

**58th CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGIONS**

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AGENDA ITEM 4: AIR NAVIGATION

AIR NAVIGATION IN PAKISTAN

(Presented by Pakistan)

INFORMATION PAPER

SUMMARY

Air Navigation Services (ANS) play a crucial role in ensuring the safety and efficiency of air traffic in Pakistan. As the country's air traffic management system becomes more complex, the need for reliable and efficient air navigation services has become increasingly important. This Discussion Paper aims to discuss the latest current and future developments in air navigation services in Pakistan.

AIR NAVIGATION IN PAKISTAN

1. INTRODUCTION

1.1 Pakistan Civil Aviation Authority is the regulator of Civil Aviation in the country. The authority is responsible for ensuring safe and seamless flow of air traffic in Pakistan Airspace. This core objective is achieved through continuous development and enhancement in ATM system, Aeronautical SAR system, AIM system, along with other cogent systems and procedures. PCAA seeks to explore innovative solutions and technologies for enhancing the efficiency and reliability of air navigation services.

2. DISCUSSION

Enhancement of surveillance and provision of new ATM system

2.1 In order to enhance surveillance capability, ADS-B system has already been installed and covering the entirety of Pakistan Airspace. ADS-B will not only serve as an alternate to MSSR but will also ensure surveillance at locations where MSSR coverage is limited. Moreover, Pakistan is on its way of commissioning new state-of-the-art ATM system to step up provision of air navigation services in its airspace. The new system would enable the ATCOs to effectively and efficiently render air traffic services. The new system would enhance the safety of air traffic by ensuring that aircraft are properly segregated, thereby eliminating the risk of any untoward incident creating a safer and more efficient air traffic environment.

Aeronautical search and rescue (SAR)

2.2 Aeronautical Search and Rescue (SAR) is a crucial component of aviation safety and security. It is the process of searching for, locating and rescuing individuals or groups of individuals who are in distress or have been involved in an aviation accident. Civil Aviation Authority (CAA), within its territorial land, waters and over the high seas, where the responsibility for the provision of Air Traffic Services has been delegated to Pakistan under Regional Air Navigation Agreements, is committed to render search and rescue services to all aircraft and facilitate immediate rescue of its occupants when they are in need of such assistance. Establishing a completely independent and self-contained Search and Rescue organization would be cost-prohibitive for CAA; therefore, the SAR facilities available with different public and private organizations have been effectively harnessed to share the responsibility in accordance with the provisions of Annex 12 supplemented by IAMSAR Manuals I, II and III, to achieve the objectives of Search and Rescue.

Transition from AIS to AIM

2.3 Pakistan Civil Aviation successfully transitioned from AIS to AIM in accordance with ICAO guidelines. AIM is a basic building block for many of the ASBU elements, as high-quality aeronautical information is a prerequisite for the new technologies and tools that aircraft and ATM system will use to enhance safety, efficiency and capacity. AIM branch of PCAA is among top ranking States in Asia/Pacific in Regional AIS – AIM Implementation.

2.4 The transition from AIS to AIM has improved the flow of information between air traffic control and airline operations by providing a modern, efficient, and reliable means of exchange. It has also helped in enhance the security and efficiency of air traffic management by reducing the potential for misunderstandings and errors.

2.5 Recently, electronic maps (eTOD/GIS based) of major airports of Pakistan depicting analysis of ICAO Annex 14 and 15 surfaces with respect to obstacle penetration have been made available on our website for better situational awareness of aviators. All of our products, including AIP, its Amendments and Supplements, AIC and NOTAMs, are made available on our website for readily use of aviation community. The Graphical User Interface (GUI) of website is kept as simple as possible

to avoid use and region-based complications.

Note: Overall Compliance of Pakistan: 86% AIM Branch of PCAA is also working in close coordination with ICAO APAC office with regards to recent developments in the field of AIM, SWIM, etc., with the perspective of Aviation System Block Upgrade (ASBU) of Global Air Navigation Plan (GANP).

Performance-Based Navigation (PBN) implementation

2.6 Performance Based Navigation (PBN) has promising potential for efficient, reliable air navigation and utilization of airspace. Recognizing the benefits of PBN and considering highest priority for PBN in air navigation, Pakistan has shown significant progress in PBN implementation. Pakistan has developed its Performance-Based Navigation implementation plan to ensure progressive implementation of Performance-Based Navigation in line with ICAO Global and Regional (APAC) Air Navigation Planning framework. The planned work on RNP APCH Procedures at all instrument runways has been completed. PBN departures based on RNP-1 navigation specification have been implemented to all IFR runway ends, where practicable. In the context of en-route phase, almost all major air traffic flow routes supporting air traffic flow between Europe and Asia have been transformed to PBN routes based on RNP10 and RNAV5 PBN specifications. According to the APAC Regional plan, Pakistan had completed the transition of RNAV to RNP charts in August 2020. Pakistan is now looking forward to use advanced capabilities of aircraft in the context of PBN.

Enhancement of civil-military cooperation

2.7 The coordination between civil aviation and military aviation is critical in ensuring the safety and security of air traffic and the effective management of airspace. It enables a more effective and efficient air traffic management system, benefiting passengers, airlines, and the aviation industry as a whole. Keeping in view, Civil-Military coordination meetings are being held from time to time for effective utilization of airspace for safe flow of air traffic.

Development and implementation of Global Air Navigation Plan

2.8 ICAO Doc GANP-9750 demands that "an Air Navigation plan of a contracting state should present an integrated, harmonized and globally interoperable ATM system. PCAA fully supports such activities of the GANP to ensure Regional harmonization. In light of ICAO GANP, PCAA has developed Air Navigation Plan (2019 to 2024), which comprises of three phases in short-term planning. Two phases of subject ANP have already been implemented, whereas preparation for third phase is underway.

Common aeronautical virtual private network (CRV)

2.9 CRV is APAC aeronautical network, dependable and reliable communication infrastructure for cost-effective Internet Protocol (IP) based connectivity to serve the Asia/Pacific Region for various systems i.e. AMHS, ATS Speech Circuits, Surveillance data, SWIM connectivity and potentially other types of data, etc in place of expensive point to point circuits. PCAA will join the CRV by December, 2023, which is extended timeline of joining CRV by ICAO APAC Office. Service order has already been issued to PCCW Global Limited, which is a common service provider of CRV for APAC region. It is expected that Network Interface Device will be installed by October 2023. PCCW Global worldwide Multi-Protocol Label Switching (MPLS) network to provide secure connectivity between ANSPs.

PAK-SBAS development

2.10 Pakistan Space Based Augmentation System (PAK-SBAS) is a satellite-based system that will provide enhanced positioning, surveying & mapping, aviation transportation, particularly in challenging environments. The system will be an important initiative for the advancement of technology in Pakistan and will have important applications in a range of areas. The system is being developed by the Space and Upper Atmosphere Research Commission (SUPARCO), a government

agency under the Ministry of Science and Technology, Pakistan. PCAA is cooperating with SUPARCO in the implementation of Pak-SBAS and plans to utilize its services for PBN in the aviation sector in Pakistan.

2.11 The Paksat-MM1R satellite is scheduled for launch by mid-year 2024. The Pak SBAS service is planned to be tested and commissioned by end-year 2024. The launch of the second satellite (GEO-2) in the Pak SBAS Space segment and augmentation of the ground segment is being considered in the year 2026.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to note the information contained in this Paper.

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