International Civil Aviation Organization

WORKING PAPER

A37-WP/225
TE/130
16/9/10
(Information Paper)
English only

ASSEMBLY — 37TH SESSION

TECHNICAL COMMISSION

Agenda Item 26: Safety Management Safety Data

ACHIEVING A COMMON UNDERSTANDING OF SSP-SMS RELATIONSHIP

(Presented by United States)

EXECUTIVE SUMMARY

Implementation of Safety Management Systems (SMS) by aviation service providers is essential to a robust aviation safety strategy. As the air transportation system becomes more global, it is increasingly important for safety strategies between States to become more aligned, both in terms of establishing a uniform level of safety performance across national boundaries and in reducing unnecessary burdens on service providers and their regulators.

To achieve this alignment, a common understanding of how SMS requirements should be applied is necessary. Two systems define the relationship between the State and service providers and, therefore, acceptance processes for service providers' SMSs: the State Safety Programme (SSP) and the Safety Oversight System. At present, these two systems are not integrated. Reconciliation of the two systems in regards to SMS acceptance will be necessary to have a clear, coherent SMS acceptance process. Next, there must be a common understanding among States regarding the processes, methods and expectations for SMS implementation and acceptance. Common SMS Standards provide a start but more is needed to establish equivalence of SMS implementation, acceptance and continuing oversight processes. Finally, there must be a common understanding of measurement and monitoring methods and processes.

This paper discusses the key aspects of SMS requirements and the relationship between civil aviation authorities and service providers with respect to SMS implementation and oversight. It identifies a basic set of problems related to these activities and proposes to address these problems and provide technical recommendations.

Strategic Objectives:	This working paper relates to Strategic Objective A.
References:	Annex 1 — *Personnel Licensing* Annex 6 — *Operation of Aircraft* Annex 8 — *Airworthiness of Aircraft* Annex 11 — *Air Traffic Services* Annex 14 — *Aerodromes* Doc 9734, *Safety Oversight Manual* Doc 9859, *Safety Management Manual (SMM)*

1. INTRODUCTION

1.1 ICAO Standards in Annex 6 — *Operation of Aircraft*, Annex 8 — *Airworthiness of Aircraft*, Annex 11 — *Air Traffic Services*, Annex 14 — *Aerodromes* and parts of Annex 1 — *Personnel Licensing* call for States to establish a State Safety Programme (SSP). Standards for SSP include requirements for States to require implementation of SMS by specified service providers. ICAO Annexes provide Standards and a set of SMS frameworks from which States can establish specific SMS requirements.

1.2 States have two key responsibilities with respect to service providers' SMSs: promulgation of SMS requirements (typically in the form of regulations) and a process for acceptance and continued oversight of those SMSs. Additionally, service providers may also be subject to evaluation performance assessment by third parties as a part of business arrangements.

1.3 Regulations and oversight practices of States involve both technical and legal/political considerations. This paper considers only the technical aspects related to establishing a common understanding of methods of evaluating SMS implementation and measuring and monitoring subsequent safety performance. A common understanding of these practices on a technical basis is essential for further determination of practical equivalence of SMSs. This will reduce the burden on service providers currently subject to certification or approval on the part of multiple authorities and be an essential consideration for any subsequent bilateral recognition of SMSs or their outputs. However, discussion of the legal aspects of possible future bilateral recognition of SMSs is outside the scope of this paper and its recommendations.

1.4 States' acceptance of service providers' SMS under Annexes 1, 6, 8, and 14 will be linked to certification, approval, acceptance, or other authorization processes and procedures applied to the service providers' operations[1]. However, of these, only service providers under Annexes 6 and 8 are subject to certification or direct oversight of multiple States' authorities. At present, these processes are also considered to be part of States' oversight systems. Oversight systems provide regulations for control of identified major hazards and processes for assurance that service providers apply these controls in a manner consistent with their individual operational environments.

1.5 It is in the best interest of the global air transportation system and individual States and service providers to foster a consistent level of safety performance across the system. This starts with adoption of common Standards and requirements (typically a matter of adopting the ICAO Standards and framework) but must also include a common understanding of those requirements and equivalent practices of applying them. The overall objective of common Standards and equivalent practices are to assure an acceptable level of safety performance and, therefore, safety on the part of organizations that provide aviation services to the public.

1.6 ICAO Annexes provide uniform requirements in the form of Standards and Recommended Practices (SARPs). However, differences in implementation and oversight practices can result in differences in performance and effectiveness in systems "as practiced" even where the same Standards are applied. What is needed is a coherent, integrated set of implementation and oversight practices among States to achieve the equivalence of SMS performance and effectiveness.

[1] While Air Traffic Management organizations are subject to the SMS requirements of Annex 11, they are not generally subject to certification or oversight by other States' authorities. Likewise, Airport (Aerodrome) operators are typically certificated only by the State in which the airport is located.

1.7 Two systems currently exist for accomplishing State-level safety management responsibilities: the SSP (ref. ICAO Doc 9859, *Safety Management Manual (SMM)* and relevant Annexes) and the Oversight System (ref. ICAO Doc 9734, *Safety Oversight Manual*). Each of these systems defines the roles and responsibilities of the State and service providers and the processes that define the relationship between them but, at present, they take different perspectives of the relationships between State civil aviation authorities and industry service providers.

2. BACKGROUND – PROBLEM STATEMENTS

2.1 The following problems need to be addressed to provide a consistent, coherent SMS implementation, acceptance, and oversight strategy:

a) overlapping and possible conflicts between currently described SSP and safety oversight systems;

b) possibility of differing concepts, expectations, and application of Standards to service provider SMS implementation and operation;

c) potential burden of maintaining different management systems to satisfy requirements of multiple certificating agencies; and

d) particular issues related to implementation, acceptance, and oversight of SMS in design organizations (Annex 8). In many States, these activities are not regulated or certificated at the organizational level, certifications being product-based rather than organization-based certification of processes.

3. DISCUSSION — SMS IMPLEMENTATION, ACCEPTANCE AND OVERSIGHT SCENARIOS

3.1 Current certification processes in most States are based upon the type of service provider. These differences include whether the service provider's process or product are approved, whether multiple States issue certificates on other States' service providers or products, and whether the organizations producing the products or services are the subject of certification or other approval.

a) Air Operator Certificate (AOC). AOCs are issued to entities that provide air transportation. AOCs are issued by the State of the Operator. States generally honor the AOCs of other Contracting States. Therefore, for operators, implementation and acceptance are not typically an issue. Oversight of AOC may be an issue based upon the differences States use to monitor safe operations;

b) Approved Maintenance Organizations (AMOs). AMO certificates are also issued to perform processes – processes related to maintenance of airframes, powerplants, propellers, or other appliance or accessories. States do not always recognize certificates issued by other States. Consequently, it is common for AMOs to be certificated and overseen by multiple States' authorities. Thus, even where requirements are equivalent, differences in implementation and oversight processes can result in significant burdens for AMO organizations; and

c) Design and Manufacturing (D&M) Organizations. Certificates are issued to design organizations' products. Like AMOs, multiple authorities may issue certificates for

these products. However, the organizations themselves and their design processes are not typically certificated. Management systems that are inherently organizational and process-oriented will pose additional challenges to SMS implementation and acceptance for D&M organizations. The additional element of multiple certifications of product designs makes this the most complex situation for harmonization and alignment by regulators. Therefore, there are more things to consider in establishing equivalence or practice in acceptance and oversight.

4. DISCUSSION — STATE-SERVICE PROVIDER RELATIONSHIPS AND SMS ACCEPTANCE

4.1 ICAO Standards require two things of a State SSP with respect to their relationships with service providers and processes for SMS acceptance:

a) regulations (State-level risk controls – see SMM 6.3.6/6.3.7) "States shall require…[SMS implementation on the part of service providers]…"; and

b) an acceptance process; "…[the service providers' SMS will be] acceptable to the State."

4.2 The two systems that define the State's role in safety of the air transportation system are:

a) SSP a, "management system for the management of safety by the State" (ICAO Doc 9859, para. 6.3.1) and, "an integrated set of regulations and activities aimed at improving safety" (ICAO Doc 9859, para. 6.3.2); and

b) oversight systems (8 Critical Elements (CEs)) safety oversight is defined as the function by which States ensure implementation of the safety-related Standards…" (ICAO Doc 9734, *Safety Oversight Manual*, para. 2.1.1). Elements of oversight related to SMS acceptance include:

1) CE-02 Specific Operating Regulations – the risk controls put in place by the State;

2) CE-06 Licensing, Certification, and Authorizations – the process by which the State assures the efficacy of the ability of organizations to control risk in their activities, including compliance with the risk controls (regulations) developed by the State;

3) CE-07 Surveillance – activities conducted by States to assure the continuing operational safety of service providers' processes and products; and

4) CE-08 Remedial Action – actions taken to improve service providers' risk controls or their compliance with them.

5. DISCUSSION — AN INTEGRATED APPROACH TO SAFETY MANAGEMENT AND OVERSIGHT

5.1 In order to achieve a technical basis for equivalent strategies for safety management, these elements of the SSP and oversight systems must be reconciled:

a) State Safety Risk Management (SRM) and requirements of CE-02;

b) State Safety Assurance (SA) of service providers' product/process designs, service provider SRM (a component of their SMS), and CE-06; and

c) State SA of service provider process/product safety performance and CE-07.

5.2 Equivalence of SMS across States and among service providers also depends upon:

a) a common understanding of the objectives and methodologies applied to these processes in the various documentation; and

b) a commonly accepted assessment and measurement strategy for these processes.

6. DISCUSSION — MEASUREMENTS OF SAFETY PERFORMANCE

6.1 ICAO Standards for both the SSP and service providers' SMSs include requirements for evaluation of the levels of safety and/or safety performance to be achieved. Currently, an active dialogue is ongoing among several States on how best to operationalize these requirements.

6.2 An important aspect of monitoring and measuring any type of system is to evaluate these systems against a consistent, robust set of performance measures and an equally robust analytical model. In order to achieve equivalence of implementation and oversight processes for service providers' SMSs, a common understanding of measurement methodologies must exist.

7. CONCLUSION

7.1 In order to establish an equivalence of SMS implementation and acceptance processes and practices among States, the following actions will be necessary:

a) reconciling the functions of safety management and safety oversight as a comprehensive, integrated system;

b) achieving common understanding of the functions of the SSP with respect to acceptance and oversight of service providers' SMS; and

c) achieving consensus on measurement and evaluation of process design and safety performance.

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