margins, a reduction in the ability of the operators to cope with adverse operating conditions as a result of increase in workload, or as a result of conditions impairing their efficiency. • Serious incident. • Injury to persons.	**C**
Minor	• Nuisance. • Operating limitations. • Use of alternate procedures. • Minor incident.	**D**
Negligible	• Little consequences	**E**

APPENDIX-E.   RISK ASSESSMENT MATRIX AND ACCEPTABILTY

Table 3: Risk Assessment Matrix (Risk Index)

Risk probability	Risk severity				
	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

Table 4: Risk Acceptability Table

Risk Index	Acceptability/Action Required
5A, 5B, 5C, 4A, 4B, 3A	STOP: Unacceptable under the existing circumstances. Do not permit any operation until sufficient control measures have been implemented
5D,5E, 4C, 3B, 3C, 2A, 2B	Management attention and approval of risk control/mitigation actions required.
4D, 4E, 3D, 2C, 1A, 1B	Acceptable after review of the operation
3E, 2D, 2E, 1C, 1D, 1E	Acceptable

APPENDIX-F.   HAZARD ASSESSMENT FORM

Hazard Assessment Form

[TO BE COMPLETED BY THE AERODROME SAFETY MANAGER]

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

Signature: _____ Date: _____

Name_____ ....

Assessment Requirement	Record details here		
Cause of Hazard (See Hazard checklist For suggested causes)	•		
Consequence of Hazard/Risk Description	•		
Current measures to reduce risks (Risk Treatments in place)			
	Consequence Level (Use Risk Severity Table)		**Likelihood** (Use Risk Probability Table)
Risk Index (Use Risk Assessment Matrix)		**Risk Tolerability** (Use Risk Acceptability Table)	
Further actions to reduce risks (Proposed risk mitigation measures)			
	Consequence Level (Use Risk Severity Table)		**Likelihood** (Use Risk Probability Table)
Risk Index (Use Risk Assessment Matrix)		**Risk Tolerability/Residual Risk** (Use Risk Acceptability Table)	

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

_____

_____
_____
_____

Resources Required: _____

_____

Responsibility for action: _____

_____

Referred to _____for further action.

Signature: _____Date: _____

Forwarded to the Aerodrome Safety Committee for review.

Signed: _____Date: _____

Appropriate Feedback given to staff.

Signed: _____Date: _____

APPENDIX-G HAZARD REPORT LOG

Hazard Report Log

Name of the Aerodrome Operator

(This Log contains a summary of data from Hazard Assessment Form, Appendix – F)

Risk by Hazard No. (see Hazard Checklist)	Possible Risk treatment Option (see Risk Assessment Matrix)	Preferred Option's	Risk Tolerability Rating (Residual Risk) after new treatment (Use Risk Acceptability Table)	Result of Cost benefit analysis	Person responsible for implementation of option	Time table for implementation	Short Term Corrective Action (Y or N)	How will risk and treatment option be monitored
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

1. The data to go under this heading is the Hazard number and Residual Risk Source for each Risk (data from Hazard Checklist).
2. The data to go under this heading is a description of the optional actions which might be taken to treat the identified risk. (etc. for all headings)

3. The data to go under this heading is the identity of the most preferable option to treat the risk identified.
4. The data to go under this heading is a re-assessment of the residual risk after the preferred risk treatment option has been introduced.
5. In many cases the preferred treatment option has been selected after a formal or informal cost benefit analysis. Record the results here.
6. Identify the responsible manager who would be in the best position to treat the risk identified.
7. Insert here a proposed completion data for the preferred risk option, and any relevant stage. This may be based on practical consideration or on the residual risk associated with a particular hazard.
8. Is it expected data the actions will be completed within 2 months of the occurrence? If so mark "Yes" in this box, otherwise "No".
9. Who and how will feedback be provided to the Aerodrome Safety manager about the results of action undertaken to treat risk?

APPENDIX-H.   TRAINING PLAN

Training Plan

Name of Aerodrome Operator _____

Name of Staff Member _____

Department (if Applicable) _____

Position _____

Training Courses	Year											
	January	February	March	April	May	June	July	August	September	October	November	December
(i) Accountable Manager in the areas of: - awareness of SMS roles and responsibilities, - safety policy, - SMS standards and - safety assurance;												
(ii) Line Managers/Directors in the areas of: - organisational safety standards and national regulations, - management commitment and responsibilities, and												

(iii) Other Managers and Supervisors in the areas of: - safety process, - management commitment and responsibilities, - hazard identification and risk management and												
(iii) Operational personnel in the areas of: - SMS fundamentals, - organisational safety policy, - organisational SMS overview, and - management commitment and responsibilities; - Hazard Identification/ Reporting; - Accident & Incident Reporting.												
(iv) SMS recurrent/ Refresher/ Advance Training: - Accident & Incident Reporting & Investigation; - Emergency Response;												
(vI) Other Trainings												
Manual Handling												
Aerodrome Emergency Plan												
Aerodrome Lighting												
Aerodrome Reporting												
Unauthorized Entry to Aerodrome												
Aerodrome Serviceability Inspections												
Aerodrome Technical Inspections												
Aerodrome Works Safety												
Aircraft Parking Control												
Airside Vehicle Control												
Bird and Animal Hazard Management												
Obstacle Control												
Disabled Aircraft Removal												
Handling of Hazardous Materials												
Protection of Radar and Navigational Aids												
Low Visibility Operations												

APPENDIX-I.   TRAINING RECORD

Training Record

Name of Aerodrome Operator_____

Title of Course_____

Location (if applicable)_____

Date of Course_____

S. No.	Name of attendees and designation	Signature
Name of Trainers *(Print):*		**Signature of Trainer**
1.		
2.		

APPENDIX-J.   ACCIDENT AND INCIDENT REPORT

Accident and Incident Report Form

To be completed by the Aerodrome Safety Manager or senior representative of the Airside Operator for all accidents and incidents that would likely seriously endanger people, aircraft, vehicles, or equipment.

Name of person that completed this report:

_ Organisation and Position:

Telephone number:

Date of Accident/Incident:

Time:

Location:

Date of Report:

Names of Witnesses

Witness 1
Name:

Address:

Telephone:

Witness 2
Name:

Address:

Telephone:

Witness 3
Name:

Address: Telephone

Details

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

Details of any injuries:

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

APPENDIX-K SAFETY PERFORMANCE INDICATORS AND TARGETS FOR AERODROME OPERATORS

Examples of Safety Performance Indicators and Targets for Aerodrome Operators

S/No.	Indicator	Safety Performance Target (incidents per 1000 movements) for CURRENT YEAR
1	**Incidents/Accidents Involving Aircraft**	**Reduction by 20% (in comparison to average of LAST YEAR).**
1.1	Passenger Handling Equipment	Reduction by 20%
1.2	Aircraft Loading Equipment	Reduction by 20%
1.3	Aircraft Servicing Equipment	Reduction by 20%
2	**Damage to/by moving aircraft**	**Not to exceed 0.018**
2.1	Another Aircraft	Not to exceed 0.001
2.2	Jet Blast	Not to exceed 0.001
2.3	A/C Marshaller/Follow Me	Not to exceed 0.001
2.4	Aircraft Manoeuvring	Not to exceed 0.003
2.5	Fixed Objects	Not to exceed 0.002
2.6	Parked Ground Equipment	Not to exceed 0.001
2.7	FOD	Not to exceed 0.003
2.8	Others	Not to exceed 0.006
3	**Loss of separation between moving *Aircraft* and ...**	
3.1	Another Aircraft	Not to exceed 0.001
3.2	Mobile Equipment/vehicle	Not to exceed 0.42
3.3	Fixed Object	Not to exceed 0.016
4	**Property Equipment by Jet Blast**	**Not to exceed 0.003**
5	**Equipment to Equipment Damage**	**Not to exceed 0.1**
6	**Equipment to Facility Damage**	**Not to exceed 0.1**
7	**Injuries to staff or passengers**	**Not to exceed 0.106**
7.1	Injuries to staff	Not to exceed 0.09
7.1.1	*Fatal*	0
7.1.2	*Severe*	Not to exceed 0.001
7.1.3	*Minor*	Not to exceed 0.09

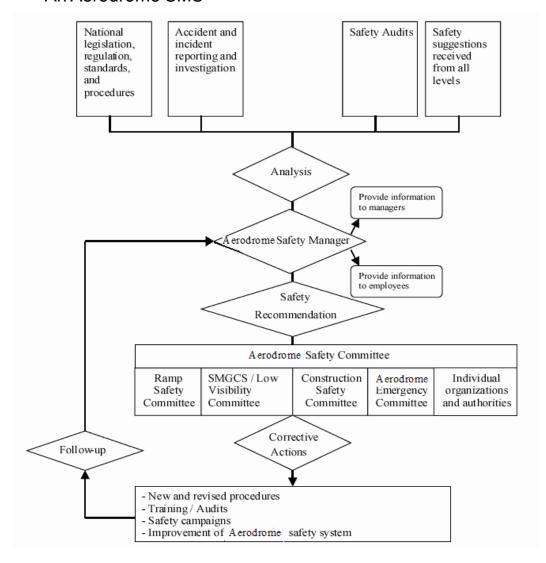|		
7.2	Injuries to passengers	Not to exceed 0.106
7.2.1	*Fatal*	0
7.2.2	*Severe*	Not to exceed 0.0005
8	**Runway Incursion**	**Not to exceed 0.023**
8.1	Category A	Not to exceed 0.0012
8.2	Category B	Not to exceed 0.007
8.3	Category C	Not to exceed 0.008
8.4	Category D	Not to exceed 0.008
9	**Spillages**	**Reduction by 20%**
9.1	Fuel Spillages	Reduction by 20%
9.2	Other Spillages needed clean up	Reduction by 20%

Notes:

1. **Runway Incursion Category A**: Separation decreases and participants take extreme action to narrowly avoid a collision, or the event results in a collision.

2. **Runway Incursion Category B**: Separation decreases but there is a significant potential for collision.

3. **Runway Incursion Category C**: Separation decreases and there is ample time and distance to avoid a potential collision.

4. **Runway Incursion Category D**: Little or no chance of a collision, but meets the definition of a runway incursion

APPENDIX-L FLOW CHART OF AN AERODROME SMS

An Aerodrome SMS