Agenda Item 3: Database and a common repository

a) Analysis of results of RMAs survey and sample data collection

(Prepared by SAT SOG)

SUMMARY

This paper presents an update on the analysis of the results of the RMAs survey and sample data collection performed by SAT SOG.

REFERENCES

- SAT 24 meeting
- ACM-S meeting
- SAT –S meeting

1. Background

1.1 The South Atlantic Safety Oversight Group (SAT SOG) is responsible to the South Atlantic Steering Group (SAT SG) for monitoring the safety management of air traffic service provision in the SAT Region and encouraging the adoption of best practices.

1.2 This working group seeks to develop a plan to implement an SAT Region database similar to the one in the NAT Region and, as a result, harmonize the procedures adopted by the States for repository provision. The new SAT SOG:

a) has established a plan for the implementation of its Terms of Reference (TORs); and

b) is planning the implementation of an SAT SOG database.

1.3 This document is an update on the analysis of the results of the RMAs survey and sample data collection that has been performed. It is supported by a PowerPoint presentation (see **Appendix A**).

2. Analysis

2.1 The SAT SOG must agree on the methodology and tools used to implement and maintain a database of safety-related occurrences reported by RMAs, ANSPs, airspace users, CSPs, States and relevant stakeholders and ensure the consistency of RMA databases. The importance of establishing a safety database baseline for the SAT should consider the following:

a) the data will have to be provided by the RMAs; and

b) the data will be collected from the 3 RMAs covering 2 different PIRGs.

2.2 To create a baseline, the SAT SOG examined all actions of the 3 RMAs, including but not limited to a review of the RMAs' related activities identifying and validating regional safety-related data being monitored by each:

a) assessing safety reporting and data quality;

b) ensuring all required data elements are evident; and

c) eliminating redundant activities.

2.3 That said, the following actions were taken:

a) the creation and submission of an online survey based on the NAT CMA Terms of Reference (TORs) to verify the standardization of the data collected and their databases;

b) a comparison of the survey results between the monitoring agencies, which enabled SAT SOG to identify its ongoing work processes and check for discrepancies between them; and

c) SAT SOG conducted a sample data collection from RMAs in the SAT Region to assess the feasibility of implementing a single database.

2.4 To gather the requirements for this project effectively, the 3 actions listed above were implemented to ensure effective planning and management.

2.5 All the actions mentioned in this paper are included in the SAT-SOG annual working programme for 2023. The update on SAT-SOG's ongoing work is presented in **Appendix A.**

3. Action by the meeting

3.1 The meeting is invited to:

a) analyze the content of **Appendix A**; and

b) provide direction as deemed necessary.

— END —

WP/3.3 - APPENDIX A

APPENDIX A - SAT-SOG01
Analysis on results of RMAs survey and sample data collection

1.a
Survey on Regional Monitoring Agencies data collection

ACM-S

- Agenda item b: SAT IMG and SAT SOG development of work programme, implementation priorities/timelines and meeting schedules
- SAT-SOG work plan update and database creation proposal

International Civil Aviation Organization ACM-S - WP/06
SPECIAL ATLANTIC COORDINATION MEETING (ACM-S)
Madrid, Spain, 23-24 June 2022

(Day 2) Agenda item b: SAT IMG and SAT SOG development of work programme, implementation priorities/timelines and meeting schedules

SAT-SOG work plan update and database creation proposal

(Presented by SAT Safety Oversight Group)

SUMMARY

This paper provides an update on the ongoing work of the SAT SOG and a base proposal for a shared database between the 3 RMAs in their jurisdiction.

References

- SAT 24 meeting
- ACM 2 meeting
- SAT –S meeting

1. **Introduction**

1.1 The South Atlantic Safety Oversight Group (SAT SOG) is responsible to the South Atlantic Steering Group (SAT SG) for monitoring the safety management of air traffic service provision in the SAT Region and encouraging the adoption of best practices.

1.2 After its establishment, the SAT-SOG group carried out an analysis of its Terms of Reference (TORs), especially item 1.3, which defines how this group will ensure the availability and correct categorization of occurrences reported in its region.

1.3 Consequently, this working group seeks to develop a plan to implement a SAT Region database similar to the one in the NAT Region and, as a result, harmonize the procedures adopted by the States for repository provision. The new SAT SOG:

ACM-S

- Annex A – Survey on Regional Monitoring Agencies data collection SAT-SOG;
- The survey was submitted to the 3RMAs;

ACM-S - WP/06 - 4 -

Annex A – Survey on Regional Monitoring Agencies data collection

The South Atlantic Safety Oversight Group (SAT-SOG) is responsible to the South Atlantic Steering Group (SAT SG) for monitoring the safety management of the provision of air traffic services in the SAT Region and for encouraging the adoption of best practices. To initiate its work plan, we are starting a survey with the Regional Monitoring Agencies concerned in the SAT airspace.

Therefore, SAT-SOG invites your agency to respond to this survey. You would be providing us with information that will help us to collect data to improve safety in the South Atlantic Monitoring Area, as well as helping us get to know your RMA.

If you want to speak to us directly, you can contact the SAT-SOG team via the e-mail presented in this form.

Identification

1. RMA's identification:

2. Please, inform a point of contact e-mail:

RMA principal functions:

Does your agency monitor the level of risk as a consequence of operational errors and in-flight contingencies by:

Survey results:
https://forms.office.com/Pages/AnalysisPage.aspx?AnalyzerToken=NxHRS78zCGdYdUqz4v7Do0VGVGaTeF7j&id=Y8kxabcHVkGrDjXR95A1uKChdWfGh3RJq8I3K2h6UnRUN0lMV1hRRlhEWEtQNktaWVdKTktTRUhCRC4u

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SAT-SOG Survey outcomes

By analysing survey results:

a. What data do the RMAs collect?
b. What are the procedures/requirements for the data collection?
    i. Which procedures are shared among the 3RMAs; and
    ii. Which procedures are not shared among the 3RMAs

6

Survey analysis – shared procedures

i. Which data/procedures are shared by the RMAs:
   F2 and F3 forms
   F4 – LHD
   KSN files

ii. What are the requirements and needs to perform it

7

Survey analysis – shared procedures

3. establishing and maintaining a mechanism for collation and analysis of all operational errors, including vertical deviations of 90m (300ft) or more?

Mais Detalhes

4. determining and analysing, wherever possible, the root cause of each deviation together with its magnitude and duration?

Mais Detalhes

- **Regarding the procedures shared among the 3 RMAs:**

a. Are the procedures similar?
b. What is the update rate?
c. What are the requirements for this work, considering workload and system?
d. Propose standardization of documents.

8

Survey analysis – shared procedures

21. Does your RMA liaise with other Regional Monitoring Agencies to exchange monitoring and RVSM approvals data amongst the regions?

Mais Detalhes

Yes	3
No	0

- **Procedures shared among the 3 RMAs:**

a. Are the communication channels chosen by the RMAs to perform these actions similar?

b. In which frequency do they communicate?

22. What are the channels adopted by your RMA to exchange monitoring and RVSM approvals data amongst the regions?

Mais Detalhes

3
Respostas

Respostas Mais Recentes

"email" SATMA

"Through the KSN platform and it is published in our website." ARMA

"CARSAMMA put all monitoring data and RVSM approvals at KSN site. CARSAMMA

9

Survey analysis – shared procedures

24. Does your RMA establish and maintain a database of aircraft approved by the respective State authorities for operations within RVSM airspaces in that region?

Mais Detalhes

Yes	3
No	0

25. What platform is used to operate this database? What is the database update frequency?

Mais Detalhes

3
Respostas

Respostas Mais Recentes

"KSN " SATMA

"Now we are using the website to collect that data and we still accept the F2... ARMA

"CARSAMMA uses our "CARSAMMA's Portal" - www.carsamma.decea.mil.br/... CARSAMMA

10

Survey analysis – shared procedures

Regarding the procedures shared among the 3 RMAs:

a. Do the F2 and F3 forms have additional fields?
   If it exists, verify the need for additional fields
   Do the Excel spreadsheets have the same layout and fields?

b. How thew RMAs collect this data?
   What is the update rate?

11

Survey analysis – shared procedures

27. Can you describe how checks of the approval status of aircraft operating in the relevant RVSM airspace are performed?

Mais Detalhes

3
Respostas

Respostas Mais Recentes

"Compare traffic with KSN Database SATMA

"We use the Air Traffic Flow Data we receive from the 48 AFI States and we ... ARMA

"There are two methods: - data on traffic carried out in Brazil are collected ... CARSAMMA

28. Describe how your RMA notifies the appropriate State of Registry/State of the Operator when a non-approved operator and aircraft are using the RVSM airspace?

Mais Detalhes

3
Respostas

Respostas Mais Recentes

"via EOROCONTROL" SATMA

"We send out a letter to the State and publish registrations that we have not... ARMA

"CARSAMMA sends an email to the relevant State Contact Point. If there is n... CARSAMMA

12

Survey analysis – shared procedures

Even though the RMAs share the role of notifying the appropriate State of Registry/State of the Operator when a non-approved operator and aircraft are using the RVSM airspace, the survey **results indicate that the notification system adopted by the RMAs are different.**

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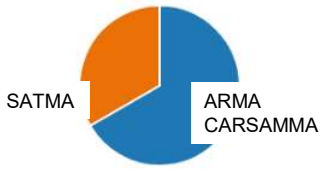
Survey analysis – distinct procedures

13. Does your RMA act as the custodian of all aircraft technical height-keeping performance data collected as part of its Regional monitoring process?

Mais Detalhes

Yes	2
No	1



14. If your agency does what was asked in the previous question, please inform the report frequency and its format:

Mais Detalhes

3
Respostas

Respostas Mais Recentes

"SATMA Works in collaboration with EUROCONTROL , so EUROCONTROL is ...

"Monthly and the data is kept in an excel format."

"Montly, data in Excel format." CARSAMMA

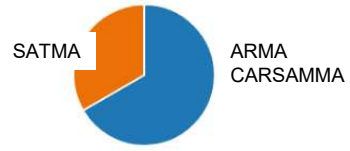
14

Survey analysis – distinct procedures

19. Does your RMA analyse ASE data to detect height deviation trends and, hence, investigate aircraft height-keeping performance?

Mais Detalhes

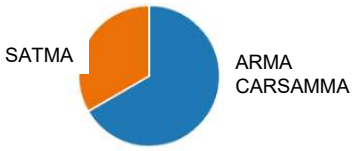
Yes	2
No	1



20. Does your RMA provide its customers and State aviation authorities with height monitoring data on request?

Mais Detalhes

Yes	2
No	1



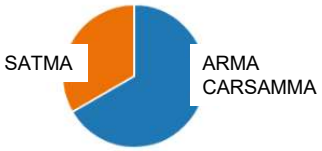
15

Survey analysis – distinct procedures

29. Does your RMA receive and maintain a database of RCP and RSP approvals issued by the associated States of Registry/the Operator?

Mais Detalhes

Yes	2
No	1



30. Does you RMA receive reports of non-compliance according to Doc 9869 (PerformanceBased Communication and Surveillance - PBCS) with RSP 180 and RCP 240 from your region's ANSP and transmit reports to the respective RMA associated with the State of the respective operator/aircraft?

Mais Detalhes

Yes	0
No	3

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Survey analysis – shared procedures

By analysing the survey results were identified procedures that the RMAs do not share:

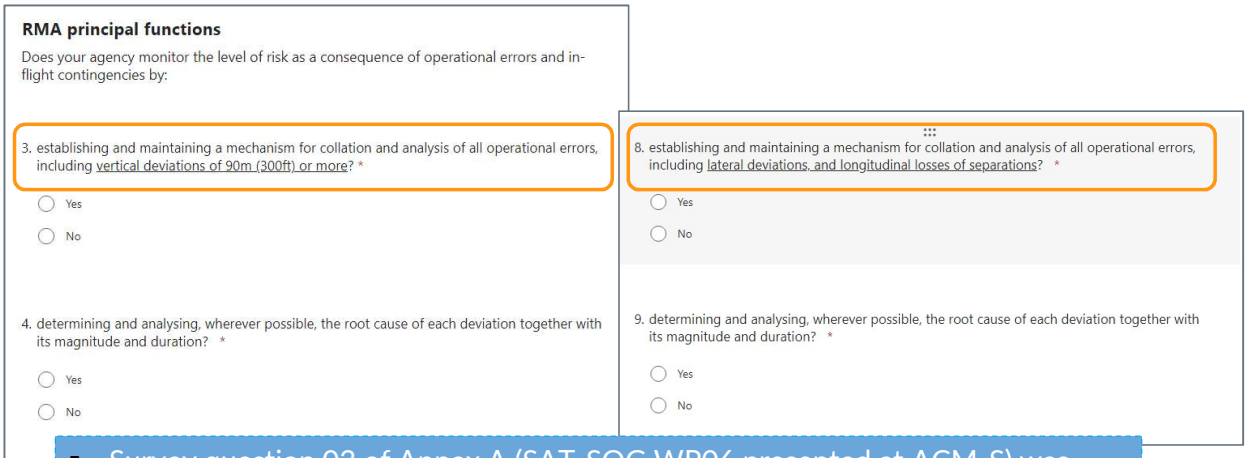
a. Why are these procedures not shared?

Regional needs;

Workload;

17

Survey outcome – distinct procedure



RMA principal functions

Does your agency monitor the level of risk as a consequence of operational errors and in-flight contingencies by:

3. establishing and maintaining a mechanism for collation and analysis of all operational errors, including vertical deviations of 90m (300ft) or more? *

Yes

No

4. determining and analysing, wherever possible, the root cause of each deviation together with its magnitude and duration? *

Yes

No

8. establishing and maintaining a mechanism for collation and analysis of all operational errors, including lateral deviations, and longitudinal losses of separations? *

Yes

No

9. determining and analysing, wherever possible, the root cause of each deviation together with its magnitude and duration? *

Yes

No

- Survey question 03 of Annex A (SAT-SOG WP06 presented at ACM-S) was split into questions 03 and 08 of the final form submitted to the RMAs.

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Survey outcome – distinct procedure

8. establishing and maintaining a mechanism for collation and analysis of all operational errors, including lateral deviations, and longitudinal losses of separations?

Mais Detalhes

Yes	1
No	2

9. determining and analysing, wherever possible, the root cause of each deviation together with its magnitude and duration?

Mais Detalhes

Yes	1
No	2

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Description of the methodology for the Collision Risk Assessment in the EUR/SAM Corridor

ENAIRE

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Page: 29/71

Description of the methodology for the Collision Risk Assessment in the EUR/SAM Corridor

3. Lateral collision risk assessment

3.1. Reich Collision risk model

As the four routes in the EUR/SAM Corridor are nearly parallel, it is possible to use the Reich Collision Risk Model to calculate lateral collision risk.

It models the lateral collision risk due to the loss of lateral separation between aircraft on adjacent parallel tracks flying at the same flight level.

The model reads as follows:

$$N_{ay} = P_y(S_y) \cdot P_z(0) \cdot \frac{\lambda_y}{S_x} \cdot \left\{ E_{y_{same}} \cdot \left[\frac{|\Delta\bar{v}|}{2 \cdot \lambda_x} + \frac{|\bar{\dot{y}}|}{2 \cdot \lambda_y} + \frac{|\bar{\dot{z}}|}{2 \cdot \lambda_z} \right] + E_{y_{opposite}} \cdot \left[\frac{2 \cdot |\bar{v}|}{2 \cdot \lambda_x} + \frac{|\bar{\dot{y}}|}{2 \cdot \lambda_y} + \frac{|\bar{\dot{z}}|}{2 \cdot \lambda_z} \right] \right\}$$

Equation 1

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Description of the methodology for the Collision Risk Assessment in the EUR/SAM Corridor

The model is based on the following hypothesis:

- All tracks are parallel
- All collisions usually occur between aircraft on adjacent routes, although, if the probability of overlap is significantly large, they may also occur on non-adjacent routes.
- The entry times into the track system are uncorrelated.
- The lateral deviations of aircraft on adjacent tracks are uncorrelated.
- The lateral speed of an aircraft is not correlated with its lateral deviation.
- The aircraft are replaced by rectangular boxes.
- There is no corrective action by pilots or ATC when aircraft are about to collide.

The model also assumes that the nature of the events making up the lateral collision risk is completely random. This implies that any location within the system can be used to collect a representative data sample on the performance of the system.

In the following sections all the parameters that appear in Equation 1 will be analysed.

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Description of the methodology for the Collision Risk Assessment in the EUR/SAM Corridor

Despite some minimal crossing traffic, the EUR SAM Corridor is formed by only four almost parallel routes, simplifying those lateral studies.

The document describes the process of calculating the risk of lateral deviations and longitudinal losses of separations in the EUR/SAM Corridor based on the Reich model adopted by ICAO.

22

Survey outcome – distinct procedure

By analysing the survey results were identified procedures that the RMAs do not share:

a. Procedures identified:

LLD and LLE calculation and collection by SATMA

Requirements and needs to perform it

23

Description of the methodology for the Collision Risk Assessment in the EUR/SAM Corridor

- **Only four almost parallel routes form the EUR SAM Corridor - does it fit in a more complex area?**
- What are the characteristics of air navigation (airways, routes) and traffic flow in SAT area?
- Is it worth creating a workshop or Ad-hoc Group to share the methodology for the Collision Risk Assessment in the EUR/SAM Corridor and implement it in other areas of SAT Region?

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1.b

Survey on Regional Monitoring Agencies data collection

Update

25

Actions related to Survey on Regional Monitoring Agencies data collection

First	Second	Third
- Submit and present the WP-06 to the ACMS (Madrid 23-24 Junho)	- Sending and submission of the Survey (Annex A) to the RMAs	- Receive survey results and RMAs data sample to analyze them and plan future actions

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Actions related to Survey on Regional Monitoring Agencies data collection

Fourth	Fifth	Sixth
- Check which monitoring procedures are shared or not by the 3 RMAs.	- Verify collection procedures, such as submission platform, document template, and submission frequency.	- Verify if the reports/procedures are standardized among the RMAs. If not, facilitate the forms and procedures standardization .

27

Actions related to Survey on Regional Monitoring Agencies data collection

Seventh	Eighth	Nineth
- Carry out actions to standardize the forms and procedures – via Ad hoc group.	- Analyze from the actions described the feasibility of designating one RMA to receive SAT Data.	- Plan SAT SOG's future actions.

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Thanks!

You can find SAT SOG Chair Team at:

Chairman: Mr Luiz Antonio -

Chairman Assistant: Ms Virginia Mignoni -

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