



ICAO

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

CAR/SAM Planning and Implementation Regional Group (GREPECAS) Twenty Fourth Scrutiny Working Group Meeting, (GTE/24)

Final Report

Mexico City, Mexico, 5 to 9 August 2024

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HISTORICAL

ii.1 Place and Date of the Meeting

The CAR/SAM Planning and Implementation Regional Group (GREPECAS) Twenty Fourth Scrutiny Working Group Meeting (GTE/24) was held at the ICAO North America, Central America and Caribbean (NACC) Regional Office in Mexico City, Mexico, from 5 to 9 August 2024.

ii.2 Opening Ceremony

Mr. Julio Siu, Deputy Regional Director of the North American, Central American and Caribbean (NACC) Office of the International Civil Aviation Organization (ICAO) provided opening remarks, highlighting the evolution of the work of the GTE on the data analysis since the GTE formulation by early 2000, the maturity of the procedures and safety assessment and the importance of the timely and high-quality data needed, welcomed the participants and officially opened the meeting.

ii.3 Officers of the Meeting

The GTE/24 Meeting was held with the participation of the Scrutiny Work Group Rapporteur Mrs. Diana Luque (Colombia). Mrs. Luque chaired the meeting plenary. Mr. Eddian Méndez, Regional Office, Air Traffic Management and Search and Rescue of the ICAO NACC Regional Office served as Secretary of the Meeting, assisted by Mr. Roberto Sosa, Regional Office, Air Traffic Management and Search and Rescue from the ICAO South American (SAM) Regional Office.

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 09:00 to 15:30 hours daily with adequate breaks. Ad hoc Groups were created during the Meeting to do further work on specific items of the Agenda.

ii.6 Agenda

Agenda Item 1: Adoption of the Provisional Agenda and Work Schedule

Agenda Item 2: Review of the Previous CARSAMMA and Scrutiny Group Meetings Conclusions and Recommendations

- 2.1 Review of previous conclusions
- 2.2 Review of previous recommendations

Agenda Item 3: Review of the Results of Large Height Deviation (LHD) and the Collision Risk Model (CRM) Analysis

- 3.1 Indicator data on points of greatest occurrence of LHD events.
- 3.2 Actions taken for the enhancement of LHD event data capture and for the improvement of Reduced Vertical Separation Minimum (RVSM) status capture by Registration States or Operator
- 3.3 Results of the assessment project for safety in RVSM airspace for the CAR and SAM Regions
- 3.4 Identification of trends
- 3.5 Lessons learned by CAR/SAM States to reduce the number of LHDs.
- 3.6 Report on the progress made by States on LHD management.
- 3.7 Report on the Flight plan audit
- 3.8 Presentation of the CRM 2023 and an analysis of the contributing causes of this risk in Flight Information Regions (FIRs) that presented a value above the Target Level of Safety (TLS) Collision Risk Assessment (CRA).

Agenda Item 4: Activities and Tasks to be Reported to GREPECAS

- 4.1 Update of the GTE Terms of Reference (ToRs)
- 4.2 Review of tasks to be reported to GREPECAS
- 4.3 GTE/Pan America Regional Aviation Safety Team (PA-RAST) cooperation.
- 4.4 CARSAMMA/GTE and the North American Approvals Registry and Monitoring Organization (NAARMO) cooperation

Agenda Item 5: Other Business

ii.7 Attendance

The Meeting was attended by 13 States/Territories from the NAM/CAR/SAM Regions and 3 International Organizations, totalling 46 delegates as indicated in the list of participants.

ii.8 Conclusions and Decisions

GREPECAS records its action in the form of conclusions and decisions as follows:

Conclusions deal with matters, which in accordance with the Group's terms of reference require direct attention of States/Territories and/or International Organizations, or on which further action will be initiated by ICAO in accordance with established procedures.

Decisions deal with matters of concern only to the GREPECAS and its Contributory Bodies organization.

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ii.9 List of Working and Information Papers and Presentations

Refer to the Meeting web page:

<https://www.icao.int/NACC/Pages/meetings-2024-gte24.aspx>

The final list of documentation will be included in the final version of the Report.

LIST OF PARTICIPANTS

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CANADA/CANADÁ

3. Atul Kumar (V)

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COLOMBIA

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CUBA

6. Roxana Bernal

7. Dora Ricardo

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31. Marie Gale (V)

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35. Steve Smoot (V)

36. José Pérez

37. Christine Falk

38. Julian Babel

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40. Jennifer Leblanc (V)

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- 44. Henry Reyes
- 45. René Martínez

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Agenda Item 1 Adoption of the Provisional Agenda and Work Schedule

1.1 The Secretariat presented WP/01 and invited the Meeting to approve the Provisional Agenda and Schedule. The Meeting approved the Agenda and Schedule as presented.

Agenda Item 2: Review of the Previous CARSAMMA and Scrutiny Group Meetings Conclusions and Recommendations

2.1 The Secretariat presented WP/02 for the review of previous GTE meetings Conclusions/Decisions and recommendations.

2.2 The Meeting reviewed each of the Conclusions. The results of the review were as follows:

- Conclusion GTE/16-4 was superseded by Conclusion GTE/24/01
- Conclusion GTE/18-2 was superseded by Conclusion GTE/24/02 to specify responsibilities.
- Conclusion GTE/18-3 was completed - the GTE considered that at this time a performance measurement cannot be carried out.
- Conclusion GTE/18-4 was superseded by Conclusion GTE/24/03 to specify responsibilities, clarify actions, and requested to be included in the report to the GREPECAS.
- Conclusion GTE/19-02 was superseded by Conclusion GTE/24/04, to specify the CARSAMMA, States and the Secretariat as responsible. The Meeting requested the CARSAMMA, with the support of the Secretariat, to organize a Performance-Based Communications (PBCs) briefing.
- Conclusion GTE/22/02 was completed.
- Conclusion GTE/22/03 was superseded by Conclusion GTE/24/05 to specify responsibilities, clarify actions.
- Conclusion GTE/22/04 was completed.

2.2 The Meeting formulated the following Draft Conclusions/Decisions:

DRAFT CONCLUSION	
GTE/24/01	URGENT ACTIONS TO IMPROVE FLIGHT PLAN PROCESSING AND COORDINATION IN THE CAR/SAM REGIONS
What: That, States and International Organizations within the CAR/SAM Regions urgently implement measures to ensure the proper application of established standards for the expeditious processing and coordination of flight plans, in accordance with ICAO provisions and the results be communicated to the GTE/25.	Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical
Why: To ensure safety of operations based on accurate flight plan information	

When: GTE/25	Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed
Who: <input checked="" type="checkbox"/> States <input type="checkbox"/> ICAO <input type="checkbox"/> Other:	

DECISION	
GTE/24/02	REDUCTION OF CODE E LHD EVENTS
<p>What:</p> <p>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 behaviour 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, the following actions Be included in the GTE work programme:</p> <ul style="list-style-type: none"> 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, the exchange of radar data and the improvement of Air Traffic Services (ATS) communications among the involved Flight Information Regions (FIRs) among other activities; b) that ICAO promote 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. 	<p>Expected impact:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical
<p>Why:</p> <p>To enhance safety of operations in RVSM airspace</p>	
When: Immediately	Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed
Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:	

DRAFT CONCLUSION	
GTE/24/03	IMPLEMENTATION OF A STRATEGY TO REVIEW RISK ASSOCIATED WITH MID-AIR-COLLISION BETWEEN THE GTE AND RASG- PA
<p>What:</p> <p>That, considering the benefits of synergy between the GTE and the Regional Aviation Safety Team – Pan America (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:</p> <ul style="list-style-type: none"> a) the GTE actively promote and prioritize the exchange of LHD event information with the PA-RAST Mid-Air Collision (MAC) Group. This exchange should specifically address lateral and longitudinal deviation errors (navigation errors) in Reduced Vertical Separation Minimum (RVSM) airspace for the CAR and SAM Regions to enhance the identification of contributing factors to mid-air collisions and support targeted hotspot mitigation efforts; b) the GTE establish an analysis mechanism between the GTE and PA-RAST to enable CAR/SAM States to access actionable safety intelligence for decision-making. This mechanism should focus on reducing LHD events and improving safety performance in RVSM airspace by including a strategic review of identified safety hotspots. This review, conducted in collaboration with the PA-RAST MAC Group, should directly address mid-air collision risks and provide data-driven solutions for hotspot mitigation; and c) the Secretariat report to the GREPECAS the results obtained from this cooperation mechanism. 	<p>Expected impact:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical
<p>Why:</p> <p>To address identified safety related events in RVSM airspace, like mid-air collisions and to support targeted hotspot mitigation efforts; States and International organizations and other aviation stakeholders should actively promote and prioritize the exchange of LHD event information.</p>	
<p>When: Report to GTE/25</p>	<p>Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed</p>
<p>Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input checked="" type="checkbox"/> Other:</p>	<p>GTE</p>

DRAFT CONCLUSION		AIRWORTHINESS/RVSM/		PERFORMANCE		BASED	
GTE/24/04		COMMUNICATION AND		SURVEILLANCE (PBCS)		APPROVAL	
		REGISTRY					
What:				Expected impact:			
<p>That, 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 that it is essential to establish an aircraft PBCS registry in the CAR/SAM Regions for the global monitoring system of these capabilities,</p> <p>a) CARSAMMA establish the appropriate mechanisms for the creation of the PBCS database;</p> <p>b)the ICAO NACC and SAM Regional Offices inform CAR/SAM States of the PBCS reporting mechanism for aircraft registered in their respective States; and</p> <p>c) CARSAMMA, with the support of the Secretariat, organize a PBCS briefing to promote and support the understanding of aircraft and operator requirements and certification on PBCS and report it to the GTE/25.</p>				<p><input type="checkbox"/> Political / Global</p> <p><input checked="" type="checkbox"/> Inter-regional</p> <p><input type="checkbox"/> Economic</p> <p><input type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Operational/Technical</p>			
Why:							
To promote adequate implementation of PBCS requirements							
When: Report to GTE/25				Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed			
Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:				CARSAMMA			

DRAFT CONCLUSION	
GTE/24/05	VALIDATION AND SHARING OF LHD DATA FOR AIRSPACES OF THE CAR REGION CONTIGUOUS TO THE UNITED STATES
<p>What:</p> <p>That, in order to ensure validation and adequate coordination for LHD events in the CAR Region occurred in the transfer of control points (TCPs) with United States:</p> <p>a) the Points of Contact (PoCs) that receive notification of possible LHD events occurring in the TCPs with the ATS facilities of United States, take actions to validate such events by sending the notification to the facilities ATS PoCs and to NAARMO;</p> <p>b) after the validation actions have been carried out, the LHD information shall be sent to NAARMO and CARSAMMA as specified in the established procedures and times; thence, RMAs will coordinate the LHDs among themselves; and</p> <p>c) the GTE amend its terms of reference and the manual of contact points accredited to the CARSAMMA to include guidelines for validation of LHD events occurred in the TCPs with United States by the GTE/23 meeting.</p>	<p>Expected impact:</p> <p><input type="checkbox"/> Political / Global</p> <p><input type="checkbox"/> Inter-regional</p> <p><input checked="" type="checkbox"/> Economic</p> <p><input type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Operational/Technical</p>
<p>Why:</p> <p>To ensure the proper identification of LHD events and the timely implementation of mitigating actions</p>	
<p>When: Report to GTE/25</p>	<p>Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed</p>
<p>Who: <input checked="" type="checkbox"/> States <input type="checkbox"/> ICAO <input checked="" type="checkbox"/> Other:</p>	<p>GTE</p>

2.3 Brazil presented NI/05 (available in Spanish only) to report the measures adopted in reference to the Conclusions GTE/16-4 and GTE/18-2.

2.4 From the discussion, the Meeting recognized the need to support the understanding of aircraft operator requirements and certification for PBCS, adopting the following Decision:

DECISION	
GTE/24/06	PBCS BRIEFING FOR CAR/SAM CIVIL AVIATION AUTHORITIES (CAAs)
What: That, to promote and support understanding of aircraft, operator requirements and certification for PBCS: <ul style="list-style-type: none"> a) the CARSAMMA, with the support of the Secretariat, organize and deliver a PBCS briefing for CAR/SAM States and International Organizations; b) the Secretariat contact CAR/SAM CAAs to promote the PBCS briefing; and c) the Secretariat contact other interested parties to promote the PBCS briefing by 15 August 2025. 	Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical
Why: To support compliance with PBCS requirements	
When: By 15 August 2025	Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed
Who: <input type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input checked="" type="checkbox"/> Other:	CARSAMMA and Secretariat

Agenda Item 3: Review of the Results of Large Height Deviation (LHD) and the Collision Risk Model (CRM) Analysis

3.1 With IP/02, supported by P/08, CARSAMMA presented a summary of the calculation of vertical collision risk in the CAR/SAM Regions in 2023 using the CRM methodology. The information paper included an analysis of the CAR/SAM Flight Information Regions (FIRs) that exceeded the Target Level of Safety (TLS).

3.2 The CAR/SAM FIRs that exceeded the TLS are listed below, with recommendations to address the main factors that increase the risk of vertical collision:

- Port au Prince
 - Attention should be paid to the number of "NON Reduced Vertical Separation Minimum (RVSM) APPROVED" aircraft flying over this FIR.
 - The transfer of Air Traffic Control (ATC) in a limited geographic and temporal airspace space requires timely and more precise coordination.
 - More care should be taken when completing the FO form, avoiding excessive data loss during data cleaning.
- La Paz
 - Attention should be paid to the number of "NON RVSM APPROVED" aircraft flying over this FIR.
 - This FIR has a long Large Height Deviation (LHD) duration, which increases the risk of collision.
 - Since this FIR covers a section of the Andes Mountains and may be subject to the effects of orographic flow, more attention should be paid when accepting air traffic from adjacent FIRs (flight level may change).
- Guayaquil
 - Attention should be paid to the number of "NON RVSM APPROVED" aircraft flying over this FIR.
 - Increased caution is recommended when accepting the transfer of air traffic from adjacent FIRs, along with the possibility of changes in the authorized level without prior notice by the crew due to the instantaneous effects of orographic flows on their geographic location.
- Curacao FIR
 - Attention should be paid to the number of "NON RVSM APPROVED" aircraft flying over this FIR.
 - CARSAMMA recommended to pay more attention when accepting/transferring ATC, to return the risk to an acceptable level.
- Panama
 - Regarding the air movement received by CARSAMMA, it was noted that the FIR RVSM movement data file was separated into 30 daily spreadsheets, different from those requested.

- Attention should be paid to the number of "NON RVSM APPROVED" aircraft flying over this FIR.
- Due to the high volume of air traffic and the absence of losses during the clearance of air movements, it caused a "dilution" of LHD occurrences, which kept the risk above and close to the TLS.
- CARSAMMA recommended to pay more attention when accepting/transferring ATC, to return the risk to an acceptable level.
- Santo Domingo
 - Regarding the air traffic movement received, 301 routes are direct, i.e. without airways included in the Aeronautical Information Publication (AIP).
 - The LHD time on a two-way and counter-directional airway was 33 min (high).
 - Attention should be paid to the number of "NON RVSM APPROVED" aircraft flying over this FIR.
 - This FIR is located between routes with a high volume of traffic, and its geographic extent is relatively small, leaving little time to receive messages and make decisions.
 - CARSAMMA recommended to pay more attention when accepting/transferring ATC, to return the risk to an acceptable level.

3.3 Under IP/03, CARSAMMA presented the LHD reports received by CARSAMMA, and the analysis with the Safety Management System (SMS) methodology proposed by ICAO.

3.4 LHDs with Code "E" (error/failure/no coordination between ATC organizations) were the most frequent in 2023, with 561 incidents, followed by Code "L" (non-RVSM approved aircraft), with 94 incidents. The high number of "E" Codes demonstrates the need to improve coordination between adjacent air traffic agencies, which could be achieved through raising awareness and coordination training for air traffic controllers. Despite the use of a tool for automatic transfers (Air Traffic Services Inter-facility Data Communication [AIDC] or ATS Message Handling System [AMHS]), this system still depends on human interaction and failures may exist.

3.5 The identification of trends was presented by CARSAMMA with IP/04, supported by P/07. Following the information presented by CARSAMMA and recognizing that many SAM States with a significant number of LHD events were not present in this meeting, the ICAO SAM Regional Office will contact the Points of Contact (PoCs) of these States to request the development and implementation of an action plan to reduce the number of LHDs, with quarterly follow-up meetings.

3.6 Colombia presented WP/11, to propose to the GTE an update in the methodology to analyse and assess E2 events. These events increase their risk value due to the delay in crew communication when entering a new FIR. The Meeting analysed the proposal from Colombia and provided additional comments to evaluate the possible implications of this change. CARSAMMA presented the formulas to compare the revised risk evaluation with the current procedures.

3.7 The Meeting considered that a more detailed analysis was necessary and decided to create an Ad hoc group, with representatives from Chile, Cuba, Bogota, Brazil, Jamaica, CARSAMMA, COCESNA and IATA, to evaluate the impact of the proposed changes and report to the GTE/25 meeting, So the following Draft Conclusion was agreed:

DRAFT CONCLUSION	
GTE/24/07	SHARED RISK ANALYSIS BETWEEN AREA CONTROL CENTRE (ACC) AND PILOTS IN E2 EVENTS
<p>What:</p> <p>That, to review the methodology for analysing and assessing E2 events that present delays in communication between crews and Air Traffic Services (ATS),</p> <p>a) the Ad hoc Group (Brazil, Chile, Colombia, Cuba, Jamaica, CARSAMMA, COCESNA and IATA)</p> <p>i) analyse, in coordination with CARSAMMA, the methodology for the classification of these type of events;</p> <p>ii) the Ad hoc Group in coordination with CARSAMMA, evaluate the current methodology for the analysis and classification of these types of events, coordinated by the GTE Rapporteur; and</p> <p>b) CARSAMMA include an item in its report to provide details of the events with communication delays during the GTE meetings to share this information with other stakeholders who participate in the discussions by 15 August 2025.</p>	<p>Expected impact:</p> <p><input type="checkbox"/> Political / Global</p> <p><input checked="" type="checkbox"/> Inter-regional</p> <p><input type="checkbox"/> Economic</p> <p><input type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Operational/Technical</p>
<p>Why:</p> <p>To enhance mitigation measures to reduce the occurrence of LHD events</p>	
<p>When: By 15 August 2025</p>	<p>Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed</p>
<p>Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input checked="" type="checkbox"/> Other:</p>	<p>CARSAMMA, IATA, GTE Rapporteur</p>

3.8 Guyana presented IP/11 to inform their challenges and mitigation actions to address LHDs in the Georgetown FIR.

3.9 IP/12 provided the North American Approvals Registry and Monitoring Organization's (NAARMO) experience with the receipt of LHD Coordination Reports and highlighted the harmonization of reporting occurrences for the US Air Route Traffic Control Centers (ARTCCs) and Mexico Area Control Centres (ACCs).

3.10 During the period of January 2023 through June 2024, NAARMO received coordination error reports via email from Miami and San Juan ARTCCs. The emails contained coordination reports between San Juan and Santo Domingo, the recipients of these emails included CARSAMMA, NAARMO, and the adjacent ATC unit. The other emails from Miami and San Juan ARTCCs to NAARMO did not include the adjacent facility as recipients.

3.11 United States ARTCCs do not routinely notify adjacent facilities when a coordination error occurs. Most 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.

3.12 NAARMO presented IP/09, supported by P/04, to provide the vertical safety monitoring report for the Miami, New York West, and San Juan FIRs. There were 64 reported occurrences accounting for 59.5 minutes spent at an incorrect FL during calendar year 2023. The largest contribution towards the vertical collision risk estimate were from Category D LHD reports. Most of this contribution is attributed to one long duration occurrence. In this event, a data entry error during coordination for a flight caused the aircraft to fly an unexpected route.

3.13 The vertical collision risk estimate for this airspace is 15.74×10^{-9} fatal accidents per flight hour (fapfh), a value that is larger than the overall safety goal of 5.0×10^{-9} fapfh. This risk estimate is a decrease from that estimated for calendar year 2022. The decrease in the vertical risk estimate is directly related to the decrease in the time spent at unexpected flight levels in 2023.

3.14 With WP/05, supported by P/05, NAARMO provided the vertical safety monitoring report for Mexico Airspace. There were 56 reported LHDs in calendar year 2023. The vertical collision risk estimate for Mexico area airspace exceeds the TLS value of 5.0×10^{-9} fapfh.

3.15 There were several Category E1 LHD reports, errors in the ATC transfer of control responsibility between adjacent FIRs. Many of the category E reports occurred at the NOTEN fix, a boundary fix between two ACCs. As a result of these occurrences, the adjacent ACCs amended their Letter of Agreement (LoA) and it was signed on 15 September 2023. There have been zero repeat occurrences at NOTEN since the modified LoA was signed.

3.16 The vertical collision risk estimate for Mexico RVSM airspace is 5.14×10^{-9} fapfh. This value exceeds the overall safety target of 5.0×10^{-9} fapfh for Mexico RVSM airspace.

3.17 IP/10 presented by Mexico, supported by P/01, informed the GTE of the progress and achievements that the Mexican Air Navigation Service Provider (ANSP) Services to Navigation in the Mexican Airspace (Servicios a la Navegación en el Espacio Aéreo Mexicano – [SENEAM]) has had in the monitoring and mitigation of LHD, as well as the annual analyses that are carried out and the technical mitigations that have been implemented, to increase Operational Safety.

3.18 SENEAM continues to make arrangements with the Civil Aviation Authority of Mexico (Federal Agency of Civil Aviation (Agencia Federal de Aviación Civil - AFAC)) to obtain authorization for the use of Automatic Dependent Surveillance – Broadcast (ADS-B) in ATC Units, and particularly in Area Control Centres (ACC), to make full use of the tool and mitigate operational safety events, as well as separation reductions in the airspace of the Gulf of Mexico. Likewise, this will allow the implementation of the RADAR Handoff with the Houston Control Center, guaranteeing coordination and significantly reducing class E codes (E1 and E2).

3.19 The meeting also addressed the procedure that SENEAM has had to implement to handle flight plans for general aviation aircraft that are presented without the “W” in field 10, which then try to update the flight plan using the control frequency to request RVSM airspace claiming that they are RVSM certified. SENEAM has implemented the procedure to confirm with the ATS reporting office if the flight plan was filled out with the “W” in field 10 and if it was not submitted with the RVSM approval confirmation, access to this airspace is not permitted.

3.20 CARSAMMA presented WP/06 to address the errors related to completing and validating of the Air Traffic Movement spreadsheet received in 2023 within the RVSM airspace monitoring programme.

3.21 CARSAMMA requested States, and International Organizations, accredited to the CARSAMMA to implement mitigation actions to provide CARSAMMA with RVSM movement data forms, in a timely manner, completed with fewer errors optimizing the utilization of the entire sample, as outlined in items 2.2.1 and 2.2.2 of the [Guidance Manual for PoCs Accredited to the CARSAMMA](#).

3.22 CARSAMMA presented WP/04, supported by P/06, to provide an assessment of non-State-approved operators using the RVSM airspace monitored by CARSAMMA in the Caribbean and South America, based on traffic samples from December 2023 and January 2024. RVSM approval records up to June 2024 were used for the assessment.

3.23 The main problems identified in the assessment are the following:

- failure to communicate or delay by the State Aviation Authorities.
- lack of registration numbers in the traffic sample.
- delay in updating the Regional Monitoring Agency (RMA) approval database.
- typographical errors in the original traffic data.

3.24 Regarding the authorities of the CAR/SAM Regions, the main problem is the lack of response from the State's PoCs. The results underline the importance of States notifying CARSAMMA in good time of the approval status of aircraft. It is important to note that CARSAMMA's LHD and Collision Risk Model (CRM)/Altimetry System Error (ASE) processes use the RMA's Logs and Auditing database to carry out their operational safety analyses of the RVSM airspace. Therefore, it is important for States' certification and airworthiness Points of Contact to have transparent communication with CARSAMMA and to be aware of the implications of their work with the RMA. **Appendix A** to this report includes the summary of these results.

3.25 IP/07 was presented by NAARMO. To comply with ICAO Annex 6 (Operation of Aircraft), Long Term Height Monitoring (LTHM) requirements, NAARMO manages a database that tracks RVSM (Reduced Vertical Separation Minimum) approvals and monitoring history for aircraft in Canada, Mexico, and the United States.

3.26 As of 17 June 2024, NAARMO's data reveals that there are 23,306 RVSM-approved aircraft across these regions. Of these, 14,935 are the airframes that needed to be monitored, once classifying the airframes according to the Minimum Monitoring Requirements (MMR) table. The final step was to verify how many of those airframes had not been monitored within the last two years. The total of non-monitored airframes is 461.

3.27 The monitoring burden varies by country: Canada has 71 aircraft without recent monitoring in the last two years, Mexico has 11, and the United States has 379. The distribution of these unmonitored aircraft underscores the importance of addressing specific airframes that might remain unmonitored due to longer intervals between monitoring, particularly for aircraft that accumulate flight hours slowly.

3.28 The implementation of ADS-B has markedly improved monitoring efficiency, particularly for aircraft operating within ADS-B airspace. This advancement has significantly reduced the number of unmonitored aircraft in United States. Continued investment in ADS-B and other monitoring technologies for all States is essential to further mitigate the monitoring burden and ensure comprehensive compliance with RVSM requirements.

3.29 IP/08 was presented by NAARMO. NAARMO, operating under the U.S. Federal Aviation Administration's William J. Hughes Technical Center since 2003, plays a critical role as the RMA for the airspace of Canada, Mexico and United States. As mandated by ICAO Doc 9937, NAARMO conducts regular compliance checks to ensure that operators meet State approval requirements in the North American airspace and within New York West portions of the NAARMO-delegated oceanic airspace. These assessments are vital for maintaining safety by identifying non-approved operators and aircraft.

3.30 This paper outlines the systematic process NAARMO employs to identify airframes operating in RVSM airspace, specifically between flight levels 290 and 410, where RVSM approval status could not be verified.

3.31 NAARMO's methodology includes analysing traffic movement data sourced from the FAA's Traffic Flow Management System (TFMS) and cross-referencing it with the Combined Approvals snapshot available on the ICAO RMA Knowledge Sharing Network (KSN). The analysis focuses on the results from December 2023 and early January 2024, covering RVSM operations across Canada, Mexico, the Contiguous United States (CONUS), and New York West airspace. This analysis also includes aircraft that were observed in multiple ICAO regions.

3.32 The findings from the traffic scrutiny are summarized in five key tables:

- **Table 1** - presents the results of the RVSM compliance survey for CONUS airspace, highlighting 129 civilian aircrafts with non-approved operations from ten States based on December 2023 data. The count of operations within the CONUS airspace FL290-FL410 inclusive is 1,036,295.
- **Table 2** - outlines the results for New York West airspace, which reported 29,230 operations and identified three civilian aircrafts with non-approved status.
- **Table 3** - details the Canadian airspace results, revealing 118,406 operations and 20 civilian aircrafts with non-approved operations from five states.
- **Table 4** - summarizes the findings for Mexico, with data from three Area Control Centres (ACCs) showing 49,152 operations and 180 civilian aircrafts that lacked RVSM approval.
- **Table 5** - lists aircraft observed in multiple ICAO regions, including those repeated in the EUR Bulletin of non-approved aircraft.

3.33 These assessments underscore the importance of timely communication regarding operator approval statuses from States to RMAs, as delays in notification have been identified as a primary reason for discrepancies in compliance. NAARMO has proactively notified relevant RMAs and State authorities about the identified non-approved airframes, reinforcing the ongoing commitment to aviation safety in North American airspace, so the following Draft Conclusion was formulated:

DRAFT CONCLUSION	
GTE/24/08	NOTIFICATIONS TO CAR/SAM CAAs OF NON-APPROVED AIRCRAFT IN RVSM AIRSPACE
<p>What:</p> <p>That considering that the operation of a non-approved aircraft in RVSM airspace represents a safety high risk and that it is essential to raise awareness among CAR/SAM States regarding this situation, ICAO NACC and SAM Regional Offices:</p> <p>a) inform every year the CAR/SAM CAAs of the non-approved aircraft flying in RVSM airspace, based on the annual flight plan audit performed by NARMO and CARSAMMA;</p> <p>b) inform GREPECAS of the non-approved aircraft flying in RVSM airspace based on the annual flight plan audit performed by NARMO and CARSAMMA; and</p> <p>c) promote communication between CAAs and CARSAMMA to improve the update of the RVSM Aircraft database.</p>	<p>Expected impact:</p> <p><input type="checkbox"/> Political / Global</p> <p><input checked="" type="checkbox"/> Inter-regional</p> <p><input type="checkbox"/> Economic</p> <p><input type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Operational/Technical</p>
<p>Why:</p> <p>To enhance safety in the RVSM airspace</p>	
<p>When: By 15 August 2025</p>	<p>Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed</p>
<p>Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input checked="" type="checkbox"/> Other:</p>	<p>CARSAMMA and NAARMO</p>

3.35 Dominican Republic presented WP/07 on the classification, analysis and mitigation of human error. The objective of this Paper was to break down in a focused manner the different aspects that influence LHDs of category E1 and E2 with the aim of mitigating these events by addressing the root causes.

3.36 The Paper presented details for the most common operational errors leading to LHDs, proposing an analysis based on the operational context for each ATC unit. Accordingly, each State should carry out a survey on the different scenarios in which these events occur. For each cause identified, there is a suggested mitigation measure.

3.37 The Meeting thanked Dominican Republic for this proposal, considering that working to address the causal factors for LHDs is the best way to reduce E2 events. CARSAMMA made a proposal to enhance the F4 form, to include additional information related to each E2 event: create an Ad hoc group Chile, Cuba, Curaçao, Dominican Republic, Trinidad and Tobago. Led by Dominican Republic.

3.38 Following the discussion of this WP, the meeting came to the following Draft Conclusion:

DRAFT CONCLUSION	
GTE/24/09	ANALYSIS AND MITIGATION OF HUMAN ERROR AS ROOT CAUSE OF LARGE HEIGHT DEVIATIONS (LHD)
<p>What:</p> <p>That, considering the large percentage of LHD events category E1 and E2 and the risk that this represents to operational safety, as well as the absence of a tool that objectively collaborates in the mitigation of human error, the Adhoc Group (Chile, Cuba, Curaçao, Dominican Republic, Trinidad and Tobago - Led by Dominican Republic):</p> <ul style="list-style-type: none"> a) to identify and analyse the main factors that influence the E1 and E2 errors; b) Propose mitigation measures associated with the identified factors; c) Prepare a Guide/Manual, which includes the causal factors, as well as mitigation measures; d) Present its results to the GTE/25, in order to be discussed at the meeting and subsequently approved. 	<p>Expected impact:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical
<p>Why:</p> <p>To enhance mitigation measures and reduce the occurrence of LHD events</p>	
<p>When: GTE/25</p>	<p>Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed</p>
<p>Who: <input type="checkbox"/> States <input type="checkbox"/> ICAO <input checked="" type="checkbox"/> Other:</p>	<p>Adhoc Group (Chile, Cuba, Curaçao, Dominican Republic, Trinidad and Tobago)</p>

3.39 Cuba presented WP/08 with the strategy implemented by the Air Navigation Cuban Company (Empresa Cubana de Navegación Aérea-[ECNA]) the Cuban ANSP (regarding the collection of Operational Safety data and the use of the European Coordination Centre for Accident and Incident Reporting Systems (ECCAIRS) tool as an option for improvement in the collection, processing and dissemination of air traffic incidents in a standardized and safe manner, to learn from these events and reduce the number not only of LHDs, but of all incidents linked to the ATS and their assessment to generalize this practice.

3.40 This Paper was supported by a presentation from the South American Regional Safety Oversight Cooperation System (SRVSOP), which provided support to Cuba for the implementation of the ECCAIRS. The presentation included detailed explanation of the benefits to use the tool, enhancing the data analysis as part of the State Safety Programme (SSP).

Agenda Item 4: Activities and Tasks to be Reported to GREPECAS

4.1 The GTE Rapporteur presented WP/03, supported by P/02, with the proposal developed by an Ad hoc group, to update the Guidance Manual for Points of Contact (PoCs) Accredited to CARSAMMA.

4.2 The Meeting had working sessions to review the proposal presented by the GTE Rapporteur and thanked the Ad hoc group for their hard work, **Appendix B** to this report shows the referred proposal. So, the following Decision was adopted:

DECISION	
GTE/24/10	UPDATE OF THE GUIDANCE MANUAL FOR THE POINTS OF CONTACT (PoCs) ACCREDITED TO CARSAMMA
What: That, considering update the Guidance Manual for the Points of Contact (PoCs) Accredited to CARSAMMA for maintaining safety, efficiency, and effectiveness in the monitoring of the RVSM airspace, the GTE approves the changes to the Guidance Manual for the Points of Contact (PoCs) Accredited to CARSAMMA as presented in the Appendix B to this report.	Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical
Why: To improve communication and coordination between the PoC and the RMAs.	
When: Immediately	Status <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed
Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:	

4.3 As part of the collaboration between the GTE/PA-RAST Joint Coordination Group activities, IATA and the FAA presented TCAS-RA hotspot information as part of the exchange of information from the Global Aviation Data Management (GADM)/Flight Data eXchange programme and the Aviation Safety Information Analysis and Sharing (ASIAS) system, which showed TCAS-RA events captured in the upper airspace for the periods under review.

4.5 ICAO highlighted some of the continued LHD waypoint hotspots also and the need for safety assessment and action plans to be provided by the FIR's involved.

4.6 The following recommendations were made to ensure both LHD's and TCAS- RA events generated in the hotspot location are assigned the appropriate risk values and actions taken to further analyse and develop mitigation on prioritized hotspots (Colombia, Brazil and Mexico) for the CAR/SAM Regions.

4.7 The following were recommended next steps as for the collaborative work:

- Integration/evaluation of analysis from validated LHD events in joint group work
- Prioritize CAR/SAM region LHD's/TCAS –RA: Ad-hoc group formation for the identified FIR's
- Seek approval in the GREPECAS plenary and publish the Caribbean and South America Upper-Airspace Safety Bulletin (CAR/SAM UASB)
- Continued engagement and participation in GTE/PA-RAST regularly scheduled in-person meetings
- PA-RAST to evaluate the feasibility of continued monitoring of the SPI to measure GANP - 23 varied 3
- GTE/PA-RAST to evaluate the feasibility of a work programme to address delayed communications by crews when crossing into a New FIR

4.8 As part of the ongoing work efforts to provide awareness on TCAS-RA adherence, the Joint Coordination Group, arranged for a presentation to be provided to the GTE on Airborne Collision Avoidance System II (ACAS II)/TCAS II.

Agenda Item 5: Other Business

5.1 Under this Agenda item CARSAMMA presented IP/06 with the results of the monitoring of the EMBRAER E135-145 aircraft group, revealing that the E35L model did not meet RVSM requirements. EMBRAER's analysis resulted in the reclassification of its aircraft into four distinct groups (E135-145, E45X, E135BJ1 and E135BJ2) in the most up-to-date version of the MMR document.

5.2 United States presented P/03, to provide a short tutorial briefing regarding the Traffic Alert and Collision Avoidance System II (TCAS II).

5.3 The Secretariat and CARSAMMA informed that the next GTE/25 meeting will be held in Salvador de Bahía, Brazil, from 18 to 22 August 2025.

APPENDIX A

AUDITED AIRCRAFT THAT STILL DO NOT HAVE RVSM APPROVAL IN THE CARSAMMA DATABASE

State	Registry	Operator	ICAO Type	Notification sent	Reply in 30 days	Current RVSM status
ARGENTINA	LVKEF	FBO	B738	YES	NO	UNKNOWN
ARGENTINA	LVKJE	FBO	B738	YES	NO	UNKNOWN
ARGENTINA	LVKHU	ARG	A332	YES	NO	UNKNOWN
ARGENTINA	LVKHO	FBO	B738	YES	NO	UNKNOWN
ARGENTINA	LVKHT	ARG	A332	YES	NO	UNKNOWN
ARGENTINA	LVKJF	FBO	B738	YES	NO	UNKNOWN
ARGENTINA	LVKJA	JES	A320	YES	NO	UNKNOWN
ARGENTINA	LVKKE	ARG	B38M	YES	NO	UNKNOWN
ARGENTINA	LVKJD	FB LINEAS AEREAS	B738	YES	NO	UNKNOWN
ARGENTINA	LVFUT	SOMASRL	LJ60	YES	NO	UNKNOWN
ARGENTINA	LVGQK	SOMASRL	F900	YES	NO	UNKNOWN
ARGENTINA	LVKFW	ANDES LINEAS AEREAS	B738	YES	NO	UNKNOWN
ARGENTINA	FBZ3813	FBO - FLYBONDI	A320	YES	NO	UNKNOWN
ARGENTINA	FBZ5903	FBO - FLYBONDI	A330	YES	NO	UNKNOWN
ARGENTINA	LVBMS	LAGLORIOSA.S.A	BE20	YES	NO	UNKNOWN
ARGENTINA	LVFVY	INTERJET S.A	C510	YES	NO	UNKNOWN
ARGENTINA	LVHEF	FB LINEAS AEREAS	B738	YES	NO	UNKNOWN
ARGENTINA	LVHKS	FB LINEAS AEREAS	B738	YES	NO	UNKNOWN
ARGENTINA	LVKEB	NUEVO BANCO DE SANTA FE	F900	YES	NO	UNKNOWN
ARGENTINA	LVKFQ	SEAS.A	CL60	YES	NO	UNKNOWN
ARGENTINA	LVKKD	ARG	B38M	YES	NO	UNKNOWN
ARGENTINA	LVKLE	CHEYENNE S.A	GL5T	YES	NO	UNKNOWN
ARGENTINA (MILITAR)	T99	FUERZA AEREA ARGENTINA	B737	YES	NO	UNKNOWN
BRAZIL	PSAES	AZUL	E295	YES	NO	UNKNOWN
BRAZIL	PSTOT	ANIVIA	B733	YES	NO	UNKNOWN
BRAZIL	PRYYC	AZUL	A20N	YES	NO	UNKNOWN
BRAZIL	PRXBO	TAM	A20N	YES	NO	UNKNOWN
BRAZIL	PRMXA	TAM	A321	YES	NO	UNKNOWN
BRAZIL	PRGPK	GOL	B738	YES	NO	UNKNOWN
BRAZIL	PRAQT	AZUL	A20N	YES	NO	UNKNOWN
BRAZIL	PTAUF	AZUL	E195	YES	NO	UNKNOWN
BRAZIL	PSGTE	GOL	B38M	YES	NO	UNKNOWN
BRAZIL	PSGPS	GOL	B38M	YES	NO	UNKNOWN
BRAZIL	PPMIE	HELISTAR TAXI AEREO	C680	YES	NO	UNKNOWN
BRAZIL	PPNOB	NOBRE EMPREENDIMENTOS E PARTICIPACOES	FA50	YES	NO	UNKNOWN

State	Registry	Operator	ICAO Type	Notification sent	Reply in 30 days	Current RVSM status
BRAZIL	PRAKL	AZUL	E195	YES	NO	UNKNOWN
BRAZIL	PRGPD	GOL	B38M	YES	NO	UNKNOWN
BRAZIL	PRGPG	GOL	B738	YES	NO	UNKNOWN
BRAZIL	PRGRB	GOL	B38M	YES	NO	UNKNOWN
BRAZIL	PSGEI	GOL	B38M	YES	NO	UNKNOWN
BRAZIL	PSPGE	GOL	B38M	YES	NO	UNKNOWN
BRAZIL	PSPGL	GOL	B38M	YES	NO	UNKNOWN
BRAZIL	PRMBHQ	TAM	A320	YES	NO	UNKNOWN
BRAZIL	PRIXBK	TAM	A320	YES	NO	UNKNOWN
BRAZIL	PRXBO	TAM	A20N	YES	NO	UNKNOWN
BRAZIL	PTMPA	TAM	A321	YES	NO	UNKNOWN
BRAZIL	PPXOM	EMBRAER	E50P	YES	NO	UNKNOWN
BRAZIL	PPYBF	MODERN LOGISTICS	B738	YES	NO	UNKNOWN
BRAZIL	PRSLH	SIDERAL LINHAS AEREAS	B738	YES	NO	UNKNOWN
BRAZIL	PSRDR	MUNDIVOXCOMUNICACOES	CL60	YES	NO	UNKNOWN
BRAZIL	PRDAD	--	GLF4	YES	NO	UNKNOWN
BRAZIL	PPJFZ	LIDER TAXI AEREO S.A	H25B	YES	NO	UNKNOWN
BRAZIL	PSGRM	GOL	B38M	YES	NO	UNKNOWN
BRAZIL	PSAXK	AZUL	E295	YES	NO	UNKNOWN
BRAZIL	PRAKN	AZUL	E195	YES	NO	UNKNOWN
BRAZIL (MILITAR)	BRS2854	FUERZA AEREA BRASILEÑA	KC39	YES	NO	UNKNOWN
BOLIVIA	CP3199	BOA	B738	YES	NO	UNKNOWN
COLOMBIA	N519VJ	--	SF50	YES	YES	UNKNOWN
PARAGUAY	ZPCRR	AZP	CRJ2	YES	YES	UNKNOWN
PARAGUAY	ZPCRS	AZP	CRJ2	YES	YES	UNKNOWN
PARAGUAY	ZPCRT	AZP	CRJ2	YES	YES	UNKNOWN
PERU	CCC PJ	LAN	A319	YES	NO	UNKNOWN
PERU	CCC PL	LPE	A319	YES	NO	UNKNOWN
PERU	CCC PM	LPE	A319	YES	NO	UNKNOWN
PERU	CCC QK	LPE	A320	YES	NO	UNKNOWN
PERU	CCDDE	SKYAIRLINE	A21N	YES	NO	UNKNOWN
PERU	CCC PO	LAN PERU	A319	YES	NO	UNKNOWN
PERU	CCC QL	LAN PERU	A319	YES	NO	UNKNOWN
VENEZUELA	YV3250	SERVICIOS AEREOS AYH C.A	LJ50	YES	NO	UNKNOWN

Table 1 - audited aircraft that still do not have RVSM approval in the CARSAMMA database

APPENDIX B**Proposed Changes to the Guidance Manual for Points of Contact (POC) Accredited to CARSAMMA****CHAPTER 1
Introduction**

- **Article 1.1.1 amended:**

1.1 Background

1.1.3 CARSAMMA was established by the 10th meeting of GREPECAS held in Manaus in 2002. Brazil assumed the responsibility of providing the means for the functioning of the Agency monitoring the CAR/SAM Regions RVSM airspace and as a repository of a database of RVSM/PBN certified aircraft by the civil aviation authorities of the States of the regions. This Agency is located in Rio de Janeiro, having as its scope, the whole region of the Caribbean and South America, which comprises a total of 34 FIRs, including 21 States, with the exception of Mexico.

1.1 Background

1.1.3 CARSAMMA was established by the GREPECAS/10 meeting held in Manaus in 2002. Brazil took on the responsibility of providing the means for the agency's operation in monitoring the RVSM airspace in the CAR/SAM Regions and serving as a repository for a database of RVSM/PBCS certified aircraft by the civil aviation authorities of the States in these regions. This agency is located in Rio de Janeiro, with its scope covering the entire Caribbean and South American region, comprising a total of 34 FIRs, excluding the FIRs of Mexico, Mexico Oceanic, Houston, Houston Oceanic, Mazatlan, Mazatlan Oceanic, Miami, Miami Oceanic, Nassau, New York West, and San Juan, Puerto Rico, as described in table (X).

RMA	REGION	STATE / TERRITORY	FIR
CARSAMMA	CAR	BELIZE COSTARICA EL SALVADOR GUATEMALA HONDURAS NICARAGUA	Central América (CENAMER)
		CURACAO	Curacao
		CUBA	Habana
		JAMAICA	Kingston
		ANTIGUA AND BARBUDA BARBADOS DOMINICA FRANCE GRENADA SANTA LUCIA SANKITTS AND NEVIS SAN VICENTE TRINIDAD AND TOBAGO	Piarco
		HAITI	Port au Prince
		DOMINICAN REPUBLIC	Santo Domingo

RMA	REGION	STATE / TERRITORY	FIR
CARSAMMA	SAM	ARGENTINA	Cordoba Ezeiza Mendoza Resistencia Comodoro
		BOLIVIA	La Paz
		BRASIL	Atlantico Amazonica Brasilia Curitiba Recife
		CHILE	Punta Arena Santiago Antofagasta Pascua Puerto Montt
		COLOMBIA	Barranquilla Bogotá
		ECUADOR	Guayaquil
		GUYANA	Georgetown
		FRENCH GUYANA	Cayenne
		PANAMA	Panama
		PARAGUAY	Asuncion
		PERU	Lima
		SURINAME	Paramaribo
		URUGUAY	Montevideo
VENEZUELA	Maiquetia		

- **Article 1.4 amended:**

1.4 List of Acronyms (acronyms inserted)

PBCS Performance Based Communications and Surveillance

CHAPTER 2

Orientation Guide for Points of Contact (PoC) accredited to CARSAMMA

- **Article 2.3.4 amended:**

2.3.4 The LHD (F4) is validated between the FIRs involved. In the event that any F4 form lacks the necessary data and information, the PoC is required to send the report and provide the information for analysis and validation. Validation can be carried out by the means considered most appropriate (teleconference, official PoC email, etc.).

2.3.4 The LHDs are validated between the involved FIRs. Subsequently, the FIR experiencing the risk will send the individual F4 form and multiple reports to CARSAMMA. If any F4 form lacks the necessary data or information, CARSAMMA will request the corresponding PoC to submit the report and provide the required information for its analysis and assessment. The validation can be carried out through the most appropriate means, such as teleconference, official PoC email, among others.

- **Section 2.3.5 inserted:**

2.3.5 After the publication of the LHD list for the CAR/SAM Region by CARSAMMA, which includes the risk values for the periods January-March, April-June, July-September, and October-December, there will be a ten-calendar-day period for the PoCs to review and give their final approval.

If necessary, teleconferences will be held to coordinate and resolve any discrepancies related to the LHD data, as well as to present the causes, contributing factors, and corrective actions for those events with a medium or high SMS risk value.

Note: If CARSAMMA identifies a risk occurrence that needs to be evaluated immediately, the agency will call for a meeting

- **The note of article 2.4.1 modified:**

Note. - Normally the Equipment Points of Contact are part of the CAAs. The FIRs Points of Contact are usually part of the ANSPs in collaboration with the different CAAs.

Note. - Normally the Team Contact Points are part of the AAC. FIR contact points must have appropriate operational experience and they are usually part of the ANSP in collaboration with the different CAAs.

CHAPTER 3

Assessment Guide for Major Altitude Deviations (LHD) based on the Safety Management System (SMS).

- **The note of article 3.2.4 modified:**

Note. - In Table 3, and only for the calculation of the risk value in terms of qualitative assessment, category “E” is subdivided into “E1 - Poor coordination” and “E2 - Absence of coordination”, which imply a risk value different ending. In the code table for LHD, these codes do not exist, but in the old table there were codes M (used for poor coordination), with value = 2 and N (absence of coordination), with value = 3. In order not to lose the historical series in that analysis, the E code is divided into two for this analysis.

Note. - In Table 3, and only for the calculation of the risk value in terms of qualitative assessment, category “E” is subdivided into “E1 - Poor coordination” and “E2 - Absence of coordination”, which implies a risk value different ending.

-

VR	Nivel de Riesgo	Control
76-100	HIGH	Unacceptable risk, the RVSM space must be cancelled until the danger is mitigated and the risk is reduced to the medium or low level
21-75	MEDIUM □	Acceptable risk, but the follow-up and riskmanagement are mandatory
01-20	LOW	Acceptable without restriction or limitation, hazards do not require an active riskmanagement, but must be documented

VR	NIVEL DE RIESGO	CONTROL
76-100	HIGH	Unacceptable risk Action will be taken in accordance with 2.3.5
21-75	MEDIUM	Acceptable risk but the follow-up and riskmanagement are mandatory
00-20	LOW	Acceptable without restriction or limitation The hazards do not require active management but should be documented

CHAPTER 4

Terms of reference

· **Article 4.2 modified:**

4.2 Terms of Reference (ToR) of the Scrutiny Working Group (GTE)

- A. Bring together experts in safety management, air traffic control, aircraft flight operations, regulation and certification, data analysis and risk models;
- B. Analyze and evaluate LHDs of 300 feet or more, as defined in ICAO Document 9574, Manual for the Implementation of a Minimum Vertical Separation of 300 m (1,000 ft) between FL 290 and FL 410 inclusive;
- C. Coordinate with CARSAMMA the collection and review of data on LHDs;
- D. Determine and validate an estimate of the flight time outside the authorized flight level used to calculate the collision risk model (CRM) by CARSAMMA;

- E. Identify safety trends based on LHD deviation analysis reports, recommend mitigation actions in accordance with ICAO SMS provisions and send annual reports on the results of safety assessments to GREPECAS in order to improve operational safety in the RVSM space of the CAR/SAM Regions; and
 - F. Perform other tasks indicated by GREPECAS
-

- A. Bring together experts in safety management, air traffic control, aircraft flight operations, regulation and certification, data analysis and risk models;
- B. Analyze and evaluate LHDs of 300 feet or more, as defined in ICAO Document 9574, Manual for the Implementation of a Minimum Vertical Separation of 300 m (1,000 ft) between FL 290 and FL 410 inclusive;
- C. Coordinate with CARSAMMA the collection and review of data on LHDs according to established times and procedures;
- D. Determine and validate an estimate of the flight time outside the authorized flight level used to calculate the collision risk model (CRM) by CARSAMMA;
- E. Identify operational safety trends based on LHD deviation analysis reports,
- F. Recommend mitigation actions according to the Guide for the Assessment of Large Height Deviations (LHD) based on the Safety Management System (SMS) available in Chapter 3, and submit annual reports on the results of safety assessments to GREPECAS in order to improve operational safety in the RVSM airspace of the CAR/SAM Regions
- G. Perform other tasks indicated by GREPECAS

- **Article 4.1.1 modified:**

CARSAMMA functions:

- A. Maintain a central record of RVSM approvals of operators and aircraft of each State/Territory that uses CAR/SAM RVSM airspace;
 - B. Facilitate the transfer of approved data to and from other RVSM regional monitoring agencies (RMAs);
 - C. Establish and maintain a database containing altimetry system errors of altitude and deviations of 300 feet or more, and deviations in the horizontal plane within the RVSM airspace of the CAR/SAM Regions;
 - D. Disclose timely information to the civil aviation authorities (CAA) of the States on the changes or monitoring status of aircraft type classifications;
 - E. Disclose the result of the monitoring flight using the GPS Global Monitoring System (GMS);
 - F. Provide the means to identify aircraft without RVSM approval operating in the RVSM airspace of the CAR/SAM Regions and notify the civil aviation authority (AAC) of the State of the fact;
 - G. Develop the means to summarize and communicate the content of relevant databases to the RVSM Scrutiny Group (GTE) for the corresponding safety assessment; and
 - H. Carry out the evaluation of the collision risk level (CRM) in the RVSM airspace of the CAR/SAM Regions, according to ICAO Doc. 9574 and Doc. 9937.
-

4.3.1 CARSAMMA Terms of Reference (TOR)

CARSAMMA functions:

- A. Monitor the level of risk due to operational errors and in-flight contingencies as follows:
 - Establish and maintain a mechanism to collect and analyze all operational errors, including vertical deviations of 90 m (300 ft) or more.
 - Determine and analyze, if possible, the root cause of each deviation along with its magnitude and duration;
 - Calculate the frequency of occurrences;
 - Evaluate the overall risk (technical and operational) in the system against the overall safety objective (see Doc 9574 - Manual on the Implementation of a Minimum Vertical Separation of 300 m (1 000 ft) between FL 290 and FL 410 inclusive);
 - Initiate follow-up actions with the State's aeronautical authorities as necessary;
- B. Circulate regular reports on all operational deviations, annually, along with the necessary graphs and tables to relate the estimated system risk to the TLS, using the criteria detailed in Doc 9574, for which formats are suggested in Appendix A of Doc 9574;
- C. Produce an annual report on risk assessment in the CAR/SAM Regions for distribution to CARSAMMA Member States and other interested parties, and submit an annual report to GTE;
- D. Act as custodian of all technical aircraft height-keeping performance data collected as part of the CAR/SAM regional monitoring process;
- E. Report the height deviations of aircraft that are observed not to comply, based on the following criteria:
 - i. Total Vertical Error (TVE) \geq 90 m (300 ft);
 - ii. Altimetry System Error (ASE) \geq 75 m (245 ft);
 - iii. Assigned Altitude Deviation (AAD) \geq 90 m (300 ft);and take necessary steps with the relevant State and operator to determine:
 - the probable cause of height deviation;
 - whether the approval status of the relevant operator is verified; and to
 - recommend, whenever possible, corrective measures;
- F. Analyze the ASE data to detect height deviation trends and therefore act as in the previous point;
 - Investigate the height maintenance performance of the aircraft in the core of the distribution:
 - the aircraft population;
 - types or categories of aircraft; and
 - individual fuselages;
- G. Provide the aeronautical authorities of the State of the CAR/SAM Regions with height monitoring data upon request;
- H. Liaise with other Regional Monitoring Agencies (RMAs) to achieve exchange of monitoring data and RVSM/PBCS approvals between regions;
- I. Establish and maintain a database of aircraft approved by the authorities of the respective State for operations within the RVSM/PBCS airspace in that region;

- J. Conduct approval status checks for aircraft operating in relevant RVSM/PBCS airspace, identify non-approved operators and aircraft using RVSM/PBCS airspace and notify the relevant State of Registry/State of Operator;
- K. Receive reports of non-compliance (Reference from the Performance-Based Communication and Surveillance Manual (PBCS - Doc 9869) with RSP 180 and RCP 240 of the ANSP CAR/SAM and transmit reports to the respective RMA associated with the State of the respective operator;
- L. Receive and maintain records of RCP and RSP approvals issued by States of the Operator/Registry associated with the State's current responsibility and incorporate them into the expanded database of RVSM/PBCS approvals and follow up on appropriate instances of non-operating aircraft. approved aircraft identified in PBCS airspace.
- M. Share RCP and RSP approval records between RMAs in accordance with current RVSM approval sharing practices so that States/ANSPs can verify that aircraft operators presenting PBCS capabilities in the flight plan are authorized to do so.

- **Article 4.4 added:**

4.4 Terms of Reference (TOR) of the Rapporteur

- A. The rapporteur must be familiar with the ICAO Policy on Interactions with External Parties. The activities of the Expert Working Group (GTE) will be aligned with GREPECAS procedures, and any action will be agreed upon with the Regional Specialist in charge. The rapporteur will not take any action without the consensus of the ICAO Regional Specialist in charge.
- B. The Rapporteur will participate, together with the Secretariat, in the preparation of the reports of the GTE meetings.
- C. The Rapporteur will be responsible for preparing and presenting an annual executive report to the Secretary of GREPECAS containing the relative statistical information on the LHD, as well as recommendations on risk mitigation measures that they deem relevant and on the activities and decisions of the Working and Scrutiny Group (GTE).
- D. The Rapporteur will have a participatory and leadership role in promoting activities within the CAR/SAM regions that contribute to reducing LHD events, in coordination with the State focal points.
- E. The Rapporteur will be elected for a period of 3 years and may be re-elected only once. They will assume their duties at the end of the GTE meeting in which they are elected.
- F. The application for Rapporteur must be made before the GTE meeting and the candidate must be a participant of the group who has the necessary experience to comply with the TOR.
- G. The election of the Rapporteur will be based on the individual nominated, not on the state to which they belong
- H. Attend, to the extent possible, all GTE and GREPECAS meetings.

CHAPTER 5

Reference Guide for Validating LHD Events

- **Article 5.4.6 modified:**

5.4.6 The duration calculation begins once the aircraft is level at a flight level that is not the level authorized or planned by ATC, and concludes once ATC initiates corrective actions.

5.4.6 The duration calculation begins once the aircraft leaves three hundred feet to occupy a flight level that is not the level authorized or planned by ATC, and concludes once ATC initiates corrective actions.

- **Articles 5.4.7 and 5.4.8 added:**

5.4.7 If the receiving FIR is not aware of the traffic, and the aircraft calls the receiving FIR before entering its airspace, outside of the buffer zone established in 5.5.1 and notifies the level it is occupying, it is an LHD and the duration will be zero (o), as long as the actions taken by ATC are immediate and prior to the aircraft entering its area of responsibility.

5.4.8 If the aircraft enters an airspace with an unauthorized level without establishing communication and the FIR has a surveillance service, the duration of the event will be calculated from the moment the aircraft enters the FIR until the ATC performs the appropriate Radar identification. The observations of the reason why timely communication with the aircraft was not established must be recorded on Form F4.

· Articles 5.5.2.1 and 5.5.3.1 are modified by incorporating the new articles which are underlined.

5.5.2.1 When the receiving FIR has ATS surveillance system coverage that reaches the airspace of the transferring FIR and it is observed that the aircraft has a flight level different from the previously coordinated one, which has not been modified, it is considered LHD. The duration is recorded in one-second increments in accordance with 5.4.5, 5.4.6, 5.4.7 and 5.4.8. It will be part of the elements to be validated between the FIRs involved. If the ATC unit does not have enough information in the LHD report to determine the time (seconds) elapsed at an incorrect flight level, the default value established by the GTE is assigned. in 5.4.11 of this manual.

5.5.3.1 When the receiving FIR has contact with the aircraft before entering its airspace, and becomes aware of the change in the aircraft's flight level with respect to the previously coordinated level, it is considered an LHD. The previously validated duration is recorded in one-second increments as established in 5.4.6, 5.4.7 and 5.4.8. If the ATC unit does not have enough information in the LHD report to determine the time (seconds) spent at an incorrect flight level, the default value established by the GTE in 5.4.12 of this manual is assigned. In case the transfer unit checks the flight level error before crossing the transfer control point (TCP) then it is not considered as LHD.

5.5.4.1 When an aircraft enters a receiving FIR and reports a flight level other than the previously coordinated one, it is considered an LHD. Consideration must be given to the time at which the aircraft crosses the FIR boundary, and whether the relevant ACC becomes aware of the traffic and takes action regarding the deviation. Also, ACC must consider whether this action means leaving the aircraft at the level it is reporting, or moving the aircraft to a level where it does not conflict with the air traffic control planning of the FIR. The duration is recorded in one-second increments in accordance with 5.4.5, 5.4.6, 5.4.7 and

5.4.8. It is also validated by the FIRs involved. If the ATC unit does not have enough information in the LHD report to determine the time (seconds) spent at an incorrect flight level, the default value established by the GTE in 5.4.11 of this manual is assigned.

- **Article 5.5.5.1 remains unchanged**

5.5.5 Lateral deviation without coverage of ATS surveillance systems in the adjacent FIR.

5.5.5.1 When an aircraft reports a laterally diverted position with respect to the original transfer point, either via another route or due to a deviation requested by the crew for reasons of operational convenience, an LHD is not considered to exist since the Initial reporting philosophy on LHD refers to vertical deviations and not lateral deviations. However, for RVSM airspace operational safety purposes, these deviations will be reported to CARSAMMA for analysis and study.

-
- **Table 10 of 5.6.1 is modified by adding the division E1 and E2 to code E and the code is added**


E	<p>Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of human factors (e.g. late or missed coordination, incorrect estimated / actual time, or non-observance of flight level, ATC route, etc. ., according to the agreed parameters)</p> <p><i>Only for the calculation of risk value in terms of qualitative assessment, category "E" is subdivided into "E1 - Poor coordination" and "E2 - Absence of coordination", which imply a different final risk value.</i></p> <p>Example 1: Sector A coordinated the transfer of aircraft 1 to Sector B at FL 380. The aircraft was actually at FL 400. Operating Procedures and Practices for Regional Monitoring Agencies in Relation to the Use of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive</p> <p>Example 2: The Sector A controller received coordination from Aircraft 1 regarding waypoint X at FL 370 in Sector B. At 05:04, Aircraft 1 was at waypoint X at FL 350 and applied for FL 370.</p>
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- **Article 5.7.2 is attached**

5.7.2 Events that, in accordance with 3.4.1, are classified as medium or high risk in the SMS assessment must be mitigated by the States that suffered the event and the result of this work must be presented by each FIR at the annual GTE meeting.

- Appendix E LHD form CARSAMMA F4 is modified

Si va a imprimir este informe, ponga aquí su logo de FIR



CARSAMMA FORMULÁRIO F4
GRAN DESVIACIÓN DE ALTITUD

La información contenida en este formulario es **confidencial** y solo será usada con el propósito estadístico de analizar la seguridad.

Informe a la CARSAMMA de una desviación de altitud de 300 pies o más, incluyendo aquellas debidas a sucesos TCAS, de Turbulencia y Contingencia.

Fecha de Hoy: 06/02/21		2. Agencia de Notificación / FIR: MUEH	
DETALLES DE LA DESVIACIÓN			
Nombre del Operador: 0	4. Distintivo de Llamada: H955	5. Tipo de Aeronave: C56X	6. ¿Mode C o ADS Visualizado? <input checked="" type="checkbox"/> Sí, Cual Nivel?: 340 <input type="checkbox"/> No
Fecha de la Ocurrencia: 09/01/21	8. Hora UTC: 18:48	9. Ubicación de la Ocurrencia (lat/long o Punto de referencia): DEPSI	10. Condición Meteorológica: <input checked="" type="checkbox"/> IMC <input type="checkbox"/> VMC
1. Ruta autorizada del vuelo: UAB90 - MDJB/MUHA UAB90 UCU J3 APRK KAVUL4B			
2. Nivel de Vuelo Autorizado: 430	13. Tiempo estimado transcurrido en el nivel de vuelo incorrecto (segundos): N/A	14. Desviación Observada (+/- pies): 9.000	
5. Otro Transito: <small>Distintivo de Llamada</small> 0 <small>Registro de la aeronave</small> 0 <small>FL (Nivel de Vuelo)</small> 1 <small>Posición</small> 0	<small>Tipo de ACFT</small> 0 <small>Ruta</small> 0 <small>Distancia entre las aeronaves</small> 0		
6. Causa de la Desviación: Error de coordinación entre unidades ATC de nivel de vuelo que no se ajustó a los parámetros acordados. <small>Ejemplos: Error operacional en el ciclo de coordinaciones ATC, Turbulencia, Clima, Falla en el Equipo, etc)</small>			
DESPUÉS DE RESTAURADA LA DESVIACIÓN			
17. Nivel de Vuelo Final Observado/Reportado *: 340	18. FL arriba del nivel autorizado: <input checked="" type="checkbox"/>		20. Cumplió este FL con las Tablas de Niveles de Crucero del Anexo 2 de la OACI? <input checked="" type="checkbox"/> Sí <input type="checkbox"/> No
Favor indicar la Fuente de la Información: <input checked="" type="checkbox"/> Modo C <input type="checkbox"/> Piloto <input type="checkbox"/> ADS <input type="checkbox"/> Otros			
19. FL debajo del nivel autorizado: <input type="checkbox"/>			
1. Descripción Detallada de la Desviación, incluir factores contribuyentes al evento y factor humano si corresponde <small>(por favor, de su evaluación de la desviación violada por la aeronave y la causa de la desviación.)</small>			
<p>Se recibe el estimado del vuelo H955 a nivel 430, sin embargo la aeronave sobrevuela la posición DEPSI a nivel 340.</p>			
2. Comentarios de la validación.			
3. Comentarios de la Tripulación <small>(de haberlos)</small>			

CARSAMMA - Agencia de Monitoreo para el Caribe y Sudamérica
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 Telefone: (+55 21) 2101-6358 (Jefe) - 2101-6868 (Adjunto) - 2101-6867 (Salon OPR)
 E-Mail: carsamma@cgna.gov.br

ANNOTATION TO HELP FILLING OUT FORM F4

21. MAKE A DETAILED DESCRIPTION OF THE DEVIATION, INCLUDING THE HUMAN OR ADDITIONAL FACTORS THAT ARE A CONTRIBUTING FACTOR TO THE EVENT
22. MAKE A DESCRIPTION OF THE PROCEDURE LIKE THIS: CORRECTLY VALIDATED, FIR SELDOM RESPONDS, TELECONFERENCE REQUIRED

- Form F4 Multiple Reports is attached

NOTES TO HELP FILL OUT THE MULTIPLE REPORT FORM (THE CMA F4 CARSAMMA, FROM 1 TO 20, WILL BE FILLED IN AUTOMATICALLY)

Columns specification of the items with the columns:
A FILL IN THE SEQUENTIAL NUMBER TO DESCRIBE THE REPORTS, BY DATE AND TIME.

— A11 —

B FILL IN THE 4 (FOUR) ICAO IDENTIFICATION LETTERS OF THE FIR OR THE OCCURRENCE NOTIFICATION AGENCY.

C FILL IN THE 4 (FOUR) LETTERS OF THE ICAO IDENTIFICATION OF THE FIR OR THE NAME OF THE FIR THAT IS BEING REPORTED OR WHO COMMITS THE FAULT.

D INSERT THE DATE OF THE OCCURRENCE (DD/MM/YY).

E INSTALL THE DATE OF COMPLETION OF THIS FORM.

F FILL IN THE 3 LETTERS OF THE ICAO IDENTIFICATION OF THE AIRCRAFT OPERATOR OR, IN THE CASE OF GENERAL AVIATION, PUT THE NAME OF THE OPERATOR/OWNER.

G FILL IN WITH THE CALL SIGN.

H FILL OUT WITH THE AIRCRAFT RECORD.

I FILL IN WITH THE ICAO DESIGNATIVE, CONTAINED IN ICAO DOC 8643, FOR EXAMPLE, FOR AIRBUS A320-211, FILL IN A322; FOR BOEING B747-438, FILL B744.

J SET THE TIME OF THE OCCURRENCE (HH:MM).

K FILL IN WITH THE LOCATION OF THE OCCURRENCE (FIXED, LAT/LONG OR THE RADIAL WITH NAUTICAL MILES FROM A POINT).

L POSITION FOR RISK. LEAVE BLANK WILL BE FILLED BY THE CARSAMMA.

M STATE THE METEOROLOGICAL CONDITIONS WHEN THE OCCURRENCE OCCURRED. (BMI or VMC)

N PUT THE NAME OF THE AIRWAY THAT CONTAINS THE REPORTED POINT IN COLUMN "J". (IF THE RETURN IS DIRECT OR RANDOM, ENTER "DCT").

O FILL IN THE ORIGIN/DESTINATION OF THE FLIGHT USING THE 4 (FOUR) ICAO IDENTIFICATION LETTERS OF THE AERODROME. (CASE COLUMN "M" DCT, AUTZ ROUTE)

P MODE C or ADS DISPLAYED SET "YES" or "NO".

Q FILL WITH THE AUTHORIZED FLIGHT LEVEL ON THE ROUTE.

S SET THE FINAL FLIGHT LEVEL, OBSERVED/REPORTED,

T ENTER THE LARGEST OBSERVED DETECTION (IN FEET). USE "+" IF IT IS FOR UP AND "-" IF IT IS FOR DOWN. (CASE DETOUR UPWARDS
SIGNAL "+" MAY BE OMITTED)

U SET THE ESTIMATED "IN SECONDS" OF THE TIME FLOWED AT THE INCORRECT LEVEL. (IF NOT MEASURED, ENTER "N/A")

V GTE DURATION. LEAVE BLANK WILL BE FILLED BY THE CARSAMMA.

W SET THE SOURCE OF INFORMATION OF THE OBSERVED/REPORTED FINAL LEVEL (MODE C, PILOT, ADS or OTHER).

X TIME (S), TIME (Op), N (S), N (Op). LEAVE BLANK WILL BE FILLED BY THE CARSAMMA

Y ENTER THE FAULT/ERROR CODE, ACCORDING TO THE TABLE BELOW. (IT'S NOT MANDATORY).

- **Appendix H is modified – FLOW CHART OF THE REPORT PROCESS AND VALIDATION OF LHD REPORT**
- **Appendix K modified, items F, H, M – FUNCTIONAL DUTIES OF THE CONTACT POINTS ACCREDITED TO THE CARSAMMA**

The functional duties of the FIR Contact Points are:

- A. Collect reported reports on LHD events.
- B. Collect and protect data on LHD events.
- C. Conduct investigation of LHD events.
- D. Exchange information about LHD events with the FIRs involved, as well as with the

the ATCO(s) and pilots involved, where applicable.

E. Prepare form F4.

F. Send Form F4 to CARSAMMA through the channels and within the established deadline.

G. Send Form F5 to CARSAMMA through the channels and within the established deadline.

H. Participate in teleconferences and validate LHD events.

I. Collect data on aircraft movements in RVSM airspace.

J. Purify data on aircraft movements and prepare Form F0.

K. Send Form F0 to CARSAMMA through the channels and within the established deadline.

L. Participate in the annual meetings of the Working and Scrutiny Group.

M. Participate in training actions or meetings on the LHD topic that ICAO calls for.

N. Interact with the Equipment PoC, in accordance with the internal procedures of each State, in every situation that warrants or is required.

O. Collaborate in the preparation of study notes (NE) that your State presents to the GTE on LHD with a risk value greater than 20.

1.1 Functional duties of the FIR contact points.

F. Send Form F4 to CARSAMMA once the validation procedure is completed, through the channels and within the established deadline.

H. Participate in teleconferences and present the causes, contributing factors and mitigation actions/recommendations when events in which the SMS risk value is medium or high.

M. Present a working paper at the GTE annual meeting that describes the causes, contributing factors and mitigation actions/recommendations when the CRM value of the FIR is above the TLS according to the working paper presented by CARSAMMA