

INTERNATIONAL CIVIL AVIATION ORGANIZATION



FIRST MEETING OF THE TASK FORCE ESTABLISHED BY THE TENTH INFORMAL MEETING ON THE IMPROVEMENT OF AIR TRAFFIC SERVICES OVER THE SOUTH ATLANTIC

(SAT/10/TF/1)

(Las Palmas, Spain 25 – 28 June 2002)

REPORT

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**Appendices to the Report of the First Meeting of the Task Force established by the Tenth
Informal Meeting of the improvement of Air Traffic Services over the South Atlantic
(SAT/10/TF/1)**

Agenda Item	Appendix	Title
Introduction	A	List of Participants
1	1A	Terms of reference, work programme and composition of the SAT/10 Task Force
1	1B	Terms of reference, work programme and composition of the SAT/10 Task Force Technical Working Group
2	2A	SATMA RNP 10 and RVSM post-implementation Report (May 2002)
2	2B	Terms of reference of the Task Force Ad Hoc Working Group
2	2C	Model of monitoring Letter of Agreement
4	4A	Missing RPLs - Status reporting format
4	4B	AFTN Transit time reporting format

Glossary of Terms

ACC	Area Control Centre
ADS	Automatic Dependent Surveillance
AFISNET	AFI satellite telecommunication network
AFS	Aeronautical Fixed Service
AFTN	Aeronautical Fixed Telecommunication Network
AIC	Aeronautical Information Circular
AIDC	ATS interfacility data communications
AIRAC	Aeronautical information regulation and control
AIS	Aeronautical Information Service
AMCP	Aeronautical Mobile Communications Panel
AMHS	ATS message handling system
AMS(R)S	Aeronautical Mobile-Satellite (R) Service
AMSS	Aeronautical Mobile-Satellite Service
APANPIRG	ASIA/PAC Air Navigation Planning and Implementation Regional Group
AR	Area of Routing
ASECNA	Agency for the Safety of Aerial Navigation in Africa and Madagascar
ATC	Air Traffic Control
ATM	Air Traffic Management
ATN	Aeronautical Telecommunication Network
ATNP	Aeronautical Telecommunication Network Panel
ATS	Air Traffic Services
BIS	Boundary Intermediate System
BBIS	Backbone Boundary Intermediate System
CAFSAT	Central Atlantic FIRs satellite telecommunication network
CIDIN	Common ICAO Data Interchange Network
CNS	Communications, Navigation, and Surveillance
COM/MET/OPS	Communications/Meteorology/Operations
CPDLC	Controller pilot data link communications
CMA	Central Monitoring Agency
CSP	Communication Service Provider
DGNSS	Differential Global Navigation Satellite System
DME	Distance Measuring Equipment
EGNOS	European Geostationary Navigation Overlay System
EUROCONTROL	European Organization for the Safety of Air Navigation
FAA	Federal Aviation Administration
FDPS	Flight Data Processing System
FIR	Flight Information Region
FM	Frequency Modulation
FMC	Flight Management Computer
FMS	Flight Management System
GES	Ground Earth Station
GIC	GNSS Integrity Channel
GLONASS	Global Orbiting Navigation Satellite System (Russian Federation)
GNSS	Global Navigation Satellite System
GPS	Global Positioning System (United States)
HF	High Frequency
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICG	Implementation Coordination Group
IFR	Instrument Flight Rules

ILS	Instrument Landing System
INS	Inertial Navigation System
IRS	Inertial Reference System
INMARSAT	International Mobile Satellite Organization
INS	Inertial Navigation System
IS	Intermediate System
ISO	International Organization for Standardization
ITU	International Telecommunication Union
JAA	Joint Aviation Authorities
LAAS	Local Area Augmentation system
LEO	Low Earth Orbit
MLS	Microwave Landing System
MODE S	Mode S - SSR Data Link
MSAW	Minimum safe altitude warning system
MTSAT	Multi-Functional Transport Satellite (Japan)
OSI	Open Systems Interconnection
RAIM	Receiver Autonomous Integrity Monitoring
RD	Routing Domain
RNAV	Area Navigation
RNP	Required Navigation Performance
SARPs	Standards and Recommended Practices
SATCOM	Satellite Communication
SATMA	South Atlantic Monitoring Agency
SITA	Société Internationale de Télécommunications Aéronautiques
SSR	Secondary Surveillance Radar
TCP/IP	Transport Control Protocol/Internet Protocol
TMA	Terminal Control Area
VDR	VHF Data Radio
VHF	Very High Frequency
VOR	VHF Omnidirectional Radio Range
WAAS	Wide Area Augmentation System
WGS-84	World Geodetic Reference System - 1984
WRC	World Radiocommunication Conference

History of the meeting

1. Duration and Venue of the Meeting

1.1 The First Meeting of the Task Force established by the Tenth Informal Meeting on the improvement of air traffic services over the South Atlantic (SAT/10, Dakar, Senegal 10–13 December 2001) was held in Las Palmas, Spain from 25 to 28 June 2002. The meeting was convened pursuant to SAT/10 Conclusion 10/6, and was organized concurrently with the SAT Technical Working Group.

2. Officers, organization and conduct of the meeting

2.1 Mr. Tomas Vidriales from AENA, Spain was unanimously elected as Chairman of the meeting.

2.2 Mr. Prosper Zo'o – Minto'o, Regional Technical Officer Communications, Navigation and Surveillance (RO/CNS) of ICAO Western and Central Office, Dakar served as Secretary of the meeting. He was assisted by Mr. Konan Brou, Regional Technical Officer Air Traffic management (ATM) from the same ICAO Office.

2.3 Mr. Sebastian Peres, Regional Director of Air Navigation Services of The Canaries officially opened the meeting. He noted with appreciation the arrangement reached to organize the SAT/10 Task Force meeting in Great Canary, Spain. The speaker emphasized the SAT Informal Group's expectations from the work of the Task Force and the significant achievements so far made in the EUR/SAM Corridor over the last past years, of which the implementation of:

- 10 minute longitudinal separation associated with the Mach Number Technique (MNT),
- CAFSAT, the interregional satellite-based telecommunication network for Central Atlantic FIRs,
- RNP 10/50 NM on 4 October 2001, and
- RVSM on 24 January 2002.

In doing so, he pointed out the key role of Spain in performing, on behalf of SAT States, traffic analyses, safety assessments and safety monitoring necessitated by the implementation of aforementioned requirements, which would have not been possible without tremendous efforts made to establishing, equipping and operating the South Atlantic Monitoring Agency (SATMA). He therefore called for a study on a cost recovery mechanism to be studied in order to collectively provide continuous support to safety monitoring activities assigned to SATMA in the EUR/SAM Corridor.

2.4 Noting that the Task Force meeting was being held only sixth months after SAT/10 meeting, Mr. Sebastian Peres also rightfully recommended that the SAT Group reexamine the periodicity of its meetings (including Task Force meetings) and make optimum use of electronic correspondence in order for States to concentrate on implementation aspects and to meet only when significant progress or development is noted.

3. Attendance

3.1 The meeting was attended by 32 delegates from 8 States and 4 International Organizations.

3.2 The list of participants is at **Appendix A** to this part of the Report.

4. Working Language

4.1 English was used as the working language and documentation was issued in this language.

4.2 The Secretariat provided *ad hoc* assistance in translating Senegal and ASECNA working papers which were submitted during the meeting, for all the participants to benefit from these contributions.

5. Agenda

5.1 The Meeting adopted the following Agenda:

- Agenda Item 1 : Review of SAT/10 Conclusions and the mandates assigned to the Task Force and the Technical Working Group.
- Agenda Item 2 : Evaluation of the results of the RVSM post-implementation safety assessment
- Agenda Item 3 : Implementation of a new ATS route (UN742) west of UN741 - Need and inconvenience of a new traffic orientation scheme in the EUR/SAM Corridor (unidirectional ATS routes)
- Agenda Item 4 : Review of the lack of flight plans and proposals of remedial actions
- Agenda Item 5 : ATM related aspects within area of routing AR2/AH8.
- Agenda Item 6 : Communications, navigation and surveillance
- Agenda Item7: Any other business.

6. Conclusions and Decisions

6.1 The Meeting records its action in the form of draft Conclusions and draft Decisions with the following significance:

6.2 Draft Conclusions

6.2.1 Draft Conclusions deal with matters which directly merit the attention of States, or on which further action will be initiated by ICAO in accordance with established procedures.

6.3 **Draft Decisions**

6.3.1 Draft Decisions deal with matters of concern to the SAT Group and SAT/10 Task Force.

6.4 **List of Draft Conclusions**

Draft Conclusion SAT/10/TF/1/1: Task Force future work programme
<ul style="list-style-type: none"> • That the SAT Task Force future work programme should include the tasks listed in Appendix 1A.
Draft Conclusion SAT/10/TF/1/2: Technical Working Group future work programme
<ul style="list-style-type: none"> • That the SAT Technical Working Group future work programme should include the tasks listed in Appendix 1B.
Draft Conclusion SAT/10/TF/1/3: Scope of activities of the South Atlantic Monitoring Agency (SATMA)
<ul style="list-style-type: none"> • That the scope of SATMA monitoring activities include both RVSM and RNP/10 in accordance with SAT/10 Conclusion 10/2.
Draft Conclusion SAT/10/TF/1/4: Aeronautical Information Circular (AIC) on SATMA new reporting format
<ul style="list-style-type: none"> • That the States in EUR/SAM Corridor publish an aeronautical information circular (AIC) on SATMA new reporting format.
Draft Conclusion SAT/10/TF/1/5: Monitoring of RNP/10 and RVSM approval status
<ul style="list-style-type: none"> • That SATMA monitor RNP/10 and RVSM approval status of all aircraft having flown within the EUR/SAM RNP/10/RVSM area, and procedures thereon be established.
Draft Conclusion SAT/10/TF/1/6: Participation in the monitoring process
<ul style="list-style-type: none"> • That in order for the monitoring process to be efficient and reliable: <ul style="list-style-type: none"> - all SAT ACCs endeavour to follow data collection procedures by forwarding relevant and precise data to SATMA (Canaries FIR) using the adequate reporting format and taking due account of agreed reporting dates; and - all airline operators be fully involved and actively participate in the reporting process.
Draft Decision SAT/10TF/1/7: Establishment of a special working group
<ul style="list-style-type: none"> • That an ad hoc working group composed of Brazil, Cape Verde, Senegal, South Africa, Spain and ASECNA be established under ICAO's coordination in order to study the appropriateness of a cost recovery mechanism to support SATMA operation, and make proposals as required. • The ad hoc working group, which will work through electronic correspondence will have to: <ul style="list-style-type: none"> - identify and collect information on existing regional monitoring agencies (RMAs); - analyze the framework for a cost recovery mechanism and, if applicable, draft proposals to be circulated to all members for comments and inputs; - make proposals on modalities of cooperation between SATMA and other RMAs; and - finalize its proposals and conclusions for submission to SAT/11. <p>The ad hoc working group would also be assigned (as required) other additional tasks of relevance to the SAT/10 Task Force.</p>

Draft Conclusion SAT/10/TF/1/8: Monitoring Letter of Agreement between EUR/SAM ACCs
<ul style="list-style-type: none"> That signing of a monitoring letter of agreement (LOA) between EUR/SAM ACCs be considered in order to formalize and harmonize monitoring procedures with SATMA, the Monitoring Agency.
Draft Conclusion SAT/10/TF/1/9: Implementation of a new ATS route UN749 and Random Routing Areas
<ul style="list-style-type: none"> That all relevant elements necessitated in preparation for the implementation of the proposed ATS route UN749 and random routing areas within AR1/AH2 and AR2/AH8, including proposed safety assessment, implementation timescales and related cost estimates as well as draft amendment proposals to AFI and CAR/SAM ANPs and to Doc 7030, be readied for consideration by SAT/11.
Draft Conclusion SAT/10/TF/1/10: Status reports on missing flight plans in SAT area
<ul style="list-style-type: none"> That, monthly status reports on missing plans be established by SAT participating ACCs. Such reports on missing flight plans should include the following elements for each flight involved: <i>date, time, aircraft type, flight number, point of departure, destination, as listed in Appendix 4A.</i>
Draft Conclusion SAT/10/TF/1/11: Need for further investigations
<ul style="list-style-type: none"> That further investigations be carried out on the lack of flight plans, with emphasis on the performance of AFTN centres in terms of transit time as defined in ICAO Doc 8259, statistics of which should be established on a quarterly basis using the reporting format shown in Appendix 4B.
Draft Conclusion SAT/10/TF/1/12: Implementation of repetitive flight plans (RPLs)
<ul style="list-style-type: none"> That, in order to maximize the possibilities of mitigating adverse effects associated with the critical lack of flight plans being experienced in the SAT area, States concerned consider the use of repetitive flight plans (RPLs) on a trial basis.
Draft Conclusion SAT/10/TF/1/13: Management of flights without FPLs
<ul style="list-style-type: none"> That, in the absence of a FPL clearly indicating RVSM or RNP approval status of an aircraft, receiving ACCs might rely on pilot statements and proceed accordingly.
Draft Conclusion SAT/10/TF/1/14: Implementation of random routes
<ul style="list-style-type: none"> That the implementation of random routes in routing areas AR1/AH2 and AR2/AH8 be included in the Task Force future work programme.
Draft Conclusion SAT/10/TF/1/15: Coordination meeting on routing area AR2/AH8
<ul style="list-style-type: none"> That, as a matter of urgency, a coordination meeting be held between concerned States on the proposed establishment of a random routing area in the Atlantic Ocean within the interface between AFI, NAT and SAM Regions.
Draft Conclusion SAT/10/TF/1/16: Provision of air traffic control service and reduction of separation minima
<ul style="list-style-type: none"> That the framework for reduction of separation minima and consideration of provision of air traffic control be included in Task Force future work programme.
Draft Conclusion SAT/10/TF/1/17 : ATS/DS circuit Las Palmas/Nouadhibou
<ul style="list-style-type: none"> That, pending the implementation of a proper circuit between Las Palmas and Nouadhibou, ASECNA and AENA (Spain) implement the agreed two-hop VSAT link between these centres as scheduled by September 2002.

Draft Conclusion SAT/T0/TF/1/18: Interoperability of VSAT networks
<ul style="list-style-type: none"> • That : <ul style="list-style-type: none"> - the use of one (or two) common satellite transponder(s) be the long-term objective for achieving full interoperability of existing/planned VSAT networks; - a meeting be organized before the end of the year 2002 between INTELSAT and States/Organizations managing VSAT networks, as called for by APIRG Conclusion 13/11, in order to study and formulate proposals for the integration of existing VSAT networks; and - ICAO and VSAT service providers coordinate and join their efforts when designing/implementing projects aiming at achieving interoperability between VSAT networks.
Draft Conclusion SAT/10/TF/1/19: Use of AFISNET and CAFSAT networks to support GNSS
<ul style="list-style-type: none"> • That, when applicable, cooperation for the use of AFISNET and CAFSAT networks be encouraged to support the introduction of GNSS applications in the EUR/SAM Corridor.
Draft Conclusion SAT/T0/TF/1/20: Extension of VHF radio coverage within Dakar Oceanic FIR
<ul style="list-style-type: none"> • That, pursuant to SAT/10 Conclusion 10/18, Senegal (ASECNA) expedite the extension of VHF radio coverage within Dakar Oceanic FIR, using a remote VSAT station located in Cape Verde.
Draft Conclusion SAT/10/TF/1/21 : ATS/DS satellite two-hop tests
<ul style="list-style-type: none"> • That, noting the results from the first simulation of a two-hop link carried out by Canaries and Sal ACCs, SAT ACCs : <ul style="list-style-type: none"> - continue to perform trials on satellite two-hop voice links to ascertain that ATS/DS requirements are met ; and - consider the implementation of such links when and where justified.
<i>Note : Controllers should be involved in trials on double hop links.</i>
Draft Conclusion SAT/10/TF/1/22: Guidance material for ADS/CPDL programmes
<ul style="list-style-type: none"> • That the development of guidance material for the establishment of ADS/CPDL implementation programmes be included in the work programme of the Technical Working Group in order to assist States and to facilitate harmonization of ADS/CPDLC programmes in the SAT Region.

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Participants : 32

States : 8

International organizations : 4

Agenda Item 1 : Review of SAT/10 Conclusions and the mandates assigned to the Task Force and the Technical Working Group.

1.1 Under this Agenda Item, the meeting reviewed the list of Conclusions from the SAT/10 meeting which was held in Dakar, Senegal from 12 to 13 December 2001, and follow up action taken thereon by States, Organizations and the Secretariat.

1.2 The meeting acknowledged that, though it was not reflected in the initial work programme of SAT/10 Task Force, monitoring activities to be carried out by the South Atlantic Monitoring Agency (SATMA) include both RNP 10 and RVSM operations in accordance with SAT/10 Conclusion 10/2.

1.3 The meeting noted with satisfaction that RNP 10 and RVSM were successfully implemented on 4 October 2001 and 24 January 2002 as scheduled, and therefore congratulated States for the timely implementation of SAT/9 and SAT/10 Conclusions relating to these operational requirements. Actions taken include establishment of implementation programmes, issuance of aeronautical information (AICs, NOTAMs), updating of ATC operations manuals, training programmes, coordination with adjacent ACCs, signing of letters of agreement and post-implementation reporting.

1.4 The meeting then took note of the mandates assigned to the Task Force and the Technical Working Group by SAT/10. *The following draft Conclusions were formulated:*

DRAFT CONCLUSION SAT/10/TF/1/1: TASK FORCE FUTURE WORK PROGRAMME

That the SAT Task Force future work programme should include the tasks listed in Appendix 1A to this part of the Report.

DRAFT CONCLUSION SAT/10/TF/1/2: TECHNICAL WORKING GROUP FUTURE WORK PROGRAMME

That the SAT Technical Working Group future work programme should include the tasks listed in Appendix 1B to this part of the Report.

DRAFT CONCLUSION SAT/10/TF/1/3: SCOPE OF ACTIVITIES OF THE SOUTH ATLANTIC MONITORING AGENCY (SATMA)

That the scope of SATMA monitoring activities include both RVSM and RNP/10 in accordance with SAT/10 Conclusion 10/2.

TERMS OF REFERENCE OF TASK FORCE ESTABLISHED BY THE SAT/10 MEETING

- Taking into account of the evolutionary implementation of CNS/ATM systems in the EUR/SAM corridor (area of routing AR1/AH1) and in the Atlantic Ocean interface between AFI, NAT and SAM Regions (area of routing AR-2/AH8), the Task Force should explore ways and means of achieving further enhancements in airspace capacity in the area as well as enhancements in the communications, navigation and surveillance fields. It will be guided by the requirements identified in the AFI and CAR/SAM CNS/ATM Implementation plans.
- *Note: The Task Force will adopt a pragmatic approach and may wish to set up sub-groups if necessary in order to carry out specific tasks.*

WORK PROGRAMME

TASK No.	SUBJECT	TARGET DATE
Area of routing AR1/AH1		
1	Evaluate the results of the post-implementation safety assessment to be carried out by SATMA for RVSM operations in the EUR/SAM corridor, and initiate actions through Secretariat for the endorsement of the results by the ICAO Council.	SAT/11
2	Study the need of implementation of a new ATS route (UN742) west of UN 741 .	SAT/11
3	Study the need and convenience of a new traffic orientation scheme in the EUR/SAM corridor (unidirectional ATS routes).	SAT/11
4	Review the lack of FPL and propose the appropriate action to solve this deficiency.	SAT/11
Area of routing AR2/AH8		
1	<p><i>In accordance with the AFI and CAR/SAM CNS/ATM Implementation Plans:</i></p> <ul style="list-style-type: none"> • Plan for the implementation of a random routing area in the Atlantic Ocean interface between AFI, SAM and NAT Regions • Consider the implementation/creation of additional ATS routes (<i>wherever applicable</i>). • Lay down the necessary framework for a reduction of separation minima. • Consider the provision of air traffic control service. • Consider the use of the ADS/CPDLC functionality of FANS 1/A equipped aircraft. • Consider the introduction of RNP in accordance with the AFI and CAR/SAM CNS/ATM implementation Plans. • Consider improvements in communications services. 	SAT/12
2	Explore ways and means of taking appropriate measures for the elimination of shortcomings and deficiencies in the area, including communications problems and propose urgent remedial actions.	SAT/11
3	Analyze the possibility to harmonize and standardize the application of ADS/CPDLC in an operational and technical point of view.	SAT/12
4	Consider the feasibility of interconnection between VSAT networks (SADC VSAT, ASECNA VSAT, CAFSAT, REDDIG and other networks).	SAT/12

- Note: The Task Force should take appropriate action on pressing issues and submit its proposal to the SAT/11 meeting.

COMPOSITION

- *The Task Force of multi-disciplinary nature shall comprise of experts from States responsible of FIRs in routing areas AR1, AR2, AH 1; AH8, and experts from adjacent FIRs and international organizations. Spain has been appointed as Rapporteur of the Task Force.*
- *The SAT/10 TF should complete its work and submit its proposal to the SAT Task Force. The SAT/10 TF should work through correspondence and make optimum use of the Internet for consultations with other partners prior to the meeting.*

TERMS OF REFERENCE OF THE TECHNICAL WORKING GROUP (TWG) ESTABLISHED BY THE SAT/10 MEETING

- Considering the GREPECAS and APIRG *Air Navigation* Plans, the SAT/TWG should explore ways and means of achieving further enhancements in airspace capacity in the EUR/SAM corridor and the Iberian Peninsula, by resorting to emerging technologies and in particular, taking advantage, where appropriate, of rationalization, integration and harmonization of systems.
- Implementation of new systems should be sufficiently flexible to accommodate existing and future services in an evolutionary and cost-effective manner.
- The associated institutional arrangements shall not inhibit competition among service providers complying with relevant ICAO Standards, Recommended Practices and Procedures.

WORK PROGRAMME

TASK No.	SUBJECT	TARGET DATE
1	Carry out studies related to the expansion of CAFSAT Network to cater for all AFS requirements within the SAT Region. Such studies should include coordination issues, service channel interfaces, monitoring and control system architecture, system availability, expansion of nodes and services, user interfaces and bandwidth monitoring.	SAT/11
2	Consider advantages of internetworking between existing VSAT networks (CAFSAT, REDDIG, ASECNA VSAT, SADC VSAT and other emerging networks) and evaluate the long term potential benefits.	SAT/11
3	Carry out a feasibility study of a cost-effective extension of VHF radio coverage based on remote VSAT stations located in Ascension Island and Cape Verde Archipelago.	SAT/11
4	Study the results of the two VSAT hops voice link tests between Atlantico and Canaries ACCs.	SAT/11
5	Considering implementation time-frames planned in the AFI and SAM CNS/ATM implementation plans, address cost-benefit aspects for the use of CNS/ATM applications, such as ADS/CPDLC.	SAT/12
6	Explore the use of emerging new ATM technologies and tools (conflict resolution systems, etc...).	SAT/12
7	Analyze the ADS data sharing initial test bed between Atlantico and Canaries ACCs.	SAT/11
8	Study the harmonization of ADS/CPDLC taking into account programmes developed by States/FIRs involved. Harmonization of ADS/CPDLC should address use of common standards, transmission protocols, data formats, procedures, methods of work, etc...	SAT/12
9	Evaluate the feasibility of using existing or emerging digital VSAT networks (CAFSAT, ASECNA VSAT network, SADC VSAT network, REDDIG, etc.) to implement data link systems to support ATN applications such as ADS and CPDLC within the EUR/SAM corridor and the Iberian Peninsula.	SAT/12

COMPOSITION

- *The Technical Working Group (TWG) being of multi-disciplinary nature shall comprise of experts from States responsible of FIRs in the area concerned, experts from adjacent FIRs and international organizations and the aeronautical industry. Senegal has been appointed as Rapporteur of the Technical Working Group.*
- *The TWG should complete its work and submit its proposal to the SAT Task Force. The TWG should work through correspondence and make optimum use of the Internet for consultations with other partners prior to the meeting.*

Agenda Item 2 : Evaluation of the results of the RVSM post-implementation safety assessment

Evaluation of collected data for the RNP/RVSM post-implementation.

2.1 The meeting was presented with RVSM post-implementation evaluation report prepared by SATMA, the monitoring agency based on data collected by ACCs. The importance of the data collection process was emphasised in order to perform reliable safety analyses, accurate monitoring and exhaustive studies. The meeting discussed at length the following issues.

Lack of data

2.2. The meeting encouraged efforts undertaken by States to apply monitoring procedures agreed so far. However, it was pointed out that the evaluation carried out by SATMA suffered from the lack of certain data on actual air traffic situation, of which indications on assignment of non-preferred flight levels.

Deviation reports

2.3 With regard to deviation reports, the meeting noted a very limited participation of airline operators in the reporting process (deviation reports and no report notifications). SATMA indicated that most of the reports received from airline operators were sent by Air Portugal. The meeting therefore called on participation of all SAT member States/FIRs and all users for the information collected by SATMA to be exhaustive and for the analyses carried out to be reliable.

2.4 It was recommended that deviation reports specify whether the deviations were cleared/known by ACCs or not, or otherwise if contingency procedures were applied instead. It was also recommended that, in case of deviations without ATC clearance, ACCs should carry out investigations thereon and inform SATMA of the results. The meeting requested SATMA to publish an AIC on the new reporting format, and *the following draft Conclusion was formulated:*

**DRAFT CONCLUSION SAT/10/TF/1/4: AERONAUTICAL INFORMATION CIRCULAR
(AIC) ON SATMA NEW REPORTING FORMAT**

That the States in EUR/SAM Corridor publish an aeronautical information circular (AIC) on SATMA new reporting format.

Monitoring of RNP/10 AND RVSM approval status

2.5 The meeting also identified the necessity for SATMA to monitor RNP/10 and RVSM approval status of all aircraft having flown within EUR/SAM RNP/10 and RVSM areas, and the need to develop procedures for this purpose. *The following draft Conclusion was formulated:*

**DRAFT CONCLUSION SAT/10/TF/1/5: MONITORING OF RNP/10 AND RVSM
APPROVAL STATUS**

That SATMA monitor RNP/10 and RVSM approval status of all aircraft having flown within the EUR/SAM RNP/10 and RVSM areas, and procedures thereon be established.

SATMA reports

2.6 The meeting was informed that three (3) post-implementation reports have been issued so far by SATMA dated 25 February 2002, 30 March 2002 and 31 May 2002. The report of May 2002 is attached to this part of the Report as **Appendix 2A**.

SATMA cost recovery mechanism

2.7 The meeting recalled SAT/6 Conclusion 1/1, SAT/7 Conclusions 3/1 and 4/1 and SAT/8 Conclusions 2/2 and 2/5 as well as CAR/SAM/3 Recommendation 5/25 which form the basis of the establishment of SATMA, the South Atlantic Monitoring Agency by Spain, AENA. It was noted that since its inception, SATMA activities have been devoted to the compilation and processing of statistical data on air traffic in the EUR/SAM Corridor, and to the preparation for RNP/10 and RVSM implementation, including safety assessments that lead to the go-decisions for the implementation of RNP/10 and RVSM in SAT FIRs. As already mentioned in this Report, these applications were successfully implemented in October 2001 (RNP/10) and January 2002 (RVSM).

2.8 In order to ensure and stability of the safety environment within the Corridor, SAT/10 requested Spain, the State managing SATMA to present a proposal to the Task Force for the continuation of SATMA monitoring activities aiming at ensuring stability of the safety environment, including the relation of the possible tasks, as well as the ways to finance the Monitoring Agency. The meeting agreed on a proposed Special Working Group to be tasked to study, among other issues, a cost recovery mechanism that will enable SATMA to support the necessary investments involved with its responsibilities and related operation costs based on ICAO relevant provisions and experience gained in ICAO Regions having implemented their regional monitoring agencies : ASI/PAC (APARMO), CAR/SAM (CMA), MID (MECMA), NAT CMA.

Need for harmonized monitoring procedures at a global level

2.9 The meeting recognized the necessity to harmonize monitoring procedures in order to avoid effort duplication, to establish common data collection procedures and to develop similar data bases. In this respect, the meeting was informed that ICAO will organize a meeting of all RMAs in Montreal early November 2002, just before or after the Separation and Airspace Safety Panel (SASP) meeting which is tasked – among other issues - to develop guidance material for RVSM monitoring. Furthermore, the need for close cooperation between SATMA and CAR/SAM M.A. was emphasized.

In view of the foregoing, the following draft Conclusions were formulated:

DRAFT CONCLUSION SAT/10TF/1/6: PARTICIPATION IN THE MONITORING PROCESS

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

- all SAT ACCs endeavour to follow data collection procedures by forwarding relevant and precise data to SATMA (Canaries FIR) using the adequate reporting format and taking due account of agreed reporting dates; and
- all airline operators be fully involved and actively participate in the reporting process.

DRAFT DECISION SAT/10TF/1/7: ESTABLISHMENT OF A SPECIAL WORKING GROUP

That an ad hoc working group composed of Brazil, Cape Verde, Senegal, South Africa, Spain and ASECNA be established under ICAO's coordination in order to study the appropriateness of a cost recovery mechanism to support SATMA operation, and make proposals as required.

The ad hoc working group, which will work through electronic correspondence will have to:

- identify and collect information on existing regional monitoring agencies (RMAs);
- analyze the framework for a cost recovery mechanism and, if applicable, draft proposals to be circulated to all members for comments and inputs;
- make proposals on modalities of cooperation between SATMA and other RMAs; and
- finalize its proposals and conclusions for submission to SAT/11.

The ad hoc working group would also be assigned (as required) other additional tasks of relevance to the SAT/10 Task Force.

*Note: The work programme of the Ad Hoc Working Group is at **Appendix 2B** to this part of the Report.*

Monitoring Letter of Agreement

2.9 The meeting discussed the relevance of having a monitoring letter of agreement (LOA) establishing agreed procedures for monitoring aircraft navigation errors between SATMA, the Monitoring Agency and the ATS Service Providers responsible for air traffic management within the EUR/SAM Corridor. Such a monitoring letter of agreement, a model of which is attached at **Appendix 2C** to this part of the Report – sets out the responsibilities and agreed RNP10 and RVSM monitoring, notification, investigation and reporting procedures, together with corrective measures to be taken if necessary.

2.10 The meeting concluded that the Ad Hoc Working Group of the SAT/10 Task Force be assigned the drafting of a monitoring LOA¹ applicable to the EUR/SAM Corridor. The draft monitoring LOA will be submitted to SAT/11. *The following draft Conclusion was formulated:*

CONCLUSION SAT/10TF/1/8: MONITORING LETTER OF AGREEMENT BETWEEN EUR/SAM ACCs

That signing of a monitoring letter of agreement (LOA) between EUR/SAM ACCs be considered in order to formalize and harmonize monitoring procedures with SATMA, the Monitoring Agency.

¹ Note: Using available models of such LOAs developed by other Regions.

(INITIAL) TERMS OF REFERENCE OF THE ATN PLANNING TASK FORCE		
To plan for the implementation of the aeronautical telecommunication network (ATN) in the AFI Region in order to meet CNS/ATM system performance requirements and capacity.		
WORK PROGRAMME		
TASK No.	SUBJECT	TARGET DATE
1	Critical analysis of the current AFTN in the AFI Region	APIRG/14
2	Description of the ATN inter-network topology, including identification of the administrative domains, their routing domains to include routers (intermediate systems and end systems), location and type of intermediate systems to interconnect the sub-networks, and definition of the interconnections.	APIRG/14
3	Description of the ATN ground-ground applications (AMHS, AIDC)	APIRG/14
TASK No.	SUBJECT	TARGET DATE
4	Preparation of an ATN addressing plan	APIRG/15
5	Preparation of an AMHS naming and addressing plan	APIRG/15
6	Preparation of guidance material to assist States, as necessary	APIRG/15
7	Update of the guidelines on ATN in the CNS/ATM Implementation Plan (Doc 003)	APIRG/15
8	Formulation of proposals to achieve the interoperability of existing VSAT networks	APIRG/15
COMPOSITION		
<i>Algeria, Angola, Burundi, Egypt, Ethiopia, Guinea, Kenya, Malawi, Niger, Nigeria, Senegal, South Africa, Tunisia, ASECNA and IATA.</i>		

**SATMA RVSM/RNP MONITORING PROGRAM
2nd POST-IMPLEMENTATION REPORT**

SATMA RVSM/RNP MONITORING PROGRAM

2nd POST-IMPLEMENTATION REPORT

On June 1st 2002, four months after the implementation of the RVSM, the South Atlantic Monitoring Agency with the cooperation of the Eur/Sam corridor Service Providers and the Operators, has prepared the 2nd monitoring results.

As there are data that affects not only the RVSM, but the RNP10 monitoring, this study brought data valid for both procedures.

The data are included under the following items:

- Flight Planning
- Flight Levels distribution
- Deviations
- Lack of Flight Plans
- Use of non preferred FLs and Rerouting
- Conclusions.

1 . FLIGHT PLANNING

No problems have been detected on the RVSM flight planning

2. FLIGHT LEVELS DISTRIBUTION

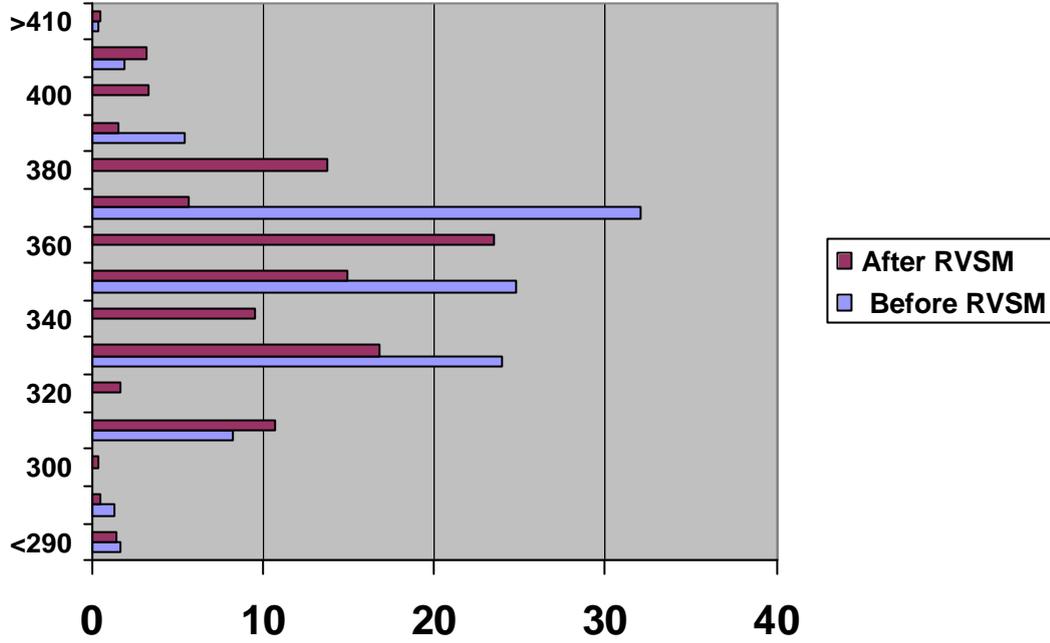
The last four month data shows that the spread of the flight levels occupancy after the RVSM implementation continues in the percentage of the 52% of the use of the new Flight Levels.

As a significant example, the occupancy of the Flight Level 370, that before the RVSM was a 32.1% of the total, has fallen to a 5.7% with the spread of the traffic between Fls 360 and 380.

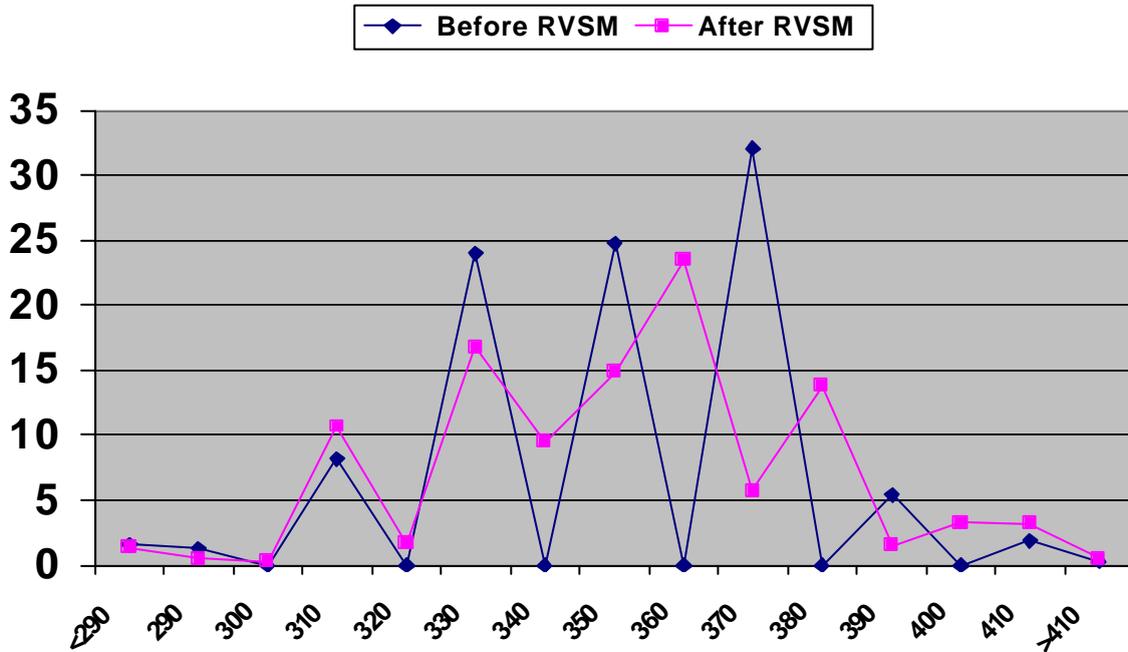
The studies derived from the Canarias ACC sectors occupancy data that has been realized with the Aena NORVASE program, shows that the RVSM has decreased the ATCOs work load in about a 20% in general, and more than 35% if we consider the night shift period, due to the new Flight Levels orientation allocation added to the RVSM implementation.

2.1 Graphic on FL distribution

Flight Levels occupancy (percentage)



Flight Levels occupancy (percentage)



3. DEVIATIONS

The vertical and lateral deviations are periodically checked by the following :

- The ACC's and AO's Navigation Deviation Form
- The ACC's and AO's Monthly report on deviations
- The ATCO's/Pilots ATC incidents notifications
- The radar monitoring

The results of March, April and May are:

- a) A lateral deviation of 13.5 NM during 3 minutes, 35 miles south of MILOK.
There have been NO more deviations without ATC clearance.
- b) The Monthly reports shows that there have been NO deviations (except the one in a))
- c) There have been no ATC incidents notification in the area
- d) The radar monitoring at Canarias shows NO significant lateral or vertical deviations.

4. LACK OF FLIGHT PLAN

The lack of Flight Plans in the ACC's concerned has decreased after the implementation of the CAFSAT data/voice communication network; nevertheless there's still a significant number of "lost FPL's".

As an example, the lack of FPL's at Canarias and Dakar Oceanic during May, has been:

- Dakar - **377**, which represent approximately a 17% of the total of the FPL's at the Eur/Sam corridor.
- Canarias - **129** that represent almost the 7% of the total of the FPL's at the Eur/Sam corridor.

A meeting was held between SATMA and Eurocontrol on march and an agreement was made so as to send to Eurocontrol the list of the lost Flight Plans so as to investigate if there's some failure or error that can be detected.

The data on May from Canarias and Dakar was distributed to Eurocontrol.

5. NON PREFERRED FL's and REROUTINGS

The data of this item is referred to the four month that follows the implementation of RVSM.

5.1 Traffic and percentages of overflights from Nov 01 to May 31

A – Total traffic and percentages on the 4 main ATS routes

	UN741 EDUMO	UN866 TENPA	UN873 IPERA	UN857 GUNET	TOTAL
NOV 01	701 37.8%	420 22.6%	578 31.1%	157 8.5%	1856
DEC 01	758 36.4%	471 22.6%	690 33.1%	164 7.9%	2083
JAN 02	654 32.1%	457 22.4%	728 35.6%	202 9.9%	2041
FEB 02	551 30.8%	358 20%	695 38.8%	187 10.4%	1791
MAR 02	584 30%	412 21.2%	769 39.5%	181 9.3%	1946
APR 02	624 32.1%	424 21.8%	734 37.8%	162 8.4%	1944
MAY 02	579 29.8%	397 20.6%	753 38.8%	212 10.9%	1941
TOTAL	4451 32.73%	2939 21.60%	4947 36.37%	1265 9.30%	13.602

B – Total traffic and percentages between UN873 and UN857

	UN873 IPERA	UN857 GUNET	TOTAL
NOV 01	578 78.6%	157 21.4%	735
DEC 01	690 80.8%	164 19.2%	854
JAN 02	728 78.2%	202 21.8%	930
FEB 02	695 78.8%	187 21.2%	882
MAR 02	769 80.9%	181 19.1%	950
APR 02	734 81.9%	162 18.1%	896
MAY 02	753 78.0%	212 22.0%	965
TOTAL	4947 79.6%	1265 20.4%	6212

5.2 Use of non preferred Flight levels

The use of non preferred flight levels is still high (about the 50% according with the Dakar data from May), nevertheless as it's higher than expected, new studies have to be done on the item so as to clarify the congruence between Flight Plans FL and requested flight levels.

5.3 Rerouted Flights

The data are referred to the month of May (Dakar data).

From	Rerouted flights
UN 741	6
UN 866	3
UN 873	4
UN 857	1

6. CONCLUSIONS

- The implementation of the RVSM in the Eur/Sam corridor is confirmed to be over expectations.
- It's confirmed that the most occupied Flight levels had a decrease of more than the 50% of the occupancy that was spread in the new RVSM flight levels.
- The deviation factor is considered to be into the parameters. The new Deviation format has to be used, for a clear indication of the observance of the contingency procedures. It has to be specify clearly if the deviation was WITH or WITHOUT ATC clearance, as indicated in the Deviation format.
- New data and investigation has to be done for the resolution of the lack of flight Plans.
- The percentage of flights that can't fly at the preferred flight level is still higher that expected.
There has been a significant decrease of flights that have to be rerouted to get a better flight level. The ATS route UN741 has the higher percentage on the rerouted flights.
- A decision is expected from the SAT10/TF1 for the way to conduct the revision with the new data (distribution and traffic growth) of the RNP10 safety assessment and the RVSM post implementation assessment.

A new Information Bulletin is expected by the end of 2002.

**TERMS OF REFERENCE AND WORK PROGRAMME OF THE AD HOC WORKING
GROUP ESTABLISHED BY SAT/10 TASK FORCE**

(Las Palmas 25 - 28 June 2002)

A) TERMS OF REFERENCE

To conduct studies aiming at establishing a perennial monitoring mechanism and maintaining a safety environment for RVSM, RNAV, RNP and random routing operations within areas of routing AR1/AH2 and AR2/AH8, for consideration by SAT/11.

B) WORK PROGRAMME

TASK No. 1: COST RECOVERY MECHANISM

(Target date of completion: SAT/11)

To :

- identify and collect information on existing regional monitoring agencies (RMAs);
- analyze the framework for a cost recovery mechanism and, if applicable, draft proposals to be circulated to all members for comments and inputs;
- make proposals on modalities of cooperation between SATMA and other RMAs;
and
- finalize proposals and conclusions.

**TASK No.2 : LETTERS OF AGREEMENT (LOPs) BETWEEN THE
MONITORING AGENCY (SATMA) AND PARTICIPATING ACCS**

(Target date of completion: SAT/11)

To develop a model of letter of procedures to be signed in order to formalize monitoring procedures between SAT ACCs and their monitoring agency.

**TASK NO.3 : IMPLEMENTATION OF A NEW ATS ROUTE UN749 AND
RANDOM ROUTING AREAS**

(Target date of completion: SAT/11)

To prepare all relevant elements necessitated in view of the implementation of the proposed ATS route UN749 and random routing areas within AR1/AH2 and AR2/AH8, including:

- proposed safety assessment;
- implementation timescales;
- related cost estimates; and
- draft amendment proposals to AFI and CAR/SAM ANPs and to Doc 7030.

Composition :

<i>States/Organizations</i>	<i>Focal Point of Contact</i>	<i>E-mail</i>
- Brazil	Julio Souza	atm3-9@decea.gov.br julioval@uol.com.br
- Cape Verde	TBC	TBC
- Senegal	Mamadou Ndiaye	TBC
- South Africa	J.M. Matshoba	jeffm@atns.co.za
- Spain	Juan de Mata Morales	jdemmorales@aena.es
- ASECNA	Théodore-Marie Fokoua	fokouathe@asecna.org

Coordination :

- Secretariat (ICAO)	Prosper Zo'o – Minto'o	zoomintoo@icao.sn pzoomintoo@yahoo.com pzoomintoo@hotmail.com
	Konan Brou	kbrou@icao.sn

Note : The Ad Hoc Working Group will complete its work mainly by using electronic correspondence. The Ad Hoc Working Group would also meet, if need be.

LETTER OF AGREEMENT

1. INTRODUCTION

1.1 Effective date: (Insert date)

1.2 Objective

1.2.2 The objective of this letter of agreement (LOA) is to establish agreed procedures for monitoring aircraft navigation errors prior to and following the introduction of RNP-based separation minima for aircraft on designated required navigation performance (RNP) routes in (Insert FIRs).

1.3 Scope

1.3.1 The procedures contained in this LOA implement the reporting and monitoring of gross lateral and longitudinal errors in areas where RNP-based lateral separation minima are applied.

1.3.2 For the purposes of this LOA, the term 'Service Providers' refers to organizations which are responsible for the provision of Air Traffic Control (ATC) and include the following: (Insert names of relevant organizations)

1.3.3 The term 'Regulatory Authority' refers to those organizations responsible for the investigation of navigational errors (Insert details of relevant organizations)

1.3.4 This LOA shall remain in force until it is cancelled or suspended

2. BACKGROUND

2.1 Requirements

2.1.1 The requirements for the application of lateral separation minima based on RNP are specified in Attachment B to Annex 11

2.2 Approval process

2.2.1 An RNP 'approval process' involves operators meeting certain requirements with regard to crew qualifications and in-flight operating procedures and the aircraft concerned being able to navigate to the specified requirements (RNP) for the entire length of the designated route. The responsibility for approval for such operations rests with the State of Registry and State of the Operator of the aircraft.

2.3 Monitoring

2.3.1 Monitoring navigation errors is a joint responsibility between the operators, the State of Registry or State of the Operator, and the ATC providers. This document sets out the responsibilities and procedures to be followed by staff of the signatory organizations to this LOA.

3. AREA OF APPLICABILITY

3.1 Aircraft type and routes

3.1.1 The procedures outlined in this LOA shall be applied to RNP approved aircraft operating on designated RNP routes.

4. MONITORING PROCEDURES

4.1 Lateral deviations

4.1.1 Monitoring shall be based on radar observations or ADS reports or pilot reports to air traffic controllers at established ATC facilities

4.1.2 When the controller observes a lateral deviation of 10 NM or more in RNP 10 airspace, the controller shall:

4.1.3 Immediately advise the pilot in command, using the following phraseology: “ATC observes a track error of (number of mile) right/left. Be advised a gross navigation error report will be filed; and

4.1.4 Provide the ‘shift supervisor’ with the necessary error report information to enable Part 1 of the Navigation Error Investigation Form (as shown on page ...) to be completed

4.1.5 Where an aircraft is off-track as the result of an ATC approved diversion (e.g. due to weather), no notification under the terms of this letter of agreement needs to be submitted

5. NOTIFICATION PROCEDURES

5.1 Responsibilities of the Service Provider

5.1.1 Each Service Provider shall be responsible for setting in place arrangements with its respective control centers and controllers to enable the Navigation Error Investigation Form, shown on ..., to be completed.

5.1.2 These arrangements may require the shift supervisor to personally complete Part 1 of the Error Navigation Investigation Form or only to provide the relevant information to another responsible officer within the Service Provider

5.1.3 The officer responsible for notification in the Service Provider shall ensure that Part 1 of the Navigation Error Investigation Form has been completed to the maximum extent possible and attach a copy of the aircraft’s flight plan

5.1.4 This officer shall then forward one copy of this form and the flight plan to the appropriate Regulatory Authority

5.2 Responsibilities of the Regulatory Authority

5.2.1 The Regulatory Authority shall forward copies of the **Navigation Error Investigation Form** (Parts 1 to 4) to the aircraft operator and the State of Registry of the aircraft or the State of the Operator, as considered appropriate.

5.2.2 In addition, the copy for the aircraft operator shall be sent with a covering letter (See page...) requiring the operator to complete the **Navigation Error Investigation Form** and to provide reasons for the error.

6 INVESTIGATION PROCEDURES

6.1 Responsibility for investigation

6.1.1 The investigation of errors notifiable under this Letter of Agreement is a joint responsibility of the operator, the Regulatory Authority (depending on the airspace in which the error occurred) and the State of Registry or State of the Operator of the aircraft involved.

6.1.2 The initial investigation shall be undertaken by the operator, who is responsible for supplying all data and comments needed to complete the for in Appendix A. The completed reports are to be returned by the operator to the appropriate Regulatory Authority.

6.1.3 For aircraft registered in States not included in this LOA, these reports are also to be forwarded to both the State of Registry and the State of the Operator of the aircraft involved. Further action is the responsibility of the State exercising control over the aircraft.

6.2 Process

6.2.1 On receipt of the completed report from the operator, the relevant Regulatory Authority will first check that all information required has been supplied, and request, if necessary, any further information from either the operator or the State of Registry of State of the Operator.

6.2.2 If the Regulatory Authority has not received the completed form from the operator within 14 days of the date of dispatch, the Regulatory Authority will contact the operator and request the completed form.

6.2.3 Once the completed information has been received, the Regulatory Authority will complete Part 5 of the **Navigation Error Investigation Form** as detailed in Appendix A. The error is to be classified by cause, in accordance with the criteria specified in Part 5.

6.2.4 The Regulatory Authority will then forward a copy of the completed form (Parts 1 to 5) to the appropriate Service Provider.

6.2.5 The decision as to whether any further investigation is warranted will be taken by the Regulatory Authority based on their assessment of the seriousness of the error.

7. ANALYSIS OF ERRORS

7.1 Responsibility of Service Providers

7.1.1 At the end of each month, Service Providers shall forward to (Insert details and relevant authority) a copy of all completed **Navigation Error Investigation Form** (Parts 1 to 5) covering reported errors or nil reports for that month, together with data on the number of movements on the routes being monitored as recorded by the relevant Flight Data Processing System.

7.2 Reports

7.2.1 (*Insert the relevant authority*) shall be responsible for calculation of the frequency of errors.

7.2.2 Each sixth months, reports shall be prepared for presentation to the ICAO Regional Office(s) and other interested organizations, setting out the results of the monitoring of the preceding six month period.

7.3 Action to be taken if Permitted Error Rate is exceeded

7.3.1 Where the summary statistics show a trend towards degradation, Service Providers and Regulatory Authorities will jointly consider the causes to determine if the problems can be eliminated or reduced through changes to procedures, additional training or increases in the applicable separation minima.

**EXAMPLE OF ASSESSMENT SCHEDULE PROCESS
FOR DESIGNATED MONITORING AREAS**

- Step 1:** All States carry out a total monthly traffic count for approved traffic operating through the designated monitoring areas or points.
- Step 2:** All States collate **Navigation Error Investigation Forms** originated by them each month.
- Step 3:** Not later than the 15th of each month, send the information gathered in Steps 1 and 2, to the monitoring authority.
- Step 4:** The monitoring authority collates the information into an assessment schedule.
- Step 5:** Each sixth months, the assessment schedule is sent to:
- All signatory States to the Monitoring Letter of Agreement; and
 - The ICAO Regional Office(s)
- Step 6 (if required):**
- If the trend in errors is increasing, the designated monitoring authority shall notify the ICAO Regional Office, for appropriate action.

**Agenda Item 3 : Implementation of a new ATS route (UN749¹) west of UN741 –
Need and inconvenience of a new traffic orientation scheme in the
EUR/SAM Corridor (unidirectional ATS routes)**

Introduction

3.1 The meeting recalled SAT/10 Conclusion 10/4 on the requirement for a new ATS route (RNAV UN749¹) west of the present UN741 with a minimum separation of 50 NM, along with the appropriateness of establishing unidirectional routes, to be studied in detail by the SAT/10 Task Force. The following tasks were to be carried out in this respect:

- Assessment of the current system taking into consideration the implementation of ATM applications such as RVSM,
- Review of the increase of airspace and system capacity in the RNP/10 and RVSM post-implementation phase
- Analysis of the impact of the new proposed route UN749 would have within the target level of safety (TLS) of 5×10^{-9} .

Proposal for a new western ATS route (UN749)

3.2 The meeting noted that though SATMA RVSM post-implementation reports show significant improvement in air traffic management within the EUR/SAM Corridor, a great number of flights are still being assigned non preferential flight levels and some deviations continue to be reported in the western part of the Corridor. At SAT/10 meeting, Spain indicated that, in order to tackle these problems, a new ATS route (UN749) has been implemented in October 2001 between point “ROSTA” and Lisbon FIR thus forming a *bypass segment* for the northbound traffic on ATS route UN741.

3.3 SAT/10 therefore requested Spain to present a *formal proposal for the establishment of a new western RNAV route UN749* and to assess the appropriateness of implementing it for northbound traffic only, whilst ATS route UN741 would be dedicated to southbound traffic only. The meeting reviewed the proposal presented by Spain and concluded that it required further studies to be carried out by the Ad Hoc Working Group established by the Task Force. Views were expressed that, in doing so, the Ad Hoc Working Group should take due account of the requirement for random routing, an operational midterm objective in the South Atlantic which some participants wanted to be implemented directly.

3.4 Actually, results from simulations and safety assessments to be undertaken for both requirements (i.e. the new RNAV route UN749 and random routing) together with related implementation timescales and cost-benefits aspects will be determining factors in the decision to be taken by SAT/11 as to whether it would make more sense to go straight to random routing or not.

¹ Note: Initially referred to as ATS route UN742 in SAT previous meetings, the by – pass segment between point ROSTA on ATS route UN741 and Lisbon FIR has been renamed UN749.

Risk assessment for the new proposed western ATS route (UN749)

3.5 The meeting agreed that the establishment of the proposed new route with a minimum lateral separation of 50 NM should be supported by conclusive safety assessments clearly demonstrating that the resulting system meet the agreed target level of safety (TLS) of 5×10^{-9} accident per flight hour, per dimension. In order to carry out the necessary risk assessments the meeting accepted a proposal from Spain, for a four-phased approach, including data collection as phase 1, data processing as phase 2, preliminary report (phase 3), analysis and feed – back of which will lead to the final report (phase 4) to be submitted to SAT/11 for consideration.

Draft amendment proposals to AFI ANP, CAR/SAM ANP s and Doc 7030

3.6 In preparation for the prompt implementation of the proposed RNAV route (UN749) if approved by the SAT Group, the meeting requested the Secretariat to initiate corresponding draft amendment proposals to AFI and CAR/SAM air navigation plans together with Doc 7030, for submission to SAT/11.

3.7 *In view of the foregoing, the following draft Conclusion was formulated:*

**DECISION SAT/10TF/1/9: IMPLEMENTATION OF A NEW ATS ROUTE UN749
AND RANDOM ROUTING AREAS**

That all relevant elements necessitated in preparation for the implementation of the proposed ATS route UN749 and random routing areas within AR1/AH2 and AR2/AH8, including proposed safety assessment, implementation timescales and related cost estimates as well as draft amendment proposals to AFI and CAR/SAM ANPs and to Doc 7030, be readied for consideration by SAT/11.

Agenda Item 4 : Review of the lack of flight plans and proposals of remedial actions

4.1 The meeting noted with great concern that missing plans (FPLs) remain a topical issue in the EUR/SAM Corridor, despite valuable efforts that have been made by States to implement reliable communication facilities using CAFSAT network. Though tangible improvement can be noted thanks to CAFSAT links, figures reported by ACCs are rather alarming. For instance, missing FPLs affected from 5% up to 13% of flights operated in Dakar Oceanic FIR during the period January/April 2002. In May 2002, Dakar ACC reported 377 missing FPLs, whilst Las Palmas ACC reported 129 missing FPLs representing 17% and 7% of the total number of flights having flown within the EUR/SAM Corridor during that month.

4.2 Table 4.1 hereunder provides an indication on the extent to which the main airlines operating in Dakar Oceanic FIR are involved.

Table 4.1 : Distribution of missing FPLs between main airlines – April 2002

(Source: Dakar Oceanic FIR)

Airline	% of missing flight plans
AFR	6
AZA	2
BAW	15
DLH	2
IBE	5
LAN	17
TAM	15
TAP	15
VRG	23
	100

4.3 The meeting was of the view that, in addition to on – going investigations on wrong addresses as the main factor which has been identified so far (SAT/10 Conclusion 10/3 refers), further investigations should be undertaken, among which communication-oriented investigations focusing on traffic analysis in terms of traceability and AFTN transit time statistics. The meeting therefore developed reporting formats shown at **Appendix 4A** - Status Reports on missing flight plans - and **Appendix 4B** - AFTN transit time statistics -.

4.4 In the same vein, further a proposal from IATA, the meeting agreed that EUR/SAM ATS provider States and Organizations should also consider the use of repetitive flight plans (RPLs) pending the implementation of a random routing environment, should it be practicable taking into consideration all regulatory aspects and relevant provisions contained in the ICAO Doc 4444 together with traffic characteristics.

4.5 *In view of the foregoing, the following draft Conclusions were formulated:*

DRAFT CONCLUSION SAT/10TF/1/10: STATUS REPORTS ON MISSING FLIGHT PLANS IN SAT AREA

That, monthly status reports on missing plans be established by SAT participating ACCs. Such reports on missing flight plans should include the following elements for each flight involved: date, time, aircraft type, flight number, point of departure, destination, as listed in Appendix 4A.

DRAFT CONCLUSION SAT/10TF/1/11: NEED FOR FURTHER INVESTIGATIONS

That further investigations be carried out on the lack of flight plans, with emphasis on the performance of AFTN centres in terms of transit time as defined in ICAO Doc 8259, statistics of which should be established on a quarterly basis using the reporting format shown in Appendix 4B.

DRAFT CONCLUSION SAT/10TF/1/12: IMPLEMENTATION OF REPETITIVE FLIGHT PLANS (RPLS)

That, pending future implementation of random routing in the EUR/SAM Corridor, and in order to optimise possibilities of mitigating adverse effects associated with the critical lack of flight plans being therein, States concerned should consider the use of repetitive flight plans (RPLs).

DRAFT CONCLUSION SAT/10TF/1/13: MANAGEMENT OF FLIGHTS WITHOUT FPLS

That, in the absence of a FPL clearly indicating RVSM or RNP approval status of an aircraft, receiving ACCs might rely on pilot statements and proceed accordingly.

Agenda Item 5 : ATM related aspects within area of routing AR2/AH8.**Planning for the implementation of a random routing area in the Atlantic Ocean at the interface between AFI, NAT and SAM Regions**

5.1. Pursuant to SAT/10 Conclusion 10/5, the Task Force discussed at length the proposed establishment of a random routing area in the South Atlantic, namely in routing area AR2/HA8 where long-range East-West-East flights are conducted in low density environment to provide a greater flight flexibility of routing and fuel and time savings. The meeting was of the view that the establishment of random routing should be looked at together with the proposed RNAV route UN 749, and that feasibility studies thereon should be presented to SAT/11 for consideration. The meeting also reiterated the need for an urgent coordination meeting on routing area AR2/AH8. *The following draft Decision and Conclusion were formulated:*

DRAFT DECISION SAT/10TF/1/14: IMPLEMENTATION OF RANDOM ROUTES

That the implementation of random routes in routing area AR2/AH8 be included in the Task Force future work programme.

DRAFT CONCLUSION SAT/10TF/1/15: COORDINATION MEETING ON ROUTING AREA AR2/AH8

That, as a matter of urgency, a coordination meeting be held between concerned States on the proposed establishment of a random routing area in the Atlantic Ocean within the interface between AFI, NAT and SAM Regions.

Implementation/creation of additional ATS routes, including new RNAV routes and RNP 10/50 NM lateral spacing

5.2 The meeting did not identify the need for additional ATS routes in the EUR/SAM Corridor.

Framework for reduction of separation minima and consideration of provision of air traffic control service in AR2/AH8

5.3 The meeting did not address this item assigned to SAT/10 Task Force. *The following draft Conclusion was formulated:*

DRAFT CONCLUSION SAT/10TF/1/16: PROVISION OF AIR TRAFFIC CONTROL SERVICE AND REDUCTION OF SEPARATION MINIMA

That the framework for reduction of separation minima and consideration of provision of air traffic control be included in Task Force future work programme.

ATS contingency plan along the EUR/SAM Corridor

5.4 The meeting acknowledged the necessity of a coordinated contingency plan along the EUR/SAM Corridor, consisting of practicable procedures to be applied in the event of failures or degradations of ATS systems, including communications, navigation and surveillance systems. It was concluded that this issue requires further studies.

Agenda Item 6 : Communications, navigation and surveillance related issues**Expansion of CAFSAT network to cater for all AFS requirements within the SAT Region**

Reference: Technical Working Group work programme, Task No.1

6.1 As requested by SAT/10, the Task Force discussed possibilities of expanding the CAFSAT network in order to cater for AFS requirements, especially ATS/DS requirements: Brasilia ACC/Luanda ACC, Dakar Oceanic ACC/Piarco ACC and Dakar Oceanic ACC/Rochambeau ACC.

6.2 *Brasilia/Luanda:* noting that Angola did not attend SAT/10 meeting, the meeting requested the Secretariat to inform this State of SAT/10 Conclusion 10/17 on the extension of CAFSAT network.

6.3 *Dakar Oceanic/Piarco and Dakar Oceanic/Rochambeau:* the meeting was of the view that, due to the very low traffic between these FIRs, it could anticipated that cost/benefit aspects will not be in favour of implementing CAFSAT nodes at Trinidad and Tobago and French Guyana. For the moment, ATS/DS links between Dakar Oceanic and the two ACCs utilize public telephone services (PSTN).

6.4 The meeting also considered two proposals from ASECNA concerning the ATS/DS link between *Las Palmas and Nouadhibou:* a) implementation of a double hop link via Dakar, using Nouadhibou/Dakar segment on AFISNET and Dakar/Las Palmas segment on CAFSAT proposed by September 2002, or b) implementation of an AFISNET node in Las Palmas (direct link). It was agreed that the double hop solution should be implemented as a first step. *The following draft Conclusion was formulated:*

DRAFT CONCLUSION SAT/10/TF/1/17 : ATS/DS CIRCUIT LAS PALMAS/NOUADHIBOU

That, pending the implementation of a proper circuit between Las Palmas and Nouadhibou, ASECNA and AENA (Spain) implement the agreed two-hop VSAT link between these centres as scheduled by September 2002.

6.5 Moreover, the meeting was informed that ASECNA and ATNS were implementing a balanced interconnection of their respective VSAT networks to cater for AFS requirements (ATS/DS and AFTN), of which the main AFTN circuit Brazzaville/Johannesburg which is currently provided via Dakar. The completion date of August 2002 was noted.

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

Reference: Technical Working Group work programme, Task No.2

6.6 The meeting recognized the urgent need for achieving interoperability between existing aeronautical VSAT networks (AFISNET, CAFSAT, REDDIG and SADC) in order to eliminate the outstanding deficiencies and pave the way for the transition to the ATN in a cost-effective manner. Currently, these networks are using four different satellites with different access techniques and operating modes. The meeting agreed that, though it has been recommended for years, a balanced and systematic interconnection of these networks would

not be cost-effective in the long-term due to additional investments involved. Anyway, in-depth studies need to be carried out thereon, including the network operations, performance upgrading (transmission protocols, bandwidth) and technical proposals for a smooth migration to the ATN. The meeting called upon a coordinated approach and joint efforts to optimize human and financial resources necessitated by related studies.

6.7 In respect of interoperability, the meeting considered two proposals as follows:

- 1) use of a single transponder on INTELSAT Satellite IS 10-02 to be launched in 2003, the footprint of which includes the entire AFI Region and the EUR/SAM Corridor; or
- 2) use of two transponders, one on INTELSAT Satellite IS 10-02 for the eastern and southern part of the Region (including Indian Ocean), and another one on IS 903 for the rest of the Region.

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

The following draft Conclusion was formulated:

DRAFT CONCLUSION SAT/T0/TF/1/18: INTEROPERABILITY OF VSAT NETWORKS

That :

- **the use of one (or two) common satellite transponder(s) be the long-term objective for achieving full interoperability of existing/planned VSAT networks;**
- **a meeting be organized before the end of the year 2002 between INTELSAT and States/Organizations managing VSAT networks, as called for by APIRG Conclusion 13/11, in order to study and formulate proposals for the integration of existing VSAT networks; and**
- **ICAO and VSAT service providers coordinate and join their efforts when designing/implementing projects aiming at achieving interoperability between VSAT networks.**

6.9 The meeting was presented with an example of positive cooperation between AENA, Spain and ASECNA within the framework of the EGNOS Test Bed and its extension to the AFI Region. It was reported that the CAFSAT link between Dakar and Las Palmas has made it possible to convey data collected from the EGNOS reference monitoring station (RIMS) in Dakar to the Central Processing Facility (CPF) located in Honefoss¹, Norway by using the infrastructure implemented by Spain to connect its RIMSs located in Majorca, Malaga and Great Canary to the same CPF.

6.10 The meeting underlined the multipurpose use of CAFSAT, including (but not limited to) :

¹ The link Dakar/Honefoss meets the requirement for transmission delays (< 1 sec.).

- AFS requirements, e.g. AFTN between Brasilia and Madrid;
- transmission of EGNOS Test Bed data, e.g. from Dakar RIMS to the Central Processing Facility located in Honefoss, Norway; and
- transmission of surveillance data (ADS, radar), e.g. from Las Palmas to Sal ACC.

6.11 It was noted that, being at the same time a supervising node in CAFSAT network and a main node in the Spanish network (REDAN), Las Palmas communication centre is placed at a key position within the EUR/SAM corridor. The meeting therefore welcomed the offer from Spain to assist, through specific arrangements, EUR/SAM States so desiring in the implementation/improvement of CNS/ATM systems such as GNSS which may require a high performance access to EUR or SAM Regions.

The following draft Conclusion was formulated:

DRAFT CONCLUSION SAT/10/TF/1/19: USE OF AFISNET AND CAFSAT NETWORKS TO SUPPORT GNSS

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

Extension of VHF radio coverage within Atlantico and Dakar Oceanic FIRs using remote VSAT stations using CAFSAT nodes located in Ascension Island and Cape Verde Archipelago

Reference: Technical Working Group work programme, Task No.3

Atlantico FIR: Use of a remote VSAT/VHF station located in Ascension Island

6.12 The meeting was apprised on the findings of the study carried out by Brazil in respect of cost-effectiveness of the implementation of a remote VSAT/VHF station in Ascension Island in order to support Atlantico ACC operations, in pursuance of SAT/10 Conclusion 10/18. The study showed that this facility would not be cost-effective due to the very long distance (1000 NM or so) between Ascension Island and EUR/SAM ATS route network and non-significant traffic to be covered. Based on the information provide, the meeting therefore concluded that the Task Force work programme should be amended by SAT/11 accordingly.

Dakar Oceanic FIR: Use of a remote VSAT/VHF station located in Cape Verde Archipelago

6.13 Pursuant to the above-mentioned SAT/10 Conclusion 10/18, Senegal and ASECNA presented an action plan including the necessary steps in view of the extension of VHF radio coverage within Dakar Oceanic FIR, using a remote VSAT station located in Cape Verde². Based on the information provided, IATA called for a prompt implementation of this operational requirement as much as possible before the target date of March 2003³. Senegal

² Cape Verde suggested Santiago Island in this respect.

³ IATA indicated that inclusion of Dakar Oceanic FIR in the IFBP area might be considered if Dakar Oceanic remote VHF station in Cape Verde is not implemented by March 2003.

and ASECNA confirmed their commitment to expedite the implementation process, in cooperation with Cape Verde and ASA. It was agreed that the implementation status will be reported to SAT/11 meeting. Cape Verde took this opportunity to reiterate its willingness to host whenever necessary such facilities aimed to improve quality of services in the EUR/SAM Corridor. *The following draft Conclusion was formulated:*

**Conclusion SAT/T0/TF/1/20: Extension of VHF radio coverage within Dakar
Oceanic FIR station**

That, pursuant to SAT/10 Conclusion 10/18, ASECNA expedite the extension of VHF radio coverage within Dakar Oceanic FIR, using a remote VSAT station located in Cape Verde.

Review of the results of the test on VSAT double hop link

Reference: Technical Working Group work programme, Task No.4

6.14 The meeting was informed that, due to work in progress on the CAFSAT node in Recife (Brazil), it was not possible to test a VSAT double hop link between Atlantico and Las Palmas ACCs as requested by SAT/10 in order to determine the ability of such a link to meet ATS/DS requirements. It therefore welcomed the initiative taken by Cape Verde and Spain therefore to carry out a similar test between Las Palmas and Sal ACCs. The test was performed on the service channel between the two ACCs. The VSAT double hop link was configured using an up-linked signal on a loop in Las Palmas then transmitted to Sal.

6.15 The meeting noted that the propagation times involved in this configuration were 387 milliseconds (one hop) and 677 milliseconds (two hops), it being understood that these figures are subject to operational validation by ATS units. *The following draft Conclusion was formulated:*

DRAFT CONCLUSION SAT/10/TF/1/21 : ATS/DS SATELLITE DOUBLE HOP TESTS

That, noting the results from the first simulation of a double hop link carried out by Canaries and Sal ACCs, SAT ACCs :

- **continue to perform trials on satellite two-hop voice links to ascertain that ATS/DS requirements are met ; and**
- **consider the implementation of such links when and where justified.**

Note : Controllers should be involved in trials on double hop links.

Review of the results of the ADS data sharing test bed between selected ACCs

Reference: Technical Working Group work programme, Task No.7

6.16 The meeting was informed of measures taken by Brazil to implement ADS/CPDLC applications in its airspace on a trial basis by March 2003. For this reason, the sharing of data

between Atlantico and Las Palmas ACCs as requested in the work programme of the SAT/10 Task Force Technical Working Group should be considered at a later date.

6.17 The meeting was also informed that preparations were underway in Spain (Canary Islands) in view of ADS/CPDLC trials together with data sharing tests between Las Palmas and Sal ACC in Cape Verde. The target date of end July 2002 was noted. In the meantime, simulation training sessions are being organized for Las Palmas technical staff and air traffic controllers, and a workstation has been installed in Sal ACC for controllers to monitor ADS and radar signals to be sent by the ADS/CPDLC system in Las Palmas.

6.18 It is expected that FANS 1/A - equipped aircraft operating in the EUR/SAM Corridor will participate in the planned trials. The meeting noted that guidance material for use by aircraft operators was made available for this purpose on SATMA Website (www.satma.sat.com).

Harmonization of ADS/CPDLC programmes

6.19 The meeting noted that most of SAT States and Organizations have their plans for the implementation of ADS and CPDLC applications in their respective FIRs, the development of which may involve different companies. The need for common guiding principles thereon was identified. *The following draft Conclusion was formulated accordingly:*

DRAFT CONCLUSION SAT/10/TF/22: GUIDANCE MATERIAL FOR ADS/CPDL PROGRAMMES

That the development of guidance material for the establishment of ADS/CPDL implementation programmes be included in the work programme of the Technical Working Group in order to assist States and to facilitate harmonization of ADS/CPDLC programmes in the SAT Region.

ADS/FDPS in Dakar ACC

6.20 The meeting took note of ASECNA activities aiming at implementing flight data processing and monitoring systems with CNS/ATM functionalities such as ADS/CPDLC at Dakar ACC.

Agenda Item 7 : Any other business**Date and venue of the 11 meeting of the SAT Group**

7.1 The meeting recalled the offer made by South Africa at SAT/10 (Dakar, Senegal 10 – 13 December 2001) to host the SAT/11 meeting in the last quarter of 2002, subject to confirmation by the South African Authorities.