International Civil Aviation Organization

CAR/SAM Planning and Implementation Regional Group (GREPECAS) Twenty-Third Scrutiny Working Group Meeting

GTE/23

Final Report

Lima, Peru 11 to 15 September 2023

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

This report presents the outcome of the analysis of the data presented at the twenty-third meeting of the GREPECAS Scrutiny Group – GTE/23.

As part of the RVSM airspace monitoring of the CAR/SAM regions.

List of Contents

Contents	Page

HISTORICAL

ii.1 Place and Date of the Meeting

The CAR/SAM Planning and Implementation Regional Group (GREPECAS) Twenty Third Scrutiny Working Group Meeting (GTE/23) was held in Lima, from 11 to 15 September 2023.

ii.2 Opening Ceremony

Mr. Fabio Rabbani Regional Director of the South American (SAM) Office of ICAO thanked the participants for attending the Meeting and highlighted the agenda items wishing success to the event.

The Secretariat welcomed the gathered participants from States and international organizations.

ii.3 Organization of the Meeting

Mr. Roberto Sosa, Regional Officer Air Traffic Management (ATM) and Search and Rescue (SAR) of the ICAO South American Regional Office acted as Secretary of the Meeting, assisted by Mr. Eddian Méndez, Regional Officer Air Traffic Management (ATM) and Search and Rescue (SAR) of the ICAO North American, Central American and Caribbean Regional Office (NACC). Mrs. Diana Maria Luque Salcedo acted as GTE Rapporteur.

ii.4 Working Languages

The working languages of the Meeting were English and Spanish. The working papers, information papers and draft report of the meeting were available to participants in both languages.

ii.5 Schedule and Working Arrangements

It was agreed that the working hours for the sessions of the meeting would be from 08:00 to 14:30 hours daily with adequate breaks.

ii.6 Agenda

Agenda Item 1: Review of the previous CARSAMMA and Scrutiny Group Meetings Conclusions and Recommendations

a) Review of previous conclusions
b) Review of previous recommendations

Agenda Item 2: Review of the results of Large Height Deviation (LHD) analysis

a) Indicators data on points of greatest occurrence of LHD events
b) Actions taken for the improvement of LHD event data capture and for the improvement of RVSM state capture by Registry States or the Operator
c) Results of the RVSM airspace safety assessment project for the CAR and SAM Regions
d) Identifying trends
e) Lessons learned by CAR/SAM States to reduce the number of LHDs
f) Report on the progress of the States in the reduction of LHDs.

Agenda Item 3: Activities and tasks to be reported to GREPECAS

a) Review of tasks to report to GREPECAS

Agenda Item 4: Data Analysis and Sharing

a) Cooperation GTE/PA-RAST
b) Data analysis

Agenda Item 5: Other business

a) Flight Plan Audit Report
b) Bilateral working meetings
c) Collision Risk Model (CRM) workshop
d) Other matters

ii.7 Attendance

The Meeting was attended by 15 States/Territories from the CAR and SAM Regions and 1 International Organization, totalling 29 delegates as indicated in the list of participants.

ii.8 List of Working and Information Papers and Presentations

The whole documentation of the Meeting is available at the following link:

https://www.icao.int/SAM/Pages/ES/MeetingsDocumentation_ES.aspx?m=2023-GTE23&t=1

Number	Agenda Item	WORKING PAPERS Title	Prepared and Presented by
WP/01	1	Agenda, schedule and working methods	Secretariat
WP/02	1	Review of previous CARSAMMA and scrutiny group meeting conclusions and recommendations	Secretariat
WP/03	2	vertical collision risk calculation (CRM)	CARSAMMA
WP/04	2	Identification of trends	CARSAMMA
WP/05	5	Safety assessment of the CAR/SAM RVSM airspace	CARSAMMA
WP/06	5	Modification of CARSAMMA's terms of reference	CARSAMMA
WP/07	5	Analysis of the evaluation process of the calculation of vertical risk in RVSM airspace for safety enhancement	Rapporteur
WP/08	2	Strategy for the reduction of LHD in Colombia, Ecuador and Panama	Secretariat
WP/09	2	Action plan for mitigation of LHD events FIR Barranquilla and FIR Bogota	Colombia
WP/10	2	Vertical safety monitoring report for Miami oceanic, New York west, and San Juan airspace – 2022	NAARMO
WP/11	2	Analysis and classification of human error	Dominican Republic
WP/12	2	CAR/SAM RVSM airspace monitoring programme	Secretariat
WP/13	5	Actions to improve the LHD CARSAMMA FORM F4, of the working group on scrutiny GTE	Rapporteur

Number	Agenda Item	INFORMATION PAPERS Title	Prepared and Presented by
IP/01	5	Long-term audit	CARSAMMA
IP/02	5	Technical analysis regarding the performance of the data link capacity during the period in which the ITCZ (Intertropical Convergence Zone) IS active in the FIR-AO AREA	CARSAMMA
IP/03	5	Communications between RMA and civil aviation authorities	CARSAMMA
IP/04	5	NAARMO Long Term Height Monitoring Burden (LTHMB)	NAARMO
IP/05	5	NAARMO traffic compliance	NAARMO
IP/06	4	MEXICO Area Airspace Vertical Safety Monitoring Report – 2022	NAARMO

LISTS OF PARTICIPANTS

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Agenda Item 1: Review of the previous CARSAMMA and Scrutiny Group meetings conclusions and recommendations

a) Review of previous conclusions
b) Review of previous recommendations

1.1 The Meeting began with the review of WP/01, presented by the Secretariat, containing the draft agenda and the items to be addressed. The Secretariat highlighted that the GTE/23 agenda contained all the items that had been previously addressed by face-to-face meetings of the Scrutiny Group, and that the respective working and information papers had been submitted to cover all the topics of interest.

1.2 The participants adopted the draft agenda presented by the Secretariat.

1.3 The Secretariat presented WP/02 for the review of previous GTE conclusions and recommendations. In connection with the meeting, a detailed analysis and review of all the conclusions in force to date was carried out.

1.4 The participants went on to review each of the conclusions and recommendations. The results of the review were as follows:

- Conclusion GTE/16-2 was considered completed, and it is requested to update the equipment focal points.
- Conclusion AWG/18-2 paragraph b) considered completed.
- Conclusion GTE/18-3 paragraph a) remains valid and paragraph b) is concluded due to the discontinuation of the SIMS.
- Conclusion AWG/19-1 was considered completed.
- Conclusion AWG/19-2 paragraph updated.
- Conclusion AWG/20-1 was considered completed.
- Conclusion GTE/20-2 is replaced by conclusion GTE/22-04.
- Conclusion AWG/22-1 was considered completed
- Conclusion AWG/22-2 a) and b) were considered finalized.
- Conclusion GTE/22-4 was updated, it replaces conclusion GTE/20-2.

1.5 During the review of the conclusions and recommendations, the Secretariat again reminded the participants that the conclusions and recommendations, even if finalised, represented tasks and commitments that were part of the work of the GTE and thus the importance of their follow-up.

1.6 The status and follow-up comments on each conclusion are based on the review carried out by the Secretariat and the representatives of States and international organisations.

APPENDIX

REVIEW OF PREVIOUSCARSAMMA AND SCRUTINY GROUP MEETING CONCLUSIONS AND RECOMMENDATIONS

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
GTE/14-2	**ORIENTATION HANDBOOK FOR CARSAMMA ACCREDITED POINTS OF CONTACT**	That, CAR/SAM Regions States use the Orientation Handbook for CARSAMMA Accredited Points of Contact attached in Appendix B to this part of the Report, with a view to train their Points of Contact (PoC), as well as to improve the submission of the needed data, so that CARSAMMA can perform its responsibilities.	CAR/SAM Regions States			**COMPLETED**
GTE/14-3	**METIGATION MEASURES FOR REDUCTION OF OPERATIONAL RISKS CAUSED BY LHD**	That, considering that the CAR/SAM Regions are significantly above the maximum acceptable operational risk values caused by LHD, the following measures to be taken: requesting the correspondent mitigation actions, considering the urgency that risk caused by LHD requires:				**COMPLETED**
		a) that the CAR/SAM States adopt mitigation measures to reduce operational risk caused by LHD as soon as possible, considering the best practices attached as Appendix A to this part of the report.	CAR/SAM States			**COMPETED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
		b) that the CAR/SAM States present Operational Risk caused by LHD Mitigation National Plans, as well as adopted mitigation measures to the GTE/15 meeting.	CAR/SAM States			**COMPETED**
		c) that the ICAO NACC and SAM Offices send an individual letter to each CAR/SAM State and ANSP informing the situation of LHD that affect operational safety in their airspace, based on detailed data obtained from CARSAMMA, and	States and ANSP			**COMPLETED**
		d) the States and ANSP present a report on mitigation measures implementation progress, based in SMS to ICAO NACC and SAM Regional Offices.	States and ANSP			**COMPLETED**
GTE/14-4	**IMPLEMENTATION OF REGIONAL MONITORING AGENCY (RMA) FOR THE CAR REGION**	That, considering infrastructure and qualified personnel, Dominican Republic in coordination with CAR States, develops a project for the implementation of a Regional Monitoring Agency (RMA) venued in Dominican Republic for the CAR Region in accordance with ICAO requirements and provides this project to GREPECAS by 31 December 2015.			31 December 2015	**COMPLETED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
GTE/16-1	**USE OF CARSAMMA PROCESS HANDBOOK IN CAR/SAM AREA CONTROL CENTRE (ACCs)**	That, States and International Organizations of the CAR/SAM Regions use the CARSAMMA Process Handbook, attached in Appendix B to GTE/16 report, to train ATCOs of ACCs to improve the submission of LHDs data to CARSAMMA.	States and ANSP			**COMPLETED**
GTE/16-2	**USE OF HANDBOOK CERTIFICATION AND OPERATION OF STATE AIRCRAFT IN THE CAR/SAM RVSM AIRSPACE**	That, States and International Organizations of the CAR/SAM Regions use the Handbook Certification and Operation of State Aircraft in the CAR/SAM RVSM Airspace attached in Appendix D to GTE/16 report, for certification and approval of height-keeping performance requirement for State aircrafts.	States and ANSP			~~**VALID**~~ **COMPLETED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
GTE/16-3	**MITIGATION MEASURES TO IMPROVE TARGET LEVEL OF SAFETY IN THE RVSM AIRSPACE**	That, a) States and International Organizations of the CAR/SAM Regions adopt the reactive, proactive and predictive actions related to the implementation of SMS in the RVSM airspace; and b) The ICAO NACC and SAM Regional Offices, in coordination with States and International Organizations, encourage bilateral meetings to analyse and implement measures to reduce LHD events that affect safety in their airspace; the impact of these measures shall be presented in the GTE/17 meeting.	States, ANSP and Regional Offices			**COMPLETED**
GTE/16-4	**URGENT ACTIONS TO IMPROVE FLIGHT PLAN PROCESSING AND COORDINATION IN THE CAR/SAM REGIONS**	That, States and International Organizations of the CAR/SAM Regions take urgent measures to require operators the correct use of established standards for timely processing and coordination of flight plans based on ICAO provisions.	States and ANSP			**VALID**
GTE/16-5	**AGREEMENT BETWEEN MEXICO AND THE NORTH**	That, Mexico and the NAARMO exchange data information regarding aircraft movement,	Mexico and NAARMO			**COMPLETED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
	AMERICAN APPROVALS REGISTRY AND MONITORING ORGANIZATION (NAARMO) FOR DATA EXCHANGE REGARDING SAFETY ASSESSMENT IN THE RVSM AIRSPACE	Large Height Deviations (LHD) reports in the RVSM airspace, as well as register of aircraft with RVSM approval, according to the information of Appendix F to GTE/16 report, and present this activities progress to the next GTE/17 meeting.				
GTE/17-1	**COLLECTION OF AIRCRAFT MOVEMENT AND LHD DATA**	Taking into account that aircraft movement and LHD data is indispensable for measuring RVSM airspace performance in the CAR/SAM Regions, the States and international organisations must ensure the timely and regular delivery of this data in the form established by CARSAMMA and the GTE. Accordingly, the ICAO Regional Offices will follow up on the timely and proper delivery of data by the States and international organisations.	Secretariat			**COMPLETED**
GTE/17-2	**REVISION OF CARSAMMA AND GTE TERMS OF REFERENCE**	That, having agreed on the importance of continued monitoring of horizontal deviations, the Secretariat request GREPECAS to revise the terms of reference (TORs) of the	States and Regional Offices			**COMPLETED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
		Regional Monitoring Agency (CARSAMMA) to include such monitoring as part of the functions of the Agency, leading to the exchange of such information with ICAO, the States and international organisations through the appropriate channels. Accordingly, that GREPECAS be requested to revise the terms of reference of the GTE to account for the expanded functions of CARSAMMA.				
GTE/17-3	**TRAINING FOR FOCAL POINTS**	That, taking into account the need to schedule training activities through CARSAMMA for LHD focal points of the CAR/SAM Regions, the Secretariat request the support of GREPECAS for the conduction of these activities in 2018.				**COMPLETED**
GTE/17-4	**OPERATION OF STATE AIRCRAFT IN CAR/SAM RVSM AIRSPACE**	That the ICAO Regional Offices coordinate with the States under their responsibility to ensure that State aircraft operating in RVSM airspace have the required approval to operate in such airspace, or complete the flight plan as established in the Manual on Certification and Operation of				**COMPLETED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
		State aircraft in CAR/SAM RVSM airspace. CARSAMMA will keep the Regional Offices informed, on a monthly basis, of occurrences involving State aircraft operating without certification in RVSM airspace.				
GTE/17-5	**OPERATION OF NON-CERTIFIED AIRCRAFT IN CAR/SAM RVSM AIRSPACE**	That CARSAMMA inform the ICAO Regional Offices, on a monthly basis, of any occurrence involving the operation in RVSM airspace of a non-RVSM aircraft with registry of a CAR/SAM State, so that the corresponding ICAO Regional Offices may contact the State in order for it to take the necessary measures to ensure that this type of operations are not carried out.				**COMPLETED**
GTE/18-1	**REVISION OF CARSAMMA TERMS OF REFERENCE**	Based in the GREPECAS Conclusion 18/22, that approved the amendment of the CARSAMMA Terms of Reference and the fact that there was not enough time to present a project by CARSAMMA at GTE/18 in order to include the safety assessment for lateral and longitudinal deviations:				~~**VALID**~~ **COMPLETED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
		- An Ad hoc group comprised by Chile, Colombia, Cuba, CARSAMMA, and the GTE Rapporteur, supported by NAARMO and IATA is approved. The ICAO NACC and SAM Regional Offices will serve as the Secretariat, to present a project to include the safety assessment for lateral and longitudinal deviations, with methodology of analysis, the Collision Risk Model to be used, the establishment of a Target Level of Safety and the guidance material to be used by the Points of Contacts (POC) by 31 January 2019.				
GTE/18-2	**REDUCTION OF CODE E LHD EVENTS**	That considering that in the classification of LHD events, the trend in code E events represents 95.03 % of the total events; and that this behavior has been maintained during the last three years, identifying several points in the CAR/SAM Regions where the reduction in the number of events has been low. Include in the GTE work programme the following actions:				**VALID**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
		a) the States of the CAR/SAM Regions develop the necessary strategies for the reduction of Code E events based on the information provided by CARSAMMA and NAARMO, including the necessary training for air traffic controllers, the improvement of the Communications, Navigation and Surveillance (CNS) infrastructure, including the exchange of radar data and the improvement of ATS communications among the involved FIRs among other activities; b) ICAO promotes bilateral and multilateral meetings to address specific issues between involved FIRs, especially at the border of the CAR and SAM Regions; and c) CAR/SAM States notify in the GTE meetings the results of these actions for the reduction of Code E events.				**VALID**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
GTE/18-3	**AIR TRAFFIC SERVICES REGIONAL PERFORMANCE MEASUREMENT**	That considering that the collection of safety information, developed for the functioning of CARSAMMA can contribute to improving the regional safety performance measurement in the provision of ATS in the CAR/SAM Regions: a) the GTE Rapporteur and the Secretariat carry out an analysis on the extension of the GTE TORs, to consider the evaluation of regional safety performance for the provision of ATS in the upper airspace in the CAR/SAM Regions, focusing on events related to the nature of the GTE work; the results of this analysis shall be presented in the GTE/19 for the consideration of the GTE; and b) States/Territories/International Organizations responsible for the provision of ATS services in the CAR/SAM Regions, connect to SIMS of ICAO, for the continuous monitoring of their safety performance and share with ICAO the data provided to CARSAMMA.				**VALID** **COMPLETED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
GTE/18-4	**IMPLEMENTATION OF A STRATEGY TO REVIEW RISK ASSOCIATED WITH MID-AIR-COLLISION BETWEEN THE GTE AND RASG- PA**	That, considering the benefits on the synergy between the GTE and the PA-RAST groups on safety hotspots in the identification of risk to ensure duplication of efforts does not exist, and that recommendations for improvements are aligned are of utmost importance: a) the GTE promote the exchange of the LHD events, especially TCAS events data with the PA-RAST MAC Group, including lateral and longitudinal deviations (navigation errors) errors in RVSM airspace and outside of the RVSM airspace for the CAR and SAM Regions to improve the identification of contributing factors to Mid-air collision; b) the GTE establish an analysis mechanism between the GTE and PA-RAST to provide CAR/SAM States with safety data for the decision-making process to help reduce LHDs events and improve the safety performance in the RVSM airspace of the CAR/SAM Regions. This analysis should				**VALID**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
		include the possibility of performing a strategic review of safety hotspots in the upper airspace for mid-air collision risk with the PA-RAST MAC team; and c) the Secretariat will report in the GTE meetings, the results obtained from this cooperation mechanism.				
GTE/19-1	**REVIEW OF THE GUIDE FOR POINTS OF CONTACT (POC) ACCREDITED TO CARSAMMA**	Taking into account that the GTE and LHD points of contact are one of the main elements of the mechanism for the monitoring, analysis and improvement of CAR/SAM RVSM airspace performance, and that the Guide for points of contact (PoC) accredited to CARSAMMA must be updated in order to clarify and reinforce the responsibilities of the GTE, points of contact and the rapporteur: a) The amendment to the Guide for points of contact (PoC) accredited to CARSAMMA, as presented in the Appendix to GTE/19-WP/03 and NI/03 forms F2/F3, is approved. a) The amended Guide is to be submitted by the rapporteur to				**~~VALID~~ COMPLETED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
		the approval of the GREPECAS/19 meeting. b) The Secretariat will take the necessary measures to ensure that the Guide and all relevant GTE documentation are available to all GTE members. c) The States and international organisations will fulfil the responsibilities defined in the				
GTE/19-02	**AIRWORTHINESS/RVSM/PBCS APPROVAL REGISTRY**	Taking into account that States are responsible for ensuring that all aircraft under their registry, and for which a PBCS approval request has been submitted, meet all the required criteria; and also considering that it is essential to establish an aircraft PBCS registry in the CAR/SAM Regions for the global monitoring system of these capabilities, the following has been agreed upon: a) CARSAMMA establish the appropriate mechanisms for the creation of the PBCS data base; and b) The ICAO Regional Offices inform CAR/SAM States of the PBCS reporting mechanism for aircraft registered in their respective States.				~~**VALID**~~ **UPDATED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
GTE/20-1	**EXPANSION OF THE APPROVAL STATUS AUDIT FOR THE CAR/SAM REGIONS**	That, recognizing the benefits to the process of ensuring the acceptable level of safety in RVSM airspace that the periodic audit carried out by CARSAMMA on the approval status of aircraft that make use of RVSM airspace and that this analysis is currently only takes into consideration the flight plan data from the Brazilian airspace. a) States, Territories and International Organizations providing air traffic services in the b) RVSM airspace of the CAR/SAM Region submit to CARSAMMA flight plan information of aircraft using RVSM airspace under their jurisdiction; and CARSAMMA will provide information to States, Territories and International Organizations regarding the data and flight plan fields required to carry out the approval status audits for the CAR/SAM Region; and c) CARSAMMA use the data submitted by States, Territories and International Organizations to expand the scope of their approval status audit.	States, territories and international organizations	Not later than January 2021		~~**VALID**~~ **COMPLETED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
GTE/20-2	**DATA EXCHANGE BETWEEN PA-RAST AND GTE FOR AIRSPACE SAFETY IMPROVEMENT**	Considering that GREPECAS and RASG-PA are groups that report to the ICAO Council, and the GTE and PA-RAST are technical groups of the GREPECAS and RASG-PA with the data analysis as one of their main tasks, and recognizing that the cooperation between the GTE and PA-RAST can improve safety and efficiency in the CAR/SAM Regions and that data exchange can help to improve the process and outcomes of both groups,: a) the GTE and PA-RAST will work jointly to develop a framework that includes mechanism and process or the data exchange and analysis between the two groups by the GTE/21 Meeting; and b) the GTE will identify how the exchanged data can be used to better benefit the CAR/SAM RVSM airspace safety analysis.	GTE and PA-RAST	Before GTE/21 Meeting		~~**VALID**~~ **SUPERSEDED by Conclusion GTE/22-04**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
GTE/22-01	**MITIGATION ACTIONS AMONG COLOMBIA, ECUADOR AND PANAMA**	That, after evaluating the information provided by the CARSAMMA regarding the LHD events reported in 2021, where a significant number of events involving the Bogotá, Barranquilla, Guayaquil and Panama FIRs are evidenced: a) The GTE present to GREPECAS the situation of the LHD events that have occurred in the CAR/SAM Regions, paying attention to the FIRs where the greatest number of events were reported, including the FIRs Bogotá, Barranquilla, Guayaquil and Panama, requesting the support of the State authorities in the process of evaluation and mitigation of LHDs; b) Colombia, Ecuador and Panama, with the support of the ICAO SAM Regional Office, hold a meeting in the short term for the analysis, preparation and subsequent implementation of an action plan for mitigation measures to address and reduce the recurrence of LHDs events reported in the FIRs under their responsibility; and	States	To report during GTE/23	Mitigation Plan	~~**VALID**~~ **COMPLETED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
		c) The SAM Regional Office present to the GTE/23 the outcomes of the implemented actions in b) for evaluation.				
GTE/22-02	**IMPROVED COORDINATION BETWEEN STATES´S AND INTERNATIONAL ORGANIZATIONS POINTS OF CONTACT AND CARSAMMA**	That, taking into consideration the need to improve the analysis of data related to LHD events that are reported to the CARSAMMA: a) The Points of Contact of the States and International Organizations accredited to CARSAMMA exchange information with the adjacent Area control centres (ACC) in order to validate with the respective Points of Contact each of the LHD events received before being reported to CASAMMA, ensuring that all information related to each event is preserved by each air traffic control centre involved; b) The CARSAMMA organize quarterly teleconferences to provide feedback on the LHD events received in the previous period to verify their validity, as well as to identify trends or safety situations that warrant immediate action; and c) The GTE amend its terms of reference and the manual	States CARSAMMA	To report during GTE/23	Coordination among States Amendment to the term of reference	~~**VALID**~~ **a) COMPLETED** **b)COMPLETED** **c) VALID**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
		of contact points accredited to the CARSAMMA to specify the validation period with the adjacent control centres for the LHDs received before being sent to CARSAMMA by the GTE/23 Meeting.				
GTE/22-03	**VALIDATION AND SHARING OF LHD DATA FOR AIRSPACES OF THE CAR REGION CONTIGUOUS TO THE UNITED STATES**	That, in order to ensure validation and adequate coordination for LHD events in the CAR Region occurred in the TCPs with United States: a) The Points of Contact that receive notification of possible LHD events, which occurred in the TCPs with the ATS facilities of United States, take actions to validate such events by sending the notification to the facilities ATS points of contact and to NAARMO; b) After the validation actions have been carried out, the LHD information be sent to CARSAMMA as specified in the established procedures and times. The validated LHD information is also sent to NAARMO; and The GTE amend its terms of reference and the manual of contact points accredited to the CARSAMMA to include guidelines	States	To report during GTE/23	Coordination among States Amendment to the term of reference	**VALID**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
		for validation of LHD events occurred in the TCPs with United States by the GTE/23 meeting.				
GTE/22-04	**SUPPORT FOR GREPECAS/RASG-PA COLLABORATION**	That, in order to strengthen the collaboration between GREPECAS and RASG-PA, promoting the exchange of information that supports the mitigation of safety events identified in the CAR/SAM Regions: a) GTE endorse the adoption of the Terms of Reference for the collaboration between the GREPECAS and the RASGPA as presented in the Appendix of GTE/22 — WP/10; and b) The rapporteur of the GTE inform GREPECAS/20 meeting of the favorable opinion on the aforementioned terms of reference.	Secretariat Rapporteur	To report during GTE/23 To report during GREPECAS/20	Amendment of term of reference	**VALID (UPDATED GTE/23)**

— END —

Agenda Item 2: Review of the results of Large Height Deviation (LHD) analysis

a) Indicators data on points of greatest occurrence of LHD events
b) Actions taken for the improvement of LHD event data capture and for the improvement of RVSM state capture by Registry States or the Operator
c) Results of the RVSM airspace safety assessment project for the CAR and SAM Regions
d) Identifying trends
e) Lessons learned by CAR/SAM States to reduce the number of LHDs
f) Report on the progress of the States in the reduction of LHDs.

2.1 Under this agenda item, the Meeting considered working papers WP/03, WP/04 and WP/05, submitted by CARSAMMA, WP/08 and WP/12 presented by the Secretariat, WP/09 submitted by Colombia, WP/10 by NAARMO, WP/11 by the Dominican Republic and WP/13 presented by the Rapporteur.

2.2 CARSAMMA presented WP/03 which includes a summary of the calculation of the vertical collision risk in the CAR/SAM Regions for the year 2022 using the CRM methodology, for this a sample was used to assess the vertical collision risk between December 1 and 31, 2022 in the 34 CAR/SAM FIRs. In these movement data, in terms of flight hours of the samples collected, 287,439 flight lines were received with 491,925.68 hours of duration of the aforementioned FIRs, being 104,780.17 hours from the CAR Region (21.30%) and 387,145.51 hours from the SAM Region (78.70%).

2.3 The WP/03 detailed that a total of 1,280 LHDs were received in 2022, after the analysis and validation carried out, 711 of these LHDs were considered valid in the CAR/SAM Regions.

2.4 As part of the CRM analysis, it was determined that in the CAR/SAM Regions, the estimated average risk is 1.255 x 10-9 below the TLS, which is 5.0 x 10-9, a trend that has been maintained for the last five years.

2.5 In WP/03 it was reported that in the 2022 CRM analysis, the FIR La Paz, Piarco, Asuncion, Guayaquil and Port-au-Prince present a risk above the Desired Security Level (TLS). See Fig.I

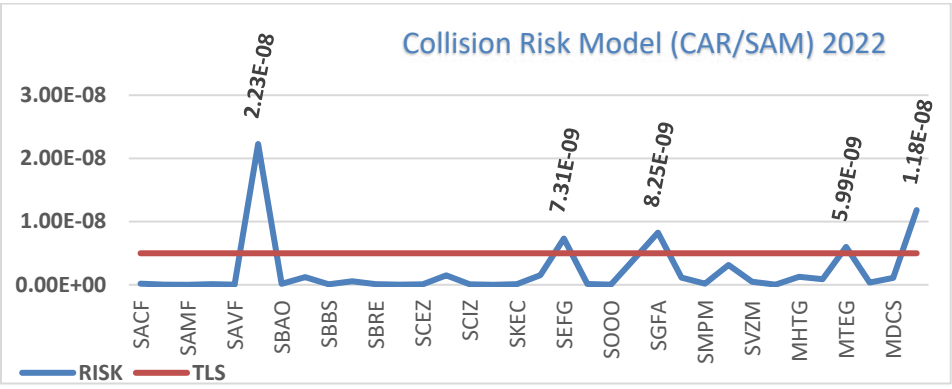


Fig. I. FIR CAR/SAM above TLS

2.6 As a result of the analysis of the data presented at WP/03, the focal points noted the following:

a) With regard to the La Paz FIR in Bolivia, a critical situation has been identified regarding the provision of air traffic services. The number of ATS staff has been reduced to the minimum; Likewise, there are limitations in communication frequencies, situations that impact the provision of services, and in coordination with adjacent ACCs.

b) Regarding the high-risk value in the FIR of Asunción, Paraguay, the limitations of surveillance coverage with Bolivia affect the coordination between the two FIRs influencing the significant number of LHDs.

c) In relation to the coordination between the Dominican Republic and Port-au-Prince, it is necessary to analyze the improvements that could be introduced in it; the deficiencies in the coordination directly influence the levels of LHDs.

d) With regard to coordination between the Piarco and New York Oceanic FIRs, there is a need to improve the coordination between the ATS.

2.7 The Meeting took note of WP/04 on identifying trends in the analysis of LHDs with the aim of providing information to experts on the root causes of LHDs analysed. This note presented information on the FIRs with the highest number of events with the following failures:

a) Transit is coordinated on a level and calls ascending or descending when the accepting organ is called.
b) Failure of coordination at a point other than the coordinated one.
c) Coordination failure related to technical situations of the equipment used for the transfer, including coordination within three minutes of the border crossing.
d) Level changes without the aircraft having crossed the border.
e) Coordination errors related to the call sign.

2.8 Likewise, the note includes the tables detailing the FIRs identified with the highest number of failures listed in the previous section.

2.9 As a result of the analysis of the data presented in WP/04, the focal points noted the following:

a) Contingency scenarios and the treatment that would be given to LHDs during these scenarios should be considered, these procedures should be included in the points of contact manual.

b) The meeting recommends that the data on trends and safety assessment be used by the contact points in their respective FIRs to sensitize controllers on the performance of their services with regard to LHDs; Likewise, this information should be used to improve the safety of air traffic services.
c) A coordination between the focal points of the La Paz and Amazonian FIR is recommended to address communication errors between these FIRs.

2.10 The WP/05 submitted by CARSAMMA provides a summary of the safety assessment of the RVSM airspace in the 2022 FIR CAR/SAM using the SGSO/SMSS methodology.

2.11 The paper shows the summary of the LHD reports that arrived, those validated by CARSAMMA, the total duration in minutes, the median duration for each of them and the median-associated VR with the monthly LHDs.

2.12 The WP includes the tables detailing the summary of LHD reports validated by FIR, the risk value (VR) of each event, the total duration in minutes, and the fixed points where the events occurred.

2.13 WP/05 also reports that LHDs with Code "E" (error/failure of coordination between ATC bodies) were the most frequent in 2022, with 685 events, followed by Codes "B" (8), "I" (5), "H" (3), "J" (3), "M" (3), "D" (2), "A" (1) and "L" (1). The high number of "E" codes demonstrates the need for better coordination between adjacent air traffic units, which could be achieved through awareness-raising and coordination training among controllers. See Fig. II

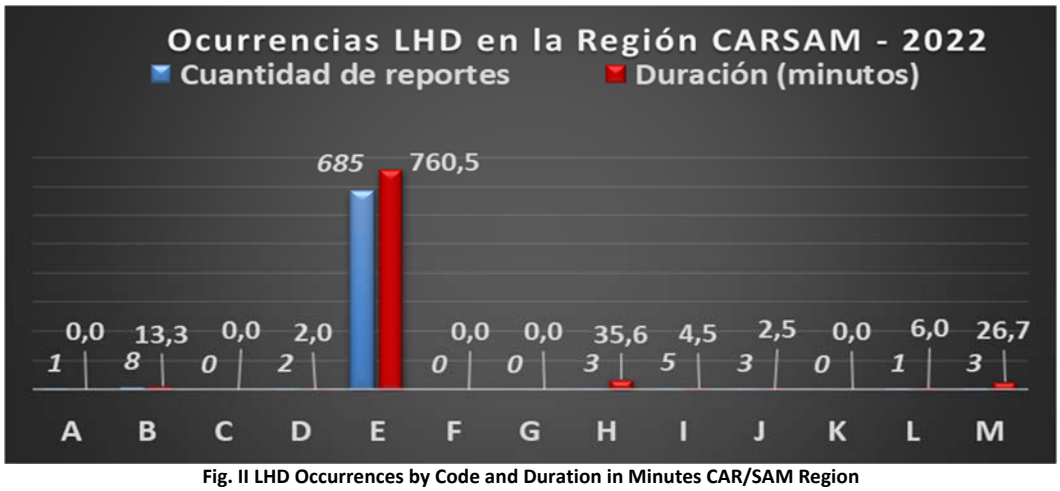


Fig. II LHD Occurrences by Code and Duration in Minutes CAR/SAM Region

2.14 The WP/05 shows Total Reports LHDs validated in 2022, where the FIRs that reported the most in 2022 were: FIR PANAMA, GUAYAQUIL, BOGOTA, AMAZONICA, LIMA and SANTO DOMINGO, totaling 414 reports, which corresponds to 58.2% of the overall total.

2.15 The FIRs that were most exposed to RISK in 2022 were: FIR PIARCO, LIMA, AMAZONICA, BOGOTA, GUAYAQUIL and LA PAZ, which corresponds to 53.6% of the overall total. See Figure III

Fig. III Number of reports validated by FIR

2.16 As a result of the analysis of the data presented at WP/05, the Meeting requested:

a) Hold a working meeting between the focal points of the FIR in Lima and La Paz to identify improvements in coordination between these FIRs.
b) That CARSAMMA revise the WP/05 table with respect to the data presented in the study note.

2.17 WP/08 presented by the Secretariat addressed the meeting between the focal points of Barranquilla, Bogota, Guayaquil and Panama as part of the strategy implemented for the reduction of LHDs on the border of Colombia, Ecuador and Panama in follow-up to the conclusion GTE/22-01.

2.18 As a result of the meeting, the following were identified:

a) The points with the highest number of LHD's at the border of the FIRs involved.
b) The root causes that produce LHD's.
c) Mitigating and corrective measures to reduce LHDs.

2.19 WP/08 contains the border points with the highest number of events that were analyzed by the experts for the identification of root causes using the Ishikawa methodology. Likewise, the main mitigating measures to reduce the number of LHD events at the FIR borders were identified. The work carried out by the focal points and the secretariat demonstrated that a collaborative strategy could lead to better results in reducing LHDs.

2.20 As a result of the analysis of the data presented in the WP, the Meeting took note of the information presented and the work that Ecuador and Colombia are carrying out to reduce the number of LHDs in the respective FIRs.

2.21 WP/09 presented by Colombia summarizes the action plan of the Barranquilla and Bogotá FIRs to mitigate LHD events, identifying root causes and proposing measures to reduce the number of validated LHD events, in follow-up to conclusion GTE/22-01.

2.22 The WP presented the need to implement specific action plans, which identify and address the root causes of LHD events, which should include bilateral and multilateral meetings between the Contact Points (POCs) with the support of the ICAO CAR and SAM Offices, the interaction of different technical areas, as well as high-level support to mitigate the risk in these airspaces.

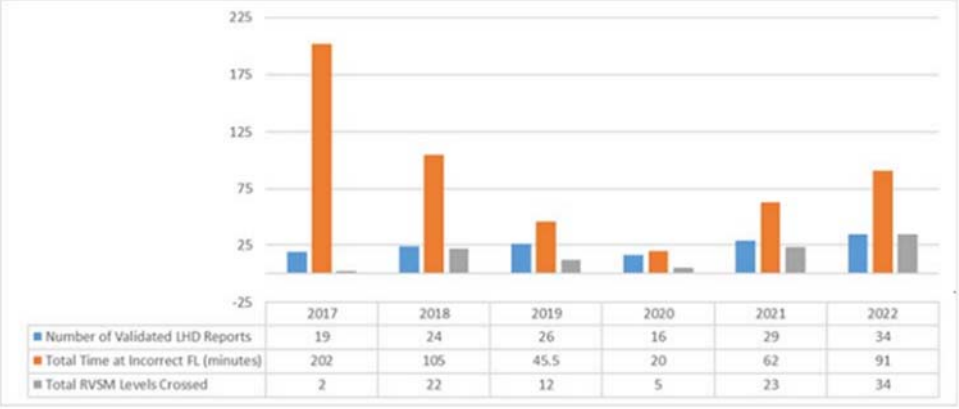
2.23 As a result of the analysis of the data presented in WP/09, the focal points took note of the information presented by Colombia regarding the reduction of LHDs in the Barranquilla and Bogotá FIRs, highlighting as good practices the actions being carried out by the Colombian State to reduce the risk in the airspace.

2.24 WP/10 submitted by the North American Monitoring and Registration Organization (NAARMO), which serves as the Regional Monitoring Agency (RMA) for the continued and safe use of the RVSM in Oceanic Miami, West New York, and San Juan airspace.

2.25 The Paper reported that NAARMO uses the FAA's Comprehensive Electronic Data Reporting and Analysis (CEDAR) database, which contains all potentially safety-related event reports from various FAA internal sources. There were forty-six (46) reported events reviewed by the scrutiny group for the airspace of Oceanic Miami, West New York, and San Juan. The scrutiny group is made up of operational experts from each air traffic control facility, representatives of the FAA's Flight Standards and Airspace Safety, which determined that there were thirty-four (34) validated LHD events during the year 2022.

2.26 WP/10 showed tables that include the number of reports, LHD duration, unauthorized cross-flight levels per month, and cause for each of the 34 LHD reports validated in the year 2022.

2.27 The WP highlighted that during the year 2022 an increase was observed in both the number of LHDs reported and the duration in the unexpected/incorrect FL compared to previous years. This result was expected due to the ongoing recovery from the COVID-19 pandemic and the associated increase in flight activity. Figure IV shows the comparison of the number of validated LHDs, duration, and cross-flight levels without ATC clearance for calendar years 2017 to 2022. The number of LHDs reported and the associated duration in 2022 is comparable to the number of LHDs reported during the pre-COVID years .



	2017	2018	2019	2020	2021	2022
Number of Validated LHD Reports	19	24	26	16	29	34
Total Time at Incorrect FL (minutes)	202	105	45.5	20	62	91
Total RVSM Levels Crossed	2	22	12	5	23	34

Fig. IV Validated LHD Reports – year 2017 to year 2022

2.28 WP/10 provided the estimates of parameters used in the ICAO vertical risk model and information on the data sources used to estimate the parameters of the risk model.

2.29 It also reported that the operational vertical risk estimated for airspace RVSM 17.92 × 10-9. The sum of this value and the estimate of the technical risk to the airspace is **17.99 × 10-9,** which is greater than the overall security target of 5.0 × 10-9 FAPFH.

2.30 The note contains tables detailing the parameters of the collision risk model (CRM) and the parameters for the calculation of technical risk.

2.31 As a result of the analysis of the data presented at WP/10, the meeting took note of the information presented, highlighting the importance of reinforcing compliance with RVSM airspace users of the basic requirements for the use of airspace, including communications with air traffic services.

2.32 The Dominican Republic presented WP/11 for the period August 2021/June 2022, providing a breakdown of the main errors made by the Santo Domingo FIR, the possible causes and mitigation measures.

2.33 The WP included a table where it identifies the errors made and then lists the mitigating actions implemented for each of them in the Santo Domingo FIR. The meeting took note of WP/11 and thanked it for its presentation.

2.34 The Secretariat introduced WP/12 with a summary of the participation of CAR/MAR States in the RVSM airspace-monitoring program of the CAR/SAM regions, in response to the provisions of Annex 11, Doc. 9574, and the regional agreements of the Caribbean and South American regions.

2.35 WP/12 informs that, although the support of the RVSM airspace monitoring program is an obligation for States due to the requirement of Annex 11 3.3.5.1, the submission of the data in a timely manner to CARSAMMA, is not always carried out according to the requirements of the CARSAMMA Contact Points Manual which is the guidance document for the submission of this data.

2.36 The WP included a table presenting the States that did not complete the December 2022 movement information, either because the data was not submitted, or because the data did not meet the form requirements and a table that cited the number of States or international organizations sent the LHDs information late.

2.37 As a result of the analysis of the data presented with WP/12, the focal points noted the following:

a) The Meeting took note of the information presented at WP/12, including information related to the non-submission of movement data used for the calculation of the CRM; likewise, the information on the delay in sending the LHDs.
b) As a follow-up to the comments made by several focal points on the WP/12 data, the Secretariat will corroborate with CARSAMMA the data and present them in a revised working paper.

Agenda Item 3: Activities and tasks to be reported to GREPECAS

a) Review of tasks to be reported to GREPECAS

3.1 Under this agenda item, no working papers were presented.

Agenda Item 5: Data collection and sharing

a) GTE/PA-RAST Cooperation
b) Data analysis

4.1 Under this agenda item, the Meeting considered information paper IP/06 submitted by NAARMO.

4.2 The Meeting took note of the information presented by NAARMO in IP/06 related to the vertical safety monitoring report for the continued and safe use of Reduced Minimum Vertical Separation (RVSM) in Mexican Airspace. IP/06 presented LHD information and airspace traffic data for the Mexico Area for calendar year 2022.

4.3 IP/06 reported that forty-eight LHDs were identified during 2022; Likewise, that the result of the vertical collision risk estimation for the airspace of the Mexico area exceeded the value of the safety level (TLS) of 5.0 × 10-9 fatal accidents per flight hour, with a total risk estimate of **12,21 × 10-9** that exceeded the overall safety goal.

Question 5 of the Agenda: **Other Matters**

a) Flight Plan Audit Report
b) Bilateral working meetings
c) Collision Risk Workshop (CRM)

5.1 Under this Agenda Item, the Meeting considered WP/06 submitted by CARSAMMA, WP/07 and WP/13 submitted by the rapporteur, and IP/01, IP/02 and IP/03 presented by CARSAMMA, as well as IP/04 and IP/05 presented by NAARMO.

5.2 CARSAMMA presented WP/06 where it proposes to update the TOR terms of reference, regarding the Agency's main deliverables and its obligations to ICAO and the Civil Aviation Authorities of the relevant States.

5.3 CARSAMMA's proposal in WP/06 is described in the Appendix of the WP, increasing from the current eight deliverables to fourteen in total, addressing the current work on the new RVSM/PBCS supervisory processes in the South Atlantic region.

5.4 The Rapporteur presented WP/07 in which it proposes to analyze the external factors that increase the risk of CRM collision of the FIRs, including the LHD events caused by the neighboring FIRs that negatively impacted the increase in the CRM value.

5.5 The WP/07 highlighted that the total estimated risk for the FIR CAR/SAM for the year 2021 was 2,76 x 10-9, which was below the acceptable TLS (5,0 x 10-9). However, six FIR's exceeded the TLS; therefore, it is necessary to implement a strategy so that all FIR CAR/SAM have a safety performance according to the expected goal.

5.6 WP/13 presented by the GTE Rapporteur included the submission and approval of modification to Form F4 as an option to improve the analysis of LHD events and the identification of adverse trends that may affect safety in RVSM airspace.

5.7 The WP/13 stated that in order to carry out the tasks efficiently, it is necessary for the Point of Contact (PoC) accredited to CARSAMMA to investigate and validate the LHD reports complying with the procedure established between FIRs, and then proceed to record the events in the forms: F4 – Large Altitude Deviation and F4 – Large Altitude Deviation, Multiple Reports Form and finally be sent to CARSAMMA before the 15th day of the month following the reported period.

5.8 The paper proposes that in order to carry out the task described above, the time of the aircraft's call to the receiving FIR should be recorded and that the use of the F4 WORD format be discontinued, due to the fact that Form F4-EXCEL, contains all the necessary information in a general and individual way to be used by CARSAMMA in the analysis of LHD events.

5.9 As a result of the analysis of the data presented at WP/13, the focal points agreed to create an AD HOC group to be responsible for the revision of Form F4, the group would be composed of 3 focal points, CARs and SAMs, and would present their work to the secretariat in the first week of December.

5.10 IP/01 submitted by CARSAMMA reported that between May and July 2023, CARSAMMA conducted an audit to investigate the validity of RVSM approvals issued between the years 2000 and 2010. The goal of this work was to increase the accuracy of the RMA database and, to update the information with the States.

5.11 IP/01 reported that 12 States were notified regarding the audit, and CARSAMMA received responses from 8 States. Based on this work, 25 aircraft were removed from the RVSM approval list upon receipt of the F3 forms, as shown in Table 01 of the IP/01.

5.12 CARSAMMA presented IP/02, which highlighted the analysis carried out in relation to the data link capacity, mainly in relation to the Figure of Merit (FOM) and CPDLC, with a view to the PBCS operation, when the Intertropical Convergence Zone is active in the FIR-AO area.

5.13 IP/02 lists the data collected, which allowed the following analyses to be carried out:

- Latency analysis of surveillance data;
- Analysis of communication response time; and
- Navigation accuracy of aircraft operating data link in FIR-AO.

5.14 The IP/02 concludes, based on the analyses carried out, that the behavior presented by the data link communication in the FIR-AO during the period of active ZCIT remained constant and in the same parameters observed in the study carried out at the end of 2022. It is assumed that the ZCIT does not impact the performance and results with a view to the operationalization of the PBCS in the ocean region. However, further operational studies on the PORT (TRN) need to be carried out, as this action is not compliant with GOLD and DOC 10063.

5.15 CARSAMMA presented IP/03 which included examples of communication processes between CARSAMMA and Civil Aviation Authorities (CAAs) in the Caribbean and South America region with the aim of reducing the existence of incomplete processes.

5.16 In the IP, CARSAMMA presented the results of the work related to the Minimum Monitoring Requirements (MMR). MMRs were even discussed at RMACG/18, in relation to aircraft falling under the 1,000-hour flight parameter. The work carried out by CARSAMMA and presented in WP/02 sought to update RVSM approvals whose dates were between the years 2000 and 2018. Of the fifteen Civil Aviation Authorities (CAAs) contacted, only eight responded: El Salvador, Costa Rica, Argentina, Ecuador, Brazil, Peru, Uruguay and Aruba. This process took place over nine months between 2021 and 2022.

5.17 NARMO presented IP/04 related to the assessment of the monitoring burden associated with long-term height monitoring requirements for airframes for which NAARMO is the responsible Regional Monitoring Agency (RMA). NAARMO approvals and global monitoring records as of July 31, 2023 were used to assess monitoring burden.

5.18 IP/04 reported that NAARMO's database of approvals as of July 31, 2023 was examined to determine NAARMO's current monitoring burden. First, the approvals for the countries under NAARMO's responsibility were compiled and then, each airframe that had a full approval in place was matched with the appropriate monitoring category applying the most up-to-date version of the Minimum

Monitoring Requirements (MMR) table (as of April 6, 2023). All aircraft types missing from the current MMR table were assigned to Category 3.

5.19 The total number of unique aircraft identified with full RVSM approval from a State of Record under NAARMO responsibility as of July 31, 2023 was 23,365, with a resulting monitoring load of 13,613 and a total of 568 aircraft that were not successfully monitored in the past. two years (or 1,000 flight hours, whichever is longer). Table 1 of IP/04 provides a summary by State of enrollment of cells requiring monitoring.

5.20 The Meeting took note of the information submitted by NAARMO in IP/05 which presented the information from the evaluation of operations without an approved record on file using the NAARMO Minimum Vertical Separation Airspace (RVSM) within North American airspace as well as in the western parts of New York. the oceanic airspace delegated by NAARMO.

5.21 IP/05 outlines the monthly assessment process and presents results for the period September 2022 to June 2023 for the contiguous United States (CONUS), and September 2022 to May 2023 for New York West (NYWest). The results of the traffic samples from Canada and Mexico were evaluated for December 2022. NAARMO approval records up to July 2023 were used in this assessment.