



International Civil Aviation Organization

INFORMATION PAPER

AN-Conf/14-WP/161
18/7/24
(Information Paper)
English only

FOURTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 26 August to 6 September 2024

- Agenda Item 2: Timely and safe use of new technologies**
2.2: Addressing safety risks related to evolving aviation technologies

BUILDING RESILIENCE IN GLOBAL'S AVIATION SECTOR: STRATEGIES FOR SAFETY AND EFFICIENCY

(Presented by Malaysia)

EXECUTIVE SUMMARY

This working paper presents Malaysia's strategic initiatives to enhance the resilience, safety and efficiency of its air navigation services (ANS). The focus is on addressing evolving safety risks, integrating advanced technologies and improving operational efficiency within the scope of ANS.

Action: The Conference is invited to agree to the recommendations in paragraph 3.

1. INTRODUCTION

1.1 Malaysia's aviation sector has seen remarkable progress over the past decade, evolving into one of the most critical hubs within Southeast Asia Region. This growth is contributed by strategic investments in air navigation service infrastructure, advanced technologies and regulatory realignment aimed at enhancing safety, efficiency and sustainability. The Civil Aviation Authority of Malaysia (CAAM) plays a pivotal role in not only overseeing and regulating the aviation industry ensuring compliance with international standards set by the International Civil Aviation Organization (ICAO), but also providing air navigation services in the Malaysia.

1.2 The aviation sector faced significant challenges during the COVID-19 pandemic, including operational constraints that caused reduction in number of passengers. However, currently Malaysia's aviation industry is on a recovery path, with passenger traffic steadily increasing and nearing pre-pandemic levels which for the first time the share of international air traffic exceeded domestic air traffic. Strategic initiatives have been implemented by Malaysia to foster growth and resilience, focusing on sustainable practices and technological advancements. The primary aim of this paper is to highlight the efforts Malaysia is making to improve its air navigation services, ensuring they remain safe, efficient and resilient.

2. DISCUSSION

2.1 As aviation technologies evolve, so do the safety risks associated with them. Malaysia has been proactive in addressing these risks through various strategic initiatives and regulatory measures. The following points highlight the key areas of focus and discussions for the Conference.

Utilizing Technology for Safety Oversight

2.1.1 Adoption of advanced safety management systems (SMS) that enable proactive risk management and compliance to ICAO Standards and Recommended Practices (SARPs). This is to facilitate more regular safety oversight activity ensuring the air navigation services is conducted according to the regulatory requirements. The usage of electronic compliance questionnaires during safety oversight has revolutionized the audit or inspection process. By transitioning from conventional paper-based audits to electronic compliance questionnaires, Malaysia has significantly cut the duration of audit activities, reduced the manpower needed, and increased the number of safety oversight activities conducted. This approach not only streamlines the process but also enhances the accuracy and efficiency of data collection and analysis.

Optimized Air Traffic Management

2.1.2 Initiatives have been taken to integrate advanced air traffic management (ATM) systems which include automated systems and data link communication. These systems have streamlined the air traffic operations, significantly reduced the workloads of both pilots and air traffic controllers, which enhancing operational efficiency in air navigation. The plan towards more sophisticated ATM systems aligns with ICAO *Global Air Navigation Plan* (GANP, Doc 9750) where the use of real-time data processing and automated systems is becoming the norm to manage increasing air traffic volumes and ensure safety and efficiency in air navigation.

2.1.3 The integration of these advanced technologies has enabled Malaysia to handle air traffic more effectively. Automated systems allow for more precise and efficient routing, reducing the workload on air traffic controllers and minimizing the risk of human error. Data link communications facilitate better coordination and communication between pilots and air traffic controllers, leading to quicker and more accurate transmission of information. This has resulted in smoother operations and improved safety margins.

2.1.4 Concurrently with the adoption of new technologies, Malaysia is also phasing out the legacy air navigation systems. This modernization effort is crucial for several reasons:

- a) operational efficiency;
- b) safety enhancements; and
- c) environmental benefits.

Contingency Management

2.1.5 Developing a comprehensive contingency management plans is a critical component in air navigation. Such plans are essential of managing disruptions and maintain continuity of operations ensuring the resilience of air navigation services and the broader aviation infrastructure. The importance of robust contingency management plans cannot be overstated, as they provide a structured approach to dealing with various crises, from natural disasters to technical failures and security threats.

International Collaboration

2.1.6 Engaging in international collaborations to share best practices, enhance knowledge and strengthen regional cooperation in air navigation services is vital for global air navigation safety. Engaging in such collaborations allows for the sharing of best practices, the enhancement of knowledge, and the strengthening of regional cooperation. One key aspect is the regular exchange of information and

experiences among states, which can be facilitated through conferences and the establishment of dedicated platforms. For instance, adjacent states can work together to harmonize air traffic management procedures, ensuring seamless and efficient operations across borders. This cooperation can include joint training programs, shared use of air navigation technologies, and coordinated contingency management planning during contingency situations.

3. CONCLUSION

3.1 Enhancing the resilience, safety, and efficiency of air navigation services are critical in addressing the evolving safety risks posed by new aviation technologies. The Conference is invited to consider and agree to the recommendations outlined below to further support these initiatives and contribute to a safer and more efficient global aviation sector.

3.2 The Conference is invited to agree to the following recommendations:

- a) Adoption of advanced SMS and electronic compliance questionnaires. These tools enhance proactive risk management, ensure compliance with ICAO SARPs and streamline safety oversight activities. By transitioning from conventional paper-based audits to electronic systems, states can improve the accuracy and efficiency of data collection and analysis, thereby reducing audit durations and resource requirements.
- b) Integration of advanced ATM systems that include automated systems and data link communications. These technologies streamline air traffic operations, reduce workloads for pilots and air traffic controllers, and enhance operational efficiency. Aligning with the ICAO GANP, the use of real-time data processing and automated systems should be promoted to manage increasing air traffic volumes effectively, ensuring safety and efficiency in air navigation.
- c) All States should focus on the development and implementation of robust contingency management plans. These plans are essential for managing disruptions, maintaining continuity of operations, and ensuring the resilience of air navigation services. Structured and more harmonized approaches among member states to handling crises, ranging from natural disasters to technical failures and security threats, should be a standard practice.
- d) International collaboration among member states to share best practices, enhance knowledge, and strengthen regional cooperation in air navigation services should be facilitated. Regular exchange of information and experiences through conferences and dedicated platforms should be encouraged. Joint training programs, shared use of air navigation technologies, and coordinated contingency management planning during emergencies should be standard practices to ensure seamless and efficient operations across borders.

— END —