



# Twenty-fifth Meeting of AFI Satellite Network Management Committee

*Freetown, Sierra Leone, 18-22 December 2017*

## Agenda Item 2: Operational Statistics

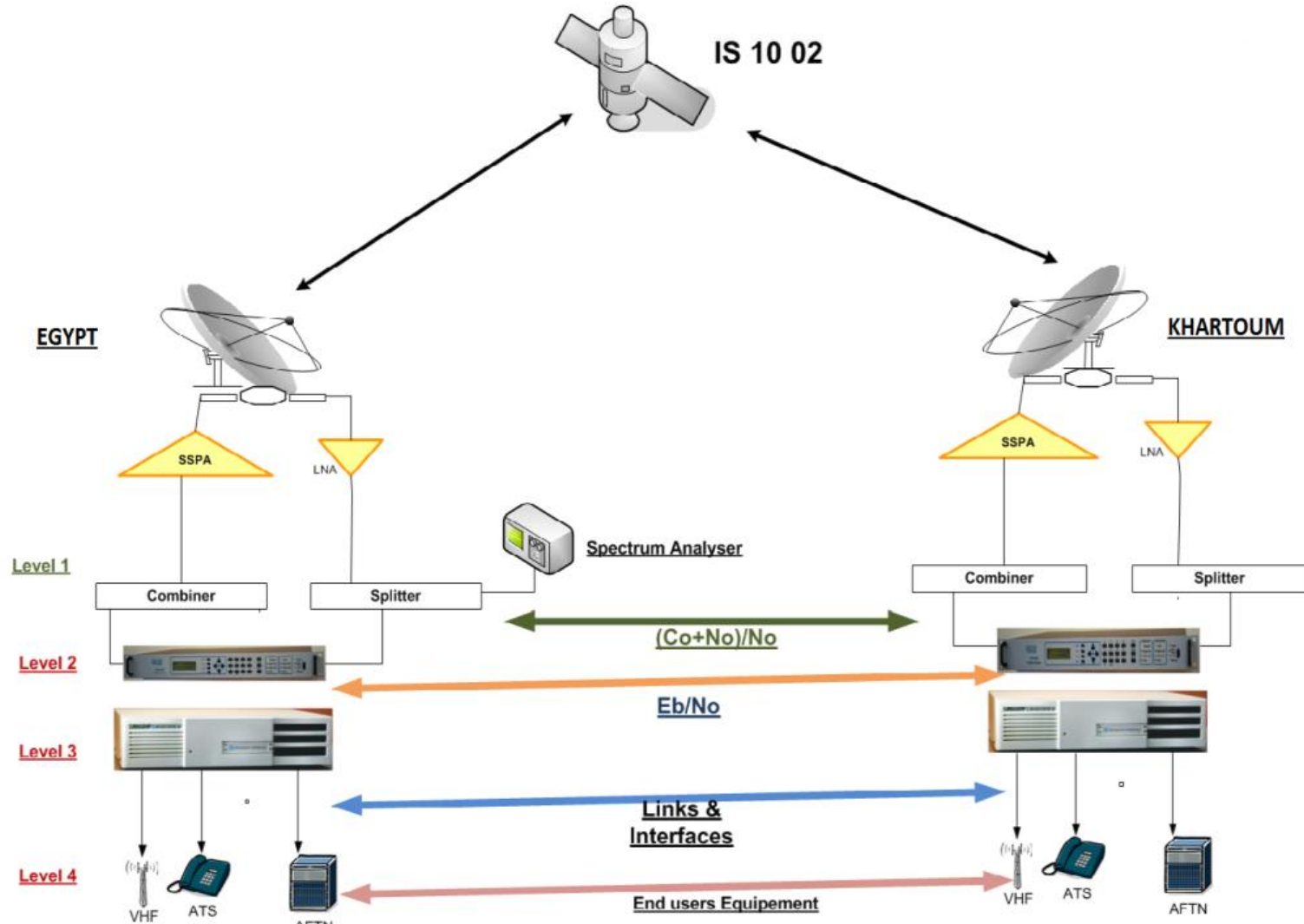
**(Presented by ASECNA)**

# 1. INTRODUCTION

This Working Paper provides

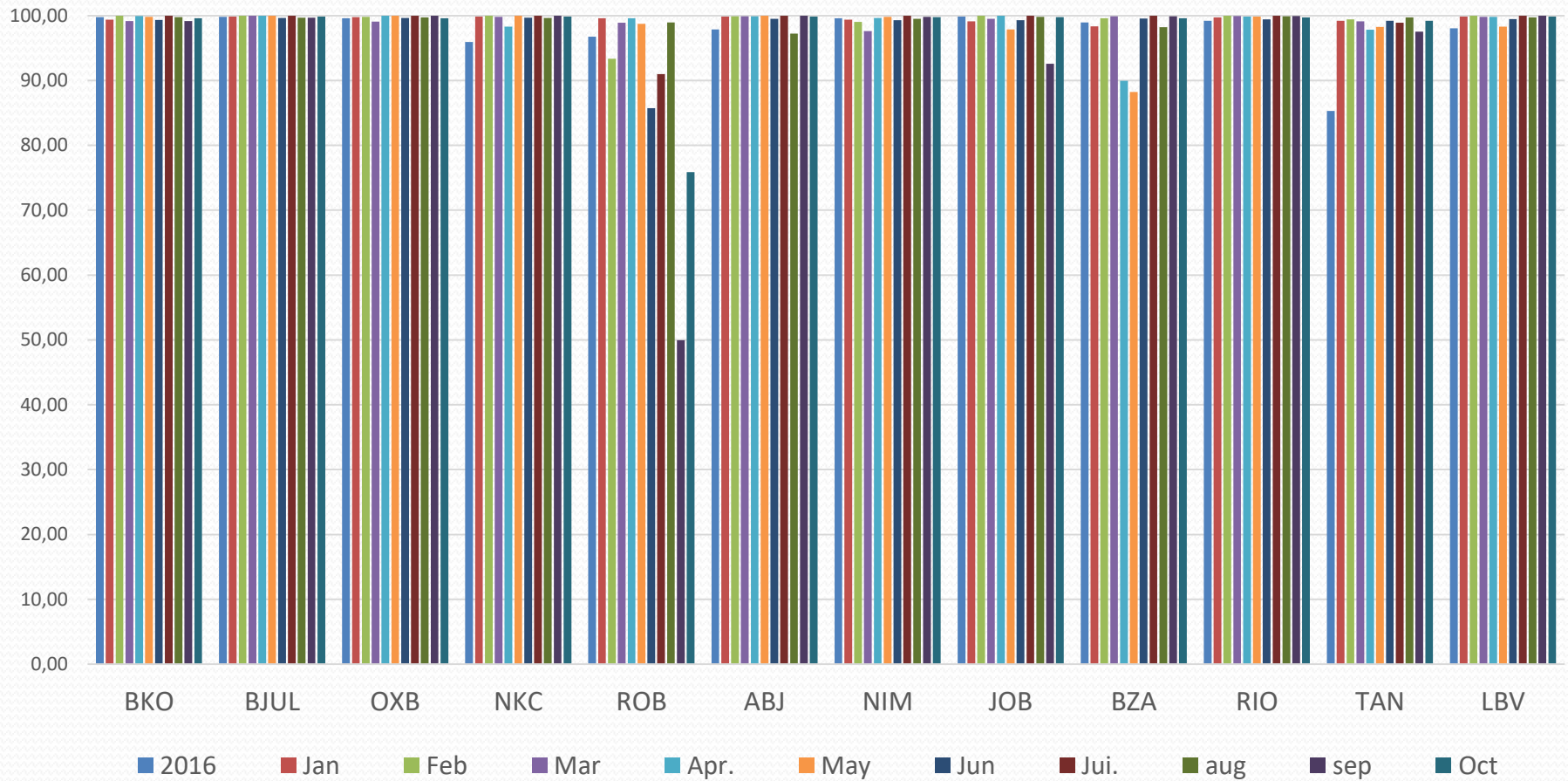
- ❖ A progress report on the availability of the AFTN circuits of SNMC COM centres in ASECNA area from January to October 2017.
- ❖ A view for the migration of AMHS towards AMHS in SNMC centers;

# 2. AFTN availability in ASECNA centers



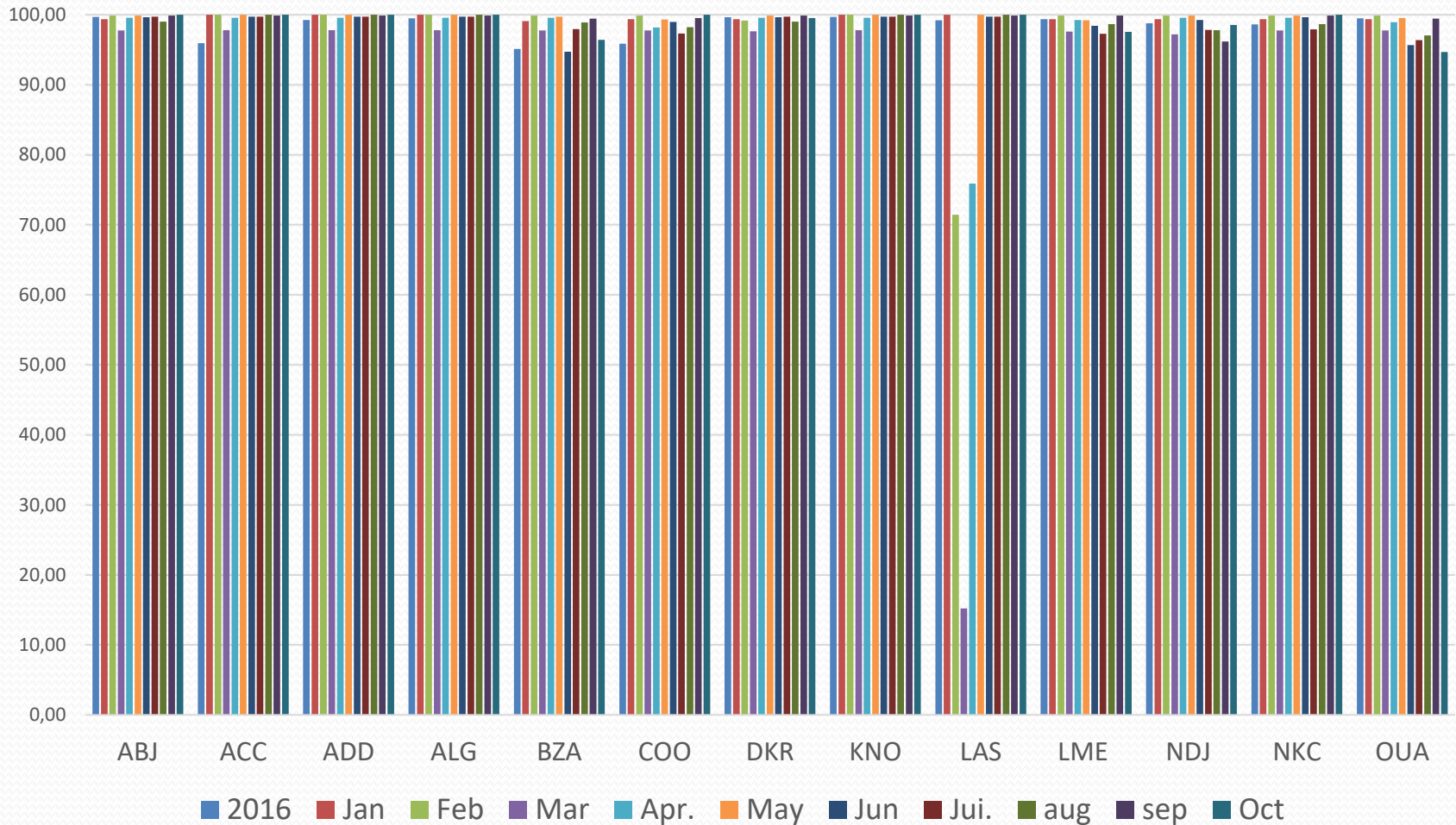
# AFTN Availability

## Dakar Center



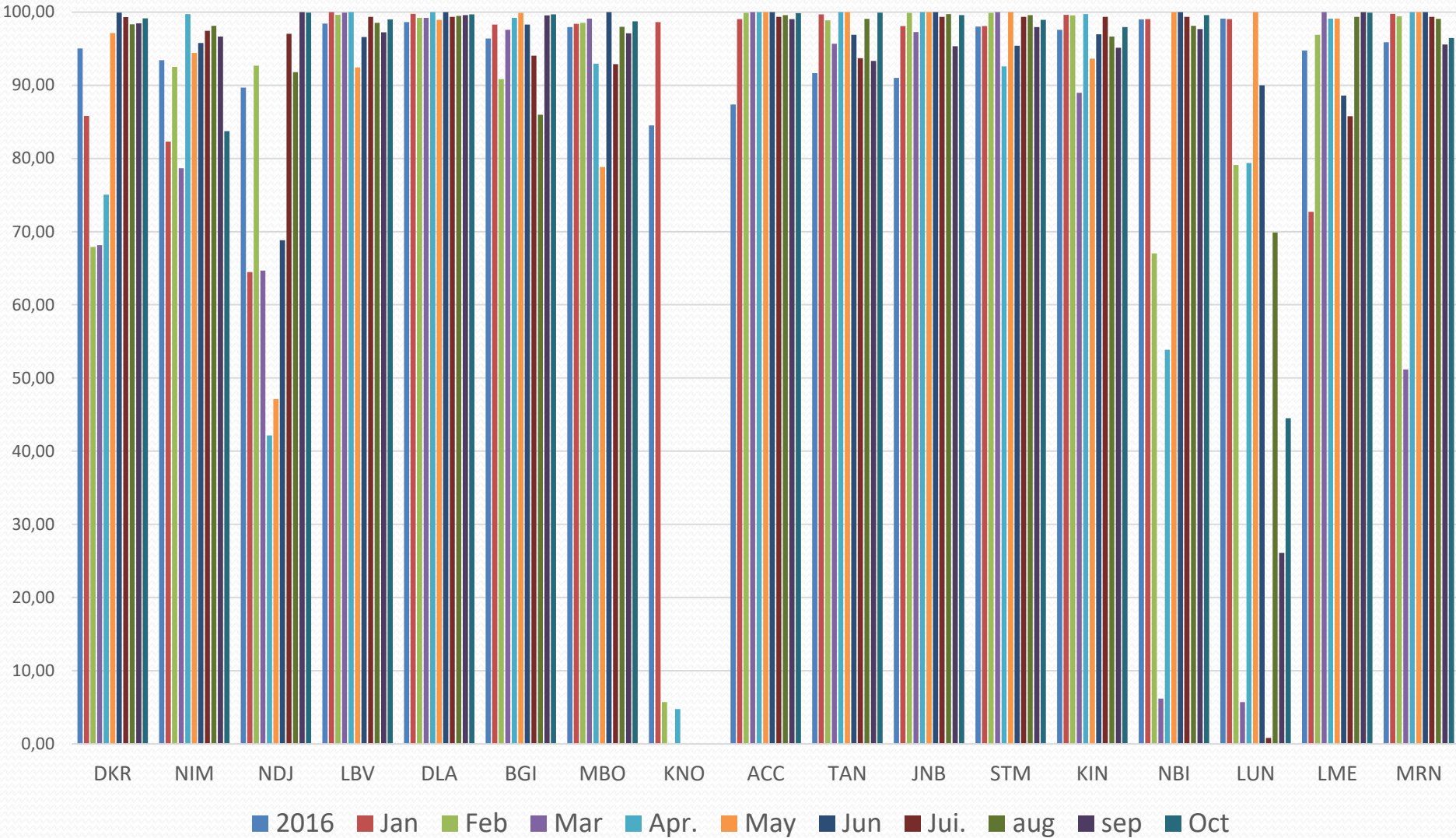
# AFTN Availability

## Niamey center

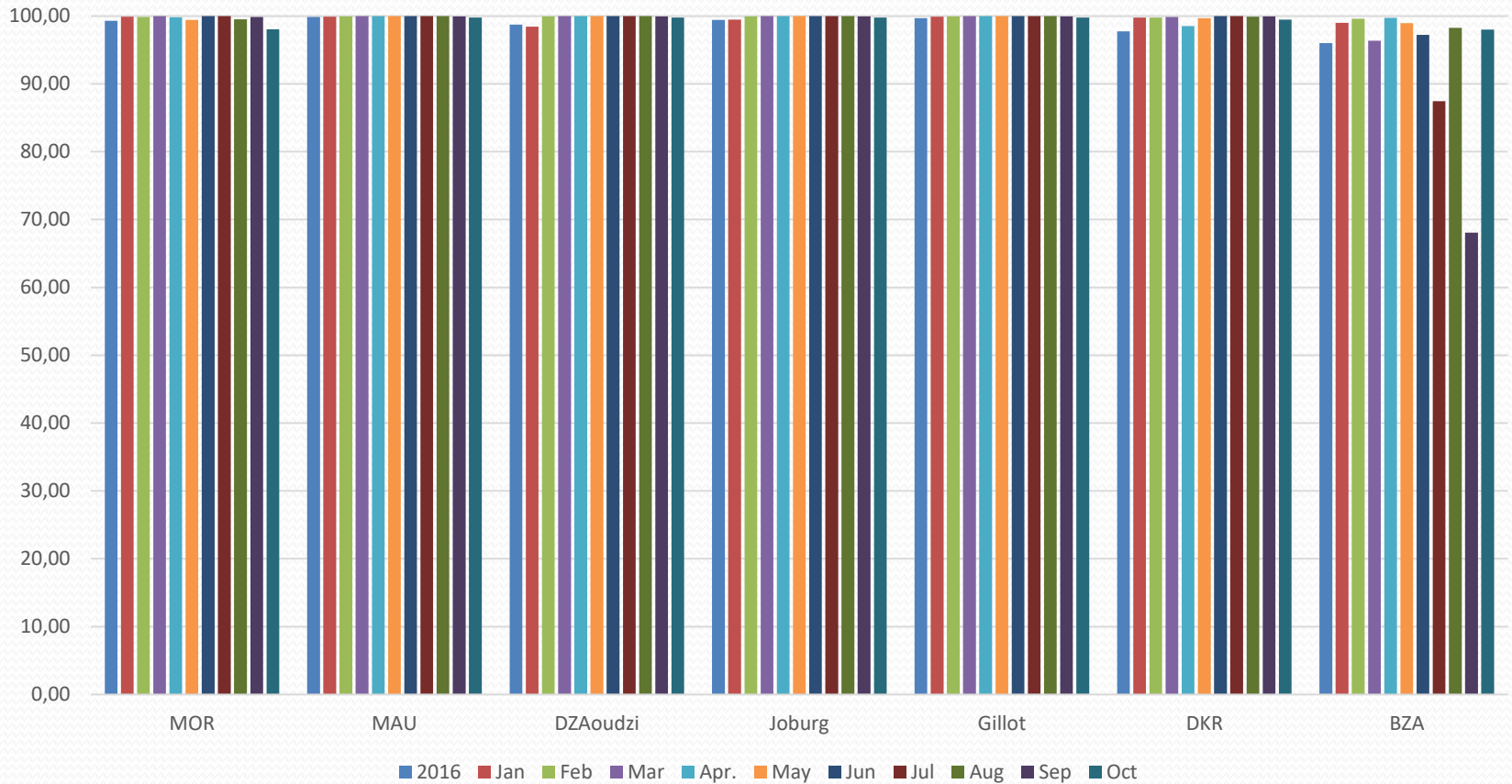


# AFTN Availability

## Brazzaville center

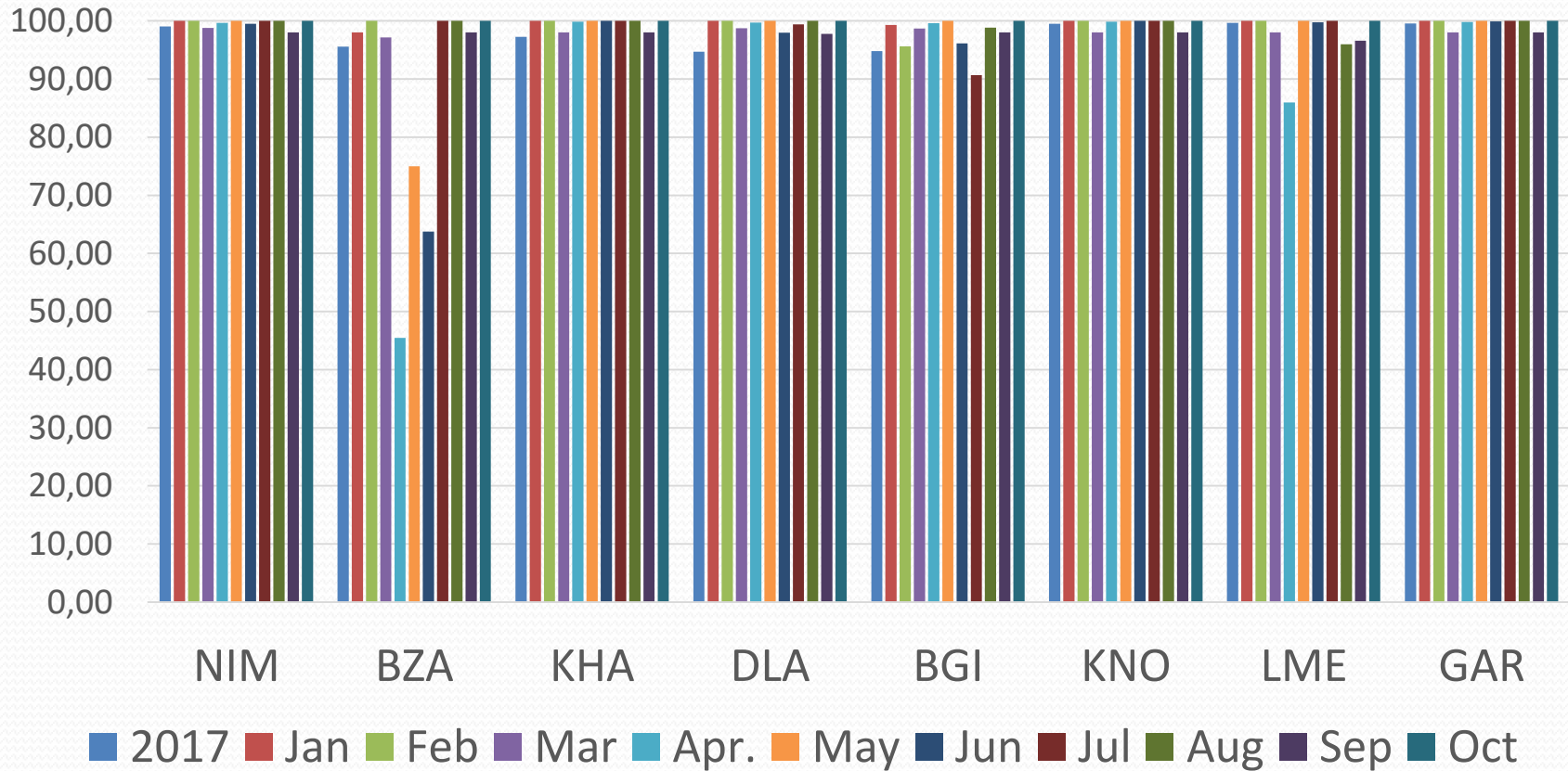


# Antananarivo Center



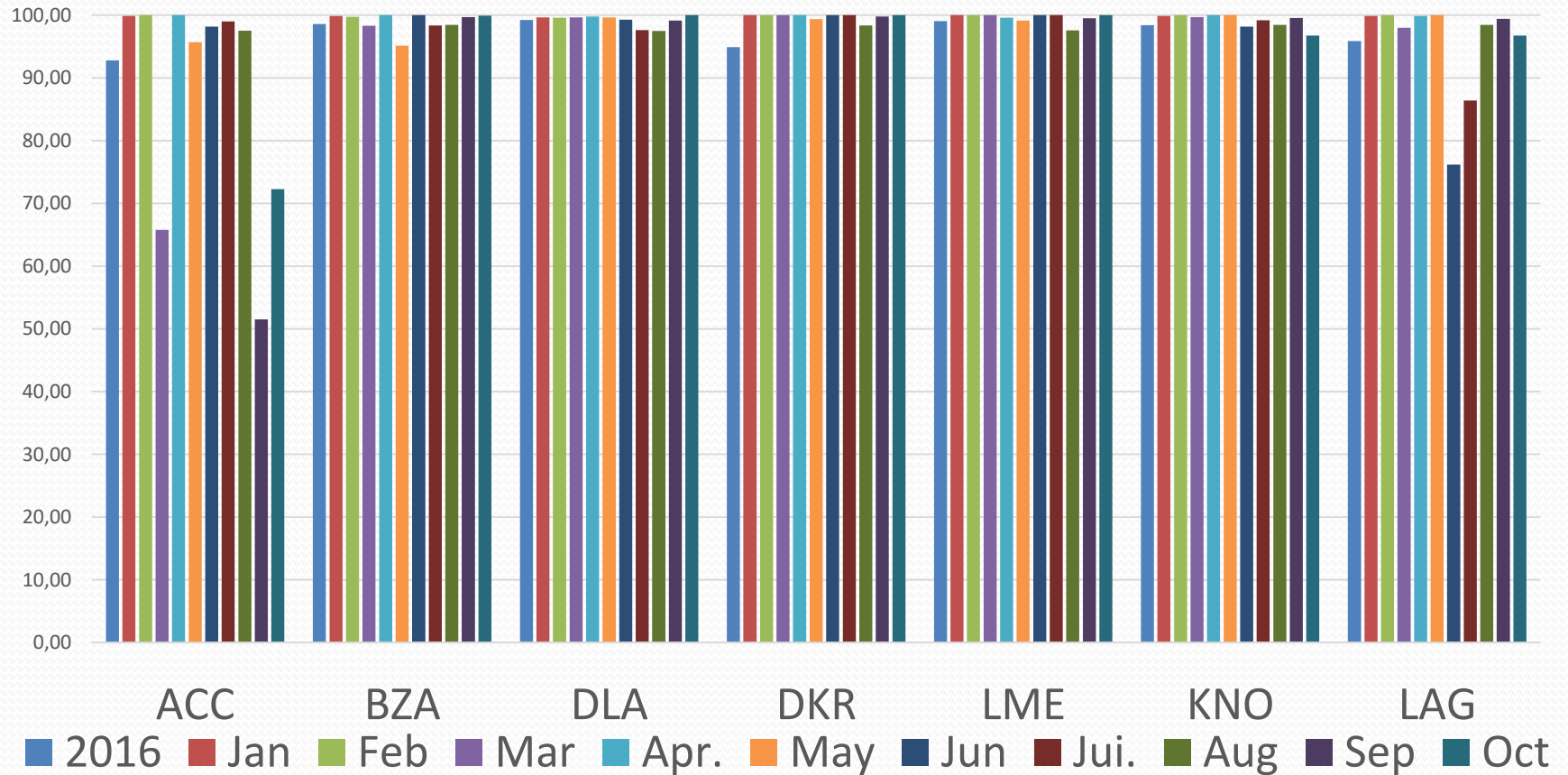


# Ndjamena center

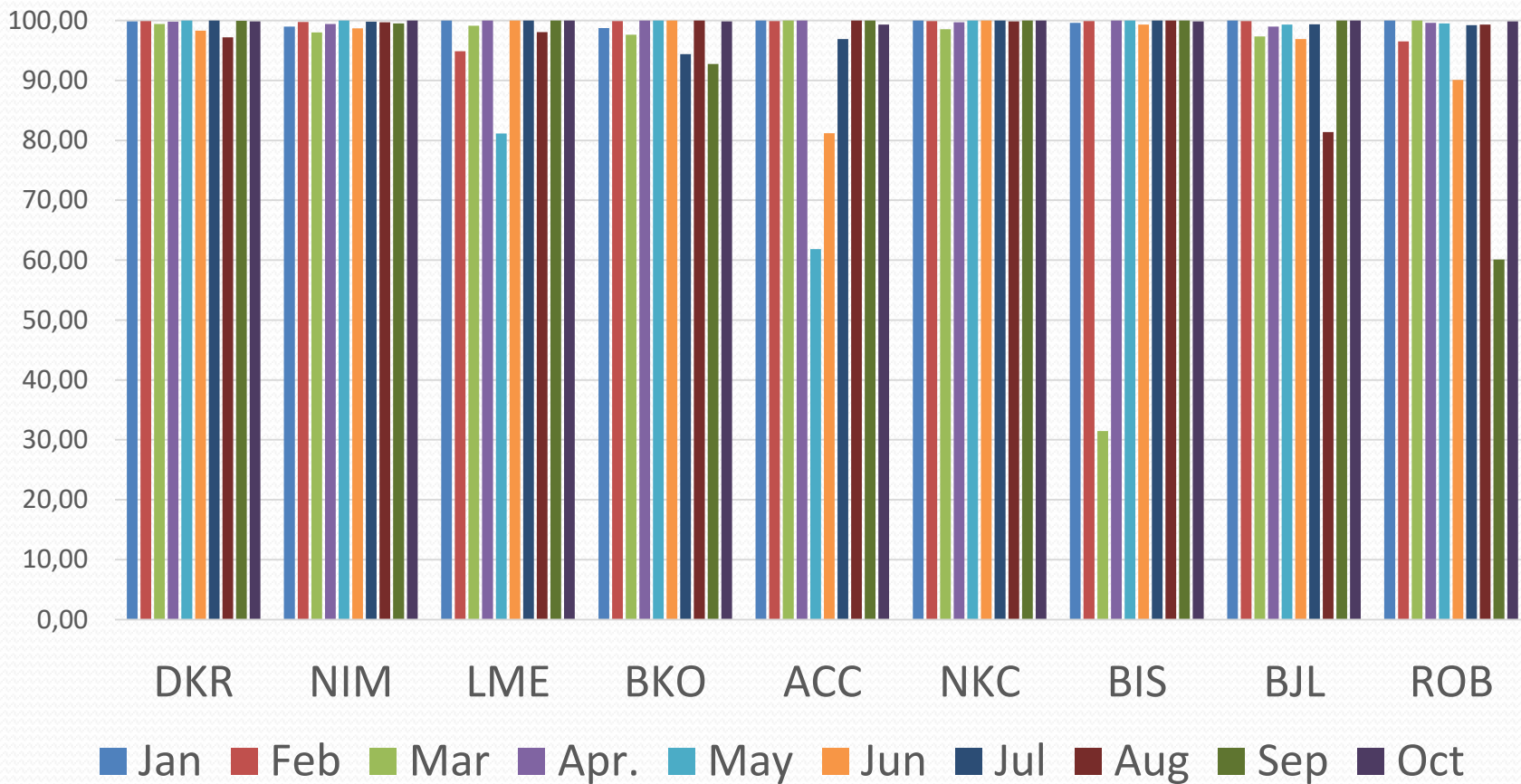




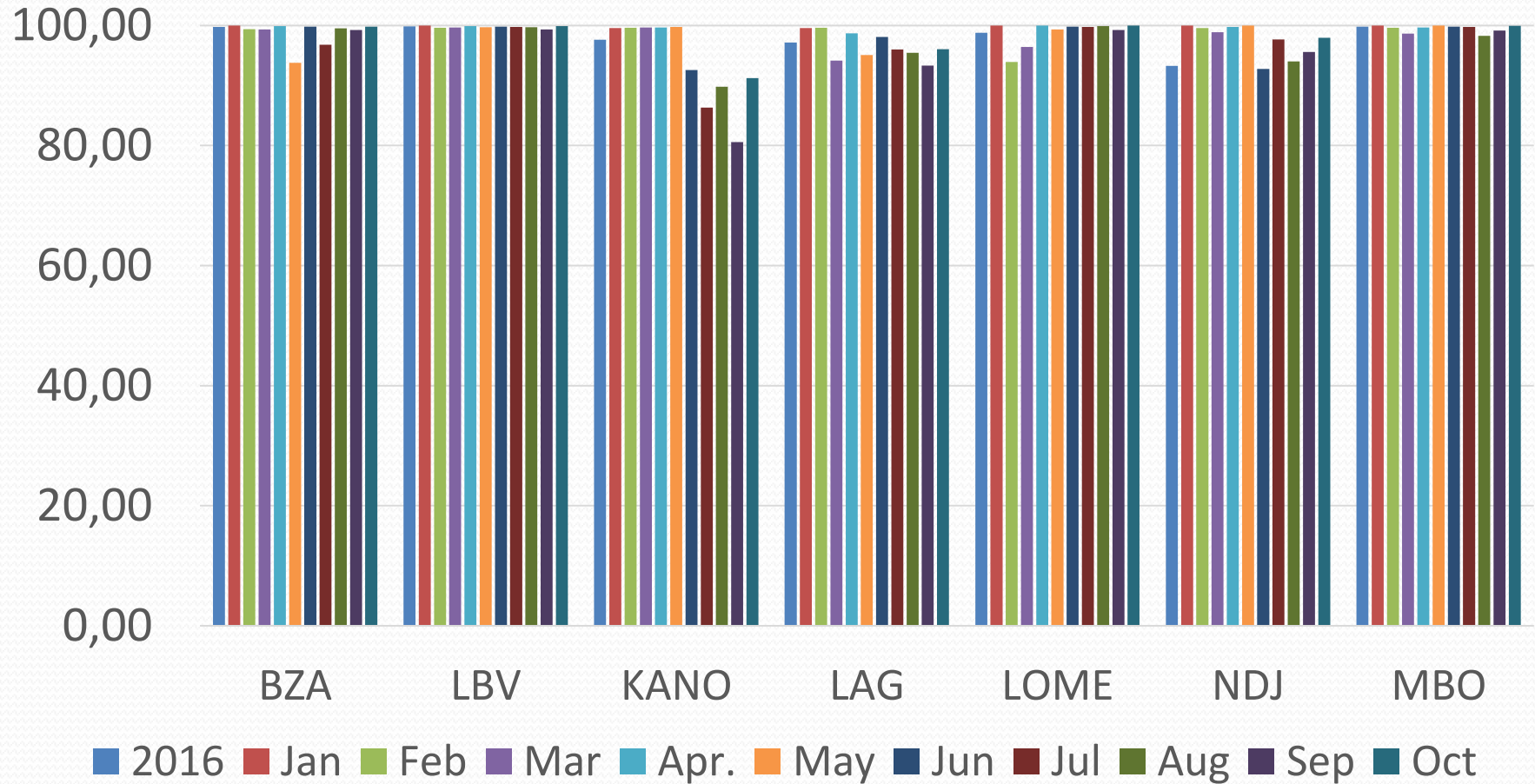
# Libreville center



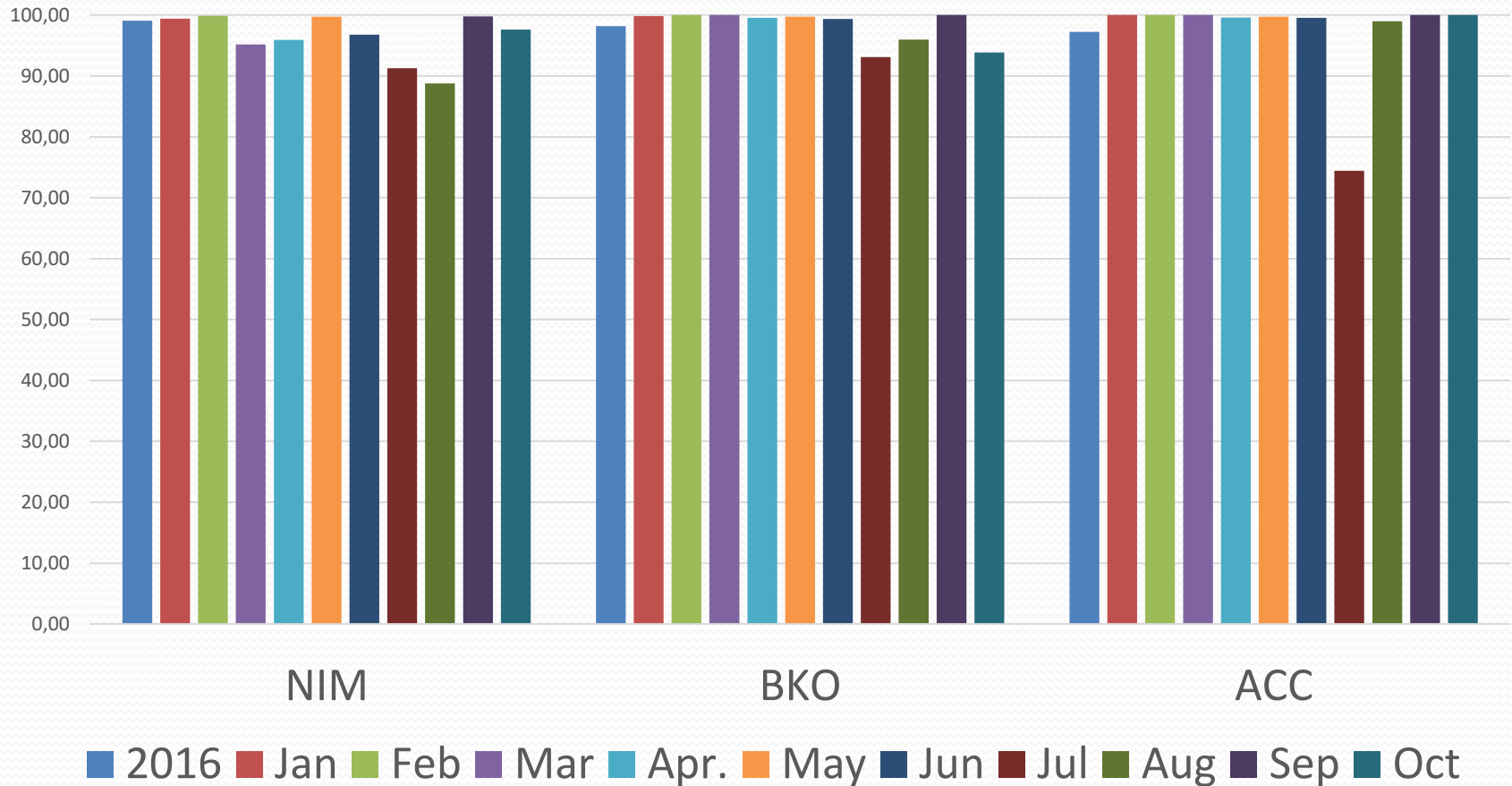
# Abidjan center



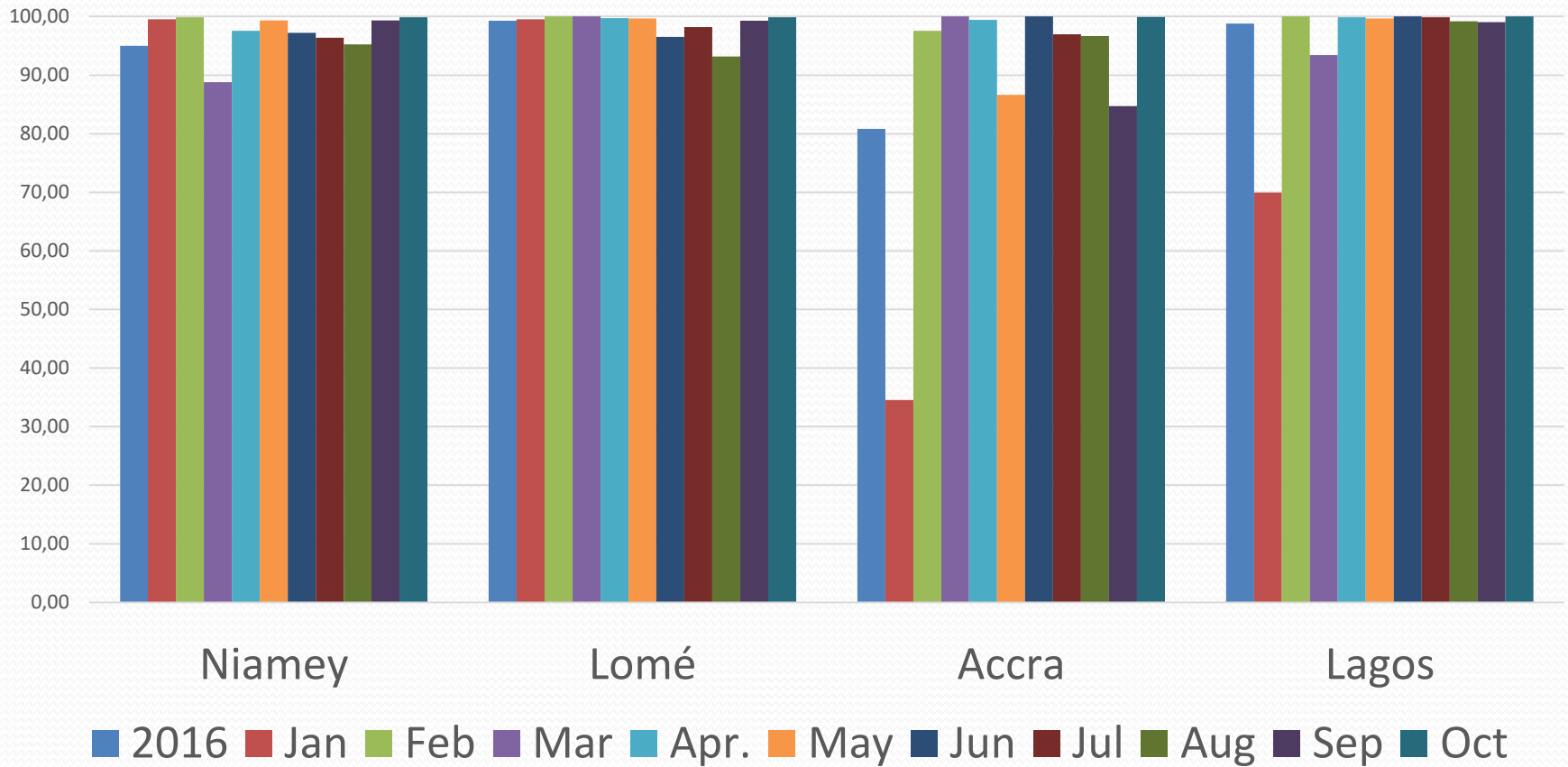
# Douala center



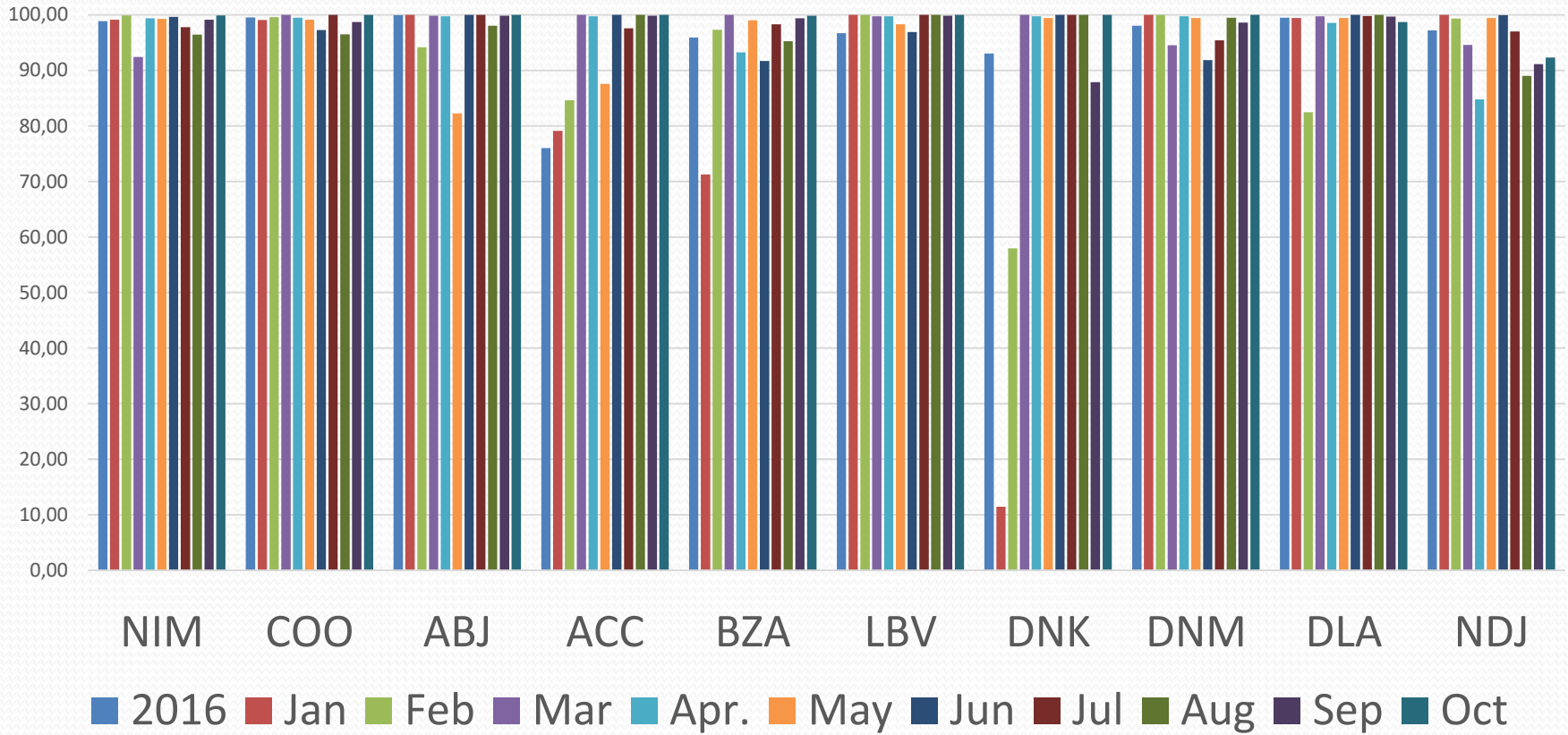
# Ouagadougou center



# Cotonou center



# Lome center



# 3.COMMENTS (1)

- ❑ The Analysis of AFTN circuits availability from January to October 2017 shows a fair good working of the circuits ;
- ❑ However, some concerns are related to:
  - The unavailability of BRZ/KNO circuit due to technical issues in Kano;
  - Some punctual instabilities related to circuits of DLA/KNO, LDA/BZV, ACC/LBV, DKR/ROB, NDJ/BZV circuits due to among others technical problem or AMHS switchover for ASECNA sites;



# 3.COMMENTS(2)

As improvement measures, ASECNA recommend:

Exchange the address and phone number of technical and operational focal point of every center to improve the coordination ;

- ❑ To Improve improve the coordination between centers ;
- ❑ To restore or stabilize circuits still impacted by unavailabilities;
- ❑ Apply the diversion procedure as soon as the connection is unavailable until its recovery to avoid the delayed or the missing operational;
- ❑ Urge SNMC for the implementation of AFISNET re-engineering and modernization

# 5. AMHS implementation in the AFI region

- ❑ The table below provides all correspondents the status of of AMHS in AFI region;
- ❑ Seven (07) ASECNA centers are fully operational with AMHS circuits implemented according to the table 3
- ❑ ASECNA planned to establish the link AMHS circuits with other AFI centers as per table 4 below;

## 5. The status of implementation of AMHS AFI region

<i>Country / Authority</i>	<i>Online since</i>	<i>AFTN / AMHS Gateway</i>	<i>ATS Message User Agent</i>	<i>ATS Service Level</i>	<i>System Supplier</i>
Angola	2012	Yes	Yes	Extended	COMSOFT
Algeria	2004	Yes	Yes	Basic	THALES
Cape Verde	2005	Yes	Yes	Extended	FREQUENTIS
Ethiopia	2010	Yes	Yes	Extended	RADIOCOM + SKYSOFT
Ghana	2012	Yes	Yes	Extended	COMSOFT
Guinea	2012	Yes	Yes	Extended	Intelcan
Kenya	2012	Yes	Yes	Extended	THALES
Liberia	2012	Yes	Yes	Extended	Intelcan
Morocco	2007	Yes	Yes	Extended	COMSOFT
Sudan	2004	Yes	Yes	Basic	THALES
South Africa	2009	Yes	Yes	Extended	THALES
ASECNA members : Mali/ Madagascar/ Mauritania/ Benin/ Togo/ Chad/ Niger/ Burkina Faso	2016	Yes	Yes	Extended	AVITECH

*Table1*

Source Wikipedia

# Implementation of AMHS in ASECNA area

## Registration « AMHS Capabilities » on the AMC site

Location Name	Locations indicators	AMHS Capabilities	Registered the
Cotonou	DXXX	OK	26 July 2016
Lomé	DBBB	OK	26 July 2016
Ouagadougou	DFFF	OK	24 July 2017
Niamey	DRRR	OK	25 July 2017
Antananarivo	FMMM	OK	27 July 2017
Ndjamena	FTTT	OK	24 July 2017
Bamako	GABS	OK	26 July 2017
Nouakchott	GQNO	OK	25 July 2017
Brazzaville	FCCC	OK	26 July 2017
Dakar	GOOO	Planned on Dec 2017	
Abidjan	DIII	2018	
Douala	FKKK	2018	
Libreville	FOOO	2018	
Bangui	FEFF	2018	
Bissau	GGOV	2018	
Moroni	FMCH	2018	
Malabo	FGSL	2018	

*Table2*

# Implementation of AMHS in ASECNA area

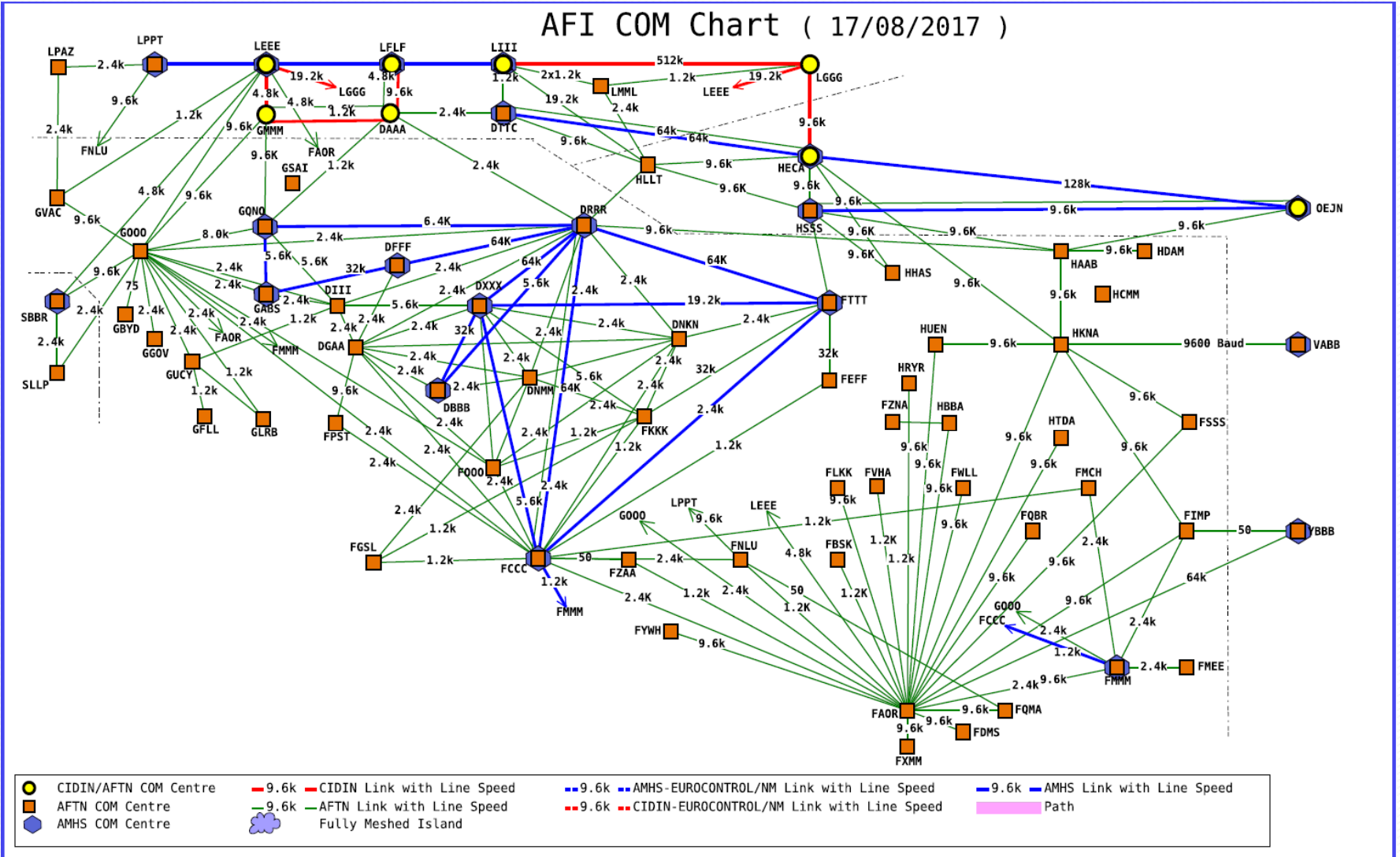
## Registration the news AMHS circuits on the AMC site

Centre 1	Centre 2	Registered the
Lomé (DXXX)	Cotonou (DBBB)	26 July 2016
Lomé (DXXX)	Ndjamena (FTTT)	25 may 2017
Niamey (DRRR)	Cotonou (DBBB)	25 July 2017
Niamey (DRRR)	Lomé (DXXX)	25 July 2017
Niamey (DRRR)	Ndjamena (FTTT)	25 July 2017
Niamey (DRRR)	Nouakchott (GQNO)	25 July 2017
Brazzaville (FCCC)	Lomé (DXXX)	26 July 2017
Niamey (DRRR)	Ouagadougou (DFFF)	25 July 2017
Brazzaville (FCCC)	Ndjamena (FTTT)	26 July 2017
Niamey (DRRR)	Brazzaville (FCCC)	26 July 2017
Ouagadougou (DFFF)	Bamako (GABS)	26 July 2017
Antananarivo (FMMM)	Brazzaville (FCCC)	27 July 2017
Nouakchott (GQNO)	Bamako (GABS)	26 July 2017

*Table3*

# 4. The status of implementation of AMHS circuits in ASECNA area (3)

AFI COM Chart ( 17/08/2017 )



## 7. AMHS circuits to be implemented

Centre 1	Centre 2	Focal point ASECNA Centre
Lomé (DXXX)	Accra (DGAA)	METOWOGO Komi Mawunyo
Niamey (DRRR)	Accra (DGAA)	IRO Mahamane
	Addis Ababa (HAAA)	
	Alger (DAAA)	
Ndjamena (FTTT)	Khartoum (HSSS)	BEMADJIBAYE Alkader
Brazzaville (FCCC)	Khartoum (HSSS)	PANDZOU Giscard
	Nairobi (HKNA)	
	Accra (DGAA)	
	Luanda (FNLU)	
	Johannesburg (FAOR)	
Ouagadougou (DFFF)	Accra (DGAA)	BANDE Aissata
Antananarivo (FMMM)	Johannesburg (FAOR)	ANDRIANIERENANA Nary
Nouakchott (GQNO)	Alger (DAAA)	MOHAMED Fadel
	Casablanca (GMMM)	
Cotonou (DBBB)	Accra (DGAA)	LOYA Koda

*Table 4*



# 6. STEPS TO ESTABLISH AN AMHS LINK BETWEEN TWO COM CENTRES (1)

1. **IP connectivity** between both COM Centres is a necessary pre-requisite for the establishment of an AMHS link between these COM Centres;
2. **TCP port:** MHS standards foresee port 102 as the default TCP port for message exchange via TCP.;
3. **Register External COM Operator to the AMC:** The ATS Messaging Management Centre (AMC) coordinates and provides look-up data for the conversion of AFTN into AMHS addresses on a world-wide base. Therefore it is indispensable that each COM Centre operating AMHS must have access to the AMC in order to download the look-up tables from the AMC;
4. **Final agreement upon PRMD names:** Currently the Nationality Letter of the State is also registered as the PRMD name of this State. If state plans to modify the PRMD names, all AMHS UAs have to be re-configured. Furthermore, the focal point for this state has to inform the AMC by this modification, following the procedure defined in ICAO EUR Doc 021 – ATS Messaging Management Manual. These steps should be performed within 1 AIRAC cycle prior to the start of interoperability tests ;
5. **Insert AMHS Capabilities in the AMC:** For each COM Centre the AMC provides a record with parameters describing the capability of the AMHS component and the AFTN/AMHS gateway. The External COM Operator should insert these parameters into the AMC background data of the COM Centre;
6. **Update planned links in the AMC:** The AMC also provides tables of planned links between COM Centres. It is advised that COM Centres planning to establish an AMHS link share this information with the AFTN/AMHS community by use of these tables;

# 6. STEPS TO ESTABLISH AN AMHS LINK BETWEEN TWO COM CENTRES (2)

7. **TCP/IP infrastructure tests:** ICAO EUR Doc 027 – IP Infrastructure Test Guidelines for EUR AMHS defines test cases which foresee the exchange of pings with various packet sizes. It is highly recommended to perform these tests in order to get a clear picture about the reliability and the performance of the IP infrastructure before conducting AMHS Interoperability Tests;
8. **Configuration of MTAs :** Both communication partners have to agree upon the configuration of their local and the remote MTA. Creating a common bilateral configuration document with all parameters (technical & operational) prior to the start of Interoperability Tests has proven to be a very useful practice;
9. **Verification of permanent MTA connections :** Once the pre-requisites described in the previous paragraphs are fulfilled, the permanent MTA associations should be connected in both directions;
10. **Bilateral AMHS Interoperability Tests :** ICAO EUR Doc 020 – EUR AMHS Manual, Appx. E defines bilateral and trilateral AMHS Interoperability Tests. The results of the Interoperability Tests are presented in a report which has to be agreed upon by both sides;
11. **Adaptation of AFTN and AMHS routing tables for operational use in the 2 COM Centres which are endpoints of the new AMHS link :** When 2 COM Centres start a direct AMHS link, AFTN and AMHS routing tables have to be adapted so that each other's AFTN Nationality Letters are routed to the MTCU in the AFTN routing table and each other's Global Domain Identifiers (PRMD names) are routed to the adjacent MTA in the AMHS routing table;
12. **Adaptation of AFTN and AMHS routing tables in other COM Centres :** The availability of a new AMHS link between 2 COM Centres may also provide chances to improve the routing to other COM Centres, in particular to those external COM Centres which at that time already operate an AMHS link with an other COM centre;

# 8. STEPS TO ESTABLISH AN AMHS LINK BETWEEN TWO COM CENTRES (3)

13. **Operational procedures for diversions:** The migration of an AFTN link to an AMHS link or the establishment of a new AMHS link also affects the alternate routing to be applied in case of a failure of a COM Centre or the AFTN or AMHS links to a COM Centre. Instead of only diversions of an AFTN circuit to another AFTN circuit, now the diversion of an AMHS circuit to another AMHS circuit, of an AMHS circuit to an AFTN circuit or of an AFTN circuit to an AMHS circuit may become necessary.;
14. **Provide updated routing tables in CSV format to the AFI focal point of the AMC :** These tables are provided in CSV files the structure of which is defined in ICAO EUR Doc 021 – ATS Messaging Management Manual, Appendix D;
15. **Preoperational Tests :** ICAO EUR Doc 020 – EUR AMHS Manual, Appx. F defines pre-operational AMHS tests;
16. **Start of AMHS operation:** Typically, successful performance of pre-operational tests are followed by an immediate and seamless cutover to AMHS operation;
17. **Inform AMC Operator about operational status of the COM Centre:** When the international AMHS link of a COM Centre is put into operation, the operational status of the COM Centre has to be set to OP. Only the AMC Operator can edit the operational status; therefore the External COM Operator has to inform and ask the AMC Operator for modification by email;
18. **Update existing links in the AMC :** The External COM Operators of both endpoint COM Centres are advised to enter the data of the new AMHS link into the connections tab of the network inventory. Normally, the data already entered as a planned connection (cf. 6) have now to be entered as an existing connection.

# 4.CONCLUSION

The meeting is invited to:

- ❑ note the above information provided in this WP;
- ❑ continue and improve co-operation between COM Centers in technical and operational domain to restore circuits and to switch some AFTN circuits to AMHS;
- ❑ Encourage all SNMC COM centers to exchange on a regular basis(daily), the information on their circuit status and make a common analysis;
- ❑ Encourage States/Organization to implemented AMHS the connections listed in the table 4;

# THANK YOU !!!!!

