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WORKING PAPER

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**CAR/SAM Planning and Implementation Regional Group (GREPECAS) Twenty Third Scrutiny  
Working Group Meeting  
(GTE/23)**

Lima, Peru, 11 to 15 September 2023

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

**ANALYSIS AND CLASSIFICATION OF HUMAN ERROR**

(Presented by Dominican Republic)

**EXECUTIVE SUMMARY**

This Working Paper presents an analysis carried out to the air traffic services system of the Santo Domingo FIR on the main factors that affect the occurrence of Large Height Deviations (LHDs) because of human error and proposes actions to mitigate them.

<b>Action:</b>	Suggested actions are included in Section 6
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"><li>• Safety</li><li>• Air Navigation Capacity and Efficiency</li></ul>
<i>References:</i>	<ul style="list-style-type: none"><li>• Guidance Manual for Points of Contact (PoC) Accredited to CARSAMMA. Second edition, 2021</li></ul>

**1. Introduction**

1.1 An analysis of the data referring to the period August 2021/June 2022 is presented, making a breakdown of the main errors committed by the Santo Domingo FIR, their possible causes and mitigation measures.

1.2 The Santo Domingo FIR is responsible for coordinating with four adjacent airspaces: Curaçao FIR and Port-au-Prince FIR, with whom coordination is carried out orally, established by letters of agreement; FIR Miami and FIR San Juan, with which, under normal conditions, coordination is carried out via AIDC (ADE) up to its second phase, which includes provision of estimates and reviews.

1.3 The objective of this Paper is to simplify the identification of the main factors that affect the occurrence of events that can become Large Height Deviations (LHDs), as well as mitigation measures, which can be put into practice immediately.

## 2. Methodology

2.1 The data collected refers to operations within RVSM airspace, coordinated with airspaces where there is no transfer of radar identification, specifically with the Curaçao FIR and the Port-au-Prince FIR.

2.2 Voice recordings and radar data were used to identify the errors committed in each of the cases, as well as the number of operations and other external factors such as weather conditions.

## 3. Results

3.1 After the analysis of the sample taken, it was possible to identify most of the errors identified as human. The following table shows an initial classification proposed by the Santo Domingo FIR:

Human factors that affect the occurrence of LHD's	Number of LHD's.
Lack of Coordination of aircraft that will cross the TCP climbing.	2
No revision of changes to the coordinated flight levels	2
Late coordination	2
Lack of coordination	5
Inadvertence of the discrepancy of the estimate provided to the adjacent sector with the read-back	1
Coordination with erroneous data related to the flight	4
TOTAL	16

3.2 Lack of coordination of aircraft that will cross climbing; represents 12% of the LHDs committed by the Santo Domingo FIR.

3.3 No review of coordinated flight level changes; represents 12% of the LHDs committed by the Santo Domingo FIR.

3.4 Late coordination; represents 12% of the LHDs committed by the Santo Domingo FIR.

3.5 Lack of coordination; represents 31% of the LHDs committed by the Santo Domingo FIR.

3.6 Inadvertence of the discrepancy of the estimate provided to the adjacent sector with the read-back; represents 6% of the LHDs committed by the Santo Domingo FIR.

3.7 Coordination of erroneous data regarding the flight; represents 25% of the LHDs committed by the Santo Domingo FIR.

#### **4. Mitigating measures**

4.1 After analysing each of the events already classified, adjustments have been made to address each of them and mitigate the occurrence of LHDs as follows:

4.1.1 Lack of coordination of aircraft that will cross when climbing.

4.1.1.1 The controller must validate with the crew the level at which the TCP will be crossed.

4.1.1.2 The controller must maintain vigilance that the level validated by the crew is met.

4.1.1.3 The planner must coordinate according to the information obtained from the crew and the subsequent surveillance of the acting controller.

4.1.1.4 It must be specified in the Operational Text line that the aircraft will climb using the established code.

4.1.2 No review of coordinated flight level changes.

4.1.2.1 Complying with the provisions of the Letters of Agreement, the controller will change the Flight Level of a coordinated aircraft and will specify the required Level Review in the Operational Text line. In the case of changes within the next ten minutes to the estimate provided, the controller must wait for the level change to be authorized by the adjacent FIR.

4.1.2.2 In the case of aircraft that interact with the two Area sectors, any level change made must be specified in the Operational Text.

4.1.3 Late coordination.

4.1.3.1 Coordinate the estimates with the adjacent sector as soon as they are received.

4.1.4 Lack of coordination.

4.1.4.1 Coordinate the estimates with the adjacent sector as soon as they are received.

4.1.5 Inadvertence of the discrepancy of the estimate provided to the adjacent sector with the read-back.

4.1.5.1 Specify and listen to the readback of each of the important data of the estimate (Call Sign, Transfer Point, Estimated Time at the point, Level and SSR Code).

4.1.5.2 Carry out the coordination using the correct phraseology; numbers must be pronounced as one digit at a time.

4.1.6 Coordination of erroneous data regarding the flight.

4.1.6.1 Insert the coordinated data at the time the adjacent FIR accepts the estimate.

4.1.6.2 In the case of using the Local Text or Distributed Text, the planner is responsible for validating the information entered in the system, in relation to the estimate provided.

4.1.6.3 Specify and listen to the readback of each of the important data of the estimate (Call Sign, Transfer Point, Estimated Time at the point, Level and SSR Code).

## **5. Conclusions**

5.1 The identification of the events that occurred, as well as their classification, makes it possible to directly and objectively address the existing weaknesses in the coordination carried out between the different airspaces of the region.

## **6. Suggested actions**

6.1 The Meeting is invited to:

- a) Take into consideration the information provided in this Working Paper and the mitigating actions implemented by the Santo Domingo FIR;
- b) recommend that measures be taken to significantly mitigate the occurrence of LHDs, using the tools that each FIR has available;
- c) it is suggested that the GTE continue with the identification of the airspaces and significant points where there is no radar coverage and take into account those where it does exist, in which other mitigation measures can be taken, aimed at the transfer of identification, such as hold control requests, flight data change reviews, and transfer of control of aircraft; and
- d) take any additional action deemed necessary.