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WORKING PAPER

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**CAR/SAM Planning and Implementation Regional Group (GREPECAS) Twenty Second Scrutiny Working Group Meeting (GTE/22)**
Mexico City, Mexico, 26 to 30 September 2022

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**Agenda Item3:** **Review of the results of Large Height Deviation (LHD) analysis**
3.6 Report on the progress made by States on LHD management

# SAFETY MITIGATING MEASURES TO REDUCE LHD EVENTS AND ASSOCIATED RISKS IN THE BARRANQUILLA FIR

(Presented by COlombia)

**EXECUTIVE SUMMARY**

This working paper presents the development of the mitigating measures implemented in the Barranquilla FIR between 2019 and 2022 with the general objective of reducing LHD events and thus maintaining high standards of safety through the efficient management of risks associated with the operation of aircraft in RVSM airspace.

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| **Action:** | See section 3 of this working paper. |
| *Strategic Objectives:* | • Strategic objective 1 –Safety<br>• Strategic Objective 2 – Capacity and efficiency of air navigation |
| *References:* | • GTE reports 2018– 2019 – 2020 – 2021<br>• Doc 9754<br>• Doc 9859<br>• Doc 9694 |

## 1. Introduction

1.1 During GTE/18, it was proposed a change in the work strategy to reduce LHD events, including implementing effective coordination between FIRs, and improving surveillance coverage in RVSM airspace.

1.2 In Colombia, a database management group - DBM was created in 2019, including ATCOs investigated and understood how AIDC automated coordination worked and how to configure it correctly, in addition to learning all the functionalities of the INDRA Aircon 2100 system from the control centers of Barranquilla and Bogotá, including how to edit their user interface.

1.3 The system's functionalities were underutilized, so it was decided to start the process for the implementation of the AIDC following the "GUIDE FOR THE IMPLEMENTATION OF THE AIDC THROUGH THE INTERCONNECTION OF ADJACENT AUTOMATED CENTERS" of the ICAO (ICAO) SAM Region.

1.4 The user interface (labels and windows) was redesigned so the controller can easily visualize the status of the AIDC coordination and thus reduce conflicts in them. The radar symbols labels were redesigned, including just the needed information by the controller as the status of the AIDC coordination (in the Area sectors) and the windows or lists were reshaped to facilitate the visualization of the flight data and the EFS (Electronic Records).

1.5 A standardized operating procedure (SOP) was developed that addressed the use of the coordination system and included the actions to be followed in case of errors or failures in the AIDC coordination system.

1.6 Bugs related to FPLs were fixed (updating settings and geography). The errors, such as non-existent FPLs and multiple FPLs, were corrected with specific actions (oral coordination). Regular assessments continue to identify and correct possible failures.

1.7 Once the AIDC coordination between the control centers of Barranquilla and Bogota was successfully implemented, the DBM group proposed in GTE 2019 to start the work of implementing the automated coordination between Barranquilla and the adjacent FIR, including Panama, Venezuela, Curacao, and Jamaica, which would optimize the services and reduce LHD events, impacting safety.

1.8 It was implemented a program to raise awareness about the findings of Safety events (including LHDs) called "Control Capsules" to inform the ATCOs in a didactic way of the root cause and mitigating measures of each event. Likewise, an induction session on LHD events and ATS incidents was implemented as part of the on-job training program (OJT), annual meetings of the ATSP group where the FIR safety results are shared.

## 2 Analysis

2.1 In 2020, the AIDC coordination service was established as a primary means between Barranquilla/Bogota and Barranquilla/Panama, made official in the LOA signed between the FIRs.

2.2 In May 2022, during the meeting of the SAM focal points, it was analyzed the partial results of the 2021 reports highlighted the significant increase of the LHD between Panama and Barranquilla at the BOGAL and AGUJA positions; these reports were unknown to Barranquilla. Therefore they could not be analyzed and validated. (**Appendix** figure 1).

2.3 A meeting between Barranquilla and Panama focal points was coordinated by the SAM office, concluding that Panama was sending the reports to an incorrect email, causing the information to get lost. It is important to mention that Barranquilla does not have information on Panama reports from 2021 to June 2022.

2.4 In the analysis of cases received in June 2022, it was identified that aircrafts departing from airports near the border with Panama passing BOGAL or AGUJA are originally coordinated by AIDC with the final authorized level; as they are ascending, a renegotiation between AIDC systems happens; calculating the crossing level and sending a new message that the Panama ACC rejects. This situation has caused multiple LHD reports to the Barranquilla FIR.

2.5 The system was updated to reduce this message, and ATCOs are aware of the importance of oral coordinating for these transits. As a definitive measure, the LOA between ACCs will be updated.

2.6 It is important to mention that one of the situations identified in the analysis of the reports is that the Orientation Manual for Points of Contact – PoC accredited to CARSAMMA, in numeral 5.5.1.1 regarding considering whether an event is LHD or Not, only considers the call time of the aircraft before crossing the limit between the FIR's, or if the transfer is made through the official coordination channels. The manual does not address when the controller has the aircraft under surveillance before the initial call, a situation that often causes reports.

2.7 Another situation is related to the problems with oral communications with Curaçao, which caused LHD events at OROSA and SELAN. Although the implementation of automated AIDC has not been possible, it was implemented as a contingency measure for oral systems failures, the automatic AFTN/AMHS messages, so all flights are coordinated using this without ceasing the oral coordination. Likewise, SOP procedures were adjusted and included in the LOA between Barranquilla and Curacao, reducing the events between the FIRs. (**Appendix** figure 2).

2.8 The oral coordination between Barranquilla and Kingston was out of service in June 2019 and could not be restored by the technical part of Colombia; this situation was notified to the SAM office at the end of 2020. The SAM office initiated a cooperative process between the technical areas of the States, ICAO offices, and the MEVA system manager, restoring the oral coordination on April 15, 2021.

2.9 Coordination problems between Barranquilla and Jamaica increased the number of validated reports in 2019. (**Appendix** - figure 3)

2.10 As a contingent measure and using the available technology, coordination was agreed upon using the official cell phone of the ACCs. In 2020, the pre-operational tests of the AIDC link between the Kingston ACC simulator and the Barranquilla ACC began, which were successful, but it was found that the Kingston ACC did not have the AIDC program, which impacted the final implementation.

2.11 The implementation of AIDC coordination with Venezuela is in the operational testing phase; however, it has worked successfully and is awaiting for officialization by signing the LOA.

2.12 One of the lessons learned during the change of management process during the implementation of the AIDC system as a primary means of coordination is that an increase in LHD reports may occur due to ATCOs' unfamiliarity with the system and operational errors in programming the AIDC which are corrected as they are identified, being the LHD reports an essential means to detect and analyze this faults.

2.13 In conclusion, the Barranquilla FIR understood that a continuous improvement in the work must be sought; testing new methods and forms of teamwork, making the most of available resources, always seeking to improve processes, design new interfaces, new protocols, and new procedures. If we keep working as we did in the past, we will not advance hand in hand with the growth of Air Traffic even if we have modern equipment and better technology.

## 3. Suggested actions

3.1 The Meeting is invited to:

a) Take note of the information presented in this Working Paper;

b) review the POC orientation manual, including surveillance coverage within the event analysis, on aircraft identified before the buffer zone with levels different than the coordinated, so as not to be considered LHD; and the need to comply with the data exchange procedures between the FIRs for its analysis before the delivery of the information to CARSAMMA;

c) agree on bi-monthly or quarterly meetings between the POCs and CARSAMMA to coordinate safety information on the RVSM airspace of the CAR/SAM regions;

d) motivate CAR/SAM States to adopt new technologies such as AIDC to reduce the risks associated with LHD events in RVSM airspace; and

e) update the information on Focal Points published on the website of the Scrutiny Working Group (GTE).

**APPENDIX**

**Figures**

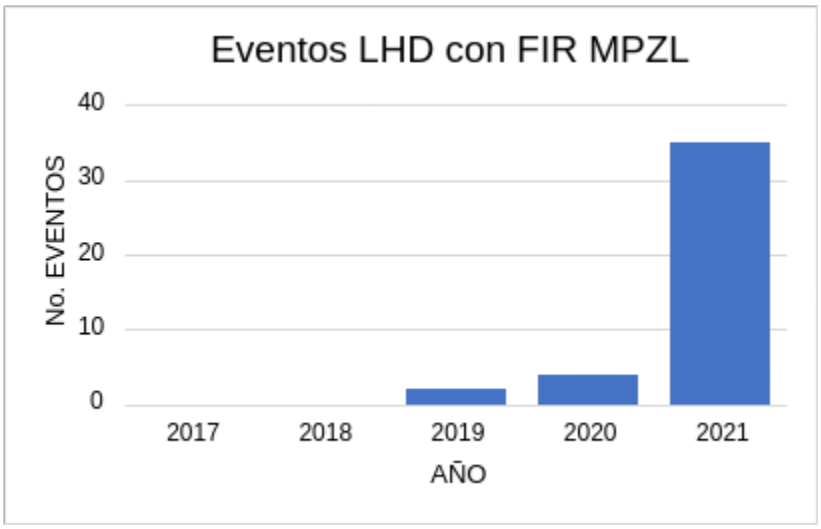


***Figure 1. Number of events generated by SKEC to MPZL***

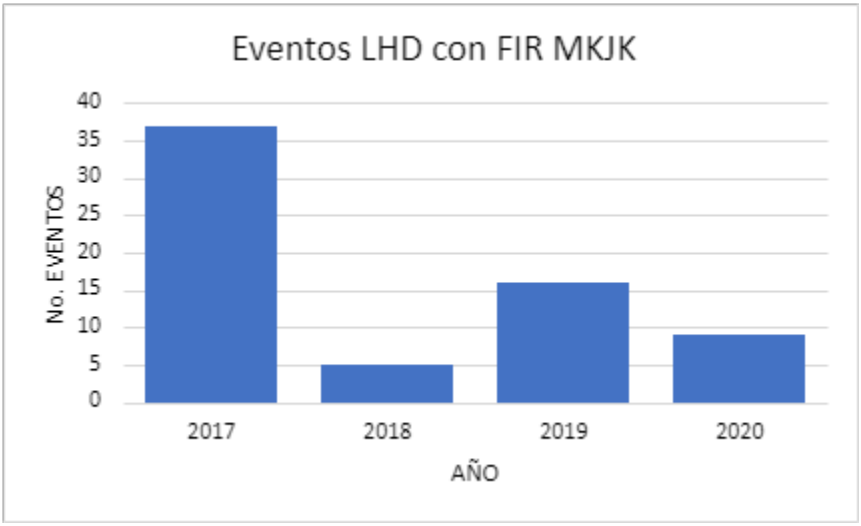


***Figure 2. Number of events generated by SKEC to FIR MKJK***

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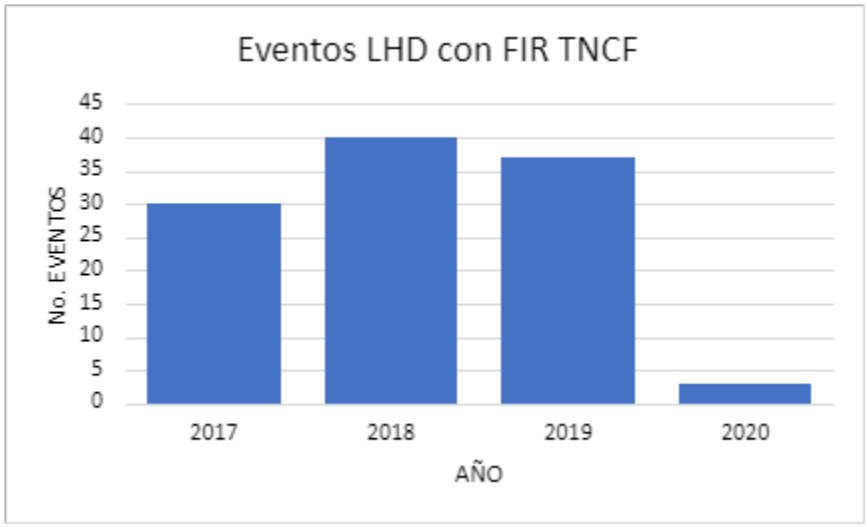


***Figure 3. Number of LHD events generated by SKEC to TNCF***

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