INTERNATIONAL CIVIL AVIATION ORGANIZATION

SIXTH MEETING OF THE PERFORMANCE BASED NAVIGATION TASK FORCE (PBN/TF/6)

Hong Kong, China, 3 - 5 February 2010

Agenda Item 6: **State / Industry Presentations**

6.1 **State PBN Plan and Status of PBN Implementation Progress**

REPUBLIC OF KOREA PBN IMPLEMENTATION PLAN

(Presented by the Republic of Korea)

SUMMARY

This paper provides information on the progress of PBN implementation within Incheon FIR. The paper notes the completion of PBN Implementation Plan of the Republic of Korea and the continuous descent operation (CDO) for Incheon International Airport. In addition, it deals with the PBN implementation plan within Incheon FIR in 2010 according to the established PBN implementation plan.

1. INTRODUCTION

1.1 The implementation of performance-based Navigation (PBN) will provide many benefits for the users and air navigation service providers (ANSPs) of airspace. The benefits are improved safety, operational efficiency, capacity, accessibility, predictability, fuel economy and environmental effects in a given airspace.

1.2 Recognizing these benefits, the 36th Session of the ICAO Assembly held in Montreal from 18 to 28 September 2007 adopted Resolution A36-23 urging all States to implement RNAV and RNP air traffic services (ATS) routes and procedures in accordance with ICAO PBN concept described in the *Performance Based Navigation Manual (Doc 9613)*. Also, the resolution calls on States and Planning and Implementation Regional Groups (PIRGs) to develop PBN implementation plan by 2009 to ensure globally harmonized and coordinated implementation of PBN.

1.3 In this regard, the 18th Meeting of Asia and Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/18) concluded to establish a Regional Performance Based Navigation Task Force (PBN/TF) to develop a PBN implementation Plan for the Asia/pacific Region and address PBN related regional implementation issues (C18/52). In addition, APANPIRG/18 encouraged States to develop their State PBN implementation plans in harmony with the Asia/Pacific Regional PBN Implementation Plan in its Conclusion 18/53.

2. PBN IMPLEMENTATION PLAN OF THE REPUBLIC OF KOREA

2.1 Recognizing the benefits of PBN and following the Conclusion 18/53 of the APANPIRG/18, the Republic of Korea established PBN/TF composed of technical staffs from all relevant areas such as ATM, CNS, Flight Standards, Airworthiness, Flight Inspection, Flight

Operations and so on in 2008 in order to develop PBN implementation plan and implementation standards for the deployment of PBN procedures and operations.

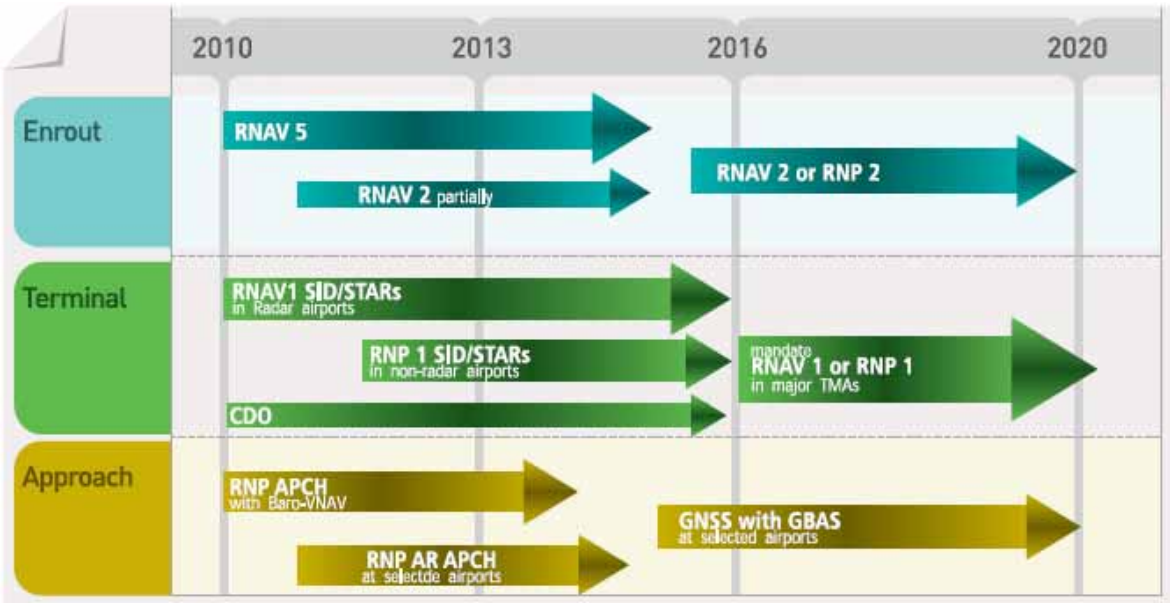
2.2 In December 2009, Office of Civil Aviation, Ministry of Land, Transport and Maritime Affairs, the Republic of Korea approved the PBN Implementation Plan which was presented by PBN/TF. The plan provides aviation stakeholders with appropriate implementation guidance and timelines to allow proper preparation for PBN implementation within Incheon FIR. Also it is aligned with the Asia/Pacific Regional PBN Implementation Plan and ICAO Assembly Resolution A36-23.

2.3 The PBN Implementation Plan of the Republic of Korea comprises 3 steps; Short Term, Medium Term and Long Term.

2.3.1 Short Term (2010~2012): Current RNAV routes will be adjusted to meet ICAO's RNAV 5 specification and RNAV 2 will be introduced on heavily congested routes such as B576 to establish unidirectional parallel routes. In terms of terminal areas, current RNAV STAR and SID will be switched over to RNAV 1 specification which will also be applied to new STARs and SIDs. And continuous descent operations (CDO) will be applied to all major airports including Incheon and Jeju. In addition, APV-Baro VNAV will be introduced to all international airports and domestic airports with high traffic volume as back-ups for ILS approaches or primary means for non-precision approaches.

2.3.2 Medium Term (2013~2016): RNAV2 or RNP 2 will be applied to new RNAV routes established during this period. Routes between the Republic of Korea and neighboring countries will be straightened out during this period and new route will be established exclusively for transition flights in an effort to diversify traffic. Also, the application of RNAV 1 or RNP 1 specification will be completed in international airports and be expanded to major domestic airports. In addition, CDO will be expanded to all domestic airports. In terms of approaches, the application of APV-Baro will be completed at all airports in Korea and trial operation of GBAS Landing System (GLS) will begin at the selected airports.

2.3.3 Long Term (2017~): All RNAV 5 routes will be switched over to RNAV 2 or RNP 2 and approach procedures using GBAS will be expanded to other airports. VOR routes and RNAV routes will be completely separated at specific airports. In addition, ground NAVAIDs will be decommissioned gradually from 2021. As a result, conventional routes will be replaced with RNAV routes.



2.4 The PBN Implementation Plan of the Republic of Korea was presented to ICAO Asia and Pacific Regional Office to be reviewed by ICAO APAC PBN/TF in January 2010.

3. PROGRESS OF THE PBN IMPLEMENTATION PLAN

3.1 As the PBN Implementation Plan was approved by the Office of Civil Aviation, the Republic of Korea is going to implement the plan from this year.

3.2 Firstly, recognizing the benefits of CDO, the Republic of Korea decided to expand CDO trial operation for Incheon airport from 2 STAR routes (G585, G597E) to 4 STAR routes (B576, G597W, G585, G597E). In addition, 5 STARs were adjusted to enable to fly directly to Initial Approach Fix (IAF) or Intermediate Fix (IF) to save the distance.

3.2.1 CDO trial operation for Incheon International Airport was conducted during mid-night hours (23:00~4:00) from 26 November 2009 to 17 January 2010. 114 flights (1.9 flights a day) from two major airlines of the Republic of Korea were participated this trial operation and around 91,000 pounds of fuel were saved in this period.

3.2.2 It is expected that 10 flights a day will be participated in the trial operation and around 457,000 pounds of fuel will be saved from this expansion of CDO trial operation.

3.3 Also, current 6 RNAV routes and RNAV STAR/SID for Incheon International Airport will be changed to RNAV 5 and RNAV 1 specification respectively this year. Also APV-Baro VNAV approaches for Runway 16/34 of Incheon International Airports will be introduced, too.

3.4 To facilitate the implementation of these, the Republic of Korea will develop the safety assessment method suitable for its own environments and will publish standards and regulations for the approval of each navigation specification after the review of the draft regulations which were presented by PBN/TF. Also, PBN Implementation Team will be established to assist the implementation process, to coordinate the stakeholder's interest and to enhance the cooperation between all related parties. The previous PBN/TF will be invited to participate in PBN Implementation Team.

4. ACTION BY THE MEETING

4.1 The meeting is invited to note:

a) That the PBN Implementation Plan of the Republic of Korea was developed in consistence with the Asia/Pacific Regional PBN Implementation Plan and approved by the Office of Civil Aviation;

b) That the Republic of Korea has started to implement the PBN Implementation Plan and the expansion of CDO trial operation for Incheon International Airport was already begun.

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