Civil Aviation Authority of Sri Lanka

SAFETY MANAGEMENT GUIDE FOR AIR TRAFFIC SERVICE PROVIDERS

2nd Edition – 2026

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SAFETY MANAGEMENT GUIDE FOR AIR TRAFFIC SERVICE PROVIDERS

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Foreword

The CAASL is the State's regulatory agency charged with the responsibility of ensuring the compliance of international safety standards published by ICAO in discharging Air Navigation Services to international and Domestic Air traffic flow that takes place through the Colombo Flight Information Region (FIR). Air Navigation Services that comprises Air Traffic Services; Communication, Navigation and Surveillance services; Meteorological services for air navigation; and Aeronautical Information Services are essential services that are to be provided ensuring safety of flights.

Proactive safety management and implementation of Safety Management Systems (SMS) by the Air Traffic Service Providers are considered vital to address the continuing traffic growth and the need to ensure improved safety levels. According to ICAO Annex 11 – Air Traffic Services, States are required, as part of their State Safety programme, Air Traffic Service providers implement a Safety Management System acceptable to the State.

The CAASL has developed this guidance material to complement the process of compliance to the above stated SARPs and to provide specific guidance to Air Traffic Service Provider to develop their own specific practices and procedures in the context. This will also provide additional guidance on implementing and maintaining the safety requirements in Air Traffic Services within Sri Lanka. The guidance in this document is also expected to aid the Air Navigation Services Inspectorate of CAASL to discharge effective safety oversight of the Safety Management System in the provision of Air Traffic Service in Sri Lanka.

As an organization which set standards to the industry personnel, the CAASL has always been taking a professional approach and being exemplary in the discharging of its regulatory obligations and services.

Accordingly, this office expects all those professionals in the industry who are involved in the implementation and maintenance of SMS in ATS would make an effective usage of this guidance Manual.

Capt. Daminda Rambukwella
Director General of Civil Aviation and Chief Executive Officer,
Civil Aviation Authority of Sri Lanka
12.01.2026

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Definitions & Abbreviations

When the following terms are used in the manual, they have the meanings indicated below.

Definitions

Acceptable level of safety performance (ALoSP). The level of safety performance agreed by State authorities to be achieved for the civil aviation system in a State, as defined in its State safety programme, expressed in terms of safety performance targets and safety performance indicators.

Accountable Manager. A single, identifiable person having responsibility for the effective and efficient performance of the service provider's SMS.

Change management. A formal process to manage changes within an organization in a systematic manner, so that changes which may impact identified hazards and risk mitigation strategies are accounted for, before the implementation of such changes.

Defences. Specific mitigating actions, preventive controls or recovery measures put in place to prevent the realization of a hazard or its escalation into an undesirable consequence.

Errors. An action or inaction by an operational person that leads to deviations from organizational, or the operational person's, intentions or expectations.

****Hazard.*** A condition or an object with the potential to cause or contribute to an aircraft incident or accident.

Risk mitigation. The process of incorporating defences, preventive controls or recovery measures to lower the severity and/or likelihood of a hazard's projected consequence.

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 data.*** A defined set of facts or set of safety values collected from various aviation-related sources, which is used to maintain or improve safety.

Note. — Such safety data is collected from proactive or reactive safety-related activities, including but not limited to:

a) accident or incident investigations

b) Safety reporting

c) continuing airworthiness reporting

d) operational performance monitoring

e) Inspections, audits, surveys; or

f) safety studies and reviews.

Safety information. Safety data processed, organized or analysed in a given context so as to make it useful for safety management purposes.

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

Safety objective. A brief, high-level statement of safety achievement or desired outcome to be accomplished by the State safety programme or service provider's safety management system.
Note. — Safety objectives are developed from the organization's top safety risks and should be taken into consideration during subsequent development of safety performance indicators and targets.

Safety oversight. A function performed by a State to ensure that individuals and organizations performing an aviation activity comply with safety-related national laws and regulations.

Safety performance. A State's or 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.

Safety performance target. The State or service provider's planned or intended target for a safety performance indicator over a given period that aligns with the safety objectives.

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

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

Surveillance. The State activities through which the State proactively verifies through inspections and audits that aviation Licence, certificate, authorization or approval holders continue to meet the established requirements and function at the level of competency and safety required by the State.

System. An organized, purposeful structure that consists of interrelated and interdependent elements and components, and related policies, procedures and practices created to carry out a specific activity or solve a problem.

Trigger. An established level or criteria value for a particular safety performance indicator that serves to initiate an action required, (e.g., an evaluation, adjustment or remedial action).

ABBREVIATIONS

ALoSP Acceptable level of safety performance

ATS Air traffic services

CAASL Civil Aviation Authority of Sri Lanka

DGCA Director General of Civil Aviation

ERP Emergency response plan

ICAO International Civil Aviation Organization

SARPs Standards and Recommended Practices

SMM Safety Management Manual

SMS Safety Management System(s)

SPI Safety performance indicator

SPT Safety performance target

SRM Safety risk management

SSP State Safety Programme

1 Chapter 1 – Introduction

1.1 Applicability

CAASL has developed this guidance material to complement the process of compliance to the Standards and Recommended Practices (SARPs) contained in ICAO Annex 19, Doc. 9859, CAASL Implementing Standards 070, 025 and other related rules and regulations. This specific guidance will serve as a reference guide for Air Navigation Service Provider (ANSP) to develop their own specific practices and procedures in the context and will also provide additional guidance on implementing and maintaining the safety requirements in Air Traffic Services within in Sri Lanka.

1.2 References

Civil Aviation Safety Management Regulations No.1 of 2018
Ensures the effective implementation of the State Safety Program through the compliance of the ATS Provider by establishing and maintaining a Safety Management System which is acceptable to DGCA and continuous monitoring of its effectiveness.

National Aviation Safety Plan (NASP) of Sri Lanka
The National Aviation Safety Plan has been developed by the Civil Aviation Authority of Sri Lanka (CAASL) in collaboration with the Ministry of Civil Aviation, Service Providers, National Operators and other stakeholders. NASP is in line with the Global Aviation Safety Plan 2023 – 2025 Edition and the Asia Pacific – Regional Aviation Safety Plan 2023 – 2025 to continually reduce fatalities and safety risks to aircraft operations.

CAASL Implementing Standards 070 – Framework for a Safety Management System (SMS)
Provides the framework for a Safety Management System (SMS) for the purpose of giving effect to the Civil Aviation Authority Safety Management Regulations no. 1 of 2018 and elaborates the requirements to be satisfied for the establishment and maintenance of Safety Management System in conformity with the International Standards and Recommended Practices contained in the ICAO Annex 19 to the Convention.

CAASL Implementing Standards 025 – Compliance to Annex 11
Chapter 2.29, requires the ATS Provider to have in place a Safety Management System (SMS), in accordance with CAASL Regulatory Requirements specified in IS 070 and any significant safety-related change to the ATS system, including the implementation of new processes and procedures, introductions of new equipment, facilities and systems etc. shall only be effected after a safety risk assessment that has demonstrated an acceptable level of safety has been met and users/ stakeholders have been consulted. When appropriate, the ATS provider shall ensure that adequate provision is made for post-implementation monitoring to verify that the defined level of safety continues to be met.

Civil Aviation Aeronautical Service Provider (Air Navigation and Aviation Security) Licensing Regulations
CAASL Implementing Standards 075 – Requirements to be Satisfied for Obtaining an Air Traffic Service Provider Competency Certificate

Under the Civil Aviation Aeronautical Service Provider (Air Navigation and Aviation Security) Licensing Regulations No. 01 of 2023, the Third Schedule, Section A — Terms and Conditions, Regulation (6) stipulates that a licensee, where required, shall establish and maintain an effective safety management system which is acceptable to the Director General in compliance with the applicable requirements.

The applicable requirements established by the Director General are set out in Implementing Standards 075 – Requirements to be Satisfied for Obtaining an Air Traffic Service Provider Competency Certificate, under Chapter 3, sub section 3.1.2 of the Organizational Requirements (section 3.1).

1.3 SMS Acceptance

The ATS Provider shall have in place a Safety Management System (SMS), accepted by the Director General.

In order to be acceptable, the ATS Provider shall apply to the Director General for the acceptance of the SMS with a printed copy of the Safety Management Manual (SMM).

Initial Acceptance of ATS SMS includes Safety Management Manual (SMM) acceptance and an on – site Audit conducted at main ATC Centers.

Acceptance of the SMS shall be valid for a period of one year.

Amendments to keep the SMS Manual updated and current shall be submitted to the CAA for acceptance.

An application for the renewal of the acceptance shall be forwarded to the Director General with new changes introduced to the SMS (if any) during the year, before the expiration of the validity period of acceptance.

The Director General may suspend or cancel the acceptance of a SMS if there are reasonable grounds to believe that the SMS is not operating in accordance with the requirements given in the applicable regulations.

ATS SMS is subjected to continuous Surveillance to verify the applicable requirements are met without compromising the safety of operations.

Initial Acceptance & continuous monitoring are further discussed in Chapter 2.

2 Chapter 2 – SMS Acceptance & Continuous Surveillance

2.1 Initial Acceptance of ATS SMS

2.1.1 Initial Acceptance of ATS SMS includes Safety Management Manual (SMM) acceptance and an on – site Audit to verify what is mentioned in the SMM are present and suitable. The ATS provider shall apply to the Director General of Civil Aviation for the acceptance of the Safety Management System with a printed copy of his Safety Management Manual. (Ref. Chapter 4.4.1 of Implementing Standards 070 – Framework for a Safety Management System)

2.1.2 The actions required for the acceptance of SMM are as follows.

2.1.3 For the acceptance, the ATS SMM should include a detailed description of the ATS Provider's policies, processes and procedures on following components.

(a) Safety policy and objectives
(b) Reference to any applicable regulatory SMS requirements
(c) System description
(d) Safety accountabilities and key safety personnel
(e) Voluntary and mandatory safety reporting system processes and procedures
(f) Hazard identification and safety risk assessment processes and procedures
(g) Safety investigation procedures
(h) Procedures for establishing and monitoring safety performance indicators
(i) SMS training processes and procedures and communication
(j) Safety communication processes and procedures
(k) Internal audit procedures
(l) Management of change procedures
(m) SMS documentation management procedures; and
(n) where applicable, coordination of emergency response planning

2.1.3 The checklist that will be used for the Safety Management Manual Acceptance is given in Appendix A.

2.1.4 A formal letter will be issued to the service provider's Accountable Manager to indicate that the SMS Manual has been reviewed and accepted by the CAA. A copy of this letter shall be incorporated into the master copy of the controlled document.

2.1.5 Upon acceptance of the ATS SMM, an on – site audit will be conducted to check whether the elements that have been described in the Manual are Existing & Suitable (suitable based on the size, nature, complexity of the organization and the inherent risk in the activity). In this phase, a comprehensive assessment shall be carried out by a desktop review of the SMS Documentation.

2.1.6 Acceptance of the SMS shall be valid for a period of one year.

2.1.7 Amendments to keep the SMS Manual updated and current shall be submitted to the CAA for acceptance.

2.1.8 An application for the renewal of the acceptance shall be forwarded to the Director General of Civil Aviation with new changes introduced to the SMS (if any) during the year, before the expiration of the validity period of acceptance.

2.1.9 Fees for the acceptance, renewal, and amendment of the SMM shall be levied in accordance with the CAASL Fees and Charges Regulations.

2.2 Validation Process

2.2.1 In the initial acceptance of the ATS Provider's SMS, the service provider may not have enough data to develop meaningful Safety Performance Indicators (SPIs) and Safety Performance Target (SPTs). In this case, the CAA might consider accepting them later in the implementation phase.

2.2.2 Once the ATS provider has collected enough safety data, he may proceed to select and define his SPIs and set its SPTs. Usually, these SPIs and SPTs are subsequently added into the SMS Manual or in other separate documents. Accordingly, the SPIs/ SPTs and accepted SMS of the ATS Provider will be evaluated at regular intervals for the evidence of operating and effectiveness as mentioned below.

2.2.3 A checklist is used to assess the compliance and effectiveness of the SMS against the generic SMS requirements based on the latest Editions of ICAO Annex 19, ICAO Doc.9859, civil Aviation Safety Management Regulations No. 01 of 2018 and CAASL Implementing Standards 070.

2.2.4 The checklist is set out using the 12 elements of the ICAO SMS Framework. Each item shall be reviewed to determine whether it is **Present, Suitable, Operating or Effective.**

2.2.5 An item to be **present** the evidence is likely to be documented only, whereas for assessing whether it is **operating**, it shall have records/ evidence that an output is being produced.

2.2.6 The organization may eventually have **Effective** (achieving the desired outcome and has a positive safety impact) processes, which is the evidence of an effective SMS.

2.2.7 The checklist for Initial Acceptance & Renewal is given in Appendix B.

2.3 Renewal of SMS acceptance

2.3.1 Following initial acceptance, the ATS Provider shall integrate and apply the Safety Management System as an integral part of its operational activities. CAASL will ensure that within the first oversight planning cycle (within the three years after granting the approval) the organization's SMS processes are **Present,** Suitable and **operating** (operational and an output is being produced).

2.3.2 The organization may eventually have **Effective** (achieving the desired outcome and has a positive safety impact) processes, which is the evidence of an effective SMS. In order to check that SMS processes are indeed **operating,** and **Effective** the SMS will be re-evaluated on a regular basis to assess how well it is performing. The review will evaluate all items outlined in the assessment checklist through a combination of organizational visits, meetings, and desktop reviews.

2.3.3 As the organization's SMS processes mature and it moves to **Operating** and **Effective** stages. Changes to the organization's functional systems may also require a safety assessment and approval from CAASL.

2.3.4 During the renewal process of SMS acceptance, all processes mentioned in the checklist shall be verified as **Operating** and the processes of hazard identification, risk assessment and mitigation, management of change and compliance monitoring are **Effective.**

2.4 Continuous oversight

2.4.1 ATS SMS is subjected to a continuous oversight process to ensure that the Acceptable Level of Safety Performances (ALoSP) defined by the State have been achieved and maintained by the ATS Provider.

2.4.2 SMS Inspection Checklist is given in Appendix C.

2.4.3 The Inspection Report, completed Checklist and Corrective Action Request Form(s) will be received within seven working days of the Inspection.

2.4.4 A template of the Inspection Report Form and Corrective Action Request Form are given in Appendix D and E respectively.

2.4.5 If a checklist item is found to be unsatisfactory or not operating, a finding shall be raised.

2.4.6 Where a checklist item is found to be operating ineffectively, an observation will be issued with recommendations for improvements.

2.5 Inspection follow – up process

2.5.1 The ATS Provider is required to develop corrective action plans (CAPs) for each finding.

(Note: Recommendations do not require submission of CAPs)

2.5.2 A finding will be raised in situations when the ATSP

- Is non-compliant with a Standard specified in Primary or Secondary Regulations
- Is non-compliant with practices/ procedures specified in approved Manuals
- Is non-compliant with ICAO recommendations that have been informed by the CAASL in writing
- Is non-compliant with any other directives issued by the DGCA
- Fails to implement the CAPs submitted for previous Findings
- Absence of evidence or records of mandatory implementation.

2.5.3 The ATS Provider shall submit the Corrective Action Plans (CAPs) to CAASL for evaluation within 14 days of the receipt of Inspection Report.

2.5.4 For a CAP to be acceptable, it must have a defined set of actions, which fully addresses the finding, an implementation timeline that is reasonable & commensurate to risk, a definite action office(s) responsible for each action item for its implementation.

2.5.5 CAPs that do not meet the above requirement shall be rejected & the ATS Provider will be informed. Upon rejection, the ATS Provider is required to provide a fresh CAP.

2.5.6 Failure to submit an acceptable CAP by the ATS Provider may result in the deficiency being referred for enforcement action.

2.5.7 When the CAP is accepted the ATS Provider will be informed as such.

2.5.8 Implementation of the CAPs will be monitored continuously through the regular SMS Inspections and additional oversight visits depending on the safety criticality of the finding.

2.5.9 Guidance for developing CAPs is given in Appendix F.

2.5.10 The ATS Provider shall facilitate the SMS audits and inspection by the Director General provide all evidence available.

3 Chapter 3 – Compliance with SMS Framework

SMS Framework

The ICAO SMS framework is made up of the following four components and twelve elements:

3.1 Safety Policy and Objectives

Safety Policy is a statement of the organisation's fundamental approach to achieve acceptable or tolerable safety.

ATS Safety Policy should be developed and endorsed by the senior management. It should be signed by the Accountable Manager. Key safety personnel, and operational Air Traffic Controllers should be consulted in the development of the safety policy and safety objectives to promote a sense of shared responsibility. The five elements of Safety Policy and objectives are described below.

3.1.1 Management Commitment

a. The safety policy should be visibly endorsed by the Accountable Manager.

b. The safety policy should include a commitment to:
   - Continuously improve the level of safety performance
   - Promote and maintain a positive safety culture within the organization
   - Comply with all applicable regulatory requirements
   - Provide the necessary resources to deliver a safe product or service
   - Ensure safety is a primary responsibility of all managers; and
   - Ensure it is understood, implemented and maintained at all levels.

c. The safety Policy and objectives should be communicated throughout the organization.

d. The safety policy should make reference to the safety reporting system to encourage safety reporting. It should clearly indicate which types of behaviors are unacceptable related to the activities of ATS provider and include the circumstances under which disciplinary action would not apply.
(Ref. Appendix G for Safety Policy Templates)

e. ATS provider should establish safety objectives defines what the ATS Division intends to achieve in terms of safety.

f. Safety objectives should be short, high-level statements reflecting the safety priorities and the most significant safety risks identified by the ANS Division.

(Significant High Risk Categories identified by the ANS Division are available in Appendix H)

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

3.1.2 Safety accountability and responsibilities

a. The ATS provider should identify an Accountable Manager, having the authority to make decisions on behalf of the ATS Division, the control of resources (both financial and human), and taking the responsibility for ensuring appropriate actions are taken to address safety issues and safety risks.

b. The safety responsibilities, accountabilities and authorities of all members of the ATS Division and their role in relation to the SMS should be documented and communicated throughout the organization.

3.1.3 Appointment of key safety personnel

a. ATS provider should appoint a competent person as the Safety Manager, essential for an effective implementation and functioning of SMS.

b. The Safety Manager should act as the focal point and be responsible for the development, administration, maintenance and promotion of an effective SMS. The Safety Manager should report directly to the Accountable Manager (Responsibilities and competencies of a Safety Manager is available in Appendix I).

c. A Safety Team should be established to assist the Safety Manager for ensuring the prompt collection and analysis of safety data and appropriate distribution of safety related information within the organization.

d. A Safety Reviewing Committee may also be established to monitor the effectiveness of ATS SMS and timely response in implementing necessary safety risk control actions.

e. TOR of the Safety Reviewing Committee and frequency of conducting Safety Committee meetings should be defined. Sample ToR can be found in Appendix R.

f. Safety Manager should conduct safety review meetings periodically with the Safety Committee and communicate all information to the Accountable Manager, as necessary to allow decision-making based on safety data.

g. Safety authorities, responsibilities, and accountabilities should be periodically reviewed to determine whether they are suitable and effective.

3.1.3.1 Duties and responsibilities of a Safety Reviewing Committee shall be to:

- Review the organization's Hazard identification and Risk Management process.
- Evaluate the adequacy of resources, staff qualifications, experience, and training programs related to safety and identify any gaps or deficiencies.
- Bring the organizational gaps to the attention of Senior Management and obtain their commitment to address and resolve them.
- Review management's response to audit findings and monitor implementation of corrective actions.
- Review safety data and performance indicators to identify trends in operational safety.
- Monitor recurring hazards or risk patterns and assess their impact on the Safety of operations and ensure the senior management takes proactive actions to mitigate identified risks.
- Provide guidance or recommendations to Senior Management on addressing safety issues revealed by trend analysis.
- Consider major findings from internal or external safety investigations in the risk assessment process.
- Monitor implementation of corrective and preventive actions arising from investigations.
- Ensure lessons learned from investigations are communicated appropriately and used to improve safety performance.
- Evaluate whether reported safety concerns are addressed promptly and effectively.
- Track the status of safety recommendations and ensure follow-up actions are completed.

3.1.4 Coordination of Emergency Response Planning (ERP)

3.1.4.1 The core difference between the Aerodrome Emergency Plan, ATM Contingency Plan and the Emergency Response Plan lies in their scope, purpose, and the types of events they address.

3.1.4.2 The Aerodrome Emergency Plan (AEP) is site-specific and reactive, focusing on the coordinated response to emergencies occurring on or in the vicinity of an aerodrome.

3.1.4.3 ATM Contingency Plan is system-wide and proactive, providing predefined procedures to ensure the safe continuity of air traffic services and its supporting services in the event of actual or potential disruptions to ATS systems or facilities.

3.1.4.4 The Emergency Response Plan (ERP) recommended in ICAO Doc. 9859 establishes the overarching organizational framework for managing major emergencies, integrating both aerodrome-related events and ATS disruptions within the service provider's Safety Management System (SMS).

a. An ERP should be developed to ensure safe continuation of operations and smooth transition to normal operations as soon as possible.

b. ERP should include checklists and procedures relevant to specific emergency/ contingency situations.

c. For emergencies occurring at the aerodrome or in its surroundings, the plan shall be aligned with the Aerodrome Emergency Plan and be coordinated with the respective stakeholders.

d. ERP should have quick-reference contact details of personnel responsible during an emergency.

e. It should be regularly tested through exercises, periodically reviewed to see the operational effectiveness and updated.

f. Activation of the Emergency Response Plan (ERP) is a management responsibility rather than an operational ATC function. The decision to activate the ERP is taken by designated ATS management personnel

3.1.5 SMS documentation

a. ATS Provider's SMS manual should include a detailed description of his policies, processes and procedures including:

- Safety policy and objectives
- Reference to any applicable regulatory SMS requirements
- System description
- Safety accountabilities and key safety personnel
- Voluntary and mandatory safety reporting system processes and procedures
- Hazard identification and safety risk assessment processes and procedures
- Safety investigation procedures
- Procedures for establishing and monitoring safety performance indicators
- SMS training processes and procedures and communication
- Safety communication processes and procedures
- Internal audit procedures
- Management of change procedures

- SMS documentation management procedures; and
- where applicable, coordination of emergency response planning

b. SMS documentation should also include the compilation and maintenance of operational records (outputs of SMS processes & procedures such as SRM and safety assurance activities) substantiating the existence and ongoing operation of the SMS.

c. SMS operational records should be stored for a defined retention periods (should define in SMM).

d. SMS operational records should include:

- Hazards Log & associated Consequence/ Risk Register, safety reports
- SPIs/ SPTs and related charts
- Record of completed safety risk assessments
- Reports of Safety review
- SMS internal/ external audit records
- Safety training records
- Safety committee meeting minutes

3.2 Safety Risk Management

ATS Provider should ensure managing of their safety risks through hazard identification, safety risk assessment and safety risk mitigation.

3.2.1 Hazard identification

a. Hazard is anything that could cause harm, damage or injury, or have negative consequence, such as bad weather, FOD, animal/bird presence, high workload/fatigue, problematic use of alcohol/ drugs, lack of training, lack of standard procedures etc.

b. ATS Provider should develop and maintain a formal process to identify hazards that could impact the safety in all areas of operation and activities including equipment, facilities and systems. This should be based on a combination of reactive and proactive methods. Some useful methods for identifying hazards are;

- Brainstorming sessions (small group discussions to generate ideas);
- Formal safety reviews (review of standards/ procedures);
- Safety Assessments (internal or externally done by other service providers/ operators)
- Safety reporting systems
- Aircraft Accident and incident Investigation Reports
- Safety Audits
- Staff surveys or questionnaires
- Literature search etc.

c. Sources of hazard

Hazards introduced by failures of the ATM/ANS systems may include the following factors

- design factors
- operating practices (application of procedures under actual operating conditions and design operating conditions);
- communication (terminology, order, timing, language including human–human, human – machine and machine – machine communications);
- installation issues
- equipment and infrastructure (failures, outages, error tolerances, nuisance alerts, defect defense systems and delays)

Hazards introduced by the operations of ATM/ANS functional system may include the following factors

- wrong, insufficient or delayed information and inadequate services delivered by third parties;
- Personnel factors (working conditions, company policies, lack of training etc.)
- Organizational factors (safety goals, operating pressure, allocation of resources, recruitments, safety culture etc.)
- Work environment (ambient noise, temperature, lighting levels, glare, annoyance, ergonomics etc.);
- external threats such as exposure to electromagnetic interference and sources of distraction

Hazards introduced with the delivery of ATM/ANS services may include the following factors

- errors, failures, non-compliance and misunderstandings
- traffic complexity (traffic growth, fleet mix and different types of traffic)
- wrong, insufficient or delayed information delivered by third parties
- inadequate service provisioning by third parties
- Human performance (restrictions due to fatigue/ stress, medical conditions, and physical limitations etc.)
- External physical factors (terrain, weather, animal presence & behaviour etc.)

d. The ATSP should have the processes in place to ensure identified hazards are actioned in a timely manner and the results/ recommendations are shared with the staffs.

e. Identified Hazards and their consequences should be documented (in Hazard Logs and Risk registers). A template of a Hazard Log is given in Appendix J.

f. ATS Provider should develop and maintain a process that ensures the analysis, assessment and control of the safety risks associated with identified hazards (the process may include predictive methods of safety data analysis)

g. ATS Provider should establish Voluntary & Mandatory Reporting Systems to encourage reporting of potential safety issues such as hazards, near misses or errors.

h. ATS Providers safety Reporting policy should clearly indicate that reported information will be used solely to support the enhancement of safety and not to take enforcement actions.

i. A responsible person (Safety Manager) should be appointed for implementing Safety reporting system, handling of safety reports and submitting reportable events that require CAA notification as required by the applicable ISs)

j. Voluntary safety reporting systems should be confidential, and the role of custodian should be kept restricted to the safety manager and personnel involved in the safety investigation.

k. Safety reporting systems should be readily accessible to all personnel (a paper-based, or web-based etc.)

l. Ensure anybody who submits a safety report sis received with a feedback on what decisions or actions have been taken.

m. Incidents that are mandatory to report should be defined (A list of ANS related reportable incidents are given in Appendix O).

n. Ensure Reports on significant incidents are forwarded to CAASL as required by the applicable Implementing Standards.

o. Procedure for conducting safety investigations should be defined clearly. This procedures should identify the distinction between accident and incident investigations under Annex 13 (for which the State is responsible) and service provider safety investigations.

p. The decision-making approach what to investigate and the scope of the investigation should be defined.

q. A competent person (or a team) should be appointed as Investigator(s) with the support from expertise of subject areas and safety.

r. The process of Safety Investigation should be defined. (This includes root cause analysis, immediate interviews with people involved, establishing timelines of key events, including the actions of the people involved, review of any policies and procedures related to the activities, review of any decisions made related to the event, identifying any risk controls that were in place that should have prevented the event occurring, reviewing safety data for any previous or similar events, conclusion - clearly defined findings and recommendations that eliminate or mitigate safety deficiencies)

3.2.2.1 Human performance related Hazard Identification

Human factors–related hazard identification is the process of recognizing conditions or practices that may adversely affect human performance and, in turn, the safe provision of Air Traffic Services. In the ATC environment, human factors hazards arise from the interaction between controllers, their tasks, the working environment, and organizational factors. Typical human factors–related hazards include fatigue, excessive or sustained workload, stress, reduced situational awareness, communication breakdowns, inadequate staffing or experience levels, poor ergonomic design of workstations, procedural complexity, and organizational or cultural influences

a. Human Factors–Related Fatigue Identification

- Human factors–related fatigue refers to a physiological and cognitive state of reduced alertness and performance resulting from insufficient sleep, prolonged wakefulness, circadian rhythm disruption, or excessive mental workload. In the ATC environment, fatigue directly affects key human performance capabilities such as attention, situational awareness, decision-making, reaction time, and communication, all of which are critical to the safe provision of Air Traffic Services.

- Human factors–related hazards in ATC arise from the interaction between human capabilities and operational, organizational, and environmental conditions. Typical human factors hazards include fatigue, high or sustained workload, stress, time pressure, inadequate staffing, shift work and night operations, poor ergonomic design, distraction, and reduced vigilance. If not adequately managed, these hazards can lead to human error, degraded performance, and an increased risk of incidents or accidents.

- Under the prescriptive approach, fatigue is identified as a hazard through compliance with duty time limitations, rest requirements, and shift scheduling rules established by the State. These limitations are based on scientific principles related

to sleep and human performance and are designed to prevent excessive fatigue by controlling factors such as maximum duty hours, minimum rest periods, night duty limits, and cumulative duty time. Exceedances, roster deviations, frequent night shifts, extended duties, or reduced rest periods are recognized indicators that fatigue may be present and are therefore treated as identifiable safety hazards within the SMS.

- Fatigue related hazards should be identified, the risks should be assessed, and safety assurance processes should be established through the existing duty rosters by monitoring duty rosters, analyzing occurrence and safety reports for fatigue-related indicators, encouraging non-punitive fatigue reporting, and implementing mitigations such as roster adjustments, additional rest, staffing reviews. Safety performance monitoring and internal audits are used to verify the effectiveness of these controls, while safety promotion activities, including training and awareness, ensure that personnel understand fatigue risks and their role in managing them. In this way, fatigue is systematically controlled as a human factors hazard within the ATS provider's SMS.

- Examples of Fatigue related SPIs are given in later chapters of this Manual.

3.2.2 Safety risk assessment and mitigation

a. ATS provider should develop a safety risk assessment model and procedures to determine what safety risks are acceptable or unacceptable and to prioritize actions.

b. After safety risks have been assessed, appropriate safety risk controls should be implemented.

c. Once the safety risk control has been implemented, the safety performance should be regularly monitored to assure the effectiveness of the safety risk control.

d. ATS Provider should document the SRM outputs (maintaining of the Hazard Log, associated consequences, Risk Index Analysis, mitigation actions taken, revised Risk Index etc.). Guidance on Hazard Identification & safety risk analysis is available on Appendix K.

e. For each identified hazard, the process from identification (when it is open) to resolution (until it is closed/ no more exist) should be clearly visible in the records.

3.3 Safety Assurance

Safety assurance activities are at core of SMS. SMS should include systematic and ongoing monitoring and recording of the safety performance, as well as evaluating the safety management processes and practices to take actions against any identified hazards having a potential safety impact.

Safety assurance is comprised of 3 elements including:

a) Safety performance monitoring and measurement,
b) The management of change, and
c) Continuous improvement of the SMS.

ATS Provider should develop and maintain processes to verify that the SMS is operating according to expectations and requirements.

3.3.1 Safety performance monitoring and measurement

a. Internal safety audits should be conducted to verify the effectiveness of the SMS.

b. Description of the Internal Audit program (in terms of criteria, scope, frequency, and methods, what processes are used to select the auditors, requirement that individuals shall not audit their own work, procedures for assignment of responsibilities, planning and conduct of audits, reporting results and maintaining records etc.) should be defined.

c. An Audit checklist for conducting Internal Audits should be developed.

d. Safety Performance Indicators (SPIs) (as a combination of both Lagging/ outcome-related and Leading/ activity-related) should be defined (A Checklist for evaluating whether the indicators are suitable and relevant is given in Appendix P).

e. They should link with the safety objectives already established.

f. Each SPI should include:
   - A description of what the SPI measures;
   - The purpose of the SPI, what it is intended to manage;
   - The units of measurement and how it is calculated (ex. Number of events per 10, 000 aircraft movements etc.);
   - who is responsible for collecting, validating, monitoring, reporting and acting upon;
   - how data should be collected;
   - the frequency of reporting, collecting, monitoring and analysis

g. Safety Performance Targets (SPTs), should be established and they should be realistic, context specific and achievable.

h. Safety Alerts or Trigger levels may be defined by means of the average values of the preceding historical data and standard deviation (SD) value for a given safety indicator.

i. An Alert is indicated if ANY of the conditions below are met for the current monitoring period:
   - Any single point is above [Average + 3 SD] line
   - 2 (or more) consecutive points are above [Average + 2 SD] line
   - 3 (or more) consecutive points are above Average + 1 SD] line

j. Alert level and Target settings can be recalculated at the end of each monitoring period (ex. yearly)

k. The safety performance of the Air Traffic Services may influence the CAASL decisions on determining the ALoSP for each year. Therefore, it is essential that the ATSP submitting the safety data quarterly to the CAASL.

l. A Safety performance report of the ATS SMS should be submitted annually, notifying the status quo of achieving the Safety Performance Targets declared and agreed upon during their period of validity. The report should include the following information:
   - The set of SPIs/ SPYs and its target setting;
   - Safety data collection on a quarterly basis;
   - Observations on negative trends and exceeding trigger levels;
   - Actions taken for negative trends and exceeding trigger levels

m. The formal Safety Review Process may include two distinct functions as follows;
   - Safety Reviews conducted by the ATS Safety Team who supports the organizations support the risk assessment process.

   - Safety Reviews conducted by the Safety Review Board or the Safety Committee chaired by the accountable executive established to ensure that the safety objectives are achieved in a timely manner. Consideration may be given to allocation of resources, commitment for new initiatives and the establishment of a clear safety policy are issues that may also be resolved

Human Performance related SPIs

Human Performance Related SPIs may Include the followings

(a) Duty Roster related Fatigue exposure Ratio – operational staff may calculate their own,

(i) Percentage of *Duty Period per month* as allocated in the Roster,

(ii) Percentage of *Operational Duty Period worked per month* as per the duty allocation sheets,

(iii) Percentage of *Exceeded maximum Operational Duty periods without a break,*

(iv) Percentage of *Reduced Rest Breaks between duties,*

(v) Percentage of *OT hours worked per month*, and compare against the respective recommended prescriptive limitations

(b) Fatigue Reporting Responses

ATS Safety Team may introduce Fatigue Reporting Forms, Fatigue Rating Scales etc. *to* monitor ATC fatigue during work periods, publish them in the ATS Safety Management Manual and promote responding.

Ex. for a Fatigue Rating Scale

1 = fully alert, wide awake
2 = very lively, responsive, but not at peak
3 = okay, somewhat fresh
4 = a little tired, less than fresh
5 = moderately tired, let down
6 = extremely tired, very difficult to concentrate
7 = completely exhausted, unable to function effectively

This type of scales may help to identify potential work positions, time periods, traffic patterns which need more attention.

Hence, *the number of voluntary fatigue reports per month* may be use as a SPI.

(c) **Excessive controller workload**, is a leading indicator and a potential precursor to safety events. You may use *Percentage of Duty hours exceeding the ATC Sector Capacity* as one of the SPIs related to this and introduce mechanism to gather data from individuals (ex. Forms)

(d) The following **competency-based SPIs** may also be used.

(i) Percentage of staff trained on Fatigue Management

(ii) Percentage of staff trained on Stress Management

(iii) Percentage of staff trained on Team Resource Management (TRM)

3.3.2 The management of change

a. The ATS provider should define the trigger for the formal change process. Changes that are likely to trigger formal change management include:

- Introduction of new technology or equipment
- Changes in the operating environment
- Changes in key personnel
- Significant changes in staffing levels

- Changes in safety regulatory requirements
- Significant restructuring of the organization; and
- Physical changes (new facility or base, aerodrome layout changes etc.).

b. ATS provider should define activities need to be included in the change management process.

c. Those activities should include:

- Understand and define the change (a description of the change and why it is being implemented.

- Understand and define who and what it will affect (this may be individuals within the organization, other departments or external people or organizations). Equipment, systems and processes may also be impacted. This includes:
  Description of the current system
  Determination of the proposed system requirements

- Identify hazards related to the change and carry out a safety risk assessment (identifying of any hazards directly related to the change, impact on existing hazards and safety risk controls that may be affected by the change should also be reviewed)
  This process includes evaluation of the risks and satisfaction of safety criteria (a template for Safety Risk Assessment is given in Appendix L)

- Develop an action plan (should define what is to be done, by whom and by when)
  (A Template for Action Plan is given in Appendix M).

- Sign off on the change (to confirm that the change is safe to implement. The individual with overall responsibility and authority for implementing the change should sign the change plan).

- Post Implementation Review (to determine whether the proposed mitigation actions are functioning effectively, if not any further actions required). Should be reviewed after one month from the implementation of change. The output should be communicated to CAASL in the given template (Ref. Appendix N).

3.3.3 Continuous improvement of the SMS

a. ATS Provider should monitor and assess its SMS processes via the monitoring of the safety performance and internal audit processes to maintain or continuously improve the overall effectiveness of the SMS.

b. Other methods to determine the effectiveness of the SMS that the ATS Provider should aim to implement may include;
   - Assessments on safety culture and SMS effectiveness;
   - Monitoring the recurrence of safety events including accidents and incidents/errors and non –compliance situations;
   - Safety surveys
   - Management reviews to examine the trend forecast of SPIs and whether the safety objectives are being achieved;
   - Addressing lessons learnt

3.4 Safety Promotion

ATS Provider should establish and implement processes and procedures that facilitate effective communication throughout the organization to encourage a positive safety culture.

3.4.1 Training and education

a. ATS provider should develop and maintain a safety training programme appropriate to each individual's involvement in the SMS, to ensure that all personnel are trained and competent to perform their SMS duties.

b. ATS Provider's training programme should include initial and recurrent training requirements to maintain competencies.

c. Initial safety training should consider, as a minimum, the following:
   - Organizational safety policies and safety objectives;
   - Organizational roles and responsibilities related to safety;
   - Basic SRM principles;
   - Safety reporting systems;
   - The organization's SMS processes and procedures; and
   - Human factors.

d. Recurrent safety training should focus on changes to the SMS policies, processes and procedures. It should also highlight any specific safety issues relevant to the Air Traffic Services and lessons learned.

e. There should be specific safety training for the Senior Management that includes the following topics:
   - Accountabilities and responsibilities;
   - Importance of compliance with International/ national & organizational safety requirements;

- Management commitment;
- Allocation of resources;
- Promotion of the safety policy and the SMS;
- Promotion of a positive safety culture;
- Effective interdepartmental safety communication;
- Safety objective, SPTs and alert levels; and
- Disciplinary policy

A sample Training program for an ATS Safety officer is available in Appendix S

3.4.2 Safety communication

a. ATS Provider should communicate the ATS Safety Policy, Safety objectives and procedures (as explained in their SMM) to all personnel.

b. ATS Provider should identify the most appropriate communication means that enables each individual, based on their individual role in the organization is received the safety related information (ex. safety newsletters, notices, bulletins, briefings or training sessions etc.)

Appendix A – Checklist for Safety Management Manual Acceptance

Safety Management System of Air Traffic Service Provider Checklist for Safety Management Manual Acceptance			
Use S for Satisfactory, I for Improvement needed, U for Unsatisfactory and N/A for Not Applicable as appropriate			
1 Safety Policy & Objectives			
Ref.	**Requirement**	**Observation**	**SMM Reference/comments**
Does the ATS Provider's Safety Policy,			
1.1	Reflect organizational commitment regarding safety, including the promotion of a positive safety culture?		
1.2	Include a clear statement about the provision of the necessary resources for the implementation of the safety policy?		
1.3	Include commitment to the management of safety risks?		
1.4	Include a commitment to comply with applicable regulatory requirements?		
1.5	Include a commitment to encourage employees to report safety issues without reprisal?		
1.6	Clearly indicate which types of behaviors are unacceptable related to the ATS and include the circumstances under which disciplinary action would not apply?		
1.7	Provide management guidance for setting safety objectives?		
1.8	Has the safety policy been signed by the accountable Manager of the organization?		
1.9	Has the policy been communicated, with visible endorsement, throughout the organization?		
1.10	Does it include the requirement for reviewing periodically to ensure it remains relevant and appropriate to the ATS service provider?		
Safety objectives of the ATS Provider:			
1.11	Are the Safety objectives of the ATS Provider, high-level statements which reflect the organization's safety priorities?		
1.12	Do they address its most significant safety risks?		
1.13	Does it define what the ATS Division intends to achieve in terms of safety?		

1.14	Does it form the basis for safety performance monitoring and measurement (SPIs/ SPTs should link with the Objectives)?		
1.15	Does it include the requirement for reviewing periodically to ensure they remain current?		
2 Reference to any applicable regulatory SMS requirements			
Ref.	**Requirement**	**Observation**	**SMM Reference/comments**
2.1	Does it give reference to the applicable Regulations specified in Annex 19, ICAO Doc. 9859 Safety management Manual, CAASL Implementing Standards 70?		
3 System Description			
Ref.	**Requirement**	**Observation**	**SMM Reference/comments**
3.1	Has a System Description been included in the Manual?		
4 Safety accountabilities and key safety personnel			
Ref.	**Requirement**	**Observation**	**SMM Reference/comments**
4.1	Has the ATS provider identified an Accountable Manager who, irrespective of other functions, is accountable on behalf of the organization for the implementation and maintenance of an effective SMS?		
4.2	Does the Manual clearly define lines of safety accountability throughout the organization, including a direct accountability for safety on the part of senior management?		
4.3	Has it documented the responsibilities of all members of management, irrespective of other functions, as well as of employees, with respect to the safety performance of the organization?		
4.4	Does it define the levels of management with authority to make decisions regarding safety risk tolerability?		
4.5	Has the ATS provider identified the role of a Safety Manager who is responsible for the implementation and maintenance of the SMS?		
4.6	Does it define under the responsibilities of Safety Manager; -the responsibility for reviewing SMS documentation? -organizing Safety committee meetings & internal audits? -implementation of Safety Reporting system? -ensuring the prompt collection and analysis of safety data and the distribution of related safety information on safety risks, mitigation & control actions within the organization?		

4.7	Does the Manual define the lines of safety accountability throughout the organization and their preferred communication methods in an organizational chart?		
4.8	Does the Manual include the requirement of appointing a Safety committee & establishment of TOR?		

5 Voluntary and Mandatory safety reporting system processes and procedures			
Ref.	**Requirement**	**Observation**	**SMM Reference/comments**
5.1	Does the Manual describe the establishment of Voluntary & Mandatory Reporting Systems?		
5.2	Has a responsible person (Safety Manager) been appointed for implementing Safety reporting system, handling the safety reports and submitting reportable events that require CAA notification as required by the applicable ISs)?		
5.3	Does it clearly state that reported information will be used solely to support the enhancement of Safety, providing appropriate protections to encourage people to report what they see or experience?		
5.4	Does the Manual define what incidents are required to be reported as mandatory?		
5.5	Does the Manual ensure safety reporting systems is readily accessible to all personnel (either paper-based or web-based)?		
5.6	Does it ensure the Voluntary safety reporting system is confidential and the role of custodian is restricted to Safety Manager & personnel responsible for Safety Investigations?		
5.7	Does it ensure anybody who submits a safety report receives feedback on what decisions or actions have been taken?		
5.8	Does the Manual ensure Reports on significant incidents are forwarded to CAASL as required by the applicable Implementing Standards?		

6 Hazard identification and safety risk assessment processes and procedures.			
Ref.	**Requirement**	**Observation**	**SMM Reference/comments**
6.1	Does the ATS provider has processes to identify hazards associated with the services?		
6.2	Is it based on a combination of reactive and proactive methods?		
6.3	Has it documented the identified hazards and their potential consequences?		

6.4	Has the ATS provider developed processes to ensure analysis, assessment and control of the safety risks associated with identified hazards (the process may include predictive methods of safety data analysis)?		
6.5	Has a safety risk assessment model and procedures been developed to determine what safety risks are acceptable or unacceptable and to prioritize actions?		
6.6	Does the Manual include the process of documenting SRM outputs (maintaining of the Hazard Log, associated consequences, Risk Index Analysis, mitigation actions taken, revised Risk Index)?		

7 Safety Investigation procedures			
Ref.	**Requirement**	**Observation**	**SMM Reference/comments**
7.1	Does the Manual contain a clearly defined procedure for conducting safety investigations as a part of their SMS to support hazard identification & risk assessment processes?		
7.2	Does it define the distinction between accident and incident investigations under Annex 13 (for which the State is responsible) and ATS provider's safety investigations?		
7.3	Does the Manual define the decision-making approach of what to investigate and the scope of the investigation?		
7.4	Has a single person or a team as Investigator(s) with the support from expertise of subject areas and safety, been appointed?		
7.5	Does the defined process of Safety Investigation include the following key points as minimum; ➢ Root cause analysis? ➢ Immediate interviews with people involved? ➢ Establishing timelines of key events? ➢ Including the actions of the people involved? ➢ Review of any policies and procedures related to the activities? ➢ Review of any decisions made related to the event? Identifying any risk controls that were in place that should have prevented the event occurring? ➢ Reviewing safety data for any previous or similar events? ➢ Conclusion - clearly defined findings and recommendations that eliminate or mitigate safety deficiencies?		

8 Procedures for establishing and monitoring safety performance indicators *(Safety Assurance)*			
Ref.	**Requirement**	**Observation**	**SMM Reference/comments**
8.1	**Internal Audits**		
8.1.1	Does the Manual include a procedure for conducting Internal safety audits to verify the effectiveness of the SMS?		

8.12	Is there a description of the Internal Audit program (in terms of criteria, scope, frequency and methods, what processes are used to select the auditors, requirement that individuals shall not audit their own work, procedures for assignment of responsibilities, planning and conduct of audits, reporting results and maintaining records etc.)?		
8.1.3	Has an Audit checklist been developed?		
8.2	**Safety Performance Monitoring**		
8.2.1	Have Safety Performance Indicators (SPIs), as the parameters of safety objectives been defined?		
8.2.2	Do the SPIs link with the safety objectives already established?		
8.2.3	Doe the Manual define the criteria for determining SPIs?		
8.2.4	Has Safety Targets been established (should be realistic, context specific and achievable when considering the resources available)?		
8.2.5	Does the Manual describe how to set Safety Triggers and monitor?		

9 SMS training processes and procedures

Ref.	Requirement	Observation	SMM Reference/comments
9.1	Has the ATS provider developed a safety training programme that ensures, the personnel are trained and competent to perform their SMS duties? Doe the training programme include initial and recurrent training requirements to maintain competencies?		

10 Safety Communication processes and procedures

Ref.	Requirement	Observation	SMM Reference/comments
10.1	Does the ATS provider have an effective program for the timely promotion of safety issues, including things like safety newsletters, notices, bulletins, briefings or training courses?		

11 Management of change procedure

Ref.	Requirement	Observation	SMM Reference/comments
11.1	Does the Manual define the triggers for the formal change process?		
11.2	Does it define activities that need to be included in the change management process (in details)?		

12 SMS documentation management procedures			
Ref.	**Requirement**	**Observation**	**SMM Reference/comments**
2.1	Does the ATS provider's SMS documentation include the compilation and maintenance of the following operational records substantiating the existence and ongoing operation of the SMS? a)hazards/ Risk registers and Details of Risk analysis; b) SPIs and related charts; c) record of completed safety risk assessments; d) SMS internal audit records; e) records of SMS safety training records; f) SM safety committee meeting minutes; g) SMS implementation plan (during initial implementation); h) Gap analysis to support implementation plan.		

Appendix B – Checklist for Initial Acceptance & Renewal of ATS Provider SMS

Safety Management System of Air Traffic Service Provider Checklist for Initial Acceptance & Renewal							
1	**Safety Policy and Objectives**						
1.1	Management Commitment						
1.1.1	Is there a safety policy, signed by the Accountable Manager which includes a commitment to continuous improvement; observes all applicable legal requirements and standards; and considers best practices?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
1.1.2	Does the safety policy include a clear statement about the provision of the necessary resources for the implementation of the safety policy?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
1.1.3	Has the safety policy been communicated, with visible endorsement throughout the organization?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
1.1.4	Does the safety policy actively encourages safety reporting? Does it clearly indicate which types of behaviors are unacceptable related to the ATS provider's activities and include the circumstances under which disciplinary action would not apply?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
1.1.5	Does the Safety Policy reflect organizational commitment regarding safety, including the promotion of a positive safety culture?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
1.1.6	Have Safety objectives been established that are consistent with the safety policy and communicated throughout the organization?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
1.2	Safety Accountability & Responsibilities						
1.2.1	Has the ATS provider identified an accountable Manager	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective

	who is accountable on behalf of the organization, for the implementation and maintenance of an effective SMS?						
1.2.2	Are safety accountabilities, authorities and responsibilities defined and documented throughout the organization and staff understand their own responsibilities?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
1.3	Appointment of Key Safety Personnel						
1.3.1	Has a competent Safety Manager, been appointed with a direct reporting line to the Accountable Manager? Are sufficient resources to manage the SMS including, but not limited to, competent staff for safety investigation, analysis, auditing, and promotion available?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
1.3.2	Has the organization established a safety committee that discuss and address safety risks and mitigation actions which includes the Senior Management and operational ATCOs?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
1.4	Coordination of Emergency Response Planning						
1.4.1	Is there an appropriate Emergency Response Plan (ERP) that defines the procedures, roles, responsibilities and actions of the operational personnel available? Is the ERP periodically tested for the adequacy of the plan and the results reviewed to improve its effectiveness?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
1.5	SMS Documentation						
1.5.1	Has the ATS provider developed and maintained an SMS manual that describes his:	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective

	(a) safety policy and objectives; (b) SMS requirements; (c) SMS processes and procedures; (d) Accountability, responsibilities and authorities for SMS processes and procedures.						
1.5.2	Has the ATS provider developed and maintained SMS operational records as part of his SMS documentation. (Operational records which includes in the SMS Documentation is given in the SMM Checklist – Attachment A)	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
1.5.3	Are ATS Provider's SMS documentation (SMM and other SMS related records) regularly reviewed and updated with appropriate version control in place?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
2	**Safety Risk Management**						
2.1	Hazard Identification						
2.1.1	(a) Is there a process to identify hazards? (b) Does the hazard identification process identify human performance related hazards? (c) Is there a process in place to analyze safety data and safety information to look for trends? (d) Are safety investigations carried out by appropriately trained personnel to identify root causes (why it happened, not just what happened)?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
2.1.2	Is there a reporting system to capture errors, hazards that is simple to use and accessible to all staff, which provides appropriate feedback to the reporter and where appropriate, to the rest of the organization?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
2.2	Risk Assessment & Mitigation						
2.2.1	(a) Is there a process to analyze the risks associated with identified hazards in terms of likelihood and	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective

	severity (or alternative methodology)? (b) Is there a criteria for evaluating the level of risks the organization is willing to accept and for the risk assessments to be appropriately justified?						
2.2.2	Has the ATS provider established processes to make decisions and apply appropriate and effective risk controls? Does the Senior management have visibility of medium and high risk hazards and their mitigation and controls?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
3	**Safety Assurance**						
3.1	Safety Performance Monitoring and Measurement						
3.1.1	Are the ATS provider's Risk mitigations and controls being verified to confirm they are working and effective?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
3.1.2	Have Safety performance indicators (SPIs) of the ATS Provider's which link with the safety objectives been defined, promulgated and are being monitored and analyzed for trends?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
3.1.3	(a) Has the ATS Provider developed an internal audit programme including details of the schedule and procedures for audits, reporting, follow up and records? (b) Are the responsibilities and accountabilities for the internal audit process defined and is there a person or group of persons with responsibilities for internal audits with direct access to the Accountable Manager?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
3.1.4	Have appropriate analysis of causal factors and corrective/	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective

	preventive actions been taken after an audit?						
3.2	The Management of Change						
3.2.1	(a) Has there any process established by the ATS Provider to identify whether changes have an impact on safety and to manage any identified risks in accordance with existing safety risk management processes? (b) Have Human Factor issues been considered as part of the change management process?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
3.3	Continuous improvement of the SMS						
3.3.1	Is the ATS Provider continuously monitoring and assessing his SMS processes to maintain or continuously improve the overall effectiveness of the SMS?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
4	**Safety Promotion**						
4.1	Training & Education						
4.1.1	(a) Has the ATS provider developed a training programme for SMS that includes initial & recurrent training? Does this training cover individual safety duties (including roles, responsibilities and accountabilities) and how the organization's SMS operates?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective
4.2	Safety Communication						
4.2.1	Is there a process to determine what safety critical information needs to be communicated and how it is communicated throughout the organization to all personnel, as relevant?	SMM Ref.	Not Present & not Planned	Not Present but being worked On	Present	Present & operational	Present and Effective

Appendix C – SMS Inspection Checklist (Continuous Oversight)

Form – CAA/AS/011/04

Civil Aviation Authority of Sri Lanka

SMS INSPECTION CHECKLIST

ATC Centre:	Date:	Time:	Name of Inspector(s):
Inspection Report Ref:			**File Ref:**

Use the following abbreviations to indicate your observations and if the space is inadequate for comments use additional page with the reference number of the Area of Inspection. Recommendations are to be raised with the appropriate Ref. No according to the Area of Inspection.

S – Satisfactory; U – Unsatisfactory; N – Not Checked/ Not Applicable; I – Improvements Needed

Ref. No	Inspection Area	Comment			
1	**Safety Policy & Objectives**	**S**	**I**	**U**	**N**
1.1	Has the Safety Policy been displayed at the ATC Centre?	☐	☐	☐	☐
1.2	Have the Safety objectives been displayed at the ATC Centre?	☐	☐	☐	☐
1.3	Have the achievement of safety objectives been regularly reviewed?	☐	☐	☐	☐
1.4	Have the roles & responsibilities of the Unit Safety Officer been included in his/her respective Job Descriptions?	☐	☐	☐	☐
1.5	Have the roles & responsibilities of operational Controllers been included in their Job Descriptions?	☐	☐	☐	☐
1.6	Is competent personnel available for the day-to-day operation of SMS at the Centre??	☐	☐	☐	☐
1.7	Is the appointed Unit Safety officer sufficiently qualified to fulfill the required duties and responsibilities?	☐	☐	☐	☐
1.8	Have safety committee meetings been taken place according to the periodicity mentioned in the SMM? When was the last meeting held?	☐	☐	☐	☐
1.9	Has senior management participated in the meeting?	☐	☐	☐	☐
1.10	Have appropriate actions taken to ensure safety recommendations of safety committee meetings are implemented.	☐	☐	☐	☐
1.11	Have Safety committee reports and safety recommendations been published or circulated among the ATCOs?	☐	☐	☐	☐
1.12	Is an updated Emergency Response Plan (ERP) available at the center?	☐	☐	☐	☐
1.13	Are the relevant checklists referred in the ERP readily available at the ATC center?	☐	☐	☐	☐
1.14	Are there any records on previous activation of the Emergency Response Plan?	☐	☐	☐	☐
1.15	Is up-to-date information on contact details of personnel involved in the Emergency Response Planning available?	☐	☐	☐	☐

1.16	Has the ERP been reviewed and tested as per the periodicity mentioned? When was the last Emergency Exercise held?	☐	☐	☐	☐
1.17	Is there an updated SMM of ATS available at the center?	☐	☐	☐	☐
1.18	Are other documents of SMS documentation being properly maintained as mentioned in the SMM?				
	a. Hazard Log	☐	☐	☐	☐
	b. Risk Register	☐	☐	☐	☐
	c. Safety Data collection	☐	☐	☐	☐
	d. SPIs and related performance charts	☐	☐	☐	☐
	e. Record of completed safety risk assessments	☐	☐	☐	☐
	f. Safety Investigation Reports	☐	☐	☐	☐
	g. SMS internal audit reports	☐	☐	☐	☐
	h. Safety training records	☐	☐	☐	☐
	i. Records of Safety Committee Meetings	☐	☐	☐	☐
	j. Records of Safety Reviews	☐	☐	☐	☐
1.19	Are following updated documents relevant to the SMS implementation readily available at the center?				
	a. ICAO Annex 19	☐	☐	☐	☐
	b. ICAO Doc. 9859	☐	☐	☐	☐
	c. IS 006	☐	☐	☐	☐
	d. IS 052	☐	☐	☐	☐
	e. IS 070	☐	☐	☐	☐
	f. IS 087	☐	☐	☐	☐
2	Hazard Identification	**S**	**I**	**U**	**N**
2.1	Are there established processes for the collecting of Safety Data?	☐	☐	☐	☐
2.2	Is there an updated hazards log maintained by the ATC center?	☐	☐	☐	☐
2.3	Have the Hazard related consequences been identified and recorded in a Risk register?	☐	☐	☐	☐
2.4	Have the Hazard Log and the Risk Register been regularly updated with newly identified hazards and their consequences, through the Safety Assessments and Investigations?	☐	☐	☐	☐
2.5	Have human performance related factors been considered in the Hazard Identification process?	☐	☐	☐	☐
2.6	Is documentation process of each hazard from identification through to resolution clearly visible in the records?	☐	☐	☐	☐
2.7	Are the staff aware of ATS Internal SMS reporting system?	☐	☐	☐	☐
2.8	Are the Mandatory/ voluntary/ confidential occurrence reporting forms available at the center?	☐	☐	☐	☐
2.9	Are the staff aware of the CAASL safety reporting system published in IS 006 & IS 052?	☐	☐	☐	☐
2.10	Is a list of mandatory reportable occurrence of ATS maintained and displayed at the center?	☐	☐	☐	☐
2.11	How many safety reports have been received for the last three months?				
2.12	How many reports have been recorded & actioned?				
2.13	Has the confidentiality protected?	☐	☐	☐	☐

2.14	Has any feedback been given to the person who submitted the report (for mandatory & voluntary reports as applicable)?	☐	☐	☐	☐
2.15	Have the investigation findings been assessed for risk and forwarded to management for corrective action decisions as appropriate?	☐	☐	☐	☐
2.16	Have the investigations been considered human, environmental and organizational factors during the root cause analysis?	☐	☐	☐	☐
2.17	Have recommendations been made available to all ATC staff after investigations?	☐	☐	☐	☐
2.18	Have the critical Safety reports been forwarded to CAASL?	☐	☐	☐	☐
2.19	Are all Risks identified in the Risk Register being assessed to determine whether they are acceptable or not?	☐	☐	☐	☐
2.20	Have mitigation actions being introduced for those Risks which are not within the acceptable level of safety?	☐	☐	☐	☐
2.21	Have the risk register and mitigation actions been regularly reviewed to see the effectiveness and updated if required?	☐	☐	☐	☐
2.22	Have the ATS safety data been retained for an acceptable period?	☐	☐	☐	☐
2.23	Are Risks managed to be as low as reasonably practicable (ALARP)?	☐	☐	☐	☐
2.24	Are mitigating actions routinely reviewed to confirm that they remain valid and effective?	☐	☐	☐	☐
3	Safety Assurance	**S**	**I**	**U**	**N**
3.1	Are there any recent evidence of conducting investigations on accident/ incidents?	☐	☐	☐	☐
3.2	Have those investigations been conducted by the personnel assigned for conducting ATM investigations as specified in the Manual?	☐	☐	☐	☐
3.3	Have the investigation process identified factors (e.g. behavioral, organizational, equipment) contributing to the accident/ incident?	☐	☐	☐	☐
3.4	Have the investigation processes been focused on improving the safety of operations rather than taking punitive actions on individuals?	☐	☐	☐	☐
3.5	Are all staff aware of the SPIs and SPTs relevant to the center?	☐	☐	☐	☐
3.6	Are those SPIs & SPTs being continuously measured?	☐	☐	☐	☐
3.7	Any observations on negative trends or exceeding trigger levels?				
3.8	Have Safety Assessments been carried out with respect to significant safety related changes to the ATS system, including for the introduction of new procedures, equipment and facilities?	☐	☐	☐	☐
3.9	Have the action plans developed in the Risk Assessment process been properly implemented?	☐	☐	☐	☐
3.10	Have post implementation reviews been conducted to ensure the effectiveness of mitigation actions applied?	☐	☐	☐	☐
3.11	Have follow up actions been taken to ensure safety recommendations of safety committee meetings, safety reviews, safety Assessments & Investigations are implemented?	☐	☐	☐	☐
3.12	Have Internal Safety Audits been conducted as specified in the ATS SMM?	☐	☐	☐	☐
3.13	Has independence of the internal audit function been achieved?	☐	☐	☐	☐
3.14	Have the Audit Reports been documented and communicated effectively?	☐	☐	☐	☐
3.15	Has senior management taken actions on audit results?	☐	☐	☐	☐

3.16	Have periodic Safety Reviews been conducted consistently as mentioned in the SMM?	☐	☐	☐	☐
3.17	Have the outcomes been circulated among the staff?	☐	☐	☐	☐
4	Safety Promotion	**S**	**I**	**U**	**N**
4.1	Is there a formal training programme developed on ATS SMS for personnel directly involved in ATS SMS and other operational staff?	☐	☐	☐	☐
4.2	Are key safety personnel being appropriately trained to suit their specific role in the ATS SMS?	☐	☐	☐	☐
4.3	Are all staff trained on the ATS SMS procedures and processes according to the ATS SMM?	☐	☐	☐	☐
4.4	Are training records kept for all staff?	☐	☐	☐	☐
4.5	Has formal means for Safety Communication developed and maintained? (Ex. Periodic Safety Bulletin/Newsletter circulated, email etc.)	☐	☐	☐	☐
Comments/ notes:					
Inspectors (Name & Signature):		**Date:**			

Appendix D – Inspection Report Form

Civil Aviation Authority of Sri Lanka
ATS INSPECTION REPORT FORM

Date of Inspection:	
ATC Centre:	
Name of the Inspector:	
Inspection Report Ref:	

Findings of the Inspection	
No.	**Findings**
1	
2	

Observations of the Inspection	
No.	**Observations**
1	
2	
3	

Recommendations	
1	
2	

Findings of previous Inspections

No	**Inspection Report Ref.**	**Finding**	**CAP received/ not received**	**Status of Finding (open/closed)**	**Open since**
1					
2					
3					

Inspector Name	**Signature**	**Date**

Appendix E – Corrective Action Request Form

Corrective Action Request (CAR) Form *(To be filled by the CAASL)*				
Inspection Ref.	Level of finding	☐ Level I	☐ Level II	☐ Level III
Date of Inspection:	ATC Center:			
Applicable Regulatory Requirement Reference:				
Description of Finding/ deficiency:				
Corrective Action Plan to be submitted in the attached format within…….days from the date of this Corrective Action request.				
Director Air Navigation Services:	Signature	Date		

Corrective Action Plan (CAP) *(to be filled by the ATS Provider)*					
Step No	**Proposed Action**	**Action Office**	**Estimated Implementation Date**	**Progress** *(if any)*	**Evidence Ref.** *(if any)*
1					
2					
3					
4					
5					
Proposed date of completion:					
Accountable Manager	Signature	Date			

Appendix F – Guidance for evaluating Corrective Action Plans (CAPs)

(a) The CAPs should be received within 14 days of the receipt of the Inspection Report in the given format with sanctions from the Accountable Manager (i.e. Chairman of AASL) of the ATS Provider.

Step no	Proposed Action	Estimated Implementation Date	Responsible officer	Progress	Evidence Ref.
1					
2					
3					

(b) CAPs submitted by the ATS Provider shall meet the following six criteria:

1. *Relevant* — CAPs should address the issues and requirements related to the finding;
2. *Comprehensive* — CAPs should include all elements or aspects associated with the finding;
3. *Detailed* — CAPs should be laid out in a step-by-step approach, to outline the implementation process;
4. *Specific* — CAPs should identify who (the responsible office) will do what and when;
5. *Realistic* — CAPs should be realistic in terms of contents and implementation timelines;
6. *Consistent* — CAPs should be consistent in relation to other related CAPs.

(c) The Corrective Action Plans shall ensure:

- The proposed actions given in a CAP directly and fully address the finding.
- Large action items are broken down into smaller, more manageable elements.
- Each proposed action is described in a clear and detailed manner.
- Corrective actions are listed step – by – step, in the correct sequential and/or chronological order.
- A clear working plan and adequate details for the implementation of each step are provided.
- The responsible action office/ officer is indicated for each one of the corrective action steps. (If more than one officer is responsible for a particular action item, each one should be identified and recorded clearly)

- The document containing the evidence are indicated in a clear manner.
  - Specific and clear reference to the page, section or paragraph of the document that contains the information is given.

(d) The estimated implementation date should be the date of completion for the action item.

(e) Ensure that an estimated implementation date is entered for each step.

(f) Ensure that the estimated implementation date is realistic for the action item.

(g) Ensure that the estimated implementation date is appropriate for the level of risk associated with the finding.

(h) In cases where corrective actions involve purchasing of equipment or systems to eliminate deficiencies, appropriately practical and agreeable time frame may be acceptable whilst the short term corrective action covers the deficiency.

If the Inspectors consider the CAP does not address or only partially addresses the finding, The ATS Provider will be advised to revise the CAP to addresses the shortcomings indicated and resubmit. If it is noted that the estimated implementation date of an action item has been passed and the action has not been completed or not fully implemented the ATS Provider is required to resubmit the CAP with revised implementation date with sanctions from the Accountable Manager.

Appendix G – Safety Policy Templates

Sample Safety Policy – 1

Safety is one of our core business functions. We are committed to developing, implementing, maintaining and constantly improving strategies and processes to ensure that all our aviation activities take place under a balanced allocation of organizational resources, aimed at achieving the highest level of safety performance and meeting national and international standards, while delivering our services.

All levels of management and all employees are accountable for the delivery of this highest level of safety performance, starting with the Accountable Manager.

Our commitment is to:

- Support the management of safety through the provision of all appropriate resources that will result in an organizational culture that fosters safe practices, encourages effective safety reporting and communication, and actively manages safety with the same attention to results as the attention to the results of the other management systems of the organization;

- Enforce the management of safety as a primary responsibility of all managers, operational personnel and trainees;

- Clearly define for all staff, managers and operational staff alike, their accountabilities and responsibilities for the delivery of the organization's safety performance and the performance of our safety management system;

- Establish and operate hazard identification and risk management processes, including a hazard reporting system, in order to eliminate or mitigate the safety risks of the consequences of hazards resulting from our operations or activities to a point which is As Low As Reasonably Practicable;

- Ensure that no action will be taken against any employee who discloses a safety concern through the hazard reporting system, unless such disclosure indicates, beyond any reasonable doubt, an illegal act, gross negligence, or a deliberate or wilful disregard of regulations or procedures;

- Comply with and, wherever possible, exceed, legislative and regulatory requirements and standards;

- Ensure that sufficient skilled and trained human resources are available to implement safety strategies and processes;

- Ensure that all staff are provided with adequate and appropriate aviation safety information and training, are competent in safety matters, and are allocated only tasks commensurate with their skills;

- Establish and measure our safety performance against realistic safety performance indicators and safety performance targets;

- Continually improve our safety performance through management processes that ensure that relevant safety action is taken and is effective; and

- Ensure externally supplied systems and services to support our operations are delivered meeting our safety performance standards.

(Signature)
Accountable Manager

Sample Safety Policy – 2

Management shall be committed to provide safe and secure work conditions and attitudes with the objective of having an accident-free workplace. We are committed to:

- Ongoing dedication to an accident free workplace, including no harm to people, no damage to equipment, the environment or property.

- A culture of open reporting of all safety hazards in which management shall not initiate disciplinary action against any personnel who, in good faith, disclose a hazard or safety occurrence due to unintentional conduct.

- Creating a culture of open reporting of all hazards.
- Supporting for safety training and awareness programs and hazard identification.
- Conducting regular audits of safety policies, procedures and practices.
- Monitoring industry activity to ensure best safety practices are incorporated into the organization.

- Achieving and maintaining the organization's Safety Performance Targets.

- Providing the necessary resources to support this policy.

- Requiring all employees to perform the duty to maintain a safe work environment through adherence to approved policies, procedures & training, and shall familiarize themselves, and comply with safety policies and procedures.

- All levels of management to be accountable for safety performance, starting with the Chairman/ CEO.

- Strengthen the organization by making safety excellence an integral part of all activities.

(Signature)
Accountable Manager

Protection of the Reporters – Just Culture (sample)

We are committed to operate according to the highest safety standards. To achieve this goal, it is imperative to have uninhibited reporting of all accidents, incidents, events, hazards, risks and other information that may compromise the safe conduct of our operations. To this end, every staff member is warmly encouraged to, and responsible for, reporting any safety-related information.
Reporting is free of any form of reprisal. The main purpose of reporting is risk control and accident and incident prevention, not the attribution of blame. No action will be taken against any staff member who discloses a safety concern through the reporting system, unless such disclosure reveals, beyond any reasonable doubt, an illegal act, gross negligence, or a deliberate or wilful disregard of regulations or procedures.
Our method for collecting, recording and disseminating safety information guarantees the protection of the identity of those who report safety information.

(Signature)
Accountable Manage

Appendix H - Significant High Risk Categories related to ANS

- Controlled flight into terrain (CFIT);
- Airborne Conflict;
- Runway excursion (RE) and incursion (RI);
- Human factors
- Inadequate Documentation and Procedures
- Problematic use of psychoactive substances
- Inadequate Operational personal and training
- Ineffective SMS in the Operations

Appendix I – Responsibilities and Competencies of a Safety Manager

The safety manager should act as the focal point and be responsible for the development, administration, maintenance and promotion of an effective safety management system. The Safety Manager should report directly to the Accountable Manager. The post should be given appropriate status in the organization in order to provide the necessary degree of authority when dealing with safety matters.

The Safety Manager as the focal point of the organization for safety shall;

a. Manage the SMS implementation plan on behalf of the Accountable Manager
b. Review and update ATS SMM, Safety Objectives, SPIs and SPTs annually, for them to be most relevant to current practices.
c. Perform/ facilitate the risk management process that should include hazard identification, risk assessment and risk mitigation;
d. monitor corrective actions and evaluate their results to ensure their accomplishment;
e. Conduct periodic Safety Review meetings;
f. provide periodic reports on the organization's safety performance;
g. maintain SMS documentation and records;
h. Plan and facilitate staff safety trainings which meet acceptable standards;
i. Implementation of Voluntary Safety Occurrence Reporting System;
j. Make the staff aware of the Safety Reporting System and promote Safety reporting culture within the organization;
k. Initiate and conduct incident/ accident Investigations on Safety Reports received and disseminate the lesson leant and recommendations among the staff;
l. Provide advice on safety matters;
m. Plan and conduct Safety Audits;
n. Monitor safety concerns in Air Traffic Services and their perceived impact on the organization's operations;
o. Coordinate and communicate, on behalf of the Accountable Manager with the Director General and other Regulatory authorities as necessary on issues relating to safety.

The Safety Manager should possess:

a. Broad operational knowledge and experience in the functions of the organization and the supporting systems;
b. Analytical and problem solving skills;
c. Effective oral and written communication skills;
d. An understanding of human and organizational factors;
e. Detailed knowledge of safety management principles and practices;
f. Operational experience related to Air Traffic Services;
g. Technical background to understand the systems that support Air Traffic Control operations;
h. It is important to note that accountability for the SMS rests with the accountable manager, not with the safety manager.

Appendix J – Template of a Hazard Log

Identification No.				Source	☐ Safety Report ☐ Safety Review ☐ Safety Assessment ☐ Safety observation ☐ Safety Audit ☐ Safety Survey ☐ Safety Inspection ☐ Others	
Assessment Date						
Assessment						
Category of Hazard	Human factors		Equipment		Operational	Environment
Identification of Hazard(s)	Description of Hazard:					
	Consequence Details (include a review of safety incidents of the existing procedure(s), if any:					
Risk Analysis – Probability	1		2	3	4	5
Risk Analysis – Severity	A		B	C	D	E
Outcome of Risk Analysis	Assessed Risk Index		Unacceptable			
			Acceptable based on Risk Mitigation			
			Acceptable			
Mitigation Measure						
Outcome of Safety Performance Monitoring (ex. 1A)						
Comments by Safety Assessment Team (if necessary)						
Date Completed						

Appendix K - Guidance on Hazard Identification and safety risk analysis

Hazard Identification

Hazard – A condition or an object with the potential to cause or contribute to an aircraft incident or accident. A Hazard may be anything that could cause;

a. Harm to people property or environment;
b. Injury, illness or death to people;
c. Damage to, or loss of, a system (hardware or software), equipment, or property; and/ or
d. Damage to the operating environment;
e. A dormant potential for harm in one form or another within the system or its environments.

Consequence – The potential outcome that can be triggered by a hazard.

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

Key points to be considered when identifying hazards and consequences

a. Hazards are normal system components that can lead to adverse consequences, and their consequences are usually manageable.
b. When the hazard is released, control is lost and the system may propagate into an adverse outcome.
c. Hazards are best identified through monitoring of work/operational context (i.e. capturing the practical drift) and from safety data sources including current processes and future changes.
d. Hazard should be described in neutral terms with commonly accepted terminology.
e. Hazard should be categorized into a generic component (natural, environmental, operational, technical/equipment) and a specific component (description).

Hazard identification methodologies

The two main methodologies for identifying hazards are:

Reactive. This methodology involves analysis of past outcomes or events. Hazards are identified through investigation of safety occurrences. Incidents and accidents are an indication of system deficiencies and therefore can be used to determine which hazard(s) contributed to the event.

Ex:

- Accident and incident investigation reports;
- Internal and external investigation results/reports;

- Continuing airworthiness reports;
- Reporting system;
- Internal & External audits;
- Safety risk assessments of existing safety issues

Proactive. This methodology involves collecting safety data of lower consequence events or process performance and analyzing the safety information or frequency of occurrence to determine if a hazard could lead to an accident or incident.

Ex:

- Safety assurance function;
- Safety studies/reviews;
- Safety reporting system (especially Voluntary);
- Safety risk assessments of changes to the system;

Hazards can also be identified through safety data analysis which identifies adverse trends and makes predictions about emerging hazards, etc.

Internal Sources	External Sources	Other methods
•Voluntary/Mandatory safety reporting systems • Audits, surveys, reviews • Feedback frim training • Service provider investigation	•Aviation accident reports • State mandatory/voluntary safety reporting systems State oversight audits and third-party audits	•Workshops, •meetings, •Brainstorming sessions, •Expert judgment

Safety Risk Analysis

Risk is the composite of the predicted probability (or likelihood) and severity of each possible consequence (result) of each identified hazard (a condition).

Safety Risk Probability Analysis

Safety risk probability is the likelihood or probability that a safety consequence or outcome will occur Probability should consider;

- Is there a history of similar occurrences or is this an isolated occurrence?
- What other similar equipment or components might have identical issues?
- What is the number of personnel following the procedures in question?
- What is the exposure of the hazard under consideration?

Likelihood of occurrence as determined by ICAO Doc 9859 – 4th Edition

Qualitative definition	Meaning	Value
Frequent	Likely to occur many times (has occurred frequently)	5
Occasional	Likely to occur sometimes (has occurred infrequently)	4
Remote	Unlikely, but may possibly occur (has occurred rarely)	3
Improbable	Very unlikely to occur (not known to have occurred)	2
Extremely improbable	Almost inconceivable that the event will occur	1

Safety Risk Severity Analysis

Safety risk severity is the extent of harm that might reasonably be expected to occur as a consequence or outcome of the identified hazard.

Severity classification should consider:

Fatalities or serious injury as a result of: being in the a/c, direct contact with any a/c part, direct exposure to jet blast.

Damage: a/c damage or structural failure which adversely affect a/c's performance, major repair or replacement, ATC or aerodrome equipment damage, adversely affected separation minima or landing capability.

All possible consequences related to a hazard, considering the worst foreseeable situation.

Severity of consequences as determined by ICAO Doc 9859 – 4th Edition

Aviation definition	Meaning	Value
Catastrophic	Aircraft / Equipment destroyed. Multiple deaths.	A
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.	B

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.	C
Minor	Nuisance. Operating limitations. Use of emergency procedures. Minor incident.	D
Negligible	Few consequence.	E

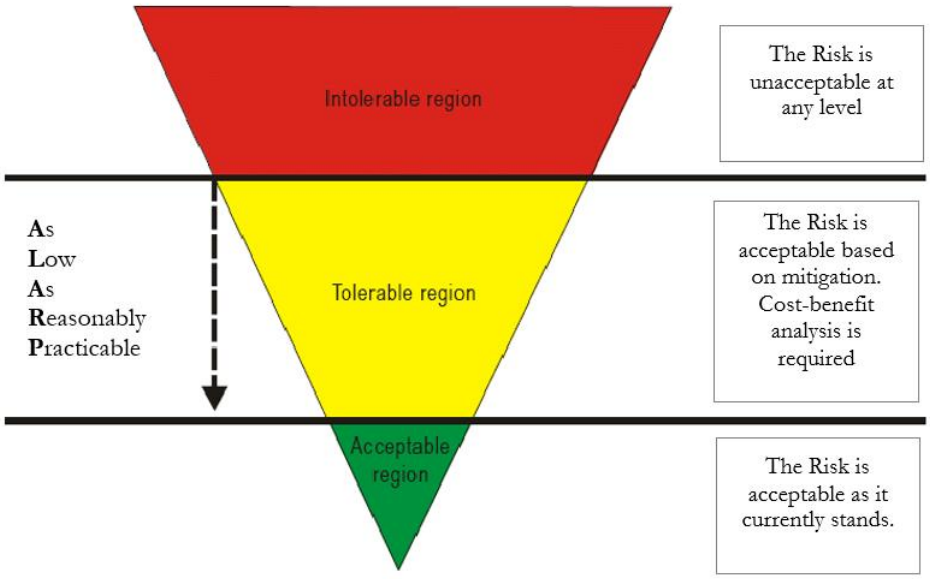
Safety Risk Assessment: Tolerability

Determination of the level of the Safety Risk Tolerability.

- Assign the alphanumerical safety risk index in the safety risk matrix: the combination of the results of probability and severity.
- Apply the safety risk index into the safety risk tolerability table: the tolerability criteria: Intolerable/Tolerable/Acceptable.
- Take risk control action to reduce the level of a risk according to the result of assessment. If the risk assessment results falls in the intolerable and unacceptable under any circumstances, mitigation action is required or activities are stopped

Risk Tolerability Matrix (ICAO Doc 9859 – 4th Edition)

Probability		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



Safety Risk Mitigation/Control Strategies

Safety Risk mitigation/ control strategies should be;

a. Balanced against the time, cost and difficulty of taking action to reduce or eliminate the safety risk (conduct cost benefit or cost effectiveness analysis);

b. be managed to an acceptable level by mitigating the safety risk through application of appropriate safety control;

- by reducing the severity of the potential consequences;
- by reducing the likelihood of occurrence or by reducing exposure to that safety risk;
- By using both.

c. Bringing changes to the existing operational procedures, equipment or infrastructure.

Note - It is easier and more common to reduce the likelihood than the severity.

Safety Risk Mitigation/Control Strategies			
Management Controls	Behavioral Controls	Engineering controls	Post – event controls
Modify SOPs, procedures	Follow rules	Safer design	Emergency Response Plan
Training	Safe work practices	System modification	Safe work practices
Informed decision making	Better communication	redundancy	Promote safety culture

Appendix L – Template of Safety Risk Assessment

	Identified Hazard	Hazard Consequence	Existing Defenses	Risk Index (Probability/ Severity/ Tolerability)	Mitigation Measures	Revised Risk Index (Probability/ Severity/ Tolerability)
1						
2						
3						
4						
5						

Appendix M - Template of Action Plan

Risk Reference	Hazard	Proposed actions to Reduce the risk	Responsible office	Date of implementation

Appendix N – Template of Post Implementation Review Report

1	Safety Assessment Reference				
2	Description of the Change				
3	Date of implementation				
4	Members of Post Implementation Review Team				
5	Outcomes of the mitigation Actions				
	Mitigation Action Proposed	Expected Outcome	Actual Outcome	Evidence Ref.	Reasons for deviations (if any)
	i				
	ii				
	iii				
	iv				
	v				
6	Sources of Information gathering				
7	Further Recommendations (if any)				
Authorization					
Date					

Appendix O – ANS related Reportable Incidents

1. Any partial/ total disruption to the provision of Air Traffic Service.
2. Any partial/ total disruption to the provision of Meteorological Services.
3. Any partial/ total disruption to the provision of Aeronautical Information Services.
4. Any failure to Communication, Navigation or Surveillance facility.
5. Activation of Contingency Plans.
6. Activation of TCAS RA.
7. Near Collision incidents without activating TCAS.
8. Separation minima infringement.
9. Controlled flight into terrain (CFIT).
10. Runway incursion.
11. Runway excursion.
12. Aircraft deviation from published procedures.
13. ATC deviations from Regulations and standard procedures.
14. Non adherence to Air Traffic Control clearance.
15. Unauthorized penetration of airspace.
16. Non equipage and carriage of mandated equipment.
17. Significant malfunction or deterioration of Communication, Navigation or Surveillance equipment.
18. Significant malfunction or deterioration of equipment required for the provision of Meteorological information (ATIS, AWOS, and Tower Top Wind Speed/ Direction indicator, Barometer etc.)
19. Aircraft Emergencies (as mentioned in Aerodrome Emergency plan).
20. RTB or aborted take – off due to Bird strike/ collision with animals.

21. Overdue or unreported Aircraft.

22. Act of unlawful interference (aircraft on ground or in flight, ANS facility including remotely located CNS facility etc.)

23. Bomb threat Information.

24. Any significant change to the existing ATS procedures, establishment of new equipment, facility or system.

25. Deviations to the prescribed Duty periods and operational Duty periods.

26. Aircraft Accident.

27. ATCO being found not fit to carry out ATC duties due to Physical or Mental disability.

28. Presence of a strayed or unidentified aircraft.

29. Unauthorized activities in the vicinity (firework, drones, balloons etc.)

Appendix P – Checklist for evaluating Safety Performance Indicators (SPIs)

Safety Management System of ATS Provider Checklist for evaluating the Safety Performance Indicators (SPIs)				
No.	**Criteria**	**Yes**	**No**	**Comments**
1	Is the indicator clearly defined and not open to interpretation?	☐	☐	
2	Is it clear and understandable what the indicator is measuring?	☐	☐	
3	Is it clear what the indicator is helping the organization achieve?	☐	☐	
4	Is the indicator clearly linked to an objective?	☐	☐	
5	Is the indicator measurable?	☐	☐	
6	Is the indicator achievable?	☐	☐	
7	Is it clear how the indicator is calculated?	☐	☐	
8	Is the unit of measurement for the indicator clearly defined?	☐	☐	
9	Is it clear where the data is collected/obtained from (are data sources identified)?	☐	☐	
10	Is it clear who collects the data for calculating the indicator values?	☐	☐	
11	Is it clear who analyzes the data?	☐	☐	
12	Is it clear who reports the analysis results?	☐	☐	
13	Is the benefit of the indicator more than the cost of collecting, analyzing and reporting the data?	☐	☐	

Appendix Q – Guidance for Document Control Procedure

The Safety Manager **shall** ensure that:

a. ATS SMM, Safety Objectives, SPIs and SPTs are reviewed annually, and updated when necessary for them to be most relevant to current practices.
b. Editions/ revisions or amendments to the SMM are submitted for the CAASL approval.
c. Revisions are communicated to all staff concerned and modifications are identified,
d. Related internal documents and procedures are updated accordingly,
e. Obsolete/invalidated versions are clearly marked accordingly,
f. Modified versions are clearly marked, changes are identified and a current version number is incorporated,
g. Document changes are recorded and kept for traceability purposes.

Control and Revision of the Safety Management Manual

Steps	Consist of	Person(s) in charge
Suggesting a request for a change	- Identify need to change the SMM - Submit a change request to the Safety Manager	All staff
Assess, validate or reject the request for change	- Check relevance - Evaluate related risks (if any) - Verify the requested change against: applicable regulations and practices other AASL/ATC documents - Validate or reject the change	Safety Manager
Approval of CAASL	- Submit approval request to CAASL	Head of ANS
Amend the SMM (upon approval)	- Make the relevant changes in the SMM - Trace the modifications - Update the version number, date of issue and list of effective pages	Safety Manager
Record and distribute the revision	- Record/archive the new version - Distribute and publish the new version - Recall the former version	Safety Manager

Record-Keeping

An effective system of record-keeping ensures that all records are accessible whenever needed within a reasonable time. These records should be organized in such a way that ensures traceability and accessibility throughout the required retention period.

In order to ensure easy and fast access to information, SMS records are:

a. Adequately referenced (title, issue date, revision number and date, list of effective pages),
b. Archived as records for a minimum period of 5 years (see the table below),
c. Disposed in a controlled manner after the defined period of retention.

Records	Person(s) in Charge	Recording/ Archiving means	Record Keeping period
Safety Objectives and Safety Performance Indicators	Safety Manager	SMS Database	5 years
Safety Committee Meeting reports	Safety Manager	SMS Database/ File	5 years
Audit Reports including the follow-up of corrective actions	Safety Manager	SMS Internal Audit File	5 years
Hazard and Risk Registers	Safety Manager/ ATS Unit Safety officer	SMS Database	Permanent
Risk Mitigations	Safety Manager	SMS Database/ File	Permanent
Safety Trainings Register	Safety Manager	SMS Training File	Permanent

Records are to be kept in a paper format or an electronic format or a combination of both. Storage of records may be carried out at any time. The records should be as legible as the original record and remain so for the required retention period. The retention period starts when the record has been created or last amended. Computer based systems should have backup system. Computer based systems must include appropriate safeguards against the possibility of access by unauthorized personnel to prevent tampering with the data.

Appendix R – Sample ToR of Safety Reviewing Committee

TOR of the Safety Reviewing Committee

1 Committee Purpose

The purpose of the Safety Reviewing Committee is to provide oversight of the organization's Safety Management System (SMS) by reviewing safety performance, ensuring the effectiveness of hazard identification and risk management processes, monitoring the implementation of safety actions, and supporting continuous improvement in safety in accordance with regulatory and organizational requirements.

2 Committee Members

The Safety Reviewing Committee shall comprise the following members:

- ATS Safety Manager
- ATS Safety Officer
- Unit Safety Officers

3 Attendance at Meetings

The following officers shall be invited for the regular Safety Reviewing Committee Meetings.

- Head of Air Navigation Services
- Deputy Head of Air Navigation Services
- Senior Managers at each ATC Unit
- ATC Watch Managers
- Operational Controllers

4 Meetings

The ATS Safety Reviewing Committee Meeting shall meet not less than x times a year. ATS Safety Manager may convene additional meetings when required.

5 Meeting Minutes

- The minutes of the Safety Reviewing Committee meetings shall provide an accurate and complete record of discussions, decisions, action items, and follow-up responsibilities.
- Minutes shall be recorded by the designated person identified in the SMM.
- Minutes shall be formally approved by the ATS Safety Manager before circulating.
- Approved minutes shall be distributed to all committee members and other relevant personnel.
- Minutes shall be maintained as part of the official records for audit, regulatory, and safety management purposes.
- Minutes shall be retained for a minimum period as required by the organization's document retention policy.

6 Duties and Responsibilities of Safety Reviewing Committee

- Review the organization's Hazard identification and Risk Management process.
- Evaluate the adequacy of resources, staff qualifications, experience, and training programs related to safety and identify any gaps or deficiencies.
- Bring the organizational gaps to the attention of Senior Management and obtain their commitment to address and resolve them.
- Review management's response to audit findings and monitor implementation of corrective actions.
- Review safety data and performance indicators to identify trends in operational safety.
- Monitor recurring hazards or risk patterns and assess their impact on the Safety of operations and ensure the senior management takes proactive actions to mitigate identified risks.
- Provide guidance or recommendations to Senior Management on addressing safety issues revealed by trend analysis.
- Consider major findings from internal or external safety investigations in the risk assessment process.
- Monitor implementation of corrective and preventive actions arising from investigations.
- Ensure lessons learned from investigations are communicated appropriately and used to improve safety performance.
- Evaluate whether reported safety concerns are addressed promptly and effectively.
- Track the status of safety recommendations and ensure follow-up actions are completed.

Appendix S – Sample Training Program for an ATS Safety Officer

Training Phase	Training Course	Duration*
Basic Subject specific Training	Basic Safety Management System	(Within) 6 months
	ICAO Global Aviation Safety Management Plan (GASP)	
	APAC Regional Aviation Safety Management Plan (AP-RASP)	
	National Aviation Safety Plan (NASP) of Sri Lanka	
	Implementing Standards 070 – Framework for a Safety a SMS	
	SLCAP 2050 – Manual for the Oversight of SMS of the ATS Provider	
	SLCAP 2250 – Safety Management Guide for ATSP	
	SLCAP 2290 – Manual for the oversight of Fatigue Management approaches of the ATS Provider	
	Safety Management Manual of AASL	
	Safety Management Manual of Air Traffic Service provider	
	Operational Manuals on Fatigue Management	
Specialized/ advanced Training (Training courses will be selected from these categories)	Safety Data analysis	1 week
	Human Factors in Aviation	1 week
	Fatigue Risk Management Systems	1 week
	Operational Hazard Identification & Risk Mitigation (Advanced)	1 week
	Aviation Accident/ Incident Investigation Techniques	1 week
	Safety Management System Monitoring & Assessing	1 week
	Threat & Error Management (TEM)	1 week
	SPI/ SPT Development	1 week
	Stress and Stress Management	1 week
Recurrent/ Refresher Training	Safety Management System (refresher)	1 week