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COMMITTEE B

Agenda Item 7: Operational safety risks

7.1: Facilitation of data-driven decision-making in support of safety intelligence to support safety risk management

REGIONAL DATA COLLECTION, ANALYSIS AND INFORMATION SHARING FOR AVIATION SAFETY IN ASIA PACIFIC (AP-SHARE)

(Presented by China, Indonesia, Japan, the Philippines, Singapore, Thailand, International Air Transport Association and Flight Safety Foundation)

REVISION NO. 1

EXECUTIVE SUMMARY

This paper highlights the progress of the AP-SHARE Demonstration Project for data collection, analysis and information sharing for aviation safety in the Asia Pacific Region. The project objectives are to integrate and analyse operational data from various sources in support of safety awareness and improvements.

The governance, cost-sharing and safety analysis modalities of the AP-SHARE are presented and may be of interest to the Conference. The project demonstrates the value of data-driven analysis to address a particular safety issue in support of safety risk management.

Action: The Conference is invited to:

- a) note the progress of the AP-SHARE as a pioneering initiative in the Asia Pacific Region to establish a regional data sharing mechanism in support of safety risk management;
- b) note the governance, cost-sharing and safety analysis modalities of the AP-SHARE;
- c) encourage States and industry stakeholders to support regional mechanisms and platforms for greater data sharing and alignment of safety priorities; and
- d) recommend that ICAO consider using an information sharing platform to facilitate the exchange of experience in regional data sharing among regional groups.

1. INTRODUCTION

1.1 The ICAO Global Aviation Safety Plan (GASP) identifies safety information sharing as a safety performance enabler to achieve the objectives set out in the plan. The exchange of safety information enables the validation of existing safety risks, detection of emerging safety issues and facilitates effective and timely action to address those issues. ICAO Annex 19 — *Safety Management* also

emphasizes safety data collection, analysis and exchange as an essential component in supporting States' safety management activities.

1.2 Recognising the benefits of sharing and exchange of safety information on a regional basis, the 38th ICAO General Assembly agreed that the regional aviation safety groups (RASGs) should be encouraged to develop and implement regional safety data sharing and analysis programmes and systems. The Second ICAO High-level Safety Conference in 2015 also called for further development of global safety initiatives and implementation strategies to be built on the collection, analysis and sharing of information among States and aviation stakeholders, with appropriate tools, systems and legal frameworks to enable States and organisations to use the shared safety information.

1.3 The AP-SHARE is a regional data sharing initiative involving Asia Pacific States and industry partners, in collaboration with Flight Safety Foundation (FSF) and MITRE as Secretariat. The AP-SHARE currently has five member States, namely China, Indonesia, Japan, the Philippines and Singapore and fifteen industry partners (Association of Asia Pacific Airlines, International Air Transport Association, All Nippon Airways, Batik Air, Citilink Indonesia, Garuda Indonesia, Indonesia AirAsia, Japan Airlines, Lion Air, Scoot-Tigerair, SilkAir, Singapore Airlines, Sriwijaya Air, Airbus and Boeing). As members, they are bound by the governing principles, including those of safety management and information protection, as spelt out in the AP-SHARE Governance Plan. The project is funded by States through an annual contribution for the 3-year duration of the project. A governing board (GB), supported by a technical working group (TWG), presides over the activities of AP-SHARE. Both the TWG and GB are led by State and industry co-chairs.

2. KEY MILESTONES

Initiation of AP-SHARE

2.1 The options for an Asia Pacific regional data sharing programme were first discussed at the third meeting of the Asia Pacific Regional Aviation Safety Team (APRAST/3) in May 2013. APRAST subsequently supported Singapore's proposal to engage FSF and MITRE to perform a study on the feasibility of a regional data sharing programme. In August 2014, FSF/MITRE completed the feasibility study which affirmed the benefits of having such a programme, and recommended that a demonstration project be conducted to show the benefits of a regional data sharing programme. This initiative was also endorsed by the Regional Aviation Safety Group Asia and Pacific Regions (RASG-APAC).

Establishment of Governance Plan, Governing Board and Technical Working Group

2.2 Between 2014 and 2017, a series of workshops and meetings, facilitated by FSF and MITRE, were held to develop the project guiding principles and overall governance. In particular, a governance plan has been established to clearly define the roles and responsibilities of all participants, the governing structure comprising a governing board, working groups and the Secretariat, and the working processes including the scope of analysis, and confidentiality provisions for all information shared and discussed. By signing a Statement of Intent to participate in the AP-SHARE, members agree to abide by a set of core principles guiding this project. This governance plan is an essential and living document to guide the work of the AP-SHARE.

Conduct of the Demonstration Project

2.3 The AP-SHARE Demonstration Project was launched in September 2017 with the inaugural meetings of the GB and the TWG. The three-year demonstration project also seeks to address

issues of concern such as data protection and confidentiality, operating models, and governance structure. A key element will be to foster confidence and build trust among all participants in a collaborative approach to use data to support safety advancement goals.

2.4 One of the foremost tasks was to identify the priority safety issues. Based on the sharing from the members, the top three topics identified were: 1) traffic collision avoidance system-resolution advisory (TCAS-RA)/loss of separation/mid-air collision risk; 2) runway excursion/energy management/unstable approach; and 3) weather related deviations/severe turbulence.

2.5 AP-SHARE is expected to complete a study of one safety issue per year using a four-step methodology - identification, characterisation, validation and mitigation. In the first safety issue, AP-SHARE studied TCAS-RA events as a precursor of mid-air collision. AP-SHARE identified the cluster areas of risk where TCAS-RA events have occurred in the AP-SHARE member States.

2.6 The initial steps of data collection and preliminary analysis to understand common scenarios of TCAS-RA events have been completed. This forms the “characterisation” phase in the study of a safety issue in the AP-SHARE. The study revealed several common scenarios where TCAS-RA events are triggered in member States’ airspaces.

2.7 After these common scenarios were understood, the next step was to use additional data as “validation” of the earlier characterisation. More data were gathered from member States and industry partners to describe the scenarios along with the approximate locations and details of the circumstances that may have contributed these scenarios. One key observation was that a significant number of TCAS-RA events were triggered although the aircraft involved had followed the required air traffic control (ATC) clearances and/or adhered to operating procedures. In addition, through the process, the study could describe not only what happened but also the contributing factors to the TCAS-RA events. These details have been used to formulate potential mitigations. AP-SHARE plans to review the applicability and effectiveness of the potential mitigations, before member States implement the mitigations. This study is expected to be completed by end-2018.

Insights from AP-SHARE

2.8 There has been significant progress of the AP-SHARE since it was initiated in 2013. A key building block is the establishment of a robust governance framework, comprising a governance plan to help address concerns regarding data protection and confidentiality and to also provide a decision-making structure. This has been instrumental in building trust and confidence among participants. The conduct of the first safety study provides an excellent opportunity to test the governance of the regional programme while drawing important regional insights into a safety issue.

2.9 Another insight gained from AP-SHARE is the need for active collaboration among all participating organisations, which entails proactive sharing of resources as well as ensuring a sustainable funding structure to support both the technical and administrative coordination activities of the programme.

2.10 These insights gained from AP-SHARE could be of interest to other States, industry partners and other regional groups that are exploring or starting to set up similar data sharing programmes. Thus, ICAO may wish to consider using an information sharing platform to facilitate the exchange of experience in regional data sharing among regional groups.