



INTERNATIONAL CIVIL AVIATION ORGANIZATION

AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP
TWENTEENTH MEETING (APIRG/20)
Yamoussoukro, Cote d'Ivoire (30 November – 2nd December 2015)

Agenda Item 2: Performance Framework for Regional Air Navigation Planning and Implementation

2.4 Communications, Navigation and Surveillance (CNS)

NAVIGATION SYSTEMS:

**AERONAUTICAL RADIONAVIGATION SYSTEM, AERONAUTICAL
(CONVENTIONAL & GLOBAL NAVIGATION SATELLITE SYSTEM)**

(Presented by the Secretariat)

SUMMARY	
This working paper presents the report of the Sixth Meeting of APIRG Communications, Navigation and Surveillance Sub-group (CNS/SG/6, Dakar, Senegal, 18-22 May 2015) on Navigation Systems for consideration by APIRG/20.	
Action by the meeting is at paragraph 3 .	
REFERENCES : <ul style="list-style-type: none">▪ ICAO SP AFI RAN 2008, Report (Doc 9930)▪ APIRG/19 Report▪ CNS/SG/6 Report	
<i>Strategic Objective(s)</i>	This working paper related to the Strategic Objectives A and B: Related to ICAO ASBU Performance Improvement Areas and Block0 Modules: PIA1 (B0-APTA); PIA3 (B0-FRTO, B0-OPFL); PIA4 (B0 – CDO, CCO)

1. INTRODUCTION

1.1 The Sixth Meeting of the APIRG Communications, Navigation and Surveillance Sub-group (CNS/SG/6) was held in Dakar, Senegal from 18 to 22 May 2015. It was attended by fifty two (52) participants from Seventeen (17) Contracting States, three international organizations namely AFCAC, ASECNA and the Roberts FIR. This working paper presents the report of the APIRG Communications on Aeronautical Radio Navigation systems.

2. DISCUSSION

2.1 The Sixth CNS/SG meeting examined the status of implementation of the Conclusions and Decisions pertaining to Aeronautical Radio Navigation Service of the CNS/SG/5 meeting held in Nairobi, Kenya from 16 to 19 September 2013 and endorsed by APIRG 19th meeting, Dakar, Senegal, 28- 31 October 2013.

Implementation and performance of the Aeronautical Conventional Aeronautical Radio Navigation Service (ARNS)

2.2 The meeting reviewed the status of implementation of the Aeronautical Radio Navigation service (ARNS), and identified deficiencies and remedial actions. The updated table of implementation is presented as an **Appendix** to this Working Paper.

Implementation and performance of the Aeronautical Global Navigation Satellite System (GNSS) for Aeronautical Radio Navigation Service (ARNS)

2.3 The meeting reviewed the status of implementation of GNSS with regard to the AFI GNSS strategy and noted that the cost benefit study called upon by APIRG/17 (**Conclusion 17/29**), APIRG/18 (**Conclusion 18/33**) and APIRG 19 (**Conclusion 19/29**) has not been conducted due to lack of funding.

2.4 The meeting was informed on trials conducted by ANSPS in particular by ASECNA on the implementation of GBAS. In this regard, ASECNA also informed the meeting on trials conducted on GBAS data collection in Dakar in the framework of a partnership with Pildo/AENA.

2.5 ASECNA also reported to the meeting on the implementation of APIRG **Conclusion 19/28** calling upon States to assess and mitigate GNSS vulnerabilities in their airspace including, unintentional and intentional interference, ionosphere scintillation in equatorial regions and other vulnerabilities as may be identified. In this regard the meeting was provided with the results of studies on the impact of the equatorial ionosphere conducted by ASECNA in partnership with Thales Alenia Space and CNES (France). The meeting applauded such initiative and encouraged States/Administrations to pursue their efforts in studies and trials on GNSS and share their results with APIRG Members. The following Draft conclusion was formulated:

DRAFT CONCLUSION 20/XX: SHARING OF STUDY ON GNSS

That;

States/Administrations, who have not done so, pursue their efforts in studies and trials on GNSS and share their results with APIRG Members

3. CONCLUSION

3.1 The meeting is invited to:

- a) Note the information presented in this working paper; and
- b) Review and adopt the draft Conclusions and Decisions contained in this working paper.

APPENDIX

ARNS deficiencies

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
Angola	Nav aids AFI/7, Rec. 10/4	Huambo	VOR/DME	1998	Not implemented	Implement facility	ENANA	30 September 2014	A
	Nav aids AFI/7, Rec. 10/4	Kuito	VOR/DME	1998	Not implemented	Implement facility	ENANA	30 September 2014	A
	Nav aids AFI/7, Rec. 10/4	Luena	VOR/DME	1998	Not implemented	Implement facility	ENANA	30 September 2014	U
	Nav aids AFI/7, Rec. 10/4	Saurimo	VOR/DME	1998	Not implemented	Implement facility	ENANA	30 September 2014	U
Cameroon	Nav aids AFI/7, Rec. 10/4	Maroua	VOR	1998	Implemented	Implementation in progress	Cameroon	30 September 2014	A
Cote d'Ivoire		Bouake			Implemented				
		Man	VOR/DME		Implemented				
		Odienne			Implemented				
		Khorogo			Implemented				
		Yamoussokro	ILS		Implemented				
Guinea	Nav aids, AFI/7 Rec. 10/4	Kankan	VOR	1998	Not implemented	Implement facility	Guinea	30 September 2014	A
	Nav aids AFI/7 Rec. 10/4	Labe	VOR	1998	Not implemented	Implement facility	Guinea	30 September 2014	A
	Nav aids AFI/7 Rec. 10/4	Nzerekore	VOR	1998	Not implemented	Implement facility	Guinea	30 September 2014	A
Kenya	Nav aids AFI/7 Rec. 10/4	Mandera	VOR/DME	1998	Not implemented	Implement facility	Kenya	30 September 2014 Implemented	U
Lesotho	Nav aids AFI/7 Rec. 10/4	Maseru	VOR/DME	2002	Not implemented	To implement	Lesotho	30 September 2014	U
Madagascar	Nav aids AFI/7 Rec. 10/4	Antsiranana	VOR	1998	Not implemented	Implement facility	Madagascar	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Maintirano	VOR	2002	Not implemented	Implement facility	Madagascar	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Morondava	VOR	1998	Not implemented	Implement facility	Madagascar	30 September 2014	U

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
	Nav aids AFI/7 Rec. 10/4	Sainte Marie	VOR	1998	Not implemented	Implement facility	Madagascar	30 September 2014	A
	Nav aids AFI/7 Rec. 10/4	Toliara	VOR	1998	Not implemented	Implement facility	Madagascar	30 September 2014	U
Sao Tome & Principe	Nav aids AFI/7 Rec. 10/4	Sao Tome	ILS 11	1998	Not implemented	Implement facility	Sao Tome & Principe	30 September 2014	A
Sierra Leone	Nav aids AFI/7 Rec. 10/4	Freetown/ Lungi	ILS 30	1999	Unserviceable	To repair	Sierra Leone	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Freetown/ Lungi	VOR/DME	1999	Unserviceable	To repair	Sierra Leone	30 September 2014	U
Somalia	Nav aids AFI/7 Rec. 10/4	Hargeisa	VOR/DME	1998	Not implemented	Implement facility	Somalia	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Mogadishu	VOR/DME	1998	Not implemented	Implement facility	Somalia	30 September 2014	U
Tanzania	Nav aids AFI/7 Rec. 10/4	Dodoma	VOR/DME	1998	Not implemented	Implement facility	Tanzania	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Mbeya	VOR/DME	1998	Not implemented	Implement facility	Tanzania	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Mwanza	DME	1998	Implemented since 2008	Implement facility	Tanzania	30 September 2014	U
Zambia	Nav aids AFI/7 Rec. 10/4	Mongu	VOR	1998	Not implemented	Under installation	Zambia	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Solwezi	VOR	1998	Not implemented	Sourcing for funds	Zambia	30 September 2014	U

Priority:

U: Urgent
A: Average