



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

MYANMAR PBN IMPLEMENTATION PLAN

(Presented by Myanmar)

1. INTRODUCTION

1.1. ICAO Asia/Pacific Air Navigation Planning and Implementation Regional Group, APANPIRG, adopted several conclusions to promote the uses of Performance-Based Navigation (PBN) and Global Navigation Satellite System (GNSS) as the navigation elements of CNS/ATM systems. These navigation technologies and specifications have promising potentials to provide accurate, reliable and seamless position determination and navigation capabilities to airspace users.

1.2. Introduction of PBN specifications and GNSS technology facilitate more efficient use of airspace and more flexibility for procedure design. They cooperatively result in improved safety, access, capacity, predictability, operational efficiency, fuel economy, and environmental effects.

2. WORKING TEAM FOR PBN AND GNSS IMPLEMENTATION

2.1. Recognizing the benefits of PBN and GNSS implementation prescribed in Asia Pacific PBN Implementation plan, Myanmar will set up the working team comprising relevant stakeholders for studying on PBN Implementation.

2.2. The Working Team is responsible for developing policy, implementation plans, and implementation standards for the deployment of PBN and GNSS procedures and operations in Myanmar airspace. It adopted three areas of responsibility in regards to the implementation of PBN and GNSS in Myanmar airspace. The three areas of responsibility are:

- Policy & Implementation Planning (Area 1)
- Establishments of Standards and Requirements in accordance to appropriate ICAO requirements (Area 2)
- Communication with Stakeholders (Area 3)

3. STATUS OF RNAV OPERATIONS AND PBN IMPLEMENTATION IN MYANMAR

3.1. Eight RNAV routes were established in Myanmar during implementation of EMARSSH routes programme. Domestic route has not been designated as RNAV so far. Terminal and Approach operations were not being conducted till 2010 at any of the airport in Myanmar.

3.2. Currently available navaid infrastructure within Myanmar supports terminal operations using DME/DME or DME/DME/IRU sensors for RNAV 1/2 or Basic RNP 1 navigation applications. Sufficient surveillance coverage is available in TMAs established around two major international airports. RNAV1 using GNSS sensor will support terminal operations in these TMAs.

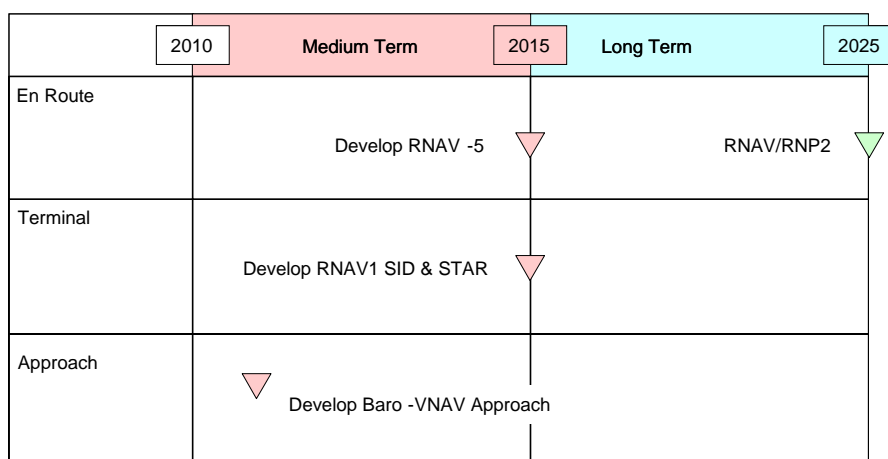
However, Basic RNP-1 applications will be implemented at all other airports where no suitable surveillance is available.

3.3. Currently onboard GNSS equipage is available on limited aircraft. As such benefits of RNAV1 and Basic RNP1 using GNSS will be limited to few aircraft.

3.4. Based on the above considerations, RNAV 5 is envisioned as primary navigation application for enroute operations continental airspace in Myanmar utilizing any allowable sensor. However, GNSS would be the primary sensor for all terminal and approach applications. Due to existing limited GNSS equipage and in order to facilitate the capable aircraft, ANSP have to support mixed environment for a prolonged period.

4. PBN & GNSS NAVIGATION SPECIFICATION ROADMAP

4.1 To assist planning and to assure proper equipages by aircraft operators, Myanmar has established a Navigation Specification Roadmap for PBN & GNSS Implementation over Yangon FIR. The Roadmap is consistent with the interim Asia/Pacific Regional PBN Implementation Plan adopted by ICAO APANPIRG/19.



5. IMPLEMENTATION

5.1 Route Implementation

During 2010-2012, Myanmar will consider the use of RNAV 10, RNAV 5, and RNP 4 navigation specifications for PBN route implementations. Some existing domestic conventional ATS routes will be modified towards PBN routes, while additional domestic and international RNAV and RNP routes may be introduced. Designation of upper and lower airspace will also be considered to assist PBN en-route implementation during the transitional period.

5.2 The following existing RNAV Routes are being considered for initial PBN route implementations:

Routes	RNAV	Airspace	Navi Specification for PBN Routes	Expected Date	Operation
L507		Continental Airspace	RNAV5	2012	
P646		Continental Airspace	RNAV5	2012	
N895		Continental Airspace	RNAV5	2012	
L301		Oceanic Airspace	RNAV5/RNP4	2012	
P762		Oceanic Airspace	RNAV5/RNP4	2012	
M770		Oceanic Airspace	RNAV5/RNP4	2012	
L759		Oceanic Airspace	RNP4	2012	
L515		Oceanic Airspace	RNAV5/RNP4	2012	

5.3 Terminal Area and Approach Implementation

Myanmar establishes the following PBN implementation schedule to increase safety and efficiency of terminal area and approach operations.

Implementation Activities Starts	Terminal Areas	Target Navigation Specifications		Expected Operation Date
2010	VYYY (Yangon Intl Airport)	Approach	RNP APCH (Baro VNAV)	2012
		SID	RNAV1 (DME/DME/IRU) or GNSS	2012
		STAR	RNAV1 (DME/DME/IRU) or GNSS	2012
2010	VYMD (Mandalay Intl Airport)	Approach	RNP APCH (Baro VNAV)	2012
		SID	RNAV1 (DME/DME/IRU) or GNSS	2012
		STAR	RNAV1 (DME/DME/IRU) or GNSS	2012
2010	VYNT (Naypyitaw Airport)	Approach	RNP APCH (Baro VNAV)	2012
		SID	RNAV1 (DME/DME/IRU) or GNSS	2012
		STAR	RNAV1 (DME/DME/IRU) or GNSS	2012
2010	VYBG (Bagan Airport)	Approach	RNP APCH (Baro VNAV)	2013
		SID	Basic RNP 1	2013
		STAR	Basic RNP 1	2013
2010	VYHH (HeHo Airport)	Approach	RNP APCH (Baro VNAV)	2013
		SID	Basic RNP 1	2013
		STAR	Basic RNP 1	2013

5.4 Basic RNP1 SID and STAR procedures will be implemented at other domestic airports also in a phased manner.

6. ACTION BY THE MEETING

6.1 The Meeting is invited to note the information provided in this paper.

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