

INTERNATIONAL CIVIL AVIATION ORGANIZATION

WESTERN AND CENTRAL AFRICAN OFFICE



ELEVENTH INFORMAL MEETING ON THE IMPROVEMENT OF AIR TRAFFIC SERVICES OVER THE SOUTH ATLANTIC (SAT/11)

R E P O R T

(Johannesburg, South Africa 17 – 21 February 2003)

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History of the meeting

ii-1 Introduction

ii-1.1 The Eleventh (11th) informal meeting for the improvement of air traffic services over the South Atlantic (SAT/11 Meeting) was held pursuant to AFI/7 RAN Meeting Recommendation 5/11 and CAR/SAM/3 RAN Meeting Recommendation 5/30 in Johannesburg, South Africa, from 17 – 21 February 2003. The meeting was hosted by the Air Traffic and Navigation Services (ATNS) of South Africa and was held at the ATNS Aviation Training Academy, Bonaero Park.

ii-1.2 Mr. A.J. Bradshaw General Manager Air traffic management, ATNS South Africa, officially opened the meeting. He welcomed the participants and wished them fruitful deliberations and a nice stay in Johannesburg. He appreciated the relevance of the meeting and informed the participants of South Africa's commitment to providing the necessary infrastructure to improve safety of air navigation along the EUR/SAM corridor. He thanked ATNS authorities for the arrangement of the meeting and expressed happiness on the effort being put by the SAT Group to implement the new CNS/ATM systems.

ii-1.3 Mr. Harry Roberts, Manager Standard Assurance, ATNS was unanimously elected as Chairman of the meeting.

ii-1.4 Mr. Brou Konan, Regional Officer ATM, from the ICAO Western and Central African Office, Dakar was the Secretary of the meeting. He was assisted by Zo'o - Minto'o, Regional Officer CNS, from the ICAO WACAF Office, J. Fernandez, Regional Officer ATM, from the ICAO Lima Office and Mr. Apolo Kharuga RO/ATM Nairobi

ii-2 Attendance

ii-2.1 The meeting was attended by 37 participants from six (6) contracting States (Brazil, Cape Verde, Senegal, South Africa, Spain, United States) and five (6) international organizations (the Agency for the Safety of Aerial Navigation in Africa and Madagascar (ASECNA), The Air Traffic and Navigation Services (ATNS), the International Air Transport Association (IATA), South Atlantic Monitoring Agency (SATMA), Federal Aviation Administration (FAA) and Jeppesen.

ii-2.2 The List of participants and their contact addresses are shown at **Appendix G**.

ii-3 Working language

ii-3.1 The meeting was conducted in English language.

ii-4 Agenda

ii-4.1 The meeting adopted the following agenda:

Agenda item 1 : Review and follow up of SAT/10 Conclusions and Decisions

Agenda item 2 : Review of the report of the first meeting of the Task Force established by SAT/10 (SAT/10/TF/1)

- Agenda item 3 : Traffic analysis
- Analysis of air traffic data collection and presentation over the South Atlantic
 - Status of the monthly reports on missing flight plans
- Agenda item 4 : Follow up of the RVSM/RNP 10/50 NM post implementation and safety assessment programme in the EUR/SAM corridor (SATMA Report)
- Agenda item 5 : ATM related aspects within areas of routings AR -1/HA1 and AR – 2/HA8
- Establishment of a random RNAV routing in the EUR/SAM Corridor
 - Status of establishment of ATS routes between USA and South Africa
- Agenda item 6 : Communications Navigation Surveillance
- Review of the report of the Technical Working Group established by SAT/10 (SAT/10/TWG)
 - Expansion of CAFSAT network
 - CNS/ATM developments
- Agenda item 7 : Any other business

ii-5 Conclusions and decisions

Conclusion 11/1: Status reports on missing flight plans in SAT area

That:

- a) **monthly status reports on missing plans be established by SAT participating ACCs;**
- b) **reports on missing flight plans be circulated to SAT members and submitted to SAT Task Force for further action; and**
- c) **the reports include the following elements for each flight involved: date, time, aircraft type, flight number, point of departure, destination, as listed in Appendix A to this Report.**

Conclusion 11/2: Need for further investigations

That EUR/SAM ACCs:

- a) undertake further investigations on the lack of flight plans, including individual cases, with emphasis on the aeronautical fixed telecommunication network (AFTN) links, switching centres, routing directory and transit time statistics as defined in ICAO Doc 8259; and**
- b) report their findings to the SAT Task Force for remedial actions.**

Note: Transit time statistics referred to in a) should be established on a quarterly basis using the reporting format shown in Appendix B to this Report.

Conclusion 11/3: Implementation of repetitive flight plans (RPLs)

That EUR/SAM ACCs investigate ways to implement harmonized repetitive flight plans (RPLs) procedures in accordance with ICAO provisions.

Conclusion 11/4: Aeronautical Information Circular (AIC) on SATMA new reporting format

That the States in EUR/SAM Corridor publish an aeronautical information circular (AIC) on SATMA new reporting format to be sent to them and made available on SATMA website (www.satmasat.aena.es).

Conclusion 11/5: Participation in the monitoring process

That in order for the monitoring process to be efficient and reliable:

- a) all EUR/SAM ACCs endeavour to follow data collection procedures by forwarding relevant and precise data to SATMA, the monitoring agency using the adequate reporting format and taking due account of agreed reporting dates; and**
- b) all airline operators be fully involved and actively participate in the reporting process.**

Conclusion 11/6 : Harmonization of RVSM and RNP monitoring policies**That:**

- a) SATMA's handbook be reviewed so as to reflect global guidance material developed by ICAO Separation and airspace safety panel (SASP) when finalized;
- b) The RVSM monitoring duties and responsibilities defined by SASP be adopted for SATMA; and
- c) SATMA RNP monitoring duties and responsibilities be harmonized with those defined for the other monitoring agencies.

Conclusion 11/7: Need for a cost recovery mechanism to support SATMA

That SATMA RVSM and RNP monitoring duties and responsibilities be supported by a relevant and appropriate cost recovery mechanism.

Conclusion 11/8: RVSM exemptions in the EUR/SAM Corridor**That:**

- a) those States in agreement establish the exemption procedures for civil aircraft do so on a case by case basis, as an interim measure; and
- b) the exemption procedures be considered by the SAT Task Force in view of a possible uniform application in the EUR/SAM Corridor.

Decision 11/9: Establishment of a Study Group on the implementation of random RNAV routing in AR1/AH2 and AR2/AH8**That :**

- a) a Study Group be established with the mandate of carrying out the necessary work to achieve a smooth implementation of random RNAV routing in AR1/AH2 and AR2/AH8; and
- b) The terms of reference, work programme and composition of the Study Group be as proposed in Appendix C to this Report.

Conclusion 11/10: Implementation of random RNAV routing in AR1/AH2 and AR2/AH8**That:**

- a) Random RNAV routing be implemented in the EUR/SAM Corridor (AR1/AH2) and AFI/NAT/SAM Interface (AR2/AH8) at AIRAC date of November 2005;
- b) SAT services providers take all necessary measures to implement the required systems sufficiently in time to support random RNAV operations, including ADS and CPDLC capabilities; and

- c) IATA's assistance be requested to keep the SAT Group informed of its associate airlines aircraft equipage status with respect to ADS and CPDLC functionalities, as additional requirements which would increase the benefits.

Conclusion 11/11: Implementation of ATS UL375, UL435 and UL695

That ACCs concerned publish the ATS Routes UL 375 (Atlanta/Capetown), UL 435 (Atlanta/Johannesburg) and UL 695 (Antigua/Ascension Island) entry/exit points in the EUR/SAM Corridor, including the ATS route intersection points with the same designators and the same aeronautical coordinates, at a coordinated AIRAC date as soon as the amendment proposal SAM 03/1-ATM/AIS is approved by the ICAO Council.

Conclusion 11/12: Integration/Interoperability of VSAT networks

That :

- a) the consolidation of aeronautical telecommunication services on a common satellite space segment be pursued in order to achieve a full integration of existing/planned VSAT networks (AFISNET, CAFSAT, REDDIG, SADC, etc.) and facilitate their interoperability;
- b) as a matter of urgency, ICAO Regional Offices undertake the necessary coordination of the Regions concerned, for them to have the same level of information and for individual States to make their final position as for the opportunity offered by the INTELSAT Satellite IS10-02@359° East to be launched by November 2003, in accordance with their formal regional and national decision-making processes;
- c) a meeting be organized between INTELSAT and States/Organizations managing VSAT networks, in order to examine all aspects of the migration to the INTELSAT Satellite IS10-02@359° East; and
- d) the Secretariat send the recommendations of the meeting referred to in c) hereabove to the respective regional planning mechanisms as soon as possible.

Conclusion 11/13: Use of AFISNET and CAFSAT networks to support GNSS

That, when applicable, AFISNET and CAFSAT networks be used to support the introduction of GNSS applications in the EUR/SAM Corridor.

Conclusion 11/14: Extension of VHF radio coverage Dakar Oceanic FIR

That Senegal explore all diplomatic avenues, including high level missions to Cape Verde in order to finalize the institutional arrangements for the implementation of Dakar remote VHF station in Santiago Island (Cape Verde) as soon as possible.

**Conclusion 11/15: Communications surveys and ATS incidents reporting
in the South Atlantic**

That ACCs and users be encouraged to promote aeronautical mobile communications surveys in the South Atlantic, on a regular basis, as well as the appropriate reporting of ATS incidents with appropriate details for their analysis.

Decision 11/16: Guidance material for ADS/CPDLC programmes

That the development of guidance material for the establishment of ADS/CPDLC programmes be included in the Task Force and Technical Working Group work programmes in order to provide necessary assistance to States and to facilitate harmonization of ADS/CPDLC programmes in the SAT Region.

**Conclusion 11/17: Full implementation of RVSM in the SAT area
(AR1/AH2 and AR2/AH8)**

That States take the appropriate measures to achieve full implementation of RVSM in the SAT area (AR1/AH2 and AR2/AH8) coincidentally with the CAR/SAM Region, in January 2005.

Conclusion 11/18: CNS/ATM systems evolution tables

That the CNS/ATM systems evolution tables for AR1/AH2 and AR2/AH8 be amended to include full implementation of RVSM coincidentally with the CAR/SAM Region as per Appendix D to this Report.

**Conclusion 11/19: Amendments to AFI ANP and CNS/ATM implantation plan
following the establishment of Atlantico FIR**

That the ATS/DS requirements in the AFI air navigation plan (Doc 7474) and the list of EUR/SAM (AR1) FIRs in the CNS/ATM implementation plan (Doc 003) be amended following the establishment of Atlantico oceanic Flight Information Region (FIR)

Decision 11/20: Task Force future work programme

That the SAT Task Force future work programme include the tasks listed in Appendix E to this Report.

Decision 11/21: Technical Working Group future work programme

That the SAT Technical Working Group future work programme include the tasks listed Appendix F to this Report.

Agenda Item 1: Review and follow up of SAT/10 Conclusions and Decisions

1.1 The meeting reviewed the list of Conclusions and decisions from the SAT/10 meeting which was held in Dakar, Senegal from 10 to 13 December 2001. The meeting also noted that although some of the tasks mentioned in the conclusions have been executed, the implementation of some others are still pending and have been included in the agenda.

Agenda Item 2 Review of the report of the first meeting of the Task Force established by SAT/10 (SAT/10/TF/1)

The meeting reviewed the conclusions and decisions from the SAT/10/TF/1 meeting which was held in Las Palmas, Canaries from 25 to 28 June 2002. The conclusions were submitted to the SAT/11 meeting for adoption.

Agenda Item 3 Traffic analysis**3.1 Analysis of air traffic data collection and presentation over the South Atlantic**

Under this agenda item the meeting apprised on the tasks achieved by the concerned ACCs and concurrent projects carried out by the SAT Task Force.

3.2 Status of the monthly reports on missing flight plans

The meeting recognized a perceptible reduction in the number of missing flight plans due to the efforts carried out by all concerned parties, particularly after the implementation of the CAFSAT data/voice communication network. But on analyzing the information provided by Brazil and Cabo Verde, the meeting noted that there are still problems. It was mentioned that this deficiency becomes even more critical taking into account the implementation of RVSM in the EUR/SAM corridor and will require a consolidated and continued effort to take special actions to solve this problem. The meeting then examined the possibility to trace routing directories, flight plan circuits of AFTN centers and urged the centers to keep a monthly survey. The meeting also investigated the possibility for the States to implement a common and harmonious repetitive flight plans (RPL) procedure. After the deliberations on this subject, the meeting resolved to the following conclusions:

Conclusion 11/1: Status reports on missing flight plans in SAT area

That, monthly status reports on missing plans be established by SAT participating ACCs. Such reports on missing flight plans to be circulated to SAT members and submitted to SAT Task Force for further action, should include the following elements for each flight involved: date, time, aircraft type, flight number, point of departure, destination, as listed in Appendix A to this Report.

Conclusion 11/2: Need for further investigations

That EUR/SAM ACCs:

- a) undertake further investigations on the lack of flight plans, including individual cases, with emphasis on the aeronautical fixed telecommunication network (AFTN) links, switching centres, routing directory and transit time statistics as defined in ICAO Doc 8259; and**
- b) report their findings to the SAT Task Force for remedial actions.**

Note: Transit time statistics referred to in a) should be established on a quarterly basis using the reporting format shown in Appendix B to this Report.

Conclusion 11/3: Implementation of repetitive flight plans (RPLs)

That EUR/SAM ACCs investigate ways to implement harmonized repetitive flight plans (RPLs) procedures in accordance with ICAO provisions.

Agenda item 4 : Follow up of the RVSM/RNP 10/50 NM post implementation and safety assessment programme in the EUR/SAM corridor (SATMA report)

Under this agenda item the meeting examined the information provided by Spain on the SATMA RVSM/RNP Monitoring programme annual post-implementation report. The issues addressed were:

4.1 Flight planning

4.1.1 It was reported to the meeting that no relevant problems have been detected on the RVSM flight planning as the procedures were correctly followed by operators and providers. The implementation of the RVSM in the EUR/SAM corridor is confirmed to be over expected.

4.1.2 Flight levels distribution

The spread of the flight levels occupancy is around the 52.5% of the new flight levels. The RVSM has decreased ATCOs work load in about a 17% in general and more than 32% due to the new flight levels orientation allocation from studies derived from the Canaries ACC sectors.

4.1.3 Deviations

The deviation factor is considered to be into the parameters and the deviation format should be used for a clear indication of the observance of the contingency procedures.

Vertical and lateral deviations are recorded periodically as follows:

- a lateral deviation of 13.5 NM during 3 minutes, 35 miles south of MILOK
- a 20 NM left lateral deviation due to weather
- no more deviations without ATC clearance
- the radar monitoring at Canaries shows no significant lateral or vertical deviations.

4.1.4 Non - preferred flight levels and reroutings

The use of non-preferred flight levels is still high (about 50%). There has also been a significant decrease of flights that have to be rerouted to get a better flight level.

After the deliberations on those subjects, the meeting formulated the following conclusions:

Conclusion 11/4: Aeronautical Information Circular (AIC) on SATMA new reporting format

That the States in EUR/SAM Corridor publish an aeronautical information circular (AIC) on SATMA new reporting format to be sent to them and made available on SATMA website (www.satmasat.aena.es).

Conclusion 11/5: Participation in the monitoring process

That in order for the monitoring process to be efficient and reliable:

- a) all EUR/SAM ACCs endeavour to follow data collection procedures by forwarding relevant and precise data to SATMA, the monitoring agency using the adequate reporting format and taking due account of agreed reporting dates; and**
- b) all airline operators be fully involved and actively participate in the reporting process.**

Conclusion 11/6 : Harmonization of RVSM and RNP monitoring policies

That:

- a) SATMA's handbook be reviewed so as to reflect global guidance material**
- b) developed by ICAO Separation and airspace safety panel (SASP) when finalized;**
- c) The RVSM monitoring duties and responsibilities defined by SASP be adopted for SATMA; and**
- d) SATMA RNP monitoring duties and responsibilities be harmonized with those defined for the other monitoring agencies.**

Conclusion 11/7: Need for a cost recovery mechanism to support SATMA

That SATMA RVSM and RNP monitoring duties and responsibilities be supported by a relevant and appropriate cost recovery mechanism.

Agenda item 5 : ATM related aspects within areas of routings AR -1/HA1 and AR – 2/HA8

Establishment of a random RNAV routing in the EUR/SAM Corridor

Status of establishment of ATS routes between USA and South Africa

5.1 RVSM exemptions in the EUR/SAM Corridor

5.1.1 The meeting examined under agenda item 5 the information provided by Brazil on the necessity of exempting some categories of flights such as ferry flights, maintenance flights and humanitarian flights with aircraft that are not RVSM/RNP/10 approved. This could be done during period of low traffic density. The meeting proposed that the SAT/11/TF should be consulted in order to examine ways and means to allow some non-approved RVSM/RNP/10 aircraft to fly in the EUR/SAM corridor. Brazil should prepare an AIC accordingly.

In the light of the aforementioned, the meeting formulated the following conclusions:

Conclusion 11/8: RVSM exemptions in the EUR/SAM Corridor

That:

- a) **Those States in agreement to establish the exemption procedures for civil aircraft do so on a case by case basis, as an interim measure; and**
- b) **The exemption procedures be considered by the SAT Task Force in view of a possible uniform application in the EUR/SAM Corridor.**

5.2 Establishment of a random RNAV routing in the EUR/SAM corridor

5.2.1 The meeting recalled the evolutionary nature of the SAT system and the implementation of random RNAV routing should have started since 2002 with a progressive implementation ending in 2005. The meeting discussed on all aspects to be addressed for a safe implementation of random RNAV routing in the area concerned taking into account the updating of the EUR/SAM Traffic Flow (AR1) Systems Development Plan Proposal (SAT/7 Meeting, Sal, December 1998). The target date for implementation should be an AIRAC date by November 2005.

5.2.2 The meeting was also informed by Spain that the request for a new ATS route UM749 is no more valid.

5.2.3 In the light of the aforementioned, the meeting formulated the following conclusions:

Decision 11/9: Establishment of a Study Group on the implementation of random RNAV routing in AR1/AH2 and AR2/AH8

That :

- a) **a Study Group be established with the mandate of carrying out the necessary work to achieve a smooth implementation of random RNAV routing in AR1/AH2 and AR2/AH8; and**
- b) **The terms of reference, work programme and composition of the Study Group be as proposed in Appendix C to this Report.**

**Conclusion 11/10: Implementation of random RNAV routing in AR1/AH2
and AR2/AH8**

That:

- a) **Random RNAV routing be implemented in the EUR/SAM Corridor (AR1/AH2) and AFI/NAT/SAM Interface (AR2/AH8) at AIRAC date of November 2005;**
- b) **SAT services providers take all necessary measures to implement the required systems sufficiently in time to support random RNAV operations, including ADS and CPDLC capabilities; and**
- c) **IATA's assistance be requested to keep the SAT Group informed of its associate airlines aircraft equipage status with respect to ADS and CPDLC functionalities, as additional requirements which would increase the benefits.**

5.3 Implementation of ATS UL375, UL435 and UL695

5.3.1 The meeting recalled that the SAT/10 meeting took note on the activities carried out by the USA and South Africa in order to define and implement ATS routes linking Atlanta to Cape Town and Johannesburg in one hand and Antigua to Ascension Island in the other hand, pursuant to conclusion 3/3 of the SAT/9 meeting. The creation of these routes with fixed entry and exit points within the EUR/SAM corridor will enhance safety. The concerned parties, South Africa, Brazil, the USA, Jeppesen and ICAO Lima Office, should work accordingly, as soon as possible, to harmonize the coordinates of the significant points.

In the light of the above, the meeting formulated the following conclusions:

Conclusion 11/11: Implementation of ATS UL375, UL435 and UL695

That ACCs concerned should publish the ATS Routes UL 375 (Atlanta/Capetown), UL 435 (Atlanta/Johannesburg) and UL 695 (Antigua/Ascension Island) entry/exit points in the EUR/SAM Corridor, including the ATS route intersection points with the same designators and the same aeronautical coordinates, at a coordinated AIRAC date as soon as the amendment proposal SAM 03/1-ATM/AIS is approved by the ICAO Council.

Agenda item 6 : Communications Navigation Surveillance

- **Review of the report of the Technical Working Group established by SAT/10 (SAT/10/TWG)**
- **Expansion of CAFSAT network**
- **CNS/ATM development**

6.1 Review of the report of the Technical Working Group established by SAT/10 (SAT/10/TWG)

6.1.1 The First Meeting of the Task Force established by the Tenth informal meeting on the improvement of the air traffic services over the South Atlantic (SAT/10, Dakar, Senegal 10-13 December 2001) was held in Las Palmas, Spain from 25 to 28 June 2002. The meeting was convened pursuant to SAT/10 Conclusion 10/6, and was organized concurrently with the SAT Technical Working Group (TWG). The meeting took note, after the presentation of the report, of the mandate assigned to the Technical Working Group by SAT/10 and formulated amendment proposals to the TWG future work programme as shown at Appendix F to this paper.

6.2 Expansion of CAFSAT network***Implementation of new nodes***

6.2.1.1 Under this agenda item the meeting was informed that although some deficiencies still affect communications in the area, efforts were made by States to expedite the implementation of CAFSAT nodes. In this respect, it was noted that South Africa (ATNS) had successfully implemented the Johannesburg CAFSAT node and that the testing of a bilateral circuit between Johannesburg and Las Palmas had been scheduled for the end of February 2003. Some other facilities are planned such as the circuit Johannesburg/Recife, which will be implemented as soon as Recife (a future entry/exit point for the AFI/SAM traffic) has the necessary infrastructure; the traffic to Ezeiza will be directed through Recife until a CAFSAT terminal is implemented by Argentina.

6.2.1.2 The Meeting noted the efforts being made by Senegal (ASECNA) and South Africa (ATNS) in improving Dakar/Johannesburg circuit. Dakar is expecting to upgrade its CAFSAT node to allow AFTN communications between Johannesburg and Dakar.

Integration/Interoperability of the existing VSAT networks (CAFSAT, REDDIG, AFISNET and SADC network)

6.2.1.3 The meeting exchanged views on the need for achieving interoperability between existing aeronautical VSAT networks (AFISNET, CAFSAT, REDDIG and SADC) in order to eliminate the outstanding deficiencies and pave the way for the transition to the ATN in a cost-effective manner. As a matter of fact, these networks are using four different satellites with different access techniques and operating modes. It is anticipated that a balanced and systematic interconnection of these networks to meet communications requirements would not be cost-effective in the long-term for States due to the additional equipment and investments involved. The meeting noted that SAT/TWG considered the use of a single transponder on INTELSAT Satellite IS 10-02 (likely to be launched in 2003 or 2004), whose footprint covers the entire AFI Region, the SAM Region and the EUR/SAM Corridor, as a potential means of achieving the integration and full connectivity of VSAT networks, thus meeting all ANPs requirements for fixed communications, and also to

facilitate interoperability between these networks. In this connection, the meeting called for a meeting of technical staff responsible for the management of AFISNET, CAFSAT, REDDIG and SADC networks.

Use of CAFSAT to support GNSS

6.2.1.4 The meeting noted with satisfaction that CAFSAT had been instrumental for connecting a GNSS RIMS in Dakar (ASECNA Headquarters) to the EGNOS central processing facility (CPF) in Honefoss (Norway), meeting the requirement of transit time of less than 1 second for transmission, a valuable contribution to the European EGNOS test bed (ESTB).

Extension of VHF radio coverage within Dakar Oceanic FIR

6.2.1.5 The extension of VHF radio coverage within Dakar Oceanic FIR using a remote VHF station located in Cape Verde in accordance with SAT Conclusion 10/18 was also discussed at length. The administrations concerned were urged to expedite

6.2.1.6 Following discussions on this agenda item, the meeting adopted the following

Conclusion 11/12: Integration/Interoperability of VSAT networks

That :

- a) **the consolidation of aeronautical telecommunication services on a common satellite space segment should be the objective in order to achieve a full integration of existing/planned VSAT networks (AFISNET, CAFSAT, REDDIG, SADC, etc.) and facilitate their interoperability, thus forming a seamless and cost-effective network for the benefit of aviation stakeholders;**
- b) **as a matter of urgency, ICAO Regional Offices undertake the necessary coordination of the Regions concerned, for them to have the same level of information and for individual States to make their final position as for the opportunity offered by the INTELSAT Satellite IS 10-02@359° East to be launched by November 2003, in accordance with their formal regional and national decision-making processes;**
- c) **a meeting be organized before the end of April 2003 between INTELSAT and States/Organizations managing VSAT networks, in order to examine all aspects of the migration to the INTELSAT Satellite IS 10-02@359° East; and**
- d) **the Secretariat should channel the outcome of the meeting referred to in c) hereabove to the respective regional planning mechanisms as soon as possible.**

Conclusion 11/13: Use of AFISNET and CAFSAT networks to support GNSS

That, when applicable, AFISNET and CAFSAT networks be used to support the introduction of GNSS applications in the EUR/SAM Corridor.

Conclusion 11/14: Extension of VHF radio coverage Dakar Oceanic FIR

That Senegal explore all diplomatic avenues, including high level missions to Cape Verde in the second quarter of 2003 in order to finalize the institutional arrangements for the implementation of Dakar remote VHF station in Santiago Island (Cape Verde) as soon as possible.

Conclusion 11/15: Communications surveys and ATS incidents reporting in the South Atlantic

That ACCs and users be encouraged to promote aeronautical mobile communications surveys in the South Atlantic, on a regular basis, as well as the appropriate reporting of ATS incidents with appropriate details for their analysis.

6.3 CNS/ATM developments

The meeting was informed of the activities being carried out by some States such as Brazil in developing standard procedures to be applied in the Atlantico ACC in the coming year following the implementation of ADS/CPDLC system. Interoperability between the ACCs in the EUR/SAM corridor will be paramount for the achievement of a maximum benefit from the procedures. In light of the above, the meeting formulated the following decisions and conclusions:

Decision 11/16: Guidance material for ADS/CPDL programmes

That the development of guidance material for the establishment of ADS/CPDL programmes be included in the Task Force and Technical Working Group work programmes in order to provide necessary assistance to States and to facilitate harmonization of ADS/CPDLC programmes in the SAT Region.

Conclusion 11/17: Full implementation of RVSM in the SAT area (AR1/AH2 and AR2/AH8)

That States take the appropriate measures to achieve full implementation of RVSM in the SAT area (AR1/AH2 and AR2/AH8) coincidentally with the CAR/SAM Region, in January 2005.

Conclusion 11/18: CNS/ATM systems evolution tables

That the CNS/ATM systems evolution tables for AR1/AH2 and AR2/AH8 be amended to include full implementation of RVSM coincidentally with the CAR/SAM Region as per Appendix D to this Report.

Conclusion 11/19: Amendments to AFI ANP and CNS/ATM implementation plan following the establishment of Atlantico FIR

That the ATS/DS requirements in the AFI air navigation plan (Doc 7474) and the the list of EUR/SAM (AR1) FIRs in the CNS/ATM implementation plan (Doc 003) be amended following the establishment of Atlantico oceanic flight information region (FIR) managed by Brazil.

Decision 11/20: Task Force future work programme

That the SAT Task Force future work programme should include the tasks listed in Appendix E to this Report.

Decision 11/21: Technical Working Group future work programme

That the SAT Technical Working Group future work programme should include the tasks listed Appendix F to this Report.

Agenda item 7: Any other business

7.1. Under this agenda item, the meeting welcomed the offers from Brazil to host SAT/11 Task Force, Technical Working Group and Random RNAV Routing Study Group meetings and from Cape Verde to host the next SAT/12 meeting, these offers being subject to approval by the authorities in Brazil and Cape Verde. Further coordination will be carried out with the concerned States for timely confirmation.

**INSTRUCTIONS FOR USE OF THE
AFTN TRANSIT TIME STATISTICS FORM**

23 January/April/July/October of each year

Transit time statistics should be computed for the messages received by a station during the 24-hour period of 230001 - 240001 of the month.

Column 1: Insert the ICAO Location Indicators of the AFTN station where the received message was originally filed for transmission.

Column 2: Show the Location Indicator of the station that actually transmitted the message to your station. In the case of direct circuits, the entry in Col. 2 would, therefore, be identical with the entry in Col. 1. Where traffic originating at a point is received over different routes, e.g. instances where alternate routing has been used, a separate entry should be made for each route.

Columns 3 and 4: In Col. 4 enter the total number of messages received from the Station of Origin during the 24-hour period covered by the Form for each Priority Group. Separate figures are to be shown to indicate the message classifications listed in Col. 3, viz. Priorities FF and higher, and Priority GG.

Column 5: Show the ICAO recommended transit times against each priority classification.

Column 6: The highest actual transit times experienced in respect of each priority classification are to be entered. Each time is found by examining the time interval between time of filing and time of delivery of each message in each priority classification, discarding the 5% having the highest transit time and then recording the highest transit time for the remaining 95% of the messages in each priority classification.

Example: If during the 24-hour period, 100 messages are received in each category (FF and higher, and GG) then for each category reject the five highest transit times. Of the remaining 95 messages, select the highest transit time - this is the figure to be shown in Col. 6 in respect the appropriate priority classification.

Column 7: Following the removal of 5% of messages in each priority classification having the highest transit time, the median time achieved for the remaining 95% of messages in each priority classification is to be recorded in this column. *Median transit time is defined as follows: When the achieved transit time in any one category of messages are arranged in a sequential descending order, the median transit time for that group is the one achieved by the message which has as many messages above as there are below, after rejecting five percent of highest transit times.*

Example: If there are 60 messages in a 24-hour period in any one category, arrange their achieved transit times in a descending order. Reject three (5%) messages with the highest transit times. The median transit time value for that group is the one achieved by the 29th message, which has 28 messages above and 28 messages below it.

Column 8: Following the removal of 5% of the total messages in each priority classification having the highest relay time, the highest relay time for the remaining 95% of messages in each priority classification. Relay time of the addressee station is contained in paragraphs 3.1.60 and 3.1.61 of Doc 8259.

Column 9: Enter any appropriate observations noted regarding circuit operations, (for example, peak load periods, circuit failures, etc.), that are of relevance in respect of the Transit Time Statistics recorded in the Form.

**AFTN TRANSIT TIME STATISTICS
TRAFFIC (CLASS A) RECEIVED FOR LOCAL DELIVERY**

STATION (Location Indicator):

.....(Month).....(Year)

Location indicators		Message Priority Grouping	Total Number of messages for each Priority Group	Transit Time prescribed by ICAO	Highest Transit Time Experienced	Median Transit Time Achieved	Maximum Relay Time Experienced	Remarks
Station of Origin	Last Relay centre Received from							
1	2	3	4	5	6	7	8	9
			FF and higher					
			GG					
			FF and higher					
			GG					
			FF and higher					
			GG					

TERMS OF REFERENCE OF THE TASK FORCE ESTABLISHED BY THE SAT/11 MEETING

<ul style="list-style-type: none"> Considering the evolutionary implementation of CNS/ATM systems in areas of routing AR1/AH2 AR-2/AH8, 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. <i>Note: The Task Force will adopt a pragmatic approach and may wish to set up auxiliary bodies when necessary in order to carry out specific tasks.</i> 		
WORK PROGRAMME		
TASK No.	SUBJECT	TARGET DATE
1.	Evaluate the results of the pre-implementation/post-implementation safety assessments to be carried out by SATMA for RVSM and RNP operations in the EUR/SAM Corridor.	Continuous
2.	Study the feasibility of a relevant and appropriate cost recovery mechanism for SATMA	SAT/12
3.	Study RVSM, RNP/RNAV procedures to be established for the AFI/CAR/SAM and EUR/SAM Interface area.	SAT/12
4.	Monitor flight plan availability and propose appropriate corrective measures.	Continuous
5.	Explore ways and means of taking appropriate measures for the elimination of ATM and CNS deficiencies.	Continuous
6.	Develop operational guidance material with a view to ensuring harmonization and standardization of ADS/CPDLC applications.	SAT/12
<ul style="list-style-type: none"> Note: The Task Force should take appropriate action on pressing issues and submit its proposal to the SAT/12 meeting. 		
COMPOSITION		
<ul style="list-style-type: none"> <i>The Task Force of multi-disciplinary nature shall comprise of experts from States responsible of FIRs in routing areas AR1/AH2 and AR2/AH8, and experts from adjacent FIRs and international organizations.</i> Rapporteur: Spain Task Team leaders: Brazil (Task No.6). Working arrangements: The SAT/11 TF should complete its work and submit its proposal to the SAT Group. The SAT/11 TF should work through electronic correspondence prior to meetings. 		

**TERMS OF REFERENCE OF THE RNAV RANDOM ROUTING STUDY (RRSG)
ESTABLISHED BY THE SAT/11 MEETING**

- **To prepare the necessary steps in view of the timely implementation of RNAV random routing in the EUR/SAM Corridor and the AFI/NAT/SAM interface area, in accordance with their respective CNS/ATM plans.**
- **The RRSB should prepare all relevant elements in this respect, including required safety analyses, implementation timescales and related cost estimates for consideration by SAT/12.**

COMPOSITION

- The Random Study Group (RR/SG) being of multi-disciplinary nature shall comprise of experts from Brazil, Cape Verde, Senegal, South Africa, Spain, ASECNA and IATA
- ***Rapporteur:** South Africa.*
- ***Working arrangements:** The SAT/RRSG should complete its work and submit its proposal to the SAT Group. The RRSB should work through electronic correspondence prior to meetings.*

TERMS OF REFERENCE OF THE TECHNICAL WORKING GROUP (TWG) ESTABLISHED BY THE SAT/11 MEETING

- Considering the GREPECAS and APIRG *Air Navigation* Plans, the SAT/TWG should explore ways and means of achieving further enhancements in ATM efficiency within in areas of routing AR1/AH2 AR-2/AH8, 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.	Carry out studies related to the expansion of CAFSAT network to cater for aeronautical telecommunication requirements within the SAT Region. Such studies should include coordination issues, service channel interfaces, monitoring and control system architecture, system availability, expansion of nodes and services, user interfaces and bandwidth monitoring.	Continuous
2.	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).	SAT/12
3.	Study the feasibility and cost-effectiveness of internetworking between existing VSAT networks (AFISNET, CAFSAT, REDDIG, and SADC) and other emerging networks.	SAT/12
4.	Support and monitor all activities related to the integration/interoperability of existing VSAT networks (AFISNET, CAFSAT, REDDIG, SADC) aimed at achieving a consolidated, seamless and cost-effective network.	SAT/12
5.	Considering implementation time-frames in the AFI and SAM CNS/ATM implementation plans, address cost-benefit aspects for the use of CNS/ATM applications.	SAT/12
6.	Study the harmonization of aeronautical fixed services (AFS) end-to-end protocols.	SAT/12
7.	Evaluate the feasibility of using existing or emerging digital VSAT networks (AFISNET, CAFSAT, REDDIG, SADC, etc.) in order to implement data link systems to support ATN applications within the SAT area.	SAT/12
8.	Study the harmonization of the technical aspects of ADS/CPDLC programmes developed by SAT States/FIRs, taking due account of operational requirements. Harmonization of ADS/CPDLC should address issues such as the use of common standards, transmission protocols, data formats, procedures, methods of work, etc...	SAT/12
9.	Study the applicability of emerging ATM concepts and systems within the SAT area.	Continuous

COMPOSITION

- The Technical Working Group (TWG) 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.3 and 4), Brazil (Task No.8)
- **Working arrangements:** The TWG should complete its work and submit its proposal to the SAT Task Force. The TWG should work through electronic correspondence prior to meetings.

CNS/ATM Systems – Evolution Tables for AR-1 and AR-2

Area of Routing	FIRs	Systems Evolution 1995-2005 1995-2010				
		Airspace and Traffic Management	Communications		Navigation	Surveillance
			Mobile Service	Fixed Service		
1	2	3	4	5	6	7
<p>Europe - South Atlantic (Oceanic routes)</p> <p>AR-1</p>	<p>Canarias Casablanca Dakar Oceanic Lisboa¹ AtlanticReef¹ Sal</p>	<p>Fixed RNAV routes (1995);</p> <p>Progressive evolution towards a random RNAV environment from West to East (2000–Nov. 2005);</p> <p>Reduction of longitudinal separation to 10 minutes using Mach Number Technique (1998); extension to route U/A302 (1999);</p> <p>Longitudinal separation 30 NM (2001), Lateral separation 25 NM (2001) both with radar surveillance;</p> <p>Distance based separation 80 NM (1998 - 2002) 50NM (2002 - onwards);</p> <p>Reduction of lateral separation to 50 NM (1999- 2004). Further reduction of lateral separation to 25 NM30NM (2004 - onwards);</p> <p>RVSM (2000-20052002); progressive evolution towards RVSM FL290/410</p>	<p>DCPC (data) by participating aircraft (Bpa) (20002004);</p> <p>Full VHF coverage on all ATS routes above FL300, and 150 NM from international airports (2000)</p>	<p>Gradual introduction of ATN compatible bit-oriented procedures (BOP) between AFTN main centres (19992004- onwards)</p>	<p>RNP 5: Casablanca and Canarias FIRs (1998);</p> <p>RNP 10: Other FIRs (1999-20042001);</p> <p>RNP 5: (2004-2005 - onwards) Other FIRs</p> <p>GNSS as primary-means</p>	<p>Automatic Position Reporting (APR) Bpa trials (2000);</p> <p>Automatic Dependent Surveillance (ADS) on RNP airspace Bpa (from 20002004)</p>

Area of Routing	FIRs	Systems Evolution 1995-2005 1995-2010				
		Airspace and Traffic Management	Communications		Navigation	Surveillance
			Mobile Service	Fixed Service		
1	2	3	4	5	6	7
Atlantic Ocean (AFI-NAT/SAM interface) AR-2	Accra Dakar Oceanic Johannesburg Oceanic Luanda Se+	Random routing (2005) ; Reduction of longitudinal separation to 10 minutes (2000) <u>RVSM (Jan. 2005)</u>	DCPC (data) by participating aircraft (Bpa) (1998); <u>HF (voice)</u> <u>Full VHF coverage on all ATS routes above FL200, and 150 NM from international airports (2000)</u>	Gradual introduction of ATN compatible bit-oriented procedures (BOP) between main AFTN Centres (1998-onwards); AFTN and ATS/DS (1999)	RNP 10 (2000) GNSS as primary-means	Automatic Position Reporting (APR) Dependent (2000) ; ADS (2000)

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