Safety Management Programe and Importance in Indian Aviation Industry

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Concept of Safety

States and service providers set the minimum level of safety performance for civil aviation that they want to achieve. These are called safety performance targets and safety performance indicators, and they are written down in terms of these goals and indicators. According to the DGCA, acceptable level of safety (ALOS) is the minimum level of safety that must be met by a system in real life. Safety is the state in which the risk of harm to people or to property is reduced to, and kept at, a level that is acceptable. This is done through a process of hazard identification and risk management.

Safety is becoming more and more seen as the result of certain organisational processes. These processes are meant to keep the safety risks and consequences of hazards in operational contexts under the control of the organisation.

As the person or people in question have different ideas about safety, the concept of safety in aviation will have different meanings, such as:

- Avoiding mistakes and not making them in the first place.
- There were no accidents or serious incidents.
- The second thing to say is that there are no hazards or risks.
- The third step is to control unsafe acts and conditions.
- Compliance with regulations.

However, even though the main goal is to avoid accidents and serious incidents, a 100% safety rate isn't possible Failures and mistakes happen, no matter how hard you try to avoid them. People and things made by people can never be completely safe, free of risks and hazards. Safety is a relative statement. In a "as low as reasonably practicable" safe system, inherent risks are OK because they are "as low as possible."

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The Need For Safety Management

Aviation is arguably the safest mode of mass transportation and one of the safest socio-technical production systems in the history of humankind. It is a tribute to the aviation safety community and its unrelenting endeavors that in a mere century aviation has progressed from a safety perspective, from a fragile system to a safety management environment in international civil aviation. From the mid-1990s to the present day, aviation entered its third safety reliability era, becoming an ultra-safe system (i.e. a system that experiences less than one catastrophic safety breakdown every one million production cycles). From a global perspective and notwithstanding regional spikes, accidents became infrequent. Serious incidents also became fewer and further apart.

Fundamental in this consolidation was the adoption of a business-like approach to the management of safety, based upon the routine collection and analysis of daily operational data. Organizational decision making leading to excess allocation of resources for protection can have an impact on the financial state of the organization and, in theory, could ultimately lead to bankruptcy. There are two sides to the safety space, or two boundaries: the financial boundary and the safety boundary. Financial management does not take into consideration the worst possible outcome (bankruptcy).

Few Terminologies Frequently Used in Aviation Safety Management System

Gap analysis: A gap analysis is a comparison of the safety arrangements already in place in the company with those that are needed for the SMS to work

Hazard: Any circumstance or scenario that has the potential to inflict damage or injury is considered a hazard.

Accident: An occurrence associated with the operation of an aircraft which:-

- An event linked with the operation of an aircraft that occurs between the time any person enters the aircraft with the intention of flying and the time all such persons disembark; or
- In the case of an unmanned aircraft, occurs between the time the aircraft is prepared to take flight and the time it comes to

rest and the primary propulsion system is turned off, during which a person is killed or badly hurt as a result of

- being a passenger on the aeroplane, or
- direct touch with any part of the aircraft, including detachable components, or
- direct contact with a jet burst

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

Just Culture: It is a culture in which personnel are not punished for actions, omissions or decisions taken by them which are commensurate with their experience and training, but where gross negligence, willful violations and destructive acts are not tolerated.

High consequence indicators: Indicators of safety performance that relate to the monitoring and measurement of high-impact occurrences, such as accidents or serious incidents. Indicators of high relevance are occasionally referred to as reactive indicators.

Lower consequence indicators: Indicators of safety performance that relate to the monitoring and measurement of low-impact occurrences, events, or activities such as incidents, non-conformance finds, or deviations. Indicators of lower consequence are occasionally referred to as proactive/predictive indicators.

Mitigation: Measures or controls implemented to eliminate a hazard or to mitigate the severity or probability of the evaluated risks.

Predictive approach: It is a proactive method predicated on the probability of an occurrence of a safety risk; a real-time monitoring system for identifying potential future hazards and related dangers.

Proactive approach: It is a safety management approach that focuses on identifying dangers prior to their occurrence.

Reactive approach: It is preventive action conducted in response to safety-related occurrences, most often as a consequence of accident incident cause investigation.

Safety data: A defined set of data or safety values gathered from a variety of aviation-related sources and used to maintain or improve safety. These safety data are gathered through proactive or reactive safety-related actions, which may include, but are not limited to the following:

i. Accident or incident investigations;
ii. Safety reporting;
iii. Continuing airworthiness reporting;
iv. Operational performance monitoring;
v. Inspections, audits, surveys; or
vi. Safety studies and reviews

Safety Information: Information contained in Safety Data Collection and Processing System
(SDCPS) established for the sole purpose of improving aviation safety, and qualified for protection under specified conditions.

Safety Management System: As per DGCA is a management tool for the management of safety by an organization, reflecting an organized and orderly approach.

Safety performance: The degree to which a state or service provider achieves its safety objectives as specified by its safety performance targets and indicators.

State safety programme: A comprehensive collection of regulations and actions targeted at enhancing safety.

Safety performance target: It comprises one or more safety performance indicators, together with desired outcomes expressed in terms of those indicators. (ICAO Doc.9859 Safety Management Manual describes safety performance indicators and safety performance targets within the concept of an "acceptable level of safety".)

Safety Measurement: It is generally associated with the SSP and refers to the quantification of the outcomes of selected high-level, high consequence events, such as accident and serious incident continuous process. It is considered a spot check conducted at periodic intervals.

Safety Performance Measurement: It is generally associated with an SMS and refers to the quantification of the outcomes of selected low level, low consequence processes. Safety performance measurement is tactical in nature and is a non-stop activity, involving continuous monitoring and measurement.

The Components and Elements of a Safety Management System (SMS)

An SMS is composed of four components that represent the two fundamental operational processes that underpin it, as well as the organisational structures essential to support those two fundamental operational processes. An SMS is composed of four components:

Safety Policies and Objectives	Safety Risk Management Safety Promotion	Safety Assurance	Safety Promotion
➢ Management commitment & responsibilities ➢ Appointment of key safety personnel ➢ Safety accountabilities of managers ➢ Coordination of Emergency Response Plan ➢ SMS documentation	➢ Hazard identification Process ➢ Risk assessment and mitigation	➢ Safety performance monitoring and measurement ➢ The management of Change ➢ Continuous improvement of the SMS	➢ Training and education ➢ Safety commitment ➢ Corporate Safety Magazine ➢ Corporate Safety Week ➢ Safety Posters

The two core operational activities of an SMS are safety risk management and safety assurance. Safety risk management must be considered as an early system design activity, aimed at initial identification of hazards in the context in which operations related to the delivery of services will take place.

Safety assurance must be considered as a continuous, ongoing activity aims that:

a) ensuring that the initial identification of hazards and assumptions in relation to the assessment of the consequences of safety risks, and the defences that exist in the system as a means of control, remain valid and applicable as the system evolves over time; and/or

b) Introducing the changes in the defences as necessary.

Therefore, hazard identification can be considered as a one-time exercise that is conducted either during system design or when facing significant changes to the original system. Safety assurance, on the other hand, is a daily activity that is conducted non-stop to ensure that the operations that support the delivery of services are properly protected against hazards. **In a nutshell, hazard identification provides the initial frame of reference against which assurance of safety is conducted on a daily basis.**

Scope and Integration of The Safety Management System

Safety management encompasses all operating activities across the Facility. An SMS's scope includes the majority of the Facility's

activities, and most definitely all operational activities that support service delivery and have the potential to cause hazards. An SMS's direct scope includes maintenance, repair, support services, training and quality assurance, as well as other operational operations. The scope of an SMS includes, indirectly, other organisational operations that support operational activities, such as finance, human resources, and legal, as appropriate and relevant to service delivery.

Safety Management System Objectives

A Safety Management System (SMS) is a systematic approach to safety management that includes the required organisational structures, accountability structures, policies, and procedures. At a bare minimum, an organization's SMS should have the following objectives:

1. To develop a mature system for managing safety and the organization's contribution to achieving the State Safety Plan's aim through continuous assessment of the SMS and implementation of any necessary adjustments.
2. To ensure that the organisation operates competently on a day-to-day basis and through changes, in terms of:

➢ Equipment, infrastructure, and service facility provision.
➢ Maintenance of equipment, infrastructure and service facilities.
➢ The provision and promulgation of maintenance and operational data to the required accuracy.
➢ Safety performance indicator setting and monitoring.
➢ Reacting to occurrences and being proactive and predictive in identifying emerging hazards.
➢ Prescribe and document procedures for performing activities/ procedures including service provider's priorities.

3. To enhance safety performance where practicable or to maintain safety performance in accordance with the DGCA's SSP (state safety program).
4. SMS integration with other management systems, such as OHSMS, enables SMS to become a part of the entire business plan once the SMS develops and the integrated management system is supported by the ICAO SARP (harmonised safety management system).
5. Resource management that is effective and efficient by: Identifying the most serious risks to safety and allocating

appropriate resources to address those issues; and utilising data from organisation process audits to assist the SMS in internal audits of processes.

6. Obtain an organizational way of working that will: Enable the development of a just culture; and Further encourage full staff participation and commitment in safety management.
7. To comply with the regulatory requirements of DGCA, state safety programme, and of civil aviation requirements.
8. Promotion of an internal reporting and feedback system within the company and MRO for the purpose of implementing remedial actions.
9. To reduce the number of technical delays, AOG conditions, IFSDs, and incidents through proactive measures.
10. To maintain an integrated safety data system and to undertake periodic assessments of the SMS's efficacy.
11. Conduct safety training programmes for position holders, executives, certifying staff, and other employees in order to promote safety awareness.
12. Safety Review Board(SRB) members will establish safety targets. If an objective is pending approval, it will be reduced by 5% from the previous quarter until clearance is gained from the SRB.
13. To establish safety instructions and controls and to monitor compliance with them, must be disseminated to all levels of the company to document and communicate safety accountability, responsibilities and authorities throughout organisation.

The Accountable Manager will be accountable for safety within Organisation, as well as the implementation and maintenance of a successful SMS. He will also give all resources necessary to build and operate SMS in organisation. Each activity centre responsible for management and t he department leader will be accountable for safety at the activity facility.

Each individual is equally accountable for maintaining safety while performing their job duties, and if any hazard is detected, it will be brought to the attention of the Safety Manager and the activity centre in charge/Department head for corrective and preventive action. SMS

Division will conduct a risk analysis of the hazard and determine the tolerable level of risk factor and the appropriate level of management will take action.

References

1. ICAO SMS Module
2. Personal Experience in Industry

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