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

PBN STATE PLAN HARMONIZATION REPORT

(Presented by IATA)

SUMMARY

A PBN State Implementation Plan Harmonization Report prepared by IATA and a group of volunteering States is attached for review and comment.

This paper relates to:

Strategic Objectives:
A: Safety- Enhance global civil aviation safety
C: Environmental Protection – Minimize the adverse effect of global civil aviation on the environment
D: Efficiency – Enhance the efficiency of aviation operations
E: Continuity – Maintain the continuity of aviation operations

Global Plan Initiatives:
GPIs 5, 11

1. Introduction

1.1 At the PBN/TF/6 meeting held in February 2010, IATA and a group of volunteering States (Australia, Hong Kong China, New Zealand and Thailand) were tasked to conduct a review and provide a harmonization report of State PBN implementation plans to the PBN/TF/7 meeting.

2. Discussion

2.1 The findings of this report highlight slow progress in PBN implementation within the Asia Pacific Region. Approximately half of the Asia Pacific States did not submit PBN implementation plans by the end of 2009 as was mandated by ICAO. Of the plans submitted, only one-third demonstrate a path toward timely and successful implementation. It is apparent the APAC region will not meet ICAO 2010 implementation targets and stands at risk of not meeting ICAO Resolution A36-23 implementation targets for 2014 and 2016.

2.1 Based on the conclusions of the plan review, prompt action needs to be taken by the APAC Region in an effort to accelerate PBN planning, development and implementation to a pace of at least achieving closure on the ICAO resolution targets.

2.2 Due to uncontrollable events, the PBN/TF/7 was rescheduled to convene just prior to APANPIRG/21. The timing of the meeting may not allow any conclusions of that meeting to be submitted to the appropriate sub-groups and APANPIRG until late 2011.

2.3 An exception to normal protocol is required to ensure timely work progression. In order to generate the necessary discussion and forward critical recommendations on Regional PBN implementation to APANPIRG this year, it was decided to present the report directly to the ATM/AIS/SAR/20 and then to CNS/MET SG/14, prior to the PBN/TF/7 meeting.

2.4 The report was presented to ATM/AIS/SAR/20 on 6 July. A record of the discussions/conclusions should be available in the meeting report.

3 Action required by the Meeting

3.1 The meeting is requested to:

a) Review the PBN State Plan Harmonization Report and provide comment.

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PBN STATE PLAN HARMONIZATION ANALYSIS REPORT

(Presented by IATA)

SUMMARY

At the PBN/TF/6 meeting held in February 2010, IATA and a group of volunteering States were tasked to conduct a review and provide a harmonization report of State PBN implementation plans. IATA served as coordinator and Australia, Hong Kong China, New Zealand and Thailand formed the review team.

The goal of the review was to assess the quality of State plans, and to identify regional implementation challenges and harmonization issues.

Of the 40 States within APAC Region, 21 State plans have been submitted. Of those plans, 7 were rated Robust (with only minimal improvements needed), 5 were rated Marginal (needing significant improvement) and 9 were rated Incomplete (no viable plan documented).

The implications of these results are that many States have not committed the resources and/or lack the proper knowledge and expertise required to plan and successfully implement PBN.

Two of the most significant areas of challenge appear to be conducting safety assessments and including international data in PBN fleet readiness assessments. These will require regional and/or global solutions to provide States with the required methodologies and data.

Plans submitted appear to be fairly well harmonized in all areas. However, the potential exists for States that are further advanced in PBN development to implement in a manner that doesn't fully account for operational need and/or capability and at a pace that exceeds the evolution of ICAO PBN specifications, specifically in Instrument Approach implementation.

Strategic Objectives:
A: Safety- Enhance global civil aviation safety
C: Environmental Protection – Minimize the adverse effect of global civil aviation on the environment
D: Efficiency – Enhance the efficiency of aviation operations
E: Continuity – Maintain the continuity of aviation operations

Global Plan Initiatives:
GPIs 5, 11

1. INTRODUCTION

1.1 The Thirty-sixth Session of the ICAO Assembly held in Montreal in September 2007 adopted a resolution that States and PIRGs complete a regional PBN implementation plan by 2009. To date, only twenty-one of forty States in Asia Pacific have submitted plans to the ICAO Regional Office.

1.2 At the PBN/TF/6 meeting held in February 2010, IATA and a group of volunteering States (Australia, Hong Kong China, New Zealand and Thailand) were tasked to conduct a review and provide a harmonization report of State PBN implementation plans to the PBN/TF/7 meeting.

1.3 Due to uncontrollable events, the PBN/TF/7 was rescheduled to convene just prior to APANPIRG/21. Based on the significant findings of this review and to ensure timely work progression, it was decided to present the report directly to the ATM/AIS/SAR SG/20 for comment and then to CNS/MET SG/14.

2. DISCUSSION

2.1 The intent of the review is to assess the quality and readiness of State plans, and to identify regional implementation challenges and harmonization issues. A robust State PBN implementation plan should include a well-defined implementation roadmap, facilitate well-established implementation standards, and ensure flexible processes that will ultimately address the needs of aviation stakeholders.

2.2 Review Criteria

States were encouraged to develop PBN implementation plans in accordance with the Regional plan and thus the primary review criteria was also developed using the basic framework of the Regional plan. The review team identified 10 basic plan elements (BPEs) that are considered the minimum necessary areas to be covered in a State Plan. BPE sub-elements were also established to highlight recommended items to be to be addressed within each BPE. A summary list of BPEs, supporting sub-elements, and their reference to the Regional plan can be found in **Appendix A.**

2.3 Review Methodology

The review methodology involved a simple assessment to determine whether BPEs were satisfied in the plan, if improvement was needed, or if the BPE was not included in the plan.

2.4 Outcomes

2.4.1 Assessment of Plan Quality and Readiness

Each team member reviewed the plans independently and the final assessment of plan quality was based on the combined inputs of all reviewers. Plans were assigned one of three quality ratings based on the number of BPEs satisfied:

- Robust - 8 to 10 BPEs satisfied in the plan;
- Marginal - 5 to 7 BPEs satisfied in the plan;
- Incomplete - 4 or less BPEs satisfied in the plan.

Of the 21 plans submitted, 7 were rated Robust (with only minimal improvements needed), 5 were rated Marginal (needing significant improvement) and 9 were rated Incomplete (no viable plan documented). Of the 9 that were rated as incomplete, 4 did not satisfy any of the 10 BPEs. A summary graph of the results is listed in **Appendix B.**

2.4.2 Individual plan assessment letters will be issued via ICAO to each State, providing confidential feedback and suggested improvements.

2.5 Areas of Challenge

The BPEs most often not addressed in plans were the Safety assessment (BPE 9), Description of tangible benefits (BPE 10), and Assessment of PBN Fleet readiness (BPE 3). BPE 3 was also the area found to need the most improvement. A listing of the observations, comments and recommended improvements for each BPE is provided below. The results of each BPE reviewed and an overall summary is presented graphically in **Appendix C.**

2.5.1 BPE 1- Policy and Implementation Planning

Observations:
BPE-1 was satisfactorily included in 12 of the State plans.
None of the 9 State plans that were rated Incomplete adequately satisfied the fundamental initial planning requirements addressed under BPE-1.
While most plans committed to establishing standards and requirements in accordance with ICAO, it appears a few States plans are not harmonized with the ICAO Navigation Specifications, specifically for instrument approach implementation. This issue is discussed in more detail in BPEs 4 and 7. Communication with stakeholders was commonly not addressed in plans.

Comments:
Formation of a key working group, establishing a framework for standards and requirements in accordance with ICAO and communication with stakeholders are essential first steps toward successful implementation.

Recommended Improvements:
Plans need to ensure overall implementation is in accordance with ICAO policies to the maximum extent possible.
Plans need to properly identify stakeholders and establish a method of communication in both the planning and implementation phases.

2.5.2 BPE 2- Assessment of CNS Infrastructure

Observation: Only 9 State plans satisfactorily addressed Assessment of the existing CNS infrastructure.

Comments: As PBN is only one enabler of the airspace concept that shapes CNS/ATM requirements and activities, it is a crucial step to account for not only existing navigation capabilities, but also the communication and surveillance capabilities that must be managed in concert to achieve airspace objectives.

Recommended improvements: States should conduct a complete assessment of the CNS infrastructure to ensure PBN implementation plans compliment and enhance the airspace operational concept.

2.5.3 BPE 3- Assessment of PBN fleet readiness

Observation: A fleet readiness assessment based on actual operating traffic was not adequately addressed in any of the State plans.

Comments: Understanding operator capabilities and requirements is essential to safe and efficient implementation and to maximize the potential benefits PBN offers. A number of States conducted a fleet readiness assessment based on their domestic fleet only. International operations form a significant portion of the traffic mix in most key airports around the region. Considering only the

capabilities and requirements of domestic operations can lead to an implementation path that is not fully justified and can potentially reduce overall safety and efficiency.
A few other States simply posted the Regional fleet assessment found within the APAC Regional PBN Plan. The regional assessment alone does not give specific, up-to-date information sufficient to shape requirements for operations within any specific country or airport.

Recommended improvement: States need access to current international fleet navigation capability data in addition to domestic fleet data in order to develop the most realistic and effective implementation timelines and strategies.
IATA and ICAO are developing an International Register of Air Operator Certificates database which will contain all Annex 6 AOC information, including PBN approvals. The target date for this database to become available, however, is 31 Dec. 2011. In the meantime, States need to consider methods to account for the capabilities of foreign operator equipage and approved operations.

2.5.4 BPE 4 - Selection of Appropriate PBN Navigation Specification

Observations: The element was satisfactorily addressed in 15 State plans (the best rated element).
However, several plans used the term “RNP 0.3 APCH” to describe a type of instrument approach to be implemented.

Comments: The term “RNP 0.3 APCH” is not a recognized ICAO navigation specification. The current ICAO navigation specifications for the Approach segment are RNP APCH and RNP AR APCH. The ICAO PBN manual lists an allowed accuracy of 0.3 for RNP APCH and an allowed accuracy range of 0.3 to 0.1 for RNP AR APCH in the Final Approach segment. Thus use of the term “RNP 0.3 APCH” makes it unclear which ICAO navigation specification a State plans to implement.
More importantly, States should remain committed to harmonized implementation in accordance with ICAO navigation specifications. Deviations in terminology and requirements should be kept to the absolute minimum to avoid onerous operator requirements to apply for multiple approvals for essentially the same type of operations.

Recommended improvement: States should ensure proper terminology is used to describe navigation specifications to be implemented.

2.5.5 BPE 5 – Strategies for en-route implementation

Observations: 12 State plans satisfactorily addressed this element. Plans needing improvement typically did not identify key traffic flows or city pairs to be affected by implementation. An analysis of en-route harmonization based on short term implementation targets was also conducted. In oceanic and remote continental airspace, all States that designated a navigation specification selected RNAV 10 (acceptable) and/or RNP 4 (preferred) in accordance with Regional plan recommendations. In continental airspace, all but one State that designated a navigation specification selected RNAV 5 and/or RNAV 2 which is the preferred and acceptable navigation specification according to the Regional plan. A summary chart of this analysis is provided in Appendix D.

Comments: Consideration of traffic flows is fundamental in the development of any airspace operational concept, affects the strategy for en-route implementation and will reduce harmonization issues. It is apparent that the Regional plan has provided a framework that has guided en-route harmonization in the shorter term. However, with a number of States not yet implementing PBN and implementing States progressing at different rates, harmonization across FIR boundaries will remain an issue.

Recommended Improvement:
- States should identify key traffic flow and city pairs in order to help determine the best applicable navigation specification to progress State plans and consider the implementation paths of neighboring States.

2.5.6 BPE 6- Strategies for terminal area iimplementation

Observation : This element was adequately addressed in 12 plans, and improvements recommended for only 2 plans.

Recommended improvement: to ensure the use of standardized nomenclature for SIDs and STARs.

2.5.7 BPE 7 Strategies for instrument approach implementation

Observations: Ten State plans adequately satisfied this element.
14 State plans indicated intent to implement APV through (RNP APCH – LNAV/VNAV) and 10 of those 14 State plans also indicated intent to implement RNP AR APCH.
One particular plan mentioned implementing RNP AR APCH where “possible”, instead of where required and operationally practicable.
Other plans target implementation of RNP AR APCH at major aerodromes with no justification and with no mention of considering RNP APCH implementation in lieu of or in tandem.

Comments (a): Several State plans show a path toward early implementation of RNP AR APCH, apparently bypassing the RNP APCH at some airports without considering the cost/benefit to flight operations and all airspace users.

Many international carriers don't have a business case to adopt RNP AR APCH capabilities at this time as RNP AR APCH is available at relatively few airports globally.

The RNP AR APCH (at 0.3) provides some advantages with RF leg flexibility and where greater accuracy is required in the initial, intermediate or missed approach segments. However, the RNP APCH is suitable in a majority of cases and can be utilized in the nearer term by a greater number of operators. Furthermore, RF leg flexibility is expected to be included in a revision to the ICAO navigation specification for RNP APCH.

The Regional plan clearly states that RNP APCH with Baro-VNAV is expected to be implemented in the maximum possible number of airports, commencing primarily with international airports; and RNP AR APCH should be implemented in selected airports where obvious benefits can be obtained.

Therefore, RNP AR APCH, should not be seen as bypass or replacement to RNP APCH, but rather is an acceptable alternative when RNP APCH is not practicable due to significant obstacles. States that choose to implement RNP AR APCH to achieve other operational gains (reduction of track miles, noise abatement, etc) should also account for the short/medium term ICAO vision and roadmap.

The APAC Regional PBN plan provides guidance that during the transition to PBN, provisions should be made to allow non-equipped operators to utilize the airspace. Where possible, an RNP APCH should be published in tandem with an RNP AR APCH that is implemented to achieve operational gain but not exclusively required due to significant obstacles or other limitations.

Recommended improvement (a):
It is essential for States to align and follow the APAC regional plan and APANPIRG conclusions which support end user capabilities and requirements by:

- implementing RNP APCH with Baro-VNAV as much as possible;
- implementing RNP AR APCH where there is operational benefit, justified by a good business case;
- publishing RNP APCH in tandem with RNP AR APCH whenever possible.

Comments (b):
A few State plans appear to diverge from the RNP AR APCH navigation specification which ultimately can result in foreign operators needing an approval not supported by the State of the Operator and most likely an additional operations specification. Proliferation of foreign operations specifications as a result of divergent standards places an onerous and costly burden on operators, and ultimately can compromise safety and efficiency.
As PBN navigation specifications evolve to support future strategies, requirements, and technologies, continued harmonization is essential to prevent a divergence of standards in even more complex flight environments.
States must recognize the potential impact of deviating from the ICAO PBN navigation specifications without full appreciation of the operator impact in terms of approval, equipage, operating and training requirements.
Also, improvements to navigation specifications and the identification of additional requirements found in one State should, in most cases, have applicability in other States.

Recommended Improvement (b):
Any deviation from a globally harmonized navigation specification should be discouraged unless there are obvious benefits. In these cases, the proposed change should be vetted by the PBN Study Group for possible incorporation into the ICAO PBN navigation specifications or for other States to recognize as acceptable.

2.5.8 BPE 8- Transitional Strategy

Observation: Only 6 State plans included a clear transitional strategy.

Comments: Section 8 of that Regional plan details the necessary steps to ensure a safe and effective transition to PBN.

Recommended improvements:

- Plans should include a risk analysis to ensure safety is not compromised with the removal of existing ground equipment (safety assessment).
- Plans should include a strategy to continue conventional air navigation procedures during the transition to guarantee operations by users that are not RNAV and/or RNP equipped.
- Plans should identify conventional NAVAIDS to be decommissioned and establish a timeline to phase-out.

2.5.9 BPE 9- Safety Assessment

Observation: Only 3 State plans satisfactorily addressed the safety assessment element.

Comments: The Regional plan specifies that the introduction of PBN applications shall only take place after a proper safety assessment is conducted by the implementing State or group of States.
Although guidance for conducting safety assessments exists is referenced in the ICAO PBN Manual and specific guidance for en-route safety assessments is available in the Regional plan, most States made no mention of the requirement in their plans.

It is recognized that there is a lack of expertise and guidance in the region for conducting various types and phases of safety assessments.

Recommend improvements:
To ensure regional PBN implementation meets an acceptable level of safety, it is urgent that a regional strategy be established to provide State assistance to conduct cooperative safety assessments.

To ensure regional harmonization of en-route safety assessment requirements and methodologies, implementing States are encouraged to work cooperatively with RASMAG who will provide guidance and technical assistance to States to support their en-route PBN implementations.

2.5.10 BPE 10- Description of tangible benefits

Observation: Only 4 State plans adequately described the tangible benefits expected from PBN based on specific planned implementations within the State.

Comments: Most States that included a description of benefits did so by merely pasting the common (generic) items listed in the Regional plan and/or the PBN manual. A clear description of measureable outcomes expected or demonstrated from any PBN implementation can help provide a rationale and justification for investment, gives stakeholders motivation to follow through with implementation, and provides a benchmark to substantiate further improvements.

Recommended Improvements:
State plans should identify the specific tangible benefits expected from each implementation.

3 CONCLUSIONS

3.1 Only 7 of 40 States within the Asia Pacific Region have submitted a PBN plan that demonstrates a path toward successful implementation.

3.2 14 of the plans submitted to ICAO were marginal or incomplete. The implications of these results are that many States have not committed the resources and/or lack the proper knowledge and expertise required to plan, develop and successfully implement PBN.

3.3 The most significant areas of challenge, safety assessment and assessment of PBN fleet readiness require regional and/or global solutions to provide States with the required methodologies and data.

3.4 It is difficult to assess the true level of harmonization within the region due to the relatively low numbers of viable plans submitted, but plans appear to be fairly well harmonized among those State plans available for review. However it is observed that the potential exists for States that are further advanced in PBN development to implement in a manner that doesn't fully account for operational need and/or capability and at a pace that exceeds the evolution of ICAO PBN specifications, specifically in the Instrument Approach segment.

3.5 The PBN Task Force and the ICAO Asia-Pacific Regional Office have provided leadership and guidance to States, promoting PBN and developing the Regional plan. However, State progress to date has been slow and there are indications that the APAC region will not meet established ICAO PBN implementation timelines. Based on the observations from the plan review, it is apparent many States need support at the working level in order to successfully complete the planning phase and to move forward to implementation.

4 RECOMMENDATIONS

4.1 States that have yet to develop and submit PBN implementation plans should meet their obligation to ICAO and do so with the greatest urgency. States with existing plans should ensure plans are robust and are aligned with the Regional plan and ICAO PBN requirements. The Basic Plan Elements identified in this plan review may be used by States as a baseline template to develop or improve implementation plans.

4.2 The results of the plan review suggest that many States require regionally-coordinated support to complete implementation plans, address areas of challenge, and receive proper guidance on development and implementation. The establishment of a regional working-level team or forum is recommended with a focus on the following:

- Providing direct support to States and/or organizing the appropriate resources that will deliver solutions and ensure regional harmonization.

- Development of additional support mechanisms that create skills and capabilities within States to develop, implement and sustain PBN capabilities;

- Formulation of cooperative arrangements with volunteering States that are further advanced in PBN to leverage knowledge and experience already gained;

- Coordination and consultation with industry to ensure operator feedback, data and expertise;

- Further promotion of PBN awareness and education to decision makers within States to create the political will to invest.

5 ACTION BY THE MEETING

5.1 The meeting is requested to:

a) Note the results of the State plan review and harmonization report, recognizing that the APAC region stands at risk of not meeting ICAO implementation targets;

b) Consider strategies to address the major areas of challenge to implementation;

c) Provide comment on the future role of the PBN Task Force and/or the establishment of other support mechanisms to address State challenges to PBN implementation at the working level;

d) Consider a continuing role of volunteering States assisting with Regional implementation and harmonization.

5.2 States are requested to:

a) States that are further advanced in PBN implementation are encouraged to contribute to regional efforts to accelerate implementation;

b) Developing States are encouraged to identify shortfalls and challenges to implementation;

c) All States with existing PBN implementation plans review and revise plans as necessary to ensure they are in alignment with the APAC Regional plan and ICAO PBN requirements;

d) States that have yet to develop PBN implementation plans and submit to ICAO do so in an expeditious manner.

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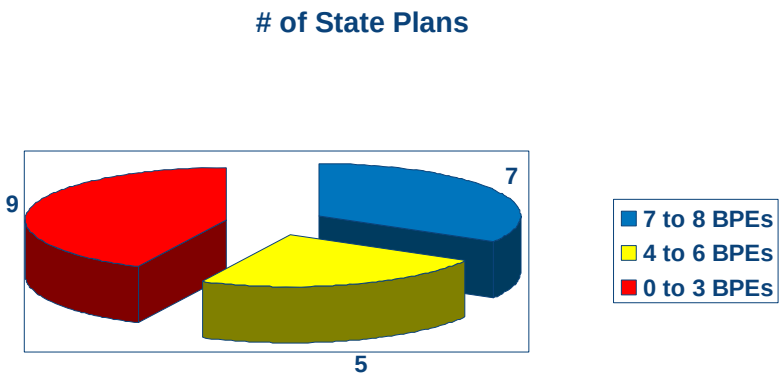
APPENDIX A

Basic Plan Elements	Regional Plan References
1. Policy and Implementation Planning Formation of a key working group Standards & Requirements in accordance with ICAO Communication with Stakeholders	**4.0**
2. Assessment of CNS infrastructure	6.11-6.16
3. Assessment for PBN fleet readiness Based on actual operator traffic	6.4-6.7
4. Selection of appropriate PBN navigation specification	7.3-7.18
5. Strategies for en-route implementation Key Traffic flows and city pairs identified Domestic International Harmonization in en-route, across FIR	5.4-5.9
6. Strategies for terminal area implementation, including timeline Specify terminal areas selected for implementation by 2010	5.10- 5.11
7. Strategies for Instrument approach implementation, including timeline Specify procedures selected for implementation by 2010 APV (Baron-VNAV and/or augmented GNSS) Designate RNP APCH (LNAV or LNAV/VNAV) Designate RNP AR APCH (with operational justification)	4.16(b) / 5.12-5.13 / 7.8-7.10 / 7.16- 7.18
8. Transition strategy Include decommissioning plan	4.17(b) / 8.0
9. Safety Assessment Pre- and post- implementation safety assessments conducted in accordance with ICAO provisions Seek guidance and technical assistance from RASMAG Periodic safety reviews undertaken by the State or group of States where required	4.17(a) / 9.0
10. Description of the tangible benefits Benefits to operations derived from PBN implementation	4.10 / Appendix D

APPENDIX B

Plan Quality and Readiness

- Robust- 8 to 10 BPE existing with no more than three that need improvement
- Marginal- At least 5 BPEs existing
- Incomplete- 4 or less BPEs existing



APPENDIX C

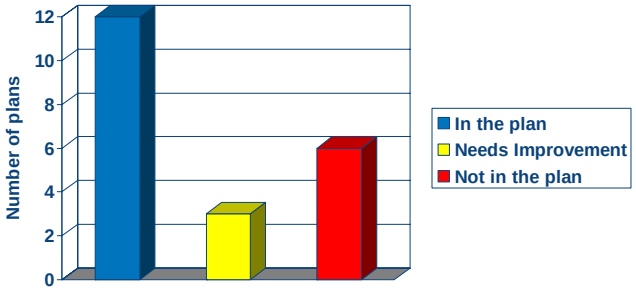
Policy and Implementation Planning

BPE 1

↗ Formation of a key working group

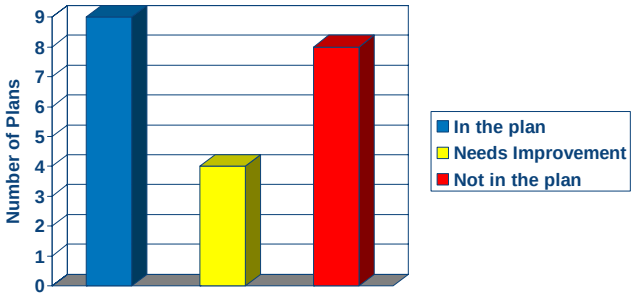
↗ Standards & Requirements in accordance with ICAO

↗ Communication with Stakeholders



Assessment of CNS Infrastructure

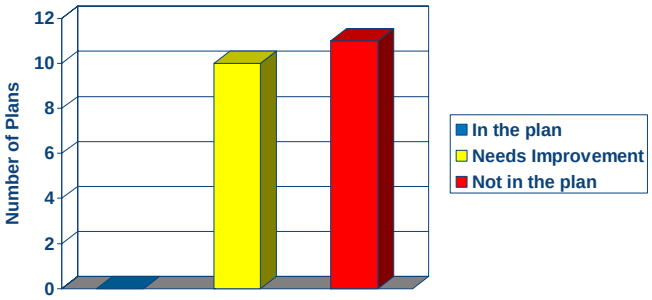
BPE 2



Assessment of PBN fleet readiness

BPE 3

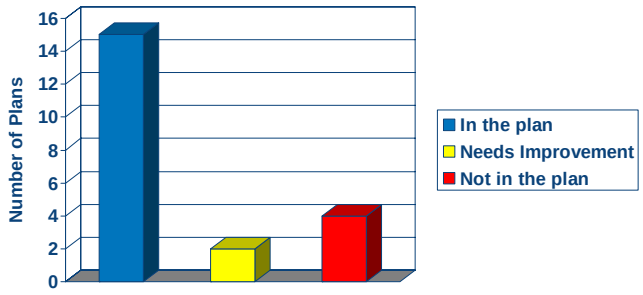
↗ Based on actual operator traffic



Selection of appropriate PBN NAV SPEC

BPE 4

- En-route
- Terminal
- Approach

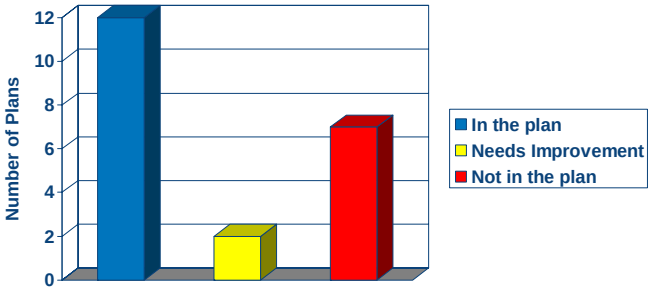


APPENDIX C

Strategies for en-route implementation

BPE 5

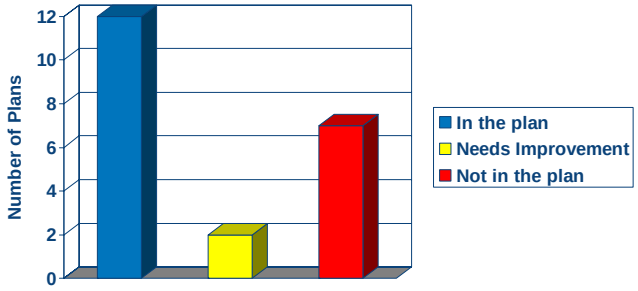
- Key traffic flow and city pairs identified
  - Domestic
  - International
- Harmonization en-route, across FIR



Strategies for terminal area implementation

BPE 6

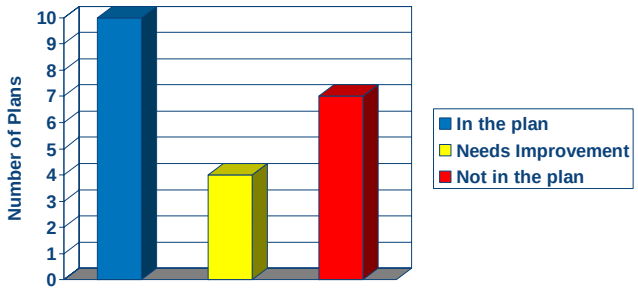
- Timeline
- Implementation by 2010
- Harmonization in Terminal area



Strategies for instrument approach

BPE 7

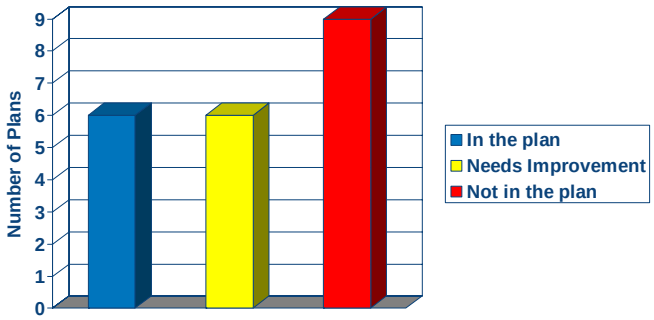
- Specify procedures for implementation by 2010
- APV (Baro-VNAV or augmented GNSS)
- Designate RNP APCH (LNAV or LNAV/VNAV)
- Designate RNP AR APCH (with operational justification)



Transition strategy

BPE 8

- Include decommissioning plan

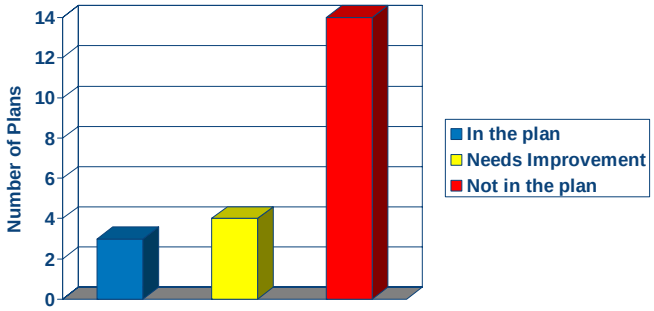


APPENDIX C

Safety Assessment

BPE 9

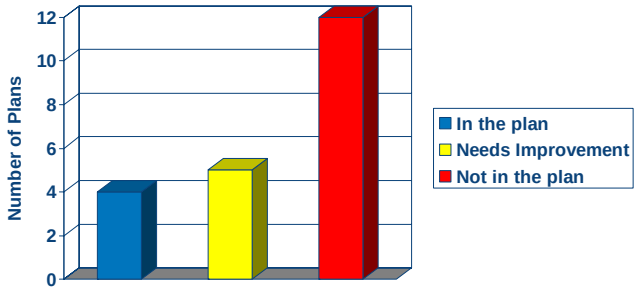
- Pre- and post-implementation safety assessments
- Seek guidance from RASMAG
- Periodic safety reviews undertaken by the State or group of States where required

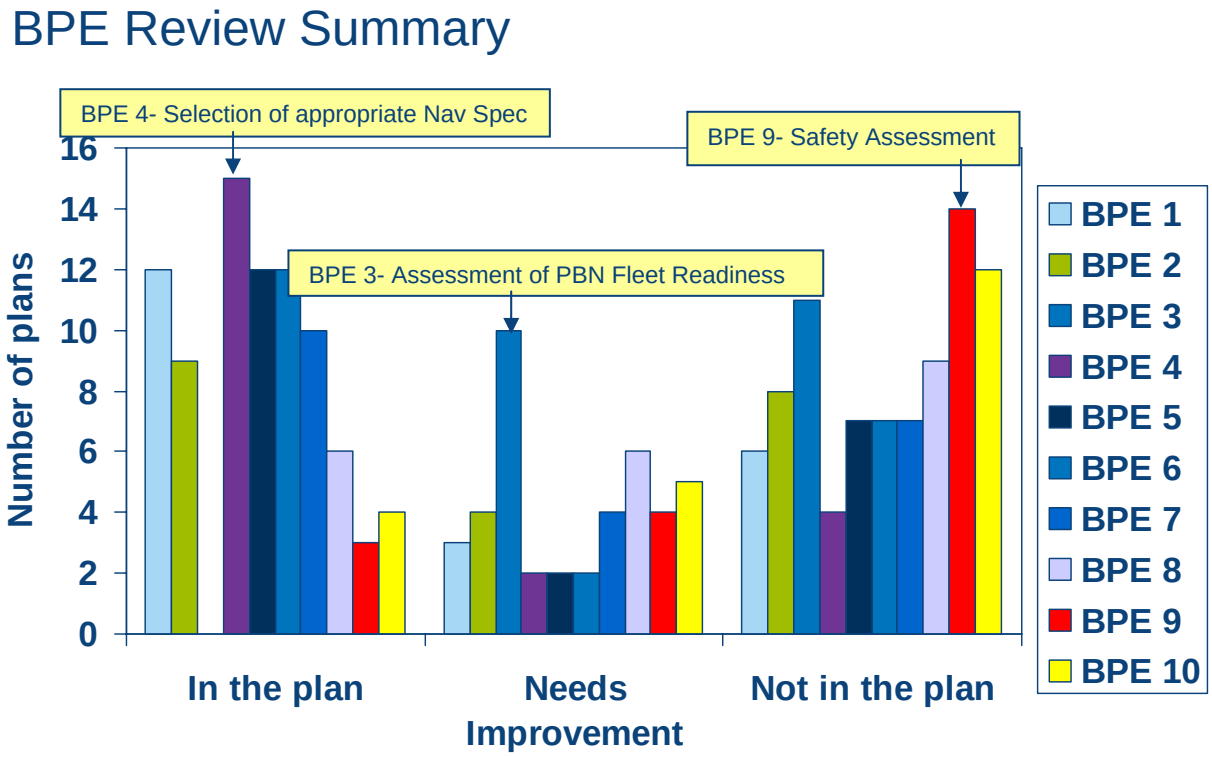


Description of tangible benefits

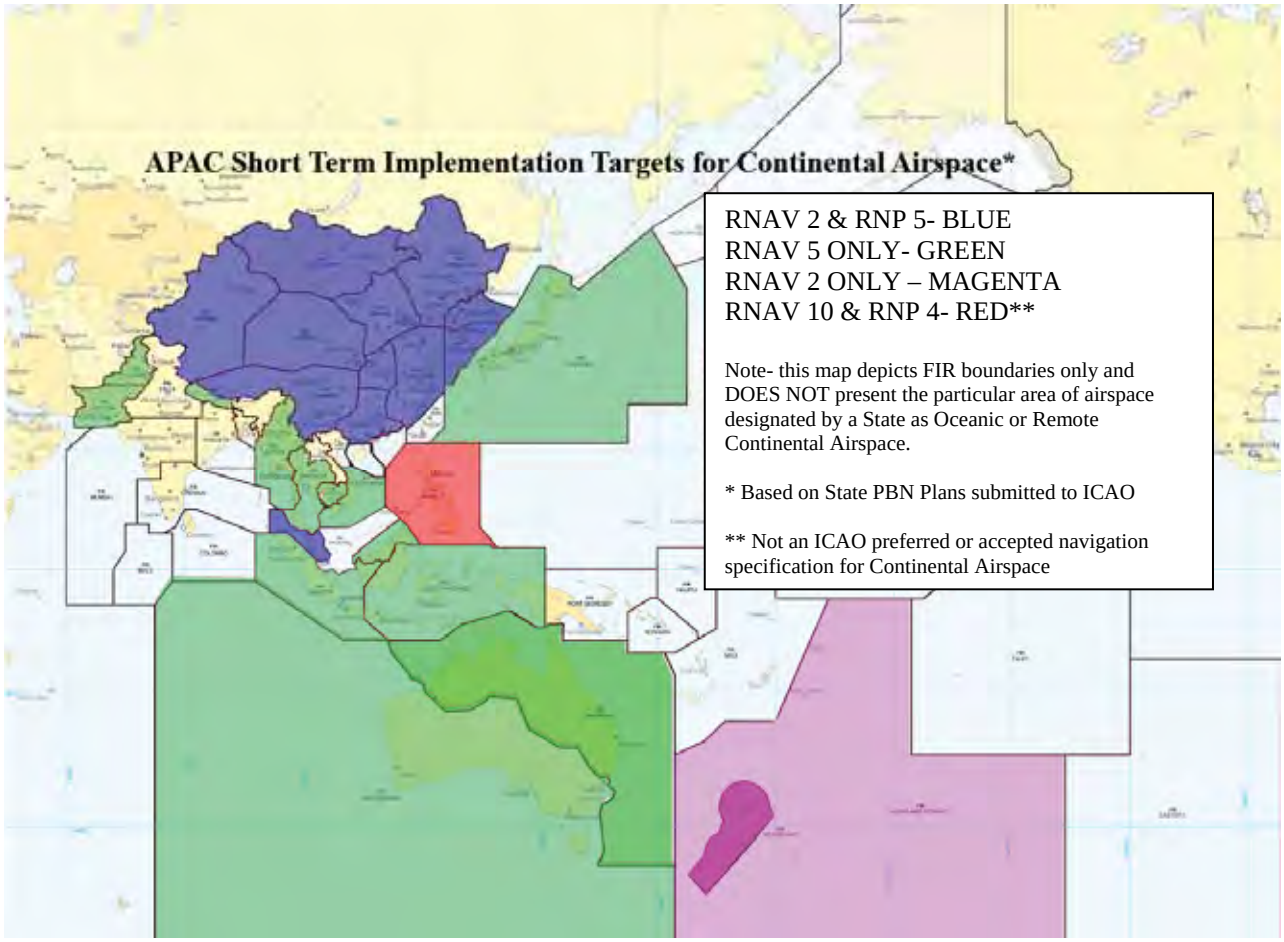
BPE 10

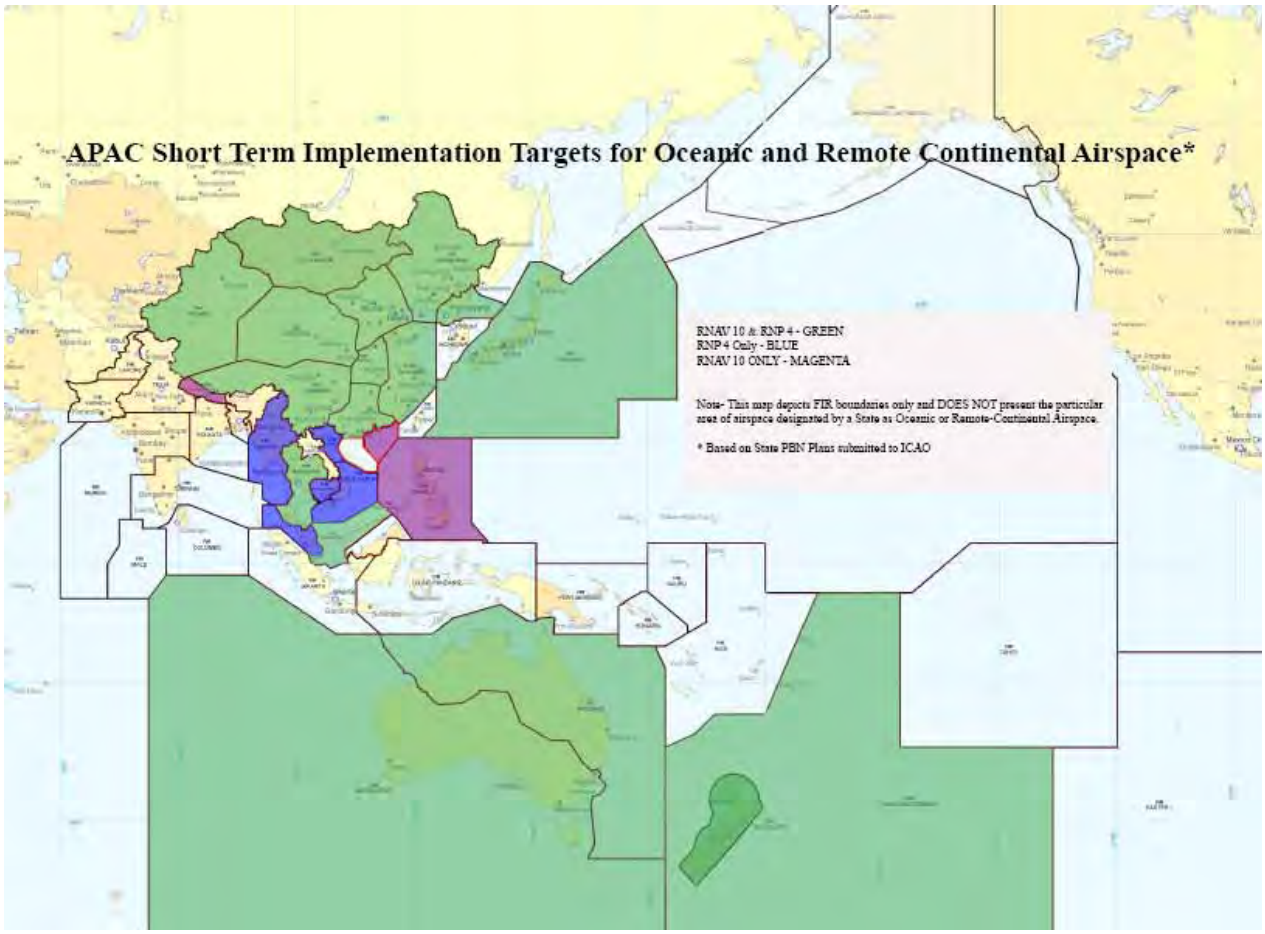
- Benefits to operations expected/ derived from PBN implementation




BPE Review Summary
BPE 4- Selection of appropriate Nav Spec
BPE 9- Safety Assessment
BPE 3- Assessment of PBN Fleet Readiness
Number of plans
16
14
12
10
8
6
4
2
0
In the plan
Needs Improvement
Not in the plan
BPE 1
BPE 2
BPE 3
BPE 4
BPE 5
BPE 6
BPE 7
BPE 8
BPE 9
BPE 10

APPENDIX D


APAC Short Term Implementation Targets for Continental Airspace*
RNAV 2 & RNP 5- BLUE
RNAV 5 ONLY- GREEN
RNAV 2 ONLY – MAGENTA
RNAV 10 & RNP 4- RED**
Note- this map depicts FIR boundaries only and DOES NOT present the particular area of airspace designated by a State as Oceanic or Remote Continental Airspace.
* Based on State PBN Plans submitted to ICAO
** Not an ICAO preferred or accepted navigation specification for Continental Airspace


APAC Short Term Implementation Targets for Oceanic and Remote Continental Airspace*
RNAV 10 & RNP 4 - GREEN
RNP 4 Only - BLUE
RNAV 10 ONLY - MAGENTA
Note- This map depicts FIR boundaries only and DOES NOT present the particular area of airspace designated by a State as Oceanic or Remote-Continental Airspace.
* Based on State PBN Plans submitted to ICAO