



SAM/IG/4  
WP/07  
11/09/09

**International Civil Aviation Organization  
South American Regional Office**

**FOURTH WORKSHOP/MEETING OF THE SAM IMPLEMENTATION GROUP (SAM/IG/4)  
REGIONAL PROJECT RLA/06/901**

**Lima, Peru, 19 to 23 October 2009**

Agenda Item 3: Implementation of performance-based navigation (PBN) in the SAM Region

**EN-ROUTE PBN ACTION PLAN (RNAV 5)**

(Presented by the Secretariat)

<p style="text-align: center;"><b>Summary</b></p> <p>This working paper proposes to the meeting the revision of the progress reached on the En-route PBN Action Plan (RNAV 5).</p>
<p><b>References:</b></p> <ul style="list-style-type: none"><li>• Second Workshop/Meeting (SAM/IG/2) Report (Lima, Peru, 3 to 7 November 2008)</li><li>• Third Workshop/Meeting (SAM/IG/3) Report (Lima, Peru, 20 to 24 April 2009)</li><li>• Regional Project RLA/06/901</li><li>• En-route PBN Action Plan (RNAV 5).</li></ul>
<p><b>ICAO Strategic objectives</b></p> <p><b>Strategic Objective A</b> <i>Safety</i> <b>Strategic Objective C</b> <i>Environmental Protection</i> <b>Strategic Objective D</b> <i>Efficiency</i></p>

**1 Background**

1.1 The SAM/IG/1 Meeting agreed on Conclusion SAM/IG/1-1 – *CAR/SAM PBN Roadmap*, which indicates that ICAO SAM States should take pertinent actions to follow the guidelines contained in the CAR/SAM PBN Roadmap in implementing RNAV/RNP.

1.2 Also, it was of the opinion that States must prepare their own PBN implementation plans which include regional planning as shown in the roadmap. These national implementation plans shall count, among other issues, with action plans which comprise activities related, dates and responsible for each activity.

1.3 SAM/IG/2 and SAM/IG/2 Meetings examined the Draft short term En-route PBN Implementation Project and the associated regional en-route PBN action plan (RNAV 5), introduced the pertinent changes, established responsible persons and start/end dates of different activities, and adopted the action plan as guideline to be followed by States.

## 2 **Discussion**

2.1 In view that the En-route PBN Action Plan (RNAV 5) contemplates tasks assigned to responsible officers defined, with established dates of compliance, a periodical revision is necessary, as a follow-up of the tasks complied for each one of the persons responsible designated by the Implementation Group. To this end, **Appendix A** to this working paper shows the tasks that must be complied up to this fourth implementation meeting. This analysis should be made taking as reference also WP/02.

## 3 **Suggested action**

3.1 The meeting is invited to:

- a) Take note of the information provided; and
- b) Review the progress reached, and if such were the case, update the en-route PBN action plan (RNAV 5) which appears in Appendix A to this working paper.

## APPENDIX A

**SHORT-TERM EN-ROUTE PBN ACTION PLAN (RNAV-5)**  
**(GPIs 1, 4, 5, 7, 8, 10, 11, 12, 16, 21, 23)**

<b>1.    Airspace concept</b>	<b>Start</b>	<b>End</b>	<b>Responsible party</b>	<b>Remarks</b>
1.1   Establish and prioritize strategic objectives (safety, capacity, environment, etc.)	June/2008	SAM/IG/2	SAM/PBN/IG (Project RLA/06/901)	Completed
1.2   Collect traffic data in order to understand traffic flows in a given airspace	June/2008	SAM/IG/4	SAM/PBN/IG (Project RLA/06/901)	In process
1.3   Analyze the navigation capacity of the aircraft fleet	June/2008	SAM/IG/4	SAM/PBN/IG (Projects RLA/06/901 and RLA/99/901) States IATA	In process. Survey sent to States
1.4   Analyze ground-based means of communication, navigation (VOR, DME) and surveillance to meet navigation specifications and the navigation reversal mode	June/2008	SAM/IG/3	SAM/PBN/IG (Projects RLA/06/901 and RLA/99/901) States	In process
1.5   Optimize airspace structure, reorganizing the network or implementing new routes based on the strategic objectives of the airspace concept, taking into account airspace modelling, ATC simulations (fast time and/or real time), live tests, etc.	SAM/IG/2	SAM/IG/4	SAM/PBN/IG (Project RLA/06/901) States IATA	Initial study presented in WP/04

<b>2.    Develop a performance measurement plan</b>	<b>Start</b>	<b>End</b>	<b>Responsible party</b>	<b>Remarks</b>
2.1   Draft a plan to measure performance, including gas emissions, safety, efficiency, etc.	SAM/IG/2	SAM/IG/5	SAM/PBN/IG Project RLA/06/901	In process

<b>2. Develop a performance measurement plan</b>	<b>Start</b>	<b>End</b>	<b>Responsible party</b>	<b>Remarks</b>
2.2 Implement the performance measurement plan	Nov/2010	Permanent	SAM/PBN/IG (Project RLA/06/901) States IATA	No activity has been initiated

<b>3 Safety assessment</b>	<b>Start</b>	<b>End</b>	<b>Responsible party</b>	<b>Remarks</b>
3.1 Prepare safety assessment execution using a qualitative methodology through the application of SMS	SAM/IG/2	SAM/IG/5	CARSAMMA Project RLA/06/901 Regional Office	RLA/06/901 in order to provide guidance material to CARSAMMA The utilisation of qualitative methodology initially defined through the application of SMS processes

<b>4</b>	<b>Establish a collaborative decision-making process (CDM)</b>	<b>Start</b>	<b>End</b>	<b>Responsible party</b>	<b>Remarks</b>
4.1	Coordinate planning and implementation requirements with air navigation service providers, regulators, users, aircraft operators and military authorities	SAM/IG/2	SAM/IG/4	SAM/PBN/IG States	States have published an initial AIC
4.2	Establish the implementation date	SAM/IG/1	SAM/IG/4	SAM/PBN/IG States	States must analyse the feasibility of the tentative date in coordination with domestic operators and military authorities
4.3	Establish the documentation format in the SAM PBN website	SAM/IG/1	SAM/IG/2	SAM Regional Office	Completed
4.4	Report planning and implementation progress to the corresponding Regional Office. Conclusion to present national plans at SAM/IG/4	SAM/IG/2	SAM/IG/4	SAM/PBN/IG States	

5 ATC automated systems	Start	End	Responsible party	Remarks
5.1 Assess PBN implementation in ATC automated systems, taking into account amendment 1 to the PANS/ATM (FPLSG).  Note: It is not a requirement for RNAV5 implementation	June/2008	SAM/IG/4	SAM/PBN/IG (Project RLA/06/901)	Completed According to the programme presented in ICAO guidelines (WP/09), it is not a requirement for the RNAV5 implementation. CNS/ATM sub-group will revise this issue.
5.2 Implement necessary changes in automated ATC systems	SAM/IG/2	TBD	States	Completed

<b>6</b>	<b>Aircraft and operator approval</b>	<b>Start</b>	<b>End</b>	<b>Responsible party</b>	<b>Remarks</b>
6.1	Analyze aircraft and operator approval requirements (pilots, dispatchers and maintenance personnel) in keeping with the PBN manual, and develop the necessary documentation.	June/2008	SAM/IG/2	Regional Project RLA/99/901- Regional Safety Oversight Cooperation System	Completed
6.2	Publish national regulations for the implementation of the RNAV-5 navigation specification	SAM/IG/2	SAM/IG/4	States	States should publish in October 2009
6.3	Begin the approval of aircraft and operators	SAM/IG/3	SAM/IG/5	States	
6.4	Establish and keep up to date a registry of approved aircraft and operators	SAM/IG/3	Permanent	CARSAMMA States Regional Office	Secretariat should send communication to CARSAMMA requesting data required for the registration data base
6.5	Verify the operation of the continuous monitoring programme (aircraft and procedures)	Nov/2010	Permanent	States	

<b>7</b>	<b>Standards and procedures</b>	<b>Start</b>	<b>End</b>	<b>Responsible party</b>	<b>Remarks</b>
7.1	Assess and, if applicable, publish the regulations on the use of GNSS.	June/2008	SAM/IG/2	SAM/PBN/IG (Project RLA/06/901) States	Completed
7.2	Finalize WGS-84 implementation	TBD	TBD	States	States which have not done so, should provide the information

<b>7</b>	<b>Standards and procedures</b>	<b>Start</b>	<b>End</b>	<b>Responsible party</b>	<b>Remarks</b>
7.3	Develop an AIC model to report PBN implementation plans	June/2008	SAM/IG/2	SAM/PBN/IG (Project RLA/06/901)	Completed
7.4	Publish the AIC reporting PBN implementation plans	SAM/IG/2	SAM/IG/4	States	States should publish on 9 April 2009
7.5	Develop an AIP Supplement model containing applicable standards and procedures, including the corresponding in-flight contingencies	SAM/IG/4	SAM/IG/5	SAM/PBN/IG (Project RLA/06/901)	
7.6	Publish the AIP Supplement containing applicable standards and procedures, including the corresponding in-flight contingencies	SAM/IG/5	SAM/IG/6	States	
7.7	Review the Procedural Handbook of the ATS units involved	SAM/IG/5	SAM/IG/6	States	
7.8	Update the letters of agreement between ATS units	SAM/IG/5	SAM/IG/6	States	
7.9	Develop an amendment to regional documentation, if necessary	SAM/IG/3	SAM/IG/4	SAM/PBN/IG (Project RLA/06/901)	
7.10	Submit a proposal of amendment to Doc. 7030, if necessary	SAM/IG/5	SAM/IG/6	SAM Regional Office	
7.11	Review practices and procedures to improve fuel consumption management and environmental protection	SAM/IG/1	Permanent	SAM/PBN/IG (Project RLA/06/901)	



<b>8. Training</b>	<b>Start</b>	<b>End</b>	<b>Responsible party</b>	<b>Remarks</b>
8.1 Develop a training and documentation programme for operators (pilots, dispatchers and maintenance personnel)	SAM/IG/4	SAM/IG/5	Regional Project RLA/99/901	
8.2 Develop a training and documentation programme for air traffic controllers and AIS operators	SAM/IG/4	SAM/IG/5	SAM/PBN/IG (Project RLA/06/901)	
8.3 Develop a training programme for regulators (aviation safety inspectors)	SAM/IG/4	SAM/IG/5	RLA/99/901 States	
8.4 Conduct training programmes	SAM/IG/5	SAM/IG/6	States	
8.5 Conduct seminars for operators, explaining plans and expected operational and economic benefits	SAM/IG/1	SAM/IG/4	States	

<b>9. Implementation decision</b>	<b>Start</b>	<b>End</b>	<b>Responsible party</b>	<b>Remarks</b>
9.1 Assess the available operational documentation (ATS, OPS/AIR)	July/2010	N/A	States	
9.2 Assess the percentage of aircraft and operators (non-exclusionary airspace)	July/2010	N/A	States	
9.3 Analyze the results of the safety assessment	July/2010	N/A	States	
9.4 Publish trigger NOTAM	Nov/2010	N/A	States	

<b>10. Performance monitoring system</b>	<b>Start</b>	<b>End</b>	<b>Responsible party</b>	<b>Remarks</b>
10.1 Develop a post-implementation en-route operations monitoring programme	SAM/IG/4	SAM/IG/5	SAM/PBN/IG (Project RLA/06/901)	
10.2 Implement a post-implementation en-route operations monitoring programme	Nov/2010	Nov/2011	States	
<b>Pre-operational implementation date</b>	Nov/2010	N/A		
<b>Definitive implementation date</b>	Nov/2011	N/A		