INTERNATIONAL CIVIL AVIATION ORGANIZATION

WESTERN AND CENTRAL AFRICA OFFICE

Twenty-seventh Meeting of the AFI Satellite Network Management Committee (SNMC/27)
(Accra, Ghana, 25-29 November 2019)

Agenda Item 4 -: Interconnection and interoperability of systems through AFISNET (AMHS, AIDC)

Performance of the NAFISAT and SADC networks in relation to the Interconnectivity with the AFISNET network.

(Presented by ATNS)

SUMMARY

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

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 as recommended by ICAO. At present ATNS' co-operation with ASECNA, Ghana CAA and other AFISNET Member States ensures interoperability of the networks although more efficient ways should be established to accomplish seamlessness interoperability and interconnectivity on level 1 of the networks ensuring greater efficiency

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.

2. Availabilities recorded for the period of April 2018 to March 2019.

During the bilateral forum interactions with ASECNA in June 2019, it was resolved that the upgrade of the JNB AFISNET Station will be carried out in November 2019. This will deal with the obsolescence of ageing equipment. The upgrade will be carried out as follows:

- Replace RF to IBUC (L Band)
- Replace TX et RX cables (L band purpose)

25 November 2019

- Replace MODEM to L Band Modem (M7 series)
- Replace MOL2P to NET PERFORMER series (Base band equipment)
- Replace Splitter / Combiner and appropriate connectors
- Configure and test the links with Brazzaville, Antananarivo and Dakar

ATNS noticed an improvement on the connections to AFISNET, however due to the terminal being off in Libya, the availability is heavily affected as depicted below.

	Availability
NAFISAT - SADC Interconnectivity	99.98%
NAFISAT - AFISNET Interconnectivity	96.78%
SADC - AFISNET Interconnectivity	97.79%

3.   Retention of interconnectivity with AFISNET

The NAFISAT and SADC VSAT2 networks are fully integrated to ensure continuation of seamless operation by being fully interconnected and interoperable on level 1.

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 ensure 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.
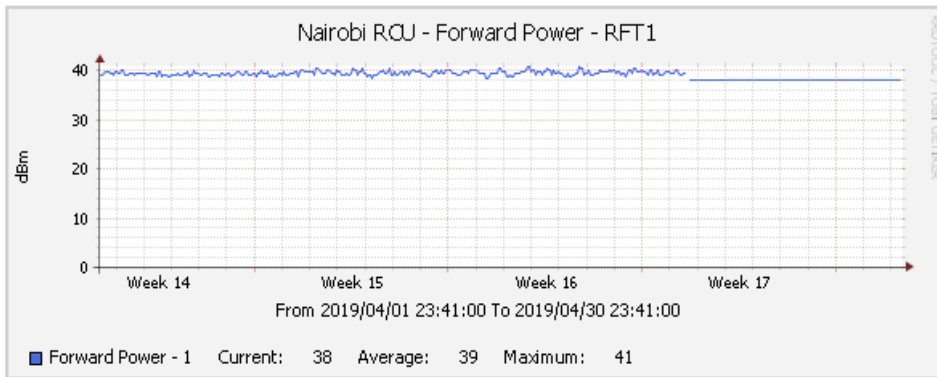
4.   REPORTING to ICAO
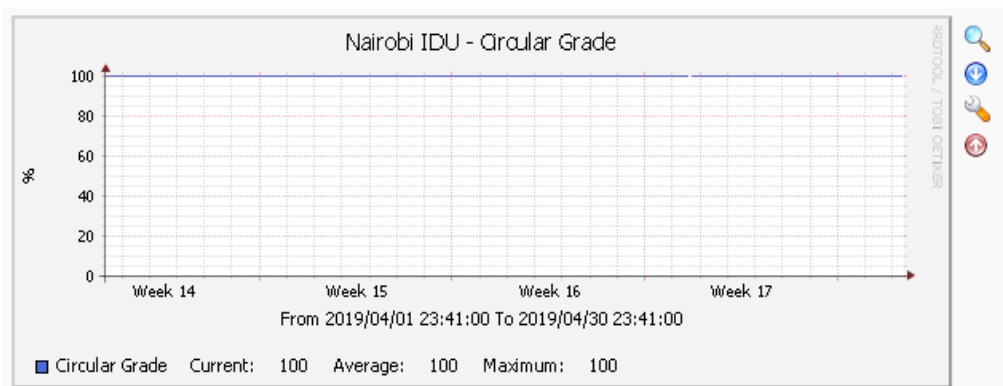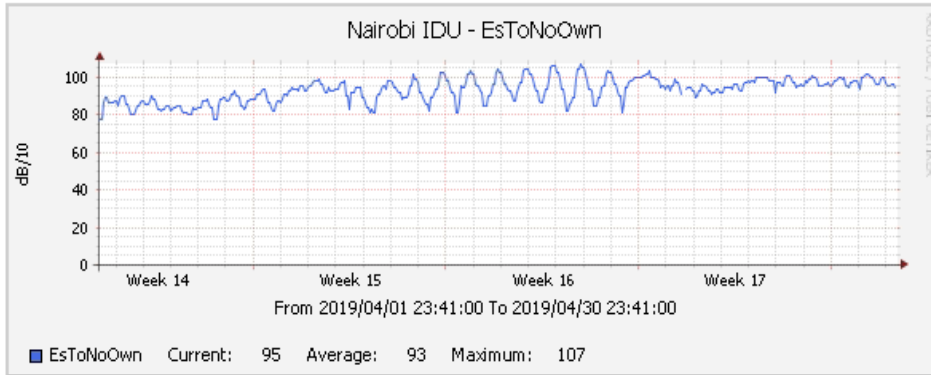
SADC and NAFISAT upgrade

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 applications 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 resulted in added improvement to the Network management system, enabling ATNS to extract information on the system required for reporting to ICAO.

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

Nairobi IDU - EsToNoOwn

From 2019/04/01 23:41:00 To 2019/04/30 23:41:00

EsToNoOwn   Current: 95   Average: 93   Maximum: 107

Nairobi IDU - Circular Grade

From 2019/04/01 23:41:00 To 2019/04/30 23:41:00

Circular Grade   Current: 100   Average: 100   Maximum: 100

Utilizing these systems ATNS compiles the level 4 statistics as required by ICAO. 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.