



International Civil Aviation Organization

**FOURTEENTH MEETING OF THE
COMMUNICATIONS/NAVIGATION/SURVEILLANCE
AND METEOROLOGY SUB-GROUP OF
APANPIRG (CNS/MET SG/14)**



Jakarta, Indonesia, 19 – 22 July 2010

Agenda Item 5: Navigation

4) review navigation strategy

NAVIGATION STRATEGY FOR THE ASIA/PACIFIC REGION

(Presented by Secretariat)

SUMMARY

This paper presents Navigation Strategy for the Asia/Pacific Region adopted by APANPIRG/20 meeting for review.

This paper relates to

Strategic Objectives:

- A. Safety – Enhance global civil aviation safety
- D. Efficiency – Enhance the efficiency of aviation operations
- E. Continuity – Maintain the continuity of aviation operations

Global Plan Initiative:

- GPI-5 RNAV and RNP (Performance-based navigation)
- GPI-11 RNP and RNAV SIDs and STARs
- GPI-21 Navigation systems

1. Introduction

1.1 The current Navigation Strategy for the Asia/Pacific Region was developed by the Thirteenth Meeting of CNS/MET Sub Group of APANPIRG in July 2009 and adopted by APANPIRG/20 meeting in September 2009.

1.2 The consolidated Navigation Strategy was adopted by APANPIRG/20 meeting held in September 2009 under its Conclusion 20/46. The Navigation Strategy has been posted on the ICAO APAC website. http://www.bangkok.icao.int/edocs/cns/navigation_strategy_rev.pdf

2. Discussion

2.1 The CNS/MET SG/13 meeting reviewed the Navigation Strategy for the Asia/Pacific Region developed in 2008 by integrating two separate strategies. Clarification on the need to transition from an interim state to the final end was discussed and it was considered appropriate to add RNP2 to the end state configurations for continental en-route. The meeting was cautioned that appropriate implementation of high performance capabilities requires training, experience and

demonstration of competence for safe implementation. The APANPIRG/20 meeting adopted following Conclusion taking into account above considerations.

Conclusion 20/46 - Revision of the Strategy for the Provision of Navigation Services in the Asia/Pacific Region

That, the updated Strategy for the provision of navigation services provided in **Appendix M** to the Report on Agenda Item 3.4 be adopted and published.

2.2 The Navigation Strategy was considered as living documents and the APANPIRG continued to review the strategy on a periodic basis and made appropriate amendments, as required.

2.3 The Navigation Strategy for the Asia/Pacific Region is also provided in the **Attachment** to this paper for review by the meeting.

3. Action required by the Meeting

3.1 The meeting is expected to:

- a) review the Navigation Strategy for the Asia/Pacific Region, in light of developments of aeronautical navigation systems; and
- b) propose updates, if required.

APANPIRG/20
Appendix M to the Report on Agenda Item 3.4

REVISED NAVIGATION STRATEGY FOR THE ASIA/PACIFIC REGION

Considering:

- a) the material contained in the Performance Based Navigation Manual (Doc 9613) for enroute, approach, landing and departures operations;
- b) operators will equip aircraft to support PBN operations;
- c) GNSS will be the predominant navigation sensor;
- d) APV operations may be conducted with BARO-VNAV or augmented GNSS;
- e) Augmented GNSS will support Category I operations by end 2009 and Category II and III operations by 2015;
- f) in the Asia/Pacific Region, ILS is capable of meeting the majority of requirements for precision approach and landing;
- g) MLS CAT III is operational;
- h) the need to maintain aircraft interoperability both within the Region and between the Asia/Pacific Region and other ICAO regions and to provide flexibility for future aircraft equipage.

Strategy

- a) transit to PBN operations as follows :-
 - i) RNP10/RNP4 for Oceanic and Remote Continental routes;
 - ii) RNAV5/RNAV2 for Continental En-route;
 - iii) RNAV1, RNAV2 and Basic RNP1 based arrivals and departure;
 - iv) APV **;
 - v) Precision approaches at selected runways.

with respective end states as follows:

- vi) RNP4 for Oceanic and Remote Continental routes;
- vii) RNP1/RNP2 for Continental En-route;
- viii) RNP1 and RNP0.3 based arrivals and departure;
- ix) APV**;
- x) Precision approaches at selected runways.

Note: Ideally, end-state should follow the above process but may be achieved directly without transitting through the immediate phases (i.e. (i) to (v)), if considered safe to do so.

- b) retain ILS as an ICAO standard system for as long as it is operationally acceptable & economically beneficial;
- c) implement GNSS with augmentation as required for APV and precision approach operations where operationally required and economically beneficial;
- d) implement the use of APV operation in accordance with ICAO's requirement;
- e) protect all the Aeronautical Radio Navigation Service (ARNS) frequencies; and
- f) ensure civil-military interoperability.

** APV includes BARO-VNAV, RNP, RNP-AR, APV 1 & 2