



**Fourth GREPECAS–RASG-PA Joint Meeting and
 Twenty-second Meeting of the CAR/SAM Regional Planning and Implementation Group
 (GREPECAS/22)**

Virtual Phase (Asynchronous, 16 September to 11 October 2024)
 In-Person Phase (Lima, Peru, 20 to 22 November 2024)

Agenda Item 2: Updates on GREPECAS-RASG-PA Joint Activities

SAFETY RISK FACTORS IN CAR/SAM RVSM

(Presented by GTE Rapporteur/Secretariat)

EXECUTIVE SUMMARY	
<p>Aggregated data analysis on Large Height Deviations (LHD) is essential to identifying trends and factors affecting the risk level in the RVSM airspace in the CAR/SAM regions.</p> <p>Identifying these trends and factors allows experts from FIRs and air operators to implement mitigating measures, improving operational safety and reducing risk in RVSM airspace.</p> <p>This Working Paper presents two of the factors that most impact the risk level in the analysis of RVSM airspace:</p> <ul style="list-style-type: none"> • Aircraft without communication • Aircraft without RVSM approval 	
Action:	Suggested actions are included in Section 5
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"> • Safety • Air Navigation Capacity and Efficiency
<i>References:</i>	<ul style="list-style-type: none"> • Preliminary Report of (GTE/24) • Working Paper WP11 GTE24 presented by Colombia • Information Paper IP02 Vertical Collision Risk Assessment of the CAR/SAM regions in 2023 by CARSAMMA.

1. Introduction

- 1.1 The joint aggregated LHD analysis is critical to enhancing safety in RVSM airspace, as it identifies trends and factors that could increase the risk of vertical collision (CRM).
- 1.2 The aggregated LHD data analysis could help FIRs and operators make informed decisions to mitigate risks, especially in areas with dense traffic or limited communication. Implementing

corrective measures reduces the likelihood of incidents, maintains operational safety standards, and contributes to achieving the Target Level of Safety (TLS) in RVSM airspace within the CAR/SAM regions.

2. Scope

2.1 This working paper aims to present updated information on the analysis of the 2023 LHD reports and the identification of various factors that affected the risk level. The goal is to prevent the recurrence of similar failures. It also seeks the experts from the FIRs and air operators to take the appropriate mitigating measures.

3. Discussion

3.1 Analysing the quantitative factors that have negatively impacted the risk level in the calculation of the Collision Risk Model (CRM) in FIRs where the risk level exceeds the Target Level of Safety (TLS), we have identified the following:

- a) Aircraft without contact with ATS services
- b) Non-RVSM-approved aircraft that overflew the FIR
- c) Limited Surveillance coverage of the FIRs

Aircraft without contact with ATS services

3.2 The 2023 LHD event analysis has identified, aircraft crossing the receiving FIR's reporting point without establishing the necessary communication as a contributing factor. The delay in communication between aircraft and the receiving FIR's air traffic services can generate LHD events, the risk assessment of which varies considerably depending on whether the FIR has surveillance coverage or not. The lack of communication by crews in airspace without radar coverage significantly impacts the safety risk (see Appendix 1 for examples of late communications).

Aircraft without RVSM approval

3.3 Operating aircraft in RVSM airspace without the necessary approval information significantly impacts the vertical collision risk assessment (CRM, Collision Risk Model), one of the main factors contributing to some CAR/SAM FIRs being above the desired safety level (TLS).

3.4 The FIRs identified above the target safety level (TLS) in 2023, and which suffered the risk of aircraft operating without RVSM approval were:

- Port Au Prince: 22 aircraft operated in RVSM airspace without approval.
- La Paz: 19 aircraft operated in RVSM airspace without approval.
- Guayaquil: 11 aircraft operated in RVSM airspace without approval.
- Curacao: 2 aircraft operated in RVSM airspace without approval.
- Panama: 7 aircraft operated in RVSM airspace without approval.

3.5 Air traffic service providers authorize aircraft overflights in RVSM airspace based on the information provided by operators in item 10 of the flight plan or on information provided by the crews via the frequency through a flight plan update related to the RVSM status. However, on some occasions, the aircraft that update their flight plan by communication frequency are not registered as RVSM approved in the RVSM capabilities database managed by CARSAMMA.

3.6 Aircraft not listed in the CARSAMMA RVSM capabilities database or other Monitoring Agencies (RMA) overfly various RVSM airspaces during their route, creating an operational safety risk. However, this risk is only identified when a coordination error between the involved FIRs causes an LHD event or through the "prolonged audit" carried out by CARSAMMA.

3.7 The "Prolonged Audit" is an activity conducted by CARSAMMA and other monitoring agencies based on flight plans or other information (e.g., ADS data) to identify aircraft operating in RVSM airspace without being registered in the RVSM capabilities databases.

3.8 During 2023 and 2024, CARSAMMA identified several aircraft without RVSM information in its database and requested official information from the States of registration. However, some States in the CAR/SAM regions have not responded to CARSAMMA's communications, hindering the update of this database.

4. Conclusions

4.1 We can conclude that when flight crews fail to contact the Flight Information Region (FIR) they are about to enter, they are disregarding the procedure established in Document 4444 - Procedures for Air Navigation Services. According to section 4.11.1.1 "On routes defined by designated significant points, the aircraft shall transmit position reports upon passing the vertical, or as soon as possible after flying over each designated compulsory reporting point, except as provided in 4.11.1.3 and 4.11.3. The relevant ATS unit may request additional reports at other points."

4.2 It is important to consider Annex 2 – Rules of the Air, section 3.3.4, Changes to a Flight Plan: "All changes to a flight plan submitted for an IFR flight, or a VFR flight operated as a controlled flight, shall be reported as soon as possible to the appropriate air traffic services unit."

4.3 These concepts are essential for the operation of aircraft in any controlled airspace, especially in RVSM.

5. Suggested actions

5.1 The Meeting is invited to:

- a. Urges States to note the factors identified in the data analysis that affect operational safety in the CAR/SAM RVSM airspace, especially regarding aircraft without communication entering the FIR or without RVSM capabilities information, which impacts the safety risk.
- b. Urge States to improve communication with CARSAMMA, facilitating the exchange of RVSM capability data for aircraft registered in CAR/SAM States.
- c. Propose other measures to improve safety in the RVSM airspace of the CAR/SAM FIRs.