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EXPERIENCE OF THE STATE OF QATAR IN THE PHASED IMPLEMENTATION OF ITS STATE SAFETY PROGRAMME

(Presented by Qatar)

EXECUTIVE SUMMARY

In accordance with an implementation strategy developed within the framework of the *Global Aviation Safety Plan* (Doc 10004, GASP) and the Regional Aviation Safety Group-Middle East (RASG-MID), the State of Qatar has laid down the framework for phased implementation of the State safety programme (SSP) and the development of an Acceptable Level of Safety Performance (ALoSP).

The objective of this paper is to share Qatar's successful experience in the implementation of its safety management system (SMS) and SSP.

Strategic Objectives:	This working paper relates to strategic Objective: Safety.
Financial implications:	No financial impact.
References:	Doc 10004, *Global Aviation Safety Plan* (GASP) 2020-2022 Doc 9859, *Safety Management Manual* RASG-MID reports High level SSP document of the State of Qatar

1. INTRODUCTION

1.1 In the early phase of the Gap analysis that the Qatar Civil Aviation Authority (QCAA) conducted on the Integrated Safety Trend and Analysis System (iSTARS), it recognized that major issues had to be addressed with a view to meeting the challenges in the region. The QCAA also recognized that the SMS and the SSP would have to be implemented in a phased manner, in accordance with the timelines set within the framework of Doc 10004 and RASG-MID.

1.2 Qatar noted that it had no legislative provisions addressing the SSP framework and, in addition, it had not developed a centralised State safety data collection and processing system (SDCPS). There were manual channels for the reporting of mandatory occurrence reports (MORs), which limited the scope of analysis. Although the stakeholders had already begun implementing the SMS in accordance with applicable regulations in place since 2010, there was no standardized methodology for the review and acceptance of the SMS documents and evaluating the status of implementation of SMS within the industry.

1.3 Thereafter, based on the broad outlines of strategy establishing the future of the civil aviation sector in the State, in line with the objectives and aspirations of Qatar National Vision 2030 and based on the new regulatory framework, Qatar has provided resources and launched projects towards addressing the challenge to develop an SSP combined with an SMS in a formal and institutionalized way. Accordingly, we would like to share some successful experience achieved with the implementation of SSP in Qatar.

2. STATUS OF IMPLEMENTATION

2.1 SSP implementation lies with the commitment of senior management in sparing no efforts in ensuring that all necessary resources are made available to concerned entities for its implementation. The status of implementation is summarized as follows:

2.2 SSP framework

2.2.1 The State of Qatar established the SSP for the management of safety, to achieve an acceptable level of safety performance in civil aviation. It addresses the overall safety performance achieved, which relies upon the total system performance of all service providers, and also the regulator, working together for a safe outcome. The SSP framework is managed at three levels, strategic, tactical and operational. Further details are provided in the appendix to this paper.

2.3 Acceptable Level of Safety Performance

2.3.1 The SSP high level-document defines how Qatar sets its ALoSP. This is a relatively new concept and does not have the benefit of extensive guidance or experience of other States to benchmark. Therefore, an ALoSP concept has been generated that is appropriate to the Qatari context using a mixture of metrics (reactive, proactive and predictive) and approaches (compliance-based approach (CBA), risk-based approach (RBA) and performance-based approach (PBA)). This is further described in the appendix, Section 2.

2.4 Interactive, centralized reporting system

2.4.1 Management of safety related information is the cornerstone of safety management. The State of Qatar has established a central database, the SDCPS, for the filing of mandatory and voluntary occurrence reports. This database is the central repository for all information with regard not only to safety reports but also to follow up and management. The system allows for direct input through a web interface from aviation stakeholders. Access to the repository and data protection is controlled. Upon receipt of occurrences a group of representatives from the various technical domains, the Safety Action Preparation Group, meets collectively to analyse and follow up on the reports provided. This is described in Section 3 of the appendix.

2.5 **Centralized SMS oversight**

2.5.1 Qatar has developed a centralized process for the oversight and acceptance of the SMS of service providers, including the initial acceptance and on-going surveillance. The QCAA considered organizations with multiple service provider certifications when assessing their SMS, developing a centralized process involving concerned technical domains (personnel licensing and training (PEL), aircraft operations (OPS), airworthiness of aircraft (AIR), air navigation services (ANS) and aerodromes, air routes and ground aids (AGA)) in a unique regulatory assessment. This process allows for avoidance of duplication of effort and rationalizes the resources for both regulator and service providers. This is further described in Section 4 of the appendix.

2.6 **Prioritization mechanism using D3M methodology, based on CBA, RBA and PBA**

2.6.1 The purpose of this process is to set the prioritization mechanism as the enabler of the risk-based and performance-based approaches using the data-driven decision-making (D3M) methodology.

2.6.2 The introduction of risk- and performance-based approaches allows for a more effective use of the available oversight resources. It provides more flexibility to better allocate staff for e.g. more intensive oversight of organisations having a high-risk profile or less performing or sustaining major management changes. However, it should not be seen as a means to reduce staff resources, especially in the case of anticipated sustained aviation growth.

2.6.3 The QCAA has developed effective procedures and advanced tools for prioritization based on compliance-based, risk-based and performance-based approaches. Further details are given in the appendix.

3. **CONCLUSION**

3.1 The Assembly is invited to note the successful experience of Qatar in the implementation of its SMS and SSP.

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APPENDIX

1. SSP FRAMEWORK

1.1 Qatar established its State safety programme (SSP) for the management of safety, to achieve an acceptable level of safety performance (ALoSP) in civil aviation. It addresses the safety performance delivered by the State overall, which relies upon the total system performance of all service providers, and also the regulator, working together for a safe outcome. The SSP framework is managed at three levels: strategic, tactical and operational, as follows:

a) **Strategic - National Safety Committee (NSC)**: A very high-level committee chaired by the Accountable Executive and comprising Directors, Section Heads, AIG, representatives of stakeholders and military aviation. The NSC provides the platform to monitor the agreed Acceptable Level of Safety Performance and to achieve the state safety objective, locking in the resources allocated, processes followed and the efficiency of the results.

b) **Tactical - SSP implementation team (SIT):** It comprises the SSP Manager/Team and the section Heads of Licensing, Flight Operations, Airworthiness, ANS Inspectorate, Aerodrome, and Meteorological Departments respectively. The SIT aims to monitor the ALoSP at a high level through the assessment of the evolution of the SPIs develop associated targets and alert levels.

c) **Operational:** Each operational section within the Air Safety Department (OPS, AIR, PEL, ANS and AGA) meet with its respective services providers to evaluate the effectiveness of the implementation of the safety management system (SMS), according to the national regulation and also the maturity and the efficiency of their safety performance processes with regard to regional and global best practices.

2. ALoSP CONCEPT

2.1 Annex 19 — *Safety Management*, requires States to establish an SSP to achieve an ALoSP in civil aviation.

2.2 The ALoSP concept complements the traditional approach to safety oversight with a performance-based approach as defined by its safety indicators and their associated target and alert levels. It is pertinent to the State's safety policy and objectives. It expresses minimum safety objectives (or expectations) of Qatar to be achieved by the State, that is, the aggregated safety performance of all service providers under its authority. Qatar ALoSP is expressed in a manner that is appropriate to the Qatari context using a mixture of metrics (reactive, proactive and predictive) and approaches (compliance-based (CBA), risk-based (RBA) and performance-based (PBA)).

2.3 Qatar defines the strategic safety objective as: "The continuous improvement of aviation safety through a progressive reduction in the number of accidents / serious incidents and related fatalities

in the State of Qatar in order to be lower than the Middle East (MID) Region and global average, based on reactive, proactive and predictive safety management practices".

2.4 Qatar is an accredited Member State of the ICAO Regional Aviation Safety Group-Middle East (RASG-MID). The RASG-MID safety objectives are in line with the GASP objectives and address specific safety risks based on the analysis of available safety data. As aviation in Qatar continues to grow, safety risks will be monitored and objectives updated.

2.5 Qatar considers performance data in planning the focus of its oversight, and has initiated the conduct of data-driven, risk-based and prioritized oversight activities, both performance-based and compliance-oriented It ensures that these regulatory and administrative oversight activities are conducted according to international standards and best practices as appropriate. This will allow its oversight practices to progressively evolve into a performance-based approach as its data resources grow and it gains increasing experience and confidence with these methods.

2.6 For this purpose, the ALoSP draws upon each of the following:

a) CBA, which is related to conventional state safety oversight. The data originates from audit/inspection results (finding, area, level, closure date).

b) RBA, which is closely related to the statistical data and organizational risk profile assessment; occurrences that are reported through mandatory occurrence reports and/or voluntary occurrence report channels for the collection, analysis and information sharing processes.

c) PBA, which affects the whole safety environment. The data originates from the SMS audit/inspection, including safety performance indicators and associated safety targets and alert levels.

3. INTERACTIVE, CENTRALIZED REPORTING SYSTEM

3.1 Management of safety-related information is the cornerstone of safety management. Qatar's SDCPS provides for the filing of mandatory and voluntary occurrence reports. This database is the central repository for all information with regard not only to the safety reports but also to follow up and management. The system allows for direct input through a web interface from aviation stakeholders. Access to the repository and data protection is controlled.

3.2 Upon receipt of occurrences a group of representatives from the various technical sections, the Safety Action Preparation Group, follows a procedure to generate tactical and operational information and proposed actions for decision makers and external parties if appropriate. The proposed actions can relate to further analysis required at the state level and/or to initiate urgent investigation.

3.3 The Safety Management Board (SMB) meets periodically and has the responsibility to allocate sufficient resources for the follow up and initiation of increased activities for inspections, audits or enforcement as well as responsibility for approval of the actions as proposed by the Safety Action Preparation Group.

4. CENTRALIZED SMS OVERSIGHT

4.1 A centralized process was developed for the oversight and acceptance of the SMS of service providers, including initial acceptance and on-going surveillance. The QCAA considered organizations with multiple service provider certifications when assessing their SMSs, developing a centralized process involving concerned sections (PEL, OPS, AIR, ANS and AGA) in a unique regulatory assessment. This process allows for the avoidance of duplication of effort and rationalizes resources of both regulator and service providers.

4.2 Qatar developed its SMS assessment process to give the QCAA a tool for evaluation of SMS effectiveness and efficiency in civil aviation approved organizations. The SMS assessment is supported by the relevant Qatar Civil Aviation Regulations. The component with associated elements of the SMS model forms the basis of the evaluation checklists (initial, routine), which have been developed to comprise a set of defined expectations for each component and element.

5. PRIORITIZATION MECHANISM USING D3M METHODOLOGY, BASED ON CBA, RBA AND PBA

5.1 The need for moving towards risk and performance-based oversight (RBO/PBO) is triggered by many elements at various levels. Each of them deals with a different perspective and, at the same time, contributes to providing good reasons for implementing RBO/PBO.

5.2 Part 3.4 of ICAO Annex 19 and Doc 8959, *Safety Management Manual*, paragraphs 6.5 and 8.5.3, SSP framework, call for ”safety-data-driven targeting of oversight in areas of greater concern or need”. States should establish procedures to prioritize inspections, audits and surveys towards those areas of greater safety concern or need, as identified by the analysis of data on hazards, their consequences on operations, and the associated safety risks.

5.3 At regulatory level, RBO/PBO provides a mechanism for better identifying hazards, measuring associated risks as well as demonstrating effective mitigation of these risks. Ultimately it allows the civil aviation system to focus its attention on organisations that require additional or higher attention, strengthening the efficiency of the oversight. At the same time, an improved understanding of the risks across the aviation system will enable adjustments in the oversight cycle, on the basis of an improved risk picture that takes into account the causal factors of all safety occurrences, from isolated events to incidents and accidents. At organisational level, RBO relies on the evaluation of the effectiveness of the organisation’s management system and an assessment on the maturity of the organisation’s management system.

Principles of prioritization:

5.4 Qatar has established a state oversight concept appropriate to the Qatari context using a mixture approaches (CBA, RBA and PBA). The safety data is well considered in planning the focus of the oversight, using data driven mechanisms for the prioritization of its surveillance activities. The performance-based correlated with compliance-oriented approaches are conducted according to international standards and best practices as appropriate.

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