INTERNATIONAL CIVIL AVIATION ORGANIZATION

THIRTEENTH MEETING ON THE IMPROVEMENT OF THE AIR TRAFFIC SERVICES IN THE SOUTH ATLANTIC (SAT/13)

R E P O R T

(Spain, Canary Island, 24 - 27 April 2006)

Prepared by the SAT Secretariat

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History of the meeting

ii-1 Introduction

ii-1.1 The Thirteenth Informal Coordination Meeting on the improvement of air traffic services over the South Atlantic (SAT/13) was held in Las Palmas, Canary Island (Spain), from 24 to 27 April 2006. The meeting was hosted by AENA, Spain and was held at the New Area Control Centre.

ii-1.2 The meeting was officially opened by Mr. Juan Cozar Maldonado, Air Navigation Planning Director, who welcomed the participants and wished them fruitful deliberations and a nice stay in the Canary Islands. In his welcome address, Mr. Cozar Maldonado emphasized the importance of the event and of the Informal Coordination Meetings on the improvement of ATS services 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.

ii-1.3 Mr. Jorge Fernández Demarco, ATM Regional Officer from the ICAO Lima Office, also addressed the meeting and extended his warm welcome to the delegates. He particularly thanked and congratulated Spain authorities and particularly AENA for its dedication to international civil aviation development, and encouraged all SAT States to pursue their efforts aiming at improving air navigation safety and efficiency in the South Atlantic, by implementing new CNS/ATM applications in their respective FIRs. Mr. Fernández also highlighted the importance of the SAT Group as an interregional mechanism, gathering representatives from AFI, EUR, CAR, NAM and SAM Regions, and expressed ICAO's gratitude to States and International Organizations their support in arranging for the participation of their representatives in the meeting.

ii-1.4 Mr. Juan Pereira, Chief of the Operations Department of the Canary Islands, was unanimously elected as Chairman of the meeting.

ii-1.5 Mr. Prosper Zo'o-Minto'o, CNS Regional Officer from ICAO Dakar Office was the Secretary of the meeting. He was assisted by Mr. Jorge Fernández Demarco, ATM Regional Officer from the ICAO, Lima Office.

ii-1.6 Mr. Sebastian Pérez González, Canary Islands Air Navigation Regional Director closed the meeting, recognizing the excellent work carried out that was reflected in the conclusions and decisions formulated by the meeting. Mr. Pérez González wished to all the participants a safe journey back to their respective countries.

ii-2 Attendance

ii-2.1 The meeting was attended by 52 participants from 11 contracting States (Angola, Argentina, Brazil, Cape Verde, France (French Guyana), Morocco, Portugal, Senegal, South Africa, United Kingdom and Spain,), 2 international organizations (ASECNA and IATA), 1 airline operator (IBERIA) and 2 system providers (INSA and SITA).

ii-2.2 The List of participants is shown at **Appendix A** to this part of the report.

ii-3 Working language

ii-3.1 The meeting was conducted in English and documentation was made available in this language.

ii-4 Agenda

The meeting adopted at its opening session the following agenda:

Agenda Item 1: Air traffic management (ATM)

1. Follow up of SAT/12 Conclusions pertaining to the ATM field
2. Review of the Report of the SAT/12 ATM Working Group
3. RVSM and RNP post-implementation safety assessments
4. Introduction of Random RNAV Routing
   - Implementation of AORRA airspace
5. Review of the Report of the New Airspace Structure Study Group
6. ATS Contingency planning

Agenda Item 2: Communications, navigation and surveillance (CNS)

1. Follow up of SAT/12 Conclusions pertaining to the CNS field
2. Review of SAT/12 CNS Working Group Report
3. Review of AFS performance
4. Interoperability between aeronautical VSAT networks and potential use of digital VSAT networks to support ATM applications

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

1. Harmonization of ADS/CPDLC programmes
   - Review of the Report of the FANS 1/A Interoperability Team
2. Harmonization of CNS/ATM systems evolution tables
3. RVSM implementation

Agenda Item 4: Future work programme

Agenda Item 5: Any other Business

ii-5 Conclusions and decisions

The meeting adopted the following conclusions and decisions:

Conclusion SAT/13/01: Action plan to avoid the lack of flight plans

That:

a) SAT ACCs experiencing the problem of missing flight plans continue to analyze and conduct investigations on the related contributing factors in real time, using the form shown as Appendix 1A to this part of the report; and

b) States explore their ATM system capabilities to accommodate automatic exchange of coordination messages.

Conclusion SAT/13/02: Collection of Large Height Deviation (LHD) and Lateral Deviation (LD) in the EUR/SAM Corridor

That States and Organizations concerned:

a) Report Large Height Deviation (LHD) and Lateral Deviation (LD) data, using and filling up exhaustively the Forms shown at Appendices 1B and Appendix 1C to this part of the report;

b) Forward LHD and LD data to SATMA by the 10th of each month, including when no deviations are recorded; and

c) Consider the diagram and the descriptive codes for vertical errors contained in Appendix 1D to this part of the report when evaluating the time spent by an aircraft at an unexpected flight level (or altitude) for the purposes of informing SATMA.

Conclusion SAT 13/03: Implementation of 15 NM lateral offset special procedures for in light contingencies in Oceanic airspace of EUR/SAM corridor

That:

a) Those AFI States and concerned Organizations proving air traffic services in the EUR/SAM Corridor make suitable arrangements to implement the 15 NM lateral offset special procedures for in flight contingencies in oceanic airspace as reflected in Doc 4444, on the AIRAC date of 7 June 2006. A specimen NOTAM for use by States and concerned Organizations is shown at Appendix 1E to this part of the report; and

b) The ICAO Secretariat expedite the processing of the corresponding amendment to Doc. 7030

Conclusion SAT 13/04: AIP Supplement on RNP10 and RVSM post-implementation procedures applicable in the EUR/SAM Corridor

That those States which have not yet done so publish an AIP Supplement on RNP10 and RVSM operations post-implementation procedures applicable in the EUR/SAM Corridor, using as reference the specimen shown at Appendix 1F to this part of the report.

Conclusion SAT 13/05: Implementation of AORRA airspace (Phase I)

That, pending the implementation of Angola's plans aimed at improving communications in Luanda Oceanic FIR:

a) Angola, Argentina, Brazil and South Africa take the appropriate measures to publish a NOTAM, before 11 May 2006, delaying the AORRA (Phase I) implementation o 31 August 2006 (AIRAC); and

b) Angola expedite the improvement of communications in Luanda oceanic FIR no later than 31 July 2006, and implement an adequate airspace classification therein.

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Conclusion SAT13/06: Need for contingency arrangements aimed at upgrading the level of air safety in Luanda Oceanic FIR

That, as a matter of urgency in the interest of the safety of international air navigation in over the oceanic airspace,

a) Angola update and publish a new aeronautical information (NOTAM) on applicable procedures for users' guidance when experiencing radio communications failure with Luanda ACC; and

b) The ICAO Regional Offices, Dakar and Nairobi be requested to facilitate the necessary arrangements between the Angola and South Africa or any other neighboring State in a position to provide assistance, with a view to improving the level of air safety in the short term within Luanda oceanic FIR.

Conclusion SAT/13/07: Traffic data to be provided to SATMA

That Brazil, Cape Verde and Senegal provide SATMA with the statistics of traffic that flew outside Canaries FIR over the period from January to November 2005 and, that affect EUR/SAM Corridor, between FL 290 and 410. The required data shall be forwarded to SATMA no later than June 7, 2006.

Conclusion SAT 13/08: Adoption of the Action Plan to implement an unidirectional FLAS in the EUR/SAM Corridor

That, in coordination with ICAO, Brazil, Cape Verde, Senegal, Spain, SATMA and IATA take appropriate measures to implement the action plan shown at Appendix 1G to this part of the report in view of a new Flight Level Allocation Scheme (FLAS) on ATS routes UN 741 and UN 866 on the tentative target date of April 12, 2007.

Conclusion SAT 13/09: EUR/SAM Contingency Plan

That Spain coordinate with other SAT States concerned the development of a comprehensive ATS Contingency Plan for the EUR/SAM Corridor in accordance with ICAO provisions in Annex 11 and Doc 9426, and present the result to the next SAT Task Force meeting.

Conclusion SAT13/10: Retention of ATS routes within AORRA airspace

That the States involved in the AORRA implementation should retain a minimum number of selected ATS routes within the AORRA airspace, but however suspend those portions of the routes identified, which are within the boundaries of the AORRA. Such route portions are to be activated in case of contingency measures.

Conclusion SAT13/11: Implementation of Atlantico/Luanda ATS/DS circuit

That Angola, Brazil and South Africa consider the implementation of Atlantico/Luanda ATS/DS link via Johannesburg through CAFSAT/SADC interconnection.

Conclusion SAT13/12: Implementation of Las Palmas/Nouadhibou and Las Palmas/Nouakchott ATS/DS links

That AENA (Spain) and ASECNA explore ways and means of solving as soon as possible the ATS/DS

deficiencies between Las Palmas and Noukchott and between Las Palmas and Nouadhibou ATS units, based on the agreed principle of interconnecting AFISNET-CAFSAT as the optimal technical solution.

Conclusion SAT13/13: Aeronautical communications network development strategies

That SAT States and Organizations concerned:

a) Take the proper actions to achieve and apply comprehensive strategies for the interconnection of VSAT networks to meet ATS requirements in the South Atlantic area;

b) Work towards seamless regional/inter-regional digital communication networks based on the Internet Protocol Suite (IPS);

c) Give due consideration to managed network services (e.g. a virtual private network (VPN)) subject to availability and cost effectiveness.

Conclusion SAT13/14: Standardization of the Internet Protocol Suite and need for end-to-end performance requirements

That ICAO be requested to expedite its work on:

a) The standardization of the Internet Protocol Suite for the States and Organizations to implement it in conformity with Article 28 of the Chicago Convention; and

b) The establishment of a universally agreed set of end-to-end performance requirements to facilitate the formulation and administration of contracts for obtaining managed network services.

Conclusion SAT13/15: Communications systems upgrading and maintenance

That SAT States and Organizations concerned take the necessary steps to upgrade as required and secure spare parts of operational equipment in order to minimize any potential critical impact on the current communications system.

Conclusion SAT13/16: ATS Voice Numbering Plans for AFI and SAM Regions

That SAT States, Organizations concerned and ICAO Regional Offices, Dakar and Lima take the necessary steps to include in GREPECAS and APIRG work programmes studies on the implementation OF ATS Voice Numbering Plans for AFI and SAM Regions, as defined by the recommendation contained within the *ICAO Manual on ATS Ground-Ground Voice Switching and Signalling* (Doc 9804, Chapter 2 Section 2.3).

Conclusion SAT13/17: Implementation of ATS No.5 Protocol in the SAT area

That:

a) SAT States and Organizations be encouraged to carry out technical research and in-depth investigations on their systems in view of a potential implementation of the ATS No.5 protocol in the SAT area, in accordance with ICAO guidance material contained in Annex 10 and Doc 9804;

b) Cape Verde, Portugal, Spain and ASECNA implement trials in order to establish the prerequisites related to the implementation of ATS-N5 signalling using VSAT links and appropriate CODECs (as required); and

c) SAT CNS Working Group work programme be amended to include the analysis of all aspects related to the implementation of ATS No.5 protocol.

Conclusion SAT13/18: Amendment proposals to AFI and SAM AFTN Routing Directories

That AFI and SAM AFTN Routing Directories be amended to incorporate Ezeiza/Johannesburg and Johannesburg/Recife circuits.

Conclusion SAT13/19: Implementation of ADS/CPDLC plans by SAT States

That SAT States and Organizations be encouraged to comply with their ADS/CPDLC implementation plans in a timely manner.

Conclusion SAT13/20: Need for a consolidated database for FANS-1/A equipped aircraft

That a consolidated database be created to identify FANS-1/A equipped aircraft operating in the South Atlantic.

Conclusion SAT13/21: Participation of regulators and main airlines in SAT/FIT meetings

That:

a) In cases where the regulators are different than the air navigation service providers, SAT States should ensure participation of regulators in SAT/FIT meetings in order to have full commitment to the implementation plan; and

b) Main airlines representatives should also participate in SAT/FIT meetings.

Conclusion SAT13/22: Procedures applicable to non-RVSM capable aircraft in the South Atlantic due to MASPS failure

That, in view of situations where an aircraft might lose RVSM capability, in the oceanic airspace, due to equipment failure affecting MASPS, SAT States include in their respective letters of procedures the provision that a 2000 ft vertical separation from other aircraft shall be applied to that flight and that the aircraft be allowed to continue as per the filed flight plan until within range of its destination or suitable alternate before being required to clear RVSM designated airspace, taking into account restrictions published for specific airspace portions.

Conclusion SAT13/23: AFI States' cooperation with ARMA in data collection

That AFI States be requested to fully cooperate in providing AFI Regional Monitoring Agency (ARMA) with timely and exhaustive information in order for the RMA to perform its duties and responsibilities in an efficient and effective manner.

Conclusion SAT13/24: Implementation of AMHS

That:

a) SAT States and Organizations take advantage of the experience gained by Argentina and Spain in the deployment of AMHS systems in the SAT Area; and

b) Argentina, Cape Verde and Spain arrange for the interconnection of their AHMS systems, on a trial basis, and present the results to the next SAT meeting.

Decision SAT13/25: Future work programme

That the SAT Group work programme be amended as per Appendices 4A, 4B and 4C to this report.

Conclusion SAT13/27: SARSAT/COSPAS SPOCs

That the ICAO Regional Office, Dakar coordinate with SAT AFI States and Organizations concerned the updating of SARSAT-COSPAS points of contact addresses and forward the updated information to the SARSAT-COSPAS Mission Control Center (MCC) located in Maspalomas, Spain.

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Agenda Item 1: Air traffic management (ATM)

1.1 Follow up of SAT/12 Conclusions pertaining to the ATM field

1.1.1 Under this agenda item, the meeting reviewed the implementation status of the conclusions and decisions adopted by the Twelfth Meeting on the improvement of air traffic services over the South Atlantic (SAT/12), which was held in Sal Island, Cape Verde Archipelago, 15 – 17 December 2004, and follow-up actions taken thereon by SAT Members and the Secretariat. The implementation status of these conclusions and decisions is shown at **Appendix 1-A** to this part of the report.

1.2 Review of the Report of the SAT/12 ATM Working Group

1.2.1 Under this Agenda item, the meeting reviewed the Report on the SAT/12 Task Force Meeting (Rio de Janeiro, Brazil, from 5 to 9 September 2005) as summarized by the Secretariat. The meeting particularly analyzed the SAT Task Force draft conclusions and decisions covering operational and technical issues, and endorsed most of these conclusions and decisions following further discussions under Agenda items 1, 2, 3, 4, 5 and 6.

1.3 Missing Flight Plans

1.3.1 The meeting noted that during the SAT/12 meeting (Cape Verde, 15-17 December 2004), Conclusion SAT/12/1 requested a coordinated investigation about the lack of flight plans in various FIR over the Atlantic Ocean. Furthermore, Conclusion SAT/12/2 was planning that IATA should investigate about the reliability of some airlines involved with certain missing flight plans.

1.3.2 At the SAT/12-TF/1 meeting (Rio de Janeiro, Brazil 5-9 September, 2005), this issue was also analyzed and the debriefing of the coordinated investigation underlined that the network was not the reason of the absence of FPL and agreed that the ACCs facing the problem were asked to investigate on a case by case basis and to analyze why the FPL were missing.

1.3.3 The importance of the issue was highlighted again especially in a missing FPL situation together with a HF propagation loss occurrence; an aircraft crossed different FIRs without radio contact.

1.3.4 The meeting was informed on the analysis done at Cayenne ACC that enabled the classification of the absence of flight plan situations into four categories:

a) Syntax errors :
- DOF (date of flight) errors were noted.
- Introduction of a hyphen in the REG field.
- Route description not ICAO compliant

b) Route not planned through SOOO with En-Route rerouting.

c) Flight plan originator forgot SOOO or a technical problem occurred.

d) Unclassified due to a lack of information from third parties.

1.3.5 The Meeting was of the opinion that, in spite the efforts carried out by all concerned, the problem was not yet solved and, considering the information provided hereabove, additional work could be done through an action plan. In addition to the action plan, the meeting agreed that IATA member airlines' pilots be requested to systematically report to the next ACC whenever they are encountering difficulties in establishing radio communications with a SAT ACC. It also requested the ICAO Regional Offices, Dakar and Lima to remind all stakeholders of the necessity to comply with ICAO guidance material concerning flight plan processing.

1.3.6 Considering the above, the following conclusion was agreed:

CONCLUSION SAT/13/01: ACTION PLAN TO AVOID THE LACK OF FLIGHT PLANS

THAT:

c) SAT ACCS EXPERIENCING THE PROBLEM OF MISSING FLIGHT PLANS CONTINUE TO ANALYZE AND CONDUCT INVESTIGATIONS ON THE RELATED CONTRIBUTING FACTORS IN REAL TIME, USING THE FORM SHOWN AS APPENDIX 1-B TO THIS PART OF THE REPORT; AND

d) STATES EXPLORE THEIR ATM SYSTEM CAPABILITIES TO ACCOMMODATE AUTOMATIC EXCHANGE OF COORDINATION MESSAGES.

1.4 Statistic of the air traffic movements in the EUR/SAM corridor

1.4.1 The meeting was informed by the South Atlantic Monitoring Agency (SATMA) on the evolution of the air traffic movements in the EUR/SAM corridor. Comparative data between the years 2004 and 2005 show an important increase of the air traffic movements in the corridor. The information provided (See **APPENDIX 1-C** to this part of the report) included detailed figures presented for the whole EUR/SAM Corridor, average per airway, city pairs and aircraft operators.

1.4.2 In summary the document describes each of the steps carried out to collect the final statistical data with the aim of showing the included/excluded air traffic in the area:

1.4.3 The traffic taken into account included the following:

- Any aircraft having used: UN-741, UN-866, UN-873 and UN-857 routes, in which the flight plans contain information of any of these fixed points: EDUMO, TENPA, IPERA or GUNET.

- Traffic not using any of the aforementioned routes, with Origin/Destination Chile from/to Spain. This traffic has been associated to random routing.

Note: According to this, aircraft using the EUR/SAM corridor would be mainly those flying from South America, Cape Verde to Europe.

1.4.4 Aircraft that, in spite of having information about the flight plan in the Canaries FIR (aircraft flying over the Canary Islands) have been excluded because of not being related to the EUR/SAM corridor (those aircraft do not use any of the ATS routes of the corridor) :

- Traffic with Origin/Destination Colombia, Venezuela, French Guyana, Surinam and Equator.

- Traffic with Origin/Destination in the Aeronautical Fixed Services routing areas: C, D, H, K, M, O, T.
- Traffic among Morocco and Cape Verde, South Africa and the Canary Islands.
- Traffic between Chile and France.
- Traffic that, due to its city pair in normal conditions, would use the EUR/SAM corridor, but which is discarded due to the information of the flight plan. For instance, DLH503 between EDDF and SBGR whose coordinates flight plan are (30 N, 30 W).

1.4.5 The analysis of each flight was made from the boundary points of the corridor (EDUMO, TENPA, IPERA and GUNET). NELSO was chosen for the RANDOM routing in the southbound routes and the first radar contact in the northbound routes.

1.4.6 When analyzing traffic at the boundary between Canaries UIR and Sal UIR, the change of ATS route along the Canaries UIR was not considered.

1.4.7 The meeting also discussed at length the figures presented and their evolution in order to take preventive action against further increase. The results of the discussions are shown under Agenda item 1.5.

1.5 **RVSM and RNP post-implementation safety assessments**

1.5.1 The meeting recalled that during the SAT/12 Meeting, the South Atlantic Monitoring Agency (SATMA) was tasked to perform a safety analysis in the EUR/SAM Corridor after the introduction of RVSM and RNP-10.

1.5.2 The meeting took note that two quantitative risk assessments based on suitable versions of the *Reich* Collision Risk Model had been carried out for the EUR/SAM Corridor in the South Atlantic, for flight levels between FL290 and FL410. The first assessment concerned the lateral collision risk whilst the second one concerned the vertical collision risk. The vertical collision risk assessment was split into two parts. The first part considered the risk due to technical causes, whilst the second one considered the risk due to all causes.

1.5.3 The existing route network composed of four nearly parallel North-South routes was analyzed, without taking account of random traffic, at about 100NM West of the current UN-741 and used mainly by IBERIA and LAN-CHILE. RNP10 and RVSM are implemented within this airspace.

1.5.4 For this study, the CRM software tool, in its four-route version, has been used. The CRM is a tool for the performance of collision risk analysis, based on the *Reich* Collision Risk Model.

1.5.5 The CRM program uses flight plan data obtained from Picasso, AENA's database, for the Canaries. For this study, flight plan data from 22nd January 2005 to 6th November 2005 has been examined to determine the types of aircraft in the airspace, the average flight characteristics of the typical aircraft and the passing frequencies of these aircraft.

1.5.6 The results obtained with the CRM for this study corresponds to the year 2005. Taking these values into account and assuming traffic growth rates of 4% and 7% per year, an estimation of the collision risk for the next 10 years was calculated.

1.5.7 The meeting expressed its concern regarding the fact that the risk assessments have been hindered considerably by a lack of data on real deviations, particularly on the larger and more infrequent deviations. As a

result, conservative assumptions have been made for certain parts of these distributions. In order to confirm the validity of these assumptions and to model the probability distributions accurately, it is recommended that additional data collections be reported from appropriate monitoring procedures.

1.5.8 Considering a number of parameters such as probabilities of lateral and vertical overlaps, lateral and vertical occupancies, average speed, average relative velocities or aircraft dimensions, the lateral and the technical vertical risk have been assessed and compared with the maximum values allowed, $TLS = 5 \times 10^{-9}$ and $\mathrm{TLS} = 2.5 \times 10^{-9}$, respectively. Nevertheless, it has not been possible to estimate the overall vertical risk due to lack of large height deviation reports. This value should be less than $TLS = 5 \times 10^{-9}$.

1.5.9 For current traffic levels, the lateral collision risk obtained is 1.62×10^{-9}, whilst the lateral collision risk estimated for 2015 with an annual traffic growth rate of 4% is 2.40×10^{-9} and 3.19×10^{-9} if the annual traffic growth rate is of 7%. These values do not take into account traffic on the RANDOM route. Nevertheless, since traffic on this route only represents 5% of the traffic in the Corridor, it is considered that the collision risk due to this route will not make the collision risk to overpass the TLS and the system is considered to be laterally safe until 2015.

1.5.10 As far as the technical vertical risk is concerned, the value of the collision risk for the current traffic levels is estimated to be 1.53×10^{-10} or 1.28×10^{-9} , depending on the vertical overlap probability used (the first value corresponds to the calculated Pz (1000) and the second one, to the conservative value used in the NAT). The technical vertical collision risk estimated for 2015 with an annual traffic growth rate of 4% is 2.27×10^{-10} for the calculated vertical overlap probability and 1.89×10^{-9} for the NAT probability. If the annual traffic growth rate is of 7% the technical risk is 3.01×10^{-10} and 2.51×10^{-9} , depending again on the vertical overlap probability used. It can be seen that the values are under the TLS for technical vertical risk, 2.5×10^{-9}, even in 2015 and with an extremely conservative vertical overlap probability.

1.5.11 In summary, the meeting was of the view that the results shown in the "EUR/SAM Safety Assessment 2005" study, suggests that current operations in the EUR/SAM Corridor after the implementation of RVSM and RNP are safe until the year 2015.

1.5.12 In the other hand the meeting also recognized the lack of real data on deviations occurred in the Corridor available for the study, especially as regards Large Height Deviation (LHD). Conservative assumptions have been made in the study to overcome the lack of real data. It was also analyzed the need to get information on lateral deviation in order to carry out an appropriate analysis of this type of deviation.

1.5.13 In that sense, the meeting agreed to recommend the ATS service providers and users to report LHD and lateral deviation occurrence and to collect and send that information to the SATMA in order to refine the results of the safety assessment and formulate the following conclusion:

CONCLUSION SAT/13/02: COLLECTION OF LARGE HEIGHT DEVIATION (LHD) AND LATERAL DEVIATION (LD) IN THE EUR/SAM CORRIDOR

THAT STATES AND ORGANIZATIONS CONCERNED:

a) REPORT LARGE HEIGHT DEVIATION (LHD) AND LATERAL DEVIATION (LD) DATA, USING AND FILLING UP

EXHAUSTIVELY THE FORMS SHOWN AT APPENDICES 1-D AND APPENDIX 1-E TO THIS PART OF THE REPORT;

b) FORWARD LHD AND LD DATA TO SATMA BY THE 10TH OF EACH MONTH, INCLUDING WHEN NO DEVIATIONS ARE RECORDED; AND

c) CONSIDER THE DIAGRAM AND THE DESCRIPTIVE CODES FOR VERTICAL ERRORS CONTAINED IN APPENDIX 1D TO THIS PART OF THE REPORT WHEN EVALUATING THE TIME SPENT BY AN AIRCRAFT AT AN UNEXPECTED FLIGHT LEVEL (OR ALTITUDE) FOR THE PURPOSES OF INFORMING SATMA.

1.6 Special Procedures for In-Flight Contingencies in Oceanic Airspace

1.6.1 The meeting recalled that previous to the implementation of RNP 10, the ICAO Council approved the inclusion of the Special Procedures for In-Flight Contingencies in Oceanic Airspace in the Doc 7030 (AFI and SAM), that has covered both RNP 10 and RVSM operations.

1.6.2 On the other hand and prior to the implementation of RVSM in the CAR/SAM Regions, the ICAO Council also approved the changes of Special Procedures for In-Flight Contingencies in Oceanic Airspace in the Doc 7030 (SAM only), which was, at that time (end of 2004), updated with the other ICAO Regions (NAT and PAC).

1.6.3 After a long experience of using several kinds of Special Procedures for In-Flight Contingencies In Oceanic Airspace in several ICAO Regions (NAT, PAC, EUR/SAM Corridor, etc), the DOC 4444 Amendment 4 harmonized this procedures for Global Application, since Nov 24, 2005.

1.6.4 The present Special Procedures for In-Flight Contingencies in Oceanic Airspace of Doc 7030, Part SAM, and of Doc 4444, are very similar. However, there is an important difference between Doc 7030, part AFI and Doc 4444/Doc 7030, part SAM concerning the procedures to be used in case an aircraft is unable to continue the flight in accordance with its ATC clearance, and/or if an aircraft is unable to maintain the navigation performance accuracy specified for the airspace, if a revised ATC clearance could not be obtained.

1.6.5 In Doc 4444 and in Doc 7030, part SAM, the lateral deviation is 15 NM. In Doc 7030, part AFI, the lateral deviation is 25 NM from its assigned route or track in a multi-track system using 50 NM spacing or otherwise, at a distance which is mid-point from the adjacent parallel route or track.

1.6.6 The meeting noted that ICAO was preparing a complete consequential amendment to the SUPPS Doc. 7030 in order to exclude the Special Procedures for In-Flight Contingencies in Oceanic Airspace from all Parts of the mentioned document. It was expected that this amendment proposal will be circulated among States and parts involved in the second semester of 2006.

1.6.7 Taking into account all the above, the meeting agreed to implement the lateral deviation of 15 NM in the EUR/SAM Corridor on the AIRAC date of 7 June, 2006 through the delivery of a NOTAM and formulated the following conclusion:

CONCLUSION SAT 13/03: IMPLEMENTATION OF 15 NM LATERAL OFFSET SPECIAL PROCEDURES FOR IN FLIGHT CONTINGENCIES IN OCEANIC AIRSPACE OF EUR/SAM CORRIDOR

THAT:

a) THOSE AFI STATES AND CONCERNED ORGANIZATIONS PROVING AIR TRAFFIC SERVICES IN THE EUR/SAM CORRIDOR MAKE SUITABLE ARRANGEMENTS TO IMPLEMENT THE 15 NM LATERAL OFFSET

SPECIAL PROCEDURES FOR IN FLIGHT CONTINGENCIES IN OCEANIC AIRSPACE ON THE AIRAC DATE OF 7 JUNE 2006. A SPECIMEN NOTAM FOR USE BY STATES AND CONCERNED ORGANIZATIONS IS SHOWN AT APPENDIX 1F TO THIS PART OF THE REPORT; AND

b) THE ICAO SECRETARIAT EXPEDITE THE PROCESSING OF THE CORRESPONDING AMENDMENT TO DOC. 7030.

1.7 AIP Supplement on RNP 10 and RVSM Post Implementation Procedures

1.7.1 The meeting also noted that since the implementation of RNP10 and RVSM, some new procedures were approved and it might be necessary to update some States' AIPs. The new procedures refer to some exceptions to operate in the EUR/SAM corridor and special coordination procedures.

1.7.2 In that sense, Brazil developed and presented to the meeting a new AIP Supplement in order to reflect the new procedures and to exclude the Special Procedures for In-Flight Contingencies in Oceanic Airspace. This new AIP Supplement attached to this part of the report and could be used as reference material. Taking this into account the meeting formulated the following conclusion:

CONCLUSION SAT 13/04: AIP SUPPLEMENT ON RNP10 AND RVSM POST-IMPLEMENTATION PROCEDURES APPLICABLE IN THE EUR/SAM CORRIDOR

THAT THOSE STATES WHICH HAVE NOT YET DONE SO, PUBLISH AN AIP SUPPLEMENT ON RNP10 AND RVSM OPERATIONS POST-IMPLEMENTATION PROCEDURES APPLICABLE IN THE EUR/SAM CORRIDOR, USING AS REFERENCE THE SPECIMEN SHOWN AT APPENDIX 1G TO THIS PART OF THE REPORT.

1.8 Introduction of Random RNAV Routing

Implementation of AORRA airspace

1.8.1 The meeting recalled that the implementation of AORRA had been planned to be effective on May 11, 2006. On this matter, the meeting noted Angola's unpreparedness due to delays in the execution of the project aimed to upgrade HF communications within Luanda FIR. In order to analyze this issue, an *ad hoc* Group was created with the parties involved.

1.8.2 At this *ad hoc* meeting, the problem presented by Angola was thoroughly reviewed and particularly, concerns were expressed at the amount of ATS incidents reports recorded in the Luanda oceanic FIR on a weekly basis. The meeting welcomed South Africa's offer to assist Angola in the provision of ATS services in Luanda Oceanic FIR until the communication problems facing Angola therein are definitively solved. Angola informed the meeting that they would consider receiving assistance from any ATS providers adjacent to Luanda FIR. However, the meeting noted that only South Africa's proposal was available and that it was not aware of any other proposal from another adjacent service provider. After thorough discussions, the meeting came to the realization that the implementation of AORRA should be effectively achieved with the participation of all States involved, and accordingly agreed to postpone the implementation to **31 August 2006,** based further information provided by Angola. Also, the meeting called upon Angola to expeditiously issue a NOTAM detailing the procedures applicable by aircraft experiencing communications failures in Luanda Oceanic FIR, as a matter of safety, and requested the relevant ICAO Regional Offices to facilitate the necessary contingency arrangements between Angola and South Africa and any other neighbouring States, with a view to improving air traffic services in the referred area in the short term.

1.8.3 In view of the above, the meeting formulated the following conclusions:

CONCLUSION SAT 13/05: IMPLEMENTATION OF AORRA AIRSPACE (PHASE I)

THAT, PENDING THE IMPLEMENTATION OF ANGOLA'S PLANS AIMED AT IMPROVING COMMUNICATIONS IN LUANDA OCEANIC FIR:

A) ANGOLA, ARGENTINA, BRAZIL AND SOUTH AFRICA TAKE THE APPROPRIATE MEASURES TO PUBLISH A NOTAM BEFORE 11 MAY 2006 INDICATING THE NEW IMPLEMENTATION DATE FOR AORRA (PHASE I) ON 31 AUGUST 2006 (AIRAC); AND

B) ANGOLA EXPEDITE THE IMPROVEMENT OF COMMUNICATIONS IN LUANDA OCEANIC FIR NO LATER THAN 31 JULY 2006, AND IMPLEMENT AN ADEQUATE AIRSPACE CLASSIFICATION THEREIN.

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CONCLUSION SAT 13/06: NEED FOR CONTINGENCY ARRANGEMENTS AIMED AT UPGRADING THE LEVEL OF AIR SAFETY IN LUANDA OCEANIC FIR

THAT, AS A MATTER OF URGENCY IN THE INTEREST OF THE SAFETY OF INTERNATIONAL AIR NAVIGATION IN OVER THE OCEANIC AIRSPACE,

A) ANGOLA UPDATE AND PUBLISH A NEW AERONAUTICAL INFORMATION (NOTAM) ON APPLICABLE PROCEDURES FOR USERS' GUIDANCE WHEN EXPERIENCING RADIO COMMUNICATIONS FAILURE WITH LUANDA ACC; AND

B) THE ICAO REGIONAL OFFICES, DAKAR AND NAIROBI BE REQUESTED TO FACILITATE THE NECESSARY ARRANGEMENTS BETWEEN THE ANGOLA AND SOUTH AFRICA OR ANY OTHER NEIGHBORING STATE IN A POSITION TO PROVIDE ASSISTANCE, WITH A VIEW TO IMPROVING THE LEVEL OF AIR SAFETY IN THE SHORT TERM WITHIN LUANDA OCEANIC FIR.

1.9 New entry/exit gates in AORRA airspace

1.9.1 An analysis made by the air traffic controllers at Atlantico ACC indicated the need to allow some exemptions in the obligation of using entry/exit gates in AORRA. These exemptions would concern the flights that are already performing out of ATS Routes, for example, between Ascension and Falklands. Inclusion of these exemptions in the AIP supplement would therefore attend to this new operational requirement.

1.9.2 Another aspect observed by Atlantico ACC was the need for establishing two new entry/exit gates to attend the ATS Routes UL 375 and UL 695, which was agreed by the meeting.

1.10 Review of the Report of the New Airspace Structure Study Group

Analysis of the current operational situation within the EUR/SAM corridor

1.10.1 The meeting recognized that the implementation of RNP10 and RVSM in the recent past years marked an important step forward that now enables more capacity and efficiency of operations, with an improved flight level allocation and optimal speeds that meet users' needs. The important increase in traffic demand and forecasts provided by different agencies show, in the most pessimistic scenario, an average annual growth of 4% until 2015.

1.10.2 In view of the increase in traffic demand, the meeting analyzed the study presented by Spain based on fast-time simulations and showing comparative air traffic data in 2005 and 2015, detailing traffic per airway, workload on ATC and number of Nautical Miles flown out of optimum Flight Level. The complete study presented during the meeting will be posted to the ICAO Offices (Dakar and Lima) websites: http://www.icao.int/wacaf/ and http://www.lima.icao.int/.

1.10.3 Taking the above into account, the meeting analyzed a strategy for the short, medium and long-term implementation of a new airspace structure in the EUR/SAM Corridor, with the objective of improving safety, capacity and efficiency of operations and meeting aircraft operators' needs.

1.10.4 It was also recalled that the work programme of the IAS/SG included the mandate to develop a short-term plan using the current separation standards based on RNP10, including the implementation of new ATS routes. The meeting reviewed different options of implementing a new ATS route network, including a preliminary safety assessment for each option, taking into account the traffic increase foreseen in the EUR/SAM Corridor until 2015.

1.10.5 In view of the above, the meeting analyzed four proposals for a new ATS structure in the EUR/SAM Corridor based on RNP10 functionalities and complemented with a preliminary safety assessment based on the Reich Collision Risk Model. The complete study presented during the meeting will be posted to the ICAO Offices (Dakar and Lima) websites: http://www.icao.int/wacaf/ and http://www.lima.icao.int/.

1.10.6 Two of the options were based on the implementation of additional ATS routes, while the two others were based on unidirectional ATS routes, thus maintaining the current network. To assess the current operational situation in the EUR/SAM Corridor, a reference day in the year 2005 has been selected from *PICASSO* (Spanish software tool for statistics) according to the following criteria:

a) It is not a peak day
b) The distribution of traffic per airway represents the media of the year
c) The period studies is from 22:00 hours until 21:59 hours of the next day
d) The reference hours are the entry hours at Canaries UIR
e) The flight level reference was obtained from the original FPL

1.10.7 The following parameters were used in the study:

a) Distribution of the air traffic per hour and per airway
b) Number of aircraft penalized with non optimum flight level.
c) Total NM flown at not optimum flight level
d) Workload per FIR/UIR

1.10.8 The study concluded that the projected situation by 2015 would be as follows:

a) The number of aircraft increases a 68% (4% annual traffic growth rate)
b) The number of aircraft penalized with non optimal flight level increases a 60%
c) The number of nautical miles flown at non optimal flight level increases a 55%
d) The percentage of workload in the ATC Units increases a 50%

1.10.9 Taking into account these parameters, the meeting concluded that the EUR/SAM Corridor structure should be modified in the short term to provide appropriate ATC services and that the situation foreseen for 2015 would not acceptable. The four proposals analyzed were the following:

Proposal 1: 8 ATS routes (4 additional routes from present situation)
Proposal 2: 6 ATS routes (2 additional routes form present situation)
Proposal 3: ATS Route UN 741 as unidirectional
Proposal 4: ATS Routes UN 741 and UN 866 as unidirectional

1.10.10 In order to analyze these proposals, the following parameters were used:

a) The FPLs were obtained from *PICASSO* (Spanish Official Statistical Tool)
b) The analysis concerned the period was from 22 January until 11 November 2005
c) The study was limited for flights from FL 290 to FL 410
d) The risk assessment applied is based on a suitable version of the Reich Collision Risk Model.

Proposal 1: 8 ATS routes (4 additional routes from present situation)

The review of the lateral collision risk analysis for the period 2005 – 2015 with an annual traffic growth rate of 4% (the most pessimist forecast) with RNP10 or RNP4, showed that:

a) It was not a valid option using RNP10 functionalities
b) It was a valid option using RNP 4 functionalities but very critical in 2015

Proposal 2: 6 ATS routes (2 additional routes form present situation)

The review of the lateral collision risk analysis for the period 2005 – 2015 with an annual traffic growth rate of 4% (the most pessimist forecast) with RNP10 or RNP4, showed that:

a) It was not a valid option using RNP 10 functionalities
b) It was a valid options using RNP 4 functionalities but possibly critical in 2015

Proposal 3: ATS Route UN 741 as unidirectional

Proposal 4: ATS Routes UN 741 and UN 866 as unidirectional

1.10.11 In addition to those parameters used to analyze the above mentioned Proposals 1 and 2, a standard reference day during 2005 was selected. To obtain the necessary parameters, TAAM and MVM/PUMA software tools were used accordingly.

1.10.12 The meeting noted that the work was ongoing and in a very short term, SATMA would obtain the final results of the risk collision model for Options 3 and 4. It was also noted that the preliminary analysis seemed to be valid.

1.10.13 The meeting discussed at length the four proposals presented as well as other options for the short and mid term that were presented during the debate, and was of the opinion that at this stage the best option would be Proposal 1, meaning the implementation of a unidirectional flight level allocation scheme on routes UN 741 and UN 866.

1.10.14 The meeting also agreed that to implement the new structure in the EUR/SAM Corridor, it would be necessary that the concerning States provide the Regional Monitoring Agency with the statistical data on traffic above Fl 290 that flew outside Canaries FIR during the period from January to November 2005.

1.10.15 The meeting also discussed the opportunity to adopt a tentative action plan with the target of 2 April 2007 for the implementation of the new flight level allocation scheme (FLAS) on the mentioned routes. The meeting accordingly formulated the following conclusions:

CONCLUSION SAT/13/07: TRAFFIC DATA TO BE PROVIDED TO SATMA

THAT BRAZIL, CAPE VERDE AND SENEGAL PROVIDE SATMA WITH THE STATISTICS OF TRAFFIC THAT FLEW OUTSIDE CANARIES FIR OVER THE PERIOD FROM JANUARY TO NOVEMBER 2005 AND, THAT AFFECT EUR/SAM CORRIDOR, BETWEEN FL 290 AND 410. THE REQUIRED DATA SHALL BE FORWARDED TO SATMA NO LATER THAN JUNE 7, 2006.

CONCLUSION SAT 13/08: ADOPTION OF THE ACTION PLAN TO IMPLEMENT AN UNIDIRECTIONAL FLAS IN THE EUR/SAM CORRIDOR

THAT, IN COORDINATION WITH ICAO, BRAZIL, CAPE VERDE, SENEGAL, SPAIN, SATMA AND IATA TAKE APPROPRIATE MEASURES TO IMPLEMENT THE ACTION PLAN SHOWN AT APPENDIX 1H TO THIS PART OF THE REPORT IN VIEW OF A NEW FLIGHT LEVEL ALLOCATION SCHEME (FLAS) ON ATS ROUTES UN 741 AND UN 866 ON THE TENTATIVE TARGET DATE OF APRIL 12, 2007.

1.11 ATS Contingency planning

1.11.1 The meeting recalled that at SAT/12 and SAT/12/TF/1 meetings, the States were urged to prepare and coordinate air traffic contingency plans, harmonize their ATS contingency plans by 30 March, 2006, and send a copy of their coordinated ATS contingency plan to the corresponding ICAO Regional Office by 30 June 2006.

1.11.2 In this connection, Spain presented Canaries FIR contingency plan to finalize the required coordination with other EUR/SAM Corridor ACCs, and harmonize the different contingency plans, taking into account the specific flight level change area of Canaries FIR.

1.11.3 The meeting noted that Spain had published in its AIP a national Air Traffic Contingency Plan, which was tested and simulated at the Canaries ACC (where there is a separate operations room for use as back-up to the normal operations room). Consequently, the Canaries Contingency Plan for the EUR/SAM Corridor should be applicable to overflight traffic only.

1.11.4 The meeting also analyzed a proposal aimed at harmonizing and consolidating EUR/SAM ACCs' contingency plans into a single document, instead of having a specific contingency plan for each of the ACC involved. The meeting agreed that Spain should coordinate with other SAT States the development of a comprehensive ATS contingency plan for the EUR/SAM Corridor. The following conclusion was formulated:

CONCLUSION SAT 13/09: EUR/SAM CONTINGENCY PLAN

THAT SPAIN COORDINATE WITH OTHER SAT STATES CONCERNED THE DEVELOPMENT OF A COMPREHENSIVE ATS CONTINGENCY PLAN FOR THE EUR/SAM CORRIDOR IN ACCORDANCE WITH ICAO PROVISIONS IN ANNEX 11 AND DOC 9426, AND PRESENT THE RESULT TO THE NEXT SAT TASK FORCE MEETING.

1.12 Retention of ATS Routes within the AORRA airspace for contingency situations

1.12.1 Taking into account that the ATS routes which are contained within the AORRA, have been published with significant points at positions requiring identification, these routes might be used for contingency purposes within the AORRA airspace, should the need arise. The routes being duly named and significant points appropriately identified, this will assist an air traffic controller unfamiliar with the area in providing ATC into that area under contingency conditions, should this be necessary.

1.12.2 In view of the above, although the existing routes within the intended AORRA airspace should be withdrawn after implementation of the AORRA, the meeting agreed that they should be suspended to serve fully or partly (as required) in case of contingency measures. The following conclusion was formulated:

CONCLUSION SAT13/10: RETENTION OF ATS ROUTES WITHIN AORRA AIRSPACE

THAT THE STATES INVOLVED IN THE AORRA IMPLEMENTATION SHOULD RETAIN A MINIMUM NUMBER OF SELECTED ATS ROUTES WITHIN THE AORRA AIRSPACE, BUT HOWEVER SUSPEND THOSE PORTIONS OF THE ROUTES IDENTIFIED, WHICH ARE WITHIN THE BOUNDARIES OF THE AORRA. SUCH ROUTE PORTIONS ARE TO BE ACTIVATED IN CASE OF CONTINGENCY MEASURES.

APPENDIX 1-A

STATUS OF CONCLUSIONS AND DECISIONS RELATED TO SAT 12 MEETING

Conclusions and Decisions	Implementation status	Remarks
Conclusion SAT/12/1: Need for further investigations on the lack of flight plans That, considering the high priority to be accorded to the issue of lack of FPLs, SAT ACCs establish an appropriate mechanism for investigating thereabout on a case-by-case basis during the period from 1 to 31 March of 2005 as follows: a) the ACC facing the problem should analyzed the reasons why the FPL is missing; b) the focal points of contact shown at **Appendix 3 - A**, should compile the results of the investigations and exchange the compiled information with the other designated focal points and the Secretary of the SAT Group no later than 15 April 2005; c) the investigations should be conducted using the form shown at **Appendix 3 - B**.	Superseded	SAT States informed that after the technical tests carried out no external problems were identified and should establish appropriate mechanisms for investigating internal problems. *See Conclusion SAT 13/01*
Conclusion SAT/12/2: Investigation on users FPL procedures That, in addition to ACC investigations, IATA analyzed and evaluate the reliability of the flight plan procedure used by a selected member airline involved with the missing flight plans in the SAT area, and inform SAT members of their findings.	Superseded	*See Conclusion SAT 13/01*
Conclusion SAT/12/3: Flight level allocation scheme applicable in the EUR/SAM Corridor That : a) Brazil, Cape Verde, Senegal and Spain publish no later than December 21, 2004, a common NOTAM announcing the new Flight Level Allocation Scheme applicable in the EUR/SAM Corridor as shown in **Appendix 3 - C**.; b) ICAO and IATA take the appropriate actions to assist in disseminating this information among the users.	Implemented Implemented	
Conclusion SAT/12/4: Special coordination procedures for cruise operation of Non – RVSM/RNP10 Compliant aircraft in the EUR/SAM RVSM/RNP10 airspace That Brazil, Cape Verde, Senegal and Spain publish an AIP Supplement or AIP Amendment implementing the special coordination procedures for cruise operations of Non - RVSM/RNP10 compliant aircraft in the EUR/SAM RVSM/RNP10 airspace on January 20, 2005, as shown in **Appendix 3 - D** in order to be in force on March 17, 2005. *Note: The Secretariat will carry out the necessary coordination with Spain and the other States involved for the publication of the AIP Supplement or AIP amendment.*	Implemented	

Conclusions and Decisions	Implementation status	Remarks
Conclusion SAT/12/5: Analysis of RVSM safety assessment parameters and aircraft/operator approval status in the EUR/SAM Corridor That SATMA take the appropriate actions in order to analyzed the following parameters, in accordance with ICAO Doc. 9574, Chapter 6 – *System Performance Monitoring*: • the vertical overlap probability, P z (1 000), does not exceed 1.7 × 10 -8 ; • the combination of all passing frequency components has no more of an adverse effect on risk than does an opposite- direction passing frequency of 2.5 per aircraft flying hour; and • the lateral overlap probability, Py (0), is not greater than 0.058 (this is based on a lateral path-keeping accuracy standard deviation of 550 m (0.3 NM)). • the risk as a result of operational errors and in-flight contingencies. • the RVSM approval status of operators and aircraft using EUR/SAM Corridor airspace.	Implemented	
Conclusion SAT/12/6: Integrity/Accuracy of RMAs information on RVSM approval status of aircraft and operators That SATMA should harmonize its database on the RVSM approval status of aircraft and operators with other RMAs in order to avoid discrepancies and to prevent flights from undue penalties and safety risks.	Valid	
Conclusion SAT/12/7: Collection of Large Height Deviation (LHD) in the EUR/SAM Corridor That the Secretariat request Brazil, Cape Verde, Senegal and Spain to use the new Large Height Deviation (LHD) Form shown at **Appendix 3 - E** to forward LHD data to SATMA. The LHD Form shall be sent to SATMA, even if no deviation occurs, by the 10th of each month.	Superseded	*See Conclusion SAT13/03*
Conclusion SAT/12/8: Action plan for random RNAV routing implementation in AORRA airspace That the action plan developed at **Appendix 3 - F** be adopted for the implementation in November 2005 (*AIRAC date*) of random RNAV routing in the AORRA airspace as described at **Appendix 3 - G**.	On going	*The implementation was postponed to August 31, 2006* *See Conclusions SAT13/05 and Conclusion SAT 13/06*

Conclusions and Decisions	Implementation status	Remarks
Decision SAT/12/9: Establishment of a Study Group on a new airspace structure in the EUR/SAM Corridor That: a) To improve the capacity and efficiency of the operations in the EUR/SAM Corridor, a Study Group is established with the mandate to develop short-term, mid-term and long term strategies for the implementation of a new airspace structure; and b) The terms of reference, work programme and composition of the Study Group are shown at **Appendix 6 – C to the report on Agenda Item 6**.	Implemented	Work is in progress
Conclusion SAT/12/10: Lateral offset procedures That, in order to mitigate collision risk, the lateral offset procedures should be used in the SAT airspace; to this effect: a) Brazil, Cape Verde, Senegal and Spain publish a NOTAM based on the model shown at **Appendix 3 - H** on December 21, 2004 to be effective on January 20, 2005; b) Angola, Brazil, Cape Verde, Senegal, South Africa and Spain publish the AIP SUPP/AIP Amendment based on the model shown at **Appendix 3 - I** on January 20, 2005 for applicability on March 17, 2005; and c) ICAO and IATA take the appropriate actions to assist in disseminating this information among users.	Implemented	
Conclusion SAT/12/11: Amendment to the AFI Part to the SUPPS (Doc. 7030) That, in order to harmonize the AFI and SAM Parts of the *SUPPs (Doc. 7030),* the Secretariat develop an amendment proposal to be presented to the SAT/13 meeting.	On going	
Conclusion SAT/12/12: Extension of the ATS route UM799 That ICAO coordinate with States involved the extension of ATS Route UM 799 from SLI VOR/DME in Amazonica FIR to appropriate points within Canaries and Sal FIRs.	Implemented	This ATS route is included in the new structure of the EUR/SAM corridor airspace See Conclusion SAT 13/08
Conclusion SAT/12/13: Improvement of AFS performance in the South Atlantic That the following measures be implemented to improve AFS performance in the SAT area: a) To harmonize monitoring procedures, protocols and reporting methodologies; b) To hold AFTN monthly statistics on circuits availability and quarterly statistics on transit times in accordance with the established procedures, disseminate these data among all AFTN correspondents within the SAT area, and coordinate the corrective measures to be implemented as necessary; c) To harmonize AFI, EUR and SAM Routing Directories on a regular basis and effectively implement the agreed requirements therein at each AFTN switching centres under ICAO coordination; and	Not implemented. On-going. On-going.	

Conclusions and Decisions	Implementation status	Remarks
d) To designate focal points of contact responsible for technical coordination between SAT centres. Contact details (postal addresses, telephone numbers, fax numbers and electronic mail addresses) of the designated focal points should be sent to the Secretary of the SAT Group no later than 15 January 2005.	Implemented.	
Conclusion SAT/12/14: Investigations on the loss of AFTN messages between SAT ACCs That, in order to further analyze and mitigate the loss of AFTN messages in the South Atlantic, including flight plan messages, Atlantico, Canaries, Casablanca, Dakar, Johannesburg, Lisbon, Luanda, Piarco, Rochambeau, Sal and Santa Maria ACCs: a) Carry out a three-day survey on AFTN performance from 15 to 17 March 2005 (inclusive), using the form and model messages attached as **Appendix 4-A** to this part of the report. In so doing, they should: 1. Provide a list of the AFTN addresses of their ACC correspondents in the SAT area; and 2. Send the results of the AFTN survey to the Secretary of the SAT Group before 30 March 2005; b) Take into account the following elements when analyzing the AFTN link operation during the investigations on the loss of flight plans to be conducted on a case by case basis from 1 to 31 March 2005 in accordance with SAT/12 Conclusion 12/1: 1. Availability of the AFTN circuit(s) involved, based on the implemented routing configuration; 2. Transit times; 3. End user terminals (AFTN PC, teletype); and 4. Alphabetic codes (ITA-2, IA-5).	Implemented Implemented	Survey conducted as scheduled, in full cooperation with SAT centres.
Conclusion SAT/12/15: Consolidation of aeronautical VSAT networks That, taking due account of networks development plans and technical considerations: a) CAFSAT Network should be established on Satellite IS 10-02 as soon as practicable; and b) The Secretariat carry out the necessary coordination with INTELSAT to secure the required bandwidth for civil aviation use in view of the transfer of CAFSAT network services to IS10–02 satellite.	Not implemented Action taken by the Secretariat	 So far, no response has been received from INTELSAT
Decision SAT/12/16: Study on networks interoperability requirements That the work programme of the SAT CNS Working Group be amended to include a detailed study on VSAT networks interoperability requirements, including the consolidation of VSAT networks on IS 10.02 satellite; the results and appropriate recommendations from the study should be presented to the next SAT meeting.	CNS/WG work programme has been amended accordingly.	No progress reported. Team Leader (ASECNA) to report implementation status.

Conclusion SAT/12/17: Adoption of FANS 1/A operational manual That in order to ensure harmonization of ADS/CPDLC procedures/systems with other regions: a) SAT States adopt the FANS 1/A operational manual (FOM) developed for the Pacific Ocean, Indian Ocean, Bay of Bengale; b) South Africa (ATNS), in coordination with the Secretariat and States in charge of the development of the FOM, carry out co-ordinations in order to include SAT FIRs into the manual and keep the manual updated.	Implemented. Implemented.	South Africa presented the FOM during the SAT/12/TF1 meeting.
Conclusion SAT/12/18: Creation of a FANS 1/A interoperability team (FIT) That a SAT FANS 1/A interoperability team (FIT) be created to oversee the monitoring of FANS 1/A system performance to ensure that it continues to meet safety and interoperability requirements and that operations and procedures are working as specified. The FIT main objectives are to: a) follow the ADS/CPDLC tests that are being carried out by SAT States and adjacent States; b) review identified problem reports and determine appropriate resolution; c) develop interim operational procedures to mitigate the effects of problems until such time as they are resolved; d) monitor the progress of problem resolution; e) prepare summaries of problems encountered and their operational implications; f) assess system performance based on information in CRA periodic reports; and g) authorize and co-ordinate system testing.	Implemented	Decision SAT/12/TF1/09 convening the First FANS 1/A Implementation Team Meeting (FIT1) was adopted.
Conclusion SAT/12/19: ATS contingency plans That: a) SAT ACCs carry out the necessary bilateral coordination through electronic correspondence to develop and implement harmonized ATS contingency plans in accordance with ICAO provisions in Annex 11 and Doc 9426; through the focal points of contact shown at **Appendix 6-A**; and b) Once finalized, the coordinated ATS contingency plans be submitted to the ICAO Council for approval as temporary amendments to regional ANPs.	On going	*See Conclusion SAT 13/09*
Decision SAT/12/20: Terms of reference, future work programme and composition of the SAT Group bodies That the future terms of reference, work programme and composition of the SAT ATM Working Group (ATM/WG), Study Group on the implementation (IAS/SG) of a new airspace structure and CNS Working Group (CNS/WG) respectively be as shown at **Appendices 6-B, 6-C** and **6-D** to this part of the report.	Implemented	

APPENDIX 1-B

STATUS OF FLIGHTS IN THE SAT REGION WITHOUT FPL

ACC :_____

Date	FIR	Aircraft Identification	Type of Aircraft	Departure Aerodrome	Destination Aerodrome	Is the FPL received by the AFTN Center?	Was the FPL received by the adjacent ACCs?	Was the FPL Address correct?	Was the AFTN link functioning properly?*	Remarks

* *The following elements shall be investigated when addressing AFTN operation (Column 9):*

1. *Availability of the AFTN circuit(s) involved, based on the implemented routing configuration ;*
2. *Transit times;*
3. *End user terminals (AFTN PC, teletype); and*
4. *Alphabetic codes (ITA-2, IA-5).*

SATMA

AIR TRAFFIC STATISTICS
OF THE EUR/SAM CORRIDOR
IN THE CANARY ISLANDS FIR

TABLE OF CONTENTS **Page**

OBJECTIVE

The aim of the document is to show statistical data about the movement of aircraft in the EUR/SAM corridor during 2004 and 2005, as well as to present the evolution between both years.

SCOPE

SATMA, the South Atlantic Monitoring Agency, has attributed as one of its functions the elaboration of statistical data about the movement of aircraft in the EUR/SAM corridor.

Due to this fact, the SAT/12/TF/1/11 decision was taken in the last SAT12 TF meeting. According to this decision, SATMA involved in the collection of statistical data about the movement of aircraft in the EUR/SAM corridor during 2004 and 2005, SATMA also interested in the evolution of the data collected regarding the aircraft movements in that area in both years to be presented in the next SAT13 meeting. This report does not include movement data from East-West, FIR/UIR origin movements from Sal to the South and movements of the aircraft not flying over Canaries FIR/UIR.

DATA COLLECTION

This chapter describes each of the steps carried out to collect the final statistical data with the aim of showing the included/excluded air traffic in the area:

2. The traffic taken into account has been the following:

   - Any aircraft having used: UN-741, UN-866, UN-873 and UN-857 routes, in which the flight plans contain information of any of these fixed points: EDUMO, TENPA, IPERA or GUNET.
   - The only traffic implemented, in spite of not using any of the aforementioned routes, is Origin/Destiny Chile from/to Spain. This traffic has been associated to RANDOM routing.

   According to this, aircraft using the EUR/SAM corridor would be mainly those flying from South America, Cape Verde to EUROPE.

3. Aircraft that, in spite of having information about the flight plan in Canaries FIR (aircraft flying over the Canary Islands) have been excluded because of not being related to the EUR/SAM corridor (those aircraft do not use any of the ATS routes of the corridor) :

   - Traffic with Origin/Destiny Colombia, Venezuela, French Guiana, Suriname and Ecuador.
   - Traffic with Origin/Destiny in the Aeronautical Fix Services routing areas: C, D, H, K, M, O, T.
   - Traffic among Morocco and Cape Verde, South Africa and the Canary Islands.
   - Traffic between Chile and France.
   - Traffic that, due to its city pair in normal conditions, would use the EUR/SAM corridor, but which is discarded due to the information of the flight plan. For instance, DLH503 between EDDF and SBGR whose coordinates flight plan are (30 N, 30 W).

4. The analysis of each flight has been made from the border points of the corridor (EDUMO, TENPA, IPERA and GUNET). NELSO has been chosen for the RANDOM routing in the southbound routes and the first radar contact in the northbound routes.

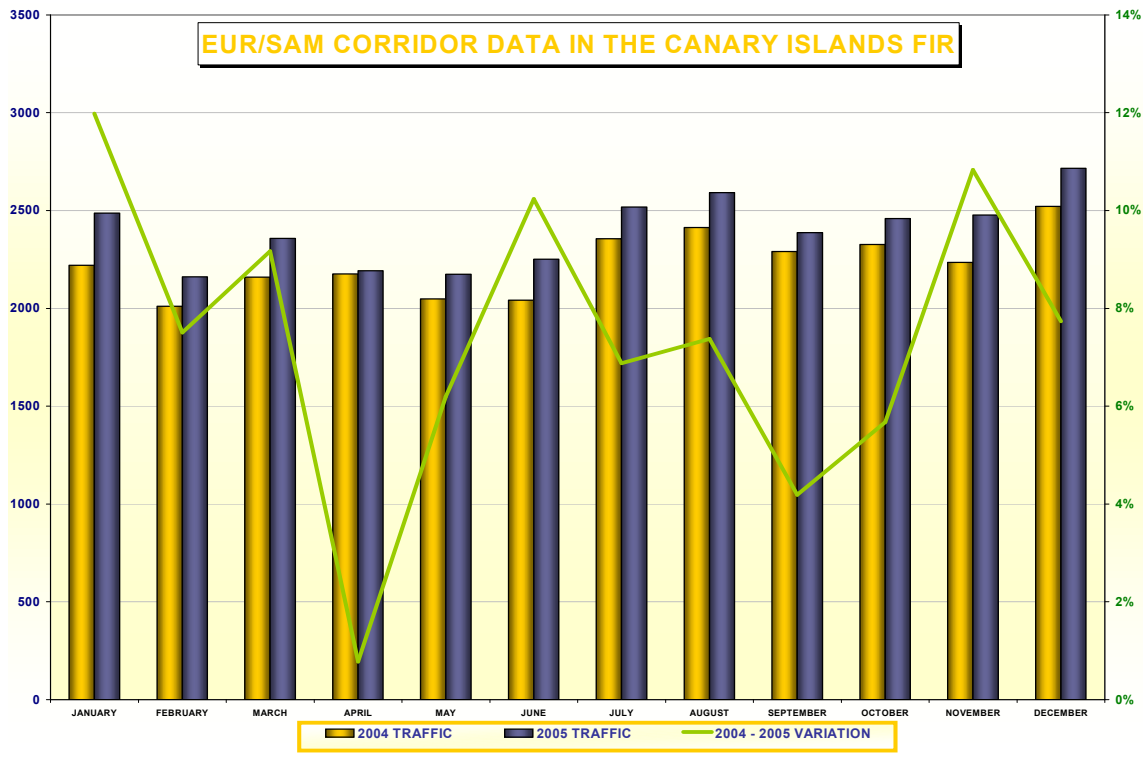
When analyzing the traffic at the borderline between Canaries UIR and Sal UIR, the change of ATS route along the Canaries UIR has not been considered.

EUR/SAM CORRIDOR DATA

Traffic of the EUR/SAM corridor is considered every aircraft having used any of the following routes: RANDOM, UN-741, UN-866- UN-873 and UN-857 at the transition point between Canaries UIR and Sal UIR.

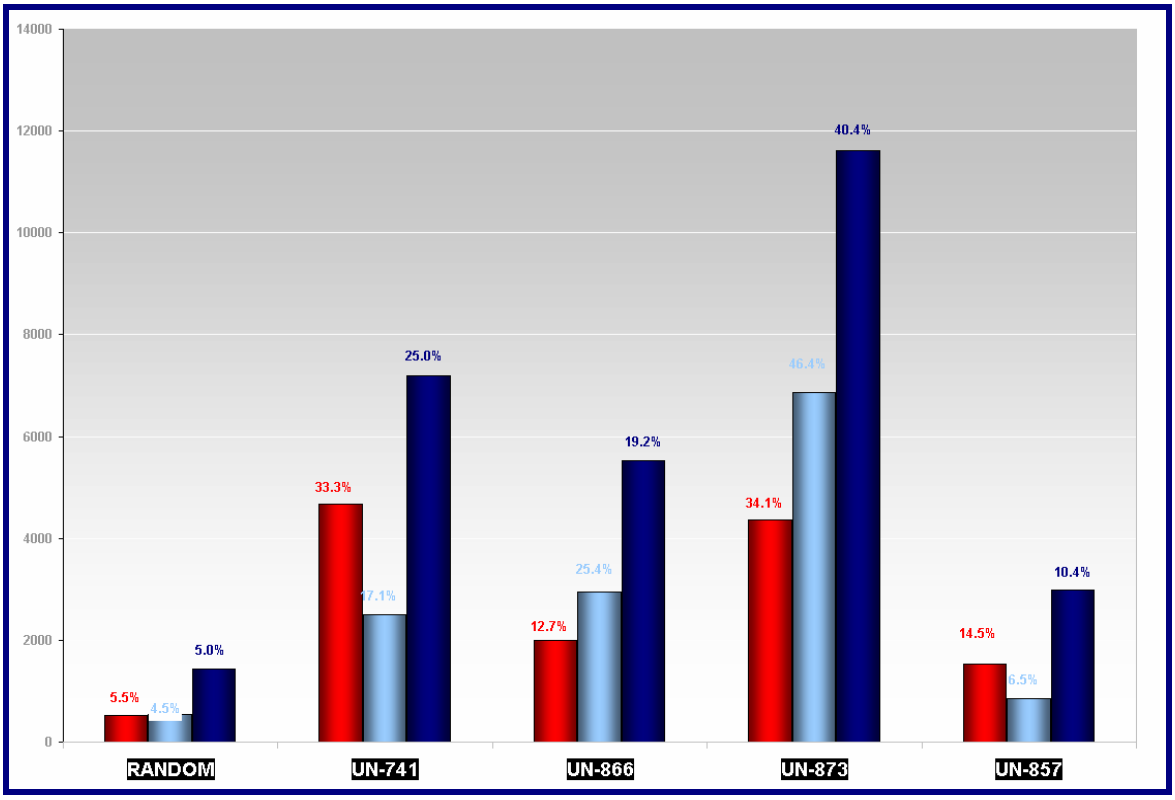
GLOBAL DATA

MONTH	SOUTHBOUND		NORTHBOUND		TOTAL TRAFFIC				% VARIATION
	2004	2005	2004	2005	2004	DAILY 2004	2005	DAILY 2005	2004 - 2005
JANUARY	1123	1266	1097	1220	2220	72	2486	80	12%
FEBRUARY	976	1096	1035	1066	2011	69	2162	77	8%
MARCH	1059	1153	1101	1205	2160	70	2358	76	9%
APRIL	1050	1068	1126	1125	2176	73	2193	73	1%
MAY	1010	1031	1038	1144	2048	66	2175	70	6%
JUNE	991	1078	1051	1173	2042	68	2251	75	10%
JULY	1125	1227	1230	1290	2355	76	2517	81	7%
AUGUST	1177	1240	1236	1351	2413	78	2591	84	7%
SEPTEMBER	1117	1187	1174	1200	2291	76	2387	80	4%
OCTOBER	1134	1240	1193	1219	2327	75	2459	79	6%
NOVEMBER	1083	1217	1151	1259	2234	74	2476	83	11%
DECEMBER	1265	1289	1256	1427	2521	81	2716	88	8%
ANNUAL TRAFFIC	13110	14092	13688	14679	26798	73	28771	79	7%



OCCUPANCY PER ATS ROUTES

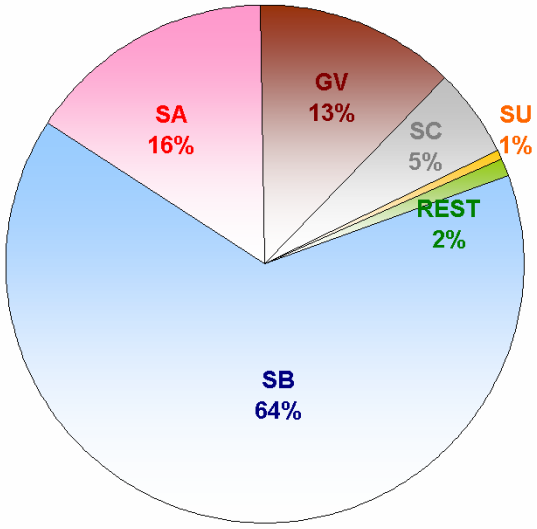
ATS ROUTE	SOUTHBOUND			NORTHBOUND			TOTAL CORRIDOR				VARIATION %
	2004	2005	% TOTAL	2004	2005	% TOTAL	2004	% TOTAL	2005	% TOTAL	2004 - 2005
RANDOM	531	776	5.5%	537	664	4.5%	1068	4.0%	1440	5.0%	35%
UN-741	4677	4686	33.3%	2496	2514	17.1%	7173	26.8%	7200	25.0%	0%
UN-866	2003	1789	12.7%	2945	3735	25.4%	4948	18.5%	5524	19.2%	12%
UN-873	4369	4802	34.1%	6856	6815	46.4%	11225	41.9%	11617	40.4%	3%
UN-857	1530	2039	14.5%	854	951	6.5%	2384	8.9%	2990	10.4%	25%



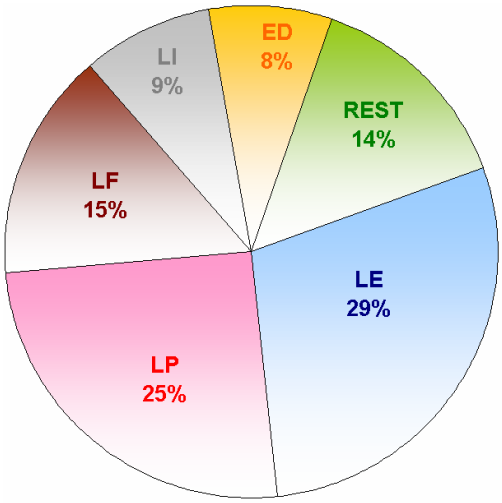
OCCUPANCY PER COMPANIES

COMPANY	2004	2005	% TOTAL	VAR 2004 -2005
VRG	5574	5247	18.2%	-6.2%
TAP	4334	4686	16.3%	7.5%
IBE	3277	3663	12.7%	10.5%
AFR	2021	2062	7.2%	2.0%
TCV	1386	1426	5.0%	2.8%
TAM	911	1255	4.4%	27.4%
ARG	1283	1211	4.2%	-5.9%
LAN	684	740	2.6%	7.6%
DLH	690	716	2.5%	3.6%
DRD	667	667	2.3%	0.0%
KLM	518	657	2.3%	21.2%

OCCUPANCY PER CITY PAIR

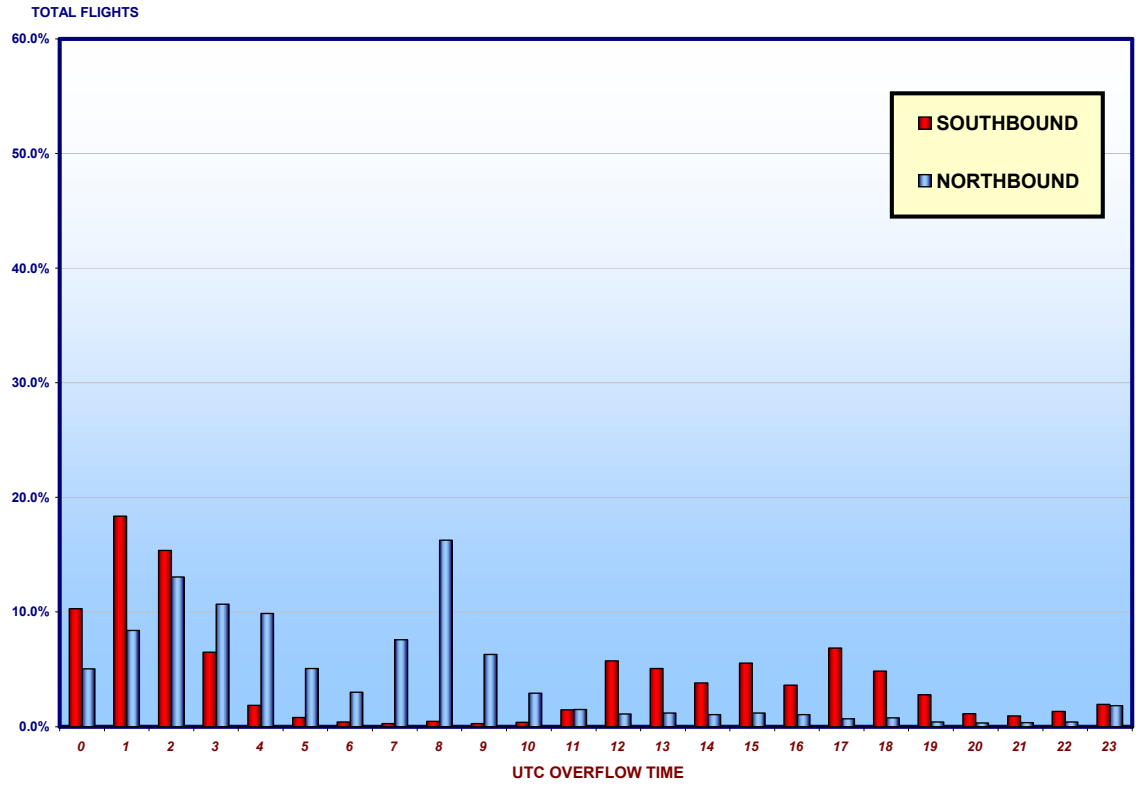


COUNTRY	2004	2005	INC %
SB	17295	18631	8%
SA	4349	4349	0%
GV	3465	3504	1%
SC	1399	1606	15%
SU	139	249	79%
REST	151	432	186%



COUNTRY	2004	2005	INC %
LE	7674	8395	9%
LP	6727	7348	9%
LF	4016	4319	8%
LI	2467	2313	-6%
ED	2219	2246	1%
REST	3695	4150	12%

OCCUPANCY PER UTC HOUR IN CANARIES FIR – YEAR 2005



UTC OVERFLOW TIME	SOUTHBOUND		NORTHBOUND		CORRIDOR	
	Nº	%	Nº	%	Nº	%
0	1451	10.3%	739	5.0%	2190	8%
1	2587	18.4%	1232	8.4%	3819	13%
2	2166	15.4%	1916	13.1%	4082	14%
3	916	6.5%	1567	10.7%	2483	9%
4	264	1.9%	1451	9.9%	1715	6%
5	110	0.8%	744	5.1%	854	3%
6	57	0.4%	443	3.0%	500	2%
7	35	0.2%	1111	7.6%	1146	4%
8	64	0.5%	2388	16.3%	2452	9%
9	35	0.2%	923	6.3%	958	3%
10	54	0.4%	427	2.9%	481	2%
11	206	1.5%	217	1.5%	423	1%
12	810	5.7%	164	1.1%	974	3%
13	716	5.1%	175	1.2%	891	3%
14	537	3.8%	153	1.0%	690	2%
15	780	5.5%	175	1.2%	955	3%
16	508	3.6%	153	1.0%	661	2%
17	966	6.9%	103	0.7%	1069	4%
18	682	4.8%	111	0.8%	793	3%
19	394	2.8%	59	0.4%	453	2%
20	161	1.1%	46	0.3%	207	1%
21	132	0.9%	52	0.4%	184	1%
22	187	1.3%	62	0.4%	249	1%
23	274	2%	268	1.8%	542	2%

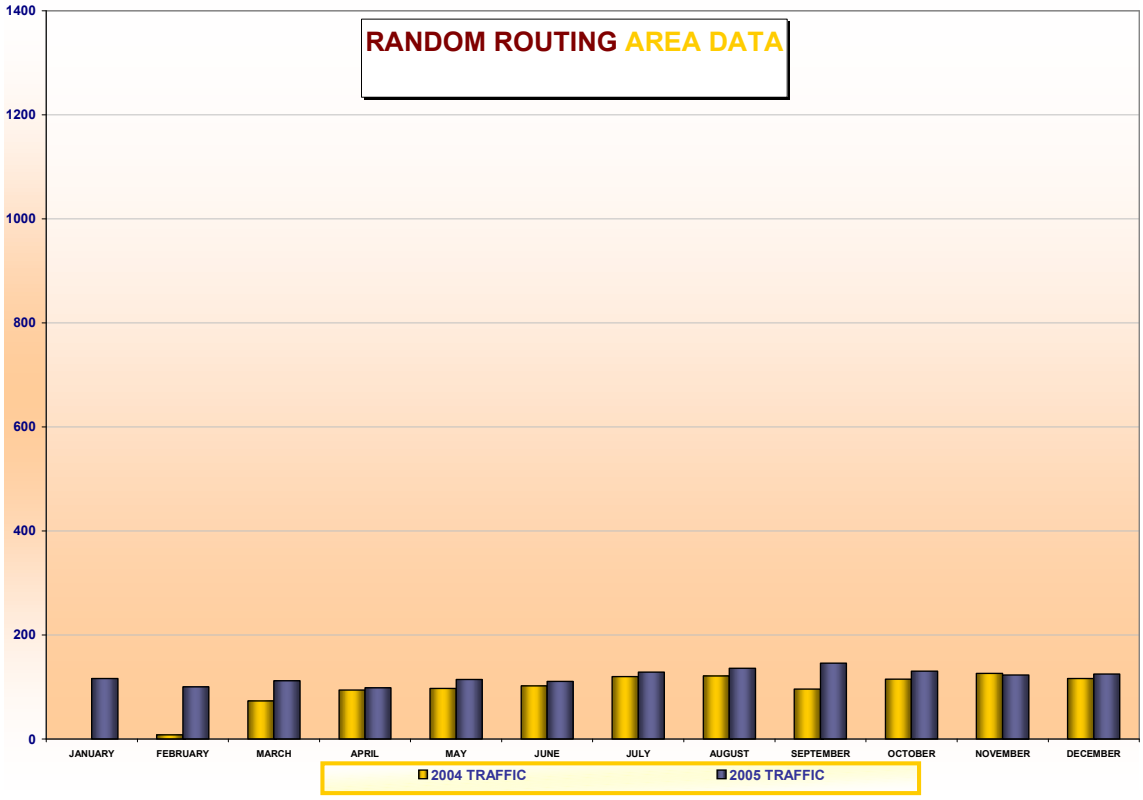
2005 DATA

ATS-RANDOM AREA DATA

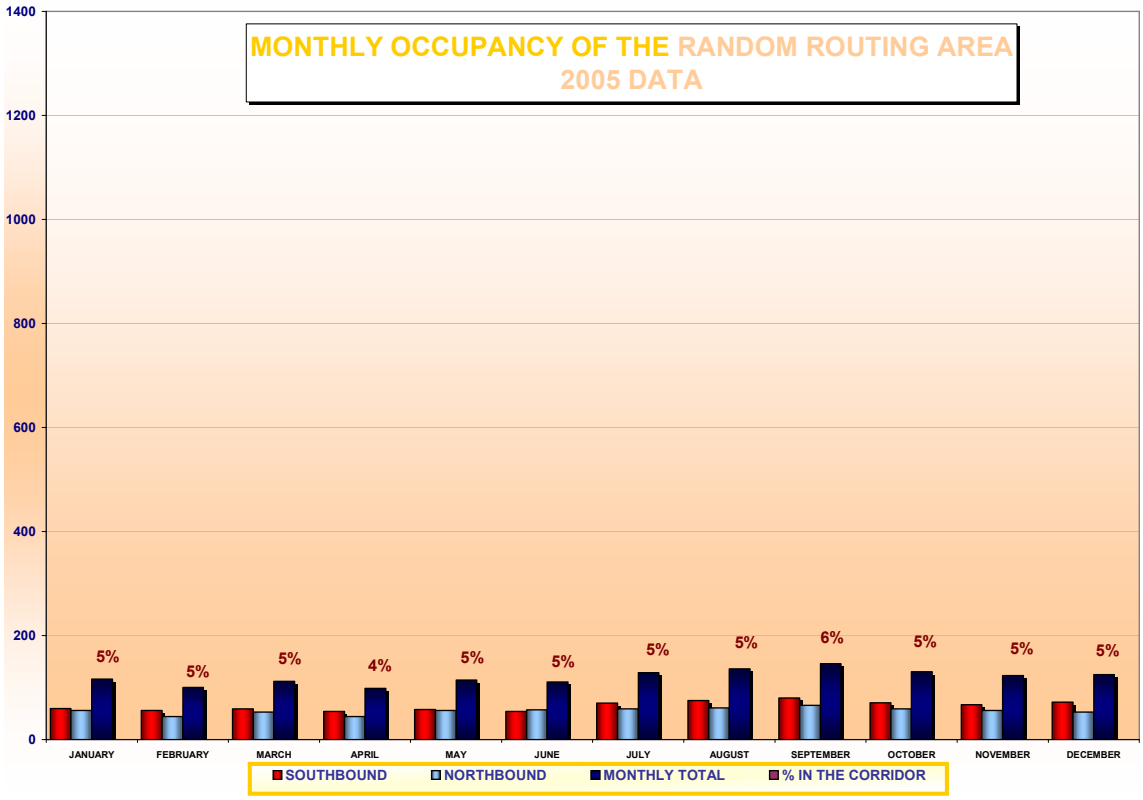
Traffic of the EUR/SAM corridor is considered every aircraft using RANDOM routing in its flight between Chile and Spain.

GLOBAL DATA

MONTH	SOUTHBOUND		NORTHBOUND		TOTAL TRAFFIC IN THE RANDOM ROUTING AREA				VARIATION %
	2004	2005	2004	2005	2004	DAILY 2004	2005	DAILY 2005	2004 - 2005
JANUARY	0	60	0	56	0	0	116	4	-
FEBRUARY	3	56	5	44	8	0	100	4	1150%
MARCH	38	59	35	53	73	2	112	4	53%
APRIL	50	54	44	44	94	3	98	3	4%
MAY	48	58	49	56	97	3	114	4	18%
JUNE	48	54	54	57	102	3	111	4	9%
JULY	58	70	62	59	120	4	129	4	8%
AUGUST	62	75	59	61	121	4	136	4	12%
SEPTEMBER	47	80	49	66	96	3	146	5	52%
OCTOBER	58	71	57	59	115	4	130	4	13%
NOVEMBER	62	67	64	56	126	4	123	4	-2%
DECEMBER	57	72	59	53	116	4	125	4	8%
ANNUAL TRAFFIC	531	776	537	664	1068	3	1440	4	35%



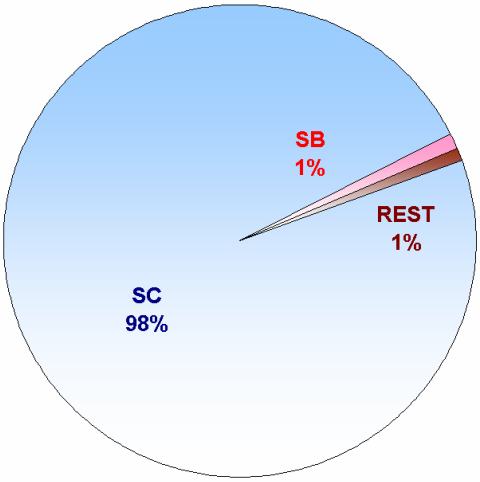
MONTHLY OCCUPANCY



occupancy per companies

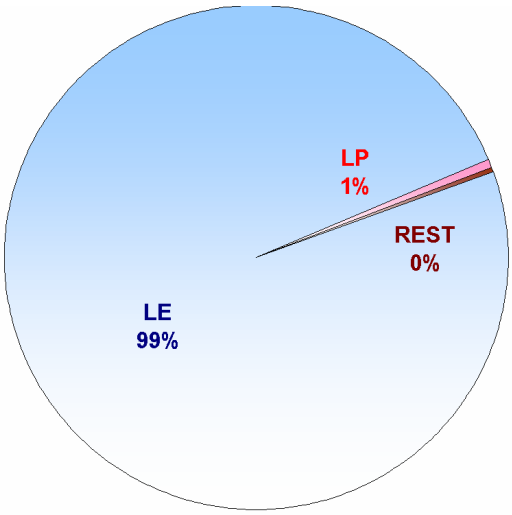
COMPANY	2004	2005	TOTAL %	VAR 2004 - 2005
LAN	553	725	50.3%	31.1%
IBE	498	618	42.9%	24.1%

OCCUPANCY PER CITY PAIR

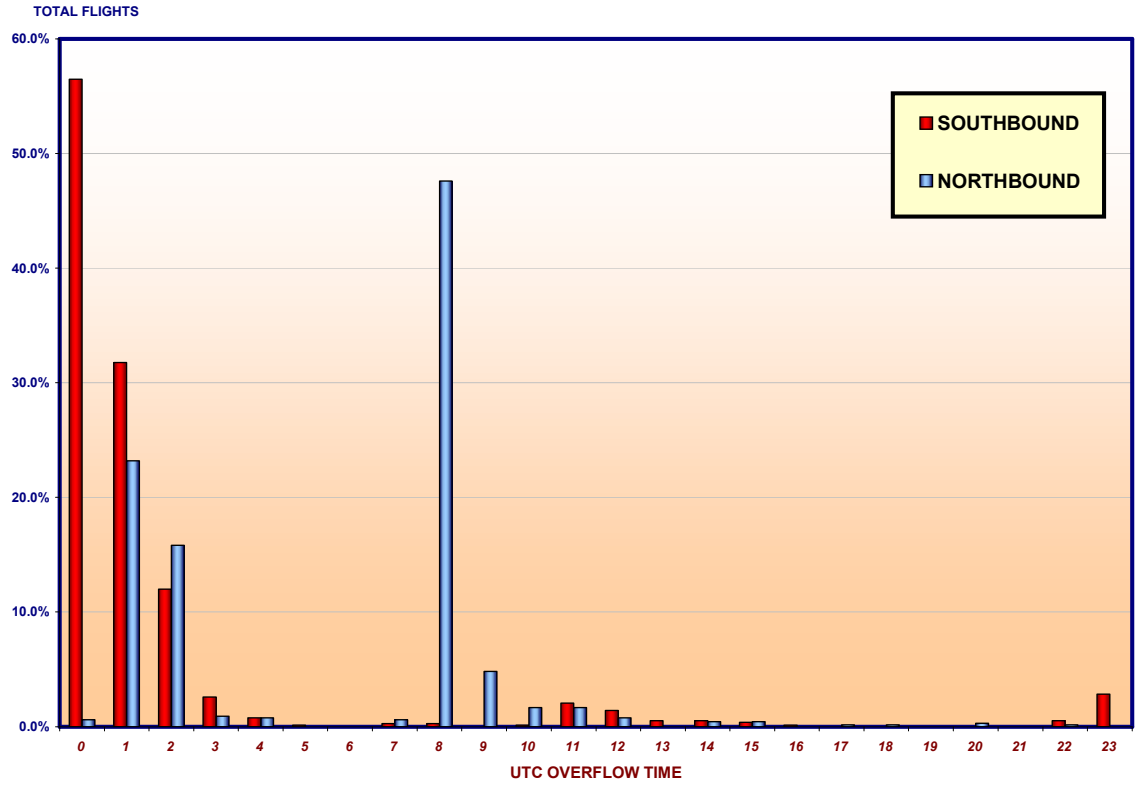


COUNTRY	2004	2005	INC %
SC	1052	1410	34%
SB	10	13	30%
REST	6	17	183%

COUNTRY	2004	2005	INC %
LE	1057	1427	35%
LP	7	9	29%
REST	4	4	0%



OCCUPANCY PER UTC HOUR IN CANARIES FIR – YEAR 2005



UTC OVERFLOW TIME	SOUTHBOUND		NORTHBOUND		CORRIDOR	
	Nº	%	Nº	%	Nº	%
0	375	48.3%	4	0.6%	379	26%
1	211	27.2%	154	23.2%	365	25%
2	93	12.0%	105	15.8%	198	14%
3	20	2.6%	6	0.9%	26	2%
4	6	0.8%	5	0.8%	11	1%
5	1	0.1%	0		1	0%
6	0		0		0	
7	2	0.3%	4	0.6%	6	0%
8	2	0.3%	316	47.6%	318	22%
9	0		32	4.8%	32	2%
10	1	0.1%	11	1.7%	12	1%
11	16	2.1%	11	1.7%	27	2%
12	11	1.4%	5	0.8%	16	1%
13	4	0.5%	0		4	0%
14	4	0.5%	3	0.5%	7	0%
15	3	0.4%	3	0.5%	6	0%
16	1	0.1%	0		1	0%
17	0		1	0.2%	1	0%
18	0		1	0.2%	1	0%
19	0		0		0	
20	0		2	0.3%	2	0%
21	0		0		0	
22	4	0.5%	1	0.2%	5	0%
23	22	3%	0		22	2%

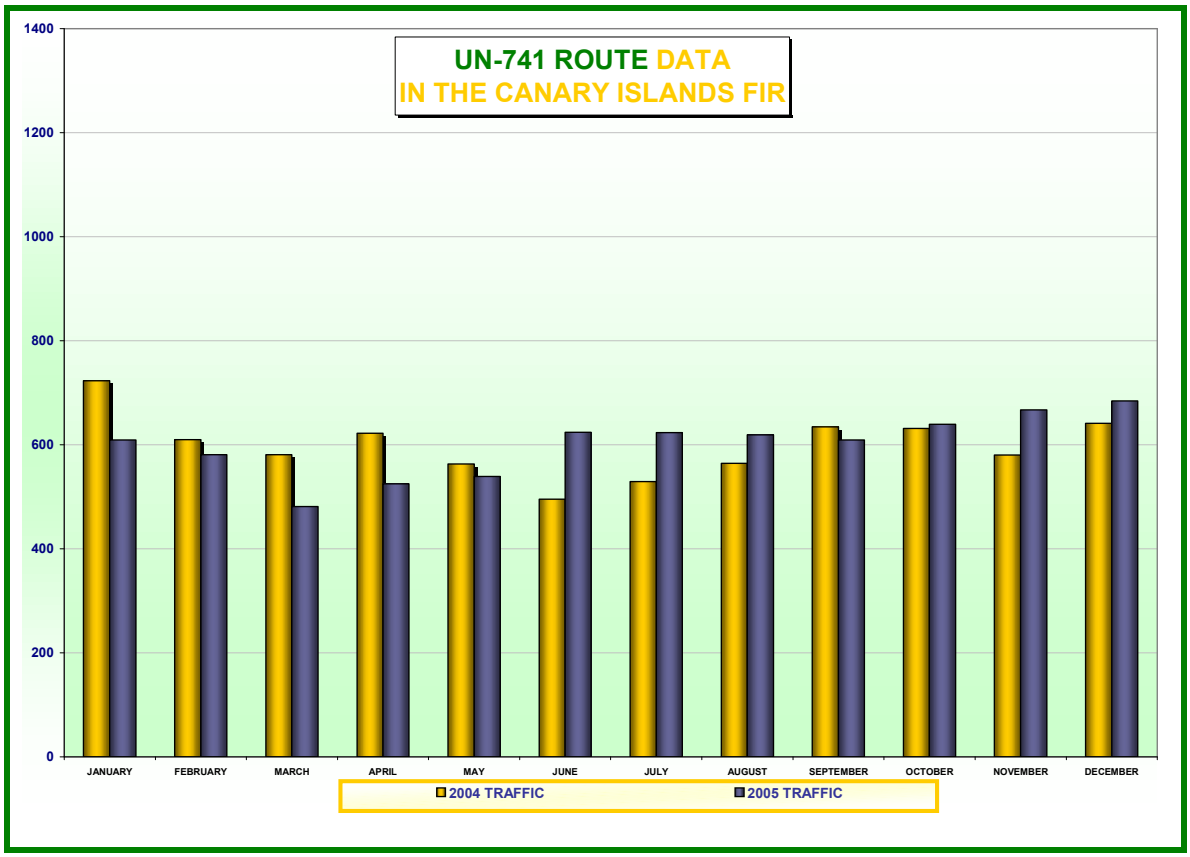
2005 DATA

ATS UN-741 (EDUMO) ROUTE DATA

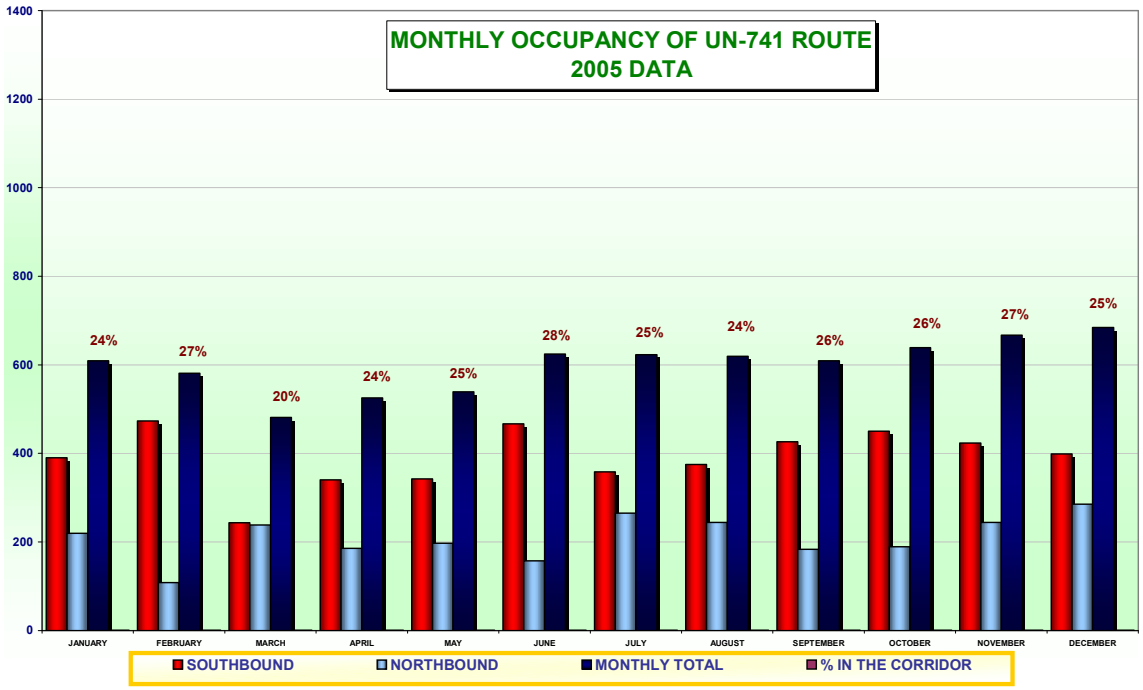
Traffic of the EUR/SAM corridor is considered every aircraft using UN-741 route at the transition point between Canaries UIR and Sal UIR.

global data

MONTH	SOUTHBOUND		NORTHBOUND		TOTAL TRAFFIC IN UN - 741 ROUTE				VARIATION %
	2004	2005	2004	2005	2004	DAILY 2004	2005	DAILY 2005	2004 - 2005
JANUARY	482	390	241	219	723	23	609	20	-16%
FEBRUARY	375	473	235	108	610	21	581	21	-5%
MARCH	299	243	282	238	581	19	481	16	-17%
APRIL	479	340	143	185	622	21	525	18	-16%
MAY	418	342	145	197	563	18	539	17	-4%
JUNE	279	467	216	157	495	17	624	21	26%
JULY	308	358	221	265	529	17	623	20	18%
AUGUST	355	375	209	244	564	18	619	20	10%
SEPTEMBER	491	426	143	183	634	21	609	20	-4%
OCTOBER	410	450	221	189	631	20	639	21	1%
NOVEMBER	374	423	206	244	580	19	667	22	15%
DECEMBER	407	399	234	285	641	21	684	22	7%
ANNUAL TRAFFIC	4677	4686	2496	2514	7173	20	7200	20	0%



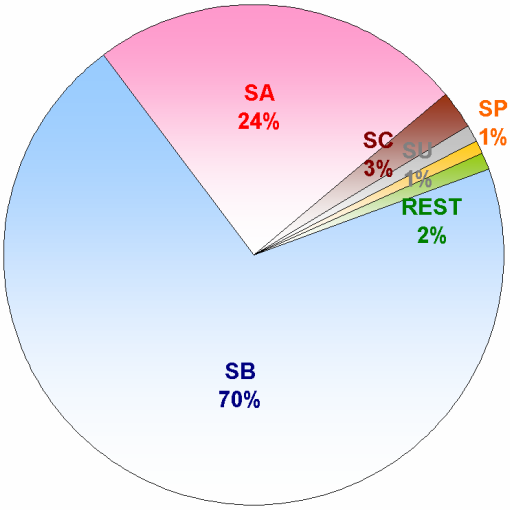
MONTHLY OCCUPANCY



OCCUPANCY PER COMPANIES

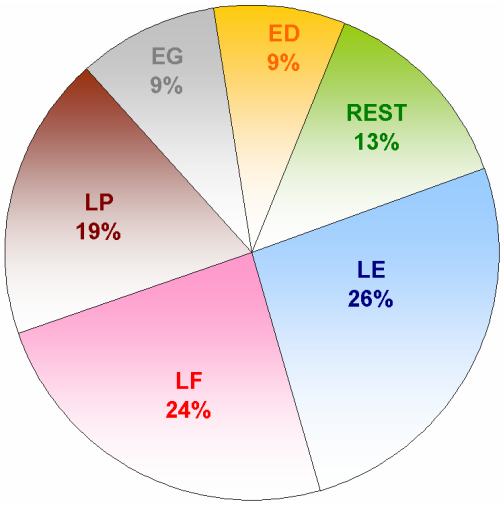
COMPANY	2004	2005	TOTAL %	VAR 2004 -2005
VRG	1751	1517	21.1%	-13.4%
AFR	899	1048	14.6%	16.6%
TAP	978	986	13.7%	0.8%
IBE	882	943	13.1%	6.9%
TAM	444	560	7.8%	26.1%
ARG	516	428	5.9%	-17.1%
KLM	200	276	3.8%	38.0%
DLH	199	176	2.4%	-11.6%
BAW	167	175	2.4%	4.8%
AZA	165	127	1.8%	-23.0%

OCCUPANCY PER CITY PAIR

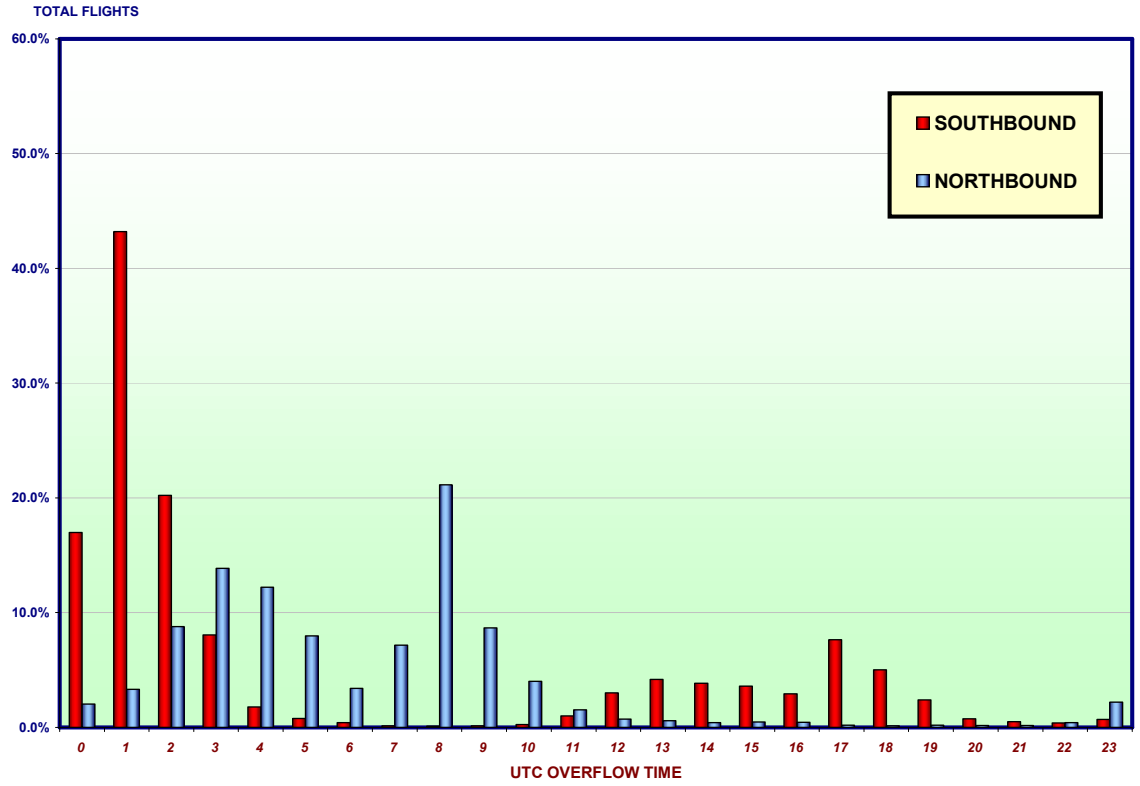


COUNTRY	2004	2005	INC %
SB	4923	5197	6%
SA	1836	1602	-13%
SC	276	113	-59%
SU	43	104	142%
SP	27	76	181%
REST	68	108	59%

COUNTRY	2004	2005	INC %
LE	1859	1903	2%
LF	1670	1779	7%
LP	1364	1326	-3%
EG	684	632	-8%
ED	637	589	-8%
REST	959	971	1%



OCCUPANCY PER UTC HOUR IN CANARIES FIR – YEAR 2005



UTC OVERFLOW TIME	SOUTHBOUND		NORTHBOUND		CORRIDOR	
	Nº	%	Nº	%	Nº	%
0	427	9.1%	51	2.0%	478	7%
1	1086	23.2%	83	3.3%	1169	16%
2	947	20.2%	221	8.8%	1168	16%
3	378	8.1%	348	13.8%	726	10%
4	83	1.8%	307	12.2%	390	5%
5	36	0.8%	200	8.0%	236	3%
6	19	0.4%	85	3.4%	104	1%
7	6	0.1%	180	7.2%	186	3%
8	5	0.1%	531	21.1%	536	7%
9	6	0.1%	218	8.7%	224	3%
10	12	0.3%	101	4.0%	113	2%
11	47	1.0%	38	1.5%	85	1%
12	141	3.0%	18	0.7%	159	2%
13	195	4.2%	14	0.6%	209	3%
14	180	3.8%	10	0.4%	190	3%
15	168	3.6%	12	0.5%	180	3%
16	137	2.9%	11	0.4%	148	2%
17	357	7.6%	5	0.2%	362	5%
18	235	5.0%	3	0.1%	238	3%
19	112	2.4%	5	0.2%	117	2%
20	35	0.7%	4	0.2%	39	1%
21	23	0.5%	4	0.2%	27	0%
22	18	0.4%	10	0.4%	28	0%
23	33	1%	55	2.2%	88	1%

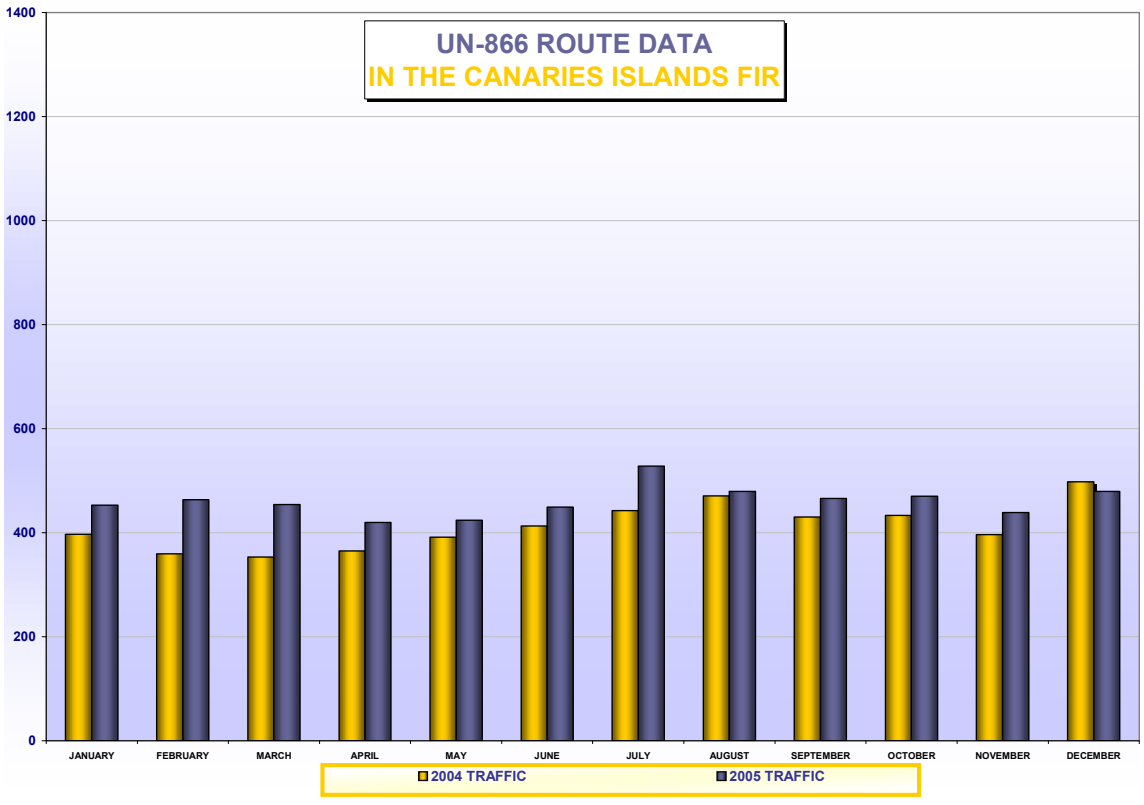
2005 DATA

ATS UN-866 (TENPA) ROUTE DATA

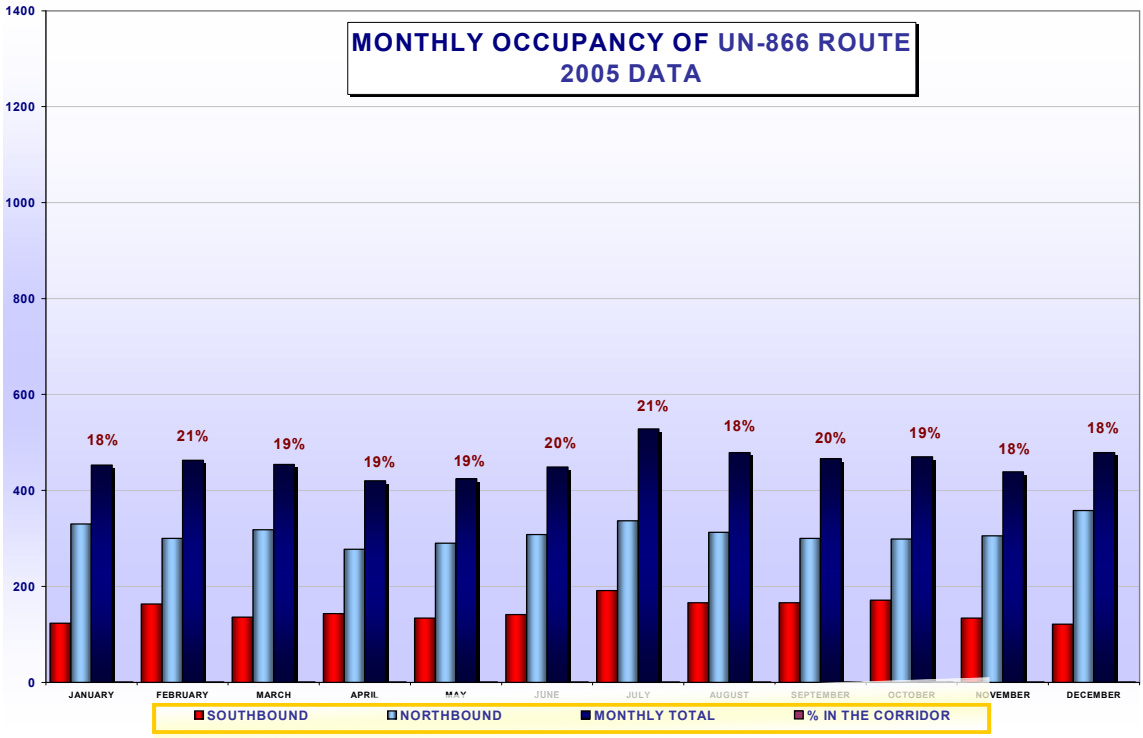
Traffic of the EUR/SAM corridor is considered every aircraft using UN-866 route at the transition point between Canaries UIR and Sal UIR.

GLOBAL DATA

MONTH	SOUTHBOUND		NORTHBOUND		TOTAL TRAFFIC IN UN - 866 ROUTE				VARIATION %
	2004	2005	2004	2005	2004	DAILY 2004	2005	DAILY 2005	2004 - 2005
JANUARY	203	123	194	330	397	13	453	15	14%
FEBRUARY	132	163	227	300	359	12	463	17	29%
MARCH	148	136	205	318	353	11	454	15	29%
APRIL	147	143	218	277	365	12	420	14	15%
MAY	178	134	213	290	391	13	424	14	8%
JUNE	190	141	223	308	413	14	449	15	9%
JULY	161	191	281	337	442	14	528	17	19%
AUGUST	202	166	269	313	471	15	479	15	2%
SEPTEMBER	174	166	256	300	430	14	466	16	8%
OCTOBER	161	171	272	299	433	14	470	15	9%
NOVEMBER	132	134	264	305	396	13	439	15	11%
DECEMBER	175	121	323	358	498	16	479	15	-4%
ANNUAL TRAFFIC	2003	1789	2945	3735	4948	14	5524	15	12%



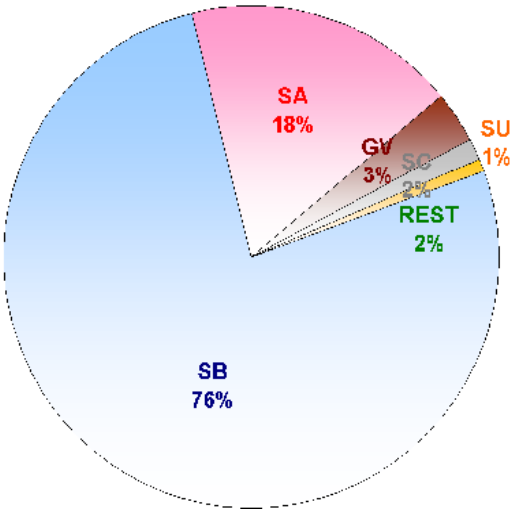
MONTHLY OCCUPANCY



OCCUPANCY PER COMPANIES

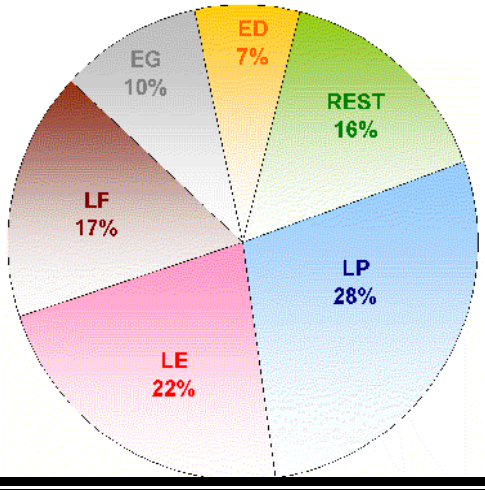
COMPANY	2004	2005	TOTAL %	VAR 2005 -2004
VRG	1475	1523	27.6%	3.3%
TAP	998	887	16.1%	-11.1%
IBE	551	740	13.4%	34.3%
TAM	213	475	8.6%	123.0%
BAW	286	309	5.6%	8.0%
DRD	3	295	5.3%	-
DLH	230	234	4.2%	1.7%
AFR	276	203	3.7%	-26.4%
ARG	136	139	2.5%	2.2%
KLM	154	137	2.5%	-11.0%

OCCUPANCY PER CITY PAIR

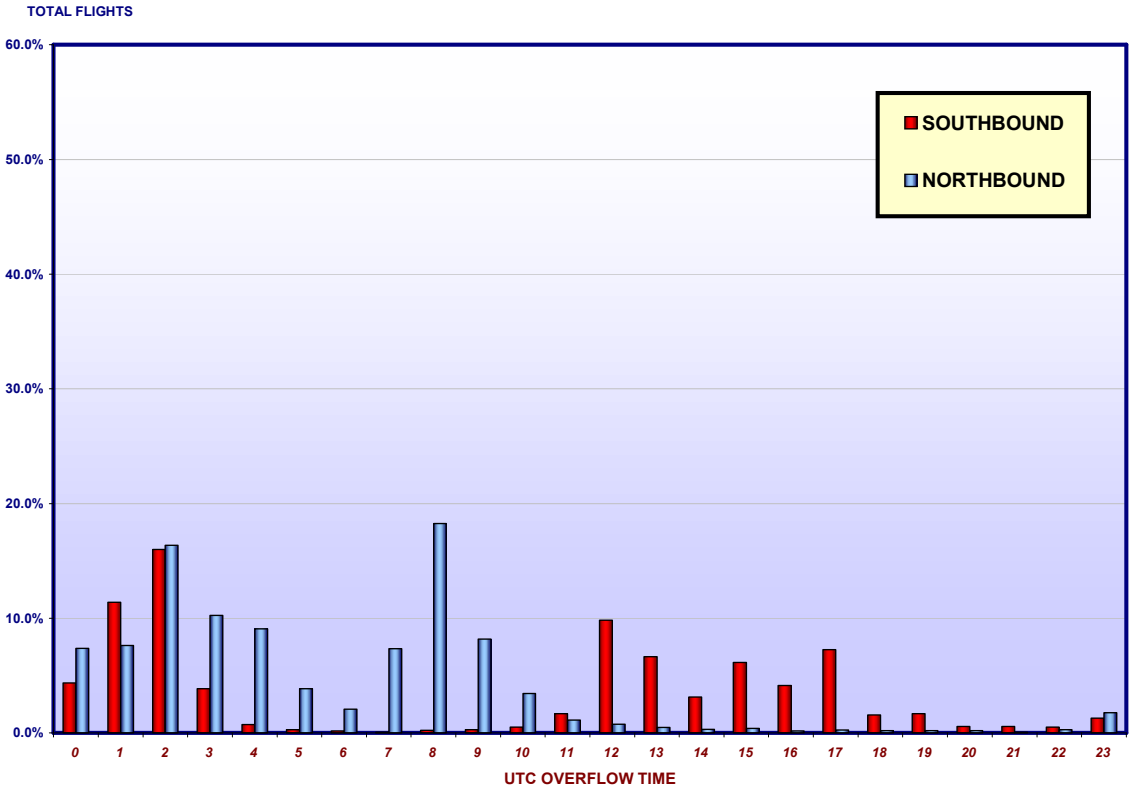


COUNTRY	2004	2005	INC %
SB	3915	4102	5%
SA	772	1103	43%
GV	188	150	-20%
SC	43	115	167%
SU	24	48	100%
REST	6	6	0%

COUNTRY	2004	2005	INC %
LP	1495	1471	-2%
LE	1078	1258	17%
LF	750	1005	34%
EG	449	567	26%
ED	388	375	-3%
REST	788	848	8%



OCCUPANCY PER UTC HOUR IN CANARIES FIR – YEAR 2005



UTC OVERFLOW TIME	SOUTHBOUND		NORTHBOUND		CORRIDOR	
	Nº	%	Nº	%	Nº	%
0	163	9.1%	276	7.4%	439	8%
1	426	23.8%	285	7.6%	711	13%
2	286	16.0%	611	16.4%	897	16%
3	69	3.9%	383	10.3%	452	8%
4	13	0.7%	339	9.1%	352	6%
5	5	0.3%	144	3.9%	149	3%
6	3	0.2%	77	2.1%	80	1%
7	1	0.1%	274	7.3%	275	5%
8	4	0.2%	682	18.3%	686	12%
9	5	0.3%	305	8.2%	310	6%
10	9	0.5%	128	3.4%	137	2%
11	30	1.7%	42	1.1%	72	1%
12	176	9.8%	28	0.7%	204	4%
13	119	6.7%	18	0.5%	137	2%
14	56	3.1%	12	0.3%	68	1%
15	110	6.1%	15	0.4%	125	2%
16	74	4.1%	6	0.2%	80	1%
17	130	7.3%	10	0.3%	140	3%
18	28	1.6%	7	0.2%	35	1%
19	30	1.7%	7	0.2%	37	1%
20	10	0.6%	7	0.2%	17	0%
21	10	0.6%	2	0.1%	12	0%
22	9	0.5%	11	0.3%	20	0%
23	23	1%	66	1.8%	89	2%

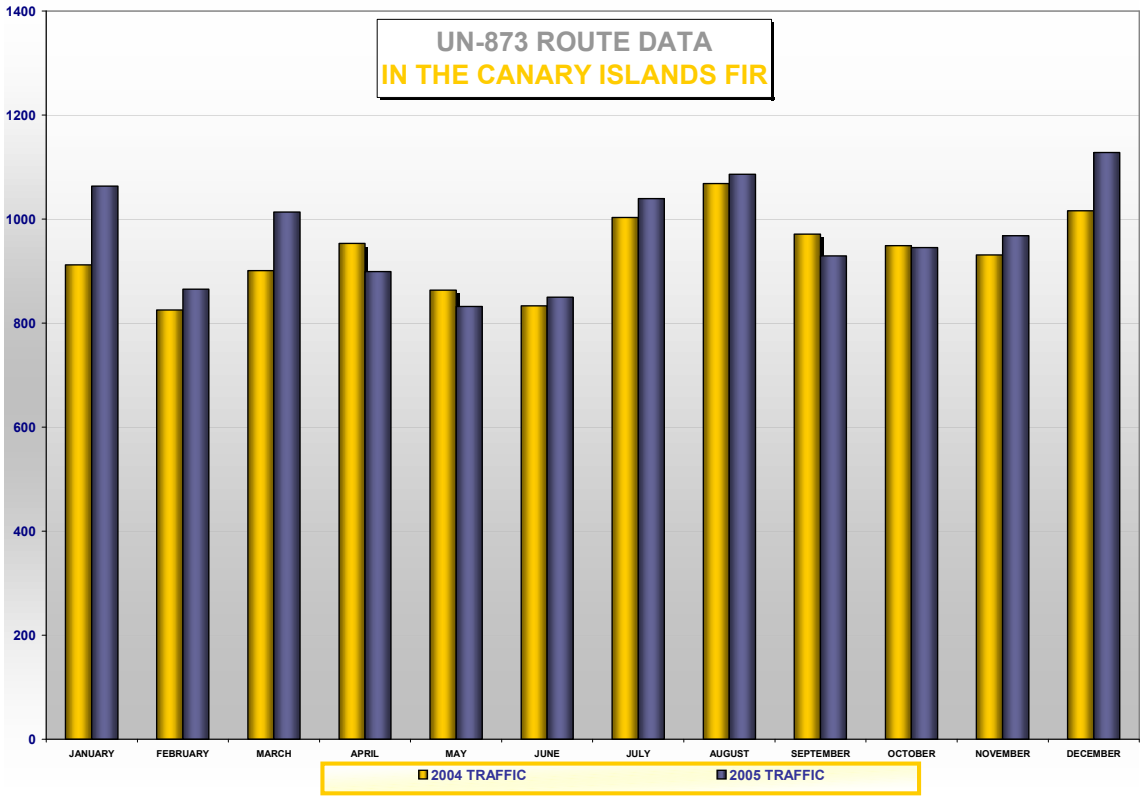
2005 DATA

ATS UN-873 (IPERA) ROUTE DATA

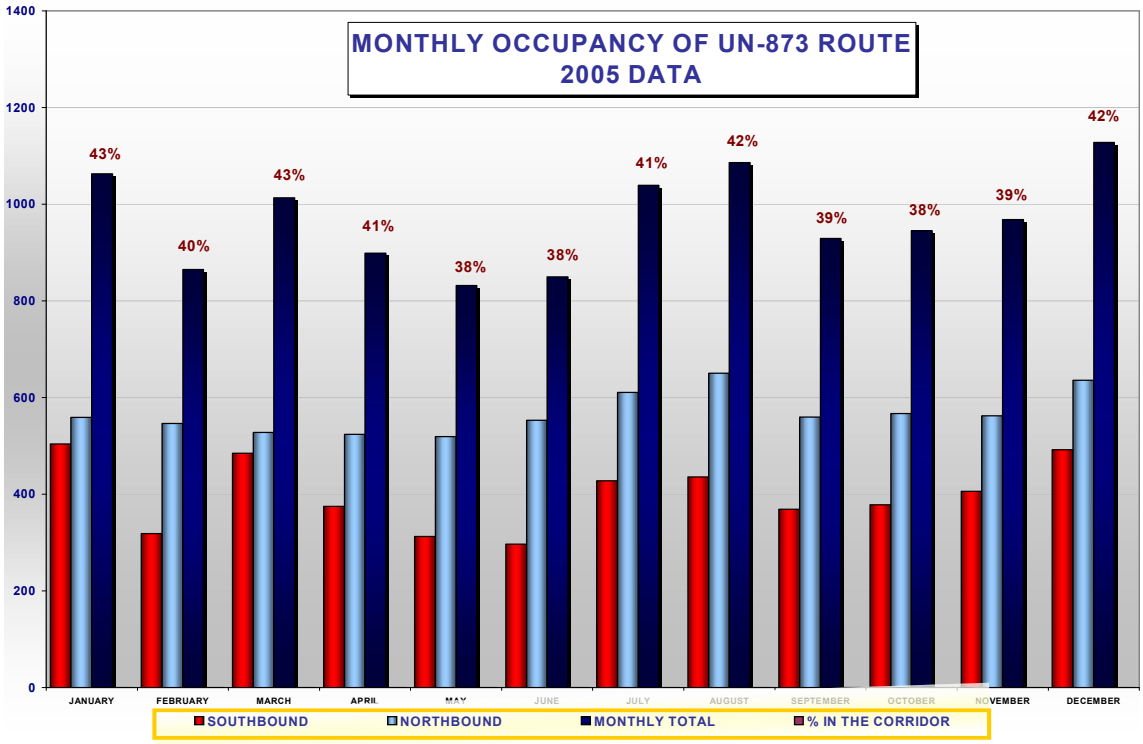
Traffic of the EUR/SAM corridor is considered every aircraft using UN-873 route at the transition point between Canaries UIR and Sal UIR.

GLOBAL DATA

MONTH	SOUTHBOUND		NORTHBOUND		TOTAL TRAFFIC IN UN - 873 ROUTE				VARIATION %
	2004	2005	2004	2005	2004	DAILY 2004	2005	DAILY 2005	2004 - 2005
JANUARY	305	504	607	559	912	29	1063	34	17%
FEBRUARY	323	319	502	546	825	28	865	31	5%
MARCH	381	485	520	528	901	29	1013	33	12%
APRIL	292	375	661	524	953	32	899	30	-6%
MAY	290	313	573	519	863	28	832	27	-4%
JUNE	352	297	481	553	833	28	850	28	2%
JULY	432	428	571	611	1003	32	1039	34	4%
AUGUST	441	436	627	650	1068	34	1086	35	2%
SEPTEMBER	333	369	638	560	971	32	929	31	-4%
OCTOBER	381	378	568	567	949	31	945	30	0%
NOVEMBER	386	406	545	562	931	31	968	32	4%
DECEMBER	453	492	563	636	1016	33	1128	36	11%
ANNUAL TRAFFIC	4369	4802	6856	6815	11225	31	11617	32	3%



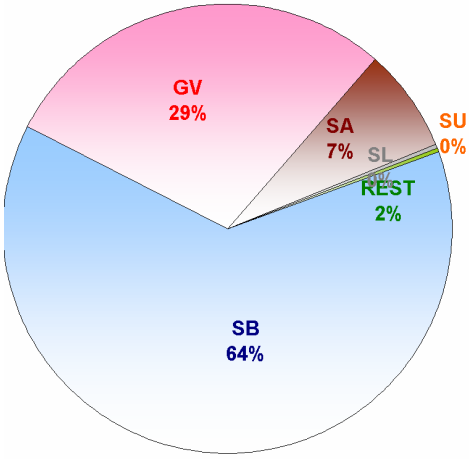
MONTHLY OCCUPANCY



OCCUPANCY PER COMPANIES

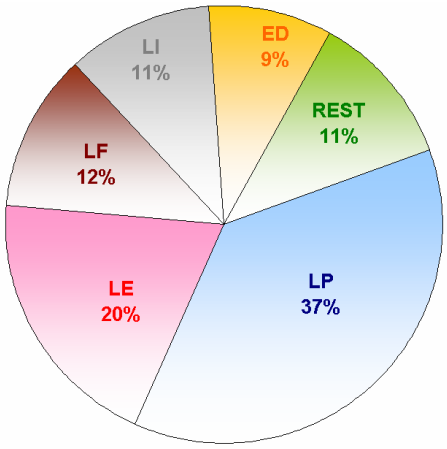
COMPANY	2004	2005	TOTAL %	VAR 2004 -2005
TAP	2332	2769	23.8%	18.7%
VRG	2023	1785	15.4%	-11.8%
TCV	1385	1423	12.2%	2.7%
IBE	819	664	5.7%	-18.9%
AFR	746	644	5.5%	-13.7%
AEA	238	346	3.0%	45.4%
NOS	336	322	2.8%	-4.2%
LXR	227	313	2.7%	37.9%
BRB	24	254	2.2%	958.3%
AZA	330	229	2.0%	-30.6%

OCCUPANCY PER cITY PAIR

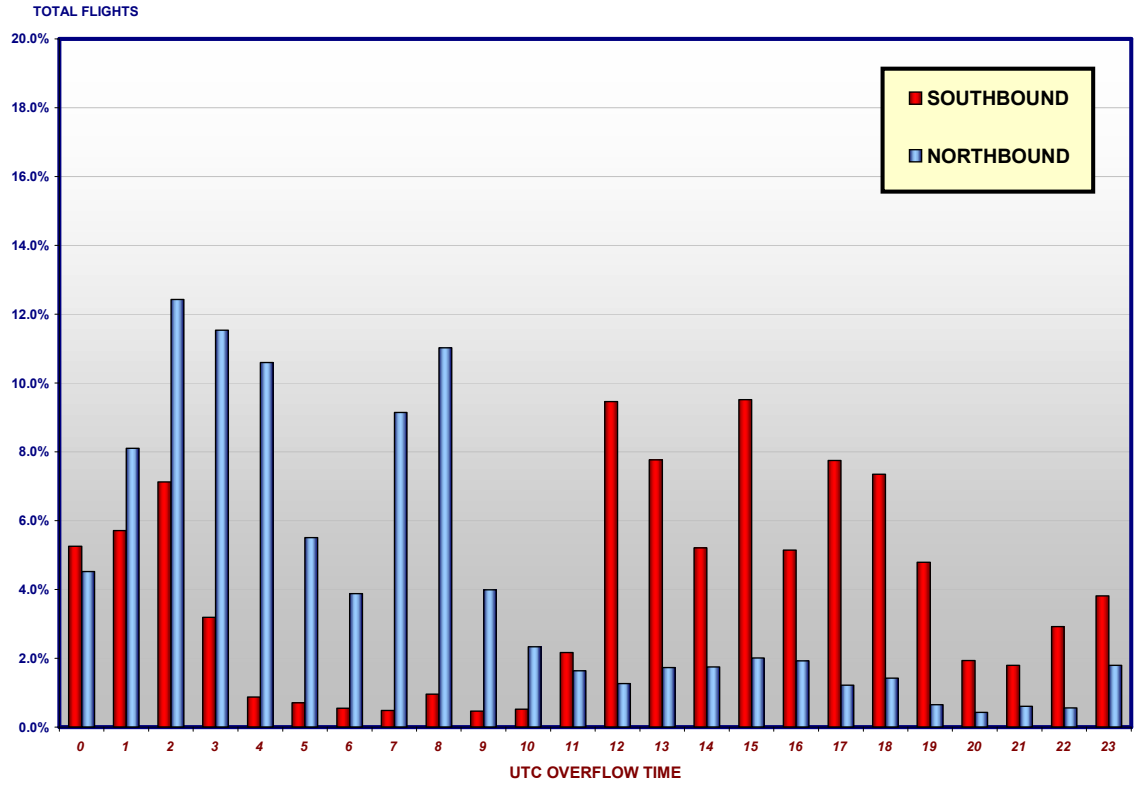


COUNTRY	2004	2005	INC %
SB	6863	7564	10%
GV	3233	3340	3%
SA	1049	655	-38%
SL	35	25	-29%
SU	16	18	13%
REST	29	15	-48%

COUNTRY	2004	2005	INC %
LP	3820	4704	23%
LE	2375	2134	-10%
LF	1472	1157	-21%
LI	1338	1125	-16%
ED	1029	1092	6%
REST	1191	1405	18%



OCCUPANCY PER UTC HOUR IN CANARIES FIR – YEAR 2005



UTC OWERFLOW TIME	SOUTHBOUND		NORTHBOUND		CORRIDOR	
	Nº	%	Nº	%	Nº	%
0	358	7.5%	308	4.5%	666	6%
1	389	8.1%	552	8.1%	941	8%
2	342	7.1%	847	12.4%	1189	10%
3	153	3.2%	786	11.5%	939	8%
4	42	0.9%	722	10.6%	764	7%
5	34	0.7%	375	5.5%	409	4%
6	26	0.5%	264	3.9%	290	2%
7	23	0.5%	623	9.1%	646	6%
8	46	1.0%	751	11.0%	797	7%
9	22	0.5%	272	4.0%	294	3%
10	25	0.5%	159	2.3%	184	2%
11	104	2.2%	111	1.6%	215	2%
12	454	9.5%	86	1.3%	540	5%
13	373	7.8%	118	1.7%	491	4%
14	250	5.2%	119	1.7%	369	3%
15	457	9.5%	137	2.0%	594	5%
16	247	5.1%	131	1.9%	378	3%
17	372	7.7%	83	1.2%	455	4%
18	353	7.4%	97	1.4%	450	4%
19	230	4.8%	44	0.6%	274	2%
20	93	1.9%	29	0.4%	122	1%
21	86	1.8%	41	0.6%	127	1%
22	140	2.9%	38	0.6%	178	2%
23	183	4%	122	1.8%	305	3%

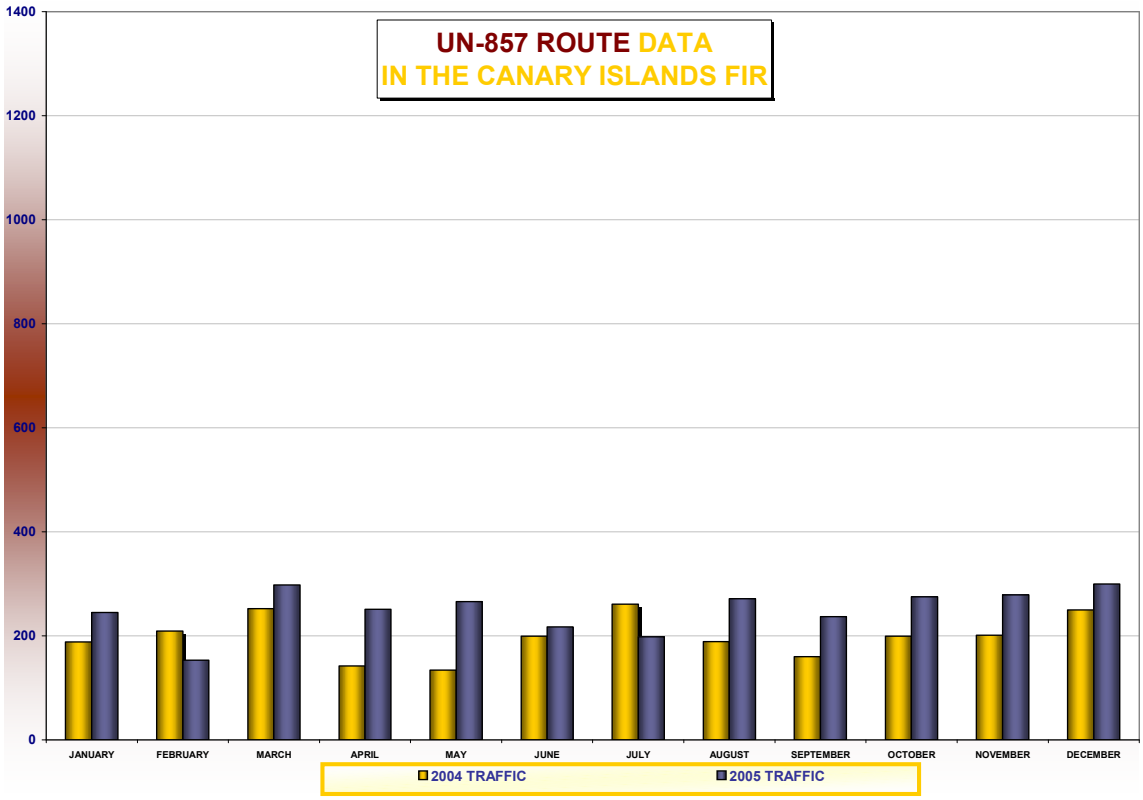
2005 DATA

ATS UN-857 (GUNET) ROUTE DATA

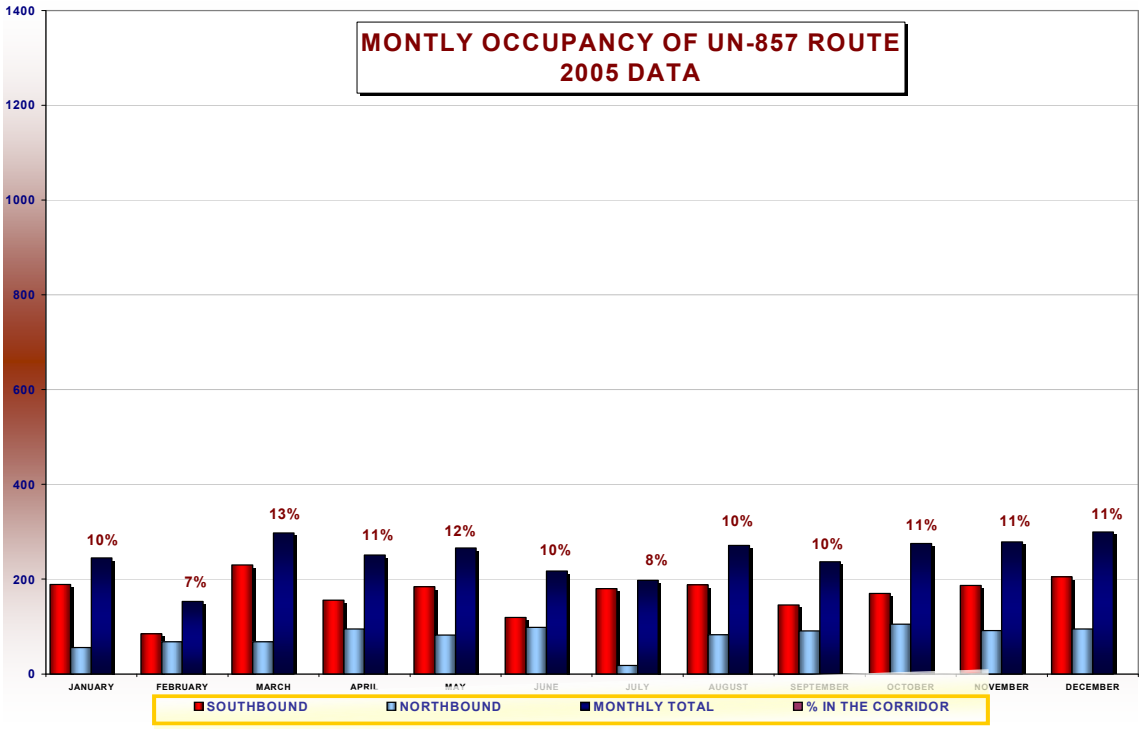
Traffic of the EUR/SAM corridor is considered every aircraft using UN-857 route at the transition point between Canaries UIR and Sal UIR.

GLOBAL DATA

MONTHLY	SOUTHBOUND		NORTHBOUND		TOTAL TRAFFIC IN UN - 857 ROUTE				VARIATION %
	2004	2005	2004	2005	2004	DAILY 2004	2005	DAILY2005	2004 - 2005
JANUARY	133	189	55	56	188	6	245	8	30%
FEBRUARY	143	85	66	68	209	7	153	5	-27%
MARCH	193	230	59	68	252	8	298	10	18%
APRIL	82	156	60	95	142	5	251	8	77%
MAY	76	184	58	82	134	4	266	9	99%
JUNE	122	119	77	98	199	7	217	7	9%
JULY	166	180	95	18	261	8	198	6	-24%
AUGUST	117	188	72	83	189	6	271	9	43%
SEPTEMBER	72	146	88	91	160	5	237	8	48%
OCTOBER	124	170	75	105	199	6	275	9	38%
NOVEMBER	129	187	72	92	201	7	279	9	39%
DECEMBER	173	205	77	95	250	8	300	10	20%
ANNUAL TRAFFIC	1530	2039	854	951	2384	7	2990	8	25%



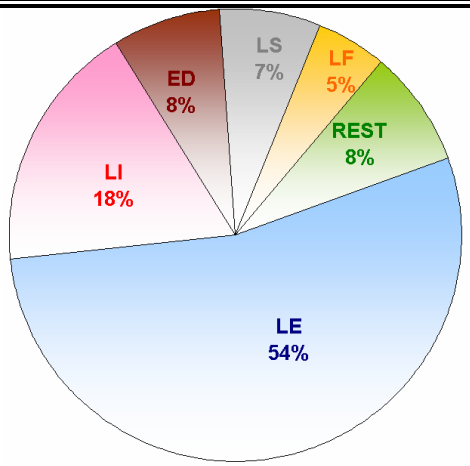
MONTHLY OCCUPANCY



OCCUPANCY PER COMPANIES

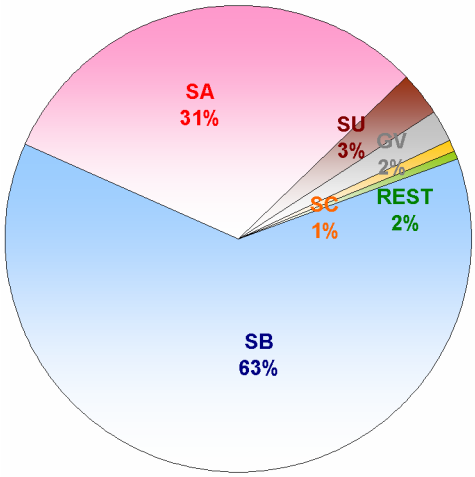
COMPANY	2004	2005	TOTAL %	VAR 2004 -2005
IBE	527	698	23.3%	32.4%
ARG	363	433	14.5%	19.3%
VRG	324	422	14.1%	30.2%
AZA	241	177	5.9%	-26.6%
AFR	100	167	5.6%	67.0%
PUA	148	152	5.1%	2.7%
SWR	133	136	4.5%	2.3%
DLH	84	104	3.5%	23.8%
RRR	-	96	3.2%	-
MPD	13	89	3.0%	584.6%

OCCUPANCY PER CITY PAIR

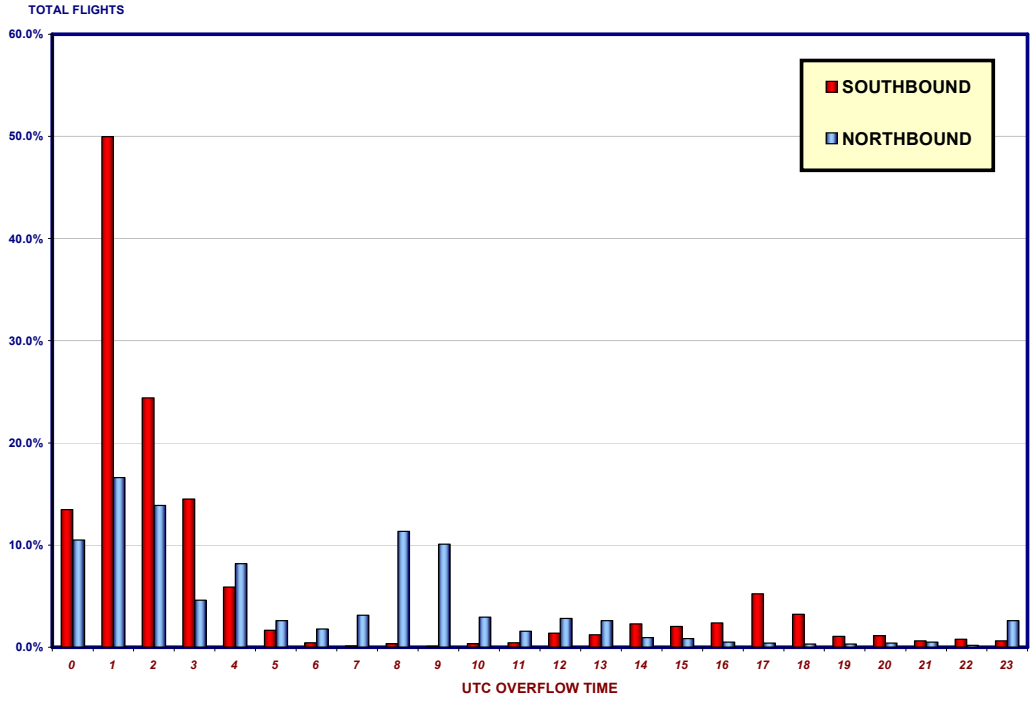


COUNTRY	2004	2005	INC %
SB	1584	1760	11%
SA	690	982	42%
SU	55	106	93%
GV	32	95	197%
SC	17	27	59%
REST	6	20	233%

COUNTRY	2004	2005	INC %
LE	1305	1584	21%
LI	511	449	-12%
ED	163	256	57%
LS	140	254	81%
LF	124	145	17%
REST	141	302	114%



OCCUPANCY PER UTC HOUR IN CANARIES FIR – YEAR 2005



UTC OWERFLOW TIME	SOUTHBOUND		NORTHBOUND		CORRIDOR	
	Nº	%	Nº	%	Nº	%
0	128	6.3%	100	10.5%	228	8%
1	475	23.3%	158	16.6%	633	21%
2	498	24.4%	132	13.9%	630	21%
3	296	14.5%	44	4.6%	340	11%
4	120	5.9%	78	8.2%	198	7%
5	34	1.7%	25	2.6%	59	2%
6	9	0.4%	17	1.8%	26	1%
7	3	0.1%	30	3.2%	33	1%
8	7	0.3%	108	11.4%	115	4%
9	2	0.1%	96	10.1%	98	3%
10	7	0.3%	28	2.9%	35	1%
11	9	0.4%	15	1.6%	24	1%
12	28	1.4%	27	2.8%	55	2%
13	25	1.2%	25	2.6%	50	2%
14	47	2.3%	9	0.9%	56	2%
15	42	2.1%	8	0.8%	50	2%
16	49	2.4%	5	0.5%	54	2%
17	107	5.2%	4	0.4%	111	4%
18	66	3.2%	3	0.3%	69	2%
19	22	1.1%	3	0.3%	25	1%
20	23	1.1%	4	0.4%	27	1%
21	13	0.6%	5	0.5%	18	1%
22	16	0.8%	2	0.2%	18	1%
23	13	1%	25	2.6%	38	1%

2005 DATA

APPENDIX 1-D

SATMA
South Atlantic Monitoring Agency

The information contained in this form is confidential and will be used for statistical safety analysis purposes only.

Altitude Deviation FORM

Report to SATMA of an altitude deviation of 300ft or more, including those due to TCAS, Turbulence and Contingency Events

1. Today's date:	2. Reporting Unit:		
DEVIATION details			
3. Operator Name:	4. Call Sign:	5. Aircraft Type:	6. Mode C Displayed:
7. Date of Occurrence:	8. Time UTC:	9. Occurrence Position (lat/long or Fix):	
10. Cleared Route of Flight:			
11. Cleared Flight Level:	12. Estimated Duration at Incorrect Flight Level (seconds):		13. Observed Deviation (+/- ft):
14. Other Traffic Involved:			
15. Cause of Deviation (*brief title*): (Examples: ATC Loop Error, Turbulence, Weather, Equipment Failure)			
AFTER DEVIATION IS RESTORED			
16. Observed/Reported Final Flight Level*: *Please indicate the source of information – ModeC/Pilot	Mark the appropriate box 17. Is the FL above the cleared level: ❑ 18. Is the FL below the cleared level: ❑	19. Did this FL comply with the ICAO Annex 2 Tables of Cruising Levels? ❑ Yes ❑ No	

Narrative
20. Detailed Description of Deviation (*Please give your assessment of the actual track flown by the aircraft and the cause of the deviation.*)

crew comments (if any)

When complete please forward the report(s) to:

South Atlantic Monitoring Agency (SATMA)
E-Mail: satma@aena.es

APPENDIX 1-E

Send to SATMA
Fax: +34 928 577052
E-Mail: satma@aena.es

LATERAL NAVIGATION DEVIATION FORM			
Type of Report: □ PILOT – Flight □ CONTROLLER – ATC Unit			
Date/Time (UTC):	Type of Error: □ LATERAL □ Type (A to G) (*)		
Causes: □ WEATHER (See G) □ OTHERS (Specify)			
Conflict Alert Systems:			
DETAILS OF AIRCRAFT	First Aircraft		
Aircraft Identification:			
Name of Owner/Operator:			
Aircraft Type:			
Departure Point:			
Destination:			
Route Segment:			
Flight Level:	Cleared		Actual
Cleared Track:			
Extent of deviation - magnitude and direction: (NM for lateral)			
Position where deviation was observed: (BRG/DIST from fixed point or LAT/LONG)			
Action Taken by ATC/Pilot:			
Other comments:			

(*) See deviation classification

EUR/SAM CORRIDOR

LATERAL NAVIGATION DEVIATION FORM

- The ATCO/Pilot should fill as many items as possible.
- Additional data can be attached.
- The notification of any lateral deviation has to be classified, when possible, according to the following types:

A – Committed by aircraft not certified for operation in the RNP airspace
B – ATC system loop error
C1 - Equipment control error including inadvertent waypoint error
C2 – Waypoint insertion error due to the correct entry of incorrect position
D – Other with failure notified to ATC in time for action
E - Other with failure notified to ATC too late for action
F - Other with failure notified/received by ATC
G - Lateral deviations due to weather when unable to obtain prior ATC clearance

Note: That there are data that have to be notified by the pilot.

Remark: The EUR/SAM corridor includes the FIR/UIRs: Atlantico, Dakar Oceanic, Sal Oceanic and Canaries.

APPENDIX 1-F

NOTAM related to the Implementation of 15 lateral offset special procedures for in flight contingencies in oceanic airspace of EUR/SAM corridor

Operators are to note that the contents of Doc. 7030, paragraph 4.0 - *Special Procedures for in Flight Contingencies for the EUR/SAM Corridor,* are herewith canceled.

The procedures relating to in flight contingencies as reflected in Doc. 4444 (PANS ATM), Chapter 15, para. 15.2 - *Special procedures for in flight contingencies in oceanic airspace* are to be adhered to and will be in force on xxx June 2006 in the XXX FIR (as applicable).

The appropriate amendment to AIP Section ENR …., paragraph…, will be published in due course/ (or) by AIRAC cycle.

Doc. 7030 is under a process of amendment and this special procedure supersedes those that are included in the SUPPS (Doc. 7030) AFI Part, paras. 4.3.2.1, 4.3.2.1 b); 4.3.3.1; 4.3.3.2 b).

APPENDIX 1-G

ENR 3.5 OTHER ROUTES

1. APPLICATION OF RNP 10 IN THE CORRIDOR BETWEEN EUROPE AND SOUTH AMERICA (EUR/SAM CORRIDOR)

1.1. AREA OF APPLICATION

1.1.1. The EUR/SAM corridor is the airspace over the South Atlantic (SAT) area which lies within Flight Information Regions of Atlantico, Canaries, Dakar Oceanic, Recife and Sal Oceanic.

1.1.2. RNP 10 shall be applicable in that volume of airspace between FL 290 and FL 410 in the following airspace:

From 25º00'N/015º30'W; 17º20'N/020º00'W; 15º00'N/020º00'W; 12º58'N/021º22'W; 08º31'S/034º21W; 08º08.2'N/034º56'W (RECIFE VOR) then follow the Northern continental limits of Brazil until the point 01º21'S/043º08'W; 07º40N/035º00W; 13º30N/ 037º30'W; 17º00'N/037º30'W; 24º00'N/025º00'W; 30º00'N/025º00'W; 30º00'N/020º00'W; 31º39'N/017º25'W; from this point following the Canaries/Lisbon boundary to 31º30'14''N/017º01'44''W; 27º00'N/020º00'W; 25º00'N/020º00'W; 25º00'N/015º30'W.

1.2. OPERATIONS WITHIN THE EUR/SAM CORRIDOR RNP-10 AIRSPACE

1.2.1. With the exception of State Aircraft, no aircraft shall flight plan to operate in the RNPI0 airspace at the EUR/SAM corridor unless it is RNP 10 certified to operate in this airspace by the State of Registry or the State of operator, as the case may be, except in the following circumstances:

a) The aircraft is being initially delivered to the State of Registry or the State of the operator;

b) The aircraft is RNP10 certified but experienced navigation system degradation and is being flown back to base or to a maintenance facility for repairs;

c) The aircraft is engaged on a humanitarian or mercy flight;

NOTE: The procedures below do not apply to the airspace at North of Parallel 27° North in the Canaries FIR where no exceptions are allowed.

1.2.2. Special coordination procedures:

a) Aircraft under 1.2.1 a. and 1.2.1 b. shall not flight plan to operate between 21:00 UTC and 09:00 UTC.

b) Aircraft operators of non RNP 10 aircraft shall obtain a special authorization from the first ACC concerned, i.e., Atlantico, Canaries, Dakar or Sal ACC. Authorization must be requested no more than 12 hours and no less than 4 hours before the intended time of departure.

c) In addition the operator shall notify by phone all other ACC's concerned of the following elements (see 1.2.4 for contact details):

i) Aircraft identification;

ii) Type of aircraft;
iii) Departure aerodrome and ETD;
iv) Route;
v) Position and estimated time over the entry and exit points of each FIR concerned;
vi) Requested Flight Level;
vii) Destination aerodrome and ETA;

d) The operator shall insert STS/NONRNP10 in field 18 of the ICAO Flight Plan;

e) Minimum lateral separation to be applied to aircraft operating under these provisions are 100NM.

1.2.3. These provisions are intended to address the special cases listed and shall not be taken as a means to circumvent the normal RNP 10 requirements and processes.

1.2.4. Contacts

i) Atlantico ACC: 55.81 2129-8330 / 3464-4107/2129-8388
ii) Canaries ACC: 34 928 577060 / 928577064
iii) Dakar ACC: 221 8692305 / 8692307
iv) Sal ACC: 2382411970

1.3. RNP 10 APPROVAL

1.3.1. The RNP 10 approval is provided by the State of Registry or State of the Operator, as appropriate.

1.3.2. Brazilian operators shall contact Civil Aviation Department (DAC) to obtain operational approval for RNP 10. Other operator shall consult their relevant State authority.

1.4. Separation of aircraft

1.4.1. Lateral separation

1.4.1.1. The minimum lateral separation that shall be applied between RNAV-equipped aircraft approved to RNP 10 or better shall be 50 NM.

1.4.1.2. Operators shall establish programmes to mitigate the occurrence of large lateral track errors due to equipment malfunction or operational error, which:

a) Ensure that operating procedures include mandatory navigation cross-checking procedures to identify navigation errors in sufficient time to prevent aircraft inadvertently deviating from an ATC cleared route; and

b) Provide for the continued airworthiness of aircraft navigation systems necessary to navigate to the degree of accuracy required.

1.4.2. Longitudinal separation

1.4.2.1. Minimum longitudinal separation between aircraft will be 10 minutes, when the MACH number technique is applied, ou 80 NM RNAV.

2. APPLICATION OF RVSM IN THE CORRIDOR BETWEEN EUROPE AND SOUTH AMERICA (EUR/SAM CORRIDOR)

2.1. AREA OF APPLICATION

2.1.1. The EUR/SAM corridor is the airspace over the South Atlantic (SAT) area which lies within Flight Information Regions of Atlantico, Canaries, Dakar Oceanic, Recife and Sal Oceanic

2.1.2. RVSM shall be applicable in that volume of airspace between FL 290 and FL 410 in the following airspace:

From 25º00'N/015º30'W; 17º20'N/020ºN00'W; 15º00'N/020º00'W; 12º58'N/021º22'W; 08º31'S/034º21W; 08º08.20'N/ 034º56.64'W (RECIFE VOR) then follow the Northern continental limits of Brazil until the point 01º21'S/043º08'W; 07º40N/ 035º00W; 13º30N/037º30'W; 17º00'N/037º30'W; 24º00'N/025º00'W; 30º00'N/025º00'W; 30º00'N/020º00'W; 31º39'N/ 017º25'W; from this point following the Canaries/Lisbon boundary to 31º30'14"N/017º01'44"W; 27º00'N/020º00'W; 25º00'/ 020º00'W; 25º00'N/015º30'W.

2.2. OPERATIONS WITHIN THE EUR/SAM CORRIDOR RVSM AIRSPACE

2.2.1. With the exception of State Aircraft, no aircraft shall flight plan to operate in the RVSM airspace at the EUR/SAM corridor unless it is RVSM approved to operate in this airspace by the State of Registry or the State of operator, as the case may be, except in the following circumstances:

a) The aircraft is being initially delivered to the State of Registry or the State of the operator;
b) The aircraft is RVSM Approved but experienced navigation system degradation and is being flown back to base or to a maintenance facility for repairs;
c) The aircraft is engaged on a humanitarian or mercy flight;

NOTE: The procedures below do not apply to the airspace at North of Parallel 27° North in the Canaries FIR where no exceptions are allowed.

2.2.2. Special coordination procedures:

a) Aircraft under 2.2.1 a. and 2.2.1 b. shall not flight plan to operate between 21:00 UTC and 09:00 UTC.
b) Aircraft operators of non RVSM aircraft shall obtain a special authorization from the first ACC concerned, i.e., Atlantico, Canaries, Dakar or Sal ACC. Authorization must be requested no more than 12 hours and no less than 4 hours before the intended time of departure.
c) In addition the operator shall notify by phone all other ACC's concerned of the following elements (see 2.2.4. for contact details):

   i) Aircraft identification;
   ii) Type of aircraft;
   iii) Departure aerodrome and ETD,
   iv) Route;
   v) Position and estimated time over the entry and exit points of each FIR concerned;
   vi) Requested Flight Level;
   vii) Destination aerodrome and ETA.

d) The operator shall insert STS/NONRVSM in field 18 of the ICAO Flight Plan;

e) Minimum vertical separation to be applied to aircraft operating under these provisions are 2000 FT

2.2.3. These provisions are intended to address the special cases listed and shall not be taken as a means to circumvent the normal RVSM requirements and processes.

2.2.4. Contacts

Atlantico ACC: 55.81 2129-8330 / 3464-4107/ 2129-8388
Canaries ACC: 34 928 577060 / 928577064
Dakar ACC: 221 8692305 / 8692307
Sal ACC: 2382411970

2.3. RVSM APPROVAL

2.3.1. The 300 m (1000 ft) separation minimum only be applied between operators and aircraft that have been approved by the State of Registry or State of the Operator, as appropriate, to conduct flights in RVSM airspace and that are capable of meeting the minimum aircraft system performance specification (MASPS) height-keeping requirements (or equivalent).

2.3.2. Brazilian operators shall contact Civil Aviation Department (DAC) to obtain operational approval for RNP 10 capability. Other operator shall consult their relevant State authority.

2.4. FLIGHT PLANNING REQUIREMENTS

The following flight planning requirements will apply to operators of RVSM approved civil aircraft intending to conduct flights within the EUR/SAM Corridor RVSM airspace:

2.4.1. For RVSM Approved Civil Aircraft

2.4.1.1. Operators of RVSM approved civil aircraft shall indicate the approval status by inserting the letter W in Item 10 of the ICAO flight plan form, regardless of the requested flight level.

2.4.1.2. Operators of RVSM approved civil aircraft intending to operate within the EUR/SAM Corridor RVSM airspace shall include the following in Item 15 of the ICAO flight plan form:

a) The entry point at the lateral limits of the EUR/SAM Corridor RVSM airspace and the requested flight level for that portion of the route commencing immediately after the RVSM entry point; and
b) The exit point at the lateral limits of the EUR/SAM Corridor RVSM airspace and the requested flight level for that portion of the route commencing immediately after the RVSM exit point.

2.4.2. For RVSM Approved State Aircraft

2.4.2.1. Operators of RVSM approved State aircraft shall indicate the approval status by inserting the letter W in Item 10 of the ICAO flight plan form regardless of the requested flight level, except that operators of formation flights of State aircraft shall ***not*** insert the letter W in Item 10 of the ICAO flight plan form, regardless of the RVSM approval status of the aircraft concerned.

2.4.2.2. Operators of formation flights of State aircraft intending to operate within the EUR/SAM Corridor RVSM airspace as General Air Traffic (GAT) shall include STS/NONRVSM in Item 18 of the ICAO flight plan form, regardless of the RVSM approval status of the aircraft concerned.

2.4.2.3. Operators of RVSM approved State aircraft intending to operate within the EUR/SAM Corridor RVSM airspace shall include the following in Item 15 of the ICAO flight plan form:

a) The entry point at the lateral limits of the EUR/SAM Corridor RVSM airspace and the requested flight level for that portion of the route commencing immediately after the RVSM entry point; and
b) The exit point at the lateral limits of the EUR/SAM Corridor RVSM airspace and the requested flight level for that portion of the route commencing immediately after the RVSM exit point.

2.4.3. For NON-RVSM Approved state Aircraft

2.4.3.1. Operators of non-RVSM approved State aircraft with a requested flight level between FL290 and FL 410 shall insert STS/ NONRVSM in Item 18 of the ICAO flight plan form.

2.4.3.2. Operators of formation flights of State aircraft shall not insert the letter W in Item 10 of the ICAO flight plan form, regardless of the RVSM approval status of the aircraft concerned. Operators of formation flights of State aircraft intending to operate within the EUR/SAM Corridor RVSM airspace as General Air Traffic (GAT) shall include STS/NONRVSM in Item 18 of the ICAO flight plan form.

2.4.3.3. Operators of non-RVSM approved State aircraft intending to operate within the EUR/SAM Corridor RVSM airspace shall include the following in Item 15 of the ICAO flight plan form:

a) The entry point at the lateral limits of the EUR/SAM Corridor RVSM airspace and the requested flight level for that portion of the route commencing immediately after the RVSM entry point; and

b) The exit point at the lateral limits of the EUR/SAM Corridor RVSM airspace and the requested flight level for that portion of the route commencing immediately after the RVSM exit point.

2.4.4. Special Procedures for crossing traffic (East/West) operations

2.4.4.1. For the purpose of this application, crossing traffic is defined as all that traffic entering or leaving the EUR/SAM RVSM Airspace along its Eastern or Western Boundaries (i.e., at any point other then its Northern (Canaries) or Southern (Brazil) boundaries.

2.4.4.2. Crossing traffic can flight plan to enter and leave the RVSM airspace at any point along its boundaries, indicating in the flight plan the coordinates and estimated time of the entering and exit points into the RVSM airspace and of the crossing of each of the fixed ATS routes.

2.4.4.3. Except when flying on published crossing routes/tracks, all crossing traffic intending to operate through the RVSM airspace must obtain an ATC Clearance. This should be requested, sufficiently in advance to preclude operational difficulties, from the ACC responsible for the first RVSM airspace to be entered, or, in case of communications difficulties, from any of the ACCs concerned with the EUR/SAM RVSM airspace or still from any other adjacent ACC.

2.5. Mandatory Pilot Reports

2.5.1. In addition to reading back altitude assignments, pilots shall report reaching any altitude assigned within RVSM airspace. This serves as a double check between pilots and controllers and reduces the possibility of operational errors. This requirement for altitude readback and reports of reaching assigned altitudes applies to both RVSM and CVSM altitudes (i.e., flight levels 330, 340, 350, 360, and 370).

EXAMPLE

(*initial altitude readback)*: *"Global Air 543 climbing to flight level 360."*
(upon reaching assigned altitude): "Global Air 543 level at flight level 360."

2.6. ACAS

2.6.1. If ACAS (TCAS) is installed in RVSM compliant aircraft, the equipment should be updated to Change 7, or a later approved version, for optimum performance in RVSM airspace

2.7. TRANSITION AREA

2.7.1. RVSM approval is not required in order to operate within RVSM Transition areas.

2.7.2. Transition from RVSM Flight Level to Non RVSM Flight Level

2.7.2.1. ATS ROUTE UL206

- Expect transition between FLUTE and NEMOL Reporting Points.

2.7.2.2. ATS ROUTE UR551

- Expect transition between AMBET and SIDIR Reporting Points.

2.7.3. Transition from Non RVSM Flight Level to RVSM Flight Level

2.7.3.1. ATS ROUTE UL206
- expect transition between BUGAT and NEMOL Reporting Points.

2.7.3.2. ATS ROUTE UR551

- expect transition between BUGAT and SIDIR Reporting Points.

2.8. In-flight Procedures Within RVSM Airspace

2.8.1. Before entering RVSM airspace, the pilot should review the status of required equipment. (See Appendix 4 of FAA Interim Guidance 91-RVSM for pilot RVSM procedures). The following equipment should be operating normally:

a) Two primary altimetry systems.
b) One automatic altitude-keeping device.
c) One altitude-alerting device.

2.8.2. The pilot must notify ATC whenever the aircraft:

a) Is no longer RVSM compliant due to equipment failure.
b) Experiences loss of redundancy of altimetry systems.
c) Encounters turbulence that affects the capability to maintain flight level. (See Appendix 5 of FAA Interim Guidance 91-RVSM for pilot and controller actions in such contingencies).

2.9. Procedures for Suspension of RVSM

2.9.1. Air Traffic Service providers will consider suspending RVSM procedures within affected areas within the Atlantico and Recife FIR and adjacent transition areas when there are pilot reports of greater than moderate turbulence. Within areas where RVSM procedures are suspended, the vertical separation minimum between all aircraft will be 2000 FT.

2.10. In-flight Contingencies Procedures (See AIC XXX/XX)

2.11. Strategic lateral offsets in oceanic airspace to mitigate collision risk and wake turbulence.

2.11.1. Pilots should use the Strategic Lateral Offset Procedure as standard operating practice in the course of normal operations to mitigate collision risk and wake turbulence. The Strategic Lateral Offset Procedure will be in force throughout the Atlântico FIR. This procedure is to be used for both wake vortex encounters, and to mitigate the heightened risk of occur due to highly accurate navigational systems.

2.11.2. Strategic Lateral Offset Procedures will be applied using the following guidelines:

2.11.2.1. Strategic lateral offsets and those executed to mitigate the effects of wake turbulence are to be made to the right of a route or track;

2.11.2.2. In relation to a route or track, there are three positions that an aircraft may fly: centerline, 1 or 2 NM right; and

2.11.2.3. Offsets are not to exceed 2 NM right of centerline.

2.11.3. The intent of this procedure is to reduce risk (increase the safety margin) by distributing aircraft laterally and equally across the three available positions. In this connection, pilots must take account of the following:

2.11.3.1. Aircraft without automatic offset programming capability must fly the centerline;

2.11.3.2. Aircraft capable of being programmed with automatic offsets may fly the centerline or offset one or 2 NM right of centerline to obtain lateral spacing from nearby aircraft;

2.11.3.3. Pilots should use whatever means are available (e.g. ACAS, communications, visual acquisition) to determine the best flight path;

2.11.3.4. Any aircraft overtaking another aircraft is to offset within the confines of this procedure, if capable, so as to create the least amount of wake turbulence for the aircraft being overtaken;

2.11.3.5. For wake turbulence purposes, pilots are also to fly one of the three positions at 2.2 above and never offset to the left of centerline nor offset more than 2 NM right of centerline;

NOTE: It is recognized that the pilot will use his/her judgment to determine the action most appropriate to any given situation and has the final authority and responsibility for the safe operation of the airplane. The air-to-air channel, 123.45 MHZ, may be used to co-ordinate the best wake turbulence offset option.

2.11.3.6. Aircraft transiting radar-controlled airspace shall remain on their established offset positions unless otherwise instructed by A TC.

2.11.3.7. There is no ATC clearance required for this procedure and it is not necessary that ATC be advised; and,

2.11.3.8. Voice position reports are to be based on the current ATC clearance and not the exact co-ordinates of the offset position.

-END-

APPENDIX 1-H

ACTION PLAN TO IMPLEMENT A UNIDIRECTIONAL FLIGHT LEVEL ALLOCATION SCHEME ON ROUTES UN 741 AND UN 866

Task	Responsible	Start Date	Final Date	Status	Remarks
1. Safety Assessment Statistical Data	States	N/A	June 7, 2006		The states must send the statistical data needed to safety assessment to SATMA, in accordance with conclusion SAT 13/XX
2. Cost-Benefit Analysis	IATA	April 2006	November 2006		IATA will analyze the proposal made by SAT States, in order to assess its suitability to the operators
3. Impact in the Airspace and Traffic management	States	April 2006	November 2006		States must analyze the impact of the proposal in its airspace.
4. AIP Supplement	States	April 2006	November 2006		
5. Safety Assessment	SATMA	April 2006	January 2007		
6. Development of a transition plan for the implementation	SATMA	April 2006	November 2006		
7. Implementation of a training programme.	States	February 2007	March 2007		
8. Go/No Go Decision	States	N/A	November 2006		SAT 13 /TF 1 meeting
9. Tentative Implementation Date	States	**N/A**	**April 12, 2007**		

Agenda Item 2: Communications, navigation and surveillance (CNS)

Agenda Item 2 Communications, navigation and surveillance (CNS)

2.1 Follow up of SAT/12 Conclusions pertaining to the CNS field

2.1.1 Under this agenda item, the meeting reviewed the implementation status of the conclusions and decisions adopted by the Twelfth Meeting on the improvement of air traffic services over the South Atlantic (SAT/12), which was held in Sal Island, Cape Verde Archipelago, 15 – 17 December 2004, and follow-up actions taken thereon by SAT Members and the Secretariat. The implementation status of these conclusions and decisions is shown at **Appendix 2-A** to this part of the report.

2.2 Review of the Report of the SAT/12 CNS Working Group

2.2.1 Under this Agenda item, the meeting reviewed the Report on the SAT/12 Task Force Meeting (Rio de Janeiro, Brazil, from 5 to 9 September 2005) as summarized by the Secretariat. The meeting particularly analyzed the SAT Task Force draft conclusions and decisions covering operational and technical issues, and endorsed most of these conclusions and decisions following further discussions under Agenda items 2, 3, 4, 5 and 6.

2.3 Review of AFS performance

Interconnection between CAFSAT and SADC networks: ATS/DS Link Atlantico/Luanda

2.3.1 The meeting acknowledged the need for a proper ATS/DS link between Atlantico and Luanda ACCs, and came to the realization that a dedicated CAFSAT node may not be cost-effective due to the level of traffic and distance between the two ACCs. It therefore suggested that Angola, Brazil and South Africa consider implementing this requirement through an interconnection between CAFSAT and SADC networks. Meanwhile, a PSTN link should be used. The following conclusion was formulated:

CONCLUSION SAT13/11: IMPLEMENTATION OF ATLANTICO/LUANDA ATS/DS CIRCUIT

THAT ANGOLA, BRAZIL AND SOUTH AFRICA CONSIDER THE IMPLEMENTATION OF ATLANTICO/LUANDA ATS/DS LINK VIA JOHANNESBURG THROUGH CAFSAT/SADC INTERCONNECTION.

Interconnection between CAFSAT and AFISNET networks: ATS/DS Links Las Palmas/ Nouadhibou and Las Palmas/Nouakchott

2.3.2 The meeting was informed of a technical meeting that took place in Las Palmas from 26 to 27 October 2005, with the participation of Cape Verde, Portugal, Spain, ASECNA and industry providers, which identified as a matter of urgency the need for achieving interconnection between AFISNET and CAFSAT networks. It was provided with detailed information on a proposed technical solution combining an RF subsystem using AFISNET space segment capacity on Satellite IS 10-02, and a baseband subsystem using CAFSAT system. Figures below describe the proposed configurations for Las Palmas node (Figure 1) and a typical AFISNET node (Figure 2):

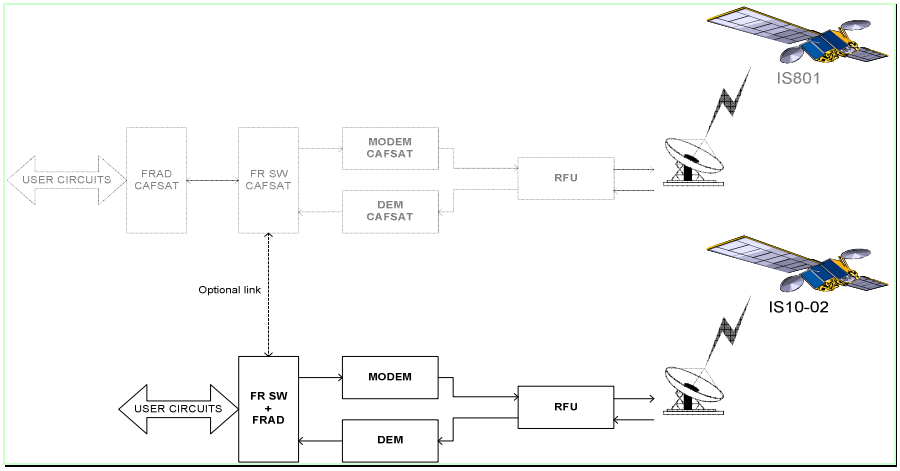


Figure 1

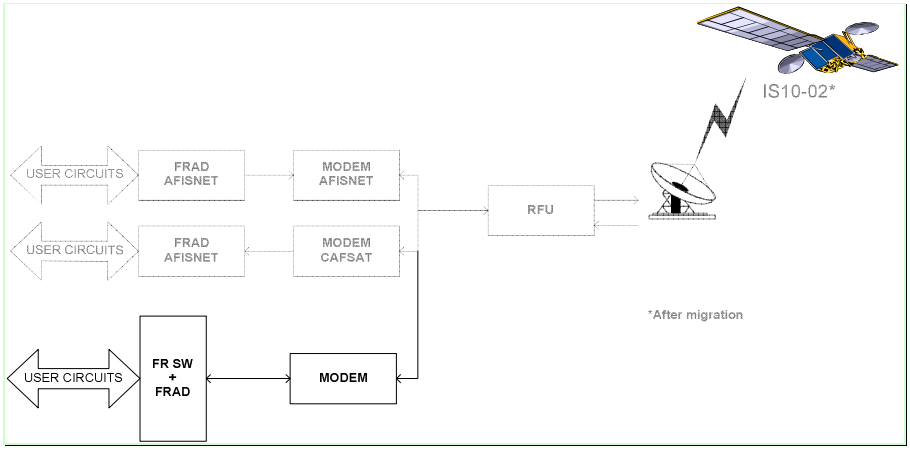


Figure 2

2.3.3 Issues related to equipment selection and system control and monitoring were also analyzed to ensure system compatibility at FR level and modem level, including NMS software adjustments. After discussions, the following conclusion was formulated:

CONCLUSION SAT13/12: IMPLEMENTATION OF LAS PALMAS/NOUADHIBOU AND LAS PALMAS/NOUAKCHOTT ATS/DS LINKS

THAT AENA (SPAIN) AND ASECNA EXPLORE WAYS AND MEANS OF SOLVING AS SOON AS POSSIBLE THE ATS/DS DEFICIENCIES BETWEEN LAS PALMAS AND NOUKCHOTT AND BETWEEN LAS PALMAS AND NOUADHIBOU ATS UNITS, BASED ON THE AGREED PRINCIPLE OF INTERCONNECTING AFISNET-CAFSAT AS THE OPTIMAL TECHNICAL SOLUTION.

2.4 Interoperability between aeronautical VSAT networks and potential use of digital VSAT networks to support ATM applications

VSAT Integration

2.4.1 A comprehensive presentation by the ICAO Secretariat provided the meeting with an overview of the issues associated with the implementation, operation and evolution of the communication networks that are based on very small aperture terminal (VSAT) technology and are used in some ICAO Regions mainly to support the provision of the aeronautical fixed service (AFS). Emphasis was put on the following :

Interconnection problems

2.4.1 Interconnection between two VSAT networks is in general more complex, especially if the networks use different satellites, access schemes and protocols. In general, interconnection of VSAT networks increases complexity/cost and degrades the overall performance (especially for voice communications). As such, ideally where there is proper satellite coverage over a certain area, efforts should be made to implement a single VSAT network. Unfortunately, in practice this principle has not always been followed mainly on non-technical grounds. Hence the need for a solution to the growing problem of interconnection between neighbouring digital networks, especially if one or more are VSAT- based.

Use of Internet Protocol (IP) technology

2.4.2 It was the view of the Secretariat that Internet Protocol (IP) based networks, provide the optimum means of establishing regional/inter-regional aviation intranets that would enable access by all users to vast resources available on the Internet (e.g. aeronautical meteorology and other data bases).

2.4.3 Another point considered was the need to exploit all the possibilities that modern technology offers. For example, the exchange of OPMET data by table-driven codes that will be phased in through amendments to Annex 3 — *Meteorological Service for International Air Navigation* between 2007 and 2016*)* cannot be accomplished by AFTN protocols. As such, the use of the Internet Protocol Suite (IPS) and associated Internet-based software (e.g. e-mail) should be further encouraged.

Standardization issues

2.4.4 The choice of the medium (e.g. terrestrial or satellite) for the provision of the AFS has never been the subject of Standardization by ICAO. The interconnection between two digital networks is a local matter that involves recovery of the bit streams from one and reformatting them for transmission over the other. In this regard, it would be fair to say that it is not practical for ICAO to develop provisions covering all possible types of physical and protocol interfaces. However, certain performance-based provisions could be developed to govern the end-to-end requirements and to narrow the choices for technologies employed.

2.4.5 In addition to ICAO's work on provisions relating to the use of the IP, Internet and related protocols for aeronautical applications (Note[1]), it should be noted that provisions have already been developed to use an IP network as a subnetwork of the aeronautical telecommunication network (ATN).

2.4.6 In summary, although not yet standardized by ICAO, IP is the most widely method of networking that provides global connectivity in the most economical manner. Moreover, all indications are that IP will (in the form of IP Version 6 with its enhanced security features) continue to be the dominant technology of the foreseeable future. Therefore, where available and cost effective, the alternative of leasing an IP-based virtual private network (VPN) for aeronautical applications should be duly considered. Again, a universally agreed set of end-to-end performance requirements would greatly facilitate the formulation and administration of contracts for obtaining such services. The following conclusions were formulated:

CONCLUSION SAT13/13: AERONAUTICAL COMMUNICATIONS NETWORK DEVELOPMENT STRATEGIES

THAT SAT STATES AND ORGANIZATIONS CONCERNED:

a) TAKE THE PROPER ACTIONS TO ACHIEVE AND APPLY COMPREHENSIVE STRATEGIES FOR THE INTERCONNECTION OF VSAT NETWORKS TO MEET ATS REQUIREMENTS IN THE SOUTH ATLANTIC AREA;

b) WORK TOWARDS SEAMLESS REGIONAL/INTER-REGIONAL DIGITAL COMMUNICATION NETWORKS BASED ON THE INTERNET PROTOCOL SUITE (IPS);

c) GIVE DUE CONSIDERATION TO MANAGED NETWORK SERVICES (E.G. A VIRTUAL PRIVATE NETWORK (VPN)) SUBJECT TO AVAILABILITY AND COST EFFECTIVENESS.

CONCLUSION SAT13/14: STANDARDIZATION OF THE INTERNET PROTOCOL SUITE AND NEED FOR END-TO-END PERFORMANCE REQUIREMENTS

THAT ICAO BE REQUESTED TO EXPEDITE ITS WORK ON:

a) THE STANDARDIZATION OF THE INTERNET PROTOCOL SUITE FOR THE STATES AND ORGANIZATIONS TO IMPLEMENT IT IN CONFORMITY WITH ARTICLE 28 OF THE CHICAGO CONVENTION; AND

b) THE ESTABLISHMENT OF A UNIVERSALLY AGREED SET OF END-TO-END PERFORMANCE REQUIREMENTS TO FACILITATE THE FORMULATION AND ADMINISTRATION OF CONTRACTS FOR OBTAINING MANAGED NETWORK

[1] *Note : ICAO Doc 9855 – Use of Public Internet for Aviation Applications.*

SERVICES.

CONCLUSION SAT13/15: COMMUNICATIONS SYSTEMS UPGRADING AND MAINTENANCE

THAT SAT STATES AND ORGANIZATIONS CONCERNED TAKE THE NECESSARY STEPS TO UPGRADE AS REQUIRED AND SECURE SPARE PARTS OF THE OPERATIONAL EQUIPMENT IN ORDER TO MINIMIZE ANY POTENTIAL CRITICAL IMPACT ON THE CURRENT COMMUNICATIONS SYSTEM.

Numbering Plan for the AFI Region

2.4.7 The meeting recalled that, in accordance with the provisions in "ICAO DOC 9804 - Manual on ATS Ground-Ground Voice Switching and Signalling", Chapter 2 Section 2.3 : *"The numbering plan is an essential element in a switched communication system. It identifies all users and provides necessary information to the switching equipment for the routing of the traffic. Numbering plans in general have to balance the desire to keep the number of digits dialled for a call to the minimum while including the possibility of expansion beyond the planned capacity without changing the basic structure of the plan".* The following recommended characteristics for the numbering plan were noted:

a) Numbers should consist of six digits, whereby the first two digits identify the area, the third and fourth digits, the ATS unit, and the fifth and sixth digits, the CWP or correspondent within the ATS unit.

b) The area identifier may be used to identify either a single country or a group of countries.

A map of the World numbering zones is shown in Figure 3 below:

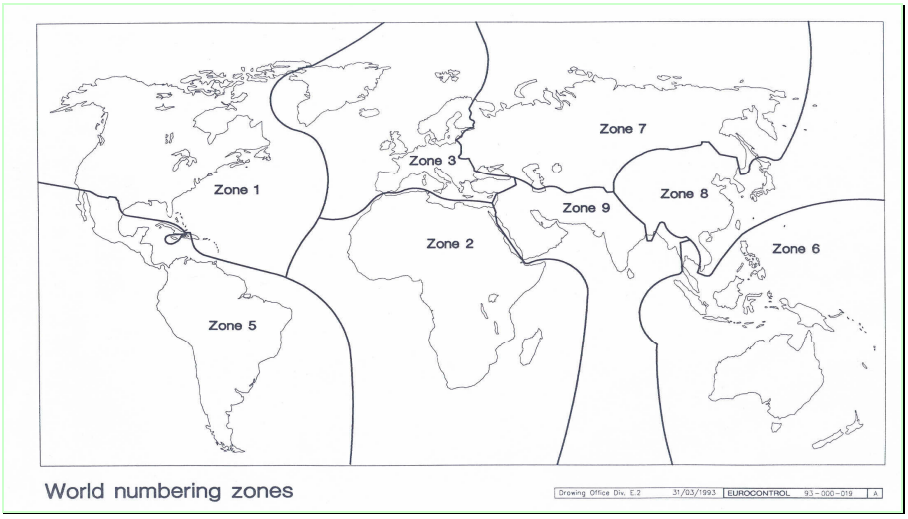


Figure 3: World Numbering Zones

2.4.8 A number format is illustrated in Figure 4 below:

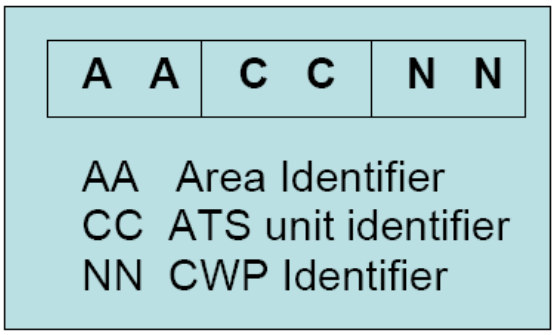


Figure 4: Format of Numbers in the 6-digit Numbering Plan

2.4.9 In order to save space in the numbering plan it is possible for ANSP's to allocate the last four digits (i.e. CC and NN) as the address of a CWP. If this is applied then a single ATS unit can be identified with different pairs of CC digits. Ideally the addresses allocated to a particular ATS unit should be in single range in the numbering plan and should not be divided into separate ranges or be split around numbering plan ranges allocated to other ATS units. If this methodology is applied however it implies that configuration of the routing tables within a VCS will be more complex.

2.4.10 The following conclusion was formulated:

CONCLUSION SAT13/16: ATS VOICE NUMBERING PLANS FOR AFI AND SAM REGIONS

THAT SAT STATES, ORGANIZATIONS CONCERNED AND ICAO REGIONAL OFFICES, DAKAR AND LIMA TAKE THE NECESSARY STEPS TO INCLUDE IN GREPECAS AND APIRG WORK PROGRAMMES STUDIES ON THE IMPLEMENTATION OF ATS VOICE NUMBERING PLANS FOR AFI AND SAM REGIONS, AS DEFINED BY THE RECOMMENDATION CONTAINED WITHIN THE *ICAO MANUAL ON ATS GROUND-GROUND VOICE SWITCHING AND SIGNALLING* (DOC 9804, CHAPTER 2 SECTION 2.3).

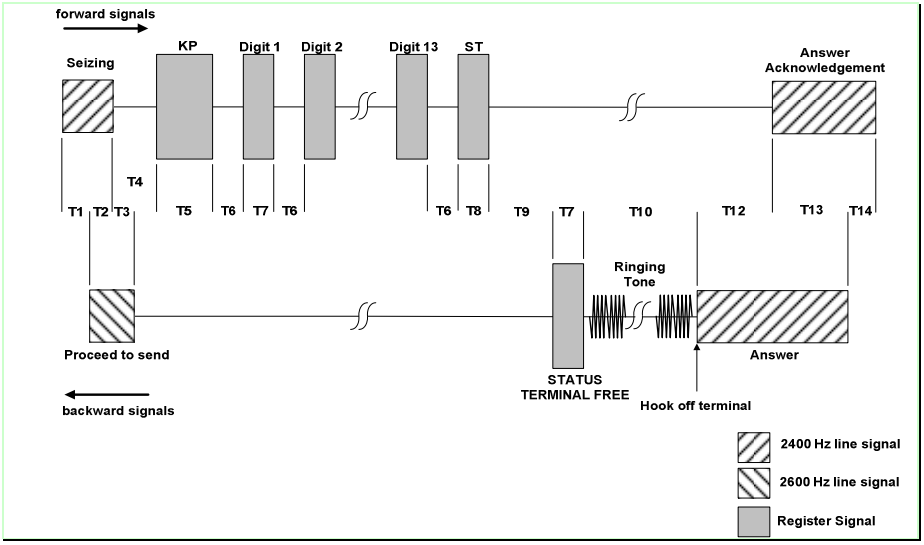
ATS-N5 protocol proposal in EUR-SAM corridor

2.4.11 The meeting acknowledged the advantages of using an ATS Ground Voice Switching Network as follows :

1) Reduction of the number of circuits (Ground-Ground links are shared by a number of users);
2) More than one link to access to a user;
3) Direct route and alternate routes are configured among VCSs for call routing;
4) Normal and Priority calls;
5) Automatic line checking.

2.4.12 Following a comparative analysis of the ATS-R2 or ATS-N5 signalling systems and based on the experience gained in EUR Region, the meeting recognized the need for a common call signalling protocol in the

SAT area. Noting that the "compelled" characteristic of the ATS-R2 register signals makes ATS-R2 unfeasible for those cases where the signal propagation delay is greater than 35 ms, whilst the "non-compelled" characteristic of the ATS-N5 register signals makes ATS-N5 less sensitive to signal propagation delay, the meeting therefore agreed that the ATS-N5 signalling system was specially useful in those ground lines where propagation delays are high, or where satellite links are (to be) used. A detailed description of ATS-N5 signalling system was provided to the meeting, including related register signals (tone pairs representing individual digits and status signals). An example of status signal is provided in Figure 5 below for guidance :



KP: start of pulsing
ST: end of pulsing

Figure 5: ATS-N5 Signalling – Terminal Free

2.4.13 Moreover, the meeting discussed the possibility of using audio CODECs algorithms in order to implement the AGVN ATS-N5 signalling protocol in VSAT links, to guarantee the voice transmission characteristics and to minimize the latency time effect on the transmission. Based on the MOS (Mean Opinion Score) criteria, the suggested CODECs should have a MOS score better than 4 (See Figure 6 below).

2.4.14 A first approach would be to compare all the CODECs which are considered as "*good*" regarding the audio point of view.

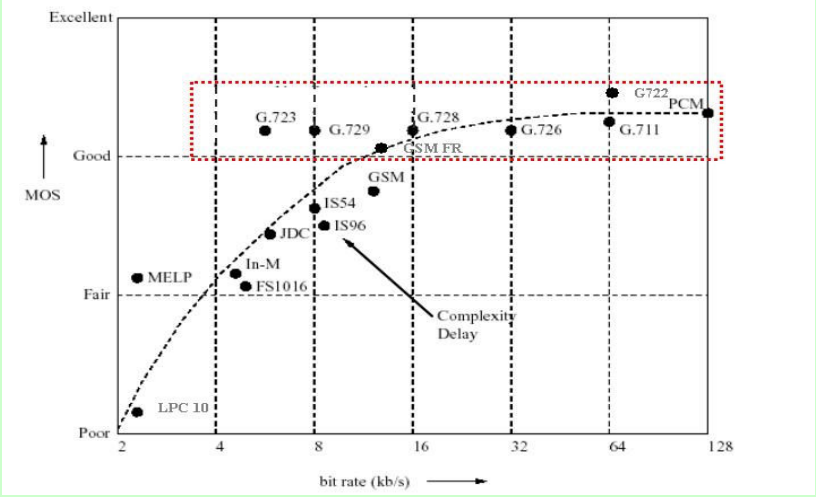


Figure 6

2.4.15 Table below provides different proposed CODECs :

- ***Voice*** *is considered to be in the 300-3400Hz bandwidth.*
- ***Tone*** *is equivalent to the usual frequencies defined for telephone application: (330 Hz, 440Hz, 1000Hz….)*
- ***DTMF****: is equivalent to the Q.23 Keypad codes used with usual telephone.*
- ***MOS*** *or E model: user satisfaction for voice quality reference*
- ***Signalling****: is equivalent to Modem frequencies or ATS-R2/ATS-N5 frequencies*
- ***MIPS*** *gives indication regarding the necessary computational power needed for the CODEC.*

CODEC TYPE	Algorithm	Kb/s	Delay (ms)	MIPS	MOS	Voice	Tones	DTMF	Signalling
G711 A-law, µ-law	PCM	64	0,75-1	0-0,1	4,5	excellent	excellent	excellent	excellent
G726 32K	ADPCM	32	1-2,5	6-7	4	fine	good	good	medium
G728	LD CELP	16	2-5	33-40	4	fine	good	good	medium
G729A	CS-ACELP	8	15	15	4	fine	good	good	bad

2.4.16 Classification from the best to the worst:

- *Excellent > No problem to use it for this type of audio signals*
- *Fine > May be used to transmit this type of signal*
- *Good > May be used but may introduce some modification of the signal*
- *Medium > Introduce serious modification or distortion on the signal*
- *Bad > Unable to transmit this type of signal*

2.4.17 AENA kindly provided the meeting with a satisfactory live demonstration thereof.

2.4.18 The following conclusion was formulated :

CONCLUSION SAT13/17: IMPLEMENTATION OF ATS NO.5 PROTOCOL IN THE SAT AREA

THAT:

a) SAT STATES AND ORGANIZATIONS BE ENCOURAGED TO CARRY OUT TECHNICAL RESEARCH AND IN-DEPTH INVESTIGATIONS ON THEIR SYSTEMS IN VIEW OF A POTENTIAL IMPLEMENTATION OF THE ATS NO.5 PROTOCOL IN THE SAT AREA, IN ACCORDANCE WITH ICAO GUIDANCE MATERIAL CONTAINED IN ANNEX 10 AND DOC 9804;

b) CAPE VERDE, PORTUGAL, SPAIN AND ASECNA IMPLEMENT TRIALS IN ORDER TO ESTABLISH THE PREREQUISITES RELATED TO THE IMPLEMENTATION OF ATS-N5 SIGNALLING USING VSAT LINKS AND APPROPRIATE CODECS (AS REQUIRED); AND

c) SAT CNS WORKING GROUP WORK PROGRAMME BE AMENDED TO INCLUDE THE ANALYSIS OF ALL ASPECTS RELATED TO THE IMPLEMENTATION OF ATS NO.5 PROTOCOL.

Interconnection between AFISNET, SADC/2 and NAFISAT networks

2.4.19 ATNS, South Africa provided the meeting with updated information on SADC/2 and NAFISAT projects. The meeting was informed that ATNS ha issued a "Request for Tender" during December 2005 to a selected shortlist of tenderers, after completion of a "Registration of Interest" phase. The tender responses were under evaluation and it wass expected that a contract would be entered into towards the end of April 2006. The "Request for Tender" documentation included a suggested remote VSAT terminal configuration for integration and interoperable functionality with the AFISNET VSAT network.

2.4.20 The meeting supported a suggested solution to solve the interconnection requirement, based on ATNS providing additional SCPC (Single Channel per Carrier) point-to-point satellite communication ground terminal facilities, similar to that being used within the AFISNET network, at the identified NAFISAT and SADC sites. This entails that no ATNS VSAT terminals shall be provided at AFISNET sites as part of the NAFISAT and SADC/2 network deployment. Algeria, GCAA (Ghana) and ASECNA are only required to equip the reciprocal AFISNET sites with additional individual SCPC modems for reception and transmission of the required SCPC carriers from and between the identified AFISNET (Accra, Abidjan (Dakar), Algiers, Brazzaville, Niamey and Ndjamena) and NAFISAT/SADC sites (Addis Ababa, Khartoum, Luanda, Nairobi and Tripoli).

Amendment proposals to AFI and SAM AFTN Routing Directories

2.4.21 The meeting recalled Annex 10, Volume II, Para. **4.4.1.3.1** *requesting that "all communications be routed by the most expeditious route available to effect delivery to the addressee"*, and it recognized that Johannesburg CAFSAT Station offered possibilities of improving the transit of AFTN messages between AFI and SAM Regions. The meeting therefore endorsed an amendment proposal to the AFI and SAM AFTN Routing Directories, as summarized in Table below:

Destination	Origin													
	1		2		3									
	MPPC		SAEZ		SBBR		SCSC		SEGU		SGAS		SKBO	
F (Except FC, FE, FG, FH, FI, FJ, FK, FM, FO, FP, FT)	KA	sk	SB	sp	FA	go	SP	sa	SP	sk	SB	sa	SV	sp
FC, FE, FG, FH, FI, FJ, FK, FM, FO, FP, FT	KA	sk	SB	sp	GO	le	SP	sa	SP	sk	SB	sa	SV	sp

2.4.22 The following conclusion was formulated accordingly:

CONCLUSION SAT13/18: AMENDMENT PROPOSALS TO AFI AND SAM AFTN ROUTING DIRECTORIES

THAT AFI AND SAM AFTN ROUTING DIRECTORIES BE AMENDED TO INCORPORATE EZEIZA/JOHANNESBURG AND JOHANNESBURG/RECIFE CIRCUITS.

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

3.1. Harmonization of ADS/CPDLC programmes

Review of the Report of the FANS/1-A Interoperability Team

3.1.1 The meeting reviewed the Report of the First Meeting of SAT FANS/1-A Interoperability Team (SAT/TF/1) and noted that this meeting discussed among other issues all the aspects of the SAT FANS/1-A Operational Manual (FOM), the FANS 1/A implementation activities in the South Atlantic, the system performance monitoring and maintenance and the future work programme of the Team. SAT/TF/1 Report has been made available on the ICAO public website: http://www.icao.int .

3.1.2 After analyzing SAT/TF/1 Report, the meeting endorsed and formulated the following conclusions:

CONCLUSION SAT/13/19: IMPLEMENTATION OF ADS/CPDLC PLANS BY SAT STATES

THAT SAT STATES AND ORGANIZATIONS BE ENCOURAGED TO COMPLY WITH THEIR ADS/CPDLC IMPLEMENTATION PLANS IN A TIMELY MANNER.

CONCLUSION SAT/13/20: NEED FOR A CONSOLIDATED DATABASE FOR FANS1/A EQUIPPED AIRCRAFT

THAT A CONSOLIDATED DATABASE BE CREATED TO IDENTIFY FANS1/A EQUIPPED AIRCRAFT OPERATING IN THE SOUTH ATLANTIC.

CONCLUSION SAT/13/21: PARTICIPATION OF REGULATORS AND MAIN AIRLINES IN SAT/FIT MEETINGS
THAT:

a) IN CASES WHERE THE REGULATORS ARE DIFFERENT THAN THE AIR NAVIGATION SERVICE PROVIDERS, SAT STATES SHOULD ENSURE PARTICIPATION OF REGULATORS IN SAT/FIT MEETINGS IN ORDER TO HAVE FULL COMMITMENT TO THE IMPLEMENTATION PLAN; AND

b) MAIN AIRLINES REPRESENTATIVES SHOULD ALSO PARTICIPATE IN SAT/FIT MEETINGS.

3.2. Harmonization of CNS/ATM systems evolution tables

3.2.1 The meeting did not review the AFI and SAM CNS/ATM systems evolution tables. The Secretariat was requested to prepare updated tables for the next meeting to ensure harmonization thereof.

3.3. RVSM implementation

AFI RVSM Minimum Aviation System Performance Standards (MASPS)

3.3.1 The AFI RVSM Policy excludes non RVSM certified aircraft from operating within the RVSM flight level band. This exclusion will affect aircraft that lose *minimum aviation system performance standards* (MASPS) due to equipment failure thus becoming 'non RVSM capable'. As a consequence of such a policy, 2000 ft separation is to be applied between this aircraft and other aircraft flying nearby.

3.3.2 In these circumstances, the ATC will clear the aircraft out of the RVSM airspace, normally to a level below the RVSM airspace; which will affect the aircraft fuel management and endurance due to low altitude, thus placing it at risk of not being able to reach its destination on the fuel remaining.

3.3.3 The meeting therefore recommended that these procedures be coordinated between FIRs having adjacent oceanic sectors and included in the Letters of Procedures (LOPs), particularly the provision that a 2000 ft vertical separation from other aircraft shall be applied to that flight and that the aircraft be allowed to continue as per the filed flight plan until within range of its destination or suitable alternate before being required to clear RVSM designated airspace, taking into account restrictions published for specific airspace portions. Subsequently, the formulated conclusion was formulated:

CONCLUSION SAT13/22: PROCEDURES APPLICABLE TO NON-RVSM CAPABLE AIRCRAFT IN THE SOUTH ATLANTIC DUE TO MASPS FAILURE

THAT, IN VIEW OF SITUATIONS WHERE AN AIRCRAFT MIGHT LOSE RVSM CAPABILITY, IN THE OCEANIC AIRSPACE, DUE TO EQUIPMENT FAILURE AFFECTING MASPS, SAT STATES INCLUDE IN THEIR RESPECTIVE LETTERS OF PROCEDURES THE PROVISION THAT A 2000 FT VERTICAL SEPARATION FROM OTHER AIRCRAFT SHALL BE APPLIED TO THAT FLIGHT AND THAT THE AIRCRAFT BE ALLOWED TO CONTINUE AS PER THE FILED FLIGHT PLAN UNTIL WITHIN RANGE OF ITS DESTINATION OR SUITABLE ALTERNATE BEFORE BEING REQUIRED TO CLEAR RVSM DESIGNATED AIRSPACE, TAKING INTO ACCOUNT RESTRICTIONS PUBLISHED FOR SPECIFIC AIRSPACE PORTIONS.

Status of RVSM implementation program in AFI Region

3.3.4 The AFI Regional Monitoring Agency (ARMA) presented the meeting with a status report on the RVSM implementation programme in the AFI Region. The meeting noted that the established AFI RVSM Task Force had hold 9 meetings so far to progress its work programme. Useful information was also provided on the status of implementation of ARMA.

3.3.5 The meeting was informed that the RVSM implementation target date was postponed to **28th September 2006** (tentatively), based on the interim CRA report. Likewise and in compliance with the AFI RVSM policy, RVSM shall be implemented throughout the AFI region, without transition areas.

3.3.6 The meeting was of the view that in order for ARMA to effectively perform its duties and responsibilities, AFI States should fully cooperate by timely providing ARMA with all information/data required. The following conclusion was formulated:

CONCLUSION SAT13/23: AFI STATES' COOPERATION WITH ARMA IN DATA COLLECTION

THAT AFI STATES BE REQUESTED TO FULLY COOPERATE IN PROVIDING AFI REGIONAL MONITORING AGENCY (ARMA) WITH TIMELY AND EXHAUSTIVE INFORMATION IN ORDER FOR THE RMA TO PERFORM ITS DUTIES AND RESPONSIBILITIES IN AN EFFICIENT AND EFFECTIVE MANNER.

Implementation of AMHS

3.3.7 The meeting was briefed on Argentina and Spain experience in the implementation of the ICAO ATS Message Handling System (AMHS), replacing AFTN/CIDIN links, which will significantly benefit from an underlying international IP network (*as discuss under Agenda Item 2, Para 2.4*). The concept of a SAT IP-based network was promoted in order to meet business demands and provide new opportunities for expansion of future ATM capabilities. By enabling scalable any-to-any connectivity through, inter-connection of ANSP national and regional infrastructures with a high speed, high quality backbone network it will support applications such as AMHS and offer valuable communication services for current and future ATM applications. The following conclusion was formulated:

CONCLUSION SAT13/24: IMPLEMENTATION OF AMHS

THAT:

a) SAT STATES AND ORGANIZATIONS TAKE ADVANTAGE OF THE EXPERIENCE GAINED BY ARGENTINA AND SPAIN IN THE DEPLOYMENT OF AMHS SYSTEMS IN THE SAT AREA; AND

b) ARGENTINA, CAPE VERDE AND SPAIN ARRANGE FOR THE INTERCONNECTION OF THEIR AHMS SYSTEMS, ON A TRIAL BASIS, AND PRESENT THE RESULTS TO THE NEXT SAT MEETING.

Agenda Item 4: Future work programme

Future work programme

4.1 The meeting adopted SAT Group future work programme as shown at **Appendices 4-A**, **4-B** and **4-C** to this part of the report. The following decision was formulated :

DECISION SAT13/25: FUTURE WORK PROGRAMME

THAT THE SAT GROUP WORK PROGRAMME BE AMENDED AS PER APPENDICES 4A, 4B AND 4C TO THIS REPORT.

APPENDIX 4-A
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	SAT/14
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.	Continue studies related to the implementation of the AORRA airspace.	Continuous

- Note: The ATM/WG should take appropriate action on pressing issues and submit its proposal to the SAT/14 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.*

APPENDIX 4-B
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.	SAT/14
2.	Explore ways and means to restructure the EUR/SAM Corridor airspace	SAT/14
3.	Develop a short term plan using the current separation standards based on RNP10, including the implementation of new ATS routes.	SAT/14
4.	Analyze the advantages of introducing unidirectional ATS routes.	SAT/14
5.	Study the feasibility of implementing RNP4, using ADS/CPDLC functionalities.	SAT/14
6.	Continue studies to implement a random routing area, using ADS/CPDLC functionalities.	SAT/14
7.	Develop necessary cost benefit analysis for the different options.	SAT/14
8.	Establish means to develop the safety assessment for the different implementation options.	SAT/14
9.	Develop an action plan for the different implementation options.	SAT/14

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.*

APPENDIX 4-C
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.	Carry out, as required, studies on the use of existing VSAT networks potentialities to cater for aeronautical telecommunication requirements in the SAT area. Such studies should include coordination issues, service channel interfaces, monitoring and control, system architecture, new services, user interfaces and bandwidth monitoring.	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/14
5.	Evaluate the feasibility of using existing or emerging digital VSAT networks (AFISNET, CAFSAT, REDDIG, SADC, etc.) to support ATS data link applications in an ATN environment.	SAT/14
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, harmonize the technical aspects of ADS/CPDLC programmes developed by SAT States/FIRs and, in this connection, address issues such as use of common standards, transmission protocols, data formats, procedures, methods of work, etc.	SAT/14

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.*

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Agenda Item 5: Any other business

Dates and venues for next meetings:

5.1 The meeting welcomed South Africa's offer to host the second meeting of SAT established FANS/1-A Interoperability Team (SAT/FIT/2) by end of 2006, subject to approval by the relevant authorities and further coordination with the Secretariat. The opportunity of a SAT/13 Task Force Meeting will also be analyzed in due course, depending upon the progress achieved in the implementation of SAT work programme.

Visit to SARSAT-COSPAS Mission Control Center (MCC)

5.2 A visit to SARSAT COSPAS MCC located at Maspalomas, was kindly organized by Spain for the benefit of all SAT/13 participants. During the briefing provided by the National Aero Space Institute (INSA) hosting and operating these facilities, emphasis was put on the need to update SARSAT-COSPAS points of contact addresses for search and rescue purposes. The meeting was of the view that it was a safety related issue and accordingly formulated the following conclusion :

SARSAT/COSPAS Points of Contact

CONCLUSION SAT13/26: SARSAT/COSPAS SPOCS

THAT THE ICAO REGIONAL OFFICE, DAKAR COORDINATE WITH SAT AFI STATES AND ORGANIZATIONS CONCERNED THE UPDATING OF SARSAT-COSPAS POINTS OF CONTACT ADDRESSES AND FORWARD THE UPDATED INFORMATION TO THE SARSAT-COSPAS MISSION CONTROL CENTER (MCC) LOCATED IN MASPALOMAS, SPAIN.
