



International Civil Aviation Organization
Eastern and Southern African Office

**Second Meeting of the APIRG Performance Based Navigation/Global
Navigation Satellite System Task Force (PBN/GNSS TF/2)
(Dakar, Senegal, 13 - 15 June 2011)**

Agenda Item 3: PBN and GNSS Regional Performance Objectives

Review and Update of PBN and GNSS Regional Performance Objectives

(Presented by the Secretariat)

SUMMARY

This paper presents the Regional Performance Objectives relevant to PBN and GNSS implementation, and submits to the meeting the *Performance Framework Forms (PFFs)* for review and update as necessary

Action by the meeting is at **paragraph 3.**

REFERENCES

- SP AFI RAN 08 meeting report
- PBN TF2 meeting report
- ATS/AIS/SAR SG/10 meeting report
- PBN/GNSS/I TFs/1 meeting report
- ATS/AIS/SAR SG/11 meeting report
- APIRG/17 meeting report
- PBN/GNSS TF1 meeting report

This Working Paper is related to Strategic Objectives: **A**

1. INTRODUCTION

1.1 The introduction of a performance-based approach to the planning of air navigation services in the AFI region was presented to the SP AFI RAN 08 meeting held in Durban, South Africa which agreed thereto. A series of performance framework Forms (PFF) relating to air navigation fields was considered by the meeting and referred to APIRG as a mechanism to identify the performance objectives as well as to establish timeframes for the regional planning and implementation process.

1.2 The Regional Performance Objectives relevant to PBN and GNSS implementation and their related Performance Framework Forms have, since then, been considered and updated progressively by the following AFI competent bodies:

- The PBN TF/2 meeting (Nairobi, December 2008)
- The ATS/AIS/SAR SG/10 meeting (Dakar, May 2009)
- The Joint PBN/GNSS/I TFs/1 meeting (Nairobi, 8 to 10 September 2009)
- The ATS/AIS/SAR SG/11 meeting (Nairobi, Kenya, 26 - 30 April 2010)

- The APIRG 17 meeting (Ouagadougou, 02-06 August 2010)
- The PBN/GNSS TF/1 meeting (Nairobi, Kenya, 12 - 14 October 2010)

2. DISCUSSION

2.1 The performance objectives and the associated PFFs recommended by the SP AFI RAN 08 meeting for the AFI Region were submitted to the APIRG 17 meeting (Ouagadougou, 02-06 August 2010) which updated and adopted them.

2.2. The Regional Performance Objectives relevant to PBN and GNSS implementation and their related Performance Framework Forms (PFFs) were considered by the first meeting of the PBN/GNSS Task Force (PBN/GNSS TF/1) which was held in Nairobi, Kenya, from 12 to 14 October 2010.

2.2 In reviewing the details of the Performance Framework Forms (PFFs), the PBN/GNSS TF/1 meeting took into consideration the outcome of the 37th Session of the Assembly on the matter of PBN implementation including amendment of Assembly Resolution A36-23 which gives guidance for the implementation of PBN at the global level.

2.3 The PBN/GNSS TF/2 meeting reviewed and updated the PBN/GNSS related PFFs, as shown at **appendix A** to this paper.

2.4 The meeting may which to review and updated these PFFs as necessary. In this regard it is to be recalled that a performance framework workshop was held in Nairobi from 6 to 10 December 2010 in order to improve familiarity and usage of PFFs system.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) review and update the PFFs attached at **Appendix A** to this working paper as necessary and
- b) decide on any follow up and implementation action thereon.

APPENDIX A1

AFI REGIONAL PERFORMANCE OBJECTIVES/NATIONAL

PERFORMANCE OBJECTIVES FOR PBN

AFI REGIONAL PERFORMANCE OBJECTIVES/NATIONAL PERFORMANCE OBJECTIVES OPTIMIZATION OF THE ATS ROUTE STRUCTURE IN EN-ROUTE AIRSPACE				
Benefits				
Environment	• reduction in gas emissions			
Efficiency	• ability of aircraft to conduct flight more closely to preferred trajectories			
Safety	• increase in airspace capacity			
	• facilitate utilization of advanced technologies (e.g., FMS-based arrivals) and ATC decision support tools (e.g., metering and sequencing), thereby increasing efficiency			
Strategy				
Short term (2010)				
Medium term (2011-2015)				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AOM	<i>En-route airspace</i>	2008		
	• develop regional implementation plan	2008-2009	AFI PBN TF	Completed
	• develop regional action plan	2009-2010	AFI PBN TF	Completed
	• establish collaborative decision making (CDM) process	2010	States	Continuous
	• develop airspace concept based on AFI PBN regional implementation plan, in order to design and implement a trunk route network, connecting major city pairs in the upper airspace and for transit to/from aerodromes, on the basis of PBN, e.g. RNAV 10 and RNAV 5, and taking into account interregional harmonization	2009-2012	AFI PBN TF/States	In progress
	• harmonize national and regional PBN implementation plans	2010-2016	AFI PBN TF/States	On-going
	• develop performance measurement plan	2010-2012	States	In progress
	• formulate safety plan	2010-2012	States	To be developed
	• publish national regulations for aircraft and operators approval using PBN manual as guidance material	2010-2011	States	To be developed
	• identify training needs and develop corresponding guidelines	2010-2011	States	In progress
• identify training programmes and develop corresponding guidelines	2010-2011	AFI PBN TF/States	in progress	

	<ul style="list-style-type: none"> • formulate system performance monitoring plan 	2010-2011	AFI PBN TF/States	To be developed
	<ul style="list-style-type: none"> • implementation of en-route ATS routes 	2010-2012	AFI PBN TF/States	In progress
	<ul style="list-style-type: none"> • monitor implementation progress in accordance with AFI PBN implementation plan and State implementation plan 	2010 and beyond	AFI PBN TF/States	On-going

APPENDIX A2

AFI REGIONAL PERFORMANCE OBJECTIVES/NATIONAL PERFORMANCE OBJECTIVES OPTIMIZATION OF THE ATS ROUTE STRUCTURE IN TERMINAL AIRSPACE				
Benefits				
Environment Efficiency Safety	<ul style="list-style-type: none"> • reduction in gas emissions • ability of aircraft to conduct flight more closely to preferred trajectories • increase in airspace capacity • improved availability of procedures • facilitate utilization of advanced technologies (e.g., FMS based arrivals) and ATC decision support tools (e.g., metering and sequencing), thereby increasing efficiency 			
Strategy				
Short term (2010)				
Medium term (2011-2015)				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AOM	<i>Terminal airspace</i>	2008		
	• develop regional implementation plan	2009	AFI PBN TF	Completed
	• develop regional action plan	2009-2010	AFI PBN TF	Completed
	• develop State PBN implementation plan	2009-2010	States	In progress
	• establish collaborative decision making (CDM) process	2010	States	In progress
	• develop airspace concept based on AFI PBN roadmap, in order to design and implement an optimized standard instrument departures (SIDs), standard instrument arrivals (STARs), holding and associated instrument flight procedures, on the basis of PBN and, in particular RNAV 1 and Basic-RNP 1	2009-2012	PBN TF/States	In progress
	• develop performance measurement plan	2010-2012	States	In progress
	• formulate safety plan	2010-2012	States	To be developed
	• publish national regulations for aircraft and operators approval using PBN manual as guidance material	2010-2011	States	To be developed
	• identify training needs and develop corresponding guidelines	2010-2011	States	In progress
	• identify training programmes and develop corresponding guidelines	2010-2011	AFI PBN TF	To be developed
	• formulate system performance monitoring plan	2010-2012	AFI PBN TF/States	In progress
	• develop a regional strategy and work programme implementation of SIDs and STARs	2009-2012	AFI PBN TF/States	In progress
• monitor implementation progress in accordance with AFI PBN implementation roadmap and State implementation plan	2010 and beyond	AFI PBN TF/States	On going	
Linkage to GPIs	GPI/5: performance-based navigation; GPI/7: dynamic and flexible ATS route management; GPI/8: collaborative airspace design and management; GPI/10: terminal area design and management; GPI/11: RNP and RNAV SIDs and STARs; GPI/12: FMS-based arrival procedures.			

Appendix A3

AFI REGIONAL PERFORMANCE OBJECTIVES/NATIONAL PERFORMANCE OBJECTIVES FOR PBN

OPTIMIZATION OF VERTICALLY GUIDED RNP APPROACHES				
Benefits				
Environment Efficiency Safety	<ul style="list-style-type: none"> • reduction in gas emissions • increased accessibility to aerodromes, including continuity of access • increased runway capacity • reduced pilot workload • availability of reliable lateral and vertical navigation capability 			
Strategy				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AOM	<i>Terminal airspace</i>	2008		
	• develop regional implementation plan	2008 – 2009	AFI PBN TF	Completed
	• develop regional action plan	2009-2010	AFI PBN TF	Completed
	• develop State PBN implementation plan	2009	States	In progress
	• establish collaborative decision making (CDM) process	2010	States	In progress
	• develop airspace concept based on AFI PBN implementation plan, in order to design and implement RNP APCH with Baro-VNAV or LNAV only (see note 1) in accordance with relevant Assembly resolutions , and RNP AR APCH where beneficial	2009 – 2012	AFI PBN TF/States	In progress
	• develop performance measurement plan	2010-2012	States	In progress
	• formulate safety plan	2010-2012	States	To be developed
	• publish national regulations for aircraft and operators approval using PBN manual as guidance material	2010-2011	States	To be developed
	• identify training needs and develop corresponding guidelines	2010-2011	States	In progress
	• identify training programmes and develop corresponding guidelines	2010-2011	AFI PBN TF/States	To be developed
	• implementation of APV procedures	2010 - 2016	AFI PBN TF/States	In progress
	• Formulate system performance monitoring plan	2010-2012	AFI PBN TF/States	in progress
linkage to GPIs	GPI/8: collaborative airspace design and management; GPI/10: terminal area design and management; GPI/11: RNP and RNAV SIDs and STARs; GPI/12: FMS-based arrival procedures			

Note 1: where altimeter setting does not exist or aircraft are not suitably equipped for APV
