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An SMS Standard

BY SUSHANT DEB

Despite the well-intended efforts of international and national aviation bodies, there is no comprehensive standard for airport safety management systems (AP-SMS). Current safety efforts are not based on a systems approach designed to achieve a condition where risks are managed to an acceptable level.

Since the Sept. 11, 2001, terrorist attacks in the United States, however, airport operational safety has been identified by civil aviation authorities throughout the world as an important concern. Many international bodies and federal agencies have examined the need for an AP-SMS

and — independently of each other — have developed implementation proposals.

In November 2005, the International Civil Aviation Organization (ICAO) amended Annex 14, Volume 1, *Airport Design and Operations*, to require member states to have all certified international airports establish an AP-SMS. In March 2006, the Airports Council International (ACI) presented the ICAO Directors General of Civil Aviation (DGCA) Conference with a proposal to introduce a Web-based safety network system for airports.

In February 2007, the U.S. Federal Aviation Administration (FAA) proposed in Advisory

Circular (AC) 150/5200-37 that U.S. airport operators implement an SMS not only to meet ICAO standards but also to complement existing Federal Aviation Regulations Part 139, “Certification of Airports.” In April 2007, the *SMS Pilot Study Participant’s Guide* was made available by the FAA. In addition, FAA AC 150/5200-18C, *Airport Safety Self-Inspection*, established a checklist primarily for airport operations areas such as ramp/apron aircraft parking areas, taxiways, runways, fueling facilities, buildings and hangars. However, the checklist is not system-based.

ICAO Document 9859, *Safety Management Manual* — first issued in 2006 — was developed to encourage a standardized approach to SMS.

The ICAO definition indicates that an AP-SMS must follow the systems process; that is, it must have a goal, a

system models follow the plan-do-check-act (PDCA) cycle of continuous improvement to control safety risks. All individual processes in an airport are planned (P), performed as planned (D), reviewed for effectiveness (C) and modified as necessary (A).

Generally accepted industry standards and the ICAO guidance describe SMS in terms of four distinct elements: safety policy and objectives, safety risk management, safety assurance, and safety promotion. The core SMS model suggested by the FAA advisory circular is based on the same four elements, called “safety pillars.” The AP-SMS standard proposed in this article, therefore, has these four pillars as a foundation.

The first pillar, safety policy and objectives, is not just an expression by the organization; it refers to the

are appropriate and effective; and, if required, modification of the mitigation activities.

An emergency response plan should be added as a complementary element of this pillar. After the 2001 terrorist attacks, this makes sense because any emergency — or crisis — response plan is based upon an assessment of risk appropriate to the size and type of operations.

The third pillar, safety assurance, calls for the risk controls developed under the second pillar to become organizational system requirements. The model proposed by the FAA advisory circular includes safety oversight — not to be confused with currently practiced airport self-inspection mentioned earlier. Because airport operations today involve participation of service providers not employed by the

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A new proposal expands on existing requirements for safety management systems.

plan to achieve the goal, processes and procedures developed according to the plan, and an evaluation process to measure the achievement of the goal. An AP-SMS standard must be comprehensive — every activity and/or process related to airport operations must be addressed by the standard.

A Management System Approach

The AP-SMS standard proposed in this article is essentially a management system approach to controlling risk. As a basic principle, most management

development of a safety management organization for the airport. According to the FAA advisory circular, the second pillar, safety risk management, refers to airport operations risk management. The airport operator must attempt to optimize the safety performance of its operations through proactive identification of hazards; assessment and measurement of safety risks; implementation of actions to mitigate the hazards and risks to an acceptable level; tracking the mitigation activities to ensure that they



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airport, “outsourcing of controls” is added to safety oversight. This is appropriate in the environments that have existed since Sept. 11, 2001. Safety promotion, the final pillar, is the foundation of a sound safety culture and emphasizes training, communication and participation.

Safety, like quality, requires continuous nurturing. The proposed AP-SMS standard must ensure this iterative concept and reduce risk to a level as low as reasonably practicable. The safety system, like the quality system, goes through a cycle of continuous improvement, from organization to implementation to audits to taking corrective and preventive action. Therefore, the AP-SMS standard could be developed in line with the concept of the ISO 9001:2000 standard, the International Organization for Standardization framework for operating a quality management system. This ISO approach seems appropriate because safety and quality are intertwined.

The proposed AP-SMS standard describes the requirements for an airport operator’s safety management system. The standard proposed here applies to Part 139 certified airports and general aviation airports in the United States and to airports of equivalent status in the rest of the world. The AP-SMS auditor will determine additional requirements applicable to individual airport operators. The AP-SMS standard would incorporate the minimum acceptable requirements of the FAA and ICAO, cited earlier in this article.

Five Clauses

The proposed AP-SMS standard has five parts — called clauses — including the four main pillars outlined by the FAA. The requirements for specifications to be documented and implemented by an airport operator are inherent in the standard. The fifth clause is safety improvement, which should contain provisions for dealing with self-evaluation of an airport’s existing SMS. This is in line with the check and act parts of the PDCA-principle. Thus, the five clauses are:

- Safety policy and objectives — The emphasis is on the airport operator’s organization and its management system. The clause should address developing an SMS manual, management commitment, periodic management reviews of the SMS, documentation requirements, establishing stakeholders’ responsibilities, establishing safety policy, and establishing safety objectives consistent with the policy.
- Safety risk management — The proposed AP-SMS standard recognizes that airport operation is a business that involves significant risk. While it makes good business sense to reduce risk and avoid the high costs associated with airport incidents and accidents, it would be prohibitively expensive and detrimental to the business environment if an airport

operator were to try to eliminate all risks. This clause should address the operator’s existing risk management system, along with its performance measures, as a means of evaluating the effectiveness. The standard would require the operator to define acceptable and unacceptable levels of safety risk, actual safety risk analysis and mitigation strategies.

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- Safety assurance — The proposed standard requires the operator to implement a self-auditing program (SAP) to evaluate how well the organization adheres to safety policy and meets its safety objectives, in addition to the airport operator's existing responsibilities for self-inspection and correction of discrepancies under Part 139 in the United States or equivalent requirements in other countries. The SAP must include each operations area of an airport.
- Safety promotion — This clause addresses safety training and education, safety communication and safety competency. The idea of this part of the proposed standard is to ensure that safety-promotion efforts are visible in all aspects of an airport's operations. This is about developing a safety culture.
- Safety improvement — This clause examines the safety management life cycle. It requires measurement of customer perception, monitoring and measuring SMS performance, implementation of corrective action for each safety non-conformity (SNC) generated during the SAP, determination of actions to eliminate the causes of potential SNC, and safety lessons learned.

The administration of the standard should not be difficult. For Class I and Class II airports under Part 139, all clauses should apply.¹ The audit duration should be at least 80 hours — 40 hours conducted by each of two auditors. For Class III, Class IV and general aviation airports, only

the clauses and subclauses selected by the AP-SMS auditor as applicable would be required. The audit duration should not exceed 40 hours by one auditor.

Each airport certified under the standard would undergo a recertification audit every third year and a surveillance audit annually.

An experienced auditor could use one of several methods; however, it is strongly recommended that an audit for accreditation follow guidelines provided by the European Aviation Safety Agency (EASA) in Document Q.1003-00.

An auditor conducting an audit using the AP-SMS standard should be certified as an ISO 9001:2000 lead assessor by the International Register of Certificated Auditors (IRCA) or an equivalent organization, and must be thoroughly familiar with the Part 139 airport certification process or its equivalent and with the current versions of several ICAO documents: Annex 14, Volume 1; ICAO Document 9774, *Certification of Aerodromes*; ICAO Document 9859; and ICAO Annex 17, *Safeguarding International Civil Aviation Against Acts of Unlawful Interference*.

In conclusion, the standard proposed in this article focuses on a combination of systems, policies, programs, processes, plans, procedures, facilities, components, types of equipment, and other safety aspects of airport operations that are considered an operational necessity.

Protecting against unknown airport safety and security hazards is an inexact science, and it is difficult to plan where to start. The fact that the future of airport safety and security will always be an unknown entity further complicates the design, development and packaging



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of an AP-SMS. However, the AP-SMS standard proposed in this article can be applied to commercial and general aviation airports anywhere in the world. ●

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Note

1. FARs Part 139 defines a Class I airport as one certificated to handle scheduled operations of large air carriers, as well as unscheduled passenger operations of large air carriers and/or scheduled operations of smaller aircraft. A Class II airport is certificated for scheduled operations of small air carriers and unscheduled passenger operations of large air carriers. A Class III airport is certificated for scheduled operations of small air carriers, and a Class IV airport is certificated for unscheduled passenger operations of large air carriers.