



ICAO

International Civil Aviation Organization  
North American, Central American and Caribbean Office

WORKING PAPER

GTE/20 — WP/05

09/10/20

**CAR/SAM Planning and Implementation Regional Group (GREPECAS) Twentieth Scrutiny Working  
Group Meeting (GTE/20)**

Online, 9 – 11 November 2020

**Agenda Item 2: Review of the Results of Large Height Deviation (LHD)  
2.4 Identification of trends**

**IDENTIFICATION OF TRENDS**

(Presented by CARSAMMA)

**EXECUTIVE SUMMARY**

This Working Paper presents a summary of the trends of some of the Large Height Deviations (LHD) received by CARSAMMA, such as: when the aircraft passes the TCP it is still ascending or descending, when the aircraft calls at a point other than the coordinated one, when the ATS service does not check the level, point or time of transfer and the transferring ATS does not perceive the error, lack of re-coordination due to change in the estimate and also errors related to failures caused by technical issues of the equipment.

<b>Action:</b>	The suggested actions are presented in Section 3.
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"><li>• Safety</li></ul>
<i>References:</i>	<ul style="list-style-type: none"><li>• GTE Methodology</li><li>• 2018 and 2019 (first semester) Large Height Deviations (LHD) Report ***</li></ul>

**1. Introduction**

1.1. The CAR/SAM Planning and Implementation Regional Group (GREPECAS) delegated to the CAR/SAM Monitoring Agency (CARSAMMA) the function of receiving, analysing and codifying the LHDs, and present them to the GTE and in the teleconferences for its validation, and carry out the risk calculations, qualitative (Safety Management System Methodology (SGSO)/Safety Management System (SMS)) and quantitative (CRM) methodologies..

1.2. The objective of this work is to provide additional information to the experts so that the 2019 and 2020 (first semester – until June) LHD reports CARSAMMA received are observed and analysed,

one more time, so similar failures do not repeat, mainly in the specified points, and that the experts of the involved FIRs take the relevant mitigating actions.

## 2. Analysis

2.1. Some 2019 LHD reports (first and the second semester underlined) had as coordination error the coordinated level, so that the traffic was still climbing or descending when it called.

2.2 **Table 1** shows all the LHD reports framed in this type of situation; the traffic is coordinated in a level and calls during climb or descent.

2019 Reports	Reporting FIR	FIR with the failure	Position
153	Santo Domingo	San Juan	KATOK
198	Barranquilla	Curazao	AMBAS (*)
207	Barranquilla	Curazao	AMBAS (*)
327	Bogotá	Panamá	DAKMO
372	Kingston	Curazao	TARBA
412	Kingston	Barranquilla	25 NM "S" KILER
413	Santo Domingo	Curazao	VESKA (***)
504	Bogotá	Guayaquil	90 NM "S" BOLDO
529	Bogotá	Maiquetía	40 NM "S" ENPUT
537	Bogotá	Guayaquil	30 NM "N" BOKAN (**)
548	Guayaquil	Bogotá	20 NM "N" BOKAN (**)
586	Central América	Guayaquil	50 NM "N" LIXAS
604	Bogotá	Panamá	30 NM "S" DAKMO
650	Santo Domingo	Curazao	VESKA (***)
<u>721</u>	Barranquilla	Curazao	AMBAS (*)
<u>733</u>	Santo Domingo	Curazao	VESKA (***)
<u>753</u>	Santo Domingo	Curazao	VESKA (***)
<u>765</u>	Lima	La Paz	ELAKO
<u>771</u>	Barranquilla	Curazao	AMBAS (*)
<u>785</u>	Bogotá	Guayaquil	UGUPI (****)
<u>786</u>	Bogotá	Guayaquil	UGUPI (****)
<u>787</u>	Bogotá	Guayaquil	BOKAN (**)
<u>796</u>	Santo Domingo	Curazao	PALAS
<u>797</u>	Santo Domingo	Curazao	VESKA (***)
<u>819</u>	Curitiba	Asunción	REBOX
<u>826</u>	Santo Domingo	Curazao	VESKA (***)
<u>841</u>	Santo Domingo	Curazao	BEROX
<u>844</u>	Bogotá	Guayaquil	20 NM "N" BOKAN
<u>869</u>	Guayaquil	Bogotá	PULTU
<u>883</u>	Bogotá	Guayaquil	ENSOL
<u>966</u>	Santo Domingo	Curazao	BEROX
<u>983</u>	Santo Domingo	Miami	JUELE
<u>1064</u>	Santo Domingo	Curazao	KARUM
<u>1099</u>	Piarco	San Juan	ILURI
<u>1100</u>	Piarco	San Juan	ILURI

2019 Reports	Reporting FIR	FIR with the failure	Position
<u>1129</u>	Asunción	Resistencia	POS
<u>1170</u>	Bogotá	Guayaquil	BOKAN (**)
<u>1187</u>	Amazónica	Bogotá	ASAPA

**Table 1** - LHD reports whose transfers are made in a certain level and call rising or falling.

2.3 As showed in **Table 1**, the FIRs that reported the most failures in 2019 were: Santo Domingo (12 times), Bogotá (11 times), and Barranquilla (4 times). The most-reported FIRs were Curaçao (15 times), Guayaquil (9 times), and Bogotá (3 times). The points with the most occurrences were VESKA (5 times), AMBAS (4 times), and BOKAN (3 times). VESKA, AMBAS, and BOKAN deserve special attention because they are presented as points already reported in 2018. It can also be observed that the pair Santo Domingo/Curaçao FIRs appear 10 times, the pair Bogotá/Guayaquil FIR appear 10 times, and Barranquilla/y Curaçao FIR appear 4 times, maintaining coordination failures both in 2018 and in 2019.

NOTE: The reports 529, 537, 586, 604, 721, 785, 844, 1129, 1187, 1099 and 1100 it draw the attention the FIRs reporting do so because of the traffic climb or descended still in their FIRs, and there was no coordination for these actions.

2.4 Some 2019 LHD reports had as a coordination failure the different coordinated fix the aircraft is in an airway, or deviated from the route, and was not coordinated with the adjacent FIR.

2.5 **Table 2** shows all the LHD reports that are framed in this type of situation; the traffic is coordinated in a point and calls in a different one.

Note: It is important to analyse if it is feasible to classify these reports as LLD.

2019 Reports	Reporting FIR	FIR with the failure	Coordinated position	Position where the aircraft calls
63	Córdoba	La Paz	¿	PUBUM
67	Bogotá	Amazónica	ARUXA	LET
99	Curitiba	Amazónica	TOSAR	40 NM DIRECHA DE TOSAR
127	Lima	La Paz	RAXUN	OPTOP
146	Santo Domingo	Curazao	VESKA	IRGUT
163	Curitiba	Brasilia	STN	46 NM DERECHA (SAT)
182	Córdoba	La Paz	PUPON	50 NM "W" (PUBUM)
185	Guayaquil	Central América	LIXAS	20 NM "N" LIXAS
219	Curazao	Barranquilla	OROSA	PALAS
228	Panamá	Kingston	¿	KASOR
239	Lima	La Paz	¿	RDL220 PDO 65 NM
280	Lima	Antofagasta	SORTA	IREMI
297	Panamá	Barranquilla	BOGAL	AL "N" DE BOGAL
357	Guayaquil	Bogotá	BOKAN	50 NM AL "W" BOKAN
363	Bogotá	Guayaquil	PULTU	PLG
463	Lima	La Paz	RAXUN	42 MN RDL 284 JUL
471	Curazao	Barranquilla	OROSA	PALAS

2019 Reports	Reporting FIR	FIR with the failure	Coordinated position	Position where the aircraft calls
485	La Paz	Asunción	MOMDI	LATERAL DE MOMDI
530	Curitiba	La Paz	¿	195126S 0585111W
532	Guayaquil	Bogotá	LIXAS	ENSOL
556	Asunción	La Paz	¿	AL "S" OROMU
560	Guayaquil	Bogotá	UGUPI	30 NM "W" UGUPI
567	Guayaquil	Bogotá	BOKAN	ENSOL
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
750	Santo Domingo	Curazao	PALAS	PIGBI
758	Lima	Amazónica	LET	"W" DE LET
784	Bogotá	Guayaquil	BOKAN	ENSOL
789	Bogotá	Panamá	BUXOS	30 NM "NW" BUXOS
833	Lima	Guayaquil	TERAS	30 NM "E" TERAS
848	Resistencia	Montevideo	KORTA	LATERAL KORTA
861	Guayaquil	Central América	UGADI	60 NM "S" UGADI
866	Santo Domingo	San Juan	SATOE	NEGON
891	Santo Domingo	Port Au Prince	PIGBI	ETBOD
892	Santo Domingo	Port Au Prince	ETBOD	20 NM "S" ETBOD
893	Santo Domingo	Port Au Prince	PIGBI	19 NM "S" PIGBI
917	Lima	La Paz	¿	55 NM RDL355 PDO
930	Curazao	Maiquetia	¿	LATERAL VODIN
969	Amazónica	La Paz	LET	ARUXA
970	Guayaquil	Bogotá	BOKAN	74 NM "NW" (ANGEL)
982	Curazao	Barranquilla	SELAN	120 NM "E" (AMBAS)
997	Lima	Antofagasta	IREMI	ARI
998	Amazónica	Bogotá	ASAPA	ABIDE
1073	Bogotá	Guayaquil	LIXAS	VAMOS
1091	Amazónica	Bogotá	¿	ASAPA
1098	Guayaquil	Bogotá	PULTO	30 NM "W" PULTU
1116	Amazónica	Bogotá	ABIDE	65 NM "N" (BRACO)
1132	Guayaquil	Central América	UGADI	LIXAS
1153	Lima	La Paz	RCO	LATERAL RCO
1189	Bogotá	Guayaquil	LIXAS	40 NM "W" LIXAS
1197	La Paz	Amazónica	RCO	KILEV
1199	Curazao	Santo Domingo	BEROX	KARUM

*Table 2 - LHD reports whose transfers are made at one point and call at another point*

2.6 As observed in **Table 2**, FIRs reporting the most in 2019 were: Santo Domingo (6 times), FIR Guayaquil a Lima (8 times each), FIR Bogotá (6 times), FIR Curaçao (5 times) y FIR Amazónica (4 times). The most reported FIRs are: La Paz (10 times), FIR Bogotá (9 times), FIR Port Au Prince (8 times), FIR Guayaquil (5 times), FIR Amazónica and FIR Barranquilla (4 times each). The coordinated points with most changes were: BOKAN, LIXAS y PIGBI (4 times each), ETBOD, LET, ONPAD, OROSA, RAXUN y RCO (2 times each). It can also be observed that the pair of FIRs that incurred in this failure the most were: Bogotá x Guayaquil (10 times), Santo Domingo x Port Au Prince (8 times), Lima x La Paz (5 times), Amazónica x Bogotá (4 times), Curaçao x Barranquilla y Curaçao x Santo Domingo (3 times each) and these coordination failures were occurred already in 2018.

Observation 1: The aircraft calls far away from the waypoint, at a considerable distance due to weather deviation, probably not informed by the pilots or unnoticed by the ATCO.

Observation 2: The failures on FIR La Paz should be attributed to the pilots because it relies on their information to make the necessary changes and/or re-coordination of the waypoint in meteorological deviations, but even knowing that a failure occurred in the coordination (reported by the adjacent FIR) La Paz ATS does not report the pilot's error.

2.7 Some LHD reports had as coordination failure the flight level flight number, fixed or hour,, in the coordination is the readback is wrong, and the transferring unit does not notice the failure. During the first and second semester (underlined) of 2019 this error were identified. These failures are listed in the **Table 3**.

2.8 Table 3 shows all the LHD reports that are framed in this type of situation; the traffic is coordinated at a flight level and is received by the adjacent FIR at a different FL. The flight number, the waypoint or the hour, can also have errors that produced an LHD report.

2019 Report	Reporting FIR	FIR with the failure	Hour, fixed point, or coordinated level	Hour, fixed point, or noted level
407	Santo Domingo	Port Au Prince	16:49	16:19
682	Central América	Guayaquil	¿	16:26
<u>788</u>	Santo Domingo	Port Au Prince	ETBOD	PIGBI
<u>1112</u>	Asunción	Resistencia	FL 350	FL 380
<u>1124</u>	Panamá	Kingston	FL390	FL 370

**Table 3** - LHD reports whose transfers were made, but with misunderstandings.

2.9 As we can see in **Table 3**, in 2019, Some FIRs have not identified the adjacent FIR mistake. In 2019, the Port Au Prince FIR makes the transfer right, but does not identify that the ATCO of Santo Domingo FIR made the read back incorrectly.

2.10 Some 2019 LHD reports (first semester and second semester underlined) had as coordination failure the data related to technical issues of the equipment used for the transfer (Aeronautical Message Handling System (AMHS) or Air Traffic Services Inter-facility Data Communication (AIDC)). The traffic calls at a different flight level than the coordinated, or was not coordinated. This situation produces a code "F" report.

2.11 **Table 4** shows all the LHD reports that are framed in this type of situation; the traffic is coordinated in one level and calls in another that was not coordinated.

2019 Reports	Reporting FIR	FIR with the failure	Position
1	Central América	Panamá	FALLA
27	Guayaquil	Lima	LOBOT
30	Maiquetia	Barranquilla	SIDOS
43	Guayaquil	Lima	TOSES
50	Guayaquil	Lima	ARNEL
51	Guayaquil	Central América	ARTOM
66	Bogotá	Guayaquil	UGUPI
70	Guayaquil	Bogotá	BOKAN
100	Bogotá	Guayaquil	UGUPI
101	Bogotá	Guayaquil	PULTU
102	Bogotá	Guayaquil	BOKAN
103	Bogotá	Guayaquil	BOKAN
106	Guayaquil	Lima	VAKUD
112	Guayaquil	Bogotá	BOKAN
123	Guayaquil	Bogotá	UGUPI
143	Bogotá	Guayaquil	UGUPI
147	Bogotá	Guayaquil	UGUPI
163	Curitiba	Brasilia	SAT
180	Bogotá	Guayaquil	BOKAN
183	Maiquetia	Barranquilla	SIDOS
191	Guayaquil	Bogotá	PULTU
194	Guayaquil	Lima	PABOB
195	Guayaquil	Lima	PABOB
199	Antofagasta	Lima	ANDAX
230	Guayaquil	Bogotá	BOKAN
240	Guayaquil	Bogotá	PULTU
244	Guayaquil	Lima	VAKUD
254	Antofagasta	Lima	ESDIN
261	Lima	Guayaquil	LOBOT
267	Lima	Guayaquil	ARNEL
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 América	OSELO
313	Guayaquil	Central América	UGADI
316	Guayaquil	Bogotá	BOKAN

2019 Reports	Reporting FIR	FIR with the failure	Position
319	Guayaquil	Lima	VAKUD
328	Lima	Guayaquil	VAKUD
339	Guayaquil	Bogotá	BOKAN
353	Guayaquil	Lima	VAKUD
362	Bogotá	Guayaquil	TCO
369	Guayaquil	Bogotá	BOKAN
385	Guayaquil	Central América	UGADI
416	Guayaquil	Bogotá	UGUPI
424	Guayaquil	Bogotá	UGUPI
425	Guayaquil	Lima	TERAS
428	Guayaquil	Bogotá	UGUPI
437	Lima	Guayaquil	PABOB
454	Lima	Guayaquil	PABOB
491	Guayaquil	Bogotá	UGUPI
498	Lima	Guayaquil	TERAS
499	Lima	Guayaquil	PABOB
508	Guayaquil	Bogotá	ANGEL
510	Guayaquil	Bogotá	UGUPI
519	Guayaquil	Bogotá	PULTU
524	Lima	Guayaquil	TERAS
531	Guayaquil	Bogotá	BOKAN
542	Guayaquil	Bogotá	PULTU
548	Guayaquil	Bogotá	BOKAN
550	Lima	Guayaquil	VAKUD
562	Lima	Guayaquil	TOSES
569	Guayaquil	Bogotá	UGUPI
573	Guayaquil	Bogotá	UGUPI
576	Guayaquil	Bogotá	UGUPI
578	Guayaquil	Lima	VAKUD
583	Lima	Guayaquil	VAKUD
596	Guayaquil	Lima	VAKUD
605	Guayaquil	Bogotá	UGUPI
626	Guayaquil	Bogotá	PULTU
636	Guayaquil	Bogotá	BOKAN
649	Guayaquil	Bogotá	PULTU
672	Guayaquil	Bogotá	BOKAN
673	Guayaquil	Bogotá	BOKAN
674	Guayaquil	Bogotá	PULTU
676	Guayaquil	Lima	VAKUD
686	Guayaquil	Bogotá	ENSOL
687	Guayaquil	Bogotá	ENSOL
692	Lima	Guayaquil	TERAS
701	Guayaquil	Bogotá	UGUPI
704	Guayaquil	Bogotá	PULTU

2019 Reports	Reporting FIR	FIR with the failure	Position
<u>710</u>	Lima	Guayaquil	VAKUD
<u>715</u>	Lima	Guayaquil	LOBOT
<u>731</u>	Lima	Guayaquil	ANPAL
<u>737</u>	Lima	Guayaquil	PABOB
<u>744</u>	Guayaquil	Lima	TOSES
<u>746</u>	Guayaquil	Lima	ARNEL
<u>774</u>	Lima	Guayaquil	ANPAL
<u>780</u>	Antofagasta	Lima	ALDAX
<u>802</u>	Guayaquil	Central América	LOGAL
<u>804</u>	Guayaquil	Bogotá	ENSOL
<u>809</u>	Guayaquil	Lima	TOSES
<u>815</u>	Guayaquil	Lima	ANPAL
<u>821</u>	Lima	Guayaquil	LOBOT
<u>823</u>	Lima	Guayaquil	VAKUD
<u>825</u>	Lima	Antofagasta	ALDAX
<u>836</u>	Antofagasta	Córdoba	KONRI
<u>837</u>	Lima	Guayaquil	ARNEL
<u>842</u>	Guayaquil	Bogotá	ENSOL
<u>850</u>	Guayaquil	Bogotá	BOKAN
<u>851</u>	Guayaquil	Bogotá	BOKAN
<u>859</u>	Guayaquil	Bogotá	ANGEL
<u>869</u>	Guayaquil	Bogotá	PULTU
<u>873</u>	Guayaquil	Bogotá	UGUPI
<u>874</u>	Lima	Guayaquil	ARNEL
<u>875</u>	Central América	Panamá	PAPIN
<u>885</u>	Guayaquil	Lima	VAKUD
<u>887</u>	Guayaquil	Bogotá	UGUPI
<u>903</u>	Guayaquil	Lima	ARNEL
<u>927</u>	Guayaquil	Bogotá	UGUPI
<u>928</u>	Guayaquil	Bogotá	UGUPI
<u>931</u>	Guayaquil	Bogotá	UGUPI
<u>932</u>	Guayaquil	Bogotá	UGUPI
<u>934</u>	Guayaquil	Bogotá	UGUPI
<u>940</u>	Guayaquil	Bogotá	PULTU
<u>941</u>	Guayaquil	Bogotá	ENSOL
<u>942</u>	Guayaquil	Bogotá	ANRAX
<u>944</u>	Guayaquil	Bogotá	PULTU
<u>946</u>	Guayaquil	Bogotá	BOKAN
<u>947</u>	Guayaquil	Bogotá	UGUPI
<u>950</u>	Lima	Guayaquil	ARNEL
<u>958</u>	Guayaquil	Lima	ARNEL
<u>964</u>	Guayaquil	Bogotá	UGUPI
<u>967</u>	Guayaquil	Bogotá	UGUPI
<u>968</u>	Guayaquil	Bogotá	UGUPI



2019 Reports	Reporting FIR	FIR with the failure	Position
<u>970</u>	Guayaquil	Bogotá	ANGEL
<u>972</u>	Guayaquil	Bogotá	UGUPI
<u>975</u>	Guayaquil	Bogotá	UGUPI
<u>984</u>	Guayaquil	Bogotá	UGUPI
<u>985</u>	Guayaquil	Bogotá	UGUPI
<u>993</u>	Guayaquil	Bogotá	BOKAN
<u>996</u>	Guayaquil	Bogotá	UGUPI
<u>997</u>	Lima	Antofagasta	ARI
<u>999</u>	Guayaquil	Bogotá	UGUPI
<u>1000</u>	Guayaquil	Bogotá	ANRAX
<u>1006</u>	Guayaquil	Bogotá	VAMOS
<u>1013</u>	Guayaquil	Bogotá	UGUPI
<u>1014</u>	Guayaquil	Bogotá	UGUPI
<u>1016</u>	Guayaquil	Bogotá	UGUPI
<u>1017</u>	Guayaquil	Bogotá	PULTU
<u>1019</u>	Guayaquil	Bogotá	BOKAN
<u>1021</u>	Guayaquil	Bogotá	ENSOL
<u>1022</u>	Guayaquil	Bogotá	UGUPI
<u>1023</u>	Guayaquil	Bogotá	UGUPI
<u>1024</u>	Guayaquil	Bogotá	UGUPI
<u>1027</u>	Guayaquil	Bogotá	ANRAX
<u>1029</u>	Guayaquil	Bogotá	UGUPI
<u>1031</u>	Guayaquil	Bogotá	ANRAX
<u>1032</u>	Guayaquil	Bogotá	ANGEL
<u>1041</u>	Guayaquil	Bogotá	UGUPI
<u>1042</u>	Guayaquil	Bogotá	UGUPI
<u>1044</u>	Guayaquil	Lima	VAKUD
<u>1052</u>	Guayaquil	Bogotá	UGUPI
<u>1058</u>	Guayaquil	Bogotá	UGUPI
<u>1079</u>	Guayaquil	Bogotá	UGUPI
<u>1082</u>	Central América	Panamá	AMUBI
<u>1083</u>	Bogotá	Guayaquil	UGUPI
<u>1085</u>	Guayaquil	Bogotá	UGUPI
<u>1088</u>	Lima	Guayaquil	TOSES
<u>1095</u>	Guayaquil	Bogotá	UGUPI
<u>1115</u>	Guayaquil	Bogotá	ANRAX
<u>1117</u>	Guayaquil	Bogotá	ANRAX
<u>1119</u>	Guayaquil	Bogotá	ANRAX
<u>1132</u>	Guayaquil	Central América	LIXAS
<u>1142</u>	Lima	Guayaquil	VAKUD
<u>1148</u>	Guayaquil	Bogotá	ANRAX
<u>1150</u>	Guayaquil	Bogotá	BOKAN
<u>1154</u>	Guayaquil	Bogotá	BOKAN
<u>1155</u>	Guayaquil	Bogotá	UGUPI

2019 Reports	Reporting FIR	FIR with the failure	Position
<u>1157</u>	Guayaquil	Bogotá	PULTU
<u>1159</u>	Guayaquil	Lima	ARNEL
<u>1162</u>	Bogotá	Guayaquil	AKTAB
<u>1165</u>	Guayaquil	Bogotá	UGUPI
<u>1166</u>	Guayaquil	Bogotá	UGUPI
<u>1173</u>	Guayaquil	Bogotá	ENSOL
<u>1177</u>	Guayaquil	Lima	ARNEL
<u>1179</u>	Amazónica	La Paz	UBKAB
<u>1184</u>	Guayaquil	Bogotá	PULTU
<u>1207</u>	Bogotá	Guayaquil	AKTAB
<u>1211</u>	Lima	Guayaquil	ANPAL
<u>1212</u>	Bogotá	Guayaquil	BOKAN
<u>1217</u>	Guayaquil	Bogotá	PULTU
<u>1223</u>	Guayaquil	Bogotá	UGUPI
<u>1225</u>	Guayaquil	Bogotá	PULTU

**Tabla 4** -- LHD reports of traffic that called at a different flight level due to equipment failure.

2.12 As we can see in **Table 4**, FIRs that report the most this type of failure are: Guayaquil (134 times), Lima (27 times), and Bogotá (13 times). The most-reported FIRs were: Bogotá (103 times), Guayaquil (38 times), and Lima (27 times). It should be noted that several points do repeat related with the involved FIRs.

**NOTE 1:** In the first teleconference in May of this year, several Points of Contact (PoCs) of the involved FIRs reported that this code was not correct since **the failure was not a problem with the AMHS or AIDC equipment but of ATCO who did not know how to adequately use the equipment** (interpretation of the messages issued by the system) and requested that all these reports with code "F" be reviewed and changed to "E1" or "E2". This work allowed that in 2019 there were no codes "F" events. It is important to note that this classification demonstrated that the Guayaquil, Bogotá, Central American, Lima, and Antofagasta FIRs must adopt immediate mitigating measures to solve coordination failures between their FIRs.

2.13 **Table 5** shows exactly where are located the problems in our region regarding this error. It was observed that the UGUPI point was the most reported (52 times), BOKAN (23 times) and VAKUD (18 times).

REPORTING FIR	REPORTED FIR	TCP POINTS	QUANTITY
GUAYAQUIL	BOGOTA	ANGEL	4
		ANRAX	8
		BOKAN	19
		ENSOL	8
		PULTU	16
		UGUPI	47

REPORTING FIR	REPORTED FIR	TCP POINTS	QUANTITY
	CENTRAL AMERICA	VAMOS	1
		ARTOM	1
		LIXAS	1
		LOGAL	1
		OSELO	1
		UGADI	2
	LIMA	ANPAL	1
		ARNEL	6
		LOBOT	1
		PABOB	1
		TERAS	1
		TOSES	3
		VAKUD	12
BOGOTÁ	GUAYAQUIL	ANTAK	2
		BOKAN	4
		PULTO	1
		TCO	1
		UGUPI	5
CENTRAL AMERICA	PANAMA	FALLA	1
		PAPIN	1
		AMUBI	1
LIMA	ANTOFAGASTA	ALDAX	1
		ARI	1
	GUAYAQUIL	ANPAL	3
		ARNEL	4
		LOBOT	3
		PABOB	4
		TERAS	3
		TOSES	2
		VAKUD	6
ANTOFAGASTA	LIMA	ALDAX	3
		ESDIN	1
	CORDOBA	KONRI	1

**Tabla 5** - LHD reports whose codes were changed, show us where we have more coordination problems

2.13 Some LHD reports of 2019 (first semester and second semester underlined), had as coordination failure the estimated time, the traffic pass early than the coordinated. .

2.14 **Table 6** shows all the LHD reports that are framed in this type of situation.

2019 Reports	Reporting FIR	FIR with the failure	Position	Coordinated time	Call time	Anticipation (mins)
14	Santo Domingo	Curazao	BEROX	14:05	13:34	31
17	Santo Domingo	Port Au Prince	ETBOD	19:12	19:02	10
20	New York	Piarco	DRDGE	22:26	22:06	20
22	Bogotá	Guayaquil	PULTU	07:40	07:20	20
53	Córdoba	La Paz	PUBUM	21:10	20:10	60
68	Bogotá	Amazónica	ARUXA	05:48	05:32	16
82	Curazao	Barranquilla	SELAN	18:50	18:43	7
88	Lima	Amazónica	LIMPO	08:38	08:27	11
91	Curazao	Barranquilla	OROSA	18:23	18:16	7
97	Santo Domingo	Curazao	VESKA	21:22	21:11	11
126	Curazao	Barranquilla	OROSA	17:56	17:42	14
129	Lima	Bogotá	ROLUS	04:16	03:56	10
134	Resistencia	Córdoba	SIKOB	18:00	17:53	7
154	Mérida	Central América	NOTOS	00:35	00:28	7
156	Santo Domingo	Port Au Prince	DCR	19:55	19:47	8
161	Curazao	Barranquilla	SELAN	18:33	18:27	6
170	Resistencia	Córdoba	SIKOB	21:56	20:56	60
178	Curazao	Santo Domingo	PALAS	20:30	20:21	9
190	Santo Domingo	Curazao	VESKA	01:14	01:06	8
204	Santo Domingo	Port Au Prince	ETBOD	03:54	03:36	18
223	Santo Domingo	Curazao	VESKA	20:01	19:47	14
226	Lima	La Paz	DOBN	10:12	09:59	13
233	Bogotá	Panamá	TOKUT	00:40	00:34	6
234	Bogotá	Panamá	BUXOS	00:36	00:27	9
259	Antofagasta	Lima	IREMI	16:40	15:40	60
284	Santo Domingo	Port Au Prince	DCR	18:41	18:35	6
287	La Paz	Curitiba	CUB	15:24	14:25	59
305	Resistencia	Ezeiza	KORTA	15:58	14:55	63
320	Lima	La Paz	ELAKO	14:15	14:09	6
324	Bogotá	Amazónica	ARUXA	16:32	16:24	8
338	Lima	La Paz	DOBN	13:03	12:02	61
358	Resistencia	Ezeiza	KORTA	01:43	01:29	14
361	Maiquetía	Amazónica	VAGAN	13:26	13:10	16
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

2019 Reports	Reporting FIR	FIR with the failure	Position	Coordinated time	Call time	Anticipation (mins)
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	Maiquetía	ENPUT	19:58	19:41	17
553	Lima	La Paz	DOBN	12:42	11:31	11
594	Curazao	Barranquilla	AMBAS	18:45	18:37	8
600	La Paz	Amazónica	RCO	06:23	06:08	15
608	Curazao	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
641	Resistencia	Ezeiza	KORTA	01:46	01:32	14
651	Maiquetia	Amazónica	VAGAN	07:53	07:03	50
657	Santo Domingo	Port Au Prince	ETBOD	21:00	20:54	6
<u>671</u>	Santo Domingo	Port Au Prince	PIGBI	23:09	23:03	6
<u>678</u>	Guayaquil	Bogotá	ENSOL	03:24	03:17	7
<u>681</u>	Curazao	Barranquilla	OROSA	23:30	23:16	14
<u>735</u>	Bogotá	Panamá	TOKUT	00:37	00:06	31
<u>739</u>	Barranquilla	Curazao	SELAN	23:38	23:27	11
<u>743</u>	Resistencia	Ezeiza	KORTA	22:26	22:20	6
<u>769</u>	Barranquilla	Curazao	AMBAS	00:49	00:43	6
<u>808</u>	Santo Domingo	Curazao	BEROX	19:29	19:22	7
<u>817</u>	La Paz	Curitiba	SIDAK	11:45	10:46	59
<u>866</u>	Santo Domingo	San Juan	SATOE	20:20	20:14	6
<u>896</u>	Santo Domingo	Curazao	POKAK	19:54	19:45	9
<u>953</u>	Asunción	La Paz	MOMDI	10:57	10:10	47
<u>965</u>	Amazónica	Maiquetia	PAKON	19:53	19:46	7
<u>977</u>	Lima	La Paz	DOBN	04:23	04:08	15
<u>992</u>	Santo Domingo	Curazao	VESKA	20:43	20:12	31
<u>1038</u>	Santo Domingo	Curazao	VESKA	19:36	19:28	8
<u>1078</u>	Amazónica	Paramaribo	POKAK	20:33	20:27	6
<u>1084</u>	Resistencia	Ezeiza	KORTA	01:41	01:10	31
<u>1101</u>	Córdoba	Antofagasta	KADAT	04:52	05:00	8
<u>1122</u>	Santo Domingo	Port Au Prince	ONPAD	16:59	16:50	9
<u>1125</u>	Barranquilla	Curazao	AMBAS	17:53	17:46	7
<u>1130</u>	Santo Domingo	Port Au Prince	ONPAD	17:22	17:14	8

2019 Reports	Reporting FIR	FIR with the failure	Position	Coordinated time	Call time	Anticipation (mins)
<u>1143</u>	Resistencia	Córdoba	SIKOB	20:12	20:02	18
<u>1193</u>	Santo Domingo	Port Au Prince	PIGBI	18:31	18:25	6
<u>1206</u>	Santo Domingo	Port Au Prince	DCR	22:22	22:12	10
<u>1219</u>	Amazónica	La Paz	KILEV	06:01	05:43	18

**Table 6** - Reportes de LHD cuyas transferencias son hechas en una hora y llama en otra (anticipación)

2.15 As we can observe in **Table 6**, the five FIRs that reported the most this type of failure in 2019 were: Santo Domingo (24 times), Resistencia (10 times), Lima (9 times), Curaçao (8 times) and Bogotá (7 times). The six most reported FIRs were: Curaçao (12 times), La Paz, and Port Au Prince (9 times each), Ezeiza, and Barranquilla (7 times each), Amazónica (6 times). The positions/points where the re-estimated failure occurred the most were: KORTA (6 times), ETBOD, DCR, and VESKA (5 times each), AMBAS, DOBNI and IREMI (4 times each), and PIGBI (3 times).

2.16 The pairs of FIRs that had most failures of this type were: Santo Domingo x Port Au Prince (14 times), Santo Domingo x Curaçao (9 times), Curaçao x Barranquilla (8 times), Resistencia x Ezeiza (7 times each) and Lima x La Paz (6 times).

2.17 Some 2019 LHD reports (first semester and second semester underlined) had as a coordination failure delayed coordination, close to the TCP, with less than 5 minutes, not complying with the requirement and the LHD methodology.

2.18 **Table 7** shows all the LHD reports framed into this type of situation; the traffic is coordinated late, close to the TCP.

2019 Reports	Reporting FIR	FIR with the failure	Position	Coordinated time	Call time	Coordinate – minutes only
32	Maiquetia	Bogotá	CUC	21:25	21:25	0
128	Panamá	Kingston	ARNAL	22:47	22:49	2
136	Lima	Bogotá	PLG	04:28	04:32	4
140	Santo Domingo	Port Au Prince	ETBOD	03:52	03:55	3
157	Antofagasta	Mendoza	MIBAS	09:41	09:44	3
159	Lima	Bogotá	PLG	05:20	05:23	3
174	Lima	Guayaquil	VAKUD	00:01	00:05	4
189	Resistencia	Ezeiza	KORTA	22:34	22:37	3
285	Lima	Antofagasta	IREMI	19:25	19:29	4
296	Bogotá	Guayaquil	UGUPI	00:18	00:19	1
328	Lima	Guayaquil	VAKUD	04:30	04:34	4
332	Curitiba	Resistencia	ARULA	14:57	14:59	2
335	Central América	Panamá	LESIR	18:22	18:20	-2
337	Guayaquil	Bogotá	ENSOL	19:13	19:15	2
369	Guayaquil	Bogotá	BOKAN	19:46	19:48	2

2019 Reports	Reporting FIR	FIR with the failure	Position	Coordinated time	Call time	Coordinate – minutes only
412	Kingston	Barranquilla	23 NM "S" KILER	13:21	13:18	3
445	Resistencia	Córdoba	SIBOK	16:05	16:04	1
469	Lima	Guayaquil	VAKUD	06:54	06:58	2
478	Curitiba	La Paz	EVLOL	21:15	21:15	0
507	Mérida	Central América	NOTOS	10:56	10:54	-2
533	Guayaquil	Bogotá	BOKAN	19:50	19:52	2
542	Guayaquil	Bogotá	PULTU	02:21	02:24	3
550	Lima	Guayaquil	VAKUD	01:57	02:00	3
554	Maiquetia	Bogotá	CUC	18:38	18:38	0
575	Bogotá	Panamá	BUXOS	01:06	01:07	1
580	Lima	Guayaquil	TERAS	01:10	01:12	2
592	Lima	La Paz	ORALO	14:36	14:40	4
614	Santo Domingo	Curazao	PALAS	00:24	00:27	3
652	Santo Domingo	San Juan	ANTEX	16:40	16:43	3
667	Santo Domingo	Curazao	KARUM	19:45	19:47	2
697	Resistencia	Córdoba	SIKOB	04:06	04:08	2
702	La Paz	Lima	DOBN	14:11	14:15	4
710	Lima	Guayaquil	VAKUD	10:32	10:36	4
724	Lima	La Paz	RAXUN	06:52	06:54	2
730	Resistencia	Ezeiza	KORTA	00:36	00:40	4
731	Lima	Guayaquil	ANPAL	08:57	09:00	3
748	Guayaquil	Lima	TOSES	09:18	09:21	3
760	Santo Domingo	Port Au Prince	DCR	19:57	20:00	3
762	Antofagasta	Lima	IREMI	02:10	02:11	1
768	Lima	Bogotá	ROLUS	21:46	21:50	4
773	Santo Domingo	Curazao	BEROX	17:44	17:48	4
799	Lima	Bogotá	ROLUS	13:28	13:32	4
806	Lima	Amazónica	LET	16:54	16:57	3
822	Lima	Guayaquil	ANPAL	02:01	02:05	4
823	Lima	Guayaquil	VAKUD	07:43	07:44	1
837	Lima	Guayaquil	ARNEL	00:06	00:09	3
926	Guayaquil	Bogotá	BOKAN	19:35	19:37	2
980	Bogotá	Panamá	DAKMO	15:33	15:34	1
988	Amazónica	La Paz	RCO	03:53	03:57	4
995	Guayaquil	Bogotá	PULTU	23:42	23:44	2
1011	Lima	La Paz	DOBN	12:23	12:25	2
1018	Bogotá	Panamá	OGLUT	22:37	22:41	4
1103	Córdoba	La Paz	PUBUM	05:19	05:21	2
1106	Córdoba	Antofagasta	KONRI	19:40	19:42	2
1118	Guayaquil	Central América	LIXAS	22:56	22:58	2
1163	Lima	Bogotá	ROLUS	13:00	13:04	4

**Tabla 7** - Reportes de LHD cuyas transferencias son hechas en una hora y llama en otra (anticipación).

2.19 As we can observe in **Table 7**, FIRs that reported the most this type of failure were: Lima (20 times), Guayaquil (8 times), Santo Domingo (6 times), Resistencia, and Bogotá (4 times each). The most-reported were: Bogotá (13 times), Guayaquil (11 times), La Paz (6 times), Panamá (4 times), and Lima (3 times each). The positions/points where the most re-estimation failures occurred were: VAKUD (6 times), BOKAN y ROLUS (3 times each).

2.20 Some 2019 LHD reports (first semester and second semester underlined), had as failure the non-compliance by the pilot of the ATC instructions, culminating in an ACAS resolution (RA).

2.21 **Table 8** (available only in Spanish) shows all the LHD reports that are framed in this type of situation.

2019 Reports	Reporting FIR	Flight incurring in failure	Position	Other aircraft (traffic)	Situation
446	Habana	TGRIE	MAXIM	LCE619	Ascendió y viró a la derecha sin ser autorizado y el LCR619 reporta RA también ascendió
538	Habana	AAL121 N808NN	FRANT	Más próximo 40 NM pasando FL200	AAL nivelado FL390, ascendió 700 pies debido RA
713	Curitiba	IBE6012	VUDAN	GEIV52	IBE6012 FL348 para FL350, ascendió cuando cruza con el tránsito FL334 para FL340

**Tabla 8** - LHD reports of transfers made in one hour and calls in a different time (before estimated).

2.22 As we can see in **Table 8**, FIRs reporting the most this type of failure were: Habana (2 times).

2.23 In **Table 9** (next page), Tables 6 and 7 data was evaluated, to identify the points with the highest number of re-coordination among FIRs.

Reporting FIR	FIR with the failure	Point 1	Point 2	Point 3	Point 4	Point 5
Santo Domingo	Curazao	VESKA	BEROX	KARUM	POKAK	PALAS
	Port Au Prince	ETBOD	PIGBI	DCR	ONPAD	1858N 07153W
	San Juan	ANTEX	SATOE			
Curazao	Barranquilla	OROSA	SELAN	AMBAS		
	Santo Domingo	PALAS				



Reporting FIR	FIR with the failure	Point 1	Point 2	Point 3	Point 4	Point 5
Guayaquil	Bogotá	BOKAN	ENSOL	PULTU		
	Central América	LIXAS				
	Lima	TOSES				
Antofagasta	Lima	IREMI				
	Mendoza	MIBAS				
Resistencia	Córdoba	SIKOB	SIBOK			
	Ezeiza	KORTA	RIOKA			
Lima	Amazónica	LET	LIMPO			
	Antofagasta	IREMI				
	Bogotá	ROLUS	PLG			
	Guayaquil	VAKUD	ANPAL	ARNEL	TERAS	
	La Paz	DOBNI	ELAKO	ORALO	RAXUN	
Amazónica	La Paz	KILEV	RCO			
	Maiquetia	PAKON				
	Paramaribo	ACARI				
Bogotá	Amazónica	ARUXA				
	Guayaquil	PULTU	UGUPI			
	Maiquetia	ENPUT				
	Panamá	BUXOS	TOKUT	DAKMO	OGLUT	
Córdoba	Antofagasta	KADAT	KONRI			
	La Paz	PUBUM				
Maiquetia	Amazónica	VAGAN				
	Bogotá	CUC				
Barranquilla	Curazao	AMBAS	SELAN			
Asunción	La Paz	MOMDI				
La Paz	Amazónica	RCO				
	Curitiba	CUB	SIDAK			
	Lima	DOBNI	ORALO			
Curitiba	La Paz	EVLOL				
	Resistencia	ARULA				
Kingston	Barranquilla	23 NM "S"				

Reporting FIR	FIR with the failure	Point 1	Point 2	Point 3	Point 4	Point 5
		KILER				
Central América	Panamá	LESIR				
Panamá	Kingston	ARNAL				
Mérida	Central América	NOTOS				
New York	Piarco	DRDGE				

*Table 9 – Evaluation of the data obtained from the LHD reports whose transfers are made in one hour and call in another hour in advance*

### 3. Suggested Actions

3.1 The Meeting is invited to:

- a) analyse the information of this working paper;
- b) use the information to carry out the safety of the CAR/SAM FIRs; and
- c) to implement the necessary measures to reduce or eliminate LHDs, including those with code "E" that continue representing a significant safety events volume.

— END —