

**APPENDIX B**

**PBN**  
**Implementation Plan**  
**State X**  
Version 1

December 2009

### **About the Plan**

ICAO Assembly Resolution A36-23 calls for each State to develop a national PBN implementation plan by 2009. This is a template developed by the ICAO PBN Programme, which has been adapted during SAM/IG/3 Meeting, as an example for use by the ICAO SAM States as they each must develop their own plans. This is only one example of what subjects a "National PBN Implementation Plan" that meets the intent of the resolution might contain. States are encouraged to tailor their plans to meet their needs. This may mean that the "PBN Implementation Plan" be not stand-alone, but part of a broader plan for development of aviation in the State. This is a determination that only the State can make. It should be pointed out that if the State has not yet met its obligations with regard to conversion to the WGS-84 coordinate system, this should be included in the plan, as all RNAV and RNP operations are conducted solely with reference to WGS-84 coordinates.

Guidance material for the presentation and complementation of ICAO National PBN Implementation Plans may be found in the CAR/SM PBN Roadmap and in Appendices B and E of the SAM/IG/2 Meeting Report on Agenda Item 2, which contain both guidance and PBN Action Plans for Approach and TMA developed during SAM/IG Meetings.

### **Why is a PBN implementation plan or roadmap needed?**

After RVSM implementation on 20 January 2005, the main tool for the optimisation of the airspace structure is the Performance Based Navigation (PBN) implementation, which shall favour the necessary conditions for the RNAV and RNP capacity use of a significant portion of airspace users of the CAR/SAM Regions. Current planning of the Regional Planning and Implementation Groups is based on Air Navigation Plans and in Regional CNS/ATM Plans. These plans are currently made up basically of tables, which do not contain the necessary details for the implementation of each of the CNS and ATM elements.

The CAR/SAM PBN Roadmap was created for this reason. The necessary concurrent and follow-on step is to develop national plans that implement the regional plans at the State level and address PBN implementation strategy at the national level.

In view of the need for detailed navigation planning, the CAR/SAM Planning and Implementation Group (GREPECAS) deemed it advisable to call for preparation of a national PBN Implementation Plan by each State by December 2009, to provide proper guidance and direction to the domestic air navigation service provider(s), airspace operators and users, regulating agency, as well as foreign operators who operate or plan to operate in the State. This guidance should address the planned evolution of navigation, as one of the key systems supporting air traffic management, and describe the RNAV and RNP navigation applications that should be implemented in at least the short and medium term, in the State, using as guidance what is set up in the PBN Roadmap of the Region.

### **What are the objectives of the PBN Implementation Plan or Roadmap?**

The PBN implementation plan should meet the following strategic objectives:

- a) provide a high-level strategy for the evolution of the navigation applications to be implemented in the State in the short term (up to 2010) and medium term (2011-2015). This strategy is based on the concepts of PBN, Area Navigation (RNAV) and Required Navigation Performance (RNP), which will be applied to aircraft operations involving instrument approaches, standard departure (SID) routes, standard arrival (STAR) routes, and ATS routes in oceanic and continental areas in accordance with the implementation goals in the Assembly resolution;
- b) ensure that the implementation of the navigation portion of the CNS/ATM system is based on clearly established operational requirements;
- c) avoid unnecessarily imposing the mandate for multiple equipment on board or multiple systems on the ground;
- d) avoid the need for multiple airworthiness and operational approvals for intra- and inter-regional operations;
- e) prevent commercial interests from outdoing ATM operational requirements, generating unnecessary costs for the State as well as for airspace users.

### **What is the intent of the PBN Implementation Plan or Roadmap?**

The PBN Implementation Plan should be developed by the State together with the stakeholders concerned and is intended to assist the main stakeholders of the aviation community plan a gradual transition to the RNAV and RNP concepts. The main stakeholders of the aeronautical community that benefit from this roadmap and should therefore be included in the development process are:

- Airspace operators and users
- Air navigation service providers
- Regulating agencies
- National and international organizations

The PBN Implementation Plan is intended to assist the main stakeholders of the aviation community plan the future transition and their investment strategies. For example, airlines and operators can use this roadmap to plan future equipage and additional navigation capability investments; air navigation service providers can plan a gradual transition for the evolving ground infrastructure. Regulating agencies will be able to anticipate and plan for the criteria that will be needed in the future as well as the future regulatory workload and associated training requirements for their work force.

**What principles should be applied in development of the PBN Implementation Plan or Roadmap?**

The implementation of PBN in the State should be based on the following principles:

- a) Continued application of conventional air navigation procedures during the transition period, to guarantee availability by users that are not RNAV- and/or RNP-equipped;
- b) Development of airspace concepts, applying airspace modelling tools as well as real-time and accelerated simulations, which identify the navigation applications that are compatible with the aforementioned concept;
- c) Conduct of cost-benefit analyses to justify the implementation of the RNAV and/or RNP concepts in each particular airspace;
- d) Conduct of pre- and post-implementation safety assessments to ensure the application and maintenance of the established target levels of safety.
- e) Must not conflict with the regional PBN implementation plan.

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