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Agenda Item 30: Other safety matters

IMPLEMENTATION OF SMS REQUIREMENTS FOR SINGAPORE AIR OPERATORS AND APPROVED MAINTENANCE ORGANIZATIONS

(Presented by Singapore)

EXECUTIVE SUMMARY	
This paper provides an overview of the progress by Civil Aviation Authority of Singapore (CAAS) to work towards the implementation of Safety Management System (SMS) requirements for Singapore air operators and approved maintenance organizations.	
Strategic Objectives:	This working paper relates to Strategic Objective A.
Financial implications:	Not applicable.
References:	Annex 6.

1. INTRODUCTION

1.1 The Civil Aviation Authority of Singapore (CAAS) started its Safety Management System (SMS) implementation programme as early as 2001. The SMS focused initially on the provision of an integrated and systematic approach to the management of safety in the running of Singapore aerodromes and air navigation services. As part of its aerodrome certification, Singapore Changi Airport implemented its SMS in 2003 to comply with ICAO Standards.

1.2 In 2004, CAAS put in place a strategy to introduce SMS requirements for Singapore air operators and approved maintenance organizations. This was in anticipation of the new Standards and Recommended Practices (SARPs) to be incorporated in Annex 6 – *Operation of Aircraft*, which would require all air operators and maintenance organizations to implement SMS by 1 January 2009.

1.3 This paper provides an overview of the phased introduction of SMS by CAAS for air operators and maintenance organizations in Singapore.

2. KEY CONSIDERATIONS

2.1 CAAS has regulatory safety oversight over 7 air operators, 140 commercial aircraft and around 100 maintenance organizations. This task of providing safety oversight will continue to grow in breadth and depth as Singapore's aerospace industry expands in tandem with the growth in the Asia-Pacific region.

2.2 Given the highly regulated nature of the aviation industry where organizations are already required to have comprehensive quality assurance programmes and are subject to regular safety audits, several key considerations were taken into account in the development of CAAS' SMS implementation plan for Singapore air operators and maintenance organizations. These were:

a) the need to ensure that organizations have a good knowledge of SMS concepts and principles, as well as of their benefits to enhancing safety;

b) the assurance that the SMS roll out plan will complement the foundation of existing safety regulations and programmes; and

c) the need to adopt a non-prescriptive, performance-based approach with regard to SMS regulations, guidance materials and assessment protocols.

3. SMS AWARENESS AND TRAINING

3.1 To address the first key consideration, CAAS started a series of annual Aviation Safety Forums in 2005 targeted at all air operators and maintenance organizations. The purpose of these forums was to educate the industry on the new SMS initiatives, and for companies to share their SMS implementation journeys. The Aviation Safety Forums were timely as an industry survey conducted by CAAS in early 2005 indicated that only twenty-three percent of the organizations had some kind of SMS awareness.

3.2 The third Aviation Safety Forum was held on 31 August 2007. The primary objective for this year's forum was to emphasize the critical importance of top management personnel to the success of SMS implementation in each organisation. Over four hundred senior and top management personnel, including seventy CEOs and Accountable Managers of Singapore air operators and maintenance organizations attended this year's forum. A positive correlation between improved safety and improved bottom lines must be demonstrated in order to obtain the buy-in of top management personnel whose commitment is necessary for the success of SMS. The forum therefore focused on the responsibility and accountability of top management in the implementation of SMS, and underscored how having an SMS in place would positively benefit the organisation financially.

3.3 The Singapore Aviation Academy (SAA) also offers courses to middle management and line personnel relating to the implementation of SMS on the ground. The intensive two-week "Integrated Safety Management Systems" course offered by SAA is aimed at providing crucial SMS training for local aviation organizations, other Civil Aviation Authorities (CAAs) as well as CAAS personnel. (Details of the SMS course are available at SAA's website at www.saa.com.sg.) CAAS has also encouraged other local training providers to offer SMS courses for the industry. Our officers have also benefited from ICAO's SMS training courses.

3.4 Feedback from our courses has shown that one of the key points that need to be addressed is the integration between the primary components and elements of SMS and other existing control systems such as Human Factors, Quality Management Systems and Occupational Safety, Health and Environment. SMS courses should also facilitate a clear understanding between the components or elements of an operator or maintenance organisation's safety management system, the State's SMS regulations and the State's overall safety programme.

4. SMS REGULATIONS AND GUIDANCE MATERIAL

4.1 Regulations and Advisory Circular

4.1.1 To address the second and third key considerations highlighted in paragraph 2.2 above, CAAS has ensured that regulations developed to require SMS were broad and non-prescriptive in nature. This allows for individual organizations to develop safety management systems which are commensurate with the scope and complexity of their operations. Detailed guidance on the implementation of SMS is contained in a non-mandatory Advisory Circular (AC 1-3(0)) issued in December 2006. This AC is available on the CAAS website at www.caas.gov.sg.

4.1.2 AC 1-3(0) spells out CAAS' two-phased SMS implementation plan. A non-mandatory "recommendation" phase between December 2006 and December 2008 encourages air operators and maintenance organizations to initiate SMS implementation, using guidance material and assessment protocols developed by CAAS. The mandatory SMS implementation phase will be effective from 1 January 2009, in line with the applicable date in Annex 6.

4.1.3 The AC also spells out eight SMS components as the minimum regulatory requirement, as follows:

a) safety policy;

b) safety accountability;

c) safety objectives and performance indicators;

d) hazard identification & risk management;

e) SMS training;

f) SMS documentation;

g) SMS audit; and

h) emergency response plan.

4.1.4 These eight SMS components are intended to constitute the essential minimum SMS regulatory requirements, and will be incorporated into existing regulations for operators and maintenance organizations before January 2009. Their incorporation into the AC was to provide the industry with advance notice of the eventual regulations. Details of the respective sub-elements under each SMS component, together with all other related guidance materials for SMS implementation, will remain within the Advisory Circular. This arrangement is in line with the "less prescriptive, more performance based" approach to SMS implementation.

4.1.5 The decision to incorporate eight core SMS components, although Annex 6 only specified four components was intentional. CAAS decided on eight core SMS components in order to place emphasis on other important aspects of SMS such as top management accountability, safety policy and goal setting, and emergency response plans. Critical components such as hazard identification and risk management were also made more explicit. This local customization of the SMS regulatory components was also apparent in the SMS requirements of other CAAs.

4.1.6 CAAS understands that ICAO is now considering expanding the four core SMS components in Annex 6 and to specify sub-elements under each component. In line with the "less prescriptive, more performance based" approach to SMS implementation, it would be expedient for the eventual SARP to allow for flexibility with respect to the number, description and arrangement of sub-elements under each SMS component. Such variations in the SMS elements should be expected across different CAAs, different aviation sector service providers, as well as between different operators and maintenance organizations. SMS harmonization beyond the level of core components may therefore not be necessary at this stage. There is a wide spectrum of organisational complexities, nature of operations and activities involved which necessitates due SMS customization within the scope of the broad, essential SMS components.

4.2 Industry consultation and feedback

4.2.1 The industry consultation phase of the Advisory Circular development surfaced several pertinent issues. States may wish to take these into account in the development of their own SMS regulations and advisory material. These issues centered primarily on:

a) the integration of aviation SMS with Quality Management Systems (QMS);

b) the integration of aviation SMS with Occupational Safety, Health & Environmental (OSHE) Systems;

c) the scope of regulatory SMS components (whether there should be 4, 6 or 8 components); and

d) whether SMS should be applicable for stand-alone component workshops.

4.2.2 The Aviation Safety Forums sought to exchange ideas and to provide some clarity on the overlapping roles of aviation SMS, QMS and OSHE systems. CAAS had also deliberated at length as to whether SMS implementation should be applicable for stand-alone component workshop organizations. It can be appreciated that States with a very sizeable population of air operator and maintenance organizations may prioritise their SMS implementation. The SMS requirements could be mandated for large aircraft operators and hangar maintenance organizations first before being extended to stand-alone workshops in the future. However, considering that even the lowest assembly of an airframe, engine or component is a critical link in the safety chain, and given that the bulk of Singapore's aviation industry are stand-alone component and engine maintenance organizations, CAAS has decided to mandate SMS for all operators and maintenance organizations simultaneously, including stand-alone component workshop organizations.

4.3 SMS assessment protocol

4.3.1 In July 2007, CAAS proceeded to the next milestone in our SMS implementation in the circulation of a draft SMS assessment protocol for industry consultation and feedback. The SMS assessment protocol was envisioned as an objective, transparent and expeditious tool for CAAS to assess an organisation's level of SMS implementation and maturity.

4.3.2 The current draft SMS assessment protocol is a 100-question checklist with questions spread over the 8 fundamental SMS components and their 14 sub-elements. The assessment protocol is intended to assess an organisation's level of SMS implementation and compliance status. Total points accumulated for satisfactory answers will serve to indicate the organisation's SMS performance and maturity level. Minimum acceptable performance is measured by the overall points attained as well as compliance to all Category One questions (which are deemed to form the baseline of a functional SMS).

4.3.3 As the industry's SMS maturity level increases, and as Singapore gains more experience in SMS, the assessment protocol questions could be revised and calibrated upwards to raise the minimum acceptable level of SMS implementation.

4.3.4 Singapore recently shared the draft SMS assessment protocol and Advisory Circular with various CAAs at the Southeast Asia Regional Initiative Forum (SEARIF) meeting on 1 August 2007, and cordially extends these documents to other interested CAAs.

5. ACTION BY THE ASSEMBLY

5.1 The Assembly is invited to note the efforts made by Singapore towards the implementation of SMS requirements for Singapore air operators and approved maintenance organizations in accordance with the SMS-related SARPs contained in Annex 6.

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