ICAO

Twenty-Second Meeting of the AFI Planning and Implementation Regional Group (APIRG/22)
(Accra, Ghana, 29 July – 2 August 2019)

Agenda Item 4.4 : Initiatives by States & Industry and other air navigation issues

SEAMLESS OPERATIONS, INTERCONNECTION AND INTEROPERABILITY OF AFI VSAT NETWORKS (SADC VSAT2, NAFISAT AND AFISNET)

(Presented by ICAO ESAF Secretariat)

SUMMARY
The continuation of seamless operations, interoperability and interconnectivity between the AFI VSAT networks remains crucial to ensuring reliable and safe communication throughout the African skies. This is achieved through close cooperation, information and knowledge sharing by the major aeronautical VSAT network operators in the AFI region. This information paper reports on progress made on agreed action plans and provides an overview of the operational performance of the links implemented between SADC/2, NAFISAT and AFISNET networks.
REFRENCE(S): • ICAO Doc 7474 (ANP/FASID) – Guidelines for multinational facility/service • SNMC/19 and SNMC/20 conclusions
Related ICAO Strategic Objective(s):

1 BACKGROUND

1.1 The interconnectivity and interoperability of the AFI VSAT networks is paramount to providing safe and reliable aeronautical fixed services throughout the AFI region. Over and above the established domestic VSAT networks (operated by the various Civil Aviation Authorities) in the AFI region, three major networks are in operation, namely the SADC VSAT2, NAFISAT and AFISNET.

1.2 On the backdrop of several regional and bilateral engagements, ATNS and ASECNA have established a framework in the form of a Memorandum of Understanding, aimed at providing common governing principles for the establishment and maintenance of these inter-network links. This framework defines the requisite operational, administrative, technical and financial provisions and responsibilities of both the network service providers and concerned member States.

1.3 The signing of the MOU by ATNS and ASECNA in December 2017 is premised on the conclusions of the first meeting of the AFI VSAT Managers and the SNMC -19 and SNMC -20 meeting conclusions.

2 DISCUSSION

2.1 For ease of reference, the context of the MOU between ATNS and ASECNA is summarised here below:

a) Setting the objective of the arrangements and defining the proposed technical solutions to achieve interconnectivity and interoperability;

b) Regulation of the methods, procedures and steps used to implement the Aeronautical Fixed Services (AFS) links, as well as governance of the relationship between the parties;

c) Financial arrangements in respect of the purchase of equipment, cost of installation, running cost i.e. the utilization of space segment, maintenance, etc;

d) Sharing of technical information and specifications amongst all affected parties to ensure an effective and fully functional solution;

e) Functions of the AFS to provide services as agreed between the parties;

f) Fault reporting procedures including contact details of fault reporting facilities in place, availability reporting, etc.

g) Term of the agreement, arrangements for extension and applicable arrangement for amendment or termination of the services.

2.2 The current links, as listed in the attached Annexure A, shows the interconnections that were retained with the upgrade of the SADC VSAT2 and NAFISAT networks. The operational performance of these interconnections is reported on an annual basis to the SADC VSAT Supervisory Board, NAFISAT Supervisory Board and ATNS-ASECNA coordination meetings. Both the SADC VSAT and NAFISAT Supervisory Boards are composed of representatives of member States of the two networks. The average operational availability figures reported for the period April 2018 to June 2019 are depicted below:

		Availability Target = 99.8%
		Achieved Availability
SADC VSAT2 - NAFISAT links		99.98%
SADC VSAT2 - AFISNET links		99,93%
NAFISAT – AFISNET links		97,79%

Table 1. Achieved operational availability for the period April 2018 to June 2019

2.3 As part of the commitments of the MOU between ATNS and ASECNA, annual technical coordination meetings are convened on an annual basis. These meetings are aimed at monitoring progress on agreed action plans and addressing emerging needs and challenges experienced with the interconnection circuits between SADC VSAT2/NAFISAT and AFISNET networks. Some of the emerging needs in the region include the following, and the implementation thereof is jointly coordinated by the ATNS and ASECNA across the concerned links:

- Planning and implementation of AMHS and AIDC circuits in the region,
- Future developments and modernization of the infrastructure
- New communication circuits to improve safety in the AFI region

2.4 The common challenges that are experienced include the political instability in some of the connected States which make access to the sites (for maintenance and repair purposes) impossible and the obsolescence of some of the infrastructure that is still in place. The impact of such matter is evident in the reported operational availability for links between NAFISAT and AFISNET (see Table 1) Action plans are in place between ATNS and ASECNA to alleviate challenges brought about by the ageing infrastructure. The immediate plans include the upgrade of baseband equipment by November 2019.

2.5   Requirements for new interconnection circuits across NAFISAT, SADC VSAT 2 and AFISNET continue to emerge. This implementation is managed through the established regional bilateral arrangements. The current technical solution for the interconnections will be retained for all new circuits (using MCPC circuits). Annexure B shows the proposed new circuits.

2.6   It is however important to note that the interoperability of SADC VSAT2 and NAFISAT with AFISNET can be greatly improved if all the three networks adopt a common access technology recommended by the ICAO Best Practices on VSAT (TDMA). This would result into huge economic and operations improvements across the networks.

3   ACTION BY THE MEETING

3.1   The meeting is invited to:
   a)   Take note of the current operational performance of the implemented circuits linking SADC VSAT2, NAFISAT and AFISNET, and also
   b)   Take note of the high-level action plans agreed between ATNS and ASECNA, aimed at improving safety of air travel in the AFI region.

List of Existing Interconnections between SADC VSAT2 network and AFISNET network				
Item	**Interconnection**	**Applicable Networks**	**Services**	**Observations**
1	Luanda and Accra	SADC and AFISNET	ATS/DS and AFTN	Interconnections retained during the SADC VSAT 2 upgrade
2	Luanda and Brazzaville	SADC and AFISNET	ATS/DS and AFTN	
3	Luanda and Dakar	SADC and AFISNET	ATS/DS	
4	Luanda and Abidjan	SADC and AFISNET	ATS/DS	
5	Johannesburg and Brazzaville	SADC and AFISNET	AFTN	
6	Johannesburg and Antananarivo	SADC and AFISNET	ATS/DS and AFTN	
7	Kinshasa and Brazzaville	SADC and AFISNET	ATS/DS and AFTN	

List of Existing Interconnections between NAFISAT network and AFISNET network				
Item	**Interconnection**	**Applicable Networks**	**Services**	**Observations**
1	Tripoli and Niamey	NAFISAT and AFISNET	ATS/DS and AFTN	Interconnections retained during the NAFISAT upgrade
2	Tripoli and N'Djamena	NAFISAT and AFISNET	ATS/DS and AFTN	
3	Khartoum and N'Djamena	NAFISAT and AFISNET	ATS/DS and AFTN	
4	Khartoum and Brazzaville	NAFISAT and AFISNET	AFTN	
5	Addis Ababa and Niamey	NAFISAT and AFISNET	AFTN	
6	Nairobi and Brazzaville	NAFISAT and AFISNET	AFTN	

Additional interconnections or services between SADC VSAT2 network and AFISNET network				
Item	**Interconnection**		**Applicable Networks**	**Services**
1.	Moroni	Dar es Salaam	SADC VSAT2 - AFISNET	ATS/DS – AIDC Planned
2.		Beira		
3.	Brazzaville	Luanda		
4.		Kinshasa		
5.	Abidjan	Luanda		
6.	Antananarivo	Johannesburg		
7.	Brazzaville	Luanda		AFTN –AMHS Planned
8.		Johannesburg		
9.		Kinshasa		
10.	Antananarivo	Johannesburg		
11.	Pointe-Noire	Luanda or Cabinda		ATS/DS – AIDC Planned
12.	Bangui	Kinshasa		

Additional interconnections between NAFISAT network and AFISNET network				
Item	**Interconnection**		**Applicable Networks**	**Services**
13.	Moroni	Seychelles	NAFISAT - AFISNET	ATS/DS - AIDC Planned AFTN – AMHS Planned
14.		Dar es Salaam		