

# Advisory Circular

## SAFETY MANAGEMENT SYSTEM

General .....	1
Purpose .....	1
Applicability .....	1
Cancellation .....	2
Effective date .....	2
References .....	2
Introduction .....	2
SMS Requirements .....	2
SMS Framework – (1) Safety Policy and Objectives .....	3
1.1 Management commitment .....	3
1.2 Safety accountability and responsibilities .....	3
1.3 Appointment of key safety personnel .....	4
1.4 Coordination of emergency response planning .....	5
1.5 SMS documentation .....	5
SMS Framework – (2) Safety Risk Management .....	6
2.1 Hazard Identification .....	6
2.2 Safety risk assessment and mitigation .....	6
SMS Framework – (3) Safety Assurance .....	8
3.1 Safety Performance monitoring and measurement .....	8
3.2 The Management of Change .....	9
3.3 Continuous Improvement of the SMS .....	9
SMS Framework – (4) Safety Promotion .....	9
4.1 Training and Education .....	9
4.2 Safety Communication .....	9
SMS Integration and interfaces .....	9
Contact Information .....	10
Appendix A : Explanation of Terms Used .....	11
Appendix B : Sample Safety Policy Statement for Service Provider .....	12
Appendix C : Guidance for the development of an SMS manual .....	13
Appendix D : Sample Risk Management Process Flowchart .....	19
Appendix E : Hazard Management Flowchart .....	20

- 1. GENERAL.** Pursuant to paragraph 88B of the Air Navigation Order, the Director-General of Civil Aviation (DGCA) may, from time to time, issue advisory circulars (ACs) on any aspect of safety in civil aviation. This AC contains information about standards, practices and procedures acceptable to CAAS. The revision number of the AC is indicated in parenthesis in the suffix of the AC number.
- 2. PURPOSE.** This AC provides guidance on the key concepts and components for effective implementation of an SMS, as required under CAAS' regulations. This AC complements other guidance material issued by CAAS on safety management-related subjects.
- 3. APPLICABILITY.** This AC applies to all holders of Singapore Air Operator Certificate (AOC), holders of Aerial Work Certificate, holders of Complex General Aviation Certificate, SAR-145 Approved Maintenance Organisations (except SAR-145, Subpart D organisations), Aviation Training Organisations (ATOs) approved by CAAS that are exposed to safety risks during the provision of their services, the air navigation service provider in Singapore, the operator of certified aerodromes in Singapore, and the Aeronautical Meteorological Service Provider.

4. **CANCELLATION.** This AC supersedes AC 1-3(5) dated 3 August 2018.
5. **EFFECTIVE DATE.** This AC is effective on 03 June 2019.
6. **REFERENCES.** ICAO Annexes, ICAO Safety Management Manual (Doc 9859), Singapore Airworthiness Requirements Part 145 (SAR-145), Singapore Air Safety Publication Part 10 (SASP 10), Manual of Standards – Air Traffic Services (MOS-ATS), Manual of Aerodrome Standards (MOAS), MOS – Meteorological Service for International Air Navigation (MOS-MET (IAN)), Air Navigation (119 – Air Operator Certification) Regulations 2018, Air Navigation (125 – Complex General Aviation) Regulations 2018, and Air Navigation (137 – Aerial work) Regulations.
7. **INTRODUCTION.**
  - 7.1 This AC has been revised to provide guidance on the implementation of an SMS.
  - 7.2 ICAO Annex 19 – *Safety Management* defines SMS as “a systematic approach to managing safety, including the necessary organisational structures, accountability, responsibilities, policies and procedures”. ICAO Doc 9859 – *Safety Management Manual* further elaborates that the SMS should assist the service provider to continuously improve safety through identifying hazards, collecting and analysing data and assessing safety risks. This will enable the service provider to proactively contain or mitigate risks before they result in aviation accidents and incidents<sup>1</sup>.
  - 7.3 The scope of SMS applies to the aviation-related activities of a service provider related to the safe operation of aircraft. The implementation of an SMS should take into account interfaces with key stakeholders, industry partners and corporate activities such as finance, human resources and legal.
8. **SMS REQUIREMENTS.**
  - 8.1 As required under CAAS’ regulations, the following service providers are required to implement a SMS that is acceptable to CAAS:
    - a. Singapore AOC holder;
    - b. SAR-145 Approved Maintenance Organisation (except SAR-145, Subpart D organisation);
    - c. Aviation Training Organisation (ATO) approved by CAAS that is exposed to safety risks during the provision of their services;
    - d. Air navigation service provider in Singapore;
    - e. Operator of certified aerodromes in Singapore;
    - f. Singapore Complex General Aviation Certificate holder
    - g. Singapore Aerial Work Certificate holder; and
    - h. Aeronautical Meteorological Service Provider.

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<sup>1</sup> More information on the SMS fundamentals can be found in ICAO Doc 9859.

- 8.2 The SMS framework comprises 4 components and the associated elements as reflected in the table below. Details of each element are explained in subsequent paragraphs. To implement an SMS, an organisation needs to translate these components and elements into how it manages safety that commensurate with the scale and complexity of its operations.

COMPONENT	ELEMENT
1. Safety policy and objectives	1.1 Management commitment
	1.2 Safety accountability and responsibilities
	1.3 Appointment of key safety personnel
	1.4 Coordination of emergency response planning
	1.5 SMS documentation
2. Safety risk management	2.1 Hazard identification
	2.2 Safety risk assessment and mitigation
3. Safety assurance	3.1 Safety performance monitoring and measurement
	3.2 The management of change
	3.3 Continuous improvement of the SMS
4. Safety promotion	4.1 Training and education
	4.2 Safety communication

## 9. SMS FRAMEWORK – (1) SAFETY POLICY AND OBJECTIVES.

- 9.1 The Safety Policy and Objectives set out the commitment and high-level directions for safety management and safety performance improvement. They also encompass processes on emergency response planning and SMS documentation.

### 1.1 *Management commitment*

- 9.2 Management's commitment to safety should be formally expressed in a safety policy statement, which captures the service provider's philosophy on safety management, and its key safety objectives. The safety policy, signed by the Accountable Executive (see Para 9.7 below) and endorsed by senior management, should minimally reflect management's commitment to:

- a. continually improve safety performance and practise safety risk management;
- b. provide the necessary financial and manpower resources, as well as training, to implement the SMS;
- c. comply with applicable regulations and guidance; and
- d. encourage a positive and proactive safety culture, with active participation of personnel in SMS activities.

- 9.3 The safety objectives should include measurable and relevant safety indicators, and outcomes that support the safety policy.

- 9.4 The safety policy statement should be regularly reviewed to maintain its relevance, and communicated clearly to all personnel.

- 9.5 A sample safety policy statement, based on ICAO Doc 9859 – *Safety Management Manual*, is provided in **Appendix B**.

### 1.2 *Safety accountability and responsibilities*

- 9.6 The accountability and responsibilities of senior management and personnel (including relevant departmental and/or unit managers, and line managers) with respect to aviation safety should be clearly identified, documented and communicated. This includes being responsible for safety performance, including ensuring appropriate corrective actions are taken to address reported hazards and errors, as well as responding to accidents and incidents.

- 9.7 The service provider is to appoint an Accountable Executive to hold overall accountability for the implementation and maintenance of the SMS. Depending on the structure, size and complexity of the service provider, the Accountable Executive may be the chairperson of the board of directors, the chief executive or a member of the senior management, or the proprietor. The Accountable Executive is responsible for the:
- a. provision and allocation of manpower, technical, financial or other resources necessary for the effective implementation of SMS;
  - b. operations under the certificate/approval of the service provider;
  - c. implementation of the safety objectives, safety policy and the aviation safety activities of the service provider;
  - d. establishment, monitoring, reviewing and improvement of safety performance; and
  - e. resolution of all safety issues.
- 9.8 Where products or services are provided by contractors and subcontractors, the service provider remains responsible for ensuring that its safety performance requirements are met. Policies and procedures should be established to clearly define the safety accountability and authority flow between the service provider and its contractors or subcontractors.

### **1.3 Appointment of key safety personnel**

- 9.9 The appointment of a Safety Manager by the Accountable Executive as the focal point responsible for the implementation and maintenance of SMS activities within the service provider is essential to a functioning SMS. The Safety Manager may hold other concurrent appointments, provided there is no conflict of interest. The Safety Manager should maintain a direct reporting line to the Accountable Executive to ensure independence of advice relating to the development and maintenance of a SMS.
- 9.10 The Safety Manager's functions include:
- a. advising the Accountable Executive and line managers on safety management matters;
  - b. managing the implementation of SMS;
    - i. performing or facilitating hazard identification, risk assessment and mitigation activities;
    - ii. monitoring corrective actions and evaluating their results;
    - iii. providing periodic reports on the service provider's safety performance;
    - iv. maintaining aviation safety-related records and documentation;
    - v. planning and facilitating personnel training related to aviation safety;
    - vi. monitoring safety concerns in the aviation industry and their perceived impact on the service provider's operations; and
  - c. coordinating and communicating with international organisations, CAAS and other Singapore government agencies as necessary on issues relating to safety.
- 9.11 A senior management platform should be established to regularly assess the effectiveness of actions taken to achieve the safety performance targets under SMS. Chaired by the Accountable Executive and composed of senior managers responsible for functional and administrative areas, the platform should:
- a. monitor the effectiveness of the SMS and associated safety management processes;
  - b. ensure that any necessary corrective action is taken in a timely manner;
  - c. assess safety performance against the service provider's safety policy and objectives;
  - d. monitor the effectiveness of the safety supervision over subcontracted operations; and
  - e. ensure that appropriate resources are allocated to achieve safety performance.

- 9.12 Action groups, which are more operationally focused, may be set up to further drive SMS activities within line functions. Reporting to the senior management platform, these action groups are composed of line managers and are normally chaired by a designated line manager. To address specific implementation issues, the action groups should:
- a. oversee operational safety performance within the functional areas;
  - b. ensure that safety risk management activities, such as hazard identification, risk assessment and mitigation are carried out;
  - c. assess the impact to aviation safety related to operational changes or new technologies;
  - d. coordinate and implement corrective actions in a timely manner;
  - e. review the effectiveness of previous safety recommendations; and
  - f. oversee safety promotion activities to raise awareness of safety issues.

#### **1.4 Coordination of emergency response planning**

9.13 An Emergency Response Plan (ERP) identifies actions to be taken in aviation-related emergencies, including accidents or serious incidents, so as to ensure safe continuation of the service provider's operations and the return to normal operations as soon as possible.

9.14 The ERP may include:

- a. designation of emergency authority;
- b. assignment of emergency responsibilities and actions, including those of subcontractors;
- c. authorisation by key personnel for actions contained in the plan;
- d. coordination of efforts including with external stakeholders to resolve the emergency, including any reference to other emergency planning and response requirements that the service provider needs to comply with; and
- e. periodic test intervals of the ERP.

9.15 The ERP should be regularly reviewed to maintain its relevance.

#### **1.5 SMS documentation**

9.16 Clear documentation and communication of safety policies, safety management processes and methodologies will help organisational personnel, partner organisations and CAAS in understanding how the organisation's SMS functions, and how the safety policy and objectives will be met. The SMS documentation may include:

- a. Components and elements of the SMS framework contained in paragraph 8.2;
- b. SMS-related records and documents such as:
  - i. SMS implementation plan (during implementation process)
  - ii. occurrence (accident and incident) reports and investigations
  - iii. hazards register reports;
  - iv. safety performance indicators and related charts;
  - v. records of completed or in-progress safety assessments;
  - vi. records of internal SMS reviews or audits;
  - vii. training records
  - viii. records of safety promotion activities; and
  - ix. minutes of SMS-related meetings

- 9.17 SMS documentation can be in the form of an SMS Manual or as a section within existing manuals, with references to relevant documents as necessary. Such documentation is subject to the acceptance by CAAS. **Appendix C** provides guidance on the overall structure of an acceptable SMS Manual.

## **10. SMS FRAMEWORK – (2) SAFETY RISK MANAGEMENT.**

- 10.1 Establishment of a formal safety risk management process is an important step in systematically identifying safety hazards and mitigating safety risks to an acceptable level. This process entails hazard identification, risk assessment and subsequent undertaking of remedial actions or mitigation measures. **Appendix D** provides an example of a safety risk management flowchart.

### **2.1 Hazard identification**

- 10.2 A hazard is any situation or condition that has the potential to cause adverse consequences. Hazards may be related to:
- a. design factors, such as equipment and task design
  - b. procedures and operating practices, such as documentation and checklists
  - c. communications, such as language proficiency and terminology
  - d. organisational factors, such as company policies for recruitment, training, remuneration and allocation of resources
  - e. work environment factors, such as ambient noise and vibration, temperature, lighting, protective equipment and clothing
  - f. defenses, such as detection and warning systems, and the extent to which the equipment is resilient against errors and failures
  - g. human factors, such as medical conditions, circadian rhythms and physical limitations
  - h. regulatory factors, such as the applicability of regulations and the certification of equipment, personnel and procedures.

*Note: Hazards should not be confused with outcomes. For example, a runway incursion is an outcome, not a hazard. On the other hand, “unclear aerodrome signage” is a hazard that could lead to an outcome of runway incursion, which could result in adverse consequences.*

- 10.3 Hazard identification is a formal and continuous process for identifying and recording hazards. **Appendix E** provides a sample hazard management flowchart.
- 10.4 Safety data and information can be collected from various sources such as mandatory reports, voluntary and confidential hazard reports, safety surveys and audits. In line with just culture, such data and information should not be used to apportion blame or liability, unless wilful violations or gross negligence have taken place. Personnel within the service provider or organisations interacting with the service provider should be encouraged to report hazards without fear of repercussion. The reporting channel(s) and format of the reports should be made clear to personnel to facilitate reporting.

### **2.2 Safety risk assessment and mitigation**

- 10.5 Safety risk assessment refers to the process of determining and analysing safety risks associated with identified hazards.
- 10.6 The level of safety risk is based on:
- a. *Likelihood*. The likelihood that an unsafe event or condition will occur; and
  - b. *Severity*. The impact of an unsafe event or condition

- 10.7 Risk assessment matrices, such as those provided in **Tables 1 to 4**, may be used to determine the overall safety risk. Based on the risk assessment, the service provider should take appropriate mitigation measures to eliminate or reduce the risk to an acceptable level.

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

Table 1: Safety Risk Likelihood Classification

*Note: Likelihood may also be defined quantitatively e.g. number of events within a time period*

Severity	Meaning	Value
Catastrophic	<ul style="list-style-type: none"> <li>Results in loss of life or destruction of equipment</li> </ul>	A
Major	<ul style="list-style-type: none"> <li>Results in serious injury to persons or major equipment damage</li> </ul>	B
Moderate	<ul style="list-style-type: none"> <li>Results in injury to persons or failure of significant operational processes or systems</li> </ul>	C
Minor	<ul style="list-style-type: none"> <li>Affects normal operating procedures or performance</li> </ul>	D
Negligible	<ul style="list-style-type: none"> <li>No significant impact to operational safety</li> </ul>	E

Table 2: Safety Risk Severity Classification

Risk Likelihood	Risk severity				
	Catastrophic A	Major B	Moderate C	Minor D	Negligible E
Frequent (5)	Unacceptable	Unacceptable	Unacceptable	Review	Review
Occasional (4)	Unacceptable	Unacceptable	Review	Review	Review
Remote (3)	Unacceptable	Review	Review	Review	Acceptable
Improbable (2)	Review	Review	Review	Acceptable	Acceptable
Extremely improbable (1)	Review	Review	Acceptable	Acceptable	Acceptable

Table 3: Risk Tolerability Matrix

Tolerability	Explanation
Unacceptable	The risk is unacceptable and operations should not take place until sufficient major risk mitigating measures have been implemented to reduce risk to an acceptable level.
Review	The risk is of concern and risk mitigating measures should be put in place to reduce the level of risk to as low as reasonably practicable. Where further risk reduction / mitigation is not practicable or viable, the risk may be accepted, provided endorsement is given by management.
Acceptable	The risk is considered acceptable.

Table 4: Risk Tolerability Notes

10.8 Risk mitigation is the process of implementing defences to eliminate or reduce the level of risks associated with hazards. Typical risk mitigation strategies include:

- a. cancelling the operation or activity because the risks exceed the benefits of continuing.
- b. reducing the frequency of the operation or activity.
- c. taking action to reduce likelihood/ severity of the risk(s) by enhancing existing defences or introducing new defences.

10.9 A consistent and systematic approach, such as developing a hazard register to record identified hazards and how they are addressed, should be implemented to document the process of safety risk assessment and mitigation.

## 11. SMS FRAMEWORK – (3) SAFETY ASSURANCE.

11.1 Safety assurance refers to processes and activities that monitor safety performance, through the use of Safety Performance Indicators (SPIs), Targets (SPTs) and Alert Levels (ALs).

11.2 SPIs measure the frequency of safety/quality-related events or occurrences in relation to the service provider's safety performance. They may be expressed as absolute numbers or as normalised rates (e.g. per 100,000 aircraft movements) and measured over a period of time, so as to facilitate trend monitoring.

11.3 SPTs are measurable, achievable and realistic targets, set in relation to the corresponding SPI, that encourage improvement to safety performance. SPT settings should take into consideration factors such as the prevailing level of safety risk, safety risk tolerability, as well as expectations relating the performance measurement of the corresponding SPI.

11.4 ALs are established levels that are set to provide an alert to evaluate the associated SPI measurement or trend. ALs may be derived using the standard deviation (SD) value (e.g. +1/2/3 SD) based on preceding historical data points of a corresponding SPI.

### 3.1 Safety performance monitoring and measurement

11.5 Performance monitoring and measurement involves the tracking and review of SPIs, SPTs and ALs for effectiveness and alignment with the service provider's safety policies and objectives. The setting of SPIs, SPTs and ALs (if appropriate) should be periodically reviewed to ensure continued relevance to the safety performance of the service provider and agreed with CAAS.



### **3.2 The management of change**

- 11.6 Changes to operations can occur for various reasons such as organisational restructuring, the introduction of new procedures and changes in the operating environment. A change management process should be in place to identify changes that may impact existing safety risk controls, as new hazards or related safety risks may be inadvertently introduced when changes occur. This may involve strengthening existing defences, such as by enhancing training practices.

### **3.3 Continuous improvement of SMS**

- 11.7 Continuous SMS improvement is achieved by monitoring the effectiveness of SMS implementation, introducing enhancements to improve compliance and ensuring that existing risk mitigation controls remain robust. This can be done through regular assessments and audits on the various aspects of SMS.

## **12. SMS FRAMEWORK – (4) SAFETY PROMOTION.**

- 12.1 Safety promotion encourages a positive safety culture through training, education and communication.

### **4.1 Training and education**

- 12.2 The Safety Manager is responsible for ensuring that there is a suitable safety training programme in place. Relevant personnel at all levels of the organisation who hold safety responsibilities have to attend training on SMS and related processes, so as to perform their SMS duties effectively. These personnel may include operational personnel, managers/supervisors, senior management and the Accountable Executive. The type of training should be appropriate to the individual's involvement in the SMS and may be integrated with other training programmes where appropriate. SMS training programmes should be carried out by personnel who have undergone appropriate SMS training, and have adequate experience in implementing related SMS work.

### **4.2 Safety communication**

- 12.3 The service provider's SMS processes and activities should be regularly communicated to all personnel to raise their awareness of safety-related issues. The communication should also explain the rationale for the SMS and its activities.
- 12.4 Examples of channels for communication include personnel meetings, publications, notices, seminars and orientation programmes.

## **13. SMS INTEGRATION AND INTERFACES.**

- 13.1 An SMS may be integrated with other management systems such as quality system, and human factor (HF) and error management systems for better coordination and optimising of resources. Possible areas of integration include having:
- a. common safety committees;
  - b. hazard identification and risk assessment (HIRA) team with personnel from the various disciplines;
  - c. consolidated hazards/HIRA registers;
  - d. integrated SMS/HF training; or
  - e. coordinated communication and promotion efforts.

13.2 A service provider's SMS could be affected by both internal (eg internal corporate departments such as marketing, finance etc) and external interfaces (eg. with other organisations). A service provider should identify these interfaces and assess the associated safety impact through identification of any hazards related to these interfaces and carry out a safety risk assessment using its existing HIRA processes. The service provider may then consider working with the other interfaces on a collaborative risk control strategy based on the safety risks identified, which may also involve the sharing of safety data/information (eg. SPIs).

**14. CONTACT INFORMATION.**

14.1 Should you have any queries relating to this AC, please contact CAAS at [CAAS\\_Safety\\_Policy@caas.gov.sg](mailto:CAAS_Safety_Policy@caas.gov.sg).

## APPENDIX A: EXPLANATION OF TERMS USED

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

**Alert Level.** 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).

**Contractor.** An organisation holding a CAAS approval and engaged by another organisation to perform work that is within the scope approved by CAAS.

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

**Error.** An action or inaction by an operational person that leads to deviations from organisational 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 or preventive controls to lower the severity and/or likelihood of a hazard's projected consequence.

**Safety Management System.** A systematic approach to managing safety, including the necessary organisational structures, accountability, responsibilities, policies and procedures.

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

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

**Safety performance target.** The 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.

**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.

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

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

**Subcontractor.** A third party organisation that is engaged by a CAAS-approved organisation to carry out the work under the responsibility of the CAAS-approved organisation.

## APPENDIX B: SAMPLE SAFETY POLICY STATEMENT FOR SERVICE PROVIDER

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### SAFETY POLICY STATEMENT

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 an appropriate allocation of organisational resources, aimed at achieving the highest level of safety performance and meeting regulatory requirements, 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 [Chief executive officer (CEO)/managing director/or as appropriate to the organisation].

Our commitment is to:

- *support* the management of safety through the provision of all appropriate resources that will result in an organisational 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 organisation;
- *ensure* that the management of safety is a primary responsibility of all managers and employees;
- *clearly define*, for all staff, managers and employees alike, their accountabilities and responsibilities in the delivery of the organisation'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 achieve continuous improvement in our safety performance;
- *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, 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 continuous monitoring and measurement, regular review and adjustment of safety objectives and targets, and diligent achievement of these; and
- *ensure* that externally supplied systems and services to support our operations are delivered meeting our safety performance standards.

(Signed by Accountable Executive)

## APPENDIX C: GUIDANCE FOR THE DEVELOPMENT OF AN SMS MANUAL

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This appendix provides guidance on the structure of a typical SMS Manual. The guidance is generic and could be applied to the various types of service providers in Singapore's aviation system. While all the components and elements of the SMS framework must be put in place, the degree of implementation should commensurate with the size, nature and complexity of the service provider's operations.

The SMS Manual may be formatted in the following manner:

- a. **Section headings.** The section headings are listed under manual contents.
- b. **Objective.** This paragraph provides a short write-up on what the section is intended to achieve.
- c. **Consideration.** This paragraph provides a non-exhaustive list of points to consider in drafting the section.

Cross-reference documents, with information supporting the SMS elements found in other relevant manuals or SOPs of the service provider, may be included in the SMS Manual.

### Manual Contents

- |     |  |
|-----|--|
| 1.  | Document Control   |
| 2.  | SMS Regulatory Requirements                                  |
| 3.  | Scope and Integration of the Safety Management System        |
| 4.  | Safety Policy  |
| 5.  | Safety Objectives  |
| 6.  | Safety Accountabilities and Key Personnel                    |
| 7.  | Non-Punitive Reporting Policy                                |
| 8.  | Safety Reporting   |
| 9.  | Hazard Identification, Safety Risk Assessment and Mitigation |
| 10. | Safety Performance Monitoring and Measurement                |
| 11. | Safety Investigations  |
| 12. | Safety Training and Communication                            |
| 13. | Continuous Improvement and SMS Audit                         |
| 14. | SMS Data and Records Management                              |
| 15. | Management of Change   |
| 16. | Coordination of Emergency Response Plan                      |

## **1. Document Control**

### Objective

Describe how the manual is kept up to date and that all personnel have the most current version.

### Considerations

- Describe the correlation of this manual with updates to other documentation, such as Company Exposition Manual, Maintenance Control Manual, Operations Manual, as applicable.
- Describe the process for periodic review of SMS documentation to ensure relevance and effectiveness.
- Describe the format of the document and how the distribution would be carried out.
- Describe how the manual is made readily accessible to all personnel.
- Show the manual is approved by the Accountable Executive.

## **2. SMS Regulatory Requirements**

### Objective

Elaborate on current CAAS' SMS regulations for reference and awareness to all personnel.

### Considerations

- Describe the current CAAS' SMS regulations and make reference to CAAS' guidance advisory material as applicable.
- Explain the relevance and implications of the regulations to the service provider.

## **3. Scope and Integration of the Safety Management System**

### Objective

Describe scope and extent of the service provider's aviation related operations and facilities within which the SMS will apply. The scope of safety risk management processes, equipment and operations should also be addressed.

### Considerations

- Describe the nature of the business and its interaction with other aviation service providers.
- Identify equipment, facilities, work scope, capabilities and other relevant aspects of the organisation within which the SMS will apply.
- Identify the scope of the relevant processes, operations and equipment which are deemed to be eligible for the service provider's safety risk management processes.
- Describe the accountabilities of each player, where the SMS is expected to be operated or administered across a group of interlinked organisations or contractors.
- Management systems may have been implemented for other purposes e.g. quality, human factor (HF) and error, environment, occupational health and safety management system and security. Describe the interaction of these management systems with SMS.

## **4. Safety Policy and Safety Objectives**

### Objective

Describe the service provider's intentions, management principles, and commitment to improve aviation safety in the company.

## Considerations

- Describe the safety policy and safety objectives.
- Show that the safety policy and objectives are approved and signed by the Accountable Executive.
- Describe the process to periodically review the safety policy and objective.
- Describe the process to involve all personnel in the establishment and maintenance of the SMS.
- Describe the process to communicate the safety objective and policy to all personnel to raise awareness of their individual safety obligations.

## **6. Roles and Responsibilities**

### Objective

Describe the safety authorities, responsibilities and accountabilities for personnel involved in the SMS.

### Considerations

- Describe the roles of the Accountable Executive, Safety Manager and safety platforms, meetings and working groups.
- Define and document the Safety authorities, responsibilities and accountabilities of personnel at all levels of the service provider.

## **7. Non-Punitive Reporting Policy**

### Objective

Describe the system or policy under which employees are encouraged to report errors, safety deficiencies, hazards, accidents, and incidents.

### Considerations

- Describe the policy and processes in place that encourages employees to report errors, safety deficiencies, hazards or occurrences.
- Describe the conditions under which punitive disciplinary action would be considered (e.g. illegal activity, recklessness, gross negligence or willful misconduct) are clearly defined.

## **8. Safety Reporting**

### Objective

Safety data and information can be collected from reports, safety surveys and audits. Describe how the reporting system is designed. Factors to consider include: report format, confidentiality, data collection and analysis and subsequent dissemination of information on corrective actions, preventive measures and recovery controls.

### Considerations

- Describe the process or system that captures internal information including incidents, accidents, hazards and other data relevant to SMS.
- Describe how information is received from all areas of the service provider within the scope of the SMS.
- Describe how reports are reviewed at the appropriate management level.
- Describe the feedback process to notify contributors that their reports have been received and to share the results of the analysis.
- Provide form(s)/template(s) that are standardized and accessible across the service provider.
- Describe the process to monitor and analyze trends.

## **9. Hazard Identification, Risk Assessment and Mitigation**

### Objective

Describe the hazard identification system and related schemes, from the collation of data to safety risk assessments and implementation of preventive action plans.

### Considerations

- Describe the process for the assessment of risk associated with identified hazards, expressed in terms of severity and likelihood.
- Describe the risk assessment and tolerability of the service provider and mitigating factors to be put in place.
- Describe the risk control strategies that include corrective action plans.
- Describe the process for evaluating the effectiveness of risk control strategies.

## **10. Safety Performance Monitoring and Measurement**

### Objective

Describe the plan to review the effectiveness of the service provider's SMS, including the safety performance indicators.

### Considerations

- Describe the formal process to develop and maintain a set of safety performance indicators and safety performance targets for monitoring.
- Indicate how the safety performance indicators and safety performance targets are linked to the safety objectives.

## **11. Safety Investigations**

### Objective

Describe how accidents and incidents are investigated. Explain how the contributing factors to accidents and incidents are determined and how corrective actions are implemented to prevent recurrence. Describe how such corrective/preventive actions are reviewed to update any existing safety assessments.

### Considerations

- Describe the process for investigation of reported occurrences. Show that the investigation identifies contributing or causal factors, identifies and ensures the implementation of necessary corrective actions.
- Show appropriate SMS follow up actions from the investigations, such that identified controls are implemented to prevent a repetition of occurrence.

## **12. Safety Training and Communication**

### Objective

Describe the type of SMS and other safety related training that personnel receives and the process for assuring the effectiveness of the training. Describe the safety communication processes/ channels within the service provider.



### Considerations

- Show that the SMS training is part of the service provider's overall training programme.
- Describe the training scope (initial and recurrent training), eligibility criteria and training requirements for personnel.
- Describe the validation process that assures the effectiveness of training.
- Describe the safety communication processes/ channels within the service provider.

## **13. Continuous Improvement and SMS Audit**

### Objective

Describe the process for continuous improvement and review of service provider's SMS.

### Considerations

- Describe the process for periodic reviews of safety performance indicators, safety performance targets and alert levels to ensure their continuing suitability, adequacy and effectiveness.
- Describe the regular audit/reviews of the service provider's SMS.
- Describe any other programs contributing to continuous improvement of the service provider's SMS and safety performance.

## **14. SMS Data and Records Management**

### Objective

Describe the method of recording and storing all SMS related documents.

### Considerations

- Describe the records system that ensures the generation and retention of all records necessary to document the SMS.
- Records to be kept include hazard reports, risk assessments reports, meeting notes, safety performance monitoring charts, SMS audit reports, SMS training records etc.

## **15. Management of Change**

### Objective

Describe the management of organisational internal or external changes that may have an impact on safety.

### Considerations

- Describe the procedures and policies to perform or review safety assessments for all substantial internal or external changes which may have safety implications.
- Include all concerned stakeholders within or outside of the service provider in relevant reviews.
- Describe how the reviews are documented and approved by management as applicable.

## **16. Coordination of Emergency Response Plan**

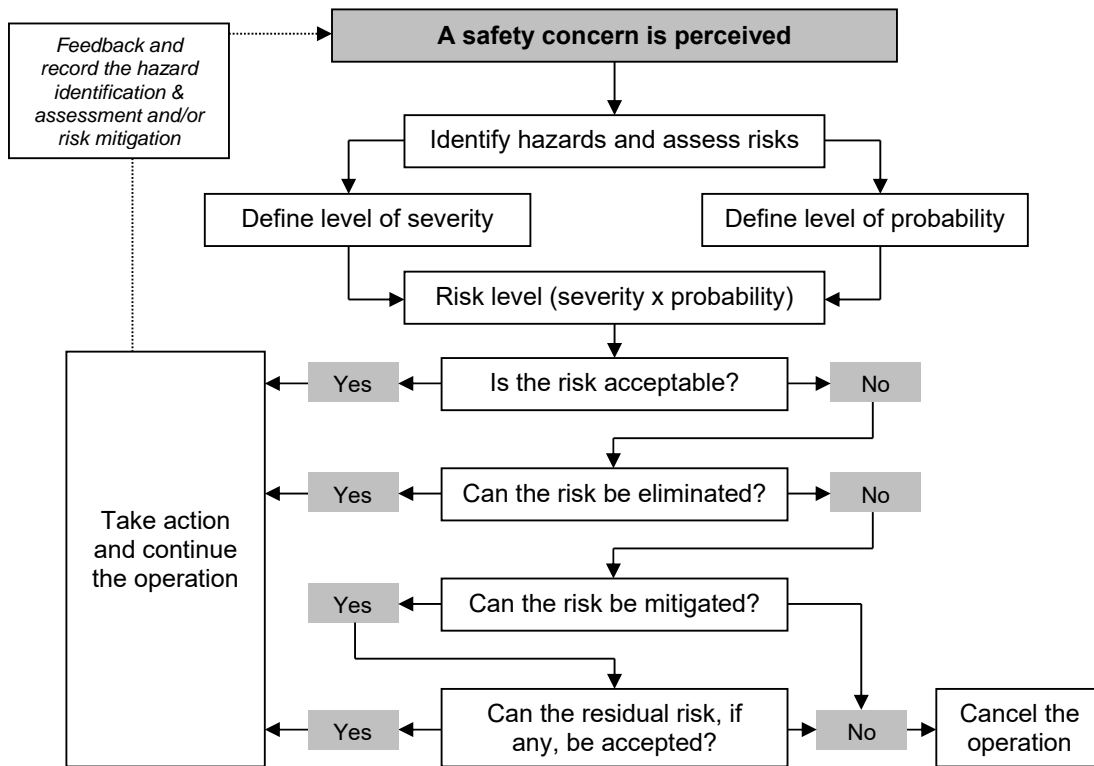
### Objective

Describe the service provider's intentions and commitment to dealing with emergency situations and their corresponding recovery controls, where applicable. Outline the roles and responsibilities of key personnel. The Emergency Response Plan can be developed as a separate document or it can be placed in this manual.

### Considerations

- Describe the emergency plan that outlines roles and responsibilities in the event of a major incident, crisis or accident.
- Describe the notification and personnel mobilization processes.
- Describe the arrangements with other organisations for aid and the provision of emergency services as applicable.
- Describe the procedures for emergency mode operations where applicable.
- Describe the procedure for overseeing the welfare of all affected individuals and for notifying next of kin.
- Describe procedures for handling media and insurance related issues.
- Describe the processes for preservation of evidence, securing affected area and mandatory/governmental reporting.
- Describe the emergency preparedness and response training to be carried out for personnel involved in emergency response.
- Describe the disabled aircraft or equipment evacuation plan in consultation with aircraft/equipment owners, aerodrome operators or other agencies as applicable.
- Describe the procedure for post-occurrence review including debrief and record of significant lessons learned.

**APPENDIX D: SAMPLE RISK MANAGEMENT PROCESS FLOWCHART**



**APPENDIX E: HAZARD MANAGEMENT FLOWCHART**

