



ICAO

INTERNATIONAL CIVIL AVIATION ORGANIZATION

WESTERN AND CENTRAL AFRICA OFFICE

Twenty-Fourth Meeting on the Improvement of Air Traffic Services over the South Atlantic (SAT/24)

Luanda, Angola, 3-4 June 2019

Agenda Item 3.4: SAT Concept of Operations CONOPS

3.4.1 SOUTH ATLANTIC (SAT) VISSION, CONCEPT OF OPERATIONS AND IMPLEMENTATION ROADMAP

(Secretariat)

SUMMARY

This paper presents an overview of the concept of operations in the airspace over the South Atlantic Ocean, and ongoing activities to facilitate improvements of Air Traffic Service provision in the SAT area.

Action by the meeting is in paragraph 3.

COORDINATION

Regional Offices concerned

REFERENCES

- Doc 9854*
- Doc 7030
- Doc 4444
- SAT 22 Report
- SAT/23 Report

Principal references

1. INTRODUCTION

1.1 The SAT area does not yet have a dedicated document on SAT Concept of Operations (CONOPS). This working paper reviews some elements of the SAT CONOPS from the Global ATM Operational Concept (GATMOC) perspective.

1.2 The SAT area comprises two homogeneous ATM areas and major traffic flows/routing areas, namely, Europe — South America (EUR/SAM) (oceanic) - Area of Routing One (AR1) consisting of Atlantico, Canarias, Casablanca, Dakar Oceanic, Recife Flight Information Regions (FIRs), and Atlantic Ocean interface between the AFI, NAT and SAM Regions – Area 2 (AR2) consisting of Accra, Dakar, Johannesburg Oceanic, Luanda, and Sal FIRs.

1.3 The AR1 is made up of an Oceanic en-route low density in the southern part and oceanic high density in the northern part which constitutes the major EUR/SAM traffic flow along EUR/SAM Corridor.

1.4 The AR2 is made up of an Oceanic en-route low density and constitutes the major traffic flow to and from three homogeneous ATM area in the AFI/NAT/SAM regions.

2. DISCUSSION

Airspace Organization and Management

2.1 Under the aegis of ICAO, Reduced Vertical Separation Minimum (RVSM) was implemented in the whole SAT area following a well-coordinated initiative which involved States, ANSPs, Airspace Users, International Organizations notably IATA, IFALPA and IFATCA. Regional Monitoring Agencies SATMA, CARSAMMA and ARMA were accordingly established.

2.2 Unidirectional RNAV routes UN741 and UN866 and bidirectional route UN873 and UN857 have been established in the EUR/SAM Corridor airspace to manage the flow of traffic along the corridor.

2.3 The SAT Region also coordinated the successful implementation of Atlantic Ocean Random Routing Area (AORRA) in four phases and introduced Entry Points, Transitional and Flexible Routes in the SAT area.

Airspace Concept

2.4 An EUR/SAM Airspace Concept has been established for the coordinated management of airspace and air traffic services along the EUR/SAM Corridor.

2.4.1 Since 2014, the SAT endorsed the need for a new EUR/SAM Corridor Airspace Concept and adopted a project approach for its implementation. The objective of the Project is the gradual implementation of the EUR/SAM Airspace Concept, which through optimized ATS Routes and ADS-C, CPDLC and PBN requirements, would allow lateral and longitudinal

separation reduction and optimum flight level allocation. Free route concept will be gradually introduced according to PBN and ADS-C/CPDLC requirements and appropriate separation.

2.4.2 The scope of the Project is to produce the high level deliverables and documentation models (letter of agreements, AIC, AIP Supplements, etc.), in order to offer the necessary support to States for the gradual implementation of a short, medium and long term EUR/SAM Airspace Concept, applying ADS-C, CPDLC and PBN requirements.

2.4.3 The metrics for the new EUR/SAM corridor airspace concept are Efficiency: NM, Fuel and CO₂ savings and Target of Level of Safety.

2.4.4 The implementation of the proposed new EUR/SAM Corridor Airspace Concept has delayed for various reasons, the latest being in the implementation of Performance based Communication and Surveillance - PBCS and changes in the leadership of the EUR-SAM Corridor Implementation Team (ESCIT).

Conflict Management

2.6 Ten (10) Minutes Longitudinal Separation is applied in the EUR/SAM Corridor with Mach Number Technique. With regards to Area navigation (RNAV) specifications as provided in Regional Supplementary Procedures (SUPPs, Doc 7030) for Performance-based Navigation, RNP 10 (RNAV 10) is applicable:

- For flights on designated controlled oceanic routes or areas within the Canarias FIR (southern sector), Dakar Oceanic, Recife and Sal Oceanic FIRs, and on designated routes over continental Africa, a lateral separation minimum of 93 km (50 NM) may be applied;
- For flights in the EUR/SAM corridor (Canarias (southern sector), Dakar Oceanic, Recife and Sal Oceanic FIRs), a longitudinal separation minimum of 93 km (50 NM) derived by RNAV may be applied between RNAV-equipped aircraft approved to RNP 10 or better, in accordance with the provisions of the PANS-ATM (Doc 4444), 5.4.2.6; and
- Longitudinal distance-based separation minima of 93 km (50 NM) between RNAV aircraft on the same track on RNP 10 routes over continental Africa shall not be used.

Airspace User Operations

2.7 Means of compliance for application of the above, the aircraft and the operator must have been approved by the State of Registry or the State of the Operator, as appropriate, to meet the following requirements (or equivalent):

- a) aircraft are approved to RNP 10 in accordance with provisions contained in the Performance-based Navigation Manual (Doc 9613);
- b) operator programmes shall be established to mitigate the occurrence of large navigational errors due to equipment malfunction or operational error:

- c) operator in-flight operating drills shall include mandatory navigation cross-checking procedures to identify navigation errors in sufficient time to prevent aircraft from inadvertent deviation from an ATC-cleared route; and
- d) the operator shall establish programmes to provide for the continued airworthiness of aircraft navigation systems necessary to navigate to the degree of accuracy required

Coordination of Atlantic Ocean Air Traffic Management between SAT and NAT

2.8 An invitation was extended to SAT Member States and SAT Group to participate in the ICAO NAT 2030 Vision Workshop in the ICAO EUR/NAT Office in Paris, France, from 29 to 30 January 2019 to afford the SAT Group to be abreast with the NAT programme for ATS improvements over the Atlantic. The workshop provided an opportunity to identify areas of collaboration in the provision of a safe, efficient, environmentally responsible and more cost effective ATS service over the entire Atlantic Ocean.

2.9 It was evident from the lessons learned that a properly developed vision document along with its associated Concepts of Operation (CONOPs) for the SAT area with an implementation roadmap, and harmonized with the NAT 2030 Vision programme where feasible and mutually beneficial, would have to be considered and decided upon by SAT.

2.10 It would be probably inconceivable now from the current situation without a dedicated vision document and CONOP for the SAT area to leapfrog to a new era where implementation decisions by the SAT Group would be based on a well-thought-plan from a clearly defined vision. However, the SAT Group can decide on elements where collaboration with the NAT and other groups would inure to its benefit leveraging on the knowledge, expertise and experiences available in the NAT Group.

2.11 Whilst it is undeniable that the volume of air traffic in the SAT airspace is far below that currently operating in the NAT area, statistics show that a majority of the fleet operate in both airspaces and are appropriately equipped to take full advantage of the considerable investments made by airspace users.

2.12 Additionally, global traffic is projected to double by 2030 and the SAT area is likely to experience significant increases of which forward planning now would be prudent.

2.13 The SAT Group has provision for conducting studies on the improvement of the airspace structure. The SAT Study Group on the Improvement of the Airspace Structure has a current Terms of Reference, work programme and composition as in **Appendix** to this working paper. The study group as constituted is expected to focus its activities in the EUR/SAM corridor. However, in consideration of the aforementioned, the SAT Group may consider to reconstitute the study Group on the Improvement of the Airspace Structure and amend its Terms of Reference, work programme and composition to incorporate the development and adoption of a SAT Vision document, Concepts of Operation and an implementation roadmap for the entire SAT area.

3. ACTION BY THE MEETING

The SAT is invited to:

- a) Note the description of the elements of the CONOPS in the SAT area and identify potential areas of collaboration with NAT Group to achieve operational seamlessness over selected over the Atlantic Ocean; and
- b) Identify initiatives in the NAT Vision 2030 project in order to harmonize operations, infrastructure and programmes with the aim of achieving a safer, more efficient, environmentally responsible and more cost effective ATS service over the entire Atlantic Ocean;
- c) Reconstitution of the study Group on the Improvement of the Airspace Structure to coordinate the development and adoption of a SAT Vision document, Concepts of Operation and an implementation roadmap.

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