



International Civil Aviation Organization
Western and Central African Office

**TWELFTH MEETING OF THE APIRG AIR TRAFFIC MANAGEMENT/
 AERONAUTICAL INFORMATION MANAGEMENT /SEARCH AND RESCUE/ SUB-GROUP
 (ATM/AIM/SAR SG/12)
 (Dakar, Senegal, 25 -29 July 2011)**

Agenda Item: 9 APIRG Performance Objectives

(Presented by the Secretariat)

SUMMARY
<p>This paper is an update on the implementation of the ICAO performance-based approach for the planning of air navigation services. In particular it is proposed to review the performance objectives for the AFI region in the ATM, AIM and SAR fields as established by the SP AFI RAN meeting in the relevant Performance Framework Forms (PFFs) and referred to APIRG.</p> <p>Action by the meeting is at paragraph 3.</p>
<p>REFERENCES:</p> <p>SP AFI RAN Report</p> <p>ATS/AIS/SAR SG/11 report</p> <p>APIRG/17 report</p> <p style="text-align: right;">This Working Paper is related to Strategic Objectives: A and C</p>

1. INTRODUCTION

1.1 The meeting may recall that the ICAO planning objective is to achieve a seamless global Air Traffic Management (ATM) system through the implementation of air navigation systems and procedures in a progressive, cost-effective and cooperative manner.

1.2 In this regard, ICAO has adopted a performance based approach for regional and national air navigation planning, in line with the *Global Air Navigation Plan* (Doc 9750).

1.3 It is to be recalled that the SP AFI RAN 08 meeting held in Durban, South Africa agreed to the introduction of a performance-based approach to the planning of air navigation services in the AFI region. Subsequently, 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.

2. DISCUSSION

2.1 The performance framework forms applicable to ATM, AIM and SAR fields, adopted by the SP AFI RAN meeting and handed over to APIRG are listed here below:

1. Implementation of the new ICAO Flight Plan Provisions
2. Optimization of the ATS route Structure in en-route airspace
3. Optimization of the ATS route Structure in terminal airspace
4. Optimization of vertically guided RNP approaches
5. Search and Rescue
6. Implementation of WGS-84 and Electronic Terrain & Obstacle Data

2.5 The APIRG/17 meeting considered the Performance Framework Forms (PFFs) establishing performance objectives for the AFI Region, which originated at the SP AFI/08 RAN Meeting in 2008 and updated by the ATS/AIS/SAR Sub-Group. It was noted that time available before target dates established by the SP AFI/08 RAN to achieve some of the tasks such as those related to Implementation of the new ICAO Flight Plan Provisions had elapsed considerably, however, that most target dates had to be maintained in order for the Region to remain on course for a harmonized implementation. Accordingly the meeting formulated the **Conclusion 17/41** to update and adopt these PFFs.

2.6 Since then, the ICAO Flight Plan Transition Task Force (FPLT TF) held two meetings (Johannesburg, South Africa from 13 to 14 September 2010 and Nairobi, Kenya from 16 to 18 February 2011) and took the opportunity to review and update the PFF on the implementation of the new ICAO Flight Plan Provisions. The FPLT TF/2 meeting recognized that guidance was required in the development of National Performance Objectives for implementation of the New ICAO FPL Provisions by 15 November 2012, in order for States/ANSPs to expedite planning processes. In this regard, the meeting reviewed a generic PFF which was the outcome of the *Workshop on 2012 FPL Provisions*, Nairobi 14-16 February 2011, modified and adopted it as exemplary guidance to States (see **Appendix G** to this paper).

2.7 Likewise, the three PFFs on ATS routes (En-route, Terminal and Approach) were reviewed and updated by the PBN/GNSS TF/1 and TF/2 meetings successively (Nairobi, Kenya, 12-14 October 2010 and Dakar, Senegal, 13-15 June 2011 respectively). The PBN/GNSS TF/2 however required States to forward further information, particularly on the status of implementation of the tasks listed, permitting to the secretariat to continuously update the PFFs.

2.8 It is expected that the first meeting of the AFI SAR Services Integration Task Force (ASSI TF) which will be held in Dakar, 19-20 September 2011, will be the opportunity to consider the PFF on Search and Rescue. Likewise the first meeting of the AFI region AIM Implementation Task Force (Dakar, Senegal, 20-22 July 2011) will review the PFF on WGS-84 and E-TOD.

2.9 The PFFs as lastly updated are shown at **Appendix A to F** this paper.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this working paper;
- b) consider the performance framework forms attached hereto, for review and update as necessary; and
- c) develop additional PFFs to meet any new performance objective identified for the AFI Region as necessary.

Appendix A
ATM PERFORMANCE OBJECTIVES

NATIONAL PERFORMANCE OBJECTIVE - IMPLEMENTATION OF THE NEW ICAO FPL PROVISIONS BY 15 NOVEMBER 2012				
Benefits				
Environment Efficiency	<ul style="list-style-type: none"> • reductions in fuel consumption • ability of air navigation service providers to make maximum use of aircraft capabilities • ability of aircraft to conduct flights more closely to their preferred trajectories • facilitate utilization of advanced technologies thereby increasing efficiency • optimized demand and capacity balancing through the efficient exchange of information 			
Safety	<ul style="list-style-type: none"> • enhance safety by use of modern capabilities onboard aircraft 			
<i>Strategy</i>				
<i>Short term (2010-2012)</i>				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AUO SDM	<ul style="list-style-type: none"> • plan the transition arrangements to ensure that the changes from the current to the new ICAO FPL form occur in a timely and seamless manner and with no loss of service; 	2009-June 2011	States	Ongoing
	<ul style="list-style-type: none"> • ensure that the capabilities of local systems are fully adaptable to the changes envisaged in the new FPL form; 	2010	States	Ongoing
	<ul style="list-style-type: none"> • ensure the ability of FDPS's to parse information correctly to guarantee that misinterpretation of data does not occur; 	2010	States	Ongoing
	<ul style="list-style-type: none"> • analyze each individual data item within the various fields of the new flight plan form, comparing the current values and the new values to verify any issue regarding the provision of service by the flight planning facility itself or downstream units; 	2010	States	Ongoing
	<ul style="list-style-type: none"> • ensure that there are no individual State peculiarities or deviations from the flight plan provisions; 	2011	States	Ongoing
	<ul style="list-style-type: none"> • ensure that the accepting ATS Reporting Office accepts and disseminates all aircraft capabilities and flight intent to all the downstream ACCs as prescribed by the PANS-ATM provisions. 	2012	States	Ongoing

	<ul style="list-style-type: none"> in order to reduce the change of double indications it is important that any State having published a specific requirement(s) which are now addressed by the amendment should withdraw those 	2010-2012	States	Ongoing
	<ul style="list-style-type: none"> requirements in sufficient time to ensure that aircraft operators and flight plan service providers, after 15 November 2012, use only the new flight plan indications; 			
	<ul style="list-style-type: none"> inform on the implementation status to the ICAO regional offices on an ongoing basis; 	2010-2012	States	Ongoing
	<ul style="list-style-type: none"> keep the Flight Plan Implementation Tracking System (FITS) up to date based on the information provided by the States. 	2010-2012	ICAO Regional Office	Ongoing
<p>linkage to GPIs</p>	<p>GPI/5 RNAV and RNP (Performance-based navigation) GPI-12 Functional integration of ground systems with airborne system GPI/18 Aeronautical Information</p>			

APPENDIX B
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	<ul style="list-style-type: none"> • reduction in gas emissions 			
Efficiency	<ul style="list-style-type: none"> • ability of aircraft to conduct flight more closely to preferred trajectories 			
Safety	<ul style="list-style-type: none"> • 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 			
<i>Strategy</i>				
<i>Short term (2010)</i>				
<i>Medium term (2011-2015)</i>				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AOM	<i>En-route airspace</i>	2008		
	<ul style="list-style-type: none"> • develop regional implementation plan 	2008-2009	AFI PBN TF	Completed
	<ul style="list-style-type: none"> • develop regional action plan 	2009-2010	AFI PBN TF	Completed
	<ul style="list-style-type: none"> • establish collaborative decision making (CDM) process 	2010	States	Continuous
	<ul style="list-style-type: none"> • 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
	<ul style="list-style-type: none"> • harmonize national and regional PBN implementation plans 	2010-2016	AFI PBN TF/States	On-going
	<ul style="list-style-type: none"> • develop performance measurement plan 	2010-2012	States	In progress
	<ul style="list-style-type: none"> • formulate safety plan 	2010-2012	States	To be developed
	<ul style="list-style-type: none"> • publish national regulations for aircraft and operators approval using PBN manual as guidance material 	2010-2011	States	To be developed
	<ul style="list-style-type: none"> • identify training needs and develop corresponding guidelines 	2010-2011	States	In progress
	<ul style="list-style-type: none"> • 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 C

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 COMPONENT S	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 (see note1)	States	In progress (X States have completed)
	• 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 D

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
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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			

(*)States that have not already done so, should complete their national PBN implementation plans as soon as possible.

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

APPENDIX E
AFI REGIONAL PERFORMANCE OBJECTIVES/NATIONAL
PERFORMANCE OBJECTIVES FOR SEARCH AND RESCUE (SAR)

ESTABLISHMENT OF SUB-REGIONAL SAR ARRANGEMENTS				
Benefits				
Efficiency and Safety	<ul style="list-style-type: none"> • cost-efficient use of accommodation and RCC equipment on a shared basis • service provision more uniform across a geographic area defined by risk • proficient services provided near and within States with limited resources. • harmonization of aviation / maritime procedures • inter-operability of life-saving equipment • development of a pool of experienced SAR mission coordinators skilled across both aviation and maritime domains thus reducing coordination and fragmentation 			
Strategy				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
N/A	<ul style="list-style-type: none"> • conduct Southern African regional SAR workshop 	2010	ICAO	2-3 June Workshop in Niger.
	<ul style="list-style-type: none"> • establish collaborative decision making process 	2011 – 2012	ICAO/States	Not started
	<ul style="list-style-type: none"> • develop needs assessment and gap analysis 	2011 – 2012	APIRG	Not started
	<ul style="list-style-type: none"> • develop Southern African regional action plan 	2011 – 2012	APIRG	Not started
	<ul style="list-style-type: none"> • conduct regional SAR Administrators training and SAR Mission Coordinators training 	2011 – 2012	ICAO	Not started
	<ul style="list-style-type: none"> • determine regional organisation, functions and responsibilities, accommodation and equipment needs. 	2011 – 2012	APIRG	Not started
	<ul style="list-style-type: none"> • produce draft legislation, regulations, operational procedures, letters of agreement SAR plans and safety management policies for regional SAR provision using IAMSAR manual as guidance. 	2010 – 2012	APIRG	Implementation on a continuous basis
	<ul style="list-style-type: none"> • determine future training needs and develop training plans 	2010 – 2011	APIRG	Implementation on a continuous basis

	<ul style="list-style-type: none"> • develop <ul style="list-style-type: none"> ➤ alerting procedures ➤ resource databases ➤ interface procedures with aerodrome emergency procedures and generic disaster response providers ➤ RCC check lists ➤ staffing, proficiency and certification plans ➤ preventive SAR programmes ➤ quality programmes ➤ education and awareness programmes ➤ in-flight emergency response procedures 	2011 – 2012	States	Not started
	<ul style="list-style-type: none"> • conduct training as required 	2010 – Permanent	States	Implementation on a continuous basis
	<ul style="list-style-type: none"> • conduct SAR exercises required 	2012 - Permanent	States	Not started
	<ul style="list-style-type: none"> • monitor implementation process 	As appropriate	ICAO/States	Not started
linkage to GPIs	N/A			

APPENDIX F
PERFORMANCE FRAMEWORK FORMS FOR WGS-84 AND E-TOD IMPLEMENTATION
AIM PERFORMANCE OBJECTIVES

NATIONAL PERFORMANCE OBJECTIVE IMPLEMENTATION OF WGS-84 AND ELECTRONIC TERRAIN AND OBSTACLE DATA				
Benefits				
Environment	none			
Efficiency	required by Performance Based Navigation support approach and departure procedure design and implementation improve aircraft operating limitations analysis support aeronautical chart production and on-board databases			
Safety	improve situational awareness support determination of emergency contingency procedures support technologies such as ground proximity and minimum safe altitude warning systems			
KPI	Status of implementation of WGS-84 in the AFI Region Status of implementation of eTOD in the AFI Region (for areas 1 & 4)			
Proposed	Number of States having implemented WGS-84			
Metrics:	Number of States having implemented a number of PBN components (based on WGS-84) Number of States having organized eTOD awareness campaigns and training programs Number of States having implemented eTOD for Areas 1 & 4			
Strategy Short term (2010) Medium term (2011 - 2015)				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
ATM CM	Electronic terrain and obstacle data (eTOD) Share experience and resources in the implementation of eTOD through the establishment of an eTOD working group.	2008-2011	APIRG States	Valid
	Report requirements and monitor implementation status of eTOD using a new AIS Table of the AFI FASID (Ref. Appendix B). Develop e-TOD implementation plan as per the implementation template endorsed by the AFI e-TOD WG/1 Meeting.	2009-ongoing	APIRG States	valid
	Develop a high level policy for the management of a national eTOD Programme.	2008- 2011	States	valid
	Provide terrain and obstacle data for Area 1;	2008-2010	States	valid
	Provide terrain and obstacle data for Area 4;	2008-2010	States	valid
	Provide terrain and obstacle data for Area 2;	2015	States	valid
	Provide terrain and obstacle data for Area 3;	2015	States	valid
ATM AUO	WGS-84 Report requirements and monitor implementation status of WGS-84 using the AIS-5 Table of the AFI FASID.	Ongoing	APIRG States	Valid
Link to GPIs	GPI-9: Situational awareness;GPI-11: RNP and RNAV SIDs and STARs; GPI-18: Aeronautical Information;GPI-20: WGS-84;GPI-21: Navigation Systems			

