



International Civil Aviation Organization

**Third Meeting of the ICAO Asia/Pacific Seamless ATM Planning Group  
(APSAPG/3)**

Chennai, India, 21-25 January 2013

---

**Agenda Item 3: Drivers for a Seamless ATM Environment**

**HARMONISING EN-ROUTE PBN IMPLEMENTATION  
TO ACHIEVE SEAMLESS ATM**

(Presented by Singapore)

**SUMMARY**

This paper presents the proposal for APSAPG to consider putting greater emphasis in harmonising the en-route PBN implementation as a key enabler to progress seamless ATM in this region. There is an urgent need for a coordinated effort to address fragmented en-route PBN implementation. In this regard, the scope of ATM Sub Group could be expanded to include planning and implementation of harmonised PBN en-route which will cater for capacity growth in this region.

This paper relates to –

**Strategic Objectives:**

A: *Safety – Enhance global civil aviation safety*

C: *Environmental Protection and Sustainable Development of Air Transport – Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment*

**Global Plan Initiatives:**

GPI-5 RNAV and RNP (Performance-based navigation)

GPI-7 Dynamic and flexible ATS route management

GPI-8 Collaborative airspace design and management

GPI-21 Navigation systems

GPI-22 Communication infrastructure

**1. INTRODUCTION**

1.1 Performance Based Navigation (PBN) offers significant advantages over the older sensor-based navigation methods. PBN improves safety, enhances operational efficiency and increases airspace capacity.

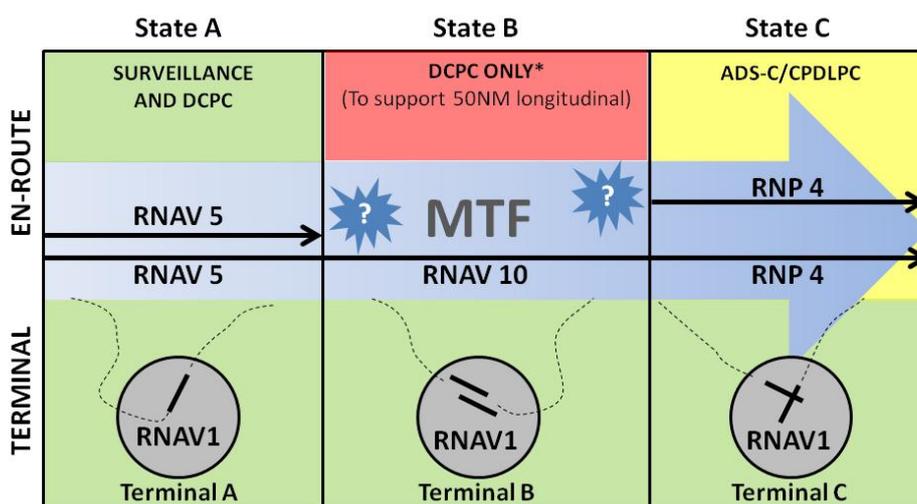
1.2 Recognizing the advantages and benefits that PBN brings, ICAO Assembly Resolution A36-23 urge ICAO to develop a coordinated action plan to assist States in the implementation of PBN and for Planning and Implementation Regional Groups (PIRG) to include in their work program the review of status of implementation of PBN by States according to the defined implementation plans. Following this, APANPIRG/18 established the PBN Task Force (PBN/TF) in 2007. In his opening remarks, ICAO Asia/Pacific Regional Director highlighted the lack of harmonization in the implementation of PBN between different geographical areas, and that the PBN/TF would address the issue and expedite implementation of PBN in a harmonized manner in the Asia/Pacific region.

1.3 There has been progress in PBN planning in this region with 60% of States having a PBN implementation plan. However, among these, only 40% had plans that are considered to be robust. Most of these States are progressing with the actual implementation of PBN especially in the terminal and approach segment. Unlike en-route PBN implementation, the efforts of rolling out PBN in terminal and approach would require minimal coordination and harmonization with adjacent States.

## 2. DISCUSSION

2.1 Efforts to progress with PBN have been focused widely on harmonizing the overall progress in accordance to the established regional implementation plan. There has been not much focus and emphasis on harmonizing the implementation of en-route PBN. Yet, en-route PBN is the key to achieving seamless ATM especially in addressing the capacity on major traffic flow routes.

2.2 There have been some efforts through ATM fora such as the former South East Asia Route Review Task Force (SEARR/TF) and the Bay of Bengal Reduced Horizontal Separation Implementation Task Force (BOB-RHS/TF) to progress with en-route PBN implementation. Similar efforts have been on-going at ATM Coordination Groups such as SEACG and SAIOACG. However, without a region-wide coordinated effort, it could result in a fragmented progress in PBN implementation which will hamper efforts to achieve seamless ATM.



2.3 The recently concluded 12<sup>th</sup> Air Navigation Conference (AN-Conf/12) in November 2012 has put great emphasis on PBN implementation concluding with a recommendation as follows;

### AN-Conf/12

#### **Recommendation 5/1 - Improved operations through enhanced airspace organization and routing**

*Considering that performance-based navigation (PBN) is one of ICAO's highest air navigation priorities and the potential benefits achievable through creation of additional capacity with PBN:*

*That States:*

- implement performance-based navigation in the en-route environment*
- fully assess the operational, safety, performance and cost implications of a harmonization of transition altitude and, if the benefits are proven to be appropriate, undertake further action on a national and (sub) regional basis;*

- c) *take advantage of improved models for inter-regional coordination and collaboration to achieve seamless air traffic management and more optimum routes through the airspace;*
- d) *through the planning and implementation regional groups improve their methods of coordination to increase implementation of en route performance-based navigation in order to achieve more optimum routes through the airspace;*

*That ICAO:*

- e) *encourage the planning and implementation regional groups to support the early deployment of performance-based navigation.*

2.4 It is clear from the AN-Conf/12 recommendation above that States and ICAO should continue to put PBN as one of the highest air navigation priorities. While this region has established clear direction for PBN implementation in terminal and approach, there is a need to put equal emphasis on harmonizing PBN implementation in the en-route environment. This will require States and ICAO in this region to continue to work closely together through established platform and forums.

2.5 The Asia Pacific region PBN/TF has served this region well to set the direction for regional PBN progress. It had provided clarity and guidance for States to develop their national PBN implementation plans. PBN/TF/10 had concluded recently and drafted a decision for its dissolution as follows;

***Draft Decision PBN/TF/10-5: Dissolution of the PBN Task Force***

*That, subject to:*

- a) *the establishment of suitable oversight of PBN implementation within the Asia/Pacific Region; and*
- b) *endorsement by APANPIRG/24 of the –*
  - (i) Asia/Pacific Regional PBN Implementation Plan Version 4.0 amendment; and*
  - (ii) PBN components within the Asia/Pacific Seamless ATM Plan;**the Performance-based Task Force (PBN/TF) be dissolved and any on-going tasks be delegated to the CNS Sub-Group or as directed by APANPIRG.*

2.6 The proposed dissolution of the PBN/TF may lead to a gap in ensuring harmonised PBN implementation for the en-route segment. The need for continual PBN implementations to improve ATM en-route cannot be overemphasised. To progress with en-route PBN implementations, the ATM Sub Group would have to play a greater role in setting the regional direction and work towards harmonised en-route PBN implementations. In this respect, APSAPG may provide guidance or alternative options for the oversight of PBN implementation to ensure seamless ATM efforts are not compromised.

2.7 The Major Traffic Flow (MTF) Study as part of the development of the Asia Pacific Seamless ATM Plan is a step forward to assess current ATM capabilities, and if these would be adequate for future traffic demand. When completed, the region should be adequately informed to make better decisions on the appropriate level of PBN implementation across each segment.

2.8 En-route PBN and its harmonised implementation is key to unlock the capacity potential of the ATS route structure. Starting from the MTF, ATM enhancements should be planned to meet the anticipated traffic growth. Even without extensive studies, some of the ATS routes are well within adequate surveillance and communications coverage and ready for route upgrade to a higher PBN navigation specification. For such PBN en-route upgrades, relevant States could collaborate on smaller focused group(s) to capitalise on the opportunities to attain immediate significant ATM capacity and efficiency gains.

2.9 With the anticipated growth of air traffic in the Asia Pacific region for the next few decades, we cannot afford to have fragmented PBN routes. There will be an urgent need for States in this region to work closely to progress with a harmonized en-route PBN implementation, key to achieving seamless ATM in this region.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) consider options, like expanding the scope of ATM Sub Group to include planning and implementation of harmonised PBN en-route as a key enabler to progress seamless ATM in this region;
- b) recognise that harmonised en-route PBN implementation is a key element to achieving seamless ATM and to cater to capacity growth in this region; and
- c) discuss any relevant matters as appropriate.

.....