INTERNATIONAL CIVIL AVIATION ORGANIZATION

TWELFTH MEETING ON THE IMPROVEMENT OF THE AIR TRAFFIC SERVICES IN THE SOUTH ATLANTIC

(Sal, Cape Verde, 15 – 17 December 2004)

Agenda Item 4: Communications

- VSAT networks: developments, consolidation, interoperability requirements

AFISNET MIGRATION ON IS 10-02; THE START OF A SEAMLESS NETWORK BEYONG AFI REGION

(Presented by ASECNA)

SUMMARY

The objective of the Working Paper aims to highlight the benefits gained and expected in the short, medium and long- terms, due to the AFISNET migration on INTELSAT satellite IS 10-02.

It also addresses some key points contributing to the improvement of quality of service rendered to our users and dealing with the close migration of CAFSAT on IS 10-02.

I -INTRODUCTION

In accordance with Conclusion SAT/11 TF/17 (Phased approach to the consolidation of aeronautical VSAT network) and Conclusion RPM IS10-02-1 (Phased approach to migration) of the Regional planning meeting on the integration of sub-regional aeronautical VSAT network(Johannesburg, South Africa, 31 March – 01 April2004);

AFISNET only should migrate to INTELSAT
IS 10-02@359°East in the first phase.
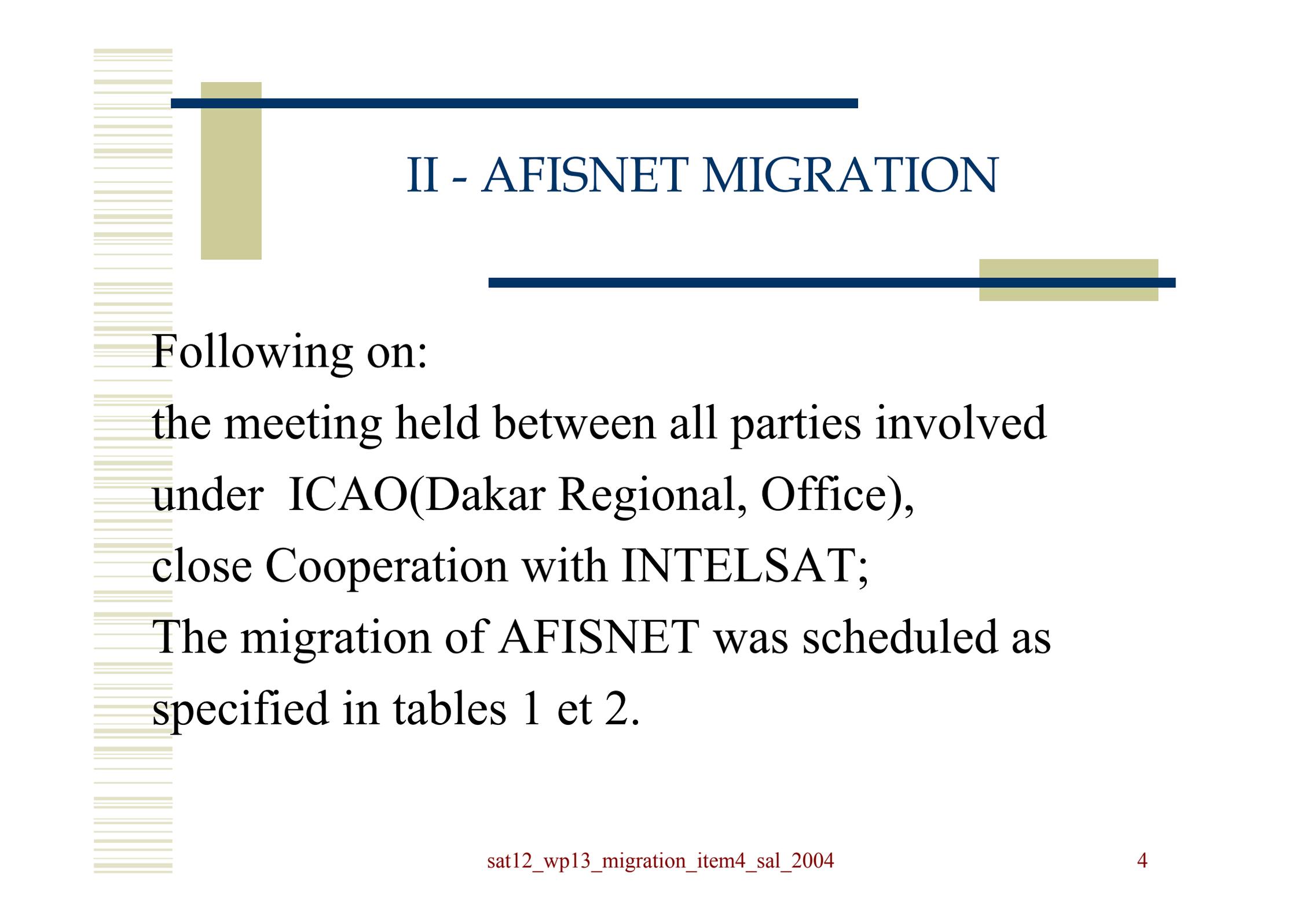
II - AFISNET MIGRATION

Following on:

the meeting held between all parties involved

under ICAO(Dakar Regional, Office),

close Cooperation with INTELSAT;

The migration of AFISNET was scheduled as

specified in tables 1 et 2.

TABLE 1: AFISNET migration in Indian Ocean

FIR	AERONAUTICAL SERVICES			SITES INVOLVED
	FIXED	MOBILE	DATE	
ANTANANARIVO	X	X	12 October 2004	Antananarivo, Antsiranana, Brazzaville, Dakar, Majunga, Moroni, Dzaoudzi, St-Denis, Toamasina, Tulear
JOHANNESBURG	X	X	12 October 2004	Johannesburg
MAURICE	X	X	12 October 2004	Plaisance, Brandon, Agalega, Rodrigues

TABLE 2: AFISNET migration in continental area

FIR	FIXED SERVICES	MOBILE SERVICES
ACCRA	23 NOVEMBER 2004	23 NOVEMBER 2004
BRAZZAVILLE	23 NOVEMBER 2004	11 NOVEMBER 2004
DAKAR	23 NOVEMBER 2004	25 NOVEMBER 2004
KANO	23 NOVEMBER 2004	23 NOVEMBER 2004
NIAMEY	23 NOVEMBER 2004	06 DECEMBER 2004
ROBERTS	23 NOVEMBER 2004	23 NOVEMBER 2004

All services are now consolidated on IS 10-02.
It should be interesting to address the benefits gained.

III-RESULTS EXPECTED

The results derived from AFISNET migration on the INTELSAT satellite IS 10-02 will be reviewed in the short term, the middle term and the long- term.

1. **In the short term:**

❑ Creation of a seamless network beyond AFI Region;

❑ Return on experience(ROE);
    preparedness of earth stations
    inter/intra Coordination matters

contingency plan
alternate means(fixed and mobile services)
publication of aeronautical information
NOTAM
post-migration tasks
- Saving of VSAT for the sites that use more than one satellite;
- Flexibility for the implementation of new services faster deployment sites connection without adding antennas

2. In the middle term
❑ Resolution of existing shortcomings and

deficiencies in AFS circuits between AFISNET sites;
❑ Elimination of network boundaries;
❑ Improvement in AFTN routing directory capabilities;
❑ Portability of proven applications, according to figure 1.
3. In the long-term
❑ Aeronautical database exchange
❑ Implementation of an aeronautical Intranet

Figure 1

INTELSAT

INMARSAT

GPS

GPS signals ....
RIMS data to/from CPF ━ ∙ ━ ∙ ━
EGNOS navigation message (integrity and corrections) ───────

AFISNET

Lomé
RIMS

N'Djamena
RIMS

Douala
RIMS

Brazzaville
RIMS

ASECNA AREA

VSAT ASECNA

TOULOUSE

Ranging + GES
CPU

Thales Router

ESTB Wide area network

HONEFOSS (NORVEGE)

ESTB CPF
CPU

Thales Router Honefoss
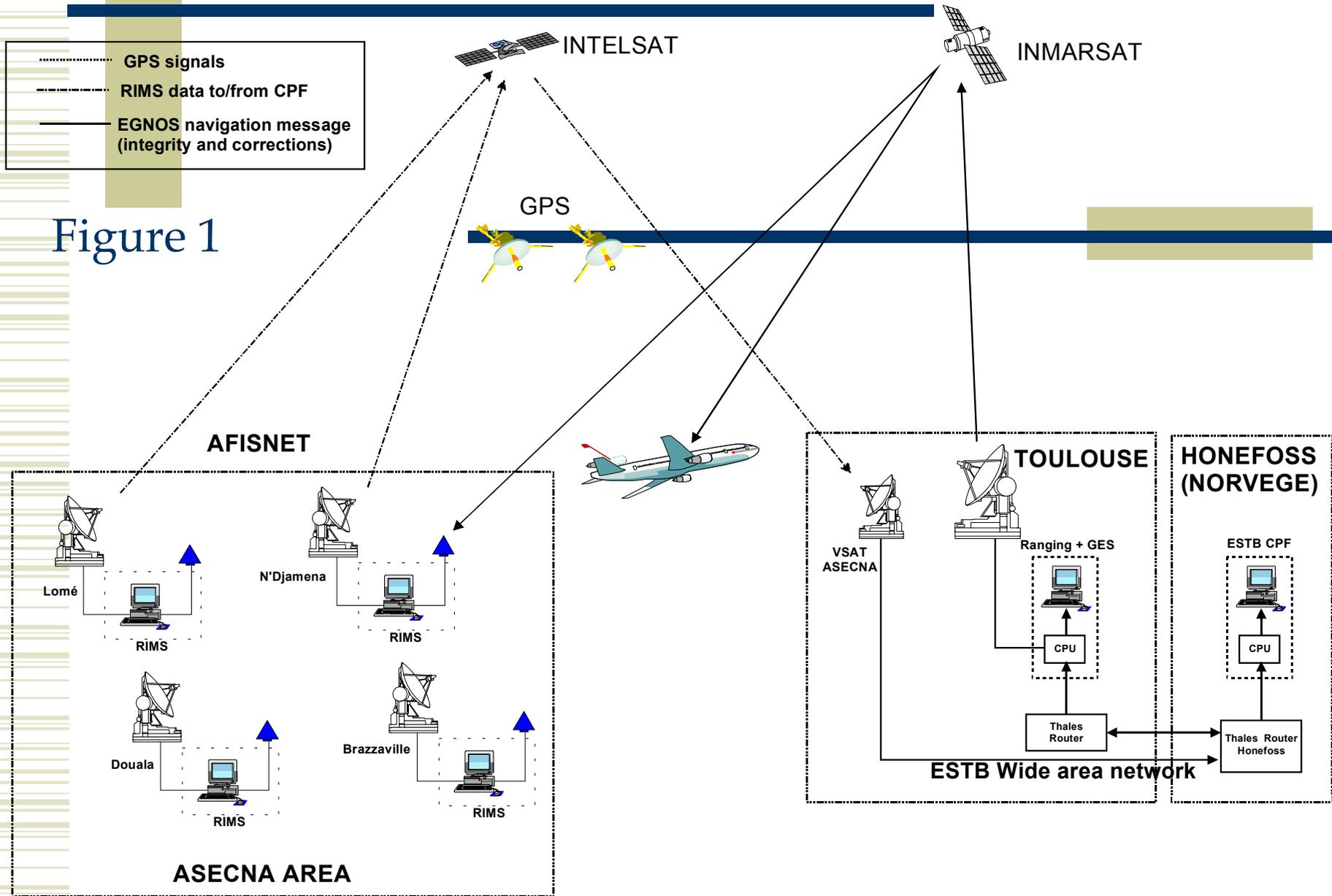
❑ Implementation of global addressing scheme in ATN environment;

❑ Implementation of common   telecommunications protocols allowing to route and to relay the messages in a transparent way;

❑ Implementation of common mechanisms allowing to ensure the reliability, integrity and security of the end to end communications.

As indicated in Conclusion SAT/11 TF/17, the close migration of CAFSAT network from IS 801@328.5°East to IS 10-02@359°East, will contribute in conjunction with AFISNET to set up a seamless aeronautical VSAT network expanding in AFI, EUR and SAM Regions.

IV- CAFSAT NETWORK MIGRATION

CAFSAT (Central Atlantic FIRs VSAT) network, is currently composed of Atlantico, Casablanca, Dakar, Johannesburg, Lisbon, Sal, Santa Maria and the Canaries FIRs, as specified in table 3.

Table 3: FIRs of CAFSAT network

FIR	AFI REGION	EUR/NAT REGION	SAM REGION
CASABLANCA	X		
DAKAR	X		
JOHANNESBURG	X		
LAS PALMAS(THE CANARIES)	X		
LISBON		X	
RECIFE(ATLANTICO)			X
SAL	X		
SANTA MARIA		X	

Globally, its migration on INTELSAT satellite IS 10-02, will be reviewed around

the following points.

❑ Preparedness of CAFSAT network earth station

  antennas re-pointing

  change of polarisation

  change of frequency plan

❑ Arrangements with INTELSAT

❑Coordination matters dealing with the migration process
    organisation to be set up
    focal points of contact to be provided
    coordination procedures to be used before, during and after the migration process

❑Contingency plan aspects

Anyway, the creation of a study group responsible for defining in detail the migration process and the holding of meetings on the matter under ICAO aegis, are essential.

Table 3: FIRs of CAFSAT network

| FIR	AFI REGION	EUR REGION	SAM REGION
CASABLANCA	X		
DAKAR	X		
JOHANNESBURG	X		
LAS PALMAS(CANARIAS)	X		
LISBON		X	
RECIFE(ATLANTICO)			X
SAL	X		
SANTA MARIA		X	

V- RESULTS EXPECTED

The migration of CAFSAT network on IS 10-02 ,
will allow notably and   in conjunction with
AFISNET to:

- consolidate the extension of a seamless aeronautical VSAT network in AFI, EUR and SAM Regions ;

- implement in a cooperative/proactive way, the entry/exit AFI/SAM points: Dakar and Johannesburg.

N.B : **Luanda(for ATS/DS) case will be envisaged in a later stage.**

Johannesburg and Dakar as AFISNET members,
have already an earth station on IS 10-02.
The integration of CAFSAT network on IS 10-02,
is an asset essential to solve the problem of AFI/SAM

interface points(AFTN and ATS/DS) by a balanced
interconnection between the new seamless
aeronautical VSAT network and REDDIG
network(until the decision of SAM Region dealing
with the migration of REDDIG network on IS 10-02),
through a framework to be defined.
The solution is illustrated in figure 2.

PAS-1R

Intelsat 10-02
@ 359° E

DAKAR

STATION ON IS 10-02

JOHANNESBURG

REDDIG STATIONS

FIGURE 2
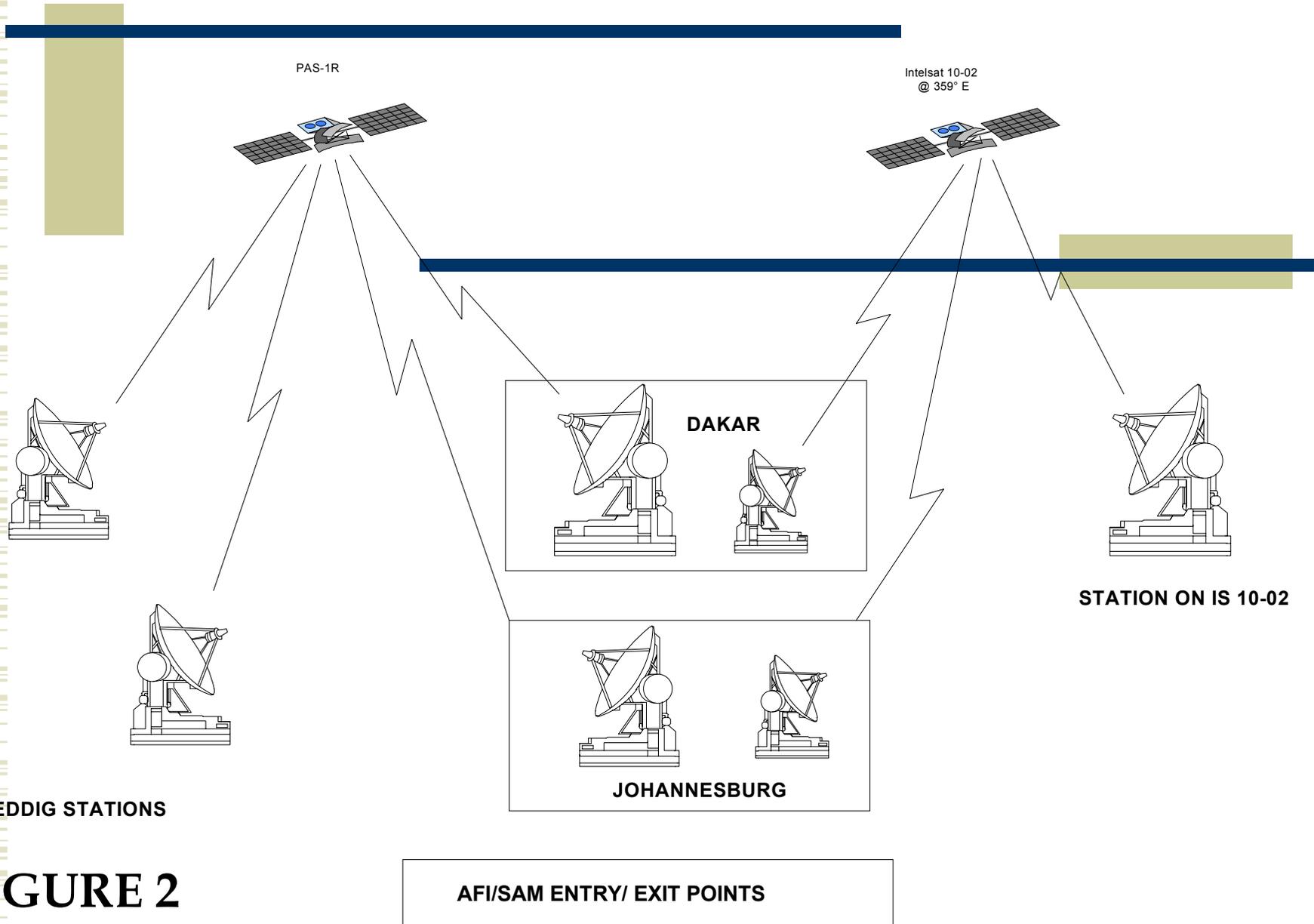
AFI/SAM ENTRY/ EXIT POINTS

VI - CONCLUSION

The meeting is invited to :

- take note of information provided above ;

- comment and take note of the implementation of the proposal of existing AFI/SAM entry/exit points;

- define the transition plan and timescales of the CAFSAT migration on IS 10-02;

- establish a study group in order to review the tasks required for a seamless CAFSAT network migration on IS 10-02.