



International Civil Aviation Organization

**AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP
SIXTEENTH MEETING (APIRG/16)
(Kigali, Rwanda 19-23 November 2007)**

Agenda Item 5: AFI Regional Air Navigation Planning and Implementation Issues

5.1: Air Navigation Deficiencies

CNS DEFICIENCIES

(Presented by the Secretariat)

SUMMARY

This working paper presents the deficiencies affecting aeronautical telecommunications in the AFI Region, for review and update by APIRG.

Action by the meeting is at paragraph 3.

References :

[1] – Report of the CNS/SG/2 Meeting (Principal reference)

[2] – Report of the CNS/SG/1 Meeting

[3] – APIRG/15 Report.

Note: References [1], [2] and [3] can be downloaded from: <http://www.icao.int>.

Related ICAO Strategic Objectives: A, D.

1. Introduction

1.1 The CNS/SG/2 Meeting reviewed the list of deficiencies affecting the operation of aeronautical telecommunications in the AFI Region as prepared by the Secretariat on receipt of information from States, relevant international organizations and reports of ICAO missions to States. The Secretariat has also carried out further coordination with States and international organizations to validate the information made available to CNS/SG/2 and collect additional information and validate the CNS implementation status.

1.2 **Appendix A** to this paper provides a comparison between priority “U” and priority “A” deficiencies as reported to APIRG/15 (September 2005) and APIRG/16 (November 2007); while **Appendix B** contains a detailed list of CNS deficiencies in AFI States as compiled by the Secretariat. Due to the lack of timely feedback from States concerning changes in the status of implementation of the CNS infrastructure, the information provided in these appendices may not reflect the current situation in some cases.

2. Discussion

2.1 Review of deficiencies in the Aeronautical Fixed Services (AFS)

2.1.1 Aeronautical Fixed Telecommunications Network (AFTN)

2.1.1.1 The CNS/SG/2 reviewed the list of deficiencies affecting AFTN circuits in the Region. The following main circuits, which are already implemented, do not meet the requirement for a minimum transmission speed of 1200 bps: Addis Ababa/Niamey, Addis Ababa/Nairobi, Cairo/Nairobi, and Nairobi/Johannesburg. The majority of tributary circuits having been upgraded to 1200 bps or more, there is a negative impact on the transit time of messages in the AFTN network.

2.1.1.2 The CNS/SG/2 meeting noted the following remedial actions being pursued to eliminate these deficiencies:

- a) Enhancing maintenance capabilities in identified areas where circuits' availability and reliability were considered as critical issues, so as to prevent these circuits from unsafe degradation;
- b) Making use of VSAT technology; and
- c) Achieving integration of aeronautical VSAT networks, as a cost-effective means of interconnecting sites without adding antennae, optimizing bandwidth requirements and introducing more flexibility for new services.

2.1.2 Air Traffic Services Direct Speech (ATS/DS)

2.1.2.1 The CNS/SG/2 noted that many of the ATS/DS circuits required in the AFI Plan, were not yet implemented, resulting in lack of coordination between ATS units in the AFI Region. However, significant improvements were after the NAFISAT and SADC/2 VSAT networks become fully operational (end of 2007).

2.3 Review of deficiencies in the Aeronautical Mobile Service (AMS)

2.3.1 The CNS/SG/2 reviewed the implementation and performance of the aeronautical mobile service in the AFI Region, and noted that no significant progress was registered in the implementation of extended VHF coverage, to support the provision of area control service, RVSM operations and RNAV/RNP operations.

2.4 Aeronautical Radio Navigation Service (ARNS)

2.4.1 The CNS/SG/2 noted that no significant progress was registered in the implementation of radio navigation aids. Forty seven (47) facilities required in the AFI Plan are still to be implemented properly. These include situations where unimplemented or unserviceable ARNS facilities tend to be reported in the list of deficiencies on a nearly permanent basis.

2.5 Progress in alleviation of deficiencies

2.5.1 **Appendix A** to this paper gives an idea of the progress achieved in eliminating deficiencies in the CNS field since APIRG/15 (2005), as illustrated in Figure 1 below:

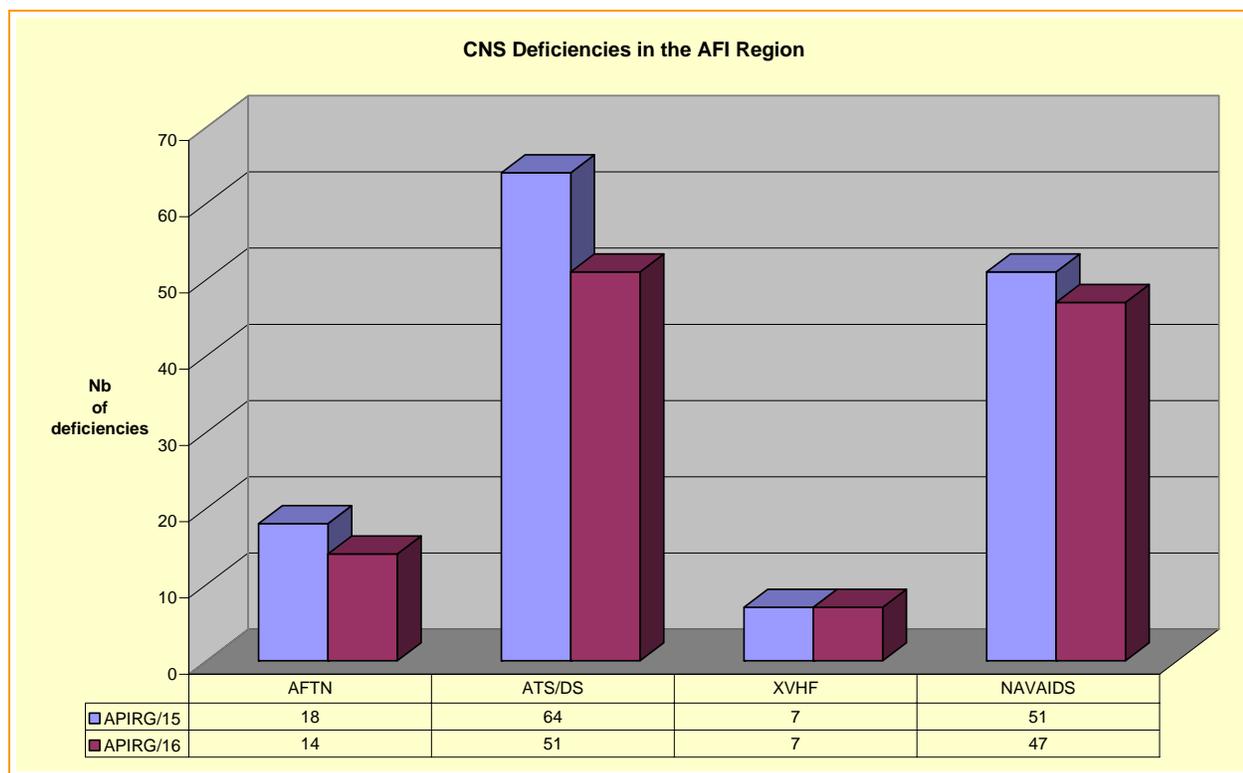


Figure 1: CNS - Priority “U” and Priority “A” Deficiencies

2.5.2 Figure 1 above shows that, though States have made efforts since APIRG/15, there is still a lot to be done in the alleviation of CNS deficiencies in the AFI Region. It does not take into account the potential benefits to be achieved after full implementation of SADC/2 and NAFISAT VSAT networks and their interconnection with AFISNET (WP/21 of this meeting refers). There is no improvement in the extension of VHF radio coverage. 16 States have no CNS deficiencies.

3. Action by APIRG:

3.1 The meeting is invited to:

- a) note the information contained in this working paper;
- b) acknowledge the efforts by States concerned aimed at eliminating deficiencies affecting AFTN, ATS/DS, ARNS and AMS;
- c) review and update the list of CNS deficiencies provided in **Appendix B** hereto as required; and
- b) urge the States concerned to pursue their efforts to solve the deficiencies still affecting the CNS infrastructure in the AFI Region.

APIRG/16-WP/24
08/11/07

Appendix A

	States	AFTN AFI/7 Rec.9/7		ATS_DS AFI/7 Rec.9/9		VHF AFI/7 Rec.9/12		NAVAIDS AFI/7 Rec.10/4	
		APIRG/15	APIRG/16	APIRG/15	APIRG/16	APIRG/15	APIRG/16	APIRG/15	APIRG/16
		1.	Algeria			1	1		
2.	Angola	1	1	3	3	2	2	5	4
3.	Benin								
4.	Botswana								
5.	Burkina Faso			2					
6.	Burundi			2	2				
7.	Cameroon			1	1			2	1
8.	Cape Verde								
9.	Central African Republic			1	1				
10.	Chad			2	2				
11.	Comoros								
12.	Congo	2	2	2	2				
13.	Cote d'Ivoire							2	2
14.	D.R. of the Congo			8	8	2	2	4	4
15.	Djibouti	1		1				1	1
16.	Egypt			1	1				
17.	Equatorial Guinea			3	3				
18.	Eritrea	1	1	1	1				
19.	Ethiopia	4	3	1	1				
20.	Gabon			2	2				
21.	Gambia			1					
22.	Ghana			3	1				
23.	Guinea			1	1			3	3
24.	Guinea Bissau	1		3	2				
25.	Kenya	4	4					3	3
26.	Lesotho							2	2
27.	Liberia			1				1	1

	States	AFTN AFI/7 Rec.9/7		ATS_DS AFI/7 Rec.9/9		VHF AFI/7 Rec.9/12		NAVAIDS AFI/7 Rec.10/4	
		APIRG/15	APIRG/16	APIRG/15	APIRG/16	APIRG/15	APIRG/16	APIRG/15	APIRG/16
		28.	Libya			4	4	1	1
29.	Madagascar							8	8
30.	Malawi					1	1		
31.	Mali			3	3			1	1
32.	Mauritania								
33.	Mauritius								
34.	Morocco								
35.	Mozambique								
36.	Namibia								
37.	Niger	1	1	1	1				
38.	Nigeria								
39.	Reunion (La)								
40.	Rwanda			4	2				
41.	Sao Tome and Principe	1	1	1	1			1	1
42.	Senegal	1		1					
43.	Seychelles								
44.	Sierra Leone							2	
45.	Somalia			1		1	1	2	2
46.	South Africa								
47.	Spain								
48.	Sudan	1	1	6	6			4	4
49.	Swaziland								
50.	Tanzania							4	4
51.	Togo			1					
52.	Tunisia								
53.	Uganda			1	1				
54.	Zambia							3	3
55.	Zimbabwe			1	1				
	<i>All</i>	<i>18</i>	<i>14</i>	<i>64</i>	<i>51</i>	<i>7</i>	<i>7</i>	<i>51</i>	<i>47</i>

Appendix B

Deficiencies CNS

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Algeria</i>	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Algiers ACC-FIC	Circuit Algiers/Tripoli	1998		Implement LTF circuit	Algeria, Libya		U

*Wednesday, 07 November, 2007**Page 1 of 56*

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Angola</i>									
	AFTN Plan, AFI/7 Rec. 9/7	Luanda AFTN centre	Circuit Luanda/Brazzaville	1998	Not implemented	To implement VSAT	Angola, ASECNA		U
	AMS AFI/7 Rec. 9/12	Luanda ACC	Inadequate VHF coverage of busy ATS routes	1998	Implement remote VHF stations	5 VHF stations to be installed	ENANA		U
	AMS AFI/7 Rec. 9/12	Luanda FIC	HF poor quality and unavailable in oceanic area	2004	Improve facilities	Install adequate equipment	ENANA		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Luanda FIC	Circuit Luanda/Accra	1998	Inmarsat phone used from Luanda. Inmarsat Phone also available in Accra	VSAT under consideration	Angola, Ghana		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Luanda FIC	Circuit Luanda/Atlantico	1998	Not implemented	Implement circuit	Angola, Brazil		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Luanda FIC	Circuit Luanda/Brazzaville	1998	PSTN used via Inmarsat	To implement LTF circuit	Angola, ASECNA		A
	Nav aids AFI/7, Rec. 10/4	Cuito Cuanavale	VOR/DME	1998	Not implemented	Implement facility	ENANA		U
	Nav aids AFI/7, Rec. 10/4	Huambo	VOR/DME	1998	Not implemented	Implement facility	ENANA		A
	Nav aids AFI/7, Rec. 10/4	Kuito	VOR/DME	1998	Not implemented	Implement facility	ENANA		A
	Nav aids AFI/7, Rec. 10/4	Luena	VOR/DME	1998	Not implemented	Implement facility	ENANA		U
	Nav aids AFI/7, Rec. 10/4	Saurimo	VOR/DME	1998	Not implemented	Implement facility	ENANA		U

Wednesday, 07 November, 2007

Page 2 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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Benin

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 3 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Botswana</i>	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Francistown TWR	Circuit Francistown/Bulawayo	2002	Not implemented	Implement facility	Botswana, Zimbabwe		A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 4 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Burkina Faso</i>									
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bobo Dioulasso	Circuit Bobo Dioulasso/Accra	1998	PSTN in use	VSAT planned by ASECNA	ASECNA, Ghana		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Ouagadougou APP	Circuit Ouagadougou/Niamtougou	2002	Not implemented	VSAT planned by Ghana CAA at Niamtougou	ASECNA, Togo, Ghana		A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 5 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Burundi</i>									
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bujumbura APP	Circuit Bujumbura/Goma	1998	Not implemented	VSAT proposed	Burundi, DR Congo	2007	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bujumbura APP	Circuit Bujumbura/Kinshasa	1998	Not implemented	VSAT implemented at Bujumbura and Kinshasa	Burundi, DR Congo	31/08/2006	A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 6 of 56

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<i>Cameroon</i>									
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Douala APP	Circuit Douala/Bata	1998	Not implemented	VSAT planned at Bata	ASECNA		A
	Nav aids AFI/7, Rec. 10/4	Foumban	VOR	1998	Not implemented	Amend AFI Plan to replace facility with Bafoussam VOR/DME	Cameroon		U
	Nav aids AFI/7, Rec. 10/4	Maroua	VOR	1998	Not implemented	Implement facility	Cameroon		A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 7 of 56

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Cape Verde

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 8 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Central African Republic</i>									
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bangui APP	Circuit Bangui/Gbadolite	1998	Not implemented	Could be implemented via Brazzaville if a circuit Kinshasa/Gbadolite is available.	ASECNA, DR Congo		A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 9 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Chad</i>									
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	N'Djamena APP/FIC	Circuit N'Djamena/Khartoum	1998	Not implemented	VSAT NAFISAT. PSTN proposed by ASECNA.	ASECNA, Sudan	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	N'Djamena APP/FIC	Circuit N'Djamena/Tripoli	1998	Not implemented	VSAT NAFISAT. PSTN and Satphone proposed by ASECNA	ASECNA, Libya	2007	U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 10 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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Comoros

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 11 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Congo</i>	AFTN Plan, AFI/7 Rec. 9/7	Brazzaville AFTN centre	Circuit Brazzaville/Luanda	1998	Not implemented	To implement VSAT	ASECNA, Angola		A
	AFTN Plan, AFI/7 Rec. 9/7	Brazzaville AFTN centre	Main circuit Brazzaville/Nairobi	1998	Not implemented	VSAT NAFISAT in project	ASECNA, Kenya	2007	U
	AFTN Plan, AFI/7 Rec. 9/7	Brazzaville AFTN centre	Circuit Brazzaville/Sao Tome	1998	Not implemented	VSAT to be installed at Sao Tome	ASECNA, Sao Tome & Principe		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Brazzaville APP/FIC	Circuit Brazzaville/Khartou	1998	Not implemented	VSAT AFISNET proposed by ASECNA	ASECNA, Sudan	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Brazzaville APP/FIC	Circuit Brazzaville/Luanda	1998	PSTN used via Inmarsat phone	To implement VSAT	Angola, ASECNA		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Brazzaville APP/FIC	Circuit Brazzaville/Sao Tome	1998	Not implemented	VSAT to be installed at Sao Tome	ASECNA, Sao Tome & Principe	2005	U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 12 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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Côte d'Ivoire

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 13 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Dem. Rep. of Congo</i>	AMS AFI/7 Rec. 9/12	Kinshasa FIR	Inadequate VHF coverage of busy ATS routes	1998		Extension of VHF coverage in	DR Congo	2006	U
	AMS AFI/7 Rec. 9/12	Kinshasa FIR	HF poor quality. Selcal not available	1998	FIC Kinshasa operational April 2005	New equipment being installed at Kinshasa, Kisangani and Lubumbashi	DR Congo	2006	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bukavu TWR	Circuit Bukavu/Kigali	1996	Not implemented		DR Congo, Rwanda	2007	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Gbadolite TWR	Circuit Gbadolite/Bangui	2002	Not implemented	Could be implemented via Brazzaville if a circuit Kinshasa/Gbadolite is available.	DR Congo, ASECNA	2006	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Goma APP	Circuit Goma/Bujumbura	1998	Not implemented	VSAT proposed	DR Congo, Burundi	2007	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Goma APP	Circuit Goma/Kigali	1998	Not implemented	VSAT proposed	DR Congo, Rwanda	2007	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kinshasa FIC	Circuit Kinshasa/Bujumbura	2002	Not implemented	VSAT implemented both centres	DR Congo, Burundi	31/08/2006	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kinshasa FIC	Circuit Kinshasa/Entebbe	1996	Not implemented	VSAT SADC2 and NAFISAT in project	DR Congo, Uganda	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kinshasa FIC	Circuit Kinshasa/Khartoum	1996	Inmarsat phone available at Kinshasa	VSAT NAFISAT in project	DR Congo, Sudan	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kinshasa FIC	Circuit Kinshasa/Kigali	1996	Not implemented	VSAT operational in Kinshasa and in Kigali	DR Congo, Rwanda	31/08/2006	A
	Nav aids AFI/7, Rec. 10/4	Kalemie	VOR/DME	1998	Unserviceable	New equipment to be installed	DR Congo	2007	U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 14 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
	Nav aids AFI/7, Rec. 10/4	Kindu	VOR	1998	Unserviceable	New equipment to be installed	DR Congo	2007	U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 15 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Djibouti</i>									
	AFTN Plan, AFI/7 Rec. 9/7	Djibouti AFTN centre	Circuit Djibouti/Addis Ababa	2005	Not implemented	Implement LTF circuit pending NAFISAT	Djibouti, Ethiopia		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Djibouti APP	Circuit Djibouti/Hargeisa	1996	Not implemented	To implement LTF circuit	Djibouti, Somalia		A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 16 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Egypt</i>	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Cairo ACC	Circuit Cairo/Khartoum	1996	Not implemented	LTF circuit via PTTs proposed by Egypt until VSAT NAFISAT implemented.	Egypt, Sudan	2007	U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 17 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Equatorial Guinea</i>									
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bata & Malabo APP	Circuit Bata/Malabo	2002	Not implemented	VSAT planned	ASECNA		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bata APP	Circuit Bata/Douala	1996	Not implemented	VSAT planned	ASECNA		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bata APP	Circuit Bata/Libreville	1996	Not implemented	VSAT planned	ASECNA		A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 18 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Eritrea</i>									
	AFTN Plan, AFI/7 Rec. 9/7	Asmara AFTN centre	Circuit Asmara/Addis	1998	The circuit has been disconnected	To be restored. NAFISAT	Eritrea, Ethiopia	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Asmara ACC	Circuit Asmara/AddisAbaba	1998	This circuit has been disconnected	To be restored. NAFISAT	Eritrea, Ethiopia	2007	U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 19 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Ethiopia</i>									
	AFTN Plan, AFI/7 Rec. 9/7	Addis Ababa AFTN centre	Circuit Addis Ababa/Asmara	1998	This circuit has been disconnected	To be restored. NAFISAT	Ethiopia, Eritrea	2007	U
	AFTN Plan, AFI/7 Rec. 9/7	Addis Ababa AFTN centre	Circuit Addis Ababa/Khartoum	1996	Not implemented	VSAT NAFISAT in project	Ethiopia, Sudan	2007	A
	AFTN Plan, AFI/7 Rec. 9/7	Addis Ababa AFTN centre	Circuit Addis Ababa/Niamey operates at low speed	2003	Causes congestion and traffic delays	Upgrade to at least 1200 bps. NAFISAT	Ethiopia, ASECNA	2007	A
	AFTN Plan, AFI/7 Rec. 9/7	Addis Ababa AFTN centre	Circuit Addis Ababa/Djibouti	2005	Not implemented	Implement LTF circuit pending NAFISAT	Ethiopia, Djibouti		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Addis Ababa ACC/FIC	Circuit Addis Ababa/Asmara	1998	This circuit has been disconnected	To be restored. NAFISAT	Ethiopia, Eritrea	2007	U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 20 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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France (Reunion)

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 21 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Gabon</i>									
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Libreville ACC	Circuit Libreville/Bata	1996	Not implemented	VSAT planned at Bata	ASECNA		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Libreville ACC	Circuit Libreville/Sao Tome	1996	Not implemented	VSAT to be installed by Sao Tome	ASECNA, Sao Tome & Principe	2005	A
	Nav aids, AFI/7 Rec. 10/4	Port Gentil	ILS RWY 21	2001	Equipment at site	Installation in progress	ASECNA		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 22 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Gambia</i>	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Banjul APP	Circuit Banjul/Bissau	1996	Not implemented	VSAT being considered	Gambia/Guinea Bissau		A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 23 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Ghana</i>									
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Accra APP/FIC	Circuit Accra/Bobo Dioulasso	1998	PSTN in use	VSAT planned at Bobo Dioulasso	Ghana, ASECNA		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Accra APP/FIC	Circuit Accra/Luanda	1998	Inmarsat phone used from Luanda. Inmarsat also available in Accra	VSAT under consideration	Ghana, Angola		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 24 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Guinea</i>									
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Conakry APP	Circuit Conakry/Bissau	1996	Not implemented	Implement LTF circuit	Guinea, Guinea Bissau		A
	Nav aids AFI/7, Rec. 10/4	Kankan	VOR	1998	Not implemented	Implement facility	Guinea		A
	Nav aids AFI/7, Rec. 10/4	Labe	VOR	1998	Not implemented	Implement facility	Guinea		A
	Nav aids AFI/7, Rec. 10/4	Nzerekore	VOR	1998	Not implemented	Implement facility	Guinea		A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 25 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Guinea Bissau</i>									
	AFTN Plan, AFI/7 Rec. 9/7	Bissau AFTN centre	Circuit Bissau/Dakar	1998	Not implemented	VSAT planned	ASECNA, Guinea Bissau		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bissau APP	Circuit Bissau/Banjul	1996	Not implemented	VSAT being considered	Gambia, Guinea Bissau		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bissau APP	Circuit Bissau/Conakry	1996	Not implemented	Implement LTF circuit	Guinea, Guinea Bissau		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bissau APP	Circuit Bissau/Dakar	1996	Not implemented	VSAT being considered	ASECNA, Guinea Bissau		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 26 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Kenya</i>	AFTN Plan, AFI/7 Rec. 9/7	Nairobi AFTN centre	Main circuit Nairobi/Brazzaville	1998	Not implemented	VSAT NAFISAT in project	Kenya, ASECNA	2007	U
	AFTN Plan, AFI/7 Rec. 9/7	Nairobi AFTN centre	Nairobi/Cairo circuit operates at low speed	2002	Causes congestion and traffic delays	Upgrade to at least 1200 bps. NAFISAT	Kenya, Egypt	2007	A
	AFTN Plan, AFI/7 Rec. 9/7	Nairobi AFTN centre	Nairobi/Johannesburg circuit operates at low speed	2002	Causes congestion and traffic delays	Upgrade to at least 1200 bps. NAFISAT	Kenya, South Africa	2007	A
	AFTN Plan, AFI/7 Rec. 9/7	Nairobi AFTN centre	Nairobi/Mumbai circuit operates at low speed	2002	Causes congestion and traffic delays	Upgrade to at least 1200 bps	Kenya, India		A
	Nav aids AFI/7, Rec. 10/4	Mandera	VOR/DME	1998	Not implemented	Implement facility	Kenya		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 27 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Lesotho</i>	Nav aids AFI/7, Rec. 10/4	Maseru	VOR/DME	2002	Not implemented	To implement	Lesotho		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 28 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Liberia</i>	Nav aids AFI/7, Rec. 10/4	Robertsfield	ILS 04	1998	Not implemented	Implement facility	Liberia		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 29 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Libya</i>	AMS AFI/7 Rec. 9/12	Tripoli FIR	Inadequate VHF coverage of busy ATS routes	2004	Implement remote VHF stations		Libya		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Tripoli ACC/FIC	Circuit Tripoli/Algiers	1998	Not implemented	Implement LTF circuit. Algiers to contact PTT Libya.	Libya, Algeria		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Tripoli ACC/FIC	Circuit Tripoli/Khartoum	1998	Not implemented	VSAT NAFISAT in project.	Libya, Sudan	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Tripoli ACC/FIC	Circuit Tripoli/Niamey	1998	Not implemented	VSAT NAFISAT in project	Libya, ASECNA	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Tripoli ACC/FIC	Circuit Tripoli/N'Djamena	1998	Not implemented	VSAT NAFISAT in project. PSTN and Satphone proposed by ASECNA	Libya, ASECNA	2007	U
	Nav aids AFI/7, Rec. 10/4	Sarir	VOR/DME	1998	Not implemented	Implement facility	Libya		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 30 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Madagascar</i>									
	Nav aids AFI/7, Rec. 10/4	Antsiranana	VOR	1998	Not implemented	Implement facility	Madagascar		U
	Nav aids AFI/7, Rec. 10/4	Maintirano	VOR	2002	Not implemented	Implement facility	Madagascar		U
	Nav aids AFI/7, Rec. 10/4	Morondava	VOR	1998	Not implemented	Implement facility	Madagascar		U
	Nav aids AFI/7, Rec. 10/4	Sainte Marie	VOR	1998	Not implemented	Implement facility	Madagascar		A
	Nav aids AFI/7, Rec. 10/4	Toliara	VOR	1998	Not implemented	Implement facility	Madagascar		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 31 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Malawi</i>	AMS AFI/7 Rec. 9/12	FIR Lilongwe	VHF coverage incomplete	2001	Install additional VHF relay stations at Muzuzu and Zomba.	Extension VHF coverage in progress. Equipment in place.	Malawi		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 32 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Mali</i>	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bamako APP	Circuit Bamako/Gao	2003	Not implemented	Implement by VSAT	ASECNA	2005	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bamako APP	Circuit Bamako/Mopti	1996	Not implemented	Implement LTF circuit	Mali		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Gao APP	Circuit Gao/Mopti	2002	Not implemented	Implement LTF circuit	Mali		A
	Nav aids AFI/7, Rec. 10/4	Tessalit	VOR	1998	Not implemented	Implement facility	Mali, ASECNA		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 33 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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Mauritania

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 34 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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Mauritius

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 35 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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Morocco

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 36 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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Mozambique

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 37 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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Namibia

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 38 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Niger</i>	AFTN Plan, AFI/7 Rec. 9/7	Niamey AFTN centre	Main circuit Niamey/Addis Ababa operates at low speed	2003	Causes congestion and traffic delays	Upgrade to at least 1200 bps. NAFISAT	ASECNA, Ethiopia	2007	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Niamey ACC/FIC	Circuit Niamey/Tripoli	1998	Not implemented	VSAT NAFISAT in project	ASECNA, Libya	2007	U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 39 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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Nigeria

This State has no deficiency in this field.

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 40 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Rwanda</i>	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kigali APP	Circuit Kigali/Bukavu	1996	Not implemented		Rwanda, DR Congo	2007	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kigali APP	Circuit Kigali/Goma	1996	Not implemented	VSAT proposed	Rwanda, DR Congo	2007	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kigali APP	Circuit Kigali/Kinshasa	1996	Not implemented	VSAT operational in Kinshasa and in Kigali	Rwanda, DR Congo	31/08/2006	A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 41 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Sao Tome & Principe</i>									
	AFTN Plan, AFI/7 Rec. 9/7	Sao Tome AFTN centre	Circuit Sao Tome/Brazzaville	1998	Not implemented	VSAT to be installed at Sao Tome	Sao Tome & Principe, ASECNA		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Sao Tome TWR	Circuit Sao Tome/Brazzaville	1998	Not implemented	VSAT to be installed at Sao Tome	Sao Tome & Principe, ASECNA	2005	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Sao Tome TWR	Circuit Sao Tome/Libreville	1998	Not implemented	VSAT to be installed at Sao Tome	Sao Tome & Principe, ASECNA	2005	A
	Nav aids AFI/7, Rec. 10/4	Sao Tome	ILS 11	1998	Not implemented	Implement facility	Sao Tome & Principe		A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 42 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Senegal</i>									
	AFTN Plan, AFI/7 Rec. 9/7	Dakar AFTN centre	Circuit Dakar/Bissau	1998	Not implemented	VSAT planned	ASECNA, Guinea Bissau		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Dakar ACC/FIC	Circuit Dakar/Bissau	1998	Not implemented	VSAT being considered	ASECNA, Guinea Bissau		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 43 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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Seychelles

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 44 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Sierra Leone</i>									
	Nav aids AFI/7, Rec. 10/4	Freetown/Lungi	ILS 30	1999	Unserviceable	To repair	Sierra Leone		U
	Nav aids AFI/7, Rec. 10/4	Freetown/Lungi	VOR/DME	1999	Unserviceable	To repair	Sierra Leone		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 45 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Somalia</i>									
	AMS AFI/7 Rec. 9/12	Mogadishu FIC	Lack of VHF coverage of busy ATS routes	1998		Install VHF relays	Somalia		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Hargeisa APP	Circuit Hargeisa/Djibouti	1998	Not implemented	Implement LTF circuit	Somalia, Djibouti		A
	Nav aids AFI/7, Rec. 10/4	Hargeisa	VOR/DME	1998	Not implemented	Implement facility	Somalia		U
	Nav aids AFI/7, Rec. 10/4	Mogadishu	VOR/DME	1998	Not implemented	Implement facility	Somalia		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 46 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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South Africa

This State has no deficiencies in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 47 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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Spain (Canary Is.)

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 48 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Sudan</i>	AFTN Plan, AFI/7 Rec. 9/7	Khartoum AFTN centre	Circuit Khartoum/Addis Ababa	1996	Not implemented	VSAT NAFISAT in project	Ethiopia, Sudan	2007	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Khartoum FIC	Circuit Khartoum/Brazzavill	1996	Not implemented	VSAT AFISNET proposed by ASECNA	Sudan, ASECNA	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Khartoum FIC	Circuit Khartoum/Cairo	1996	Not implemented	LTF circuit via PTTs proposed by Egypt until implementation of VSAT NAFISAT	Egypt, Sudan	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Khartoum FIC	Circuit Khartoum/Jeddah	1996	Not implemented	VSAT NAFISAT in project	Sudan, Saudi Arabia	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Khartoum FIC	Circuit Khartoum/Kinshasa	1996	Not implemented	VSAT NAFISAT in project	Sudan, DR Congo	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Khartoum FIC	Circuit Khartoum/N'djamen	1996	Not implemented	VSAT NAFISAT in project. PSTN proposed by ASECNA	Sudan, ASECNA	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Khartoum FIC	Circuit Khartoum/Tripoli	1996	Not implemented	VSAT NAFISAT in project	Sudan, Libya	2007	U
	Nav aids AFI/7, Rec. 10/4	Geneina	VOR	1998	Not implemented	Implement facility	Sudan		U
	Nav aids AFI/7, Rec. 10/4	Juba	ILS 13	1998	Not implemented	Implement facility	Sudan		A
	Nav aids AFI/7, Rec. 10/4	Karina	VOR/DME	1998	Not implemented	Implement facility	Sudan		U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 49 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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Swaziland

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 50 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Tanzania</i>									
	Nav aids AFI/7, Rec. 10/4	Dodoma	VOR/DME	1998	Not implemented	Implement facility	Tanzania	31/12/2005	U
	Nav aids AFI/7, Rec. 10/4	Mbeya	VOR/DME	1998	Not implemented	Implement facility	Tanzania	June 2006	U
	Nav aids AFI/7, Rec. 10/4	Mwanza	DME	1998	Not implemented	Implement facility	Tanzania	June 2005	U
	Nav aids AFI/7, Rec. 10/4	Zanzibar	VOR/DME	1998	Not implemented	Implement facility	Tanzania	June 2006	A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 51 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Togo</i>	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Niamtougou TWR	Circuit Niamtougou/Ouagadougou	2002	Not implemented	VSAT planned at Niamtougou by Ghana CAA	Togo, ASECNA, Ghana		A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 52 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
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Tunisia

This State has no deficiency in this field

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 53 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Uganda</i>	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Entebbe FIC	Circuit Entebbe/Kinshasa	1996	Not implemented	VSAT SADC2 and NAFISAT in project	DR Congo, Uganda	2007	U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 54 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Zambia</i>									
	Nav aids AFI/7, Rec. 10/4	Mongu	VOR	1998	Not implemented	Under installation	Zambia	30/12/2005	U
	Nav aids AFI/7, Rec. 10/4	Solwezi	VOR	1998	Not implemented	Sourcing for funds	Zambia	Dec 2006	U

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 55 of 56

<i>StateName</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
<i>Zimbabwe</i>	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bulawayo TWR	Circuit Bulawayo/Francistown	2002	Not implemented	Implement facility	Zimbabwe, Botswana		A

APIRG/16-WP/24
08/11/07

Wednesday, 07 November, 2007

Page 56 of 56

LIST OF CNS DEFICIENCIES IN THE AFI REGION