55th CONFERENCE OF DIRECTORS GENERAL OF CIVIL AVIATION ASIA AND PACIFIC REGIONS

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AGENDA ITEM 3: AVIATION SAFETY

MEASURES TO PROMOTE SAFETY OF REGIONAL OPERATIONS IN ASIA PACIFIC

Presented by France

SUMMARY

In the context of a growing number of short haul operators in the Asia Pacific region and of different operating environments and infrastructure challenges, regional operations require dedicated focus and attention to prioritise relevant safety initiatives.

MEASURES TO PROMOTE SAFETY OF REGIONAL OPERATIONS IN ASIA PACIFIC

1. INTRODUCTION: HIGHLIGHTS OF REGIONAL OPERATIONS

1.1 The Asia Pacific regional market forecasts +3.9 % annual traffic growth from 2018. Based on the same metrics, the emerging markets' demand has overtaken the more mature markets' capacity since 2011 in the regional sector (+ 4.6% growth in emerging markets). This is notably driven by the growing markets in China and India.

1.2 During the COSCAP SEA meeting of 2016, the specificity of the regional aviation operations has been highlighted by the *Association of Asia Pacific Airlines*.

1.3 Turboprop aircraft are optimized to short haul routes in environment with limited ground infrastructure. Half of the growth of their operations is driven by the creation of new routes as part of airlines network development strategy. The other half relates to the expanded usage of the turboprop technology in pre-existing segments.

1.4 The IATA annual (2017) safety report makes a distinction between jet, turboprop and cargo operations. "*IATA member airlines achieved an even higher level, with zero fatal accidents or hull losses in 2017 involving either jet or turboprop equipment*."
"*Turboprop operations continue to account for a disproportionate share of the accident toll. They generated around 20% of all sectors flown last year, yet represented 44% of all accidents and 83% of all fatal accidents. Two of the five fatal turboprop accidents occurred in North America, so it is not a challenge that is confined to the developing world. Cargo operations are another area in need of additional attention.*"

1.5 2017 IATA annual report does highlight the significant difference between IATA members and non-IATA members. "*The all accident rate for airlines on the IOSA registry was nearly four times better than that of non-IOSA airlines"* (0.56 vs. 2.17). It also compares total fatalities where the numbers are comparable (as absolute numbers, not rate). IATA turboprop category is commercial operations with 14+ seats. The report states that latent conditions of regulatory oversight are a greater factor in turboprop operations compared to jets (40% vs 29%).

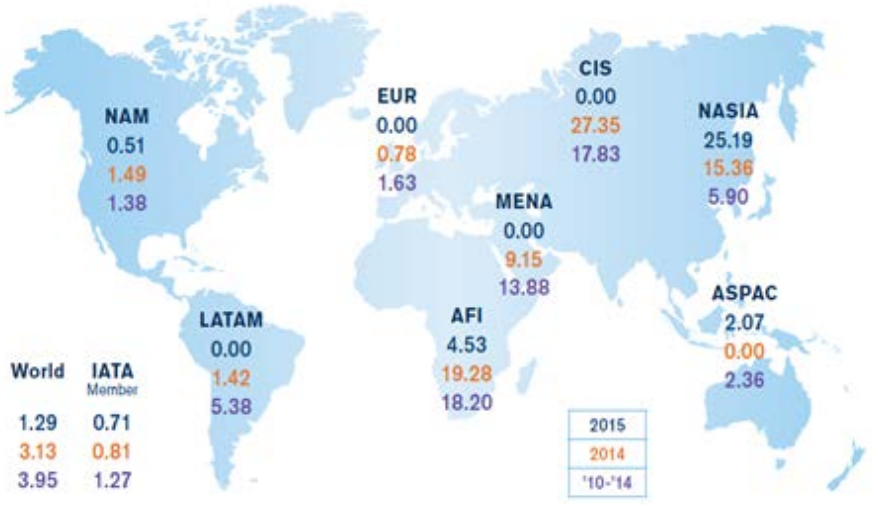

Figure 1: Turboprop Aircraft Hull loss rate by area per Million Sectors (source: IATA Safety report 2015)

2. DISCUSSION: MITIGATION MEASURES TO PROMOTE SAFETY OF REGIONAL OPERATIONS

2.1 Flight Data Monitoring should be at the heart of the operator's Safety Management System. To this end, ICAO recommends the implementation of Flight Data Analysis Program to all operators operating aircraft which Max Takeoff Weight is beyond 20 tons – compulsory beyond 27 tons (see Convention on International Civil Aviation Annex 6 Part 1 §3.3.5 & 3.3.6). Flight Data Analysis Program should be recommended for implementation to all operators operating aircraft with a MTOW over 5 700 kg, based on technology availability such as Quick Access Recorder (QAR). Indeed, such a program is at the heart of the operator's Safety Management System (Annex 6 part 1 ICAO) to monitor Standard Operating Procedures, identification of safety issues' precursors, and support for training.

2.2 To support this recommendation, dedicated training is available from relevant aircraft builders, and the message is promoted in various international forums (such as *Asia Pacific Aviation Safety Seminar, Safety in African Aviation, ATR Worldwide Flight Safety Conference, ALTA Safety Summit,*) and during face-to-face visits to operators.

2.3 This alternative was proposed at the Twenty - Seventh Regional Aviation Safety Group - Pan America Executive Steering Committee Meeting (ESC) of ICAO in December 2016, and this alternative was further discussed in ESC 28 and 29. One possible objective would be to include this proposition in the work for an 11th version of Annex 6 of ICAO.

See here below the conclusion of ESC29 on the matter:

> RASG-PA request the ICAO ANC to take note of the results of the CBA document and consider an amendment to Annex 6 Part I, FDAP Recommendation 3.3.1 and Standard 3.3.2 of Section 3.3, as follows:
>
> *3.3.1 Recommendation — All aeroplanes of a maximum certificated take-off mass over 5 700 kg should be equipped with a Quick Access Recorder (QAR). This QAR should record at a minimum the parameters recorded by the Flight Data Recorder and the operator should establish and maintain a flight data analysis programme as part of its safety management system.*
>
> *3.3.2 All aeroplanes of a maximum certificated take-off mass over 5 700kg for which the individual certificate of airworthiness has been first issued on or after 1 January 2005 shall be equipped with a Quick Access Recorder (QAR). This QAR shall record at a minimum the parameters recorded by the Flight Data Recorder and the operator shall establish and maintain a flight data analysis programme as part of its safety management system.*

2.4 Performance Based Navigation (PBN) uses satellites and PBN-compliant on-board equipment for navigation purposes. The PBN offers a high degree of flexibility for the development of instrument approach procedures and does not require installation of ground-based radionavigation systems, which can be very expensive (purchase plus maintenance). It should ease the development of instrument flight procedure where there are currently only visual approaches. Different categories of PBN approach enable authorities to adapt the procedures and their complexity to the local context.

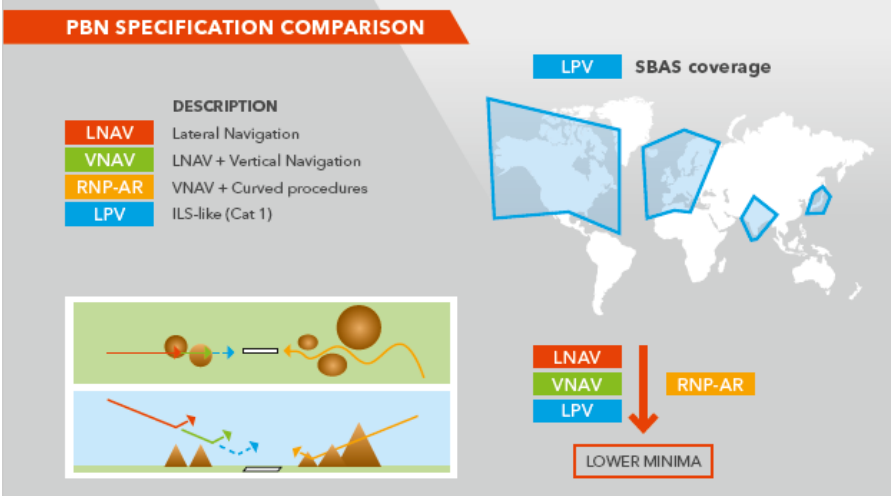

Figure 2. Performance Based Specification Comparison[1]

2.5 The safety benefit of PBN allows passengers aircraft operating daily tens of airports in challenging weather and geographic environment. In addition, PBN allows increased airspace capacity, increases airport accessibility, improves operational efficiency, and reduces environmental impact by saving fuel. It can allow airlines to save up to 10% of flight duration and therefore provides direct operating cost reduction.

2.6 In its resolution A37-11, the ICAO Assembly "*Urges all States to implement RNAV and RNP air traffic services (ATS) routes and approach procedures in accordance with the ICAO PBN concept laid down in the Performance-based Navigation (PBN) Manual (Doc 9613)*" and "*Resolves that States complete a PBN implementation plan as a matter of urgency*".

2.7 Flight crew and mechanic skills shortage plays an important role in the safety environment. External studies demonstrate that the social status of flight crew is currently under pressure with a subsequent impact on salaries and working conditions making the roles less attractive. In addition the training costs (200 000 to 300 000 USD) remain a barrier to many people wishing to enter the flight crew profession in the Asia Pacific region. A similar trend is developing in the industry for licensed mechanics. Airlines are competing for similar skills in a diminishing resources context. This implies pressure on training (reducing time of training), and skills reduction. Improving training standards for flight crew, licensed engineers, and create harmonized syllabus to ensure a minimum quality standard for type rating instructors is key to mitigate safety risks in regional operations.

[1] PBN approaches can be split in 4 parts: LNAV (Lateral navigation), VNAV (Vertical and Lateral navigation), LPV (Localizer Performance with Vertical guidance) and RNP-AR (Required Navigation Performance – Authorization Required). These approaches procedures allow reaching minima as low as 200 feet.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

a) note the information contained in this paper

b) promote and accelerate adoption of Flight Data Monitoring (FDM)

b1) Get the status of FDM implementation per fleet and per operator

b2) Target 100% FDM implementation whenever Quick Access Recorder is available on board (as per ICAO RASG-PA ESC29 conclusion)

c) In the context of phase 3 of the APAC FPP, contribute to enforce the adoption of PBN by inviting member States to

c1) Establish the ratio of airfields to which commercial air transport flights are operated and having no instrumented approach published

c2) Engage in a resolute implementation of PBN procedures in order to significantly lower the above ratio

d) encourage the development of harmonized standards with regards to crew and maintenance staff training

e) In connection with the NGAP initiative, encourage local authorities to support hiring and training efforts of regional operators, through tailored tools such as Crew Resource Management, Threat & Error Management and Evidenced Based Training.

- END –