



*International Civil Aviation Organization*

**THE SEVENTH MEETING OF PERFORMANCE BASED NAVIGATION  
 IMPLEMENTATION COORDINATION GROUP (PBNICG/7)**

*(Video conference, 21 – 23 October 2020)*

**THE PROGRESS OF PBN IMPLEMENTATION IN MYANMAR**

(Presented by Myanmar)

**SUMMARY**

This paper presents the status of the progress of PBN implementation in the Myanmar.

**1. INTRODUCTION**

1.1 In line with the International Civil Aviation Organization (ICAO) Asia-Pacific Regional PBN Implementation Plan, the Department of Civil Aviation, Myanmar has adopted a 3- phased approach for the PBN implementation;

- Short Term (2010-2014)
- Medium Term (2015-2018)
- Long Term (Beyond 2018)

1.2 As per Myanmar PBN implementation plan, the action plan for PBN Terminal and Approach implementation is adopted as below;

1.2.1 PBN Approach Procedures

Sr. No.	Airports	Approach	Target Date	Current Status	Remark
1	VYYY (Int'l)	RNP APCH with Baro-VNAV	Completed	Published	
		RNP to ILS (ILS Z)	Completed	Published	
2	VYMD (Int'l)	RNP APCH with Baro-VNAV	Completed	Published	
		RNP to ILS (ILS Z)	Dec, 2020	Design Reviewing	
3	VYNT (Int'l)	RNP APCH with Baro-VNAV	Completed	Published	
		RNP to ILS (ILS Z)	Completed	Published	
4	VYBG	RNP APCH with Baro-VNAV	Completed	Published	
5	VYHH	RNP APCH with Baro-VNAV	Completed	Published	
6	VYSW	RNP APCH with Baro-VNAV	Completed	Published	
7	VYTD	RNP APCH with Baro-VNAV	Dec, 2019	FV Finished	Effective in DEC 2020
8	VYDW	RNP APCH with Baro-VNAV	Dec, 2019	FV Finished	Effective in DEC 2020
9	VYME	RNP APCH with Baro-VNAV	Dec, 2019	FV Finished	Effective in DEC 2020
10	VYTL	RNP APCH with Baro-VNAV	Dec, 2019	Design Finished	FV in 2021
11	VYMK	RNP APCH with Baro-VNAV	Dec, 2020	Design Finished	FV in 2021
12	VYPT	RNP APCH with Baro-VNAV	Dec, 2020	Design Finished	FV in 2021
13	VYKP	RNP APCH with Baro-VNAV	Dec, 2021	Design Finished	FV in 2022
14	VYKT	RNP APCH with Baro-VNAV	Dec, 2021	Conceptual Design	
15	VYKG	RNP APCH with Baro-VNAV	Dec, 2021	WGS-84 Surveyed	
16	VYKL	RNP APCH with Baro-VNAV	Dec, 2021	WGS-84 Surveyed	
17	VYLS	RNP APCH with Baro-VNAV	Dec, 2021	WGS-84 Surveyed	

## 1.2.2 Terminal SID & STAR Procedures

Sr. No.	Airports	Terminal	Target Date	Current Status	Remark
1	VYYY	RANV1 SID/STAR	Completed	Published	
2	VYMD	RANV1 SID/STAR	Completed	Published	
3	VYNT	RNP1 SID/STAR	Dec, 2019	Design Reviewing	
4	VYBG	RNP1 SID/STAR	Dec, 2019	Design Reviewing	
5	VYHH	RNP1 SID/STAR	Completed	Published	
6	VYSW	RNP1 SID/STAR	Completed	Published	
7	VYTD	RNP1 SID/STAR	Dec, 2019	FV Finished	Effective in DEC 2020
8	VYDW	RNP1 SID/STAR	Dec, 2019	FV Finished	Effective in DEC 2020
9	VYME	RNP1 SID/STAR	Dec, 2019	FV Finished	Effective in DEC 2020
10	VYTL	RNP1 SID/STAR	Dec, 2019	Design Finished	FV in 2021
11	VYMK	RNP1 SID/STAR	Dec, 2020	Design Finished	FV in 2021
12	VYPT	RNP1 SID/STAR	Dec, 2020	Design Finished	FV in 2021
13	VYKP	RNP1 SID/STAR	Dec, 2021	Design Finished	FV in 2022
14	VYKT	RNP1 SID/STAR	Dec, 2021	Conceptual Design	
15	VYKG	RNP1 SID/STAR	Dec, 2021	WGS-84 Surveyed	
16	VYKL	RNP1 SID/STAR	Dec, 2021	WGS-84 Surveyed	
17	VYLS	RNP1 SID/STAR	Dec, 2021	WGS-84 Surveyed	

## 2. DISCUSSION

### 2.1 Implementation of PBN Instrument Approaches and Terminal Operations

2.1.1 At Yangon International Airport, PBN procedures were implemented on 10<sup>th</sup> December 2015. Due to ATC/ Airspace requirements, we conducted the period review during RSO's PBN Go Team Workshop in Yangon in March 2018 and then applied High Loss Margin for Baro-VNAV approach and republished again with effective date 08 November 2018 with;

- a) 2 RNP Approaches with Baro-VNAV
- b) 1 RNP to ILS (ILS Z)
- c) 18 RNAV1 SIDs and
- d) 10 RNAV1 STARs

2.1.2 At Mandalay International Airport, the PBN procedures were implemented on 10<sup>th</sup> December 2015 with;

- a) 2 RNP Approaches with Baro VNAV
- b) 6 RNAV1 SIDs and
- c) 7 RNAV1 STARs

Due to ATC and Airspace requirement, Myanmar has planned to conduct periodic review in 2021 and will apply High Loss Margin for Baro-VNAV approach and will consider to publish RNP to ILS (ILS Z) procedure.

2.1.3 At Naypyitaw International Airport, the PBN procedures (RNP Approach with Baro-VNAV and RNP to ILS Approach) were implemented on 29 Mar 2018. Due to RSO PBN Go Team activities in

March 2018, Myanmar applied High Loss Margin for Baro-VNAV approach and republished again with effective date 03 January 2019 with;

- a) 2 RNP Approaches with Baro VNAV
- b) 1 RNP to ILS (ILS Z) and  
the following SID & STAR procedures will be published in December 2021;
- c) 5 RNP1 SIDs and
- d) 4 RNP1 STARs

2.1.4 At Bagan/Nyaung U Airport, PBN approach procedures (RNP Approach with Baro-VNAV) were implemented on 29 March 2018. By reviewing during the RSO PBN Go Team activities in March 2018, Myanmar applied High Loss Margin for Baro-VNAV approach and republished with effective date 03 January 2019 with;

- a) 2 RNP Approaches with Baro VNAV and  
the following SID& STAR procedures will be published in December 2021;
- b) 6 RNP1 SIDs and
- c) 6 RNP1 STARs

2.1.5 At Heho Airport, published the PBN procedures (RNP Approach with Baro-VNAV) with effective date of 03 Jan 2019 and the SIDs & STARs procedures were published with effective date of 23 May 2019. Myanmar applied High Loss Margin for Baro-VNAV approach as advised by RSO PBN Go Team.

- a) 1 RNP Approach with Baro VNAV
- b) 2 RNP1 SIDs and
- c) 2 RNP1 STARs

2.1.6 At Sittwe Airport, published the PBN procedures (RNP Approach with Baro-VNAV) with effective date of 03 Jan 2019 and the SIDs & STARs procedures were published with effective date of 23 March 2019. Myanmar applied High Loss Margin for Baro-VNAV approach as advised by RSO PBN Go Team.

- a) 2 RNP Approaches with Baro VNAV
- b) 8 RNP1 SIDs and
- c) 8 RNP1 STARs

2.1.7 The PBN implementations for Thandwe, Dawei and Myeik airports are ongoing progress with the target date of Dec 2019. The Flight Validation (FV) has already been conducted by Aerothai and all PBN Procedures (RNP APCH, SIDs & STARs) will be published in December 2020. The following procedures are expected to publish:

I. Thandwe airport (VYTD)

- a) 1 RNP Approach with Baro VNAV
- b) 6 RNP1 SIDs and
- c) 6 RNP1 STARs

II. Dawei airport (VYDW)

- a) 1 RNP Approach with Baro VNAV
- b) 1 RNP Approach with LNAV Only
- c) 6 RNP1 SIDs and
- d) 6 RNP1 STARs

III. Myeik airport (VYME)

- a) 1 RNP Approach with Baro VNAV
- b) 6 RNP1 SIDs and
- c) 6 RNP1 STARs

2.1.8 The PBN implementations for Tachileik, Myitkyina and Putao airports are ongoing progress with the target date of Dec 2019/2020. The procedure design process was finished and although DCA-Myanmar made a contract with Aerothai, the Flight Validation (FV) had to be postponed until 2021 due to COVID-19 Pandemic. The following procedures are expected to publish:

I. Tachileik airport (VYTL)

- a) 1 RNP Approach with Baro VNAV
- b) 2 RNP1 SIDs and
- c) 2 RNP1 STARs

II. Myitkyina airport (VYMK)

- a) 2 RNP Approach with Baro VNAV
- b) 10 RNP1 SIDs and
- c) 7 RNP1 STARs

IV. Putao airport (VYPT)

- d) 1 RNP Approach with Baro VNAV
- e) 3 RNP1 SIDs and
- f) 3 RNP1 STARs

2.1.9 The following airports are also planned to implement PBN procedures with the target beyond 2021.

- a) Kawthoung Airport
- b) Kengtung Airport
- c) Kyaukpyu Airport
- d) Kalay Airport
- e) Lashio Airport

**2.2 Implementation of PBN in Enroute (International)**

2.2.1 According to the outcomes of the BIMT/6 meeting, Thailand and Myanmar agreed with realignment of L507 (between ARATO and BKK VOR) called BIMT Route Structure Phase 2 to enhance airspace usage efficiency and safety for civilian and military flight operations within Bangkok FIR. Acknowledge Thailand and Myanmar cooperation for realignment L507 which were implemented on 11 October 2018 and BIMT Phase 2b is ongoing process between Thailand and Myanmar.

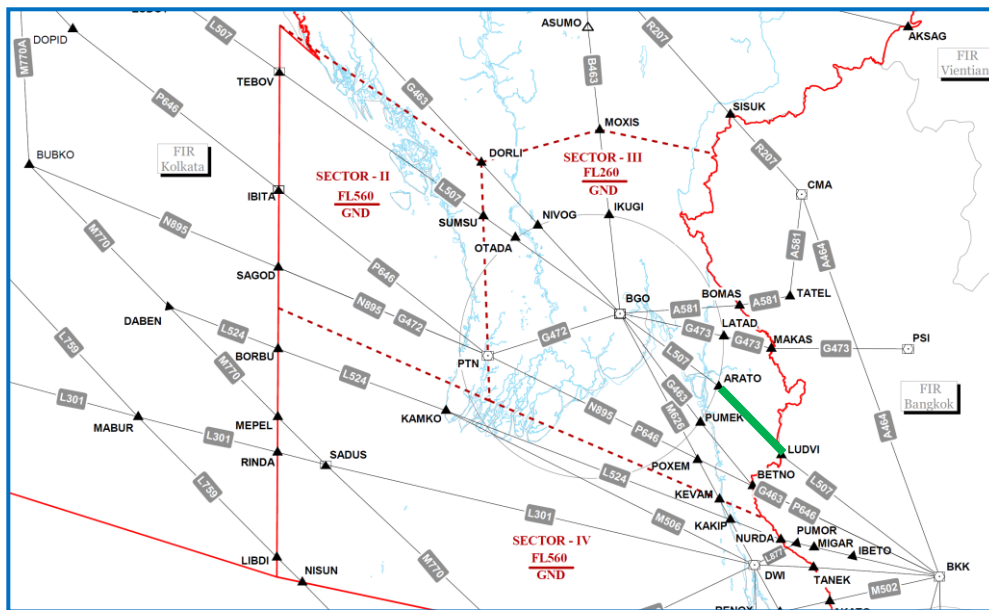
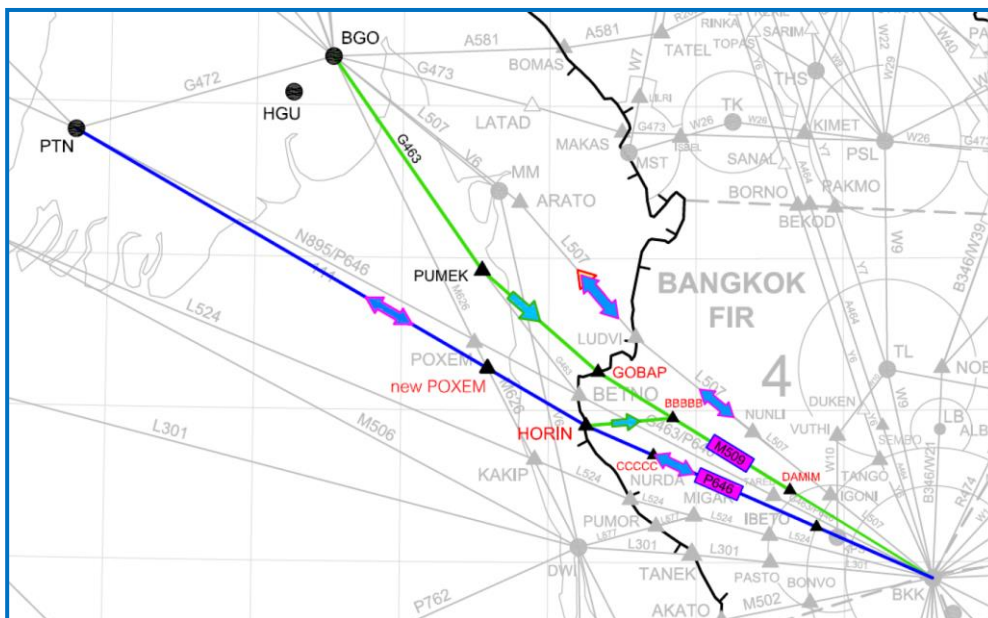


Fig: Realignment of L507 Route in Yangon FIR



ATS Route	Application	Action
N895/P646	Bi-directional except arrival traffic to VTBD & VTBS	Realign PTN-BKK
G463	Uni-directional Eastbound for arrival traffic to VTBD & VTBS only	(1) Realign PUMEK-BKK or (2) Upgrade to RNAV2/RNAV10 (M509)
L507	Bi-directional except arrival traffic to VTBD & VTBS	-

Fig 5.4(b): BIMT phase 2b

### 2.3 Implementation of PBN in Enroute (Domestic)

2.3.1 As per the PBN Implementation work plan, the preparation for the implementation of (6) domestic city-pair parallel routes connecting to the five main airports (including 3 international airports) is being conducted, further aiming for the efficiency of flight operations and reduction of conflicts from opposite direction traffic. All routes are connected with appropriate SIDs & STARs of respective airports.

2.3.2 However, the implementation process has been delayed due to some constraints involving military airspaces, prohibited area, gun firing area and the gap of surveillance capability for low level aircraft. Therefore, Myanmar has decided to discuss with ICAO-RSO for support of technical assistance and based on the study along with the route structure plans, a MSSR surveillance is needed to be installed at Nay Pyi Taw International Airport (or) Navigation Specification has to be changed to RNP2 operation.

2.3.3 Furthermore, DCA-Myanmar has conducted a Civil Military ATM Coordination (CMAC) Conference & Workshop which is organized by ICAO APAC on 17-18 December, 2019 with the aim for the greater safety and effective use of airspaces. The discussions about the realignment of the airspaces between DCA-Myanmar and Myanmar Military are ongoing process and the domestic city-pair parallel routes will be published in December 2021.

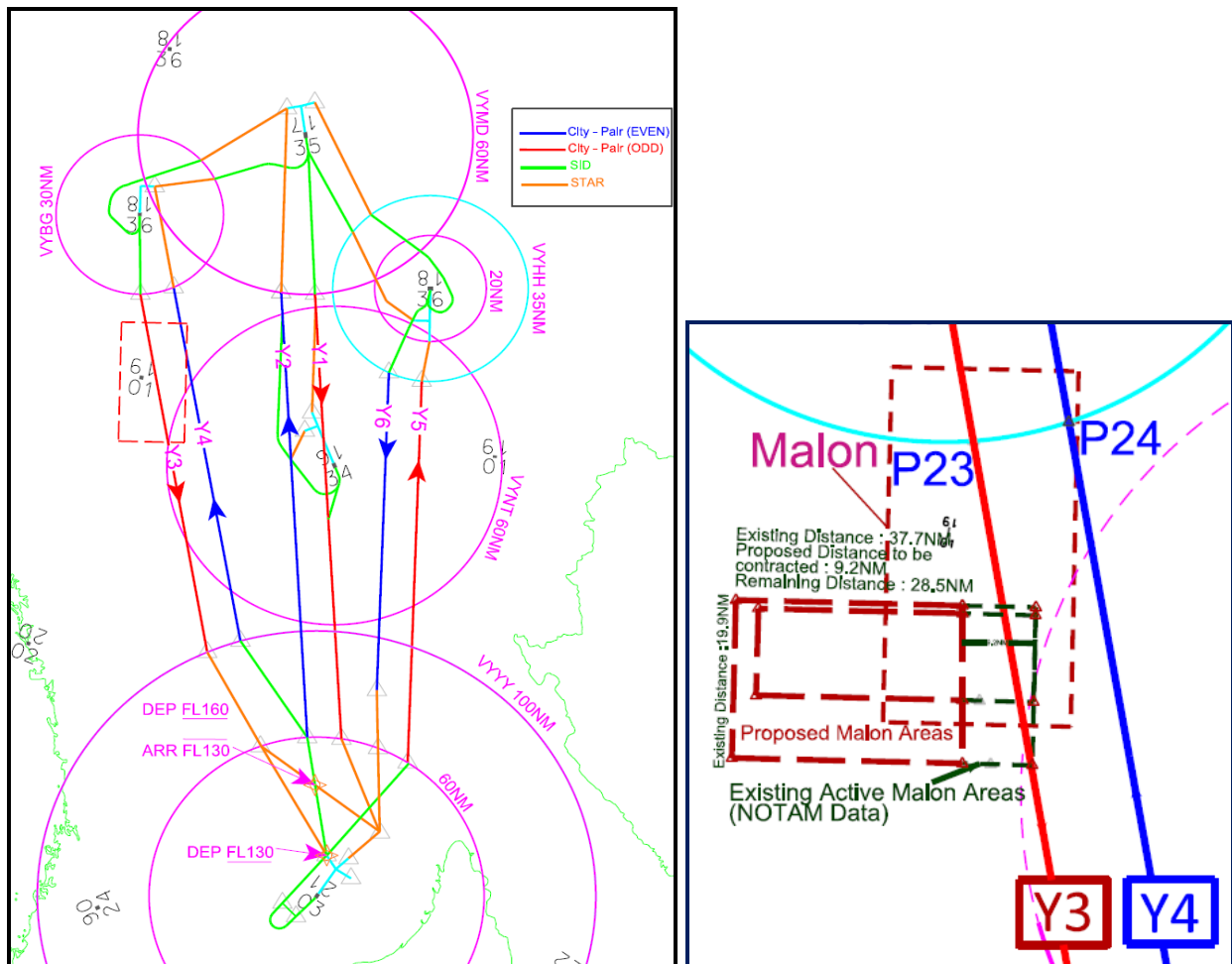


Fig: City-Pair Parallel Routes Structure in Yangon FIR and Malon Gun Firing Area

**ACTION REQUIRED BY THE MEETING**

- 3.1 The meeting is kindly invited to:
- a) note the information contained in this paper; and
  - b) discuss any relevant matters as appropriate