CHAPTER 1

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1. INTRODUCTION TO SAFETY MANAGEMENT SYSTEM (SMS)

1.1 History

In recent years a great deal of effort has been devoted to understanding how accidents happen in aviation and other industries. As a result of extensive research, it has been proved that most accidents result from human error. Studies have further confirmed that these human errors are not purely indicative of carelessness or incompetence on the job. Investigators are finding that the human is only the last link in a chain that leads to an accident. We will not prevent accidents by changing people; we will only prevent accidents when we address the underlying causal factors. In the 1990’s the term ‘organizational accident’ was coined because most of the links in an accident chain are under the control of the organization. Since the greatest threats to aviation safety originate in organizational issues, making the system safer will require action by the organization. Aviation safety experts and Regulatory Authorities worldwide have accepted and endorsed the conclusion that the most efficient way to enhance aviation safety is, to adopt a systematic approach to manage safety.

The basic safety process is accomplished in five steps:

a. A safety issue or concern is raised, a hazard is identified, or an incident or accident happens
b. The concern or event is reported or brought to the attention of management;
c. The event, hazard, or issue is analyzed to determine its causes or sources;
d. Corrective action, control or mitigation is developed and implemented; and
e. The corrective action is evaluated to make sure it is effective. If the safety issue is resolved, the action can be documented and the safety enhancement maintained. If the problem or issue is not resolved, it should be re-analyzed until it is resolved.

Safety is defined by ICAO as a state in which the risk of harm to persons or property damage is reduced to and maintained at or below an acceptable level through a continuing process of hazard identification and risk management. A Safety Management System is a systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures.

A Safety Management System concerns itself with organizational safety and defines how the Airline intends the management of air safety to be conducted as an integral part of the company’s business management activities. In common with all management systems a safety management system provides for goal setting, planning, and measuring performance. A Safety Management System is woven into the fabric of the organization. It becomes
part of the culture; the way people do their jobs. Notwithstanding the Regulatory aspect, aviation experts agree that implementation of an SMS, by an Airline, is justifiable as it also makes good business sense from the viewpoint of cost/benefit analysis.

Aviation can never be entirely risk free. While risk can never be completely eliminated, it must be reduced to as low a level as is reasonably practicable to ensure maximum safety and operational efficiency. The primary requirement for a Safety Management System (SMS) is to establish a management system that has the necessary processes and procedures in place such that operational safety is maintained at this acceptable level (risk management) and specified operational results are always achieved (quality management). Unlike traditional methods, which typically identify safety deficiencies after undesired events, safety management systems proactively identify and reduce causative hazards and their associated risks.

1.2 Safety Management System in PIA

The Safety program of PAKISTAN INTERNATIONAL AIRLINES is an integrated set of policies, procedures and activities aimed at improving safety. The organizational structures and activities that make up the Airlines’ Safety Management System are found throughout the organization. Every employee contributes to the safety health of the organization. In some departments safety management activity is more visible than in others, but the system is be integrated into “the way things are done” throughout the organization. This will be achieved by the implementation and continuing support of a safety program based on a coherent policy that leads to well designed procedures. This develops the capability to anticipate and address safety issues before they can lead to a serious incident or accident, thus improving operational safety and productivity.

Scope:

Safety Management System in PIA is applicable to all Departments and Divisions and covers all domestic and international stations. The objective is to ensure control of operations and management of safety risks.

Structure:

SMS is implemented through the respective departmental, divisional, sectional or station’s management personnel, specifically, by a group of experienced personnel nominated as members of Safety Action Group (SAG) by the Departmental/Divisional Head. This manual typically provides guidance designed to assist the employees in the implementation of SMS.
Functions:

SAGs are required to meet on at least monthly basis to undertake following functions for ensuring SMS implementation.

- Review and analyze the SAMS reports/issues and safety trends
- Identification & review of identified safety & security operational existing & potential hazards;
- Identification and review of risks (consequences) of identified hazards;
- Assessment of base risk level of the consequences.
- Identification and review of existing controls & guards (defenses) that are already available in the system, and their impact on the base risk level, to calculate the existing/actual risk level.
- Identify new or additional controls and guards (solutions) to bring the existing/actual risk level to the organizational minimum acceptable risk level or to totally eliminate the risks, if possible.
- To take initiatives based on risk assessment and ensure that the overall system risks are reduced to an acceptable level and/or maintained at lowest levels.
- To follow-up on management decisions and ensure effective implementation of controls.
- To generate performance reports for management review and solicit decisions from applicable levels of management.
- To define objectives based on safety performance and SMS implementation and ensure their achievement and analysis for identifying areas for continual improvement.
- To give inputs on significant issues to Safety Committee, Safety Review Board and Management Review Committee

Minutes of SAG meetings is recorded by the departmental/divisional SMS coordinator

SAMS is used as a main tool for risk management from reporting of hazards (voluntarily and confidential both) till the risk mitigation and follow-up of line and ground operations, core and support services and other arising issues during operations. For Safety Assurance, Document & Record Control and other QMS procedures for ensuring SMS implementation Corporate Quality Manual is to be referred. For Coordination of Emergency Response Planning, Emergency Response Manual is to be referred.

Reference Documents for Expanded Guidelines

In addition to policies and procedures explained in this manual expanded
guidance may be obtained from the applicable regulations of Civil Aviation Authority PCAA, ICAO Annex 19 and ICAO Document 9859 and IATA SMS Implementation guidelines. Policies and procedures defined in this manual are in line with the State Safety Program of Pakistan.

Communication Process for SMS Awareness

The nominated SMS coordinators and the departmental SAGs are closely linked with SMS Section of Safety & QA Department. Mediums such as information bulletins, QHSE newsletter, Safety magazine, email alerts, and web based SAMS software are used to provide an awareness of SMS. SAMS is mechanism used for generating statistical reports and trends of concerned domains and departments for risk based decision making.

Typically, in the SAG meetings which are also attended by the nominated official from Director Safety & QA, ongoing safety issues and initiatives to address these issues are discussed.

1.2.1 Safety Management System Components

To achieve the objective of highest level of operational safety, PIA has the following requisite components of an effective SMS:

a. Safety Policy Statement, which provides the Airline’s fundamental approach toward safety and promotes a positive safety culture. The Safety Policy Statement, signed by the Managing Director, is based on a genuine commitment to safety by the Airlines’ senior management team.

b. Statement of Accountabilities, which defines safety responsibilities of managers and employees at different levels in the organization, with effective delegation of responsibilities established for operationally critical areas when principal office holders are absent.

c. Accident Prevention Programme, which ensures the capture, analysis and dissemination of information used to identify operational hazards, and raise awareness throughout the organization. This programme includes an incident reporting system, flight data analysis as well as regular analysis of accident reports.

d. Risk Management Programme, comprised of systematic risk identification, expressed in terms of severity and likelihood of occurrence requires further development and implementation. The objective of this is to quantify risk in order to devise effective mitigation strategies. It also includes internal safety investigations.
e. Safety Assurance Programme, which incorporates safety performance monitoring and measurement and continuous improvement of the Safety System; encompassing activities ranging from safety audits, implementation of corrective & preventive actions to flight data management & analysis and safety management reviews.

f. A Safety Promotion Programme, which includes training and education, and safety communication through various means. It ensures that SMS awareness among all employees is maintained.

g. An Emergency Response Programme, consisting of contingency plans to ensure the proper response demanded of different parts of an organization when an emergency arises

h. Safety Data Collection Program

i. To ensure that existing and potential hazards & security threats to aircraft operations are indentified and analyzed the company offers the following channels of Reactive and Proactive safety data collection methods:

**Reactive Safety Reporting Channels**

- Confidential & Voluntary Safety Reporting (SAMS)
- Investigation Findings-Safety Recommendations
- Observation of Flight Crew Performance in line operations & Trainings
- QA and or Safety Auditing Reports
- PCAA Form 114 (MOR)
- SAFE Card

**Proactive Safety Reporting Channels**

- Gap Analysis
- Safety Case Studies
- SAG Meetings (SAMS Reports)
- Confidential & Voluntary Safety Reporting (SAMS)
- QA and or Safety Auditing Reports
- Flight Data Analysis Reports
- Safety Reports from Domestic & International Station Managers
- Safety Information Exchange (external sources)
- SAFE Card

Operational Safety Hazards are also recorded in different Data bases like, SAMS, AirFASE, PAMMIS, STEADES and in house developed MS Access for flight safety analysis program.
1.3. Documents for Reference

The following manuals should be read in conjunction with this SMS Manual:

- Flight Operations Manual
- MOE (Maintenance Organizational Exposition)
- Safety Equipment and Procedures Manual
- Passenger Handling Manual
- Emergency Response Planning Manual
- The CAR 1994 Part XIII and XV Accident and Incidents
- ANO 91.0020 Accident Prevention and Flight Safety Program
- ANO 91.0028 Flight Data Analysis (FDA) Programme & Flight Safety Document System
- ANO 93.0001 Identification of Aircraft Occurrence Reports
- ANO 91.0032 Safety Management Systems (SMS) for Operators.
- SAMS User guide and SOP for Qualification & Regularization of SAMS
- ANO 145 Appendix V

The following documents shall be consulted if clarification is required when a PCAA reference is not available:

- ICAO Annex 6 Part I & 2
- ICAO Doc 9760 Airworthiness Manual
- ICAO Doc 9756: Manual of Aircraft Accident and Incident Investigation
- ICAO Doc 9735 Safety Oversight Audit Manual
ICAO Annex 19 & ANO 145
Relevant documents of, EASA or FAA standards