



*International Civil Aviation Organization
Eastern and Southern African Office*

**Joint Meeting of the APIRG Performance Based Navigation and
Global Navigation Satellite System Implementation Task Forces (Joint
PBN & GNSS/I TFs)**

**First Meeting
(Nairobi, 8 - 10 September 2009)**

**Agenda Item 2: Review and follow up of Recommendations, Conclusions and
Decisions applicable to the Task Forces**

**FOLLOW UP ON RAN MEETING RECOMMENDATIONS AND
APIRG CONCLUSIONS AND DECISIONS**

(Presented by the Secretariat)

SUMMARY

This paper presents the Recommendations of the Special AFI RAN Meeting, and Conclusions and Decisions formulated within the frameworks of APIRG, review and update as necessary including consolidation where appropriate and the enhancement of the mechanism for follow up of actions required to implement the Recommendations, Conclusions and Decisions.

Action by the meeting is at paragraph 3.

REFERENCES

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

1. INTRODUCTION

1.1 The Special AFI RAN Meeting, Durban, South Africa 24-29 November 2008, formulated nine (9) Recommendations that were applicable to the ATM and AIS fields, six (6) of which were applicable PBN implementation. The APIRG/16 meeting was held in Rubavu, Rwanda, 19-23 November 2007. The meeting adopted 69 Conclusions and Decisions of which six (6) Conclusions and two (2) Decisions are considered relevant to the work of the PBN/TF and GNSS/I/TF. The ATS/AIS/SAR/SG/10 meeting in Dakar 12-15 May 2009 agreed on 49 Conclusions and Decisions, of which sixteen (16) Conclusions and two (2) Decisions are relevant to the work of the BN/TF and GNSS/I/TF. The PBN/TF/2 meeting in November 2008 formulated sixteen (16) Conclusions and four (4) Decisions, while the GNSS/I/TF/4 meeting in Nairobi, Kenya from 8 to 9 December 2008 formulated 7 Conclusions and 2 Decisions.

2. DISCUSSION

2.1 In accordance with the ICAO Business Plan and the requirements for performance monitoring, it has become necessary for APIRG and its subsidiary bodies to develop a systematic follow up action plan in order to avoid duplication and oversight, and otherwise ensure efficiency within APIRG. In order to facilitate this process, the SP AFI RAN Meeting Recommendations, as well as Conclusions and Decisions within the framework of APIRG, that are relevant to the work of the Performance Based Navigation and Global Navigation Satellite System Implementation Task Forces has been reflected in the Appendixes to this working paper: **Appendix A** (SP AFI RAN Recommendations), **Appendix B** (APIRG/16), **Appendix C** (ATS/AIS/SAR/SG/10), and **Appendix D** (GNSS/ITF/4), for consideration by the meeting.

2.2 In addition to considering the action applicable to the meeting from the Recommendations, Conclusions and Decisions, the meeting may wish to review the follow up actions and target dates and status thereof, with the objective to facilitate ease of follow up, management of work and efficiency.

2.3 Furthermore, the meeting may wish to consider the need where appropriate, to merge Conclusions or Decisions with others or considered similar or closely related; identify those that are adequately addressed by other Conclusions, Decisions, procedures, or activities; identify those that may be included in the terms of reference and work programmes of relevant APIRG subsidiary bodies or the included in the APIRG handbook to serve general purposes.

2.4 In order to reduce repeated discussions of the subjects, the meeting may wish to consider the Recommendations, Conclusions and Decision under the relevant agenda items.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the follow-up action on the list of Conclusions and Decisions at **Appendixes A to D** to this working paper;
- b) consider the Conclusions, Decisions and follow-up action thereon during its deliberations on specific, related agenda items;
- c) update the applicable follow up action and target dates; and
- d) identify Conclusions and Decisions that may be:
 - i.) merged with others or considered as adequately addressed by other Conclusions, Decisions, procedures, or activities;
 - ii.) included in the terms of reference and work programmes of relevant APIRG subsidiary bodies
 - iii.) included in the APIRG handbook;

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**Special Africa-Indian Ocean Regional Air Navigation Meeting
(Durban, South Africa 24 to 29 November 2008)**

FOLLOW-UP ON ATM RECOMMENDATIONS

Conc/Dec No. Strategic objectives*	Title of Conclusion/ Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates
Recommendation 6/9:	Performance-based navigation (PBN) performance objectives	<p>That APIRG adopt the Performance Objectives as contained in the performance framework forms in Appendix D to the Report on Agenda Item 6:</p> <p>a) optimization of the air traffic services (ATS) route structure in en-route airspace;</p> <p>b) optimization of the ATS route structure in terminal airspace; and</p> <p>c) implementation of vertically guided required navigation performance (RNP) approaches.</p> <p>That States develop their national action plans to meet the requirements of the regional performance framework forms, as a matter of priority to meet the PBN implementation goals established by Assembly Resolution A36-23.</p>				

Conc/Dec No. Strategic objectives*	Title of Conclusion/ Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates
Recommendation 6/10:	Support for establishment of an Africa ICAO flight procedure office	<p>That:</p> <ul style="list-style-type: none"> a) States and international organizations support the implementation of an AFI flight procedures office; and b) ICAO disseminate a letter, with supporting documentation, inviting interested States and international organizations to submit proposals for establishment and hosting of the FPO. 				
Recommendation 6/13:	Publication of GNSS-based RNP approach procedures	<p>That:</p> <ul style="list-style-type: none"> a) States having taken part in the IATA area navigation (RNAV) global navigation satellite systems (GNSS) procedures development and implementation programme and which had not yet done so, publish GNSS-based required navigation performance (RNP) approaches, and at the same time, remove any operational restrictions that may be in place; and b) States that had not taken part in the IATA RNAV GNSS procedures development and implementation programme, seek assistance from appropriate organizations with the objective of designing and implementing GNSS-based RNP approach procedures 				

Conc/Dec No. Strategic objectives*	Title of Conclusion/ Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates
Recommendation 6/14:	ICAO assistance with legal and regulatory issues associated with implementation of GNSS approach procedures	That ICAO provide assistance to States in overcoming legal and regulatory difficulties associated with implementation of global navigation satellite systems (GNSS) based approach procedures.				

*Note: ICAO has established the following Strategic objectives for the period 2005-2010

A: Safety: Enhance global civil aviation safety;

B: Security: Enhance Global civil aviation security;

C: Environmental Protection: Minimize the adverse effect of global civil aviation on the environment;

D: Efficiency: Enhance the efficiency of aviation operation;

E: Continuity: Maintain the continuity of aviation operations; and

F: Rule of Law: Strengthen law governing international civil aviation

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**THE SIXTEENTH MEETING OF THE
AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP (APIRG/16)
(RUBAVU, RWANDA, 19 - 23 NOVEMBER 2007)**

Conclusions/ Decisions No. Strategic Objectives*	Title of conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/Intended Outcome	Target Dates
Decision 16/1: A	ESTABLISHMENT OF AN APIRG PERFORMANCE- BASED NAVIGATION TASK FORCE (APIRG/PBN/TF)	That an APIRG PBN Task Force, with terms of reference as outlined in Appendix D to this report, be established to develop a PBN implementation plan for the AFI Region and address related regional PBN implementation issues.	Nomination of Members of the Task Force	ESAF Office	State Letter to nominate Members	
Conclusion 16/2: A	DEVELOPMENT OF STATE PBN IMPLEMENTATION PLANS	That the Regional Offices encourage States to begin development of their State PBN implementation plans in harmony with the development of the AFI Regional PBN implementation plan being coordinated by the AFI PBN Task Force for submission to APIRG.	Encourage States to develop State PBN implementation Plan 2008	ESAF Office	State Letter	
Conclusion 16/3: A	DESIGNATION OF CONTACT PERSON FOR PBN IMPLEMENTATION	That, by 28 February 2008, States designate a focal contact person responsible for Performance-Based Navigation implementation and provide details of the contact person to ICAO Regional Offices for the AFI Region.	Follow-up with States for POC	ESAF Office WACAF Office	State Letter State Letter	

Conclusions/ Decisions No. Strategic Objectives*	Title of conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/Intended Outcome	Target Dates
<p style="text-align: center;">Concl. 16/4 A & F</p>	<p>IMPLEMENTATION OF GNSS EN-ROUTE AND NON-PRECISION APPROACH OPERATIONS</p>	<p>That AFI States continue their efforts to implement GNSS applications for en-route and non-precision approach operations as part of Phase 1 of AFI GNSS Strategy. In so doing, particular attention should be accorded to meeting all GNSS implementation requirements, including establishment of GNSS legislation, regulatory framework, and approval and monitoring procedures.</p>	<p>Notify AFI States</p>	<p>WACAF</p>	<p>State Letter</p>	
<p style="text-align: center;">Concl. 16/5 A & E</p>	<p>RECORDING OF GNSS PARAMETERS</p>	<p>That AFI States that approve GNSS-based operations ensure that GNSS data relevant to those operations are recorded as recommended in ICAO Annex 10, Volume I, Chapter 2, para. 2.4.3. Particularly, for GNSS core systems, the following monitored items should be recorded for all satellites in view:</p> <ul style="list-style-type: none"> a) observed satellite carrier-to-noise density; b) observed satellite raw pseudo-range code and carrier phase measurements; c) broadcast satellite navigation messages, for all satellites in view; and d) relevant recording receiver status information. 	<p>Notify AFI States</p>	<p>WACAF</p>	<p>State Letter</p>	

Conclusions/ Decisions No. Strategic Objectives*	Title of conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/Intended Outcome	Target Dates
Conclusion 16/6: A & D	AERONAUTICAL INFORMATION RELATED TO GNSS	That when implementing GNSS-based operations, AFI States ensure that the relevant aeronautical information is provided to the users as appropriate.	Notify AFI States	WACAF	State Letter	
Dec.16/24 A & F	AFI GNSS IMPLEMENTATION STRATEGY	That the action taken by the Commission on APIRG/15, Conclusions 15/18, 15/19 and 15/20 be referred to the AFI GNSS Implementation Task Force for updating the AFI GNSS Strategy and progressing its work accordingly.	Hold AFI/GNSS/1/TF Meeting	WACAF	Organize an AFI GNSS/I/TF meeting and update AFI/GNSS Implementation Strategy	
Concl. 16/8 A & D	ELIMINATION OF AIR NAVIGATION DEFICIENCIES	That States be reminded to adopt a step-by-step approach when implementing air navigation system elements, by giving priority to solving the deficiencies affecting all elements of the system.	Notify States	WACAF	State Letter	

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**THE TENTH MEETING OF THE ATS/AIS/SAR SUB-GROUP (ATS/AIS/SAR/SG/10)
(DAKAR, 12 – 15 MAY 2009)**

Conclusions/ Decisions No. Strategic Objectives*	Title of conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/Intended Outcome	Target Dates
Conclusion 10/1:	Members of PBN Task Force	That the following States and International Organizations shall nominate experts to serve as members of the PBN Task Force: Algeria, Benin, Burundi, Botswana, Cameroon, Cape Verde, Chad, Democratic Republic of Congo (DRC), Egypt, Ethiopia, Ghana, Kenya, Lesotho, Liberia, Mauritius, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Tanzania, Tunisia, Uganda, IFALPA, IFATCA, IATA, ASECNA and Roberts FIR.				

Conclusions/ Decisions No. Strategic Objectives*	Title of conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/Intended Outcome	Target Dates
Conclusion 10/2:	Conduct of Surveys on aircraft equipage	<p>That:</p> <ul style="list-style-type: none"> a) ICAO Regional Offices conduct regular surveys on aircraft equipage within the AFI Region, as part of PBN implementation related activities; and b) ICAO regional surveys on aircraft equipage should be carried out in close coordination with States, IATA and AFRAA. 				
Conclusion 10/4:	Nomination of National PBN Program Managers (NPPMs)	<p>That:</p> <p>States/service providers which have not done so, designate/nominate as soon as possible, but not later than 31 July 2009 a National PBN Program Manager PBN (NPPM), who will be responsible for ensuring that the proper mechanism be put in place for the effective implementation of PBN.</p>				

Conclusions/ Decisions No. Strategic Objectives*	Title of conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/Intended Outcome	Target Dates
		<p>Note: The terms of reference of PBN program managers are provided at Appendix I to this report.</p>				
Conclusion 10/5:	Implementation of PBN in the AFI Region	<p>That:</p> <ul style="list-style-type: none"> a) States in the AFI Region ensure that all requirements be met with a view to safely implementing PBN; and b) Implementation of PBN in the AFI Region be harmonized and coordinated with other adjacent Regions. 				
Conclusion 10/6:	Training of all personnel involved with the implementation of PBN in the AFI Region	<p>That:</p> <ul style="list-style-type: none"> a) APIRG PBN Task Force identify training needs in order to assist States with RNAV/RNP implementation in the en-route, terminal, and approach flight phases, taking account the performance-based navigation (PBN) concept. 				

Conclusions/ Decisions No. Strategic Objectives*	Title of conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/Intended Outcome	Target Dates
		<p>b) Seminars/Workshops be organized in the Region for training of relevant personnel directly involved in the implementation of PBN namely pilots, controllers, procedures designers, dispatchers, OPS/Air, operators etc;</p> <p>c) ICAO develop training modules on PBN by 31 December 2009 that may be used by States for training; and</p> <p>d) States having difficulties in implementing PBN implementation programme, may either individually or in group explore the possibility of seeking outside expertise.</p>				
Conclusion 10/7:	PBN Legislation	That the States that have not done so, include in their legislation and regulations the provisions relating to PBN.				

Conclusions/ Decisions No. Strategic Objectives*	Title of conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/Intended Outcome	Target Dates
Conclusion 10/8:	Participation of representatives of States involved in PBN approval process	That representatives of States involved in the PBN approval process of aircraft operators, be invited to attend the future meetings of the PBN Task Force.				
Conclusion 10/9:	Funding of the PBN Implementation Program	That regulatory bodies, operators, service providers and other stakeholders be granted budgetary allocations for acquisitions and other activities necessary for ensuring that all the requirements be met in a timely manner in order to safely implement PBN in the AFI Region.				
Conclusion 10/10:	AFI Regional PBN Implementation Plan and National PBN Plan Template	That: a)The Regional PBN Implementation Plan at Appendix J is applicable in the AFI Region. b) States use the National PBN Plan Template at Appendix K in developing their National PBN Plans; and				

Conclusions/ Decisions No. Strategic Objectives*	Title of conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/Intended Outcome	Target Dates
		c) States complete their National PBN Plans as soon as possible, but not later than 31 December 2009.				
Conclusion 10/11:	Amendment to the AFI CNS/ATM Plan (Doc.003)	That ICAO Regional Offices carry out necessary actions in coordination with States to amend the relevant parts of the AFI/CNS/ATM Plan (Doc.003) to incorporate PBN issues.				
Decision 10/6:	Proposals of amendment to the AFI/CNS/ATM Plan (Doc.003)	That the PBN Task Force develop amendment proposals to assist APIRG in the incorporation of PBN elements in the AFI/CNS/ATM Plan (Doc.003).				
Conclusion 10/13:	Renaming of the APIRG PBN Task Force	Taking into account the assigned objectives of both the PBN and GNSS Task Forces, the ATS/AIS/SAR proposes that APIRG endorses the merger of the two task forces into the AFI PBN/GNSS task force in order to prevent duplication of work, as per combined Terms of Reference at Appendix L.				

Conclusions/ Decisions No. Strategic Objectives*	Title of conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/Intended Outcome	Target Dates
Decision 10/7:	AFI Regional PBN Performance Objectives and Action Plans	That, in accordance with Special AFI RAN 08 Recommendation 6/9, the APIRG PBN Task Force finalize the development of the AFI PBN performance objectives and Action Plans based on the performance framework forms (PFFs), and report to APIRG.				
Conclusion 10/15:	Need for early implementation of PBN	That AFI States and other stakeholders anticipate PBN implementation activities, in accordance with APIRG Conclusion 16/3 - Development of States PBN implementation Plans, using available guidance material, including the navigation specifications shown in Appendix M . In so doing, partnership with relevant Organizations should be considered as required				

Conclusions/ Decisions No. Strategic Objectives*	Title of conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/Intended Outcome	Target Dates
Conclusion 10/16:	Implementation of AFI Flight Procedures Office (FPO)	<p>That ICAO:</p> <ul style="list-style-type: none"> a) Expedite the establishment of an AFI Flight Procedures Office; and b) Expedite its work on additional guidance material on PBN in a timeframe compatible with the milestones established under Assembly Resolution A36-23, and ensure that is made available in other ICAO working languages. 				
Conclusion 10/17:	IATA Guidelines for Operational Approvals	<p>That IATA facilitates stakeholders' access to its Guidelines developed to assist operators in obtaining Airworthiness and Operational Approvals for PBN, for guidance and reference as required.</p>				

Conclusions/ Decisions No. Strategic Objectives*	Title of conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable/Intended Outcome	Target Dates
Conclusion 10/18:	Need for a comprehensive list of deficiencies and coordination of initiatives	<p>That:</p> <p>a) APIRG establish a comprehensive list of deficiencies consistent with ICAO definition; and</p> <p>b) ICAO establish mechanisms to ensure that AFI initiatives aimed at ensuring that air navigation safety and efficiency issues are properly coordinated to avoid duplication of efforts and develop effective synergy, thus enabling the timely resolution of identified deficiencies in the Region.</p>				

*Note: ICAO has established the following Strategic objectives for the period 10005-10010

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LIST OF CONCLUSIONS/DECISIONS From GNSS Task Force/4 Meeting (8 -9 December 2008, Nairobi, Kenya)

Number	Title	Action by	Target date	Status
Conclusion 4/2	Need for ICAO assistance to States That the Regional Office carry out a survey on States' needs for assistance in implementing APIRG conclusions concerning Phase I of the AFI GNSS Strategy as defined by APIRG/15, including GNSS operational requirements (such as legislation/regulations, design and/or publication of procedures, etc.)	ICAO	State Letter by January 2009	On going
Conclusion 4/3	Deletion of Footnotes in ITU Radio Regulations That CAAs which have not yet done so should liaise with telecommunication regulatory authorities to delete the existing footnotes in the ITU RR.	ICAO States	State Letter by January 2009	To be addressed at Frequency meeting 1-3 Oct
Conclusion 4/1	a): Aeronautical Information on GNSS –Daily Advisory. That States should register at :- http://www.navcen.uscg.gov for the daily GPS advisory (b): The need for AIS Seminar/Workshop That ICAO conducts Seminar/Workshop on GPS advisory for AFI States.	States ICAO	State Letter by January 2009	GPS Advisory workshop 1-3 September 2009
Conclusion 4/4	Report on AFI Test Bed That, ESA, in cooperation with ASECNA, ATNS South Africa and Kenya provide the ICAO Secretariat with a consolidated final report on AFI GNSS Test Bed, covering Zone A, Zone B and Zone C.	ESA ASECNA ATNS Kenya ICAO	March 2009	3 reports have been received from ESA but not technical report

Number	Title	Action by	Target date	Status
Decision 4/1	<p>: ISA Cost Benefit Analysis:- That:- a) ICAO Secretariat ensure that the input to the Cost Benefit analysis related to ISA , include Statistical data, fleet data and equipage, industry trends etc.,</p> <p>When finalized, the ISA Cost Benefit Analysis presented to GNSS/I/TF/4 be circulated to all AFI GNSS TASK FORCE members for comments and feed- back to the Secretariat</p>	ESA ICAO		To be submitted to this meeting by ESA
Conclusion 4/4	<p>Navigation Specifications to be supported by AFI GNSS</p> <p>That the AFI GNSS operational requirements should be based on the navigation specifications provided in draft GNSS strategy, in accordance with the AFI PBN Regional Plan.</p>	APIRG States	2008-2016	On going
Conclusion 4/5	<p>Implementation of Approach with Vertical Guidance (APV)</p> <p>That APIRG should coordinate and specify the applicable approach with vertical guidance (APV) type (Baro-VNAV versus SBAS) in view of Assembly Resolution A36-23 to achieve implementation of approach procedures with vertical guidance (APV) (Baro-VNAV and/or augmented GNSS) for all instrument runway ends, either as the primary approach or as a back-up for precision approaches by 2016 with intermediate milestones as follows: 30 per cent by 2010, 70 per cent by 2014.</p> <p><i>Note: An APIRG decision is required no later than 2010 in order to meet the above date.</i></p>	APIRG	2010	To be submitted to APIRG/17
Conclusion 4/6	<p>Proposed amendments to AFI GNSS Strategy</p> <p>That the AFI GNSS Strategy be updated as proposed in Appendix (draft AFI GNSS)to this report.</p>	APIRG	2009	On going
Decision 4/2	<p>Finalization of draft amendments to AFI GNSS Strategy as part of AFI CNS/ATM Implementation Plan (Doc 003)</p> <p>That a joint meeting of APIRG PBN and GNSS Implementation Task Force be held in order to finalize draft amendments to AFI GNSS Strategy as part of AFI CNS/ATM Implementation Plan (Doc 003), based on the AFI Regional PBN Plan (Roadmap) and</p>	ICAO	May 2009	On going for submission to this meeting

Number	Title	Action by	Target date	Status
	related performance objectives and action plan for en – route, terminal and approach flight phases.			
Conclusion 4/7	<p>Establishment of a combined APIRG PBN/GNSS Task Force</p> <p>That APIRG establish a combined PBN/GNSS Task Force to ensure consistency in the planning and implementation of AFI requirements for Performance Based Navigation concept and the Navigation element of CNS/ATM, with the Terms of reference shown in Appendix 8A to this report.</p>	APIRG	APIRG/17	Done
