



**GOVERNMENT OF INDIA
OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
TECHNICAL CENTRE, OPPOSITE SAFDRJUNG AIRPORT, NEW DELHI**

**CIVIL AVIATION REQUIREMENTS
SECTION 6 – DESIGN STANDARDS &
TYPE CERTIFICATION
SERIES 'B', PART II
XX, December, 2010**

EFFECTIVE: FORTHWITH

Subject: SAFETY MANAGEMENT SYSTEM (SMS) OF DESIGN ORGANISATION.

1. INTRODUCTION :

India is a contracting State to the Convention on International Civil Aviation which forms the constitution of the International Civil Aviation Organization (ICAO). As a signatory to the Convention, India has an obligation to comply with the standards and recommended practices in the Annexes to the Convention. ICAO has recommended that the Design Organizations, responsible for type design of aircraft shall have a Safety Management System (SMS) in place. In this regard, ICAO has made it a standard, applicable to all State of Design. This CAR is intended to provide guidance to Design Organisations, approved in accordance with CAR 21, Subpart JA / JB, to implement Safety Management Systems (SMS) in their organisation. This Civil Aviation Regulation is issued under the provisions of Rule 133A of the Aircraft Rules, 1937.

2. SCOPE AND APPLICABILITY

2.1 Scope

2.1.1 This CAR specifies the requirements for a Design Organisation's Safety Management System (SMS) in accordance with ICAO Annex 8 — Airworthiness of Aircraft.

2.1.2 The Design Organisation is responsible for the safety of services or products contracted or subcontracted to, or purchased from, other organizations.

2.1.3 This CAR establishes the minimum acceptable requirements of Design Organisation.

2.2 Applicability

2.2.1 The Design Organisation approved by DGCA in accordance with CAR21, Subpart JA/JB, shall have Safety Management System (SMS) in place acceptable to DGCA which :

2.2.1.1 Identifies safety hazards;

2.2.1.2 Ensures the implementation of remedial action necessary to maintain agreed safety performance;

2.2.1.3 Provides for continuous monitoring and regular assessment of safety performance; and

2.2.1.4 Aims at a continuous improvement of the overall performance of the safety management system.

2.2.2 In order to be acceptable to the DGCA, the SMS of a Design Organisations shall meet the requirements set forth in this CAR.

3. GENERAL

3.1 Definition

3.1.1 **Safety management system** : A systematic approach to managing safety, including necessary organizational structures, accountabilities, policies and procedures.

3.1.2 **State safety programme** : An integrated set of regulations and activities aimed at improving safety.

3.2 Overview of Safety Management Systems

SMS is a formal organisational system to manage safety. It integrates a range of safety management tools, including senior management commitment, hazard identification, risk management, safety reporting, audit, investigations and remedial actions, safety culture and education. These are supported by clear policies and processes about how safety is to be regarded, who is responsible for safety and what level of performance is to be achieved. An effective SMS environment enhances an organisation's safety culture by enabling it to readily

identify and resolve systemic safety problems. Every SMS must address the same key elements, however, its implementation should be proportional with the size of the organisation and complexity of the scope of approval. SMS provides a framework through which organisations are not only aware of their safety management responsibilities but are also able to properly discharge them. It defines how safety-related policies and procedures are to be implemented and managed on a daily basis.

The Design Organisation shall develop, establish, maintain and adhere to the SMS that is appropriate to the size, nature and complexity, hazards and safety risks related to scope of the work.

4. SAFETY POLICY AND OBJECTIVES

4.1 General requirements

4.1.1 The Design Organisation shall define the organization's safety policy.

4.1.2 The safety policy shall be signed by the Head of Design Organisation (HODO) / Chief Executive Officer or equivalent.

4.1.3 The safety policy shall include:

4.1.3.1 The responsibilities of management and employees with respect to the safety performance of the SMS.

4.1.3.2 A clear statement about the provision of the necessary resources for its implementation.

4.1.3.3 A commitment to continual improvement in the level of safety;

4.1.3.4 The hazard reporting procedures; and

4.1.3.5 The conditions under which disciplinary action would be applicable following hazard reporting by employees.

4.1.4 The safety policy shall be in accordance with all applicable CARs, best industry practices and reflect organizational commitments regarding safety.

4.1.5 The safety policy shall be communicated, with appropriate approval, throughout the organization.

4.1.6 The safety policy shall be reviewed periodically by the Design Organisation to ensure that it remains relevant and appropriate to the organisation.

4.1.7 The Design Organisation shall establish safety objectives for the SMS.

4.1.8 The safety objectives should be linked to the safety performance indicators, safety performance targets and action plans of the SMS established by the Design Organisation.

4.2 SMS organizational arrangements and safety accountabilities and responsibilities

4.2.1 A Design Organisation shall identify a Chief of Safety Management to be responsible and accountable on behalf of the Design Organisation for meeting the requirements of this CAR. The name of the Chief of Safety Management shall be intimated to DGCA.

4.2.2 The Chief of Safety Management shall be identifiable person who, irrespective of other functions, shall have ultimate responsibility and accountability, on behalf of the organization, for the implementation and maintenance of the SMS.

4.2.3 The Chief of Safety Management shall have:

4.2.3.1 Full control of the human resources required

4.2.3.2 Full control of the financial resources required

4.2.3.3 Direct responsibility for the conduct of the organization's affairs; and

4.2.3.4 Overall responsibility for all safety issues.

4.2.4 The Design Organisation shall establish the necessary organizational arrangements for the implementation of, adherence to and maintenance of the organization's SMS.

4.2.5 The Design Organisation shall identify the safety accountabilities, responsibilities and authorities of all members of management as well as of all employees, irrespective of other responsibilities.

4.2.6 Safety-related accountabilities, responsibilities and authorities shall be defined, documented and communicated throughout the organization.

4.2.7 The Design Organisation shall identify a person from within the management to act as the Safety Manager, the individual and focal point responsible for the implementation and maintenance of an effective SMS.

4.2.8 The Safety Manager shall :

4.2.8.1 Ensure that processes needed for the SMS are developed, implemented adhered to and maintained;

4.2.8.2 Report to the Chief of Safety Management on the performance of the SMS and on any need for improvement; and

4.2.8.3 Ensure safety promotion throughout the organization.

4.3 Coordination of Emergency Response Planning

4.3.1 The Design Organisation shall ensure its emergency response plan is properly coordinated with the emergency response plans of those organizations it must interface with during the provision of its services.

4.3.2 The coordination of the emergency response plan shall ensure the orderly and efficient transition from normal to emergency operations and the return to normal operations.

4.3.3 The coordination of the emergency response plan shall include, the:

4.3.3.1 Delegation of emergency authority;

4.3.3.2 Assignment of emergency responsibilities during the coordinated activities;

4.3.3.3 Coordination of efforts to cope with the emergency; and

4.3.3.4 Compatibility with other emergency response plans of other organizations.

4.4 Documentation

4.4.1 The Design Organisation shall develop and maintain SMS documentation to describe:

4.4.1.1 The safety policy and objectives;

4.4.1.2 The SMS requirements;

4.4.1.3 The SMS processes and procedures;

4.4.1.4 The accountabilities, responsibilities and authorities for processes and procedures; and

4.4.1.5 The SMS outputs.

4.4.2 The Design Organisation shall, as part of the SMS documentation, complete a system description.

4.4.3 The system description shall include the following:

4.4.3.1 The system interactions with other systems in the design organisation;

4.4.3.2 The system functions;

4.4.3.3 Required human performance considerations of the system operation;

4.4.3.4 Hardware components of the system;

4.4.3.5 Software components of the system;

4.4.3.6 Related procedures that define guidance for the operation and use of the system;

4.4.3.7 Operational environment; and

4.4.3.8 Contracted, subcontracted and purchased products and/or services.

4.4.4 The Design Organisation shall, as part of the SMS documentation, complete a gap analysis, in order to:

4.4.4.1 Identify the safety arrangements and structures that may already exist in its organization; and

4.4.4.2 Determine additional safety arrangements required to implement and maintain the organization's SMS.

4.4.5 The Design Organisation shall, as part of the SMS documentation, develop, adhere to and maintain an SMS implementation plan.

4.4.6 The SMS implementation plan shall be the definition of the approach the organization will adopt for managing safety in a manner that will meet the organization's safety objectives.

4.4.7 The SMS implementation plan shall explicitly address the coordination between the SMS of the Design Organisation and the SMS of other organizations the Design Organisation must interface with during the provision of services.

4.4.8 The SMS implementation plan shall include the following:

4.4.8.1 safety policy and objectives;

4.4.8.2 system description;

4.4.8.3 gap analysis;

4.4.8.4 SMS components;

4.4.8.5 safety roles and responsibilities;

4.4.8.6 hazard reporting policy;

4.4.8.7 means of employee involvement;

4.4.8.8 safety performance measurement;

4.4.8.9 safety training;

4.4.8.10 safety communication; and

4.4.8.11 management review of safety performance.

4.4.9 The SMS implementation plan shall be endorsed by senior management of the organization.

4.4.10 The Design Organisation shall, as part of the SMS documentation, develop and maintain a Safety Management Systems Manual (SMSM), to communicate the organization's approach to safety throughout the organization.

4.4.11. The SMSM shall include eleven chapters as given below :

a) Chapter 1 — Overview of the manual;

b) Chapter 2 — Basic safety concepts;

c) Chapter 3 — Introduction to safety management;

d) Chapter 4 — Hazards;

e) Chapter 5 — Safety risks;

f) Chapter 6 — ICAO / DGCA safety management requirements;

g) Chapter 7 — Introduction to safety management systems (SMS);

h) Chapter 8 — SMS planning;

- i) Chapter 9 — SMS operation;
- j) Chapter 10 — Phased approach to SMS implementation; and
- k) Chapter 11 — State safety programme (SSP).

4.4.12 The SMSM shall document all aspects of the SMS, and its contents shall include the following:

- 4.4.12.1 Scope of the safety management system;
- 4.4.12.2 Safety policy and objectives;
- 4.4.12.3 Safety accountabilities;
- 4.4.12.4 Key safety personnel;
- 4.4.12.5 Documentation control procedures;
- 4.4.12.6 Coordination of emergency response planning;
- 4.4.12.7 Hazard identification and safety risk management schemes;
- 4.4.12.8 Safety performance monitoring;
- 4.4.12.9 Safety auditing;
- 4.4.12.10 Procedures for the management of change;
- 4.4.12.11 Safety promotion; and
- 4.4.12.12 Control of contracted activities.

4.4.13 The Safety Management System Manual (SMSM) of the Design Organisation, including its subsequent amendments, shall be approved by DGCA.

5. SAFETY RISK MANAGEMENT

5.1 General

5.1.1 The Design Organisation shall develop and maintain a formal process that ensures that hazards are identified.

5.1.2 The Design Organisation shall develop and maintain Safety Data Collection and Processing Systems (SDCPS) that provide for the identification of hazards and the analysis, assessment and mitigation of safety risks.

5.1.3 The Design Organisation's SDCPS shall include reactive, proactive and predictive methods of safety data collection.

5.2 Hazard Identification

5.2.1 The Design Organisation shall develop and maintain formal means for effectively collecting, recording, acting on and generating feedback about hazards in operations, which combine reactive, proactive and predictive methods of safety data collection. Formal means of safety data collection shall include mandatory, voluntary and confidential reporting systems.

5.2.2 The hazard identification process shall include the following steps:

5.2.2.1 Reporting of hazards, events or safety concerns;

5.2.2.2 Collection and storage of safety data;

5.2.2.3 Analysis of the safety data; and

5.2.2.4 Distribution of the safety information distilled from the safety data.

5.3 Safety Risk Assessment

5.3.1 The Design Organisation shall develop and maintain a formal process that ensures analysis, assessment and control of the safety risks of the consequences of hazards during the provision of its services.

5.3.2 The safety risks of the consequences of each hazard identified through the hazard identification processes described in para 5.2 of this CAR shall be analysed in terms of probability and severity of occurrence, and assessed for their tolerability.

5.3.3 The Design Organization shall define the levels of management with authority to make safety risk tolerability decisions.

5.3.4 The organization shall define safety controls for each safety risk assessed as tolerable.

6. SAFETY ASSURANCE

6.1 General

6.1.1 The Design Organization shall develop and maintain safety assurance processes to ensure that the safety risk controls developed as a consequence of the hazard identification and safety risk management activities in para 5 achieve their intended objectives.

6.1.2 Safety assurance processes shall apply to an SMS whether the activities and/or operations are accomplished internally or are outsourced.

6.2 Safety Performance Monitoring and Measurement

6.2.1 The Design Organization shall, as part of the SMS safety assurance activities, develop and maintain the necessary means to verify the safety performance of the organization in reference to the safety performance indicators and safety performance targets of the SMS, and to validate the effectiveness of safety risk controls.

6.2.2 Safety performance monitoring and measurement means shall include the following:

6.2.2.1 Hazard reporting systems;

6.2.2.2 Safety audits;

6.2.2.3 Safety surveys;

6.2.2.4 Safety reviews;

6.2.2.5 Safety studies; and

6.2.2.6 Internal safety investigations.

6.2.3 The hazard reporting procedures shall set out the conditions to ensure effective reporting, including the conditions under which disciplinary/administrative action shall not apply.

6.2.4 In case of any accident / incident the Design Organisation should intimate DGCA within 72 hours of its occurrence and after investigation, a comprehensive report should be submitted to DGCA as soon as practicable.

6.3 Change in Design Organisation

6.3.1 The Design Organisation shall, as part of the SMS safety assurance activities, develop and maintain a formal process for any change in Design Organisation.

6.3.2 The formal process for the change shall:

6.3.2.1 Identify changes within the organization which may affect established processes and services;

6.3.2.2 Establish arrangements to ensure safety performance prior to implementing changes; and

6.3.2.3 Eliminate or modify safety risk controls that are no longer needed due to changes in the Design organisation.

6.4 Continuous Improvement of the Safety System

6.4.1 The Design Organisation shall, as part of the SMS safety assurance activities, develop and maintain formal processes to identify the causes of substandard performance of the SMS, determine the implications on its operations, and rectify situations involving substandard performance in order to ensure continuous improvement of the SMS.

6.4.2 Continuous improvement of the Design Organisation's SMS shall include:

6.4.2.1 Proactive and reactive evaluations of facilities, equipment, documentation and procedures, to verify the effectiveness of strategies for control of safety risks; and

6.4.2.2 Proactive evaluation of the individual's performance, to verify the fulfilment of safety responsibilities.

7. SAFETY PROMOTION

7.1 General

The Design Organisation shall develop and maintain formal safety training and safety communication activities to create an environment where the safety objectives of the organization can be achieved.

7.2 Safety Training

7.2.1 The Design Organization shall, as part of its safety promotion activities, develop and maintain a safety training programme that ensures that personnel are trained and competent to perform their SMS duties.

7.2.2 The scope of the safety training shall be appropriate to the individual's involvement in the SMS.

7.2.3 The Chief of Safety Management and his team shall receive safety awareness training regarding:

7.2.3.1 Safety policy and objectives;

7.2.3.2 SMS roles and responsibilities;

7.2.3.3 SMS standards; and

7.2.3.4 Safety assurance.

7.3 Safety Communication

7.3.1 The Design Organisation shall, as part of its safety promotion activities, develop and maintain formal means for safety communication, to:

7.3.1.1 Ensure that all staff are fully aware of the SMS;

7.3.1.2 Convey safety-critical information;

7.3.1.3 Explain why particular safety actions are taken;

7.3.1.4 Explain why safety procedures are introduced or changed; and

7.3.1.5 Convey generic safety information.

7.3.2 Formal means of safety communication shall include:

7.3.2.1 Safety policies and procedures;

7.3.2.2 Newsletters;

7.3.2.3 Bulletins; and

7.3.2.4 Websites.

8. QUALITY POLICY

The Design Organization shall ensure that the organization's quality policy is consistent with, and supports the fulfilment of, the activities of the SMS.

9. IMPLEMENTATION OF THE SMS

9.1 This CAR proposes, but does not mandate, a phased implementation of the Design Organisation's SMS, which encompasses four phases as described in para 9.2 through 9.5 of this part.

9.2 **Phase 0** — Planning should provide a blueprint on how the SMS requirements will be met and integrated into the organization’s work activities, and an accountability framework for the implementation of the SMS:

9.2.1 Identify the Chief of Safety Management and the safety accountabilities of managers;

9.2.2 Identify the person (or planning group) within the organization responsible for implementing the SMS;

9.2.3 Describe the system of the Design Organisation;

9.2.4 Conduct a gap analysis of the organization’s existing resources compared with the national and international requirements for establishing an SMS;

9.2.5 Develop an SMS implementation plan that explains how the organization will implement the SMS on the basis of applicable Civil Aviation Requirements, the system description and the results of the gap analysis;

9.2.6 Develop documentation relevant to safety policy and objectives; and

9.2.7 Develop and establish means for safety communication.

9.3 **Phase I** — Reactive processes should put into practice those elements of the SMS implementation plan that refer to safety risk management based on reactive processes:

9.3.1 Hazard identification and safety risk management using reactive processes;

9.3.2 Training relevant to:

9.3.2.1 SMS implementation plan components; and

9.3.2.2 Safety risk management (reactive processes).

9.3.4 Documentation relevant to:

9.3.4.1 SMS implementation plan components; and

9.3.4.2 Safety risk management (reactive processes).

9.4 **Phase II** — Proactive and predictive processes should put into practice those elements of the SMS implementation plan that refer to safety risk management based on proactive and predictive processes:

9.4.1 Hazard identification and safety risk management using proactive and predictive processes;

9.4.2 Training relevant to:

9.4.2.1 SMS implementation plan components; and

9.4.2.2 Safety risk management (proactive and predictive processes).

9.4.3 Documentation relevant to:

9.4.3.1 SMS implementation plan components; and

9.4.3.2 Safety risk management (proactive and predictive processes).

9.5 **Phase III** — Operational safety assurance should put into practice operational safety assurance:

9.5.1 Development of and agreement on safety performance indicators and safety performance targets;

9.5.2 SMS continuous improvement;

9.5.3 Training relevant to operational safety assurance;

9.5.4 Documentation relevant to operational safety assurance; and

9.5.5 Develop and maintain formal means for safety communication

10. Audit of SMS of Design Organisation

10.1 The audit of Safety Management System of Design Organisation shall be carried out by DGCA at least once in a calendar year and surveillance may be carried out at any time. The design organization shall make arrangements that allow DGCA to make any investigations, including investigations of partners and subcontractors, necessary to determine compliance with the requirements contained in this CAR.

10.2 The findings of the non-compliances with shall be classified as follows:

10.2.1 Level 1 : A level one finding is any non-compliance with this CAR which could lead to uncontrolled non-compliances with applicable requirements. In case of a level one finding, the holder of the design organization approval shall demonstrate corrective action to the satisfaction of DGCA within a period of maximum 7 working days, extendable up to no more than 21 working days, depending upon complexity of the case, after written confirmation of the finding;

10.2.2 Level 2 : A level two finding is any non-compliance with this CAR which is not classified as level one. The corrective action period granted by DGCA shall be within three months. In certain circumstances and subject to the nature of the finding, DGCA may extend the period from three months to six months, subject to a satisfactory corrective action plan agreed by the DGCA.

10.2.3 Level 3 : A level three finding is any item where it has been identified, by objective evidence, to contain potential problems that could lead to non-compliance under para 10.2.1. A level three finding shall not require immediate action by the holder of the design organization approval.

10.3 In case of level one or level two findings, the Design Organization Approval may be subject to a partial or full suspension or revocation under the applicable administrative procedures established by DGCA. The holder of the Design Organization Approval shall provide confirmation of receipt of the notice of suspension or revocation of the Design Organization Approval in a timely manner.

(CHARAN DASS)
Joint Director General of Civil Aviation

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