



International Civil Aviation Organization

**THE NINTH MEETING OF PERFORMANCE BASED NAVIGATION
IMPLEMENTATION COORDINATION GROUP (PBNICG/9)**

Video Conference, 22 - 24 March 2022

Agenda Item 4: States' PBN Implementation Progress

(Presented by Islamic Republic of Pakistan)

SUMMARY

This paper presents current status and plans for PBN implementation in Pakistan.

1. INTRODUCTION

- 1.1 Recognizing the benefits of PBN and considering highest priority for PBN in air navigation, Pakistan has taken required steps towards PBN implementation since its inception. Pakistan had developed First National PBN Implementation Plan in May 2009 and now its fourth version (2020 to 2024) is in place. The Implementation Plan has adopted phased approach as mentioned above and Phased II approach is in process. At present all operational airports have RNP APCH procedures in place at all instrument runways supported by STARs, where feasible. All major international airports having jet aircraft operations are being served with RNP 1 SIDs. In order to have maximum benefits of PBN, RNP / ILS integration has also been provided for runways equipped with ILS. Pakistan is now looking forward to use advanced capabilities of aircraft in the context of PBN.

2. DISCUSSION

En-route Implementation

- 2.1 Pakistan is at the boundary of the ICAO Asia/Pacific Region interfacing with ICAO MID Region. It has adjoining airspace of Oman and Iran towards west where RNAV 5 is being used. RNP10 has been implemented in APAC region including Afghan airspace. Pakistan earlier transformed a number of ATS Routes serving major traffic flows into PBN ATS routes with navigation specification of RNP10 and RNAV5 for en-route phase to support regional harmonization.
- 2.2 Pakistan is also working towards APAC seamless ATM Plan implementation. The review of PBN navigation specification as RNP 2 for enroute phase of flight is under study to enable implementation in harmony with the adjacent states as and when required to achieve PBN goals. However, due to airspace limitations, the real benefits of parallel route spacing for RNP 2 are not likely to be achieved.

Terminal / Approach Implementation

- 2.3 Pakistan had completed target implementation of RNP APCH and associated STARs at all instrument runway ends in 2018. Pakistan has been really benefitted in terms of Implementation of RNP APCH procedures at some non-instrument runways where the provisions of conventional procedures were not practicable due to airspace limitations. An Statistical Analysis of RNP APCH implementation is given below:

International			Domestic			Overall		
Target	Published	%age	Target	Published	%age	Target	Published	%age
25	25	100	21	21	100	46	46	100

- 2.4 As the provision of RNP APCH based on LNAV or LNAV/VNAV is being used in Pakistan, ILS remains the primary approach, where available. Pakistan has therefore initiated work for PBN / ILS integration to gain PBN implementation benefits. RNP1 initial segments followed by ILS precision segment are presently available at airports where ILS facility is available.
- 2.5 RNP Standard Instrument Departures (SIDs) are also important aspect of PBN implementation. Pakistan has implemented PBN departures at all major airports. The process of implementing PBN departures at other airports is ongoing which is likely to be completed by 31st December 2022.
- 2.6 Implementation of CCO / CDO procedures is also one of the priority tasks. However, limited aircraft operations and availability of ATS surveillance facility had enabled to optimize operations at major airports. In this context, efforts were also made to incorporate the PBN airspace design principles to possible extent in trajectories at major airports of Faisalabad, Islamabad, Karachi and Lahore.

PBN Operational Approvals

- 2.7 Percentage of Fleet having PBN OPS approval for En-route operations =67% (8/12)
 Percentage of Fleet having PBN OPS approval for Terminal operations(SID/STAR) and Approach operations(RNP APCH) =75% (9/12)

Future Developments

- 2.8 The northern parts of Pakistan have rich terrain environment. A number of airports are operational in those areas but limited to day VFR operation. Pakistan CAA is planning to explore the possibility to implement RNP AR operations at these airports. The phased plan is based on the study of feasibility in the first phase. Subject to feasibility, further steps for implementation of RNP AR provisions will be undertaken.
- 2.9 Pakistan is also in the process of exploring the possibility of SBAS implementation for better use of RNP APCH operations.

3. ACTION REQUIRED BY THE MEETING

- 3.1 The meeting is invited to:

- a) note the information contained in this papers; and
- b) discuss any relevant matters as appropriate.

Summary of the paper to be included in the meeting report-

Pakistan has shown significant progress in PBN implementation. The planned work on RNP APCH has completed at all functional Airports. PBN SIDs & STARs based on the RNP 1 navigation specification have also been implemented and at all major airports arrival & departures have been facilitated by utilizing the concept of CCO & CDO technique.

The studies on the implementation of SBAS & RNP AR APCH procedures along with possibility of development of RNP 2 ATS routes is in the process and declared as a priority task.