International Civil Aviation Organization
North American, Central American and Caribbean Office

WORKING PAPER

NACC/WG/10 — WP/20
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Tenth North American, Central American and Caribbean Working Group Meeting (NACC/WG/10)
Tulum, Quintana Roo, Mexico, from 8 to 12 September 2025

Agenda Item 2: **Follow-up to the Conclusions and Previous Agreements of the NACC/WG, GREPECAS and NACC/DCA meetings**

IMPROVE CAR REGION RVSM AIRSPACE TARGET LEVEL OF SAFETY: FOLLOW-UP CAR REGION RVSM AIRSPACE SAFETY REVIEW

(Presented by the Secretariat)

EXECUTIVE SUMMARY

This Working Paper informs the progress of the NACC/WG/9 Conclusion regarding the improvement to the CAR Region CAR Region Reduced Vertical Separation Minimum (RVSM) Target Level of Safety and updates the results of the CAR/SAM Planning and Implementation Regional Group (GREPECAS) Twenty Fifth Scrutiny Working Group Meeting (GTE/25).

Action:	Suggested actions are included in Section 6
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency
References:	• Final Report of the Ninth North American, Central American and Caribbean Working Group Meeting (NACC/WG/9), Mexico City, Mexico, 30 September to 4 October 2024 • Preliminary Report of the Twenty-Fifth Scrutiny Working Group Meeting (GTE/25) of the CAR/SAM Regional Planning and Implementation Group (GREPECAS), Río de Janeiro, Brazil, 18–22 August 2025

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. A brief explanation of LHDs is included in **Appendix A**.

2. Foundation of the RVSM airspace safety monitoring

2.1 The RVSM airspace safety monitoring has three basic inputs, required to be reported to the Regional Monitoring Agencies (RMA):

- Information on the RVSM/PBCS certification of each aircraft flying RVSM airspace.
- Information on the occurrence of LHDs.
- Information on the number of operations in the RVSM airspace per each Flight Information Region (FIR).

2.2 The collection of LHD events is conducted by the area control centres accredited to their respective RMA. The main responsibility for the CAR/SAM RVSM safety review is performed by the CARSAMMA, but the compilation of LHD events is shared between the CARSAMMA and the North American Approvals Registry and Monitoring Organization (NAARMO), according to Graph 1 in **Appendix B** to this Working Paper. In the CAR Region most of the FIRs are accredited to the CARSAMMA. Mexico and FIRs where the ATC is provided in the upper airspace by the United States FAA report to NAARMO.

2.3 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 Fifth Scrutiny Working Group Meeting (GTE/25), held in Río de Janeiro, Brazil, 18–22 August 2025, several issues were identified that are important to be brought to the attention of the NACC/WG Meeting. Graphs 2 and 3 in Appendix B to this Working Paper provides the location of all LHDs occurred in the CAR Region.

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 x 10^{-9} fatal accidents per flight hour in the RVSM airspace. The vertical collision risk assessment performed by the CARSAMMA for 2024, shows that the Port-au-Prince, Curacao, and Santo Domingo FIRs experienced risk above the TLS. Table 1 below provides detailed information for the CAR Region TLS.

RMA	FIR/UIR	No. of flights	Flying Hours[1]	VR[2] Estimate
CARSAMMA	Central America MHCC	20,808	336,154.04	3.26046E-10
CARSAMMA	Curacao TNCF	6,652	25,927.43	9.6032E-09
CARSAMMA	Habana MUFH	27,865	269,640.53	8.62355E-10
CARSAMMA	Kingston MKJK	14,091	158,227.64	4.39594E-11
CARSAMMA	Piarco TTZP	9,284	66,418.56	1.17051E-09
CARSAMMA	Port-Au-Prince MTEG	2,205	10,847.59	5.67972E-09
CARSAMMA	Santo Domingo MDCS	10,402	40,752.45	9.127742E-09
NAARMO	Houston Oceanic KZHU	112,644	167,173	1.18025E-09
NAARMO	Mexico MMFR	1,403,060	1,525,126.89	1.78306E-09
NAARMO	Miami Oceanic/ San Juan KZMA/TJZS	323,604	415,998.08	1.58615E-09
NAARMO	New York Oceanic West KZWY	288,168	389,458.80	4.5575E-10

Table 1.

Note 1: 2024 flying hours observed in traffic sample display .Note 2: 2024 Vertical Risk Estimate compared to the TLS 5 x 10-9

3.3 Most reported TCPs 2020-2024

3.3.1 CARSAMMA performed an analysis of the most reported transfer of control points (TCPs) in the CAR Region for LHDs since 2020. The table below shows the top 5 most reported TCPs for LHD per year:

RANKING	2020	2021	2022	2023	2024
01	BEROX	PALAS	PIGBI	ETBOD	ETBOD
02	DCR	KARUM	BEROX	NOSIS	BEROX
03	PALAS	KISAS	ETBOD	KARUM	PALAS
04	RETAK	BEROX	VESKA	PIGBI	PIGBI
05	PIGBI	PIGBI	ONPAD	VESKA	KISAS

Table 2

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

RANKING	2020	2021	2022	2023	2024
01	Curaçao / Santo Domingo	Curaçao / Santo Domingo	Port au Prince / Santo Domingo	Port au Prince / Santo Domingo	Port au Prince / Santo Domingo
02	Port au Prince / Santo Domingo	Curacao / Santo Domingo	Curaçao / Santo Domingo	Kingston/ Port au Prince	Curaçao / Santo Domingo
03	Curaçao / Santo Domingo	Curaçao / Santo Domingo	Port au Prince / Santo Domingo	Curaçao / Santo Domingo	Curaçao / Santo Domingo
04	Port au Prince / Santo Domingo	Curaçao / Santo Domingo	Curaçao / Santo Domingo	Port au Prince / Santo Domingo	Port au Prince / Santo Domingo
05	Port au Prince / Santo Domingo	Port au Prince / Santo Domingo	Port au Prince / Santo Domingo	Curaçao / Santo Domingo	Curaçao / Santo Domingo

Table 3

4. Follow-up Pending NACC/WG Conclusion

4.1 The Ninth North American, Central American and Caribbean Working Group Meeting (NACC/WG/9), Mexico City, Mexico, 30 September to 4 October 2024 approved Conclusion NACC/WG/09/01, IMPROVE CAR REGION RVSM AIRSPACE TARGET LEVEL OF SAFETY.

4.2 Curacao, Dominican Republic and Haiti, presented action plans to reduce the TLS they exceeded in 2023. However, the action plans were developed individually, and the Secretariat could not coordinate the harmonization of the action plans. The three FIRs exceeded again the TLS in 2024.

4.3 The United States FAA is actively developing procedures for notification and coordination of LHD events that occur at transfer of control points (TCPs) with adjacent CAR Area Control Centres (ACC). The objective is to leverage successful quality assurance LHD protocols currently used at San Juan ACC, to create standard operating procedures (SOP) to follow by FAA and SENEAM facilities that are under NAARMO evaluation/scrutiny authority. Doing so will ensure timely and comprehensive evaluation, validation and coordination of LHD events to all stakeholders within the CAR Region and with designated CARSAMA Points of Contact (PoCs), allowing RMAs to efficiently coordinate LHDs among themselves.

4.4 The Secretariat has not completed the work to establish the link, with sufficient detail, between the operational conditions of the FIRs that exceed the TLS and the lack of implementation of essential ANS elements. However, considering that the majority of LHD events are caused by ATC communication errors, it is evident that the implementation of automated ATS inter-facility data communication can significantly reduce the occurrence of LHDs.

5. Conclusions

5.1 The GREPECAS GTE remains the only forum to analyze the safety performance for the provision of air traffic services in the CAR/SAM Regions. The Secretariat would like to encourage the support of the GTE work, particularly that from the States Points of Contact which provides the data that serves as the foundation of the scrutiny process. The participation from States that provide air traffic control in the upper airspace of the CAR Region is vital for the compliance with the established objectives.

5.2 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. The objective analysis and evaluation of the GTE results will enhance the work of the NACC/WG by allowing the task forces to identify key implementation initiatives and assess the result of previous implementations.

5.3 The Secretariat suggests a trilateral meeting between the FIRs of Curacao, Port-Au-Prince and Santo Domingo to continue working together to update their operational letters of agreement, improving their operational procedures and enhancing their collaboration.

6. Suggested actions

6.1 The Meeting is invited to:

a) Take note of the information provided in this Working Paper and provide guidance to enhance the collaboration between the NACC/WG and the GREPECAS GTE.

b) Request the Secretariat to coordinate with Curacao, Dominican Republic and Haiti to evaluate the viability of a trilateral meeting to continue working together to update their operational letters of agreement, improving their operational procedures and enhancing their collaboration.

c) Request any other action deemed necessary.

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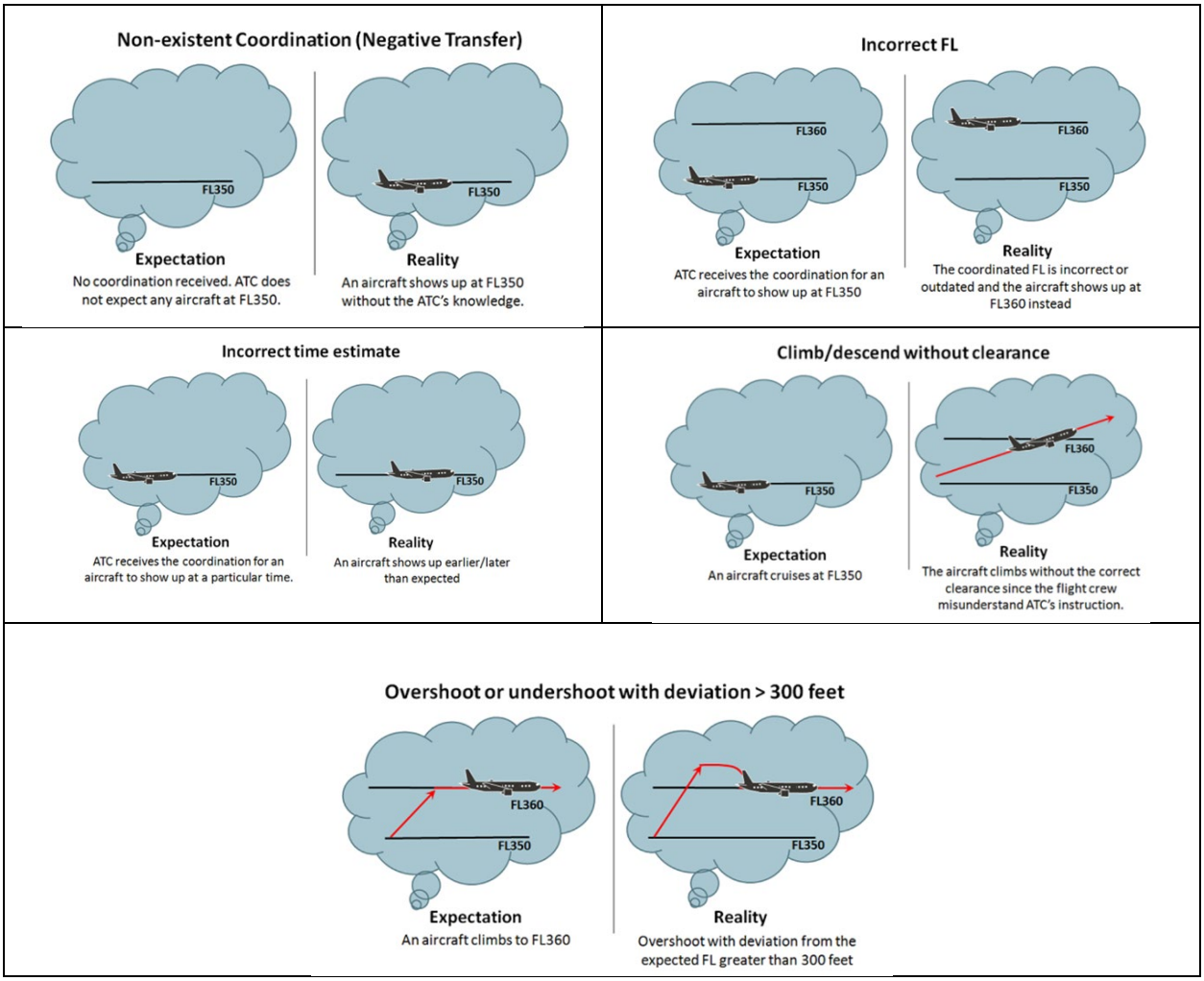
Appendix A
Description of Large Height Deviations LHD



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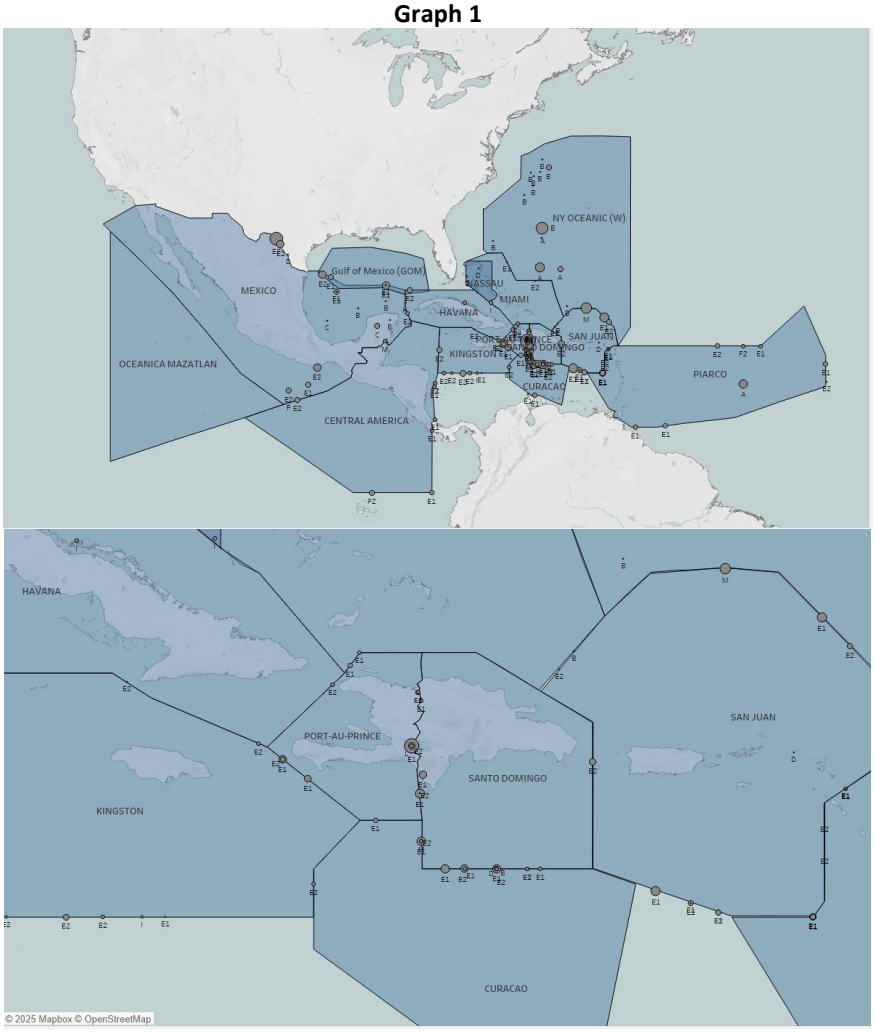
Appendix B

RESPONSIBILITIES FOR THE COLLECTION AND LOCATION OF LARGE HEIGHT DEVIATIONS

Division of the Responsibilities for RVSM Monitoring/LHD notification in the CAR Region

Graph 1



Location of CAR Region LHD Events in 2024

Graphs 2 and 3

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