

SMS:

The Next Step In Aviation System Safety

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Some - if not all - of what you have heard about safety management systems (SMS) is probably wrong.

I usually start each of my Federal Aviation Administration (FAA) briefings and workshops on SMS by asking who has heard about the systems and then making this assertion. Of late, nearly 100 percent of the participants report having heard at least something about SMS. In this article, we will therefore attempt to debunk some of the misconceptions that are commonly associated with SMS, before going into greater detail.

INCORRECT ASSUMPTIONS

SMS is not a substitute for compliance with FAA or other regulations, operating rules or policies. High technical and operational standards are still the vital underpinning of safety; a robust SMS gives us a more systematic way to develop, implement and meet these standards.

SMS is also not a substitute for FAA oversight. The agency still has a statutory obligation to provide assurance to the public of a safe air transportation system. However, SMS provides a more proactive means of assuring attainment of safety goals and interaction between the FAA and operators. It gives both parties a clear set of expectations for how risk will be managed.

SMS is not a substitute for system safety. System safety is commonly defined as a set of technical and managerial practices and principles applied in a systematic manner to hazard identification and risk management. Traditionally, most of the effort has been placed on the technical side. SMS completes the system safety circle by adding emphasis on structured management of these technical aspects.

Finally, SMS is not a prescription for a new or enlarged safety department. While safety specialists and organizations provide valuable services, particularly to large organizations, in all cases, those involved in and in charge of line operations must accomplish safety management. Safety management cannot be added to the tactics necessary to accomplish our mission. Rather, it is the way that we approach mission tasks. SMS provides a set of decision-making tools for operating safely.

THE EVOLUTION OF SMS

Approximately 10 years ago, the FAA set out to transform its oversight to employ system safety methodologies. Starting with systems for oversight of major air carriers, the administration began placing more emphasis on assurance of safety critical processes in operations than on isolated inspection results. This followed the evolution of quality management seen in industrial circles over the past decades. Emphasis is increasingly being placed on assurance that processes are designed and organized to assure success and decreasingly on after-the-fact analysis of failures. Other major countries, including Canada, Australia, the U.K. and others, are making the same evolution.

However, it quickly became clear that oversight could only go so far. The process owners, the organizations that conducted the business activities and other missions in which the risk was incurred, had to ensure that successful safety management was accomplished. This led the agency to explore the concept of SMS.

The SMS concept also was and continues to be explored by other countries. In 2006, the International Civil Aviation Organization (ICAO) enacted a standard that will require the organization's contracting countries to enact regulations for operators in international commercial air operations to implement SMS. Also in 2006, the FAA issued Advisory Circular 120-92, Introduction to Safety Management Systems for Air Operators. This circular provides a framework for SMS development on the part of operators. Currently, SMS is still voluntary in the U.S.

SMS GOING FORWARD

ICAO defines SMS as "a systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures." FAA began its development efforts with a thorough study of existing SMS programs around the world, as well as a review of existing management systems in the areas of quality, environmental protection, and occupational health and safety. A common set of principles from these systems was organized around four fundamental components, originally developed by the FAA Air Traffic Organization and since adopted by ICAO.

The first of these components, sometimes referred to as "pillars," is policy. A robust safety policy must go beyond the slogans often seen in mission, vision and policy statements. Safety policies provide a detailed expression of top management's objectives and expectations for the organization. It sets up a framework for plans, organizational structures and accountability frameworks for the organization's management and employees. Policies must also be translated into clear processes and procedures for employees.

The second major component is safety risk management (SRM). SRM is the core of safety management and covers all activities from major programs, such as training, dispatch and maintenance, down to practices for individual mission planning and control. SRM begins with gaining a thorough understanding of the mission, activity or organizational process at hand. It proceeds through hazard identification from a variety of sources, including process and mission analysis, employee-reporting systems, incident reports and audits. From here, analysis of risk provides us with a sense of how likely we are to encounter hazardous conditions and the potential severity of consequences. A fundamental next step is that of determining risk acceptability. This is an especially critical step for operators performing public safety missions. Careful analysis and clear procedures for balancing mission safety risk with mission criticality must be developed. Finally, SRM provides a means of developing, implementing and tracking risk controls.

The safety assurance process helps us to make sure our risk controls remain effective and that we become aware of changes in the operational environment that could present new hazards. The process provides us with a set of analytical data, analysis and decision-making activities to give us confidence in the robustness of our risk management strategies and controls. It also provides a means of implementing corrective actions when necessary.

The final pillar, safety promotion, provides processes for determining required competencies, training in safety critical areas and two-way communication between management and employees about safety matters. The safety promotion element is not a separate process but rather a series of activities that pervade the entire SMS and help to shape the organization's safety culture.

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