



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

**Twenty-fifth Meeting of the AFI Satellite Network Management Committee (SNMC/25)
(Freetown, Sierra Leone, 18-22 December 2017)**

**Agenda Item 5: Interconnection and interoperability of AFISNET with its neighbouring networks
(CAFSAT, NAFISAT, SADC2)**

(Presented by the secretariat)

SUMMARY

This paper aims to draw the attention of the meeting on the challenges of the interconnection and the interoperability of the AFI VSAT in view of appropriate policies to support the Air Navigation Safety

Reference: ALLPIRGs/5
SAT 18
SNMC 24th Report

Action by the meeting in paragraph 3

1. INTRODUCTION

The provision of air navigation services relies on the various regional VSAT networks interconnected and interoperable AFISNET, CAFSAT, SADC, NAFISAT. In order to comply with the current and future aeronautical telecommunications services, as well as the evolution of the satellite technology, each network is developing an upgrade programme of its network based on the migration towards IP-based digital communication network.

This migration rises the issue of the safety and security of the critical information flowing in and between the networks. States and ANSP have to address the threats related to IP technology and take measures to contend them in order to ensure a safe operation of the aeronautical VSAT networks.

2. DISCUSSION

2.1. ALLPIRG/5 particularly requested PIRGs to work towards integrated regional/interregional digital communication networks, with a centralized operational control and preferably based on the Internet Protocol (IP) (Conclusion 5/16 refers).

2.2. According to the APIRG/16 conclusion 16/16, ASECNA in cooperation with ATNS implemented successfully the interconnection of SADC-2, NAFISAT and AFISNET VSAT networks. This interconnection allowed to improve the Aeronautical Fixed Service (AFS) between ASECNA centers and the SADC and NAFISAT involved centers. With the technological evolution, these interconnections require to be upgraded with IP protocols capability. ASECNA and ATNS are regularly coordinating on this issue.

2.3. The seventeenth SAT meeting, held from 18-20 April, 2012, encouraged concerned Sates/Organizations to realize or complete the interconnection process between neighboring networks in

order to implement the remaining interconnection required for ATM operation and pursue their collaboration when modernizing their respective networks components in order to build and harmonized interregional network provided with the capability to support the forthcoming CNS applications.

2.4. With regard to SAT/18 conclusion 3/6, ASECNA in coordination with DGAC (French Guyana), Trinidad and Tobago Civil Aviation Authority (TTCAA) and Brazil, completed the interconnection of AFISNET to REDDIG -2 and CAFSAT through the implementation of AFISNET nodes in Cayenne (French Guyana, Piarco (Trinidad and Tobago) and Recife (Brazil), with IP capability

The table below summarize the various services implemented:

Node I	Node II	Planned Services	Observations
Dakar	Cayenne	ATS/DS, AIDC	Fully operational since august 2015(ATS/DS)
	Piarco		
Dakar	Recife	ATS/DS AMHS AIDC	ATS/DS implemented, AMHS and AIDC ongoing
Abidjan		ATS/DS, AIDC	ATS/DS implemented between Abidjan and Recife. Implementation of AIDC on going,
Las Palmas			Backup for REDDIG-2 VSAT link
Cayenne			Backup for REDDIG-2 VSAT link
Piarco			Backup for REDDIG-2 VSAT link

2.5. This extension of AFISNET to the SAM region solves deficiencies the Aeronautical Fixed Services affecting the two regions and improves the ATM provision between AFI and SAM regions. It is an opportunity to build an interregional circuit, with the capability to support the forthcoming CNS applications (AMHS and AIDC), in accordance with Required Communication Performance (Doc 9869).

2.6. CAFSAT network is interconnected to AFISNET through Dakar and the Recife AFISNET and CAFSAT nodes with the capability to support IP protocols. The CNMC and the SNMC are respectively in the process to upgrade CAFSAT and AFISNET networks to support IP protocols both.

2.7. DGAC(France), DECEA (Brazil) and TTCCA (Trinidad and Tobago) and ASECNA planned AMHS and AIDC trials in the framework of SAT and the implementation is ongoing.

2.8. However, due to IP-based networks and systems, interconnecting the various ANSP and cyber-security risks, required security measures must be taken by the various ANSP to ensure the safe operation of these systems.

3. ACTION BY THE MEETING

The meeting is invited to:

- Take note of the information provided above, related to the interconnection of AFISNET to the AFI and SAM aeronautical VSAT networks,
- Take note of the upgrade process ongoing and particularly the migration of the aeronautical VSAT networks to IP based networks;
- Take any relevant conclusion/decision, in order to build and AFI seamless network full interconnected to the other regions networks and ensure its safe operation to support the provision of air navigation services.