



SUMMARY OF DISCUSSIONS OF THE SOUTH ATLANTIC SAFETY OVERSIGHT GROUP - THIRD MEETING (SAT SOG/03)

(Sao Paulo, Brazil, 15 to 19 April 2024)

0. Introduction

0.1 The Third Meeting of the South Atlantic Safety Oversight Group (SAT SOG/03) was held from 15 to 19 April 2024, in Sao Paulo, Brazil, to continue the safety optimization activities, within the scope of the ATS Continuous Improvement Group on the South Atlantic (SAT). The event was supported by DECEA - Brazil and backed by GOL Airlines. Mr. Luiz Antonio chaired the meeting with the support of Mr. Jorge de Avila and Mrs. Virginia Mignoni. The Secretariat was conducted by Mr. Fernando Hermoza, ATM/SAR Regional Officer, ICAO SAM Office.

0.2 Mr. Antonio welcomed the participants and stressed the importance of enhancing safety in the SAT airspace. The virtual participation via Microsoft Teams of SAT Implementation Management Group (IMG) and SAT Steering Group (SG) Secretariat, Mr. Sven Halle and Mr. Serge Tchanda, ATM Officers from Paris and Dakar ICAO Offices, was acknowledged. As well, the virtual participation of ATM/SAR Officers, Keziah Ogutu and Colin Bryant, from ESAF Office.

0.3 The lists of participants and meeting documentation are provided in **Appendix A** and **Appendix B** respectively. The list of appendices to this summary is shown in **Appendix C**. The Action item list is provided in **Appendix D**, as well the SAT SOG Decisions list in **Appendix E**.

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 Group adopted the following agenda and agreed on the proposed work schedule:

Agenda Item 1: Opening and review of developments

- a) Adoption of the Agenda
- b) Review of SAT SOG action item list and Decisions. Follow up.

Agenda Item 2: Coordination between SAT bodies

- a) Review of the outcomes of the SAT SG/01 meeting
- b) Review of the outcomes of the SAT IMG/03 meeting
- c) General coordination (SAT bodies, States, Organizations, Industry, ANSPs)

Agenda Item 3: SAT SOG working plan

- a) SAT SOG working plan 2024-2025
- b) SAT SOG communication plan

Agenda Item 4: SAT SOG's Project teams updates

- a) SAT RMA HS PT updates
- b) SAT OESB PT updates
- c) SAT ASR PT updates
- d) Other PTs reports (*Studies for scrutiny activities were addressed under this item*)

Agenda Item 5: Collision risk assessment (CRA) and LHD

- a) RMAs activities on height monitoring.
- b) Mitigation of LHD. Related states ANSPs programs.

Agenda Item 6: SAT Traffic statistics

- a) SAT Traffic statistics

Agenda Item 7: Any other business

- a) Future work programme and follow-up actions. Next meetings
- b) Report to the next SAT SG/02 meeting.

1. Review of developments

1.b	Review of SAT SOG action item list and Decisions. Follow up. (WP 1.2)
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1.1 The SAT SOG/02 meeting was held virtually, via MS TEAMS, from 20 to 22 November 2023. The meeting SoD is available in the ICAO secure Portal.

1.2 During the SAT SOG/02, 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 errors. 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.

1.3 Consequently, the 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**.

2. Coordination between SAT bodies

2. a	Review of the outcomes of the SAT SG/01 meeting (WP 2.1)
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2.1 The SAT SG/01 meeting was held virtually on 4th December 2023, from 1100 UTC to 1600 UTC. The role of the SAT Steering Group is to ensure a continuous, coherent, and harmonised implementation of the air navigation system in the South Atlantic.

2.2 The SAT SG/01 made an overall appraisal of the summary of discussions of the SAT IMG 01 and SAT IMG 02 meetings, as well, SAT SOG/01 and SAT SOG/02, analysing their actions and decisions. The meeting

commended the contributory bodies for the work done and, therefore, formulated the following decisions endorsing the work of the SOG;

SAT-SG/01 DEC03: Outcomes of SAT SOG 01 & 02

That,

the SAT SOG 01 summary of discussions, the briefs from SAT SOG 02, together with the action items and decisions are endorsed.

2.3 A number of actions items and decisions/conclusions were also approved by the SAT SG/01, in order to adopt the SAT Safety Policy, deliverables, identify required studies and to align the working plans and activities.

2.4 Consequently, the SAT SOG/03 meeting reviewed the status of mentioned action items and decisions/conclusions, with special focus on those related to the SAT SOG responsibilities.

2.b	Review of the outcomes of the SAT IMG/03 meeting (WP2.2, WP 2.3)
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2.5 The SAT IMG/03 meeting was organised, thanks to the kind invitation of the Portuguese Air Navigation Service Provider (NAV Portugal), from 5 to 8 February in Santa Maria (Azores), Portugal. The complete SAT IMG meetings documentation and summaries are available on the ICAO Secure Portal.

2.6 The SAT IMG discussed the Performance Based Communication and Surveillance (PBCS) implementation Project Team tasks and started the work on a seamless airspace data table (information on capabilities of the oceanic FIRs or portions of oceanic airspace for all States within the South Atlantic area) which will be used as a baseline for a SAT service development roadmap. The meeting reviewed the IATA's SAT Operational Strategy Document and analysed the data and related information for = changing the ATS route UN866 to a bi-directional ATS Route within the EUR/SAM (Europe to/from South America) corridor.

SAT Contingency Plan – SAT Doc 002

2.7 The draft SAT Doc 002 was presented to the SAT IMG/03 meeting for final discussion, and the SAT IMG endorsed the first edition of the SAT Contingency Plan with Decision SAT IMG/03-7. The SAT Doc 002 has also been promulgated by the ICAO State Letter to all SAT members and involved stakeholders.

2.8 The SAT Contingency Plan Review (CPR) Project Team based the SAT Doc 002 development on the SAT/24 meeting WP 20, which was an initial draft of the ATM contingency plan in the SAT area, following the outcomes from the Atlantic Coordination Meetings in 2018 and 2020, and the AFI Regional ATM contingency plan.

2.9 The baseline document was completely rewritten with actual information from national AIPs, and the structure of the document now includes detailed information on contingency arrangements for flights inside the EUR-SAM corridor, for flights in the AORRA airspace, for flights in the SAT area outside of the EUR-SAM corridor and for flights in specific FIR-to-FIR interface areas.

2.10 The document also includes reference links to national contingency plans, an updated contact list for each State and stakeholder in the SAT area and two NOTAM templates that can be used in a contingency scenario. The final consultation within the PT took place from 12 to 19 January 2024 and comments were received from Angola, Brazil, French Guiana, Ghana, Spain and IATA. All of them were incorporated into the version which is now proposed for endorsement.

2.11 Finally, it was highlighted that the SAT Doc 002 will be a living document and that the SAT IMG will be updated on a regular basis. The maintenance of the SAT Doc 002 will be done in close cooperation with the established SAT DMO – Document Management Office coordinated by Brazil.

2.12 During the SAT SOG/03 meeting, the SAT IMG Secretariat instructed the process to receive contributions and data clarifications for the SAT Doc 002 until mid-September 2024.

2.c	General coordination - SAT bodies, States, Organizations, Industry, ANSPs (WP 2.4, WP 2.5, WP 2.6)
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Safety Reporting Challenges in the SAT Region

2.13 The SAT SOG/03 meeting recognized the importance of regional safety reporting to support enhancing safety management within the SAT region. The identified key points are:

Scarcity of Safety Reports and Reporting Quality Concerns:

- a) SAT SOG acknowledges concerns raised by stakeholders, including Regional Monitoring Agencies (RMAs), about the limited availability of safety reports and perceived deficiencies in reporting quality.
- b) These issues hinder the identification of safety trends and hazards, impacting the implementation of preventive measures.

Fostering a Safety Reporting Culture:

- a) SAT SOG emphasizes the need to foster a culture of safety reporting.
- b) Stakeholders' active participation contributes to continuous safety improvement in airspace operations.
- c) Effective safety reporting builds trust and transparency among aviation community members, including airspace users, Air Navigation Service Providers (ANSPs), Civil Aviation Authorities (CAAs), and associations.

Integrating Safety Reporting into the SAT Oceanic Error Safety Bulletin (OESB):

- a) SAT SOG proposes integrating safety reporting topics into the SAT OESB.
- b) This approach encourages proactive reporting practices and facilitates sharing the safety information among SAT states and stakeholders.

Coordinated Campaign with IATA:

- a) SAT SOG plans a joint campaign with the International Air Transport Association (IATA) to raise awareness among SAT state members about safety reporting.
- b) Leveraging IATA's global reach and expertise, the campaign aims to promote best practices in reporting and data sharing.

2.14 Consequently, the meeting remarked that effective safety reporting is crucial for maintaining and enhancing safety management in the SAT area. The SAT SOG remains committed to fostering a safety reporting culture among SAT state members. The meeting agreed on the following action:

(Action 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.

PBCS framework in Brazil

2.15 Brazil informed that, within DECEA's SIRIUS Program, a strategic initiative has been launched to develop and coordinate the implementation of the Performance-Based Communication and Surveillance concept (PBCS) as Doc 9869 and Doc 10063 refers.

2.16 Brazil described the activities achieved from 2022 until now. The meeting took note that the PBCS Brazil project is a crucial component of an inter-regional strategy, especially within the context of PBCS in the EUR/SAM airways corridor. The importance of a PBCS regional monitoring program for data compilation and management, focusing on reporting and filtering underperforming aircraft, in agreement with the 3 RMAs of the SAT area, was highlighted.

2.17 The meeting took note of the information and commended the Brazilian initiative. Additionally, it was remarked that, during the SAT IMG/02, the SAT PBCS Implementation Support Project Team (PBCS IS PT) was launched in order to develop a combined implementation plan, task list and timelines/action items, which will support the harmonized implementation of PBCS and the use of the related PANS-ATM separation minima in the South Atlantic. Section 3 included the SATMA report related to the said project team, and the action item agreed by the meeting.

Search and Rescue cooperation and coordination in Angola

2.18 The meeting was informed that Angola has planned to sign the SAR MoU with the neighboring FIRs, which will strengthen the international SAR cooperation and coordination as the agreement includes protocols for cross-border SAR operations and participation in regional and international SAR initiatives to enhance response capabilities. Angola invited SAT states, organizations and delegates to participate in the Interregional SAR Workshop planned to take place in Luanda – Angola, from 17 to 21 June 2024. The meeting commended the efforts of Angola for the improvement of SAR services.

3. SAT SOG working plan**3.a SAT SOG working programme 2024 - 2025 (WP 3.1)**

3.1 The SAT SOG's working programme was approved for the period 2024-2025, as presented in **Appendix F**. 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.

3.2 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.

3.3 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. .

3.b SAT SOG communication plan 2024 - 2025 (WP 3.2)

Enhancing Stakeholder Engagement for SME Designation in SAT SOG Project Teams

3.4 The meeting took note that SAT SOG project teams' activities are facing challenges regarding designation of subject matter experts (SMEs) by states, despite regional efforts to nominate and confirm experts, stakeholders' response to participate in project team activities has been limited. . This lack of SME participation poses a obstacle to the progress of safety initiatives and constrains project teams' ability to fulfil their mandates effectively.

3.5 The meeting recognized that several factors could impede SMEs designation beyond stakeholder engagement for SAT SOG project teams. Addressing these factors requires a comprehensive approach that involves stakeholder engagement, capacity building, resource allocation, and incentivization strategies. By understanding and mitigating these challenges, SAT SOG can enhance SME designation and foster greater collaboration and effectiveness in safety oversight initiatives.

3.6 The Meeting identified some initiatives to facilitate the indication of SMEs, and agreed on the following action:

(Action SOG03-02)

- a) Meeting participants were asked to complete the fields in 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.

4. SAT SOG's Project teams updates

4.a SAT RMA HS PT updates (WP4.1, WP 4.2, WP 4.3, WP 4.4)

SAT RMA HS PT report to the SOG

4.1 The SAT SOG Regional Monitoring Agency Harmonization/Standardization Project Team (SAT SOG RMA H/S PT) was established in March 2023 to focus on the following objectives and principles:

- i. **Conduct** a feasibility study consisting of a detailed analysis of the current state of data collection, processing, and dissemination among the three RMAs. Analyze factors such as data consistency, efficiency, resource availability, and training requirements.
- ii. **Identify** differences in the current processes employed by SAT RMAs and propose solutions to harmonize and standardize procedures where needed.
- iii. **Assess** the feasibility of implementing a centralized SAT RMA database for the collection of LHDs, LLDs, and LLEs.
- iv. **Adopt** a standardized collision risk assessment methodology to ensure consistent and accurate risk assessment in the SAT Region.
- v. **Provide** input to determine SAT geographical area from a safety assessment perspective.

4.2 Considering the above objectives, the Project Team anticipates that the following deliverables will be produced (shown in **Table 1**). Significant milestones and estimated target dates for completion of each deliverable aligned with each delimitation phase are shown below 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)	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 Region (ref. SAT/SOG/1-WP/2.80, Action SOG01-05)	30 May 2024	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)	30 Sep 2024	
5	Standardized collision risk assessment methodology (ref. SAT/SOG/1-WP/5.7)	30 May 2024	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	First draft complete
7	Data field and format requirements for developing a centralized SAT RMA database for collection of LHDs, LLDs, LLEs		In Progress

Table 1. SAT SOG RMA HSPT Anticipated Deliverables

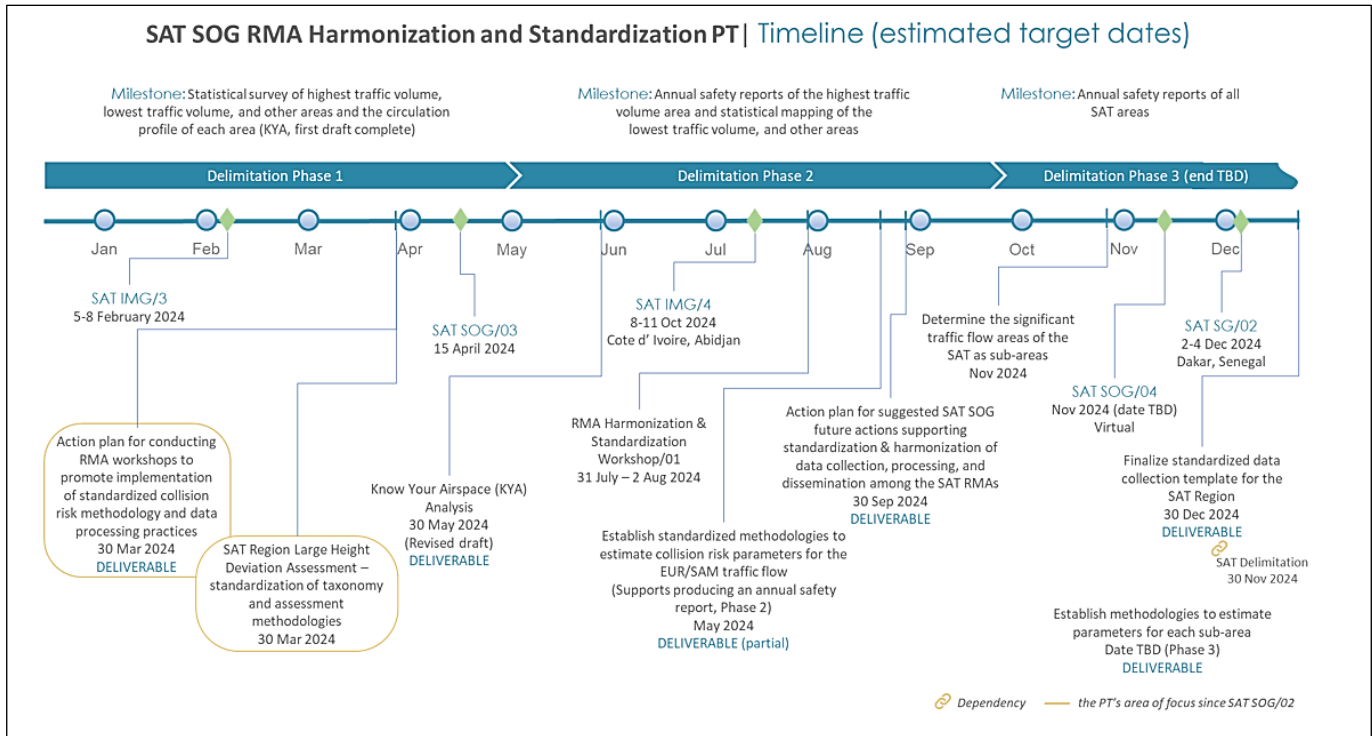


Figure 1. SAT SOG RMA HS PT Timeline

SAT-Specific Traffic Sample Data (TSD) Collection Template

4.3 The RMA HSPT initiated the development of the SAT-specific TSD template by employing a multi-step process. The first step entailed an initial review to determine the source of the TSD data files (standardization), the frequency with which the data files were submitted, acquire a high-level determination of the highest traffic volume areas, and determine the feasibility of:

- developing a unified SAT Region TSD file;
- developing harmonized collision risk assessment parameter estimations; and
- establishing harmonized risk assessment methodologies.

4.4 Given the outcomes of the initial TSD review, the Project Team developed an initial draft SAT Region specific TSD collection template. The purpose of this template is to ensure data field and format consistency among SAT RMAs, ensure that the data fields necessary for conducting airspace operational and safety assessments are captured, and support developing a unified SAT TSD. The SAT Region specific TSD collection template is shown in **Figure 2**. The fields highlighted in “orange” are specific to the SAT Region. The SAT States provide the RMA with TSD using the RMA collection template. The SAT RMAs process the received TSD into the template format.

4.5 The template presented to SAT SOG/02 was representative of an initial concept; however, moving forward, the finalization of the template is dependent on the availability and types of data provided to the RMAs.

DATE	CALL SIGN	ITEM 10 OF THE FLIGHT PLAN	SUR/ TAG IN ITEM 18 OF THE FLIGHT PLAN	AIRCRAFT TYPE	ORIGIN AERODROME	DESTINATION AERODROME	FIR ENTRY TIME	FIR ENTRY FL	ENTRY FIX or LAT/LONG	ENTRY AIRWAY (if applicable)	TRAFFIC FLOW DESIGNATOR	TOTAL FLY TIME (HOURS)	EUR/SAM FLY TIME	AORRA FLY TIME

Figure 1. SAT Region specific TSD collection template

4.6 Furthermore, the outcomes of the SAT delineation will also affect the design of the template. For example, applicable to a State whose FIR expands across continental and oceanic airspace, the ability to separate data (continental from oceanic operations) could affect the template design. Once the SAT delimitation is complete, a more specific SAT Region TSD template will be developed.

4.7 During RMA HSPT discussions, it was highlighted that the methods by which TSD templates are designed and populated vary by ICAO Region. The variations are attributed to geographic and airspace features. For example, in the NAT, statistics are accumulated and calculated by FIR. Parameters, such as occupancy, are averaged across FIRs. Using the NAT format as guidance, the SAT-specific template will likely consider elements as shown in **Figures 3 and 4**.

Reporting of Oceanic Flights data by Oceanic Control Area (OCA)						
60 West	50 West	40 West	30 West	20 West	10 West	00 West
						BODO
			Reykjavik			
		Santa Maria				
			Shanwick			
	Gander					
New York (East)						

Figure 2. NAT TSD Format Example - Reporting of Oceanic Flight Data by OCA

	BODO	Reykjavik	Santa Maria	Shanwick	Gender	New York (East)	Example of Data Field Formats (All blank fields separated by a comma in the CSV file)
Gregorian Date							04/01/2013
Julian Day							13001
Year							2013
Flight Reg#							N815NW
Class ¹							C
Direction							E
Track ²							RI
Type							A333
Equipment							SWXRGIDE2E3FHJ3J5M1YZ/LB1
Speed POE							800
From							KJFK
To							EHAM
POE Fix Desc ³							DENDU
POE Time							0:03:00
POE Flight Level							3300
60W Latitude							
60W Time							
60W Flight Level							
50W Latitude							5100
50W Time							0:13:00
50W Flight Level							33000
40W Latitude							5300
40W Time							0:58:00
40W Flight Level							33000
30W Latitude							5500
30W Time							1:38:00
30W Flight Level							33000
20W Latitude							5600
20W Time							2:16:00
20W Flight Level							33000
10W Latitude							
10W Time							
10W Flight Level							
00W Latitude							
00W Time							
00W Flight Level							
POX Fix Desc ³							PIKIL
POX Time							2:34:00
POX Flight Level							33000
OCAPOE Latitude							5300
OCAPOE Longitude							5000
OCAPOE Time							0:58:00
OCAPOE Flight Level							33000
OCAPOX Latitude							5500
OCAPOX Longitude							3000
OCAPOX Time							1:38:00
OCAPOX Flight Level							33000
POE = Point of Entry (Ocean Entry) POX = Point of Exit (Ocean Exit) OCAPOE = Oceanic Control Area (OCA) Point of Entry OCAPOX = Oceanic Control Area (OCA) Point of Exit ¹ Civil or Military flight ² Published track ID or Random North (RN), Random (RS) or (RI) - Oceanic flight not within published track times. ³ Format if fix description not available ex. 4900N02000W = Introduced in Jan 2018 for the collection of 2017 data.							

Figure 3. NAT Example - TSD Fields and Formats

4.8 The RMA HSPT will continue to modify the TSD template as necessary and aim to produce a finalized version following the completion of the SAT Region delineation. It should be noted that the purpose of the template is to consolidate traffic samples provided by States, which will be used by RMAs. States and ANSPs should use the standardized TSD template that is used everywhere.

Next Steps for Continuation of the Know Your Airspace (KYA) Assessment for the SAT Region

4.9 A key step to supporting the delimitation of the SAT Region is conducting a detailed examination of the operational structure and use of the airspace in which the delimitation is planned to take place, otherwise known as a “Know Your Airspace” (KYA) analysis. The purpose of the study is to provide analysts and airspace planners involved in the Region with information pertaining to the operators, aircraft, and traffic characteristics observed in the Region.

4.10 The Project Team has initiated work under this initiative and presented the results of an initial assessment during SAT SOG/02. In alignment with SAT Delimitation Phase 1, the work performed to date has been focused on the EURSAM Corridor, the area with the highest traffic volume. It is intended that the KYA will be a “living” document and will be periodically updated to include ongoing assessment of the EURSAM Corridor and other areas of the SAT Region, such as the AORRA airspace and low traffic volume areas.

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

- ✓ (1) Update the general KYA elements, such as traffic flows, airspace usage and operator characteristics, **using December 2023 data** *.

**Note.- The previous version of the KYA was based on December 2022 data. During SAT IMG/02, July was designated as the optimal month for TSD collection for the SAT Region. Since the decision to transition from using July instead of December as the TSD collection month was made during the calendar year 2023 and considering recent SAT RMA feedback, provision of July 2023 data is not likely.*

- ✓ (2) Identify collision risk model parameter values applicable to the EURSAM corridor (e.g., occupancy, speed, and vertical overlap values).
 - Develop traffic density values for significant traffic flows in the EURSAM corridor.
 - Assess LHDs that were observed in the SAT Region during the calendar year 2022 and combine assigned parameter values. Typically, most of the collision risk estimate is attributed to values assigned to LHD events (operational risk).
- ✓ (3) Identify collision risk model parameter values applicable to areas in the SAT Region with lower traffic volumes

4.12 Consequently, the RMA HSPT will continue to produce iterations of the SAT KYA as needed throughout the SAT delimitation process.

Coordination of the SAT-Specific Traffic Sample Data Collection Template with SAT Member States and Applicable Stakeholders

4.13 The SAT SOG/02 meeting reviewed the outcomes of the initial RMA HSPT TSD assessment and supported a recommendation that a standardized SAT Region-specific TSD collection template be developed (Action SOG02-06: States members to develop a specific TSD collection template for SAT)

4.14 It was noted that since the RMA HSPT is currently identifying available TSD data elements, among all SAT FIRs, that will support comprehensive airspace and safety assessments and is responsible for developing a standardized SAT-specific TSD collection template, superseding Action SOG02-06 is recommended further to clarify the expectation and responsibility of member States.

4.15 The meeting agreed on a new action item (see below) that removes the implied burden on SAT member States to develop a TSD collection template and redirects emphasis on modifying their systems as necessary to support the provision of data elements identified by the RMA HSPT as necessary to perform collision risk and airspace assessments.

4.16 Part of the RMA HSPT's responsibilities included developing a TSD collection template is identifying effective methods by which information pertinent to the new template is disseminated to SAT member States and applicable stakeholders.

4.17 Prior to SAT SOG/02, the RMA HSPT performed an assessment of the format and frequency with which data are submitted to and disseminated by SAT RMAs. The assessment outcome revealed that some TSD files submitted to SAT RMAs did not conform to the current template, and, in some cases, the TSD files were not being submitted.

4.18 In view of the above, the following action was agreed:

(Action 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;
 - 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.

Assessment of the Feasibility of Implementing a Centralized SAT RMA Database for Collection of Safety Occurrence Reports and Identifying Standardized Collision Risk Parameter Values Commonly Derived from Safety Occurrence Reports

Consistency of data collection across the three RMAs

4.19 The RMA HS PT conducted an initial data collection survey. The purpose of the survey was to complete an initial assessment of the format and frequency with which data are submitted to and disseminated by RMAs. The results of the survey were presented during SAT SOG/01. A review of the results, specific to safety occurrence reports, is provided in the following sections.

4.20 To assess the feasibility of implementing a centralized SAT RMA database for the collection of safety occurrence reports, LLDs and LLEs were included in the survey. Recognizing that RMA duties are applicable to reduced vertical separation minimum, the intent is to simply determine which tasks are currently being performed and to highlight areas that should be addressed by the SAT SOG if there is an agreement that this responsibility will be designated to RMAs.

Safety Occurrence Report Data delivery

4.21 The SAT RMAs completed a survey addressing data provided by States and were requested to enter “Y” for Yes or “N” for No in the table below to answer the following questions applicable to LHDs, LLDs/LLEs;

- A) Does the State provide data in the format specified by Doc 9937 or Doc 10063?
- B) Does the relevant State provide data to the applicable RMA? (Does the State provide data regardless of frequency?)
- C) Does the relevant State provide data monthly (i.e., on a regular basis)?
- D) Do you have a designated point of contact?

The RMA responses are shown in **Table 2**

Designated RMA	State	LHDs				LLDs/LLEs			
		A	B	C	D	A	B	C	D
ARMA	Ghana	N	N	N	Y	N	N	N	Y
ARMA	South Africa	Y	Y	Y	Y	N	N	N	Y
ARMA	Angola	N	N	N	Y	N	N	N	Y
ARMA	Namibia	N	N	N	Y	N	N	N	Y
CARSAMMA	Brazil	Y	Y	Y	Y	Y	Y	N	Y
CARSAMMA	French Guiana	Y	Y	N	Y	N	N	N	Y
CARSAMMA	Argentina	Y	Y	N	Y	N	N	N	Y
CARSAMMA	Uruguay	Y	Y	N	Y	N	N	N	Y
CARSAMMA	Trinidad & Tobago	Y	Y	Y	Y	N	N	N	Y

Designated RMA	State	LHDs				LLDs/LLEs			
		A	B	C	D	A	B	C	D
SATMA	Spain/ENAIRE	Y	Y	Y	Y	N	N	N	N
SATMA	Senegal/ASECNA	Y	Y	Y	Y	N	N	N	N
SATMA	Cape Verde/ASA	Y	Y	Y	Y	N	N	N	N

Table 2. SAT RMA data standardization survey results – Safety Occurrence Reports

4.22 As evidenced in Table 2, challenges concerning receiving data from some States were revealed. It should be noted that Action SOG02-06 supports the remediation of this issue. Additionally, the development of an infrastructure for collecting LLDs and LLEs will be required.

Safety Occurrence Report Format – LHDs

4.23 Since RMAs are responsible for performing assessments of airspace operations applicable to the vertical dimension within the RVSM flight level stratum, the feasibility assessment will be based on LHD collection practices. It will be the foundation by which the requirements for the centralized database will be developed. In other words, requirements for integrating LLDs and LLEs will build upon this foundation.

4.24 The RMA HS PT performed an assessment of the data fields and formats in which LHD data are recorded. The first step was to review the taxonomy, a letter code assigned to each LHD event that indicates a route cause used by SAT RMAs. Except for a few minor differences, all SAT RMAs use the same taxonomy; therefore, applying standardized LHD taxonomy among SAT RMAs is feasible. A comparison of LHD taxonomy used by SAT RMAs is provided in **Appendix H**. The second step was to review the LHD data fields and formats recorded by SAT RMAs to ensure that the data fields necessary for performing safety assessments and assessing collision risk are captured.

4.25 The LHD data fields recorded by SAT RMAs were compared, and although there were some differences, most of the fields were consistent. The differences were the result of a data field captured by one RMA that was not captured by another RMA. A comparison of the data fields recorded by SAT RMAs is provided in **Appendix I**. Considering the commonalities, it is the RMA HSPT's view that implementing a centralized database is feasible.

Availability of resources and technical expertise

4.26 The survey mentioned in paragraph 4.19 also addressed resource availability and constraints. The intent was to determine which tasks are currently being performed by SAT RMAs and to highlight areas that should be addressed by the SAT SOG. The outcomes of the survey were provided in SAT/SOG/02 Summary of Discussions.

4.27 Resources required to satisfy the duties applied to monitoring operations in the horizontal plane could be grouped into two high-level categories: (1) managing safety occurrence reports (LLDs and LLEs), and (2) performing safety assessments and other applicable duties as specified in ICAO Doc 10063.

4.28 To address (1) and support implementing a centralized database, collection of LLDs and LLEs could be added to an RMA's list of duties and responsibilities. RMAs perform a similar task when receiving records of PBCS approvals, but do not have additional responsibilities related to assessing PBCS operations. This task was added to RMA terms of reference (TORs) by their Regional Planning Groups (PIRGs).

4.29 To address (2), subject matter expertise and resources are required. The RMA HSPT developed an SAT RMA Workshop Action Plan, that addresses an in-depth review of the methodology applied to horizontal plane performance monitoring; however, discussions should continue regarding resource constraints and availability. Furthermore, entities that perform horizontal plane performance monitoring should be endorsed by the appropriate PIRG.

4.30 Noting the outcomes of the preliminary SAT RMA resource assessment and considerations outlined before, the SAT SOG should consider when actions applicable to tasks related to performance-based horizontal monitoring are discussed and continue discussions with SAT RMAs regarding resource availability and requirements. Consequently, the following action was agreed:

(Action 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.

Action Plan for Conducting RMA Workshops

4.31 The RMA HS PT was tasked with developing an action plan and conducting workshops to promote the implementation of standardized data collection and collision risk assessment methodology among the SAT RMAs.

4.32 The workshop agenda will include a review of methodologies and practices used for NAT airspace that can be adopted for SAT airspace. The draft SAT RMA Workshop Action Plan template is attached as **Appendix J** The action plan includes a list of goals and tasks to be accomplished by a series of workshops.

4.33 The PT informed that coordination was held to organize the first Workshop in the NACC Office, Mexico City, between 31 July – 2 August 2024. The Meeting agreed on the following action:

(Action SOG03-05)

ARMA, SATMA, and CARSAMMA give high priority to their participation in the workshop programmed to promote the implementation of standardized data collection and collision risk assessment methodology among the SAT RMAs.

Delineation of the SAT area

4.34 IATA remarked that the exigence for delineation of SAT airspace is to better define the Routes, FIR/UIRs, ACCs, ANSPs, States concerned in the SAT airspace. The activity would:

- a) support administrative delineation of some FIRs for the purposes of data collection and submission to facilitate safety assessment, risk estimation, and metrics harmonization within the SAT; and
- b) provide standardized data to help the RMAs achieve their objectives and deliverables, as well as support comprehensive assessment of the SAT Region

4.35 Consequently, the SAT Steering group approved the following:

SAT-SG/01 DEC05: Delineation of the SAT area*That,*

- a) *The delineation of the SAT area be coordinated between SAT IMG and SAT SOG relevant project teams.*
- b) *The final version of the delineation of the SAT area be submitted to States for endorsement by means of correspondence by 31 October 2024.*

4.36 IATA hosted a meeting on February 26th, 2024, with Brazil, the United States and Boeing/Jeppesen to discuss a suitable methodology for the delineation. This informal meeting identified a strategic-based approach to define the airspace applicable to the SAT Area. It was agreed that a progressive, phased approach should be employed, meeting specific objectives in each phase.

- Phase 1: produce a general definition of the SAT Area, amended by the applicable SAT States, by the end of September 2024. This timeline was set to meet the SAT SG/01 task to submit the delineated SAT Area airspace by 31 October 2024.
- Phase 2: refinements of the SAT Region boundary, such as airspace classifications, could be implemented at a future date.

4.37 Some of the main issues observed by the group included:

- a) Some FIRs contained in the SAT Region extend into continental airspace. It is necessary to delineate the airspace applicable to the SAT Region to separate data necessary for inclusion in the annual safety report for the SAT Region.
- b) The initial delineation need was focused on safety issues; however, it was soon recognized that future implementations and airspace improvements, such as PBCS, will drive the need for delineation.
- c) Delineation will enable the identification of State responsibilities.
- d) Regional supplemental procedures that will be developed for the SAT Region must have an area of applicability. The chart will also be embedded with descriptors such as RVSM and airspace classifications and enabling operators to develop customized charting.

4.38 To meet the goal of establishing a general SAT Region delineation by 2024, the group agreed that SAT delineation should be accomplished by applying a multi-step process. In other words, begin with a simplistic approach and then build upon it. See **Appendix K**.

4.39 In light of the steps identified, the meeting analyzed an action plan applying a multi-step approach to define the SAT area delineation, as shown in Table 3;

#	Action	Target Date Tentative	Notes
1	Develop a generic boundary (12NM offshore) with general coordinates of the SAT Region	30 April 24	Coordinates only
2	Produce a chart depicting the generic boundary (12NM offshore) with general coordinates of the SAT Region	As soon as feasible based on resource availability	Discuss feasibility of producing a chart with Holly and review alternative options/resources if

#	Action	Target Date Tentative	Notes
			necessary
3	Coordinate the generic boundary with the SAT SOG RMA HSPT to support further development of the SAT Know Your Airspace Analysis	Upon completion of action item #1	Supports development of standardized safety and risk analysis metrics
4	Establish a SAT Boundary Project Team	30 April 24	Coordinated through the SAT IMG
5	Convene the first SAT Boundary Project Team	30 June 24	Coordinated through the SAT IMG
6	Develop final State input to defining the SAT boundary	18 Sep 24	This meets the SAT SG action target date; this also is just prior to IMG/4 scheduled for 8 Oct 24
7	Develop a revised set of SAT Region boundary coordinates and chart (if feasible based on resources) to be submitted to the SAT SG.	30 Nov 24	This item should be prepared to be submitted to the SG meeting scheduled for 2 Dec 24

Table 3 . – Action Plan to define the SAT area boundary

4.40 Thus, the Meeting agreed on the following action:

(Action SOG03-06)

Secretariat to support the development of Decision SAT-SG/01 and SAT SOG Decision 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.

4.b SAT OESB PT updates (WP 4.5)

4.41 The kick-off meeting for SAT OESB, initially scheduled for February 2024, was postponed to March 2024 due to low attendance. The kick-off meeting covered various topics, including SAT OESB project tasks, establishing communication channels, and tracing project team members' roles/responsibilities. A folder containing relevant materials, such as NAT OPS Bulletins 2017 revisions (003-007) and project team files, was also provided.

4.42 The meeting also presented the topics currently addressed in the NAT OESB, as follows:

- a) Top Tips for Operators Large Height Deviations
- b) Gross Navigation Errors (GNEs)
- c) Erosion of Longitudinal Separation
- d) Controller Pilot Data Link Communications (CPDLC)
- e) Contingencies
- f) General
- g) Flight Planning
- h) SLOP Strategic Lateral Offset Procedures

4.43 After analyzing the NAT OESB topics, the project team leader proposed, which had received positive feedback from the project team members, that the SAT OESB prototype should include the following topics:

- a) Top Tips for Operators: This topic would be produced by gathering suggestions from pilots indicated as SMEs or observers of this Project team;
- b) Contingencies: Disseminating items from the recently published SAT DOC 002;
- c) General Considerations: Address a culture of safety reporting in the SAT OESB to increase the number of reports and aim to improve its quality;
- d) Strategic Lateral Offset Procedures (SLOP): As outlined in Action SOG01-10, the SAT States and regulators are responsible for promoting and supervising the SLOP within their respective FIR/UIRs. This effort supports safety measures and maintains an optimal Target Level of Safety (TLS) across the South Atlantic airspace. The activities and guidance provided by the OESB PT bulletin will play a crucial role in facilitating the adoption and implementation of SLOP procedures.

4.44 The SAT OESB prototype is scheduled for presentation during SAT SOG/04. Based on discussions from recent SAT SOG and IMG meetings, the project team will evaluate the feasibility of integrating CPDLC and LHD as potential topics into the prototype.

4.45 Thus, the Meeting agreed on the following action:

(Action 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.

4.c SAT ASR PT updates (WP 4.6, WP 4.8, WP 4.9)

SAT ASR PT updates

4.46 The SAT Annual Safety Report (ASR) Project Lead recalled that 2 kick-off meetings between the Civil Aviation Authority of Senegal (ANACIM) and the ATS provider ASECNA concerning ASR development. . The first one, held at the ANACIM head quarter on December 18th, 2023, presented the draft work plan focusing on the assignment to SMEs of tasks contained in the kick-off meeting agenda and an update of the participants list to the project by adding Côte d'Ivoire.

4.47 The second meeting, held in virtual mode on December 28th, 2023, raised questions on safety management concerning Collision Risk Estimate (CRE), Key Performance Indicators (KPI) and scrutiny of safety events. Questions relating to ICAO safety policy were coordinated with the ICAO Secretariat.

4.48 The PT work plan is based on four (4) work packages:

1. Project launch;
2. Safety Performance measurement, KPI and target level of safety identification;
3. SAT ASR prototype drafting; and
4. development of SAT ASR update and revision mechanism.

4.49 The ASR PT lead informed the SOG of the tasks assignment to SME, which was sent previously to the designated expert. However, feedback was not received in time to facilitate discussion on some topics during the SAT SOG/03 meeting. A draft of the plan was analyzed by the Meeting, with improvements to facilitate alignment

with the ASR PT's ToRs, as well as some clarifications to better define requirements and tasks. A new meeting was agreed to review the high-level tasks and the complete Plan.

4.50 Consequently, the Meeting agreed on the following action:

(Action 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.

Development of Key Performance Indicators for the South Atlantic Region (SAT ASR PT)

4.51 Under the working paper 4.8, Senegal and Trinidad and Tobago presented a proposal for developing Key Performance Indicators for the South Atlantic and described a roadmap for achieving the goals. The proposal included identifying the identification of benefits derived from the management of KPIs aligned with the GANP and GASP.

4.52 The meeting thanked the presentation of the paper and took note of the information provided. After a detailed analysis of the proposal the meeting concluded that the deployment of KPIS would be part of the activities of project teams in the next future and agreed it would be prudent to wait until the SAT SOG PTs achieve their defined goals.

Enhancing South Atlantic Safety: Unified Data Collection and State Plans (SAT ASR PT)

4.53 Concerning WP 4.9, Senegal and Trinidad and Tobago remarked the importance of the process of effective data management. Both the States and the SAT Steering Group have tasks to complete in order to achieve this central theme of safety enhancement. Consequently, states should engage in either the establishment and implementation, or the review of their national safety plans.

4.54 The meeting addressed the issue of creating a harmonized system for safety data collection. To help States stick to their commitment of data sharing, the ICAO Document 10131, Manual on the Development of Regional and National Aviation Safety Plans (NASP) provides extensive guidance on the enhancement of safety data planning and management at both the regional and national level. The NASP helps to pinpoint the High-Risk Categories of Occurrences and the specific areas of elevated safety risk that require monitoring. In this context, an example of a Workflow for Safety Data Collection was presented.

4.55 The meeting thanked the presentation of the paper and took note of the information provided. After a detailed analysis of the proposal, the meeting concluded that the amendment of the SAT TORs is not feasible at this moment.

4.d Other PTs reports (WP 4.7)

SAT PBCS IS PT: PBCS in EURSAM Corridor/SAT Area

4.56 SATMA presented a glance at the progress made towards PBCS Performance Monitoring within the EUR/SAM Corridor /SAT Area. The EUR/SAM Corridor States, via the ESCIT group, are studying the best approach to achieve a reduction of the longitudinal separation minima. One proposed options is to follow a PBCS implementation, ensuring RSP180 and RCP240 requisites in the area.

4.57 In this line, involved RMAs and ANSPs in the SAT Region have presented working papers to inform trials and surveys to know the current/future local plans regarding PBCS. Therefore, the PBCS Implementation Support Project Team (PBCS IS PT) has been created by the SAT IMG to plan the implementation.

4.58 The SAT IMG/03 approved the action item *SAT IMG03-03: Following the approval by the SAT IMG, engage with the SAT SOG to ensure that the post implementation monitoring task (E-1) will include the involved RMAs.*

4.59 ICAO Doc. 9869 Performance-based Communication and Surveillance Manual offers the reader guidance on establishing a PBCS monitoring program, with detailed guidance in its Appendix D for compilation and handling of the data to support monitoring. So far, = each ANSP has filled out this checklist to establish a local plan. A similar exercise has been conducted in the PBCS IS PT to establish the regional plan.

4.60 However, PBCS monitoring programmes not only require the available infrastructure to function, but also a set of interlinking policies and procedures for smooth operations between the participating organisations: ANSP, AU and RMAs.

4.61 NAT Region has developed the PBCS MONITORING AND REPORTING GUIDANCE, NAT Doc 11, composed of three phases:

Phase 1 - ATSP: This phase covers initial monitoring and reporting by the Air Traffic Service Provider (ATSP) at a local level.

Phase 2 - RMA: This phase captures the administration of the regional monitoring requirements and the mechanism to achieve global reporting.

Phase 3 - State Oversight Authority: This phase covers the State Oversight Authority's role in managing the non-compliance reports.

4.62 According to action item SAT IMG03-03 and the PBCS plan in the SAT Region, it is recommended to start as soon as possible with the elaboration of PBCS Monitoring and Reporting Guidance in the SAT Area/EUR SAM Corridor/AORRA (the implementation would be planned by each airspace).

4.63 On the other hand, ICAO Doc 10063 Manual on Monitoring the Application of Performance-based Horizontal Separation Minima defines Large lateral/ Longitudinal deviation (LLD/LLE). If the new operational concept requires of the separation minima based on the application of performance, then, RMAs/ANSPs must start to report/ and analyse those kinds of deviations. Moreover, the CRA must be reviewed in those terms.

4.64 Consequently, the Meeting agreed on the following action:

(Action SOG03-09)

RMAAs 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.

Development of Scrutiny activities

4.65 The SAT SOG chair team recalled the background of the initiative to implement scrutiny activities for the SAT area. The SAT SOG/02 concluded that, to define the best approach for the initiative, a feasibility study is required to ensure a systematic approach and effective implementation of the SAT Scrutiny Group's responsibilities. The meeting appointed Brazil to lead a study on this matter and agreed on the action SOG02-02 - *States members to implement a feasibility study for a SAT Scrutiny Group. Near coordination with Secretariat and Steering Group.*

4.66 During the initial analysis held in Brazil, among SMEs and the chair team, it was recognized that a better approach was needed to the proposal. It was considered that a feasibility study could be misunderstood as a decision already taken to implement by the SAT SOG. Therefore, the Brazilian team proposed to conduct a detailed analysis of the *problem statement* and the expected challenges. This comprehensive approach will ensure a thorough understanding of the requirements and documents needed for the implementation. Consequently, the Meeting agreed on the following action:

(Action 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

5. Collision risk assessment (CRA) and LHD

5.a	RMAAs activities on height monitoring (WP 5.1)
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Data Collection of Air Traffic Movements Over the Oceanic Area

5.1 CARSAMMA recalled that, with the aim of replicating the same separation and surveillance structure used in the North Atlantic oceanic area throughout the SAT area, the manager of the SAT RMA H/S Project Team asked the RMAAs for a test study to understand the evolution of traffic operating at RVSM flight levels in the SAT area.

5.2 It was necessary to know the frequency, aircraft types, average speed, airway occupancy rate, etc., for decision-making. For this purpose, CARSAMMA initially used the data sent by the FIRs involved in the calculation of the CRM dated December 2023, which contained this data, but mixed with flight data on the continental sector, which led to filtering work to separate the two overflight sectors.

5.3 For the reasons listed above, to continue and improve testing, CARSAMMA requested the support of the ICAO Regional Offices in Lima and Mexico to request the FIRs (PIARCO, CAYENNE, ATLÂNTICO, MONTEVIDEO, EZEIZA AND COMODORO RIVADAVIA) to send the air movement collection from the RVSM

levels of the month July 2024, only for traffic that overfly the Atlantic Ocean, excluding the segment of flights over the continental sector.

5.4 The Meeting took note of the information provided and endorsed the requirements. CARSAMMA, through the RMA HS PT, will present a new analysis, taking July's 2024 data, to the next SAT SOG meeting.

5.b Mitigation of LHD. Related states ANSPs programs (WP 5.2, WP 5.3, WP 5.4)

LHD reports from the SAT area

5.5 CARSAMMA informed that from January to December 2023, 30 LHD reports were received involving FIRs MAIQUETIA, PIARCO, PARAMARIBO, CAYENNE, AMAZONICA, RECIFE, ATLANTICO, CURITIBA, MONTEVIDEO, EZEIZA and COMODORO RIVADAVIA.

5.6 Within the 30 LHDs reported, 3 waypoints/positions with repeated events stood out: ITEGO (3 times), ELJEZ (2 times) and ANADA (2 times).

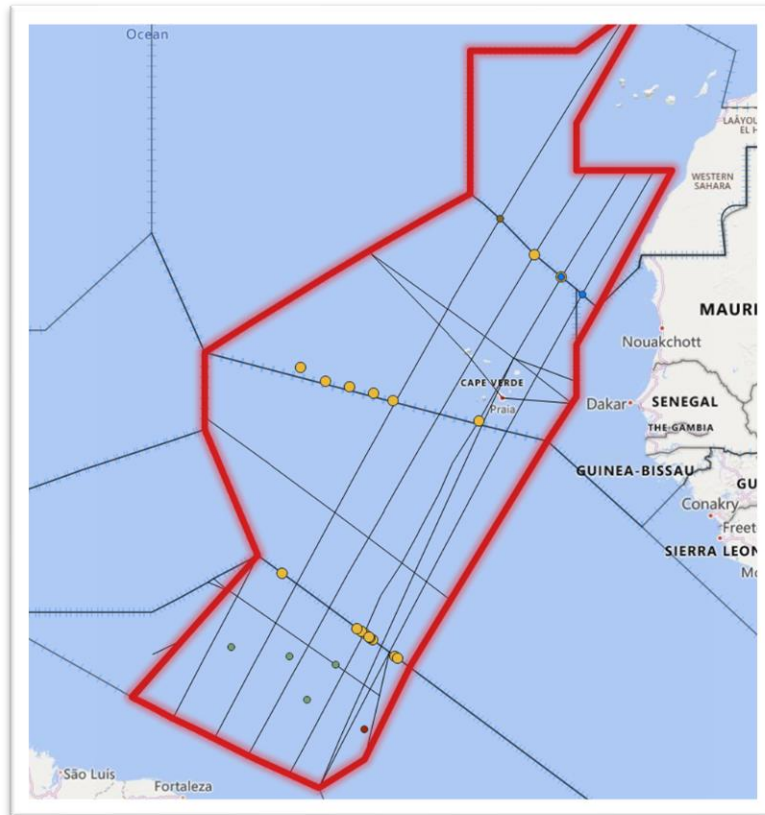
5.7 **Appendix L** presents a complete report regarding the FIR involved in the reports and the waypoints where the LHD occurred.

5.8 The information prepared by CARSAMMA was duly analyzed. The meeting noted the need for delineation and Scrutiny activities in SAT. The Secretariat was tasked to follow up the presented matter during GTE/24 meeting, to be held in the NACC Office, Mexico City, in August 2024.

LHD reports – the EUR/SAM corridor (2023)

5.9 SATMA informed that in 2023, 37 LHD/LLD reports were received from SAT States (ANSP) involving the EUR/ASM Corridor. The following picture shows a geographical representation of what is mentioned above.

Intentionally in blank



Localization of LHD/LLD deviations in the EUR/SAM Corridor 2023

5.10 The most common operational error was Category E, “Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of human factors issues”, 17 cases (53.1%), followed by F “Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of equipment outage or technical issues” with 8 cases (25.0%).

5.11 In 2023, the meeting noted one Category B deviation, “Flight crew climbing/descending without ATC Clearance”, and two Category D, “ATC system loop error”.

5.12 The meeting was reminded of previous recommendations already presented by SATMA in SAT/SOG/01 to mitigate or even prevent LHD:

- a) There is no data link mandate in the EUR/SAM Corridor; however, it is recommended the use of ADS-C and CPDLC to increase awareness when possible.
- b) SLOP has already been established for aircraft flying along the EUR-SAM Corridor in specific circumstances (mainly to mitigate the effects of wake turbulence).
- c) Up today, the proposals to prevent LHD occurrences focus on considering the application of the Cross-Boundary LHD coordination procedure. The best practice is the implementation of AIDC/OLDI.

5.13 The meeting reaffirmed that safety reporting is the main pillar to effective safety management and essential to LHD/LLD investigations:

- a) The systematic manner should be provided, with the defined format, a monthly report to SATMA/RMA regarding LHDs detected in the respective ACCs during the month. A recommended practice would be to report errors and potential causal factors even if no LHD occurs.
- b) ACCs should include the training material being used to promote awareness of LHDs.
- c) To define, establish a Focal Point/Team for LHD monitoring/reporting to SATMA/RMA.

5.14 Consequently, the Meeting agreed on the following action:

(Action 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.

EUR/SAM Corridor Collision Risk Assessment - CRA (2023)

5.15 Considering the information presented in the previous section of this SoD referred to LHD reports, SATMA provided the results of the CRA 2023.

5.16 **Traffic.** - For this study, flight progress data from the Canaries, SAL, Dakar and Atlantic ACCs, between FL290 and FL410, have been made available for all of 2023. The SAT IMG group (South Atlantic Implementation Management Group) decided to use the Demand Data Repository (DDR) provided by the EUROCONTROL Network Manager (NM) as a new data source for traffic figures in the fourth FIRs of the EUR/SAM Corridor. For this reason, it has been possible to have flight plans in all FIRs for the entire year 2023. The estimation of the collision risk for the next four years has been calculated, assuming a traffic growth rate described in section 6 of this SoD.

5.17 **Location For Risk Assessments.** - For the studied scenario, lateral and vertical collision risks are assessed. This assessment was made in six distinct locations along the Corridor, covering the four UIRs. These locations are the following:

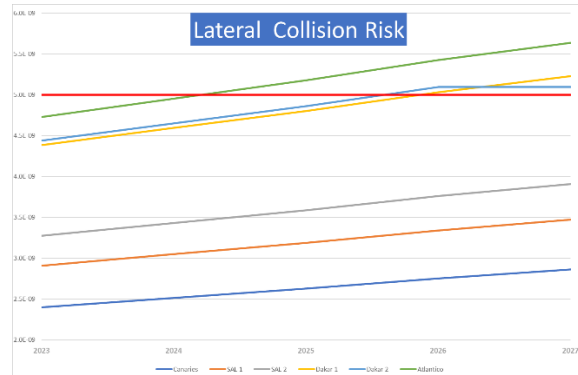
- Canaries: FIR/UIR limit
- SAL1: UR976/UA602
- SAL2: UIR SAL Oceanic/UIR Dakar Oceanic
- Dakar1: UL435
- Dakar2: UIR Dakar Oceanic/Atlantic FIR
- Atlantico/Recife: UL375/UL695

5.18 Traffic in the DCT Area, placed west of the current UN741, has not been considered in the analysis (it is not a congested area).

COLLISION RISK ASSESSMENT

5.19 Lateral collision risk is below the $TLS = 5 \times 10^{-9}$ with the current traffic flow. However, the TLS would be exceeded in the estimated period (2027) in all analysed locations except the Canaries and SAL1/SAL2.

FIR	Lateral Collision Risk	
	2023	2027
Canaries	2.3997*10 ⁻⁹	2.8616*10 ⁻⁹
SAL 1	2.9108*10 ⁻⁹	3.4711*10 ⁻⁹
SAL 2	3.2753*10 ⁻⁹	3.9058*10 ⁻⁹
Dakar 1	4.3829*10 ⁻⁹	5.2265*10 ⁻⁹
Dakar 2	4.4377*10 ⁻⁹	5.0933*10 ⁻⁹
Atlantico	4.7266*10 ⁻⁹	5.6365*10 ⁻⁹



Lateral Risk (CRA 2023)

5.20 Technical vertical risk represents the risk of a collision between aircraft on adjacent flight levels due to normal or typical height deviations of RVSM approved aircraft. It is attributable to the height-keeping errors that result from the combination of altimetry system errors (ASE) and autopilot performance in the vertical dimension.

FIR	Technical Vertical Collision Risk				
	2023	2024	2025	2026	2027
Canaries	2.7859*10 ⁻¹⁶	2.9196*10 ⁻¹⁶	3.0510*10 ⁻¹⁶	3.1981*10 ⁻¹⁶	3.3222*10 ⁻¹⁶
SAL 1	1.6677*10 ⁻¹⁶	1.7478*10 ⁻¹⁶	1.8264*10 ⁻¹⁶	1.9144*10 ⁻¹⁶	1.9887*10 ⁻¹⁶
SAL 2	1.6137*10 ⁻¹⁶	1.6912*10 ⁻¹⁶	1.7673*10 ⁻¹⁶	1.8524*10 ⁻¹⁶	1.9243*10 ⁻¹⁶
Dakar 1	2.1408*10 ⁻¹⁶	2.2435*10 ⁻¹⁶	2.3445*10 ⁻¹⁶	2.4575*10 ⁻¹⁶	2.5528*10 ⁻¹⁶
Dakar 2	2.3834*10 ⁻¹⁶	2.4978*10 ⁻¹⁶	2.6102*10 ⁻¹⁶	2.7361*10 ⁻¹⁶	2.8422*10 ⁻¹⁶
Atlantico	2.3272*10 ⁻¹⁶	2.4389*10 ⁻¹⁶	2.5487*10 ⁻¹⁶	2.6715*10 ⁻¹⁶	2.7752*10 ⁻¹⁶

Technical vertical risk (CRA 2023)

5.21 The estimates of the technical vertical risk are below the technical TLS even in 2027 in all the locations and similar to the values obtained in last year's assessment.

TOTAL VERTICAL RISK

5.22 After an analysis of the deviation reports, it was concluded that all the registered deviations are due to errors in coordination between adjacent ATC units, resulting in either no notification of the transfer or in transfer at an unexpected flight level.

FIR	Total Vertical Collision Risk				
	2022	2023	2024	2025	2026
Canaries	$8.6562 \cdot 10^{-7}$	$9.0717 \cdot 10^{-7}$	$9.4799 \cdot 10^{-7}$	$9.9368 \cdot 10^{-7}$	$1.0322 \cdot 10^{-6}$
SAL 1	$1.6677 \cdot 10^{-16}$	$1.7478 \cdot 10^{-16}$	$1.8264 \cdot 10^{-16}$	$1.9144 \cdot 10^{-16}$	$1.9887 \cdot 10^{-16}$
SAL 2	$1.6137 \cdot 10^{-16}$	$1.6912 \cdot 10^{-16}$	$1.7673 \cdot 10^{-16}$	$1.8524 \cdot 10^{-16}$	$1.9243 \cdot 10^{-16}$
Dakar 1	$6.5000 \cdot 10^{-9}$	$6.8120 \cdot 10^{-9}$	$7.1186 \cdot 10^{-9}$	$7.4617 \cdot 10^{-9}$	$7.7512 \cdot 10^{-9}$
Dakar 2	$2.3834 \cdot 10^{-16}$	$2.4978 \cdot 10^{-16}$	$2.6102 \cdot 10^{-16}$	$2.7361 \cdot 10^{-16}$	$2.8422 \cdot 10^{-16}$
Atlantico	$2.3272 \cdot 10^{-16}$	$2.4389 \cdot 10^{-16}$	$2.5487 \cdot 10^{-16}$	$2.6715 \cdot 10^{-16}$	$2.7752 \cdot 10^{-16}$

Total vertical risk (CRA 2023)

5.23 The total vertical risk calculated using the deviations reported by the States is lower than the TLS in all locations except in Canaries and Dakar.

5.24 It was remarked that all the received deviations had been due to coordination errors between ATC units and not related to RVSM operations and also, of the deviation reports received no traffic in conflicts were detected.

5.25 One factor affecting the collision risk calculation being higher than the TLS was the incorporation of ATC coordination errors are taken into account, was already identified in the previous safety assessments and the corresponding conclusions were presented. Nevertheless, it is also advisable to insist on the need of implementing adequate corrective actions to reduce operational errors in the Corridor.

5.26 IATA informed SOG/03 its concern regarding the Total Vertical Collision Risk table and noted the risk calculation formula used was not aligned with the formula used in the adjacent airspace, NAT Region. The difference adds to confusion with respect to cross boundary collision risk assessment. Additionally, the calculation as provided indicates a significant rise in total vertical collision risk, year over year.

5.27 The meeting thanked SATMA for its efforts and provision of safety data and information. Further, the SOG/03 encouraged SATMA to focus on activities that may have a positive effect on LHDs in the EUR/SAM corridor.

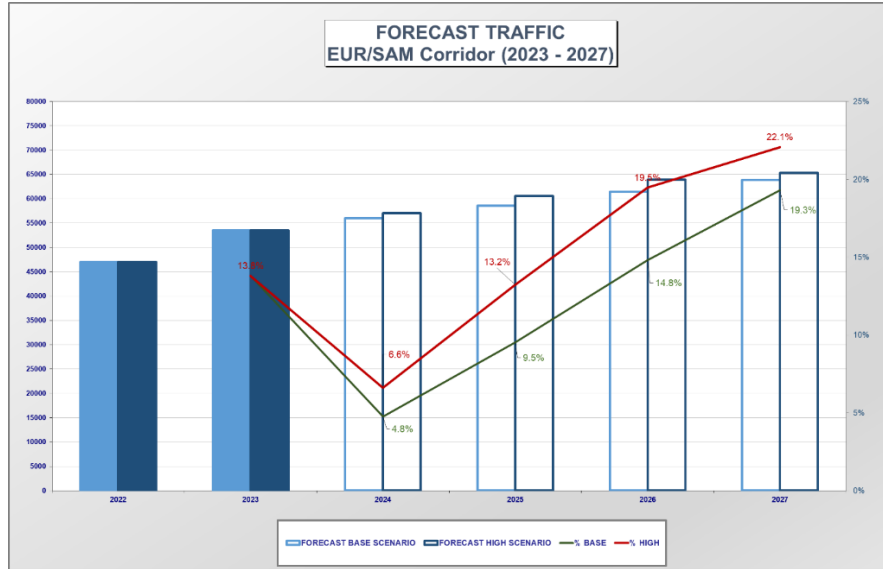
6. SAT Traffic statistics

6.a SAT Traffic statistics (WP 6.1, IP 6.1)

Forecast for traffic in the EURSAM corridor until 2027

6.1 SATMA addressed the decision SAT-IMG 02-01, “Expand the time horizon for traffic number monitoring in the EUR/SAM corridor” and partially the action items SOG01-07 and SG01-06. An expansion of the horizon for traffic figures monitoring has been carried out in the EUR/SAM corridor for 2027.

6.2 The main results in terms of flights is broken in the following Picture:



Forecast Traffic in the EUR/SAM Corridor (2023-2027)

6.3 The base scenario foresees:

- a) an increase of **9.5%** to 2025. In a more optimistic scenario, high one, this increment is foreseeing until **13.2%**.
- b) an increase of **19.3%** to 2027. In a more optimistic scenario, high one, this increment is foreseeing until **22.1%**.

6.4 The Meeting took note of the information and acknowledged the works of SATMA, which continuously support the activities of SAT SOG and SAT IMG.

Aircraft Operators PBCS Capabilities in the EUR/SAM Corridor

6.5 SATMA informed the SOG/03 of decision SAT-IMG 03-02, “Based on the report from SATMA, verify the correct flight plan filing in F10 and F18 for RCP240 and RCP180 with aircraft operators in the EUR/SAM corridor”.

6.6 During the SAT IMG/03 meeting, SATMA presented a WP “TRAFFIC FIGURES IN THE EUR/SAM CORRIDOR 2023”. SATMA conducted a similar analysis of equipment and capabilities in the EUR/SAM Corridor in January 2024. The following table shows the preliminary results.

EQUIPMENT - JANUARY 2024	
EQUIPMENT	%
RNP10	99.8%
RNP4	80.7%
CPDLC	83.0%
RSP180	41.2%
RCP240	62.9%
RSP180/RCP240	41.0%
ADS-B	97.6%
GNSS	99.9%

- 6.7 This data is obtained from flight plans, where capabilities comprise the following elements:
- the presence of relevant serviceable equipment on board the aircraft;
 - that equipment and capabilities are commensurate with flight crew qualifications; and
 - the authorization from the appropriate authority where applicable. So far in the SAT Area is only required RNP10.
- 6.8 The top 9 of the operators observed in the EUR/SAM Corridor lacking RCP (January 2024) is the following:

Airline	%
TAM	18%
TAP	13%
TOM	11%
LAN	7%
ARG	6%
TFL	5%
TUI	4%
TCV	3%
TVF	3%

6.9 In Summary, SATMA informed that TAM, LAN and ARG were the operators that use the entirety of the EUR/SAM corridor. The remaining airlines operate from/to FIRs Cabo Verde - Dakar to/from Europe. The top aircraft observed in the EUR/SAM Corridor is B77W. The Meeting noted the provided information.

7. Any other business

7.1 SAT SOG/03 attended the following presentations, referred to CNS systems and Safety Events Reporting applications:

- Collins Aerospace: related to the SATVOICE communications implementation. Detailing information on the one-stage dialing current state and evolution.
- Isavia, Iceland: presented NERA (North Atlantic Events Reporting Application), a database made by Isavia ANS that is used for the collection of reportable events in NAT HLA. After collection and scrutiny, information is used to populate the NAT Scrutiny Group Report (NAT SG Report), which is later reviewed at the NAT Safety Oversight Group meeting. The meeting commended the best practices of NAT and recognized the value of such automated tools for upcoming safety activities in the SAT area.

7.2 SAT SOG/03 meeting acknowledged the excellent work performed by Mr. Chairman Luiz Antonio, especially leading and pushing the group's first stages, who is going to leave the DECEA-Brazil, due to retirement. Mr. Jorge Wilson de Avila was introduced and welcomed to continue the work performed by Mr. Luiz Antonio, as appointed by Brazil.

7.a Future work programme and follow-up actions. Next meetings
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7.3 The Next relevant meetings for 2024 are:

- NAT SG (scrutiny) September 9-13, 2024
- SAT SOG/04 (October 1-4, 2024, Virtual)
- SAT IMG/04 (October 8-11,2024 In-person)
- SAT SG/02 (December 2 -4, 2024, Dakar, Senegal)

7.4 The tentative working program for 2024 of the SAT SOG projects teams was summarized as presented in the Tables below. As possible, the dates were defined to avoid overlaps with the calendar of other SAT and NAT groups:

SAT ASR PT	Frequency	Comments
May 22 nd , 2024 – 12 UTC	Monthly – every 4 th Wednesday	
June 26 th , 2024 – 12UTC	Monthly – every 4 th Wednesday	
July 24 th , 2024 – 12UTC	Monthly – every 4 th Wednesday	
August 28 th , 2024 – 12 UTC	Monthly – every 4 th Wednesday	
September 25 th – 12 UTC	Monthly – every 4 th Wednesday	

SAT RMA H/S	Frequency	Comments
Convened as needed	Convened as needed	

SAT OESB	SAT OESB – option 2 if necessary	Comments
May 3 rd , 2024 – 13 UTC	TBD	Monthly – every 1 st Thursday or 2 nd Wednesday
June 12 th , 2024 – 13UTC	TBD	NAT SOG/30, 4-7 June, 2024
July 4 th , 2024 – 13 UTC	TBD	
August 1 st , 2024 – 13 UTC	TBD	
September 5 th – 13 UTC	TBD	

7.b Report to the next SAT SG/02 meeting.

7.5 The report to SAT SG/02 will be prepared after the SAT SOG/04 meeting, as the SAT SG/02 will take place in December 2024.

Appendix A
LIST OF PARTICIPANTS

* *Virtual (MS TEAMS) participants*

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PHOTO

Appendix B
LIST OF MEETING DOCUMENTS

PAPERS	AGENDA ITEM	TITLE	PRESENTED BY
Agenda Item 1: Opening and review of developments a. Adoption of the Agenda b. Review of SAT SOG action item list and Decisions. Follow up.			
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	Follow up.	Secretariat
Agenda Item 2: Coordination between SAT bodies a. Review of the outcomes of the SAT SG/01 meeting b. Review of the outcomes of the SAT IMG/03 meeting c. General coordination (SAT bodies, States, Organizations, Industry, ANSPs)			
WP 2.1	2 a	Review of the outcomes of the SAT SG/01 meeting	Secretariat
WP 2.2	2 b	SAT IMG/03 initial results	Secretariat
WP 2.3	2 b	SAT DOC 002 (SAT CONTINGENCY PLAN)	Secretariat
WP 2.4	2 c	Addressing Safety Reporting Challenges in the SAT Region: SAT SOG's Insights and Proposals	SAT SOG Chair team
WP 2.5	2 c	PBCS framework in Brazil	Brazil
WP 2.6	2 c	Search and Rescue cooperation and coordination	Angola
Agenda Item 3: SAT SOG working plan a. SAT SOG working plan 2024 - 2025 b. SAT SOG communication plan			
WP 3.1	3 a	SAT SOG Working Programme Proposal for 2024-2025	SAT SOG Chair team
WP 3.2	3 b	Enhancing Stakeholder Engagement for SME Designation in SAT SOG Project Teams	SAT SOG Chair team
Agenda Item 4: SAT SOG's Project teams updates a. SAT RMA HS PT updates b. SAT OESB PT updates c. SAT ASR PT updates d. Other PTs reports			
WP 4.1	4a	SAT RMA HS PT report to the SOG	SAT RMA HS PT

PAPERS	AGENDA ITEM	TITLE	PRESENTED BY
WP 4.2	4a	Coordination of the SAT-Specific Traffic Sample Data Collection Template with SAT Member States and Applicable Stakeholders	SAT RMA HS PT
WP 4.3	4a	Assessment of the Feasibility of Implementing a Centralized SAT RMA Database for Collection of Safety Occurrence Reports and Identifying Standardized Collision Risk Parameter Values Commonly Derived from Safety Occurrence Reports	SAT RMA HS PT
WP 4.4	4a	Delineation of the SAT area	IATA
WP 4.5	4b	SAT OESB Project Team Update	Brazil
WP4.6	4 c	SAT ASR PT updates	Senegal
WP 4.7	4 d	SAT PBCS IS PT: PBCS in EURSAM Corridor/SAT Area	SATMA
WP 4.8	4 c	Development of Key Performance Indicators for the South Atlantic Region (SAT ASR PT)	Senegal and Trinidad and Tobago
WP 4.9	4 c	Enhancing South Atlantic Safety: Unified Data Collection and State Plans (SAT ASR PT)	Senegal and Trinidad and Tobago
Agenda Item 5: Collision risk assessment (CRA) and LHD <ul style="list-style-type: none"> a. RMAs activities on height monitoring. b. Mitigation of LHD. Related states ANSPs programs. 			
WP 5.1	5 a	Data Collection of Air Traffic Movements Over the Oceanic Area	CARSAMMA
WP 5.2	5 b	LHD reports from SAT area	CARSAMMA
WP 5.3	5 b	LHD reports – the EUR/SAM corridor (2023)	SATMA
WP 5.4	5 b	EUR/SAM Corridor Collision Risk Assessment (2023)	SATMA
Agenda Item 6: SAT Traffic statistics <ul style="list-style-type: none"> a. SAT Traffic statistics 			
WP 6.1	6 a	Forecast for traffic in the EURSAM corridor until 2027	SATMA
IP 6.1	6 a	Aircraft operators PBCS Capabilities in the EUR/SAM Corridor	SATMA

PAPERS	AGENDA ITEM	TITLE	PRESENTED BY
	Agenda Item 7:	Any other business a. Future work programme and follow-up actions. Next meetings b. Report to the next SAT SG/02 meeting.	
	Presentations:	PPT01 Collins Aerospace, SATVOICE communications PPT02 Isavia, Iceland, North Atlantic events report application – NERA	

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	SAT SOG's working programme 2024-2025	Par. 3.1
Appendix G	SAT SOG Project Teams	Par. 3.6
Appendix H	A comparison of LHD taxonomy used by SAT RMAs	Par. 4.24
Appendix I	A comparison of the data fields recorded by SAT RMAs	Par. 4.25
Appendix J	SAT RMA Workshop Action Plan	Par. 4.32
Appendix K	Multi Step Approach to delineation of SAT	Par. 4.38
Appendix L	LHD reports from SAT area	Par. 5.7

Appendix D — ACTION ITEM LIST

Superseded and completed actions shown in red color.

ID #	ACTION	WHO	WHEN	Notes by SAT SOG/02	Status and Notes by SAT SOG/03
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.
SOG01-01	Follow up the sharing of the results of SAT IMG Decision 01-03, survey on PBCS implementation with the 3 RMAs.	Secretariat	SAT SOG/02	SAT IMG/02 SoD, Par. 2.21 <i>“In follow up to the SAT IMG/01-03 decision and as not all States had responded on the PBCS survey, the Group agreed to invite the remaining States to complete the survey and present the obtained results at the next SAT IMG/03 meeting.”</i>	COMPLETED According to SAT IMG 03 results (see SATSOG03 - WP 2.2) the decision SAT IMG DEC 01-03 is Completed , considering the activities in progress of the PBCS IS PT.

ID #	ACTION	WHO	WHEN	Notes by SAT SOG/02	Status and Notes by SAT SOG/03
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
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	Secretariat	SAT SOG/02	Not yet started	NOT YET STARTED - DMO have to address this action.

ID #	ACTION	WHO	WHEN	Notes by SAT SOG/02	Status and Notes by SAT SOG/03
	in terms of structures and resources.				
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
SOG01-09	Coordinate the support on PBCS training activities from some Agency / Organization in EUR/NAT or APAC Regions.	Secretariat	SAT SOG/02	Not yet started (When: Q1 - Q2 2024)	SUPERSEDED by ACTION SAT IMG /02-1 & SAT IMG /03-03
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	ON-GOING To be presented in SAT SOG/04

ID #	ACTION	WHO	WHEN	Notes by SAT SOG/02	Status and Notes by SAT SOG/03
				application of the SLOP. See WP/2.2 (When: SAT SOG/04)	
SOG01-13	Considering the increased traffic flow in the SAT area that is tending to a continuous growth in the next 3 years; Reinforce mitigation measures on ATS procedures, operational errors, ATM/CNS issues, etc. and boost their participation in the activities carried on by the SAT Group.	All SAT members	SAT SOG/02	The deployment of a SAT scrutiny body will contribute to reinforce mitigation actions on ATS procedures. See Action SAT02- 03	SUPERSEDED By ACTION SOG03- 11
SOG01-14	Identify the training gaps in the SAT members states in order to define a programme that fulfil the members necessities. Survey on oceanic operation training needs.	Trinidad and Tobago Secretariat	Q3 , Q4 2023	Not yet started (When: Q1 - Q2 2024)	NOT YET STARTED To be coordinated with SOG CO-CHAIR

➤ **SAT SOG/02**

ID #	ACTION	WHO	WHEN	Notes by SAT SOG/02	Status and Notes by SATSOG03
SOG02-01	State members and observers, supported by Secretariat to fill in the form provided in Appendix F.	SAT State members and observers Secretariat	8 December 2023 SAT SOG/03	Approved by SAT SOG/02	SUPERSEDED by STEER-GRP SAT-S G/01 CON09 see also SOG01-03
SOG02-02	States members to implement a feasibility study for a SAT Scrutiny Group. Near coordination with Secretariat and Steering Group.	Brazil State members Secretariat	Progress report to SAT SOG/03 and SAT SOG/04	Approved by SAT SOG/02	SUPERSEDED By action SOG03- 11
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
SOG02-04	State members to implement the approved SAT ASR PT 2024 work plan presented in appendix J. Invite NAT experts and RMAs to meetings.	SAT ASR PT SAT members Secretariat	Progress report to SAT SOG/03 and SAT SOG/04	Approved by SAT SOG/02	SUPERSEDED by ACTION SOG03-09
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
SOG02-06	States members to develop a specific TSD collection template for SAT	SAT RMA H/S PT	SAT SOG/03	Approved by SAT SOG/02	SUPERSEDED by ACTION SOG03-04
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	SAT SOG Members Secretariat	SAT SOG/04	Approved by SAT SOG/02	ON-GOING

ID #	ACTION	WHO	WHEN	Notes by SAT SOG/02	Status and Notes by SATSOG03
	<p>satisfied;</p> <p>b) Support assessment of existing information dissemination practices within the SAT Region to assure standardization requirements awareness and prevent redundancy/duplication of efforts; and</p> <p>c) Support development of workshops to promote the implementation of standardized data collection and collision risk assessment methodology among the SAT RMAs.</p>				
SOG02-08	<p>Secretariat to prepare and deliver a White Paper to IATA, explaining the need of support with mapping facilities to update charts of SAT airspace, AORRA, EUR SAM Corridor, etc.</p>	Secretariat	January 2024	Approved by SAT SOG/02	SUPERSEDED by ACTION SOG03-07
SOG02-09	<p>Secretariat to raise the suggested actions of SAT SOG/02 - WP 4.4, regarding RVSM height monitoring in AFI region, to the SAT Steering Group first meeting, in view of the participation of AAMAC and BAGASOO and RSOO organizations in the meeting. Also, this matter will be informed to RSOOs of SAM and CAR regions.</p>	Secretariat	Immediately	Approved by SAT SOG/02	COMPLETED See ACTION SAT-SG/01 ACT05 (steering group)
SOG02-10	<p>States members to start an Action Plan to address the lack of reporting on RVSM and LHDs data to RMAs.</p>	SAT SOG members IATA	SATSOG03	Approved by SAT SOG/02	SUPERSEDED by ACTION SOG03-01

ID #	ACTION	WHO	WHEN	Notes by SAT SOG/02	Status and Notes by SATSOG03
SOG02-11	Secretariat to foster and coordinate nomination of AFI states focal point on RVSM and LHD data.	TBD Secretariat		Approved by SAT SOG/02	SUPERSEDED by ACTION SOG03-01
SOG02-12	RMA's 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 RMA's. SAT RMA's 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	NOT YET STARTED

➤ **SAT SOG/03**

ID #	ACTION	WHO	WHEN	STATUS	NOTES BY SAT SOG 03
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	According to SAT SOG/03 - WP/2.4 suggested actions.

ID #	ACTION	WHO	WHEN	STATUS	NOTES BY SAT SOG 03
SOG03-02	<p>a) Meeting participants were asked to complete the fields in the Table shown in the Appendix G;</p> <p>b) The Secretariat to coordinate ICAO Regional offices to send an additional state letter asking for SMEs designation; and</p> <p>c) Update the project team TORs to include a field that specifies the tasks of the project team members and their workload estimate.</p>	Secretariat	Before SAT SOG/04	Approved by SAT SOG/03	
SOG03-03	<p>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</p> <p>b) Secretariat to assist and follow up. That State letters summarizing the following be issued:</p> <p>1) Notification to States, with a request to disseminate the notification to appropriate stakeholders as necessary, of the new SAT-specific TSD collection template;</p> <p>2) A request that SAT member States modify</p>	<p>Secretariat</p> <p>SAT Members States, ANSPS</p> <p>RMA</p>	Upon completion of developing the SAT-specific TSD collection template.	Approved by SAT SOG/03	SUPERSEDES SOG02-06

ID #	ACTION	WHO	WHEN	STATUS	NOTES BY SAT SOG 03
	<p>their systems as necessary (or able) to support populating the SAT-specific TSD collection template;</p> <p>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</p> <p>4) Request confirmation of availability and feasibility of accommodating the data requests listed below:</p> <p>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.</p> <p>ii. Feasibility of populating additional fields identified by the RMA HSPT (e.g., traffic flow designator and flying time)</p> <p>iii. Feasibility of providing July 2023 TSD or begin providing July TSD beginning in 2024.</p>				
SOG03-03	Regarding PBCS implementation; RMAs concerned in the SAT airspace (SATMA, ARMA, CARSAMMA), as well SAT SOG members engage and support the activities needed for the adequate	SAT SOG RMAs Secretariat	According to working plan derived from IMG actions.	Approved by SAT SOG/03	

ID #	ACTION	WHO	WHEN	STATUS	NOTES BY SAT SOG 03
	development of Item Actions SAT IMG /02-1 and SAT IMG /03-03. Secretariat to follow up and bring assistance.				
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 RMA SAT Members		Approved by SAT SOG/03	
SOG03-05	ARMA, SATMA, and CARSAMMA give high priority to their participation in the workshop programmed to promote the implementation of standardized data collection and collision risk assessment methodology among the SAT RMAs.	RMA RMA HS PT	31 July – 2 august 2024	Approved by SAT SOG/03	FAA is going to convene as soon.
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	SUPERSEDES ACTION SOG02- 08
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	

ID #	ACTION	WHO	WHEN	STATUS	NOTES BY SAT SOG 03
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
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	
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
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	Secretariat RMAs	SAT SOG 05	Approved by SAT SOG/03	

ID #	ACTION	WHO	WHEN	STATUS	NOTES BY SAT SOG 03
	transmission of LHD events information provided by RMAs, needed to determine causal factors and subsequently, drive implementation of risk mitigations by ANSPs and States.				

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	State Letter to administrations, requesting the nomination of the designated focal points and/or the SME/members/leaders/coordinators of the PT	On-going

	document to the SAT SOG/2 to be validated.		
SAT SOG Decision 02/01 - Support for the workplan of SAT SOG RMA H/S Pt	<p>That, SAT SOG members are invited to:</p> <ul style="list-style-type: none"> a) Support administrative delineation of some FIRs * for the purposes of data collection and submission to facilitate safety assessment, risk estimation, and metrics harmonization within the SAT; 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. <p style="text-align: center;"><i>* Specifically: Accra, Canaries, Comodoro Rivadavia, Ezeiza, Johannesburg, Luanda, Montevideo and Windhoek FIRs have portions of airspace designated to the SAT Area.</i></p>		On-going

Appendix F – 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
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	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						X						X
Coordination of activities – RMA	SAT-SOG, RMAs	As needed	SAT-SOG will establish the frequency											
Coordination of implementation actions.	SAT-SOG, SAT IMG	Quarterly		V			V			V			V	

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
Project team meetings: SAT Oceanic Errors Safety Bulletin Project Team (SAT OESB PT)	Project team	TBC	The project team leader will establish the frequency (V)											
Project team meetings: SAT Annual Safety Report Project Team (SAT ASR PT)	Project team	TBC	The project team leader will establish the frequency (V)											
Project team meetings: SAT RMAS' Harmonization/Standardization Project Team (SAT RMA H/S PT)	Project team	TBC	The project team leader will establish the frequency (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
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	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						X						X
Coordination of activities – RMA	SAT-SOG, RMAs	As needed	SAT-SOG will establish the frequency											
Coordination of implementation actions.	SAT-SOG, SAT IMG	Quarterly		V			V			V			V	

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
Project team meetings: SAT Oceanic Errors Safety Bulletin Project Team (SAT OESB PT)	Project team	TBC	The project team leader will establish the frequency (V)											
Project team meetings: SAT Annual Safety Report Project Team (SAT ASR PT)	Project team	TBC	The project team leader will establish the frequency (V)											
Project team meetings: SAT RMAS' Harmonization/Standardization Project Team (SAT RMA H/S PT)	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 G – SAT SOG Project Teams

SAT Annual Safety Report Project Team (SAT ASR PT)

STATE	NAME	ROLE	ORGANIZATION	POSITION	E-MAIL	PHONE
Senegal	Papa Dibocur Sene	Project Manager	ANACIM	Director of Air Navigation and Aerodromes	dibocor.sene@anacim.sn	
	Abibou Mbaye	SME	ANACIM	ATM/SAR Service Chief	abibou.mbaye@anacim.sn	
	Gallo BA	SME	ANACIM	CNS Inspector in charge	gallo.ba@anacim.sn	
	Jacob Auguste Edward Leye	SME	ASECNA	Safety, Security, Quality, and Environment Manager	leyejac@asecna.org	
	Khadidiatou Nancy Fall	SME	ASECNA	CCR Controller	fallkha@asecna.org	
	Sokhna Yaya Wane	SME	ASECNA	Exploitation MTO	wanesok@asecna.org	
	Ribeiro Rustique Cami	SME	ASECNA	Maintenance and IT Charge	ribeirocam@asecna.org	
Cape Verde	Micael Moreno	SME	Cabo Verde Civil Aviation Authority	ATM/SAR Inspector	micael.moreno@aac.cv	+2389957222
	Paulo Costa	SME	Cabo Verde Civil Aviation Authority	CNS/AIS Inspector	paulo.costa@aac.cv	+2389950033
Brazil	Claudionor Silva De Macêdo	SME	DECEA	Head of the Assurance Section of ASEGCEA	macedocsm@decea.mil.br	+5521982338910
United States	Danielle Crudden	SME	FAA	Air Traffic Safety Inspector	danielle.f.crudden@faa.gov	+12022677952
Iata	Jeffrey Miller	SME	IATA	Assistant Director, Americas Regional Office (OSS)	MILLERJ@iata.org	+13056070577
Ivory Coast	Sanogo Adama	SME	ANAC	ATM Inspector	asanogo@anac.ci	+2250778113170
	Mrs. Djia Aby Jocelyne	SME	ASECNA	Head ACC and COMM	abyepsedjiamifer@asecna.org	+2250778113088

SAT Oceanic Errors Safety Bulletin Project Team (SAT OESB PT)

STATE	NAME	ROLE	ORGANIZATION	POSITION	E-MAIL	PHONE
Brazil	Virginia Thais Guedes Mignoni Evaristo	Project Manager	CARSAMMA	Advisor at the Regional Monitoring Agency CAR/SAM	mignonivtgm@decea.mil.br	+5521969340653 +552121016507

Senegal	Papa Dibocur Sene	SME	ANACIM	Director of Air Navigation and Aerodromes	dibocor.sene@anacim.sn	
	Abibou Mbaye	SME	ANACIM	ATM/SAR Service Chief	abibou.mbaye@anacim.sn	
	Jacob Auguste Edward Leye	SME	ASECNA	Safety, Security, Quality and Environment Manager	leyejac@asecna.org	
	Sidy Mohamed Ndoye	SME	ASECNA	CCR Controller	ndoyesid@asecna.org	
Cape Verde	Micael Moreno	SME	Cabo Verde Civil Aviation Authority	ATM/SAR Inspector	micael.moreno@aac.cv	+2389957222
	Paulo Costa	SME	Cabo Verde Civil Aviation Authority	CNS/AIS Inspector	paulo.costa@aac.cv	+2389950033
United States	Danielle Crudden	SME	FAA	Air Traffic Safety Inspector	danielle.f.crudden@faa.gov	+12022677952
United States	Kevin C. Kelley	SME	FAA	Aviation Safety Inspector, Oceanic Operations	kevin.c.kelley@faa.gov	+12022678854
Iata	Chris Michalakakis	SME	IATA	SME Operations	chris.michalakakis@dps.delta.com	+19042333247
Ivory Coast	Assielou Yara Joseph	SME	ANAC	Head ATM/SAR Officer	jassielou@anac.ci	+2250757048029
	Jean-Baptiste Assogba	SME	ASECNA	Area Control Operations Manager	assogbajea@asecna.org	+2250747449121
Spain	Ángel Forcada Puerto	SME	ENAIRES	Regional Division of Air Traffic Services	aforcada@enaire.es	
	Félix Travieso Montesdeoca	SME	ENAIRES	Head of the Canary Islands Regional Security Department	fravieso@enaire.es	

SAT RMAs Harmonization-Standardization Project Team (SAT RMA H/S PT)

STATE	NAME	ROLE	ORGANIZATION	POSITION	E-MAIL	PHONE
United States	Christine Falk	Project Manager	FAA	Separation Standards Analysis Branch	christine.falk@faa.gov	+1 6094856877
	José Perez	SME	FAA	FAA Computer Specialist	jose.perez@faa.gov	
	Stephanie Beritsky	SME	FAA		stephanie.l-ctr.beritsky@faa.gov	
South Africa	Nonjabulo Gumede	SME	ARMA	Head of AFI RMA	nonjabulom@atns.co.za	+2711 928 6506
Brazil	Charlene Roberta da Silva Moreira	SME	CARSAMMA	Head of CARSAMMA	charlene.rsma@cgna.decea.mil.br	+5521965083183
Spain	Alexander Dorta Fumero	SME	SATMA	ATM Expert	alexander.dorta@ineco.com	+ 34661316655

STATE	NAME	ROLE	ORGANIZATION	POSITION	E-MAIL	PHONE
	Eduardo J. Ortuño Villapalos	SME	SATMA	Head of ATS Division Canary Islands	ejortuno@enaire.es	+34928577057
	Mikel Pineiro Zabaleta	SME	SATMA		mpzabaleta@enaire.es	
Senegal	Papa Dibocur Sene	SME	ANACIM	Director of Air Navigation and Aerodromes	dibocor.sene@anacim.sn	
	Abibou Mbaye	SME	ANACIM	ATM/SAR Service Chief	abibou.mbaye@anacim.sn	
	Jacob Auguste Edward Leye	SME	ASECNA	Safety, Security, Quality and Environment Manager	levejac@asecna.org	
	Cossé Wade	SME	ASECNA		wadecos@asecna.org	
	David Mathurin Tendeng	SME	ASECNA		tendengdav@asecna.org	
Ivory Coast	Traore Ariel Yao	SME	ANAC	ATM SAR Inspector	atraore@anac.ci	+225 07 47887418
	Brou Gosse	SME	ASECNA	ATS Instructor	brougos@asecna.org	+225 07 48808114

Appendix H

A Comparison of LHD Taxonomy Used by SAT RMAs

Code	ARMA	CARSAMMA	SATMA
A	Flight crew failing to climb/descend the aircraft as cleared	Flight crew failing to climb / descend the aircraft as cleared.	Flight crew failing to climb/descend the aircraft as cleared
B	Flight crew climbing/descending without ATC Clearance	Flight crew climbing / descending without ATC cleared.	Flight crew climbing/descending without ATC Clearance
C	Incorrect flight level provided due to incorrect operation or interpretation of airborne equipment (e.g., incorrect operation of fully functional FMS, incorrect transcription of ATC clearance or re-clearance in FMS, flight plan followed rather than ATC clearance, original clearance followed instead of re-clearance etc.)	Incorrect operation or interpretation of airborne equipment (e.g.: incorrect operation of fully functional FMS, incorrect transcription of ATC clearance or re-clearance, flight plan followed rather than ATC clearance, original clearance followed instead of re-clearance, etc.)	Incorrect operation or interpretation of airborne equipment (e.g., incorrect operation of fully functional FMS, incorrect transcription of ATC clearance or re-clearance, flight plan followed rather than ATC clearance, original clearance followed instead of re-clearance etc.)
D	ATC system loop error (e.g. ATC issues incorrect flight level clearance or flight crew misunderstands flight level clearance message.)	ATC system loop error (e.g.: ATC issues incorrect clearance or the flight crew misunderstands clearance message).	ATC system loop error (e.g., ATC issues incorrect clearance or flight crew misunderstands clearance message. Includes situations where ATC delivery of operational information, including as the result of hear back and/or read back errors, is absent, delayed, incorrect or incomplete, and may result in a loss of separation.)
E (E1)	Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of human factors issues (e.g., late or non-existent coordination of flight level)	Coordination errors in the ATC-to-ATC transfer or control responsibility as a result of Human Factors (e.g.: late coordination; incorrect time estimate / actual; flight level, ATS route, etc. Not in accordance with agreed parameters).	Coordination errors in the ATC-to-ATC transfer or control responsibility as a result of human factors issues (e.g., late or non-existent coordination, incorrect time estimate/actual, flight level, ATS route etc. not in accordance with agreed parameters)
E2		Coordination errors in the ATC-to-ATC transfer or control responsibility as a result of Human Factors (non-existent coordination).	
F	Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of equipment outage or technical issues	Coordination errors in the ATC-to-ATC transfer or control responsibility as a result of equipment outage or technical issues.	Coordination errors in the ATC-to-ATC transfer or control responsibility as a result of equipment outage or technical issues

Code	ARMA	CARSAMMA	SATMA
	(e.g., late or non-existent coordination of flight level)		
G	Aircraft contingency event leading to sudden inability to maintain assigned flight level (e.g., pressurization failure, engine failure)	Deviation due to aircraft contingency event leading to sudden inability to maintain assigned flight level (e.g.: pressurization failure, engine failure, etc.).	Deviation due to aircraft contingency event leading to sudden inability to maintain assigned flight level (e.g., pressurization failure, engine failure)
H	Airborne equipment failure leading to unintentional or undetected change of flight level (e.g., altimetry errors)	Deviation due to airborne equipment failure leading to unintentional or undetected change of flight level.	Deviation due to airborne equipment failure leading to unintentional or undetected change of flight level
I	Turbulence or other weather-related causes leading to unintentional or undetected change of flight level	Deviation due to turbulence or others weather-related cause.	Deviation due to turbulence or other weather-related cause
J	TCAS resolution advisory, flight crew correctly climb or descend following the resolution advisory	Deviation due to TCAS RA; flight crew correctly following the RA.	Deviation due to TCAS resolution advisory, flight crew correctly following the resolution advisory
K	TCAS resolution advisory, flight crew incorrectly climb or descend following the resolution advisory	Deviation due to TCAS RA; flight crew incorrectly following the RA.	Deviation due to TCAS resolution advisory, flight crew incorrectly following the resolution advisory.
L	An aircraft being provided with RVSM separation is not RVSM approved (e.g., flight plan indicating RVSM approval, but aircraft not approved, ATC	An aircraft that is not RVSM approved being provided with RVSM separation (e.g.: flight plan indicating RVSM approval, but aircraft not approved; ATC misinterpretation of flight plan).	An aircraft being provided with RVSM separation is not RVSM approved
M	Others	Other - this includes flights operating (including climbing / descending) in airspace where flight crews are unable to establish normal air-ground communications with the responsible ATS unit.	Other– this includes situations where: i) There has been a failure to establish or maintain a separation standard between aircraft; or ii) Where flights are operating (including climbing/descending) in airspace where flight crews are unable

Appendix I

A Comparison of LHD Data Fields Recorded by SAT RMAs

Since the initial analysis effort is focused on the high traffic volume areas, the figure below shows a comparison of the LHD header fields recorded by CARSAMMA and SATMA. Gray shaded cells indicate a field that is not recorded by the RMA.

CARSAMMA Header	SATMA Header
RMA	RMA
REPORT NUMBER	ID
	AREA
	REPORT TYPE
REPORTING UNIT	REPORTING FIR
FIRorWHOM COMMITTED FAULT/ERROR	MAIN RESPONSIBLE FIR
	AFFECTED DEVIATION FIR
EVENT DATE	DATE OF OCCURRENCE
Operator Name	OPR NAME
FLIGHT CALL SIGN	CALL SIGN
REGISTER	ACFT REGISTER NUMBER
ACFT TYPE	ACFT TYPE
	ADEP
	ADES
EVENT HOUR	EVENT HOUR TIME UTC
POSITION FOR THE RISK	OCCURRENCE POSITION
IMC or VMC	
ROUTE AWY	
ROUTE FROM/TO	CLEARED ROUTE OF THE FLIGHT
MODEC/S ADSB/C DISPLAY	MODE C ADS DISPLAY
	ADS-B/C

CARSAMMA Header	SATMA Header
SOURCE	
	CLRD FL
EVENT FL	OBSERVED REPORTED FINAL FL
HEIGHT LHD (FEET)	OBSERVED DEVIATION (+ / - ft)
	ESTIMATED DURATION
DURATION GTE (Sec.)	DURATION SATMA
TIME (SAME) Sec.	
TIME (OPP) Sec.	
X LEVEL (SAME)	
Xed LEVEL (OPP)	
CODE GTE	CODE SATMA
CAUSE	CAUSE OF DEVIATION
SUMMARY1	DETAILED DESCRIPTION OF DEVIATION
CREW COMMENTS (IF ANY)	REMARKS (Spanish)
DISTANCE BETWEEN AIRCRAFT	DISTANCE BETWEEN THEM/OTHER INVOLVED TRAFFIC
2ND ACFT CALLSIGN	2 ^a ACFT (Call sign / Registration / Acft type / Awy - FROM/TO)
2ND ACFT REGISTRATION	
2ND ACFT TYPE	
2ND ACFT AWY	
2ND ACFT FL	FL 2 ^a ACFT
2ND ACFT POSITION	POSITION 2 ^a ACFT

Appendix J

SAT SOG RMA HS PT

WORKSHOP

SAT RMA Harmonization & Standardization

Draft Action Plan Template

ACTION PLAN

Purpose: The purposes of the SAT RMA Harmonization & Standardization Workshop are (1) to standardize and implement harmonized data collection and collision risk assessment methodology among the SAT RMAs and (2) Identify training requirements and establish standardized training materials among SAT RMAs.

- Goals:**
- 1) Adopt standardized collision risk assessment methodology to ensure consistent and accurate assessment of risk in the SAT Region
 - 2) Establish requirements for implementing a centralized SAT RMA database for collection of large height deviations (LHDs), large lateral deviations (LLDs) and large longitudinal errors (LLEs).
 - 3) Establish standardized data collection, processing, and dissemination methods among the SAT RMAs
 - 4) Identify training requirements and established standardized training materials among SAT RMAs

Timeframe: The objective is to satisfy identified goals by conducting a series of workshops, as needed, by the end of calendar year 2024.

TASK LIST for Developing SAT SOG RMA HSPT Workshop Planning Materials

	Tasks	Target Date	Status	Notes
1	Identify goals and tasks	30 April	In-progress	First draft complete
2	Identify participants	30 April	Complete	Participation is limited to SAT RMAs
3	Identify the number of workshops needed to accomplish identified goals	30 April	Ongoing	Determination of the final number of workshops needed is dependent on the progress achieved toward each goal
4	Establish dates and locations	30 April	In-progress	
5	Secure workshop venue	*		*Approximately two months prior to the workshop start date
6	Develop and distribute invitation correspondence	30 May 2024		

7	Develop and distribute workshop agenda	*		*Two weeks prior to pending workshop
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Goal #1 Adopt standardized collision risk assessment methodology to ensure consistent and accurate assessment of risk in the SAT Region

	Tasks	Target Date	Status	Notes
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 Region			
7	Establish methodology to estimate vertical collision risk for same and crossing track operations			

Goal #2 Establish requirements for implementing a centralized SAT RMA database for collection of large height deviations (LHDs), large lateral deviations (LLDs) and large longitudinal errors (LLEs).

	Tasks	Target Date	Status	Notes
1	Assess and establish taxonomy continuity among the SAT RMAs			
2	Identify data fields necessary for performing safety assessments and assessing collision risk (e.g., Speeds other than normal, occurrence coordinates, assigned values (time spent at incorrect flight level).			
3	Identify data format requirements			
4	Assess the feasibility of implementing a centralized SAT RMA database for collection of large height deviations (LHDs), large lateral deviations (LLDs) and large longitudinal errors (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	Target Date	Status	Notes
1	Review the current state of data collection, processing, and dissemination among the SAT RMAs			A significant portion of this task was completed by meeting remotely.
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	Target Date	Status	Notes
1	Identify internal and external (stakeholders) training gaps and shortfalls			
2	Identify training goals and develop a training plan			The goals should address the gaps identified after completing task 1.
3	Identify training and education requirements for the SAT SOG and wider South Atlantic region community			Ref. SAT/SOG/1-WP/3.5 ICAO Accredited course for RVSM Focal points and standard guidance material to be signed off by appointed focal points (ref. SAT/SOG/02-WP/3.3)
4	Establish and confirm a list of points of contact for the SAT Region			
5	Establish harmonized training information dissemination processes and procedures			
6	Develop standardized (as appropriate) training materials applicable to the SAT Region - internal			
7	Develop standardized (as appropriate) training materials applicable to the SAT Region - external			

Appendix K

Multi Step Approach to delineation of SAT

Step 1 – Create a boundary of the entire SAT Region by creating a general 12NM offshore boundary, with generic coordinates, that identifies all oceanic/international high seas airspace that should be considered for inclusion in the SAT Region.

(Note: Generalized lat/longs could be used where Jeppesen does not have the FIR boundary coordinates)

Phase 1 will provide a baseline configuration that will enable applicable States to collaborate and further refine the coordinates as necessary. Regarding how far south the SAT Region border should extend, to be consistent with other ICAO Regions, it was agreed that the border should extend to the South Pole.

Step 2 – Considering the geographic extent of surveillance and communications services across multiple FIRs, using the boundary developed during Phase 1, States collaborate on defining the geographic extent of combined surveillance services and combined communications services and modify the coordinates as necessary. At this point a special Project Team, including participants from all applicable States, should be convened. The importance of participation by all applicable States was highlighted.

(Note: With respect to FIRs that will be split to separate oceanic/high seas airspace from continental airspace, it is not necessary to rename the FIRs)

Step 3 – Identify Regional Monitoring Agency (RMA) areas of responsibility.

(Note: RMA areas of responsibility, including States and FIRs, are defined in ICAO Doc 9937, Operating Procedures and Practices for Regional Monitoring Agencies in Relation to the Use of a 300m (1000ft.) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive)

Step 4 – Identify airspace classifications (e.g., Class G)

Appendix L

LHD reports from SAT area

From January to December 2023, 30 LHD reports were received involving FIR that have part of their territory in the oceanic region (MAIQUETIA, PIARCO, PARAMARIBO, CAYENNE, AMAZONICA, RECIFE, ATLANTICO, CURITIBA, MONTEVIDEO, EZEIZA and COMODORO RIVADAVIA).

1. Analysis

1.1 Of these 30 reports, 3 positions stood out for having been reported more than once: ITEGO (3 times), ELJEZ (2 times) and ANADA (2 times).

1.2 The following image is a geographical representation of the three points mentioned above.



Figure 1- geographical representation of the most reported point

1.3 In the next table we can see the FIR involved in these reports and the position where the LHD occurred. The highlights are:

- PIARCO x MAIQUETIA – 5 times
- COMODORO RIVADAVIA x Mount Pleasant – 4 times
- ATLANTICO X LUANDA – 4 times
- COMODORO X EZEIZA – 3 times
- PIARCO X SAN JUAN – 2 times
- PIARCO X NEW YORK – 2 times

Report number	Reporting FIR	FIR or whom committed the failure	Position Of risk	CROSSED LEVELS		DURATION (sec)	LHD Code	Risk of value
				S	OPP			
44	ATLANTICO	LUANDA	1200S 01000W	1	1	90	E1	31
143	COMODORO RIVADAVIA	Mount Pleasant	5000S 05600W	1	2	60	E2	17
150	EZEIZA	MONTEVIDEO	3905S 04734W	0	0	3.000	E2	51
151	COMODORO RIVADAVIA	EZEIZA	4408S 05125W	0	0	3.900	E2	46
195	CAYENNE	ATLANTICO	074326N 0382639W	1	1	780	E1	29
218	PIARCO	SAN JUAN	ANADA	0	0	60	E2	22
272	PIARCO	NEW YORK	ELJEZ	1	1	60	E2	34
276	PIARCO	MAIQUETIA	ITEGO	1	1	90	E2	22
304	PIARCO	DAKAR	GANAK	0	0	1.300	E1	13
309	PIARCO	CAYENNE	0927N 05300W	0	0	90	E1	26
336	COMODORO RIVADAVIA	Mount Pleasant	490719S 0583920W (next to KABES)	0	0	60	E2	46
364	COMODORO RIVADAVIA	Mount Pleasant	503420S 0560047W	0	0	90	E2	29
376	COMODORO RIVADAVIA	Mount Pleasant	494900S0544100 W	0	0	60	E2	22
384	PIARCO	DAKAR	182500N 0443300W	0	0	90	E2	44
412	PIARCO	MAIQUETIA	145000N 0650500W	0	0	60	E2	17
423	CAYENNE	PIARCO	0925N 05301W	1	1	60	E2	34
433	ATLANTICO	DAKAR	PROXIMO A POSIÇÃO MOVGA	0	0	60	E2	22
438	PIARCO	MAIQUETIA	ITEGO	0	0	60	E1	18
442	PIARCO	MAIQUETIA	ABEAM ANADA	1	1	60	E1	18
472	PIARCO	PARAMARIBO	TRAPP	3	3	60	E1	13
505	PIARCO	MAIQUETIA	ITEGO	1	1	60	E2	17
508	MAIQUETIA	SAN JUAN	MILOK	1	1	600	E1	18
512	COMODORO RIVADAVIA	EZEIZA	IREMO	2	2	120	E1	18
541	RECIFE	EQUIPAMENTO	105 NM NE DE FLZ	0	0	60	M	16
548	ATLANTICO	LUANDA	1300S 01000W	0	0	60	E1	26
593	ATLANTICO	LUANDA	130000S 0100000W	0	0	60	E2	22
599	ATLANTICO	MONTEVIDEO	341200S 0340900W	0	0	60	E2	22
617	ATLANTICO	LUANDA	130000S 0100000W	1	1	90	E2	22

Report number	Reporting FIR	FIR or whom committed the failure	Position Of risk	CROSSED LEVELS		DURATION (sec)	LHD Code	Risk of value
				S	OPP			
625	COMODORO RIVADAVIA	EZEIZA	OTADO	1	2	60	E2	17
651	PIARCO	NEW YORK	ELJEZ	0	0	3.000	E1	13
674	PIARCO	SAN JUAN	GEECE	0	0	3.900	E1	13

Table 1 - summarizes LHD reports from the SAT region.

1.4 Risk value calculation:

The risk value is calculated following the SMS (Safety Management System) table, where values between 1 - 20 present a low risk and are represented by green, the medium risk in yellow, between the values 21 – 75 and high risk, 76 – 100, is represented by the color red.

1.5 Crossed levels:

- S – same: when the aircraft cross a flight level that is in the same direction of the flight level previously authorized.
- OPP – opposite: when the aircraft cross a flight level that is in the opposite direction of the flight level previously authorized.

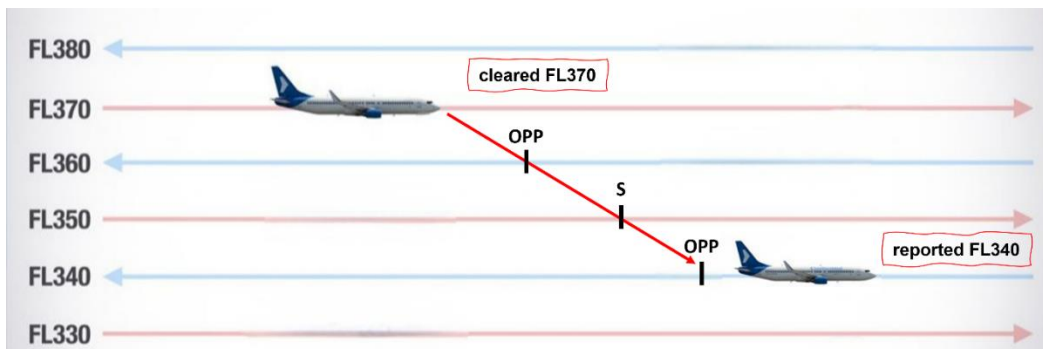
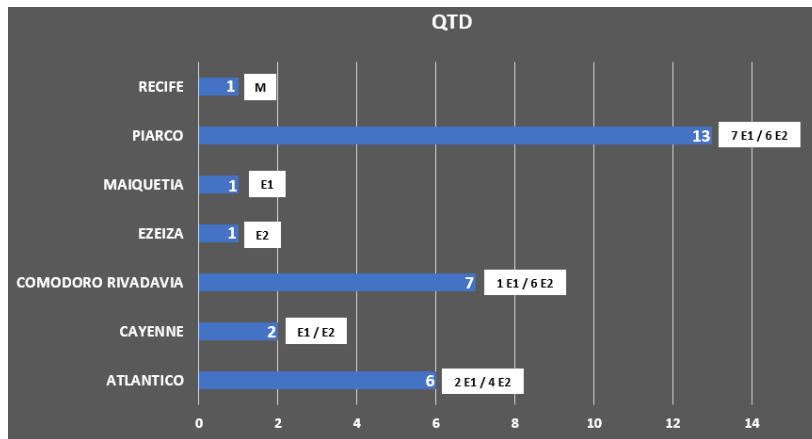


Figure 2 – crossed level representation

1.6 Specification of codes:

- E1 - Poor coordination
- E2 - Lack of coordination
- M – Other



Graf 1 - This graph shows the number of reports per code in each FIR.

- 1.7 In the following image is presented the geographical location of the positions (red points) where the reports occurred. The highest concentration of incidents was in the area bordering San Juan, Piarco and Maiquetia and in the FIR Comodoro Rivadavia around Mount Pleasant.

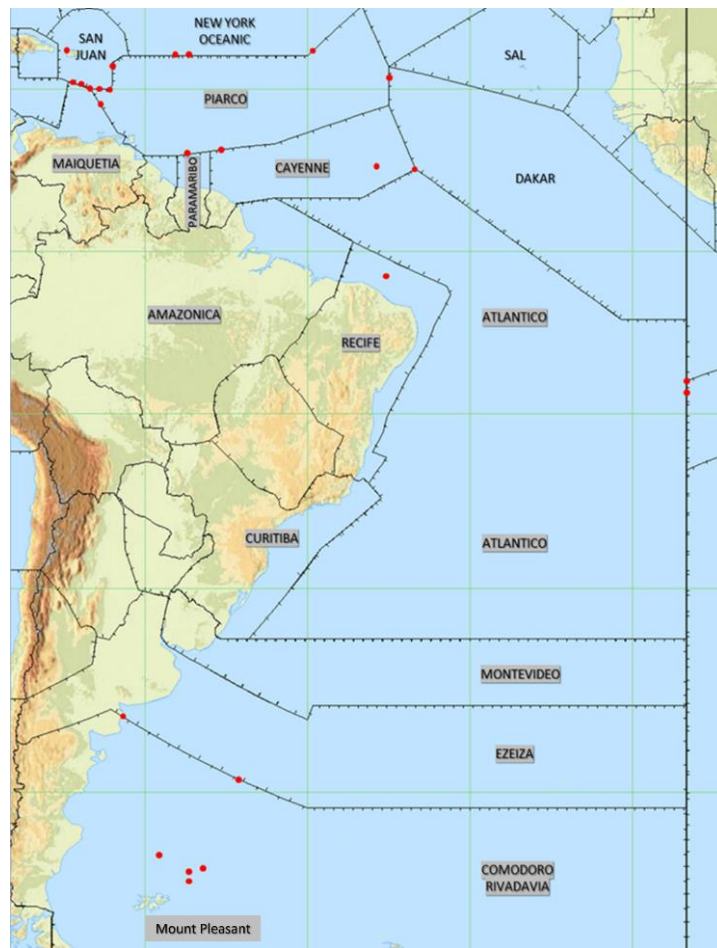


Figure 3 - geographical representation of the most reported points