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WORKING PAPER

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Twenty-third Meeting of the Working Group on Scrutiny (GTE/23) of the CAR/SAM Regional Planning and Implementation Group (GREPECAS)

Lima, Peru, from September 11 to 15, 2023

Agenda Item 2: Review of the results of the Large Altitude Deviations (LHD) analysis

TREND IDENTIFICATION

(Submitted by CARSAMMA)

EXECUTIVE SUMMARY	
This working paper presents a summary of the trends of some Major Altitude Deviations (LHD) received by CARSAMMA for the year of 2022.	
Action:	The suggested actions if they fit into mitigating actions.
Objectives Strategic:	• Safety
References:	• GTE methodology. • Reports of Major Altitude Deviations (LHD) (**APPENDIX**). • Manual SGSO - ICAO. • Manual of the POCs accredited to CARSAMMA.

1. Introduction

1.1. This work is aimed at providing more information to the experts so that the 2022 LHD reports, received until January 24, 2023, by CARSAMMA are observed and analyzed, so that similar failures are not repeated, mainly at the specified points and that the experts of the FIR involved take pertinent mitigating actions.

2. Analysis

2.1. The analysis of the LHD reports of 2022, first and second half (number of reports underlined) can be found below.

2.2. Table **1** shows all LHD reports in which traffic is coordinated at one level and ascends or descends when the accepting unit is called.

Reports 2022	Reporting FIR	FIR that commits the fault	Position	Level
8	PORT AU PRINCE	SANTO DOMINGO	ONPAD	FL290 ↗ FL300
39	BOGOTA	PANAMA	BUSMO	FL310 ↗ FL350
119	FILE	GUAYAQUIL	KUMET	FL330 ↗ FL370
134	CENTRAL AMERICA	MERIDA	NICHOLAS	FL350 ↗ FL360
167	PIARCO	GEORGETOWN	VOKAN	FL360 ↗ FL380
168	MAIQUETIA	BOGOTA	KIKAS	FL315 ↗ FL350
193	FILE	AMAZONICA	LET	FL380 ↘ FL360
294	FILE	LA PAZ	ELAKO	FL340 ↗ FL380
350	MAIQUETIA	BOGOTA	KIKAS	FL360 ↗ FL390
377	CURACAO	SANTO DOMINGO	BEROX	FL330 ↗ FL360
423	MAIQUETIA	BOGOTA	KIKAS	FL350 ↗ FL390
443	MAIQUETIA	BOGOTA	KIKAS	FL330 ↗ FL390
459	FILE	GUAYAQUIL	KUMET	FL320 ↗ FL410
489	LA PAZ	AMAZONICA	RCO	FL350 ↗ FL370
521	CURITIBA	MONTEVIDEO	AKPOD	FL330 ↗ FL370
538	FILE	LA PAZ	ELAKO	FL320 ↗ FL360
642	MAIQUETIA	BOGOTA	KIKAS	FL330 ↗ FL370

2.3. As **Table 1** shows, the FIRs that most report this type of failure were: MAIQUETIA and LIMA (5 times each), the most reported FIR was BOGOTA (5 times) and the pair of FIRs involved in this type of failure was: MAIQUETIA x BOGOTÁ (5 times), all in the KIKAS position.

2.4. In **Table 2**, the reports had a coordination failure at a different point than coordinated. Traffic is coordinated at one point and calls at another and this change is not arranged with the adjacent FIR.

Reports 2022	Reporting FIR	FIR that commits the fault	Coordinated position	Position the aircraft calls
13	PORT AU PRINCE	HAVANA	URLAM	**DEPSI** - (81 NM A LA DERECHA DE URLAM) - MUHA/MDSD
56	GUAYAQUIL	BOGOTÁ	ENSOL	**AKTAB** - **(**44 NM A LA DERECHA DE ENSOL) - MPTO/SEQM
64	LA PAZ	AMAZONICA	RCO	**AKVOR** - (84 NM A LA ESQUIERDA DE RCO) – MPTO/SAEZ
72	CURITIBA	BRASILIA	MULAP	**PUNTO 1 -** (10 NM A LA DERECHA DE MULAP) -SBSP/SBRF
74	LIMA	AMAZONICA	ISIDI	**DAMDU** - (15 NM A LA ESQUIERDA DE ISIDI) – SGAS/MPTO
114	AMAZONICA	PILOTO	UL201	**PUNTO 2 -** 29 NM A LA ESQUIERDA DA AWY) **-** MPTO/SBCF
160	GUAYAQUIL	BOGOTÁ	PULTU	**PUNTO 3** - (26 NM A LA ESQUIERDA DE PULTU) **-** SKBO/SCEL

164	GUAYAQUIL	CENTRAL AMERICA	BUVUL	**PUNTO 4** - (34 NM A LA ESQUIERDA DE BUVUL) **-** MMTO/SPJC
169	ATLANTICO	DAKAR	NANIK	**MOVGA** - (135 NM A LA DERECHA DE NANIK) - LPPT/SBGR
338	AMAZONICA	BOGOTÁ	LET	**ASAPA** - (103 NM AL NORTE/NORDESTE DE LET) - KMIA/SAEZ
345	AMAZONICA	BOGOTÁ	UP776	**BRACO** - (15 NM A LA ESQUIERDA DE LA AWY) - EHAM/SPJC
349	LA PAZ	PILOTO	DOBNI	**PUNTO 5** - (26 NM A LA DERECHA DE DOBNI) - SBKP/SPJC
351	AMAZONICA	GEORGETOWN	SUMVA	**TONOM** – (60 NM A LA ESQUIERDA DE SUMVA) - KJFK/SBGR
413	BOGOTÁ	PANAMÁ	ASEPI	**BUSMO** - (70 NM A LA ESQUIERDA DE ASEPI - MMMX/SKCL
421	LA PAZ	AMAZONICA	ISARA	**AKVOR** - (61 NM A LA DERECHA DE ISARA) - MPTO/SAAR
460	GUAYAQUIL	BOGOTÁ	ENSOL	**UGUPI** - (69 NM A LA DERECHA DE ENSOL) - KMIA/SPJC
462	GUAYAQUIL	BOGOTÁ	ANRAX	**UGUPI** - (83 NM A LA DERECHA DE ANRAX) - KMIA/SPJC
555	LIMA	BOGOTÁ	PABON	**ROLUS** - (236 NM A LA DERECHA DA AWY) - SKBO/SBGR
593	ANTOFAGASTA	LIMA	IREMI	**SORTA** - (53 NM A LA ESQUIERDA DE IREMI) - KMIA/SCEL
643	SAN JUAN	MAIQUETIA	ARMUR	**MILOK** - (46 NM A LA ESQUIERDA DE ARMUR) - SBGR/KMIA
691	SANTO DOMINGO	CURACAO	VESKA	**BEROX** - (40 NM A LA DERECHA DE VESKA - SKRG/MDPC
710	CENTRAL AMÉRICA	MÉRIDA	ILUBA	**PUNTO 6** - (30 NM AL NORTE DE ILUBA) – KIAH/MPTO
741	GUAYAQUIL	BOGOTÁ	UGUPI	**BOKAN** - (123 NM OESTE DE UGUPI) - MPTO/SEGU
761	LA PAZ	CURITIBA	SIDAK	**CUB** - (48 NM OESTE DE SIDAK) – SBCG/SLVR
791	GUAYAQUIL	BOGOTÁ	ANRAX	**UGUPI** - (83 NM ESTE DE ANRAX) - KMIA/SAEZ
811	MAIQUETIA	AMAZONICA	VAGAN	**VUMPI** - (121 NM SUROESTE DE VAGAN) - SLVR/SVMI

2.5. In **Table 2**, the FIR that most reported this type of failure was: GUAYAQUIL (7 times), the most reported FIR was BOGOTÁ (9 times) and the two FIRs involved in this type of failure was: GUAYAQUIL x BOGOTÁ (6 times).
Note: Many of those failures occurred due to adverse climate conditions, bad weather.

2.6. In **Table 3**, the LHDs had coordination failure. The coordination is done, but in an incorrect way, and the unit performing the transfer does not perceive the failure.

2022 Report	Reporting FIR	FIR that fails	Time, landline, level or number of the coordinated flight	Time, landline, level or flight number noted
5	PANAMA	KINGSTON	FL390	FL370
87	KINGSTON	HAVANA	18:03	19:03
467	PORT AU PRINCE	MIAMI	01:06	01:16
712	ANTOFAGASTA	LIMA	SORTA	IREMI
793	PORT AU PRINCE	SANTO DOMINGO	RETAK	ETBOD

2.7. As indicate above, the FIR PORT AU PRINCE appears in two situations of coordination failure, one from MIAMI and another from SANTO DOMINGOThe FIR PORT AU PRINCE pointed out the wrong time transmitted by FIR MIAMI and the TCP different from the coordinated by FIR SANTO DOMINGO.

2.8. **Table 4** had as coordination failure the parameter related to technical issues of the equipment used for the transfer, (**AMHS** = ATS MESSAGE HANDLING SYSTEM or **AIDC** = ATS INTER-FACILITATE DATA COMMUNICATION). The aircraft called at a different flight level than the coordinated, or it was not coordinated. Although this is classified as code "F", it is not a failure of the equipment but a lack of knowledge of the ATCO when handling the equipment, since they do not know how to interpret the errors / failures pointed out by the automatic transfer system. In all reports described below, CARSAMMA, based on the description of the event, coded them as E1 (poor coordination) or E2 (lack of coordination).

FIR REPORTING	FIR THAT COMMITS THE FAULT	POINT - TCP	QUANTITY and (CODES)
GUAYAQUIL (58 times)	BOGOTÁ (38 times)	BOKAN (9)	1 (E1) and 8 (E2)
		ENSOL (5)	3 (E1) and 2 (E2)
		PULTU (3)	3 (E2)
		UGUPI (21)	17 (E1) and 4 (E2)
	CENTRAL AMERICA (5 times)	ARTOM (1)	1 (E2)
		LIXAS (4)	1 (E1) and 3 (E2)
	LIMA (7 times)	VAKUD (7)	4 (E1) and 3 (E2)
	PILOT (8 times)	ARNEL (2)	2 (E2)
		VAKUD (6)	6 (E2)
PANAMA (21 times)	BARRANQUILLA (4 times)	AGUJA (2)	1 (E1) and 1 (E2)
		BOGAL (1)	1 (E1)
		ESEDA (1)	1 (E1)
	BOGOTÁ (11 times)	ARORO (1)	1 (E2)
		BUSMO (3)	3 (E2)
		BUXOS (3)	2 (E1) and 1 (E2)
		DAKMO (1)	1 (E2)
		ILTUR (1)	1 (E2)

		TINPA (1)	1 (E1)
		TOKUT (1)	1 (E2)
	CENTRAL AMERICA (5 times)	BUFEO (1)	1 (E1)
		EGODI (1)	1 (E2)
		FALLA (1)	1 (E2)
		ISEBA (1)	1 (E2)
		PELRA (1)	1 (E2)
	PANAMA (1 time)	ARORO (1)	1 (E1)
CENTRAL AMERICA (10 times)	GUAYAQUIL (3 times)	LIXAS (2)	1 (E1) and 1 (E2)
		UGADI (1)	1 (E1)
	HAVANA (1 time)	SELEK (1)	1 (E2)
	MERIDA (1 time)	ANEPU (1)	1 (E2)
	PANAMA (5 times)	ANSON (2)	1 (E1) and 1 (E2)
		DURAM (1)	1 (E2)
		LESIR (1)	1 (E1)
		POXON (1)	1 (E2)
MERIDA (4 times)	CENTRAL AMERICA (4 times)	ANIKO (2)	2 (E1)
		ANREX (1)	1 (E1)
		VIDNO (1)	1 (E2)
BOGOTÁ (8 times)	GUAYAQUIL (6 times)	BOKAN (1)	1 (E2)
		ENSOL (2)	1 (E1 and 1 (E2)
		UGUPI (3)	3 (E2)
	PANAMA (2 times)	KAKOL (2)	2 (E2)
LIMA (2 times)	GUAYAQUIL (2 times)	KUMET (2)	2 (E1)
AMAZONICA (2 times)	BRASILIA (1 time)	OPTEN (1)	1 (E2)
	PILOT (1 time)	ILRIR (1)	1 (I)
ANTOFAGASTA (2 times)	LIMA (2 times)	ALDAX (2)	1 (E1) and 1 (E2)
MAIQUETIA (2 times)	AMAZONICA (2 times)	VUMPI (2)	2 (E1)
KINGSTON (1 time)	CENTRAL AMERICA (1 time)	DELVI (1)	1 (E2)

2.9. As Table 4 shows**,** the FIRs that most reported this failure were: GUAYAQUIL (58 times), PANAMA (21 times) and CENTRAL AMERICA (10 times). The most reported FIRs were: BOGOTÁ (49 times), CENTRAL AMÉRICA (15 times) and GUAYAQUIL (11 times).

2.10. It should be noted that the pair of FIR that was most involved in this type of situation was: GUAYAQUIL x BOGOTÁ (44 times). We could also observe that several reports made by the FIR GUAYAQUIL on 04/14/22, pointing out how the FIR LIMA had committed the coordination failures (8 times), these reports had to do with the activation of the ATS CONTINGENCY PLAN FOR FIR LIMA, according to AIP SUPPLEMENT 06/21 of 18 DEC 21 and thus, the failures were committed by the PILOTS. On 05/24/22, upon learning of these reports, the POC of FIR LIMA, informed CARSAMMA that on 04/14/22 the Severe Contingency Plan was activated in the FIR LIMA and through NOTAM informed that the coordination would be carried out by the pilots themselves before entering the FIR that would be flown.

Therefore, with all the evidence shown in Table 4, we suggest that BOGOTÁ's ATCOs do a recycling when it comes to operating the automatic transfer equipment(s).

2.11. **Table 5** shows all LHD reports in which traffic is coordinated in a specific time, and calls in a different that the coordinated(anticipated, more than 3 minutes).

Reports 2022	Reporting FIR	FIR that commits the fault	Position	Coordinated Time	Time crossed by TCP	Anticipated ___minutes
43	SANTO DOMINGO	PORT AU PRINCE	PIGBI	19:50	19:45	5
78	LA PAZ	AMAZONICA	AKVOR	23:56	23:44	12
85	SANTO DOMINGO	CURACAO	VESKA	15:16	15:02	14
93	PORT AU PRINCE	SANTO DOMINGO	OSIDU	09:45	09:15	30
100	SANTO DOMINGO	CURACAO	BEROX	15:03	14:51	12
104	CURACAO	SAN JUAN	SCAPA	21:42	21:34	8
129	PORT AU PRINCE	HAVANA	URLAM	15:33	15:28	5
130	SANTO DOMINGO	CURACAO	BEROX	22:02	21:56	6
137	SANTO DOMINGO	CURACAO	KARUM	18:47	18:40	7
151	PORT AU PRINCE	MIAMI	ALBEE	18:20	18:00	20
159	SANTO DOMINGO	PORT AU PRINCE	PIGBI	18:40	18:35	5
161	SANTO DOMINGO	CURACAO	VESKA	19:32	19:27	5
182	SANTO DOMINGO	PORT AU PRINCE	ETBOD	02:57	02:50	7
195	LA PAZ	LIMA	DOBNI	06:40	06:30	10
222	LA PAZ	AMAZONICA	RCO	05:58	05:27	31
287	SANTO DOMINGO	CURACAO	BEROX	20:52	20:43	9
292	PORT AU PRINCE	HAVANA	URLAM	17:34	16:34	60
296	PORT AU PRINCE	SANTO DOMINGO	ONPAD	17:04	16:04	60
306	ANTOFAGASTA	LIMA	IREMI	19:59	19:54	5
321	GUAYAQUIL	LIMA	PABOB	06:32	06:26	6
326	SANTO DOMINGO	PORT AU PRINCE	ONPAD	18:26	18:16	10
355	SANTO DOMINGO	PORT AU PRINCE	OSIDU	16:52	16:18	34
359	ANTOFAGASTA	CÓRDOBA	KONRI	13:52	13:42	10
360	MAIQUETIA	SAN JUAN	MILOK	18:04	17:52	12
384	PORT AU PRINCE	SANTO DOMINGO	PIGBI	14:44	13:45	59
454	ANTOFAGASTA	FILE	IREMI	22:53	20:53	120
465	SANTO DOMINGO	PORT AU PRINCE	PIGBI	17:46	17:11	35
500	SANTO DOMINGO	CURACAO	BEROX	17:17	17:05	12
512	BOGOTA	LIMA	ROLUS	04:23	04:16	7
528	SANTO DOMINGO	CURACAO	POKAK	19:07	19:03	4
537	LA PAZ	AMAZONICA	RCO	05:42	05:34	8
548	SANTO DOMINGO	PORT AU PRINCE	PIGBI	01:14	01:08	6
560	SANTO DOMINGO	PORT AU PRINCE	ETBOD	03:55	03:33	22

570	SANTO DOMINGO	PORT AU PRINCE	PIGBI	06:06	05:58	8
574	SANTO DOMINGO	PORT AU PRINCE	ETBOD	20:26	20:17	9
590	SANTO DOMINGO	PORT AU PRINCE	PIGBI	06:02	05:58	4
599	SANTO DOMINGO	CURACAO	VESKA	06:51	06:46	5
674	SANTO DOMINGO	CURACAO	POKAK	22:47	22:42	5
692	SANTO DOMINGO	PORT AU PRINCE	ETBOD	00:50	00:44	6
717	SANTO DOMINGO	PORT AU PRINCE	PIGBI	14:05	13:59	6
725	SANTO DOMINGO	CURACAO	BEROX	20:24	20:18	6
730	PORT AU PRINCE	SANTO DOMINGO	PIGBI	16:04	14:04	120
734	SANTO DOMINGO	CURACAO	BEROX	21:25	21:20	5
738	ANTOFAGASTA	LIMA	IREMI	08:28	07:28	60
758	SANTO DOMINGO	PORT AU PRINCE	PIGBI	22:09	22:02	7
771	SANTO DOMINGO	PORT AU PRINCE	PIGBI	22:09	22:02	7
797	SANTO DOMINGO	PORT AU PRINCE	PIGBI	18:07	18:01	6

2.12. In Table 5, the FIRs that reported most this type of failure were: SANTO DOMINGO (28 times) and the most reported FIRs were: PORT-AU-PRINCE (16 times) and CURAÇAO (12 times). The positions in which these failures occurred the most were: PIGBI (12 times) and BEROX (6 times).

The FIR pairs that had this type of failure the most were: SANTO DOMINGO x PORT AU PRINCE (20 times) and SANTO DOMINGO x CURACAO (12 times).

2.13. **Table 6** shows LHDs with coordination failure that the traffic is coordinated late, very close to the TCP. All of them are carried out with less than 3 minutes, or the coordination was not carried out and the pilot calls near the TCP, not complying with the LHD methodology.

Reports 2022	Reporting FIR	FIR that commits The Fault	Position	Time for Coordination	Time calling on TCP	Coordinate only with __ minutes
32	GUAYAQUIL	BOGOTÁ	BOKAN	23:18	23:19	1
45	GUAYAQUIL	LIMA	VAKUD	14:23	14:25	2
283	SANTO DOMINGO	CURACAO	PALAS	14:48	14:48	0
303	PANAMÁ	CENTRAL AMÉRICA	ANSON	14:38	14:32	-6
368	SANTO DOMINGO	PORT AU PRINCE	ETBOD	18:28	18:28	0
393	PORT AU PRINCE	SANTO DOMINGO	ONPAD	15:20	15:21	1
434	AMAZONICA	BRASILIA	OPTEN	19:11	19:11	0
509	MAIQUETIA	BOGOTÁ	KIKAS	22:55	22:56	1
603	LIMA	LA PAZ	ORALO	23:27	23:28	1
609	LIMA	LA PAZ	DOBNI	13:42	13:45	3
659	GUAYAQUIL	BOGOTÁ	PULTU	14:24	14:24	0
701	CURACAO	SANTO DOMINGO	VESKA	17:50	17:51	1

2.14. Above we can see that the FIR that most reported this type of failures were: GUAYAQUIL (3 times), SANTO DOMINGO and LIMA (2 times each). The most reported FIRs were: BOGOTÁ (3 times),

SANTO DOMINGO and LA PAZ (2 times each). The FIR that had this type of failure the most were: SANTO DOMINGO x CURAZAO, GUAYAQUIL x BOGOTÁ, PORT AU PRINCE x SANTO DOMINGO and LIMA x LA PAZ (2 times each).

2.15. In **Table 9**, the LHD reports had as a failure some type of poor coordination, as acceptance of traffic in conflict, control of them without adequate observation of the descents or ascents of the aircraft or information on turbulence that caused the activation of the "TCAS".

Reports 2022	FIR that Reports	FIR or WHO Commit the Fault	Position	1st ACFT	2nd ACFT
392	HAVANA	HAVANA	BILSI	CMP809 FL360 - MPTO/KJFK	ARG1305 ↗ 370 - KMIA/SAEZ
432	KINGSTON	HAVANA	NIBEO	AAL840 ↘290 - MUFH/MKJK	UAL727 FL340 - MPTO/MKJK
484	KINGSTON	PILOT	GCM	SLI655 FL360 - MDSD/MMMX	XBOYM ↗ ↘ ± 200 FT CAT

2.16. In report 392, the aircraft approached 10 NM, both south of BILSI, one at 25 NM and the other at 15 NM.

2.17. In report 432, aircraft approached 8.5 NM. AAL840 15 NM north of NIBEO, airway UM221 and UAL727 keeping FL340 on airway UM347.

2.18. In report 484, the aircraft approached less than 5 NM. The SLI655 near GCM maintains FL360 on the UL577 airway and the XBOYM which is varying by ± 200 feet, reports being in mild turbulence. The separation between them was 700 feet.

2.19. **Table 10** shows the LHD reports that did not comply with the coordination parameter since the accepting unit performs the descent or ascent of the transferred aircraft still in the FIR of the transferred unit.

Reports 202	Reporting FIR	FIR that commits the fault	Position	I was in the FL	FL who was instructed
91	AMAZÔNICA	LA PAZ	VILUX	350	↗ 370
271	CENTAL AMERICA	GUAYAQUI	LIXAS	350	↗ 370
357	AMAZONICA	BOGOTA	ARUXA	320	↗ 340
700	AMAZONICA	BRASILIA	MASVA	350	↗ 400

2.20. In **Table 11**, they had as a coordination failure the parameter that makes the accepting unit request that the aircraft to be transferred reach a level and the transferring unit does not comply with the request.

Reports 2022	Reporting FIR	FIR that commits the fault	Position	FL requested	FL calling
510	NEW YORK	PIARCO	BNJEE	300	320

754	BARRANQUILLA	PANAMA	AGUJA	340	330

2.21. **Table 12** shows the LHD reports that show that the traffic transferred to the accepting unit is different, different from the real one. The transferred unit transfers to the accepting unit a different flight, often because it has a similar callsign or number, and the error it is not identified.

Account 2022	Reporting FIR	FIR that commits the fault	Flight number or coordinated registration	Flight number or calling registration
65	AMAZONICA	BOGOTA	LAE1833	LCO1103
544	SAN JUAN	MAIQUETIA	TFL352	JRC522

NOTE 1: In the case of # 65, the FIR BOGOTÁ coordinates with the FIR AMAZONICA the LAE1833 for entry into the FIR SBAZ for 00:12, but the PLN does not arrive. The plane he named SBAZ was LCO1103 at 01:12.

NOTE 2: In the case of # 544, the FIR MAIQUETIA coordinates with the FIR SAN JUAN the TFL352 - TNCC/EHAM - MILOK 20:36 - FL350, but the traffic that called was the JRC522 at the same level and position.

3. Suggested actions

3.1. The meeting is invited to:

a) Take note of the information of this working paper:

b) Recognize the assessments and terms presented in this document and that States are willing to use the information as a reference for the mitigation of their LHD reports; and

c) submit this decision to the members of the AWG for their knowledge and approval.

— END —