INTERNATIONAL CIVIL AVIATION ORGANIZATION
EASTERN AND SOUTHERN AFRICAN (ESAF) OFFICE

THE FIFTEENTH VIRTUAL MEETING OF THE NAFISAT SUPERVISORY BOARD
(NAFISAT-SVB/15) (14 – 15 JULY 2021)

Agenda Item 6: Background and Rationale of the NAFISAT Network

(Presented by ATNS)

SUMMARY
This paper aims to demonstrate the background and the founding rationale behind the structure and the operational model of the NAFISAT Network. The paper further captures the critical historical decisions as concluded by the Member States and AFI Regional structures.
REFRENCE(S):   MOU Between NAFISAT Member States and ATNS & IATA   APIRG Conclusions
RELATED ICAO STRATEGIC OBJECTIVE(S):   Global Air Navigation Plan (GANP)   ASBU Block 1 modules

1. INTRODUCTION

1.1. In 2001, the Thirteenth Meeting of the AFI Planning and Implementation Regional Group (APIRG/13) held in Cape Verde, through Conclusion 13/15 – *Extension of the Use of Satellite Technology* – recommended the establishment of the North Eastern AFI VSAT Network (NAFISAT), which should cover the AFI Region, the MID Region and the interface with India.

1.2. The Eleventh Meeting of the MID Air Navigation Planning and Implementation Regional Group (MIDANPIRG/11) Conclusion 11/55 – *Completion of the MID VSAT project* – recommended that following the successful implementation of Phase 1 of the MID VSAT project and in order to avoid the proliferation of the VSAT networks, MID States requiring VSAT connections may join the NAFISAT network project and participate in its Steering Group.

1.3. In 2004, ATNS and IATA (collectively referred to as "Network Service") were mandated to provide, operate and manage the NAFISAT network by a meeting of NAFISAT Air Traffic Service providers held in Nairobi under the aegis of ICAO.

1.4. In 2007, the NAFISAT network was established to address ground/ground communication deficiencies in the North Eastern part of the AFI region.

1.5.   The objective of the network is to support the provision of a variety of aeronautical telecommunication services including the mandated Air Traffic Services Direct Speech (ATS/DS) and Aeronautical Fixed Telecommunication Network (AFTN), for which the network was built as well as the migrating of these to the modern equivalent ATN applications of ATS Message Handling System (AMHS), ATS Inter-facility Data Communications (AIDC) and Voice over Internet Protocol (VoIP).

1.6.   In 2012, the Eighteenth Meeting of the APIRG (APIRG/18) held in Kampala commended the improvement in ATS/DS and AFTN services in the AFI Region and recommended States to put in place mechanisms for future sustainability of the NAFISAT network beyond 2015, under its conclusion 18/27 – *Arrangements to Ensure Sustainability of NAFISAT and SADC VSAT/2 Networks.*

1.7.   In 2013, the Nineteenth Meeting of the APIRG (APIRG/19) held in Senegal commended the positive agreement reached by NAFISAT States, ATNS and IATA to maintain, upgrade and/replace the network for the upcoming 7 years, to support the continued and effective provision of Air Traffic Management services, pursuant to APIRG Conclusion 19/27 – *Arrangements to Ensure Sustainability of NAFISAT and SADC VSAT/2 Networks*.

2. DISCUSSION

2.1. The NAFISAT network upgrade was completed in 2017 to enable the network to be IP capable. Subsequent to the upgrade, the optimization of the bandwidth was undertaken and completed in 2018.

2.2.   The following are some of the services that the network is capable of supporting.

➢ Computer-to-computer data exchanges between ATS Flight Data Processing Systems (FDPS);
➢ Operational meteorological data exchanges;
➢ Operational aeronautical information services exchanges;
➢ Aeronautical administrative support;
➢ ADS-B and Radar data exchanges; and
➢ VHF Extended range.

2.3.   A technical feasibility study was conducted in 2018 and showed that the upgraded networks are technically capable of supporting the added services, however these services will require additional satellite spectrum and in some cases hardware.

2.4.   The services currently operating on the networks are the following.

➢ Aeronautical Fixed Telecommunication Network (AFTN) data services;
➢ Aeronautical Message Handling System (AMHS); and
➢ Air Traffic Services Direct Speech (ATS/DS) voice services

2.5.   A Proof of Concept (PoC) was conducted in 2018 to measure the impact of Value-Added Services on the NAFISAT network to ensure that the network is flexible and scalable to adopt future services.

2.6.   The PoC was conducted between South Africa and a NAFISAT Member State (Seychelles) and the objective was to test if the network was able to handle a continuous data stream in the form of the:
  ➢   Space-based ADSB data; and
  ➢   The Centralized AIM database client connectivity.

2.7.   The conclusion of the PoC was that the networks is capable of supporting these additional Value-Added Services.

2.8.   Additional satellite provider spectrum would be required for each additional service that is activated and would need its own dedicated spectrum on the network.

2.9.   Since the 2017 upgrade, the network continues to operate at the agreed service levels. This has also resulted in the benefit that Member States now have access to a platform that is enabled to deliver traditional services in a more efficient and cost-effective manner. The network has rather over the years seen a slow uptake of the IP enabled services (such as AMHS) for which it was upgraded. It is encouraged that Member States deliberate on and share their implementation plans on these IP enabled services.

2.10.   The impacts of the global COVID-19 pandemic has necessitated a rethink in the balancing of service provision, safety of operations and affordability. As a result, the network service provider has developed a roadmap for the future of the NAFISAT network leading towards the year 2022 and beyond. The formulation of this roadmap is aimed at providing a technically feasible response to the current economic difficulties that the global aviation industry finds itself in as well as ensuring that the network remains operationally and financially sustainable.

2.11.   Since the World Health Organization declared the coronavirus as the global pandemic, the AFI Region has seen a very steep decline in air traffic movements and in turn, lower FIR crossings. The decline in FIR crossing has since remained under pressure and is expected to remain subdued for a foreseeable period of time. It is estimated that the recovery will only start to be evident in the later part of 2023 to early 2024. This status quo has put the financial sustainability of the network under pressure. This situation is a reminder to the Member States to ensure that the network operator's ability to collect the NAFISAT charges is enabled and supported, through the aeronautical publication of NAFISAT charges in line with the NAFISAT MOU.

3. ACTION BY THE MEETING

3.1   The meeting is requested to note the content of the Working Paper and urge Member States take action in implementing the suggestions within their jurisdictions where necessary.

-END-