(PRELIMINARY)

SUMMARY OF DISCUSSIONS OF THE SOUTH ATLANTIC SAFETY OVERSIGHT GROUP - FOURTH MEETING (SAT SOG/04)

(Virtual, 01 to 04 October 20, 2024)

0. Introduction

0.1 The Fourth Meeting (virtual) of the South Atlantic Safety Oversight Group (SAT SOG/04) was held from 01 to 04 October 2024). Mr. Jorge de Avila chaired the meeting with the support of Mrs. Virginia Mignoni. Forty delegates from SAT states, organizations and RMAs attended the meeting. The Secretariat was conducted by Mr. Fernando Hermoza, ATM/SAR Officer from the ICAO South American Office.

0.2 Mr. Avila welcomed the participants and stressed the importance of enhancing safety in the SAT airspace. The virtual participation via MS Teams of SAT Steering Group (SG) Secretariat, Mr. Serge Tchanda, ATM Officer from Dakar ICAO Office, was acknowledged. As well, the participation of ATM/SAR Officers, Mrs. Keziah Ogutu from ESAF Office and Mr. Roberto Sosa from SAM Office.

0.3 The lists of participants and meeting documentation are provided in **Appendix A** and Ap**pendix B** respectively. The list of appendices to this summary is shown in **Appendix C.**

0.4 Complete SAT SOG meetings documentation and summaries are available on the ICAO Secure Portal https://portallogin.icao.int/ , Group name SATSOG (all caps, no space).

0.5 At its opening session the meeting adopted the following agenda and agreed on the proposed work schedule:

Agenda Item 1: Opening and review of latest developments

a. Adoption of the Agenda
b. Status of actions and Follow-up
c. Update on the latest significant international aviation developments.
d. Review the outcomes from recent meetings and events.

Agenda Item 2: SAT SOG working plan

a. SAT SOG working plan
b. SAT ASR PT Updates
c. SAT OESB PT Updates
d. SAT RMA H/S Updates
e. States/ANSP Safety matters and General Coordination

Agenda Item 3: Collision risk assessment and LHD

a. Activities on height monitoring and LHD Mitigation;
b. Collision Risk Assessment by SAT RMAs

Agenda Item 4: Any other business

a. Future work programme and follow-up actions
b. Next meetings
c. Report to the next SAT SG meeting

1. Review of latest developments

1.b	Status of actions and Follow-up (WP1.2)

1.1 The SAT SOG/03 meeting was held virtually, via MS TEAMS, from 15 to 19 April 2024. The meeting SoD is available in the ICAO secure Portal.

1.2 During the SAT SOG/03, the focus of discussion was the identification of safety improvements for the South Atlantic airspace and ATS services, as well as the need for scrutiny oceanic error. Also, the meeting analyzed the enhancement of safety oversight in SAT area, and the progress of the three project teams' working program. SATMA, ARMA and CARSAMMA presented results of collision risk analysis in SAT Area. Scrutiny activities in the SAT were discussed.

1.3 Consequently, the SAT SOG/04 meeting updated the decisions and follow-up action list, which are an integral part of the SAT SOG reports. The updated Action item Table is provided in **Appendix D.** The SAT SOG Decisions Table is in **Appendix E**

1.c	Update on the latest significant international aviation developments.

1.4 No Papers were submitted under this agenda item.

1.d	Review the outcomes from recent meetings and events. (WP1.3, IP1.3)

ICAO Fourteenth air navigation conference (AN-CONF/14)

1.5 The ICAO Fourteenth Air Navigation Conference (AN-Conf/14) was held in Montreal, Canada, from 26 August to 6 September 2023. The detailed information on the Fourteenth Conference is presented in the link below:

https://www.icao.int/Meetings/anconf14/Pages/default.aspx

1.6 The '*Yellow Cover*' report is presented in the following link:

https://www.icao.int/Meetings/anconf14/Pages/Yellow-Cover-Report.aspx

1.7 Under the agenda item 3.1 Proposals to improve the efficiency of air navigation services contributing to LTAG, initiatives for Airspace optimization were addressed. The Conference reviewed AN-Conf/14-WP/10, presented by the Secretariat, which brought forward an initiative to focus attention on the seamless implementation of longitudinal separations of 55.5 km (30 NM) or less in oceanic and remote airspace, and 19 km (10 NM) or less elsewhere, with the objective of enhanced operational efficiency of the global air navigation system.

1.8 The Conference agreed that while uniform application of separation minima would reduce bottlenecks and improve air navigation safety and efficiency, akin to the goals of Project 30/10, modern ATM solutions should also be applied across large portions of airspace that have similar traffic flow characteristics. These included air traffic flow management (ATFM), flexible use of airspace, free route airspace (FRA) and civil-military cooperation. A recommendation was adopted:

Recommendation 3.1/1 – Project 30/10 - Optimized implementation of longitudinal separation minima
That States:

a) within the processes of the planning and implementation regional groups, actively collaborate with neighbouring States to implement Project 30/10 – implementation of longitudinal separations of 55.5 km (30 NM) or less in oceanic and remote airspace, and 19 km (10 NM) or less elsewhere;

that ICAO:

b) through the planning and implementation regional groups, develop regional action plans for the implementation of Project 30/10;

c) monitor and support inter-regional collaboration for a harmonized implementation of Project 30/10; and

d) consider other minimum service level procedures, via a framework, for implementation in oceanic and remote airspace.

1.9 In that sense, the Meeting take note of the WP/05 to be presented during the SAT IMG/04 meeting (Abidjan, Cote d'Ivoire, 7-11 October 2024) regarding the application of the 30NM minimum longitudinal separation in the EUR-SAM corridor, supported by the drafted SAT DOC 003, aligned to Doc. 4444. The meeting agreed to wait for the outcomes of the SAT IMG/04 meeting and, and accordingly, follow up and support the initiative.

1.10 Consequently, the meeting agreed on the following action:

(Action SOG04-01)

SAT SOG Secretariat is appointed to coordinate with SAT IMG Secretariat the inclusion of this topic in the agenda of the planned joint meeting SAT IMG – SAT SOG (Q2 2025).

Safety awareness campaign by IATA

1.11 The meeting recalled the Action Item SOG01-10, that urges SAT members to disseminate and oversight the application of SLOP procedure in their FIR/UIRs, aimed to reinforce safety and adequate TLS in SAT.

1.12 The Secretariat was informed that IATA airlines have supported the utilization of Strategic Lateral Offset Procedures due to its safety benefits and to support turbulence avoidance. In this way, the IATA Latin America & Caribbean Regional Coordination Group (LATAM/CAR RCG), in coordination with IATA AFI and EUR colleagues, have launched the SAT SLOP campaign for the month of August 2024. See **Appendix F.**

1.13 The ICAO TV website has included a video on this topic.

https://www.icao.tv/videos/strategic-lateral-offset-procedures-slop

1.14 ARMA reported that some AFI states are not incentivizing the use of SLOP. IATA offered to address this concern via its Johannesburg Office.

1.15 After the campaign, IATA will conduct a high-level survey to detect pilot awareness and the utilization of the procedure on a more consistent basis. The meeting commended the IATA's initiative and agreed to follow up this important matter.

2. SAT SOG working plan

2.a	SAT SOG working plan (WP2.1, WP2.3)

Working Plan

2.1 The SAT SOG's working programme was approved for the period 2024-2025, as presented in **Appendix G**. The meeting recognized that the programme is crucial for advancing aviation safety within the South Atlantic region. A vital aspect of this proposal involves evaluating the effectiveness of safety oversight strategies implemented in 2024. By conducting this assessment, SAT-SOG aims to identify areas for improvement and ensure alignment with risks and challenges regionally and globally.

2.2 Stakeholder collaboration and coordination are essential for the success of safety oversight efforts. SAT SOG acknowledges the significance of working closely with stakeholders, including industry experts, regulators, SAT groups, and NAT Region groups.

2.3 The working programme must undergo periodic revisions to maintain adaptability and responsiveness to emerging safety challenges and industry developments. These revisions should incorporate new activities and initiatives arising from meeting discussions.

Update on SAT SOG project team terms of reference (TORS) template

2.4 Action item 'c' from SAT SOG/03-02, instructed that the Project Team Terms of Reference (ToRs) be updated to clearly define the tasks of project team members (SMEs) and specify their expected workload. This update aims to resolve potential conflicts, improve accountability, and enhance the overall performance of the project teams.

2.5 The updated ToRs will include a description of SMEs' roles, responsibilities, and workload; this will inform the States of the expectations regarding their participation and contribution to the projects. The objective is to better define project team members' roles, responsibilities, and workload, typically SMEs from various states and organizations. This update is crucial for ensuring that teams operate efficiently and effectively with a clear understanding of their tasks.

2.6 The SAT SOG meeting approved the updated version of the Terms of Reference (ToRs) template for SAT SOG Project Teams. See **Appendix H.** Consequently, the meeting agreed on the following action:

(Action SOG04-02)

a) The updated version of the Terms of Reference (ToRs) template for SAT SOG Project Teams is approved, as shown in **Appendix H;**

b) The three project team leaders are invited to update the respective Terms of Reference, in coordination with the Secretariat, and

c) The SAT Document Management Office (DMO) is tasked to include the mentioned template

in the next review of the SAT Handbook.

2.b	SAT ASR PT Updates (WP2.4, IP2.4)

2.7 During the ASR PT meeting held on May 29th, 2024, an updated version of the workplan was presented and adopted, taking into consideration the action SOG03-08 including alignment with the PT ToRs and harmonization deadlines with SAT SOG meeting dates. The main milestones of the workplan include:

a) The development of a survey listing the NAT ASR events and related KPI as well as the NAT ASR topics, addressed to the SAT States/ANSP (done and sent to States/ANSP mid-august)
b) The presentation of a reference document for Safety performance measurement for the SAT area to be approved at SAT/SOG 4 (from the 1st of October 2024)
c) The presentation of a prototype of SAT ASR including update and revision mechanism and amendments adopted by SAT SOG 5 (from the 7th of April 2025)

The complete SAT SOG ASR PT work plan is provided in **Appendix I**

SAT SOG ASR PT Survey for SAT KPI

2.8 To fulfill this elementary task 2.1 of the SAT ASR PT workplan related to the work package 2, a survey was developed and presented with the aim of determining which KPI and topics contained in the 2022 NAT ASR are applicable to the SAT and what topics should be included in the SAT ASR. The validated survey includes the following documents:

a) Survey SAT KPI 31 JULY 2024 - version D INSTRUCTIONS
b) SAT SOG ASR PT Survey SAT KPI – SAMPLE
c) SAT SOG ASR PT Survey SAT KPI version D – SURVEY

2.9 States/ANSPs responsible for providing air traffic services over oceanic airspace within the SAT area (specifically FL290 through FL410) were invited to fill in the survey and return it by mail by the 30th of August 2024. The ASR PT is awaiting a significant sample of answers to analyze the results. The Secretariat takes note to follow up the survey responses from States, considering high priority. The survey is presented in **Appendix J**.

2.10 During the PT meetings held on 25th - 26th September 2024, the project team discussed the next course of action while waiting for the results of the survey. The PT decided to firstly work with the available data from the monitoring agencies: ARMA, CARSAMMA, NAARMO and SATMA. The results of the survey will then be analyzed to refine the KPIs and the selection of relevant topics.

2.11 The development of supporting resources and processes should also be considered, among which, a solid safety data collection and processing system. "*The ASR Project Team Proposal 2025"* was formulated and adopted by the PT, focused on performance evaluation in the SAT Area (see next paragraph).

ASR Project Team proposal 2025

2.12 Uncertainty about data repositories, the number of SMEs with data expertise, and other stakeholder commitments may hinder creating a perfect report with exceptional KPIs and risk mitigation. Setting KPIs and targets generally requires historical data to observe statistical trends over at least three years. The SAT Upper Airspace boundaries are under construction, so initial values will represent the entire FIR of the State. These values will be updated to reflect the true airspace limits once available.

2.13 ICAO and North Atlantic Systems Planning Group (NAT SPG) produce Annual Safety Reports. Examining the historic report layout and the content in the tables below will give us some guidance on ideas for an initial ASR for the SAT. The SAT SOG/04 meeting observed similarities in the report structures and the evolution of the report layout over the years.

2.14 In 2015, the NAT ASR started with a written summary of the overall statistics, followed by visuals and a brief description of the traffic flow, pattern and communication modes available in the upper airspace of the North Atlantic. There was a hierarchical structure of the project groups and the guiding principles of the Safety policy. The Safety performance section consisted of:

a) description of the Large Height Deviation (LHD) events (tabular values plus charts);
b) description of the errors causing deviations (charts);
c) the risk values (table and charts); and
d) the KPIs were annual totals

2.15 As of 2023, the executive summary consists of complementary traffic forecast visuals and the safety policy. The traffic statistics section includes a brief note on the flow, pattern and CNS modes available. The safety performance section comprises statistics for events that cause deviations, mitigation, the risk factors, the impact of SLOP, complex KPI averages with targets for rolling 3 year averages.

2.16 Comparing both reports show that the layout is identical. Both have a summarized introduction, a main body of statistical details that evolve with time and futuristic goals or recommended futuristic action.

2.17 In view of the above, the proposal is that the project team should compile a safety report for the SAT based on data from the monitoring agencies for the past ten years, from 2014 or later until the present. This caters for:

a) The statistical anomalies,
b) To highlight the trends from which, the targets are derived, and
c) To present a comprehensive and reliable, pictorial representation of the possible trends.

2.18 Like the ASRs for ICAO and the NAT region, the report has to follow the same format and consist of an **executive summary** that comprises:

a) A written summary for the past, at least four years
b) A concise summary of the safety policy for the SAT and
c) Visuals of traffic statistics to complement the summary in paragraph a.

In addition, a **statistical body** which comprises the following based on data for the entire State's FIR:

a) A brief description of the traffic flow that is based on the routes in the upper airspace, EAST-WEST or SOUTH-NORTH
b) The traffic orientation: what is the main pattern; is the orientation mostly twice a day, twice a week, twice a month?

c) The types of CNS availability in the upper airspace of the SAT for each participating State.
d) The types of Deviations.
e) Collision risk values compared with TLS which are readily available from the RMAs and
f) KPIs with or without set targets

2.19 The project team hierarchy can be used to recognize everyone's efforts and outline future goals for the next one to two years. Objectives could include streamlining data collection goals from States for navigation errors, mitigation strategies from ANSPs, and establishing a data hub similar to the NAT Event Reporting Application (NERA). See the infographic included in **Appendix K.**

2.20 The meeting highlighted that additional discussion is required, on the use of the data that is already available from the Regional Monitoring Agencies (RMAs). As well, it is crucial to identify any additional resources that could support the SAT ASR PT related to the challenges faced specifically the availability of safety data and safety information expected from Staes/ANSP.

2.21 The meeting agreed on the following action:

(Action SOG04-03)

a) SAT ASR PT to update its Work and communication Plan for 2024 and 2025.
b) Initiatives proposed by SAT ASR PT referred to safety KPIs are endorsed. These initiatives must be deployed within the framework of SAT group and SAT SOG, maintaining close coordination with the SAT SOG Secretariat.

2.c SAT OESB PT Updates (WP2.2)

2.22 The South Atlantic (SAT) Oceanic Errors Safety Bulletin (OESB) Project Team, led by Brazil, which was endorsed during the SAT SOG/01 meeting through the SAT SOG Decision 01/01. Throughout 2024, the Team scheduled monthly meetings, although due to the workload, additional meetings were planned.

2.23 After reviewing the NAT OESB topics and considering the discussions from recent SAT SOG meetings and the challenges faced by stakeholders in the SAT area, the SAT OESB draft includes the following topics:

a) Top Tips for Operators
b) General
c) Operations in the EUR/SAM Corridor
d) Safety Culture
e) Large Height Deviations (LHD)
f) Contingencies
g) SLOP Strategic Lateral Offset Procedures

2.24 The bulletin covers topics similar to the NAT OESB, including LHD, Contingencies, and SLOP, with additional content specific to SAT, such as Operations in the EUR/SAM Corridor and Safety Reporting. The project team considered removing this topic as SAT currently lacks a scrutiny group to address it. Suggestions include adding visual aids, QR codes, and tailored content, as well as creating a logo for the bulletin.

2.25 The SAT OESB will be updated on a regular basis. The SAT Scrutiny Committee/Group should be tasked with providing content for the SAT OESB.

2.26 The meeting adopted the version presented in **Appendix L** to the present SoD (Separate file). The meeting agreed on the following action:

(Action SOG04-04)

a) SAT SOG meeting endorses the SAT OESB draft as presented **in Appendix L;**
b) Secretariat tasked to coordinate the host of the OESB on the website of ICAO SAM Office; and
c) SAT OESB PT and Secretariat, to study the benefit of sharing links to the NAT OESB repository.

2.d SAT RMA H/S Updates (WP2.6)

2.27 The SAT SOG RMA Harmonization/Standardization Project Team was formed in March 2023 to evaluate the procedures and methods of three RMAs in the South Atlantic Area. Their main tasks included organizing the SAT RMA Workshop, developing the SAT Know Your Airspace (KYA) Analysis, and creating a data collection template.

2.28 The Project Team identified a set of recommended deliverables, shown in **Table 1.** A timeline illustrating significant milestones and estimated target dates for completion of each deliverable, aligned with each delineation phase, is shown in **Figure 1.**

#	Deliverable	Target Date	Status
1	SAT RMA H/S PT SAT SG Contributing Bodies Communication and Collaboration Plan (ref. SAT SOG/1 SOD, Appendix I)	SAT SOG/02	Complete
2	Standardized SAT-specific traffic sample data collection template (Ref. SAT/SOG/1-WP/3.3, SAT/SOG/1-WP/3.4)	February 2025	In Progress, Final version is dependent on SAT Delineation
3	Know Your Airspace Analysis for the South Atlantic Area (ref. SAT/SOG/1-WP/2.80, Action SOG01-05)	March 2025	In Progress/First draft complete
4	Action plan for recommended SAT SOG future actions supporting standardization and harmonization of data collection, processing, and dissemination among the three SAT RMAs (Ref. SAT/SOG/1-WP/3.3, SAT/SOG/1-WP/3.4)	April 2025	
5	Standardized collision risk assessment methodology (ref. SAT/SOG/1-WP/5.7)	April 2025	In Progress
6	Action plan for conducting workshops to promote implementation of standardized data collection and collision risk assessment methodology among the SAT RMAs. (ref. SAT/SOG/1-WP/5.7)	30 Mar 2024	Complete
7	Data field and format requirements for developing a centralized SAT RMA database for collection of LHDs, LLDs, LLEs	TBD	In Progress

Table 1. SAT SOG RMA HSPT Anticipated Deliverables

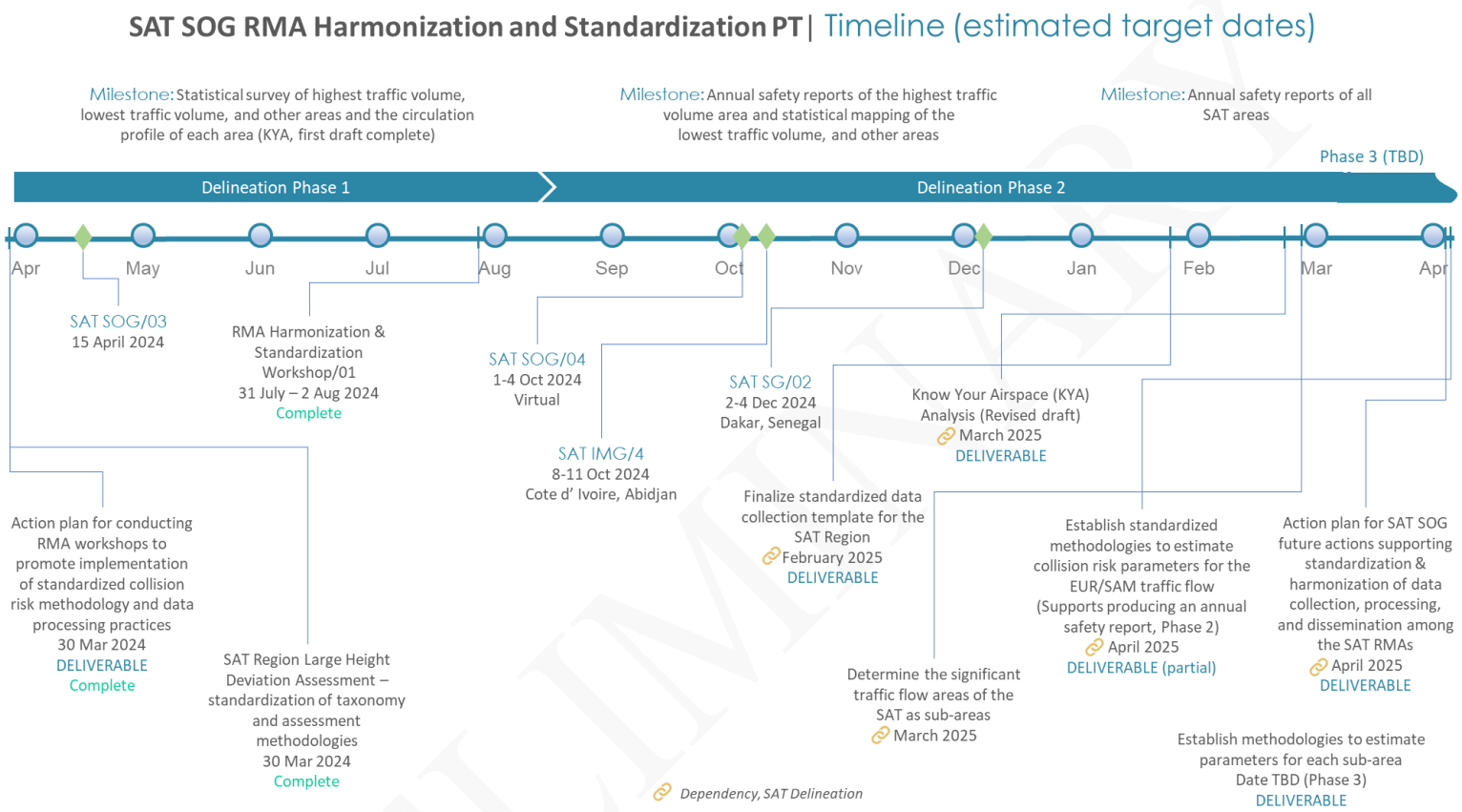


Figure 1. SAT SOG RMA H/S PT Timeline

2.29 The tenth meeting of the Project Team took place on 26 September 2024. The main goals of this meeting were to:

a) Review the outcomes of the SAT RMA Harmonization & Standardization Workshop.
b) Assess the progress made toward delineating the SAT Area.
c) Discuss the approach for producing the next iteration of the SAT Know Your Airspace (KYA) Analysis.
d) Review the Project Team's timeline and pending actions.

During the meeting, the Project Team reviewed their actions and deliverables. They noted that many pending items depend on the completion of the SAT Area delineation. The team has been working with the SAT Delineation Project Team and discussed the approach presented by IATA. Phase 1, which involves creating an initial SAT Area boundary, is expected to be completed by November 2024. Based on this forecasted completion date, the Project Team updated the estimated target dates for their deliverables and adjusted their timeline accordingly.

SAT RMA Harmonization & Standardization Workshop

2.30 The Project Team was given the task of creating an action plan and organizing workshops. These workshops aim to encourage the SAT RMAs to adopt standardized methods for data collection and collision risk assessment. The first SAT RMA Workshop took place at the ICAO NACC Office from 31 July to 2 August 2024. A complete summary of the workshop is provided as **Appendix M.**

2.31 The workshop aimed to:

a) Promote the standardization and implementation of harmonized data collection and collision risk assessment methodologies to ensure consistent and accurate risk assessment in the SAT Area.
b) Identify training requirements for stakeholders.
c) Develop standardized training materials to be distributed by the SAT RMAs, enhancing awareness of data collection and safety reporting requirements.

2.32 During SAT SOG/03, the Project Team presented a SAT RMA Workshop Action Plan. The action plan included five high-level goals with subtasks aimed at fostering collaborative development of some of the Project Teams deliverables. The first workshop addressed goal 1 and all applicable subtasks, shown in table 2. The remaining goals and subtasks are shown in table 3.

Goal #1 Adopt standardized collision risk assessment methodology to ensure consistent and accurate assessment of risk in the SAT Area	
	Tasks
1	Establish methodology for observing application of the strategic lateral offset procedure (SLOP)
2	Establish a process for incorporating the observed SLOP into the vertical collision risk estimate
3	Establish a process for evaluating reported occurrences involving lateral and deviations and longitudinal errors
4	Establish a process for estimating vertical and lateral occupancy values
5	Establish a process for producing Lateral and longitudinal risk estimates
6	Develop and establish standardized methodologies to estimate collision risk parameters, applicable to the vertical and horizontal planes, for the EUR/SAM traffic flow, AORRA airspace and other areas of the SAT Area
7	Establish methodology to estimate vertical collision risk for same and crossing track operations

Table 2. SAT RMA Workshop Goal 1 and Subtasks

Goal #2 Establish requirements for implementing a centralized SAT RMA database for collection of LHDs, LLDs and LLEs	
	Tasks
1	Assess and establish taxonomy continuity among the SAT RMAs
2	Identify data fields necessary for performing safety assessments and assessing collision risk
3	Identify data format requirements
4	Assess the feasibility of implementing a centralized SAT RMA database for collection of LHDs, LLDs and LLEs
5	Identify a preferred platform
6	Identify resource availability and constraints
Goal #3 Establish standardized data collection, processing, and dissemination methods among the SAT RMAs	
	Tasks
1	Review the current state of data collection, processing, and dissemination among the SAT RMAs
2	Identify SAT-specific data collection requirements
3	Establish SAT-specific standardized data collection, processing, and dissemination processes as appropriate
4	Establish a finalized Traffic Sample Data (TSD) collection template
Goal #4 Identify training requirements and establish standardized training materials among SAT RMAs	
	Tasks
1	Identify internal and external (stakeholders) training gaps and shortfalls
2	Identify training goals and develop a training plan
3	Identify training and education requirements for the SAT SOG and wider South Atlantic Area community
4	Establish and confirm a list of points of contact for the SAT Area
5	Establish harmonized training information dissemination processes and procedures
6	Develop standardized (as appropriate) training materials applicable to the SAT Area - internal
7	Develop standardized (as appropriate) training materials applicable to the SAT Area - external

Table 3. Remaining RMA Workshop Goals and Subtasks

2.33 Upon conclusion of the workshop, it was agreed that the Project Team will review the outcomes of the workshop and discuss the need to conduct a follow-on workshop during the next few Project Team meetings. In other words, some tasks can be achieved through regular Project Team meetings, where an in-person meeting might be a better forum for other tasks.

2.34 The meeting commended the support of the SAT H/S RMA PT and the outcomes of the first RMA Workshop that will reinforce the application of harmonized procedures. Therefore, the meeting encourages the RMAs to develop the actions items and recommendations of the workshop, as presented in Appendix M.

2.35 A proposal for a Second workshop in 2025, following the GTE/25 meeting, planned in Salvador Bahia, Brazil, will be analyzed by the PT and the Chairteam, to define feasibility.

Know Your Airspace (KYA) Assessment for the SAT Area

2.36 A crucial step in supporting the delimitation of the SAT Area is conducting a "Know Your Airspace" (KYA) analysis. This detailed examination focuses on the operational structure and use of the airspace where the

delimitation is planned. The purpose of the KYA analysis is to provide analysts and airspace planners with essential information about the operators, aircraft, and observed traffic characteristics in the SAT Area. This analysis provides the basis for evaluating key parameters used in the collision risk model, identifying significant traffic flows, identifying areas that require enhanced monitoring, and informing harmonization and standardization decision-making.

2.37 The Project Team began work on this initiative and presented initial assessment results during SAT SOG/02. The next KYA iteration will be conducted after Phase 1 of the SAT Area delineation is complete. The KYA will be a "living" document, periodically updated to include ongoing assessments of the EURSAM Corridor, AORRA airspace, and low traffic volume areas. It provides the basis for the SAT RMAs' data consolidation methodology.

2.38 The following steps will be employed to produce the next iteration of the SAT KYA:

a) Update the general KYA elements, such as traffic flows, airspace usage and operator characteristics, using December 2023 traffic sample data or more recent data if available.
b) Identify collision risk model parameter values applicable to the EURSAM corridor (e.g., occupancy, speed, and vertical overlap values).
c) Identify collision risk model parameter values applicable to areas in the SAT Area with lower traffic volumes

2.39 For producing the next iteration of the SAT KYA, the Project Team recalled Action SOG03-03 (see the text in Appendix D). Consequently, the meeting agreed on the following action:

(Action SOG04-05)

The Secretariat, no later than December 2024, according to Action SOG03-03, drafts and delivers a letter to SAT States explaining the purpose and benefits of the implementation of a new data sample (TSD).

2.e	States/ANSP Safety matters and General Coordination (WP2.5, WP2.7)

SAT SCRUTINY COMMITTEE / SAT-SC (Action Item SAT SOG/03-10)

2.40 Brazil's feasibility study examined the requirements and documentation necessary to create a Scrutiny Group for the South Atlantic (SAT) region. The study compared two established models, NAT SG and GTE, to identify the best practices and potential challenges for setting up a Scrutiny Group in the SAT airspace.

2.41 The study highlighted key differences and similarities between the NAT SG and GTE (Body of GREPECAS) models that would influence the structure and operation of a SAT Scrutiny Group. Both models involve participation from States, Regional Monitoring Agencies (RMAs), and aviation organizations like IATA and IFALPA. NAT SG includes nominated experts from NAT SPG Member States, Spain, NAT MWG, NAT CMA, IATA, IBAC, IFALPA, and IFATCA. These experts are usually from the ANSP's investigation units or are knowledgeable about the events being discussed. A notable difference is the more active participation of pilots in NAT SG.

2.42 The methods of data gathering and analysis differ between NAT SG and GTE, reflecting the unique needs of each region:

a) NAT SG: Uses the North Atlantic Event Reporting Application (NERA) for systematic reporting in RVSM airspace. ANSP members review their reports before meetings, using a "Quick reference list" from the NAT SG Handbook to expedite the process. Data is validated during bi-annual in-

person meetings, leading to the production of the NAT Annual Safety Report (ASR), which is submitted to NAT SOG.

b) GTE: Relies on F4 forms or Excel files submitted via email or the CARSAMMA portal. Occurrences are validated during quarterly virtual meetings. Annually, CARSAMMA and NAARMO present papers with collision risk assessments for the CAR-SAM Regions. States provide papers on mitigation actions for identified hotspots in risk analysis.

2.43 Given the complexities of the SAT area, a tailored approach is essential. The region involves three RMAs and includes three different Planning and Implementation Regional Groups (PIRGs). These challenges necessitate a customized solution rather than directly adopting existing models like NAT SG and GTE. It's crucial to consider that the RMAs play a critical role in collecting safety data from the RVSM airspace and integrating it into existing scrutiny and safety assessment processes.

2.44 Considering both groups analyzed, NAT SG and GTE, key actions should be considered by the States involved in planning and executing action SAT SOG/03-10:

a) Consider an effective composition and structure for the SAT SC;
b) Establish Terms of Reference (ToR) and a handbook, including clear guidelines for data collection, event analysis, and the roles and responsibilities of participating entities within the SAT SC;
c) Define a database or a mechanism for data collection in collaboration with the SAT RMAs;
d) Ensure that data collection methods are standardized across the region to facilitate consistent analysis; and
e) Define resource allocation and an activities calendar.

2.45 The first phase involves establishing the Committee's Terms of Reference (ToR), outlining its composition, working arrangements, and functions, with participation from the three SAT RMAs. The SAT RMA Project Team will identify harmonized or available data to support the Committee in creating the SAT SC handbook and setting up a data reporting mechanism. This will enable the Committee to analyze trends from aggregated SAT RMA data, identifying patterns and potential risks in the SAT airspace.

2.46 Findings, including trends and risk areas, will be compiled into SAT SC deliverables, contributing to publications like the Annual Safety Report (SAT ASR) and the SAT Oceanic Errors Safety Bulletin (SAT OESB). A proactive approach will involve collaboration with SAT States to implement mitigating actions based on the Committee's analysis. Close cooperation between SAT RMAs and SAT SC will enhance safety oversight and timely risk mitigation. These recommendations provide a comprehensive roadmap for establishing and operating the Committee, ultimately improving air traffic safety in the South Atlantic airspace.

2.47 Consequently, the meeting agreed on the following action:

(Action SOG04-06)

a) The meeting agrees on the feasibility of a SAT Scrutiny group;
b) Brazil and SAT members to prepared documents needed to implement a Scrutiny contributing body for the SAT airspace; and
c) To hold a Virtual Meeting January 23, 2025 (tentative date)

SAT DMO ACTIONS

2.48 The SAT Document Management Office (DMO) headed by Brazil, ensures the currency, consistency, and harmonization of SAT documentation across the region. The SAT DMO actions address standardizing documentation to improve coordination among regional bodies, which should be reflected in SAT documentation and actions. As stipulated in the Terms of Reference, the DMO is responsible for:

a) Coordinating with ICAO Regional Offices and relevant SAT contributory bodies to continuously review SAT documentation, propose updates, and manage approvals as per SAT Doc 001.
b) Supporting ICAO Regional Offices in implementing and publishing approved proposals.
c) Coordinating with NAT DMO to ensure that the documentation in the SAT and NAT regions, especially within interface areas, remains consistent and up to date.

2.49 It is essential to keep SAT documents up to date, which is why several proposals have been proposed to SAT Handbook Revision 04. One key proposal focuses on standardizing the preparation of discussion papers and formalizing the election period for all SAT Groups' Chair Teams. SAT stakeholders are invited to provide input and comments on the Handbook to ensure it remains relevant and accurate, which can be assessed by the link:

https://myerauedu-my.sharepoint.com/:w:/g/personal/mignoniv_erau_edu/EaHTrGi46MBDnIxjwk9F1HABY56g5s8gF3HdYlzsXGbgCA?e=SwfnMb&wdLOR=c487FEB95-8B22-46D6-8828-ED1B7DDF385C

2.50 A regular schedule for reviewing and updating SAT documentation is needed to ensure it reflects current regulations, procedures, and technological advancements, reducing the risk of outdated materials. SAT documentation should be hosted on a dedicated homepage to enhance accessibility, collaboration, and oversight. This promotes transparency and trust within the organization.

2.51 The SAT DMO plans to align documentation and procedures for regional consistency. Regular reviews maintain accountability, track performance, and ensure alignment with safety goals. Updates keep stakeholders like airlines, air traffic controllers, and RMAs informed of the latest safety procedures, fostering a regional safety culture.

2.52 The proposals mentioned and actions are shown (power point slides) in **Appendix N,** "SAT DMO Actions on SAT Upcoming Meetings".

3. Collision risk assessment and LHD

3.a	Activities on height monitoring and LHD Mitigation (WP3.2)

ARMA RVSM Safety Improvement Initiatives

3.1 The main activities of an RMA include verifying aircraft/operator RVSM approval status, monitoring aircraft height-keeping performance, ensuring compliance with long-term monitoring requirements, and providing annual airspace safety assessments. The RMA reports non-compliance and safety issues to the States, which are responsible for taking remedial action. States must support the RMA by coordinating RVSM approval data exchanges and providing operational incident reports for annual safety assessments.

3.2 ARMA faced challenges with participation and contributions from States, ANSPs, and Air Operators. A 2022 webinar with the 6 SAT States under ARMA's jurisdiction, in collaboration with CARSAMMA,

improved data submissions. However, timely submissions remain an issue, with most data arriving just before meetings like APIRG, SAT SOG, and SAT IMG.

3.3 SLOP implementation, as ARMA informed the meeting yesterday that, despite efforts to inform and educate applicable stakeholders, Some AFI States are reluctant to implement SLOP. This challenge has been reported to the APIRG, RMACG and in SAT Meetings. The RMACG Secretariat informed ARMA that this issue was raised during APIRG/26 and subsequently was reported to the ANC. The Secretariat also suggested that LHD concerns should be reported to all PIRGs and RASGS.

CARSAMMA and ARMA engagement

3.4 ARMA was invited to use the CARSAMMA LHD Manual in their analysis process as majority of the reports received by ARMA often do not include duration information. Accordingly, the ARMA LHD Manual was developed and translated into French with the help of WACAF ATM Officer Mr. Serge Guy Tchanda. This was to address the issue highlighted in the April 2024 TAG meeting, where West African States were not submitting LHD reports. The translation aims to encourage French-speaking States to submit these reports. At the RMACG meeting, CARSAMMA offered to invite ARMA to be an observer in their annual scrutiny activity. The ARMA LHD Manual in French is presented in **Appendix O. (separate pdf file)**

3.5 ARMA developed RVSM Guidance Material for the Africa Indian Ocean region, based on European Doc 034, to improve regional adoption. This decision was made to address low compliance levels and clarify the roles of each stakeholder in regional RVSM compliance.

ADS-B Height Monitoring System in AFI, SAT Ocean and Indian Ocean

3.6 Implementation of Automatic Dependent Surveillance in Broadcast Mandate (ADS-B) in the AFI region, is based on conclusion 5/11 of the RASG-AFI/5 meeting and conclusion 22/40 of APIRG/22 on the continental survey to be carried out to support the decision for the mandate of ADS-B out 1090 Mhz. Extended Squitter (ES).

3.7 ARMA conducted a feasibility test with the FAA using historic ADS-B Space Based data from Aireon and the test was successful. The test produced 5 minutes segments samples that could calculate Altimetry System Error. The program assessed all altitudes between FL170 and FL660. In this case we identified 44,494 5-minute samples from 1632 aircraft. The lowest flight level was FL180 and the highest was FL470. However, we sampled using data from FL290-FL410 for height keeping checks. The total number of samples within RVSM was 42,501.

3.8 The NIC (Navigational Integrity Category) Subfield used to specify the containment radius integrity associated with horizontal position data. Altimetry System Error calculation require for the NIC >8. With the outcome of this test, ARMA was able take a decision into starting with pre-implementation phase to have ADB Height Monitoring as one of the methods for height keeping checks in the region as it will benefit traffic equipped with ADS-B Out operating over the AFI Region, SAT Ocean and Indian Ocean.

3.b	Collision Risk Assessment by SAT RMAs (WP3.1)

Vertical collision risk of the EUR/SAM corridor relevant for CARSAMMA

3.9 CARSAMMA, as the CAR-SAM Regional Monitoring Agency, is responsible for carrying out the necessary studies and evaluations to analyze the risk of vertical collision in the part of the EUR/SAM corridor

monitored by CARSAMMA. The RVSM safety assessment covers twelve consecutive months. Tools for safety assessment are:

a) ICAO Collision Risk Methodology;
b) ICAO Doc 9574 is used to develop the global system Performance Specification, with the specification and performance requirements for aircraft altitude maintenance;
c) All aircraft operating in airspace with reduced minimum vertical separation must be RVSM certified;
d) The RVSM certification of the aircraft is current;
e) The tolerable safety level (TLS) of 5 x 10^{-9} fatal accidents per flight hour (in a representative sample of aircraft) continues to be met;
f) There is evidence of stability of the aircraft altimetry system (ASE) error;
g) The introduction of RVSM does not increase the level of risk due to operational errors and flight contingencies, in accordance with a predefined level of statistical confidence;
h) Additional effective safety measures are taken to reduce the risk of vertical collision and meet safety goals due to operational errors and contingency procedures; and
i) Air traffic control procedures continue to be effective.

3.10 The risk model was adapted to consider the technical risk of the aircraft on the same airway and the intersection airways; and the effect of LHDs on system risk.

3.11 The vertical collision risks in the RVSM airspace of the EUR/SAM corridor monitored by CARSAMMA were evaluated for the studied area. This part of the corridor comprises part of the corridor that belongs to the Atlantic FIR, plus the part of the corridor that enters the Recife FIR, bordered by the continent. Thus, the area includes sections of the following airways: UM799, UZ5, UZ51, UN741, UN866, UN873, UB623, UN857, UM661, UL375, UL695, UM791.

3.12 Data Traffic Collection - The sample used to evaluate the pass frequency and physical and dynamic parameters of typical aircraft to assess the risk of vertical collision, was collected between **December 01 and 31, 2023.** In these movement data, in terms of flight hours of the samples collected, 2,916 flight lines were used with 203,257.83 hours of duration of the part of the EUR/SAM corridor monitored by CARSAMMA.

3.13 Regarding the occurrence of LHDs, we collected a total of 03 LHDs in 2023. CARSAMMA received 2 LHDs of this total by ACC-AO and collected 01 LHD as presented by SATMA* at the SAT SOG/03 meeting (Sao Paulo, 15-19 April 2024).

**Note. - The meeting highlighted the importance of data sharing regarding the LHDs events in the EURSAM corridor, between SATMA and CARSAMMA.*

Conclusions from the Vertical Collision Risk Assessment (CRA)

3.14 The technical error of the EUR/SAM corridor monitored by CARSAMMA meets the objective that it should not exceed 2.5 x 10^{-9} fatal accidents per flight hour due to loss of the standard vertical separation of 1000 feet and all other causes.

- Operational risk does not have a predetermined limit according to ICAO Doc 9574.
- In the case of the part of the EUR/SAM corridor monitored by CARSAMMA, the estimated risk is 0.254 x 10^{-9} below the TLS, which is 5.0 x 10^{-9}.

EUR/SAM corridor – Estimated Flight Hours = 203,257.83 hours			
Source of Risk	**Estimated Risk**	**TLS**	**Observation**
Technical Error	**0.032×10^{-9}**	**2.5×10^{-9}**	**Below**
Operational Error	**1.073×10^{-9}**	**-**	**-**
Risk	**0.254×10^{-9}**	**5.0×10^{-9}**	**Below**

Table 4 – EUR/SAM CRA

3.15 The meeting commended the information provided by CARSAMMA. The complete 2023 calculation of vertical collision risk in the EUR/SAM corridor, covered by CARSAMMA, using the CRM methodology, is presented in **Appendix P.**

4. Any other business

4.a & 4.b	Future work programme and follow-up actions. Next meetings

4.1 The tentative working program for November 2024, February 2025 and March 2025 of the SAT SOG projects teams was presented:

a) SAT OESB PT – First week (1st Thursday)

b) SAT ASR PT - Fourth week (4th Wednesday)

c) SAT RMA HS PT – Second week (2nd Wednesday)

4.2 The Next relevant meetings for 2024 are:

a) SAT IMG/04 (October 8-11,2024 In-person)

b) SAT SG/02 (December 2 -4, 2024, Dakar, Senegal)

c) Scrutiny group preparation, Virtual Meeting January 23, 2025 (tentative)

4.c	Report to the next SAT Steering Group meeting

4.3 A report to the SAT SG/02 (Dakar, Senegal, 9 -12 December 2024) will be presented.

Appendix A

LIST OF PARTICIPANTS

ARGENTINA

1. Florencia Cornelio
2. Grispi Ramallo Carla Soledad
3. Leticia Ines Gutierrez
4. Zenaida Patricia Castellino

BRAZIL

5. Jorge Wilson de Avila Ferreira Penna
6. Virgínia Thaís Guedes Mignoni Evaristo
7. Thatiane dos Santos Sakalem
8. Antonio Eduardo Santilli
9. Charlene Roberta da Silva Moreira Aieta
10. Claudionor Silva de Macêdo
11. Hugo Dominato Rossi
12. Jorge Wilson de Avila
13. Luiz Henrique Barreto de Moura Costa Freitas
14. Marcos Vinícius De Oliveira
15. Renata Goncalves
16. Ricardo Dantas Rocha
17. Ingrid Fontoura Brandão

CABO VERDE

18. Micael Delgado Lima Moreno
19. Paulo Costa

SENEGAL

20. Jacob Auguste Edward LEYE
21. Papa Dibocor Sene
22. Vivien Habib B. Malack
23. Abibou Mbaye
24. Sidy Mohamed Ndoye
25. Amadou Sene

SOUTH AFRICA

26. Nonjabulo Gumede
27. Caine Mainganya
28. Jeoffrey Matshoba

TRINIDAD and TOBAGO

29. Ian Gomez
30. Paula Rachel Mark

UNITED STATES/FAA

31. Holly King
32. Christine Falk
33. Jennifer Kileo
34. Jose Perez
35. Stephanie Beritsky
36. Danielle Crudden

ASECNA

37. Kpatcha Essozimna AWISSOBA
38. RIBEIRO Rustique Cami

IATA

39. Jeffrey Miller
40. Chris Michalakis
41. Rich Stark

ICAO

42. Keziah Ogutu
43. Serge Tchanda
44. Roberto Sosa
45. Fernando Hermoza

Appendix B

LIST OF MEETING DOCUMENTS

PAPERS	AGENDA ITEM	TITLE	PRESENTED BY
Agenda Item 1: Opening and review of latest developments a. Adoption of the Agenda b. Status of actions and Follow-up c. Update on the latest significant international aviation developments. d. Review the outcomes from recent meetings and events.			
WP 1.1	1 a	Draft Agenda & Schedule	Secretariat
IP 1.1	1 a	List of Meeting Documents	Secretariat
IP 1.2	1 a	Access to the ICAO Portal site - SAT SOG group repository	Secretariat
WP 1.2	1 b	Status of actions and Follow-up	Secretariat
WP 1.3	1 d	Outcomes from AN Conf /14	Secretariat
IP 1.3	1 d	South Atlantic - Safety Awareness Campaign by IATA	Secretariat
Agenda Item 2: SAT SOG working plan a. SAT SOG working plan b. SAT ASR PT Updates c. SAT OESB PT Updates d. SAT RMA H/S Updates e. States/ANSP Safety matters and General Coordination			
WP 2.1	2 a	SAT SOG working plan 2025	SAT SOG
WP 2.2	2 c	SAT OESB PT Updates	Brazil
WP 2.3	2a	UPDATE ON SAT SOG PROJECT TEAM TERMS OF REFERENCE (ToRs) TEMPLATE	SAT SOG
WP 2.4	2 b	SAT ASR PT Updates	Senegal
IP 1.4	2 b	ASR PROJECT TEAM PROPOSAL 2025	Trinidad and Tobago and Senegal

PAPERS	AGENDA ITEM	TITLE	PRESENTED BY
WP 2.5	2 e	Establishing the South Atlantic Scrutiny Committee (SAT-SC): minimum requirements and comparative analysis	Brazil
WP 2.6	2 d	SAT SOG Regional Monitoring Agency Harmonization and Standardization Project Team (SAT SOG RMA H/S PT) Report to the SOG	RMAs HS PT
WP 2.7	2 e	SAT DMO actions on the SAT Upcoming Meetings	SAT SG Secretariat and SAT DMO
Agenda Item 3: Collision risk assessment and LHD c. Activities on height monitoring and LHD Mitigation; d. Collision Risk Assessment by SAT RMAs			
WP 3.1	3 b	Vertical collision risk of the EUR/SAM corridor relevant for CARSAMMA	CARSAMMA
WP3.2	3 a	ARMA RVSM Safety Improvement Initiatives (ARMA Handbook in a separate file)	ARMA
Agenda Item 4: Any other business d. Future work programme and follow-up actions e. Next meetings f. Report to the next SAT SG meeting			

Appendix C — List of Appendices

Id.	Title	Reference in the SoD
Appendix A	List of participants	Par. 0.3
Appendix B	Meeting documentation	Par. 0.3
Appendix C	List of appendices	Par. 0.3
Appendix D	Action item list	Par. 0.3
Appendix E	SAT SOG decisions	Par. 0.3
Appendix F	IATA - SAT safety awareness campaign SLOP	Par. 1.12
Appendix G	SAT SOG's working programme for 2024-2025	Par. 2.1
Appendix H	Terms of Reference (ToRs) template for SAT SOG Project Teams	Par. 2.5
Appendix I	SAT SOG ASR PT work and communication plan for 2024	Par. 2.7
Appendix J	SAT SOG ASR PT Survey for SAT KPI	Par. 2.9
Appendix K	Inforgraphic ASR PT proposal	Par. 2.19
Appendix L	South Atlantic (SAT) Oceanic Errors Safety Bulletin (OESB)	Par. 2.23
Appendix M	First South Atlantic Regional Monitoring Agency Workshop (SAT RMA)	Par. 2.28
Appendix N	SAT DMO Actions on SAT Upcoming Meetings	Par. 2.50
Appendix O	ARMA LHD Manual (French)	Par. 3.4
Appendix P	Vertical collision risk in the EUR/SAM corridor, covered by CARSAMMA	Par. 3.15

Appendix D — ACTION ITEM LIST

Superseded and completed actions shown in red color.

ID #	ACTION	WHO	WHEN	STATUS	Status and Notes by SAT SOG/04
SOG R-01 (RECURRENT)	The SAT SOG group Delegates were urged to prepare and address the working papers to the Secretariat within the deadlines defined in the convening letter.	All SAT members	Every meeting	Secretariat reminded to the meeting the said requirement.	RECURRENT The Secretariat stressed that, in general, the SAT SOG 03 working papers were received within deadlines. Invite members to deliver papers, on time, and clearly prepared.
SOG01-02	Coordinate / harmonize the biannual working programme with its pairs of Paris, Dakar, Nairobi and Mexico Regional Offices, in order to adjust and maintain updated the said programme	Secretariat	SAT SOG/03	SAT SG/1 is initiating activities. SAT 2024 working programme will be addressed in the SAT SG/01 meeting.	ON-GOING see also STEER-GROUP DECISION SAT-SG/01 DEC11
SOG01-03	Collect and upload in the portal.icao the background documents and reports on the previous SAT meetings, as well as follow up the application of the Communication Plan, and to keep it updated. An assessment on the efficiency of the Communication Plan, must be conducted twice in the year	Secretariat	SAT SOG/02	The portal is already implemented; however, some failures have been observed regarding access to users. Need to coordinate with ICAO HQ.	ON-GOING Secretariat requested an extension, to execute an assessment by February 2025.

ID #	ACTION	WHO	WHEN	STATUS	Status and Notes by SAT SOG/04
SOG01-06	Draft a fast-track procedure for the SAT GROUP taking into account the best practices of the document NAT SPG HANDBOOK - DOC 001. The study must identify the differences between NAT and SAT in terms of structures and resources.	Secretariat	SAT SOG/02		SAT SOG/4: ON GOING
SOG01-07	Prepare a paper to be submitted to the SAT SG, pointing out the importance of traffic forecasts in the general framework of the SAT, and recommending the coordination between the Steering Group and the concerned PIRGs, to identify options to receive adequate traffic forecast for the AORRA airspace and other sectors of SAT.	Secretariat	SAT SG first meeting	Not yet started. SOG Secretariat will prepare a White paper, starting coordination with Dakar Secretariat. (When: Q1 - Q2 2024)	ON-GOING SAT SOG/4: Related to SAT-SG/01 DEC06: Traffic forecast in the SAT area
SOG01-10	Disseminate and oversight the application of SLOP procedure in their FIR/UIRs, aimed to reinforce safety and adequate TLS in SAT.	All SAT IMG states/regulators	SAT SOG/02	The activities and guidance of the bulletin produced by OESB PT will contribute to disseminate application of the SLOP. See WP/2.2 (When: SAT SOG/04)	ON-GOING SAT SOG/4: IATA has presented Its campaign SLOP in the SAT area. The SAT OESB bulletin is going to foster dissemination.
SOG01-14	Identify the training gaps in the SAT members states in order to define a programme that fulfil the	Trinidad and Tobago Secretariat	Q3 , Q4 2023	Not yet started (When: Q1 - Q2 2024)	NOT YET STARTED

ID #	ACTION	WHO	WHEN	STATUS	Status and Notes by SAT SOG/04
	members necessities. Survey on oceanic operation training needs.				To be coordinated with SOG CO-CHAIR

- **SAT SOG/02**

ID #	ACTION	WHO	WHEN	STATUS	Status and Notes by SATSOG04
SOG02-03	States members to implement the approved SAT OESB PT Project Charter listed in Appendix I.	SAT OESB PT SAT members Secretariat	Progress report to SAT SOG/03 and SAT SOG/04	Approved by SAT SOG/02	ON-GOING
SOG02-05	SAT RMA H/S PT to continue with elaboration of the "Know your space" analysis, version 0.1.b (Technical edit) and 0.1 (Draft), in support to the delimitation of SAT airspace.	SAT RMA H/S PT SAT members Secretariat	Progress report to SAT SOG/03 and SAT SOG/04	Approved by SAT SOG/02	ON-GOING
SOG02-07	State members to provide assistance to RMA H/S PT, with following actions: a) Confirm that the necessary information collection and related actions are being satisfied; b) Support assessment of existing information dissemination practices within the SAT Region to assure standardization requirements awareness and prevent redundancy/duplication of efforts; and c) Support development of workshops to promote the implementation of standardized data collection and collision	SAT SOG Members Secretariat	SAT SOG/04	Approved by SAT SOG/02	ON-GOING

ID #	ACTION	WHO	WHEN	STATUS	Status and Notes by SATSOG04
	risk assessment methodology among the SAT RMAs.				
SOG02-12	RMAs to support collaborative partnership between ARMA and CARSAMMA to strengthen training for RVSM and LHD focal points. Incentivize initial and recurrent training to SAT stakeholders responsible for sharing RVSM and LHD data with RMAs. SAT RMAs H/S PT are involved in reviewing and endorsing final training materials for quality and accuracy.	ARMA CARSAMMA SAT RMA H/S PT Secretariat		Approved by SAT SOG/02	SAT SOG/4: ON GOING

- **SAT SOG/03**

ID #	ACTION	WHO	WHEN	**STATUS**	**NOTES BY SAT SOG 04**
SOG03-01	a) Secretariat to develop a coordinated campaign with IATA and ANSPs to raise awareness among airlines about safety reporting; b) Secretariat to coordinate with ICAO Regional Offices to facilitate engagement with SAT States and promote awareness about safety reporting among SAT state members; and c) Secretariat to coordinate State letters, According to SAT SOG/03 - WP/2.4 suggested actions.	Secretariat	Before SAT SOG/04 2024	Approved by SAT SOG/03	SAT SOG/4: ON GOING According to SAT SOG/03 - WP/2.4 suggested actions. State Letters on SLOP application - AIPs LHD reporting Just Culture Data delivery for RMAs
SOG03-02	a) Meeting participants were asked to complete the fields in	Secretariat	Before SAT SOG/04	Approved by SAT SOG/03	COMPLETED

ID #	ACTION	WHO	WHEN	**STATUS**	**NOTES BY SAT SOG 04**
	the Table shown in the Appendix G; b) The Secretariat to coordinate ICAO Regional offices to send an additional state letter asking for SMEs designation; and c) Update the project team TORs to include a field that specifies the tasks of the project team members and their workload estimate.				
SOG03-03	a) State members be prepared to amend data collection practices as necessary to support populating the SAT-specific TSD collection template developed by the SAT SOG RMA HSPT; and b) Secretariat to assist and follow up. That State letters summarizing the following be issued: 1) Notification to States, with a request to disseminate the notification to appropriate stakeholders as necessary, of the new SAT-specific TSD collection template; 2) A request that SAT member States modify their systems as necessary (or able) to support populating the SAT-specific TSD collection template;	Secretariat SAT Members States, ANSPS RMAs	Upon completion of developing the SAT-specific TSD collection template.	Approved by SAT SOG/03	SUPERSEDES SOG02-06 SAT SOG/4: ON GOING

ID #	ACTION	WHO	WHEN	**STATUS**	**NOTES BY SAT SOG 04**
	3) Notification that, in accordance with decision SAT IMG/02-4, to support the collection of an optimal traffic sample, the TSD sample period requested was changed from December to the month of July; and 4) Request confirmation of availability and feasibility of accommodating the data requests listed below: i. Feasibility of providing oceanic/high seas only data for FIRs that will be "split" administratively for data collection purposes, following delineation of the SAT Region. ii. Feasibility of populating additional fields identified by the RMA HSPT (e.g., traffic flow designator and flying time) iii. Feasibility of providing July 2023 TSD or begin providing July TSD beginning in 2024.				
SOG03-04	Secretariat monitors the progress, outcomes and deliverables issued by SAT SOG RMA HS PT to timely communicate SAT States and ANSPs regarding upcoming requirements and infrastructure needs for collecting LLDs and LLEs.	Secretariat RMAs SAT Members		Approved by SAT SOG/03	SAT SOG/4: ON GOING
SOG03-05	ARMA, SATMA, and CARSAMMA give high priority to their participation in the workshop programmed to promote the implementation of standardized data collection	RMAs RMA HS PT	31 July – 2 august 2024	Approved by SAT SOG/03	FAA is going to convene as soon. **COMPLETED** The workshop was delivered, in Mexico

ID #	ACTION	WHO	WHEN	**STATUS**	**NOTES BY SAT SOG 04**
	and collision risk assessment methodology among the SAT RMAs.				July 2024.
SOG03-06	Secretariat to support the development of Decision SAT-SG/01 and Decision SAT SOG 02/01. To coordinate the implementation of an action plan with IATA, SAT States, ANSPs and concerned Regional Offices. Analysis to assess the impact of delineation to the AIPs information, Regional ANPs, Doc 7030, etc.	Secretariat SAT members	31 October 2024	Approved by SAT SOG/03 Not yet started	SUPERSEDES ACTION SOG02-08 SAT SOG/4: Not yet started
SOG03-07	A draft of SAT OESB will be validated on SAT SOG/04 and presented on SAT SG/2.Then, its final version will be adopted on SAT SOG/05.	OESB PT Project manager	SAT SOG 04 SAT SG/2	Approved by SAT SOG/03	SAT SOG/4: ON GOING
SOG03-08	The SAT SOG invites the ASR PT to: a) hold a meeting on May 22, 2024, to review the Project High Level Tasks and improve definition of its work plan; b) program a monthly calendar for the PT meetings in coordination with Secretariat; and c) harmonize the deadlines of its deliverables considering SAT SOG meeting schedule.	ASR PT Project manager Secretariat	Report to SAT SOG 04 Present on SAT SOG 05	Approved by SAT SOG/03	**SUPERSEDES** ACTION SOG02-04 **COMPLETED**
SOG03-09	RMAs concerned in the SAT area (SATMA, ARMA, CARSAMMA), and SAT SOG members engage and support the activities needed for the adequate development of Item Actions SAT IMG /02-1 and SAT IMG /03-03. Secretariat to follow up and bring assistance.	SAT SOG RMAs Secretariat	According to working plan derived from IMG actions.	Approved by SAT SOG/03	SAT SOG/4: ON GOING

ID #	ACTION	WHO	WHEN	**STATUS**	**NOTES BY SAT SOG 04**
SOG03-10	States members, under the coordination of Brazil, to elaborate a study on the requirements and documents needed to implement a Scrutiny Group for the SAT airspace. The SAT SG will be informed regarding the approach given to the action SAT-SG/01 ACT04. Close follow-up from the Secretariat will be performed	➢ Brazil ➢ State members Secretariat	Progress report to SAT SOG/04 and SAT SOG/05	Approved by SAT SOG/03	**SUPERSEDES** ACTION SOG02-04 AND SOG01-13 --- addresses the ACTION SAT-SG/01 ACT04 of Steering group SAT SOG/4: ON GOING
SOG03-11	Secretariat to gather and coordinate relative information to ensure that PIRG bodies and RSOOs are notified, and regional processes are identified to support processes timely transmission of LHD events information provided by RMAs, needed to determine causal factors and subsequently, drive implementation of risk mitigations by ANSPs and States.	Secretariat RMAs	SAT SOG 05	Approved by SAT SOG/03	SAT SOG/4: ON GOING

➢ **SAT SOG/04**

ID #	ACTION	WHO	WHEN	**STATUS**	**NOTES BY SAT SOG 04**
SOG04-01	SAT SOG Secretariat is appointed to coordinate with SAT IMG Secretariat the inclusion of this topic in the planned joint 2025 meeting SAT IMG – SAT SOG meeting agenda.	SAT SOG and SAT IMG Secretariat's	Before SAT SOG /05	Approved by SAT SOG/04	
SOG04-02	a) The updated version of the Terms of Reference (ToRs) template for SAT SOG Project Teams is approved as shown in	Document Management Office - DMO	Before SAT SG/02 meeting	Approved by SAT SOG/04	

ID #	ACTION	WHO	WHEN	**STATUS**	**NOTES BY SAT SOG 04**
	Appendix H. b) The SAT Document Management Office (DMO) is tasked to include the mentioned template in the next review of the SAT Handbook.				
SOG04-03	a) SAT ASR PT to update its Work and communication Plan for 2024 and 2025. b) Initiatives proposed by SAT ASR PT referred to safety KPIs are endorsed. These initiatives must be deployed within the framework of SAT group and SAT SOG, maintaining close coordination with the SAT SOG Secretariat.	SAT ASR PT	Report progress to the SAT SOG /05	Approved by SAT SOG/04	
SOG04-04	a) SAT SOG meeting endorses the SAT OESB draft as presented in Appendix L; b) Secretariat tasked to coordinate the host of the OESB on the website of ICAO SAM Office; and c) SAT OESB PT and Secretariat, to study the benefit of sharing links to the NAT OESB repository.			Approved by SAT SOG/04	
SOG04-05	The Secretariat, no later than December 2024, according to Action SOG03-03, drafts and delivers a letter to SAT States explaining the purpose and benefits of the implementation of a new data sample (TSD).			Approved by SAT SOG/04	
SOG04-06	a) The meeting agrees on the feasibility of a SAT Scrutiny group; b) Brazil and SAT				

ID #	ACTION	WHO	WHEN	**STATUS**	**NOTES BY SAT SOG 04**
	members to prepared documents needed to implement a Scrutiny contributing body for the SAT airspace; and c) To hold a Virtual Meeting January 23, 2025 (tentative date)				

Appendix E — SAT SOG DECISIONS

Reference / Title	Description	Notes	Status
SAT SOG Decision 01/01 –SAT Oceanic Errors Safety Bulletin Project Team (SAT OESB PT)	That, a Project Team be established to elaborate the SAT oceanic errors safety bulletin (SAT OESB) aimed to improve safety in the South Atlantic airspace. The project team will review the NAT OESB document and determine which topics are relevant to the SAT region, compose a SAT OESB with relevant topics specific to the region, and will **present a recommendation to the SAT SOG/2 regarding the implementation and publication of the SAT OESB document.**	State Letter to administrations, requesting the nomination of the designated focal points and/or the SME/members/leaders/coordinators of the PT	**On-going**
SAT SOG Decision 01/02 – SAT annual safety report project team (SAT ASR PT)	That, a Project Team be established to elaborate the SAT annual safety report (SAT ASR) aimed to improve safety in the South Atlantic airspace. The project team will review the NAT ASR, compose a SAT ASR with relevant topics specific to the region, and will present **the drafted document to the SAT SOG/2 to be validated.**	State Letter to administrations, requesting the nomination of the designated focal points and/or the SME/members/leaders/coordinators of the PT	**On-going**
SAT SOG Decision 02/01 - Support for the workplan of SAT SOG RMA H/S Pt	That, SAT SOG members are invited to: a) Support administrative delineation of some FIRs ***** for the fpurposes of data collection and submission to facilitate safety assessment, risk estimation, and metrics harmonization within the SAT;		**On-going**

	b) provide standardized data to help the RMAs achieve their objectives and deliverables, as well support comprehensive assessment of the SAT Region; and *c)* endorse and support the activities of RMA H/S PT on delineation of SAT, according to planned phases 1, 2 and 3. ** Specifically: Accra, Canaries, Comodoro Rivadavia, Ezeiza, Johannesburg, Luanda, Montevideo and Windhoek FIRs have portions of airspace designated to the SAT Area.*		

<<<

Appendix F

https://www.icao.tv/videos/strategic-lateral-offset-procedures-slop

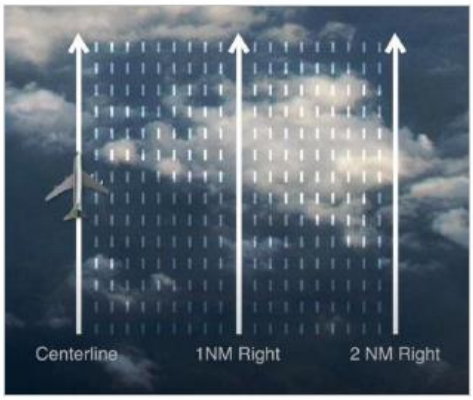
South Atlantic - Safety Awareness Campaign

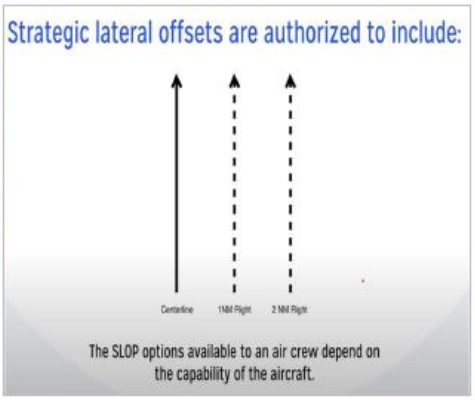
Strategic Lateral Offset Procedure

The Latin America and Caribbean Regional Coordination Group (LATAM/CAR RCG) 55th Meeting has chosen **strategic lateral offset procedure (SLOP)** to *Spotlight* for 2024. The SLOP campaign **is targeted for Europe and South America (EUR/SAM) Corridor during the month of August 2024.** Given the safety benefit SLOP provides, airlines are highly encouraged to increase their uptake of SLOP.

- *SLOP significantly reduces the risk of collision when non-normal events occur and provides a means to avoid wake turbulence. Flight crews with automatic offset tracking capability can select lateral offsets as an option.* Strategic Lateral Offset Procedures (SLOP) - Instructional videos - ICAO TV.

  Authorized strategic lateral offsets include centerline, and up to 2 nautical miles **RIGHT** of centerline. For aircraft capable of offsets in one nautical mile increments, the choices are centerline, 1 nautical mile or 2 nautical miles right. For aircraft capable of offsets in tenths of a nautical mile, the choices are centerline, and any nautical mile increment up to 2 nautical miles right. Offsets to the left of centerline are **PROHIBITED**. Flight crews should avoid using Heading mode to offset. Air Traffic Control or ATC clearance is not required, and it is NOT necessary that ATC be advised.





- The Procedures for Air Navigation Services (PANS) Air Traffic Management (ATM) 6th Edition, 2016, also states that this allows aircraft to fly on a parallel track to the right of the centreline, relative to the direction of flight to mitigate the lateral overlap probability due to increased navigation accuracy and wake turbulence encounters.

- Aircraft operators and flight crews should verify the use of SLOP with the State's Aeronautical Information Publication (AIP).

Note: State References – SAL OCEANIC, AIC 0002/2005; ATLÂNTICO OCEANIC, BRAZIL, AIP ENR 3.3; DAKAR OCEANIC, ASECNA, AIP Part 2, 1.8; CANARIAS, ESPAÑA AIP, ENR 1.8

Appendix G – SAT SOG Program 2024 - 2025

SAT SOG WORK PROGRAMME FOR 2024

Note: *X=Physical meeting, V=Virtual meeting, TBC= To be confirmed*

Activity	Participants	Frequency	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024
SAT-SOG														
Bi-annual SAT-SOG meeting (alternating in-person/virtual)	SAT-SOG members	Bi-annually				X						V*		
Coordinate/harmonize biannual working program with Lima, Paris, Dakar, Nairobi, and Mexico Regional Offices.	Secretariat	As needed (likely after every SAT SOG meeting)					V							V
Collect and upload background documents and reports on previous SAT meetings to the portal	Secretariat	As needed	The secretariat will establish the frequency.											
Submit Report to SAT Steering Group (SG)	SAT-SOG Chairperson, Secretariat	TBC	SAT-SG meetings will establish the frequency.											
Video conference for coordination of SAT-SOG actions and planning	SAT-SOG Chairperson, Secretariat	As needed	SAT-SOG will establish the frequency.											
Participate in NAT SOG meetings as observers	SAT-SOG Chairperson	Bi-annually						V						V
Coordination of activities – RMA	SAT-SOG, RMAs	As needed	SAT-SOG will establish the frequency.											

Activity	Participants	Frequency	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024
Coordination of implementation actions.	SAT-SOG, SAT IMG	Quarterly		V			V			V			V	
Project team meetings: SAT Oceanic Errors Safety Bulletin Project Team (SAT OESB PT)	Project team	TBC	Monthly meeting. The project team leader will establish the dates as agreed on SAT SOG/03 (V). May, 2nd, 2024 – 16 UTC June, 12th , 2024 – 13UTC July 4th, 2024 – 13 UTC - Postponed to July 9th, 2024 August, 1st, 2024 – 13 UTC September, 5th – 13 UTC											
Project team meetings: SAT Annual Safety Report Project Team (SAT ASR PT)	Project team	TBC	Monthly meeting. The project team leader will establish the dates as agreed on SAT SOG/03 (V).											
Project team meetings: SAT RMAS' Harmonization/Standardization Project Team (SAT RMA H/S PT)	Project team	TBC	Monthly meeting. The project team leader will establish the dates as agreed on SAT SOG/03 (V).											
SAT Area delineation	SAT-SOG SAT-IMG Project team	TBC	The project team leader will establish the frequency (V).											
Coordination meetings for the partnership between ARMA and CARSAMMA	SAT-SOG ARMA CARSAMMA	TBC	SAT-SOG will establish the frequency (V).											

SAT SOG WORK PROGRAMME FOR 2025

Note: *X=Physical meeting, V=Virtual meeting, TBC= To be confirmed*

Activity	Participants	Frequency	Jan 2025	Feb 2025	Mar 2025	Apr 2025	May 2025	Jun 2025	Jul 2025	Aug 2025	Sep 2025	Oct 2025	Nov 2025	Dec 2025
SAT-SOG														
Bi-annual SAT-SOG meeting (alternating in-person/virtual)	SAT-SOG members	Bi-annually				X						V*		
Coordinate/harmonize biannual working program with Lima, Paris, Dakar, Nairobi, and Mexico Regional Offices.	Secretariat	As needed (likely after every SAT SOG meeting)					V							V
Collect and upload background documents and reports on previous SAT meetings to the portal	Secretariat	As needed	The secretariat will establish the frequency.											
Submit Report to SAT Steering Group (SG)	SAT-SOG Chairperson, Secretariat	TBC	SAT-SG meetings will establish the frequency.											
Video conference for coordination of SAT-SOG actions and planning	SAT-SOG Chairperson, Secretariat	As needed	SAT-SOG will establish the frequency.											
Participate in NAT SOG meetings as observers	SAT-SOG Chairperson	Bi-annually						V						V
Coordination of activities – RMA	SAT-SOG, RMAs	As needed	SAT-SOG will establish the frequency.											

Activity	Participants	Frequency	Jan 2025	Feb 2025	Mar 2025	Apr 2025	May 2025	Jun 2025	Jul 2025	Aug 2025	Sep 2025	Oct 2025	Nov 2025	Dec 2025
Coordination of implementation actions.	SAT-SOG, SAT IMG	Quarterly		V			V			V			V	
Project team meetings: SAT Oceanic Errors Safety Bulletin Project Team (SAT OESB PT)	Project team	TBC	Monthly meeting dates shall be agreed on SAT SOG/04											
Project team meetings: SAT Annual Safety Report Project Team (SAT ASR PT)	Project team	TBC	Monthly meeting dates shall be agreed on SAT SOG/04											
Project team meetings: SAT RMAS' Harmonization/Standardization Project Team (SAT RMA H/S PT)	Project team	TBC	Monthly meeting dates shall be agreed on SAT SOG/04											
SAT Area delineation	SAT-SOG SAT-IMG Project team	TBC	The project team leader will establish the frequency (V).											
Coordination meetings for the partnership between ARMA and CARSAMMA	SAT-SOG ARMA CARSAMMA	TBC	SAT-SOG will establish the frequency (V).											

Appendix H

SAT SOG PROJECT TEAM TERMS OF REFERENCE (ToRs) TEMPLATE

Project Title:	Provide a concise, descriptive title for the project.
Parent Group:	SAT SOG (Identify the group that the project reports to).
Project Supervisory body:	SAT SOG (Refers to the entity responsible for overseeing the project)
Project Period:	Define the start and end dates of the project.
Project Objectives:	List the main goals the project aims to achieve.
Project High-Level Tasks:	Outline the key tasks needed to accomplish the objectives.
Coordination Requirements:	Mention any necessary coordination with other teams or stakeholders.
Project Outcomes:	Describe or list the expected deliverables or results of the project.
Project Lead:	Name the State or Organization responsible for leading the overall project execution.
Project Team Leader Role and Responsibilities:	Summarize the duties and expectations of the team leader.
Expected workload for project team leader:	Estimate the time and effort required from the team leader monthly. e.g., 5h/month
Project Team Members:	List the members and observers designated to be involved in the project team. - Members: - Observers: - Notes:
Project Team Member's Role and Responsibilities:	Briefly describe the roles and duties of team members.
Expected workload for project team members:	Estimate the time and effort required from the team members monthly. e.g., 5h/month
Kick-off meeting	Provide the date and agenda for the initial project meeting. (e.g., tentative date: date – hour UTC)

Project Artefacts/Files folder:	Please provide a link to the project team artefacts/files folder to be created by the project team leader.
Communication channels/ frequency:	The project team leader shall specify the methods and frequency of communication, including how often the team will meet. (e.g., email, chat, monthly meetings)
Project Secretariat Support:	If needed, any administrative support by secretariat is available to the project team.

WHY	Clearly state the purpose and objectives of the project team. Please explain why the team is being established and what problem or opportunity it aims to address.
WHAT	Describe the tasks, deliverables, or goals the project team will work on. Explain the project's scope and what the team is expected to accomplish, setting clear expectations and helping the reader understand the project's boundaries.
WHO	Identify the project team members, including the team leader, key stakeholders, and subject matter experts. Specify member's roles and responsibilities.
WHEN	Provide the project timeline, including start and end dates, key milestones, and the schedule for meetings or deliverables.

Appendix I

SAT ASR PT Work and communication Plan for 2024

Work packages		Elementary Task		Actor	Deadline	Condition	Communication channel	Deliverables
1.	Project launch	1.1	Prepare questions regarding: - NAT ASR CRE, KPI, TLS, and Scrutiny of events tools, resources, and challenges - ICAO SARPS regarding CLE	PM	December 28th, 2023 (Done)	Coordination with ANSP (ASECNA) and ICAO WACAF	email	- List of questions established and shared with ICAO WACAF
		1.2	Update list of ASR PT SME contacts	PM	3rd January 2024 (Done)	Coordination with States	email	Updated list of SME contacts
		1.3	Organize a virtual Kick off meeting with all SME and leaded by the PM	PM	4th January 2024 (Done)	- Presentation of the Project to the Project Team - Presentation of SAT Safety Policy approved by SAT SG - Presentation of NAT ASR 2022 and questions regarding NAT ASR (1.1) addressed - Presentation of SAT ASR PT Work Plan for 2024 - Project tasks assignment to SME including project risk assessment	MS TEAMS	- Summary of Discussions - Agenda of the next meeting team - Updated list of SME contacts
2.	Safety	2.1	Based on the	SMEs	29th may	Internal	email	Survey developed

Work packages		Elementary Task		Actor	Deadline	Condition	Communication channel	Deliverables
	Performance measurement, KPI and target level of safety identification		NAT ASR 2022, develop a survey listing the NAT ASR events and KPI to the SAT States/ANSP and NAT ASR topics	(to be designated)	2024 (Done)	coordination and coordination with SAT ANSPs	MS TEAMS WhatsApp	and validated by the 4th ASR PT meeting
		2.2	Send, collect and analyze the result of the survey	SMEs (to be designated)	31st may to 31st July 2024 (Survey transmitted mid august)	Survey developed and validated	email	Summary report including: - NAT ASR KPI applicable to the SAT - Other relevant KPI from SAT States/ANSP - Relevant topics applicable to the SAT - Other relevant topics - risk assessment for data collection validation and analysis - Recommendations
		2.3	Draft a prototype of common KPI for SAT ASR and relevant topics	Project Manager	1st September 2024	Post survey summary report of SME	MS TEAMS	Reference document for Safety performance measurement for the SAT area approved at SAT/SOG 4 (1st oct) (ASR Project Team Proposal 2025 presented at SAT SOG 4)
3.	SAT ASR prototype drafting	3.1	Elaborate and share the SAT ASR prototype drafting with	SMEs (to be designated)	5th November 2024	Reference document for Safety performance measurement for the SAT	MS TEAMS WhatsApp email	Draft of SAT ASR prototype shared with ICAO WACAF and SAT States/ANSP

Work packages		Elementary Task		Actor	Deadline	Condition	Communication channel	Deliverables
			ICAO WACAF and SAT States/ANSP			region approved		
		3.2	Finalize the SAT ASR prototype drafting with ICAO WACAF and SAT ANSP	PM	5th December 2024	Draft of SAT ASR shared, and amendments considered	email	Prototype of SAT ASR adopted by ASR PT 7th meeting (end of December)
4.	Development of SAT ASR update and revision mechanism	4.1	Elaborate and share the proposal for SAT ASR update and revision mechanism	SMEs (to be designated)	15th January 2025	Prototype of SAT ASR adopted by ASR PT 7th meeting	email MS TEAMS WhatsApp	Draft of SAT ASR update and revision mechanism adopted by the ASR PT 8th meeting (end of January)
		4.2	Finalize and share the SAT ASR update and revision mechanism with the PT	PM	3rd March 2025	Draft of SAT ASR update and revision mechanism and amendments considered	email	Prototype of SAT ASR, update and revision mechanism and amendments adopted by SAT SOG 5 (7th April 2025)

Appendix J

RELEVANT SAFETY KPI AND TOPICS FOR SAT ANNUAL SAFETY REPORT SURVEY INSTRUCTIONS

1. Background

1.1. The First meeting of the South Atlantic Safety Oversight Group (SAT SOG/1) which was held from 13 to 17 March 2023, in Miami, Florida, United States of America established a SAT Annual Safety Report (ASR) Project Team headed by Senegal.

1.2. The project objectives are:

- To improve aviation safety in the South Atlantic airspace by developing an annual safety report that will analyze safety data, identify trends, propose enhancements and mitigate risks.
- The project aims to enhance safety awareness and culture, improve data quality and analysis, and promote collaboration among stakeholders in the region.

1.3. During the second South Atlantic Safety Oversight Group (SAT SOG/2) which was held in virtual mode in November 2023, the SAT ASR PT Work Packages (WP) and plan was presented and adopted. Furthermore, the SAT ASR PT detailed work and communication plan was presented and adopted at the 4th SAT annual safety report project team meeting held online on the 29th of May 2024.

1.4. The action 2.1 elementary task of the SAT ASR PT work and communication plan related to the work package 2 (Safety Performance measurement, KPI and target level of safety identification), is "Based on the NAT ASR 2022, develop a survey listing the NAT ASR events and KPI to the SAT States/ANSP and NAT ASR topics".
To fulfill this elementary task, a survey was developed and presented with the aim of determining which KPI and topics contained in the 2022 NAT ASR are applicable to the SAT and what topics should be included in the SAT ASR.

1.5. The information provided in the survey by States/ANSP are used exclusively for the need of the SAT SOG ASR project team.
The answers given in this form by States/ANSP will not be directly shared or published. Information will be interpreted, summarized and presented graphically to support the development of SAT Annual Safety Report.

1.6. States/ANSPs responsible for providing air traffic services over high seas oceanic airspace within the SAT area (specifically FL290 through FL410) are invited to fill in the survey and return it by mail to the following addresses dibocor.sene@anacim.sn; abibou.mbaye@anacim.sn and leyejac@asecna.org by the 30th of august 2024.

2. Presentation of the survey

The survey is composed of 2 parts:
Part A related to the Safety KPI and Part B related to the relevant topics for SAT ASR

2.1 Instructions for Part A: Safety KPI

The part A of the survey is composed of 6 columns:

Column 1: Event Type
This column contains the events type found in the 2022 NAT ASR.
Column 2: Effective monitoring of the Event type (Yes/No)
"Yes" or "No" should be inserted by the State/ANSP.
"Yes" means that the related event type in column 1 is monitored for the State/ANSP. In this case, go to the column 4.
In case of "No" answer, the next column is column 3.
Column 3: Suggested event and related KPI or any other comment
This column should be filled in case of "No" answer in column 2. In this case, the State/ANSP can insert the suggested event type and related KPI they use in the area or any other relevant comment. In this case, the next step is the following event type in the next line.
Column 4: Related NAT Safety KPI
This column contains the NAT Safety KPI found in the 2022 NAT ASR related to the safety events type in column 1.
Column 5: Effective measurement of related KPI (Yes/No)
"Yes" or "No" should be inserted by the State/ANSP.
"Yes" means that NAT Safety KPI is measured within your air space. In this case, the next step is the following event type in the next line.
In case of "No" answer, the next column is column 6.
Column 6: Actual Safety KPI and/or any other suggestions and remarks
In case of "No" answer in column 5 fill in this column with the actual safety KPI used in your air space and/or any other suggestions and remarks. The next step is the following line.

2.2 **Instructions for Part B:** Relevant topics for SAT ASR

The part B of the survey is composed of 4 columns.
Column 1: NAT ASR 2022 Topics
This column contains the topics developed in the NAT ASR 2022
Column 2: Content
This column gives the details of the related topic
Column 3: Relevant (Yes/No)
This column should be filled by the State /ANSP to express their opinion on the relevance of the related topic. In case of Yes or No answer, the column 4 can be filled.
Column 4: Comments or suggested topics and content
This column can be filled in case of "Yes" or "No" answer in the column 3.

SURVEY SAMPLE FOR PART A

PART A: Safety KPI

State/ANSP:						
1	2	**3**	**4**		5	**6**
Event type	Effective monitoring of Event type (Y/N ?)	**Suggested event and related KPI or any other comment (In case of "No" answer in column 2)**	**Related NAT Safety KPI**		Effective measurement of related KPI (Y/N ?)	**Actual safety KPI And/or any other suggestions and remarks (in case of "No" answer in column 5)**
Accidents	Y	-	NAT.SKI.01	Number of accidents	Y	-
LHD	Y	-	NAT.SPKI.02a	Number of LHD events divided by number of flight hours flown in the NAT HLA	N	The number of LHD is measured but not related to any other data
			NAT.SKPI.02b	Overall time of LHDs at unprotected flight level divided by total duration of flights in minutes	N	
Lateral deviations	Y	-	NAT.SKPI.03a	Number of Lateral deviations divided by number of flight hours flown in the NAT HLA	N	The number of lateral deviation is measured but not related to any other data
			NAT.SKPI.03b	Overall time of lateral deviations on an unprotected profile divided by total duration of flights in minutes	N	
losses of separation	Y	-	NAT.SKPI.04	Number of losses of separation events divided by number of flight hours flown in the NAT HLA	N	The number of losses of separation is measured but reported to the number of movements
coordination errors	Y	-	NAT.SKPI.05a	Number of coordination errors divided by number of flight hours flown in the NAT HLA	N	The number of coordination errors is not measured but the number of

						uncoordinated flights is measured
			NAT.SKPI.05b	Overall time of coordination errors spent at unprotected profile divided by total duration of flights in minutes	N	
Collision Risk Estimate (CRE)	N	Ongoing project for CRE measurement implementation in 2025	NAT.SKPI.06a	Collision Risk Estimate (CRE) in the vertical dimension	-	-
			NAT.SKPI.06b	Collision Risk Estimate (CRE) in the lateral dimension	-	-
Effective Implementation	Y	-	NAT.SKPI.07	Regional Effective Implementation (EI) score in ANS for NAT provider States	N	EI is scored by the civil aviation authority for the state not only for ANSP but by categories or area of audit

SURVEY : PART A: Safety KPI

State/ANSP and FIR:						
1	**2**	**3**	**4**		**5**	**6**
Event type	Effective monitoring of Event type (Y/N ?)	**Suggested event and related KPI or any other comment (In case of "No" answer in column 2)**	**Related NAT Safety KPI**		Effective measurement of related KPI (Y/N ?)	**Actual safety KPI And/or any other suggestions and remarks (in case of "No" answer in column 5)**
Accidents			NAT.SKI.01	Number of accidents		
LHD			NAT.SPKI.02a	Number of LHD events divided by number of flight hours flown in the NAT HLA		
			NAT.SKPI.02b	Overall time of LHDs at unprotected flight level divided by total duration of flights in minutes		
Lateral			NAT.SKPI.03a	Number of Lateral		

deviations				deviations divided by number of flight hours flown in the NAT HLA		
			NAT.SKPI.03b	Overall time of lateral deviations on an unprotected profile divided by total duration of flights in minutes		
losses of separation			NAT.SKPI.04	Number of losses of separation events divided by number of flight hours flown in the NAT HLA		
coordination errors			NAT.SKPI.05a	Number of coordination errors divided by number of flight hours flown in the NAT HLA		
			NAT.SKPI.05b	Overall time of coordination errors spent at unprotected profile divided by total duration of flights in minutes		
Collision Risk Estimate (CRE)			NAT.SKPI.06a	Collision Risk Estimate (CRE) in the vertical dimension		
			NAT.SKPI.06b	Collision Risk Estimate (CRE) in the lateral dimension		
Effective Implementation			NAT.SKPI.07	Regional Effective Implementation (EI) score in ANS for NAT provider States		

ANY OTHER COMMENT

PART B: Relevant topics for SAT ASR

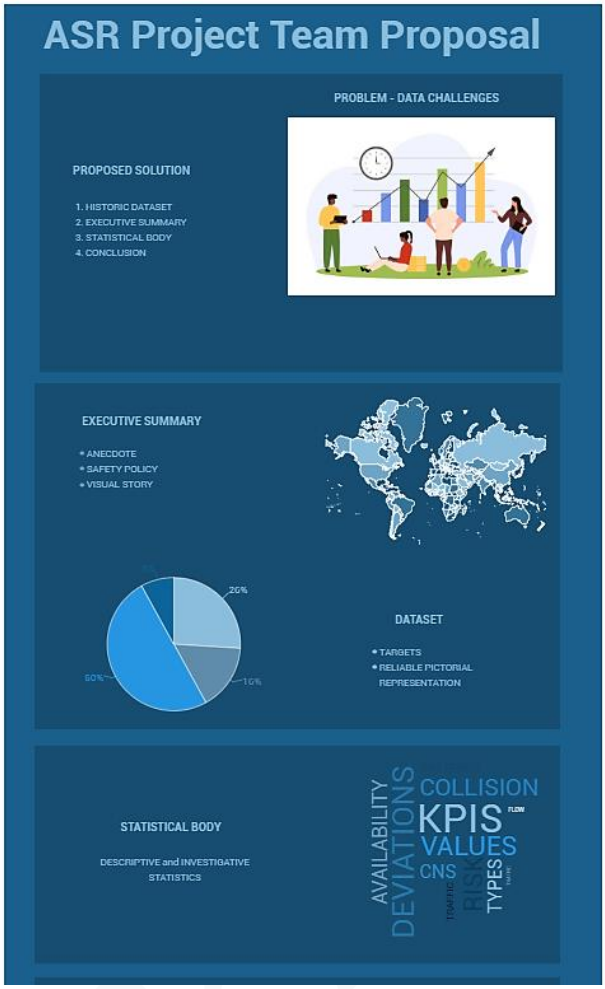
NAT ASR 2022 Topics	**Content**	**Relevance for SAT ASR (Y/N)**	**Comments or suggested topics and content**
1	**2**	**3**	**4**
Safety policy	NAT SPG policy		
Objective	Objective of the NAT SPG member States		
Guiding	Guiding principles of the North		

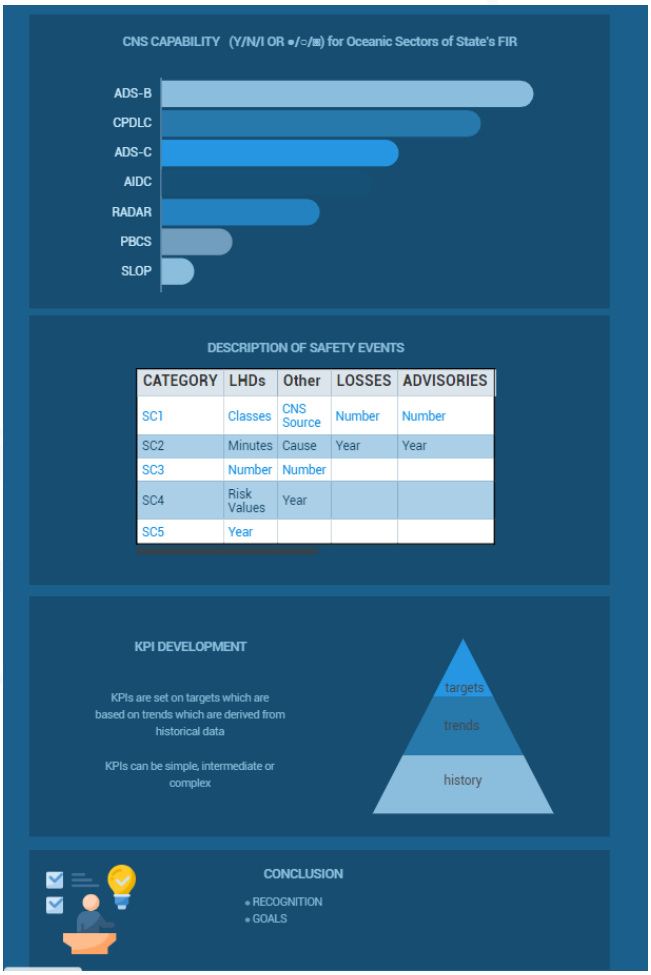
Principles	Atlantic Systems Planning Group (NAT SPG) member States		
Executive Summary	- NAT HLA (High Level Airspace) traffic statistics - NAT HLA (High Level Airspace) safety performance summary		
The North Atlantic Scenario	- NAT airspace characteristics - Traffic evolution (2018-2022)		
Safety Performance Monitoring and Measurement - Collision Risk Estimates	- Vertical and lateral CREs for the reporting period - Vertical and lateral CREs for previous years comparison		
Safety Performance Monitoring and Measurement - Safety Key Performance Indicators (KPIs)	- Safery KPI list, target and measure for previous rolling 3 years period of performance - Safery KPI list, target and measure per year for previous 3 years period of performance and current reporting period (2022)		
Safety Performance Monitoring and Measurement - Scrutiny of events	- Scrutiny of reported events - Categorization of reported events - contributing issues allocated to all events and relative position from 2021 report - Mitigations used for prevented deviation events in 2022		
NAT regional priorities	Conclusion and recommendations		

ANY OTHER COMMENT

Appendix K

Follow this link for an electronic version of the infographic (https://prezi.com/i/nzjtglfzczyx/)

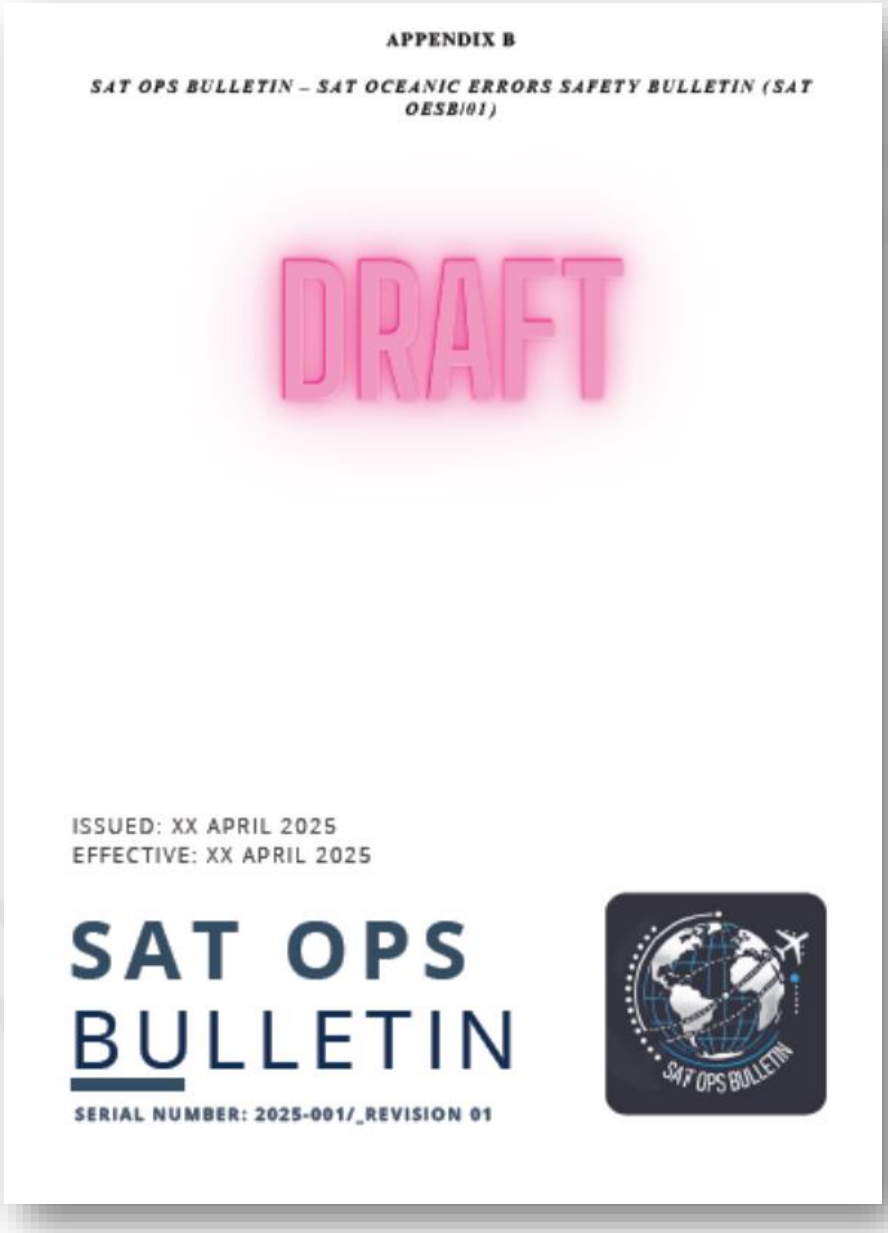




Appendix L

South Atlantic (SAT) Oceanic Errors Safety Bulletin (OESB)

(SEPARATE FILE)



Appendix M

WORKSHOP SUMMARY

(Presented by the SAT RMA Harmonization and Standardization (H/S) Chairperson)

1. HISTORICAL

1.1 The first SAT RMA Workshop was held at the International Civil Aviation Organization (ICAO) North American, Central American, and Caribbean (NACC) Office from 31 July through 2 August 2024. The purposes of the Workshop were to: (1) promote standardization and implementation of harmonized data collection and collision risk assessment methodology to ensure consistent and accurate assessment of risk in the SAT Area, (2) identify stakeholder training requirements, and (3) establish standardized training materials disseminated by the SAT RMAs to promote awareness of data collection and safety reporting requirements.

1.2 The SAT Workshop was attended by the three SAT Area RMAs: Africa Indian Ocean Regional Monitoring Agency (ARMA), Caribbean and South American Monitoring Agency (CARSAMMA) and South Atlantic Monitoring Agency (SATMA) and was led by the SAT RMA H/S Chairperson. The list of participants is provided as **Attachment A**.

2. WORKING ARRANGEMENTS AND APPROVAL OF THE AGENDA

2.1 The workshop was conducted in English.

2.2 The meeting reviewed and approved the following agenda:

1) Review proposed standardized collision risk assessment methodology applicable to the SAT Area
    a. Overview of risk models used in safety assessments
    b. Review methodology for observing application of the strategic lateral offset procedure (SLOP)
    c. Incorporating the observed SLOP into the vertical collision risk estimate
    d. Estimating vertical and lateral occupancy values
    e. Estimating vertical collision risk for same and crossing-track operations
    f. Vertical crossing risk estimation
    g. Evaluating reported occurrences involving lateral deviations and longitudinal errors
    h. Producing lateral and longitudinal risk estimates
2) Adopt standardized collision risk assessment methodology to ensure consistent and accurate assessment of risk in the SAT Area
3) Review goals for the next workshop or follow-on meetings as determined necessary

2.3 A list of documentation and resources presented during the workshop is provided in Attachment B.

2.4 The actions originated by the workshop are provided in Attachment C.

3. DISCUSSION

Note: The following sections provide a brief summary of the topics reviewed during the workshop. Presentations and applicable resource documents have been posted to the SAT SOG RMA H/S PT Teams site. SAT SOG RMA H/S PT | General | Microsoft Teams

3.1 Agenda Item 1a – Overview of Risk Models Used in Safety Assessments

3.1.1 To provide the necessary background information to support discussions related to progression of standardizing collision risk assessment methodologies applied to the vertical and horizontal dimensions, an overview of risk models used in safety assessments was presented. The presentation included an overview of the ICAO-endorsed safety assessment process, a high-level examination of mathematical risk models used in safety assessments, some observations concerning safety assessments supporting introduction of PBN-based horizontal-plane separation minima and a review of RMA data collection activities supporting estimation of risk-model parameters.

3.1.2 The presentation included a review of key assumptions applied to collision risk modeling, methods of determining occupancy values, and methods of calculating collision risk model parameter values.

3.2 Agenda Item 1b and 1c – Review methodology for observing application of SLOP and incorporating the observed SLOP into the vertical collision risk estimate

3.2.1 The presentation provided a review of the operational and technical advancements that led to the need for SLOP and the benefits gained by applying SLOP in specific airspace volumes.

3.2.2 Methods of observing SLOP were detailed, which included: data collection requirements and techniques for assessing the probability distribution of individual-aircraft lateral errors observed in traffic samples.

3.2.3 The presentation continued with a review of methods of incorporating the observed SLOP into the vertical collision risk estimate and the potential effect of incorporating SLOP on the outcome of collision risk estimates. In other words, since SLOP is a risk mitigation procedure, incorporating SLOP typically results in a reduced collision risk estimate.

3.3 Agenda Item 1d – Estimating vertical and lateral occupancy values

3.3.1 Methods of estimated vertical and lateral occupancy values were reviewed. The presentation addressed:

1) Methods for identifying aircraft pairs; methods of identifying same-direction or opposite-track aircraft pairs
2) Data collection requirements
3) Use of geographical features, such as OCA boundaries, and expected traffic densities to divide a large airspace volume into areas or "zones" with similar characteristics for further refinement of estimating occupancy values
4) A review of the basic model form elements relevant to estimating vertical and lateral occupancy values.

3.4 Agenda Items 1e and 1f – Estimating vertical collision risk for same and crossing-track operations and vertical crossing risk estimation

3.4.1 The following steps leading to estimating risk for crossing-track operations were reviewed:

1) Obtaining data and methods of combining independent data sets such as, flight profiles and ATM surveillance reports, to create a comprehensive data record with the data fields necessary for each individual flight to produce crossing-track risk estimates
2) A method to calculate distance between two points
3) A method to calculate initial bearing from point 1 to point 2 (ellipsoid)

4) A method to calculate the cross-track error distance

5) A practical approach to calculating crossing-track error risk estimates

3.5 Agenda Item 1d – Evaluating reported occurrences involving lateral deviations and longitudinal errors

3.5.1 Noting that the roles and responsibilities of RMAs historically have been applicable to assessing risk in the vertical dimension (and, therefore, putting a focus on evaluating large height deviations), it was recognized that the workshop participants would benefit from a review of methodology applied to assessing large lateral deviations (LLDs) and large longitudinal errors (LLEs). Accordingly, the methods and benefits of assessing these occurrences and how the assessment supports horizontal-plane system performance monitoring was reviewed.

3.5.2 Methods of collecting reports of LLD and LLE occurrences as well as a recommended report format were discussed. Furthermore, assessing LLD and LLE occurrences, assigning parameter values such as event magnitude and duration, assessing the occurrences over time, and identifying remedial actions were also discussed.

3.5.3 An approach to determining values, such as reporting requirement magnitude and lateral infringement distances as well as treatment of LLDs and LLEs in safety assessments were also reviewed.

3.5.4 To further progress a level of understanding of how horizontal occurrences are assessed, it was agreed that it would be beneficial to provide a set of example occurrences along with assigned parameter values to demonstrate the application of the methodologies presented during the workshop.

SAT RMA Workshop/01/01	
What	Provide a set of example LLD and LLE occurrences along with assigned parameter values.
Why	To further progress a level of understanding of how horizontal occurrences are assessed and demonstrate application of assessment methodologies presented during Workshop/01.
Who	Workshop Chairperson
When	30 September 2024 (estimated target date)

3.6 Agenda Item 1h – Producing lateral and longitudinal risk estimates

3.6.1 An overview of the lateral risk model employed by the North Atlantic Region and the differences between the vertical operational and lateral risk models were presented.

3.6.2 Equations for estimating lateral risk due to tracks crossed incorrectly and risk due to time spent on an incorrect track were reviewed.

3.7 Agenda Item 2 – Adopt standardized collision risk assessment methodology to ensure consistent and accurate assessment of risk in the SAT Area

3.7.1 During the workshop, ICAO-endorsed collision risk methodologies and best practices employed by monitoring agencies were reviewed. Workshop participants were also introduced to methods of assessing airspace characteristics and defining smaller “zones” with similar operational characteristics within a large airspace volume to produce risk estimates that are representative of observed operations.

3.7.2 The next step will be to review the methods presented during the workshop and collectively agree on the best approach to assess collision risk and perform safety assessments for the SAT Area.

SAT RMA Workshop/01/02

What	Establish standardized methodologies to estimate collision risk parameters, applicable to the vertical and horizontal planes, for the EUR/SAM traffic flow, AORRA airspace and other areas of the SAT Area
Why	To ensure consistent and accurate assessment of risk in the SAT Area
Who	All SAT RMAs
When	30 November 2024 (estimated target date)

3.8 Agenda Item 3 – Review goals for the next workshop or follow-on meetings as determined necessary

3.8.1 The following items were identified as goals for the next SAT RMA Workshop or follow-on meetings:

- If it is determined that implementing a centralized SAT RMA database is feasible, establish requirements for implementing the database and for collection of LHDs, LLDs and LLEs.
- Establish standardized data collection, processing, and dissemination methods among the SAT RMAs
- Identify training requirements and establish standardized training materials among SAT RMAs. The purpose of this initiative is to ensure that information pertaining to the standardized processes and procedures established by SAT RMAs is adequately and effectively disseminated to the appropriate stakeholders, such as service providers and air traffic management personnel.

SAT RMA Workshop/01/03	
What	Establish and maintain a set of SAT RMA Workshop goals and ensure alignment with the actions assigned to the SAT RMAs by SAT SOG.
Why	To ensure that the purposes and goals of the SAT RMA Workshop are satisfied.
Who	SAT RMA Workshop Chairperson
When	Routinely until the purposes and goals of the SAT RMA Workshop are satisfied.

3.9 Since the workshop topics are closely related to the SAT RMA contributions to SAT SOG, the participants also reviewed the SAT SOG RMA H/S PT actions.

3.9.1 The SAT SOG RMA H/S PT anticipated deliverables were reviewed and are shown in table 1.

#	Deliverable	Target Date	Status
1	SAT RMA H/S PT SAT SG Contributing Bodies Communication and Collaboration Plan (ref. SAT SOG/1 SOD, Appendix I)	SAT SOG/02	Complete
2	Standardized SAT-specific traffic sample data collection template (ref. SAT/SOG/1-WP/3.3, SAT/SOG/1-WP/3.4)	30 Dec 2024	In Progress, Final version is dependent on SAT Delineation (ref. para 3.1.4)
3	Know Your Airspace Analysis for the South Atlantic Area (ref. SAT/SOG/1-WP/2.80, Action SOG01-05)	15 Sep 2024	In Progress/First draft complete

#	Deliverable	Target Date	Status
4	Standardized collision risk assessment methodology (ref. SAT/SOG/1-WP/5.7)	30 Nov 2024	In Progress
5	Action plan for conducting workshops to promote implementation of standardized data collection and collision risk assessment methodology among the SAT RMAs. (ref. SAT/SOG/1-WP/5.7)	30 Oct 2024	First draft complete, next iteration in progress
6	Action plan for recommended SAT SOG future actions supporting standardization and harmonization of data collection, processing, and dissemination among the three SAT RMAs (ref. SAT/SOG/1-WP/3.3, SAT/SOG/1-WP/3.4)	30 Sep 2024	
7	Data field and format requirements for developing a centralized SAT RMA database for collection of LHDs, LLDs, LLEs		In Progress, feasibility study pending
Note: Target dates are estimates and are contingent on the Project Team's ability/availability to meet as needed.			

Table 4. SAT SOG RMA H/S PT List of Anticipated Deliverables

3.9.2 The participants discussed preparation actions for the upcoming SAT SOG meeting and agreed that the Project Team's focus should be on producing the next iteration of the Know Your Airspace (KYA) Analysis for the SAT Area. The discussion then turned to the requirements for producing the revised KYA. It was agreed that the general KYA elements, such as traffic flows, airspace usage and operator characteristics, will be updated using December 2023 data. The previous version of the KYA was based on December 2022 data. It was noted, during SAT IMG/02, that July was designated as the optimal month for TSD collection for the SAT Area. Since the decision to transition from using July instead of December is the TSD collection month was made during calendar year 2023 and considering recent SAT RMA feedback, provision of July 2023 data is not likely.

3.9.3 It was also agreed that collision risk model parameter values applicable to the EUR/SAM corridor (e.g., occupancy, speed, and vertical overlap values) and traffic density values for significant traffic flows in the EUR/SAM corridor will be produced.

3.9.4 LHDs observed in the SAT Area during the calendar year 2022 will be assessed and assigned parameter values. Typically, most of the collision risk estimate is attributed to values assigned to LHD events (operational risk).

3.9.5 Identification of collision risk model parameter values applicable to areas in the SAT Area with lower traffic volumes will most likely be included in a later version of the KYA.

3.9.6 It was agreed that the Project Team should meet prior to SAT SOG/04. The next meeting was scheduled to be held on 26 September 2024.

3.10 Next Workshop

3.10.1 The SAT SOG RMA H/S PT will review the outcomes of the workshop and discuss the need to establish a follow-on workshop during its next meeting.

Attachment A - List of Participants

Name	RMA or Organization	email
Christine Falk (Chairperson)	United States/FAA	Christine.Falk@faa.gov
Holly King	United States/FAA	holly.a.king@faa.gov
José Perez	United States/FAA	Jose.Perez@faa.gov
Julian Babel	United States/FAA	Julian.P.Babel@faa.gov
Philip McKinney	United States/FAA	Philip.mckinney@faa.gov
Stephanie Beritsky	United States/FAA support	Stephanie.L-CTR.Beritsky@faa.gov
Nonjabulo Gumede	ARMA	nonjabulom@atns.co.za
Charlene Roberta da Silva Moreira Aieta	CARSAMMA	charlenecrsma@cgna.decea.mil.br
Alexander Dorta Fumero	SATMA	Alexander.dorta@ineco.com
Eduardo J. Ortuño Villapalos	SATMA	EJOrtuno@enaire.es
Eddian Méndez	ICAO/NACC Regional Office	emendez@icao.int
Roberto Sosa	ICAO/SAM Regional Office	rsosa@icao.int

** This table represents the participants who attended the Workshop in-person.*

Attachment B - List of Resources

The following presentations and resources have been posted to the SAT SOG RMA Harmonization and Standardization Team Sites under General > Files > SAT RMA Workshop/01.

- **Presentations**

    1) SAT RMA Workshop Agenda
    2) Overview of Risk Models Used in Safety Assessments
    3) Methodology for
    4) Estimating Vertical and Lateral Occupancy Values
    5) Estimating Vertical Collision Risk for Same and Crossing Track Operations
    6) Evaluating LLDs and LLEs
    7) Producing Lateral and Longitudinal Risk Estimates

- **Resources reviewed during the meeting**

    1) North Atlantic Mathematicians' Handbook
        - This reference/guidance addresses the two major questions which a monitoring agency might ask related to SLOP:
            - What method can be used to observe the frequency of SLOP use?
            - How can the effect of SLOP on operational risk be estimated numerically?
        - This reference also includes example techniques applied to collision risk modeling, assessing LLDs and LLEs, and incorporating LLDs and LLEs into collision risk models.
    2) North Atlantic Mathematicians' Working Group (NAT MWG/58) IP09, New Method for Vertical Occupancy.
        - Related to vertical crossing collision risk modeling, this paper provides techniques to simplify proximate time through an intersection.
    3) Spreadsheet supporting latera deviation calculations

- **References**

    1) ICAO Doc 4444, Procedures for Air Navigation Services, Air Traffic Management, Sixteenth Edition, 2016
    2) ICAO Doc 9574, Manual on a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive, Third Edition, 2012
    3) ICAO Doc 10063, Manual on Monitoring the Application of Performance-Based Horizontal Separation Minima, Second Edition (publication pending)

Attachment C - List of Actions Originated by the Workshop

SAT RMA Workshop/01/01	
What	Provide a set of example LLD and LLE occurrences along with assigned parameter values.
Why	To further progress a level of understanding of how horizontal occurrences are assessed and demonstrate application of assessment methodologies presented during Workshop/01.
Who	Workshop Chairperson
When	30 September 2024 (estimated target date)

SAT RMA Workshop/01/02	
What	Establish standardized methodologies to estimate collision risk parameters, applicable to the vertical and horizontal planes, for the EUR/SAM traffic flow, AORRA airspace and other areas of the SAT Area
Why	To ensure consistent and accurate assessment of risk in the SAT Area
Who	All SAT RMAs
When	30 November 2024 (estimated target date)

SAT RMA Workshop/01/03	
What	Establish and maintain a set of SAT RMA Workshop goals and ensure alignment with the actions assigned to the SAT RMAs by SAT SOG.
Why	To ensure that the purposes and goals of the SAT RMA Workshop are satisfied.
Who	SAT RMA Workshop Chairperson
When	Routinely until the purposes and goals of the SAT RMA Workshop are satisfied.

Traffic Sample Data (TSD) Collection Template

This appendix provides the information required for each flight in a sample of traffic movements. This information is referred to as traffic sample data (TSD). Each SAT Area Flight Information Region (FIR) should provide their RMA with the TSD for the month of July each year.

INFORMATION FOR EACH FLIGHT IN THE SAMPLE

The information requested for each flight observed in the FIR is listed in the following table. Some of the fields listed in the table are available from the operator filed flight plans.

Field	Example	Mandatory or Optional	Comment
Date (dd/mm/yyyy)	24/01/2022 for 24 Jan 2022	**Mandatory**	
Aircraft Identification (or call sign)	DAL157	**Mandatory**	
Aircraft Registration Mark	N826NW	**Mandatory**	**Available in Item 18 of the operator filed flight plan, e.g. REG/FGSQT**

Field	Example	Mandatory or Optional	Comment
PBC Approval Type	RCP 240	**Mandatory**	**Available in Item 10a of operator filed flight plan, e.g. P2 for CPDLC RCP240**
PBN Approval Type	RNP 4	**Mandatory**	**Available in Items 10a and 18 of the operator-filed flight plan (e.g. an 'R' contained in Item 10a and RNAV specification codes contained in Item 18, e.g. PBN/A1L1**
PBS Approval Type	RSP 180	**Mandatory**	**Available in Item 18 of the operator filed flight plan, e.g. SUR/RSP180**
Aircraft Type	A333	**Mandatory**	**Available in operator filed flight plan**
Origin Aerodrome	DGAA	**Mandatory**	**Available in operator filed flight plan**
Destination Aerodrome	KJFK	**Mandatory**	**Available in operator filed flight plan**
Cleared/expected route of flight (item 15 of flight plan)	LUMPO UNAMA CVS IRANI GAMBA ULTEM	**Mandatory**	**Available in current flight plan**
First point (fix or latitude/longitude) into FIR/Airspace	LUMPO	**Mandatory**	
Time at FIR entry point (UTC)	0520 or 05:20	**Mandatory**	
Flight Level at FIR entry point	300	**Mandatory**	
Additional fix/time/flight-level combinations that the monitoring organization judges are necessary to capture the traffic movement characteristics of the airspace		**Mandatory**	
Exit point (fix or latitude/longitude) at FIR Boundary	ULTEM	**Mandatory**	
Time at FIR exit point (UTC)	0700 or 07:00	**Mandatory**	
Flight Level at FIR exit point	300		

Appendix N

SAT DMO actions on SAT Upcoming meetings

PRESENTED BY:
SAT DMO

Presentation Outline

1. Update on SAT Handbook
2. SAT DOC 002
3. Proposal for SAT documentation webpage
4. Q&A

Objective

- Ensure Consistency and Accountability in SAT Documentation and Processes

SAT Handbook inconsistencies

- Duplications and typos were identified;
- Create a list of acronyms and abbreviations;
- Establish roles and responsibilities for the SAT Groups Vice-Chairman;
- Election periods are inconsistent (3 and 4 years);
- Be more specific about SAT Observers;
- Discussion papers to be added in the list of papers;

SAT Handbook inconsistencies - RMAs

- Establish the supporting role of RMAs to SAT, mainly supporting the safety oversight activities; and
- Review and update the SAT RMAs' Terms of Reference to better align their roles with their PIRGs and support the role in the SAT.

SAT Handbook inconsistencies – Project Team

- Revise Project Team Guidelines by defining clear mechanisms for project team accountability and ensuring SAT-SG endorses the establishment of project teams; and
- Allow the project team leader to assess the number of SMEs required to perform the PT tasks.

Revision Schedule for SAT Documentation

- Establish regular review cycle SAT DOC 002;
- SAT OPS - SAT DMO proposes the creation of a project team to develop the SAT OPS related to CPDLC logon issues (DAKAR/ACCRA) - (paper);
- Discuss the integration of SAT OESB and SAT OPS bulletins; and
- Consider a schedule for revising the upcoming SAT Bulletins.

Revision Schedule for SAT Dcoumentation

- **Standardized Procedures:** A regular review cycle ensures that all SAT documentation is uniformly updated. This helps in maintaining a standardized approach to airspace management, reporting, and safety assessments.
- **Optimized Search:** A centralized homepage allows users to search across all documents more effectively, leading to faster access to the needed information.

Proposal for SAT documentation page

Create a dedicated page for SAT documents, such as SAT DOC 002 and the SAT OESB Bulletin, similar to the NAT on the ICAO EUR/NAT page.

- Host it on an ICAO Regional office webpage and provide links to other SAT ICAO Regional Offices for posting online.

This action will be trigged through a paper presented at SAT SG/02.

Proposal for SAT documentation page

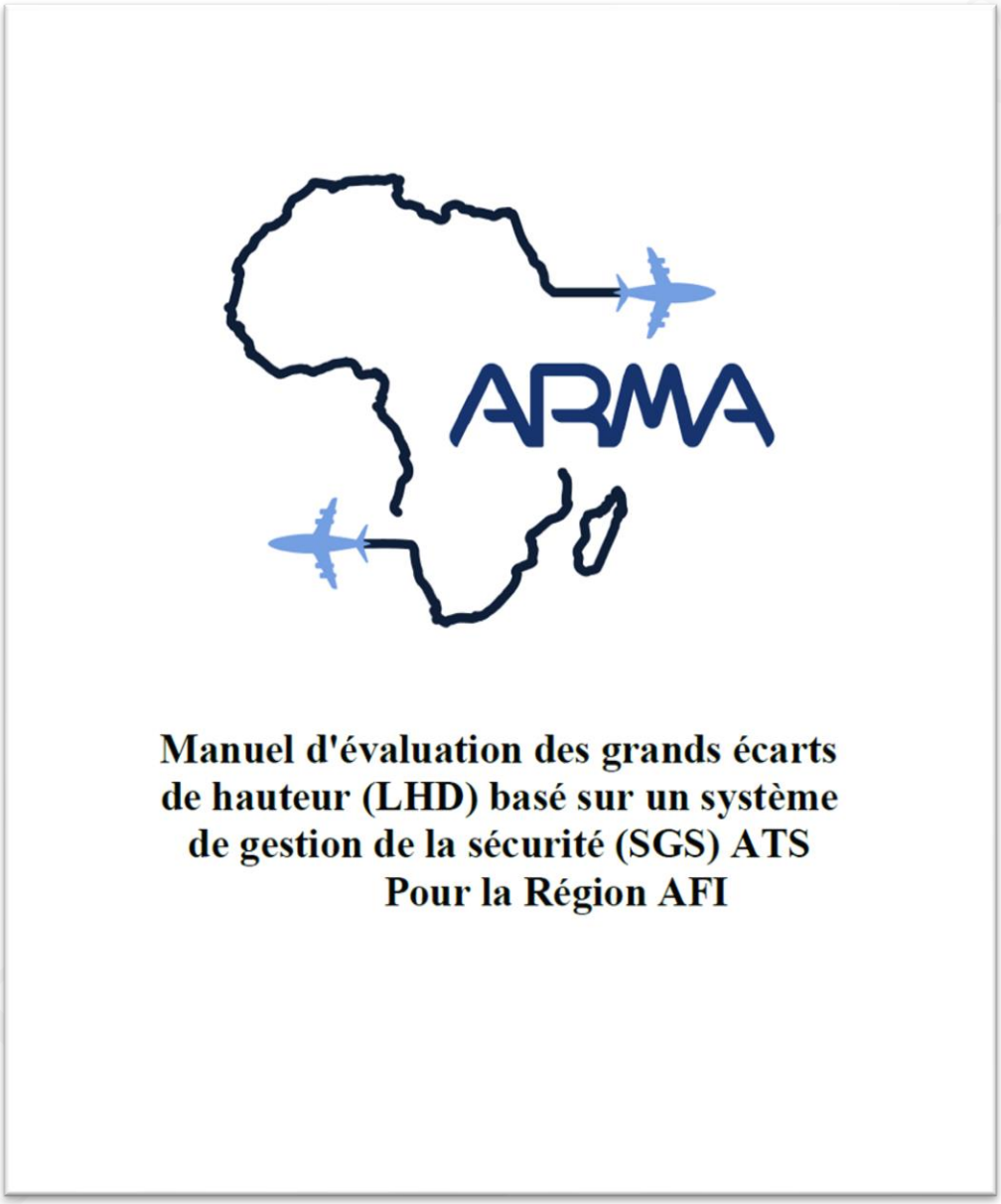
- **Centralized Updates:** Maintaining documentation in one place makes it easier to ensure that all documents are up-to-date. You can ensure that outdated versions are removed or archived, reducing confusion and ensuring users access the latest versions.
- **Change Tracking:** With a centralized homepage, changes or updates can be better managed and documented. This promotes visibility into the documentation and processes, fostering a culture of transparency and trust within the organization.

This action will be trigged through a paper presented at SAT SG/02.

Appendix O

Manuel d'évaluation des grands écarts de hauteur (LHD) basé sur un système de gestion de la sécurité (SGS) ATS Pour la Région AFI

(SEPARATE FILE)



Appendix P

VERTICAL COLLISION RISK IN THE EUR/SAM CORRIDOR, COVERED BY CARSAMMA

CALCULATION OF VERTICAL COLLISION RISK IN THE EUR/SAM CORRIDOR IN 2023 USING THE CRM METHODOLOGY.

1 Introduction

1.1 CARSAMMA, as the CAR-SAM Regional Monitoring Agency, is responsible for carrying out the necessary studies and evaluations to analyze the risk of vertical collision in the part of the EUR/SAM corridor monitored by CARSAMMA.

1.2 This document reports the vertical collision risk analysis in RVSM airspace in 2023 in the part of the EUR/SAM corridor monitored by CARSAMMA.

2 Analysis

2.1 Per Doc. 9574 and Doc. 9937, the assessment should ensure that operations within RVSM airspace do not increase the risk of vertical collision to the extent that the total vertical risk does not exceed the defined safety objectives.

2.2 The Reich Vertical Collision Risk Model is used for the quantitative assessment, as recommended by ICAO. After analyzing aircraft movements - using spreadsheets containing data on flights carried out in RVSM airspace-, this model, with its solid mathematical foundations, calculates the safety level of the part of the EUR/SAM corridor monitored by CARSAMMA. Various calculation tools and databases are used for the various calculations during the process, as well as several hours of analysis by CARSAMMA experts.

2.3 The RVSM safety assessment covers twelve consecutive months.

2.4 Tools for safety assessment:

- ICAO Collision Risk Methodology;
- ICAO Doc 9574 is used to develop the global system Performance Specification, with the specification and performance requirements for aircraft altitude maintenance;
- All aircraft operating in airspace with reduced minimum vertical separation must be RVSM certified;
- The RVSM certification of the aircraft is current;
- The tolerable safety level (TLS) of 5×10^{-9} fatal accidents per flight hour (in a representative sample of aircraft) continues to be met;
- There is evidence of stability of the aircraft altimetry system (ASE) error;
- The introduction of RVSM does not increase the level of risk due to operational errors and flight contingencies, in accordance with a predefined level of statistical confidence;
- Additional effective safety measures are taken to reduce the risk of vertical collision and meet safety goals due to operational errors and contingency procedures; and
- Air traffic control procedures continue to be effective.

2.5 The risk model was adapted to take into account:

- Technical risk of the aircraft on the same airway and the intersection airways; and
- The effect of LHDs on system risk.

3. Location of the area for risk assessment

3.1 The vertical collision risks in the RVSM airspace of the EUR/SAM corridor monitored by CARSAMMA were evaluated for the studied area. This part of the corridor comprises part of the corridor that belongs to the Atlantic FIR, plus the part of the corridor that enters the Recife FIR, bordered by the continent. Thus, the area includes sections of the following airways: UM799, UZ5, UZ51, UN741, UN866, UN873, UB623, UN857, UM661, UL375, UL695, UM791.

Figure 1 - EUR/SAM corridor monitored by CARSAMMA

3.2 Data Traffic Collection - The sample used to evaluate the pass frequency and physical and dynamic parameters of typical aircraft to assess the risk of vertical collision, was collected between December 01 and 31, 2023. In these movement data, in terms of flight hours of the samples collected, 2,916 flight lines were used with 203,257.83 hours of duration of the part of the EUR/SAM corridor monitored by CARSAMMA.

3.3 Regarding the occurrence of LHDs, we collected a total of 3 LHDs in 2023. CARSAMMA received 2 LHDs of this total by ACC-AO and collected 1 LHD from WP 5.3 presented by SATMA at the SAT SOG/03 meeting.

3.4 The following table describes the distribution of LHD per month:

Month	Code	# LHD	Duration (min)	Crossed Levels
March	E1	1	-	2
July	E2	1	1	0
September	M	1	10	2
Total	-	**3**	**11**	**4**

Table 1 - Monthly LHD

3.5 A brief description of the LHDs analyzed by CARSAMMA is as follow:

- In the LHD code M, the TAP084 transit was registered and had requested to go up to level 390 through the CPDLC system. The sector ATCO after analyzing the transits in the area, authorized that transit to climb to level 390, but the one that climbed was TAP075 which was in another sector of the corridor at that time, 105NM NE of the VOR FLZ.
- In the LHD code E2, there was a lack of coordination, and the ACC DAKAR did not coordinate the transit of BAW247 (EGLL/SBGR) with the ACC ATLANTICO.
- In the LHD code E1, ACC DAKAR notified SATMA about an AIR EUROPA (SBSV/LEMD) transit at the TASIL position. This LHD was collected from WP 5.3 (SAT SOG/03, submitted by SATMA) and classified by CARSAMMA as code E1 (poor coordination) because there were no additional details about the occurrence at the WP.

4. Aircraft movement data collection

4.1 Sample data to estimate pass frequency and physical parameters, and the dynamics of a typical aircraft for vertical collision risk assessment were collected from December 1st to December 31rd, 2023.

4.2 Upon receiving the aircraft movement, CARSAMMA proceeded to filter and process the data. **Table 2** shows one of these products and list the types of aircraft that flew through the part of the EUR/SAM corridor monitored by CARSAMMA, with their dimensions and percentage of flight numbers, including a typical aircraft, used as one of the dimension parameters of the vertical collision risk calculation model.

ACFT Type (Top 20)	Lenght λx	Wingspan λy	Height λz	Flights	% de Flights
A339	0.034341	0.032559	0.009098	511	17.52%
B789	0.034017	0.034017	0.009179	432	14.81%
B77W	0.034395	0.034989	0.010043	385	13.20%
A332	0.031749	0.032559	0.009395	383	13.13%
A359	0.036123	0.034557	0.009125	285	9.77%
A333	0.034341	0.032559	0.009098	139	4.77%
B772	0.034395	0.032883	0.009989	124	4.25%
B788	0.030778	0.032397	0.009179	122	4.18%
A21N	0.024033	0.018413	0.006350	109	3.74%
B748	0.038153	0.034795	0.010481	70	2.40%
A35K	0.039957	0.034557	0.009179	51	1.75%
B77L	0.034395	0.034989	0.010043	37	1.27%

Table 2 – The Top 20 aircraft that flew in the EUR/SAM corridor monitored by CARSAMMA.
(Dimension measurements are expressed in nautical miles)

ACFT Type (Top 20)	Lenght λx	Wingspan λy	Height λz	Flights	% de Flights
B744	0.038175	0.034773	0.010475	35	1.20%
B763	0.029644	0.025702	0.007559	33	1.13%
A343	0.034341	0.032559	0.009098	30	1.03%
GLEX	0.016360	0.015388	0.004087	19	0.65%
GLF5	0.015869	0.015388	0.004249	15	0.51%
GLF6	0.015869	0.015388	0.004249	13	0.45%
CL60	0.011258	0.010588	0.003402	11	0.38%
B38M	0.021312	0.019395	0.006641	10	0.34%
Typical acft	**0.033323**	**0.032428**	**0.009154**	**2814**	**96.50%**

5. Vertical Collision Risk Assessment (CRA)

5.1 This section analyzes the results of the RVSM airspace vertical collision risk estimation in the relevant part of the EUR/SAM corridor for CARSAMMA.

5.2 The internationally accepted vertical Collision Risk Model (CRM) has been used for the safety assessment of RVSM airspace in the part of the EUR/SAM corridor monitored by CARSAMMA.

Figure 2 – General formula of the REICH Vertical Collision Risk Model

$$N_{ax} = 2P_y(0)P_z(0)\left(\frac{\overline{|\dot{x}(m)|}}{2\lambda_x} + \frac{\overline{|\dot{y}_0|}}{2\lambda_y} + \frac{\overline{|\dot{z}_0|}}{2\lambda_z}\right)\frac{2\lambda_x}{\overline{|\dot{x}(m)|}}\frac{1}{T}\sum_s E(s)Q(s)$$

5.3 The source material and quantity used to estimate the values of each parameter of the internationally accepted vertical CRM used to evaluate the safety of RVSM airspace are summarized in **Table 3**.

Description	Value
Longitudinal window to calculate occupancy (Sx)	103.5
Probability of lateral overlap (Py (0))	0.096
Passing Frequency in the opposite direction (Nx(opp))	0.006039
Passing Frequency in the same direction (Nx(same))	0.003982
Crossing Frequency (Nxy(cross))	0.000163
Average lenght of the aircraft sample (λx)	0.033323 Nm
Average wingspan of the aircraft sample (λy)	0.032428 Nm
Average height of the aircraft sample (λz)	0.009154 Nm
Relative speed of the same direction of the aircraft sample – module (|ΔV|)	30.6116 kt
Average speed of the aircraft sample – module (|V|)	414.147 kt

Average relative speed of the aircraft at na airway intersection (|y|)	13 kt
Average relative vertical speed of the aircraft during loss of vertical separation (|z|)	1.5 kt
Flight hours	**203,257.83 h**

Table 3 - CRA Parameter Estimates

5.4 Demonstration of the technical feasibility of RVSM in the EUR/SAM corridor:
- Pass frequency **Nx**;
- Probability of lateral overlap **Py (0);** and
- Vertical overlap probability **Pz (1000).**

The following objectives were established to demonstrate this:
- Build confidence in technical TLS compliance; and
- Certify the stability of the ASE.

5.4.1 Pass frequency, **Nx** - This is the airspace parameter in which the aircraft is exposed to risk. The equivalent pass frequency was estimated considering two aircraft flying in the same and opposite directions, as shown in **Table 4**.

Pass Frequency	Same Direction	Opposite Direction	Equivalent	Flight Hours
	0.003982	**0.006039**	**0.0101466**	**203,257.83**

Table 4 – Pass Frequency

5.4.2 The values relate to the CAR/SAM airspace system. It should be noted that the equivalent passage frequency shown in Table 4 (**0.0101466**) has been calculated based on the flight hours of the part of the EUR/SAM corridor monitored by CARSAMMA.

5.4.3 The estimated value of **Pz (1000)** used in our calculations was **2.46×10^{-8}**.

5.4.4 **Table 5** contains the sets of physical and dynamic parameters estimated in the risk profile and the monitoring of the main parameters for EUR/SAM corridor.

EUR/SAM corridor	Ez (same)	ΔV (same)	Ez (opp)	ΔV (opp)	Ez (cross)	V
	0.026938	**30.6116 kt**	**0.00151**	**886.719 kt**	**0.097024**	**414.147 kt**

Table 5 – Physical and dynamic parameters

6. Conclusions from the Vertical Collision Risk Assessment (CRA)

6.1 Collision Risk - Figure 3 shows the vertical collision risks calculated for the part of the EUR/SAM corridor monitored by CARSAMMA during 2023.

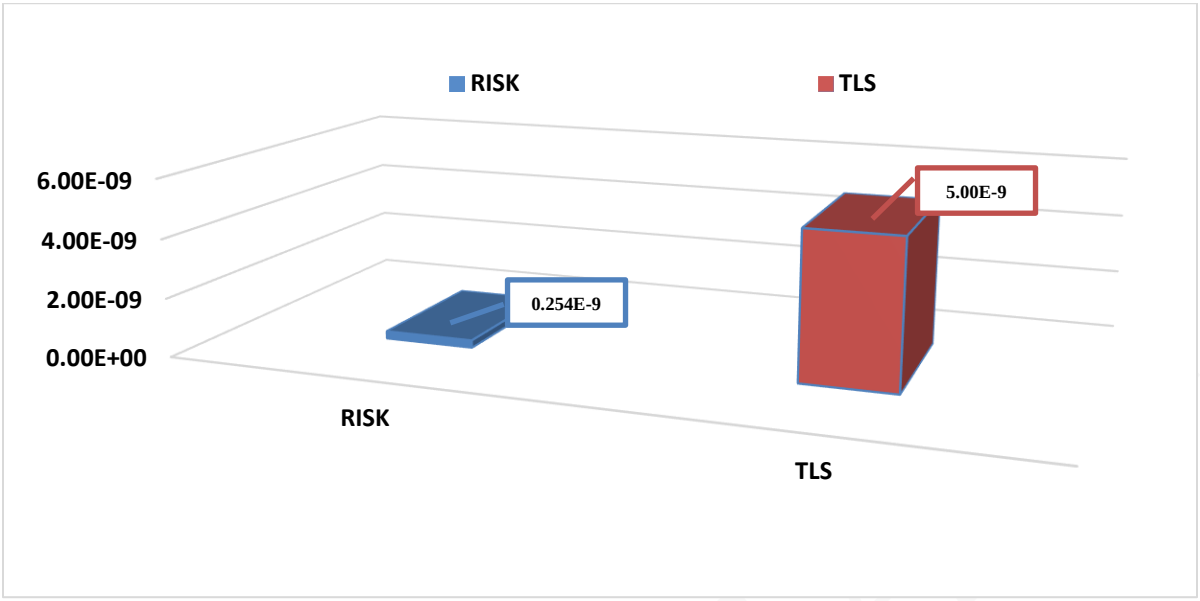


Figure 3 - Vertical Collision Risk

6.2 The technical error of the EUR/SAM corridor monitored by CARSAMMA meets the objective that it should not exceed 2.5 x 10^{-9} fatal accidents per flight hour due to loss of the standard vertical separation of 1000 feet and all other causes.

- Operational risk does not have a predetermined limit according to ICAO Doc 9574.
- In the case of the part of the EUR/SAM corridor monitored by CARSAMMA, the estimated risk is 0.254 x 10^{-9} below the TLS, which is 5.0 x 10^{-9}.
-

EUR/SAM corridor – Estimated Flight Hours = 203,257.83 hours			
Source of Risk	**Estimated Risk**	**TLS**	**Observation**
Technical Error	**0.032 x 10^{-9}**	**2.5 x 10^{-9}**	**Below**
Operational Error	**1.073 x 10^{-9}**	**-**	**-**
Risk	**0.254 x 10^{-9}**	**5.0 x 10^{-9}**	**Below**

Table 6 – EUR/SAM CRA
Fdix p

>>>>>>>>>>>>>>>>>>>>>>>>