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INTERNATIONAL CIVIL AVIATION ORGANIZATION

Twenty-Fifth Meeting of the AFI Planning and Implementation Regional Group (APIRG/25)

7 - 11 November 2022

Agenda Item 3: Implementation of air navigation goals, targets and indicators, including the priorities set in the regional air navigation plan

3.6 Other Air Navigation Initiatives

Implementation of Ground/Ground Communication (AMHS and AFTN) in South Africa

(Presented by South Africa)

SUMMARY	
This working paper presents an update on the implementation of Ground/ground (AMHS and AFTN) communication aimed at ensuring operational traffic data flow and information management in South Africa; challenges encountered and recommendations. Action by the Meeting as in paragraph 3.	
Strategic Objectives	• Safety • Air Navigation Capacity and Efficiency

1 INTRODUCTION

1.1 The Aeronautical Fixed Service provides, among other things, for the exchange of messages about the safety of air navigation and the regular, efficient and economical operation of air traffic services.

1.2 The framework of the technologies Roadmap for Communication defined in the Global Air Navigation Plan (GANP) and the Africa-Indian Ocean (AFI) strategy assist States in the implementation of:

a) Aeronautical Fixed Telecommunication Network (AFTN); and
b) Air Traffic Service Message Handling System (AMHS).

1.3 The implementation of Ground/ground (AMHS and AFTN) communication is in accordance with the operational requirements of Annex 3 – Aeronautical Meteorology, Annex 10 Volume II – Aeronautical telecommunication, Annex 11 – Air Traffic Service, Annex 15 – Aeronautical Information Service, and the relevant supporting guidance documents (Doc 9896 – Manual for the ATN using IPS Standards and Protocols, Doc 9880 – Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols Doc 9694 Manual on Air Traffic Services Datalink Applications.

2. DISCUSSION

2.1. **AFTN/AMHS**

2.1.1. AFTN was implemented in South Africa in 2001.

2.1.2 The Aeronautical Telecommunication Network (ATN) router was upgraded from supporting Internet Protocol version 4 (IPv4) only to supporting IPv4 and Internet Protocol version 6 (IPv6) in 2007. The AMHS was implemented in 2009 with the upgrade of the AFTN system.

2.1.3. All domestic airports using AFTN were also migrated to Transmission Control Protocol/Internet Protocol (TCP/IP). The domestic implementation of AFTN/AMHS has been a success, with South Africa assisting other states with their implementation.

2.1.4 The AMHS systems deployed (by different vendors) within South Africa successfully tested the interchange of IWXXM messages between the RODB (Pretoria Met) and the Communication Centre in September 2016.

2.1.5. South Africa is currently, busy with the process of replacing the AFTN/AMHS system with a new system that will ensure that South Africa continues to deliver the required service as the regional communications centre as provided for in the ICAO Regional Plans.

2.2. Inter Air Navigation Service Providers (ANSP)/States AMHS Migration Status

2.2.1 South Africa has managed to migrate the Aeronautical Information Management (AIM) connection from AFTN to AMHS with the following states:

AIRPORT	**COUNTRY**	**INTERFACE**
NAFISAT		
Nairobi	Kenya	AMHS/MTA-P1
SADC [VSAT II]		
Gaborone	Botswana	AMHS/MTA-P1
Manzini	Eswatini	AMHS/UA-P3
Plaisance	Mauritius	AMHS/MTA-P1
Lusaka	Zambia	AMHS/MTA-P1
Entebbe	Uganda	AMHS/MTA-P1
OTHER INTERFACE CONNECTIONS		
Canberra	Australia	AMHS/MTA-P1
SITA	Singapore	AMHS/MTA-P1

2.2.2 South Africa is still to migrate the AIM connections from AFTN to AMHS with the following states:

AIRPORT	**COUNTRY**	**INTERFACE**
AFISNET		
Brazzaville	Congo	AFTN/RS-232
Antananarivo	Madagascar	AFTN/RS-232
CAFSAT		
Dakar	Senegal	AFTN/RS-232

Las Palmas	Spain	AFTN/RS-232
Buenos Aires	Argentina	AFTN/RS-232
Recife	Brazil	AFTN/RS-232
NAFISAT		
Victoria	Seychelles	AFTN/RS-232
SADC [VSAT II]		
Antananarivo	Madagascar	AFTN/RS-232
Luanda	Angola	AFTN/RS-232
Beira	Mozambique	AFTN/RS-232
Maputo	Mozambique	AFTN/RS-232
Harare	Zimbabwe	AFTN/RS-232
Lilongwe	Malawi	AFTN/RS-232
Maseru	Lesotho	AFTN/RS-232
Windhoek	Namibia	AFTN/RS-232
Kinshasa	DRC	AFTN/TCPIP
Bujumbura	Burundi	AFTN/RS-232
Kigali	Rwanda	AFTN/RS-232
Dar-Es-Salaam	Tanzania	AFTN/RS-232
OTHER INTERFACE CONNECTIONS		
Saint Helena	Saint Helena	AFTN/TCPIP

2.2.3 South Africa is in the process of establishing an AMHS connection with the following states:

AIRPORT	**COUNTRY**	**INTERFACE**
SADC [VSAT II]	**SADC [VSAT II]**	**SADC [VSAT II]**
Mogadishu	Somalia	N/A

2.3 Inter Air Navigation Service Providers (ANSP) / States Connection challenges/issues.

2.3.1. South Africa experienced no major challenges/issues with the domestic implementation of AFTN/AMHS; however, challenges/issues which impacted the implementation were encountered when required to connect to other ANSPs/States.

2.3.2. Common challenges/issues encountered with inter ANSP/states implementation are as follow:

a) Insufficient training -
The training that is offered by the service provider appointed to install the system does not equip the states technical teams with sufficient information to enable them to maintain the system after installation. This was highlighted on the APIRG Infrastructure & Information Management Sub-Group COM Project 2 meeting that took place on 12 May 2021.

b) States readiness -
The states readiness to facilitate interconnection with other ANSPs/States is a major challenge as it determines whether the ANSP/State has all the infrastructure in place to facilitate cross-border communication such as Very-small-Aperture terminal (VSAT).

c) Use of Internet Service Providers (ISPs) -
Using ISPs to facilitate interconnection between states where there's no VSAT is a challenge because ISPs only want one ANSP/State to be responsible for the agreement of the

communication line.

d) Air Traffic Services Messaging Management Centers (AMC) Status Registration -
States not registered with (AMC) is a challenge as the AMHS transition is complex to manage, and proper coordination between COM Centers is an essential requirement to ensure the overall air traffic service messaging quality of service. The AMC supports AMHS operation, address management and user management. This assists during transitioning from AFTN to AMHS.

e) States Representative contact information -
States contact details not up to date on the AIPs for communication centre manager, supervisor, senior manager, operations and details of the operating hours.

f) Engagement Platforms-
There are limited platforms to engage on AFTN/AMHS discussion that will promote the AMHS migration in the region.

3 ACTION BY THE MEETING

3.1. The meeting is invited to:

- To take note of the status of the Implementation of the AFTN/AMHS in South Africa;
- Encourage AFI state members to update AIPs, share implementation status, challenges/issues which are encountered during the implementation of AFTN/AMHS with other ANSP/States; and
- Arrange Training platforms or Webinars to engage on AFTN/AMHS discussion that will promote the AMHS migration in the region.

3.1 **Draft Conclusion /Decision 3/xx : Title of Conclusion/Decision**

Implementation of Ground/Ground Communication (AMHS and AFTN)

That

- AMHS/AFTN Training platforms or Webinars be arranged to promote and assist in the AMHS migration in the AFI region by 30 June 2023;
- States to update contact details on the AIPs; and
- States to share implementation status, challenges or issues which are encountered during the implementation of AFTN/AMHS with other ANSP/States.