INTERNATIONAL CIVIL AVIATION ORGANIZATION WESTERN AND CENTRAL AFRICA OFFICE

Second Meeting of the Central Atlantic FIR Satellite Network (CAFSAT) Management Committee (CNMC/2)

(Dakar, Senegal, 06-08 November 2012)

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Agenda Item 2: **Review of operational and technical statistics of availability for supported links**

(Presented by the secretariat)

SUMMARY
The purpose of this paper is to review the performances of CAFSAT earth stations as well as the operational performance in term of Aeronautical fixed service availability rate.
Action by the meeting is at paragraph 3.
References :   Report on SAT 16 &17 meetings.   *Note: References can be downloaded from* ***www.icao.int/wacaf***.
Related ICAO Strategic Objective A.

1.   Introduction

The first CNMC meeting noted that the CAFSAT network involves various technical components which contribute to the Quality of the Aeronautical Fixed Service provision. The secretariat reminded the meeting that, due to the wide variety of network architectures, type of access used by VSAT industries worldwide, ICAO has not standardized the physical layer of communication.

2.   Discussion

2.1   The meeting was provided with Guidelines on Performance of Very Small Aperture Terminal (VSAT) networks aiming at supporting States/Organization for the implementation and the operation of VSAT Networks developed by ICAO. The metrics for VSAT monitoring derived from guidance material concerning the reliability and availability of radio communication and radio navigation aids (Attachment F of Annex X Vol. 1) was considered by CNMC/1 as well as two templates developed by other aeronautical satellite network committee (SNMC) aiming to conducting a survey of the performance of the network nodes.

2.2   CNMC/1 decided to develop a Performance Data Collection Form (**PDCF**) aiming to facilitating the automation of the survey of CAFSAT network Earth Stations basics parameters and nominated ASECNA and Ghana, already tasked by SNMC to conduct similar development. Meanwhile, it was agreed to use the proposed templates for the collection of CAFSAT nodes parameters for a quarterly report to the secretariat.

2.3   Since then, the evaluation of the operation of CAFSAT Network was undertaken by some members through the model described by the PDCF. Other members continue to submit their data under the old format.

The secretariat received statics figures from ASECNA, Brazil, Morocco and Portugal and a summary of these figures is presented in Appendix to this paper.

Analyzing these figures it can be agreed on a good rate of availability of the AFS links supported by CAFSAT.

However it has been noted dysfunctions on some of the links that cause the decrease of the availability in particular;

- **ATS/DS**

Dakar/SAL on 2012:

April	May	June	July
91.85%	**91.85%**	**56.66%**	**77.42%**

- **AFTN**

Dakar/Atlántico on July 2011 (**96%**), **Nouakchott/Casablanca** on September 2011 **(63%)** and **Dakar/ Las Palmas** (**91, 57%**) on August 2012,

2.4 Based on this it will be advisable to undertake a study for the automation of the collection of these figures for easier monitoring and analysis.

3. Action by the meeting:

The meeting is invited to:

a) Take note of the above information

b) Encourage CNMC members to continue using the PDCF model to collect CAFSAT nodes and services parameters and monthly forward them to CNMC current team leader with copy to CNMC Secretariat.

c) Participate in a study for the automation of the collection of CAFSAT statistics figures for easier monitoring and analysis exercises.

Appendix A: Availability of the sub network around Dakar Center

A.1 Availability of ATS/DS

Year 2011/2012 Availability of ATS/DS circuits on Dakar COM Center

Centres	Year 2011												Year 2012							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
LAS	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
SAL	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	**91.85**	**91.85**	**56.66**	**77.42**	100
ATL/Rio	100	100	100	100	100	100	100	100	100	100	100	100	100	99.44	100	100	100	100	100	100

Year 2011/2012 Availability of ATS/DS circuits on Nouakchott COM Center

Centres	Year 2011												Year 2012							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
LAS	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	98	100	100
SAL	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
ATL/Rio																				

A.2 Availability of AFTN

Years 2011/2012 Availability of AFTN circuits on Dakar COM Center

	Centres	Year 2011												Year 2012							
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
		AFTN																			
DAKAR	SAL	100	100	99.9	100	100	100	100	100	98.7	100	97.5	100	99.81	99.87	99.74	100	100	99.63	100	98.93
	RIO	99.3	99.7	99.1	100	99.53	99.5	**96**	98.96	98.95	99.9	97.6	100	99.91	100	99.92	99.07	99.3	99.78	99.87	99.40
	LAS	100	100	100	100	99.36	100	100	100	98.78	99.9	99.1	100	99.91	100	99.89	100	100	99.77	100	**91.57**
	JOB	100	100	86.6	100	100	100	100	100	99.66	100	100	100	99.91	100	100	100	100	99.94	100	100
	CAS	100	100	99.9	100	99	99.9	100	99.51	99.64	100	100	100	99.91	100	100	100	100	99.94	100	98.88

Years 2011/2012 Availability of AFTN circuits on Nouakchott COM Center

		Year 2011												Year 2012							
	Centres	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
		AFTN																			
NKC	CAS	100	100	100	99.1	100	100	100	100	**63.00**	99	97.5	100	99.81	99.87	99.74	99.91	100	99.86	100	100
	LAS	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

4

Appendix B
CAFSAT Collection of the Performance Statistic Data

Performance of AFTN

Centre: Lisbon (Coordinates: 38º 46' 29.14'' N / 09º 07' 28.77'' W, under WGS 84 format)

Date: 16/04/2012

Country	Terminal I	Terminal II	Support	Com Prot.	Speed	Transit time	Routing	Monthly Availability 2011														½ Annual Average Availability	
								07		08		09		10		11		12		1			
Portugal	Lisbon	Santa Maria	CAFSAT	Assy. V.24	2.4 Kbps		Direct	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx		
								100 %	100 %	100 %	100 %	98.84 %	98.84 %	99.94 %	99.94 %	99.8 7%	99.87 %	99.86%	99.8 6%	99.75%	99.75 %		
								07		08		09		10		11		12					
								Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx		

Quality Performance of ATS/DS

Centre: Lisbon

Date: 16/04/2012

Country	Terminal I	Terminal II	Support	Connection Time	Nb.. of Attempts	One Way Latency Time	Call set up time	Voice Quality (1 to 5)	Monthly Availability 2011						½ Annual Average Availability
Portugal	Lisbon	Santa Maria 1	CAFSAT					4	07	08	09	10	11	12	99.75%
									100%	100%	98.84%	99.94%	99.87%	99.86%	
		Santa Maria 2						4	07	08	09	10	11	12	99.75%
									100%	94.45%	98.84%	99.94%	99.87%	99.86%	
		Casablanca AMS (Foia)						4	07	08	09	10	11	12	99.96%
									100%	99.99%	100%	99.92%	99.97%	100%	
									07	08	09	10	11	12	

CNS Services OLDI and Radar Data

Centre: Lisbon

Date: 16/04/2012

Country	Terminal I	Terminal II	Support	Provided Service	COM Protocol	Speed	Transit Time	Routing	Monthly Availability 2011	½ Annual Average Availability

Country	Terminal I	Terminal II	Support		Com Prot.	Speed		Routing							½ Annual Average Availability
Portugal	Lisbon	Casablanca		OLDI	X.25	9.6 Kbps		Direct	07	08	09	10	11	12	99.96%
									100%	99.99%%	100%	99.92%	99.97%	100%	
		Casablanca		Radar Fóia	HDLC	9.6 Kbps		Direct	07	08	09	10	11	12	99.96%
									100%	99.99%%	100%	99.92%	99.97%	100%	
		Casablanca	CAFSAT	Radar Porto Santo	HDLC	9.6 Kbps		Direct	07	08	09	10	11	12	99.96%
									100%	99.99%%	100%	99.92%	99.97%	100%	
									07	08	09	10	11	12	

CAFSAT Collection of the Performance Statistic Data

Performance of AFTN

Centre: Lisbon (Coordinates: 38º 46' 29.14'' N / 09º 07' 28.77 W, under WSG 84 format))

Date: 16/04/2012

Country	Terminal I	Terminal II	Support	Com Prot.	Speed	Transit time	Routing	Monthly Availability 2012													½ Annual Average Availability	
Portugal	Lisbon	Santa Maria	CAFSAT	Assy. V.24	2.4 Kbps		Direct	01		02		03		04		05		06		1		
								Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	
								100%	100%	94.45%	94.45%	99.97%	99.97%									
								01		02		03		04		05		06				
								Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	

Quality Performance of ATS/DS

Centre: Lisbon

Date: 16/04/2012

Country	Terminal I	Terminal II	Support	Connection Time	Nb.. of Attempts	One Way Latency Time	Call set up time	Voice Quality (1 to 5)	Monthly Availability 2012						½ Annual Average Availability
Portugal	Lisbon	Santa Maria 1	CAFSAT					4	01	02	03	04	05	06	
									100%	94.45&	99.97%				
		Santa Maria 2						4	01	02	03	04	05	06	
									100%	94.45%	99.97%				
		Casablanca AMS (Foia)						4	01	02	03	04	05	06	
									100%	94.41%	99.97%				
									01	02	03	04	05	06	

6

CNS Services OLDI and Radar Data

Centre: Lisbon

Date: 16/04/2012

Country	Terminal I	Terminal II	Support	Provided Service	COM Protocol	Speed	Transit Time	Routing	Monthly Availability 2012						½ Annual Average Availability
Portugal	Lisbon	Casablanca	CAFSAT	OLDI	X.25	9.6 Kbps		Direct	01	02	03	04	05	06	
									100%	94.41%	99.97%				
		Casablanca		Radar Fóia	HDLC	9.6 Kbps		Direct	01	02	03	04	05	06	
									100%	94.41%	99.97%				
		Casablanca		Radar Porto Santo	HDLC	9.6 Kbps		Direct	01	02	03	04	05	06	
									100%	94.41%	99.97%				
									01	02	03	04	05	06	

CAFSAT Collection of the Performance Statistic Data

Performance of AFTN

Centre: Santa Maria (Coordinates: 36º 58' 22.45'' N / 25º 09' 55.01'' W, under WGS 84 format)

Date: 16/04/2012

Country	Terminal I	Terminal II	Support	Com Prot.	Speed	Transit time	Routing	Monthly Availability 2011													½ Annual Average Availability	
								07		08		09		10		11		12		1		
								Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	
Portugal	Santa Maria	Lisbon	CAFSAT	Assyn V24	2.4Kbps		Direct	100%	100%	100%	100%	98.84%	99.84%	99.94%	99.94%	99.97%	99.97%	99.96%	99.96%	99.75%	99.75%	
		Sal		Assyn V24	2.4Kbps		Direct	07		08		09		10		11		12				
								Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	
								100%	100%	100%	100%	97.12%	100%	100%	100%	99.84%	100%	100%	100%	99.49%	100%	

Quality Performance of ATS/DS

Centre: Santa Maria

Date: 16/04/2012

Country	Terminal I	Terminal II	Support	Connetion Time	Nb of Attemps	One Way Latency Time	Call set up time	Voice Quality (1 to 5)	Monthly Availability 2011						½ Annual Average Availability
Portugal	Santa Maria	Canary	CAFSAT						07	08	09	10	11	12	99.37%
								4	100%	100%	96.59%	99.78%	99.84%	100%	
		Sal							07	08	09	10	11	12	99.49%
								4	100%	100%	97.12%	100%	99.84%	100%	
		Lisbon 1							07	08	09	10	11	12	99.75%
								4	100%	100%	98.84%	99.94%	99.97%	99.96%	
		Lisbon 2							07	08	09	10	11	12	99.95%
								4	100%	100%	98.84%	99.94%	99.97%	99.96&	

CNS Services OLDI and Radar Data

Centre: Santa Maria

Date: 16/04/2012

Country	Terminal I	Terminal II	Support	Provided Service	COM Protocol	Speed	Transit time	Routing	Monthly Availability 2011						½ Annual Average Availability
Portugal	Santa Maria	Canary	CAFSAT	OLDI	X.25	2.4 Kbps		Direct	07	08	09	10	11	12	99.37%
									100%	100%	96.59%	99.78%	99.84%	100%	
		Sal		OLDI	X.25	1.2 Kbps		Direct	07	08	09	10	11	12	99.49%
									100%	100%	97.12%	100%	99.84%	100%	
									07	08	09	10	11	12	
									07	08	09	10	11	12	

Performance of AFTN

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Date: 16/04/2012

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								01		02		03		04		05		06		1		
								Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx
Portugal	Santa Maria	Lisbon	CAFSAT	Assy V24	2.4Kbps		Direct	100%	100%	94.45%	94.45%	99.97%	99.97%								
		Sal		Assy. V24	2.4Kbps		Direct	01		02		03		04		05		06			
								Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx
								100%	100%	100%	99.78%	100%	100%								

Quality Performance of ATS/DS

Centre: Santa Maria

Date: 16/04/2012

Country	Terminal I	Terminal II	Support	Connetion Time	Nb of Attemps	One Way Latency Time	Call set up time	Voice Quality (1 to 5)	Monthly Availability 2012						½ Annual Average Availability
Portugal	Santa Maria	Canary	CAFSAT					4	01	02	03	04	05	06	
									100%	99.85%	99.97%				
		Sal						4	01	02	03	04	05	06	
									100%	99.97%%	100%				
		Lisbon 1						4	01	02	03	04	05	06	
									100%	94.45%	99.97%				
		Lisbon 2						4	01	02	03	04	05	06	
									100%	94.45%	99.97%				

CNS Services OLDI and Radar Data

Centre: Santa Maria

Date: 16/04/2012

Country	Terminal I	Terminal II	Support	Provided Service	COM Protocol	Speed	Transit time	Routing	Monthly Availability 2012						½ Annual Average Availability
Portugal	Santa Maria	Canary	CAFSAT	OLDI	X.25	2.4 Kbps		Direct	01	02	03	04	05	06	
									100%	99.85%	99.97%				
		Sal		OLDI	X.25	1.2 Kbps		Direct	01	02	03	04	05	06	
									100%	99.97%	100%				
									01	02	03	04	05	06	
									01	02	03	04	05	06	

9