Twenty First Meeting of the Africa-Indian Ocean Planning and Implementation Regional Group (APIRG/21)
(Nairobi, Kenya, 9 – 11 October 2017)

Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation

REVISION OF AIR NAVIGATION PERFORMANCE TARGETS SET BY THE APIRG20 MEETING

AFI networks interconnection and interoperability challenges

(Presented by ASECNA)

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	
Strategic Objectives	This Working Paper is related to Strategic Objectives: A, B & E
References	ALLPIRGS/5 APIRG /16, APIRG 20 Conclusion 3/6: SAT 18; Rapport reunion IIM/1

1.   INTRODUCTION

1.1.   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 program of its network based on the migration towards IP-based digital communication network.

1.2.   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 upgrade 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.   During the SAT/18 meeting, held in Dakar, 15- 19 July, 2013, ASECNA proposed technical architecture to achieve this interconnection and the CNMC/3 meeting adopted the conclusion 3/6) *calling for the establishment of direct links based on the existing satellite VSAT networks (AFISNET and CAFSAT) in order to ensure a sustainable Aeronautical Fixed Service between ATCs, Atlantico FIR (Brazil), Sal FIR (Cape Verde), Dakar FIR (Cote d'Ivoire, Senegal), Cayenne FIR (French Guyana), Santa Maria FIR (Portugal), and Piarco FIR (Trinidad & Tobagoa).*:

2.5.   From 2014, in order to implement this conclusion, ASECNA proposed an architecture to meet the ICAO communications requirements based on one hope satellite link and coordinated with DGAC (French Guyana), Trinidad and Tobago Civil Aviation Authority (TTCAA) and Brazil. All the parties agreed with the architecture which allows ensuring the adequate coordination of the increasing traffic between the various centers to backup the single CAFSAT link between Recife and Dakar.

2.6.   The implementation of Piarco and Cayenne AFISNET nodes has been completed since August, 2015 and the links are fully operational, supporting ATS/DS service between Dakar and Cayenne and Dakar and between Piarco. The implementation of Recife AFISNET node was completed in February 2017. The table below summarize the services:

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			
Cayenne			Backup for REDDIG-2 VSAT link
Piarco			Backup for REDDIG-2 VSAT link

2.7.   This extension of AFISNET to the SAM region solves deficiencies the Aeronautical Fixed Services impacting 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).

2.8.　　　　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.

2.9.　　The networks and systems, interconnecting the various ANSP are IP-based and will be more and more exposed at several levels to cyber-attacks. Urgent actions are required from the region in order 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, including the migration of the aeronautical VSAT networks and interconnection from a closed architecture to an opened architecture, IP based;
- Take any relevant conclusion/decision, in order to ensure the safe operation of the aeronautical VSAT networks and interconnections to support the provision of air navigation services