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WORKING PAPER

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CAR/SAM Regional Planning and Implementation Group (GREPECAS)
Twenty-First Scrutiny Working Group Meeting
(GTE/21)
Zoom Meeting, 23-26 August 2021

Agenda Item 2: Review of the results of large height deviations (LHD) analysis
2.4 IDENTIFICATION OF TRENDS

(Presented by CARSAMMA)

EXECUTIVE SUMMARY

This paper presents a summary of the trends in some of the large height deviations (LHDs) received by CARSAMMA, such as when the aircraft crosses the TCP while climbing or descending, when the aircraft calls at a point different from that coordinated, when the unit does not confirm the flight level, point or time of transfer and the transferring unit does not identify the error, including changes in the estimated time, or errors related to transfer failures caused by technical equipment issues.

Action:	**The suggested action appears in section 3.**
Strategic objectives:	• Safety
References:	• GTE methodology • 2020 report on large height deviations (LHDs) • ICAO Safety Management Manual

1. Introduction

1.1. The CAR/SAM Regional Planning and Implementation Group (GREPECAS) delegated to the Caribbean and South American Monitoring Agency (CARSAMMA) the function of receiving, analysing and coding the LHDs and submitting them to the GTE and at the teleconferences for validation and risk calculation, applying a qualitative (SMS) and quantitative (CRM) method.

1.2. The objective of this work is to provide experts with additional information so that the 2020 LHD reports received by CARSAMMA can be analysed once again, and to avoid repeating any of the errors shown in this analysis; also, to make it easier for experts of the FIRs involved to take the relevant mitigation measures.

2. Discussion

2.1. Some LHD reports in the first and second semester (underlined) of 2020 showed error in the coordinated level, traffic was still climbing or descending when the call was made.

2.2. **Table 1** shows all LHD reports that fall in this group, where traffic is coordinated at one level and the call is made while climbing or descending.

2020 reports	Reporting FIR	FIR generating the failure	Position
09	Santo Domingo	Curacao	VESKA
35	Santo Domingo	Curacao	KARUM
87	Bogotá	Guayaquil	UGUPI
93	Panama	Barranquilla	AGUJA
106	Lima	La Paz	ELAKO
148	San Juan	Piarco	ELOPO
193	Bogotá	Maiquetía	KIKAS
200	Santo Domingo	Curacao	KARUM
203	Bogotá	Guayaquil	ENSOL
258	Piarco	Pilot	60 NM "S" RAKAN
299	Lima	Bogotá	PLG (Puerto Leguizamo)
334	Curacao	Santo Domingo	BEROX
363	Guayaquil	Bogotá	UGUPI
382	Curacao	Santo Domingo	BEROX
407	Curacao	Barranquilla	08NM "E" SELAN

Table 1 *- LHD reports where transfer was made at a given level and the call was made while climbing or descending*

2.3. As can be seen in **Table 1**, the FIRs that most reported this failure in 2020 were: Santo Domingo, Bogota and Curacao (3 events each). The most reported FIRs were Curacao (3 events), Guayaquil, Barranquilla and Bogotá (2 events each). The points where most of these errors occurred were KARUM, UGUPI and BEROX (2 events each). It should also be noted that the Santo Domingo and Curacao FIRs had 5 occurrences each; likewise, the Bogota and Guayaquil FIRs had 3 events each. It is important to note that coordination failures similar to those in 2019 were also identified.

2.4 In some cases, the FIRs reported the occurrence because traffic was climbing or descending while still in the reporting FIR, and no coordination took place.

2.5 Some LHD reports in the first and second semester (underlined) of 2020 showed an error in the coordination point, *i.e.* the aircraft comes on an airway, changes airway or deviates from the route and this change is not coordinated with the adjacent FIR. Table 2 shows all LHD reports that fall in this group, where traffic is coordinated at one point and calls from another.

Note: It is important to analyse if these reports can be classified as LLD.

2020 reports	Reporting FIR	FIR generating the failure	Coordinated position	Position at which the aircraft calls
01	Guayaquil	Bogotá	BOKAN	40NM "E" BOKAN
59	La Paz	Asunción	SIDAK	50NM "W" SIDAK
129	Bogotá	Guayaquil	BOKAN	30NM "E" BOKAN
150	La Paz	Lima	ORALO	ELAKO
211	Córdoba	Antofagasta	KONRI	GEKAL
226	La Paz	Asunción	SIDAK	50NM "W" REMEK
252	Lima	Bogotá	TERAS	PLG (Puerto Leguizamo)
376	San Juan	Miami	HARBG	10 NM NORTHEAST HARBG

Table 2 *-LHD reports where transfer is made at a certain point and the call is made from another.*

2.6. As may be seen in **Table 2**, the FIR that reported the most in 2020 was La Paz (3 events). The most reported FIR was Bogotá (2 events). It can also be noted that the FIR pairs that incurred in

this error the most were Bogotá with Guayaquil and La Paz with Asunción (2 events each). These coordination errors had already been reported in 2019.

2.7. Some LHD reports showed coordination errors related to the flight level, flight number, fix or time, *i.e.* coordination took place, but the readback was incorrectly done, and the transferring unit was not aware of the error. In the first and second semester (underlined) of 2020, several such events were identified and reflected in **Table 3**, which shows all LHD reports related to the above situation, where traffic is coordinated at a flight level and is incorrectly entered by the receiving FIR. The flight number, fix or time may have also been entered incorrectly, resulting in an LHD report.

2020 report	Reporting FIR	FIR generating the failure	Coordinated time, fix or level	Time, fix or level entered
222	Port-au-Prince	Santo Domingo	FL300	FL360
308	St. Maria	Piarco	23:14	22:51

***Table 3** - LHD reports in which transfer was made but it was misunderstood*

2.8. As can be seen in **Table 3**, in 2020, some FIRs did not detect the readback of the ATCO of the adjacent FIR. The Port-au-Prince FIR did the transfer properly, but did not grasp the readback of the controller in the Santo Domingo FIR.

2.9. Some LHD reports during the first and second semester (underlined) of 2020 showed coordination errors related to technical issues of the equipment used for the transfer, (**AMHS** = ATS MESSAGE HANDLING SYSTEM or **AIDC** = ATS INTER-FACILITY DATA COMMUNICATION); that is, the aircraft calls from a flight level other than the coordinated level or the flight level was not coordinated. These occurrences were classified as “F” by the reporting FIR or based on the description in the LHD report.

2.10. **Table 4** shows all the LHD reports that correspond to this group, where traffic is coordinated at one level and calls from another, or it was not coordinated.

2020 reports	Reporting FIR	FIR generating the failure	Position
301	Guayaquil	Lima	ARNEL
304	Guayaquil	Lima	VAKUD
306	Guayaquil	Lima	TOSES
375	Panama	Bogotá	BUXOS
411	Guayaquil	Bogotá	UGUPI

***Table 4** - LHD reports where transfer is made at one level and call is made from another due to equipment failure.*

2.11. As may be seen in **Table 4**, the FIR that reported the most this type of failure was: Guayaquil (4 events). The most reported FIRs were: Lima (3 events) and Bogotá (2 events). It should be noted that the FIR pair that reported this event the most was Guayaquil with Lima.

2.12. **Table 5** shows the FIRs that reported problems related to lack of coordination or poor coordination due to problems with the transfer equipment. However, the description of the occurrences indicates that they were due to lack of knowledge by the people making the transfer, or lack of knowledge of the codes generated by the equipment and/or they did not review the message or it was not sent. Out of 83 “F”-coded reports, only 5 were maintained, 28 were classified as "E1" and 50 as "E2”.

REPORTING FIR	REPORTED FIR	TCP POINTS	NUMBER
GUAYAQUIL (61 events)	BOGOTA (49 events)	ANRAX	1 (E2)
		BOKAN	3 (E1) and 7 (E2)
		ENSOL	2 (E1) and 2 (E2)
		PULTU	4 (E1) and 5 (E2)
		UGUPI	10 (E1) - 12 (E2) and 1 (F)
		VAMOS	2 (E2)
	LIMA (12 events)	ARNEL	1 (E1) - 3 (E2) - 1 (F)
		PABOB	1 (E2)
		TOSES	1 (E2) and 1 (F)
		VAKUD	2 (E1) - 1 (E2) and 1 (F)
BOGOTÁ (9 events)	GUAYAQUIL (8 events)	BOKAN	2 (E2)
		ENSOL	2 (E2)
		UGUPI	4 (E2)
	PANAMA (1 time)	TOKUT	1 (E1)
CENTRAL AMERICA (1 time)	GUAYAQUIL (1 time)	UGADI	1 (E1)
LIMA (9 events)	ANTOFAGASTA (2 events)	ALDAX	2 (E2)
	GUAYAQUIL (7 events)	ANPAL	2 (E1)
		VAKUD	2 (E2)
		LOBOT	1 (E2)
		PABOB	2 (E2)
ANTOFAGASTA (1 time)	LIMA (1 time)	ALDAX	1 (E1)
CÓRDOBA (1 time)	ANTOFAGASTA (1 time)	GEKAL	1 (E1)
PANAMA (1 time)	BOGOTÁ (1 time)	BUXOS	1 (F)

***Table 5** - LHD reports were classified as "F", but only 5 were maintained, and the others changed to "E1" or "E2". They show where we have most coordination problems caused by the equipment.*

2.13. In some LHD reports of the first and second semester (underlined) of 2020, the coordination error involved the time, with traffic coordinated at a given time but crossing significantly earlier. **Table 6** shows all LHD reports that fall in this group, where traffic is coordinated at a given time but calls ahead of that time.

Note: It is important to consider if these events can be classified as LLE

2020 reports	**Reporting FIR**	**FIR generating the failure**	**Position**	**Coordinated time**	**Call time**	**Anticipation __ minutes**
5	Córdoba	La Paz	PUBUM	11:55	10:55	60
30	Santo Domingo	Port-au-Prince	DCR	20:13	20:08	05
38	Santo Domingo	Curacao	VESKA	04:59	04:36	23
55	Resistencia	Ezeiza	OPNIN	01:57	01:35	22
57	Maiquetia	Bogotá	CUC	19:28	19:10	18
58	Santo Domingo	Port-au-Prince	PIGBI	21:58	21:51	07
67	Santo Domingo	Curacao	VESKA	15:41	15:36	05

83	La Paz	Amazónica	RCO	21:22	21:10	12
102	Lima	Guayaquil	ANPAL	10:25	10:17	08
105	Bogotá	Guayaquil	UGUPI	11:48	11:43	05
130	Santo Domingo	Curacao	PALAS	11:29	11:21	08
132	La Paz	Lima	DOBNI	07:30	07:10	20
135	Santo Domingo	Port-au-Prince	DCR	17:36	17:31	05
159	Santo Domingo	Port-au-Prince	DCR	16:20	16:14	06
199	Santo Domingo	Port-au-Prince	RETAK	18:04	17:58	06
268	Antofagasta	Lima	ESDIN	02:18	02:07	11
369	New York	Piarco	FISST	23:28	23:08	20

***Table 6** - LHD reports where transfer is made at a given time and the pilot calls ahead of time.*

2.14. As seen in **Table 6**, the 2 FIRs that reported the most this type of failure in 2020 were: Santo Domingo (8 events) and La Paz (2 events). The 4 most reported FIRs were: Port-au-Prince (5 events), Curacao (3 events), and Guayaquil and Lima (2 events). The positions/points where this error occurred the most were: DCR (3 events) and VESKA (2 events).

2.15. The FIR pairs that had most failures of this type were: Santo Domingo with Port-au-Prince (5 events) and Santo Domingo with Curacao (3 events).

2.16. An LHD report during the second semester (underlined) of 2020 showed an error involving late coordination, close to the TCP, that is, with less than 5 minutes, infringing the LHD requirement and methodology. **Table 7** shows the LHD report related to this situation, where traffic was coordinated late, close to the TCP.

2020 reports	Reporting FIR	FIR generating the failure	Position	Coordinated time	Call time	Coordinates only with __ minutes
312	Antofagasta	Lima	SORTA	00:01	00:03	2

***Table 7** - LHD report where transfer was made at a given time and the call is made at another (in advance)*

2.17. As may be seen in **Table 7**, the only FIR that reported this type of failure in 2020 was Antofagasta, and the reported FIR was Lima. The position where the error occurred was SORTA.

2.18. **Tabla 8** shows an assessment of the data contained in Tables 6 and 7, showing the points where more errors between FIRs were observed.

Reporting FIR	FIR that generated the failure	Point 1	Point 2	Point 3	Point 4	Point 5
Santo Domingo	Curacao	VESKA	PALAS			
	Port-au-Prince	DCR	PIGBI	RETAK		
Antofagasta	Lima	ESDIN	SORTA			
Resistencia	Ezeiza	OPNIN				
Lima	Guayaquil	ANPAL				
Bogotá	Guayaquil	UGUPI				

Córdoba	La Paz	PUBUM				
Maiquetia	Bogotá	CUC				
La Paz	Amazónica	RCO				
	Lima	DOBNI				
New York	Piarco	FISST				

Table 8 *– Assessment of data taken from LHD reports where transfer is made at a given time and call made ahead of that time*

3. Suggested action

3.1 The Meeting is invited to:

a) take note of the information presented in this working paper;

b) use the information herein to develop the mitigation measures required to avoid the recurrence of errors; and

c) submit said decision to the GTE members for their information and validation.

— END —