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North American, Central American and Caribbean Office

WORKING PAPER

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Ninth North American, Central American and Caribbean Working Group Meeting (NACC/WG/09)
Mexico City, Mexico, 30 September to 04 October 2024

Agenda Item 2: **Follow-up to the Conclusions and Previous Agreements of the NACC/WG, CAR/SAM Planning and Implementation Regional Group (GREPECAS) and regional initiatives related to air navigation**

CAR REGION RVSM AIRSPACE SAFETY REVIEW

(Presented by the Secretariat)

EXECUTIVE SUMMARY

This Working Paper provides information regarding the results of the safety performance analysis of the CAR Region Reduced Vertical Separation Minimum (RVSM) airspace presented to the CAR/SAM Planning and Implementation Regional Group (GREPECAS) Twenty Fourth Scrutiny Working Group Meeting (GTE/24) and request the NACC/WG to make recommendations to address the main issues identified.

Action:	Suggested actions are included in Section 5
Strategic Objectives:	• Safety
References:	• CAR/SAM Planning and Implementation Regional Group (GREPECAS) Twenty Fourth Scrutiny Working Group Meeting (GTE/24). Mexico City, Mexico, 5 to 9 August 2024

1. Introduction

1.1 The implementation of Reduced Vertical Separation Minima (RVSM) in the Caribbean Region became effective on 20 January 2005. Under the framework of the CAR/SAM Regional Planning and Implementation Group (GREPECAS) the establishment of a Scrutiny Working Group was approved, to follow up and review the performance of operations in RVSM airspace conducted by the Caribbean and South American Regional Monitoring Agency (CARSAMMA).

1.2 The main objective of the GREPECAS Scrutiny Working Group (GTE) is to identify the safety trends based on the analysis of the Large Height Deviations (LHDs) reports and recommend mitigation actions associated with the LHDs.

1.3 The GTE is composed of experts from the CAR/SAM Regions qualified in the analysis and assessment of LHDs. This Group also carries out an important coordination work with the North American Approvals Registry and Monitoring Organization (NAARMO). The GTE reports to GREPECAS on the results of safety assessments to improve safety in the CAR/SAM RVSM airspace.

2. Analysis

2.1 To comply with its objectives, the GTE carries out several activities during the year, required to support Air Traffic Service (ATS) providers to compile data on LHD events, bilateral coordination to validate the occurrences, and submit validated events to the corresponding Regional Monitoring Agency. The main responsibility for the RVSM safety review is performed by the CARSAMMA, but the compilation of LHD events is shared between the CARSAMMA and NAARMO, according to Graph 1 in the **Appendix** to this Working Paper.

2.2 The GTE meets annually, and reports to GREPECAS the results of the RVSM review performed by the CARSAMMA and main trends in occurrences identified. Due to the current nature of the GREPECAS meetings, with more executive analysis instead of detailed technical review, some of the root causes of LHD events are not being addressed by the corresponding air navigation implementation support working groups. Consequently, the Secretariat decided to present this paper to the NACC/WG, to provide information and request actions to address possible issues of concern.

3. Safety Evaluation of the RVSM Airspace of the CAR Region

3.1 During the Twenty Fourth Scrutiny Working Group Meeting (GTE/24), held in Mexico City, Mexico, 5 to 9 August 2024, several issues were identified that are important to be brought to the attention of the NACC/WG Meeting.

3.2 Flight Information Regions that exceeded the Target Level of Safety

3.2.1 The level of risk in the RVSM airspace considered acceptable was named "Target Level of Safety" (TLS), which is expressed as 5×10^{-9} fatal accidents per flight hour in the RVSM airspace. The vertical collision assessment performed by the CARSAMMA for 2023, shows that the Port-au-Prince, Curacao, and Santo Domingo FIRs experienced risk above the TLS.

3.2.2 Port au Prince FIR

- Total LHDs reported: 40
- Unauthorized occupation of Flight Levels: 58 Minutes
- Unauthorized Flight Levels crossed: 67
- Main factors that increase the risk of collision:
  - Number of NON RVSM Approved aircraft (22) flying through this FIR.
  - The passage of air traffic in a reduced geographic and temporal airspace requires timely and more precise coordination.

3.2.3 Curacao FIR

- Total LHDs reported: 27
- Unauthorized occupation of Flight Levels: 28 Minutes
- Unauthorized Flight Levels crossed: 29
- Main factors that increase the risk of collision:
  - More attention to the acceptance and transferring of traffic.

3.2.4 Santo Domingo FIR

- Total LHDs reported: 47
- Unauthorized occupation of Flight Levels: 33 Minutes
- Unauthorized Flight Levels crossed: 27
- Main factors that increase the risk of collision:
  - Number of NON RVSM Approved aircraft (22) flying through this FIR.
  - The passage of air traffic in a reduced geographic and temporal airspace requires timely and more precise coordination.
  - The LHD time on a two-way, opposite-directional airway was 33 min (high).
  - 17 "NON RVSM" aircraft flying over this FIR.
  - The MDCS FIR is located between routes with a high volume of traffic, and short extent, leaving little time for receiving messages and making decisions, more attention should be paid to coordination at transfer communication points (TCPs).

3.3 Most reported TCPs 2029-2023

3.3.1 The CARSAMMA performed an analysis of the most reported transfer of control points (TCPs) in the CAR Region for LHDs since 2019. The table below shows the top 5 most reported TCPs for LHD per year:

RANKING	2019	2020	2021	2022	2023
01	ETBOD	BEROX	PALAS	PIGBI	ETBOD
02	PIGBI	DCR	KARUM	BEROX	NOSIS
03	PALAS	PALAS	KISAS	ETBOD	KARUM
04	BEROX	RETAK	BEROX	VESKA	PIGBI
05	DCR	PIGBI	PIGBI	ONPAD	VESKA

3.3.2 Using as a reference the most reported TCPs, we can identify the most reported FIRs for the CAR Region in the table below.

RANKING	2019	2020	2021	2022	2023
01	Port au Prince / Santo Domingo	Curaçao / Santo Domingo	Curaçao / Santo Domingo	Port au Prince / Santo Domingo	Port au Prince / Santo Domingo
02	Port au Prince / Santo Domingo	Port au Prince / Santo Domingo	Curacao / Santo Domingo	Curaçao / Santo Domingo	Kingston/ Port au Prince
03	Curaçao / Santo Domingo	Curaçao / Santo Domingo	Curaçao / Santo Domingo	Port au Prince / Santo Domingo	Curaçao / Santo Domingo
04	Curaçao / Santo Domingo	Port au Prince / Santo Domingo	Curaçao / Santo Domingo	Curaçao / Santo Domingo	Port au Prince / Santo Domingo
05	Port au Prince / Santo Domingo	Port au Prince / Santo Domingo	Port au Prince / Santo Domingo	Port au Prince / Santo Domingo	Curaçao / Santo Domingo

3.4 Review of LHD events with air traffic control facilities of the United States

3.4.1 With the objective of exchanging information about each LHD event, validating it, and ensuring the implementation of immediate corrective actions that prevent its possible recurrence, the GTE established a procedure that requires coordination between the adjacent ATS units involved in each event before sending the report to the corresponding Regional Monitoring Agency. This procedure is carried out normally by the Points of Contact accredited to the CARSAMMA.

3.4.2 However, United States Air Traffic Control Centres (ATCC) do not routinely notify adjacent facilities when a coordination error occurs. Most Air Traffic Control (ATC) units will call the adjacent facility at the time of the occurrence, but this call does not always generate the necessary investigation to determine underlying causes. It is recommended that ATC facilities communicate these reports with the adjacent ATC unit to ensure data retention has not expired.

3.4.3 GREPECAS Conclusion 21/23 required Mexico and United States to implement procedures to ensure the exchange of LHD events that occur with Flight Information regions (FIRs) from other States.

4. Conclusions

4.1 The work to ensure that the performance of operations in the RVSM airspace of the CAR/SAM Regions remains below the TLS, requires the intervention of multiple stakeholders, with a significant amount of work dedicated to data collection carried out by the States, the data analysis performed by the monitoring agencies, and the evaluation of these results carried out by the GTE.

4.2 All this work only makes sense if the appropriate actions are taken to address the safety issues that may be identified by this process.

4.3 The NACC/WG and the corresponding implementation task forces, can play an invaluable work to enhance safety of operations in the CAR Region RVSM airspace.

5. Suggested Actions

5.1 The Meeting is invited to:

a) take note of the information provided in this Paper;
b) make recommendations for the development of action plans for FIRs that exceeded the TLS in 2023;
c) encourage the air traffic control centres of the United States to share information with adjacent facilities when a coordination error occurs and implement joint actions to prevent their recurrence; and,
d) suggest any other action deemed necessary.

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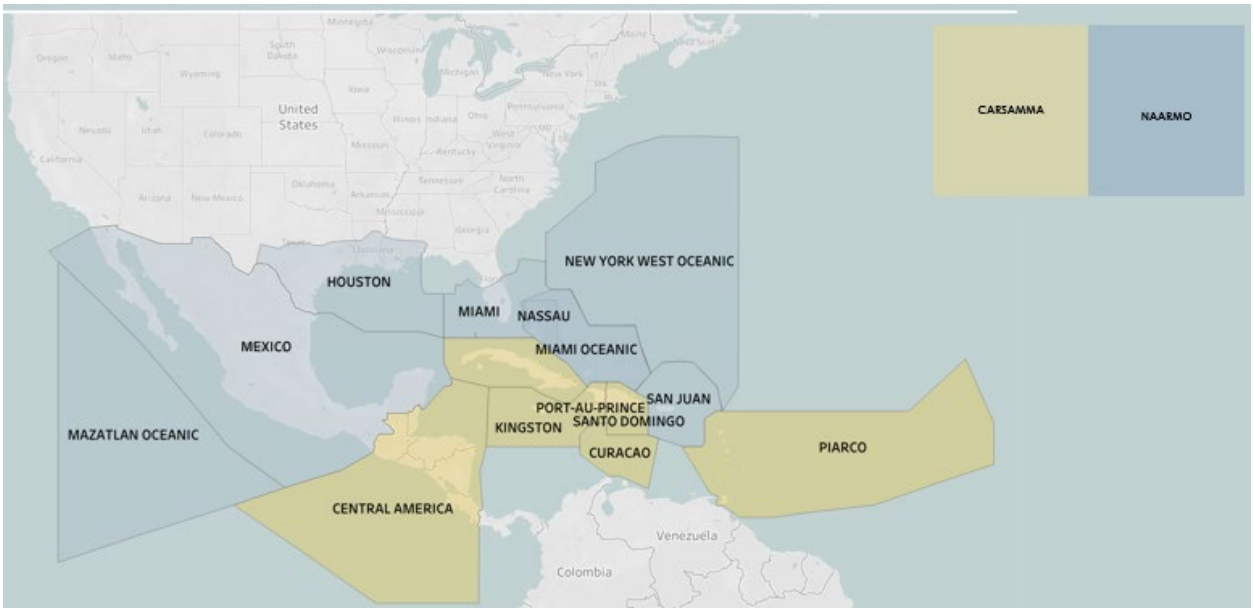
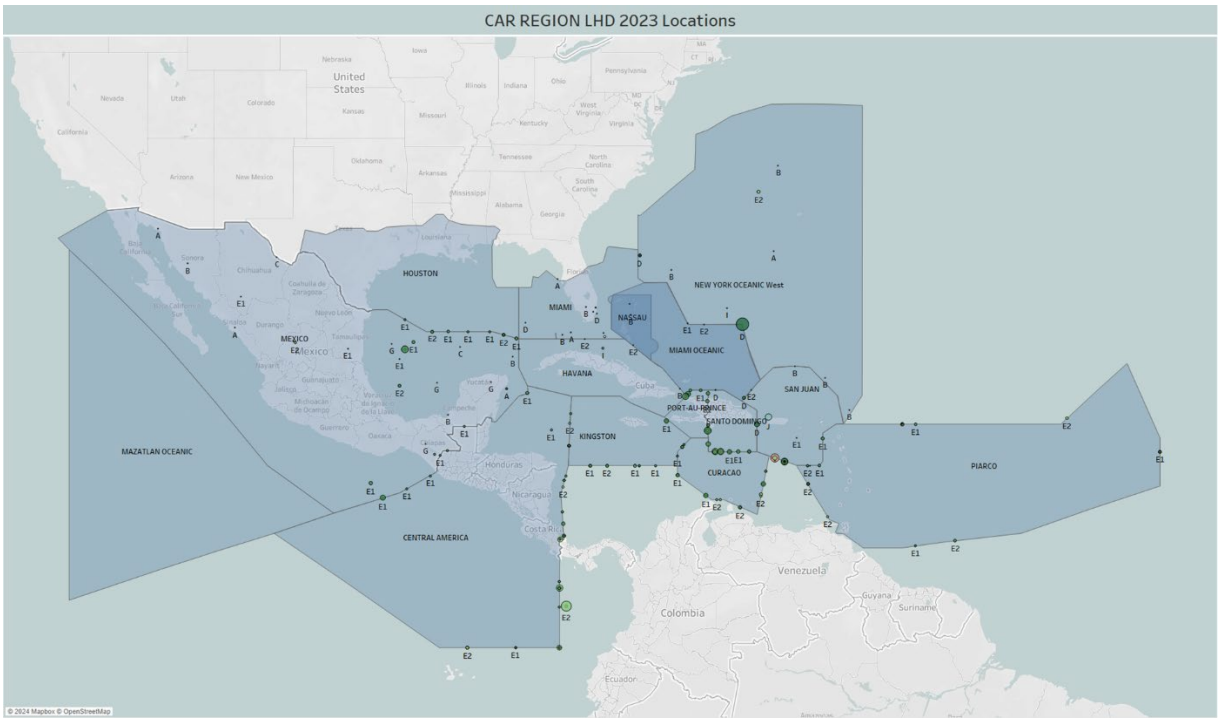
APPENDIX/APÉNDICE
CAR REGION RVSM AIRSPACE SAFETY REVIEW/
REVISIÓN DE SEGURIDAD OPERCACIONAL DEL ESPACIO AÉREO RVSM DE LA REGIÓN CAR



Division of the Responsibilities for RVSM Monitoring/LHD notification in the CAR Region/ División de responsabilidades para el monitoreo de RVSM y la notificación de LHD en la Región CAR
Graph 1/Gráfica 1



Location of CAR Region LHD Events in 2023/ Ubicación de los eventos LHD de la Región CAR en 2023
Graph 2/Gráfica 2

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