

Agenda Item 7.1 - Operation, maintenance and performance of the NAFISAT Network

(Presented by ATNS)

19th NAFISAT Supervisory Board Meeting

Mogadishu, Somalia, 14 – 17 October 2024

SUMMARY

This paper summarizes the operation, maintenance and performance of the NAFISAT network.

Reference: Report

FRC Call Records

Interconnectivity between adjacent Networks

Network Availability

AFTN Availability

ATS/DS Availability

Yearly comparative availability

AMHS implementation

1 Introduction:

- 1.1 This report presents the operational performance and maintenance of the NAFISAT network for the period April 2023 to March 2024. The report covers the availability of all services provided by the network, and these are measured against the agreed SLAs.

The robustness of the maintenance strategy implemented by ATNS and the NAFISAT Supervisory Board is reflected in the summary of trends observed throughout the reporting period and the statistics of incident reports received through the ATNS Fault Reporting Centre (FRC). The FRC is located at the Johannesburg ACC and provides a 24 hr remote service for reporting and resolution of faults. ATNS is investigating a solution to make the ATNS FRC accessible via WhatsApp and will communicate the details as soon as they become available.

- 1.2 The summary of the calls (reported incidents) are also given for the period April 2023 to March 2024.

2 Discussion

The successful maintenance of the VSAT is made possible with the continuous commitment, assistance and teamwork of the NAFISAT member States and their personnel. Skills obtained by all States' participants at the ATA training continues to prove to be fruitful to ensure that the reported faults are dealt with timeously. The VSAT training schedule is available, and members are advised to submit requests to ATNS to fill the slots available for the financial year 24/25.

- 2.1 Assistance is still required with the issuance of LOI's, VISAS, with emphasis on assistance with customs processes and site access permits required by some authorities. These factors remain a risk to quick on-site response and availability of spares.

2.2 NAFISAT FRC faults reported (Apr 2023 to March 2024)

Total: FRC = 166

	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Total
FRC	14	17	15	18	13	15	5	9	13	15	15	17	166
Corrective	13	12	11	5	10	8	1	4	7	10	12	15	108
Preventative	0	0	0	2	0	0	0	0	0	0	1	0	3
External	1	5	4	11	3	7	4	5	6	5	2	2	55

Corrective – 108
 Preventative –03
 External – 55

2.3 Yearly comparative FRC reported call totals

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024
Total	159	171	103	115	152	107	120	130	166

2.4 Trends

- 2.4.1 RFTs and RF switch failures have stabilised and are now dealt with as per fault restore process, and mitigation strategies in place to deal with these failures. As reported in the previous year, 25 additional RFTs were replenished into the central stores.
- 2.4.2 External interference has been dealt with as reported during the previous SBM. 5G interference has been identified in most cases and as reported, ATNS implemented 5G filters to mitigate this interference. It is crucial that regulators are approached to enforce the protection of the VSAT registered frequencies. ATNS prioritised the roll out of 5G filters into the Network specifically to sites with interference. More discussion on the 5G interference will take place during the presentation of the future of the network.
- 2.4.3 Mains power supply at some sites are still troublesome and affects the VSAT terminals. Reliable mains supply and backup systems are critical to the correct operations of the equipment. UPS batteries are failing because of the increased supply challenges. ATNS continues to replace the UPS batteries during the preventative maintenance visits.
- 2.4.4 Evaluating trends, ATNS is experimenting with a different configuration on the receive path to eliminate the crossover on the receive path when redundancy is switched as well as dealing with current 5G interference.
- 2.4.5 Should any new developments or trends arise, ATNS will follow the necessary processes to maintain the network to the required standard.
- 2.4.6 Discussions with the OEM have been concluded and alignment of the maintenance contract for the duration of the network agreed period is underway. The current contract is in place until November 2024.

2.5 Interoperability

- 2.5.1 Seamless operations, interoperability and interconnectivity between VSAT networks in the AFI Region remains crucial and ATNS remains committed to implement the best practices as recommended by ICAO. The NAFISAT and SADC VSAT2 networks are fully integrated to ensure

continuation of seamless operation by being fully interconnected and interoperable on the Satellite level 1.

2.5.2 At present interconnectivity between AFISNET and NAFISAT is achieved on level 3 through baseband equipment and not on the satellite level 1 and recent engagements with ASECNA intends to address this issue.

2.5.3 The links continue to be achieved through the DATUM 500L series. The multiplexers are now changed to the NETPERFORMER FAD and fully operational except for the connection between Luanda and Accra.

2.5.4 Below an indication on the status of the services to the NETPERFORMER as at March 2024.

		Network	AFTN/AMHS	ATS/DS
Khartoum/N'Djamena		U/S	U/S	U/S
Khartoum/Brazzaville		Serviceable	N/A	Serviceable through the alternative solution
Addis/Niamey		serviceable	Serviceable old platform	N/A
Nairobi/Brazzaville		serviceable	Serviceable	N/A
Tripoli/Niamey		U/S	U/S	U/S
Tripoli/N'Djamena		U/S	U/S	U/S

2.5.5 The availability of these links and services are recorded as follows:

		Network	AFTN/AMHS	ATS/DS
Khartoum/N'Djamena		0%	0%	0%
Khartoum/Brazzaville		0%		0%
Addis/Niamey		99,99%	0%	
Nairobi/Brazzaville		99,99%	93,75%	
Tripoli/Niamey		0%	0%	0%
Tripoli/N'Djamena		0%	0%	0%

AVE 99,99% 93,75% 0%

The achieved availability of the operational links; i.e. level 1 and 2 are within specification above 99.9%

The availability of the voice circuits implemented was 99.99% and the voice circuits were 99.98%

2.6 Implementation of AMHS service on the NAFISAT network

2.6.1 The migration of AFTN service to AMHS has gained traction in F/Y 2022/2023 but unfortunately has come to a standstill. Although the capability is there on some end user systems, transition is still not done. Unfortunately, some of the members have not replaced systems to AMHS capability.

2.6.2 The central switch in Nairobi have been reported as problematic. Mauritius, Johannesburg, Ethiopia, Somalia, and others have been reporting regular outages to the AMHS service via Nairobi. This issue has been escalated to the Kenya authorities as Nairobi is the main gateway between NAFISAT, SADC and other AFI regions.

2.6.3 The service provider reiterates that this is not a network challenge and all investigations points to end user equipment in Nairobi.

2.6.4 As with new equipment the transition to AMHS is posing its own operational challenges. Reports of loss of flight plans as well as not correct message priorities are reported to our FRC operators on a regular basis.

2.6.5 These can be attributed to various phenomena; AMHS system outages, wrong addressing, destination and routing entered on flight plan from the operators. operators needing training on the AMHS service, Technical personnel needing training on the MTA server as well as when setting the application configuration.

2.6.6 AMHS service implementation is currently as per below;

	Site 1 / HP SW		Site 2 / HP SW	
IP AFTN	Juba	172.16.109.254	JHB	172.16.160.254
IP AFTN	Victoria	172.16.103.254	JHB	172.16.160.254
IP AFTN	Khartoum		Cairo	
AMHS	Jeddah	172,16,105,254	Cairo	172,16,97,254
AMHS	Jeddah	172,16,105,254	Khartoum	172,16,106,254
AMHS	Nairobi	172,16,100,254	JHB	172,16,160,254
AMHS	Entebbe	172.16.107.254	Nairobi	172.16.100.254
AMHS	Nairobi	172,16,100,254	Plaicance	172,16,71,254
AMHS	Cairo	172,16,97,254	Khartoum	172,16,106,254
AMHS	Cairo	172,16,97,254	Johannesburg	192,16,160,254
AMHS	Nairobi	172,16,100,254	Addis	172,16,99,254

On hold	DarEsSalaam	172,16,77,254	JHB	172,16,160,254
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on hold	Nairobi	172,16,100,254	DarEsSalaam	172,16,77,254
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on hold	Kigali	172,16,75,254	Entebbe	172,16,107,254
on hold	Kigali	172,16,75,254	JHB	172,16,160,254
was done/ON Hold	Khartoum	172,16,106,254	Addis	172,16,99,254
On hold	Entebbe	172.16.107.254	DarEsSalaam	172.16.77.254
SETUP/complete	Entebbe	172.16.107.254	Cairo	172.16.77.254
Test/TTDS	New Luanda	172.16.63.254	JHB	172.16.160.254
Config	Mogadishu	172,16,102,254	JHB	172,16,160,254
Config	Nairobi	172,16,100,254	Mogadishu	172,16,102,254

3 Performance of the Network

3.1 Data was collated from April 2023 to March 2024 and is presented to the meeting for information.

(PRESENTATION)

3.2 Network achieved availability (April 2023 to March 2024)

NETWORK AVAILABILITY											
Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
100	99,95	99,99	99,98	100	100	100	99,88	99,71	100	100	100

Average =99,96%

3.3 Network operational availability (April 2023 to March 2024)

NETWORK AVAILABILITY											
Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
87,27	83,29	83,33	83,32	83,33	83,33	91,54	91,38	91,67	91,67	91,67	91,66

Average =87,79%

3.4 MMC AVAILABILITY (April 2023 to March 2024)

MMC AVAILABILITY											
Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
100	100	100	99,86	100	100	100	100	100	100	100	100

Average =99.99 %

3.5 AFTN circuit availability (April 2023 to March 2024)

AFTN CIRCUIT AVAILABILITY											
Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
54,29	49,99	49,93	49,86	63,74	67,86	67,79	67,73	67,86	67,85	67,85	67,86

Average = 61,88%

3.6 ATS/DS circuit availability (April 2023 to March 2024)

ATS/DS CIRCUIT AVAILABILITY											
Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
90,33	89,13	89,18	89,19	89,15	91,89	91,63	88,29	89,19	89,19	89,17	89,18

Average =89,63%

3.7 AMHS circuit availability (April 2023 to March 2024) network services

AMHS CIRCUIT AVAILABILITY											
Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
36,34	28,12	26,15	36,53	52,67	56,29	55,57	56,18	56,44	56,60	56,60	56,59

Average = 47,84%

3.8 AMHS circuit availability (April 2023 to March 2024) implemented services

AMHS CIRCUIT AVAILABILITY											
Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
83,86	87,08	87,79	84,50	93,71	99,34	98,06	99,14	99,59	98,91	99,89	99,87

Average = 94,31%

3.9 Data collected on Services (April 2023 to March 2024)

Number of voice calls recorded since April 2023 to March 2024 = 114 353

Number of Bytes transmitted since April 2023 to March 2024 = 366 964 729

3.10 Yearly comparative availabilities

Yearly Network availability

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024
Average	99,97	99,98	99,97	99,97	99,97	99,96	99,99	99,96	99,96

Average = 99,97%

Yearly AFTN availability

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024
Average	97,62	98,91	98,41	98,43	87,26	86,06	68,87	54,74	61,88

Average = 83,57%

Yearly ATS/DS availability

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024
Average	96,56	99,2	99,15	98,36	89,82	88,97	79,46	85,89	89,63

Average = 91,89%

4 Distribution of statistics

- 4.1 Distribution of network statistics is done on a monthly basis.
- 4.2 Statistics are published on the ATNS website for State Members to view. Member states receive an e-mail alert that the statistics are available on the website.
- 4.3 ATNS continues to provide the level 4 statistics as required from ICAO on a monthly basis.

5 Action to be taken by the meeting

- 5.1 The meeting is invited to take note of the above information. More information on specifics will be made available upon request.
- 5.2 States are requested to continue submitting the statistics recorded on the level 4 template to ATNS for the completion of the document to be sent to ICAO.
- 5.3 Relevant States are requested to assist in timeously supplying Letters of Invitation and all States are requested to assist in resolving difficulties experienced at the respective customs for the clearing and releasing of equipment and spares as well as the facilitation to access the site during maintenance.
- 5.4 States are encouraged to implement AMHS services as per the ICAO block Upgrades and the network proposed design.

5.5 States are reminded to follow the fault reporting procedure and report all NAFISAT network faults to the ATNS FRC on +27 11 928 6477 or frcentre@atns.co.za or frcooperators@atns.co.za and to copy to the Manager Technical Support ruip@atns.co.za