INTERNATIONAL CIVIL AVIATION ORGANIZATION

WESTERN AND CENTRAL AFRICAN OFFICE

REPORT OF THE NINETEENTH MEETING ON THE IMPROVEMENT OF AIR TRAFFIC SERVICES OVER THE SOUTH ATLANTIC (SAT/19)

(Buenos Aires, Argentina, 6 to 8 August 2014)

TABLE OF CONTENTS

PART I - HISTORY OF THE MEETING

PART II – REPORT ON THE AGENDA ITEMS

Appendixes

PART I: HISTORY OF THE MEETING

1 Place and duration of the meeting

1.1 The Nineteenth Informal Coordination Meeting on the improvement of air traffic services over the South Atlantic (SAT/19) was held at the Conference Room of the Argent Tower Suite hotel, Buenos Aires, from 06 to 08 August 2014 back to back with the SATFIT9 held in parallel with the CNMC/4 meeting from 4 to 5 August 2014), at the kind invitation of the Argentina Aeronautical Administration (Administración Nacional de Aviación Civil ANAC).

2. Opening ceremony

2.1 The meeting was officially opened the 4th August 2014 by Mr. **Alejandro Granados**, Director General of ANC Argentina. Mr. Alejandro Granados, firstly welcomed the participants to the three meetings (CNMC/4, SATFIT9 and SAT19) being held back to back. Then, he emphasized the importance of the SAT Group meetings with regard to the tangible improvement of ATS safety, capacity, efficiency and the contribution to the preservation of the environment over the South Atlantic (SAT). He reminded the participants with several achievements of the SAT Group which were recorded by the aviation community as success stories. He recalled also how Argentina is actively involved in the activities of the SAT Group and reaffirmed the strong commitment of his State to conduct his part of the work carried out by the SAT Group. Finally he wished fruitful deliberations and a nice stay in Buenos Aires to the participants.

3. Organization, Secretariat and attendance

3.1 Mr. **Ignacio Oliva Whitely** from ANAC, Argentina was unanimously elected as Chairperson of the SAT meeting. He therefore chaired and moderated its plenary sessions.

3.2 Mr. **François-Xavier Salambanga,** Regional Officer CNS, ICAO WACAF Office was the Secretary of the meeting with the support of Mr. **Onofrio Smarelli** and Mr**. Julio de Souza Pereira** respectively Regional Officers CNS and ATM/SAR, ICAO SAM Office.

3.3 The meeting was attended by seventy three participants from twelve (12) ICAO contracting States from the ICAO AFI, CAR, EUR, NAT and SAM regions namely, Angola, Argentina, Brazil, Cape Verde, Cote d'Ivoire, Ghana, Portugal, Senegal, South Africa, Spain, Trinidad & Tobago, Uruguay, four (4) International Organizations (ASECNA, ARINC, IATA, SITA) and a delegation of observers conducted by Nav Canada.

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

4. Working languages

4.1 The meeting was conducted in the English language and the documentation was presented in this language. The Argentina Aeronautical Administration (ANAC) provides simultaneous translation (English and Spanish) for the ATM Working Group and the plenary sessions meetings.

5. Agenda of the meeting

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

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

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

1. Follow up of SAT/18 Conclusions pertaining to the ATM field
2. SATMA report on Traffic Statistics, Safety procedures and operational procedures in the EUR/SAM corridor.
3. Follow up on operations in the AORRA airspace.
4. ATS Contingency planning
5. Any other ATM business

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

1. Follow up of SAT/18 Conclusions pertaining to the CNS field
2. Review of the conclusions/decisions of CNMC/4 meeting
3. Improvement CNS system in the SAT Region (AMHS,AIDC, ADS-B)
4. Any other CNS business

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

1. Harmonization of ADS/CPDLC programmes
2. Review of the Report of the ninth SAT FANS 1/A Interoperability Team (SAT/FIT/9)
3. Review of the report of the fourth meeting of the CAFSAT Network management committee (CNMC/4)
4. Performance Based Navigation (PBN) in the South Atlantic
5. RNP4 in the EURSAM corridor

Agenda Item 5: *Adoption of the conclusions/decisions of the SAT/19 meeting* (*Plenary session)*

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

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

5. Conclusions and Decisions of the meeting

The meeting adopted the following conclusions and decisions:

Agenda Item 2: Air traffic management (ATM)

Conclusion SAT19/01: Additional Waypoints to increase flexibility between West Africa and North America

That:

French Guyana, Senegal and Trinidad Tobago implement the proposed new waypoints from IATA (Appendix C, part I SAT 18 Meeting), on the effective AIRAC date of 05 February 2015.

Conclusion SAT19/02: Contingency Planning

That:

SAT States:

a) Review the Contingency Plan, presented in SAT17 by South Africa, and send comments to Martinc@atns.co.za by 30th November 2014;
b) Notify if there is no comments to be provided.

Conclusion SAT19/03: Ascension Island FHAW/ASI and its criticality to airline operations

That:

SAM and WACAF Offices coordinate the analysis of the feasibility of using FHAW/ASI to ETOPS operations, including, among others aspects:

a) Publication of the 30 hours TAFs for FHAW/ASI.
b) Determine how operationally important data concerning FHAW/ASI can be provided to all stakeholders to ensure safe operations.

Conclusion SAT19/04: EUR/SAM Corridor Traffic Data Collection

That:

a) Taking into account the necessary traffic data for airspace planning, safety assessment and statistics in the EUR/SAM Corridor, Brazil, Cape Verde, Spain and Senegal will collect the Air Traffic Movement data in a period of six months (Jan-Jun), in accordance with form provided in SATMA website.
b) This data shall be sent to SATMA (aariasf@aena.es and satma@aena.es) up to 30th September each year.
c) SATMA will use the mentioned Air Traffic Movement data to perform the corresponding Safety Assessment, to be presented in the following year to the SAT Meetings.

Conclusion SAT19/05: LHD

That:

a) EUR/SAM Corridor States shall continue to send LHD reports to SATMA on a monthly basis, from 1st to 15th of each month to the following emails: aariasf@aena.es and satma@aena.es.
b) SATMA shall provide a feedback about the data sent by EUR/SAM States to the nominated focal points until the last working day of the corresponding month.
c) EUR/SAM Corridor States, taking into consideration the significant decrease in the number of LHD reports sent to SATMA since SAT/16 meeting, shall make an investigation about a possible deficiency on ACC's LHD Reporting.

Conclusion SAT19/06: Implementation of new waypoints onto Dakar and SAL ACCs' border and its mixture with the use of geographical coordinates

That:

a) IATA encourage the airlines to use the additional entry/exit waypoints to facilitate crossing Dakar and Sal FIRs border for aircraft operating random routing, on west of UN741, implemented on February the 5th, 2014.

b) Cape Verde and Senegal develop and publish procedures on using the mentioned additional entry/exit waypoints in random routing area on west of UN741, taking into consideration the following:

    1. Mandate the use of published entry/exit waypoints for non-equipped ADS-C/CPDLC aircraft

    2. Allow the use of any entry/exit waypoints, based on geographical coordinates, for equipped ADS-C/CPDLC aircraft.

c) Brazil, French Guyana and Senegal analyze the feasibility of solving the issue regarding the operations passing through a common waypoint border of Dakar, Atlantico and Cayenne FIRs (MOVGA - 07°40'N 037°30W).

d) Cape Verde, Portugal, Senegal and Trinidad Tobago analyze the feasibility of solving the issue regarding the operations passing through a common waypoint border of Dakar, Piarco, Sal and Santa Maria FIRs (TUTLO -17°40'N 035°00'W)

Conclusion SAT19/07: Amendment no. 6 to the Procedures for Air Navigation Services Air Traffic Management (Doc 4444)

That:

a) SAT states analyze and apply, as far as possible, the Amendment no. 6 to the Procedures for Air Navigation Services Air Traffic Management (Doc 4444), in order to:
    1. Amend the National regulations, Aeronautical Information Publications, ATS Units Procedures, Air Crew Procedures and ANS Safety Oversight Protocols.
    2. Train the Air Crew, Air Traffic Controller and Aeronautical Information Operators.
    3. Evaluate and change, if necessary, the ATC Systems.

b) ICAO SAM and WACAF Offices:

1. Coordinate the presentation of detailed information regarding the application of the Amendment no. 6 to the Procedures for Air Navigation Services Air Traffic Management (Doc 4444) to the SAT/20 Meeting.

2. Analyze the feasibility of holding a specific training on the application of the more complex portions of the Amendment no. 6 to the Procedures for Air Navigation Services Air Traffic Management (Doc 4444) and present the results to the next SAT 20 Meeting.

Conclusion SAT19/08: AF 447 Accident Final Report

That:

Taking into consideration the Safety Recommendations from AF 447 Accident Final Report:

a) SAM and WACAF Offices coordinate the development of a Doc 7030 (Regional Supplementary Procedures) amendment proposal in order to mandate the use of ADS-C/CPDLC in the South Atlantic for Aircraft already equipped with FANS 1/A systems.

b) Brazil and Senegal take the appropriate action in order to sign the letter of agreement between DAKAR/SENEGAL RCC AND ATLÂNTICO/BRAZIL RCC.

c) Brazil and South Africa finalize and sign the draft letter of agreement between JOHANNESBURG/SOUTH AFRICA RCC AND ATLÂNTICO/BRAZIL RCC, proposed by Brazil;

d) Brazil and French Guyana finalize and sign the draft letter of agreement between CAYENNE/FRENCH GUIANA RCC AND ATLÂNTICO/BRAZIL RCC, proposed by Brazil;

e) Brazil and Angola finalize and sign the draft letter of agreement between LUANDA/ANGOLA RCC AND ATLÂNTICO/BRAZIL RCC, proposed by Brazil;

Conclusion SAT19/09: Memorandum of Understanding on Cooperation in Search and Rescue in the EUR/SAM Corridor

That:

a) EUR/SAM Corridor States provide comments about Memorandum of Understanding on Cooperation in Search and Rescue in the EUR/SAM Corridor to Senegal and to SAM and WACAF Offices, by October 2014.

b)

c) Senegal send the Memorandum of Understanding on Cooperation in Search and Rescue in the EUR/SAM Corridor to the EUR/SAM Corridor to the corresponding States, through the appropriate mechanisms, taking into consideration the comments received, in order to be formalized.

Conclusion SAT19/10: Large Height Deviation and unknown traffic in the South Atlantic

That:

- The SAT Group expresses its concern about the unknown traffic and the increasing number of Large Height Deviation in the South Atlantic airspace, due to the lack of coordination and information of the flights coming from and going to Falkland Islands (Malvinas)*.

- The SAT Group recalls the need that all ATS Units involved in the South Atlantic airspace provide information to their respective ACCs in accordance with the international arrangements in force (among them, the Letters of Operational Agreements) and with the applicable ICAO rules and procedures, in order to enhance the coordination among the FIRs involved."

** A dispute exists between the government of Argentina and the government of Great Britain and Northern Ireland concerning the sovereignty of the Falkland Islands (Malvinas).*

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

Conclusion 19/11: Implementation of the ATS/DS Circuit between Luanda and Atlántico ACCs

That;

Angola (ENANA) expedite the completion of the ongoing installation of the CAFSAT VSAT project and establish the ATS/DS voice coordination circuit between Luanda and Atlántico ACCs no later than 31 December 2014.

Conclusion 19/12: Implementation of ATS voice switching and signaling systems

That;

SAT States/Organizations:

a) Update in the attached Table 1 (**Appendix G** refers) the information on their VCCSs' capability to support ATS voice switching and signaling protocols (N-5 and VoIP) no later than 15 September 2014;
b) Conduct studies and bilateral trials in order to ensure an efficient and cost effective implementation of ATS voice switching and signaling systems;
c) Report quaternary to Argentina Team Leader of Task 8 of the work programme of the SAT CNS/WG

Conclusion 19/13: Mitigation of the loss of Flight Plans

That;

As a matter of urgency, SAT members who have not done so (Table 2 **Appendix H** refers):

a) Establish no later than 31 October 2014, local Missing Flight Plan Investigation Working Groups involving all stakeholders: ATCs, AIM, COM, Maintenance personnel…, as called upon by SAT/18 (Decision 18/03) and nominate Focal Points responsible of the coordination of the Group activities;
b) Implement the procedure for the investigation on missing Flight Plans adopted by SAT/18 (Decision 18/02) (Appendix I refers) and;

c) Report quaternary to ASECNA, Team leader of Task 3(**Appendix I** refers) of the Work Programme of the SAT CNS/WG on the results of the mitigation action taken to minimize the loss of Flight Plans.

Decision 19/14: Adoption of the Conclusions and Decisions of CNMC4th meeting

That;

The Conclusions and Decisions of the 4th Meeting of the CAFSAT Network Management committee (CNMC/4) are adopted as attached in **Appendix J**.

Conclusion 19/15: Implementation of AMHS in the SAT ACCs

That;

Considering the level of implementation of AMHS as attached in Table 3, (**Appendix K**) SAT ACCs establish Memoranda of Understanding to conduct trials and implement AMHS in line with the regional AFI/CAR/EUR/SAM/NAT Air Navigation Plans and report to SAT 20 meeting.

Conclusion 19/16: Implementation of AIDC in the SAT ACCs

That;

Taking into consideration the capability of ATM automated systems for AIDC functionality attached in Table 4, (**Appendix L** refers) SAT ACCs carry out studies on ATS automated coordination requirements and on potential expected benefit in order to conduct trials and implement when justified, AIDC operation.

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

Conclusion SAT19/17: New Airspace Concept in the EUR/SAM Corridor

That:

An EUR/SAM corridor Airspace Concept Task Force is established with representatives of Brazil, Cape Verde, Senegal, Spain, IATA, WACAF ICAO Office and SAM ICAO Office, in order to:

a) Analyze the Roadmap for EUR/SAM Corridor proposed by Spain, attached as **Appendix M** to this report;
b) Develop an Airspace Concept to EUR/SAM Corridor, based on application of RNP 4, ADS-C and CPDLC;

c) Analyze the feasibility of proposing a DOC 7030 Amendment to mandate the use of RNP 4, ADS-C and/or CPDLC.

d) Work through Electronic Correspondence and Teleconferences.

e) Present the results to the SAT 20 meeting.

Agenda Item 6: Future work programme

Decision 19/18: Terms of reference and work programme of the SAT ATM &CNS/WGs

That;

The Terms of Reference and Work Programme of the SAT ATM/WG, IAS/SG & CNS/WG are adopted as attached at **Appendix N.**

Part II: REPORT ON THE AGENDA ITEMS

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

1.1 Mr. **Ignacio Oliva Whitely** from the ANAC, Argentina was unanimously elected as Chairperson of the SAT meeting. He therefore chaired and moderated its plenary sessions.

Agenda
Item 2: Air traffic management (ATM)

2.1 Follow up of SAT/18 Conclusions pertaining to the ATM field

2.1.1 Under this agenda item the Meeting reviewed the conclusions and decisions of the SAT/18 meeting pertaining to ATM field as attached at **Appendix B1**. The meeting was informed by IATA that the waypoints expected to be implemented on the AIRAC date of November 14, 2013 were not implemented. Taking into consideration the importance of the mentioned waypoints to offer a higher flexibility on flight planning and operations in the involved region, the meeting formulated the following conclusion:

Conclusion SAT19/01: Additional Waypoints to increase flexibility between West Africa and North America

That:

French Guyana, Senegal and Trinidad Tobago implement the proposed new waypoints from IATA (Appendix C, part I SAT 18 Meeting), on the effective AIRAC date of 05 February 2015.

2.1.2 The meeting concluded that there was no progress on Contingency Planning development for the SAT Area due to the absence of Mr. Johnny Smith, expert in charge of receiving and consolidates comments from states regarding the mentioned plan. In this sense, the meeting elected a new responsible for this task and formulated the following conclusion:

Conclusion SAT19/02: Contingency Planning

That:

SAT States:

a) Review the Contingency Plan, presented in SAT17 by South Africa, and send comments to Martinc@atns.co.za by 30th November 2014; and

b) Notify if there is no comments to be provided.

2.1.3 The meeting discussed the use of Ascension Island FHAW/ASI and its criticality to airline operations. This matter was analyzed during the SAT 18 meeting, in order to provide the airdrome with suitable meteorological and aeronautical information to allow the use of the mentioned airport for ETOPS operations. Besides, the meeting was of the opinion that probably the use of an airport to ETOPS

operations must be preceded by its inclusion in the Air Navigation Plan. Taking all the discussion into consideration, the meeting formulated the following conclusion:

Conclusion SAT19/03: Ascension Island FHAW/ASI and its criticality to airline operations

That:

SAM and WACAF Offices coordinate the analysis of the feasibility of using FHAW/ASI to ETOPS operations, including, among others aspects:

a) Publication of the 30 hours TAFs for FHAW/ASI.

b) Determine how operationally important data concerning FHAW/ASI can be provided to all stakeholders to ensure safe operations.

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

Traffic Statistics in the EUR/SAM corridor

2.2.1 The meeting was presented with global and detailed information about the air traffic statistics of the EUR-SAM Corridor during year 2013 as well as the evolution of these figures since 2004. During previous two years of 2013, the global figures of the EUR-SAM Corridor showed a relevant an important increase related to the global crisis started on 2009: 11% and 10% respectively to 2011 and 2012. However, the upward trend has not been consolidated during 2013 where has been registered a huge decrease of 7% annual average. This figure shows that globally the Corridor is at similar level than during 2009 or 2010 with the same average traffic per day. In this line, the preliminary figures registered at the beginning of 2014 consolidate and emphasizes the drop trend of 2013.

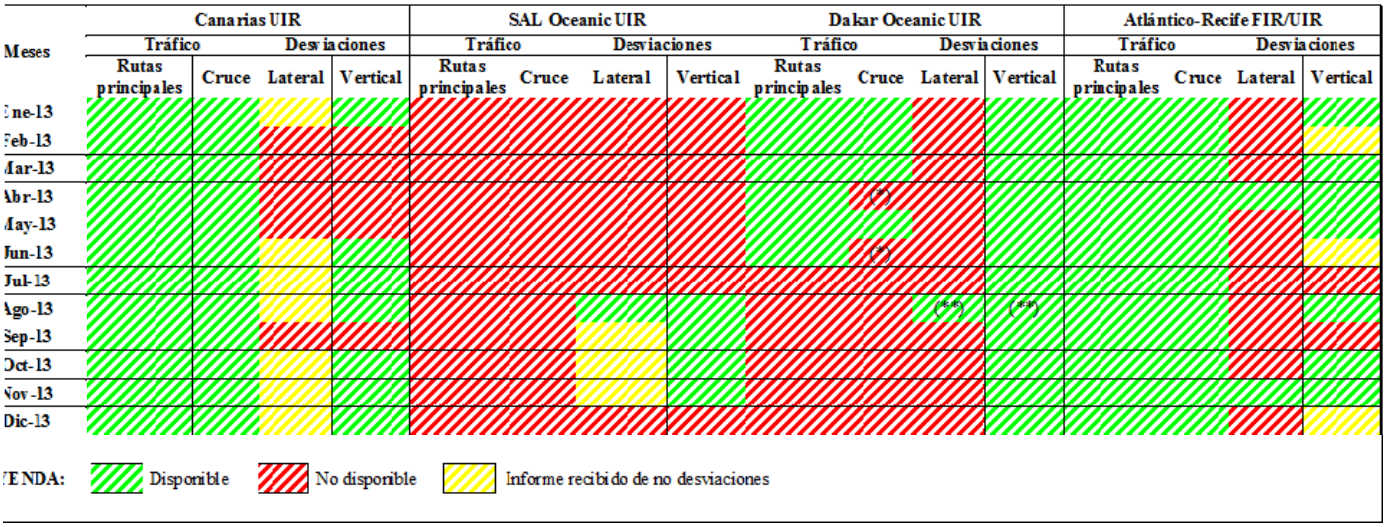
2.2.2 The use of the ATS routes remains with the same trend detected after the implementation of the two unidirectional routes. In this way, the use of both UN741 (16%) and the use of UN866 (22%) are gradually decreasing. In fact, UN866 has showed a clear increase in the beginning of the implementation of the unidirectional two route system, rising from 14% in 2006 to 22% in 2013. Nevertheless, during 2013 showed the lowest figure since 2006. UN873, managing the 47% of the total traffic of the Corridor is the most demanded route. This bidirectional route needs special attention to its evolution. The use of the other bidirectional route, UN857 (13%) has decreased respected 2011, being its average of use still moderated. The use of the RANDOM route, 1%, shows a steady decrease.

2.2.3 A complete analysis regarding Traffic Statistics in the EUR/SAM/Corridor**,** developed by SATMA, is attached as **Appendix C** to this Report.

EUR/SAM Corridor Traffic Risk Assessment

2.2.4 It was recalled that SATMA has been performing the required periodical Risk Assessment for the region since RVSM/RNP10 was implemented in the EUR/SAM corridor in January 2002 and that the CRM model approved by ICAO to perform Safety Assessment in RVSM areas is strongly based on Traffic Data and on LHD deviations. So, it is important that this basic Data Set, regarding Deviations and Traffic, is reported properly and on time as a requirement to perform the Risk Assessment.

2.2.5 In this regard SATMA reported once more that it was not receiving the required monthly data from some of the concerned ACCs. Moreover, SATMA informed that emails were sent regularly to remind States in order to allow the establishment of a coherent schedule for the development of the Safety Assessment Report. According to SATMA, this schedule could be achieved to deliver the Safety Assessment Report to SAT 19, and the analysis for this period had to be aborted. The following table shows a summary of 2013 Data received by SATMA about May 2014.



2.2.6 In despite of not presenting the Safety Assessment to the meeting due to aforementioned reasons, SATMA has been reported monthly by States regarding LHD all along 2013, so deviations has been classified and analyzed by LHD monitoring team. The analysis performed by SATMA is attached at **Appendix D** to this report.

2.2.7 Taking into consideration the mentioned difficulties in developing the Safety Assessment, SATMA made contact with State´s Focal points to propose a new period (Jun-July 2014) for data collection. After an urgent solitude, 2014 1st semester data has been delivered on time, so SATMA is in disposal to develop the 2014 CRM model, under ICAO recommendations, to be presented to SAT 20.

2.2.8 Taking into account the extensive discussions on EUR/SAM Corridor Traffic Risk Assessment, the meeting formulated the following conclusions:

Conclusion SAT19/04: EUR/SAM Corridor Traffic Data Collection

That:

a) Taking into account the necessary traffic data for airspace planning, safety assessment and statistics in the EUR/SAM Corridor, Brazil, Cape Verde, Spain and Senegal will collect the Air Traffic Movement data in a period of six months (Jan-Jun), in accordance with form provided in SATMA website.

b) This data shall be sent to SATMA (aariasf@aena.es and satma@aena.es) up to 30th September each year.

c) SATMA will use the mentioned Air Traffic Movement data to perform the corresponding Safety Assessment, to be presented in the following year to the SAT Meetings.

Conclusion SAT19/05: LHD

That:

a) EUR/SAM Corridor States shall continue to send LHD reports to SATMA on a monthly basis, from 1st to 15th of each month to the following emails: aariasf@aena.es and satma@aena.es.

b) SATMA shall provide a feedback about the data sent by EUR/SAM States to the nominated focal points until the last working day of the corresponding month.

c) EUR/SAM Corridor States, taking into consideration the significant decrease in the number of LHD reports sent to SATMA since SAT/16 meeting, shall make an investigation about a possible deficiency on ACC's LHD Reporting.

2.3 Follow up on operations in the AORRA airspace

2.3.1 There was no working paper presented under this agenda item.

2.4 ATS Contingency planning

2.4.1 This item was discussed under agenda item 2.1 (Follow up of SAT/18 Conclusions pertaining to the ATM field), taking into consideration the conclusion Conclusion SAT18/04: Contingency Planning.

2.5 Any other ATM business

New waypoints onto Dakar and SAL ACCs' border

2.5.1 The meeting was informed about the implementation of additional entry/exit waypoints to facilitate crossing Dakar Sal ACCs border for aircraft operating random in February the 5th, 2014. Airlines are thus given the opportunities to realize large benefits from the tracks designed to maximize wind affect by seeking tailwinds and avoiding headwinds. These additional published entry/ exit waypoints allow flexible routing and constitute an enabler for the ATC to have a better monitoring of the traffic. However, statistics data indicated that **88%** of the traffic flying random routing in this airspace is still flying via some geographical coordinates which are too close to those new published waypoint.

2.5.2 Besides, some waypoints positions belonging to more than two ACCs cause some problems of coordination between ACCs responsible for adjacent FIR. That's the case with **MOVGA** (07°40'N 037°30W) bordered to Dakar, Atlántico and Cayenne, as well as **TUTLO** (17°40'N 035°00'W) shared by four ACCs: Dakar, Sal, Piarco, and Santa Maria.

2.5.3 In this sense, the meeting formulated the following conclusion:

Conclusion SAT19/06: Implementation of new waypoints onto Dakar and SAL ACCs' border and its mixture with the use of geographical coordinates

That:

a) IATA encourage the airlines to use the additional entry/exit waypoints to facilitate crossing Dakar and Sal FIRs border for aircraft operating random routing, on west of UN741, implemented on February the 5th, 2014.

b) Cape Verde and Senegal develop and publish procedures on using the mentioned additional entry/exit waypoints in random routing area on west of UN741, taking into consideration the following:

1. Mandate the use of published entry/exit waypoints for non-equipped ADS-C/CPDLC aircraft.
2. Allow the use of any entry/exit waypoints, based on geographical coordinates, for equipped ADS-C/CPDLC aircraft.

c) Brazil, French Guyana and Senegal analyze the feasibility of solving the issue regarding the operations passing through a common waypoint border of Dakar, Atlántico and Cayenne FIRs (MOVGA - 07°40'N 037°30W).

d) Cape Verde, Portugal, Senegal and Trinidad Tobago analyze the feasibility of solving the issue regarding the operations passing through a common waypoint border of Dakar, Piarco, Sal and Santa Maria FIRs (TUTLO -17°40'N 035°00'W)

Amendment 6 to the fifteenth edition of the Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444)

2.5.4 The meeting was informed that the Air Navigation Commission, acting under delegated authority, on 29 April 2014, approved Amendment 6 to the fifteenth edition of the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444), for applicability on 13 November 2014. The amendments were approved on 20 June 2014, by the President of the Council on behalf of the Council in accordance with established procedure. A copy of the amendments is available as attachments to the electronic version of State letter AN 13/2.1-14/48 on the ICAO-NET (http://portal.icao.int) where all other relevant documentation can be accessed. The Amendment 6 to the PANS-ATM - Doc 4444 is attached as **Appendix E**.

2.5.5 The meeting took note that Amendment 6 stems from proposals arising from the Separation and Airspace Safety Panel (SASP), the Operational Data Link Panel (OPLINKP), the International Volcanic Ash Task Force (IVATF) and the Aerodromes Panel (AP). The main parts of the of the approved Amendment 6 to the fifteenth edition of the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) that may have an impact in the South Atlantic Operations are the following:

a) Data Link Communications Initiation Procedures (item 4.15.4).
b) Lateral Separation with use of Fly-Over waypoint (item 5.4.1.1.4).
c) Lateral Separation with use of GNSS (5.4.1.2.1.2).
d) Lateral separation of aircraft on parallel or non-intersecting tracks or ATS routes with RNAV 10 (RNP 10), RNP 4, RNP 2 applications or use of GNSS (5.4.1.2.1.6).
e) Lateral separation of aircraft on intersecting tracks or ATS routes with RNAV 10 (RNP 10), RNP 4, RNP 2 applications (5.4.1.2.1.7).
f) Longitudinal Separation Minima Based on Distance Using ADS-B In-Trail Procedure (ITP) (5.4.2.7).
g) ATC Phraseologies for GNSS Service Status and Separation Instructions (12.3.1.14 and 12.3.2.8).
h) ADS-C Contracts in airspace where procedural separation is being applied (13.4.3.4.3.2).
i) Use of CPDLC pre-formatted free text messages (14.3.4)
j) Strategic Lateral Offset Procedures (SLOP) (16.5)

k) Use of letter G in item 10 of the FPL (appendix 2 of Doc 4444)
l) Use of letter G in item 10 of ATS Messages (appendix 3 of Doc 4444)
m) ITP CPDLC Message Set (appendix 5 of Doc 4444)

2.5.6 Due to the magnitude of the Amendment 6 to the fifteenth edition of the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444), the meeting was of the opinion that the following actions must be taken by regulators, ANSP and Aircraft Operators in order to take advantage of the new procedures made available in the mentioned amendment.

a) Amend the national regulations, Aeronautical Information Publications, ATS Units Procedures, Air Crew Procedures and ANS Safety Oversight Protocols.
b) Train the Air Crew, Air Traffic Controller and Aeronautical Information Operators.
c) Evaluate and change, if necessary, the ATC Systems.

2.5.7 Taking into consideration the complexity of the mentioned amendment to Doc 4444, the meeting asked to the secretariat to present more detailed information regarding its application to the next SAT meeting, as well as consider the feasibility of providing specific training to the States regarding this matter. In this sense, the meeting formulated the following conclusion:

Conclusion SAT19/07: Amendment no. 6 to the Procedures for Air Navigation Services Air Traffic Management (Doc 4444)

That:

a) SAT States analyze and apply, as far as possible, the Amendment no. 6 to the Procedures for Air Navigation Services Air Traffic Management (Doc 4444), in order to:

1. Amend the National regulations, Aeronautical Information Publications, ATS Units Procedures, Air Crew Procedures and ANS Safety Oversight Protocols.
2. Train the Air Crew, Air Traffic Controller and Aeronautical Information Operators.
3. Evaluate and change, if necessary, the ATC Systems.

b) ICAO SAM and WACAF Offices:

1. Coordinate the presentation of detailed information regarding the application of the Amendment no. 6 to the Procedures for Air Navigation Services Air Traffic Management (Doc 4444) to the SAT/20 Meeting.
2. Analyze the feasibility of holding a specific training on the application of the more complex portions of the Amendment no. 6 to the Procedures for Air Navigation Services Air Traffic Management (Doc 4444) and present the results to the next SAT 20 Meeting.

Final Report of the AF 447 (F-GZCP) accident

2.5.8 The meeting was informed about the Final Report of the AF 447 (F-GZCP) accident, occurred on June 01, 2009, published by Bureau d'Enquêtes et d'Analyses (**BEA**-France) on July 2012. The BEA AF 447 Accident Final Report has addressed 41 Safety Recommendations to the DGAC, EASA, the FAA, ICAO and to the Brazilian and Senegalese authorities related to flight recorders, certification, training and recurrent training of pilots, relief of the Captain, SAR and ATC, flight simulators, cockpit ergonomics, operational feedback and oversight of operators by the national oversight authority. Some of these Safety Recommendations involve ICAO, as well as Brazilian and Senegalese authorities, and have an impact on the SAT flight operations.

2.5.9 The meeting took note about the following Safety Recommendations on Final Report of the AF 447 Accident that involve Air Navigation Services in South Atlantic and could be used as guidance for the work to be done by SAT States:

a) BEA Final Report Item 4.3.1 SAR coordination plans over maritime and remote areas

"Those responsible for Brazilian SAR stated that they did not know what means were available in the neighboring SAR areas and had not tried to obtain information on the subject. Contrary to ICAO standards and recommended practices, there is no SAR coordination plan between Brazil and Senegal. This lack of a plan caused a considerable delay in the start of SAR operations".

Consequently, the BEA recommends that:

"ICAO ensures the implementation of SAR coordination plans or regional protocols covering all of the maritime or remote areas for which international coordination would be required in the application of SAR procedures, including in the South Atlantic area". [Recommendation FRAN-2012-032]

b) BEA Final Report Item 4.3.4 Air Traffic Control

"The investigation showed that the use of HF as a means of communication between ground and airplane is limited. Link outages were frequent in this area, especially on the day of the accident. A simulation of the use of ADS-C and CPDLC functions showed that the loss of altitude would have generated an alert on the DAKAR controller's screen. There are numerous areas in the world where HF remains the only means of communication between ground and airplane, though more reliable means are available today".

Consequently, the BEA recommends that:

"The Brazilian and Senegalese authorities make mandatory the utilization, by airplanes so equipped, of ADS-C and CPDLC functions in the zones in question"; [Recommendation FRAN‑2012‑037]

"ICAO requests the involved States to accelerate the operational implementation of air traffic control and communication systems that allow a permanent and reliable link to be made between ground and airplane in all of the areas where HF remains the only means of communication between the ground and airplanes". [Recommendation FRAN‑2012‑038]

2.5.10 Regarding the Safety Recommendation item 4.3.1 of the BEA final Report, the meeting was informed that Brazil has developed the SAR Letter of Agreement Proposals mentioned bellow. These SAR Letters of agreement were forward by Lima ICAO Office to French Guyana, Dakar ICAO Office and Nairobi ICAO Office.

a) DAKAR/SENEGAL RCC AND ATLÂNTICO/BRAZIL RCC
b) CAYENNE/FRENCH GUIANA RCC AND ATLÂNTICO/BRAZIL RCC
c) JOHANNESBURG/SOUTH AFRICA RCC AND ATLÂNTICO/BRAZIL RCC
d) LUANDA/ANGOLA RCC AND ATLÂNTICO/BRAZIL RCC

2.5.11 Taking into consideration the high priority that must be given to this safety recommendation, States involved were highly encouraged to analyse, make the appropriated changes proposals, if necessary, and sign the Brazilian proposals of SAR letters of agreement. Brazil and Senegal agreed in the

content of the letter of agreement between DAKAR/SENEGAL RCC AND ATLÂNTICO/BRAZIL RCC. Both States have established the means to sign the final version of the letter of agreement. It was also recommended that States not directly involved on AF 447 accident use these letters of agreement as a model, if suitable, in order to develop and sign similar letters of agreement.

2.5.12 Regarding the BEA Final Report Item 4.3.4 Air Traffic Control, the Meeting was of the opinion that the ADS-C/CPDLC implementation analysis in SAT meetings normally is related to the Flight Operations Efficiency. However, the Safety recommendation made by BEA links the ADS-C/CPDLC use to the Flight Operations Safety. The mandatory utilization of ADS-C/CPDLC by airplanes so equipped should not be made by Brazilian and Senegalese Authorities as indicated in the Safety Recommendation issued by BEA, taking into considerations that the airspace involved is over high seas. The most suitable mechanism to establish the mentioned mandatory utilization of ADS-C/CPDLC is an amendment to the Doc. 7030 – Regional Supplementary Procedures. Taking into consideration also that this procedure should be suitable for another portions of the South Atlantic, all SAT states analysed the application of this procedure and the convenience of developing a Doc. 7030 amendment proposal.

2.5.13 The Meeting recalled that after the Malaysia 370 Accident, there is a significant trend to the massive use of Data Link Communications related to the Flight Operations Safety. The studies being conduct by ICAO regarding Flight Tracking could be verified in the Conclusions and Recommendations of the Special Meeting on Global Flight Tracking, held in Montréal, 12-13 May 2014, in the following web link:

http://www.icao.int/Meetings/GTM/Documents/Final%20Global%20Tracking%20Meeting%20Conclusions%20and%20%20Recommendations.pdf

2.5.14 After an intense discussion regarding the AF 447 Accident Final Report, the meeting was of the opinion that a Doc 7030 amendment proposal shall be prepared and circulated to States and International Organizations, in order to mandate the use of ADS-C/CPDLC for FANS 1/A equipped aircraft. In this sense, the meeting formulated the following conclusion:

Conclusion SAT19/08: AF 447 Accident Final Report

That:

Taking into consideration the Safety Recommendations from AF 447 Accident Final Report:

a) SAM and WACAF Offices coordinate the development of a Doc 7030 (Regional Supplementary Procedures) amendment proposal in order to mandate the use of ADS-C/CPDLC in the South Atlantic for Aircraft already equipped with FANS 1/A systems.
b) Brazil and Senegal take the appropriate action in order to sign the letter of agreement between DAKAR/SENEGAL RCC AND ATLÂNTICO/BRAZIL RCC.
c) Brazil and South Africa finalize and sign the draft letter of agreement between JOHANNESBURG/SOUTH AFRICA RCC and ATLÂNTICO/BRAZIL RCC, proposed by Brazil;
d) Brazil and French Guyana finalize and sign the draft letter of agreement between CAYENNE/FRENCH GUIANA RCC AND ATLÂNTICO/BRAZIL RCC, proposed by Brazil;
e) Brazil and Angola finalize and sign the draft letter of agreement between LUANDA/ANGOLA RCC AND ATLÂNTICO/BRAZIL RCC, proposed by Brazil;

Memorandum of understanding on cooperation in Search and Rescue in the EUR/SAM corridor

2.5.15 Delegation of Senegal presented a proposal for MOU on cooperative assistance in Search and Rescue to be analysed by EUR/SAM corridor States, taking into consideration ICAO Standards and Recommended Practices on mutual SAR services among contracting states.

2.5.16 The mentioned proposal was based on the need of cooperation and coordination between these contracting States in order to achieve the following goals:

a) the set-up of a mutual assistance in SAR
b) the pooling of resources in case of a major disaster in the corridor
c) a mutual assistance between rescue centers
d) facilitating entry operations in different search areas
e) a precise knowledge and characteristics of everyone's available resources and their possibilities of use
f) strengthening communication and support between coordination centers
g) conducting joint training exercises and regular exchange of officers (experts, coordinators, operators)
h) regular meetings to address and solve any issue concerning cooperation practice, operators training, exchange of expertise, harmonization of procedures etc.

2.5.17 After the discussion regarding the Senegal Delegation´s Proposal, the meeting decided to formulate the following conclusion:

Conclusion SAT19/09: Memorandum of Understanding on Cooperation in Search and Rescue in the EUR/SAM Corridor

That:

a) EUR/SAM Corridor States provide comments about Memorandum of Understanding on Cooperation in Search and Rescue in the EUR/SAM Corridor to Senegal and to SAM and WACAF Offices, by October 2014.

b) Senegal send the Memorandum of Understanding on Cooperation in Search and Rescue in the EUR/SAM Corridor to the EUR/SAM Corridor to the corresponding States, through the appropriate mechanisms, taking into consideration the comments received, in order to be formalized.

Large Height Deviation and unknown traffic in the South Atlantic

2.5.18 The meeting recalled that a reliable provision of air traffic service by the ATS units involved contributes to the safety of operations in any airspace, mainly in oceanic ones, like the South Atlantic airspace. One of the most important issues to be taken into consideration is that ATS units must have all the available information provided by a suitable ATS service, in accordance with the applicable rules and procedures.

2.5.19 The meeting recalled also that the Caribbean and South American Regional Planning and Implementation Group (GREPECAS) has delegated to the Caribbean and South American Monitoring Agency (CARSAMMA) the safety monitoring function in support of the implementation and use of RVSM airspace in the Caribbean and South American Regions. One of the main responsibilities of the CARSAMMA is to verify the risk associated to the RVSM operations and recommend the best practices to guarantee a suitable coordination between ATS Facilities. CARSAMMA has observed a significant increase number of Large Height Deviation in South Atlantic, resulting in a higher risk associated with

operations in South Atlantic RVSM Airspace.

2.5.20 The meeting observed that Basically the Large Height Deviation in the affected region is caused by the lack of coordination between the Monte Agradable ATS Unit and the Comodoro Rivadavia ACC, via AFTN (FPL, DEP, etc) or voice communication. Thus, some aircraft take off from the Falkland Islands (Malvinas)* without prior coordination with the responsible ACC by the

** Text in accordance to the ICAO Regional Office Manual (ROM)*
** A dispute exists between the government of Argentina and the government of Great Britain and Northern Ireland concerning the sovereignty of the Falkland Islands (Malvinas).*

FIR, in the case, Comodoro Rivadavia. Furthermore, Argentina informed that Monte Agradable ATS Unit does not contact the Comodoro Rivadavia ACC to transfer the responsibility on the aircrafts when they are leaving the CTR Monte Agradable.

2.5.21 In some cases aircraft establish contact with the Comodoro Rivadavia ACC and/or Ezeiza ACC and this ACC makes the coordination with the Montevideo ACC and so on with the Atlántico ACC. However, there are several cases in which the aircraft does not make any contact with the Comodoro Rivadavia ACC.

2.5.22 The meeting took note that the aircraft cannot make any contact with the Montevideo ACC due to unavailability of ADS-C/CPDLC and HF equipment in the Montevideo FIR (Atlantic Sector) (ADS-C/CPDLC is in process of implementation through SITA). In such cases, the aircraft normally makes contact with the Atlántico ACC, flying a long way without any contact with an ATC unit and thus constituting a risk to operational safety, affecting the risk analysis calculated by the CARSAMMA, taking into account the Collision Risk Model Methodology applied.

2.5.23 The meeting recalled that several meetings of the GREPECAS Scrutiny Working Group have dealt with Large Height Deviation in South Atlantic. The ATM/CNS Trilateral Meeting Argentina, Brazil and Uruguay, (SAM ATM/CNS South) also took into consideration the LHD in the region and developed several actions to be taken in order to solve the information/coordination issues.

2.5.24 Several SAT meetings also discussed the issue regarding lack of coordination between Monte Agradable ATS Facility and Comodoro Rivadavia ACC, and its consequences to the neighboring ACC´s (Montevideo and Atlántic). SAT/15 formulated the conclusion SAT15/07 whereas “the SAT Group expresses its concern about the unknown traffic coming to/from Malvinas Islands, Ascension Islands and other uncontrolled flights in the South Atlantic and calls for the involvement of ICAO to find a solution." SAT/16 took note of the results of the ATM/CNS Trilateral Meeting Argentina, Brazil and Uruguay, (SAM ATM/CNS South), mentioned in item 2.4 above. The SAT/16 has observed that the aim of this meeting was the improvement of operational procedures to ensure safety in the area concerned. The three States committed to implement all remedial actions identified during the ATM/CNS Trilateral Meeting. However, the meeting also noted the persistency of unsafe conditions occurring in the area concerned. Numerous safety concerns were still raised with respect to the operations in that area, among which unknown or uncoordinated traffic flying through many airspaces. The meeting was of the view that more efforts should be taken by all stakeholders to tackle these occurrences. In this sense, the SAT/16 Meeting formulated the Conclusion SAT16/1.

2.5.25 During GREPECAS/17 meeting, Caribbean and South America Monitoring Agency (CARSAMMA) presented the preliminary Total Risk estimated for 2013 in the FIRs under its jurisdiction, prior to the analysis by the Scrutiny Working Group. The value achieved was 1, 19 x 10^{-8}, which is about 2, 38 times above the TLS of 5,0 x 10^{-9}. Such value may vary, depending on the results of

the Fourteenth GTE Meeting.

2.5.26 It can be observed an about 3,5 times higher annual total vertical collision risk in a comparison between 2012 and 2013. This significant raise on the risk in 2013 is also associated to the higher number of LHD in the South Atlantic.

2.5.27 Air traffic from and to the Malvinas Islands should be carried out in accordance to what was agreed in the Joint Statement of the Governments of Argentina and the United Kingdom of 25 September 1991, pursuant to the terms of the sovereignty formula contained in item 2 of the Joint Statement of 19 October 1989.

2.5.28 Communications, navigation and surveillance/management of air traffic from and to the Falkland Islands (Malvinas)* are regulated by the Letter of Operational Agreement between the Comodoro Rivadavia Area Control Centre and the Air Traffic Services Unit of Monte Agradable Airport, Falkland Islands (Malvinas)* Islands, on the establishment of a Terminal Control Zone (CTR) and on the establishment of air traffic routing procedures. The CTR Monte Agradable Airport is within the Comodoro Rivadavia Flight Information Region (FIR). Such Operational Agreement entered into force on 9 October 1991 and was presented to ICAO by Argentina and the United Kingdom jointly, under the above-mentioned sovereignty formula.

2.5.29 In accordance with the Argentine air navigation authorities the Monte Agradable ATS Unit has constantly failed to provide information about aircraft flying from and to the Falkland Islands (Malvinas)* Islands, which is considered a breach of item III (2) of the Joint Statement between the Governments of Argentina and the United Kingdom of 25 September 1991 and items IV - 4.1 (Scope) VI – 6.6 (coordination – in paragraphs 6.6.1 and 6.6.5) of the Letter of Operational Agreement. This situation should be considered as a safety risk for aviation over the South Atlantic and it might also be considered as lack of compliance from an ICAO member State.

2.5.30 The meeting was informed that Argentina has presented its formal protest to the United Kingdom about such breach and notified this situation to the ICAO Secretary General (Note ARG066-13 from Argentina’s Permanent Mission to ICAO).

2.5.31 Argentina has provided information regarding a higher degree of compliance in the presentation of Filed Flight Plans (FPL) and Departure Messages (DEP) by the Monte Agradable ATS Unit. However, it is still needed to observe what has been agreed regarding the request for traffic information and coordination of flights taking off from Monte Agradable Airport (Current Flight Plan – CPL).

2.5.32 Also in accordance with information provided by Argentina, the crews of the aircraft that fly from the Falkland Islands (Malvinas)* to the mainland communicate with the Comodoro Rivadavia ACC through satellite telephones and/or HF for the purpose of requesting traffic clearance and informing their estimated entry into the FIR. This procedure makes it possible to partially mitigate the risk posed by the lack of compliance with the Letter of Operational Agreement.

2.5.33 In the case of flights to Ascension Island or Antarctica, Delegation of Argentina has informed that the Comodoro Rivadavia and Ezeiza ACC, as the case may be, the Monte Agradable ATS Unit does not communicate the flight plans (FPL) and departure message (DEP), therefore only details of the flight route are received, provided that the aircraft communicates with the control towers.

2.5.34 The lack of compliance with the Letter of Operational Agreement with the Comodoro Rivadavia ACC puts at risk the safety of air traffic in the airspace of the South Atlantic, since that

situation causes a gap in the coordination chain that is necessary among the various FIRs involved in the provision of air traffic services to aircrafts using such airspace.

2.5.35 After an extensive discussion regarding Large Height Deviation and unknown traffic in the South Atlantic, the meeting formulated the following conclusion:

Conclusion SAT19/10: Large Height Deviation and unknown traffic in the South Atlantic

That:

a) The SAT Group expresses its concern about the unknown traffic and the increasing number of Large Height Deviation in the South Atlantic airspace, due to the lack of coordination and information of the flights coming from and going to Falkland Islands (Malvinas)*.

b) The SAT Group recalls the need that all ATS Units involved in the South Atlantic airspace provide information to their respective ACCs in accordance with the international arrangements in force (among them, the Letters of Operational Agreements) and with the applicable ICAO rules and procedures, in order to enhance the coordination among the FIRs involved."

** A dispute exists between the government of Argentina and the government of Great Britain and Northern Ireland concerning the sovereignty of the Falkland Islands (Malvinas).*

2.5.36 The meeting recalled that the objective of the **SATISFIED** (SAT Improved uSe of Flight corrIdor for Emissions reduction) project has been to demonstrate that further improvement in en-route aircraft performance is possible through the execution of flexible optimized oceanic route trials inside the EUR-SAM corridor. Particularly, flight demonstrations validating the solutions for CO2 emissions reduction were performed in the oceanic domain over the South Atlantic region, covering the following Oceanic centers: CANARIAS, SAL, DAKAR and ATLANTICO.

2.5.37 Additional information regarding the results of the satisfied project could be obtained in **Appendix F**. The final SATISFIED report will be available on SJU web page: http://www.sesarju.eu/innovation-solution/demonstrating-sesar/aire.

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

3.1 Follow up of SAT/18 Conclusions pertaining to the CNS field

3.1.1 Under this agenda item the meeting reviewed the conclusions and decisions of the SAT/18 meeting pertaining to CNS field as attached in **Appendix B2**. The meeting was informed by the delegate of Angola on the ongoing project of implementation of the Luanda CAFSAT node aiming to ensuring the coordination ground/ground communication between Luanda and Recife ACCs.

3.1.2 The meeting reaffirmed the urgent need of this circuit in order to increase air navigation service safety in the SAT airspace and it was agreed with ENANA Angola that the link will be operational before the end of year 2014.

The following conclusion was formulated:

Conclusion 19/11: Implementation of the ATS/DS Circuit between Luanda and Atlántico ACCs

That;

Angola (ENANA) expedite the completion of the ongoing installation of the CAFSAT VSAT project and establish the ATS/DS voice coordination circuit between Luanda and Atlántico ACCs no later than 31 December 2014.

3.1.3 The meeting examined the issue related to the need of ATS/DS voice signaling and switching capability for VCCSs in order to provide a continuous ground/ground voice coordination means to ATCs.

3.1.4 The Secretariat developed and presented Table 1 attached in **Appendix G** which summarizes the VCCSs capability to support ATS voice switching and signaling protocols such as N-5 and VoIP. The survey shows disparity of VCCSs capability to support the two protocols. The meeting also noted that the N5 signaling concept is based on analogue technology while IP is based on emerging digital technology.

3.1.5 The meeting encouraged SAT States/ANSPs to update the table developed by the Secretariat and to take due account of cost effectiveness consideration for the implementation of ATS voice switching and signaling systems.

The following conclusion was formulated:

Conclusion 19/12: Implementation of ATS voice switching and signaling systems

That;

SAT States/Organizations:

a) Update in the attached Table 1 (Appendix G refers) the information on their VCCSs' capability to support ATS voice switching and signaling protocols (N-5 and VoIP) no later than 15 September 2014;
b) Conduct studies and bilateral trials in order to ensure an efficient and cost effective implementation of ATS voice switching and signaling systems;
c) Report quaternary to Argentina Team Leader of Task 8 of the work programme of the SAT CNS/WG.

3.1.6 The meeting discussed the issue related to the missing Flight Plans and the possible mitigation actions. The participants were reminded on the conclusions of the previous SAT meetings in particular SAT/18 Decision 18/ 03 calling upon for the establishment of local Missing Flight Plan Investigation Working Groups involving all stakeholders: ATCs, AIM, COM, Maintenance personnel and for the nomination of Focal Points responsible of the coordination of the Group activities.

3.1.7 Although some investigation actions were conducted by most of the SAT members, it appears that some SAT States/ANSPs have not yet formally established an organized investigation multidisciplinary Team. The meeting encouraged SAT States/ANSPs to set up such investigation group and nominate Focal Points to conduct the adequate investigation on missing Flight Plans.

3.1.8 The meeting was also informed by ASECNA, Team Leader of Task 3 of SAT CNS WG Term of Reference, that the procedure for the investigation on missing Flight Plans adopted by SAT/18 (Decision 18/02) was circulated. It appeared that this procedure has not been widely implementedThe

meeting confirmed the encouraging results attained in the mitigation of missing Flight Plans after the implementation of this procedure developed by ASECNA.
The Meeting agreed that this procedure should be implemented and the results reported to the Team Leader. On this respect, the following conclusion was formulated

Conclusion 19/13: Mitigation of the loss of Flight Plans

That;

As a matter of urgency, SAT members who have not done so (Table 2 **Appendix H** refers):

a) Establish no later than 31 October 2014, local Missing Flight Plan Investigation Working Groups involving all stakeholders: ATCs, AIM, COM, Maintenance personnel…, as called upon by SAT/18 (Decision 18/03) and nominate Focal Points responsible of the coordination of the Group activities;

b) Implement the procedure for the investigation on missing Flight Plans adopted by SAT/18 (Decision 18/02) (**Appendix I** refers) and;

c) Report quaternary to ASECNA, Team leader of Task 3 of the Work Programme of the SAT CNS/WG on the results of the mitigation action taken to minimize the loss of Flight Plans.

3.1 Review of the Conclusions/Decisions of CNMC/4 meeting

3.4.1 The Secretariat presented to the meeting the conclusion/decision of the 4th meeting of the CAFSAT Network Management Committee (**CNMC/4**) which was held from 04 to 05 August 2014 in prelude to the SAT/19 meeting.

3.4.2 The CNMC/4 meeting was attended by Seventeen (17) participants from nine (9) States (Angola, Argentina, Brazil, Cape Verde, Portugal, Senegal, South Africa, Trinidad & Tobago, Uruguay), three (03) Air Navigation Service Providers, namely ASECNA, ATNS, Nav Canada, and a Communication Integrator Company ISDEFE (Spain).

3.4.3 After deliberations on its agenda items the meeting adopted three (**03**) Decisions and eleven (**11**) Conclusions endorsed by the SAT meeting. These conclusions/decisions are presented in **Appendix J** to this report.

The following Decision was formulated:

Decision 19/14: Adoption of the Conclusions and Decisions of CNMC4th meeting

That;

The Conclusions and Decisions of the 4th Meeting of the CAFSAT Network Management committee (CNMC/4) are adopted as attached in **Appendix J,**

3.2 Improvement of CNS systems in the SAT Region (AMHS,AIDC)

3.5.1 The meeting examined the status of implementation of AMHS in SAT ACCs and noted a good pace of realization. The Secretariat developed and presented Table 3 aiming to providing an updated picture of AMHS capability in the SAT area.

3.5.2 The meeting noted progress in the implementation of AMHS and ongoing project of implementation being conducted by SAT states. All the States of SAM Region have implemented AMHS system. Successful AMHS interconnections implementation was made in the SAM Region between Peru and Colombia, Peru and Ecuador, Guyana and Surinam and Argentina and Paraguay. Additionally successful operational trials were reported between Argentina and Brazil, and Brazil and Peru. It is expected that this two circuits will be operational at the end of the third quarter of 2014.

3.5.3 The difficulty encountered to complete AMHS interconnection, was reported to result from software incompatibility between the AMHS from different manufacturers installed in the ACCs of the SAM Region. In this respect, the update of systems software appears to be crucial in order to ensure interconnection of AMHS systems.

3.5.4 At the interregional level, AMHS trials were successfully made between Brazil and Spain through the CAFSAT network as mean of communication used. It is expected that this circuit will be operational in the last quarter of 2014.

3.5.5 The meeting applauded these results and encouraged SAT members conducting project of implementation to expedite the installation of AMHS systems and to consider in the planning of the projects, trial phases with their neighbouring ACCs to create appropriate conditions for real traffic exchange between both Regions as soon as systems are updated or implemented.

The following conclusion was formulated:

Conclusion 19/15: Implementation of AMHS in the SAT ACCs

That;

Considering the level of implementation of AMHS as attached in Table 3 (**Appendix K** refers), SAT ACCs establish Memoranda of Understanding to conduct trials and implement AMHS in line with the regional AFI/CAR/EUR/SAM/NAT Air Navigation Plans and report to SAT 20 meeting.

3.5.6 The meeting reviewed the status of implementation of AIDC by SAT ACCs.
It was reported in Table 4 the pace of implementation of automated ATM systems with AIDC capability.

3.5.7 The meeting was informed on successful trials conducted between Asunción (Paraguay) and Ezeiza (Argentina) with AIDC operation scheduled for December 2014, Dakar (Senegal).and Abidjan (Cote d'Ivoire).

3.5.8 Partially successful trials (correct in one direction, but not in the other) were reported between Ecuador and Peru, Chile and Argentina, started in March/April 2014 and scheduled to continue until solving the inconveniences to enable the start-up.

3.5.9 The results of the trials scheduled between Curitiba–Asunción and Colombia–Panamá are being awaited for, while more tests between Peru–Colombia and Ecuador–Colombia were requested.

3.5.10 The meeting recognized that the main objective of the interconnection of AIDC systems between adjacent ACCs is to reduce the aeronautical incident risks generated by voice coordination activities between ACCs and, at the same time, to improve the planning phases for a more efficient flight control from/to the corresponding Flight Information Regions (FIR).

3.5.11 It was agreed that prior to trials on interconnection and operation of AIDC function, the operational requirement involving the agreed list of messages to be exchanged needs to be defined by the ATM actors of the concerned ACCs.

The following conclusion was formulated:

Conclusion 19/16: Implementation of AIDC in the SAT ACCs

That;

Taking into consideration the capability of ATM automated systems for AIDC functionality attached in Table 4, (**Appendix L** refers) SAT ACCs carry out studies on ATS automated coordination requirements and on potential expected benefit in order to conduct trials and implement when justified, AIDC operation.

3.5.12 The meeting took note of the activities in the SAM Region for the modernization of the new digital network in the SAM Region the REDDIG II that it is expected to entry in operation by the end of October 2014.

3.5.13 The meeting was informed that REDDIG II consist of two networks: a main network based on IP VSAT stations, which uses the same bandwidth of the current REDDIG, and a ground network based on MPLS (multiprotocol label switching) technology, running on fiber optics, which will initially serve as backup to the satellite network, thus increasing network availability.

3.5.14 Finally on this respect the meeting took note that the management of the current REDDIG network and the activities developed for the implementation of the new REDDIG II are made through an ICAO technical cooperation project through the SAM ICAO Regional Office. Considering the successful operation, management of the REDDIG network and implementation of the new REDDIG network (REDDIG II) through a Regional ICAO technical cooperation project the Meeting considered this effective practice for use in other ICAO Regions.

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

4.1 Harmonization of ADS/CPDLC programmes

4.1.1 The meeting reviewed the table pertaining to the status of implementation of ADS-C/CPDLC in the SAT area, discussed during the SAT/FIT/9 Meeting. The mentioned status as reported by States/ANSPs is shown in the following table*:*

STATE/ACC	Implementation status/ Target date	Remark
Dakar/Senegal	Implemented/August 2009	Full operational

STATE/ACC	Implementation status/ Target date	Remark
Canarias/Spain	Implemented/August 2009	Full operational
Recife/Brazil	Implemented/July 2009	Full operational
Abidjan/ Cote d'Ivoire	Implemented/August 2010	Full operational
Johannesburg/South Africa	Implemented/February 2005	Full operational
Ezeiza / Argentina Comodoro Rivadavia	- Pre-operational - ATCO Training on going - Regulation Changes on going - Need of airlines information regarding operators/aircraft equipage to the trials phase.	- Pre-operational in 2010 for the South Africa FIFA Worldcup. - Change on Argentina Administration delayed the project. - On going project to implement a single Oceanic FIR in airspace under Argentina´s jurisdiction. - There is no date established yet to the begining of the Operational Trials.
Luanda/Angola	May 2014	At the project level
Accra/Ghana	December 2011	Full operational
Sal/Cape Verde	September 2011	Full operational
Montevideo/Uruguay	Pre-operational in September 2014 Operational in December 2014	
Rochambeau/France	March 2011	Full operational

4.2 Review of the Report of the Ninth SAT FANS 1/A Interoperability Team (SAT/FIT/9)

4.2.1 The ATM WG summarized the outcome of SAT/FIT/9 meeting. The meeting took note of the conclusions/decisions of SAT/FIT/9 meeting and tasked the Secretariat to consider its conclusions and decisions together with those from CNMC and from the SAT 19 ATM WG in order to avoid redundancies.

4.3 Review of the report of the fourth meeting of the CAFSAT Network management committee (CNMC/4)

4.3.1 The CNS WG summarized the outcome of CNMC/4 meeting as detailed under Agenda item ***3.4: Review of the Conclusions/Decisions of CNMC/4 meeting.***

4.3.2 The meeting applauded the conclusions/decisions of CNMC/4 and tasked the Secretariat to consider the conclusions and decisions from CNMC/4 together with those from SAT/FIT/9 and from the SAT 19 CNS WG in order to avoid redundancies.

4.4 RNP4 in the EURSAM corridor

4.4.1 The meeting was informed that currently, RNP 10 supports 50NM lateral and 80NM (or 10 minutes) longitudinal separation and RNP 4 implementation would allow 30NM lateral and 30NM

longitudinal separation. RNP 4 implementation is a target of the working programme of IAS/SG. In this line, the meeting recalled several working papers, references and decisions related to the implementation of RNP 4 in the EUR/SAM Corridor, during last SAT meetings.

4.4.2 The meeting recalled that in order to accomplish with SAT17 decisions, during SAT18 SATMA recommended SAT members the following steps:

I. EUR/SAM Corridor Short Term Plan - Data Link Mandate

*This data link mandate would be implemented during **2015**, with all aircraft operating in corridor between FL330 to FL390 inclusive, being required to be fitted with and using CPDLC and ADS-C equipment. This measure would have the following effects:*

- *Optimum flight level assignment to equipped and connected aircrafts.*
- *Reduced minimum longitudinal and lateral separation of 50NM based on RNP 10 and use of ADS-C and CPDLC from FL330 to FL390.*
- *This plan would require a previous analysis, including its respective CRM, trials and consolidation of operation.*

II. EUR/SAM Corridor Long Term PBN implementation plan

This PBN implementation plan should consist of:
- *RNP 10 and RNP 4 differentiated airspace structure:*
- *RNP 4 airspace from FL360 to FL390 based on ADS-C and CPDLC compliance, reduced lateral and longitudinal separation to 30NM and an extended set of new RNP 4 airways;*
- *RNP 10 airspace from FL330 to FL350 based on ADS-C and CPDLC compliance, reduced lateral and longitudinal separation to 50NM and the existing set of airways;*
- *RNP 10 airspace bellow FL330 with no ADS-C and CPDLC compliance, lateral and longitudinal separation of 80NM and the existing set of airways.*
- *A full implementation of this plan would be accomplished during 2020.*

This plan allows to have reduced separation and optimum performance for better equipped aircrafts, and it is compatible with the operation in the EUR/SAM corridor for worse equipped aircraft. Thus, there would be three different degrees of performance according to the "best equipped best served" statement.
This plan would require a previous analysis, including its respective CRM, an agreed roadmap, trials and consolidation of operation.

III. Common tasks

The previous plans must be completed with:
- *The promotion of real implementation of Central FANS 1/A Reporting Agency (CFRA). Note that nowadays there are many technical and operative issues related to FANS 1/A and a lack of global data: aircraft capabilities, incidents, etc.*
- *The definition of an agreed and consolidated roadmap of improvements for EUR/SAM Corridor.*
- *To encourage operators to take the necessary steps to obtain RNP 4 approvals for suitably equipped aircrafts in their fleets.*

4.4.3 In order to progress with the work of a coherent and harmonized RNP 4, ADS-C and CPDLC planning an implementation, Spain presented a consolidated study on the implementation of RNP4 in the

EUR/SAM corridor and proposed the establishment of an implementation working plan. The study is attached as an **Appendix M.**

4.4.4 After an analysis of the study presented by Spain, the meeting was of the opinion that the first step of the Action Plan to implement RNP 4, ADS-C and CPDLC must be the development of a comprehensive Airspace Concept, in order to show a positive cost-benefit analysis to the Aircraft Operator and Air Navigation Service Provider. In this sense, the meeting agreed on the establishment of a EUR/SAM corridor Airspace Concept Task Force, in order to develop the mentioned Airspace Concept, taking into consideration the study carried out by Spain. The following conclusion was formulated:

Conclusion SAT19/17: New Airspace Concept in the EUR/SAM Corridor

That;

An EUR/SAM corridor Airspace Concept Task Force is established with representatives of Brazil, Cape Verde, Senegal, Spain, IATA, WACAF ICAO Office and SAM ICAO Office, in order to:

a) Analyze the Roadmap for EUR/SAM Corridor proposed by Spain, attached as **Appendix M** to this report;
b) Develop an Airspace Concept to EUR/SAM Corridor, based on application of RNP 4, ADS-C and CPDLC;
c) Analyze the feasibility of proposing a DOC 7030 Amendment to mandate the use of RNP 4, ADS-C and/or CPDLC;
d) Work through Electronic Correspondence and Teleconferences; and
e) Present the results to the SAT/20 meeting.

4.4.5 The meeting took note about the proposal of the following proposal to reduce the longitudinal separation for RNP10 and ADS/CPDLC equipped aircraft:

a) the longitudinal separation 50NM be transformed into time based(07mn)

b) reduce the difference in the estimate that needs to be revised from 03mn to 01mn (after agreement between neighboring centers.

4.4.6 In this regard, the meeting was of the opinion that a change of this magnitude in Separation Minima and Difference in the Estimate could be implemented only through a complete risk assessment. In this sense, the meeting indicated that it is more convenient to adopt the regular procedures of the Doc. 4444.

4.4.7 The meeting discussed a proposal of having route segregation, instead of the vertical segregation, as foreseen in the SAT 18 RNP 4 Road Map, as follows:

a) the non RNP4 equipped aircraft (RNP10 with ADS/CPDLC and RNP10 without ADS/CPDLC) will be constrained to follow a route (example UN857) and the current separation in use up to now will be applied.

b) the remaining routes of the corridor will be only RNP4 with a 30NM. lateral and longitudinal separation.

c) RNP4 equipped aircraft can fly via routes intended to be used for non-equipped aircraft but, would not in this case benefit from the30NM longitudinal and lateral spacing.

4.4.8 The meeting was of the opinion that the aforementioned proposal should be discussed in the context of the EUR/SAM corridor Airspace Concept Task Force.

Agenda
Item 5: Adoption of the conclusions/decisions of the SAT/19 meeting (Plenary session)

5.1 Under this agenda item, which was considered lastly, the meeting reviewed and adopted its conclusions and decisions. However, it was agreed that the draft report, including the draft conclusions/decisions will be circulated to all participants, for consideration, before finalization.

Agenda
Item 6: Future work programme

6.1 The meeting reviewed and amended the Terms of Reference and Work Programme of the SAT Group (ATM/WG, IAS/SG, and CNS/WG) as presented in **Appendix N** to this report;

The following decision was formulated:

Decision 19/18: Terms of Reference s and work programmes of the SAT Group

That;

The Terms of Reference and Work Programme of the SAT ATM/WG, IAS/SG & CNS/WG are adopted as attached at **Appendix N.**

Agenda
Item 7: Any other business

7.1 The meeting examine the issue related to the future date and venue of SATFIT/10, CNMC/5 and SAT/20 meetingsCote d'Ivoire kindly offered to host these events with the support of ASECNA.The meeting expressed its gratitude to Cote d'Ivoire and tasked the Secretariat (ICAO Regional WACAF Office) to finalize with Cote d'Ivoire the date and venue and advise as earlier as possible.

7.2 With regard to space ADS-B, the Meeting was informed that this new technology would become globally operational in 2017. The implementation of this system is due to the initiative of NAV CANADA, ENAV, Irish Aviation Authority (IAA), NAVIAIR (the ANSP for Denmark) and Iridium.

7.3 In this respect, to ensure the operational implementation of this system, amendments would have to be made to the use of the 1090 MHz frequency, basically with respect to its protection on the side of the aircraft facing the satellite.

7.4 Therefore, the Meeting deemed convenient that the States of the SAT Region, in view of the reach and usefulness of the system, count with the support necessary at the regional fora in preparation for the International Telecommunications Union (ITU) Fifteenth World Radiocommunication Conference

(WRC-15), as well as in the WRC-15 itself, for the amendments required to provide greater protection to the 1090 MHz frequency.

7.5 The meeting expressed its gratitude to Argentina government and Argentina CAA (ANAC) for the hospitality and friendly welcome and assistance provided to all the participants during their stay in Buenos Aires.

International Civil Aviation Organization
Nineteenth Meeting on the improvement of Air Traffic Services over the South Atlantic (SAT/19)
(Buenos Aires, Argentina, 6 to 8 August 2014)

LIST of PARTICIPANTS / LISTA DE PARTICIPANTES

NAME / NOMBRE POSITION /TÍTULO	ADDRESS / DATOS
ARGENTINA	
Dra. Gabriela Logatto	Directora Nacional de Inspección de Navegación Aérea- ANAC Tel: +541159413000 int:69122 Email: glogatto@anac.gov.ar
Ignacio Oliva Whiteley	Director de Inspecciones y Auditorias- ANAC Buenos Aires-Argentina Email: ioliva@anac.gov.ar
Rafael Alberto Molina	Director de Relaciones Regionales- ANAC Azopardo 1405, Buenos Aires Tel: +541159413000 int:69326 E-mail: rmolina@anac.gov.ar
Hector Luciani	Director Regional (DRNO-ANAC) Km 8 ½ cno Pajas Blancas Córdoba Tel: 03514756444 E-mail: hluciani@anac.gov.ar
Eduardo López	Jefe Dpto. Regional Insp. Nav. Aérea (DRNS-ANAC) Ten Acuarel 30,Comodoro Rivadavia – Argentina Te: +54 0297154203643 Email: elopez@anac.gov.ar
Alberto Hayas	Jefe Dpto. Regional Insp. Nav. Aérea (DRNO-ANAC) Camino Pajas Blancas km 8 ½, Córdoba Tel: +54 03514756441 E-mail: ahayas@anac.gov.ar
Moira Callegare	Jefe Departamento CNS - ANAC Azopardo 1405, Buenos Aires Tel: +5411 5941 3097 E-mail: mcallegare@anac.gov.ar
Carlos Torres	Jefe Departamento Programación Técnica – ANAC Azopardo 1405, Bs As Tel: 59413000 int 69193 E-mail: ctorres@acac.gov.ar
Héctor Sánchez	Jefe Departamento Registro y Estadística – ANAC Azopardo 1405, Buenos Aires Te: +5411 59413000 ex: 69773 Email: hsanchez@anac.gov.ar

Mónica Pozzuto	Inspectora Nacional de Nav. Aérea-- ANAC La Peperina 1680 Te: +5411 46201530 Email: mpozzuto@anac.gov.ar
Diego Frigerio	Inspector Nacional Navegación Aérea – ANAC Azopardo 1405 Te: +54911 33093677 E-mail: dfrigerio@anac.gov.ar
José Saucedo	Inspector Nacional de Navegación Aérea – ANAC Beruti 4450 Buenos Aires Tel: +541147770280 E-mail: jsaucedo@anac.gov.ar
Guillermo Castro	Inspector Nacional de Navegación Aérea -ANAC Azopardo 1405, Buenos Aires Tel: +54911 41695116 Email: guillermoluiscastro@gmail.com / gcastro@anac.gov.ar
Marisa Haydee Bertani	Especialista Cartógrafa – ANAC Sarmiento 178, Avellaneda Tel: +54911 62431131 E-mail: mhb_soto@hotmail.com
Christian Alejandro Buchanan	Especialista en Normas ATS- ANAC Azopardo 1405, Buenos Aires Te: +5411 59413000 ext:69378
Gustavo Rodríguez	Especialista SAR- ANAC Marmol 90 3B CABA Tel: +54911 3183 5792 E-mail: grodriguez@anac.gov.ar
Walter Daniel Silva	Planificador de Espacios Aéreos – ANAC Azopardo 1405, CABA Tel: +5411 59413000 ext: 69770 E-mail: silvawd@yahoo.com.ar
Sandra Naumovitch	Especialista ATM – ANAC Azopardo 1405 Tel: +5411 5941 3000 ext:69768 E-mail: snaumovitch@anac.gov.ar
Juan Carlos Soto	Controlador de Tránsito Aéreo– ANAC Los Claveles 886, Comodoro Rivadavia Tel: +54 0297 156244721 E-mail: jcmsoto@gmail.com / jsoto@anac.gov.ar
Sebastián Ponce	Controlador de Tránsito Aéreo – DGCTA Aut. Richieri km 34 ½ Buenos Aires Tel: +54911 64432167 E-mail: sebastponce@gmail.com

Daniel Cabo Vila	Operador de Comunicaciones – ANAC Darragueira 985 Aldo Bonzi Tel: +5411 20531483 E-mail: danielcrivas@hotmail.com
Guillermo Cocchi	Director Servicios Navegación Aérea – DGCTA Pedro Zanni 250, CABA. Tel: +5411 43176000 ext: 15130 E-mail: dsna@faa.mil.ar
Alejandro Iazzolino	Jefe depto. Tecnico ATS- DGCTA Sabat 2 B° Aeronáutico Tel: +54911 53275549 E-mail: aiazzolino@gmail.com
José Luis Oreglia	Jefe Depto. Normas y Reglamentaciones – DGCTA (ANSP) Pedro Zanni 250, CABA Te: +5411 43176000 ext: 16724 E-mail: jloreglia@yahoo.com.ar
Ricardo Sagarzazu	Licenciado. INVAP Av. Piedrabuena 4950, Bariloche, Argentina Tel: +549111551100422 E-mail: peck@invap.com.ar
Cristian Javier Vittor	Jefe Técnico-Operativo Dpto. Comunicaciones Digitales Ezeiza (DGCTA) Decodi Ezeiza, 4to. Piso Aeropuerto Internacional Ministro Pistarini Ezeiza – CP 1820 Buenos Aires, Argentina Tel: +54 11 4480 2350 / 2362 E-mail: javiervittor@gmail.com
María Alejandra Vlek	Consejero Ministerio de Relaciones Exteriores y Culto Esmeralda 1212 Piso 11, Buenos Aires Tel: +5411 5555 8907 E-mail: vle@mrecic.gov.ar
Gonzalo Sebastián Mazzeo	Secretario de Embajada Ministerio de Relaciones Exteriores y Culto Esmeralda 1212 Buenos Aires Tel:+54 11 4819 7424 E-mail: szz@mrecic.gov.ar
Carlos María Villarino	Segundo Secretario de Embajada Ministerio de Relaciones Exteriores y Culto Esmeralda 1212, CABA Tel: +5411 819 8008 E-mail: uno@cancilleria.gov.ar
ANGOLA	

Arquimides Ferreira	Air Navigation Director Instituto Nacional de Aviación Civil Rua Miguel de Melo 96 Luanda, Angola Te: +24491250639 E-mail: arquimedes.ferreira@inavic.gv.ao / arquimedesf@gmail.com
Antonio Borges Pereira	Head of CNS Direction. ENANA Luanda, Angola E-mail: borgesabp@gmail.com
Ambrosio Paka	Inspector AIM (INAVIC) Rua Miguel de Melo N 96 Luanda, Angola Te: +244923517253 Email: ambrosiopaka@yahoo.com.br
BRASIL	
Paulo Fernando de Santa Clara Ramos Junior	Departamento de Control del Espacio Aéreo (DECEA) Av. General Justo 160 – 4º Andar, Centro Rio de Janeiro 20010-130, Brasil Tel: +55 21 2101 6350 - +55 21 2101 6345 / +558186490692 E-mail: tel@cindacta3.aer.mil.br / pauloscr@ig.com.br
Mauruzán Ribeiro Batista	Representante ATM Departamento de Control del Espacio Aéreo (DECEA) Av. General Justo 160 – 4º Andar, Centro Rio de Janeiro 20010-130, Brasil Tel: +55 8121298115 E-mail: mauruzan@hotmail.com
CAPE VERDE	
Alberto Cardoso Correia e Silva	Agência de Aviação Civil CAANAV Director Av. Cidade Lisboa 16 Praia Cabo Verde Tel: 2382603430 / 2382611075 E-mail. albertos@acivil.gov.cv
Moisés Duarte Monteiro	Aeroportos e Segurança Aérea- ASA Head of Air Traffic Services Amílcar Cabral International Airport P.O.B. 68, Espargos, Sal Island City of Espargos, Sal Island Tel: +238 241 9200 E-mail: mduarte@asa.cv

José Carlos de Jesús Fernades	Head of COMMS/ATS Maintenance. Aeroportos e Segurança Aérea-ASA Amílcar Cabral International Airport P.O.B. 68, Espargos, Sal Island City of Espargos, Sal Island Tel: +238 991 2831 E-mail: jcarlos@asa.cv
Rui Manuel Teresa Jesús	Aeroportos e Segurança Aérea-ASA Head of Aeronautical Telecommunication System Maintenance and Management Service Amílcar Cabral International Airport P.O.B. 68, Espargos, Sal Island City of Espargos, Sal Island Tel: +238 241 9209, 241 3336 E-mail: rjesus@asa.cv
Sabino André Galvão Baptista	Agência de Aviação Civil Inspector ANS Avenida Cidade Lisboa 34 Praia Cabo Verde Tel: 2389912807 E-mail: sabinog@gmail.com
Solange H. Barros Varela	Agência de Aviação Civil Praia Av. Cidade Lisboa N°16 Santiago Cabo Verde Tel: 2382603430 / 2389957568 E-mail: Solange.varela@acivil.go.cv
CÔTE D'IVOIRE	
Henri Joel Ondze	ASECNA Head of Operations 15 B.P. 915 Abidjan 15 Abidjan Tel: +225 21 21 58 80, +225 21 21 71 71 E-mail: ondzehen@asecna.org
Adama Sanogo	ASECNA Air Traffic Control Instructor 15 B.P. 915 Abidjan 15 Abidjan Tel: +225 21 21 58 83, +225 21 21 71 71 E-mail: sanogoada@asecna.org /admsanogo@gmail.com
GHANA	

Albert Taylor	Ghana Civil Aviation Authority Director, Air Traffic Management Private Mail Bag Kotoka International Airport Accra, Ghana Tel: +233 302 773283 / +233 302 773293 E-mail: ATaylor@gcaa.com.gh
Samuel Kwabena Asante	Ghana Civil Aviation Authority PMB, KIA Accra, Ghana Tel: +233 302 773283 / +233 244 644872 E-mail: skasante05@yahoo.com
Joyce Asante	Ghana Civil Aviation Authority Manager Surveillance Systems Private Mail Bag Kla Kotoka Acera Ghana Tel: +233244886813 E-mail: jasante@gcaa.com.gh / naanajoyce@yahoo.com
PORTUGAL	
Nuno Simões	Navegação Aérea de Portugal - NAV Portugal E.P.E. Head of Strategy and External Relations Rua C, Edificio 118 Airport of Lisboa 1700-007, Lisboa - Portugal Tel.: + 351218553838 / +351218553593 E-mail: nuno.simoes@nav.pt
Luis F.L. Rodrigues	CNS Specialist Directorate Studies and Projects NAV Portugal E.P.E. Rua C, Edificio 118 Airport of Lisboa Rua C Ed 118 – 1700-007, Lisboa - Portugal Tel.: +351 21855 3562 E-mail: Luis.Rodrigues@nav.pt
SENEGAL	
Papa Dibocor Sene	Agencia Nacional de Aviación Civil y Meteorología (ANACIM) Director, Air Navigation and Aerodromes P.O. Box 8184 Aeorport L.S.S. Dakar, Yoff, Senegal Tel: +221 77 740 8325 / +221 33 869 6500 E-mail: dibocor.sene@anacim.sn/spdibocor@yahoo.fr

Bissa Sougue	Responsable Expl. Telecom BP 3144, Dakar Senegal Te: +221338207538 E-mail: souguebis@asecna.org
SPAIN	
Alexander Dorta Fumero	Ministerio de Fomento Dirección General de Aviación Civil - DGAC Paseo de la Castellana, 67 28071 Madrid, Spain Tel: +34 91 597 5355 E-mail: alexander.dorta@imeco.es
SOUTH AFRICA	
Martin Cooper	Manager ACC Control - Johannesburg Air Traffic and Navigation Services – SA East gate office park Block C South Boulverd road Brum A South Africa Te: 0119286578 Email: martinc@atnc.co.za
Hein Reid	Air Traffic and Navigation Services East gate office park block C, South boulevard road Brum A, South Africa Tel: 011 6071570 Email: heinr@atns.co.za
TRINIDAD & TOBAGO	
Alexis Brathwaite	Trinidad & Tobago Civil Aviation Authority Manager Air Navigation Services & Air Navigation Services Safety P.O. Box 2163 National Mail Centre, Golden Grove Road Piarco, Republic of Trinidad & Tobago Tel: +1 868 669 4806 / +1 868 668 8222 ext: 2504 Mob: +1 568 6205969 Fax: +1 868 669 5239 E-mail: abrathwaite@caa.gov.tt
Veronica Ramdath	Trinidad & Tobago Civil Aviation Authority Manager Communication, Navigation, Surveillance P.O. Box 2163 National Mail Centre, Golden Grove Road Piarco, Republic of Trinidad & Tobago Tel: +1 868 669 4706 / 4806 E-mail: vramdath@caa.gov.tt / vramdath@gmail.com
URUGUAY	

Tabaré Rivera Sardeña Braga	Dirección Nacional de Aviación Civil e Infraestructura Aeronáutica DINACIA Director Navigation and Surveillance Av. Wilson Ferreira Aldunate (Ex Cno. Carrasco) 253 (5519) Aeropuerto Internacional de Carrasco Canelones, Uruguay Tel: +598 2604 0408 int. 4532 Cel: +598 99141 E-mail: tsardena@gmail.com
Adriana San Germán	Dirección Nacional de Aviación Civil e Infraestructura Aeronáutica DINACIA Technical Chief Air Traffic Av. Wilson Ferreira Aldunate (Ex Cno. Carrasco) 253 (5519) Canelones, Uruguay Tel: +598 2604 0251 int. 5109 E-mail: asangerman@gmail.com / dtta@dinacia.gub.uy
Alberto Fernández	Dirección Nacional de Aviación Civil e Infraestructura Aeronáutica DINACIA Air Traffic Controller – ATM Advisor Av. Wilson Ferreira Aldunate (Ex Cno. Carrasco) 5519, Canelones, Uruguay Tel: +598 2604 0251 int. 5109 E-mail: eco1alberto@hotmail.com
ARINC	
Manuel Góngora	Director. –Rockwell Collins Arinc Blue Lagoon Drive 5200, suite 840, Miami, Fl.- Estados Unidos Tel: 11.305.263.5772 E-mail: mgongora@arinc.com
ASECNA	
Diaga Basse	ASECNA Representative in Senegal Dakar Center Operations Manager P.O.Box 8132, Dakar-Yoff, Dakar, Senegal Tel: +221 77 4429504 / +221 33 520 0600 E-mail:bassedia@asecna.org
Mamadou Mbodji	ASECNA Representative in Senegal Area Control Center Manager P.O.Box 8155, ASECNA-Yoff, Dakar, Senegal Tel: +221 76 3886062 / +221 33 8208561 E-mail: mbodjimam@asecna.org
Saydou Ba	ASECNA Representative in Senegal Computer and Navigation Infrastructure Maintenance Manager P.O.Box 8132, Dakar-Yoff Dakar, Senegal Tel: +221 77 2573672 / +221 76 388 6040 E-mail: basey@asecna.org

Amadou Malal Gueye	Air Traffic Service Manager -ASECNA 32-38 Av. J. Jaures B.P. 3144 Dakar, Senegal Tel: +221 33 8695209 / +221 77 3213362 E-mail: gueyeama@asecna.org / amagueye@gmail.com
Ismaïla Diaw	ASECNA Representative in Senegal Air Traffic Controller/Instructor P.O.Box 8132, Dakar-Yoff, Dakar, Senegal Tel: +221 77 6409927 / +221 33 8200561 E-Mail: diawism@asecna.org
Bissa Sougue	Responsable Explotation des Telecommunications BP 3144, Dakar Senegal Te: +22133820753 E-mail: souguebis@asecna.org
SITA	
Adriana Mattos	Gerente de Negocios ATM – SITA Av. Rio Branco 53, Rio de Janeiro Te: +552121115856 E-mail: Adriana.mattos@sita.aero
IATA	
Marco Antonio Vidal Macchiavello	Manager Safety and Flights Operations- IATA Av. Canaval y Moreyra 522, piso 17 San Isidro, Perú Tel: +511 222 4353 Ext. 116/+519890300900 E-mail: vidalm@iata.org
ISDEFE	
Ana Belén Torres Fustes	Deputy Stations Director Beatriz de Bodadilla, 3 28040 Madrid, Spain Tel: +3491 271 9167/ +3491 271 9180 E-mail: abtorres@isdefe.es
Isaac Domínguez Santos	Space Stations Director Beatriz de Bodadilla, 3 28040 Madrid, Spain Tel: +3491 271 9180/ +3491 411 4703 E-mail: idominguez@isdefe.es
OBSERVERS	
Peter Kearney	Director ATM Operations and Strategy- Irish Aviation Authority The Times Building 11-12 D'Olier Street; Dublin 2, Ireland Tel: +353 1 603 1546 E-mail: susan.greene@iaa.ie

Larry Lachance	Vice-President Operations -Nav Canada 77 Metcalfe Street Ottawa, Ontario K1P 5L6, Canadá Tel: +613 563 5426 / +613 563 5437 E-mail: larry.lachance@navcanada.ca
Guimond Vachon	Director, CNS Engineering 280 Hunt Club Road Ottawa, ON Canada Tel: 613 248 6913 E-mail: vachon@navcanada.ca
ICAO	
Onofrio Smarrelli	Regional Officer Communication Navigation & Surveillance (CNS) SAM Office Av. Víctor Andrés Belaúnde No.147 Centro Empresarial Real, Vía Principal No.102 Edificio Real 4, Piso 4, San Isidro Lima 27, Perú Tel: +511 611-8686, Ext. 107 Fax: +511 611-8689 E-mail: osmarrelli@icao.int Websie: http://www.icao.int/SAM
François-Xavier Salambanga	Regional Officer Communication Navigation & Surveillance (CNS) WACAF Office Tel: +221 33 869 24 15 E-mail: FSalambanga@icao.int Website: www.icao.int/wacaf
Julio de Souza Pereira	Regional Officer Air Traffic Management (ATM) SAM Office Av. Víctor Andrés Belaúnde No.147 Centro Empresarial Real, Vía Principal No.102 Edificio Real 4, Piso 4, San Isidro, Lima 27, Perú Tel: +511 611-8686, Ext. 107 / Tel:+511 611-8686, Ext. 104 Fax: +511 611-8689 E-mail: jpereira@icao.int Websie: http://www.icao.int/SAM

APPENDIX B 1

Status of Conclusions and Decisions related to SAT/18 Meeting pertaining to ATM field

Conclusions and Decisions	Implementation Status	Remarks
<u>Conclusion SAT18/01</u>: EUR/SAM Corridor Traffic Data for Risk Assessment That: Taking into account the difficulty of gathering relevant data from EUR/SAM corridor ACCs, concerned States will send to SATMA the data collected in a period of six months (Jan-Jun) to do the required Risk Assessment. States to send the data (Jan-Jun) up to 30th September each year. Concerned States to investigate a possible new tool for compiling the necessary data to be sent to SATMA for the risk assessment Concerned States (focal points) to coordinate and to exchange information by email and, if needed, to set a teleconference**.**	**Replaced by Conclusion SAT19/04**	
<u>Decision SAT18/01</u>: LHD **That:** EUR/SAM Corridor ACCs to continue sending LHD reports to SATMA on a monthly basis, from 1st to 15th of each month.	**Replaced by Conclusion SAT19/05**	
<u>Conclusion SAT18/02</u>: Additional Waypoints to increase flexibility between West Africa and North America. That: The meeting agreed on the principle of the implementation the proposed new waypoints from IATA(Appendix C, part I) All concerned ACCs to discuss internally the feasibility of this implementation, target effective AIRAC date 14 November 2013. States to send to IATA, ICAO secretariat in copy, a response by 15 October 2013.	**Replaced by Conclusion SAT19/01**	

Conclusions and Decisions	Implementation Status	Remarks
<u>Conclusion SAT18/03</u>: Additional waypoints to optimize Operations in the EUR/SAM Corridor That: Concerned ACCs (Dakar, Canarias, Lisbon, Santa Maria, Sal) to discuss internally the feasibility of the implementation of new waypoints proposed in the paper (Appendix C, part II)	**Replaced by Conclusion SAT19/06**	
<u>Conclusion SAT18/04</u>: Contingency Planning That: SAT States to review the Contingency Plan, presented in SAT17 by South Africa, and to send comments to JohnnyS@atns.co.za by 30th november 2014. To this regard, States also to notify if no additional comments.	**Replaced by Conclusion SAT19/02**	
<u>Conclusion SAT18/05</u>: Ascension Island FHAW/ASI and its criticality to EMERGENCY airline operations That: The Dakar ICAO secretariat to coordinate with Lima ICAO office in order to: Publish the 30 hours TAFs for FHAW/ASI. Determine how operationally important data concerning FHAW/ASI can be provided to all stakeholders to ensure safe operations.	**Replaced by Conclusion SAT19/03**	
<u>Conclusion SAT18/06</u>: Co-ordination failures in the SAT region That: SAT member States to make a concerted effort to report all co-ordination failures to their respective RMA's for processing and to find technical, procedural or/and human interface solutions.	**Still valid**	
<u>Conclusion SAT18/14</u>: Implementation of RNP 4 in the EUR/SAM corridor	**Replaced by Conclusion SAT19/17**	

Conclusions and Decisions	Implementation Status	Remarks
That: 1. SATMA consolidate the study on the implementation of RNP4 in the EUR/SAM corridor and establish an implementation work plan describing: a. The responsibilities and tasks of all stakeholders (ANSPs, States, Operators) b. Milestones and corresponding timelines c. Ways and means to conduct the required pre-implementation safety assessment **2.** SATMA will contact States, ANSPs and IATA to compile data and information required		

APPENDIX B 2

Status of Conclusions and Decisions related to SAT/18 Meeting pertaining to CNS field

Conclusions and Decisions	Implementation Status	Remarks
<u>Conclusion 18/07</u>: Implementation of the ATS/DS Circuit between Luanda and Atlántico That: As a matter of urgency ENANA (Angola); a) Formally endorse the draft Plan of Action for the implementation of the CAFSAT node of Luanda developed by the Secretariat and presented at Appendix D; b) Take the appropriate actions to expedite the implementation of the Plan of Action in coordination with the project to modernize Recife CAFSAT node currently conducted by Brazil; c) Convene, commencing no later than end of September 2013, monthly coordination e-meetings with Brazil and involving the Secretariat, SAT Chairperson, ISDEFE (formerly INSA) to agree on the adjustment on planning of the effective implementation of the ATS/DS circuit between Luanda and Recife before the end of December 2013.	Still valid	The Secretariat in liaise with SAT Chairperson has been following up by E-mail and by phone the implementation of the CAFSAT Node in Luanda Angola to report on the current status Forms to the national Telcom Authority for clearance on intelsat frequencye Civil work on going. Equipment will be received on September with installation completed by end of December 2014.
<u>Conclusion 18/08</u>: ATS Voice Switching systems That: SAT ATCs pursue the investigation on their VCCs capability to handle the ATS voice N5 protocol and share the information with their concerned neighboring centers in order to conduct trials.	Ongoing	SAT ATCs to report

Conclusions and Decisions	Implementation Status	Remarks
<u>Conclusion 18/09</u>: Trials on ATS/DS VoIP That: SAT ATCS conduct when possible trials on VoIP as component of the Aeronautical Network (ATN) Ground/Ground component, and report to SAT/19 meeting.	Still valid	States to Report
<u>Conclusion 18/10</u>: Implementation of AIDC That: SAT ATCs, a) Consider the implementation of AIDC as enabler to the interoperability between ATM systems; b) Conduct trials on AIDC with regard to the requirements of ATM Global Operational Concept (Doc. 9854) aiming to enhancing Air navigation safety and efficiency within the SAT region.	Still valid	WP 08 Follows up the implementation of AMHS in the SAM Region SAT ATCS to report
<u>Conclusion 18/11:</u> Implementation of AMHS within the SAT region That: In order to ensure the interoperability between systems through the implementation of ATN within the SAT region, a) The SAT Secretariat finalizes the assessment on the current status of implementation of AMHS; b) SAT members commence the interconnection of AMHS systems based on the strategies of implementation of the AFI, EUR and SAM regionals Air Navigation Plans;	Still valid	The Secretariat has developed a follow up table WP 08 Follows up the implementation of AMHS in the SAM Region

Conclusions and Decisions	Implementation Status	Remarks
c) ICAO pursue the assistance to SAT members in the implementation of AMHS through Regional seminars and workshops.		
Conclusion 18/12: Automation of the collection of AFS Performance That: SAT members undertake the automation of the collection of AFS performance in accordance with the model, methodology and technical guidance developed by the specialized study group established by CNMC/3.	Still valid	Stats to report
Decision 18/02: Procedure for the investigation missing Flight Plans That: The procedure for the investigation on missing flight plans developed by ASECNA is adopted as attached in Appendix E.	Implemented	
Decision 18/03: Establishment of local Missing Flight Plan Investigation Working Groups That: SAT members establish local missing Flight Plans Investigation Working Groups involving all stakeholders (ATCs, AIM, COM, Maintenance personnel…) in order to investigate on missing Flight Plans and take the adequate mitigation actions.	Still valid	States to Report

Conclusions and Decisions	Implementation Status	Remarks
<u>Conclusion 18/13</u>: Investigation on Missing Flight Plans That: a) ASECNA circulate the adopted procedure of investigation on missing Flight Plans and the example of corrective actions taken to minimize the pace of missing flight plans; b) Based on this procedure SAT ATCs conduct with all stake holders (IATA, Airlines, ANSPs…) daily detailed investigation on missing Flight Plans and report quaternary to SAT Chairperson.	Still valid	ASECNA to Report on the circulation of the procedure States to report
<u>Decision 18/04</u>: Adoption of the CNMC3 report That: The SAT members approve the report on the 3rd CNMC meeting, its conclusions and decisions as presented at Appendix F to this report.	Implemented	
<u>Decision SAT 18/05</u>: Adoption of SAT/FIT/8 Report and amendments to the SATFIT TORs and work programme That: The SAT members approve the report of the SATFIT/8 meeting, its conclusions and decisions, the amendments to the SATFIT TORs and work programme, as presented to SAT/18 meeting.	Implemented	
<u>Conclusion SAT18/14</u>: Implementation of RNP 4 in the EUR/SAM corridor That: 1. SATMA consolidate the study on the implementation of RNP4 in the EUR/SAM corridor and establish an implementation work plan describing:	Still valid	SATMA report on this

Conclusions and Decisions	Implementation Status	Remarks
a. The responsibilities and tasks of all stakeholders (ANSPs, States, Operators) b. Milestones and corresponding timelines c. Ways and means to conduct the required pre-implementation safety assessment 2. SATMA will contact States, ANSPs and IATA to compile data and information required.		
<u>Decision 18/06</u>: TORs and work programmes of the SAT Group That: The TORs and work programmes of SAT (ATM and CNS Working Groups) are amended as shown at Appendix G to this report.	Implemented	
<u>Conclusion 18/15</u>: Participation of Trinidad & Tobago, Argentina, Uruguay & French Guyana to SAT Meetings That: As a matter of coordination efficiency Trinidad &Tobago, Argentina, Uruguay & French Guyana endeavour to regularly attend the SAT meetings	Implemented	Coordination between Lima Mexico and Dakar ICAO regional Offices to ensure the participation of the concerned States.

SAT/19

Appendix C

ENAIRE

AIR TRAFFIC STATISTICS OF THE EUR/SAM CORRIDOR

2013

SATMA

DATA COLLECTION

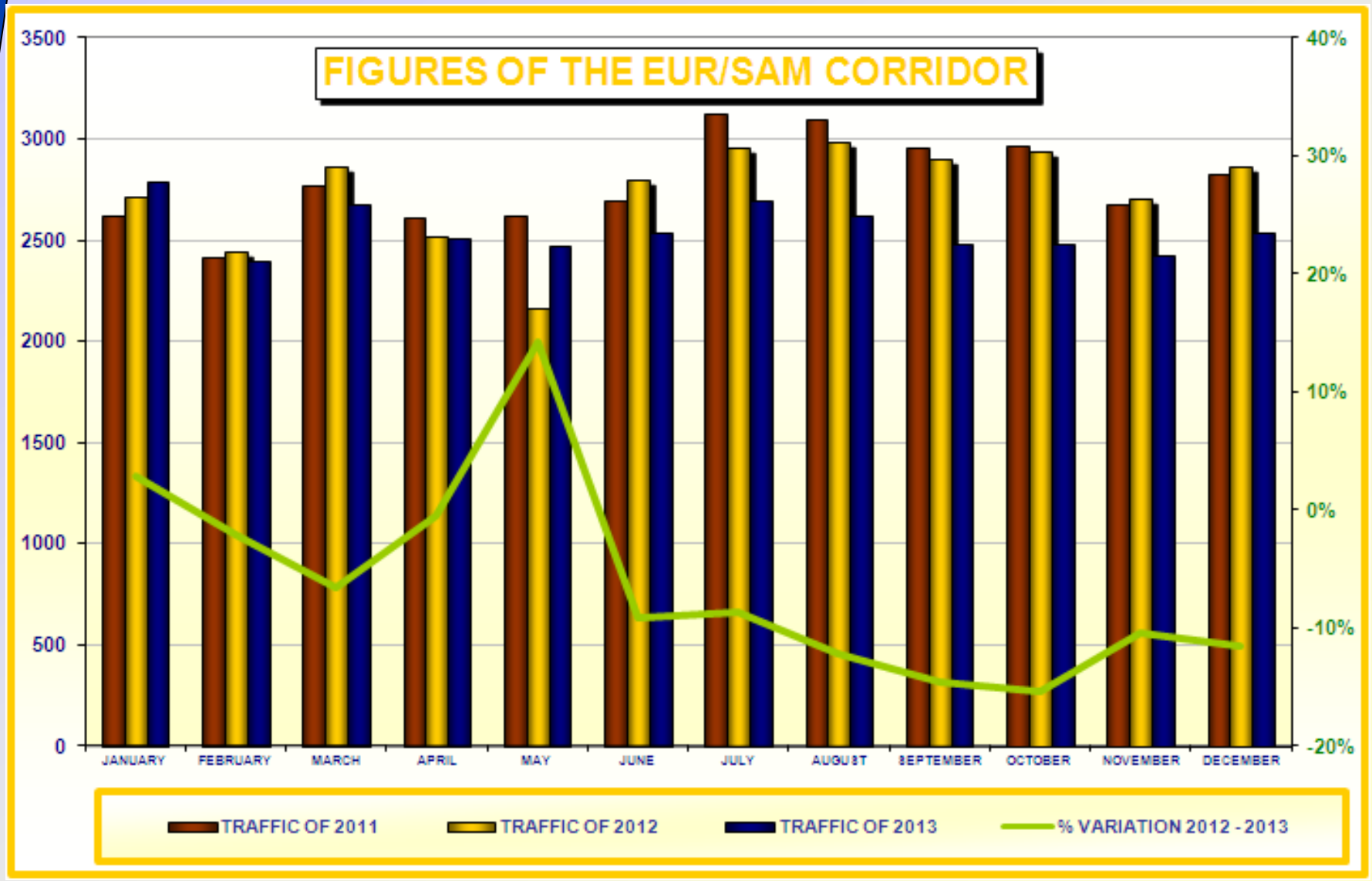
- THE NECESSARY FLIGHT PLAN INFORMATION TO PERFORM THIS STUDY IS OBTAINED FROM PALESTRA (AENA´S DATA BASE):
  - THIS FLIGHT PLAN DATA CONTAINS INITIAL FLIGHT PLAN INFORMATION THAT IS UPDATED BY RADAR AND CONTROLLERS WITH PILOT POSITION REPORTS.
  - THE AIR TRAFFIC MOVEMENTS REFLECTED IN THIS STUDY ARE:
    - ALL AIRCRAFTS USING UN741, UN866, UN873 AND UN857 WHOSE FLIGHT PLANS CONTAINS INFORMATION ABOUT EDUMO, TENPA, IPERA AND GUNET FIX POINTS.
    - AIRCRAFT USING THE RANDOM ROUTE.
  - THIS STUDY DOES NOT REFLECT:
    - TRAFFIC NOT OVERFLYING CANARIES FIR/UIR.
    - DATA FROM EAST-WEST FLOWS CROSSING THE EUR-SAM CORRIDOR.
    - SOUTHBOUND TRAFFIC TO/ FROM CAPE VERDE.

ENAIRE

GLOBAL FIGURES OF THE EUR/SAM CORRIDOR

MONTH	SOUTHBOUND		NORTHBOUND		TOTAL TRAFFIC IN THE CORRIDOR						% VARIATION	% VARIATION
	2012	2013	2012	2013	2011	DAILY	2012	DAILY	2013	DAILY	2011 - 2012	2012 - 2013
JANUARY	1163	1347	1551	1447	2624	85	2714	88	2794	90	3%	3%
FEBRUARY	1061	1107	1385	1289	2421	86	2446	84	2396	86	1%	-2%
MARCH	1337	1290	1532	1393	2768	89	2869	93	2683	87	4%	-6%
APRIL	1038	1248	1486	1264	2613	87	2524	84	2512	84	-3%	0%
MAY	1027	1110	1140	1365	2627	85	2167	83	2475	80	-18%	14%
JUNE	1333	1225	1463	1314	2699	90	2796	93	2539	85	4%	-9%
JULY	1386	1283	1569	1417	3126	101	2955	95	2700	87	-5%	-9%
AUGUST	1410	1319	1576	1304	3101	100	2986	96	2623	85	-4%	-12%
SEPTEMBER	1410	1178	1494	1303	2961	99	2904	97	2481	83	-2%	-15%
OCTOBER	1452	1252	1485	1232	2967	96	2937	95	2484	80	-1%	-15%
NOVEMBER	1201	1167	1503	1255	2677	89	2704	90	2422	81	1%	-10%
DECEMBER	1427	1252	1440	1284	2830	91	2867	92	2536	82	1%	-12%
AVERAGE	1270	1232	1469	1322	2785	92	2739	91	2554	84	-2%	-6%

SATMA


FIGURES OF THE EUR/SAM CORRIDOR
3500
3000
2500
2000
1500
1000
500
0
40%
30%
20%
10%
0%
-10%
-20%
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
TRAFFIC OF 2011
TRAFFIC OF 2012
TRAFFIC OF 2013
% VARIATION 2012 - 2013

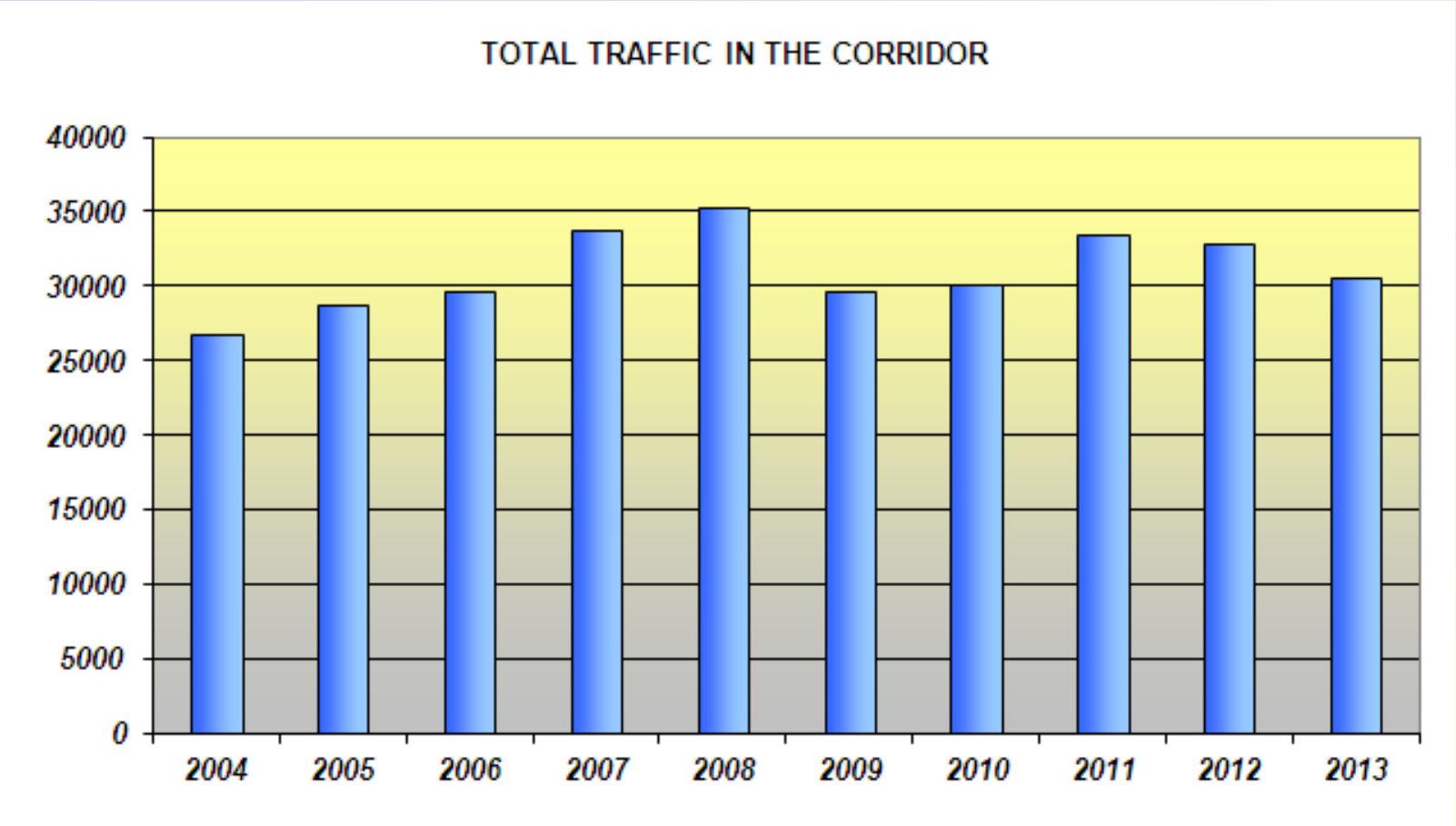
ENAIRE

NUMBER OF MOVEMENTS

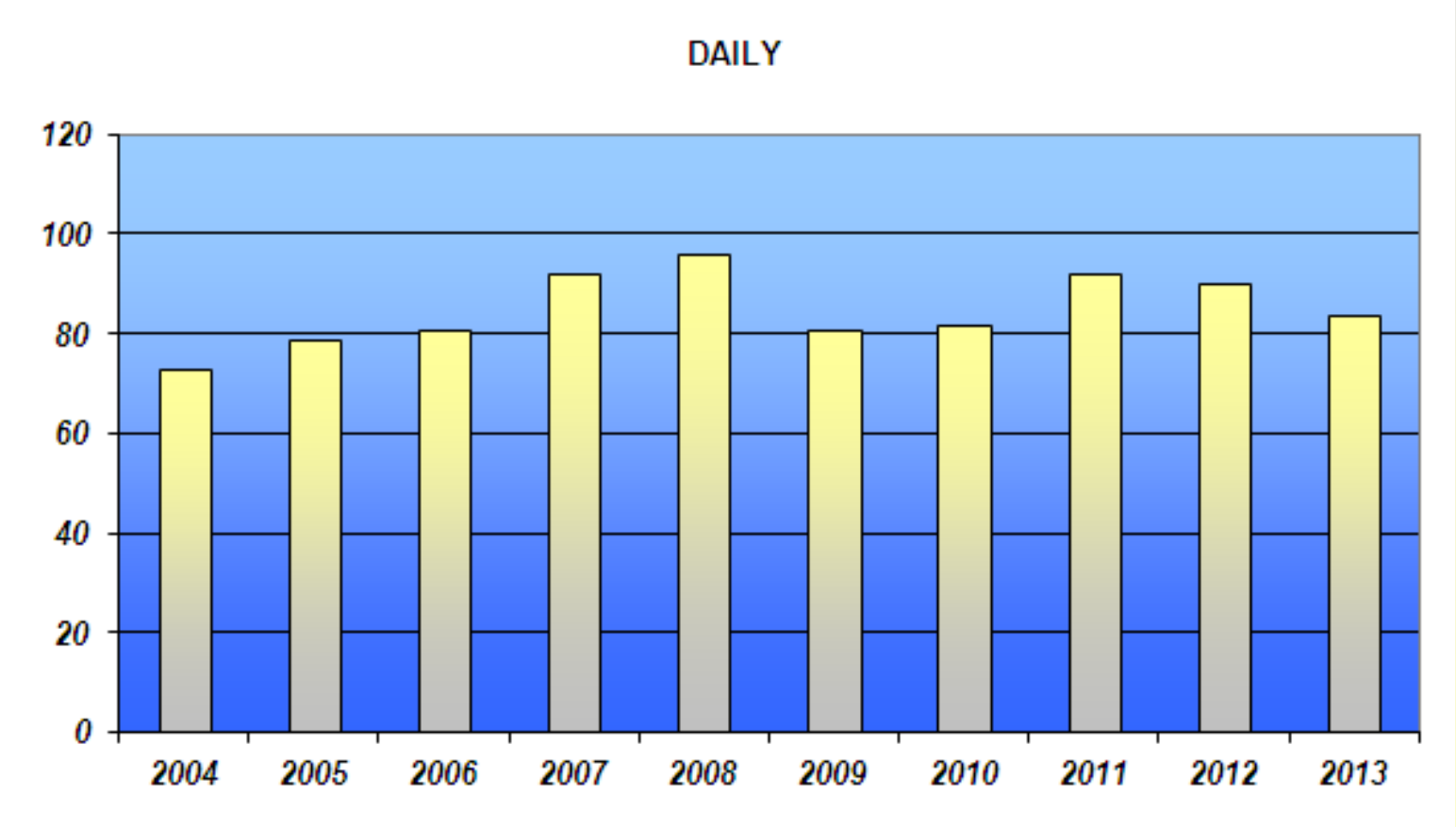
FIGURES OF	SOUTHBOUND	NORTHBOUND	TOTAL TRAFFIC IN THE CORRIDOR	MONTHLY	DAILY
2004	13108	13685	26793	2233	73
2005	14088	14674	28762	2397	79
2006	14651	15036	29687	2474	81
2007	16704	17004	33708	2809	92
2008	17024	18295	35319	2943	96
2009	14256	15366	29622	2468	81
2010	14083	16019	30102	2508	82
2011	15426	17988	33414	2784	92
2012	15245	17624	32869	2739	90
2013	14778	15867	30645	2554	84

SATMA

NUMBER OF MOVEMENTS

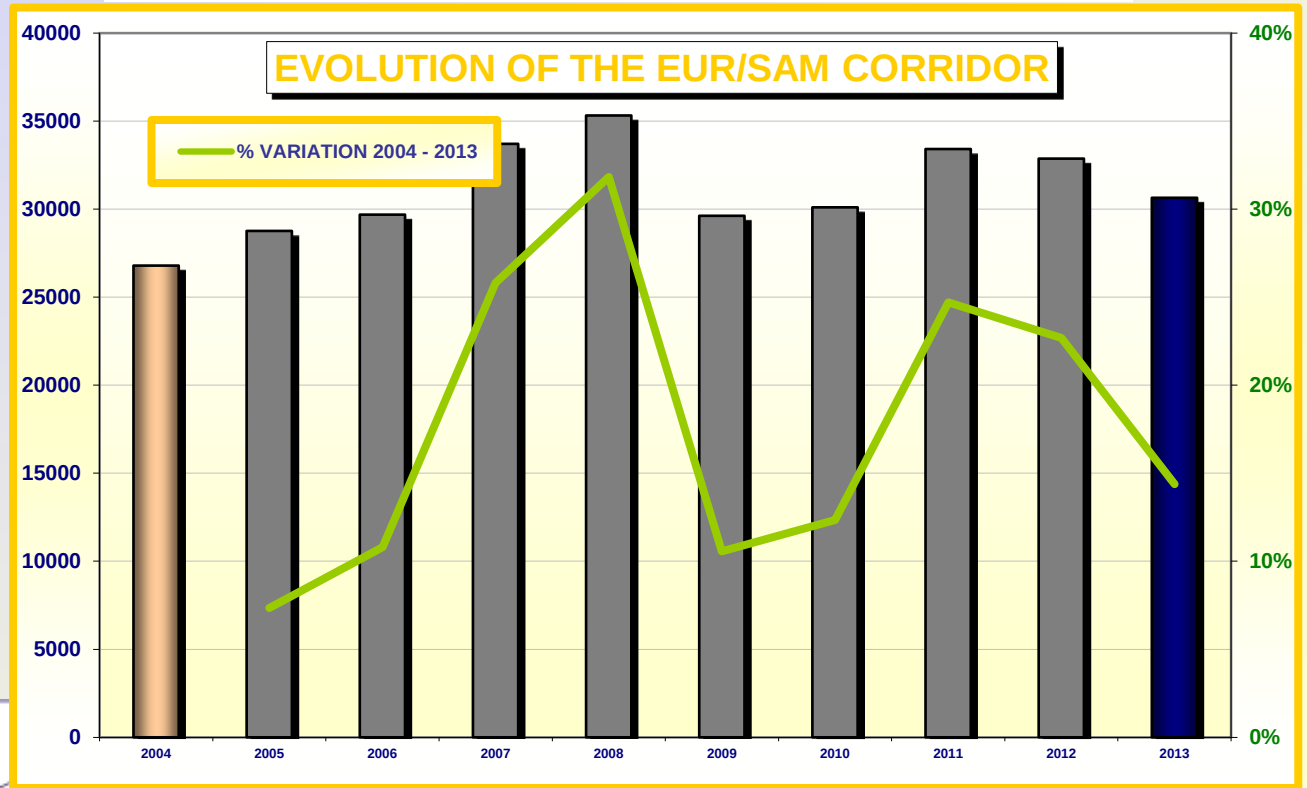


AVERAGE OF DAILY TRAFFIC



EVOLUTION OF THE EUR/SAM CORRIDOR

FIGURES OF	SOUTHBOUND	NORTHBOUND	TOTAL TRAFFIC IN THE CORRIDOR	% INCREASE FROM 2004
2004	13108	13685	26793	-
2005	14088	14674	28762	7.3%
2006	14651	15036	29687	10.8%
2007	16704	17004	33708	25.8%
2008	17024	18295	35319	31.82%
2009	14256	15366	29622	10.56%
2010	14083	16019	30102	12.35%
2011	15426	17988	33414	24.71%
2012	15245	17624	32869	22.68%
2013	14778	15867	30645	14.38%



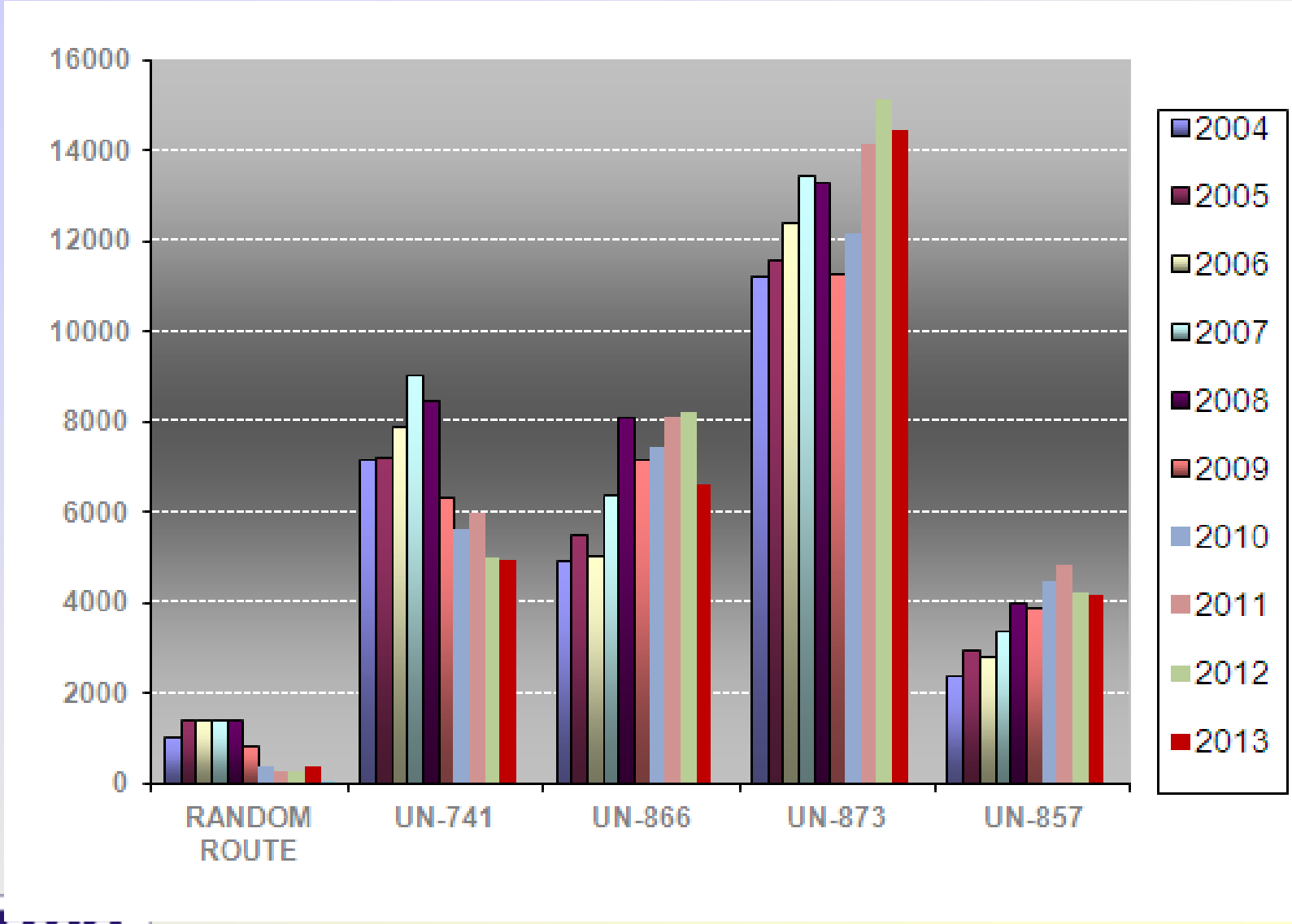
ENAIRE

TRAFFIC PER ATS ROUTES

	TOTAL	RANDOM ROUTE	UN-741	UN-866	UN-873	UN-857
2004	26793	1052	7179	4960	11219	2383
2005	28762	1413	7220	5534	11609	2986
2006	29687	1429	7935	5037	12442	2844
2007	33708	1424	9039	6389	13484	3372
2008	35319	1399	8486	8113	13314	4007
2009	29622	845	6383	7173	11320	3901
2010	30102	399	5605	7466	12170	4462
2011	33414	261	5999	8129	14172	4853
2012	32869	292	5009	8237	15129	4202
2013	30645	388	4968	6634	14477	4178

SATMA

TRAFFIC PER ATS ROUTES



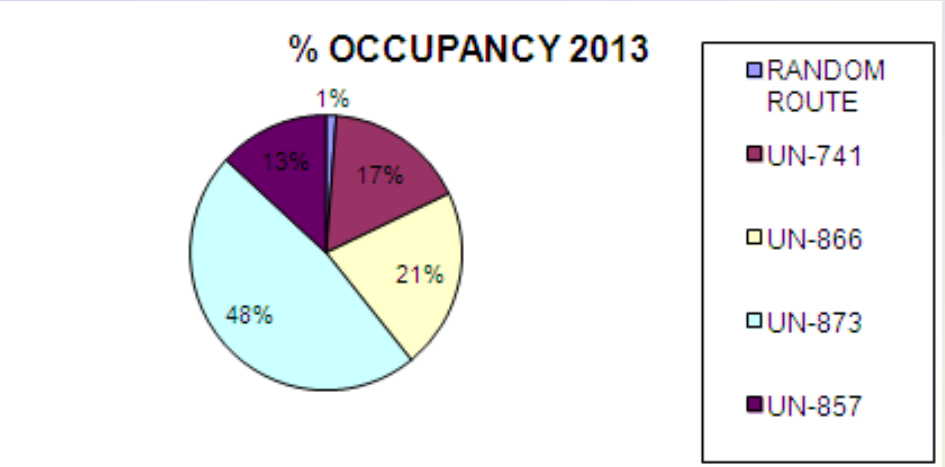
ENAIRE

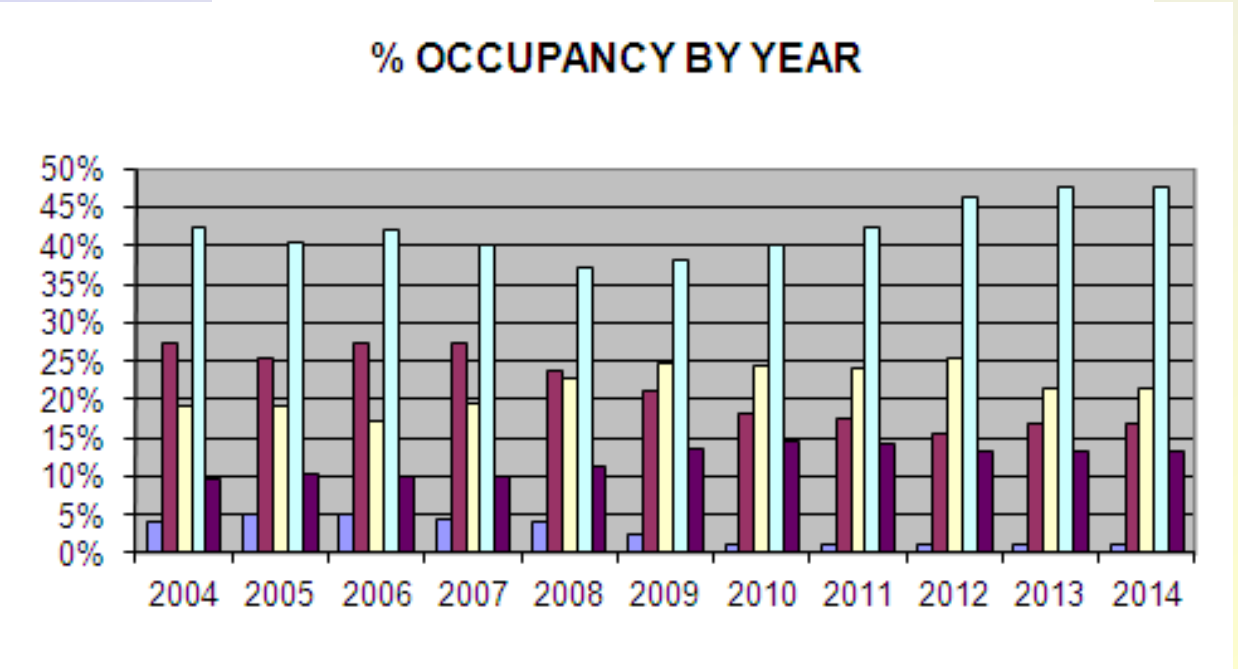
DAILY TRAFFIC

	TOTAL CORREDOR	RANDOM ROUTE		UN-741		UN-866		UN-873		UN-857	
		DAILY	%	DAILY	%	DAILY	%	DAILY	%	DAILY	%
2004	73	3	4%	20	27%	14	19%	31	42%	7	10%
2005	79	4	5%	20	25%	15	19%	32	41%	8	10%
2006	81	4	5%	22	27%	14	17%	34	42%	8	10%
2007	92	4	4%	25	27%	18	20%	37	40%	9	10%
2008	97	4	4%	23	24%	22	23%	36	37%	11	11%
2009	81	2	2%	17	21%	20	25%	31	38%	11	14%
2010	82	1	1%	15	18%	20	24%	33	40%	12	15%
2011	92	1	1%	16	17%	22	24%	39	42%	13	14%
2012	91	1	1%	14	15%	23	25%	42	46%	12	13%
2013	84	1	1%	14	17%	18	21%	40	48%	11	13%
2014	84	1	1%	14	17%	18	21%	40	48%	11	13%

SATMA

DAILY TRAFFIC

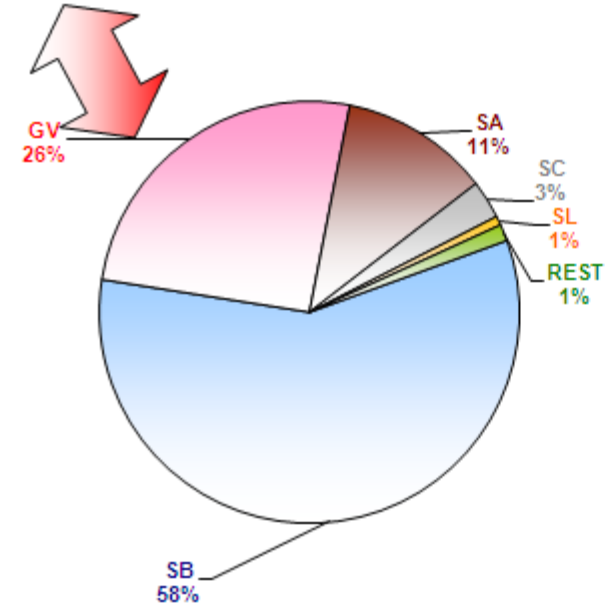




MAIN FLOWS

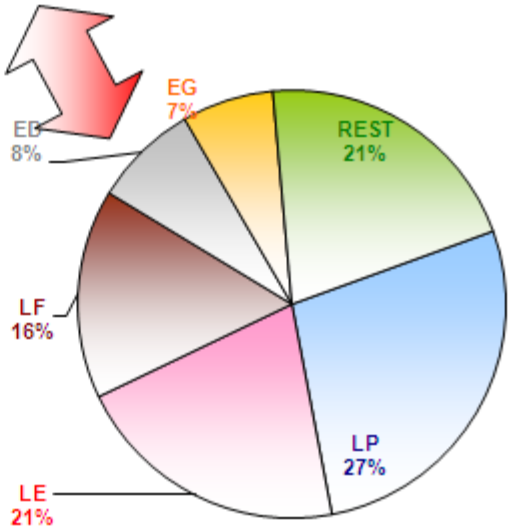
COUNTRY *	2012	2013	VAR %
SB	19797	17790	-10%
GV	7517	7836	4%
SA	3898	3510	-10%
SC	927	904	-2%
SL	96	214	123%
REST	634	391	-38%

* ORIGIN / DESTINATION



COUNTRY *	2012	2013	VAR %
LP	8323	8445	1%
LE	7264	6402	-12%
LF	5555	4846	-13%
ED	3004	2434	-19%
EG	3007	2122	-29%
REST	5716	6396	12%

* ORIGIN / DESTINATION



MAIN AIRPORTS

MAIN AIRPORT: SBGR

% CORRIDOR: 26.85%

ATS ROUTE	SOUTHBOUND	NORTHBOUND	TOTAL	% PER ROUTE
RANDOM				
UN-741	1640		1640	20%
UN-866		2655	2655	32%
UN-873	1436	1511	2947	36%
UN-857	577	410	987	12%
TOTAL	3653	4576	8229	

MAIN AIRPORT: LPPT

% CORRIDOR: 26.85%

ATS ROUTE	SOUTHBOUND	NORTHBOUND	TOTAL	% PER ROUTE
RANDOM				
UN-741	674		674	8%
UN-866		1913	1913	24%
UN-873	2675	2228	4903	62%
UN-857	176	267	443	6%
TOTAL	3525	4408	7933	

MAIN AIRPORT: LEMD

% CORRIDOR: 25.89%

ATS ROUTE	SOUTHBOUND	NORTHBOUND	TOTAL	% PER ROUTE
RANDOM	208	121	329	6%
UN-741	1535		1535	27%
UN-866		1316	1316	23%
UN-873	722	824	1546	27%
UN-857	469	461	930	16%
TOTAL	2934	2722	5656	

MAIN AIRPORTS

MAIN AIRPORT: LFPG

% CORRIDOR: 18.46%

ATS ROUTE	SOUTHBOUND	NORTHBOUND	TOTAL	% PER ROUTE
RANDOM	50		50	1%
UN-741	1123		1123	26%
UN-866		769	769	18%
UN-873	626	1337	1963	46%
UN-857	311	77	388	9%
TOTAL	2110	2183	4293	

MAIN AIRPORT: SBGL

% CORRIDOR: 14.01%

ATS ROUTE	SOUTHBOUND	NORTHBOUND	TOTAL	% PER ROUTE
RANDOM				
UN-741	477		477	12%
UN-866		1032	1032	25%
UN-873	829	1058	1887	46%
UN-857	455	263	718	17%
TOTAL	1761	2353	4114	

MAIN AIRPORT: GVAC

% CORRIDOR: 13.42%

ATS ROUTE	SOUTHBOUND	NORTHBOUND	TOTAL	% PER ROUTE
RANDOM				
UN-741	79	1	80	2%
UN-866		183	183	5%
UN-873	1253	1838	3091	78%
UN-857	273	313	586	15%
TOTAL	1605	2335	3940	

ENAIRE

MAIN CITY PAIRS

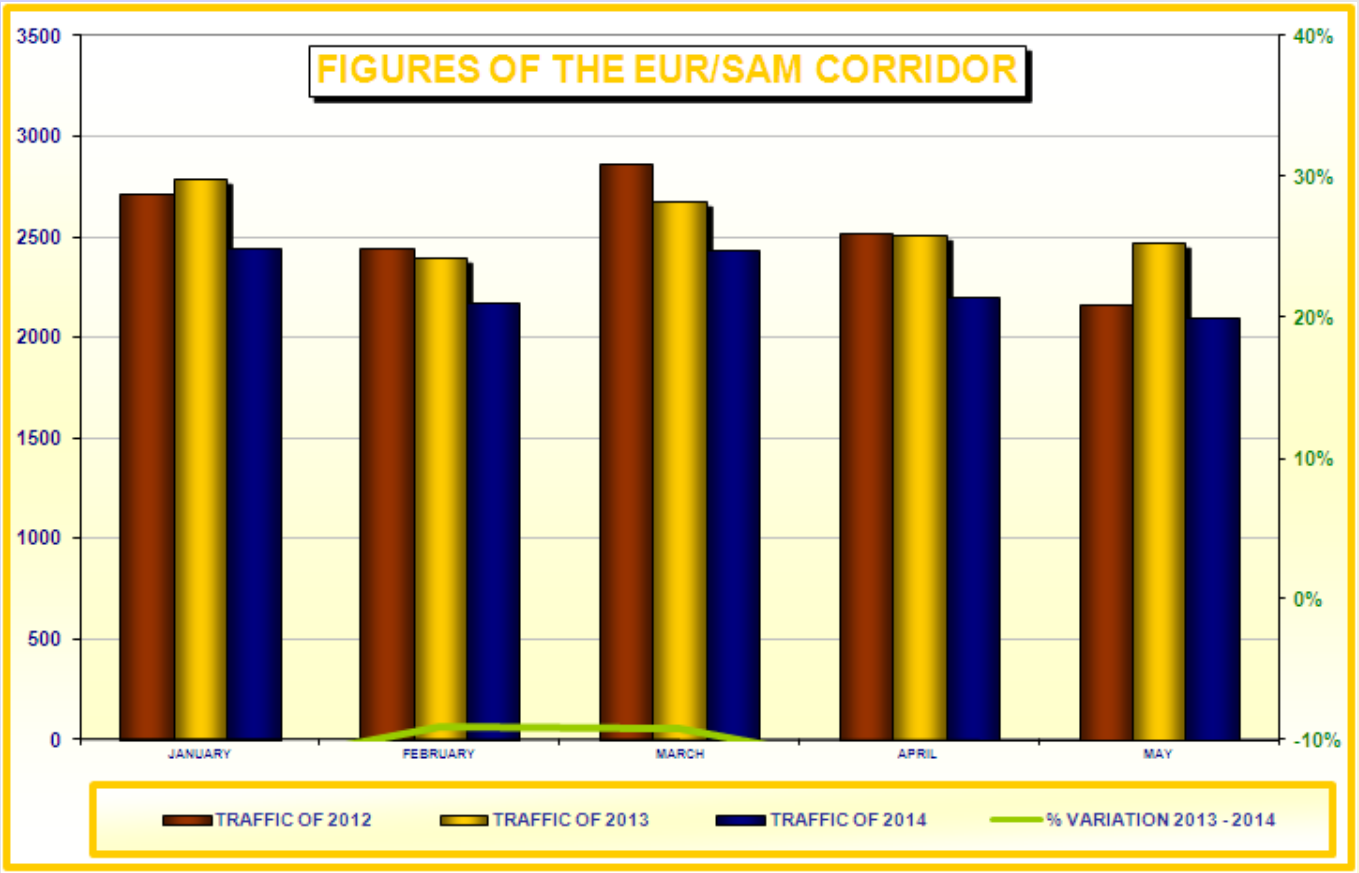
CITY PAIR	TOTAL	% TOTAL
SAEZ <-> LEMD	1982	6.47%
SBGR <-> LFPG	1820	5.94%
SBGR <-> LEMD	1773	5.79%
SBGL <-> LFPG	1363	4.45%
SBGR <-> LPPT	1032	3.37%
GVNP <-> LPPT	1012	3.30%
SBGL <-> LPPT	934	3.05%
SBGR <-> EDDF	830	2.71%
GVAC <-> LPPT	800	2.61%
SCEL <-> LEMD	729	2.38%
SBGR <-> LIMC	677	2.21%
SBRF <-> LPPT	625	2.04%
SBSV <-> LPPT	614	2.00%
SAEZ <-> LFPG	572	1.87%
SBGR <-> EGLL	560	1.83%
SBFZ <-> LPPT	524	1.71%
SBCF <-> LPPT	499	1.63%
GVAC <-> GCLP	481	1.57%
SBBR <-> LPPT	473	1.54%
SBGL <-> LEMD	452	1.47%
REST	12893	42.07%

SATMA

EVOLUTION OF AO's

AIRCRAFT OPERATOR	2012	2013	VARIATION
TAP	7158	7187	0.4%
TAM	4738	3374	-28.8%
IBE	3806	3131	-17.7%
AFR	3391	3116	-8.1%
TCV	1354	1348	-0.4%
ARG	1091	1177	7.9%
DLH	1163	985	-15.3%
TOM	1006	851	-15.4%
AEA	622	648	4.2%
KLM	639	638	-0.2%
REST	7901	8190	3.7%

TRAFFIC EVOLUTION IN 2014



MONTH	SOUTHBOUND		NORTHBOUND		TOTAL TRAFFIC IN THE CORRIDOR						% VARIATION	% VARIATION
	2013	2014	2013	2014	2012	DAILY	2013	DAILY	2014	DAILY	2012 - 2013	2013 - 2014
JANUARY	1347	1159	1447	1288	2714	88	2794	90	2447	79	3%	-12%
FEBRUARY	1107	1092	1289	1087	2446	84	2396	86	2179	78	-2%	-9%
MARCH	1290	1108	1393	1329	2869	93	2683	87	2437	79	-6%	-9%
APRIL	1248	914	1264	1286	2524	84	2512	84	2200	73	0%	-12%
MAY	1110	936	1365	1163	2167	83	2475	80	2099	68	14%	-15%
AVERAGE	1232	1042	1322	1231	2739	91	2554	84	2272	75	-6%	-12%

SAT/19

Appendix D

ANALISYS OF REPORTED LHD DURING 2013

EUR/SAM CORRIDOR

ENAIRE

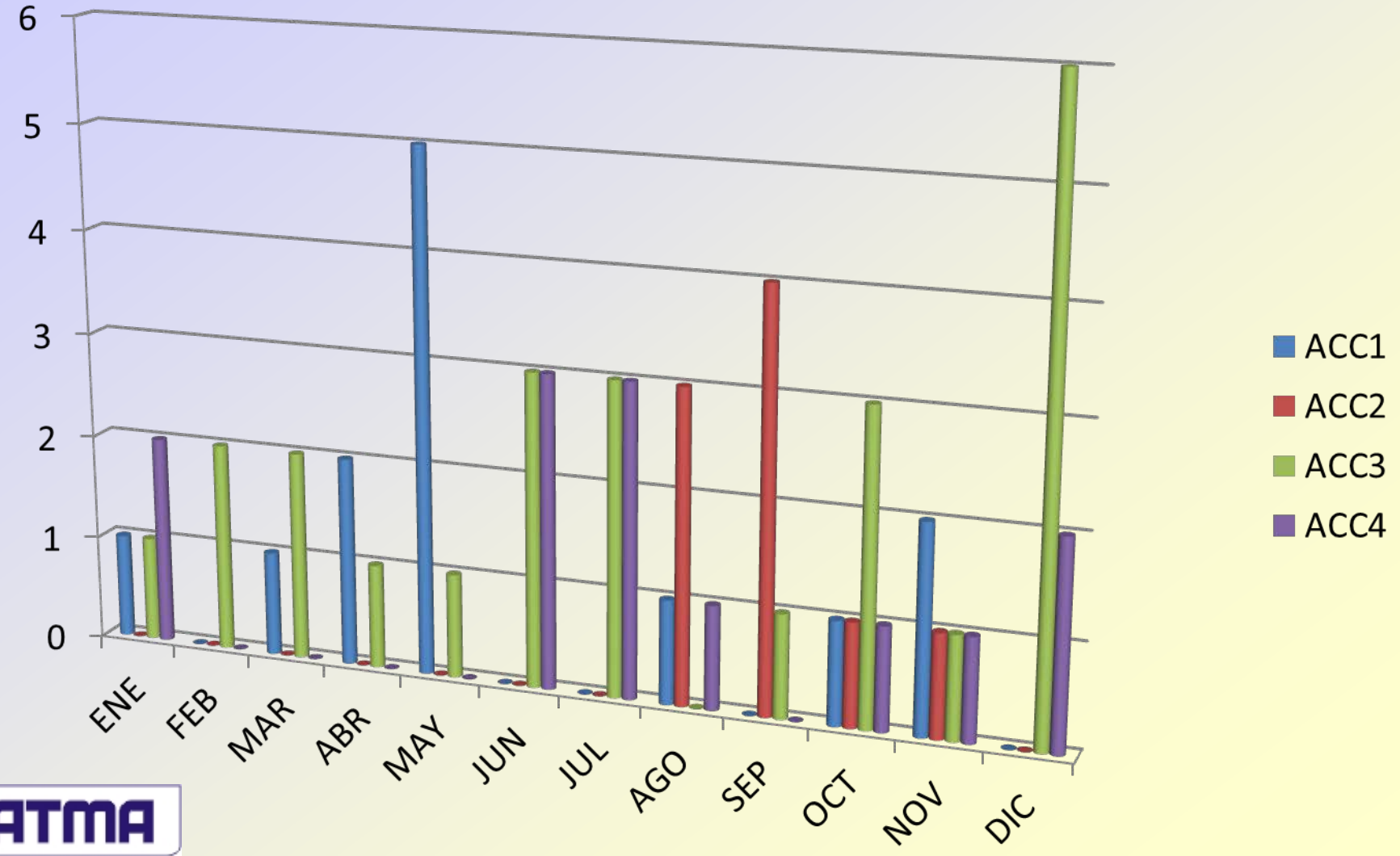
NUMBER OF LHD'S REPORTED

MEETING	REPORTED LHDs
SAT14	43
SAT15	51
SAT16	124
SAT17	206
SAT18	60
SAT19	59

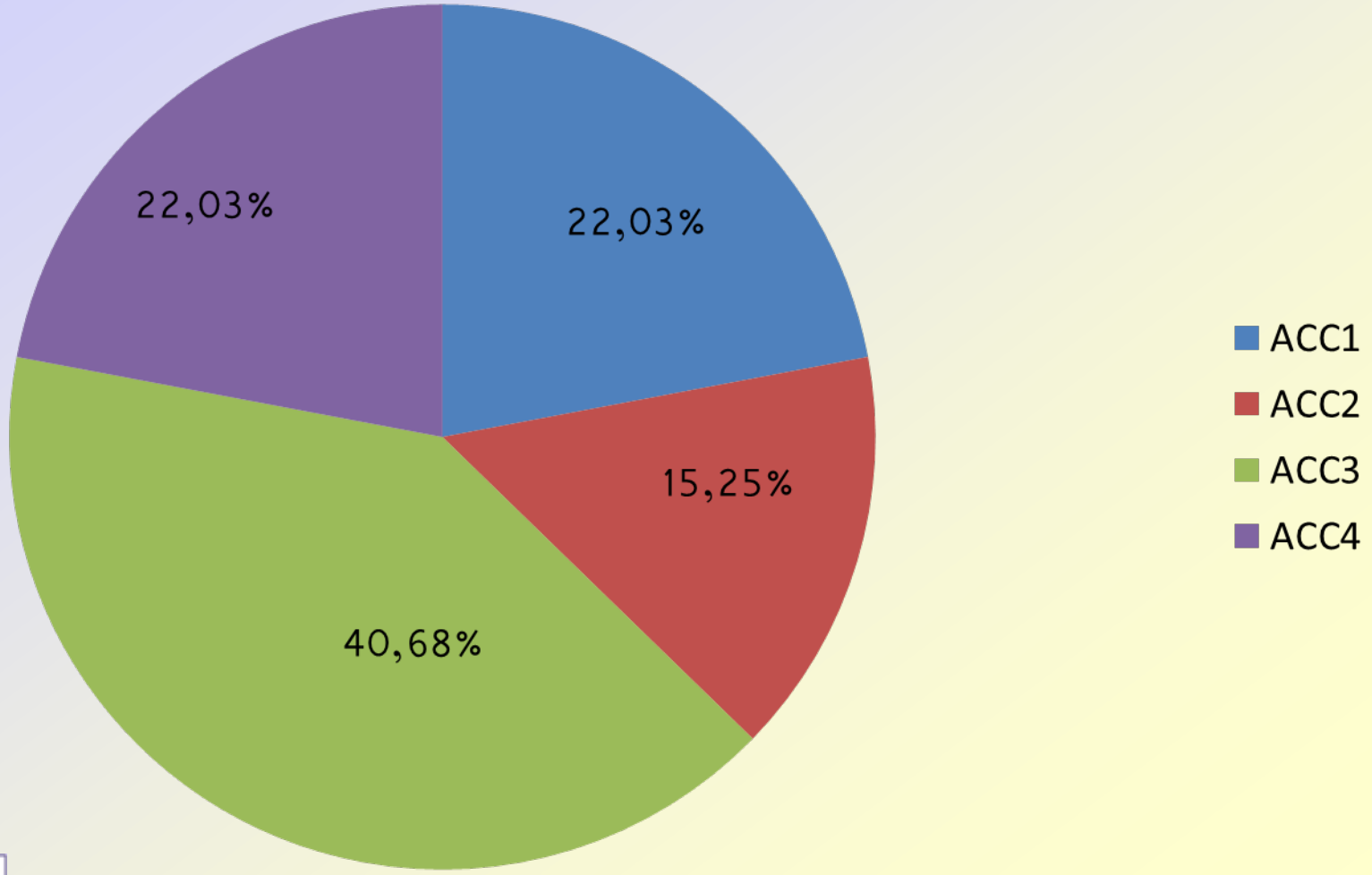
SATMA

NUMBER OF LHD'S REPORTED

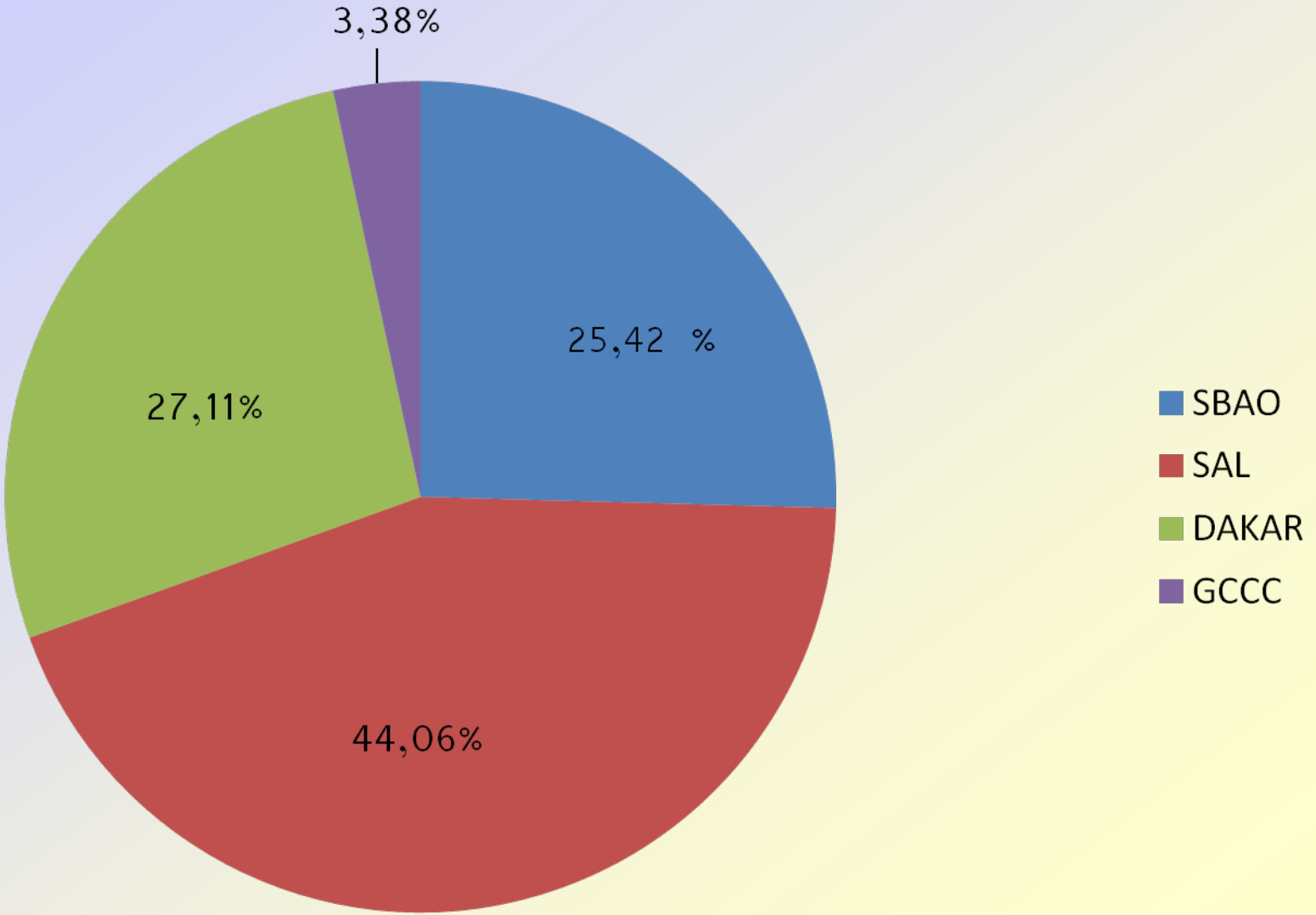
TOTAL LHD'S 2013: 59



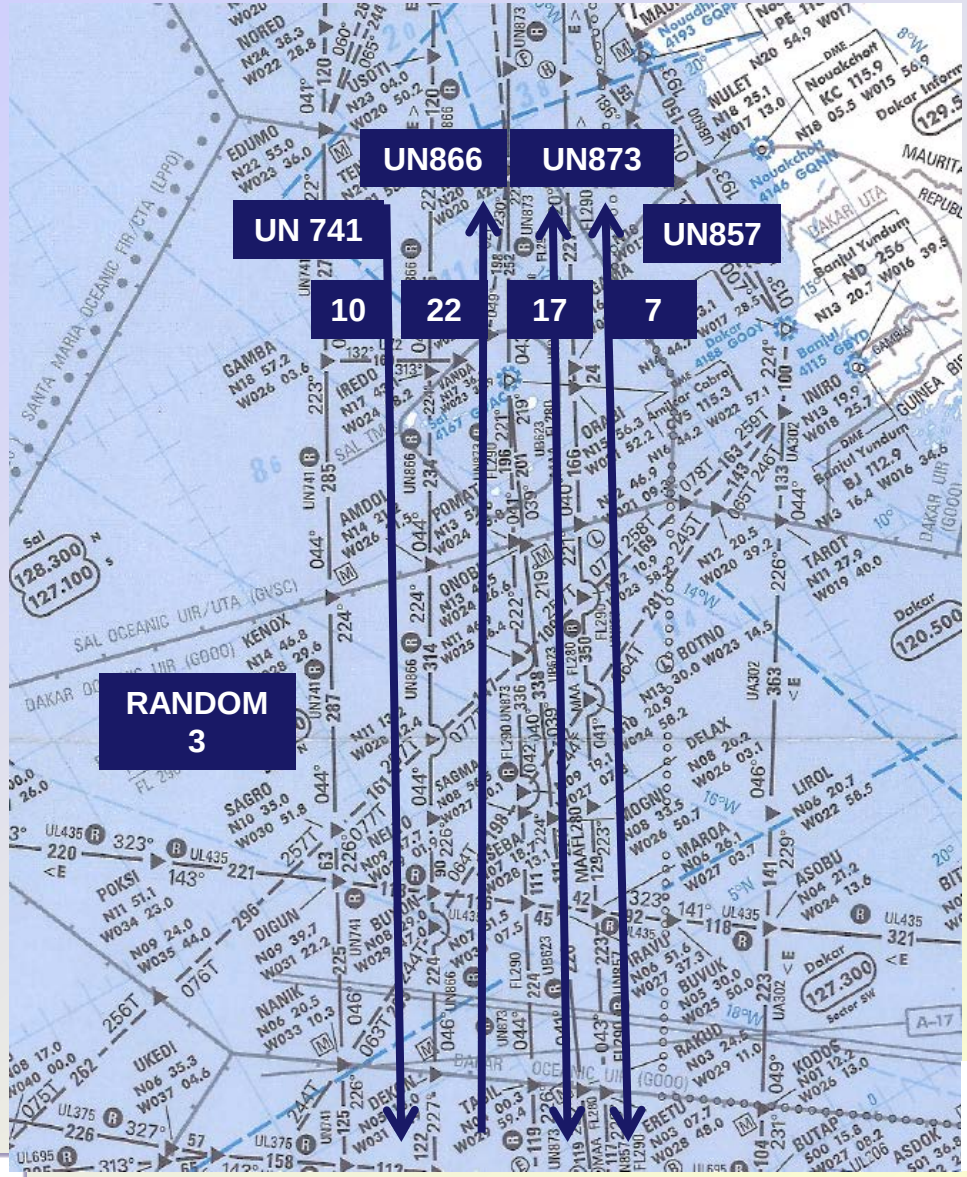
Percentage of LHD's per region



Percentage of LHD's Contribution per region



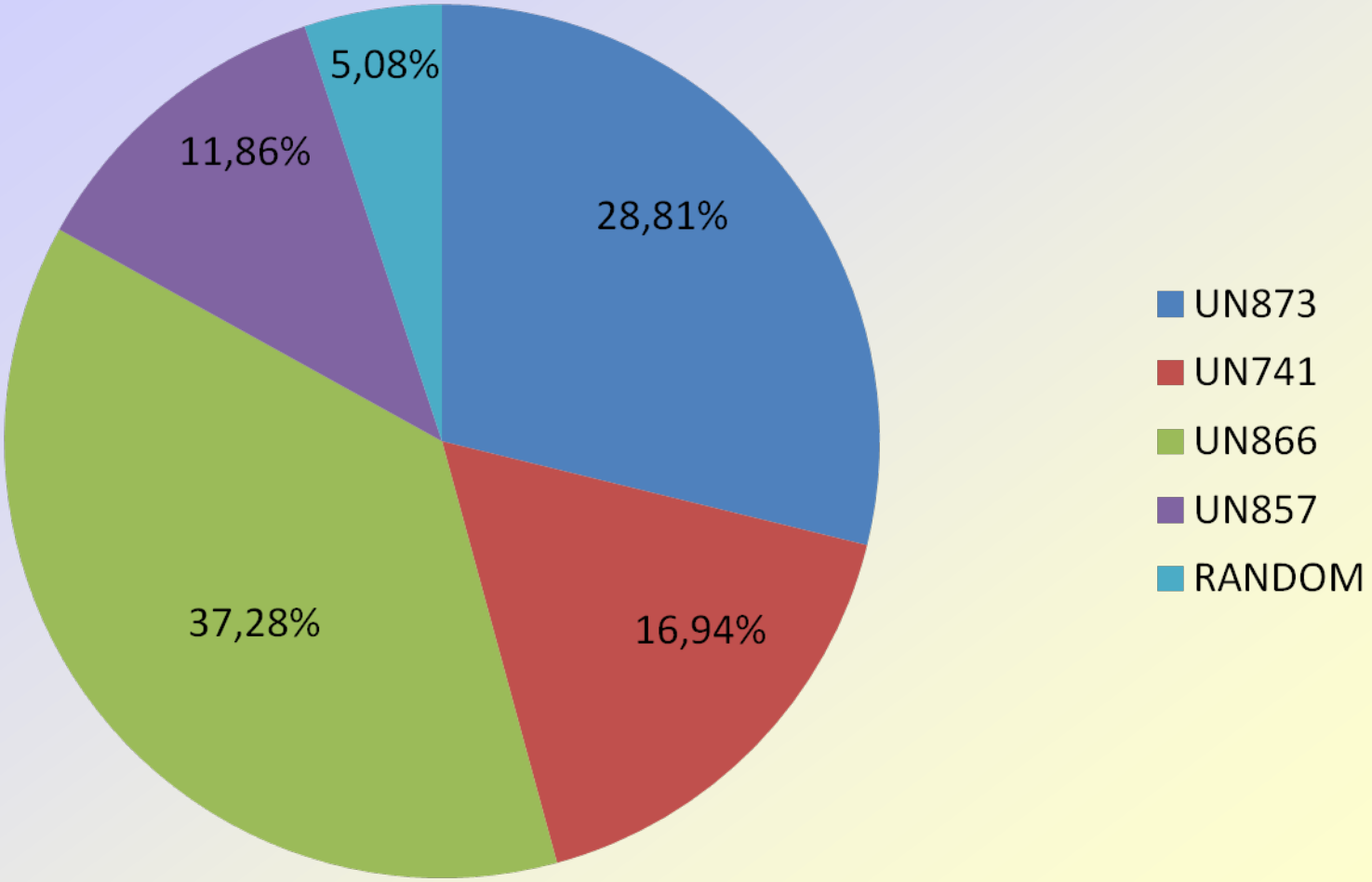
Distribution of LHD's per ATS route



2012

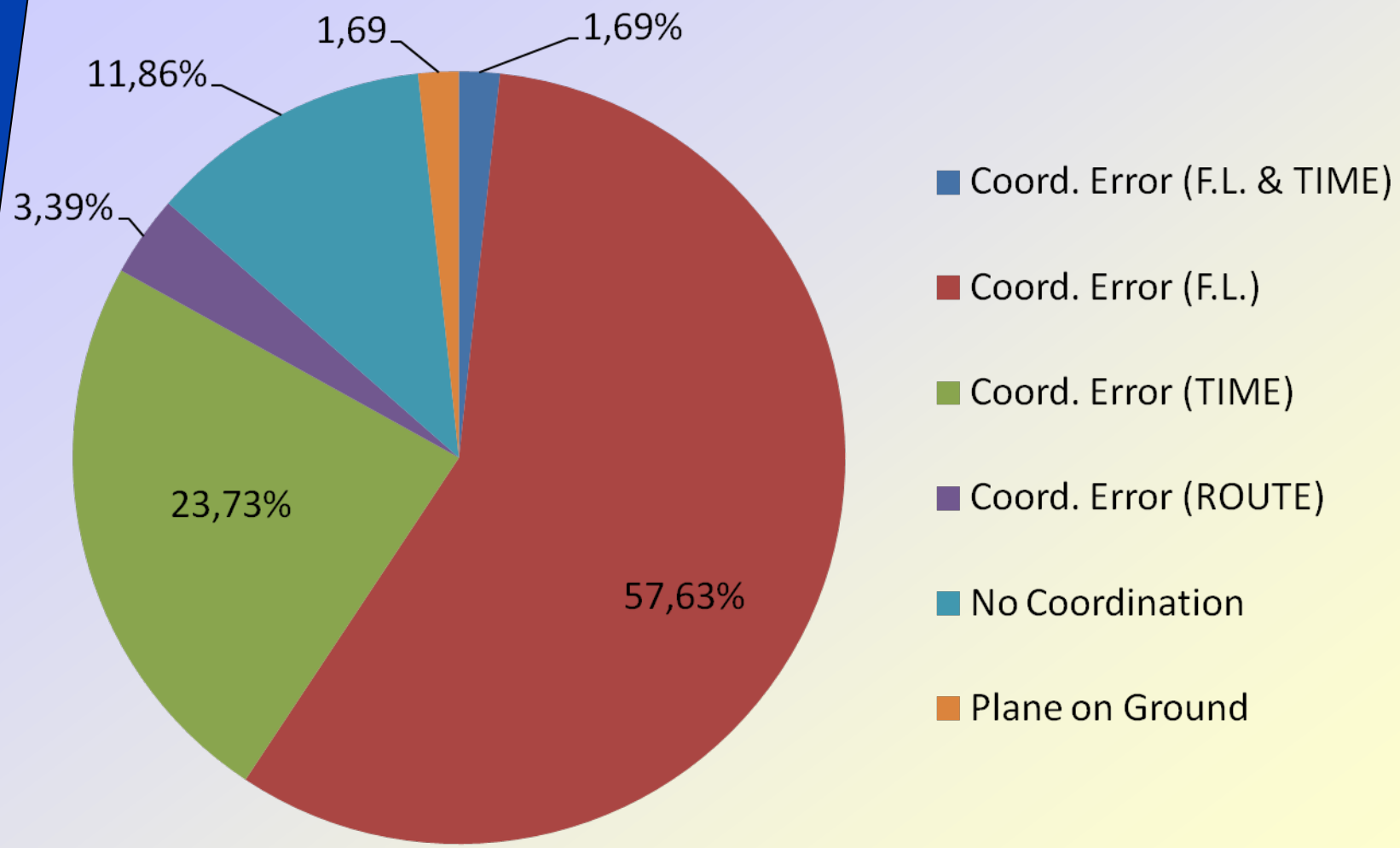
2	13	19	30	9
RANDOM	UN741	UN866	UN873	UN857

Percentage of LHD's per ATS route



ENAIRE

Percentage of LHD'S Contributing Factors



SATMA

AMENDMENT No. 6

TO THE

PROCEDURES
FOR
AIR NAVIGATION SERVICES

AIR TRAFFIC MANAGEMENT

(Doc 4444)

INTERIM EDITION

The text of Amendment No. 6 to the PANS-ATM (Doc 4444) was approved by the President of the Council of ICAO on behalf of the Council on **20 June 2014** for applicability on **13 November 2014**. This interim edition is distributed to facilitate implementation of the amendment by States. Replacement pages incorporating Amendment No. 6 are expected to be distributed in October 2014. (State letter AN 13/2.1-14/48 refers.)

JUNE 2014

INTERNATIONAL CIVIL AVIATION ORGANIZATION

NOTES ON THE EDITORIAL PRESENTATION OF THE AMENDMENT TO THE PANS-ATM

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

1. ~~Text to be deleted is shown with a line through it.~~	text to be deleted
2. New text to be inserted is highlighted with grey shading.	new text to be inserted
3. ~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	new text to replace existing text

TEXT OF AMENDMENT 6 TO THE

PROCEDURES FOR AIR NAVIGATION SERVICES

AIR TRAFFIC MANAGEMENT

. . .

Chapter 1

DEFINITIONS

. . .

Insert new text as follows:

Free text message element. A message element used to convey information not conforming to any standardized message element in the CPDLC message set.

ITP aircraft. An aircraft approved by the State of the Operator to conduct in-trail procedure (ITP).

ITP distance. The distance between the ITP aircraft and a reference aircraft as defined by:

a) for aircraft on the same track, the difference in distance to an aircraft calculated common point along a projection of each other's track; or

b) for aircraft on parallel tracks, the distance measured along the track of one of the aircraft using its calculated position and the point abeam the calculated position of the other aircraft.

Note.— Reference aircraft refers to one or two aircraft with ADS-B data that meet the ITP criteria described in paragraph 5.4.2.7 and are indicated to ATC by the ITP aircraft as part of the ITP clearance request.

Pre-formatted free text message element. A free text message element that is stored within the aircraft system or ground system for selection.

Standardized free text message element. A message element that uses a defined free text message format, using specific words in a specific order.

Note.— Standardized free text message elements may be manually entered by the user or pre-formatted.

. . .

End of new text.

Chapter 4

GENERAL PROVISIONS FOR AIR TRAFFIC SERVICES

. . .

4.15 DATA LINK COMMUNICATIONS INITIATION PROCEDURES

. . .

4.15.4 Failure

~~In the case of an initiation failure, the originator of the data link initiation process shall be informed.~~

4.15.4.1 In the case of an initiation failure, the data link system shall provide an indication of the failure to the ATS unit and the flight crew.

4.15.4.2 The ATS unit shall establish procedures to resolve, as soon as practicable, data link initiation failures. Procedures should include, as a minimum, the following:

a) when a flight plan is available, verify that the aircraft identification, aircraft registration, and other details contained in the data link initiation request correspond with details in the flight plan, and where differences are detected make the necessary changes; or

b) when a flight plan is not available, create a flight plan with sufficient information in the flight data processing system, to achieve a successful data link initiation; then

c) arrange for the re-initiation of the data link.

4.15.4.3 The aircraft operator shall establish procedures to resolve, as soon as practicable, initiation failures. Procedures should include, as a minimum, that the pilot:

a) verify the correctness and consistency of the flight plan available in the FMS or equipment from which the CPDLC communication is initiated, and where differences are detected make the necessary changes;

b) verify the correct ATSU address; and

c) re-initiate data link.

. . .

Chapter 5

SEPARATION METHODS AND MINIMA

. . .

5.4 HORIZONTAL SEPARATION

. . .

5.4.1 Lateral separation

5.4.1.1 LATERAL SEPARATION APPLICATION

. . .

5.4.1.1.4 When an aircraft turns onto an ATS route via a flyover waypoint, a separation other than the normally prescribed lateral separation shall be applied for that portion of the flight between the flyover waypoint where the turn is executed and the next waypoint (see Figures 5-1 and 5-2).

Note 1.— For flyover waypoints aircraft are required to first fly over the waypoint before executing the turn. After the turn the aircraft may either navigate to join the route immediately after the turn or navigate to the next defined waypoint before re-joining the route. This will require additional lateral separation on the overflown side of the turn.

Note 2.— This does not apply to ATS routes that have turns using fly-by waypoints.

Note 3.— An example of a prescribed lateral separation minima based on a specific navigation performance can be found in 5.4.1.2.1.6.

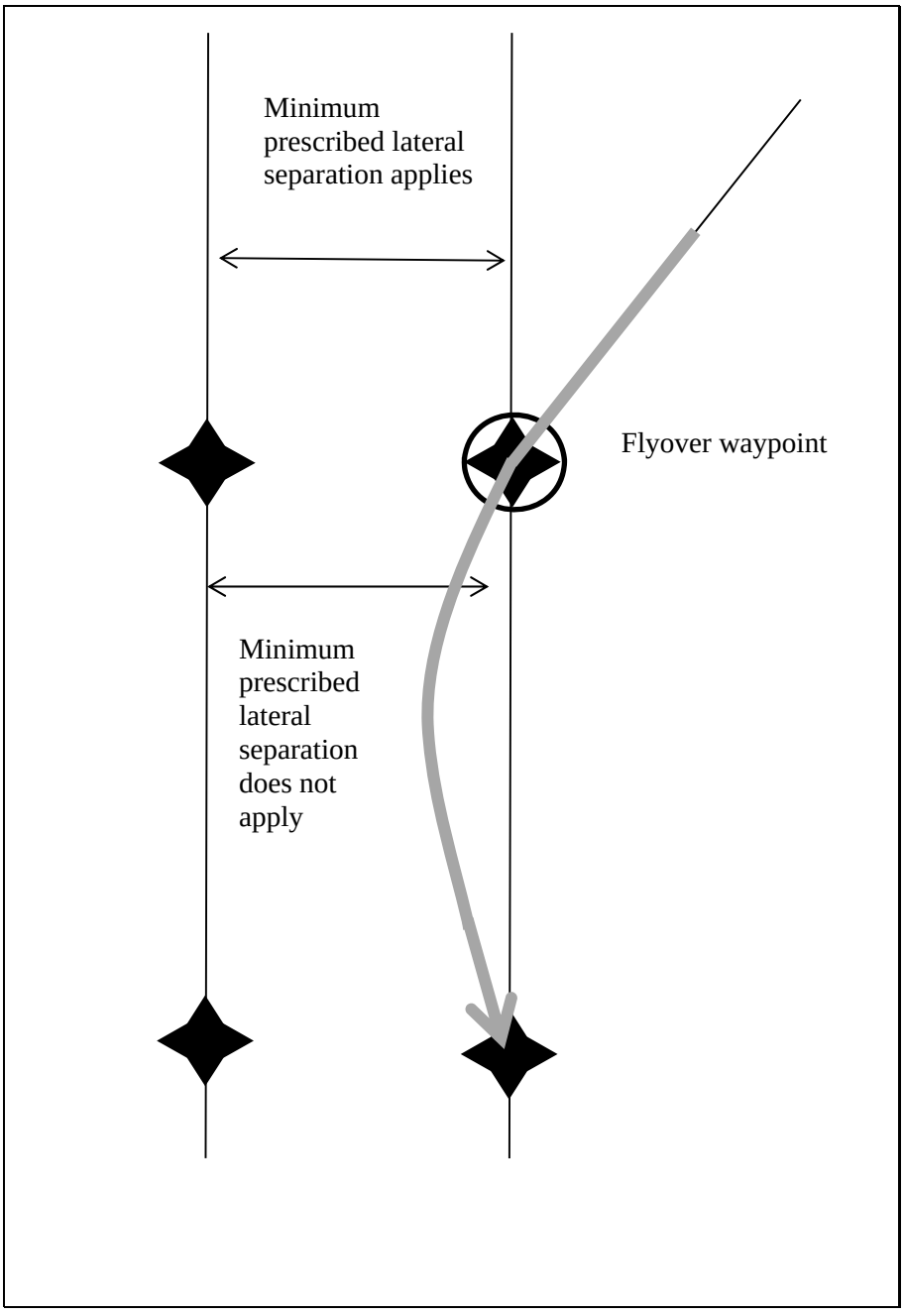


Figure 5-1: Turn over flyover waypoint (See 5.4.1.1.4)

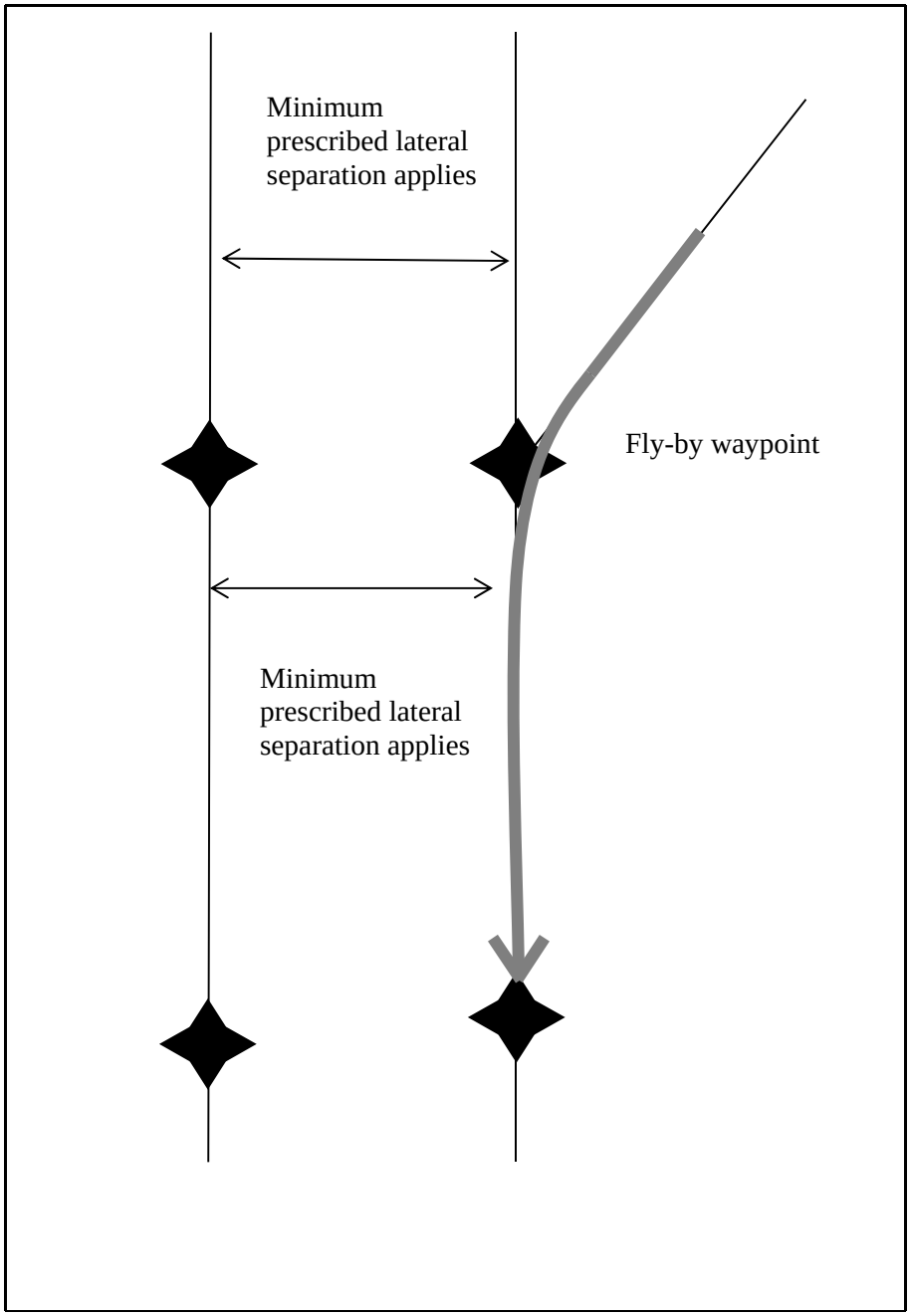


Figure 5-2: Turn at fly-by waypoint (See 5.4.1.1.4)

Renumber subsequent figures.

5.4.1.2 LATERAL SEPARATION CRITERIA AND MINIMA

5.4.1.2.1 Means by which lateral separation may be applied include the following:

5.4.1.2.1.1 *By reference to the same or different geographic locations*. By position reports which positively indicate the aircraft are over different geographic locations as determined visually or by reference to a navigation aid (see Figure 5-~~1~~3).

5.4.1.2.1.2 *By use of ~~the same navigation aid or method~~NDB, VOR or GNSS on intersecting tracks or ATS routes*. By requiring aircraft to fly on specified tracks which are separated by a minimum amount appropriate to the navigation aid ~~or method~~ employed. Lateral separation between two aircraft exists when:

a) *VOR:* both aircraft are established on radials diverging by at least 15 degrees and at least one aircraft is at a distance of 28 km (15 NM) or more from the facility (see Figure 5-~~2~~4);

b) *NDB:* both aircraft are established on tracks to or from the NDB which are diverging by at least 30 degrees and at least one aircraft is at a distance of 28 km (15 NM) or more from the facility (see Figure 5-~~3~~5);

c) *~~dead reckoning (DR)~~GNSS/GNSS:* ~~both~~each aircraft ~~are~~is confirmed to be established on ~~tracks diverging by at least 45 degrees and at least one aircraft is at a distance of 28 km (15 NM) or more from the point of intersection of the tracks, this point being determined either visually or by reference to a navigation aid and both aircraft are established outbound from the intersection (see Figure 5-4)~~ a track with zero offset between two waypoints and at least one aircraft is at a minimum distance from a common point as specified in Table 5-1; or

d) *~~RNAV operations~~VOR/GNSS:* ~~both~~ the aircraft ~~are~~using VOR is established on ~~tracks which diverge by at least 15 degrees and the protected airspace associated with the track of one aircraft does not overlap with the protected airspace associated with the track of the other aircraft. This is determined by applying the angular difference between two tracks and the appropriate protected airspace value. The derived value is expressed as a distance from the intersection of the two tracks at which lateral separation exists~~ a radial to or from the VOR and the other aircraft using GNSS is confirmed to be established on a track with zero offset between two waypoints and at least one aircraft is at a minimum distance from a common point as specified in Table 5-1.

	Aircraft 1: VOR or GNSS Aircraft 2: GNSS	
Angular difference between tracks measured at the common point (degrees)	FL010 – FL190 Distance from a common point	FL200 – FL600 Distance from a common point
15 – 135	27.8 km (15 NM)	43 km (23 NM)
The distances in the table are ground distances. States must take into account the distance (slant range) from the source of a DME signal to the receiving antenna when DME is being utilized to provide range information.		

Table 5-1

Note 1.— The values in the table above are from a larger table of values derived by collision risk

analysis. The source table for separation of aircraft navigating by means of GNSS and VOR is contained in Circular 322, Guidelines for the Implementation of GNSS Lateral Separation Minima Based on VOR Separation Minima. *States may refer to Circular 322 for greater detail and other angular differences and separation distances.*

Note 2.— The values in the table above have accounted for distances from the common point encompassed by the theoretical turn area for fly-by turns as specified in the Minimum Aviation System Performance Standard: Required Navigation Performance For Air Navigation *(ED-75B/DO-236B), section 3.2.5.4 and fixed radius transition turns as defined in the* Performance-based Navigation (PBN) Manual *(Doc 9613).*

Note 3.— Guidance material for the implementation of GNSS lateral separation is contained in Circular 322, Guidelines for the Implementation of GNSS Lateral Separation Minima Based on VOR Separation Minima.

5.4.1.2.1.2.1 When aircraft are operating on tracks which are separated by considerably more than the ~~foregoing~~ minimum ~~figures~~in 5.4.1.2.1.2 a) and b), States may reduce the distance at which lateral separation is achieved.

5.4.1.2.1.2.2 Before applying GNSS-based track separation the controller shall confirm the following:

a) ensure that the aircraft is navigating using GNSS; and

b) in airspace where strategic lateral offsets are authorized, that a lateral offset is not being applied.

5.4.1.2.1.2.3 In order to minimize the possibility of operational errors, waypoints contained in the navigation database or uplinked to the aircraft flight management system should be used in lieu of manually entered waypoints, when applying GNSS-based track separation. In the event that it is operationally restrictive to use waypoints contained in the navigation database, the use of waypoints that require manual entry by pilots should be limited to half or whole degree of latitude and longitude.

5.4.1.2.1.2.4 GNSS-based track separation shall not be applied in cases of pilot reported receiver autonomous integrity monitoring (RAIM) outages.

Note.– For the purpose of applying GNSS-based lateral separation minima, distance and track information derived from an integrated navigation system incorporating GNSS input is regarded as equivalent to GNSS distance and track.

5.4.1.2.1.2.5 GNSS receivers used for applying separation shall meet the requirements in Annex 10, Volume I and be indicated in the flight plan.

Delete Figure 5-4.

. . .

5.4.1.2.1.4 *Lateral separation of aircraft on published ~~adjacent~~ instrument flight procedures for arrivals and departures.*

5.4.1.2.1.4.1 Lateral separation of departing and/or arriving aircraft, using instrument flight procedures, will exist:

a) where the distance between any combination of RNAV 1 with RNAV 1 or, ~~Basic~~ RNP 1, RNP APCH ~~and/~~or RNP AR APCH tracks is not less than 13 km (7 NM); or

b) where the distance between any combination of RNP 1, RNP APCH or RNP AR APCH tracks is not less than 9.3 km (5 NM); or

~~b~~c) where the protected areas of tracks designed using obstacle clearance criteria do not overlap and provided operational error is considered.

Note 1.— ~~The 13 km (7 NM)~~distance values contained in a) and b) above ~~was~~were determined by collision risk analysis using multiple navigation specifications. Information on this analysis is contained in Circular 324, Guidelines for Lateral Separation of Arriving and Departing Aircraft on Published Adjacent Instrument Flight Procedures.

Note 2.— Circular 324 also contains information on separation of arrival and departure tracks using non-overlapping protected areas based on obstacle clearance criteria, as provided for in the Procedures for Air Navigation Services — Aircraft Operations, *Volume II* — Construction of Visual and Instrument Flight Procedures *(PANS-OPS, Doc 8168).*

Note 3.— Provisions concerning reductions in separation minima are contained in Chapter 2, ATS Safety Management, and Chapter 5, Separation Methods and Minima, Section 5.11.

Note 4.— Guidance concerning the navigation specifications is contained in the Performance-based Navigation (PBN) Manual *(Doc 9613).*

5.4.1.2.1.6 *Lateral separation of aircraft on parallel or non-intersecting tracks or ATS routes.* Within designated airspace or on designated routes, lateral separation between aircraft operating on parallel or non-intersecting tracks or ATS routes shall be established in accordance with the following:

a) for a minimum spacing between tracks of 93 km (50 NM) a navigational performance of RNAV 10 (RNP 10), RNP 4 or RNP 4~~2~~ shall be prescribed~~; and~~

b) for a minimum spacing between tracks of 55.5 km (30 NM) a navigational performance of RNP 4 or RNP 2 shall be prescribed~~.~~;

c) for a minimum spacing between tracks of 27.8 km (15 NM) a navigational performance of RNP 2 or a GNSS equipage shall be prescribed. Direct controller-pilot VHF voice communication shall be maintained while such separation is applied;

d) for a minimum spacing between tracks of 13 km (7 NM), applied while one aircraft climbs/descends through the level of another aircraft, a navigational performance of RNP 2 or a GNSS equipage shall be prescribed. Direct controller-pilot VHF voice communication shall be maintained while such separation is applied; and

e) for a minimum spacing between tracks of 37 km (20 NM), applied while one aircraft climbs/descends through the level of another aircraft whilst using other types of communication than specified in d) above, a navigational performance of RNP 2 or a GNSS equipage shall be prescribed.

Note 1.— Guidance material for the implementation of the navigation capability supporting 93 km (50 NM), ~~and~~ 55.5 km (30 NM), 37 km (20 NM), 27.8 km (15 NM)~~,~~ and 13 km (7 NM) lateral separation is contained in the Performance-based Navigation (PBN) Manual *(Doc 9613)* and *Circular 334*, Guidelines for the Implementation of Lateral Separation Minima.

Note 2.— Guidance material for implementation of communication capability supporting 93 km (50 NM) and 55.5 km (30 NM) lateral separation is contained in the Manual on Required Communication Performance (RCP) *(Doc 9869). Information regarding RCP allocations for these capabilities is contained in RTCA DO-306/EUROCAE ED-122* Safety and Performance Standard for Air Traffic Data Link Services in Oceanic and Remote Airspace (Oceanic SPR Standard).

Note 3.— Existing implementations of the 55.5 km (30 NM) lateral separation minimum require a communication capability of direct controller-pilot voice communications or CPDLC and a surveillance capability by an ADS-C system in which a periodic contract and waypoint change and lateral deviation event contracts are applied.

Note 4.— See Appendix 2, ITEM 10: EQUIPMENT AND CAPABILITIES in relation to the GNSS prescribed in c), d) and e) above.

5.4.1.2.1.7 ~~*RNAV operations (where RNP is specified) on intersecting tracks or ATS routes.* The use of this separation is limited to intersecting tracks that converge to or diverge from a common point at angles between 15 and 135 degrees.~~*Lateral separation of aircraft on intersecting tracks or ATS routes.* Lateral separation between aircraft operating on intersecting tracks or ATS routes shall be established in accordance with the following:

a) an aircraft converging with the track of another aircraft is laterally separated until it reaches a lateral separation point that is located a specified distance measured perpendicularly from the track of the other aircraft (see Figure 5-6); and

b) an aircraft diverging from the track of another aircraft is laterally separated after passing a lateral separation point that is located a specified distance measured perpendicularly from the track of the other aircraft (see Figure 5-6).

This type of separation may be used for tracks that intersect at any angles using the values for lateral separation points specified in the table below:

Navigation	**Separation**
RNAV 10 (RNP 10)	93 km (50 NM)
RNP 4	55.5 km (30 NM)
RNP 2	27.8 km (15 NM)

5.4.1.2.1.8 When applying the 27.8 km (15 NM) separation minima specified in the table above, a GNSS, as indicated in the flight plan by the letter G meets the specified navigation performance.

Note 1.— Guidance material for the implementation of the navigation capability supporting 93 km (50 NM), 55.5 km (30 NM), and 27.8 km (15 NM) lateral separation is contained in the Performance-based Navigation (PBN) Manual *(Doc 9613) and Circular 334,* Guidelines for the Implementation of Lateral Separation Minima.

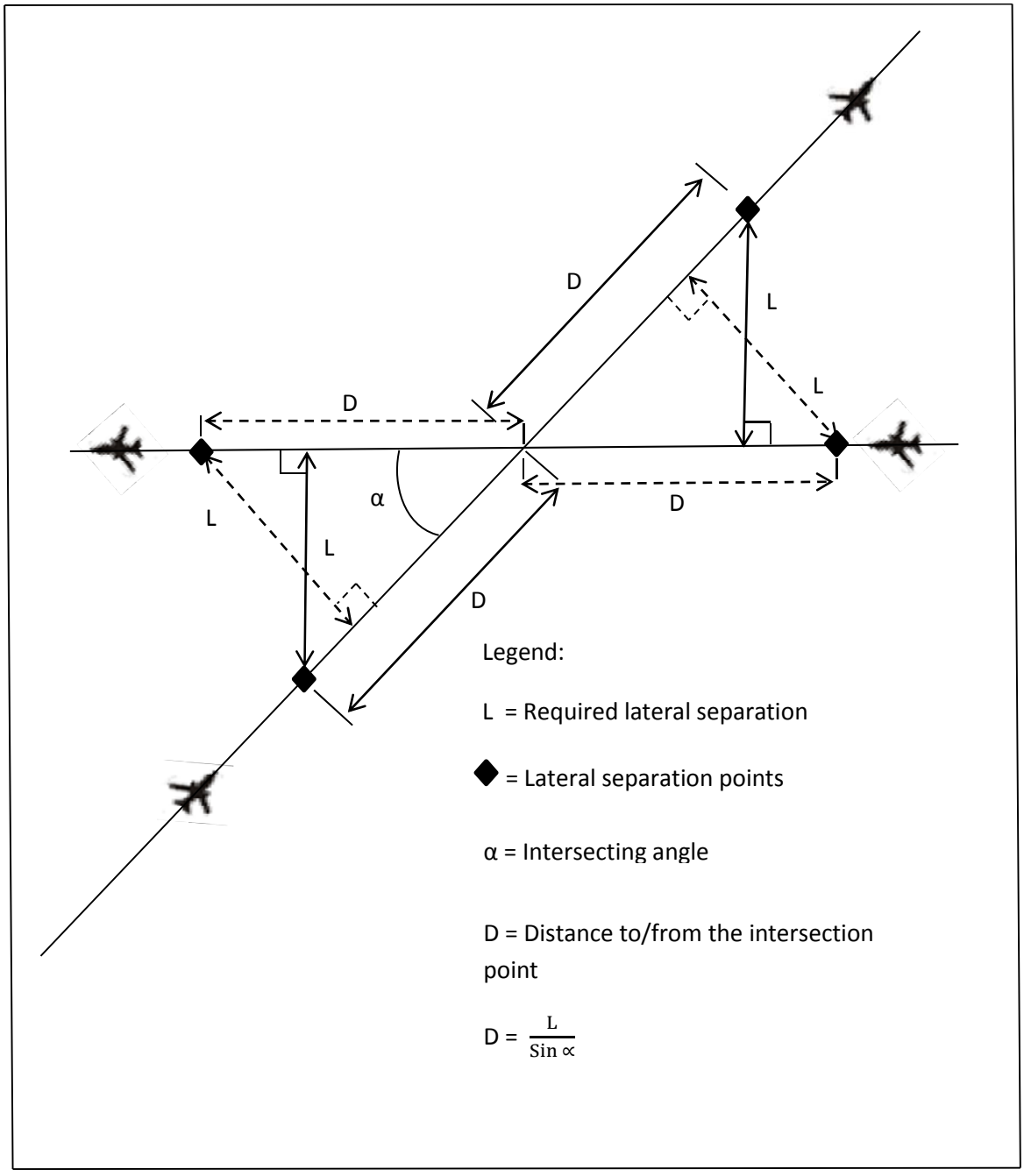


Figure 5-56. Lateral separation points ~~and the area of conflict~~ (see 5.4.1.2.1.7.~~1~~)

Renumber subsequent figures.

~~5.4.1.2.1.7.1 For intersecting tracks, the entry points to and the exit points from the area in which lateral distance between the tracks is less than the required minimum are termed lateral separation points. The area bound by the lateral separation points is termed the area of conflict (see Figure 5-5).~~

~~5.4.1.2.1.7.2 The distance of the lateral separation points from the track intersection shall be determined by collision risk analysis and will depend on complex factors such as the navigation~~

~~accuracy of the aircraft, traffic density, and occupancy.~~

~~*Note.— Information on the establishment of lateral separation points and collision risk analyses are contained in the* Manual on Airspace Planning Methodology for the Determination of Separation Minima *(Doc 9689).*~~

~~5.4.1.2.1.7.3 Lateral separation exists between two aircraft when at least one of the aircraft is outside the area of conflict.~~

5.4.1.2.1.~~8~~9 *Transitioning into airspace where a greater lateral separation minimum applies*. Lateral separation will exist when aircraft are established on specified tracks which:

a) are separated by an appropriate minimum; and

b) diverge by at least 15 degrees until the applicable lateral separation minimum is established;

providing that it is possible to ensure, by means approved by the appropriate ATS authority, that aircraft have the navigation capability necessary to ensure accurate track guidance.

. . .

5.4 HORIZONTAL SEPARATION

. . .

5.4.2 Longitudinal separation

. . .

Insert new text as follows:

5.4.2.7 LONGITUDINAL SEPARATION MINIMA BASED ON DISTANCE USING ADS-B IN-TRAIL PROCEDURE (ITP)

Note 1.— Attention is drawn to Circular 325, In-Trail Procedure (ITP) using Automatic Dependant Surveillance – Broadcast (ADS-B).

Note 2.— Guidance material on ITP equipment can be found in RTCA DO-312/EUROCAE ED-159 Safety Performance and Interoperability Requirements Document for the In-Trail Procedure in Oceanic Airspace (ATSA-ITP) Application *and Supplement and RTCA DO-317A/EUROCAE ED-194, Minimum Operational Performance Standards (MOPS) for Aircraft Surveillance Application (ASA) System*.

5.4.2.7.1 The routes or airspace where application of the in-trail procedure is authorized, and the procedures to be followed by pilots in accordance with the provisions of this Section (5.4.2.7), shall be promulgated in aeronautical information publications (AIPs).

5.4.2.7.2 ITP requests and clearances shall be communicated via a CPDLC message exchange only and in accordance with the appropriate message elements in Appendix 5.

5.4.2.7.3 Longitudinal separation between a climbing or descending ITP aircraft and reference aircraft shall be applied in accordance with 5.4.2.7.3.1, 5.4.2.7.3.2 and 5.4.2.7.3.3. An ITP aircraft shall not be separated simultaneously from more than two reference aircraft using the ITP separation minimum.

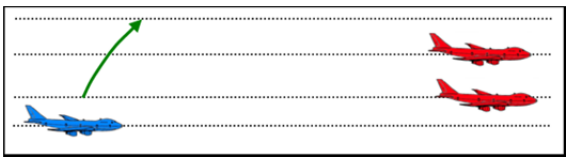
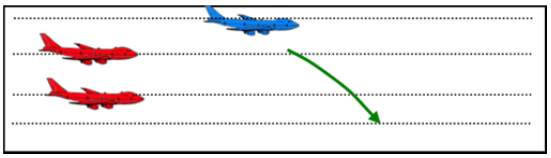
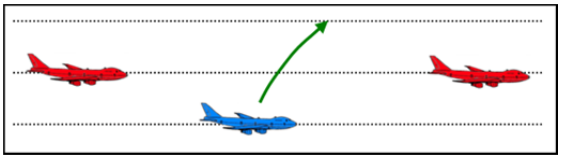
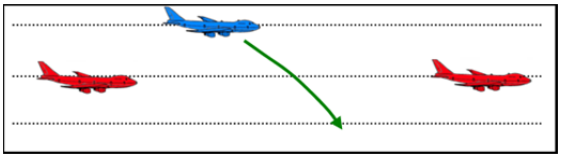
ITP “BEHIND” CLIMB (1 or 2 reference aircraft) 	ITP “BEHIND” DESCENT (1 or 2 reference aircraft) 
ITP “AHEAD OF” CLIMB (1 or 2 reference aircraft) 	ITP “AHEAD OF” DESCENT (1 or 2 reference aircraft) 
ITP COMBINED “BEHIND AND AHEAD OF” CLIMB 	ITP COMBINED “BEHIND AND AHEAD OF” DESCENT 
Note.– *In the diagrams above, the “ITP aircraft” is the aircraft to which the arrow indicating climb or descent is attached. Other aircraft in the diagrams are the “reference aircraft”.*	

Figure 5-34. ITP flight level change scenarios (see 5.4.2.7.3)

Renumber subsequent figures accordingly.

5.4.2.7.3.1 An ITP climb or descent may be requested by the pilot provided the following ITP criteria are satisfied:

a) the ITP distance between the ITP aircraft and the reference aircraft shall be:

1) not less than 28 km (15 NM) with a maximum closing ground speed of 37 km/h (20 kt); or

2) not less than 37 km (20 NM) with a maximum closing ground speed of 56 km/h (30 kt);

b) the ITP on-board equipment shall indicate that the angle between the current tracks of the ITP aircraft and reference aircraft is less than 45 degrees;

c) the altitude difference between the ITP aircraft and any reference aircraft shall be 600 m (2 000 ft) or less;

d) the climb or descent shall be conducted at a rate of not less than 1.5 m/s (300 ft/min), or any higher rate when specified by the controller; and

e) the climb or descent shall be performed at the assigned Mach number. If no Mach number has been assigned by ATC, the ITP aircraft shall maintain the current cruise Mach number throughout the ITP manoeuvre.

Note.— These criteria are designed to ensure a minimum separation of 19 km (10 NM) between the ITP aircraft and the reference aircraft during the climb or descent.

5.4.2.7.3.2 A controller may clear an aircraft for an ITP climb or descent provided the following conditions are satisfied:

a) the ITP climb or descent has been requested by the pilot;

b) the aircraft identification of each reference aircraft in the ITP request exactly matches the Item 7 - aircraft identification of the corresponding aircraft's filed flight plan;

c) the reported ITP distance between the ITP aircraft and any reference aircraft is 28 km (15 NM) or more;

d) both the ITP aircraft and reference aircraft are either on;

1) same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or

2) parallel tracks or same tracks with no turns permitted during the manoeuvre.

Note.— Same identical tracks are a special case of same track defined in 5.4.2.1.5 a) where the angular difference is zero degrees.

e) no speed or route change clearance shall be issued to the ITP aircraft until the ITP climb or descent is completed;

f) the altitude difference between the ITP aircraft and any reference aircraft shall be 600 m (2 000 ft) or less;

g) no instruction to amend speed, altitude or route shall be issued to any reference aircraft until the ITP climb or descent is completed;

h) the maximum closing speed between the ITP aircraft and each reference aircraft shall be Mach 0.06; and

i) the ITP aircraft shall not be a reference aircraft in another ITP clearance.

5.4.2.7.3.3 Following receipt of an ITP climb or descent clearance and before initiating the procedure, the pilot of the ITP aircraft shall determine that the ITP criteria referred to in 5.4.2.7.3.1 a) and b) are still being met with respect to the reference aircraft identified in the clearance and:

a) if the ITP criteria are satisfied, the pilot shall accept the clearance and commence the climb or descent immediately; or

b) if the ITP criteria are no longer satisfied, the pilot shall notify the controller and maintain the previously cleared level.

End of new text.

. . .

Chapter 11

AIR TRAFFIC SERVICES MESSAGES

. . .

11.4.3.4 MESSAGES CONTAINING INFORMATION ON AERODROME CONDITIONS

Note.— Provisions regarding the issuance of information on aerodrome conditions are contained in Chapter 7, 7.5.

. . .

11.4.3.4.2 Information that water is present on a runway shall be transmitted to each aircraft concerned, on the initiative of the controller, using the following terms:

DAMP — the surface shows a change of colour due to moisture.

WET — the surface is soaked but there is no standing water.

~~WATER PATCHES — patches of standing water are visible.~~

~~FLOODED — extensive standing water is visible.~~

STANDING WATER — for aeroplane performance purposes, a runway where more than 25 per cent of the runway surface area (whether in isolated areas or not) within the required length and width being used is covered by water more than 3 mm deep.

. . .

Chapter 12

PHRASEOLOGIES

. . .

12.3 ATC PHRASEOLOGIES

12.3.1 General

. . .

12.3.1.11 AERODROME INFORMATION	a) [*(location)*] RUNWAY SURFACE CONDITION RUNWAY *(number) (condition)*; b) [*(location)*] RUNWAY SURFACE CONDITION RUNWAY *(number)* NOT CURRENT;

c) LANDING SURFACE *(condition)*;

d) CAUTION CONSTRUCTION WORK *(location)*;

e) CAUTION *(specify reasons)* RIGHT (*or* LEFT), (*or* BOTH SIDES) OF RUNWAY *[number]*;

f) CAUTION WORK IN PROGRESS (*or* OBSTRUCTION) *(position and any necessary advice)*;

g) RUNWAY REPORT AT *(observation time)* RUNWAY *(number) (type of precipitant)* UP TO *(depth of deposit)* MILLIMETRES. ~~BRAKING ACTION~~ ESTIMATED SURFACE FRICTION GOOD (*or* MEDIUM TO GOOD, *or* MEDIUM, *or* MEDIUM TO POOR, *or* POOR ~~*or* UNRELIABLE) [*and/or* BRAKING COEFFICIENT *(equipment and number)*~~];

h) BRAKING ACTION REPORTED BY *(aircraft type)* AT *(time)* GOOD (*or* MEDIUM to GOOD, *or* MEDIUM, *or* MEDIUM to POOR, *or* POOR);

~~i) BRAKING ACTION [*(location)*] *(measuring equipment used)*, RUNWAY *(number)*, TEMPERATURE [MINUS] *(number)*, WAS *(reading)* AT *(time)*;~~

~~j~~i) RUNWAY (*or* TAXIWAY) *(number)* WET [*or* ~~DAMP, WATER PATCHES, FLOODED *(depth)*~~ STANDING WATER, *or* SNOW REMOVED *(length and width as applicable)*, *or* TREATED, *or* COVERED WITH PATCHES OF DRY SNOW (*or* WET SNOW, *or* COMPACTED SNOW, *or* SLUSH, *or* FROZEN SLUSH, *or* ICE, *or* WET ICE, *or* ICE UNDERNEATH, *or* ICE AND SNOW, *or* SNOWDRIFTS, *or* FROZEN RUTS AND RIDGES)];

~~k~~j) TOWER OBSERVES *(weather information)*;

~~l~~k) PILOT REPORTS *(weather information)*.

. . .

Circumstances	*Phraseologies*
12.3.1.14 GNSS SERVICE STATUS	a) GNSS REPORTED UNRELIABLE (*or* GNSS MAY NOT BE AVAILABLE [DUE TO INTERFERENCE]); 1) IN THE VICINITY OF *(location) (radius)* [BETWEEN *(levels)*]; or 2) IN THE AREA OF *(description)* (*or* IN *(name)* FIR) [BETWEEN *(levels)*]; b) BASIC GNSS (*or* SBAS, *or* GBAS) UNAVAILABLE FOR *(specify operation)* [FROM *(time)* TO *(time)* (*or* UNTIL FURTHER NOTICE)]; *c) BASIC GNSS UNAVAILABLE [DUE TO (*reason, e.g.* LOSS OF RAIM *or* RAIM ALERT)]; *d) GBAS (*or* SBAS) UNAVAILABLE; e) CONFIRM GNSS NAVIGATION; and *f) AFFIRM GNSS NAVIGATION. * Denotes pilot transmission.

. . .

12.3.2 Area control services

. . .

12.3.2.8 SEPARATION INSTRUCTIONS	a) CROSS *(significant point)* AT *(time)* [OR LATER (*or* OR BEFORE)]; b) ADVISE IF ABLE TO CROSS *(significant point)* AT *(time or level)*; c) MAINTAIN MACH *(number)* [OR GREATER (*or* OR LESS)] [UNTIL *(significant point)*];

d) DO NOT EXCEED MACH *(number)*;

e) CONFIRM ESTABLISHED ON THE TRACK BETWEEN *(significant point)* AND *(significant point)* [WITH ZERO OFFSET];

*f) ESTABLISHED ON THE TRACK BETWEEN *(significant point)* AND *(significant point)* [WITH ZERO OFFSET];

g) MAINTAIN TRACK BETWEEN *(significant point)* AND *(significant point)*. REPORT ESTABLISHED ON THE TRACK;

*h) ESTABLISHED ON THE TRACK;

Note.– When used to apply a lateral VOR/GNSS separation confirmation of zero offset is required. (see 5.4.1.2)

i) CONFIRM ZERO OFFSET;

*j) AFFIRM ZERO OFFSET.

* Denotes pilot transmission.

. . .

Chapter 13

AUTOMATIC DEPENDENT SURVEILLANCE — CONTRACT (ADS-C) SERVICES

. . .

13.4 USE OF ADS-C IN THE PROVISION OF AIR TRAFFIC CONTROL SERVICE

. . .

13.4.3 Provision of ADS-C services

. . .

13.4.3.4 GENERAL ADS PROCEDURES

. . .

13.4.3.4.3 *ADS-C AGREEMENTS*

13.4.3.4.3.1 Except as provided for in 13.4.3.4.3.2, ~~I~~initial ADS-C agreements shall be determined by the ATS authority. Subsequent modifications to individual contracts may be made at the discretion of the~~controller based on prevailing traffic conditions and airspace complexity~~ ATS unit.

13.4.3.4.3.2 In airspace where procedural separation is being applied, ADS-C agreements shall, as a minimum, contain the following ADS contracts:

a) a periodic contract at an interval appropriate to the airspace requirements;

b) a waypoint change event contract;

c) a lateral deviation event contract;

d) a level range deviation event contract; and

e) a vertical rate change event contract for climb or descent, using a 27 m/s (5 000 ft/min) threshold.

Note 1.— Circumstances may dictate that periodic contract reporting rate might be increased on receipt of a lateral deviation or level range deviation event report.

Note 2.— A vertical rate change event specified at, for example, a negative vertical rate (i.e. a descent) exceeding 27 m/s (5 000 ft/min), may provide additional indication of an abnormal situation.

13.4.3.4.3.~~2~~3 When the application of specified separation minima is dependent on the reporting interval of periodic position reports, the ATC unit shall not establish periodic contracts with a reporting interval greater than the required reporting interval.

13.4.3.4.3.~~3~~4 Where an expected position report is not received within a prescribed time parameter, action shall be taken, as appropriate, to ascertain the position of the aircraft. ~~This may be achieved by the use of an ADS demand contract, CPDLC or voice communications, or receipt of a subsequent periodic report.~~

Note 1.— This may be achieved by the use of an ADS demand contract, CPDLC or voice communications, or receipt of a subsequent periodic report.

Note 2.— Requirements concerning the provision of an alerting service are contained in Chapter 9.

13.4.3.4.3.~~4~~5 An ADS-C aircraft observed to deviate significantly from its cleared flight profile shall be advised accordingly. Action shall be taken, as appropriate, to ascertain the position and intentions of the aircraft. Appropriate action shall also be taken if, in the opinion of the controller, such deviation is likely to affect the air traffic service being provided.

Note.— This may be achieved by the use of an ADS demand contract, CPDLC or voice communications.

. . .

Chapter 14

CONTROLLER-PILOT DATA LINK COMMUNICATIONS (CPDLC)

. . .

14.3 EXCHANGE OF OPERATIONAL CPDLC MESSAGES

. . .

14.3.4 Free text messages

The use of free text messages by controllers or pilots, other than ~~pre-formatted~~standardized free text message~~s~~ elements, should be avoided. Standardized free text message elements should be pre-formatted and made available to controllers and pilots to facilitate their use.

Note 1.— While it is recognized that non-routine and emergency situations may necessitate use of free text, particularly when voice communications have failed, the avoidance of utilizing free text messages is intended to reduce the possibility of misinterpretation and ambiguity.

Note 2.— Provisions concerning the use of ~~pre-formatted~~standardized free text message~~s~~ elements are contained in Annex 10, Volume II, Chapter 8.

. . .

Chapter 15

PROCEDURES RELATED TO EMERGENCIES, COMMUNICATION FALURE AND CONTINGENCIES

. . .

15.8 PROCEDURES FOR ~~AN ATC~~ATS UNITS WHEN A VOLCANIC ASH CLOUD IS REPORTED OR FORECAST

. . .

15.8.1 If a volcanic ash cloud is reported or forecast in the ~~FIR~~airspace for which the ~~ACC~~ATS unit is responsible, the ~~controller~~following actions should be taken:

a) relay ~~all~~pertinent information ~~available~~immediately to ~~pilots~~flight crews whose aircraft could be affected to ensure that they are aware of the ash cloud's current and forecast position and the flight levels affected;

b) accommodate requests for re-routing or level changes to the extent practicable;

~~b~~c) suggest ~~appropriate~~ re-routing ~~to the flight crew~~ to avoid ~~an~~or exit areas of ~~known~~reported or forecast ash clouds when requested by the pilot or deemed necessary by the controller; and

~~c~~d) ~~inform pilots that volcanic ash clouds are not detected by relevant ATS surveillance systems;~~when practicable, request a special air-report when the route of flight takes the aircraft into or near the forecast ash cloud and provide such special air-report to the appropriate agencies.

~~d) if the ACC has been advised by an aircraft that it has entered a volcanic ash cloud the controller should:~~

~~1) consider the aircraft to be in an emergency situation;~~

~~2) not initiate any climb clearances to turbine-powered aircraft until the aircraft has exited the ash cloud; and~~

~~3) not initiate vectoring without pilot concurrence.~~

Note 1.— Experience has shown that the recommended escape manoeuvre for an aircraft which has encountered an ash cloud is to reverse its course and begin a descent if terrain permits. The final responsibility for this decision, however, rests with the pilot-in-command as specified in the Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds *(Doc 9691), 5.2.4.1*.

Note 2.— The final authority as to the disposition of the aircraft, whether to avoid or proceed through a reported or forecast ash cloud, rests with the pilot-in-command, as prescribed in Annex 2, 2.4.

15.8.2 ~~Each State should develop appropriate procedures and contingency routings for avoidance of volcanic ash clouds that meet the circumstances of the State and fulfill its obligations to ensure safety of aircraft.~~When the flight crew advises the ATS unit that the aircraft has inadvertently entered a volcanic ash cloud, the ATS unit should:

a) take such action applicable to an aircraft in an emergency situation; and

b) initiate modifications of route or level assigned only when requested by the pilot or necessitated by airspace requirements or traffic conditions.

Note 1.— General procedures to be applied when a pilot reports an emergency situation are contained in Chapter 15, 15.1.1 and 15.1.2.

Note 2.— Guidance material concerning the effect of volcanic ash and the impact of volcanic ash on aviation operational and support services is provided in Chapters 4 and 5 of Doc 9691.

~~15.8.3 Controllers should be trained in procedures for avoidance of volcanic ash clouds and be made aware that turbine-engine aircraft encountering an ash cloud may suffer a complete loss of power. Controllers should take extreme caution to ensure that aircraft do not enter volcanic ash clouds.~~

~~*Note 1.— There are no means to detect the density of a volcanic ash cloud or the size distribution of its particles and their subsequent impact on engine performance and the integrity of the aircraft.*~~

~~*Note 2. Guidance material is provided in Chapters 4 and 5 of the* Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds *(Doc 9691).*~~

Chapter 16

MISCELLANEOUS PROCEDURES

. . .

16.5 STRATEGIC LATERAL OFFSET PROCEDURES (SLOP) ~~IN OCEANIC AND REMOTE CONTINENTAL AIRSPACE~~

~~16.5.1~~*Note 1.— SLOP are approved procedures that allow aircraft to fly on a parallel track to the right of the centre line relative to the direction of flight~~.~~ to mitigate the lateral overlap probability due to increased navigation accuracy, and wake turbulence encounters. Unless specified in the separation standard, a~~A~~n aircraft's use of these procedures does not affect the application of prescribed separation standards.*

~~*Note 1.— The use of highly accurate navigation systems (such as the global navigation satellite system (GNSS)) by an increasing proportion of the aircraft population has had the effect of reducing the magnitude of lateral deviations from the route centre line and, consequently, increasing the probability of a collision, should a loss of vertical separation between aircraft on the same route occur.*~~

~~*Note 2.— The following incorporates lateral offset procedures for both the mitigation of the increasing lateral overlap probability due to increased navigation accuracy, and wake turbulence encounters.*~~

Note ~~3~~2.— Annex 2, 3.6.2.1.1, requires authorization for the application of strategic lateral offsets from the appropriate ATS authority responsible for the airspace concerned.

16.5.1 Implementation of strategic lateral offset procedures shall be coordinated among the States involved.

Note.— Information concerning the implementation of strategic lateral offset procedures is contained in the Implementation of Strategic Lateral Offset Procedures *(Circ 331)*.

~~16.5.2 The following shall be taken into account by the appropriate ATS authority when authorizing the use of strategic lateral offsets in a particular airspace:~~

~~a) strategic lateral offsets shall only be authorized in en-route oceanic or remote continental airspace. Where part of the airspace in question is provided with an ATS surveillance service, transiting aircraft should normally be allowed to initiate or continue offset tracking;~~

~~b) strategic lateral offsets do not affect lateral separation minima and may be authorized for the following types of routes (including where routes or route systems intersect):~~

~~1) uni-directional and bi-directional routes; and~~

~~2) parallel route systems where the spacing between route centre lines is not less than 55.5 km (30 NM);~~

~~c) in some instances it may be necessary to impose restrictions on the use of strategic lateral offsets, e.g. where their application may be inappropriate for reasons related to obstacle clearance;~~

~~d) strategic lateral offset procedures should be implemented on a regional basis after coordination between all States involved;~~

~~e) the routes or airspace where application of strategic lateral offsets is authorized, and the procedures to be followed by pilots, shall be promulgated in aeronautical information publications (AIPs); and~~

~~f) air traffic controllers shall be made aware of the airspace within which strategic lateral offsets are~~

~~authorized.~~

16.5.2 Strategic lateral offsets shall be authorized only in en-route airspace as follows:

a) where the lateral separation minima or spacing between route centre lines is 55.5 km (30 NM) or more, offsets to the right of the centre line relative to the direction of flight in tenths of a nautical mile up to a maximum of 3.7 km (2 NM); and

b) where the lateral separation minima or spacing between route centre lines is 11.1 km (6 NM) or more and less than 55.5 km (30 NM), offsets to the right of the centre line relative to the direction of flight in tenths of a nautical mile up to a maximum of 0.9 km (0.5 NM).

16.5.3 The routes or airspace where application of strategic lateral offsets is authorized, and the procedures to be followed by pilots, shall be promulgated in aeronautical information publications (AIPs). In some instances, it may be necessary to impose restrictions on the use of strategic lateral offsets, e.g. where their application may be inappropriate for reasons related to obstacle clearance. Route conformance monitoring systems shall account for the application of SLOP.

16.5.3~~4~~ The decision to apply a strategic lateral offset shall be the responsibility of the flight crew. The flight crew shall only apply strategic lateral offsets in airspace where such offsets have been authorized by the appropriate ATS authority and when the aircraft is equipped with automatic offset tracking capability.

~~16.5.4 The strategic lateral offset shall be established at a distance of 1.85 km (1 NM) or 3.7 km (2 NM) to the right of the centre line relative to the direction of flight.~~

Note 1.— Pilots may contact other aircraft on the inter-pilot air-to-air frequency 123.45 MHz to coordinate offsets.

Note 2.— The strategic lateral offset procedure has been designed to include offsets to mitigate the effects of wake turbulence of preceding aircraft. If wake turbulence needs to be avoided, ~~one of the three available options (centre line, 1.85 km (1 NM) or 3.7 km (2 NM) right offset) may be used~~an offset to the right and within the limits specified in 16.5.2 may be used.

Note 3.— Pilots are not required to inform ATC that a strategic lateral offset is being applied.

. . .

Appendix 2

FLIGHT PLAN

. . .

2. Instructions for the completion of the flight plan form

ITEM 10: EQUIPMENT AND CAPABILITIES

. . .

A	GBAS landing system	J6	CPDLC FANS 1/A SATCOM (MTSAT)
B	LPV (APV with SBAS)	J7	CPDLC FANS 1/A SATCOM (Iridium)
C	LORAN C	K	MLS
D	DME	L	ILS
E1	FMC WPR ACARS	M1	ATC RTF SATCOM (INMARSAT)
E2	D-FIS ACARS	M2	ATC RTF (MTSAT)
E3	PDC ACARS	M3	ATC RTF (Iridium)
F	ADF	O	VOR
G	GNSS. If any portion of the flight is planned to be conducted under IFR it refers to GNSS receivers that comply with the requirements of Annex 10, Volume I *(See Note 2)*	P1–P9	Reserved for RCP
		R	PBN approved *(See Note 4)*
		T	TACAN
		U	UHF RTF
		V	VHF RTF
		W	RVSM approved
H	HF RTF	X	MNPS approved
I	Inertial Navigation	Y	VHF with 8.33 kHz channel spacing capability
J1	CPDLC ATN VDL Mode 2 *(See Note 3)*	Z	Other equipment carried or other capabilities *(See Note 5)*
J2	CPDLC FANS 1/A HFDL		
J3	CPDLC FANS 1/A VDL Mode 4		
J4	CPDLC FANS 1/A VDL Mode 2		
J5	CPDLC FANS 1/A SATCOM (INMARSAT)		

. . .

Appendix 3

AIR TRAFFIC SERVICES MESSAGES

1. Message contents, formats and data convention

. . .

Field Type 10 – Equipment and capabilities

. . .

SINGLE HYPHEN

(a) *Radiocommunication, navigation and approach aid equipment and capabilities*

1 LETTER as follows:

N no COM/NAV/approach aid equipment for the route to be flown is carried, or the equipment is unserviceable

OR S Standard COM/NAV/approach aid equipment for the route to be flown is carried and serviceable (s*ee Note 1*)

AND/OR ONE OR MORE OF THE FOLLOWING LETTERS to indicate the serviceable COM/NAV/approach aid equipment and capabilities

A	GBAS landing system	J7	CPDLC FANS 1/A SATCOM (Iridium)
B	LPV (APV with SBAS)	K	MLS
C	LORAN C	L	ILS
D	DME	M1	ATC RTF SATCOM (INMARSAT)
E1	FMC WPR ACARS	M2	ATC RTF (MTSAT)
E2	D-FIS ACARS	M3	ATC RTF (Iridium)
E3	PDC ACARS	O	VOR
F	ADF	P1–P9	Reserved for RCP
G	GNSS. If any portion of the flight is planned to be conducted under IFR it refers to GNSS receivers that comply with the requirements of Annex 10, Volume I *(See Note 2)*	R	PBN approved *(see Note 4)*
		T	TACAN
		U	UHF RTF
		V	VHF RTF
		W	RVSM approved
H	HF RTF	X	MNPS approved
I	Inertial navigation	Y	VHF with 8.33 kHz channel spacing capability
J1	CPDLC ATN VDL Mode 2 *(see Note 3)*	Z	Other equipment carried or other capabilities *(see Note 5)*
J2	CPDLC FANS 1/A HFDL		
J3	CPDLC FANS 1/A VDL Mode A		
J4	CPDLC FANS 1/A VDL Mode 2		
J5	CPDLC FANS 1/A SATCOM (INMARSAT)		
J6	CPDLC FANS 1/A SATCOM (MTSAT)		

Note 1.— If the letter S is used, standard equipment is considered to be VHF RTF, VOR and ILS, unless another combination is prescribed by the appropriate ATS authority.

Note 2.— If the letter G is used, the types of external GNSS augmentation, if any, are specified in Item 18 following the indicator NAV/ separated by a space.

Note 3.— See RTCA/EUROCAE Interoperability Requirements Standard for ATN Baseline 1 (ATN B1 INTEROP Standard – DO-280B/ED-110B) for data link services air traffic control clearance and information/air traffic control communications management/air traffic control microphone check.

Note 4.— If the letter R is used, the performance-based navigation levels that can be met are specified in Item 18 following the indicator PBN/ . Guidance material on the application of performance-based navigation to a specific route segment, route or area is contained in the Performance-based Navigation (PBN) Manual *(Doc 9613).*

Note 5.— If the letter Z is used, specify in Item 18 the other equipment carried or other capabilities, preceded by COM/ , NAV/ and/or DAT, as appropriate.

Note 6.— Information on navigation capability is provided to ATC for clearance and routing purposes.

. . .

APPENDIX 5. CONTROLLER-PILOT DATA LINK COMMUNICATIONS (CPDLC) MESSAGE SET

1. Uplink messages

. . .

Insert new table as follows:

Table A5-12. Spacing messages (uplink)

Number	*Message intent/use*	*Message element*	*URG*	*ALRT*	*RESP*
*	ATS acknowledgement for the pilot use of the in-trail procedure when the ITP aircraft is behind the reference aircraft. This message element is always concatenated with a vertical clearance.	ITP BEHIND *(aircraft identification of reference aircraft)*	N	L	R
*	ATS acknowledgement for the pilot use of the in-trail procedure when the ITP aircraft is ahead of the reference aircraft. This message element is always concatenated with a vertical clearance.	ITP AHEAD OF *(aircraft identification of reference aircraft)*	N	L	R
*	ATS acknowledgement for the pilot use of the in-trail procedure when the ITP aircraft is behind both reference aircraft. This message element is always concatenated with a vertical	ITP BEHIND *(aircraft identification of reference aircraft)* AND BEHIND *(aircraft identification of reference aircraft)*	N	L	R

	clearance.				
*	ATS acknowledgement for the pilot use of the in-trail procedure when the ITP aircraft is ahead of both reference aircraft. This message element is always concatenated with a vertical clearance.	ITP AHEAD OF *(aircraft identification of reference aircraft)* AND AHEAD OF *(aircraft identification of reference aircraft)*	N	L	R
*	ATS acknowledgement for the pilot use of the in-trail procedure when the ITP aircraft is behind one reference aircraft and ahead of one reference aircraft. This message element is always concatenated with a vertical clearance.	ITP BEHIND *(aircraft identification of reference aircraft)* AND AHEAD OF *(aircraft identification of reference aircraft)*	N	L	R
* Use UM169 when sending these messages as free text.					

Renumber subsequent tables accordingly.

. . .

2. Downlink messages

. . .

Insert new table as follows:

Table A5-24. Spacing messages (downlink)

Number	*Message intent/use*	*Message element*	*URG*	*ALRT*	*RESP*
*	Advisory indicating that the pilot has the ITP equipment, and provides the distance to the reference aircraft, including aircraft identification. This message element is always concatenated with a vertical request.	ITP (distance) BEHIND *(aircraft identification of reference aircraft)*	N	L	N
*	Advisory indicating that the pilot has the ITP equipment, and provides the distance from the reference aircraft, including aircraft identification. This message element is always concatenated with a vertical request.	ITP *(distance)* AHEAD OF *(aircraft identification of reference aircraft)*	N	L	N
*	Advisory indicating that the pilot has the ITP equipment, and provides the distance to both reference aircraft, including aircraft identification. This message	ITP *(distance)* BEHIND *(aircraft identification of reference aircraft)* AND *(distance)* BEHIND *(aircraft identification of*	N	L	N

	element is always concatenated with a vertical request.	*reference aircraft)*			
*	Advisory indicating that the pilot has the ITP equipment, and provides the distance from both reference aircraft, including aircraft identification. This message element is always concatenated with a vertical request.	ITP *(distance)* AHEAD OF *(aircraft identification of reference aircraft)* AND *(distance)* AHEAD OF *(aircraft identification of reference aircraft)*	N	L	N
*	Advisory indicating that the pilot has the ITP equipment, and provides the distance to one reference aircraft and distance from another reference aircraft, including aircraft identification. This message element is always concatenated with a vertical request.	ITP *(distance)* BEHIND *(aircraft identification of reference aircraft)* AND *(distance)* AHEAD OF *(aircraft identification of reference aircraft)*	N	L	N
* Use DM67 when sending these messages as free text.					

Renumber subsequent tables accordingly.

. . .

— END —

Appendix F

RELEVANT FEATURES OF SATISFIED PROJECT

SCOPE

SATISFIED was based on the aircraft following their preferred track without the constraints of the fixed airways passing throw of four ACCs: Canarias, SAL, DAKAR and ATLANTICO.

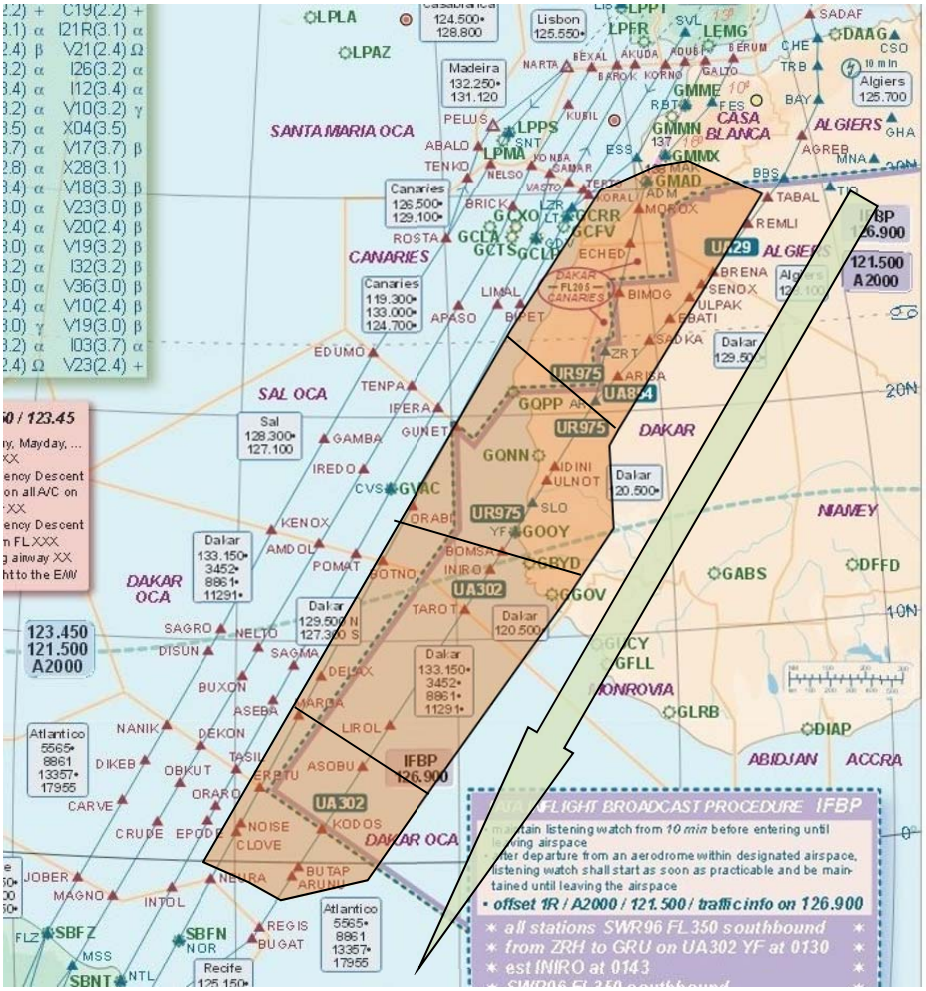


Figure 1: Area of Interest

In order to guarantee at least a minimum of 50 flight demonstrations, number required by SJU, it was defined a period for the performance of the flight trials: between March 2013 and April 2014. Likewise, the transoceanic flights were exclusively performed by member of consortium's aircraft connecting Europe to South America (Air Europa and Iberia).

Only South-West flow, from Europe to South America, was considered in these demonstration trails. The rest of flows were discarded due to both Canarias ACC was exclusively the responsible to coordinate the

trials with the rest of stakeholders (airlines and of ACCs) as well as that involved AOC's staff was located in Spain.

PREMISE TO THE SATISFIED PROCEDURE (AIRLINES)

Any SATISFIED flight complied with the following:

- The flight plan was uniquely identified as a SATISFIED test flight adding to field 18 the following: "**SATISIFIED STANDARD**".
- One flight per day (to keep the ATC workload) was conducted as is shown in the table below:

ORIGEN	Destination	DAY	Period	Airline	Aircraft	Max. nº Flights
MAD (LEMD)	EZE (SAEZ) GIG (SBGL) GRU (SBGR)	Tuesday Wednesday	-Daytime	IBERIA	A340-300/600	**1 X day**
	SSA (SBSV)	Tuesday[1] Thursday	Daytime	Air Europa	A330-300	**1 X day**

Table 1 Candidate flights

- Aircraft will be FANS1/A equipped and certified, as well as the crew certified in the use of CPDLC/ADS-C.
- Exceptionally these flights had to **Log-On to CANARIAS 1 (one) hour before the entrance to the FIR identifying themselves as "SATSIFIED" flight**, in order to have direct communication in case of a setback in the process.
- The demonstration flights by AirEuropa took place between March 2013 and April 2014.
- The demonstration flights by Iberia took place between the 7th of May 2013 and April 2014.
- *Any flight planned through route UA-302 or Santa Maria was excluded from the trials* due to Canarias ACC cannot coordinate them.

In order to reduce the workload and coordination, it was applied a unique and independent procedure for airline and/or destination.

INTERNAL COORDINATION (ASNPs)

The SATISFIED working group elaborated a technical note in order to describe:

- The different tasks together with their responsibilities;
- Coordination processes among the different participants;

- The preliminary risks and mitigating solutions which have been identified for the performance of the SATISFIED flight trials.

This technical note was agreed by involved stakeholders: ANSPs and Airlines and it allowed to have a safety and optimized operation in EUR-SAM Corridor during the trials period.

SATISFIED FLIGHT PLAN EXAMPLE

The values which are shown in the figures below belong to the flight with available Flight Data Recording (FDR) data:

- Flight Plan 1: initial Flight Plan file 180 minutes before Take Off;
- Flight Plan 2: Flight Plan updated with the aircrafts' load sheet;
- FOQA: real flight route.

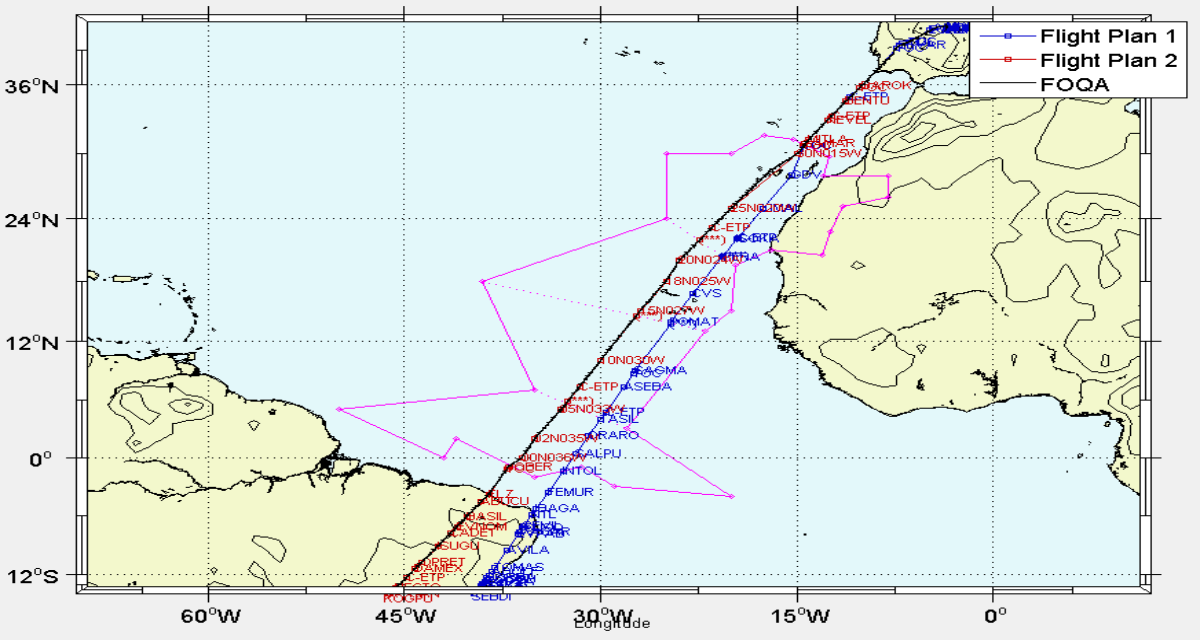


Figure 2: Example of SATISFIED Flight

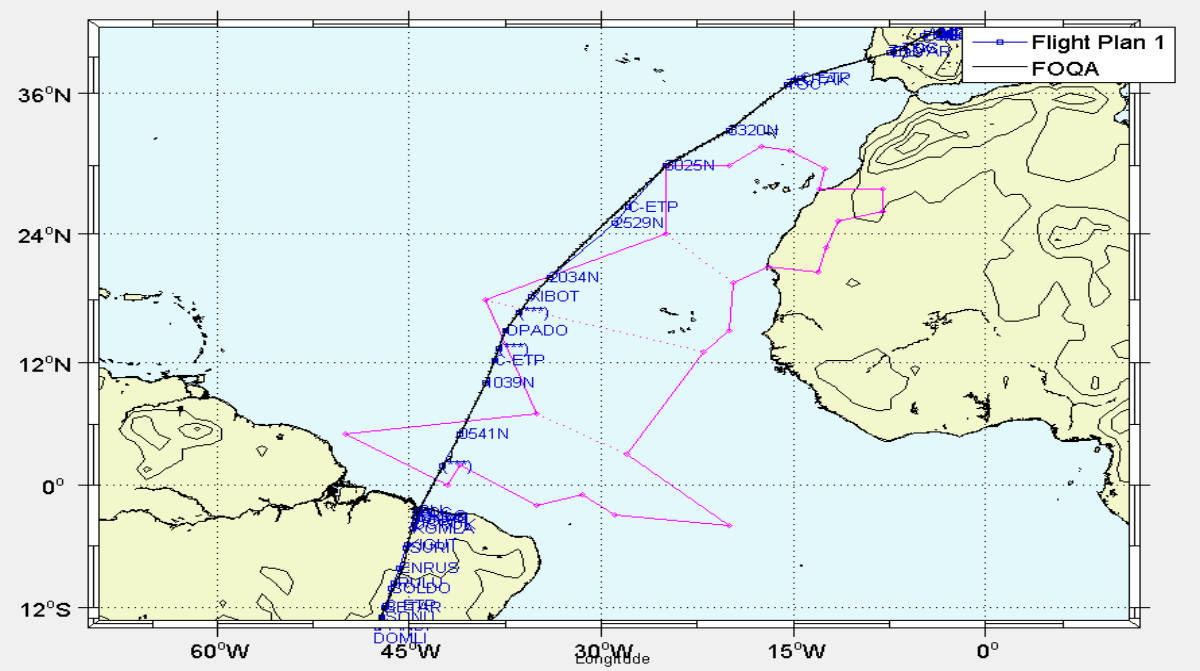


Figure 3: Example of Not SATISFIED Flight

SATISFIED RESULTS

A total of planned **165** flights were flown of which 36 were optimized either statically (Statically Optimized Flight - SOF) or dynamically (Dynamically Optimized Flight - DOF). Around 40% of the flights were found to choose another route which would partially or not at all cross the EUR-SAM Corridor (see Figure 3:).

	Iberia	AirEuropa
NOT Optimised	44	85
Dynamically Optimised	5	7
Statically Optimised	20	4
Total	69	96
Total planned flights	165	
Total optimised flights	36	

Table 2 Results of the IBERIA and AirEuropa campaign

Although there were a small number of Optimized flights captured, the results have partially helped fulfill the main aim of the project: reduction in emissions and fuel burn. The environmental operational

assessment performed has shown potential reductions in fuel burn and emissions of around 2-3% depending on the airline flying (and the fleet).

Sadly the reduction is only indication of a trend and not a solid statistical value due to the small number of flights actually performing the SATISFIED procedure. It is in fact more likely that the reduction is due to SOF, which establishes the update of the first flight plan to the actual values coming from the a/c's load sheet. This value was later used by the environmental impact assessment (EIA) to calculate its indicators and as a feed in for the economic analysis.

In fact, the environmental impact assessment applied to a SATISFIED Progressive implementation scenario (evolution of traffic, fleet capabilities, etc.) estimated:

- That the application of the SATISFIED process could save the equivalent of 1.8% in distance for each flight.
- That about 1.85 tons of CO_2 could be saved on a per-flight basis with the introduction of the SATISFIED process.
- That the progressive implementation of the SATISFIED process would save airlines 155 million Euros1 during the next fifteen years.
- Based on a forecast of 325,459 Optimized flights during the next 15 years, the economic savings are translated to 477€ saved per flight.

On the other hand it was fundamental for the free route concept since it highlighted, for these types of procedures, that there are constraints inherent in the EUR-SAM airspace and the possibilities for the implementation of improvements in the same line. In particular from the operational side what was found was that:

- That all the candidate flights were accepted by the EUR-SAM OCCs involved, showing the high degree of coordination between them;
- The restrictions, imposed by neighboring fixed ATS route network environment, have not given the flexibility required for the flight planning systems to deliver the sought improvement. Meaning that the current environment (with different level of maturity in systems and in traffic equipment) does not allow implementing the free routing concept to all flights;
- That existing AOC flight planning systems are not ready to optimize only part of the total trajectory, since the objective is the optimization of the whole origin/destination route;
- In many cases the flight plan (main tool of the airline) could not improve the route based on the conditions and change in parameters offered.

1 Assuming current - 2014 -kerosene prices of 750€/t and expected MBM offsetting costs and 20€/t of CO2. The fuel price forecast is quite uncertain, and it is out of the scope of this study to focus on that detail. Given the proposed costs, 8% of the savings would be due to environmental Market Based Measures (MBM) for CO2 emissions. Further savings can be expected in the future if other pollutants such as NOx are included in the MBM programme.

Finally, the project has delivered the first results of trying to deploy the free route concept to the EUR-SAM corridor. Even though the data collected is not enough to validate through these flights what was proved beneficial in theory and in other demonstration campaigns (DORIS, AIRE, etc..), it has shun more light on the critical changes needed for the deployment of the free route concept through these 4 Oceanic Control Areas.

It has also clearly shown the commitment/preparedness of all the operational actors and the maturity of the systems to the task.

SATISFIED RECOMMENDATIONS

Based on the results and experiences during the trials, a set of aspects should be taken into account when the implementation of the operational concept tested in SATISFIED is going to be put into service. The fact of having such an heterogeneous mix of fleet equipage, makes the implementation of the SATISFIED operational concept difficult. Currently some traffic can be correctly monitored through ADS-C and information/communication can be interchanged through CPDLC, but this is not universally possible, hence safety issues could arise due to the uncertainty relative to the traffic's position while sharing the same airspace.

Finally the first prerequisite would be to have all the aircraft crossing the EUR-SAM corridor, *between certain flight levels*, conveniently equipped with ADS-C and CPDLC (FANS1A).

- The EUR/SAM corridor must develop a transition/modernization plan which allows adequately equipped aircraft (e.g.: FANS1/A) to take advantage of their systems by allowing reduced separation and optimum performance , while maintaining as far as possible compatibility with the rest of the traffic operations crossing the EUR/SAM corridor ("worse equipped aircraft"). At the same time, the surrounding ATS airways' network, defining the EUR/SAM corridor, should be reviewed and updated to guarantee the continuation of the optimized trajectory.

In an environment where all the traffic would be at least FANS1A or better equipped the implementation of new functionalities in the ATC system like MTCD could be considered, which would easily provide for an enhanced, adequate,, efficient and safe ATS service.

- To encourage operators to take the necessary steps to obtain new approvals for suitably equipped aircrafts in their fleets which would be aligned with the above mentioned modernization plan and international requirements.

Once the new airspace concept is implemented, the AOC could plan strategically, the free route rather than tactically, the flight plan in accordance with the new operational circumstances. Likewise, higher automation in the flight planning systems may significantly decrease the AOC workload and coordination.

In accordance with the expected ATM flexibility, internally the airlines must consider the tactical decisions made by the Captain concerning the balance of the different flight parameters (optimum time, minimum fuel consumption and total cost).

- A further validation campaign could be envisaged, based on the legacy left by SATISFIED, when all the issues/requirements that have come afloat from the SATISFIED project are solved.

- Given the proposed costs, 8% of the savings would be in the future due to environmental Market Based Measures (MBM) for CO_2 emissions. Further savings thus can be expected if other pollutants such as NOx (critical in the cruise level) are included in the MBM programme.

Appendix G

Table 1

Table of VCCs N5 and VoIP capabilities

ACC	N5 Capable	VoIP capable	Comments
Abidjan	No		
Accra	No		
Canarias	Yes	Yes	
Casablanca		Yes	
Cayenne			
Dakar	No		
Ezeiza	No		
Johannesburg			
Lisbon	Yes	End of June 2015	
Luanda			
Montevideo		Yes	
Nouakchott	No		
Piarco	No		
Recife	No	Yes (near future)	
Sal	Yes	No	
Santa Maria	End of December 2015	End of December 2015	

Appendix H

Table 2

Table of Establishment of Local Groups for Missing Flight Plans Investigation

ACC	Working Groups Missing Flight Plans Investigation	Comments
Abidjan	Implemented	Coordination with adjacent ATCs. Monthly reporting
Accra	Implemented	Coordination with ASECNA
Canarias	?	
Casablanca	?	
Cayenne	?	
Dakar	Implemented	
Ezeiza	Not implemented	
Johannesburg	implemented	
Lisbon	No	Trials conducted years ago. Non-technical causes
Luanda	?	
Montevideo	Informal Group	
Nouakchott	Implemented	
Piarco	Implemented	Implementation of a centralized FPLs investigation system
Recife	Informal Group	Coordination with Dakar. Wrong addresses
Sal	Implemented	
Santa Maria	No	

Appendix I

Title: Procedure for collection, analysis and processing

Of missing flight plans

1. Object

The object of this procedure is to identify missing flight plans, examine, analyze the causes and propose corrective measures to overcome this problem.

2. Purpose

2.1. The issue of missing flight plans is being considered since a long time and several initiatives have been undertaken by ANSP and/or States in order to tackle this problem. A consolidated global procedure is necessary to properly improve globally the availability of the flight plans at regional and inter-regional level.

2.2. This procedure aims to provide provision which implementation will allow to mitigate and /or to minimize the impact of missing flight plans on the safety of the air navigation. It describes the approach to be followed by the various involved actors, for the monitoring missing flight plans.

2.3. It specifies the actions to be taken in a timely manner and the responsibility of all stakeholders in the collection and management of data on missing flight plans. It aims to reduce to an acceptable level the proportion of missing flight plans.

2.4. The dispositions of this procedure shall be applied from the date of its signature.

3. Scope

The implementation of this procedure will involve several entities from the ANSP, including Aerodrome (Local) control Unit, (En) Route control unit, Telecommunications Operations Unit, AIM Unit (Flight plan Processing Unit)

4. Definitions

4.1. Missing flight plan: a flight plan is considered missing when it is not received by the Units involved in air traffic management, or on the AFTN terminal or on the support of any other approved system of air traffic management.

4.2. Flight Plan Working Group (FPWG): a group whose role is to monitor and propose measures to mitigate the problem of missing flight plans. Its composition includes:

- Aerodrome control;
- En-route control;
- ATC, local training, AIM, Telecommunications Operations; units

- Air Traffic Controller.

The sessions of the Working Group shall be chaired by the En-route control Manager or the aerodrome Manager

5. Collection of missing flight plans information

5.1. The Head Unit ATC identifies and indicates by distinctive memo mentions in the section "Miscellaneous" or reverse of strips, to distinguish flights whose flight plans are either received, missing or received with a delay.

5.2. Then Air Traffic controllers on duty will note, clearly, these distinctive mentions in the strip during their service.

5.3. The distinctive mentions may be

- « R » : for flights whose flight plans were received ;
- « D » : for flights whose flight plans were received with delay
- « N »: for flights whose flight plans were not received.

5.4. The of head Unit of ATC will collect daily the data on flight plans and fill a file of Excel designed for this purpose (see Annex).

5.5. AIM staff collects data on arrivals for flight plans not received and will fill each day, the file of Excel designed for this purpose.

5.6. The data collected by AIM or ATC units and AC can be compared in order to detect anomalies at least for flight on arrival.

5.7. In case of doubt on the recorded data, investigations will be conducted in collaboration with the Telecommunications Operation Unit.

5.8. Investigation will be conducted in coordination with the Operation of Telecommunications unit to define the hours of receipt of the plans received with delays.

5.9. Investigation will be conducted in coordination with the Telecommunications Operation unit to determine the plans received by the center but not addressed to the concerned control organism.

6. Analysis and processing of the missing flight plan

6.1. The file containing information on missing flight plans will be finalized at the latest 2nd of the following month by the head of ATC unit and transmitted to the en-route control Manager or to the aerodrome Manager.

6.2. The en-route control Manager or to the aerodrome Manager, from the Excel file, extract all relevant information that can be used to analyze and identify the various causes of the missing flight plans, including.

- percentage of missing flight plans by type of traffic (arrivals over flight);
- the missing flight plans by departure aerodrome(ANSP), airlines...
- Percentage of flight plans received by the center but not routed correctly to the relevant organism, by origin, by airline.
- any other relevant ratio for analysis.

6.3. The en-route control Manager or to the aerodrome Manager convene the Flight Plan Working Group no later than 4th of the month to analyze and interpret the various results and ratios and provide corrective actions to mitigate the problem of missing flight plans.

6.4. The results of the Flight Plan Working Group will be forwarded to Headquarter no later than the 5th of the month by the en-route control or aerodrome Manager, for the appropriate actions.

6.5. The Flight Plan Working Group should follow the status of implementation of previous corrective actions and results of their application. Highlights should be reported in the report of the working group.

7. Implementation of the correctives action

The corrective actions will be implemented as soon as possible taking in account

- Coordination between relevant centers
- Coordination with the entities in charges of flight plan processing
- Coordination between ANSP
- Coordination with IATA or Airlines

5.3. Annexes: missing flight plan template

Date	Call Sign	Registration	Airport		Flight Plan						Remarks
			Departure	arrival	received	Not received	Delay	TX time	RX time	Transit time	
1	2	3	4	5	6	7	8	9	10	11	12
TOTAL					36	12					

Appendix J

Fourth Meeting on the CAFSAT Network Management Committee (CNMC/4)
Buenos Aires, Argentina, 4 to 5 August 2014

Conclusions/Decisions

Agenda Item 1: Review of the status of implementation of the Conclusion/ Decision of the third meeting of CNMC (CNMC/3)

Conclusion 4/01: Implementation of the outstanding Conclusion/Decision of the third meeting of CNMC (CNMC/3)

That CNMC Members States/Organizations that have not done so, implement the outstanding conclusions/decisions of the third meeting of CNMC as per Appendix B.

Conclusion 4/02: **Reporting on CAFSAT Performance Statistics data to CNMC coordinator**

That:

a) Argentina nominates a coordinator for CNMC activities until next CNMC meeting, and communicates his details to the Secretariat.

b) SAT States/Organizations be encouraged to use electronic mail to forward CAFSAT Performance Data to the current CNMC Coordinator for compilation, with copy to the Secretariat.

Decision 4/03: Establishment of a Study Group for the Automation of CAFSAT Performance Data and Assignment of focal points and a Team Leader

That:

a) A Study Group is established to develop under the leadership of Brazil a framework for a cost effective and efficient automation of CAFSAT Performance Data Collection.

b) SAT States/Organizations nominate focal points to participate in the activities of the Study Group.

c) The Study Group will assess the existing statistics tools with regard to the Performance Data Collection Form (PDCF) and make proposals for possible automation to CNMC/5 meeting.

Agenda Item 2: Review of the performance of CAFSAT earth stations and the operational statistics of availability for supported links

Conclusion 4/04: Restoration of the AFTN & ATS/DS circuits between Nouakchott and Casablanca

That in collaboration with the industry SAT concerned States and Organizations urge to expedite

the restoration of the AFTN & ATS/DS circuits between Nouakchott and Casablanca and report to CNMC coordinator with copy to the appropriate ICAO Regional Offices.

Conclusion 4/05: Reinforcement of the Coordination between Johannesburg and Recife, Johannesburg and Ezeiza

That South Africa provides a technical focal point in order to facilitate the technical coordination between Johannesburg and Recife, Johannesburg and Ezeiza and minimize the failure duration period of AFS (AFTN &ATS/DS) circuits supported by the CAFSAT nodes.

Agenda Item 3: Implementation of recommendations 6/19 of Special AFIRAN meeting

Conclusion 4/06: Reinforcement of SAT members' participation in VSAT coordinating meetings seminars and workshops

That SAT concerned States/Organizations reinforce their participation to the meetings seminars and workshops conveyed in the framework of the implementation of Recommendations 6/19 of Special AFIRAN meeting calling upon to hold regular joint meetings under the auspices of ICAO regional offices for the purpose of harmonization and eventual realization of a seamless AFI communication network supporting all present and future CNS Systems.

Agenda Item 4: Interconnection and interoperability of CAFSAT with its neighboring networks

Conclusion 4/07: Consideration of upcoming services to increase the availability and reliability of CAFSAT Network

That SAT States/Organizations consider the requirements of the upcoming services to be supported by the CAFSAT Network (AMHS, AIDC, ATM Automated Systems Interconnection…) to conduct bilateral/multilateral actions to reinforce the availability and reliability of the circuits supported by the CAFSAT Network.

Conclusion 4/08: Need of back up for the CAFSAT Network

That SAT Sates/Organizations take benefit of the example of backup system implemented in the CAR/SAM Region for the satellite based REDDIG II network and envisage adequate techniques in order to ensure a seamless ground communication provision with regard to the requirements of the services supported by the CAFSAT Network.

Agenda Item 5: Outcome of ITU WRC-12 pertaining to VSATs Networks and preparation of WRC-15

Conclusion 4/09: Preparation of ITU WRC-15

That SAT States/Organizations reinforce the coordination of their CAAs with their National Authority of Regulation of Telecommunication in order to strengthen the support to ICAO position for WRC-15

Conclusion 4/10: Future preparatory actions on WRC-15 Agenda item 9.1.5: *Resolution 154 (WRC-12)*

That as a matter of urgency, SAT States/Organizations:

a) Consider the outcome of ITU Working Party 4A (as attached at Appendix C) which reflects ICAO inputs as the basis they may use to make their proposals to be included in the national position to the Conference (November 2015).

b) Develop the adequate strategies with all the stakeholders in order to maintain/strengthen this draft CPM text during the future CPM meeting.

c) Report to the current CNMC coordinator with copy to the Secretariat in the table attached at Appendix D on their effective actions conducted in the matter.

Agenda Item 6: CAFSAT modernization and re-engineering

Decision 4/11: Update of the deadline of the completion of Phase 1 of the CAFSAT modernization and re-engineering

That the deadline of the completion of Phase 1 of the CAFSAT modernization and re-engineering exercise is updated as attached at Appendix E.

Conclusion 4/12: Implementation of the CAFSAT node in Luanda

That Angola (ENANA) expedites the completion of the installation of the CAFSAT node in Luanda no later than 31 December 2014 in order to implement the required ATS/DS circuit between Luanda and Recife.

Conclusion 4/13: Future Phase of the CAFSAT modernization and re-engineering

That:

a) A Joint Technical Team (JTT) is established under the leadership of Portugal in order to conduct a comprehensive evaluation of the future technical requirements to be considered for the future phases of the CAFSAT modernization and re-engineering;

b) The Joint Technical Team composed with experts appointed by SAT States/ Organizations will conduct its work with electronic mailing support and regularly report to the current CNMC coordinator and present his final report to next CNMC meeting.

Agenda Item 7: Review of the Terms of Reference and Work Programme of CNMC

Decision 4/14: Adoption of the Terms of Reference and Work Programme of CNMC

That the Term of Reference and Work arrangement of CNMC are adopted as attached in Appendix F.

Table for the follow up of the actions to support to the ICAO position for WRC-15

Name of the States:
Date of the Report:

WRC Agenda item	Date of formal submission to the Nation Authority of Regulation Of Telecommunication	Date of discussion on the concerned WRC Chapter	National position on ICAO position	Future action	Comments
9.1.5 VSATs on C BAND					

Appendix E

CAFSAT stations upgrade plan (*)

Station	**Current situation**	**Schedule**	Deadline	**Notes**
Casablanca	Request for proposal from ONDA to implement the domestic network including the upgrade of the CAFSAT Station beginning by October	?	30 April 2015 ???	
Dakar	Done. May 2014	NA	NA	
Ezeiza	Contract with ISDEFE via ICAO TCB around end 2014	Six(6) months after contract signature (around June 2015)	June 2015	
Johannesburg	Finalizing purchase of equipment and contract for upgrade	November/December 2014	December	
Las Palmas	Done. April 2014	NA	2014	
Lisbon	Partially done. Upgrade will be completed by September/October	September / October 2014	NA	1)
Luanda	Civil work for the antenna ongoing		October 2014	
Nouakchott	Done. June 2014		December	
Recife	Done. November 2013		2014	2)
Sal	Done. November 2013		NA	
Santa Maria	Partially done.	September / October 2014	NA	3)

Table 1

(*) Upgrade according Phase 1 – Step 3 of document “Technical Study for CAFSAT network upgrade – February 2012“.

Notes:

1) Link Lisbon – Santa Maria already done (October 2010).
2) Links Recife-Dakar and Recife-Las Palmas done. Links Recife - Johannesburg and Recife - Luanda will be established when sites finish upgrading.
3) Links Lisbon (October 2010) and Sal (November 2013), already done.

Appendix F

TERMS OF REFERENCE OF THE CAFSAT NETWORK MANAGHEMENT COMMITTEE (CNMC)

1. **Mandate of the CAFSAT Management Committee**

1.1 Decide on the network concept and topology in accordance with the relevant ATM operation requirements and based on ICAO SARPs and guidance materials.

1.2 Ensure the continued operation of the CAFSAT network, meeting the CNS/ATM plan requirements of the AFI /NAT/EUR/SAM Regions while taking into consideration CNS/ATM plans of adjacent regions, and including approval of deployment plans and/or extension plans.

1.3 Decide on type and levels of service to be provided, and monitor the performance of the Network providers (facilities and leased band) to ensure that service delivery meets required service performance for Aeronautical Fixed Service criteria previously pre-determined in accordance with the Manual of ATS ground-ground Voice Switching and Signaling (Doc 9804), the Procedures for Air Navigation Services - ATS Management (DOC. 4444), Annex X Vol.II, Chap. 4 and Annex XI.

1.4 Ensure that participating States/Organizations provide statistics on the Network Performance, and investigate service delivery complaints from users.

1.5 Review and take the appropriate actions to clear the service dysfunctions within the required service performance defined criteria in line with ATM PBN and SMS requirements.

1.6 Monitor the harmonization of the implementation of facilities and services and, where necessary, ensure interregional connectivity, taking due account of cost/benefit analysis, business case development and financing issues:

- Study the extension of the network to other countries.
- Propose the network integration and interoperability with other neighboring networks

1.7 Monitor and harmonize the Network maintenance operation and management by defining a cooperation methodology between network centers in regard with:

- Maintenance personnel team training and exchange, redeployment if necessary of a technical assistance;
- Spare parts exchange, fault location/repairs, and turnaround time
- Development and modernization of CAFSAT after a Joint Technical Evaluation and Re-engineering team assessment.

1.8 Review and adopt the annual follow up on the meeting conclusion and update the future work programme.

1.9 The report of CAFSAT Network Management Committee is to be addressed to SAT/CNS-WG

2. **Composition and organization of the Committee**

The CAFSAT Network Management Committee (**CNMC**) is composed of member States/Organizations hosting/operating CAFSAT nodes, namely:

- **AENA (Spain)**
- **ANAC (Argentina)**
- **ASA (Cape Verde)**
- **ASECNA (Côte d'Ivoire, Mauritanie, Senegal)**
- **ATLANTICO FIR (Brazil)**
- **ATNS (South Africa)**
- **NAV Portugal (Portugal)**
- **ONDA (Morocco)**

Observers as facilities providers (**INSA**), satellite spectrum providers (**INTELSAT**), Airline Associations (**IATA**), Maintenance Personnel Association (**IFATSEA**), neighboring Networks (**AFISNET**) can join the Committee.

2.1 The Chair of the Committee shall be elected by the Committee from among the Committee members every year. The Chair may be re-elected for no more than two periods of one year each. The mandate as Chair of the Committee shall not exceed three years.

2.2 ICAO shall be the Secretary of the Committee.

2.3 To ensure that the Committee functions optimally, the designated representatives of Air Navigation Service Providers should have experience in the provision of air navigation infrastructure and services. Advisors may accompany the Representative.

3. **Participation by International Organizations**

Moreover those listed in paragraph 2, the Committee may invite representatives of appropriate regional and international organizations (**ATU, CITEL, CEPT, ITU, EUROCONTROL...)** to attend meetings in the capacity of observer.

4. **Establishment and Dissolution of Contributory Bodies**

4.1 In order to assist in its work, the Committee may establish bodies, e.g. task forces, charged with preparatory work on specific issues. Representation in such contributory bodies should be by specialists in the subjects concerned and familiar with the issues under consideration.

4.2 The establishment and work of contributory bodies shall be governed by the following provisions:

a) A contributory body shall only be formed when it has been clearly identified that it is likely to make a substantial contribution to the resolution of the issue in question.

b) A contributory body shall be given clear and concise terms of reference describing its task and an expected target date for its completion.

c) The composition of a contributory body shall be such that, although intended to be as small as possible, all participating States and any organization deemed to be able to make valid contributions shall be given an opportunity to participate in it.

d) A contributory body shall be dissolved as soon as it has either completed its assigned task or it has become apparent that work on the subject in question cannot be usefully continued.

5. **Working arrangements**

5.1 The Committee ordinary meeting will be hosted by one of the State\organization and held at least once a year in principle in parallel with the SAT /FIT meeting;

5.2 The committee can hold in case of absolute necessity extraordinary meetings to clear out urgent problems that may be a threat to the service provided by the network;

5.3 The invitation letter to the meetings is issued by the Secretariat in coordination with the hosting State/Organization.

5.4 Decisions shall be reached by consensus.

5.3 Two-thirds of members shall constitute a quorum and, where a quorum is not achieved, decisions will be reached through correspondence under the Chair Person coordination.

– END –

Appendix K

Table 3

Table of AMHS capability

ACC	AMHS Capable	Comments
Abidjan	Planned for 2015/2016	
Accra	Yes	
Canarias	Yes	
Casablanca	?	
Cayenne	?	
Dakar	Yes (under installation)	
Ezeiza	Yes	
Johannesburg	Yes	
Lisbon	Yes	
Luanda	yes	
Montevideo	Yes	
Nouakchott	Yes (under installation)	
Piarco	Yes	
Recife	Yes	
Sal	Yes	
Santa Maria	No	

Appendix L

Table 4

Table of AIDC capability

ACC	AIDC Capable	Comments
Abidjan	Yes	
Accra	Yes (before end of 2014)	
Canarias	?	
Casablanca	?	
Cayenne	?	
Dakar	Yes	
Ezeiza	Yes	
Johannesburg	Yes	
Lisbon	No (EUR OLDI used)	
Luanda	?	
Montevideo	Yes	
Nouakchott	Yes	
Piarco	Yes	
Recife	Yes	
Sal	No (EUR OLDI used)	
Santa Maria	No (EUR OLDI used)	

Appendix M

1. PROPOSED ROADMAP FOR EUR/SAM CORRIDOR (SAT18)

In order to accomplish with SAT17 decisions, SATMA recommended SAT members in SAT18 to follow these next steps:

1.1 EUR/SAM Corridor Data Link Mandate

This data link mandate would be implemented during **2015**, with all aircraft operating in corridor between FL330 to FL390 inclusive, being required to be fitted with and using CPDLC and ADS-C equipment. This measure would have the following effects:

- Optimum flight level assignment to equipped and connected aircrafts.
- Reduced minimum longitudinal and lateral separation of 50NM based on RNP 10 and use of ADS-C and CPDLC from FL330 to FL390.

This plan would require a previous analysis, including its respective CRM, trials and consolidation of operation.

1.2 EUR/SAM Corridor PBN implementation plan

This PBN implementation plan should consist of:

- RNP 10 and RNP 4 differentiated airspace structure:
  - RNP 4 airspace from FL360 to FL390 based on ADS-C and CPDLC compliance, reduced lateral and longitudinal separation to 30NM and an extended set of new RNP 4 airways;
  - RNP 10 airspace from FL330 to FL350 based on ADS-C and CPDLC compliance, reduced lateral and longitudinal separation to 50NM and the existing set of airways;
  - RNP 10 airspace bellow FL330 with no ADS-C and CPDLC compliance, lateral and longitudinal separation of 80NM and the existing set of airways.
- A full implementation of this plan would be accomplished during 2016.

The aim of this plan would be to implement reduced separation and optimum performance for better equipped aircrafts, while still compatible with the operation in the EUR/SAM corridor for worse equipped aircraft. Thus, there would be three different degrees of performance according to the “best equipped best served” statement.

2. CURRENT STATUS IN EUR/SAM CORRIDOR (2013)

Before developing any implementation plan, it is necessary to know the current status and possible issues that could limit the implementation.

As it has been described in previous SAT meetings, the main aspects which limit the implementation of RNP4 are described in next sections.

2.1 FLEET CAPABILITIES IN EUR/SAM CORRIDOR

There is a lack of a global database of aircraft capabilities, both FANS 1/A and RNP4, in EUR/SAM Corridor. The unique existing data is collected by SATMA and reported by ENAIRE that shows data relative to the performance and use of FANS services since 2010. This data concerns only aircraft flying in the UIR Canaries from/to the EUR/SAM Corridor.

An abstract of the reported data in SAT/FIT/9 by ENAIRE is shown herein:

Traffic Data	2013			2012	2011	2010
	Maximum	Minimum	Mean	Mean	Mean	Mean
Number of connected flights	1518	1271	**1400**	**1651**	**1601**	**1601**
Percentage referred to total number of flights in the EUR/SAM Corridor [1]	57,66%	52,80%	**55,13%**	**59,97%**	**61,37%**	**61,37%**
Percentage referred to flights in the EUR/SAM Corridor indicating data link and ADS capacity in the Flight Plan	97,80%	93,42%	**95,36%**	**95,44%**	**97,99%**	**97,99%**
Number of flights with CPDLC connection (Monthly average)	1460	1204	**1335**	**1526**	**1525**	**1525**

Table 1: Traffic data summary

The main conclusions obtained from this study are the following:

- Approximately **60%** out of the total flights within EUR/SAM Corridor are FANS equipped flights.
- Almost every equipped flight connected to SACCAN[2] (**95%).**
- The majority of logged-on flights exchanged CPDLC information (**95%**).
- **Trend of figures is kept since 2010.**

The previous data considers only traffic over flying the UIR Canaries from/to EUR/SAM Corridor. Therefore the traffic flows which fly SANTA MARIA OCEANIC directly Cape Verde/Dakar or UR976/UA602 have been not considered (approximately 600 flights per moths). Thus, there is not a global figure concerning fleet capabilities in the EUR/SAM Corridor.

Additional data sources could be used by SATMA in order to complete the previous study, for instance, the equipment and capabilities (item 10/18) of each presented flight plan. However, this data source has also some limitations:

1 **Traffic over flying the UIR Canaries from/to EUR/SAM Corridor**

2 **SACCAN**: ADS/CPDLC System in the Canarias FIR.

- This data is received by ATFN. Normally, an unique flight has several messages and then it needs to be validated by the ATC System or similar. Besides, Spain only has the flight plans crossing its airspace jurisdiction. Likewise, EUROCONTROL could provide similar information but only for traffic from/to the ECAC area.

- This data only contains the presence of relevant serviceable equipment on board the aircraft which are commensurate with flight crew qualifications and where applicable. Nowadays it is exclusively required RNP10. Therefore others capabilities, like RNP4, could not be reflected in the flight plan.

On the other hand, there is also a lack of Acceptable Means of Compliance (**AMC**) to certificated RNP4. Most of CAAs require an AMC to provide the certification. Hence, Air Europa and Iberia, that mean the 12% of total traffic, are not certificated.

In addition, the **uselessness** for EUR/SAM Corridor (currently there are not operational benefits) and other areas (e.g. nowadays in North Atlantic it is not required) confirm that **the evolution of this certification will be slow and progressive during several years**.

This data is the key one to determine the milestones of the RNP4 implementation plan. Taking into account that the unique source shows that the approximately **60%** out of the total flights within EUR/SAM Corridor are FANS equipped flights, SATMA propones:

- Each ASNP, if needed, will contact with its CAA in order to establish the needed mechanisms related to RNP4 certifications.

- SATMA will perform, from flight plans provided for each ASNP, a deep and global study of fleet capabilities in the EUR/SAM Corridor.

- IATA/SATMA will contact with the airlines in order to complete the previous document (fleet capabilities).

- To review the date for EUR/SAM Corridor Data Link Mandate (see the suggested new road map).

2.2 GROUND SYSTEMS UPGRADING

Next table summarises the requirements for RNP4 related to the Air Navigation Service Provider (ANSP):

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

Table 2: Requirements for ANSP

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

However, in accordance with the report provided by CFRA in the period 2010-2013, there are several operational issues, such as the following ones, that should be addressed:

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

These operational issues could mean the loose of direct controller pilot communications with any aircraft, and therefore a contingency situation for the ATCs in a RNP4 environment. Likewise, there has not been ADS/CPDLC issues registered nor harmonization of ADS/CPDLC procedures between states, etc., which denotes that CFRA is not in full operation yet.

SAMTA/CFRA proposes to collect the needed data of each member of EUR/SAM corridor to establish a roadmap for the improvement of ATC System (improvements already done, planned and ongoing).

3. PROPOSAL OF ROADMAP FOR EUR/SAM CORRIDOR

In order to accomplish with the SAT decisions mentioned above and taking into account the current status of EUR/SAM Corridor as well as the defined dates/targets in NAT Region, SATMA recommends SAT members to follow these next steps:

3.1 EUR/SAM Corridor Data Link Mandate

This data link mandate will be implemented at the beginning of **2017**, with all aircraft operating in corridor between FL330 to FL390 inclusive, being required to be fitted with and using CPDLC and ADS-C equipment. This measure would have the following effects:

- Optimum flight level assignment to equipped and connected aircrafts.

- Reduced minimum longitudinal and lateral separation of 50NM based on RNP 10 and use of ADS-C and CPDLC from FL330 to FL390.

In order to achieve this plan, several activities must be accomplished:

1 Determine that the proposed flight levels are aligned with the operation. Global study of fleet capabilities in the EUR/SAM Corridor, to be performed by SATMA, will include this requirement;
2 The respective Collision Risk Model analysis for 2014, based on the traffic of the six first months of 2014, will include an estimation of risk for this mandate. In other words, SATMA will perform a CRM analysis considering that all aircraft, operating in corridor between FL330 to FL390, will be fitted with and using CPDLC and ADS-C equipment;
3 Before the implementation, a period of trials could be established to apply the reduced separation, if needed;
4 During 2016, LoA between SAT involved members must be updated. Likewise CFRA must coordinate the implementation of ADS/CPDLC procedures and configurations: e.g. LoA between states, the indicated periodic reporting intervals (27 minutes as maximum), etc. CFRA would present all these procedures, configurations during SAT/FIT11 (2016);

5 To publish an AIC at the end of 2016. SATMA will present the AIC during SAT 21 (2016) where the implementation date shall be agreed.

IATA, SATMA, CAAs and ASNPs will disseminate all information about this mandate as far as possible.

3.2 EUR/SAM Corridor PBN implementation plan

The PBN implementation plan should consist of:

- RNP 10 and RNP 4 differentiated airspace structure:
  - RNP 4 airspace from FL360 to FL390 based on ADS-C and CPDLC compliance, reduced lateral and longitudinal separation to 30NM and an extended set of new RNP 4 airways;
  - RNP 10 airspace from FL330 to FL350 based on ADS-C and CPDLC compliance, reduced lateral and longitudinal separation to 50NM and the existing set of airways;
  - RNP 10 airspace bellow FL330 with no ADS-C and CPDLC compliance, lateral and longitudinal separation of 80NM and the existing set of airways.

- A full implementation of this plan would be accomplished during **2018-2020**. Obviously, the timelines for EUR/SAM Corridor PBN implementation plan will depend directly on the previous step.

This plan allows to have reduced separation and optimum performance for better equipped aircrafts, while still compatible with the operation in the EUR/SAM corridor for worse equipped aircraft. Thus, there would be three different degrees of performance according to the “best equipped best served” statement.

As it has been mentioned before, the first step of this phase is to define and approve the new airways structure. SATMA will present in 2016 a detailed RNP 4 airspace structure which must be analyzed and approved in 2017, by the SAT members. This RNP 4 airspace structure will consider both, the new structure inside the corridor and the interface with the adjacent airspace (SBAO ATS routes network and GCCC/GMMM interface).

4. COMMON TASKS

The previous plan must be completed with:

a. The promotion of real implementation of Central FANS 1/A Reporting Agency (CFRA). Note that nowadays there are many technical and operative issues related to FANS 1/A and a lack of global data: aircraft capabilities, incidents, etc;

b. To provide the required operational information: flight plans and LHD’s in time and format;

c. To encourage operators to take the necessary steps to obtain RNP 4/ FAN 1A approvals for suitably equipped aircrafts in their fleets;

d. Monitoring and reviewing the agreed and consolidated roadmap of the improvements for EUR/SAM Corridor.

SUMMARY OF MILESTONES AND TIMELINES

In accordance with the previous roadmap, the main milestones, timelines and tasks are summarized below:

- Preliminary but essential activities:
    a. Delivery of Flight Plans (6 first months of 2014). October 2014 – All SAT involved members. Activity already done by all states.
    b. Delivery of LHD's fpr 2014. January 2015 – All SAT involved members.
    c. SATMA will analyze and process both data: CRM analysis for Data Link Mandate. SATMA.

- During SAT 20/2015:
    a. CRM Analysis – Current Situation. SATMA.
    b. CRM Analysis based on FANS 1/A mandate. SATMA.
    c. Global study of fleet capabilities in the EUR/SAM Corridor. SATMA/IATA.
    d. Review and monitoring of the RNP4 roadmap. SATMA

  During SAT20/FIT10 2015:
    e. Analysis of FANS services in the EUR/SAM Corridor. CFRA.
    f. Harmonization of procedures to avoid technical and operational issues. CFRA.
    g. Roadmap of improvements for ATC Systems. CFRA.

- During SAT 21/2016
    a. Harmonization of changes on LoA in accordance with new separation values. SATMA.
    b. AIC - EUR/SAM Corridor Data Link Mandate. SATMA.
    c. "Go" establishing the Implementation Date or "No Go". SAT Members.
    d. Detailed new RNP 4 airways structure. SATMA
    e. Review and monitoring of the RNP4 roadmap. SATMA.

  During SAT21/FIT11 2016:
    a. Analysis of FANS services in the EUR/SAM Corridor. CFRA.
    b. Harmonization of changes on ATC systems in accordance with new separation values. CFRA.

- During SAT 22/2017:
    a. Review and monitoring of the RNP4 roadmap. SATMA
    b. Approval of new RNP 4 airways structure. SAT Members.
    c. Preliminary operational assessment of the new structure in service in the EUR/SAM Corridor during 2017. SATMA.

- During SAT/FIT12 2017:
    a. Preliminary analysis of FANS services in the EUR/SAM Corridor during 2017. CFRA.

APPENDIX N

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

1. 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.

2. *Note: The Task Force will adopt a pragmatic approach and may set up auxiliary bodies to carry out specific tasks, as necessary.*

WORK PROGRAMME

TASK No.	SUBJECT	TARGET DATE
1.	Analyze ATM deficiencies and make proposals for their elimination.	Continuous
2.	Monitor pre-implementation/post-implementation safety assessments (as applicable) for RVSM and RNP operations in the South Atlantic, including adjacent areas.	*Continuous*
3.	Study and evaluate RVSM, RNP/RNAV procedures applicable in the AFI/CAR/SAM and EUR/SAM Interface areas.	Continuous
4.	Monitor flight plan availability and propose appropriate corrective measures.	Continuous
5.	Oversee FANS 1/A system performance monitoring to ensure that the system continues to meet safety and interoperability requirements and that operations and procedures are working as specified.	Continuous
~~6.~~	~~Carry out studies on the establishment of a central reporting agency (CRA) and related institutional issues~~	~~Completed~~
7.	Harmonize ADS/CPDLC programmes developed by SAT States/FIRs and analyze cost-benefit aspects related to their implementation.	Continuous
8.	Maintain ADS/CPDLC operational guidance material updated.	Continuous
9.	Conduct studies related to the implementation of the Global ATM Operational Concept and other enabling concepts within the SAT area.	Continuous
10.	Continue studies related to the extension of the AORRA airspace.	**SAT20**
11.	Analyze the operational requirements of AIDC implementation in South Atlantic	**SAT20**
12.	Analyze the feasibility of ITP application in the South Atlantic	**SAT20**

- Note: The ATM/WG should take appropriate action on pressing issues and submit its proposal to the SAT Group 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 and 7 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 N2

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

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

WORK PROGRAMME

TASK No.	SUBJECT	TARGET DATE
~~1.~~	~~Analyze the current operational situation within the EUR/SAM Corridor taking into account statistics and users needs.~~	~~Completed~~
~~2.~~	~~Explore ways and means to restructure the EUR/SAM Corridor airspace~~	~~Completed~~
~~3.~~	~~Develop a short term plan using the current separation standards based on RNP10, including the implementation of new ATS routes.~~	~~Completed~~
~~4.~~	~~Analyze the advantages of introducing unidirectional ATS routes.~~	~~Completed~~
5.	Study the feasibility of implementing RNP4, using ADS/CPDLC functionalities.	**SAT/20**
6.	Continue studies to implement a random routing area, using ADS/CPDLC functionalities.	**SAT/20**
7.	Develop necessary cost benefit analysis for the different options.	**SAT/20**
8.	Establish means to develop the safety assessment for the different implementation options.	**SAT/20**
9.	Develop an action plan for the different implementation options.	**SAT/20**
10.	Analyze the Report of the Airspace Concept Task Force	**SAT/20**

COMPOSITION
• Brazil, Cape Verde, France, Portugal, Senegal, Spain, Trinidad and Tobago, United States, ASECNA and IATA. • ***Rapporteur**: **Portugal**.*
• ***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 N3

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

1. 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 areas of routing AR1/HA1 AR-2/HA8 *as defined in the Global Air Navigation Plan (GANP ICAO Doc 9750)*, by resorting to emerging technologies and, in particular, by taking advantage of rationalization, integration and harmonization of systems where appropriate.

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

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

WORK PROGRAMME

TASK No.	SUBJECT	TARGET DATE
1.	Analyze CNS deficiencies and make proposals for their elimination.	Continuous
2.	Review the report of the CAFSAT Network Management Committee	Continuous
3.	Undertake investigations on the lack of flight plans, including individual cases, with emphasis on the aeronautical fixed telecommunication network (links, switching centres, routing directory and transit time statistics).	Continuous
4.	Carry studies and make proposals to achieve end-to-end interoperability of ATM applications, in accordance with the ATM global operational concept.	SAT/20
5.	In accordance with CNMC conclusions and decisions evaluate the feasibility of using existing or emerging digital VSAT networks to support ATS data link applications in an ATN environment.	Continuous
6.	Considering the implementation time-frames in the AFI and SAM CNS/ATM implementation plans, address cost-benefit aspects for the use of CNS/ATM applications (as required).	Continuous
7.	In coordination with SAT ATM/WG, share relevant technical aspects of different ADS/CPDLC Systems to be implemented by SAT States addressing issues regarding work methodology, procedures, data	SAT/20

	interchange, maintenance, etc.	
8.	Analyze all aspects related to the implementation of ATS Voice switching and signaling protocols (ATS-N5, VoIP) in the SAT area in accordance with guidance material contained in ICAO Relevant documents	SAT/20

COMPOSITION

- The CNS/WG being of multi-disciplinary nature shall comprise experts from States responsible of FIRs in the area concerned, experts from adjacent FIRs and international organizations and the aeronautical industry.
- ***Rapporteur**: **Senegal**.*
- ***Task Team leaders**: ASECNA (Tasks. Nos.**3** and 4), **South Africa** (Task No.7), Argentina (Task 8)*
- ***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.*