INTERNATIONAL CIVIL AVIATION ORGANIZATION

WESTERN AND CENTRAL AFRICAN OFFICE

REPORT OF THE SEVENTEENTH MEETING ON THE IMPROVEMENT OF AIR TRAFFIC SERVICES OVER THE SOUTH ATLANTIC (SAT/17)

(LAS PALMAS, SPAIN, 18 to 20 April 2012)

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History of the meeting

1. Place and duration of the meeting

1.1 The Seventeenth Informal Coordination Meeting on the improvement of air traffic services over the South Atlantic (SAT/17) was held in Las Palmas, Spain, from 18 to 20 April 2012. The meeting was hosted by the Aeropuortos Espanoles y Navigacion Aeria (AENA) of Spain and was held at the **Lopesan Costa Meloneras** Hotel.

2. Opening ceremony

2.1 The meeting was officially opened by Mr. **Gabriel Novelles**, ATM Development Division, AENA, Sapion who welcomed the participants and wished them fruitful deliberations and a nice stay in Canarias. In his welcome address, Mr. **Gabriel Novelles** emphasized the importance of the SAT Group meetings with regard to the improvement of ATS services and the safety of operations over the South Atlantic (SAT). He took the opportunity to reaffirm Spain commitment to the work carried out by the SAT Group and highlighted the permanent support provided by the concerned States to SAT meetings.

3. Organization, Secretariat and attendance

3.1 Mr. **Albert Aidoo Taylor,** Director Air Traffic Management, Ghana Civil Aviation Authority, was unanimously elected as Chairperson of the meeting.

3.2 Mr. **François Xavier SALAMBANGA**, Regional Officer Communication Navigation and Surveillance (CNS) of the ICAO WACAF Office, was the Secretary of the meeting.

3.3 The meeting was attended by 46 participants from nine (09) ICAO contracting States namely, Angola, Brazil, Cape Verde, Cote d'Ivoire, Ghana, Portugal, Senegal, South Africa and Spain, 03 International/Interregional Organizations (ASECNA, IATA, ICAO) and 04 representatives of the industry (INSA, INECO, NUCLEO and SITA).

3.4 The list of the participants and their contact addresses is at **Appendix A** to this report.

4. Working languages

4.1 The meeting was conducted in the English language and its relevant documentation was presented in this language.

5. Agenda of the meeting

5.1 The meeting adopted the following agenda and discussed its items when appropriate, within the ATM or the CNS Working Group, or during the plenary sessions:

Agenda Item 1: ***Election of the chairperson and adoption of the agenda* (*Plenary session*)**

Agenda Item 2: ***Air traffic management (ATM)* (*by the ATM Working Group*)**

1. Follow up of SAT/16 Conclusions pertaining to the ATM field

2. SATMA report on Traffic Statistics, Safety procedures and operational procedures in
the EUR/SAM corridor.
3. Follow up on operations in the AORRA airspace.
4. ATS Contingency planning
5. Any other ATM business

Agenda Item 3: ***Communications, navigation and surveillance (CNS)*** **(*by the CNS Working Group*)**

1. Follow up of SAT/16 Conclusions pertaining to the CNS field
2. Review of AFS performance
3. CNMC issues
4. Any other CNS business

Agenda Item 4: ***Communications, navigation and surveillance /Air traffic management (CNS/ATM) Systems* (*Plenary session)***

1. Harmonization of ADS-C/CPDLC programmes
   • Review of the Report of the Seventh SAT FANS 1/A Interoperability Team (SAT/FIT/7)
2. RNP4 in the EURSAM corridor
3. SATISFIED project

Agenda Item 5: ***Adoption of the conclusions/decisions of the SAT/17 meeting* (*Plenary session)***

Agenda Item 6: ***Future work programme* (*Plenary session*)**

Agenda Item 7: ***Any other business* (*Plenary session)***

6. Conclusions and Decisions of the meeting

The meeting adopted the following conclusions and decisions:

Agenda Item 2: Air traffic management (ATM)

Decision SAT17/01: EURSAM corridor Collision Risk Assessment

That SAT States provide SATMA with the air traffic data for the first half of 2011 by end of June 2012, and the data for the second half of 2011 as soon as possible.

Conclusion SAT17/01: LHD

That:

a) SATMA, Brazil, Cape Verde, Senegal and Spain, work on measures to decrease amount of LHDs.
b) Identify measures to be implemented by amending agreements affecting those four States.
c) AT ACCs, aircraft operators and adjacent RMA continue reinforcing safety culture by reporting and analysing the LHD.

Conclusion SAT17/02: Extension of AORRA as per Conclusion SAT16/03

That Abidjan ACC and Accra ACC:

a) Implement as agreed, the extension of AORRA air space to 04° North, at effective AIRAC 20 SEP 2012 with publication date AIRAC 26 July 2012.
b) Fully coordinate with Roberts FIR prior implementation.

Conclusion SAT17/03: Implementation of ADS-C/CPDLC in the AORRA Space

That in order to improve safety and enhance ATC operations, IATA encourage aircraft operators to make use of ADS-C/CPDLC and promote aircraft equipage.

Agenda Item 3: Communications, navigation and surveillance (CNS)

3.1 Follow up of SAT/16 Conclusions pertaining to the CNS field

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

Conclusion SAT17/04: Implementation of the ATS/DS Circuit between Luanda and Atlantico

That as a matter of urgency:

a) Angola confirm to SAT members the schedule within which it intends to implement the CAFSAT node of Luanda taking into consideration the project of modernization of Recife CAFSAT node planned by Brazil;

b) Angola and Brazil convene under ICAO auspices, and no later than end of September 2012, a coordination meeting to agree on a planning of the effective implementation of the ATS/DS circuit between Luanda and Recife before the end of June 2013.

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

Conclusion SAT 17/05: Trials for extension of ATS-N5 Voice switching protocol

That SAT States pursue the trials on ATS-N5 Voice switching protocol based on the test bed developed by Spain and report to SAT/18.

Conclusion SAT17/06: Implementation of AMHS within the SAT region

That In order to ensure a coordinated AMHS interconnection:

a) ICAO Regional Office of Dakar develop and circulates between SAT members a template on the current status of implementation of AMHS;
b) SAT members report on the future development of the ongoing and/or planned project for the implementation of AMHS;
c) ICAO pursue the assistance to SAT members in the implementation of AMHS through Regional seminars and workshops.

Conclusion SAT 17/07: Trials on AMHS systems

That when implementing AMHS systems SAT members take the necessary actions to conduct trials with their neighboring centers through Memorandum of Understandings (MoU) as called upon by SAT/16 conclusion 16/12.

3.2 Review of AFS Performance

Follow up Conclusion SAT/16/14: 16/19 and decision 16/04: Regular Evaluation of AFS performance; Development of CAFSAT Earth Stations Performance Data Collection Form (PDCF) and Utilization of provisional templates for the collection of the Performance data statistic of CAFSAT nodes

Decision SAT17/03: Performance Data Collection Form

That the Performance Data Collection Form adopted by APIRG/18 meeting and presented in Appendix C to this report be used by SAT members to assess the operational and technical performance of AFS.

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

Conclusion SAT17/08: Development of a consolidated procedure for the analysis of missing Flight Plans

That in accordance with the statement of conclusion SAT/16/15, ASECNA circulates by the end of May 2012, the draft procedure amongst SAT members for consolidation and assessment of the missing flight plans to be reported to SAT/18.

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

Conclusion 17/09: ATS voice circuits implementation by double hoop satellite link through the REDDIG, CAFSAT and AFISNET networks

That:

a) Argentina, Brazil, French Guyana, Santa Maria, Senegal, South Africa, Trinidad &Tobago, Uruguay and Cote d'Ivoire confirm to the respective ICAO regional offices by the end of September 2012 their plan to implement ATS voice trials using a double hoop satellite link through the REDDIG, CAFSAT and AFISNET networks following the draft Action Plan developed by SAT/16 (Appendix D to SAT/16 report), in order to complete the pending direct circuit implementation between CAR /SAM, AFI and NAT.

b) AFI SAM and NAT ANPs to be amended accordingly.

3.3 CNMC issues

Decision SAT17/04: Nomination of contact persons for the joint technical team for CAFSAT evaluation and re-engineering.

That SAT concerned members communicate to Spain (Team Leader) the name and the title of their designated contact person for the joint technical team for CAFSAT evaluation and re-engineering no later than end of April 2012.

Decision SAT17/05: CAFSAT Reengineering Roadmap and Reference Document

That:

a) The CAFSAT Reengineering schedule and its Reference Working Document developed by Spain are approved as presented to SAT states.

b) CNMC members follow up and provided Spain with the adequate additional information for the development of the project

Decision SAT17/06: Holding of CNMC meetings

That in order to ensure coordination and optimize resources, CNMC and SAT/FIT meetings are held at the same venue and dates with merged sessions if necessary.

Conclusion SAT17/10: Participation of SAT members to the meetings of the Task Force on an integrated AFI Aeronautical VSAT Networks

That SAT concerned members namely Angola, Cape Verde, Cote d'Ivoire, Ghana, Mauritania, Spain, Senegal, South Africa, Roberts endeavor to regularly participate in the meetings of the Task Force on an integrated AFI Aeronautical VSAT Networks aiming to harmonize the implementation of a robust satellite based backbone network for the provision of ATN components and other CNS services.

Agenda Item 4: Communications, navigation and surveillance / Air traffic management (CNS/ATM) Systems (Plenary session)

4.1. Harmonization of ADS/CPDLC programmes
• Review of the Report of the Sixth SAT FANS 1/A Interoperability Team (SAT/FIT/6)

Decision SAT 17/07: Adoption of SAT/FIT/7 Report

That the SAT/FIT/7 Report and its conclusions are approved as presented to SAT/17Meeting.

4.2. RNP4 in the EURSAM corridor

Conclusion SAT17/11: Implementation of RNP 4

That:

a. SATMA and SAT States initiate study for a mandatory target date for aircraft FANS equipage on the routes in the corridor in close coordination with NAT region.
b. IATA assist with the data.

Conclusion SAT17/12: SATISFIED Project

That Spain introduces strategic partnership to reduce emission in the EUR/SAM Corridor to improve energy efficiency through the development and the implementation of environmental friendly procedures.

Agenda Item 5: Adoption of the conclusions/decisions of the SAT/17 meeting

None

Agenda Item 6: Terms of reference and Future Work Programme

Decision SAT17/08: Work Programmes for SAT ATM & CNS/WGs

That the work programmes for SAT ATM & CNS/WGs be amended as shown at Appendix x to this report.

Agenda Item 7: Any other business

Conclusion SAT17/13: Participation of Rochambeau and Piarco to SAT Meetings

That as a matter of coordination efficiency Rochambeau and Piarco ACCs endeavour to regularly attend the SAT meetings.

Summary of Discussions

Agenda Item 1: Election of the chairperson and adoption of the agenda

1.1 The meeting unanimously elected Mr. **Albert Aidoo Taylor,** Director Air Traffic Management, and Ghana Civil Aviation Authority, as Chairperson of the meeting.

Agenda Item 2: Air traffic management (ATM)

2.1 Follow up of SAT/16 Conclusions pertaining to the ATM field

2.1.1 The Secretariat presented the status of implementation of the conclusions emanating from the sixteenth meeting of the improvement of air traffic control in the South Atlantic (SAT/16), which was held in Recife, Brazil, from 02 to 04 May 2011. The meeting reviewed and noted the actions taken by SAT Members and the Secretariat on the conclusions.The status of implementation of these Conclusions is shown at **Appendix B** to this report.

2.1.2 The meeting had a lengthy discussion on the follow-up of Conclusion SAT16/01: Unknown traffic in the South Atlantic (follow-up on conclusion SAT15/07). It was reported that since the coordination meeting held in Lima Peru on 13 August 2010 by Argentina, Brazil and Uruguay with the participation of ICAO, with the aim to improving operational procedures to ensure safety in the area concerned, the future tentative meetings were unsuccessful. It was reported a lack of Flight Plans from Falkland Island to Assumption Islands and the meeting confirmed an urgent need for a coordinating meeting involving Argentina, Assumption Island, Falkland Islands, Brazil, and Uruguay aiming to developing and implementing all adequate remedial actions.

2.1.3 It was agreed that ICAO Lima Office should raise this safety issue to a higher level for political decisions and actions. Meanwhile, the meeting proposed that the ICAO Regional Office of Lima initiate a teleconference between the concerned States and involving IATA and IFALPA to address this issue on Unknown traffic in the South Atlantic.

2.1.4 The meeting confirmed the need of implementation of Conclusion SAT16/01 on the persistency of unsafe conditions occurring in the area concerned..

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

2.2.1 SATMA reported to the meeting the status of evolution of the air traffic along the EUR-SAM Corridor, showing an important increase of the traffic figures during 2011: 33.414 movements in total,+11% of increase compared to 2010.

2.2.2 It was noted that the use of the ATS routes continues with the same tendency detected after the implementation of the unidirectional two route system; UN741 in gradually decreasing demand, 17% of occupancy; UN866 in increasing demand, 24% of occupancy; UN873 remains the most demanded route and is increasing its average of occupancy, 42% and UN857 with a gradual increase and now supports 14% of the traffic. Traffic on random routes is gradually reducing and has been testimonial in 2011(1%).

2.2.2 The meeting noted that since 2004 the evolution of the traffic figures of the EUR-SAM Corridor is clearly positive; despite the important drop of the traffic during 2009, the Corridor has now 24,71% more traffic and the meeting was invited to take this pace of growth into consideration when seeking for the adequate actions to be conducted in order to reinforce the safety in the Corridor.

2.2.3 In order to ensure a safe application of RVSM and RNP10 in the EUR/SAM Corridor, to monitor collision risk and to check whether this value is held below the required Target Level of Safety, SATMA presented to the meeting the assessment on the current and projected lateral and vertical collision risk in the EUR/SAM Corridor, where RNP10 and RVSM are implemented, with data of traffic between FL290 and FL410 collected from 1st January 2010 to 31st December 2010 collected from the UIR crossed by the Corridor.

2.2.4 SATMA reported that in the data provided, sometimes, not all the information needed at all waypoints was given and, in some other cases, the information was incoherent and, extrapolation of traffic data has been necessary in some cases in order to obtain the traffic distribution along the Corridor and on crossing routes, considering the most logical routes, flight levels and speeds.

2.2.5 As the accuracy of the assessment greatly depends on the availability and accuracy of the data provided, it was agreed that SATMA should be provided with accurate flight progress data and deviation reports from all FIR/UIRs including as much information as possible.

The following Decision was therefore formulated:

Decision SAT17/01: EURSAM corridor Collision Risk Assessment

That SAT States provide SATMA with the air traffic data for the first half of 2011 by end of June 2012, and the data for the second half of 2011 as soon as possible.

2.2.5 The study by SATMA also presented to the meeting the Target Level of Safety (TLS) of Lateral Collision Risk, Vertical Technical Collision Risk and Total Vertical Collision Risk, calculated for each UIR from the LHD reports sent by the States. The study noted that besides the coordination errors, the main cause of the LHDs, and the resulting failure to comply with the TLS, four deviations are due to ATC loop errors.

2.2.6 Moreover, it is noteworthy that there is traffic in conflict in three out of all the deviations reported by the States. The meeting noted that the existence of situations with traffic in conflict in this assessment makes necessary to strongly insist on the need of implementing adequate corrective actions to reduce operational errors in the Corridor.

2.2.7 The meeting agreed on the need for the implementation of corrective actions in order to reduce operational coordination errors affecting operational risk. In this regard, especial account should be taken of the situations with traffic in conflict, the need for the monitoring the LHDs caused by ATC loop errors, and the identification of their causes in order to propose, if applicable, the adequate corrective action.

2.2.8 The meeting was also provided with the evolution of the LHD reported to SATMA by ACCs, other Monitoring Agencies and IATA during 2011 as collected by the LHD Monitoring Team. It was noted that during this one year period a total of 206 LHD reports were forwarded to SATMA and 12 among of these reports are related to the use of the OLDI link.

2.2.9 The causes of the operational coordination errors were identified as follows:

- 92 Cases of “entry into airspace at incorrect flight level”. Normally no revision of the flight level communicated on the previous estimate (verbal or OLDI)
- 56 Cases “lack of in data over the common boundary point”. Normally traffic without estimate over the boundary fix point
- 55 Cases “no revision of the estimate, ETO, over the boundary fix point”
- 2 Cases “estimate for different COP”
- 1 Case “lack of separation over the boundary fix point”

2.2.10 The outcome of 40 investigations was communicated to SATMA with 4 cases reflecting problems with radio or CPDLC communications as well as one loss of separation over the boundary fix point. The meeting encouraged SAT ACCs, aircraft operators and adjacent RMAs to continue reinforcing the culture of safety by reporting and analysing the LHD, as well as to solve and implement common safety solutions along the EUR-SAM Corridor and formulated the following conclusion:

Conclusion SAT17/01: LHD

That:

a) SATMA, Brazil, Cape Verde, Senegal and Spain, work on measures to decrease amount of LHDs.
b) Identified measures to be implemented by amending agreements affecting those four States.
c) SAT ACCs, aircraft operators and adjacent RMA continue reinforcing safety culture by reporting and analysing the LHD

2. 3 **Follow up of the AORRA airspace implementation.**

2.3.1 The meeting was reminded on the successful implementation of AORRA Phases 3 and 4 on the AIRAC date of 26 August 2010 and on the follow up measures to be taken to ensure the safety of the operations and to provide increased benefit from the random routing system.

2.3.2 The meeting considered 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 aiming to provide increased environmental benefits. Likewise, this extension would bring the AORRA boundary to an optimum distance from the North East continental border in order to benefit from the ground radar and VHF coverage where currently available.

2.3.3 At the invitation of the meeting, and in conjunction with IATA, Abidjan and Accra ACCs convened a side meeting during which the technical actions to be taken for the extension of AORRA were agreed. The meeting also invited the two ACCs to coordinate with Roberts FIR that must be involved in the process. The following conclusion was therefore formulated:

Conclusion SAT17/02: Extension of AORRA as per Conclusion SAT16/03

That Abidjan ACC and Accra ACC:

a) Implement as agreed, the extension of AORRA air space to 04° north, at effective AIRAC 20 SEP 2012 with publication date AIRAC 26 July 2012.
b) Fully coordinate with Roberts FIR prior implementation.

2.3.4 The meeting was recalled by ASECNA Senegal that the number of aircrafts flying in the AORRA airspace keeps on growing, making more and more difficult the tasks of surveillance and communication. The meeting noted that about 65% of aircrafts flying in this oceanic airspace (which is not radar and/or VHF covered) are not ADS-C / CPDLC equipped. The meeting recognized that a systematization of the use of ADS-C / CPDLPC (even though not mandatory in RNP10 airspace) would mitigate the problems of communication and surveillance in this inter-tropical area, where dangerous meteorological phenomena for the aviation generate numerous deviations (sometimes for more than 100NM), to be handle by the air-traffic controller.

The meeting invited IATA to encourage its member airlines to increase the use of ADS-C/CPDLC in the AORRA airspace. The meetings formulated the following conclusion:

Conclusion SAT17/03: Implementation of ADS-C/CPDLC in the AORRA Space

That in order to improve safety and enhance ATC operations, IATA encourages aircraft operators to make use of ADS-C/CPDLC and promote aircraft equipage.

2.4. ATS Contingency planning

2.4.1 In the frame of the implementation of Conclusion SAT15/06: ***Contingency plan for the SAT Area*****,** South Africa provided the meeting with 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 noted the provision of South Africa and urged SAT Member States/FIRs to study the draft contingency Plan, compare it with individual national contingency plans for harmonization and submit comments or disagreements to Johnny Smit (South Africa) who will compile the feedback and submit to SAT /18 for review and adoption.

2.4.2 The attention of the meeting was drawn once again 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 . It was therefore recalled that, these routes should be only "suspended" not "cancelled"; meaning that their related waypoints should remain on the charts and in aircraft databases as well.

Agenda Item 3: Communications, Navigation and Surveillance (CNS)

3.1 Follow up of SAT/16 Conclusions pertaining to the CNS field

Follow up Conclusion SAT/16/10: Implementation of the ATS/DS Circuit between Luanda and Atlántico

3.1.1 The meeting discussed the evolution of the project consisting to implement the ATS/DS circuit between Luanda and Atlántico. Brazil informed the meeting on its ongoing discussion for a contract which is expected to be signed by the end of year 2012 with INSA, the CAFSAT network provider in order to modernize its node in Recife; This project takes into consideration the need for the link with Luanda.

3.1.2 With the absence of ENANA the Angola Air Navigation service provider, the meeting could not be provided with any consistent information indicating Angola intended or planned project and the network provider confirmed that contact was established with ENANA in the past but currently there was no discussion and no more contact for future discussion with Angola on the project.

3.1.3 The meeting agreed on a need for a meeting between Angola and Brazil with the assistance of ICAO to tackle this safety issue. The following conclusion was formulated:

Conclusion SAT17/04: Implementation of the ATS/DS Circuit between Luanda and Atlantico

That as a matter of urgency:

a) Angola confirm to SAT members the schedule within which it intends to implement the CAFSAT nodes of Luanda taking into consideration the project of modernization of Recife CAFSAT node planned by Brazil;

b) Angola and Brazil convene under ICAO auspices, and no later than 30 September 2011, a coordination meeting/teleconference to agree on a planning of the effective implementation of the ATS/DS circuit between Luanda and Recife before the end of June 2013.

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

3.1.4 The meeting reviewed the capability of the VCCSs of SAT ACCs to support N5 protocol. It was noted that Brazil, Cape Verde, Portugal and Spain VCCSs are N5 capable. Abidjan and Dakar VCCSs are not N5 capable. The meeting also noted that the bandwidth consumption on the CAFSAT Network can be a constraint for N5 implementation.
Spain presented a test bed aiming to interfacing any VCCS with the N5 protocol switching system.

3.1.4 The meeting encouraged Spain and SAT States to pursue the trials on ATS-N5 Voice switching protocol based on the test bed developed by Spain and report to its future session and formulated the following conclusion:

Conclusion SAT17/05: Trials for extension of ATS-N5 Voice switching protocol

That SAT States pursue the trials on ATS-N5 Voice switching protocol based on the test bed developed by Spain and report to SAT/18.

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

3.15 The secretariat informed the meeting that the operational requirements had not been defined by the SAT ATM WG and transmitted to the CNS WG as requested by SAT/16 Decision /02. The meeting was reminded on the need to properly define the operational, requirements for ADS data sharing.

3.1.6 It was proposed and agreed that the study on the requirements for ADS data sharing be included in the activities of the CFRA the Terms of reference and work programme of which should be reviewed accordingly. The following decision was formulated:

Decision SAT17/02: Operational Requirements for ADS Data Sharing

That the Terms of Reference and work programme of the CFRA be reviewed to include the study on the operational requirements for ADS Data Sharing.

Follow up Conclusion SAT/16/12 & SAT/16/13: Development of Memorandum of Understanding for AMHS interconnection and Implementation AMHS within the SAT region

3.1.7 The meeting reviewed the status of implementation of AMHS within SAT States; It was noted that some ACCs have already implemented AMHS and are conducting trials (Portugal, Spain). Ghana reported to have concluded a contract with its supplier and will be fully operational by the end of year 2012. ASECNA has launched a call for tenders for its member states. It was concluded that the secretariat will circulate a table for the update of the status of implementation of AMHS.

3.1.8 The meeting also reviewed the pace of participation of SAT members to workshops and seminars convened by ICAO Regional Offices, Dakar, Lima and Nairobi to assist States in the implementation of AMHS. ASECNA for its members State, Angola, Portugal and Spain participated in such events and took benefit from the technical guidance provided.

The meeting recognized the effort deployed by ICAO to assist States through these events and encouraged SAT States to endeavor attending the future meetings. The following conclusion was formulated:

Conclusion SAT17/06: Implementation of AMHS within the SAT region

That in order to ensure a coordinated AMHS interconnection:

a) ICAO Regional Office of Dakar develops and circulates between SAT members, a template on the current status of implementation of AMH
b) SAT members report on the future development of the ongoing and/or planned project for the implementation of AMHS;
c) ICAO pursues the assistance to SAT members in the implementation of AMHS through Regional seminars and workshops.

3.1.9 The meeting also confirmed the need of coordination between SAT members when implementing AMHS. This coordination was recognized to be the necessary means of harmonization of AMHS systems. The following conclusion was formulated.

Conclusion SAT17/07: Trials on AMHS systems

That when implementing AMHS systems SAT members take the necessary actions to conduct trials with their neighboring centers through Memorandum of Understandings (MoU) as called upon by SAT/16 conclusion 16/12.

3.2. Review of AFS performance

Follow up Conclusion SAT/16/14; 16/19 and decision 16/04: Regular Evaluation of AFS performance; Development of CAFSAT Earth Stations Performance Data Collection Form (PDCF) and Utilization of provisional templates for the collection of the Performance data statistic of CAFSAT nodes

AFS Performance

3.2.1 The meeting reviewed the performances of Aeronautical Fixed Service (AFS-ATS/DS & AFTN) presented by the Secretariat and by ASECNA.

The meeting examined the data compiled for Nouakchott and Dakar centers and noted that the yearly 2011service availability for the main **ATS/DS** circuits has been satisfactory in general, during this period and for the first two months of year 2012.Although the means of investigation is

subjective due to lack of standardized guidance for ATS/DS quality measurement, it was agreed that the average availability rate is above **97.5%.**

3.2.2 For the AFTN operations, the meeting also noted a general satisfactory availability rate along year 2011 except dysfunctions encountered between Dakar and Johannesburg in March 2011 and between Nouakchott and Casablanca in September 2011. The average rate of availability was above 97% as required in the AFI Air Navigation Plan (*AFI/7 Recommendation 9/3*).

AFS Performance Data collection process

3.2.3 The meeting discussed the issue pertaining to the collection of statistic Data of Aeronautical Fixed Service and noted that this issue remains a major concern to the Secretariat , some States still do not submit the necessary information in due time. It was recalled that this issue raised up by relevant conclusions of previous regional meetings such as APIRG was brought to the attention of SAT members and a commitment was taken under conclusion 16/14 of SAT/16 consisting on forwarding the monthly availability of AFS (AFTN & ATS/DS) to the respective ICAO Regional Offices for compilation and analysis starting from first of June 2011.

3.2.4 As stated during previous meetings, the current mechanism of collection of the statistic data for AFS does not seem to be the suitable methodology to easily provide the Regional Offices with the row material for analysis. The meeting noted that it would be advisable that the SAT State develop an electronic data base tool and adopt a suitable methodology for the validation of the integrity of the data in accordance with SARPs stated in Annex X Volume III Chap 8.

3.2.5 The meeting recognized that this mechanism would be useful for an easier collection, compilation and analysis of the data as well as it will ensure the development of the web based data collection tool called upon by the AFI Region ***(APIRG Conclusion 17/15)*** to enable States to key in directly the AFS statistic data for monitoring.

The meeting encouraged SAT States to take into consideration the requirements of these functionalities when purchasing the AFS new facilities to accordingly integrate them in the technical specifications.

3.2.6 The meeting was informed that APIRG/18 meeting adopted the draft **P**erformance **D**ata **C**ollection **F**orm (**PDCF**) aiming to compile technical and operational statistics data on the VSATs networks operated within the Region. The template includes the collection of AFS statistics of availability.

Portugal has already commenced using successfully this template. It was agreed that SAT States adopts this template to report on AFS availability. ICAO Regional Office of Dakar was invited to circulate an excel version among the SAT members. The following conclusion was formulated:

Decision SAT17/03: Performance Data Collection Form (PDCF)

That the Performance Data Collection Form adopted by APIRG/18 meeting and presented in Appendix C to this report be used by SAT members to assess the operational and technical performance of AFS.

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

3.2.7 The meeting examined the issue related to the missing Flight Plan within SAT area; It was noted that with the growing pace of automation of ATM operation through the implementation of ADS-C/CPDLC the availability of Flight Plans will be a crucial issue to be tackled in order to ensure the safe operation of Data communication and Surveillance systems.

The meeting was reminded on the ongoing migration process towards the ICAO New Flight Plan Format that will be in force on 15 November 2012.

3.2.8 ASECNA reported to have developed as requested by SAT 16, a procedure for the analysis of missing Flight Plans that was under internal trials before circulation among SAT Members; The meeting urged ASECNA to share the procedure for consolidation by SAT members. The following conclusion was formulated:

Conclusion SAT17/08: Development of a consolidated procedure for the analysis of missing Flight Plans

That in accordance with the statement of conclusion SAT/16/15, ASECNA circulates by the end of May 2012, the draft procedure amongst SAT members for consolidation and assessment of the missing flight plans to be reported to SAT/18.

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

3.2.9 The meeting examined the status of implementation of Conclusions SAT16/16 & SAT 16/17 *ATS voice circuits implementation via REDDIG and CAFSAT VSAT networks and ATS voice circuits implementation via AFISNET and CAFSAT VSAT networks.*

In spite of the operational requirement raised up by SAT 16 meeting it was noted a low pace of implementation of these conclusions.

The Secretariat reminded the meeting on the draft action plan developed by ICAO SAM Office and adopted by SAT 16 meeting for the implementation of such circuits and requested the stake holders to confirm their intention to progress on the implementation process. The following conclusion was formulated:

Conclusion SAT17/09: ATS voice circuits implementation by double hoop satellite link through the REDDIG, CAFSAT and AFISNET networks

That:

a) **Argentina, Brazil, French Guyana, Santa Maria, Senegal, South Africa, Trinidad &Tobago, Uruguay and Cote d'Ivoire confirm to the respective ICAO regional offices by the end of September 2012 their plan to implement ATS voice trials using a double hoop satellite link through the REDDIG, CAFSAT and AFISNET networks following the draft Action Plan developed by SAT/16 (Appendix D to SAT/16 report), in order to complete the pending direct circuit implementation between CAR /SAM, AFI and NAT.**
b) **AFI SAM and NAT ANPs to be amended accordingly.**

3.3 CNMC issues

3.3.1 Further to the difficulties encountered by Spain to find contact person in SAT States to respond to the request for comments on the reengineering preparation activities, the Secretariat reminded the meeting with the importance for each State to nominate a contact person to handle the re-engineering exercise as called upon by decision SAT/16/05 (**Establishment *of a Joint Technical Team for CAFSAT Network evaluation and re-engineering*).** The following decision was formulated:

Decision SAT17/04: Nomination of contact persons for the joint technical team for CAFSAT evaluation and re-engineering.

That SAT concerned members communicate to Spain (Team Leader) the name and the title of their designated contact person for the joint technical team for CAFSAT evaluation and re-engineering no later than end of April 2012.

3.3.2 Spain reported on the initiatives taken for the development of the CAFSAT Network evaluation and re-engineering exercise. It was recalled that a draft Document for CNM evaluation and re-engineering had been circulated by Spain among concerned SAT members for consolidation but by the time being, no contribution was received back from members. Spain also presented an initial schedule for CAFSAT evaluation and re-engineering future activities.

3.3.3 It was agreed that the document will be the Reference Working Document and will be examined point by point and link by link establishing the best technical configuration for the Network by the next CNMC meeting to be convened in Dakar during the 3rd quarter of year 2012.

It is expected that with the inputs from all States, a final roadmap that will include all CAFSAT nodes new design, equipment and configuration and a global implementation plan schedule and tasks will be developed and approved.

The following decision was formulated:

Decision SAT17/05: CAFSAT Reengineering Roadmap and Reference Document

That:

a) The CAFSAT Reengineering schedule and its Reference Working Document developed by Spain are approved as presented to SAT states.
b) CNMC members follow up and provided Spain with the adequate additional information for the development of the project.

3.3.4 The meeting also discussed the issue related to the venue and holding of CNMC. It was recognized that opportunity should be taken to hold CNMC meetings during SAT meetings period in order to take benefit of the presence of participants of SAT states.

The meeting proposed that CNMC meetings be held in parallel with SAT/FIT meetings with merged sessions if necessary. However the future meeting will be held in Dakar before the end of year 2012 to ensure the progress on the ending reengineering exercise. The following Decision was formulated:

Decision SAT17/06: Holding of CNMC meetings

That in order to ensure coordination and optimize resources, CNMC and SAT/FIT meetings are held at the same venue and dates with merged sessions if necessary.

3.3.5 The Secretariat informed the meeting with a short summary of the outcome of the second meeting of the AFI VSAT networks Managers held in Douala, Cameroon from 30 January to 01 February 2012 and commented Decision 18/28 of APIRG 18 meeting, held in Kampala, Uganda from 27 to 30 March 2012, establishing a Task Force For the AFI Aeronautical VSAT Networks Regional Project. SAT concerned States were encouraged to participate in the future meetings of the Task Force. The following conclusion was formulated:

Conclusion SAT17/10: Participation of SAT members to the meetings of the Task Force on an integrated AFI Aeronautical VSAT Networks

That SAT concerned members namely Angola, Cape Verde, Cote d'Ivoire, Ghana, Mauritania, Spain, Senegal, South Africa, Roberts endeavor to regularly participate in the meetings of the Task Force on an integrated AFI Aeronautical VSAT Networks aiming to harmonize the implementation of a robust satellite based backbone network for the provision of ATN components and other CNS services.

Agenda Item 4: Communications, navigation and surveillance / Air traffic management (CNS/ATM) Systems (Plenary session)

4.1. Harmonization of ADS-C/CPDLC programmes

4.1.1 Under this agenda item the meeting reviewed the Report of the Seventh SAT FANS 1/A Interoperability Team (SAT/FIT/7) that was held from 16 to 17 April 2012. The SAT FIT meeting adopted seven (07) Conclusions and four (04), Decisions aiming to reinforcing the interoperability between FANS1/A systems within SAT area. The meeting agreed on the conclusions and decision of the SAT FIT/7 meeting by formulating the following decision:

Decision SAT 17/07: Adoption of SAT/FIT/7 Report

That the SAT/FIT/7 Report and its conclusions are approved as presented to SAT/17Meeting.

4.2. RNP4 in the EURSAM corridor

4.2.1 SATMA presented a preliminary assessment of the feasibility to implement the RNP-4 in the EUR/SAM corridor as a target of the work programme of the IAS/SG. The meeting was reminded on the different arrangements agreed by previous SAT meetings in particular Decision SAT14/TF1/ 11 (2009-Cape Verde): *That EUR/SAM Corridor States and ANSPs are Agreed on a need for a RNP4 - 30/30NM implementation strategy*; Decision SAT15/FIT5/ 3 (2010-Lisbon):*That IATA and ACC units encourage Airlines to increase their level of participation in ADS-C/CPDLC operations in order to enhance safety and efficiency of operations within the SAT and specially the EUR/SAM corridor.*
By Decision SAT 16/06 –Brazil it was agreed by all EUR SAM States that consolidation of FANS1/A aircraft facilities, prior to RNP4 fleet certifications, should be a prerequisite for the implementation of RNP 4 in the area.

4.2.2 SATMA presented the analysis of the consolidation of FAN1/A in the EUR/SAM Corridor based on data relative to the performance and use of FANS services for the year 2011, concerning aircraft flying in the UIR Canaries from/to the EUR/SAM Corridor collected and reported by AENA.

An abstract of this report shown in the table below indicates that:

- Approximately **60%** out of the total within the EUR/SAM Corridor are FANS equipped flights.
- Almost every equipped flight connected to SACCAN (**95%).**
- The majority if logged-on flights exchange CPDLC information (**95%**).
- **The trend of figures is kept regarding the 2010.**

Therefore, the ***prerequisite for the implementation of RNP*** *4,* the consolidation of FANS 1A**, has not yet been achieved** in the EUR/SAM Corridor.

Traffic data summary

Traffic Data	2011			2010
	Mean	Maximum	Minimum	Mean
Number of connected flights	**1658**	**1843**	**1482**	**1601**
Percentage referred to total number of flights in the EUR/SAM Corridor 1	**59.07%**	**62.7%**	**54.69%**	**61,37%**
Percentage referred to flights in the EUR/SAM Corridor * indicating data link and ADS capacity in the Flight Plan	**94.89%**	**96.66%**	**93.55%**	**97,99%**
Number of flights with CPDLC connection (Monthly average)	**1546**	**1712**	**1410**	**1525**

On the other hand, the study highlighted that the lack of the CFRA involves that there are not global data and monitoring of FANS 1/A in the EUR/SAM Corridor.

FANS1/A equipped & RNP4 certified aircraft

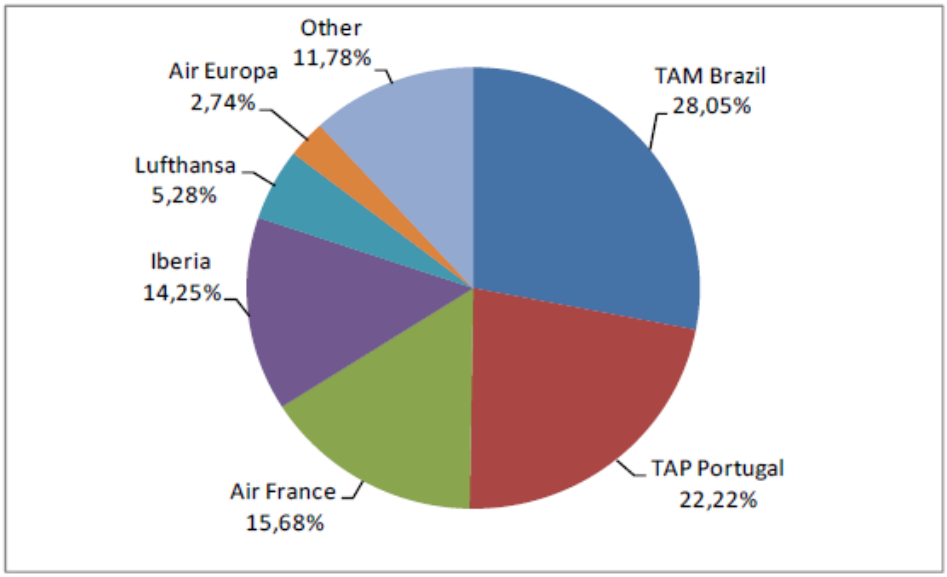
4.2.3 In addition, SATMA has contacted with states, IATA and airlines to compile data and information required to know the current status of FANS1/A equipped and RNP4 certification aircraft. The status of equipped and RNP 4 certified aircraft is summarized as follows.

Equipped and certified aircraft summary

Airlines	Operating the following FANS1/A aircraft	Aircraft in the EUR/SAM Corridor	% TOTAL
KLM	A330-200 (12) A330-300 (4) * in 2012 B777-200 (17) B777-300 (5)	- - Yes Yes	1,3%
AFR	All aircraft are RNP4/FANS certified and french CAA (DGAC) will deliver to AFR the approval to fly RNP4 routes in early 2012	All	14,69%
DLH	B747-400 (30) FANS 1 and RNP /4/10 B747-8 (17) FANS 1 A and RNP 1/4/10 from 2012 A330s (15) FANS A+ and RNP 1/4/10 A340-600s (24) FANS A+ and RNP 1/4/10 19 of 26 A340-300 are FANS A and RNP 1/4/10	Yes - - Yes Yes	2,2 % (1 % exc)
IBE	All aircraft are RNP10/FANS certified. The most of them are equipped RNP4 but not certified.	Yes	14,25%
LPE	B767-300 Not RNP4 certificated.	Yes	-
IWD	A330-300 (2) FANS 1/A A330-200 (1) FANS 1/A from 2012	Yes	0,2 % (0,05 % exc)

4.2.4 The compilation of the most significant airlines registered in Canarias (SACCAN-CANARIAS ADS/CPDLC System) their percentages of FANS-1/A connections referred to the total number of connected flights for the whole time of study is shown as follows:

Average percentage of most significant airlines



Although the presented sample does not include all airlines in the corridor, the lacks of Acceptable Means of Compliance (**AMC**) to certificated RNP4 as well as the **uselessness** for EUR/SAM Corridor (currently there are not benefits operatives) and other areas (e.g. nowadays in North Atlantic it is not required) confirm that **the evolution of this certification will be slow and progressive during several years**.

4.2.5 The study took into account that airlines should have to certificate each aircraft and its crew that operate in the EUR/SAM Corridor to not obtain any operational benefits. To have an idea of this process, next table shows the Airworthiness and Operational Approval Matrix required

Operational Approval Matrix for aircraft

Operational Approval Process (PBN Vol II, Part B/C, Paragraph X.3.2.2)	**Evidence of Aircraft Eligibility**	**Assessment of the on-board navigation system for the following functional requirements**	**Assessment of the Operating Procedures for the navigation system(s) to be used**	**Control of those procedures through acceptable entries in the Operations Manual(s)**	**Identification of flight crew, flight dispatchers and maintenance personnel knowledge and training**	**Where required, control of navigation database process**
RNP 4	(PBN Vol II, Part C, Paragraph 1.3.3) **FAA Order 8400.33** FAA AC 20-130A FAA AC 20-138A • Aircraft fitted with GNSS only as an approved long range navigation system for oceanic and remote airspace operations must meet the technical requirements specified in paragraph 1.3.3. • Appropriate standards are FAA Technical Standard Orders (TSO) C129a or C146(), and EASA Technical Standard Orders (ETSO) C129a or C146() • Multi-Sensor Systems Integrating GNSS with integrity provided by RAIM. Multi-sensor systems incorporating GPS with RAIM and FDE that are approved under FAA AC20-130A	(PBN Vol II, Part C, Paragraph 1.3.3.2) Functional requirements • display of navigation data; • track to fix (TF); • direct to fix (DF); • direct—to function; • course to fix (CF); • parallel offset; • fly-by transition criteria; • user interface displays; • flight planning path selection; • flight planning fix sequencing; • user defined course to fix; • path steering; • alerting requirements; • navigation data base access; • WGS 84 geodetic reference system, and • automatic radio position updating.	(PBN Vol II, Part C, Paragraph 1.3.4) Pre-flight planning • The onboard navigation data must be current and include appropriate procedures • Review contingency procedures for the event that aircraft can no longer navigate to its RNP 4 capability Enroute • At least two LRNSs must be operational at the entry point to RNP 4 airspace • Advise ATC of any deterioration or failure of the navigation equipment that falls below the required level	(PBN Vol II, Part C, Paragraph 1.3.4) General Operating Procedures • Cross-checking procedures must be in place to identify navigation errors • Use a lateral deviation indicator, flight director or autopilot in lateral deviation mode on RNP 4 routes • Pilots may use a navigation map display with equivalent functionality to a lateral deviation indicator • MEL update	(PBN Vol II, Part C, Paragraph 1.3.5) Pilot training Operators must ensure that flight crews are trained and have appropriate knowledge of topics contained in the PBN Navigation Specification, the limits of their RNP 4 navigation capabilities, the effects of updating and RNP 4 contingency procedures	(PBN Vol II, Part C, Paragraph 1.3.6) The navigation database should be obtained from a supplier that complies with RTCA DO-200A/EUROCAE ED 76. LoA issued by the CAA of the State of Registry demonstrates compliance with this requirement.

Impact of "FL, Route or Airspace"

4.2.6 Once defined the area to apply this change, except for specific aircraft to be defined, **only** aircraft which are RNP-4 approved will be authorized to operate within the same.

At the same time, each Air Navigation Services Provides must be in compliance with:

- **NAVAID INFRASTRUCTURE CONSIDERATIONS**
  RNP 4 does not require any ground-based navaid infrastructure. Nevertheless, GNSS is the primary navigation sensor to support RNP-4, either as a stand-alone navigation system or as part of a multi-sensor system.

- **COMMUNICATION CONSIDERATIONS**
  In accordance with annex 11 the Communications requirements are: Direct controller-pilot voice communications or controller-pilot data link communications (**CPDLC**),

- **SURVEILLANCE CONSIDERATIONS**
  *According with annex 11 the s*urveillance requirements are: An **ADS system** in which an event contract must be set that includes a lateral deviation event report whenever a deviation from track centre line greater than 9.3 km (5 NM) occurs. Note that (Prior to implementation, a system verification of sufficient duration and integrity shall be performed). The separation minima to be applied, it will affect to the ADS-C periodic reporting interval.

The table below summed up the requirements for the Air Navigation Service Provider (ANSP):

Requirements for ANSP

. . . NAV	. . . COM	. . . SUR
. . . Based on **GNSS.**	. . . Direct controller-pilot voice communications **or** . . . CPDLC	. . . **ADS C** in accordance with determinate specifications

In this regard, the status of implementation of ADS-C/CPDLC ground systems in the EUR/SAM corridor is fully operational.

4.2.7 Nevertheless, as it has been indicated before, aircraft equipage is not complete (around 60%). On the other hand, in accordance with the report provided by CFRA in 2010 and the report on FANS services in Canarias airspace of the EUR/SAM Corridor during 2011 provided by AENA, there are several operative issues, such as the following ones, that should be addressed:

- Problems with A/C Log-On due to diverse causes;
- Flight Plans with incorrect aircraft registration;
- Reception of Not Current Data Authority.

The meeting therefore recommended reviewing the full report with all the operative issues as well as the technical.

4.2.8 Due to the current capabilities of aircraft that overfly the EUR/SAM corridor as well as the ATS service provided, SATMA suggested that previous to implement the RNP 4 it will be necessary to address some of the following options:

- To guarantee harmonized ADS/CPDLC procedures as well as to implement an adequate monitor and report on ADS/CPDLC. Both tasks are considered like part of duties and responsibilities of CFRA. Therefore, SATMA suggests **promoting a real implementation of Central FANS 1/A Reporting Agency CFRA**.

- According with the Regional Supplementary Procedures (DOC 7030), for flights in the EUR/SAM corridor (Canarias (southern sector), Dakar Oceanic, Recife and Sal Oceanic FIRs), a longitudinal separation minimum of 93 km (**50 NM**) derived by RNAV may be applied between RNAV-equipped aircraft approved to RNP 10 or better, in accordance with the provisions of the PANS-ATM, 5.4.2.6. In this line, for aircraft cruising, climbing or descending on the same track, the following separation minima may be used:

Separation minima – RNP Type

Separation minima	RNP type	Maximum ADS-C periodic reporting interval
93 km (50 NM)	10 4	27 minutes 32 minutes
55.5 km (30 NM)	4	14 minutes

- The indicated periodic reporting intervals are specific to the use of ADS-C and are derived from performed safety assessments. As a result, these intervals may differ from those required for use with other procedural RNAV longitudinal separation minima.

4.2.8 Obviously the aircraft certification is yet achieved. Nevertheless, the requirements in the ATC System are different to apply the mentioned reduction for ANSP. Likewise, these improvements only could be applied between aircraft with defined minimum navigation performance specifications. Hence, **it could be defined a specific area to apply this improvement (50/50 NM based on RNP10) and so to encourage the consolidation of FANS/1A**.

The following conclusion was formulated:

Conclusion SAT17/11: Implementation of RNP 4

That:

a. SATMA and SAT States initiate study for a mandatory target date for aircraft FANS equipage on the routes in the corridor in close coordination with NAT region.
b. IATA assists with the data.

4.3. SATISFIED project

4.3.1 The meeting was presented with the **SAT I**mproved u**S**e of **F**light corr**I**dor for **E**missions reduction (**SATISFIED**) initiative supported by the European Union through SESAR-JU.

The aims of the SATISFIED project proposal are to trial and assess the feasibility of implementing flexible optimized oceanic routes with the following objectives:

.

- Allow for a minimum of 50 flight trials in the EUR-SAM corridor
- Identify routes which allow flying optimized route segments.
- Reduction in emissions achieved by allowing flying closer to the a/c's Optimal Preferred Trajectory or RBT as compared to the current scenario.
- Identify the coordination actions required between the SAT's Oceanic centres, the aircraft operators, the flight crews and ATC for the modification of trajectories and stimulate their coordinated interaction.
- Assess through the deployment of flight trials and post flight assessments, the economical, environmental and operational benefits of suing flexible routes.
- Demonstrate that forecasted benefits can be obtained without increasing the workload on Controllers or Crew.
- Publish the results and stimulate through dissemination and communication the application/extension of flexible routes through all the EUR-SAM Corridor.

4.3.2 The initiative involves 1ANSP (AENA), Airlines, (Iberia and Air Europa); Civil Aviation Authority (AESA) Specialist Aviation Consultancy (INECO and SENASA). The meeting was also informed on the benefit that can be taken from such initiative in the matter of reduction of separations

for RNP4 equipped aircraft, optimization of Oceanic Entry/Exit transition and oceanic trajectory (horizontal, vertical, longitudinal), optimization of the Oceanic Area, better use of Meteorological information.

It was also noted that significant savings in fuel consumption and emissions can be ensured when flexible routes are allowed along OCEANIC control areas, without increasing the workload of the operators (ANSPs and flight crew).

4.3.3 The meeting encouraged the stake holders to pursue their effort and invited Spain to introduce strategic partnership to reduce emission in the EUR/SAM Corridor to improve energy efficiency through the development and the implementation of environmental friendly procedures. The following conclusion was formulated:

Conclusion SAT17/12: SATISFIED Project

That Spain introduces strategic partnership to reduce emission in the EUR/SAM Corridor to improve energy efficiency through the development and the implementation of environmental friendly procedures.

Agenda Item 5: Adoption of the conclusions/decisions of the SAT/17 meeting

5.1 The meeting reviewed and adopted the draft conclusions and decisions developed by the secretariat

Agenda Item 6: Future work programme

6.1 The meeting reviewed and adopted the Term of Reference and Work Programme of the SAT Group as presented in **Appendix D** to this report. The following decision was formulated:

Decision SAT 17/08: work programmes of SAT ATM & CNS/WGs

That the work programmes of SAT ATM & CNS/WGs be amended as shown at Appendix D to this report.

Agenda Item 7: Any other business (Plenary

Participation of Piarco to SAT Meetings

7.1 The meeting noted the low pace of participation of Rochambeau and Piarco to the SAT Group meetings although these centres are concerned in the resolution of safety issue within the SAT area. The meeting encouraged these two centres to endeavour to regularly attend the future SAT meetings. The following conclusion was formulated:

Conclusion SAT 17/13: Participation of Rochambeau and Piarco to SAT Meetings

That as a matter of coordination efficiency Rochambeau and Piarco ACCs endeavour to regularly attend the SAT meetings.

APPENDIX A
INTERNATIONAL CIVIL AVIATION ORGANIZATION
Western and Central African Office

Seventeenth Meeting on the Improvement of Air Traffic Services over the South Atlantic (SAT/17)

(Las Palmas, Gran Canarias, Spain, 18-20 April 2012)

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APPENDIX B

Status of Conclusions and Decisions related to SAT/16 Meeting

Conclusions and Decisions	Implementation Status	Remarks
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.***	**Still valid**	**Refer to para 2.1 of this the report**
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.***	**Implemented**	
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.***	**implemented**	**Super seded by Conclusion SAT17/02**

Conclusions and Decisions	Implementation Status	Remarks
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.***	**Still valid**	**South Africa to report to next meeting.**
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 ASESSMENTS" published in SATMA website (www.satmasat.com)***	**continuous**	**SATMA will report on the issue**
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.***	**ongoing**	**Proposal for amendment to Doc 7030 drafted by ICAO Dakar; under review by APIRG Secretary; will be forwarded soon to the Council and circulated to all States.**

Conclusions and Decisions	Implementation Status	Remarks
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.***	**Continous**	**SATMA will report on the issue**
Decision SAT 16 /01: LHD reporting ***That the SATMA Altitude Deviation Form as amended and shown at* Appendix C *is adopted.***	**implemented**	
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***	**Still valid**	**South Africa to report to next meeting.**
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.***	**continuous**	
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***	**On going**	**Spain Angola and Brazil to Report on this issue**

Conclusions and Decisions	Implementation Status	Remarks
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:*** ***a) Spain provide an update procedure for the implementation of ATS-N5 voice switching protocol in EUR/SAM area by 30th June 2011;*** ***b) Other SAT States report current VCCS capability to support ATS-N5 by 29 July 2011;*** ***c) 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.***	**On going**	**Spain to report on trials** **States to report on their VCCS capability to support ATS-N5 protocol**

Conclusions and Decisions	Implementation Status	Remarks
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/17 Meeting.***	**On going**	**ATM WG to report**
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.***	**On going**	**States to report**
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.***	**On going**	**States to report on this issue**
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.***	**Partially implemented**	**Statistics received from Morocco, Cote D'Ivoire, Senegal, Mauritania through ASECNA**
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.***	**On going**	**ASECNA to Report**
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).***	**On going**	**Concerned States to report on the issue**

Conclusions and Decisions	Implementation Status	Remarks
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 Atlántico ACCs.***	**Still valid**	**Brazil and Cote d'Ivoire to report**
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.***	**Implemented**	
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.***	**Still valid**	
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….***	**Completed**	**The PDCF has been adopted by APIRG 17 for the AFI Region**
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.***	**Completed**	**States to report** **No filled template was received within WACAF except from Portugal**

Conclusions and Decisions	Implementation Status	Remarks
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:*** ***Required service performance level of the network to support the operation and development of sensitive current and forthcoming CNS/ATM components;*** ***CAFSAT interoperability with its neighboring networks;*** ***Maintenance fundamental parameters governing service availability, continuity and integrity such as: reliability, turn over statistics, maintenance personnel expertise;*** ***Cost-effectiveness;***	**On going**	**A joint technical team has been established with Terms of Reference Led by Spain**
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.**	**Completed**	**Spain circulated a draft roadmap for the evaluation and re engineering project**
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.***	**Still valid**	**AFI States to report**
Decision SAT 16/06: SAT/FIT/6 Report ***That The SAT/16 Meeting approved the SAT/FIT/6 Report and its conclusions***	**Implemented**	
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***	**Done**	

APPENDIX C

PERFORMANCE DATA COLLECTION FORMS

Appendix C1

Earth Station Parameters

Centre:

Date:

Parameters	Values	Remarks
Fixed Parameters		
Intelsat link Name	IS 901 @°E	
Transponder Number	36/36	
Satellite Earth Station Coordinates	LONG = ddd, mm O/E LAT = dd, mm N/S	Under WGS 84 Format
	AZ = ddd, mm O/E EL = dd, mm N/S	
Antenna Type and Size	….m	
Antenna Gain	Tx : …dBi Rx : …dBi	
SSPA type	X W	
Up Converter Frequency	MHz	
Down Converter Frequency	MHz	
Global Dynamic parameters		
EIRP		
G/T		
C/N0		
BER		
MTBF		
MTTR		
Parameter for Carrier Performance		
Carrier failure rate		
C/N0		
BER		

Appendix C2

1: Performance of Aeronautical Fixed Service supported by CAFSAT

Performance of AFTN

Centre : Atlántico
Date /

Country	Terminal I	Terminal II	Support	COM Protocol	Speed	Transit Time	Routing	Monthly Availability 2011												½ Annual Average Availa-bility	
								01		02		03		04		05		06			
Brazil	Atlántico	Dakar	CAFSAT					TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX

2: Qualitative performance of ATS/DS

Centre :
Date /

Country	Terminal I	Terminal II	Support	Connexion Time	Nb of Attempts	One Way Latence Time	Call set up time	Voice Quality (1 to 5)	Monthly Availability 2011						½ Annual Average Availability
Brazil	Atlán-tico	Dakar	CAFSAT						01	02	03	04	05	06	

3: Qualitative performance of Future CNS Services

Country	Terminal 1	Terminal II	Support	Provided Service	COM Protocol	Speed	Transit Time	Routing	Availability						½ Annual Average Availability
									01	02	03	04	05	06	
Brazil	Atlántico	Dakar	CAFSAT	AIDC											
Spain	Las Palmas	Sal	CAFSAT	AMHS											

APPENDIX D
D.1 TERMS OF REFERENCE, WORK PROGRAMME AND COMPOSITION OF THE SAT ATM WORKING GROUP (ATM/WG)

- Considering the evolutionary implementation of CNS/ATM systems in areas of routing AR1/HA1 and AR2/HA8 *as defined in the Global Air Navigation Plan (ICAO Doc 9750)*, the Task Force should explore ways and means to achieve further enhancements in ATM capacity and aeronautical telecommunications, and to implement CNS/ATM elements taking into consideration the timescales agreed for these areas of routing. It will be guided by the requirements identified in the AFI and CAR/SAM CNS/ATM Implementation Plans.
- *Note: The Task Force will adopt a pragmatic approach and may set up auxiliary bodies to carry out specific tasks, as necessary.*

WORK PROGRAMME

TASK No.	SUBJECT	TARGET DATE
1.	Analyze ATM deficiencies and make proposals for their elimination.	Continuous
2.	Monitor pre-implementation/post-implementation safety assessments (as applicable) for RVSM and RNP operations in the South Atlantic, including adjacent areas.	**Continuous**
3.	Study and evaluate RVSM, RNP/RNAV procedures applicable in the AFI/CAR/SAM and EUR/SAM Interface areas.	Continuous
4.	Monitor flight plan availability and propose appropriate corrective measures.	Continuous
5.	Oversee FANS 1/A system performance monitoring to ensure that the system continues to meet safety and interoperability requirements and that operations and procedures are working as specified.	Continuous
6.	Carry out studies on the establishment of a central reporting agency (CRA) and related institutional issues	Completed
7.	Harmonize ADS/CPDLC programmes developed by SAT States/FIRs and analyze cost-benefit aspects related to their implementation.	Continuous
8.	Maintain ADS/CPDLC operational guidance material updated.	Continuous
9.	Conduct studies related to the implementation of the Global ATM Operational Concept and other enabling concepts within the SAT area.	Continuous
10.	4. Continue studies related to the extension of the AORRA airspace.	**SAT17**
11.	**Monitor the implementation of the ICAO New Flight Plan in the SAT Region.**	**15 November 2012**

- Note: The ATM/WG should take appropriate action on pressing issues and submit its proposal to the SAT/15 meeting.

COMPOSITION

- *The Task Force of multi-disciplinary nature shall comprise of experts from States responsible of FIRs in AFI and SAM routing areas AR1/AH2 and AR2/AH8 as defined in the Global Air Navigation Plan (ICAO Doc 9750), and experts from adjacent FIRs and international organizations.*
- ***Rapporteur:*** *Spain*
- *Tasks Nos. 5, 6, 7 and 8 are assigned to the SAT established FANS-1/A Interoperability Team (FIT) with South Africa as Team Leader.*
- ***Working arrangements****: The ATM/WG should complete its work and submit its proposal to the SAT Group. The ATM/WG should work through electronic correspondence prior to meetings.*

TERMS OF REFERENCE, WORKING PROGRAMME AND COMPOSITION OF THE SAT STUDY GROUP ON THE IMPROVEMENT OF THE AIRSPACE STRUCTURE IN THE EUR/SAM CORRIDOR (IAS/SG)

- To develop a strategy for the short-term, mid-term and long term for the implementation of a new airspace structure in the EUR/SAM Corridor with the end to improve the capacity and efficiency of the operations and to meet users needs.

WORK PROGRAMME

TASK No.	SUBJECT	TARGET DATE
1.	Analyze the current operational situation within the EUR/SAM Corridor taking into account statistics and users needs.	Completed
2.	Explore ways and means to restructure the EUR/SAM Corridor airspace	Completed
3.	Develop a short term plan using the current separation standards based on RNP10, including the implementation of new ATS routes.	Completed
4.	Analyze the advantages of introducing unidirectional ATS routes.	Completed
5.	Study the feasibility of implementing RNP4, using ADS/CPDLC functionalities.	**SAT17**
6.	Continue studies to implement a random routing area, using ADS/CPDLC functionalities.	**SAT17**
7.	Develop necessary cost benefit analysis for the different options.	**SAT17**
8.	Establish means to develop the safety assessment for the different implementation options.	**SAT17**
9.	Develop an action plan for the different implementation options.	**SAT17**

COMPOSITION

- Brazil, Cape Verde, France, Portugal, Senegal, Spain, Trinidad and Tobago, United States, ASECNA and IATA.
- ***Rapporteur****: Spain.*

- ***Working arrangements****: The IAS/SG should take the appropriate action to complete its work and submit its proposals to the next meeting of the SAT Group. The IAS/SG should work through electronic correspondence prior to meetings.*

D.2 TERMS OF REFERENCE, WORK PROGRAMME AND COMPOSITION OF THE SAT CNS WORKING GROUP (CNS/WG)

- Considering the CAR/.SAM and AFI Air Navigation Plans, the SAT CNS/WG should explore ways and means of achieving further enhancements in ATM efficiency within in areas of routing AR1/HA1 AR-2/HA8 *as defined in the Global Air Navigation Plan (ICAO Doc 9750),* by resorting to emerging technologies and, in particular, by taking advantage of rationalization, integration and harmonization of systems where appropriate.

- Implementation of new systems should be sufficiently flexible to accommodate existing and future services in an evolutionary and cost-effective manner.

- The associated institutional arrangements shall not inhibit competition among service providers complying with relevant ICAO Standards, Recommended Practices and Procedures.

WORK PROGRAMME

TASK No.	SUBJECT	TARGET DATE
1.	Analyze CNS deficiencies and make proposals for their elimination.	Continuous
2.	Review the report of the CAFSAT Network Management Committee	Continuous
3.	Undertake investigations on the lack of flight plans, including individual cases, with emphasis on the aeronautical fixed telecommunication network (links, switching centres, routing directory and transit time statistics).	Continuous
4.	Carry studies and make proposals to achieve end-to-end interoperability of ATM applications, in accordance with the ATM global operational concept.	**SAT/16**
5.	In accordance to CNMC conclusions and decisions evaluate the feasibility of using existing or emerging digital VSAT networks to support ATS data link applications in an ATN environment.	**SAT/16**
6.	Considering the implementation time-frames in the AFI and SAM CNS/ATM implementation plans, address cost-benefit aspects for the use of CNS/ATM applications (as required).	Continuous
7.	In coordination with SAT ATM/WG, share relevant technical aspects of different ADS/CPDLC Systems to be implemented by SAT States addressing issues regarding work methodology, procedures, data interchange, maintenance, etc.	**SAT/16**
8.	Analyze all aspects related to the implementation of ATS-N5 protocol in the SAT area in accordance with ICAO guidance material contained in Annex 10 and Doc. 9804	**SAT 16**

COMPOSITION

- The CNS/WG being of multi-disciplinary nature shall comprise of experts from States responsible of FIRs in the area concerned, experts from adjacent FIRs and international organizations and the aeronautical industry.
- ***Rapporteur****: Senegal.*
- ***Task Team leaders****: ASECNA (Tasks. Nos.2 and 4), South Africa (Task No.7)*
- ***Working arrangements****: The CNS/WG should complete its work and submit its proposal to the SAT. The CNS/WG should work through electronic correspondence prior to meetings.*