



Lao People's Democratic Republic
Peace Independence Democracy Unity and Prosperity

Ministry of Public Work and Transport
Department of Civil Aviation

No: 1081 /DCA

LETTER OF ENDORSEMENT

The Department of Civil Aviation endorses this PBN Implementation Plan dealing with:

1. Establishment of PBN and GNSS Task Force
2. Work Tasks
3. Special Tasking
4. Work Arrangements
5. PBN Roadmap
6. PBN Implementation Target for Short Term
7. PBN Implementation Target for Long Term

This PBN Implementation Plan shall come into force after the date of signing.

Director General

Dated: 28 JUL 2011



Yakua LOPANGKAO



Lao People's Democratic Republic
Peace Independence Democracy Unity and Prosperity

Ministry of Public Work and Transport
Department of Civil Aviation

No: 1080 /DCA⁴

Dated: 28 JUL 2011

To: Mokhtar A Awan
ICAO Regional Director
Asia and Pacific Office
252/1 Vipavadee Rangsit Road
Ladyao, Chatuchack, Bangkok 10900, Thailand
Fax: +66 (2) 537 8199

Subject: State PBN Implementation Plan

Dear Sir,

Refer to your letter T3/10.0, T3/8/30-AP042/11 (ATM), dated 25 March 2011. The Department of Civil Aviation of the Lao People's Democratic Republic kindly submits State PBN Implementation Plan attached herewith to the above mentioned letter for your consideration.

Please accept, Sir, the assurance of my highest consideration.
Sincerely Yours,



Yakua LOPANGKAO
Director General

PBN Implementation Plan

Version 1.0
Lao P.D.R

April 2011

Table of Contents

- 1. Introduction**
- 2. Establishment of PBN and GNSS Task Force**
- 3. Work Tasks**
- 4. Special Tasking**
- 5. Work Arrangements**
- 6. PBN Roadmap**
- 7. PBN Implementation Target for Short Term**
- 8. PBN Implementation Target for Long Term**

1. Introduction

1.1 The continuing growth of aviation increases demands on airspace capacity therefore emphasizing the need for optimum utilization of available airspace. The Performance-Based Navigation (PBN) concept specifies aircraft RNAV system performance requirements in terms of accuracy, integrity, availability, continuity and functionality needed for the proposed operations in the context of a particular Airspace Concept.

1.2 ICAO Asia/Pacific Air Navigation Planning and Implementation Regional Group, APANPIRG, adopted several conclusions to promote the uses of 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.

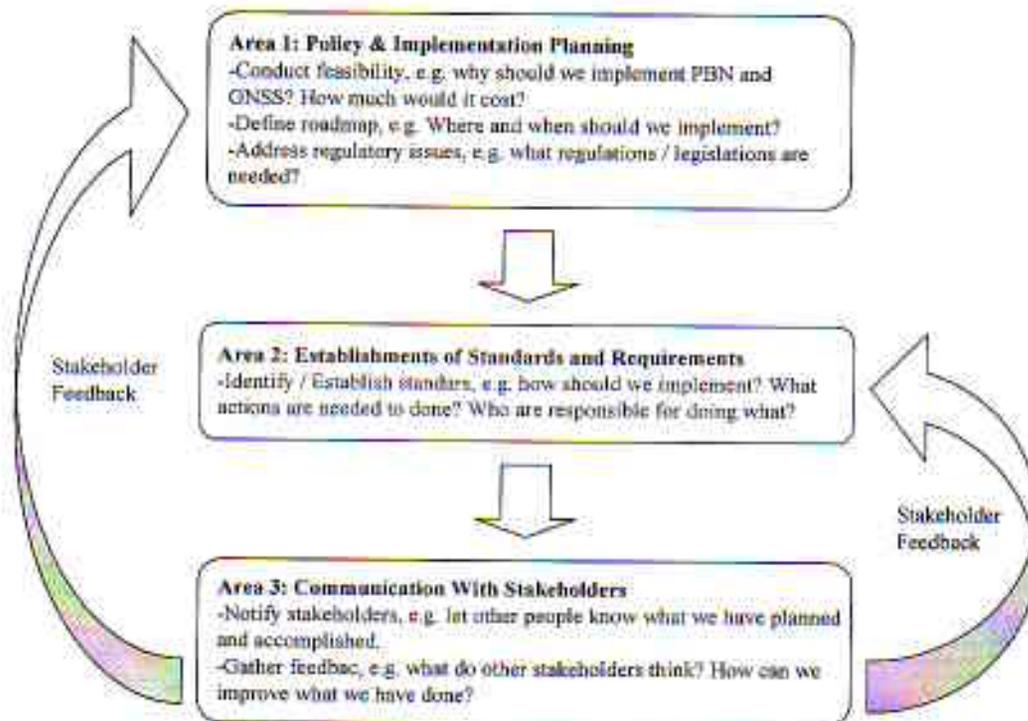
2. Establishment of PBN and GNSS Task Force

2.1 Recognizing the benefits of PBN and GNSS, Lao DCA has established a Task Force Team to foster a cooperative approach among the aviation stakeholders in the implementations of PBN and GNSS over Lao PDR airspaces. Planning and implementation activities involve participation from Department of Civil Aviation of Lao PDR as the State regulator, representative from air navigation service provider and air operator.

2.2 The Task Force Team is responsible for developing policy, implementation plans, and implementation standards for the deployment of PBN and GNSS procedures and operations in Lao PDR airspace. The working Group has three areas of responsibility in regards to the implementation of PBN and GNSS in Lao PDR airspace as follows:

- Policy & Implementation Planning
- Establishments of Standards and Requirements in accordance to appropriate ICAO requirements
- Communication with Stakeholders

2.3 These three areas of responsibility define the list of work tasks responding to the needs for careful planning, well-defined implementation roadmap, well-established implementation standards, and flexible processes to address the needs of aviation stakeholders. The three areas are related, sequential, and recursive by nature. The following diagram depicts the roles and relationships of each area of responsibility:



3. Work Tasks

Area 1: Policy & Implementation Planning

In this area of responsibility, the joint working group is responsible for developing implantation plans and recommending any revision on aviation policy with related to PBN and GNSS implementation. In the development of the implementation plan, the task force team should consider safety, efficiency, and economic benefits for all stakeholders within aviation community. The joint working group should also take into account the implementation strategies agreed by the ICAO APANPIRG. The work tasks under this area of responsibility are:

- Conduct feasibility study and develop a national implementation plan defining operational requirements for PBN and GNSS procedures and operations;
- Establish target dates and deployment roadmap for PBN and GNSS procedures;
- Identify navigation infrastructures that meet the operational requirements;
- Identify required regulatory changes to support authorization of PBN and GNSS procedures and operations;
- Identify business case elements to support expenditures on development of procedures, related elements and augmentation systems;
- Facilitate with appropriate government authorities to protect and manage GNSS frequencies;

- Facilitate with appropriate agencies on issues regarding noise and environmental impacts;
- Develop transitional plans for decommissioning some terrestrial navigation aids as appropriate;
- Develop implementation strategy for all aviation users, including general aviation, for issues related to PBN and GNSS; and
- Provide guidance to representatives on international forums relating to PBN and GNSS.

Area 2: Standards and Requirements in accordance to appropriate ICAO requirements. In this area of responsibility, the joint working group is responsible for identifying and/or establishing standards and procedures for PBN and GNSS implementation activities. These standards and procedures should be in compliance with or based on ICAO SARPs, manuals, and documents and address all types of airspace users, including general aviation. The standards and procedures should also assist the harmonization of global and regional standards and practices. The work tasks under this area of responsibility are:

- Identify/Establish standard on WGS (World Geodetic System)-84 standards for surveys, publications and databases;
- Identify/Establish technical evaluation procedures regarding signal-in-space requirements and engineering assessment of navigation infrastructures;
- Identify/Establish process on the development of PBN and GNSS flight procedures, using ICAO approved design criteria and accounting for aerodrome standards;
- Identify/Establish flight inspection requirements and procedures;
- Identify/Establish requirements for Aeronautical Information Services elements related to PBN and GNSS implementation;
- Identify/Establish requirements for GNSS status monitoring and associated NOTAMs;
- Identify/Establish an operational use policy, a separation standards application and ATC procedures for PBN and GNSS operations;
- Identify/Establish standards and guidance material for airworthiness requirements governing the installation of approved PBN and GNSS equipment on-board aircraft;
- Identify/Establish standards and guidance material for certifications governing the installation of approved PBN and GNSS ground equipments; and
- Identify/Establish related training requirements.

Area 3: Communication with Stakeholders

Active participation from aviation stakeholders is essentially for successful implementation of PBN and GNSS. In this area of responsibility, the joint working group is responsible for the following work tasks:

- Gather stakeholders inputs regarding PBN and GNSS implementation plans;

- Promote the use of PBN and GNSS and assist aircraft operators to make decisions on installation and certification of required avionic equipments;
- Inform aircraft operators of the terms and conditions for the use of PBN and GNSS procedures;
- Develop guidance material associated to the approval to use PBN and GNSS procedures; and
- Develop a system of post-implementation reviews to ensure the effective and safe introduction of PBN and GNSS operations.

4. Special Task

The joint working group may identify the need for task forces to address a particular technical or operational issues related to PBN and GNSS implementations within its airspace. The joint working group shall develop terms of reference for the work to be done, identify required resources, obtain management approval from participating organizations, and assign the work to a task force for completion. Results provided by the task force will then be reviewed by the joint working group, who will then submit a consensus report with recommendations to management approval.

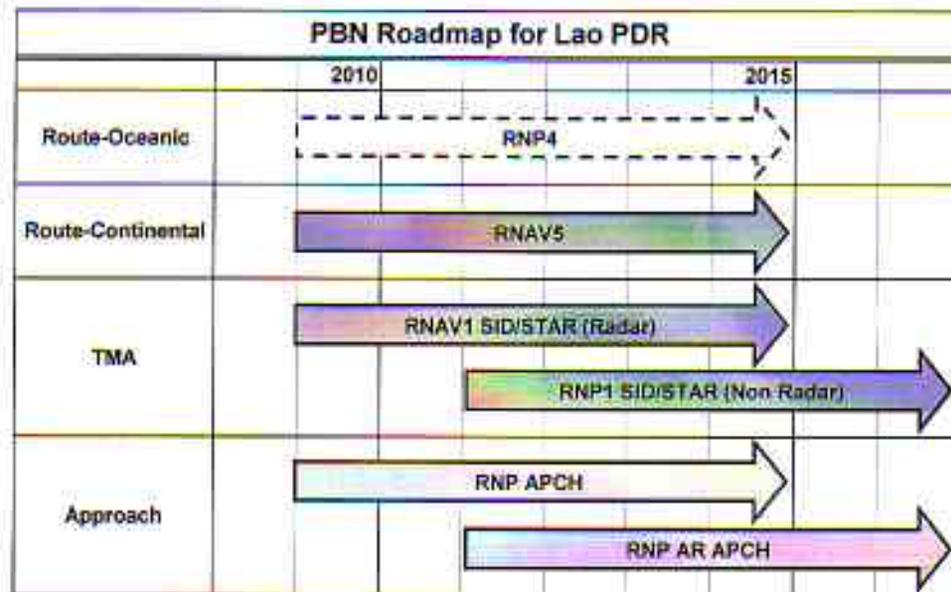
5. Work Arrangements

Meetings: The joint working group meeting should be held monthly or as decided by the joint working group.

Reporting: The joint working group secretariat will issue the report following each joint working group meeting, summarizing the outcomes of the meeting. Joint working group's recommendations will be submitted to the management of each participating organizations for acknowledgements and/or approvals.

6. PBN Implementation Roadmap

Considering its entire aviation circumstance of human resources, facilities, etc, Lao PDR proposed to apply different Roadmap about three (3) years behind schedule from ICAO APAC schedule.



7. PBN Implementation Target for Short Term (2010 – 2015)

7.1 Continental Route

- 1) RNAV5 for the route between major airports: B218 Vientiane – Luang Phabang, R474: Vientiane – Hanoi
- 2) RNAV5 for the all new routes.
- 3) RNAV5 for all other domestic routes as required.

7.2 TMA (Ref to ICAO APAC PBN Implementation Target for Short Term)

RNAV1 SID/STAR for the radar airports, 50% of international airports by 2013 and 75% by 2015: Vientiane airport by 2013, and Xiengkhouang airport by 2015

Note: SSR at Vientiane and Xiengkhuang, PSR at Vientiane will be available.

7.3 Approach (Ref to ICAO APAC PBN Implementation Target for Short Term)

RNP APCH with Baro-VNAV in most possible airports, in 30% of instrument runways by 2013 and 50% by 2015.

Note: Targeted airports would be selected by considering the traffic demand forecasts and other conditions (airspace complexity, topographic, meteorological, etc.).

8. PBN Implementation Target for Long Term (2016 – 2025)

1) TMA

Basic RNP1 SID/STAR for the non-radar airports.

2) Approach

RNP AR APCH for the mountainous or terrain surrounded airport: Luang Phabang

3) PBN Mandate of Flight Level

In order to avoid the mixture of the PBN capable aircraft and non-PBN aircraft, it is necessary to mandate PBN operations at/above certain flight level such as FL290 at the suitable time schedule from the year 2015 in the Vientiane FIR.

