



INTERNATIONAL CIVIL AVIATION ORGANIZATION

**AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP
EIGHTEENTH MEETING (APIRG/18)
Kampala, Uganda (27 – 30 March 2012)**

Agenda Item 3.7: Other Air Navigation matters

**ACTIVITIES OF THE SAT INFORMAL GROUP FOR THE IMPROVEMENT OF AIR
TRAFFIC SERVICES OVER THE SOUTH ATLANTIC**

(Presented by Secretariat)

SUMMARY
This paper presents the outcome of the Sixteenth Informal Coordination Meeting on the Improvement of Air Traffic Services over the South Atlantic for review by APIRG
REFERENCE(S): [1] – SAT/FIT/6 Report [2] – SAT/16 Report.
Related ICAO Strategic Objective(s):A, C

1. INTRODUCTION

1.1 The report of the fifteenth Informal Coordination Meeting on the improvement of air traffic services over the South Atlantic (SAT/15) which was held in Lisbon, Portugal from 19 to 21 May 2010, was presented to APIRG/17 meeting.

1.2 Since then, the SAT Group held its sixteenth (SAT/16) meeting in Recife, Brazil from 04 to 06 May 2011. The meeting was preceded as usual by the meeting of the SAT FANS 1/A Interoperability Team (SAT/FIT/6) held at the same venue on the 3rd May 2011.

1.3 This paper presents a summary of the discussions during the SAT/16 meeting and further activities planned by the SAT Group. **Appendix A** hereto contains the SAT/16 conclusions and decisions and **Appendix B** shows the conclusions and decisions of the SAT/FIT/6 meeting as endorsed by the SAT16 meeting.

2. DISCUSSION

Air Traffic Management

2.1 Follow up of the AORRA airspace implementation

2.1.1 The meeting was apprised of the implementation of AORRA Phases 3 and 4 on the airac date of 26 August 2010, thus completing the establishment of the entire AORRA airspace as initially designed. Likewise, as required by former SAT meetings, all States and ANSPs concerned have suspended all fixed routes within the AORRA and created transition routes to/from AORRA.

2.1.2 However, the attention of the meeting was drawn to the difficulties that the reactivation of the suspended fixed routes in case of contingency situations may raise, as these routes are no more neither on charts nor in operators' flight planning data bases.

2.1.3 The meeting recalled that these routes should be only "suspended" not "cancelled"; meaning that their related waypoints should remain on the charts and in aircraft data bases as well. This was clearly stated in the guidance given by SAT meetings on the issue.

2.1.4 Examples of savings in CO2 emissions further to the use of random routes were given my users representative. The meeting was seized with a proposal from IATA for an extension of the AORRA airspace from the equator to the north, precisely from 0 deg latitude to 4 deg latitude. This extension is estimated to provide increased environmental benefits. This extension is under consideration between States concerned and decision thereon will be made at the next SAT meeting

2.15 The meeting considered also a draft AIP Supplement proposed by South Africa as an example of common information document including all information relevant to operations within the various FIR's area of responsibility which cover the AORRA airspace, to be published at least annually. It was however agreed that the issue as well as the draft AIP proposed should be examined more deeply under all aspects and details before final decision.

2.2 SATMA report on Traffic Statistics, Safety procedures and operational procedures in the EUR/SAM corridor

2.2.1 SATMA presented to the meeting global and detailed information about the air traffic statistics of the EUR-SAM Corridor during year 2010 as well as the evolution of these figures since 2004. In summary:

- a) Global figures:
 - important drop of the traffic during 2009 (-16%),
 - a moderate increase of +2% in 2010
 - globally the Corridor is at similar level than during 2006 with the same average traffic per day
 - in 2011, from January to March, 5% of increase; average number of air movements per day until 87 movements; consolidation of the positive tendency initiated on May 2010.

- b) Traffic per route (2010)
- unidirectional UN741 (18%): decrease
 - unidirectional UN866 (24%): stable
 - bidirectional UN873 (40%): increase
 - bidirectional UN857 (15%): increase

2.2.2 The meeting was presented also with a summary and conclusions of the 2009 RVSM/RNP10 safety assessment in EURSAM corridor applying the collision risk model to available data. The assumptions and data available for the assessment were as follows:

- Traffic growth hypothesis: 6% per annum
- Palestra (Aena's database) database for the Canaries UIR (01/01/2009-31/12/2009)
- traffic sample from SAL and Atlantic-Recife (01/01/2009-31/12/2009)
- traffic sample from Dakar (01/01/2009-31/03/2009, 01/05/2009-30/06/2009 and 01/09/2009-31/10/2009)
- Only those crossing routes with more than 50 aircraft per annum have been analysed
- Traffic on RANDOM two routes represents less than 2% of the total traffic. ROSTA-NADIR is southbound traffic and mainly even levels are used and NADIR-ABALO is northbound traffic and only odd levels are used
- SAL, Dakar and Atlantic-Recife traffic samples do not include all the flights and/or all the information for the required waypoints
- Trajectories and information at required waypoints (i.e., time and FL) were assumed, considering the most logical routes and speedsrisk evaluated in 6 different locations along the Corridor.

Hence the resulting figures for CRM:

Lateral collision risk: $TLS = 5 \cdot 10^{-9}$

Locations	Lateral Collision Risk 2009	Lateral Collision Risk 2019
Canaries	$1.2214 \cdot 10^{-9}$	$2.1873 \cdot 10^{-9}$
SAL 1	$1.3332 \cdot 10^{-9}$	$2.3876 \cdot 10^{-9}$
SAL 2	$2.0704 \cdot 10^{-9}$	$3.7078 \cdot 10^{-9}$
Dakar 1	$1.6361 \cdot 10^{-9}$	$2.9300 \cdot 10^{-9}$
Dakar 2	$1.4924 \cdot 10^{-9}$	$2.6726 \cdot 10^{-9}$
Recife	$1.5517 \cdot 10^{-9}$	$2.7788 \cdot 10^{-9}$

Technical vertical risk: $TLS = 2.5 \cdot 10^{-9}$

Locations	Technical Vertical Collision Risk 2009	Technical Vertical Collision Risk 2019
Canaries	$0.0094 \cdot 10^{-9}$	$0.0169 \cdot 10^{-9}$
SAL 1	$0.0037 \cdot 10^{-9}$	$0.0066 \cdot 10^{-9}$
SAL 2	$0.0059 \cdot 10^{-9}$	$0.0105 \cdot 10^{-9}$
Dakar 1	$0.0065 \cdot 10^{-9}$	$0.0116 \cdot 10^{-9}$
Dakar 2	$0.0062 \cdot 10^{-9}$	$0.0111 \cdot 10^{-9}$
Recife	$0.0063 \cdot 10^{-9}$	$0.0112 \cdot 10^{-9}$

Total vertical risk: TLS = $5 \cdot 10^{-9}$

Locations	Total Vertical Collision Risk 2009	Total Vertical Collision Risk 2019
Canaries	$1.7728 \cdot 10^{-7}$	$3.1748 \cdot 10^{-7}$
SAL 1	$5.0382 \cdot 10^{-7}$	$9.0226 \cdot 10^{-7}$
SAL 2	$4.3219 \cdot 10^{-7}$	$7.7398 \cdot 10^{-7}$
Dakar 1	$1.0423 \cdot 10^{-6}$	$1.8666 \cdot 10^{-6}$
Dakar 2	$1.0676 \cdot 10^{-6}$	$1.9120 \cdot 10^{-6}$
Recife	$4.2489 \cdot 10^{-7}$	$7.6091 \cdot 10^{-7}$

In conclusion:

- Lateral and technical vertical risks are below the TLS.
- Total vertical risk is higher than the TLS; this is due to LHDs resulting from coordination errors, in particular those related to:
 - No notification of the transfer
 - Transfer at unexpected flight level

2.2.3 In light of the above, and given that the causes of the problems are well known, the meeting encouraged States involved to implement mandatory initiatives aimed to revert the situation concluded by 2009 Safety Assessment analysis following ICAO DOC 9937 , Chapter 1. 2.e “**initiate necessary remedial actions if RVSM requirements are not met**”. (Also Doc 9574). In the same vein, the meeting requested SATMA to present a summary of EUR/SAM Corridor Safety Assessment and LHD summary in next the RMA meeting (Montreal June 2011) and present a report of affecting conclusions from the RMA meeting to the SAT Group.

2.2.4 SATMA as coordinator of the LHD Monitoring Team presented the meeting with the evolution of LHDs in the EUR-SAM Corridor from April 2010 until February 2011. For the 124 LHDs reported to SATMA , the most common reason (117 reports), is still the same than on previous SATMA reports, “operational coordination error between adjacent ACC’s”. However the meeting noted the important increase of the number of LHD reported, meaning that the culture of reporting is improving in all ACCs. The meeting discussed various LHD reports and as a result, encouraged ACCs and aircraft operators to reinforce the policy of reporting as a way to detect, solve and implement common safety solutions along the EUR-SAM Corridor.

2.2.5 The meeting acknowledged that the introduction of FANS in EUR/SAM Corridor is an important LHD/LD mitigation factor. So, in order to accurately measure the impact of ADS/CPDLC operations on EUR/SAM Safety TLS figures, the LHD Monitoring Team should have enough information thereon. The meeting therefore agreed to amend the Altitude Deviation Reporting form in order to facilitate the investigations to be carried out by LHD Monitoring Team, and formulated the decision:

2.3 ATS Contingency planning

2.3.1 As per Conclusion SAT15/06, South Africa presented to the meeting a draft comprehensive ATS contingency plan for the SAT airspace based on the existing EUR-SAM corridor contingency plan and in accordance with ICAO Annex 11 provisions. The meeting was of the view that all SAT member States should be given time to review and amend this draft before agreement to a common contingency plan to be adopted and implemented. The issue will be considered at the next SAT meeting.

2.4 Other ATM matters

2.4.1 The meeting was presented with the South-Atlantic Interoperability Initiative to Reduce Emissions (SAIRE) initiative, which will aim, similar to the EU/US initiative AIRE (Atlantic Interoperability Initiative to Reduce Emissions) to improve energy efficiency and lower aircraft noise through the development and implementation of environmentally friendly procedures for all phases of flight. The following improvement areas/solutions were given as examples:

- a) Oceanic trajectory optimization (horizontal, vertical, longitudinal);
- b) Reduced separations for RNP 4 equipped aircrafts (lateral, longitudinal);
- c) Optimized Oceanic Entry/Exit transition;
- d) Better use of Meteorological information;
- e) Continuous Descent Operations (CDO) procedures;
- f) Continuous Climb procedures;
- g) Optimized departure routings;
- h) Collaborative decision support systems that increase aircraft taxi time predictability allowing airlines to capitalize on use of fuel saving procedures such as reduced engine taxi out

2.4.2 Other ATM initiatives were presented to the meeting, all aiming at the improvement of the safety and the efficiency of operations:

- the **Indian Ocean Strategic Partnership to Reduce Emissions (INSPIRE)** : The INSPIRE partnership is intended to be collaborative network of partners across the Arabian Sea and Indian Ocean region dedicated to improving the efficiency and sustainability of aviation
- the **OPTIMI (Oceanic Position Tracking Improvement & Monitoring)**: The aim of the OPTIMI project is to assess and trial the feasibility of implementing oceanic flight tracking services in the Atlantic (NAT, EUR and AFI regions) in order to improve the accuracy with which aircraft position is known, allowing better coordination and ATS service provision in normal operations and also in cases in which an unusual event occurs.
- The **Iflex project**: implementation of a flexible route network framework that will enable airlines to leverage the prevailing upper wind conditions and seize opportunities for fuel and CO2 savings at the flight planning phase.

The meeting endorsed all these initiatives and called upon SAT members to support any actions required within the framework thereof.

Communications, Navigation and Surveillance (CNS)

2.6 Follow up of SAT/15 Conclusions pertaining to the CNS field

Follow up Conclusion SAT/15/09: Implementation of ATS/DS circuit for Luanda/Atlántico

2.6.1 The meeting examined the status of implementation of the CAFSAT node in Luanda to establish the ATS/DS direct link between Recife and Luanda as agreed by Conclusion SAT/15/9. The meeting was informed by Angola and Brazil on their common actions taken with the supplier (INSA) to establish this link by purchasing a CAFSAT node in Luanda and complementary equipment for the Atlántico.

2.6.2 The meeting was informed that CAFSAT modernization and re-engineering exercise will be conducted by a Joint Technical Team established by CNMC 1st meeting and led by Spain. It was therefore agreed that Angola and Brazil should take benefit of its outcome when implementing the link. Spain was requested to provide Angola and Brazil with the guidelines for planning of CAFSAT modernization plan by end of June 2011. Commitment was taken by Angola and Brazil to implement the link by the end of April 2012.

Follow up Conclusion SAT/15/10: ATS-Voice Numbering Plan for AFI and Conclusion SAT/15/11: Trials for extension of ATS-N5 Voice switching protocol

2.6.3 The meeting was informed on APIRG/17 deliberation through its Conclusion 17/20 tasking the AFI CNS/SG to include in his mandate the study for the development and implementation of ATS Voice Numbering Plan revising its Work Programme accordingly. The meeting noted that the updated form containing the technical requirements for VCSSs capability to support ATS-N5 voice switching protocol has not been yet developed by Spain and provided to States so that no report could be conducted as requested by Conclusion SAT/15.

Follow up Decision SAT/15/02: ADS Data Sharing

2.6.4 The meeting examined the status of implementation of Decision SAT/15/02 calling for the determination by SAT ATM WG of a consolidated list of operational requirements to facilitate the development of ADS C data sharing process within SAT Region. The meeting encouraged Administration/Organizations to pursue their efforts for the implementation of Conclusion SAT/15 Voice numbering Plan within SAT Region.

Follow up Conclusion SAT/15/12: Implementation and Interconnection of AMHS systems

2.6.5 The meeting was provided with the status of implementation of AMHS in SAT region. In particular it was noted that some states of SAM Region namely, have been implementing AMHS systems and conducting bilateral trials (Brazil/Argentina). The meeting was also informed on APIRG deliberation on the implementation of AMHS within AFI region. In particular APIRG/17 through Conclusion 17/12 called for an AMHS implementation governed by a cooperative approach to ensure the continuity of Aeronautical Fixed Service during the transition time from AFTN to AMHS. APIRG/17 therefore created through Conclusion 17/17 the AFI AMHS Implementation Task Force which is organizing a Workshop from 17 to 18 and its first meeting from 19 to 20 in Nairobi, Kenya

Taking into consideration the experience gained by the SAM region the meeting recognized that the harmonization of the implementation should be conducted through Memorandum of Understanding aiming to ensuring the interoperability between the interconnected systems and encouraged States to do so.

2.6.6 The meeting also raised up the issue related to the training for operational and maintenance personnel and urged SAT States to ensure the suitable provision for the effective participation of their personnel in the regional training session (Seminars, workshops, symposium) organized by ICAO in the matter.

2.7 Review of AFS Performance

2.7.1 The secretariat presented to the meeting the AFS (ATS/DS & AFTN) performance data collected from some States, in particular from Cote d'Ivoire, Senegal, Mauritania (through ASECNA) and Morocco.

2.7.2 The meeting noted that the Service availability has been satisfactory in general, during year 2010 and for the first quarter of year 2011 for ATS/DS. AFTN circuits operation was also satisfactory in general along year 2010 except some dysfunctions between Dakar and Rio that affected the availability rate on October (**96.10%**) and December 2010 (**96.12%**) Dakar and Johannesburg on January 2010 (**90.39%**) and March 2011(**86.59%**).

2.7.3 Considering the collection of Aeronautical Fixed Service statistic Data, the meeting noted that, in spite of recommendation **9/4 of RAN AFI/7 (Performances of AFTN circuits)** and decision **16 /12 of APIRG/16 (Follow up of the performances of the Aeronautical Fixed Service)**, most of the States still do not submit the necessary information in due time.

2.7.4 It was reported to the meeting the deliberation of APIRG/17 on this issue which noted that only 20 percent of States in the AFI Region responded to AFI/7 recommendations calling States to send the monthly AFTN availability statistics to the ICAO Regional Offices. APIRG/17 Conclusion 17/14 and respectively encouraging States to implement these conclusions and requesting ICAO to develop a web based data collection centre where States can key in directly the AFTN statistical data for compilation and analysis were presented to the meeting. The meeting therefore requested Administration/Organization to collect and send to ICAO Regional Offices the monthly diagram of availability commencing by first of June 2011.

Follow up Conclusion SAT/15/13: Investigation of missing Flight Plans

2.7.5 The meeting discussed the issue of the investigation on the missing flight Plans. It was recognized that this pending concern should be tackle in order to provide the ATM automated system with reliable and available raw materials, namely flight plans in order to ensure efficient automated ATM operations. The meeting recognized that the mitigation of the missing flight plan can be performed by the usage of a consolidated procedure and tasked ASECNA to submit a draft by the end of year 2011.

2.7.6 The secretariat presented to the meeting some ATS voice circuits implemented in SAM region through the MEVA II / REDDIG interconnection using double hoop satellite circuits. The meeting was recalled that According to CAR/SAM ANP FASID Table CNS 1C - ATS direct speech circuits plan, the following ATS speech direct circuits are required between the CAR/SAM and AFI Regions:

- a) Atlantico ACC-Dakar ACC;
- b) Atlantico ACC-Johannesburg ACC;
- c) Ezeiza ACC-Johannesburg ACC;
- d) Montevideo ACC-Johannesburg ACC;
- e) Piarco ACC-Santa Maria ACC; and
- f) Rochambeau ACC -Dakar ACC.

The meeting noted that in spite of this required planed direct circuits, the ATS Voice service was implemented using the international direct dialling (IDD) telephone calls except Atlántico ACC-Dakar ACC, Atlántico ACC-Johannesburg ACC and Ezeiza ACC-Johannesburg ACC circuits implemented through the CAFSAT network. The meeting noted the benefit for concerned ACC Administration to analyze the possibility of carrying out trials on ATS speech circuits implementation using a double hoop satellite link through the REDDIG and CAFSAT networks, and approved an action plan thereon.

2.7.7 The meeting was informed by Cote d'Ivoire and Brazil on the need of a coordination direct link between Abidjan and Atlántico in order to ensure direct traffic ATS voice coordination. The meeting agreed on this request and tasked Cote d'Ivoire and Brazil to conduct trials on interconnection between the two CAFSAT and AFISNET nodes.

2.8 Review of CNMC report

Follow up Decision SAT/15/03: Adoption of the Terms of Reference of CAFSAT Network Management Committee

2.8.1 The secretariat submitted to the meeting the draft report on the first meeting of the CAFSAT Network, Management Committee (CNMC) held in Recife, on 02 May 2011. This meeting was attended by all the States hosting CAFSAT nodes except and Mauritania (node managed by ASECNA) and Morocco. The CNMC first meeting was attended by twenty nine (29) participants from nine (09) States (Angola, Brazil, Cape Verde, Cote d'Ivoire, Portugal, Senegal, South Africa, Spain, Uruguay), two (02) Air navigation Service Providers, namely ASECNA and ATNS, one international organization (ARINC) and a Communication Integrator Company INSA (Spain). The deliberation of the meeting adopted three (03) Decisions and six (06) Conclusions. The meeting recognized that for the successful development of CNMC current and future activities in accordance with its Term of Reference, the Members administrations/organizations should actively participate in the regular meetings and specialized technical Task forces and study Group.

Follow up Conclusion SAT/15/14: Harmonization of AFS maintenance procedures and AFS statistics data collection

2.8.2 The meeting noted that the CAFSAT network involves various technical components which contribute to the Quality of the Aeronautical Fixed Service provision. ICAO 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.

2.8.2 The meeting was reminded with the 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 and therefore analyzed and approved the principle of developing a Performance Data Collection Form (PDCF) aiming to facilitating the automation of the survey of CAFSAT network Earth Stations basics parameters as well as the nomination of ASECNA and Ghana, already tasked by SNMC to conduct similar development. Meanwhile, it was agreed to use the templates as proposed by CNMC/1 meeting for the collection of CAFSAT nodes parameters for a quarterly report to the secretariat.

Follow up Conclusion SAT/15/15: Modernization of CAFSAT Network

2.8.3 The meeting noted that CFSAT network has been operating since 2001 over three continents (EUR, SAM, and AFI) and recognized that it modernization and re-engineering should be initiated

through an harmonized approach that should involve all the stakeholders in order to ensure seamless provision of Aeronautical fixed service (AFTN, ATS/DS) supported by the Network along the EUR/SAM corridor while interfacing with AFI for a safer Air navigation service provision.

2.8.4 Moreover, the meeting also recognized that the forthcoming implementation of CNS/ATM components with time critical or sensitive applications (Automation of ATM in the frame of ICAO New Flight Plan Format, Sharing Surveillance data, Implementation of AMHS...) may require the modernization/re-engineering of the current VSAT Networks taking into consideration the flexibility gained with the emerging technologies and bearing in mind the necessity to ensure a comprehensive safety of the data across the Networks and a costs effectiveness of the operation for the VSAT managers. The meeting finally agreed with the principle of the development of a Roadmap for CAFSAT joint technical evaluation and re-engineering proposed by CNM meeting.

2.8.5 The meeting examined in length a draft Term of Reference Composition and Work Programme of a Joint Technical Team for CAFSAT Network Evaluation and Re-engineering proposed by CNMC first meeting and agreed on the amended version in **the Report of CNMC/1 meeting**. Spain was nominated as the Leader of the Team whose duration is estimated to be six (06) months.

2.9 Other CNS matters

Follow up Conclusion SAT/15/16: Implementation of AIDC /OLDI in SAT

2.9.1 The meeting was informed that Administrations/Organizations in SAM Region have been developing Interface Communication Documents (ICD) aiming to facilitate a harmonized implementation of ATS Interfacilities Data Communication (AIDC). The meeting recognized that although some implementation projects are ongoing in the AFI region, the AFI Surveillance Implementation Plan is at the updating step with a Task Force planned to be held from 22 to 24 June 2011. It was therefore agreed that the development of ICD for AFI States should be considered by the forthcoming AFI Aeronautical Surveillance Implementation Task force (ASI/TF) meeting.

Communications, navigation and surveillance / Air traffic management (CNS/ATM) Systems

2.10 Harmonization of ADS/CPDLC programmes

• Review of the Report of the Sixth SAT FANS 1/A Interoperability Team (SAT/FIT/)

2.10.1 The Rapporteur of the SATFIT presented to the meeting the report of the SAT/FIT/6 meeting which was held on the 3rd May 2011 in Recife, just before the SAT 16 meeting. The SAT16 meeting reviewed the list of conclusions and decisions adopted by the FIT and endorsed them.

2.11 Performance Based Navigation (PBN) in the South Atlantic

2.11.1 The meeting considered the issue of the implementation of RNP4 in the EUR/SAM Corridor and the transition from the current RNP10 with 10 minutes longitudinal spacing and 50NM lateral spacing to RNP4 30/30 NM. It was recalled that the SAT14 meeting (Montevideo, Uruguay, from 7 to 9 May 2008) noting the unexpected increase of the air traffic flows had considered the implementation of RNP4 along the EUR-SAM Corridor as a relevant target. Thereafter, the SAT14/TF1 meeting held in Sal, Cape Verde, from 10 to 12 June 2009 deemed necessary that a study/assessment be conducted on the transition from the current RNP10 with 10 minutes longitudinal spacing and 50NM lateral spacing to RNP4 30/30 NM in order to assess the safety of the operations as well as the expected economical advantages

2.11.2 In view of the above and after discussion on the current operational environment prevailing in the EUR/SAM corridor and the relevance of the application of RNP4 therein, the meeting tasked Spain as rapporteur of IAS/WG to draft an initial report in order to develop a project for the medium/long term implementation of RNP-4 along the EUR_SAM Corridor. The report made by Spain and endorsed by the SAT Group is summarized in the following paragraphs:

- ” It is agreed by all EUR SAM States that consolidation of FAN1/A aircraft facilities, prior to RNP4 fleet certifications, should be a prerequisite for the implementation of RNP 4 in the area.
- On the other hand, schedule and plans presented by States during FIT meeting allow us to be optimistic about a full operational FAN1/A EURSAM Corridor in a relative short term, so first steps aimed to a future RNP4 implementation might be studied and debated.
- SATMA will contact States and IATA to compile data and information required to achieve a cost/benefit study based on the following hypothesis:
 - a) Results in terms of time and average of FANSI/A equipped & RNP4 certified aircraft on traffic growth expected
 - b) Impact of “FL, Route or Airspace” restrictions for low average of FANSI/A equipped & RNP4 certified aircraft
 - c) Increase average of optimal levels per period /peak time sets
 - d) ATC/Pilots Work load impact
- The cost/benefit analysis will submitted to SAT Group for further actions”

Terms of reference and Future Work Programme

The meeting updated and amended the work programmes of the SAT Group and subsidiary Working Groups.

Dates and venue of SAT/17 meeting

The meeting welcomed the offer of Spain to host the forthcoming SAT/17 meeting, which will be held in Las Palmas, Canarias from 16 to 20 April 2012..

3. Action by APIRG

3.1 The meeting is invited to:

- a) Note the information contained in this paper;
- b) Note the work carried out by the SAT Informal Group as a key interregional mechanism between AFI, EUR, NAM and SAM Regions;

- c) Encourage States and Organizations concerned to provided continued support to SAT implementation activities; and
- d) Provide the SAT Group with any appropriate guidance for the implementation of ICAO provisions.

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List of SAT/16 meeting Conclusions and Decisions

Agenda Item 1: Air traffic management (ATM)

1.1 Follow up of SAT/15 Conclusions pertaining to the ATM field

Conclusion SAT16/01: Unknown traffic in the South Atlantic (follow-up on conclusion SAT15/07)

That:

In view of the longstanding problems of unknown traffic and coordination issues in the South Atlantic,

- a) Argentina, Brazil and Uruguay will continue joining their efforts to address all the challenges in terms of infrastructure and operational procedures in order to enhance the safety in the area concerned.*
- b) The three States will develop a Safety Case covering the area concerned, in order to determine the hazards, assess the safety risks and propose resolution/mitigation actions, under the leadership of the ICAO SAM regional office.*
- c) Any other SAT member may participate in the Safety Case on request, by providing traffic data/information*
- d) The States will ask SAM regional office to send the finding of the Safety Case to be discussed at high level within ICAO, and ICAO to ensure the corrective actions are implemented.*

1.2. Follow up of the AORRA airspace implementation.

Conclusion SAT 16/02: Routes in AORRA in contingency situation

That

- a) All fixed routes, suspended within the AORRA airspace, remain available on chart and in aircraft databases through their constitutive waypoints as published*
- b) In case of contingency situation, those to be reactivated be published by notam with their relevant waypoints, by ANSPs.*

Conclusion SAT 16/03: Extension of the AORRA boundary from lat 0° to 4°N

That

A Working Group comprising Dakar ACC, Abidjan ACC, Accra ACC Roberts ACC, ASECNA and IATA is established with the mandate to discuss the extension of the AORRA boundary from the equator to the latitude 04°N line, and the new gates and transitions routes to be created, as proposed by IATA.

Conclusion SAT16/04: Supplemental AORRA information

That

- 1. Each SAT Member State designate a contact person responsible for the management and upkeep of the information on AORRA*
- 2. South Africa will coordinate with other SAT members the development of a comprehensive operational document and present the draft to the next SAT meeting, in order to harmonize their respective operational information in terms of AORRA operations.*

1.3. SATMA report on Traffic Statistics, Safety procedures and operational procedures in the EUR/SAM corridor.

Conclusion SAT16/05: Data for risk assessment

That

Apart from LHD/LD monthly report, States provide SATMA with data regarding 2010/2011 traffic following, if possible, the DATA models of document “DATA NEEDED FOR EUR/SAM MONITORING AND ASESSEMENTS” published in SATMA website (www.satmasat.com)

Conclusion SAT16/06: Common additional procedures to prevent LHD,s

That

The modification to ICAO Doc.7030 proposed under Conclusion SAT/15/05 is amended as follows:

Supplementary safety procedures for aircrafts in cases of air/ground communications problems (radio or CPDLC) and relay with other aircrafts is not available

Procedures for aircrafts flying along the EUR-SAM Corridor, aircrafts will perform SLOP in cases where:

- a) *Impossible, difficult or incomprehensive radio or CPDLC communications with the relevant ACC after trying to establish the communications at least during 10 minutes*
- b) *Doubts and impossible confirmation of a clearance issued by ATC*
- c) *When performing an ATC clearance with additional restriction (time to reach the cleared flight level, Mach number, etc.) and the position of the aircraft is 10 minutes or less to the next boundary*

Conclusion SAT16/07: LHD monitoring team

That as per conclusion SAT14TF1/08 and Decision SAT15/01, States must continue sending to SATMA the monthly reports about deviations detected.

Decision SAT 16 /01: LHD reporting

That the SATMA Altitude Deviation Form as amended and shown at Appendix C is adopted.

1.4. ATS Contingency planning

Conclusion SAT16/08: Contingency plan for the SAT Area

That

1. *Each SAT Member State designate a contact person responsible for the development of a common Contingency Plan for the SAT area*
2. *South Africa circulate the draft Contingency Plan presented under WP05 to all SAT members for review and inputs, and present a final draft by end of June 2011*

1. 5. Any other ATM business

Conclusion SAT16/09: South-Atlantic Interoperability Initiative to Reduce Emissions (SAIRE)

That, SAT members

- a) *support the SAIRE and any other initiative (Iflex, OPTIMI, INSPIRE, etc...) to improve energy efficiency and lower aircraft noise through the development and implementation of environmentally friendly procedures for all phases of flight*

b) make any effort to participate in any initiative within the framework of the SAIRE project.

Agenda Item 2: Communications, Navigation and Surveillance (CNS)

2.1 Follow up of SAT/15 Conclusions pertaining to the CNS field

Follow up Conclusion SAT/15/09: Implementation of ATS/DS circuit for Luanda/Atlantico

Conclusion SAT/16/10: Implementation of the ATS/DS Circuit between Luanda and Atlantico

That:

- a) *In the framework of the Joint Technical Team for CAFSAT evaluation and re-engineering Spain, Team Leader , provide Brazil and Angola with the guidelines for planning of CAFSAT modernization plan by end of June 2011;*
- b) *Considering the a) results Angola and Brazil implement and operate the Luanda Atlantico ATS/DS circuit by the end of April 2012*

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Follow up Conclusion SAT/15/11: Trials for extension of ATS-N5 Voice switching protocol

Conclusion SAT/16/11: Trials for extension of ATS-N5 Voice switching protocol

That:

In accordance with the recommendation contained within the ICAO Manual on ATS Ground-Ground Voice Switching and Signalling (Doc 9804, Chapter 2 Section 2.3), SAT States pursue their effort to conducting the ATS-N5 Voice switching protocol through the following steps:

- Spain provide an update procedure for the implementation of ATS-N5 voice switching protocol in EUR/SAM area by 30th June 2011;*
- Other SAT States report current VCCS capability to support ATS-N5 by 29 July 2011;*
- Spain develops and conducts trials with the SAT States that comply with b) in coordination with the Joint Technical Team for CAFSAT modernization and re-engineering.*

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Follow up Decision SAT/15/02: ADS Data Sharing

Decision SAT/16/02: Operational Requirements for ADS Data Sharing

That:

In order to establish technical, financial and legal aspects, SAT ATM/WG is urged to implement Decision SAT/15/02: ADS Data Sharing, by conducting the study on the operational requirements to be provided to the SAT CNS/WG for consideration during the next SAT/I7 Meeting.

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Follow up Conclusion SAT/15/12: Implementation and Interconnection of AMHS systems

Conclusion SAT/16/12: Development of Memorandum of Understanding for AMHS interconnection

That:

In order to ensure a coordinated AMHS interconnection, SAT States are encouraged to develop, if necessary, bilateral Memorandum of Understanding taking into consideration all the technical operational and administrative requirements.

.....

Conclusion SAT/16/13: Implementation of AMHS within the SAT region

That:

In order to take the benefit of ICAO provision in AMHS implementation process, SAT States who have not implemented AMHS, endeavor to participate in the forthcoming regional seminars and workshops organized by ICAO to support the implementation of AMHS regional Plans requirements.

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2.2 Review of AFS Performance

Conclusion SAT/16/14: Regular Evaluation of AFS performance

That:

SAT States forward the monthly availability of AFS (AFTN & ATS/DS) to the respective ICAO Regional Offices for compilation and analysis starting from first of June 2011 or commence the delivery of such information as soon as possible thereafter, while advising the relevant ICAO office of the intended date on which delivery of the information will commence.

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Follow up Conclusion SAT/15/13: Investigation of missing Flight Plans

Conclusion SAT/16/15: Development of a consolidated procedure for the analysis of missing Flight Plans

That:

In accordance with the Terms of Reference of SAT/CNS/WG, a draft consolidated procedure should be developed by ASECNA, by the end of year 2011, in order to properly mitigate the missing flight plans.

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Conclusion SAT/16/16: ATS voice circuits implementation via REDDIG and CAFSAT VSAT networks

That:

Argentina, Brazil, French Guyana, Santa Maria, Senegal, South Africa, Trinidad & Tobago and Uruguay inform to the respective ICAO regional offices by the fifteen June 2011 their intention to implement ATS voice trials using a double hoop satellite link through the REDDIG and CAFSAT networks following the draft Action Plan presented as Appendix D to this report, in order to complete the pending direct circuit implementation between CAR /SAM and AFI region specified in their respective Air Navigation Plan (DOC 8733 & 7474).

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Conclusion SAT/16/17: ATS voice circuits implementation via AFISNET and CAFSAT VSAT networks

That:

Considering the operational coordination requirement, Brazil and Côte D'Ivoire, inform to their respective ICAO regional offices by the fifteen June 2011 through an agreed planning, their intention to implement ATS voice trials using a double hoop satellite link through the AFISNET and CAFASAT networks in order to satisfy the ATS coordination requirement between Abidjan and Atlantico ACCs.

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2.3 Review of CNMC report

Follow up Decision SAT/15/03: Adoption of the Terms of Reference of CAFSAT Network Management Committee

Decision SAT/16/03: Adoption of the Report of the first meeting of CNMC

That:

The Report of the first meeting of CAFSTAT Network Management Committee (CNMC) is adopted as attached in APPENDIX E to this report.

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Conclusion SAT/16/18: Active participation in CNMC meetings by CNMC members

That:

CNMC Members should endeavour to actively:

- a) Participate in CNMC regular meetings and technical specialized Task Forces /Study Groups and therefore,*

b) *Provide the suitable support to their nominated delegates in accordance with the commitment they have taken under the Terms of Reference and Work Programme of CNMC.*

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Follow up Conclusion SAT/15/14: Harmonization of AFS maintenance procedures and AFS statistics data collection

Conclusion SAT/16/19: Development of CAFSAT Earth Stations Performance Data Collection Form (PDCF)

That:

In accordance with ICAO guidelines on Performance of Very Small Aperture Terminals (VSAT), ASECNA and GHANA, already tasked by SNMC Conclusion 18/02 for the matter, develop and submit to next CNMC meeting, a draft Earth Stations Performance Data Collection Form (PDCF) aiming to facilitating the future automation of the collection and the monitoring of CAFSAT stations performance data, taking into consideration the most sensitive components of the network.

Note: List of sensitive components: Modems, UP/down Converters, SSPA , Antenna Feed....

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Decision SAT/16/04: Utilization of provisional templates for the collection of the Performance data statistic of CAFSAT nodes

That:

Meanwhile the complete development of the PDCF (Conclusion SAT/16/19 refers) for the automation of the monitoring of the Network Performance, CAFSAT members adopt the templates attached in Appendix F and report quarterly to the current CNMC manager with copy to relevant ICAO Regional Offices.

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Follow up Conclusion SAT/15/15: Modernization of CAFSAT Network

Conclusion SAT/16/20: Development of a Roadmap for CAFSAT joint technical evaluation and re-engineering

That:

In accordance with ICAO guidance materials (Annexe X, Vol 1, Attachment F: Guidance material concerning reliability and availability of radiocommunications and navigation aids; ICAO Guidelines on Performance of Very Small Aperture Terminal (VSAT) Networks) CNMC member states develop a Roadmap for a Joint Technical Evaluation and re-engineering in the view of ensuring an efficient and optimized modernization of CAFSAT Network taking into consideration:

- a) *Required service performance level of the network to support the operation and development of sensitive current and forthcoming CNS/ATM components;*
- b) *CAFSAT interoperability with its neighboring networks;*
- c) *Maintenance fundamental parameters governing service availability, continuity and integrity such as: reliability, turn over statistics, maintenance personnel expertise;*
- d) *Cost-effectiveness;*

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Decision SAT/16/05: Establishment of a Joint Technical Team for CAFSAT Network evaluation and re-engineering

That:

A Joint Technical Team for CAFSAT network evaluation and re-engineering (JTT) is established with Terms of Reference and Work Programme presented in Appendix G to this report.

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2.4 Any other CNS business

Follow up Conclusion SAT/15/16: Implementation of AIDC /OLDI in SAT

Conclusion SAT/16/21: Development of a harmonized Interface Communication Documentation

That:

In accordance with their Regional Plan AFI SAT States develop Interface Communication Documents (ICD) taking in consideration the existing ICD in the SAM Region in order to facilitate an harmonized AIDC implementation and operation in the SAT region.

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Agenda Item 3. Communications, navigation and surveillance / Air traffic management (CNS/ATM) Systems

3.1. Harmonization of ADS/CPDLC programmes

- **Review of the Report of the Sixth SAT FANS 1/A Interoperability Team (SAT/FIT/6)**

Decision SAT 16/06: SAT/FIT/6 Report

That The SAT/16 Meeting approved the SAT/FIT/6 Report and its conclusions

Agenda Item 4: Terms of reference and Future Work Programme

Decision SAT 16 /07: Amendment to the work programmes of the ATM/WG and the CNS/WG

That the work programmes of ATM/WG and CNS/WG are amended as shown at Appendix H to this report

Agenda Item 5. Any other business

None

**Sixth Meeting of the FANS I/A Interoperability Team (SAT/FIT/6)
Recife, Brazil, 3 May 2011**

DRAFT LIST OF CONCLUSIONS

Number	Title
Decision SAT FIT 6/1	<p>ADS/CPDLC implementation status in the SAT Area That</p> <p>SAT/FIT members that have not done so, provide the Rapporteur with ADS-C/CPDLC implementation and interoperability status in order to complete a follow up table that will be distributed to all.</p>
Conclusion SAT FIT 6/1	<p>ADS-CPDLC operations by Airlines That</p> <p>IATA continues encouraging Airlines to increase their level of participation in ADS-C/CPDLC operations in order to enhance safety and efficiency of operations within the SAT area.</p>
Conclusion SAT FIT 6/2	<p>CPDLC message set That</p> <p>ATS Units and Aircraft operators draw the attention of the controllers and flight crew members to the use of the preformatted message elements when ever applicable and strictly limit the use of free text messages to specific reports.</p>
Conclusion SAT FIT6/3	<p>CFRA That</p> <ol style="list-style-type: none"> 1) The meeting calls for an ANSP to volunteer for the performing of the CFRA functions 2) The rapporteur consider the possibility for technical services providers to present their offers for the performing of CFRA functions, including a cost recovery system.
Decision SAT FIT 6/2	<p>System Performance Monitoring That</p> <ol style="list-style-type: none"> 1) SATMA will provide the SATFIT Rapporteur with the existing procedure developed for the identification, reporting and resolution of system performance shortcomings in aspects related to CFRA. 2) This procedure will be distributed by the SATFIT rapporteur to SAT members for CFRA data collection by 31 May 2011
Conclusion SAT FIT 6/4	<p>OPTIMI That</p> <p>SAT members support the OPTIMI initiative to integrate current technologies and procedures for the improvement of safety across the Atlantic.</p>

Number	Title
Decision SATFIT 6/3	SAIRE That SAT members take note of the SAIRE initiative and other Regional ATM initiatives, to improve energy efficiency and lower aircraft noise through the development and implementation of environmentally friendly procedures for all phases of flight. This initiative will be referred to the SAT16 meeting for consideration.

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