



DIRECTORS GENERAL OF CIVIL AVIATION CONFERENCE ON A GLOBAL STRATEGY FOR AVIATION SAFETY

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Theme 2: Improving aviation safety

Topic 2.2: Management of aviation safety

SAFETY MANAGEMENT SYSTEM ENHANCEMENT

(Presented by Iran (Islamic Republic of))

SUMMARY

This paper presented to the Directors General of Civil Aviation Conference on A Global Strategy for Aviation Safety, regarding to improving aviation safety by implementation of a computerized data base system procedure, in order to enhance, the safety management systems (SMS), of an aviation, institute, industry or an airline. Hazard identification, evaluation of risk mitigation, safety performance monitoring data are collected and saved in a computer. A special designed software analyzes the data and recognizes hazards and high risks by analytical tools, consequently, alerts are provided in the form of visual light annunciation and audio annunciation, based on the type of conflict.

1. INTRODUCTION

1.1 The existing levels of aviation safety are needed to improve, due to continuing growth of the air transportation and aviation industry maintenance organizations and bases and airline operators shall improve their existing levels of safety. Additional safety measures are needed in airline industries and air carriers for business survival as a financial management system (FMS), and a safety management system (SMS) should be established to achieve enhanced safety performance aiming at safe and sound aviation business, and organization's financial health.

1.2 Safety management is centred on such a systematic approach to hazard identification and risk management in the interests of minimizing the loss of human life, property damage, financial, environmental and societal; losses, associated with flight operations, related ground operations, aircraft engineering and aircraft maintenance, licensing and certification. In SMS, process, the safety concern problem, hazard, and accordance, shall be reported, then analyzed and lastly corrected, and evaluated, and

finally if resolved it must be documented, and in case it is not resolved, it shall be again analyzed, corrected and evaluated.

1.3 Referring to *Global Air Traffic Management Operational Concept* (Doc 9854), the systematic safety approach uses systems theory, systems engineering and management tools, to manage risks formally, in an integrated manner across all organizational levels, all disciplines, and all system life-cycle phases.

1.4 In "JAR OPS-1" which refers to fixed wing aircraft commercial air operations it is stated that:

"An operator shall establish an Accident Prevention and Flight Safety Programme, which may be integrated with the quality system, including programmes to achieve and maintain Risk Awareness by all persons, involved in operations".

The statement is based upon Standards and Recommended Practices (SARPs) in Annex 6 — *Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes*, and appropriate guidance material in *"Accident Prevention Manual* (Doc 9422) in which SMS is described.

1.5 The Aviation Quality Database (AQD), consisting of safety information of different sections and units of aviation and air transportation shall be collected, and investigated and analyzed. Airlines AQD, Airports AQD, ATC units AQD, meteorological AQD, personnel licensing AQD will be added up after audits and investigation in order to achieve master AQD" and Risk Management.

1.6 The International Safety Incident and Accident Data Reporting and Exchanging Systems are:

- a) ICAO Accident/Incident Data Reporting (ADREP);
- b) European Co-ordination Counter for Aviation Incident Reporting Systems;
- c) IATA Safety Trend Evaluation and Analysis Data Exchange System (STEACS).

1.7 The one definition of SMS is: "Safety Management" is the systematic management of the risks associated with flight operations, related ground operations and aircraft engineering or maintenance activities to achieve high levels of safety performance, SMS can be compared with a financial management system as a method of systematically managing a business function. SMS must be given the same care and attention as that of financial health of an organization; since, an aircraft accident is also an "unexpected loss" and not one any civil aviation industry or air operator wishes to suffer. An effective, and developed SMS will provide safe and sound air operations.

2. **DISCUSSION**

2.1 The basis of SMS will be strengthened by the existence of a positive safety culture.

2.1.1 The management of safety in an organization is from top management down through the organization, will describe the safety culture, and it is essential that safety must be actively managed from the very top of a company.

2.1.2 In other hand, SMS is a system for the management of safely including the organizational structure responsibilities, procedures, processes, and provisions for the implementation of safety policies in order to provide for the control of safety; that is: systematic procedures, and practices used by an organization to manage safety.

2.1.3 SMS must be explicit, systematic and proactive, safety monitoring, safety assessment, safety auditing, and safety promotion, make safety policy and the philosophy of safety management, concerning safety culture and maintenance or improvement of safety performance.

2.2 Steps to establish SMS are:

a) Planning:

- 1) safety assessment;
- 2) safety objectives;
- 3) safety strategy;
- 4) safety management processes and activities;
- 5) resources implications and timelines.

b) Senior management commitment to safety;

c) Organization:

- 1) safety manager;
- 2) safety organizational structure;
- 3) responsibilities and accountabilities;
- 4) safety committee;
- 5) training and competency.

d) Hazard identification;

e) Risk management;

f) Investigation compatibility. — Not only, "what happened"? - But also: "why it happened.";

g) Safety analysis compatibility, by:

- 1) recognized methodology analytical tools;
- 2) analysis, occurrence investigation;

- 3) hazard identification;
- 4) evaluation of risk mitigation;
- 5) monitoring safety performance.
- h) Safety promotion and training:
 - 1) training;
 - 2) being aware and informed by safety activities.
- i) Safety management documentation and information management, manuals, include: policy, accountabilities, safety procedures; and
- j) Safety oversight and program evaluation, oversight; include: inspector, survey, and audit.

3. CONCLUSION

3.1 The aim of this paper is to introduce a computerized database system in order to enhance the Safety Management Systems. of an aviation institute, industry or an airline.

3.2 Data and results collected by means of different modules such as:

- a) Safety awareness;
- b) Safety records and safety documentation;
- c) Safety survey and safety monitoring;
- d) Competency and licensing;
- e) Policy organization, target levels;
- f) Reporting and investigation; and
- g) Implementation plan.

3.3 In all phases, divisions, namely: operations, maintenances, cabin crew, other personnel, are documented in the safety management manual, and are saved in a computer, the computer is equipped with a *pecially designed software*, which is able to identify hazards and high risks data, systematically recorded and analyzed through a defined and recognized methodology and analytical tools, and in a systematic computerized manner.

3.4 Trend analysis, occurrence investigation, hazard identification, evaluation of risk mitigation and safety performance monitoring are done by the computer, and the results of these will be reported automatically to the concerned directors by e-mail and announced in physical manners.

3.5 Alerts are provided in the form of visual light annunciation of a caution or warning, and audio annunciation based on the type of conflict and colour enhanced visible display in the case of safety violation.

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