



**INTERNATIONAL CIVIL AVIATION ORGANIZATION
WESTERN AND CENTRAL AFRICA OFFICE**

**Twenty-sixth Meeting of the AFI Satellite Network Management Committee (SNMC/26)
(Ouagadougou, Burkina Faso, 19-23 November 2018)**

Agenda Item 4 -: Interconnection and interoperability of AFISNET with its neighboring networks (CAFSAT, NAFISAT, SADC2)

(Presented by ATNS)

SUMMARY

This working paper discusses the performance of the NAFISAT and SADC network in relation to the Interconnectivity with the AFISNET network.

It also discusses the progress made to date in respect of the upgrade and its improved futures of the NAFISAT and SADC VSAT Network and certain implications that have been identified.

1. Interoperability

Seamless operations, interoperability and interconnectivity between VSAT networks in the AFI Region remains crucial and ATNS remains committed by implementing the best practices. At present co-operation between ATNS – ASECNA and other AFISNET member States ensures interoperability of the networks.

The specification and design of the NAFISAT and SADC2 network provide continued connectivity with AFISNET and provision was made for the retention of the current technical interface solution with the AFISNET network.

Challenges experienced with Interconnection between Luanda and Accra were resolved and all services have been restored and are operational. Currently no space segment (level 1 and 2) challenges have been recorded between the SADC 2, NAFISAT and AFISNET networks. There are however still challenges on the services in the multiplexer and end-user equipment (level 3 and 4) experienced with sites interconnecting with Brazzaville, Niamey and N'Djamena.



2. Availabilities recorded for the period of April 2017 to March 2018.

	Availability
NAFISAT - SADC Interconnectivity	99.98%
NAFISAT - AFISNET Interconnectivity	97.79%
SADC - AFISNET Interconnectivity	89.96%

3. Retention of interconnectivity with AFISNET

The 8 AFTN and 9 ATS/DS links to the AFISNET sites, were not upgraded to ensure continuity of services until the AFISNET network is upgraded.

The NAFISAT sites that interconnect with AFISNET are indicated below:

NAFISAT & SADC Terminals Connected to AFISNET	AFTN	ATS/DS
Tripoli	Niamey N'Djamena	Niamey N'Djamena
Khartoum	N'Djamena	N'Djamena Brazzaville
Addis Ababa	Niamey	
Nairobi	Brazzaville	
Luanda	Brazzaville Accra	Brazzaville Accra Abidjan Dakar
Kinshasa	Brazzaville	Brazzaville

ATNS retained the MEMOTEC multiplexers from the NAFISAT and SADC Networks. This will give ATNS the capacity to maintain the existing links with the AFISNET Network and insure connectivity from the NAFISAT and SADC Networks.



ATNS and ASECNA have agreed in the beginning of 2018 to deal with the obsolescence of the multiplexers (MEMOTEC CX series) by replacing them with the MEMOTEC Net Performer devices. This will ensure the continuation of the services between the VSAT networks and should restore the availabilities of the services to recommended levels.

4. REPORTING to ICAO

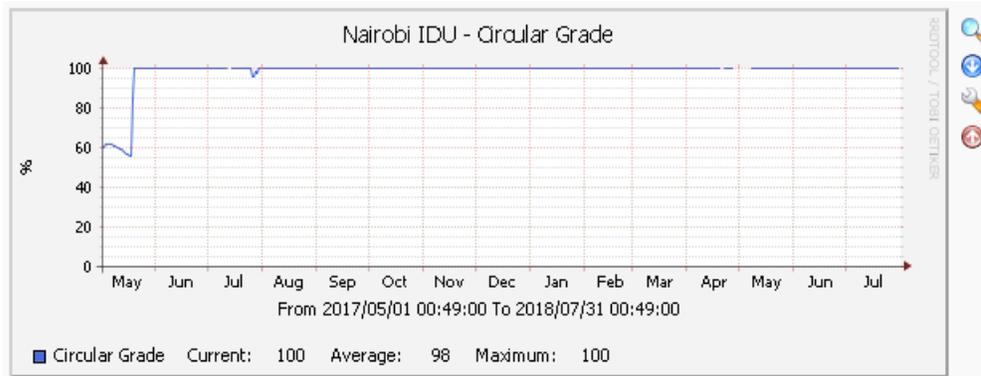
SADC and NAFISAT upgrade

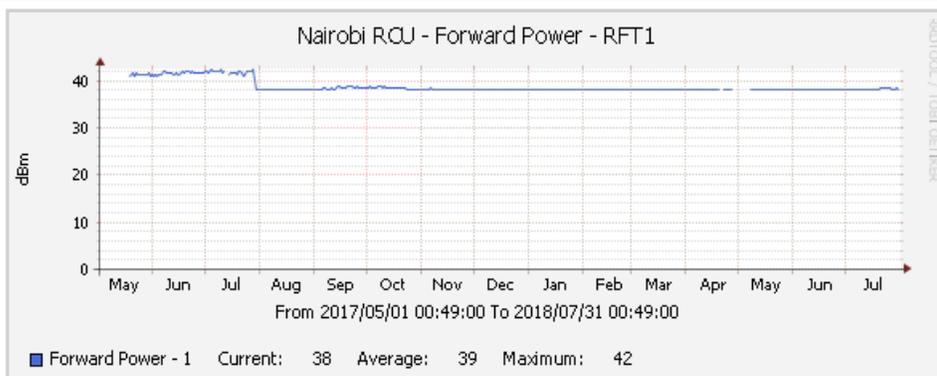
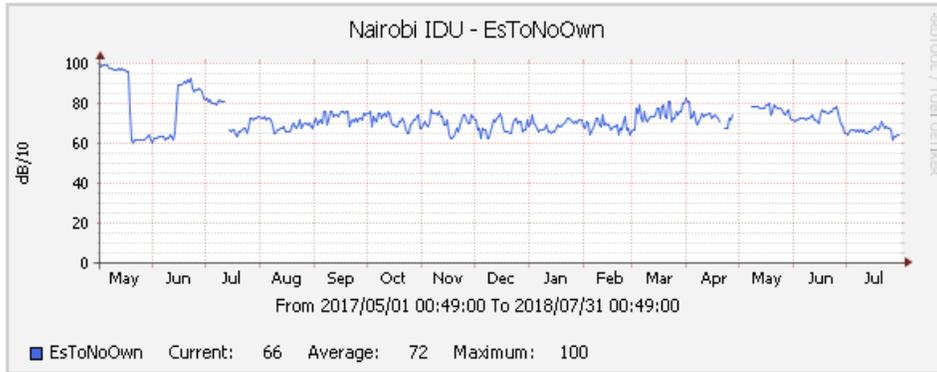
The NAFISAT and SADC VSAT2 networks were successfully upgraded in the middle of 2017 and MF-TDMA technology was used for the Network upgrade. The equipment can provide connectivity for existing legacy application as well as the planned ICAO IP based applications e.g. AMHS, AIDC etc.

Both the NAFISAT and SADC2 networks were upgraded simultaneously so as to ensure interconnectivity between the two networks, particularly the following links, Khartoum, Nairobi, Entebbe and Victoria on the NAFISAT network and between Johannesburg, Dar es Salaam, Plaisance, Antananarivo, Kinshasa and Kigali on the SADC2 network.

This upgrade saw an improvement added to its management system enabling ATNS to extract information on the system required for the reporting to ICAO.

Below is an extract of the systems ATNS use to extract continuous recorded information to provide comprehensive statistics.





Utilising these systems ATNS compiles the level 4 statistics as required. This is a comprehensive document where space segment, IDU, ODU and end-user equipment statistics are collected and distributed to ICAO ESAF.

5. ACTION TO BE TAKEN BY THE MEETING

The meeting is invited to take note of the above information. More information on specifics will be made available upon request.