



CAR/SAM Planning and Implementation Regional Group (GREPECAS)  
**Nineteenth Scrutiny Working Group Meeting**  
Barranquilla, Colombia, 18 to 22 November 2019

**Agenda Item 3: Review of the results of the analysis of Large Height Deviations (LHDs)**

**IDENTIFICATION OF TRENDS**

(Presented by CARSAMMA)

<b>SUMMARY</b>	
This working paper presents a summary of the trends observed in some large height deviations (LHDs) received by CARSAMMA, such as: the aircraft passes the transfer of control point (TCP) still climbing or descending; the aircraft calls from a point other than that coordinated; the ATS does not properly readback the level, point or time of transfer and the transferring ATS does not perceive the error; lack of re-coordination when the aircraft gets ahead of the coordinated estimate; transfer failures due to technical problems in the equipment.	
<b>References:</b>	
<ul style="list-style-type: none"><li>• GTE methodology</li><li>• 2018 and 2019 (first semester) large height deviation (LHD) report.</li></ul>	
<b>ICAO strategic objectives:</b>	<ul style="list-style-type: none"><li>• Safety</li></ul>

**1. Background**

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 LHDs and presenting them to the GTE and at the teleconferences for their validation, in order to extract information to be used for the qualitative (SMS/SGSO) and quantitative (CRM) risk calculation methods.

1.2. The objective of this work is to provide further information to allow experts to observe and analyse LHD reports of 2018 and the first half of 2019 (until June) received by CARSAMMA, to avoid repetition of errors, mainly in the specified points, and for the experts of the FIRs involved to take the relevant mitigation measures.

**2. Analysis**

2.1. Some LHD reports in the first and second semester (underlined) of 2018 and the first semester of **2019** (in bold) showed a coordination error in the flight level: traffic was still climbing or descending and not on the coordinated level when the call was made to air traffic control.

2.2. **Table 1** shows all LHD reports showing this condition: traffic is coordinated at one level and call is made while climbing or descending.

2018 reports	Reporting FIR	FIR committing error	Position
29	Bogotá	Guayaquil	BOKAN
41	Panama	Bogotá	DAKMO
114	Recife	Curitiba	IRUXI
122	Santo Domingo	Miami	SEKAR
190	Córdoba	Ezeiza	MJZ
307	Curitiba	Montevideo	AKPOD
355	Bogotá	Guayaquil	ENSOL
379	Bogotá	Panama	DAKMO
406	Bogotá	Guayaquil	ENSOL
<u>505</u>	New York	Piarco	BNJEE
<u>569</u>	Curacao	Santo Domingo	POKAK
<u>585</u>	Panama	Bogotá	BUXOS
<u>706</u>	Maiquetia	Barranquilla	URIBI
<u>872</u>	Santo Domingo	Curacao	VESKA
<u>898</u>	Curacao	Barranquilla	AMBAS
-	-	-	-
2019 Reports	Reporting FIR	FIR Committing Error	Position
153	Santo Domingo	San Juan	KATOK
198	Barranquilla	Curacao	AMBAS
207	Barranquilla	Curacao	AMBAS
327	Bogotá	Panama	DAKMO
362	Bogotá	Guayaquil	TCO
372	Kingston	Curacao	TARBA
413	Santo Domingo	Curacao	VESKA
<u>529</u>	Bogotá	Maiquetia	40 NM "S" ENPUT
<u>537</u>	Bogotá	Guayaquil	30 NM "N" BOKAN
<u>586</u>	Central America	Guayaquil	50 NM "N" LIXAS
<u>604</u>	Bogotá	Panama	30 NM "S" DAKMO
650	Santo Domingo	Curacao	VESKA
675	Santo Domingo	Curacao	KARUM

**Table 1 - LHD reports of transfers made at one level, and traffic calling while climbing or descending**

2.3. As shown in **Table 1**, the FIR that had the largest number of reports in 2018 was Bogota (4 times), followed by Curacao, Panama and Santo Domingo (twice, each). The most reported FIR was Guayaquil (3 times), followed by Bogota and Barranquilla (twice, each). The points where more reports were made were DAKMO and ENSOL (twice, each). The FIRs that reported this error the most in the **first semester** of 2019 were Bogota (5 times), then, Santo Domingo (4 times) and Barranquilla (twice). The most reported FIRs were Curacao (6 times) and Guayaquil (3 times). Point AMBAS was the most reported (twice), although DAKMO and VESKA deserve special attention since they also appear as points previously reported in 2018. It can also be noted that the Bogota-Guayaquil and Bogota-Panama pairs of FIRs show coordination failures both in 2018 and during the **first semester** of 2019; therefore, greater attention should be given by the FIRs having traffic passing by/crossing over DAKMO, AMBAS, BOKAN and VESKA reporting points.

**NOTE:** If you refer to Reports 529, 537, 586 and 604 pertaining to the **first semester** of 2019, the reporting FIRs issued the reports because the climbing or descending traffic failed to coordinate while they were still in their FIRs.

2.4. Some LHD reports in the first and second semester (underlined) of 2018, and the first semester of **2019** (in bold) showed as coordination error a point other than that coordinated; *i.e.*, the aircraft is flying on a given airway, and changes airway or deviates from the route without the change being coordinated with the adjacent FIR.

2.5. **Table 2** shows all LHD reports that fall under this condition, where traffic has been coordinated at a point and calls from a different one.

2018 Reports	Reporting FIR	FIR Committing Error	Coordinated Position	Position from where the aircraft calls
03	San Juan	Piarco	ELOPO	"NE" ELOPO
13	Lima	Antofagasta	SORTA	IREMI
28	Bogotá	Panama	TOKUT	BUXOS
31	Santo Domingo	Port-au-Prince	ETBOD	OSIDU
143	Antofagasta	Lima	IREMI	SORTA
204	San Juan	Piarco	MODUX	ILURI
212	Santo Domingo	Curacao	PALAS	VESKA
227	Amazonica	Lima	POSKA	OSORA
232	Asunción	La Paz	VME	MONDI
286	Lima	Guayaquil	ARNEL	VAKUD
325	Asunción	La Paz	SIDAK	"W" SIDAK
347	Curacao	Santo Domingo	PALAS	BEROX
358	Bogotá	Lima	PLG	ROLUS
367	Antofagasta	Córdoba	GEKAL	20 NM "W" GEKAL
368	Santo Domingo	Curacao	VESKA	KISAS
388	Curitiba	Resistencia	ARULA	118 NM "NE" ARULA (ILPEP)
400	Central America	Bogotá	FALLA	BOLDO
<u>465</u>	Santo Domingo	Port-au-Prince	ETBOD	OSIDU
<u>526</u>	Lima	Bogotá	ASAPA	PUPAS
<u>544</u>	Guayaquil	Central America	UGADI	ARTOM
<u>545</u>	Central America	Panama	FALLA	PAPIN
<u>575</u>	Santo Domingo	Curacao	SCAPA	ABM POKAK
<u>576</u>	Santo Domingo	Curacao	POKAK	IRGUT
<u>620</u>	Santo Domingo	Curacao	PALAS	ABM KISAS
<u>643</u>	Resistencia	Montevideo	KORTA	MCS
<u>651</u>	Santo Domingo	Port-au-Prince	PIGBI	ABM OSIDU
<u>653</u>	Lima	Antofagasta	IREMI	SORTA
<u>705</u>	Santo Domingo	Curacao	BEROX	IRGUT
<u>756</u>	Santo Domingo	Port-au-Prince	ONPAD	"N" ONPAD
<u>794</u>	La Paz	Amazonica	RCO	KILEV
<u>795</u>	Curacao	Santo Domingo	KISAS	VESKA
<u>887</u>	Asunción	La Paz	SIDAK	REMEK
<u>901</u>	Montevideo	Resistencia	SEKLO	MCS

2018 Reports	Reporting FIR	FIR Committing Error	Coordinated Position	Position from where the aircraft calls
-	-	-	-	-
2019 Reports	Reporting FIR	FIR Committing Error	Coordinated Position	Position from where the aircraft calls
63	Córdoba	La Paz	PUBUM	40 NM "W" PUBUM
67	Bogotá	Amazonica	ARUXA	LET
99	Curitiba	Amazonica	TOSAR	40 NM "E" TOSAR
127	Lima	La Paz	RAXUN	OPTOP
146	Santo Domingo	Curacao	VESKA	IRGUT
163	Curitiba	Brasilia	STN	SAT / 46 NM LEJO DE LA RUTA
182	Córdoba	La Paz	PUBUM	50 NM "W" PUBUM
239	Lima	La Paz	ALBEG	RDL220 PDO 65 MN / 115 NM "W" ALBEG
263	Lima	Antofagasta	IREMI	"N" ASEPU
280	Lima	Antofagasta	SORTA	IREMI
297	Panama	Barranquilla	ESEDA	BOGAL
349	Maiquetia	Amazonica	AKPEP	EKUNA
357	Guayaquil	Bogotá	BOKAN	50 NM AL "W" BOKAN / ENSOL
363	Bogotá	Guayaquil	PLG	PULTU
447	Maiquetia	Barranquilla	¿	ORTIZ
463	Lima	La Paz	RAXUN	42 MN RDL 284 JUL / 116 NM "W" RAXUN
485	La Paz	Asunción	ESELA	LATERAL MOMDI / 50 NM "N" ESELA
530	Curitiba	La Paz	CUB	195126S 0585111W / 84 NM "SW" CUB
532	Guayaquil	Bogotá	LIXAS	ENSOL
556	Asunción	La Paz	ESELA	50 NM "S" OROMU
560	Guayaquil	Bogotá	UGUPI	30 NM "W" UGUPI
567	Guayaquil	Bogotá	BOKAN	"N" ENSOL / TCO
611	Santo Domingo	Port-au-Prince	ETBOD	20 NM "S" ETBOD
613	Santo Domingo	Port-au-Prince	ONPAD	OSIDU
622	Santo Domingo	Port-au-Prince	PIGBI	85 NM "N" PIGBI / 27 NM "N" ETBOD
623	Santo Domingo	Port-au-Prince	PIGBI	ETBOD
666	Santo Domingo	Port-au-Prince	ONPAD	25 NM "S" ONPAD

**Table 2 – LHD reports of transfers made at one point and aircraft called from another**

2.6. As shown in **Table 2**, the FIRs that reported the most in 2018 were: Santo Domingo (10 times), followed by Lima (4 times) and Asuncion (3 times). The most reported FIRs were: Curacao (6 times), followed by Port-au-Prince (4 times), La Paz and Lima (3 times, each). Other FIRs such as Panama, Bogota and Antofagasta were reported twice, each. The most reported points were PALAS (3 times) changed for BEROX, VESKA and ABM POKAK; then IREMI (twice) changed for SORTA; SIDAK (2 times) changed for REMEK; and one point more to the "W"; FALLA (twice) changed for BOLDO and PAPIN; and ETBOD (twice) changed for OSIDU. During the **first semester** of 2019, the most reported FIRs were: Santo Domingo (6 times), followed by Lima (5 times) and Guayaquil (4 times). Other FIRs such as:

Bogotá, Córdoba and Curitiba (twice, each). The most reported FIRs were: La Paz (7 times), Port-au-Prince (5 times), Bogotá (4 times), Amazonica (3 times) and Antofagasta (twice). The most reported points were BOKAN (twice) changed for ENSOL and “N” ENSOL, followed by ESELA (twice) changed for 50 NM “S” OROMU and 50 NM “N” ESELA; ONPAD (2 twice) changed for OSIDU and 25 NM “S” ONPAD; PIGBI (twice) changed for 27 NM “N” ETBOD and ETBOD; PUBUM (twice) changed for 40 and 50 NM “W” PUBUM; and RAXUN (twice) changed for OPTOP and 116 NM “W” RAXUN. There were points such as ETBOD, IREMI, ONPAD, PIGBI, SORTA and VESKA that had been previously reported in 2018 and appeared again in 2019.

Remarks on these types of errors:

- 1 - The aircraft calls from a location far from the fix due to weather deviation, probably not reported by the pilots, or unknown to the ATCO.
- 2 - As to the La Paz FIR, errors should be attributed to the pilots since the FIR relies on their information to make the corresponding changes and/or re-coordinate the fix due to weather deviation. But even knowing that a coordination error has occurred, as reported by the adjacent FIR, La Paz does not report the errors of the pilots.

2.7. Some LHD reports show that the coordination error was a misunderstanding of the flight level, the flight number, the fix, or the time, where the readback was done with the wrong information, and the transferring ATS unit did not notice the error. During the first and second semester (underlined) of 2018, this type of error was identified; however, during the first semester of **2019** (in bold), some events were identified as shown below.

2.8. **Table 3** shows all LHD reports that fall under this condition: traffic is coordinated at a certain flight level and is mistakenly annotated by the adjacent FIR. The flight number, the fix or the time, can also be erroneously annotated and, therefore, be the cause of an LHD report.

2018 Reports	Reporting FIR	FIR Committing Error	Coordinated time, fix, FIR, level or flight	Annotated time, fix, FIR, level or flight
392	Panama	Central America	FL 370	FL 350
<u>495</u>	Guayaquil	Bogotá	03:26	03:36
<u>782</u>	Georgetown	Piarco	BWA483	BWA883
<u>806</u>	Santo Domingo	San Juan	FL 300	FL 200
<u>876</u>	Bogotá	Panama	AMX798	AMX708
<u>925</u>	Paramaribo	Piarco	FIR Cayenne	
<u>967</u>	Santo Domingo	Curacao	FL 340	400
2019 Reports	Reporting FIR	FIR Committing Error	Coordinated time, fix, FIR, level or flight	Annotated time, fix, FIR, level or flight
<b>407</b>	Santo Domingo	Port-au-Prince	16:49	16:19
<b>601</b>	La Paz	Amazonica	CMP244	Data from ARG1361
<b>682</b>	Central America	Guayaquil	FL 360	FL 320

**Table 3 - LHD reports of transfers made with misunderstandings**

2.9. As may be seen in **Table 3**, there are FIRs in 2018 that still do not realise that the ATCO of the adjacent FIR collates. The Piarco FIR twice gives the correct transfer, but does not understand that the ATCO of the accepting FIR speaks/collates another flight number or sends the traffic to another FIR. The one that reported the most errors was the FIR Santo Domingo (twice). In 2019, **first semester**, we only have 3 reports so far, but Santo Domingo has one already.

2.10. Some LHD reports in the first and second semester (underlined) of 2018 and the **first semester** of 2019 (in bold) showed as coordination error that related to technical problems with the equipment used for the transfer (**AMHS** = ATS MESSAGE HANDLING SYSTEM or **AIDC** = ATS INTER-FACILITY DATA COMMUNICATION); *i.e.*, traffic called from a flight level other than that coordinated, or was not coordinated at all.

2.11. **Table 4** shows all LHD reports that fall under this type of condition: traffic being coordinated at one level and calling from another, or was not coordinated.

2018 Reports	Reporting FIR	FIR Committing Error	Position
197	Havana	Central America	FUNKO
303	Guayaquil	Lima	VAKUD
304	Lima	Guayaquil	ARNEL
305	Lima	Guayaquil	VAKUD
338	Lima	Guayaquil	VAKUD
339	Lima	Guayaquil	VAKUD
<u>443</u>	Lima	Guayaquil	ARNEL
<u>524</u>	Lima	Bogotá	PLG
<u>540</u>	Lima	Guayaquil	TERAS
<u>542</u>	Panama	Bogotá	ARORO
<u>548</u>	Lima	Bogotá	PLG
<u>550</u>	Lima	Guayaquil	EVLIM
<u>556</u>	Lima	Bogotá	PLG
<u>561</u>	Lima	Guayaquil	EVLIM
<u>562</u>	Lima	Guayaquil	VAKUD
<u>565</u>	Lima	Bogotá	PLG
<u>572</u>	Lima	Bogotá	PLG
<u>573</u>	Guayaquil	Bogotá	ENSOL
<u>574</u>	Lima	Bogotá	PLG
<u>579</u>	Lima	Guayaquil	ARNEL
<u>587</u>	Guayaquil	Bogotá	BOKAN
<u>599</u>	Guayaquil	Bogotá	UGUPI
<u>600</u>	Lima	Bogotá	PLG
<u>611</u>	Guayaquil	Bogotá	BOLOM
<u>612</u>	Guayaquil	Lima	ARNEL
<u>613</u>	Lima	Bogotá	PLG
<u>614</u>	Lima	Bogotá	PLG
<u>631</u>	Guayaquil	Lima	EVLIM
<u>632</u>	Guayaquil	Bogotá	ANGEL
<u>633</u>	Lima	Bogotá	PLG
<u>676</u>	Lima	Bogotá	PLG
<u>679</u>	Lima	Bogotá	PLG
<u>704</u>	Lima	Antofagasta	ALDAX
<u>707</u>	Guayaquil	Bogotá	UGUPI
<u>711</u>	Lima	Bogotá	PLG
<u>718</u>	Guayaquil	Bogotá	BOKAN
<u>721</u>	Guayaquil	Bogotá	BOKAN

2018 Reports	Reporting FIR	FIR Committing Error	Position
<u>730</u>	Guayaquil	Lima	ARNEL
<u>733</u>	Lima	Bogotá	PLG
<u>736</u>	Lima	Bogotá	PLG
<u>748</u>	Lima	Bogotá	PLG
<u>755</u>	Lima	Bogotá	PLG
<u>771</u>	Lima	Bogotá	PLG
<u>783</u>	Lima	Bogotá	PLG
<u>787</u>	Guayaquil	Bogotá	ANRAX
<u>797</u>	Guayaquil	Bogotá	BOKAN
<u>805</u>	Lima	Bogotá	PLG
<u>816</u>	Guayaquil	Bogotá	UGUPI
<u>817</u>	Lima	Bogotá	PLG
<u>824</u>	Antofagasta	Lima	ALDAX
<u>874</u>	Guayaquil	Bogotá	ANRAX
<u>909</u>	Lima	Bogotá	PLG
<u>920</u>	Guayaquil	Bogotá	ENSOL
<u>936</u>	Lima	Bogotá	PLG
<u>937</u>	Lima	Bogotá	PLG
<u>939</u>	Lima	Bogotá	PLG
<u>942</u>	Lima	Bogotá	PLG
<u>949</u>	Lima	Bogotá	PLG
<u>950</u>	Lima	Bogotá	PLG
<u>970</u>	Guayaquil	Bogotá	UGUPI
2019 Reports	Reporting FIR	FIR Committing Error	Position
<b>1</b>	Central America	Panama	FALLA
<b>27</b>	Guayaquil	Lima	LOBOT
<b>30</b>	Maiquetia	Barranquilla	SIDOS
<b>43</b>	Guayaquil	Lima	TOSES
<b>50</b>	Guayaquil	Lima	ARNEL
<b>51</b>	Guayaquil	Central America	ARTOM
<b>66</b>	Bogotá	Guayaquil	UGUPI
<b>100</b>	Bogotá	Guayaquil	UGUPI
<b>101</b>	Bogotá	Guayaquil	PULTU
<b>102</b>	Bogotá	Guayaquil	BOKAN
<b>103</b>	Bogotá	Guayaquil	BOKAN
<b>143</b>	Bogotá	Guayaquil	UGUPI
<b>147</b>	Bogotá	Guayaquil	UGUPI
<b>163</b>	Curitiba	Brasilia	SAT
<b>180</b>	Bogotá	Guayaquil	BOKAN
<b>183</b>	Maiquetia	Barranquilla	SIDOS
<b>191</b>	Guayaquil	Bogotá	PULTU
<b>194</b>	Guayaquil	Lima	PABOB
<b>195</b>	Guayaquil	Lima	VAKUD

2019 Reports	Reporting FIR	FIR Committing Error	Position
199	Antofagasta	Lima	ALDAX
230	Guayaquil	Bogotá	BOKAN
240	Guayaquil	Bogotá	PULTU
244	Guayaquil	Lima	VAKUD
271	Antofagasta	Lima	ALDAX
277	Guayaquil	Lima	VAKUD
290	Guayaquil	Bogotá	ENSOL
293	Guayaquil	Bogotá	UGUPI
295	Guayaquil	Bogotá	BOKAN
310	Guayaquil	Lima	VAKUD
312	Guayaquil	Central America	OSELO
313	Guayaquil	Central America	UGADI
316	Guayaquil	Bogotá	BOKAN
319	Guayaquil	Lima	VAKUD
328	Lima	Guayaquil	VAKUD
339	Guayaquil	Bogotá	BOKAN
353	Guayaquil	Lima	VAKUD
362	Bogotá	Guayaquil	TCO
369	Guayaquil	Bogotá	BOKAN
383	Mérida	Central America	TAP
385	Guayaquil	Central America	UGADI
416	Guayaquil	Bogotá	UGUPI
424	Guayaquil	Bogotá	UGUPI
425	Guayaquil	Lima	TERAS
428	Guayaquil	Bogotá	UGUPI
491	Guayaquil	Bogotá	UGUPI
498	Lima	Guayaquil	TERAS
510	Guayaquil	Bogotá	UGUPI
519	Guayaquil	Bogotá	PULTU
531	Guayaquil	Bogotá	BOKAN
548	Guayaquil	Bogotá	BOKAN
569	Guayaquil	Bogotá	UGUPI
573	Guayaquil	Bogotá	UGUPI
576	Guayaquil	Bogotá	UGUPI
578	Guayaquil	Lima	VAKUD
596	Guayaquil	Lima	VAKUD
605	Guayaquil	Bogotá	UGUPI
626	Guayaquil	Bogotá	PULTU
636	Guayaquil	Bogotá	BOKAN
672	Guayaquil	Bogotá	BOKAN

2019 Reports	Reporting FIR	FIR Committing Error	Position
673	Guayaquil	Bogotá	BOKAN
674	Guayaquil	Bogotá	PULTU
676	Guayaquil	Lima	VAKUD
686	Guayaquil	Bogotá	ENSOL
687	Guayaquil	Bogotá	ENSOL

*Table 4 – LHD reports where traffic is coordinated via AIDC and AMHS at one level and calls from another*

2.12. As may be seen in **Table 4**, the FIRs that most reported in 2018 were: Lima (39 times), followed by Guayaquil (18 times). The most frequently reported FIR were: Bogota (42 times) followed by Guayaquil (10 times) and Lima (5 times). The most frequently reported points were PLG (28 times), ARNEL and VAKUD (5 times, each), BOKAN and UGUPI (4 times, each), EVLIM (3 times) and ALDAX, ANRAX and ENSOL (twice, each). During the **first semester** of 2019, the FIR that most reported this event was Guayaquil (46 times), followed by Bogota (9 times) and Antofagasta and Maiquetia (twice, each). The most reported FIR with this error was Bogotá (28 times), followed by Lima (14 times), Guayaquil (11 times) and Central America (5 times). The most reported points in 2019 were: UGUPI (14 times), BOKAN (13 times), VAKUD (10 times), PULTU (6 times), ENSOL (3 times) and ALDAX, SIDOS, TERAS and UGADI (twice, each).

**NOTE:** More attention should be paid to the message exchange system when positions VAKUD, UGUPI and BOKAN are involved, since these points have been many times reported during this first semester of 2019.

2.13. Some LHD reports in the first and second semester (underlined) of 2018 and in the **first semester** of 2019 (in bold), showed as coordination error the parameter related with re-coordination, as the traffic is coordinated at a certain time, but gets well ahead of time.

2.14. **Table 5** shows all LHD reports that fall under this type of situation: traffic is coordinated at a certain time, and call is made ahead of time.

2018 Reports	Reporting FIR	FIR Committing Error	Position	Coordinated Hour	Time of Call	In advance - minutes
1	Kingston	Curacao	DIBOK	15:37	15:28	9
7	San Juan	Piarco	LAMKN	23:16	22:36	40
34	Antofagasta	Lima	IREMI	19:09	19:00	9
43	Antofagasta	Lima	IREMI	15:25	15:15	10
85	Curacao	Barranquilla	OROSA	18:54	17:52	62
86	Curacao	Barranquilla	OROSA	18:16	18:10	6
87	Curacao	Barranquilla	OROSA	18:27	18:17	10
120	Port-au-Prince	Kingston	BENET	05:52	04:52	60
137	Bogotá	Guayaquil	ANGEL	21:15	20:49	26
146	Curacao	Santo Domingo	IRGUT	15:01	14:51	10
152	Curacao	Barranquilla	OROSA	14:57	13:58	59
155	Guayaquil	Bogotá	ENSOL	22:08	22:01	7
161	Lima	Guayaquil	EVLIM	23:13	22:13	60
163	Curacao	Barranquilla	OROSA	18:28	18:19	9
219	Curacao	Barranquilla	OROSA	18:17	18:04	13
221	Guayaquil	Bogotá	UGUPI	23:18	23:11	7

2018 Reports	Reporting FIR	FIR Committing Error	Position	Coordinated Hour	Time of Call	In advance - minutes
240	Curacao	Santo Domingo	IRGUT	17:19	16:52	27
263	Santo Domingo	Port-au-Prince	OSIDU	01:33	01:23	10
272	Curacao	Kingston	DIBOK	22:10	21:45	25
282	Curacao	Kingston	AMBIN	22:27	22:21	6
308	Lima	La Paz	ORALO	12:36	12:31	5
311	Resistencia	Córdoba	SIKOB	20:25	19:08	77
312	Resistencia	Córdoba	TIKLA	20:07	19:10	57
318	Guayaquil	Bogotá	BOKAN	14:31	14:20	11
323	Guayaquil	Central America	UGADI	16:52	16:46	6
326	Santo Domingo	Port-au-Prince	DCR	12:40	12:33	7
335	Santo Domingo	Port-au-Prince	ETBOD	22:19	22:14	5
356	Curacao	Port-au-Prince	LENOM	07:42	06:41	61
375	Bogotá	Guayaquil	UGUPI	16:40	15:37	63
382	Santo Domingo	Port-au-Prince	DCR	18:38	18:32	6
410	Santo Domingo	Curacao	POKAK	20:29	20:23	6
415	Santo Domingo	Curacao	VESKA	03:43	02:42	61
418	Curacao	Barranquilla	OROSA	16:08	15:57	11
419	Guayaquil	Bogotá	BOKAN	06:17	06:01	16
441	Santo Domingo	Curacao	IRGUT	05:48	05:40	8
447	Antofagasta	Lima	SORTA	09:44	08:45	59
449	Santo Domingo	Curacao	VESKA	14:05	13:50	15
453	Santo Domingo	Port-au-Prince	PIGBI	04:18	04:08	10
457	Guayaquil	Bogotá	BOKAN	22:31	22:20	11
467	Central America	Guayaquil	LIXAS	10:10	09:23	47
472	Santo Domingo	Port-au-Prince	PIGBI	18:35	18:23	12
482	Santo Domingo	Port-au-Prince	DCR	14:51	14:44	7
490	Santo Domingo	Curacao	VESKA	20:13	20:07	6
510	Santo Domingo	Port-au-Prince	PIGBI	01:26	01:16	10
514	Curacao	Barranquilla	OROSA	00:30	00:13	17
554	Guayaquil	Bogotá	UGUPI	01:43	01:37	6
593	Santo Domingo	Curacao	VESKA	00:10	23:57	13
621	Antofagasta	Lima	IREMI	01:09	01:02	7
626	Curacao	Santo Domingo	BEROX	01:48	01:38	10
637	Curacao	Maiquetia	ACORA	21:59	21:53	6
646	Lima	Amazonica	ILNAM	15:06	14:58	8
674	Antofagasta	Lima	IREMI	08:03	07:57	6
677	Lima	Guayaquil	ARNEL	23:16	22:58	18
686	Curacao	Santo Domingo	VESKA	21:30	20:30	60
692	Asunción	La Paz	OROMU	10:20	10:12	8
741	Panama	Bogotá	BUXOS	21:37	21:23	14
749	Amazonica	Maiquetia	PAKON	02:10	01:23	13
760	Curacao	Barranquilla	OROSA	21:49	21:41	8
770	Curacao	Kingston	TARBA	18:36	18:25	11
773	Santo Domingo	Port-au-Prince	PIGBI	21:30	20:30	60
780	Guayaquil	Bogotá	ENSOL	21:57	21:37	20
829	Curacao	Barranquilla	AMBAS	13:28	12:29	59

2018 Reports	Reporting FIR	FIR Committing Error	Position	Coordinated Hour	Time of Call	In advance - minutes
<u>837</u>	Antofagasta	Lima	IREMI	08:11	08:05	6
<u>861</u>	Amazonica	Paramaribo	SIROS	07:49	07:33	6
<u>882</u>	Maiquetia	Amazonica	VUMPI	05:35	04:35	60
<u>883</u>	Maiquetia	Amazonica	VUMPI	05:56	04:56	60
<u>902</u>	Maiquetia	Amazonica	VUMPI	04:48	04:40	8
<u>929</u>	Santo Domingo	Curacao	BEROX	22:22	22:13	8
<u>932</u>	Santo Domingo	Port-au-Prince	PIGBI	16:56	16:50	6
<u>963</u>	Resistencia	Ezeiza	KORTA	20:42	20:25	17
<u>971</u>	Antofagasta	Lima	SORTA	19:29	19:17	12
-	-	-	-	-	-	-
2019 Reports	Reporting FIR	FIR Committing Error	Position	Coordinated Hour	Time of Call	In advance - minutes
<b>14</b>	Santo Domingo	Curacao	BEROX	14:05	13:34	31
<b>17</b>	Santo Domingo	Port-au-Prince	ETBOD	19:12	19:02	10
<b>20</b>	New York	Piarco	DRDGE	22:26	22:06	20
<b>22</b>	Bogotá	Guayaquil	PULTU	07:40	07:20	20
<b>53</b>	Córdoba	La Paz	PUBUM	21:10	20:10	60
<b>68</b>	Bogotá	Amazonica	ARUXA	05:48	05:32	16
<b>82</b>	Curacao	Barranquilla	SELAN	18:50	18:43	7
<b>88</b>	Lima	Amazonica	LIMPO	08:38	08:27	11
<b>91</b>	Curacao	Barranquilla	OROSA	18:23	18:16	7
<b>97</b>	Santo Domingo	Curacao	VESKA	21:22	21:11	11
<b>126</b>	Curacao	Barranquilla	OROSA	17:56	17:42	14
<b>129</b>	Lima	Bogotá	ROLUS	04:16	03:56	10
<b>134</b>	Resistencia	Córdoba	SIKOB	18:00	17:53	7
<b>154</b>	Mérida	Central America	NOTOS	00:35	00:28	7
<b>156</b>	Santo Domingo	Port-au-Prince	DCR	19:55	19:47	8
<b>161</b>	Curacao	Barranquilla	SELAN	18:33	18:27	6
<b>162</b>	Santo Domingo	Curacao	PALAS	14:46	14:41	5
<b>170</b>	Resistencia	Córdoba	SIKOB	21:56	20:56	60
<b>178</b>	Curacao	Santo Domingo	PALAS	20:30	20:21	9
<b>190</b>	Santo Domingo	Curacao	VESKA	01:14	01:06	8
<b>204</b>	Santo Domingo	Port-au-Prince	ETBOD	03:54	03:36	18
<b>223</b>	Santo Domingo	Curacao	VESKA	20:01	19:47	14
<b>226</b>	Lima	La Paz	DOBNI	10:12	09:59	13
<b>233</b>	Bogotá	Panama	TOKUT	00:40	00:34	6
<b>234</b>	Bogotá	Panama	BUXOS	00:36	00:27	9
<b>238</b>	Santo Domingo	Port-au-Prince	PIGBI	21:02	20:57	5
<b>259</b>	Antofagasta	Lima	IREMI	16:40	15:40	60
<b>284</b>	Santo Domingo	Curacao	DCR	18:41	18:35	6
<b>287</b>	La Paz	Curitiba	CUB	15:24	14:25	59

2019 Reports	Reporting FIR	FIR Committing Error	Position	Coordinated Hour	Time of Call	In advance - minutes
305	Resistencia	Ezeiza	KORTA	15:58	14:55	63
320	Lima	La Paz	ELAKO	14:15	14:09	6
323	Bogotá	Amazonica	ARUXA	16:28	16:23	5
324	Bogotá	Amazonica	ARUXA	16:32	16:24	8
338	Lima	La Paz	DOBNI	13:03	12:02	61
358	Resistencia	Ezeiza	KORTA	01:43	01:29	14
361	Maiquetia	Amazonica	VAGAN	13:26	13:10	16
381	Santo Domingo	Port-au-Prince	DCR	20:26	20:21	5
389	Santo Domingo	Port-au-Prince	ETBOD	14:54	14:48	6
402	Antofagasta	Lima	IREMI	16:36	15:37	59
410	Resistencia	Ezeiza	RIOKA	21:13	21:04	9
411	Lima	Antofagasta	IREMI	02:15	02:07	8
430	Santo Domingo	Port-au-Prince	PIGBI	22:31	21:31	60
432	Antofagasta	Lima	IREMI	07:24	06:55	29
480	La Paz	Lima	ORALO	06:37	05:33	64
490	Resistencia	Ezeiza	KORTA	02:23	02:09	14
502	Santo Domingo	Port-au-Prince	DCR	18:32	17:43	59
514	Lima	La Paz	ELAKO	12:22	12:11	11
528	Bogotá	Maiquetia	ENPUT	19:58	19:41	17
553	Lima	La Paz	DOBNI	12:42	11:31	11
594	Curacao	Barranquilla	AMBAS	18:45	18:37	8
600	La Paz	Amazonica	RCO	06:23	06:08	15
608	Curacao	Barranquilla	AMBAS	13:44	13:38	6
622	Santo Domingo	Port-au-Prince	1858N 07153W	00:34	00:27	7
623	Santo Domingo	Port-au-Prince	ETBOD	02:06	02:00	6
640	Lima	Bogotá	ROLUS	22:27	22:22	5
641	Resistencia	Ezeiza	KORTA	01:46	01:32	14
651	Maiquetia	Amazonica	VAGAN	07:53	07:03	50
657	Santo Domingo	Port-au-Prince	ETBOD	21:00	20:54	6
671	Santo Domingo	Port-au-Prince	PIGBI	23:09	23:03	6
678	Guayaquil	Bogotá	ENSOL	03:24	03:17	7
681	Curacao	Barranquilla	OROSA	23:30	23:16	14

*Table 5 – LHD reports where transfers were made at one time and called at another (in advance)*

2.15. As seen in **Table 5**, the FIRs that most reported this type of error in 2018 were: Curacao (19 times), Santo Domingo (17 times), Guayaquil (8 times), Antofagasta (7 times), Lima (4 times), Maiquetia and Resistencia (3 times, each) and Amazonica and Bogotá (twice, each). The most reported were: Port-au-Prince (23 times), Barranquilla (17 times), Curacao (14 times), Lima, Bogotá and Amazonica (11 times, each). The positions/points where re-estimation errors occurred were: OROSA (9 times), IREMI, PIGBI y VESKA (5 times, each). During the **first semester** of 2019, the FIRs that most reported this occurrence were: Santo Domingo (18 times), Lima (9 times), Curacao (8 times), Bogotá and Resistencia

(7 times, each). The most reported FIRs with this error were: Port-au-Prince (12 times), Barranquilla (7 times), La Paz and Curacao (6 times, each) and Amazonica and Ezeiza (5 times, each). The positions/points where this re-estimation error occurred in 2019 were: ETBOD (5 times), DCR, REMI and KORTA (4 times, each), ARUXA, DOBNI, OROSA, PIGBI and VESKA (3 times, each). As to the minutes in advance that they occurred in 2018, consideration was given only to those that occurred over 30 minutes in advance: #311 (77 minutes), #375 (63 minutes), #85 (62 minutes), #356 and #415 (61 minutes), #120, #161, #686, #773, #882 and #883 (60 minutes each), #152, #447 and 829 (59 minutes each), #312 (57 minutes), #467 (47 minutes) and #7 (40 minutes). For the first semester of 2019, we have Reports #48 (64 minutes), #305 (63 minutes), #338 (61 minutes), #53, #170, #259 and #430 (60 minutes each), #287, #402 and #502 (59 minutes each), #651 (50 minutes) and #14 (31 minutes).

2.16. Some LHD reports in the first and second semester (underlined) of 2018 and the **first semester** of 2019 (in bold) showed as coordination error the parameter related with coordination in good time, near the transfer of control point (TCP), *i.e.*, with less than 5 minutes, failing to comply with the proper rule and LHD methodology.

2.17. **Table 6** shows all LHD reports that fall under this type of situation, where traffic is coordinated in good time, near the transfer of control point (TCP).

2018 Reports	Reporting FIR	FIR Committing Error	Position	Coordinated Hour	Time of Call	Coordinates only within minutes
20	Santo Domingo	Curacao	POKAK	06:59	07:02	3
22	Santo Domingo	Curacao	KARUM	15:38	15:42	4
30	Antofagasta	Lima	SORTA	09:49	09:51	2
65	Antofagasta	Lima	SORTA	11:00	11:03	3
67	Lima	Bogotá	PLG	16:41	16:41	0
70	Resistencia	Ezeiza	TODES	12:52	12:53	1
75	Lima	Bogotá	PLG	18:40	18:42	2
80	Santo Domingo	Curacao	TEKOL	09:02	09:05	3
92	Guayaquil	Central America	UGADI	07:55	07:55	0
100	Amazonica	Maiquetia	POVLA	02:15	02:19	4
115	Guayaquil	Bogotá	UGUPI	03:46	03:46	0
125	Lima	Antofagasta	ALDAX	20:19	20:22	3
158	Amazonica	Bogotá	BRACO	20:38	20:41	3
167	Santo Domingo	Curacao	VESKA	02:14	02:15	1
208	Bogotá	Panama	KAKOL	¿	00:50	-5
231	Guayaquil	Bogotá	UGUPI	06:30	06:30	0
241	Antofagasta	Lima	IREMI	12:04	12:07	3
254	Guayaquil	Bogotá	VAMOS	19:03	19:03	0
270	Santo Domingo	Port-au-Prince	ETBOD	06:18	06:20	2
283	Amazonica	Recife	NEMIG	01:09	01:13	4
291	Lima	Guayaquil	VAKUD	22:34	22:37	3
361	Guayaquil	Central America	LOGAL	02:25	02:27	2
398	Guayaquil	Central America	LIXAS	11:10	11:13	3
429	Guayaquil	Bogotá	UGUPI	18:42	18:42	0
<u>454</u>	Central America	Panama	LESIR	21:01	20:55	- 6
<u>500</u>	Amazonica	Lima	POSKA	03:15	03:19	4
<u>519</u>	Lima	Amazonica	LET	14:15	14:17	2

2018 Reports	Reporting FIR	FIR Committing Error	Position	Coordinated Hour	Time of Call	Coordinates only within minutes
<u>520</u>	Santo Domingo	Curacao	IRGUT	20:51	20:53	2
<u>532</u>	Amazonica	Bogotá	ABIDE	15:08	15:09	1
<u>628</u>	Santo Domingo	Curacao	IRGUT	07:07	07:09	2
<u>714</u>	Antofagasta	Lima	ESDIN	18:33	18:36	3
<u>791</u>	Lima	La Paz	KOMPA	15:55	15:55	0
<u>864</u>	Resistencia	Ezeiza	KORTA	20:12	20:12	0
<u>917</u>	Lima	Antofagasta	ALDAX	10:30	10:33	3
-	-	-	-	-	-	-
2019 Reports	Reporting FIR	FIR Committing Error	Position	Coordinated Hour	Time of Call	Coordinates only within minutes
<u>32</u>	Maiquetia	Bogotá	CUC	21:25	21:25	0
<u>128</u>	Panama	Kingston	ARNAL	22:47	22:49	2
<u>136</u>	Lima	Bogotá	PLG	04:28	04:32	4
<u>140</u>	Santo Domingo	Port-au-Prince	ETBOD	03:52	03:55	3
<u>157</u>	Antofagasta	Mendoza	MIBAS	09:41	09:44	3
<u>159</u>	Lima	Bogotá	PLG	05:20	05:23	3
<u>174</u>	Lima	Guayaquil	VAKUD	00:01	00:05	4
<u>189</u>	Resistencia	Ezeiza	KORTA	22:34	22:37	3
<u>213</u>	Resistencia	Ezeiza	KORTA	20:15	20:20	5
<u>285</u>	Lima	Antofagasta	IREMI	19:25	19:29	4
<u>296</u>	Bogotá	Guayaquil	UGUPI	00:18	00:19	1
<u>328</u>	Lima	Guayaquil	VAKUD	04:30	04:34	4
<u>332</u>	Curitiba	Resistencia	ARULA	14:57	14:59	2
<u>335</u>	Central America	Panama	LESIR	18:22	18:20	-2
<u>337</u>	Guayaquil	Bogotá	ENSOL	19:13	19:15	2
<u>369</u>	Guayaquil	Bogotá	BOKAN	19:46	19:48	2
<u>412</u>	Kingston	Barranquilla	23 NM "S" KILER	13:21	13:18	3
<u>445</u>	Resistencia	Córdoba	SIBOK	16:05	16:04	1
<u>451</u>	Curacao	Barranquilla	SELAN	18:50	18:55	5
<u>457</u>	Curacao	Barranquilla	SELAN	18:47	18:52	5
<u>469</u>	Lima	Guayaquil	VAKUD	06:54	06:58	2
<u>478</u>	Curitiba	La Paz	EVLOL	21:15	21:15	0
<u>507</u>	Mérida	Central America	NOTOS	10:56	10:54	-2
<u>533</u>	Guayaquil	Bogotá	BOKAN	19:50	19:52	2
<u>542</u>	Guayaquil	Bogotá	PULTU	02:21	02:24	3
<u>550</u>	Lima	Guayaquil	VAKUD	01:57	02:00	3
<u>554</u>	Maiquetia	Bogotá	CUC	18:38	18:38	0
<u>575</u>	Bogotá	Panama	BUXOS	01:06	01:07	1
<u>580</u>	Lima	Guayaquil	TERAS	01:10	01:12	2
<u>592</u>	Lima	La Paz	ORALO	14:36	14:40	4
<u>614</u>	Santo Domingo	Curacao	PALAS	00:24	00:27	3
<u>652</u>	Santo Domingo	San Juan	ANTEX	16:40	16:43	3
<u>667</u>	Santo Domingo	Curacao	KARUM	19:45	19:47	2

*Table 6 - LHD reports where transfers were made at one time and called at another (in advance)*

2.18. As may be seen in **Table 6**, the FIRs that most reported this type of error in 2018 were: Santo Domingo, Guayaquil and Lima (7 times, each), Amazonica (5 times) and Antofagasta (4 times). The most reported FIRs were: Amazonica (8 times), Santo Domingo (6 times), Lima (5 times) and Guayaquil (3 times). The positions/points where re-estimation errors occurred were: UGUPI (3 times), ALDAX, IRGUT, PLG and SORTA (twice, each). During the **first semester** of 2019, the FIRs that most reported this error were Lima (9 times), Guayaquil and Santo Domingo (4 times, each) and Resistencia (3 times). The FIRs that most reported this error were Guayaquil (8 times), followed by Bogotá (6 times). The positions/points most reported were: VAKUD (4 times), BOKAN, CUC, KORTA, PLG and SELAN (twice, each). As to how many minutes in advance they occurred in 2018, this analysis only considers those errors in which the FIR did not meet the rule of coordinating traffic more than 5 minutes in advance.

Remark: In the reports highlighted in grey, coordination only occurred because the FIRs had radar or ADS and/or the pilots called the receiving FIR before the aircraft entered that FIR. There are cases in which coordination occurred when the aircraft was over the TCP, or had already entered the FIR.

2.19. In some LHD reports in the first and second semester (underlined) of 2018 and in the **first semester** (in bold) of 2019, the error was that the pilot did not follow ATC instructions, resulting in an RA resolution.

2.20. **Table 7** shows all LHD reports that fall under this type of situation, where the pilot makes a mistake when following ATC instructions.

2018 Reports	Reporting FIR	Flight Committing Error	Position	Other Aircraft (traffic)	Situation
<u>504</u>	Brasilia	AZU4185	21 NM "NE" OPRUT	ONE6197	Descended beyond the cleared FL
<u>619</u>	Brasilia	GLO1556	OPVUK	GLO2177	Descended ATZ at the side of the traffic, but
<u>743</u>	Brasilia	AZU5425	QUARU	AZU5478	Climbed when crossing traffic
<u>935</u>	Resistencia	ARG1778	30 NM "S" SIS	LAN770	Descended beyond the cleared FL
974	Havana	YV2486	20 NM "N" UCL	SWG793	Climbed beyond the cleared FL. Error when complying with RA
2019 Reports	Reporting FIR	Flight Committing Error	Position	Other Aircraft (traffic)	Situation
<b>489</b>	Bogotá	CMP700	DAKMO	CMP873 y RPB633	Aircraft in Bogota airspace

**Table 7 – LHD reports that were treated as errors/failures with TCAS / ACAS warning**

2.21. As can be seen in **Table 7**, the FIR most reporting this type of error in 2018 was Brasilia (3 times). In the first semester of 2019, only one occurred, in Bogotá.

2.22. Hereunder is an assessment of the data in Tables 5 and 6. It shows where re-coordination is the greatest error (2018 and 2019 data) - **Table 8**.

Reporting FIR	Failing FIR	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
Santo Domingo	Curacao	VESKA	IRGUT	BEROX	KARUM	PALAS	POKAK
	Port-au-Prince	PIGBI	ETBOD	DCR			
	San Juan	ANTEX					

Reporting FIR	Failing FIR	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
Curacao	Barranquilla	OROSA	SELAN	AMBAS			
	Kingston	DIBOK	TARBA	AMBIN			
	Maiquetia	ACORA					
	Port-au-Prince	LENOM					
	Santo Domingo	IRGUT	BEROX	PALAS	VESKA		
Lima	Amazonica	ILNAM	LET	LIMPO			
	Antofagasta	ALDAX	IREMI				
	Bogotá	PLG	ROLUS				
	Guayaquil	VAKUD	ARNEL	EVLIM	TERAS		
	La Paz	DOBNI	ELAKO	ORALO			
Guayaquil	Bogotá	BOKAN	UGUPI	ENSOL	PULTU	VAMOS	
	Central America	UGADI	LIXAS	LOGAL			
	Lima						
Antofagasta	Lima	IREMI	SORTA	ESDIN			
	Mendoza	MIBAS					
Resistencia	Córdoba	KORTA	SIKOB				
	Ezeiza	KORTA	OPNIN				
Bogotá	Amazonica	ARUXA					
	Guayaquil	UGUPI	ANGEL	PULTU			
	Maiquetia	ENPUT					
	Panama	BUXOS	KAKOL	TOKUT			
Amazonica	Bogotá	ABIDE	BRACO				
	Lima	POSKA					
	Maiquetia	PAKON	POVLA				
	Paramaribo	SIROS					
	Recife	NEMIG					
Maiquetia	Amazonica	VUMPI	VAGAN				
	Bogotá	CUC					
Central America	Guayaquil	LIXAS					
	Panama	LESIR					
La Paz	Amazonica	RCO					
	Curitiba	CUB					
	Lima	ORALO					
Curitiba	La Paz	EVLLOL					
	Resistencia	ARULA					
Kingston	Barranquilla	KILER					
	Curacao	DIBOK					
Panama	Bogotá	BUXOS					
	Kingston	ARNAL					
Asunción	La Paz	OROMU					

Reporting FIR	Failing FIR	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
Córdoba	La Paz	GAXOK					
Port-au-Prince	Kingston	BENET					

*Table 8 – Assessment of data extracted from LHD reports, where transfers were made at one time and the call at another, in advance or not*

Final note: Mount Pleasant (EGYP) has a CTR whose APP failed to coordinate traffic or send flight plan data to the Comodoro Rivadavia FIR on many occasions. In 2018, there were 8 reports and during the first semester of 2019, there have been 16 reports.

**3. Suggested action**

3.1. The Meeting is invited to:

- a) take note of the information contained herein so that States may use it as a reference for mitigating their LHDs; and
- b) inform the members of the GTE of that decision for their knowledge and approval.