International Civil Aviation Organization

CAR/SAM Planning and Implementation Regional Group (GREPECAS) Nineteenth Scrutiny Working Group Meeting

GTE/19

Final Report

Barranquilla Colombia, 18 to 22 November 2019

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HISTORICAL

ii.1 Place and Date of the Meeting

The CAR/SAM Planning and Implementation Regional Group (GREPECAS) Nineteenth Scrutiny Working Group Meeting (GTE/19) was held in Barranquilla, Colombia, from 18 to 22 November 2019.

ii.2 Opening Ceremony

Mr. Roberto Sosa Regional Officer, Air Navigation Services and Safety of the South American (SAM) Office of ICAO thanked the Unidad Administrativa Especial de Aeronautica Civil Colombia (UAEAC) and to the Dirección Aeronáutica Regional Atlantico for hosting this meeting and conveyed the message of support from the SAM Regional Office.

Coronel Rolando Aros, on behalf of the Director of the AEROCIVIL, greeted all participants highlighting the commitment of Colombia to the aviation safety, and that the development of this meeting demonstrated that Commitment. Colonel Rolando Aros welcomed the participants and officially opened the meeting.

Mr. Juan Esteban Vasquez, Regional Atlantic Aeronautical Director, mentioned that it was the first time that a GTE meeting was held outside the ICAO Offices, and expressed his pleasure that Barranquilla was the event venue.

The secretariat thanked Colombia for agreeing to hold this meeting of the Scrutiny Group in the city of Barranquilla and thanked all the delegates of States and international organizations for attending the meeting.

ii.3 Officers of the Meeting

Mr. Roberto Sosa 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) Mr. Julio Lewis 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 09:00 to 15:00 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: 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 proposals for the extension of the functions of the GTE and CARSAMMA for airspace in the CAR and SAM Regions

a) Proposal for the extension of the GTE terms of reference as a mechanism for measuring safety performance in CAR/SAM regions.
b) Proposal for the analysis of horizontal deviations in airspace RVSM CAR/SAM/ADHOC group result.

Agenda Item 3: Review of the results of Large Height Deviation (LHD) analysis

a) Indicator data on points of greatest occurrence of LHD events.
b) Actions taken for the enhancement of LHD event data capture and for the improvement of RVSM status capture by Registration States or Operator.
c) Results of the assessment project for safety in Reduced Vertical Separation Minimum (RVSM) airspace for the CAR and SAM Regions.
d) Identify trends.
e) Lessons learned by CAR/SAM States to reduce the number of LHDs.
f) GTE recommendations.
g) Report on the progress made by States on LHD management.

Agenda Item 4: Activities and tasks to be reported to GREPECAS

a) Review of tasks to be reported to GREPECAS 2020.

Agenda Item 5: Other business

a) Workshop for LHD' focal points in CAR/SAM regions.
b) Some matters related to GTE

ii.7 Attendance

The Meeting was attended by 14 States/Territories from the CAR Region, 2 International Organizations, totalling 35 delegates as indicated in the list of participants.

ii.8 Draft Conclusions and Decisions

The Meeting recorded its activities as Draft Conclusions as follows:

DRAFT CONCLUSIONS: Activities requiring endorsement by the CAR/SAM Regional Planning and Implementation Group Meeting (GREPECAS).

DECISIONS: Deal with matters of concern only to the GREPECAS and its Contributory Bodies organization.

ii.8 List of Conclusions

ii.9 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/EN/MeetingsDocumentation_EN.aspx?m=2019-GTE19

Number	Agenda Item	WORKING PAPERS Title	Prepared and Presented by
WP/01 REV	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	Proposal to extend the terms of reference of the GTE as a mechanism to measure safety performance in the CAR/SAM regions	Secretariat
WP/04	3f)	Measurement and improvement of safety performance in CAR/SAM RVSM airspace	Secretariat
WP/05	3a)	Safety assessment of RVSM airspace in CAR/SAM FIRs	CARSAMMA
WP/06	3c)	2018 Vertical Collision Risk (CRM) in the CAR/SAM Regions	CARSAMMA
WP/07	3d)	Identification of trends	CARSAMMA
WP/08	3e)	Flight Plans' Audit	CARSAMMA

Number	Agenda Item	INFORMATION PAPERS Title	Prepared and Presented by
IP/01	--	General Information	Secretariat
NI/02	5	Ocurrencias en la FIR Habana de varios eventos LHD ocasionados por fallas del sistema anticolisión (TCAS) (SPANISH ONLY)	Cuba
IP/03	5	F2 and F3 form amendments	CARSAMMA
NI/04	5	Cambios en la interface de usuario presentación radar (SPANISH ONLY)	Colombia
NI/05	5	Implementación del SMS en el ATSP – medidas de mitigación operacional a los reportes LHD del ACC Barranquilla (SPANISH ONLY)	Colombia
NI/06	3e)	Medidas mitigadoras implementadas entre las FIR Lima y Bogotá para reducir la alta incidencia en PLG (SPANISH ONLY)	Colombia

NI/07	3e)	Medidas de mitigación de eventos LHD implementadas entre Argentina y Chile (SPANISH ONLY)	Chile
NI/08	3g)	Implementación del AIDC entre Bogotá y Guayaquil (SPANISH ONLY)	Colombia
IP/09	3e)	Failures of coordination in the SAM oceanic regions	CARSAMMA
IP/10	5b)	Fast Form Project (FFP) – electronic forms F2 and F3	CARSAMMA
NI/11	3g)	Advances of the mitigating actions implemented by the Dominican Republic for the reduction of LHD events in the Santo Domingo FIR	Dominican Republic
IP/12	5b)	Risk management of large height deviations - an experimental analysis	Trinidad & Tobago
NI/13	3g)	Análisis y mitigación de LHD´s (SPANISH ONLY)	COCESNA
IP/14	3	Miami Oceanic, New York West, and San Juan airspace vertical safety monitoring report - 2018	United States
IP/15	3	Mexico airspace vertical safety monitoring report – 2018	United States
IP/16	5	New York west airspace horizontal safety monitoring report - 2018	United States
IP/17	5	Coordination errors occasioned by incorrect interpretation of operational letter of agreement	Jamaica
IP/18	3e)	Detección de Hot Spot (SPANISH ONLY)	Uruguay

LIST OF PARTICIPANTS

ARGENTINA

1. Noelia Soledad Fernández
   Supervisora ACC Resistencia
   E-mail: nfernandez@eana.com.ar

BAHAMAS

2. Darling Shorn
   Airdrome Safety Inspector
   E-Mail: Shorn.darling@bcaa.gov.bs

BOLIVIA

3. Reynaldo Cusi Mita
   Jefe de Unidad ATM/SAR DGAC
   E-Mail: rcusi@dgac.gob.bo

BRAZIL

4. Christian Mills
   CARSAMMA
   E-Mail: carsamma@cgna@gov.br; millscm@fab.mil.br

5. Raphael Ribeiro Nogueira Barbosa
   CARSAMMA
   E-Mail: raphaelrrnb@cgna.gov.br

CHILE

6. Juan C. Álvarez
   Punto Focal LHD (DGAC)
   E-mail: juan.alvarez@dgac.gob.cl

7. Francisco J. Uzieda
   Jefe Centro de Control Oceánico DGAC
   E-mail: fuzieda@dgac.gob.cl

8. Julio R. Fernández
   Sub Departamento ATS – Operaciones SSATC - DGAC
   E-mail: rfernandez@dgac.gob.cl

COCESNA

9. Fernando Soto Mcnab
Coordinador ATFM
E-mail: fernando.soto@cocesna.org

COLOMBIA

10. Diana María Luque Salcedo
Miembro GESO (Grupo gestor seguridad operacional Regional Atlántico)
E-mail: diana.luque@aerocivil.gov.co

11. Edwin Holman Sierra Cortés
Supervisor BOG-DCC POC-BOG FIR
E-mail: edwin.sierra@aerocivil.gov.co

12. Yazmín Valencia Rocchi
Miembro GESO (Grupo gestor seguridad operacional Regional Atlántico)
E-mail: yasmin.valencia@aerocivil.gov.co; seg.operacional_baq@aerocivil.gov.co

13. Luis Carlos Hastamorir Patiño
Controlador experto
E-mail: luis.hastamorir@aerocivil.gov.co

14. Willington Jarvy Ochoa Aguilar
Supervisor POC (BOG ACC)
E-mail: willington.ochoa@aerocivil.gov.co

15. Paulino Rodríguez Palomino
E-mail: paulino.rodriguez@aerocivil.gov.co

16. Teddy Aloy Denis Vega
E-mail: teddy.denis@aerocivil.gov.co

CUBA

17. Adriana Tenorio Mazola
Especialista ATM ECNA
E-mail: adriana.tenorio@aeronav.avianet.cu

CURACAO

18. Robert Bonifacio
Quality Assurance /Safety Manager
Email: r.bonifacio@dc-ansp.org

UNITED STATES

19. Christine Falk (Lead Delegate)
Operations Research Analyst
Separation Standards Analysis Branch
Office of NextGen Atlantic City NJ
E-mail: christine.falk@faa.gov

20. José Pérez
Information Technologies Specialist
Separation Standards Analysis Branch
Office of NextGen Atlantic City NJ
E-mail: jose.perez@faa.gov

21. Kimberly Fowler
Foreign Affairs Specialist
Air Traffic Safety Oversight Service
Washington DC
E-mail: kimberly.fowler@faa.gov

22. Danielle Crudden
Air Traffic Safety Inspector
Air Traffic Safety Oversight Service
Washington DC
E-mail: danielle.f.crudden@faa.gov

JAMAICA

23. Courtney Malcolm
Unit Manager - KATCC
E-mail: courtney.malcolm@jcaa.gov.jm

24. Herman Gayle
Air Traffic Control Supervisor
E-mail: herman.gayle@jcaa.gov.jm

DOMINICAN REPUBLIC

25. Bolivar Ezequiel León
Supervisor Centro de Control Santo Domingo
E-mail:brosa@idac.gov.do

26. Felix Rosa Martínez
Encargado Departamento de Gestión de Tránsito Aéreo
E-mail: felix.rosa@idac.gov.do

27. Julio Alexis Lewis
Relator del GTE
E-mail: julio.lewis@idac.gov.do

28. Manolo Abreu
Supervisor Centro de Control Santo Domingo
E-mail: manolo.abreu@idac.gov.do

TRINIDAD & TOBAGO

29. Paula Rachel Mark
AIS Officer
E-mail: pmark@caa.gov.tt

30. Ian Raphael Gomez
Unit Chief ANS Safety
E-mail: igomez@caa.gov.tt

URUGUAY

31. Alberto Abetti
Jefe Técnico de Tránsito Aéreo
E-mail: Alberto.abetti@dinacia@gub.uy

32. Gabriel Fernández
Inspector de Seguridad Operacional
E-mail: g.fernandez@delpino@gmail.com

VENEZUELA

33. Wilfredo Gil Sánchez
Jefe del Centro de Control de Maiquetía
E-mail: w.gil@inac.gob.ve

34. Carlos Armas
Jefe de Operaciones de los Servicios ATC
E-mail: carlos.armas@inac.gob.ve

IFALPA

35. Diana Martinez
RVP SAM North
E-mail: dmartinez@acdac.org

ICAO

36. Roberto Sosa
Regional Officer, Air Navigation Services and Safety
South American (SAM) Office
E-mail: rsosa@icao.int

37. Eddian Méndez
Regional Officer, Air Traffic Management and Search and Rescue
North American, Central American and Caribbean Regional Office (NACC) Office
E-mail: emendez@icao.int

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. The Secretariat highlighted that the GTE/19 agenda had a special structure, as it included a refresher workshop for focal points. Accordingly, agenda items would be organised based on this activity. The participants approved the agenda proposed by the Secretariat.

1.2 The Secretariat presented WP/02, *Review of the previous GTE meeting conclusions and recommendations*. The participants examined each of the conclusions and recommendations and agreed on the following:

- Conclusion GTE/14/2 was considered *Completed*
- Conclusion GTE/14/3 was considered *Completed*
- Conclusion GTE/14/4 was considered *Completed*
- Conclusion GTE/16/1 was considered *Completed*
- Conclusion GTE/16/3 was considered *Completed*
- Conclusion GTE/16/5 was considered *Completed*
- Conclusion GTE/17/1 was considered *Completed*
- Conclusion GTE/17/2 was considered *Completed*
- Conclusion GTE/17/3 was considered *Completed*
- Conclusion GTE/17/4 was considered *Completed*
- Conclusion GTE/17/5 was considered *Completed*

1.3 The rest of the conclusions remain valid. The updated list of valid GREPECAS GTE conclusions is shown in **Appendix** to this part of the Report.

1.4 During the review of conclusions and recommendations, the Secretariat reminded the participants that several of the conclusions and recommendations, although completed, were tasks that had to be carried out periodically, as part of the work of the GTE.

1.5 The status and follow-up comments of each conclusion is based on the review undertaken by the Secretariat and the representatives of the 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)
Conclusion 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**
Conclusion 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**
Conclusion 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)
Conclusion 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**
Conclusion 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**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
Conclusion 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**
Conclusion 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			**COMPLETED**
Conclusion 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.				
Conclusion 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, States and ANSP			**COMPLETED**
Conclusion 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 Regional Monitoring Agency				**COMPLETED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
		(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.				
Conclusion 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**
Conclusion 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 State aircraft in CAR/SAM RVSM airspace.				**COMPLETED**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
		CARSAMMA will keep the Regional Offices informed, on a monthly basis, of occurrences involving State aircraft operating without certification in RVSM airspace.				
Conclusion 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**
Conclusion 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**

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.				
Conclusion 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)
Conclusion 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**

Conclusion	Title	Text	Responsable of action	Completion date	Deliverable	Status (valid, completed or superseded)
Conclusion 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.				

— END —

Agenda Item 2: Review of proposals to extend GTE and CARSAMMA functions to CAR/SAM airspace

a) Proposal to extend the terms of reference of the GTE as a mechanism for measuring safety performance in CAR/SAM Regions
b) Proposal for the analysis of horizontal deviations in CAR/SAM RVSM airspace/ADHOC group results

2.1 Under this agenda item, the Meeting examined WP/03, *Proposal to extend the terms of reference of the GTE as a mechanism to measure safety performance in the CAR/SAM regions*, presented by the Secretariat.

2.2 The working paper dealt with the role played by the GTE and LHD points of contact as part of the main mechanism to oversee and analyse airspace performance between FL290 and FL410 in the CAR/SAM Regions, and proposed that the GTE analyse the Guide for points of contact (PoC) accredited to CARSAMMA, specifically with regard to the functions and responsibilities of the GTE, points of contact, and the rapporteur, with a view to promoting continuous improvement of safety and efficiency in RVSM airspace.

2.3 The Meeting took note that the Appendix to WP/03 contained the Guide for points of contact (PoC) accredited to CARSAMMA, with the proposed amendments, for its analysis by the plenary and subsequent submission to GREPECAS/19 for approval.

2.4 The Meeting agreed to a review of the Guide with a view to reinforcing the responsibility of the points of contact, giving them a more active role in the reduction of LHDs and in the improvement of the level of risk. The Meeting felt that the role of the points of contact should not be limited to the identification and subsequent reporting of LHDs to CARSAMMA, but should be a more active role in the LHD reduction mechanism.

2.5 As part of the review to the Guide for points of contact (PoC) accredited to CARSAMMA, the Meeting agreed to update GTE responsibilities so that it evolve to become a safety improvement mechanism in the CAR/SAM Regions. It also agreed to review the responsibilities of the rapporteur to assign a more active role to the rapporteur in the reduction of risk in CAR/SAM RVSM airspace.

2.6 The Meeting considered that the Guide for points of contact (PoC) accredited to CARSAMMA, as well as all GTE-related documentation, should be available on the web to facilitate their use. Accordingly, the Secretariat noted that consideration would be given to the best possible location to make all relevant documentation available to all GTE members.

2.7 During the discussion, the Contact Point of the Dominican Republic requested that the functions of the Contact Points include the exchange of LHD data with the FIR involved and that CARSAMMA distribute the LHDs reports on a monthly basis. The secretariat took note of the requested in ordere to include it in the manual, and will coordinate with CARSAMMA the establishment of an appropriate mechanism for the exchange of LHD information.

2.8 Upon reviewing WP/03 and its Appendix, the following draft conclusion was formulated:

DRAFT CONCLUSION GTE/19/1	**REVIEW OF THE GUIDE FOR POINTS OF CONTACT (POC) ACCREDITED TO CARSAMMA**
That: 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 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 Guide for points of contact (PoC) accredited to CARSAMMA.	**Expected impact:** ☐ Political / Global ☐ Interregional ☐ Economic ☐ Environmental ☒ Technical/Operational
Why: To improve the monitoring mechanism and the safety level performance in CAR/SAM RVSM airspace.	
When: GTE/19	**Status:** ☒ Valid / ☐ Invalid / ☐ Completed
Who: ☒ States ☒ ICAO ☐ Other:	GTE Rapporteur

2.9 During the NE/03 discussion, delegate from Venezuela informed the Meeting that as part of the oversight carried out on the RVSM airspace in the FIR Maiquetía, there are records of unidentified operations at flight level 295 and above that put flight operations at risk in RVSM airspace. Other Points of Contact confirmed that similar operations have been identified in their airspaces. The secretariat took note of this information.

2.10 The secretariat reported on the results of the ADHOC group meeting to address the measurement of large side deviations (LLDs). Chile, the United States and the Dominican Republic participated in the meeting and concluded that side deviations will continue to be recorded as LHDs code "M", and will continue to be included in the CRM analysis. CARSAMMA will present at each GTE meeting an analysis of these events that will include the quantification of the events during the corresponding period, the main causes and other important information, so that the GTE decides whether these deviations should to be assessed in a different risk calculation than is currently being performed.

Agenda Item 3: Review of the results of Large Height Deviation (LHD) analysis

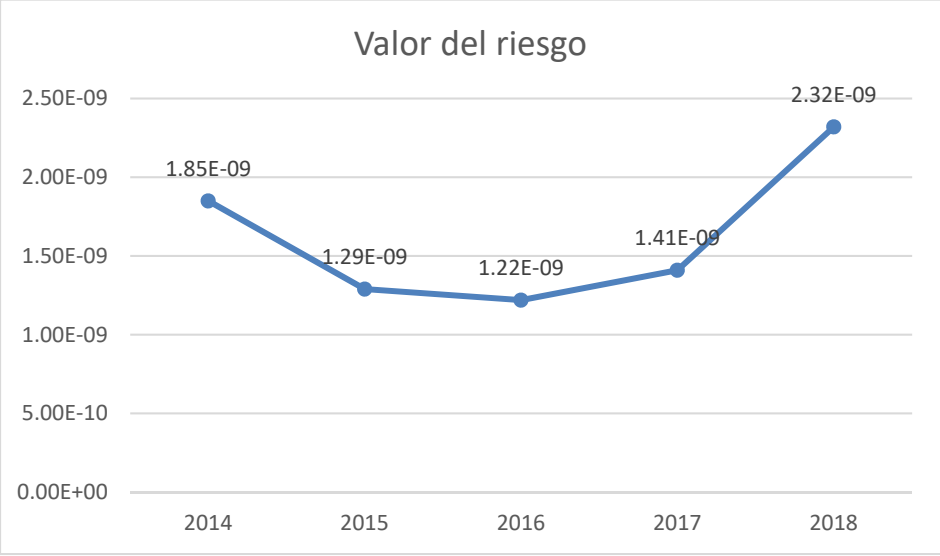
a) Indicator data on points of greatest occurrence of LHD events.
b) Actions taken for the enhancement of LHD event data capture and for the improvement of RVSM status capture by Registration States or Operator.
c) Results of the assessment project for safety in Reduced Vertical Separation Minimum (RVSM) airspace for the CAR and SAM Regions.
d) Identify trends.
e) Lessons learned by CAR/SAM States to reduce the number of LHDs.
f) GTE recommendations.
g) Report on the progress made by States on LHD management.

LHD trends in the CAR / SAM Regions

3.1 Under this Agenda Item, the Meeting examined WP/04, WP/05, WP/06, WP/07, WP/08 and NI/06 (in Spanish only), NI/07(in Spanish only), IP/09, NI/08 (in Spanish only), IP/11, NI/13 (in Spanish only), IP/14, IP/15 and IP/18.

3.2 The Secretariat presented WP/04 referred to the analysis of risk behaviour over the last five-year period (2014-2018), including the number of reported and validated LHDs, as well as other parameters used for calculating safety risk in CAR/SAM RVSM airspace.

3.3 The Secretariat stated that, although the GTE reports show an annual reduction in the number of LHD events received and validated by CARSAMMA; risk level behavior has been opposite, with a trend of increase over the past five years (see Figure 1), so it is necessary to set risk reduction targets.



3.4 Following an analysis by all participants, consensus was not reached on the targets for improving the level of risk in RVSM airspace, and the secretariat proposed to present at the Twentieth meeting of the GTE the proposal for indicators that can be used to measure and improve the operational safety performance of RVSM airspace.

3.5 The Secretariat stated that the value of the risk level of RVSM should be included in ICAO's operational safety information exchange portals; as well as on the regional offices websites, to show the calculated risk value of the CAR/SAM region airspace and the trend compared to the previous year, for which the Meeting agreed.

3.6 In WP/04, the Secretariat stated that the review of the reports of previous meetings had identified significant variations in the value used for the calculation of the risk of the CAR/SAM regions, therefore, the correct risk values and number of flight hours' values, should be considered in substitution of values shown in GTE/14, GTE/15, GTE/16, GTE/17, and GTE/18 reports. with the following matrix:

GTE	GTE 14	GTE 15	GTE 16	GTE 17	GTE 18
Year of the analysis	2013[1]	2014[2]	2015[3]	2016[4]	2017[5]
Anual hours used for calculation	944,628	967,135	1,044,378	1,392,732	2,555,136
Risk value	**4,62 E-09**	**1,85 E-09**	**1,29 E-09**	**1,41 E-09**	**2,32 E-09**

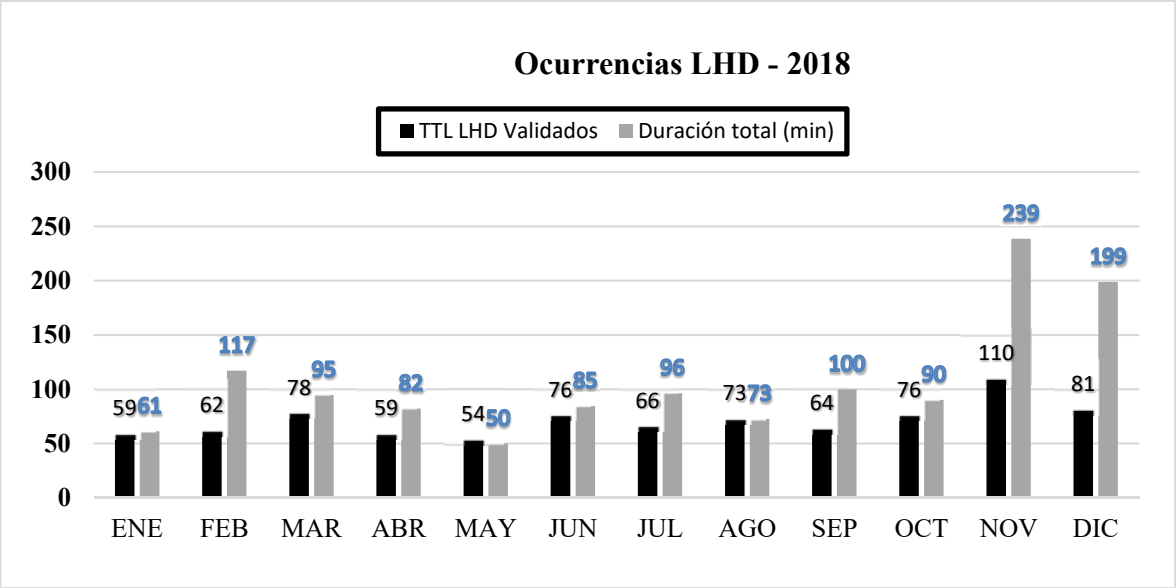
3.7 The Meeting took note on the information presented by CARSAMMA in WP/05 on the results of results of Caribbean and South American airspace monitoring (CARSAMMA), specifically on the SGSO/SMS methodology in the analysis of LHDs, taking into account LHD reports between January and December 2018. The meeting also took note of the information presented in Table 1 and Figure 1 of WP/05 on the occurrences of LHD per month, being November the month that had the largest number of reported events.

Month	Number of LHDs	Total Duration (min.)	Average Duration (min.)	Average Risk	Highest Risk
January	59	61	1.04	21.2	45
February	62	117	1.89	22.2	35
March	78	95	1.21	21.7	45
April	59	82	1.39	23.8	51
May	54	50	0.92	21.4	45
June	76	85	1.11	22.3	60
July	66	96	1.46	20.7	55
August	73	73	1.00	25.6	**75**

[1] It replaces the information in the GTE/14 report. The movement sample was from November 2013..
[2] It replaces the information in the GTE/15 report. Sample was from December 2014.
[3] It replaces the information in the GTE/16 report. Sample was from December 2015.
[4] It replaces the information in the GTE/17 report. Sample was from December 2016
[5] It replaces the information in the GTE/18 report. Sample was from December 2017.

September	64	100	1.56	23.8	55
October	76	90	1.19	26.2	55
November	110	239	2.17	23.0	55
December	81	199	2.45	27.9	55
Total	**858**	**1,286**	**1.50**	**23.4**	

Table 1 - LHD occurrences, with duration, average duration, average risk and highest risk, by month



Graph 1 - LHD occurrences/duration, by month

3.8 The Meeting was informed that in November 2018, three situations occurred which added up to 123 minutes of the total 239 minutes of failures occurred during that month. Likewise, in December two situations occurred that, summed 87 out of the total of 199 minutes of failures in that month.

3.9 The Meeting took note of the events with the highest risk values (VR), both events happened between FIR Lima and Bogota, the first in the month of June with VR = 60 and the second with the highest level of risk VR=75, both events occurred at the PLG point (Port Leguizamo) which was the point with the most reports during 2018. (See Tables 2 and 3 of WP/05).

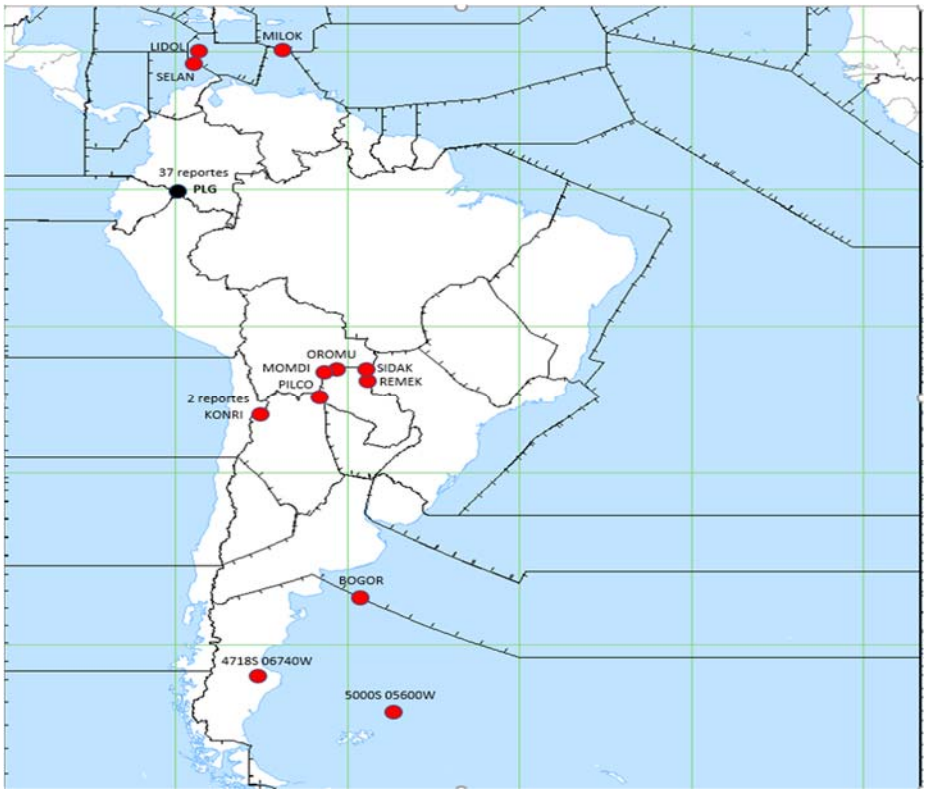
3.10 The WP/05 presented to the Meeting the LHD reports with the longest duration in time (greater than or equal to five (5) minutes), Table 4 and Figure 2 of the WP/05 present a summary of the number of occurrences of LHD reports, the duration (in minutes) associated with the LHD code and the number of unauthorized cross-flight levels, from 1 January to 31 December 2018.

3.11 The meeting was informed that the 2018 analysis showed that LHD reports with Code "E" (failure of coordination between ATC units) were the most frequent in 2018 with 743 events, followed by codes "F" (67), "D" (8), "A" (5), "J" (5), "B" (2), "H", "I", "K", "L" and "M" (1). The high number of reports with Code "E" demonstrates the need for better coordination between adjacent ATC units, which could be achieved through awareness-raising and training of coordination among controllers. iN Figure 2 of NE/05, it can be observed that LHD reports with Code "E" had the longest duration (total duration of 1,086.5 minutes or 18.1 hours).

3.12 The participants took note on the information presented in Figure 4 of WP/05 than the number of all LHD reports validated by FIR, where the FiRs Lima and Guayaquil have the absolute number of the duration in minutes, so the aircraft in these FIRs are more exposed to operational risk. As regards the results of the RVSM airspace operational safety assessment in the FIR CAR/SAM, they are detailed in Table 6 and Figure 5 of WP/05.

3.13 The Meeting was informed that the Safety Analysis (SMS) of LHD (Appendix A to NE/05) details all LHD reports whose failures or operational errors have been evaluated in teleconferences or analyzed by CARSAMMA in conjunction with the FIR POCs involved; as well as those with the highest value risk (>20) produced during the 12 months of 2018. Table 7 of NE/05 also presents the FIR that suffered and generated risks, very useful information for mitigation measures to be established at the regional level.

3.14 The Meeting took note on the contribution rate of each FIR to the total risk of RVSM airspace in the CAR/SAM region. This information is shown in Figure 6 and Figure 7 of NE/05. CARSAMMA also showed in WP/05 A graph with the points with the highest number of LHD events associated. During the discussion of WP/05 the rapporteur reminded the importance of updating CARSAMMA with the information on the surveillance area within FIRs under their responsibility, since this information influences the analysis of the risk value.



3.15 CARSAMMA presented WP/06 on the analysis of vertical collision risk in RVSM airspace in 2018 in the Flight Information Regions (FIR) of the Caribbean and South America, where the calculation methodology of the Vertical Collision Risk Model (CRM) was used.

3.16 The Meeting was informed that the sample used to assess the frequency of passage and physical and dynamic parameters of typical aircraft to assess collision risk was collected in the period from 1 to 31 December 2018 of the 34 CAR/SAM FIR. In this data of movements from collected samples, 342,239 flight lines records of the above-mentioned FIRs were received. All records were purged, withdrawing 330,200 lines of flight logs validated in the process. CARSAMMA highlighted that as in previous years, much of the data received from some States could not be exploited in the CRM for various reasons, including errors in the entry and exit hours of RVSM space (less than or equal flight entry time), lack of complete information to identify and locate fixed routes and notifications, and even sending the data beyond deadline.

3.17 The Meeting took note of the information presented on risk level by FIR (see Fig. 4 –and Table 7 of WP/06). The Meeting expressed concern about why some FIRs have out-of-average curve behavior, so CARSAMMA was asked to clarify why this abnormal behavior in FIR Asuncion, Curacao, Guayaquil, Santo Domingo, La Paz and Maiquetía.

3.18 At the closure of the meeting, CARSAMMA presented updated information regarding the level of risk in those FIRs from where clarification was requested, nevertheless the Meeting requested CARSAMMA a deeper explanation. The secretariat took note of this matter. An updated matrix of the risk calculation in FIRs identified in this analysis, follows:

FIR	RVSM SPACE	2018 - GTE19									2017 - GTE18			2016 - GTE17		
		Overall Risk	QTY LHD ***	categoria	HOUR MOVEMENT	Operational Error AWY ONE	Operational Error AWY TWO	X FL AWY ONE	X FL AWY TWO	ACFT NO RVSM	Overall Risk	QTY LHD ***	categoria	Overall Risk	QTY LHD ***	categoria
CURAÇAO	TNCF	18,6 E-09	72	E	71639	32	69	15	62	4	8,2 E-09	66	65 E, 1 H	7,15 E-09	69	1 A, 2 C, 66 E
SANTO DOMINGO	MDCS	5,60 E-09	58	57 E, 1 D	53173	7	16	15	42	5	4,13 E-09	99	E	2,82 E-09	24	E
LA PAZ	SLLF	114 E-09	35	E	37566	12	42	16	30	4	3,79 E-09	13	E	0,189 E-09	37	1 B, 36 E
GUAYAQUIL	SEFG	5,61 E-09	108	88 E, 20 F	54105	1	80	0	96	19	7,13 E-09	123	1D, 10 F, 112 E	0,0307 E-09	144	1 B, 1 H, 142 E
ASUNCION	SGFA	10,4 E-09	13	E	14967	2	46	2	10	1	3,94 E-09	12	E	0,0405 E-09	12	E
MAIQUETIA	SVZM	6,54 E-09	21	E	57983	81	15	2	10	3	1,84 E-09	17	E	0,029 E-09	20	E

3.19 The Meeting took note of the risk values for year 2018, where the technical risk of FIR CAR/SAM meets the TLS value that does not exceed 2.5 x 10-9 fatal accidents per flight hour due to the loss of the standard vertical separation of 1,000 feet and all other causes, and the estimated total risk is 2.32 x 10-9, below the set limit (TLS) which is 5.0 x 10-9.

3.20 The secretariat and the Meeting welcome the fact of the 2018 risk assessment showing that CAR/SAM regions remain below the expected risk level (TLS); however, called the attention of the Meeting that it is not enough for the CAR/SAM regions to be below the TLS, but that an annual reduction in the risk value of airspace of CAR/SAM regions is necessary for which it asks attendees for their commitment to developing activities that lead to reducing LHDs in airspace.

3.21 Attendees thanked CARSAMMA for the information presented in NE/05 and NE/06, and for the excellent work done over the years in analyzing the risk level of RVSM airspace in the CAR/SAM regions.

3.22 The CARSAMMA presented WP/07 on the trend of Great Altitude Deviations (LHDs) when an aircraft passes TCP even on the ascent or descent, when the aircraft calls at a different point than the coordinated, when the receiving ACC does not correctly copy the level, point or time of transfer correctly and the ACC transferring does not perceive the error, among other situations including transfer failures caused by technical issues of the equipment.

3.23 CARSAMMA expressed that this Working Paper is aimed at providing further information to allow experts to observe and analyse LHD reports of 2018 and the first half of 2019 (until June) received, to avoid repetition of errors, mainly in the specified points, and for the experts of the FIRs involved to take the relevant mitigation measures.

3.24 The Meeting notes that Table 1 of NE/07 presents all LHD reports produced by coordination failure with respect to the flight level, specifically when traffic was still climbing or descending at the time of the initial call.

3.25 The CARSAMMA highlighted that in Table 1 of WP/07 can be observed that the FIR that reports this error the most in 2018 is Bogota (4 reports) and then Panama, Santo Domingo and Curacao (2 reports each). The most reported FIR is Guayaquil (3 reports) and then Bogota and Barranquilla (2 reports). The points where these failures occurred the most were DAKMO and ENSOL (2 reports each). The FIR that reports this failure the most in 2019 (first semester), is Bogota (5 reports), then Santo Domingo (4 reports) and then Barranquilla (2 reports). The most reported FIR was Curacao (6 reports) and then Guayaquil (3 reports). The point BOTH was the most reported (2 reports), the CARSAMMA highlighted that DAKMO and VESKA are points that deserve attention since 2018 were also points reported with that same error.

3.26 The Meeting noted that WP/07 recommended to analyze the coordination between Bogota and Guayaquil, Bogota and Panama FIRs, since the analysis shows coordination failures both in 2019 and 2019 (first semester), similarly that DALMO, AMBAS, BOKAS and VESKA are points that deserve attention.

3.27 The Meeting noted that Table 2 of WP/07 presents all LHD reports produced by coordination failure with respect to a different point from that coordinated, where the aircraft is on a route different than that coordinated route, changes the route or deviates from the route and the modification is not reported to the adjacent FIR.

3.28 CARSAMMA reported that Table 2 of WP/07 shows that the RFIs that reported the most in 2018 were Santo Domingo (10 reports), followed by FIR Lima (4 reports) and FIR Asuncion (3 reports). Other FARs such as Antofagasta, Bogota, Central America, Curacao and San Juan (2 reports each). The most reported FIRs were Curacao (6 reports), followed by the FIR Port Au Prince (4 reports), followed by FIR La Paz and FIR Lima (3 reports each). Other FIRs such as: Panama, Bogota and Antofagasta were reported (2 reports each). In 2019 (first semester) the FIRs more reported were: Santo Domingo (6 reports), followed by FIR Lima (5 reports) and FIR Guayaquil (4 reports). Other FIRs such as: Bogotá, Córdoba and Curitiba (2 reports each). The most reported FIRs were: La Paz (7 reports), FIR Port Au Prince (5 reports), FIR Bogotá (4 reports), FIR Amazon (3 reports) and FIR Antofagasta (2 reports).

3.29 The Meeting took note of the most reported points including PALAS (3 reports) changed by BEROX, VESKA and ABM POKAK, then IREMI (2 reports) changed by SORTA, SIDAK (2 reports) changed by REMEK, FALLA (2 reports) changed by BOLDO and PAPIN, ETBOD (2 changed by OSIDU. In 2019 (first

semester) the most reported points were BOKAN (2 reports) changed by ENSOL and "N" ENSOL, then ESELA (2 reports) changed to 50 NM "S" OROMU and 50 NM "N" ESELA, ONPAD (2 reports) changed to OSIDU and 25 NM "S" ONPAD, then PIGBI (2 reports) changed to 27 NM "N" ETBOD and ETBOD, PUBUM (2 reports) changed to 40 AND 50 NM "W" PUBUM and then RAXUN (2 reports) changed by OPTOP and 116 NM "W" RAXUN. Points such as ETBOD, IREMI, ONPAD, PIGBI, SORTA and VESKA were already reported in 2018 and are re-reported in 2019.

3.30 The Meeting noted that Table 3 of WP/07 presents all LHD reports produced when the transit is coordinated at a flight level and is annotated at a different level by the adjacent FIR. The table shows that FIR Piarco had two such reports; FIR Santo Domingo also had 2 reports. In 2019, (first semester), only 3 reports of this type were submitted, one of them produced by FIR Santo Domingo.

3.31 The Meeting noted that Table 4 of WP/07 presents all LHD reports related to coordination failure in the technical-related parameter of the equipment used for transfer, (AMHS - ATS MESSAGE HANDLING SYSTEM or AIDC - ATS INTER-FACILITY DATA COMMUNICATION), where transit calls at the flight level other than that coordinated or was not coordinated. The FIR that reports the most in 2018 was Lima (39 reports), followed by Guayaquil (18 reports). The most reported FIR was Bogotá (42 reports), followed by Guayaquil (10 reports) and Lima (5 reports).

3.32 The most reported points were: PLG (28 reports), ARNEL and VAKUD (5 reports each), BOKAN and UGUPI (4 reports each), EVLIM (3 reports) and ALDAX, ANRAX and ENSOL (2 reports each). In the first half of 2019, the most reported FIR was Guayaquil (46 reports), followed by Bogota (9 reports) and Antofagasta and Maiquetia (2 reports each). The most reported FIR with this failure was Bogotá (28 reports), followed by Lima (14 reports), Guayaquil (11 reports) and Central America (5 reports). The most reported points in 2019 were UGUPI (14 reports), BOKAN (13 reports), VAKUD (10 reports), PULTU (6 reports), ENSOL (3 reports) and ALDAX, SIDOS, TERAS and UGADI (2 reports each). Special attention is recommended when the VAKUD, UGUPI and BOKAN positions are involved as they were reported in 2018 and the first half of 2019.

3.33 The Meeting noted that Table 5 of WP/07 presents all LHD reports that had as a failure to coordinate the parameter related to the lack of correction in the estimated time to a point (the transit is coordinated in one hour and is considerably advanced). The FIRs that reported the most in 2018 this type of failure were: Curacao (19 reports), Santo Domingo (17 reports), Guayaquil (8 reports), Antofagasta (7 reports), Lima (4 reports), Maiquetia and Resistencia (3 reports each) and Amazon and Bogotá (2 reports each). The most reported were: Port Au Prince (23 reports), Barranquilla (17 reports), Curacao (14 reports), Lima, Bogota and Amazon (11 reports each).

3.34 CARSAMMA reported that the positions/points where this error most occurred were OROSA (9 reports), IREMI, PIGBI and VESKA (5 reports each). In the first half of 2019, the MOST reported FIR was Santo Domingo (18 reports), Lima (9 reports), Curacao (8 reports), Bogota and Resistencia (7 reports each). The most reported FIR with this failure was Port Au Prince (12 reports), Barranquilla (7 reports), La Paz y Curacao (6 reports each) and Amazonica and Ezeiza (5 reports each). The positions/points that most occurred this error in 2019 were: ETBOD (5 reports), DCR, REMI and KORTA (4 reports each), ARUXA, DOBNI, OROSA, PIGBI and VESKA (3 reports each).

3.35 The Meeting noted that Table 6 of WP/07 presents all LHD reports that had as a failure to coordinate the parameter related to coordination made with a good estimate, near TCP, with less than 5 minutes, in breach of the pre-time requirement at the crossing time of the fixed. The FIRs that report the

most in 2018 this type of failure were Santo Domingo, Guayaquil and Lima (7 reports each), Amazon (5 reports) and Antofagasta (4 reports). The most reported FIRs were Amazon (8 reports), Santo Domingo (6 reports), Lima (5 reports) and Guayaquil (3 reports). The positions/points that occurred the most re-estimated failure were: UGUPI (3 reports), ALDAX, IRGUT, PLG and SORTA (2 reports each). In the first half of 2019, the FIR that reported the most this was Lima (9 reports), Guayaquil and Santo Domingo (4 reports each) and Resistencia (3 reports). The most reported FIR with this failure was Guayaquil (8 reports) followed by Bogotá (6 reports). The most reported position/point was: VAKUD (4 reports), BOKAN, CUC, KORTA, PLG and SELAN (2 reports each).

3.36 The Meeting took note that Table 7 of WP/07 presents all LHD reports related to pilot errors in compliance with the ATC's instructions. The FIR that report the most in 2018 this type of failure was Brasilia (3 reports). For 2019, only one report was filed at FIR Bogotá in the first semester.

3.37 The Meeting thanked CARSAMMA for the analysis and information of provided in WP/07.

3.38 The Meeting took note of the information submitted by CARSAMMA with WP/08 related to the provisions of Doc 9937, where all Regional Monitoring Agencies must initiate checks on the "approval status" of aircraft operating in the relevant RVSM airspace, identify unapproved operators and aircraft using RVSM airspace and notify the relevant Operator's Registration Status/State. CARSAMMA reported that over the past few years has successfully carried out several audits on all flight plans received by the Brazilian ANSP (DECEA), with the aim of confirming that all aircraft presented as approved RVSM (including the code "W" in the tenth field - equipment - of the flight plan form), or mentioning any RVSM level in the fifteenth field - route - of that form, in fact are RVSM approved. Audits of these flight plans have been conducted monthly and have involved, in each of these procedures, the analysis of approximately 140,000 flight plans.

3.39 CARSAMMA emphasized on the importance of sharing all flight plan data with the RMA, highlighting that due of the temporary and changing nature of the RVSM approval list, the data sent to CARSAMMA is only valuable if it is recent, so CARSAMMA should receive flight plans for a given month no later than the end of the following month.

3.40 The Meeting took note of the information presented by Colombia in NI/06 regarding the mitigating measures implemented between FIR Bogotá (SKED) and FIR Lima (SPIM) for the reduction of the high incidence of LHD in the PLG point, where 57 reports were produced in 2018 LHDs validated being 54 of them mistakes made by SKED.

3.41 Colombia reported that all events produced in 2018 occurred at the PLG point, as it was a point of convergence of inbound and outbound routes (UT228 in Lima and UQ103) (BUSMO-PLG-IQT)-UQ106-UQ110 in Bogota, without preferential meanings and with semicircular levels confronted by this very fact. The PLG events generated by SKED came to have a risk value of 60 taking into account that SPIM does not have coverage for surveillance in this sector and that its communications are not reliable. In January 2019, 13 LHD events were generated of which 11 were generated by SKED. Given that these events were high risk from convergence of routes and lack of surveillance and communications, AIDC implementation tests were cancelled, with other mitigating measures having to be taken, including:

a) Cancellation of the PLG-TERAS section on route UN228, elimination of route UQ103 (BUSMO-PLG-IQT);
b) creation of route UN420 (BUSMO-NIRBU-ORBAB-TOLUS-IQT);

c) elimination of routes UQ106 and UQ110, to create UK342 with preferential input meaning.

3.42 The measures taken have resulted in a significant reduction in LHD events in PLG however both FIRs continue to monitor operations in the area mentioned.

3.43 The Meeting took note of the information presented by Argentina and Chile in NI/07 regarding mitigating measures for the reduction of LHD events between the FIR Antofagasta and Cordoba with the participation of the ATS Chiefs of Argentina and Chile, chiefs of Iquique and Cordoba ACC, coordinated by the respective Focal Points and with the support of the ICAO SAM Office. A series of proposals for LHD event mitigation measures were carried out in the TCP between Antofagasta and Córdoba.

3.44 The Meeting was informed of the measures taken, including the establishment of a protocol, as a white march, for the use of the AFTN/AMHS network between the ACC of Córdoba and Iquique, resulting in a considerable reduction of HDNs during the second half of the current year.

3.45 The Meeting thanked Argentina and Chile for the presentation and welcomed the initiative of both States to develop a joint strategy for the reduction of LHDs that has had a very positive impact on the operational safety of RVSM airspace in the CAR/SAM regions.

3.46 The Meeting took note of the information presented by Colombia in NI/08 on the implementation of the AIDC between the SEFG and SKED, where a significant number of LHD events were presented before implementation. The report of the GTE/18 meeting shows 35 LHDs generated by SKED with a maximum risk value of 30 and 10 generated by SEFG with a maximum risk value of 39.

3.47 Colombia reported that it was identified that the training received by the AIDC system administrator at SEFG has not been the same received in SKED and that this has generated a lot of errors in the coordination cycle, creating some resistance between each FIR officials, so new OJT training has been scheduled for SKED staff seeking to reduce both the events and the risk value of them.

3.48 IP/11 presented by the Dominican Republic presented to the Meeting the progress made in the mitigating actions implemented for the reduction of LHD events in FIR Santo Domingo, recalling that in GTE/13, the Dominican Republic undertook to reduce the occurrences of LHD events by 15% per year. This goal has been significantly exceeded, referenced each year compared to the amount committed the previous year, the error count being 146 LHDs in 2013, the reduction was 15% for 2014 (123), 30.89% for 2015 (85), 48% for 2016 (45), 29% for 2017 (32) and 6.3% for 2018 (30), respectively. For the Dominican Republic it has been helpful to identify the operational characteristics of each FIR, analyzing its physical and technological infrastructures in order to focus on better options to mitigate the occurrences of LHDs events, as well as identifying the hours of the greatest number of occurrences to strengthen supervision in them.

3.49 In order to meet the proposed targets, measures were implemented to double and triple the supervisory responsibility, making it more effective in the hours identified as having the highest number of LHD occurrences. Training and awareness campaigns for ATC staff were also carried out so that they are more alert and able to easily identify potential errors and can correct them before they become an operational deviation or an LHD event. All these actions maintained the occurrences of LHD events caused by FIR Santo Domingo to adjacent FIRs below the acceptable level, however the 2018 decrease was less than 7% which posed a new challenge, concluding in the implementation of a new plan, consisting of the identification of ATC staff who have demonstrated a high level of operational competence and

implementing a special timetable for those personnel to implement the coordination with FIRs with which the main causal factors of events, with the instruction to conduct a study and report what it believed were the main causes that gave rise to the occurrence of LHDs events.

3.50 In response, new tools were installed with the update of their radar software, which includes:

- RED alert of estimate time difference over TCP, when the estimate calculated by system differs with the estimate coordinated with the adjacent FIR by a value above that acceptable according to the letter of agreement.
- RED alert on difference level over TCP, when the level maintained by the aircraft differs from the level coordinated with the adjacent FIR.
- Deviation Alert of coordinated route compared to the aircraft's projected route.

3.51 Operational letters of agreement were updated with each adjacent FIR proposing the implementation of new procedures that address the identified causes and should have a substantial impact on substantial improvements to the ATS activity. Some measures expected to drastically reduce LHDs include the implementation of AIDC with Miami and San Juan FIRs, as well as the sharing of radar data with FIR Curacao. The Contact Point of the Dominican Republic emphasizes that it would be desirable for CARSAMMA to periodically send to the Contact Points, the information of the LHDs processed, this would allow better monitoring especially of those events that have been reported by the adjacent FIRs.

3.52 NI/13, presented by COCESNA (Spanish only) informed the efforts made by CENAMER ACC to mitigate the occurrence of LHDs. The increase in air operations within the FIR Central America has been 1.58% from 2017 to 2018 and from 1.77% in 2018 to October 2019 which brings the increase in coordination of controllers between the different adjacent and within the FIR also increases the chances of error in them. Based on the statistics of errors in the ATC coordination cycle and the lack of coordination contained in the LHD reports, CENAMER ACC has taken action to mitigate such errors including:

- Implementation of automated data interconnection with adjacent ATC FIRs.
- Radar data sharing with adjacent ATC FIRs.
- Implementation of ADS-C / CPDLC surveillance in CENAMER's ocean airspace.
- Satellite ADS-B data integration planning to ACC CENAMER.
- Revision of the ATS Procedures Manual in order to eliminate/improve procedures.
- During the recurrent training a module is taught that deals with LHDs, their importance, filling FM4, causes and highlighting the issue that it is not punitive, also encouraging ATCOs to notify each of the events.

3.53 A remaining point is the implementation of radar data exchange between Ecuador and COCESNA. It was said that this task has a considerably progress and should be resume to finish it. With this exchange agreement, COCESNA is expected to be able to have radar coverage at the most vulnerable points, resulting in a significant reduction in LHDs and their associated risk value. During the meeting it was reported that COCESNA and Bogota would resume the AIDC connection. The Secretariat will follow-up this activity.

3.54 The meeting took note of the information submitted by the United States in IP/14 on the vertical safety monitoring report for the continued and safe use of the Minimum Vertical Reduced Separation (RVSM) in airspace of Miami Oceanic, New York West and San Juan. The safety assessment

was carried out in accordance with the methodology approved by the International Civil Aviation Organization (ICAO). This task uses Large Height Deviations (LHD) reports and traffic sample data (TSD) for year 2018. The purpose of this report is to compare actual performance with safety objectives related to the continued use of RVSM in airspace Miami Oceanic, New York West, and San Juan. This report contains a summary of the LHD reports received by NAARMO for year 2018.

3.55 The Meeting was informed by the United States in IP/15 about the vertical safety monitoring report for the continued-safe use of the Reduced Vertical Separation Minimum (RVSM) in Mexico airspace. The safety assessment was carried out according to the methodology approved by the International Civil Aviation Organization (ICAO). This work makes use of high altitude deviations (LHD) reports and traffic sample data (TSD) provided by Mexico to the NAARMO for calendar year 2018. The purpose of this report is to compare actual performance to safety goals related to the continued use of RVSM in Mexico airspace.

3.56 The Meeting took note of the information presented by Jamaica with IP/17 describing the importance of the operational letters of agreement as a tool to ensure the development of coordination activities in a way that operational security is not affected. It highlights the need to ensure that the operational letters of agreement are appropriate for the operational circumstances of each FIR.

3.57 The Meeting took note of the information presented by Uruguay with NI/18 regarding the high incidence of events in the Monte Caseros (MCS) position such as a Hot Spot on the border between the FIR Montevideo, Curitiba and Resistance involving routes UW64, UP526 and UW7 that converge in the Position Homemade Monte and the route UM418, at the nearest point runs to 30NM south of MCS.

3.58 Uruguay explained that aircraft established on route UP526 flying from/to FIR SUEO must change the quadrantal level when checking the MCS position. Cases of LHD events have been reported by default coordination between services and by aircraft that do not reach the final level in time, entering the adjacent FIR in descent or ascent; additional coordination between services uses telephone lines that are often saturated at peak times, making it difficult for agile communications between services. This results in coordination performed over time and/or omissions that can lead to LHD occurring that have involved aircraft with lateral separation of less than 5NM that had to be instructed to perform emergency separation maneuvers.

3.59 During the presentation of NI/18, concern was expressed about the increase in LHDs produced by uninformation-free transits arriving and leaving FIR Comodoro Rivadavia from and to Mount Pleasant, including separation loss events with very high risk levels. The Contact Point of Uruguay reported that there are currently no communications in this sector of FIR Montevideo, including CPDLC that is out of service. The secretariat took note of this information and will coordinate with the focal point of Argentina and Uruguay to address this issue as a priority issue.

3.60 The Meeting thanked Uruguay for its presentation and proposed coordinating a task force involving the FIRs mentioned in NI/18 to conduct an analysis of the situation and seek appropriate mitigating measures to stablished.

Agenda Item 4 Activities and tasks to be reported to GREPECAS

a) Review of tasks to be reported to GREPECAS 2020.

4.1 On this Agenda Item, no papers were presented.

Agenda Item 5: Other business

a) Workshop for LHD focal points in the CAR/SAM regions
b) Some matters related to the GTE

5.1 Under this agenda item, the Meeting examined NI/02 (in Spanish only), IP/03, NI/04 (in Spanish only), NI/05 (in Spanish only), and IP/12.

5.2 The Meeting took note of the information presented by Cuba regarding three LHD events recorded in 2019 at the Havana FIR, due to failures in the aircraft collision avoidance systems. During the presentation, emphasis was made on the high level of risk of these events due to a significant reduction in separation minima.

5.3 The Meeting thanked the representative of Cuba for the information presented in IP/02, and noted that the LHD collection mechanism contributed to a correct analysis of events such as those reported by Cuba, with a view to improving safety in CAR/SAM RVSM airspace.

5.2 The Meeting took note of the information presented by CARSAMMA in IP/03 concerning changes in RVSM Certification/Cancellation Forms F2 and F3, as part of the global implementation of the performance-based communication and surveillance (PBCS) separation concept, mainly due to studies being undertaken on the use of reduced lateral and longitudinal separation in the EUR-SAM corridor, involving the Atlantic and Recife FIRs in the CAR/SAM Regions.

5.3 The Meeting was informed that, in order to enable RMAs to meet the requirements to receive and record RCP/RSP compliance and standardise the information provided by States issuing PBCS approvals/authorisations, the North Atlantic Safety Oversight Group (NAT SOG/19) had encouraged States to adopt a common format for notifying PBCS approvals to their accredited RMAs, including RCP/RSP authorisations. Based on the above, CARSAMMA had amended the F2 and F3 templates being used by the States, so that State authorities could record the details, depending on the format of their approval/authorisation process.

5.4 Taking into account the importance of the foregoing, the Meeting formulated the following draft conclusion:

<table>
<tr><td colspan="3">DRAFT CONCLUSION GTE/19-02 AIRWORTHINESS/RVSM/PBCS APPROVAL REGISTRY</td></tr>
<tr><td colspan="2">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 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.</td><td>Expected impact:

☐ Political / Global
☐ Interregional
☐ Economic
☐ Environmental
☒ Technical/Operational</td></tr>
<tr><td colspan="3">Why:

To improve the monitoring mechanism and safety performance in CAR/SAM RVSM airspace.</td></tr>
<tr><td>When: GTE/19</td><td colspan="2">Status: ☒ Valid / ☐ Invalid / ☐ Completed</td></tr>
<tr><td>Who: ☒ States ☒ ICAO ☐ Other:</td><td colspan="2">GTE Rapporteur</td></tr>
</table>

5.5 The Meeting took note of the information presented by Colombia in IP/04 regarding the analysis of changes in the radar display user interface to properly locate AIDC coordination status and other important flight data, including the re-design of radar symbol tabs to provide the controller with the necessary information, the AIDC coordination status (in area sectors), the re-design of windows or listings, and electronic flight strips (EFS), to improve situational awareness and thus reduce LHD events.

5.6 During the presentation of NI/04, were discussed the difficulties in the communication channels between the FIR Barranquilla – Kingston, and between the FIR Barranquilla – Curacao, where the MEVA and REDIG systems are not providing the availability and reliability required for land-to-land coordination.

5.7 The secretariat urged the supervisors of above-mentioned FIR to take immediate action to address the problems in the communications channels for which the secretariat would support coordinating a task force among the FIR Involved.

5.8 The Meeting took note of the information presented by Colombia in IP/05 concerning SMS implementation in air traffic services in the Barranquilla FIR, and on measures taken to mitigate LHD events at the ACC as part of safety management.

5.9 The Meeting took note that, since 2018, the Atlantic Regional Safety Management Group (GESO) had been actively participating in the analysis of LHDs reported by the Barranquilla FIR, with a view to identifying their causes and take mitigating measures to maintain an acceptable level of reporting. In addition, it was working on the creation of an LHD reporting culture among ACC ATCOs. Based on these

measures, it had been possible to reduce the number of LHD events, and to promote a reporting culture among the controllers of the Barranquilla ACC.

5.10 The secretariat highlighted that Colombia's integration of the LHD analysis with SMS in the provision of air traffic services is an appropriate strategy, will allow Colombia to identify the causes of events and take action about them.

5.11 The Meeting acknowledged the representatives of Colombia for the information provided in both information papers, which showed the various strategies adopted by Colombia to reduce LHD events.

5.12 The Meeting took note of the information provided by Trinidad and Tobago in IP/12, showing the results of an analysis of the Piarco airspace during the last 9 years, which revealed the need for a risk management method suited to the operations in the FIR. The analysis included elements such as the most susceptible fixes, the most vulnerable times to expect an occurrence, and the most important risk factors.

5.13 The Meeting took note that the study had focused on the classification and assessment of risks, the results of which supported the information presented in GTE/18-WP/10. These results had been used to develop additional mitigation strategies to improve safety in the Piarco FIR RVSM airspace.

5.14 The Meeting acknowledged the representatives of Trinidad and Tobago for the information provided in the information paper.

5.15 In IP/16, the United States informed the Meeting about horizontal safety oversight for continuous and safe use of lateral and longitudinal separation minima in the airspace west of New York, showing large lateral deviations (LLDs), large longitudinal errors (LLEs) and traffic sample data (TSD) for calendar year 2018.

5.16 The Meeting took note of 39 events reported in the airspace west of New York, identifying 20 LLDs as high-risk events. The Meeting acknowledged the United States for this important information.

5.17 CARSAMMA informed the Meeting that IP/10 would not be presented at this GTE Meeting, but rather at the next meeting of the scrutiny group.

5.18 Under this agenda item, a refreshing course for LHD points of contact (PoC) accredited to CARSAMMA was provided, with the participation of all the participants to the Meeting. The workshop, *inter alia*, unified criteria for the identification, analysis and processing of CAR/SAM LHDs, with a view to improving the safety oversight mechanism in RVSM airspace.

5.19 The Meeting acknowledged the Secretariat and the GTE rapporteur for the conduction of the refresher workshop.

5.19 By the end of the meeting Mr. Julio Alexis Lewis, rapporteur of the GTE, informed that for personal reasons it would not be possible to continue in his position as rapporteur of the Scrutiny Group. The meeting thanked for the good work carried out by Mr. Lewis during his work, and wished him the best in his future plans.

5.20 The Secretariat proposed the election of a new rapporteur. The Point of Contact of CONCESNA recommended Mr. Manolo Abreu from Dominican Republic. The proposal was supported by all representatives of States and International Organizations, so that Mr. Abreu will serve as rapporteur for the GTE.

5.21 The secretariat informed the Meeting that the next GTE will take place from 4 to 7 August 2020 at the premises of the ICAO NACC Office in Mexico City.

5.22 As part of other matters related to GTE, during the closing, the agreement for the establishment of the AIDC between the FIR of Barranquilla and Maiquetía was signed. The secretariat recognized that these activities reinforce the management of the GTE in the FIRs of the CAR/SAM regions.

5.23 The Secretariat thanked Colombia and the whole organizing team for the support given for the carrying out of the GTE/19 Meeting, concluding the meeting.