SA-CATS 140

Safety management system

List of technical standards

140.01.3 REQUIREMENTS OF SAFETY MANAGEMENT SYSTEM

1. Minimum standards for the safety management system

140.01.3 REQUIREMENTS OF A SAFETY MANAGEMENT SYSTEM

1. Minimum standards for a safety management system

1.1. For the holder of a Category 4 or higher aerodrome licence where commercial activities take place

(1) The aerodrome operator of a Category 4 or higher aerodrome licence where commercial activities take place shall establish a safety management system as prescribed in this technical standard and in ICAO Doc 9774 and Doc 9859 in a format acceptable to the Director for the control and supervision of the services covered by the operation.

(2) A description of the safety management system established in terms of paragraph (1) by the operator, to the satisfaction of the Director, for the control and supervision of the services covered by the operation, shall include ï

(a) the identification of safety hazards;

(b) remedial action necessary to maintain an acceptable level of safety;

(c) continuous monitoring and regular assessment of the safety level achieved; and

(d) continuous improvement to the overall level of safety.

(3) The safety management system shall clearly define lines of safety accountability throughout the air transport operation, including a direct accountability for safety for senior management.

(4) The minimum standards for a safety management system shall be as prescribed in paragraph (5) below.

(5) The safety management system must include the following minimum standards:

(a) A clear definition of the level of safety that the operator intends to achieve.

(b) Proof by the aerodrome operator to the Director that adequate safety measures to maintain the required level of safety will be or are instituted.

(c) The components and elements described in paragraph (6) below.

(6) Components and elements required for a safety management system

(a) Safety Policy & Objectives

(i) Management commitment and responsibility

(aa) The aerodrome operator shall define its safety policy which shall be in accordance with international and national requirements, and which shall be signed by the accountable executive.

(bb) The safety policy shall reflect its commitments regarding safety; including a clear statement about the provision of the necessary human and financial resources for its implementation; and be communicated, with visible endorsement, throughout the operation.

(cc) The safety policy shall be reviewed at least biannually to ensure that it remains relevant and appropriate to the operator.

(ii) Safety accountabilities of managers

(aa) The aerodrome operator shall identify the accountable executive who, irrespective of other functions, shall have ultimate responsibility and accountability for the implementation and maintenance of the SMS.

(bb) The aerodrome operator shall identify the safety accountabilities of all members of senior management, irrespective of other functions. Safety accountabilities and authorities shall be documented and communicated throughout the operation.

(iii) Appointment of key safety personnel

(aa) The aerodrome operator shall identify a safety manager, if he or she is not performing this function, to be the responsible individual and focal point for the implementation and maintenance of an effective SMS.

(bb) The safety manager shall report directly to the accountable manager (CEO or MD of the operator, organisation or provider) with respect to any significant safety concerns with unacceptable risk and with respect to implementation and maintenance of the SMS.

(cc) The selection criteria for safety managers or safety officers and suggested attributes and qualifications include:

(A) Broad operational knowledge and experience in the functions of the organisation;

(B) Sound knowledge of safety management principles and practices, including theoretical training and theoretical experience;

(C) At least 2 years of experience (safety officer) and at least 5 years of experience (safety manager) with the implementation and management of an aviation safety management system;

(D) Good written and verbal communication skills;

(E) Well-developed interpersonal skills;

(F) Computer literacy;

(G) The ability to relate at all levels, both inside and outside the organisation;

(H) Organisational ability;

(I) Capable of working unsupervised;

(J) Good analytical skills;

(K) Leadership skills and authoritative approach;

(L) Worthy of respect among peers and management;

(M Project management skills.

(iv) SMS implementation plan

(aa) The aerodrome operator shall develop and maintain an SMS implementation plan that defines the operatorôs approach to manage safety in a manner that meets the operatorôs safety needs.

(bb) The SMS implementation plan of the aerodrome operator shall explicitly address the coordination between the SMS of the operator and the SMS of other service providers (that

may affect aviation safety and security) with whom the operator may interface during the provision of services.

(cc) The SMS implementation plan shall be endorsed by senior management of the operator.

(v) Coordination of emergency response planning

(aa) The aerodrome operator shall develop, coordinate and maintain an emergency response plan that ensures orderly and efficient transition from normal to emergency operations, and return to normal operations.

(bb) The Aerodrome Emergency Management System (aircraft-related) is a separate document under CAR 139.02.6 and should be in accordance with the guidelines in ICAO Doc 9137-AN/898 Part 7, and should be listed in the Aerodrome Operations Manual.

(vi) Documentation

(aa) The aerodrome operator shall develop and maintain SMS documentation to describe the following:

(A) safety policy and objectives;

(B) the SMS standards to be achieved;

(C) the SMS procedures and processes;

(D) the accountabilities, responsibilities and authorities for procedures and processes;

(E) the SMS areas of responsibilities; and

(F) the SMS outputs.

(bb) The aerodrome operator shall incorporate its safety management documentation into its operations manual to communicate its approach to safety throughout the operation, including the provision of applicable portions to airports tenants, or in a separately approved SMS manual.

(b) Safety risk management shall include, but is not limited to:

(i) Hazard identification process

The aerodrome operator shall develop and maintain a formal process for effectively collecting, recording, acting on and generating feedback about hazards in operations, based on a combination of reactive, proactive and predictive methods of safety data collection.

Note: *Reactive methods refer to methods of identifying hazards that are based on the investigation of occurrences.* Proactive *methods aim to use any other information within the organisation for the identification of potential hazards. Predictive methods rely on data that is collected within the organisation that could be used effectively to predict the existence of hazards, usually done by trend analysis.*

(ii) Risk assessment and mitigation process

(aa) The aerodrome operator shall develop and maintain a formal risk management process that ensures analysis (in terms of probability and severity of occurrence), assessment (in terms of tolerability or acceptability) and control (in terms of mitigation) of risks to an acceptable level.

(bb) The following matrixes should be used for purposes of analysing and assessing risk:

Risk Severity Matrix

Risk Severity definition	*Description: Consequence (can lead to)…*	*Examples of what to look out for…*
Category A Catastrophic	One or multiple deaths & complete loss/ destruction of equipment	A major accident.
Category B Hazardous	Serious injuries/Major Damage to equipment	Large reduction in safety margins, physical distress or workload such that the operators cannot be relied upon to perform their tasks accurately or completely.
Category C Major	Minor injuries/ Minor equipment damage	A significant reduction in safety margins, a reduction in the ability of the operators to cope with adverse operating conditions as a result of increase in workload, or as a result of conditions impairing their efficiency.
Category D Minor	Incidents	Operating limitations are breached. Procedures are not used correctly.
Category E	Negligible/Inconveni	Few consequences. No safety

Negligible	ence	consequences. Nuisance.

Risk Probability Matrix

Likelihood/ Probability Category	*Description*	*Examples of what to look out for*
1	Extremely improbable (Rare)	Almost inconceivable that the event will occur.
2	Improbable (Seldom)	Very unlikely that the event will occur. It is not known that it has ever occurred before.
3	Remote (Unlikely)	Unlikely but could possibly occur. Has occurred rarely.
4	Occasional	Likely to occur sometimes. Has occurred infrequently.
5	Frequent	Likely to occur many times/regularly. Has occurred frequently/regularly.

RISK PROBABILITY		RISK SEVERITY				
		Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
Frequent	5	5A	5B	5C	5D	5E
Occasional	4	4A	4B	4C	4D	4E
Remote	3	3A	3B	3C	3D	3E
Improbable	2	2A	2B	2C	2D	2E
Extremely improbable	1	1A	1B	1C	1D	1E

Risk assessment Index	Suggested Criteria
5A, 5B, 5C, 4A, 4B, 4C, 3A, 3B, 2A	Unacceptable under the existing circumstances. Risk mitigation critical.
5D, 4D, 3C, 3D, 2B, 2C, 1A,	Risk mitigation required. It might require

1B	management decision.
5E, 4E, 3E, 2D, 2E, 1C, 1D, 1E	Acceptable.

(cc) The following is an example of strategies that can be introduced for mitigation (risk control):

Avoidance	The operation or activity is cancelled because the risks exceed the benefits of continuing the operation or activity.
Reduction	The frequency of the operation or activity is reduced, or action is taken to reduce the magnitude of the consequences of the accepted risks.
Segregation of exposure	Action is taken to isolate the effects of risks or build in redundancy to protect against it.

(dd) Alternative means of analysing, assessing and controlling risk may be implemented by the aerodrome operator with the approval of the Director.

(ee) All safety information reported to the Director shall be in the format specified in the above matrixes.

(ff) The aerodrome operator shall also define those levels of management with authority to make decisions regarding the tolerability/acceptability of safety risks, and the introductions of mitigating measures.

(c) Safety assurance

(i) Monitoring and measurement of safety performance

(aa) The aerodrome operator shall develop and maintain the means to verify the safety performance of the operation compared to the safety policy and objectives, and to validate the effectiveness of safety risk controls.

(bb) The safety reporting procedures relating to safety performance and monitoring shall clearly indicate which types of operational behaviours are acceptable or unacceptable, and include the conditions under which immunity from disciplinary action would be considered. A non-punitive policy is required to enhance the reporting culture. Immunity from disciplinary action may not be granted in instances of violation and negligence.

(cc) The aerodrome operator shall create an environment where voluntary reporting mechanisms are established as opposed to collection of safety-related information by purely relying on investigative processes.

(ii) The management of change

The aerodrome operator shall develop and maintain a formal process to identify changes within the organisation which may affect established processes and services; to describe the arrangements to ensure safety performance before implementing changes; and to eliminate or modify safety risk controls that are no longer needed or effective due to changes in the operational environment.

(iii) Continuous improvement of the SMS

The aerodrome operator shall develop and maintain a formal process to identify the causes of sub-standard performance of the SMS, to determine the implications of sub-standard performance in operations, and to eliminate such causes. This may be achieved through audits of the SMS to ensure its effective implementation.

(d) Safety promotion

(i) Training and education

(aa) The aerodrome operator shall develop and maintain a safety training programme that ensures that personnel responsible for the associated functions as contained in the SMS are trained and competent to perform their respective duties and thus not compromising SMS goals.

(bb) The scope of the safety training shall be appropriate to each individualôs involvement in the SMS.

(ii) Safety communication

The aerodrome operator shall develop and maintain formal means for safety communication, which ensures that all personnel are fully aware of the SMS, conveys safety critical information, and explains why particular safety actions are taken and why safety procedures are introduced or changed.

(e) Safety reporting requirements

(i) The aerodrome operator shall report any significant safety concern identified through its SMS to the Director within 7 days of it being verified.

(ii) The aerodrome operator shall report the following safety information to the Director on an annual basis, as per a schedule agreed to with the Director:

(aa) The top 20 hazards identified by the operator;

(bb) The mitigation strategies implemented to address the risk.

1.2 Safety management system for other organisations

(1) This section prescribes the requirements of a safety management for the holder of ï

(a) an aviation training organisation approval;

(b) an aircraft maintenance organisation approval;

(c) a manufacturing organisation approval ;

(d) an air traffic service unit approval;

(e) a design organisation approval;

(f) an operating certificate issued in terms of Parts 127;

(g) a procedure design organisation approval; and

(h) an electronic services organisations approval.

(2) The safety management system, referred to in CAR 140.01.1, for the organisations referred to in paragraph (1) above, shall include:

(a) A clear definition of the level of safety that the organisation intends to achieve;

(b) Proof by the approved organisation or the operator concerned to the Director that adequate safety measures to maintain the required level of safety will be or have been instituted;

(c) The components and elements described in paragraph (3) below.

(3) Components and elements required for a safety management system

(a) Safety Policy and Objectives

(i) Management commitment and responsibility

(aa) The approved organisation or operator concerned shall define its safety policy which shall be in accordance with international and national requirements, and which shall be signed by the accountable executive.

(bb) The safety policy shall reflect its commitments regarding safety; including a clear statement about the provision of the necessary human and financial resources for its implementation; and be communicated, with visible endorsement, throughout the organisation.

(cc) The safety policy shall be reviewed at least biannually to ensure that it remains relevant and appropriate to the organisation.

(ii) Safety accountabilities of managers

(aa) The approved organisation shall identify the accountable executive who, irrespective of other functions, shall have ultimate responsibility and accountability for the implementation and maintenance of the SMS.

(bb) The approved organisation or operator concerned shall identify the safety accountabilities of all members of senior management, irrespective of other functions. Safety accountabilities and authorities shall be documented and communicated throughout the organisation.

(iii) Appointment of key safety personnel

(aa) The approved organisation or operator concerned shall identify a safety manager, if he or she is not performing this function, to be the responsible individual and focal point for the implementation and maintenance of an effective SMS.

(bb) The safety manager shall report directly to the accountable manager (CEO or MD of the operator, organisation or provider) with respect to any significant safety concerns with unacceptable risk and with respect to implementation and maintenance of the SMS.

(cc) The selection criteria for safety managers or safety officers and suggested attributes and qualifications include:

(A) Broad operational knowledge and experience in the functions of the organisation;

(B) Sound knowledge of safety management principles and practices, including theoretical training and theoretical experience;

(C) At least 2 years of experience (safety officer) and at least 5 years of experience (safety manager) with the implementation and management of an aviation safety management system;

(D) Good written and verbal communication skills;

(E) Well-developed interpersonal skills;

(F) Computer literacy;

(G) The ability to relate at all levels, both inside and outside the organisation;

(H) Organisational ability;

(I) Capable of working unsupervised;

(J) Good analytical skills;

(K) Leadership skills and authoritative approach;

(L) Worthy of respect among peers and management;

(M) Project management skills.

(IV) SMS implementation plan

(aa) The approved organisation or operator concerned shall develop and maintain an SMS implementation plan that defines the organisation's approach to manage safety in a manner that meets the organisation's safety needs.

(bb) The SMS implementation plan of the approved organisation or operator concerned shall explicitly address the coordination between the SMS of the approved organisation or operator concerned and the SMS of other service providers (that may affect aviation safety and security) with whom the approved organisation or operator concerned may interface during the provision of services.

(cc) The SMS implementation plan shall be endorsed by senior management of the organisation.

(v) Coordination of emergency response planning

The approved organisation or operator concerned shall develop, coordinate and maintain an emergency response plan that ensures orderly and efficient transition from normal to emergency operations, and return to normal operations.

(vi) Documentation

(aa) The approved organisation or operator concerned shall develop and maintain SMS documentation to describe the following:

(A) safety policy and objectives;

(B) the SMS requirements;

(C) the SMS procedures and processes;

(D) the accountabilities, responsibilities and authorities for procedures and processes; and

(E) the SMS outputs.

(bb) The approved organisation or operator concerned shall incorporate its safety management documentation into its manual of procedures to communicate its approach to safety throughout the operation, or in a separately approved SMS manual.

(cc) An SMS manual developed in terms of any other Part of the Regulations will be acceptable, provided the approved organisation or operator concerned is associated with the holder of the approval.

(b) Safety risk management

(i) Hazard identification process

The approved organisation or operator concerned shall develop and maintain a formal process for effectively collecting, recording, acting on and generating feedback about hazards in operations, based on a combination of reactive, proactive and predictive methods of safety data collection.

Note: *Reactive methods refer to methods of identifying hazards that are based on the investigation of occurrences. Proactive methods aim to use any* other *information within the organisation for the identification of potential hazards. Predictive methods rely on data that is collected within the organisation that could be used effectively to predict the existence of hazards, usually done by trend analysis.*

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	equipment	upon to perform their tasks accurately or completely.
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Category E Negligible	Negligible/Inconvenience	Few consequences. No safety consequences. Nuisance.

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Risk assessment Index	Suggested Criteria
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5D, 4D, 3C, 3D, 2B, 2C, 1A, 1B	Risk mitigation required. It might require management decision.
5E, 4E, 3E, 2D, 2E, 1C, 1D, 1E	Acceptable.

(cc) The following is an example of strategies that can be introduced for mitigation (risk control):

Avoidance	The operation or activity is cancelled because the risks exceed the benefits of continuing the operation or activity.
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(dd) Alternative means of analysing, assessing and controlling risk may be implemented by the approved organisation or operator concerned with the approval of the Director .

(ee) All safety information reported to the Director shall be in the format specified in the above matrixes.

(ff) The approved organisation or operator concerned shall also define those levels of management with authority to make decisions regarding the tolerability/acceptability of safety risks, and the introductions of mitigating measures.

(c) Safety assurance

(i) Monitoring and measurement of safety performance

(aa) The approved organisation or operator concerned shall develop and maintain the means to verify the safety performance of the organisation

compared to the safety policy and objectives, and to validate the effectiveness of safety risk controls.

(bb) The safety reporting procedures relating to safety performance and monitoring shall clearly indicate which types of operational behaviours are acceptable or unacceptable, and include the conditions under which immunity from disciplinary action would be considered. A non-punitive policy is required to enhance the reporting culture. Immunity from disciplinary action may not be granted in instances of violation and negligence.

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The approved organisation or operator concerned shall develop and maintain a formal process to identify the causes of sub-standard performance of the SMS, to determine the implications of sub-standard performance in operations, and to eliminate such causes. This may be achieved through audits of the SMS to ensure its effective implementation.

(d) Safety promotion

(i) Training and education

(aa) The approved organisation or operator concerned shall develop and maintain a safety training programme that ensures that personnel responsible for the associated functions as contained in the SMS are trained and competent to perform the SMS duties.

(bb) The scope of the safety training shall be appropriate to each individual's involvement in the SMS.

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The approved organisation or operator concerned shall develop and maintain formal means for safety communication, which ensures that all personnel are fully aware of the SMS, conveys safety critical information, and explains why particular safety actions are taken and why safety procedures are introduced or changed.

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(i) The approved organisation or operator concerned shall report any significant safety concern identified through its SMS to the Director within 7 days of it being verified.

(ii) The approved organisation or operator concerned shall report the following safety information to the Director on an annual basis, as per a schedule agreed to with the Director :

(aa) The top 20 hazards identified by the operator;

(bb) The mitigation strategies implemented to address the risk.