



ICAO

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

WORKING PAPER

GTE/24 — WP/11
30/07/24

**CAR/SAM Planning and Implementation Regional Group (GREPECAS)
Twenty Fourth Scrutiny Working Group Meeting (GTE/24)
Mexico City, Mexico, 5 to 9 August 2024**

Agenda Item 3: Review of the Results of Large Height Deviation (LHD) and the Collision Risk Model (CRM) Analysis
3.5 Lessons learned by CAR/SAM States to reduce the number of LHDs.

SHARED RISK ANALYSIS BETWEEN ACC AND PILOTS IN E2 EVENTS DUE TO DELAYED COMMUNICATIONS BY CREW WHEN CROSSING INTO A NEW FIR

(Presented by Colombia)

EXECUTIVE SUMMARY	
The purpose of this Study Note is to propose to the GTE an update in the methodology for analysing and assessing E2 events. These events increase their risk value due to the delay in communication by the crews when entering a new FIR.	
Action:	Suggested actions are included in Section 4
<i>Strategic Objectives:</i>	<ul style="list-style-type: none">• Safety• Air Navigation Capacity and Efficiency
<i>References:</i>	<ul style="list-style-type: none">• LHD 2023- Valor de Riesgo Ene-Dic 202• ICAO Doc. 4444 ATM501.

1. Introduction

1.1 Through the analysis of LHD events, it has been identified as a contributing factor that aircraft cross the notification point of the receiving FIR and do not communicate with it immediately.

1.2 The delay in communication should not be critical in an environment where surveillance coverage by radar or ADS systems is complete, and technical and operational errors causing LHD events do not exist. However, in our scenario, there have been situations where, in addition to the LHD event—mostly caused by coordination errors or lack thereof (E1, E2)—the crew's untimely communication creates

an additional risk. This risk initially arises from the LHD event and is increased by the crew's lack of communication.

2. Analysis

2.1 Specifically, SKED has recorded two E2-class events in 2023 where the risk value is considerable due to the time taken by the crews to notify their position to the adjacent FIR. We outline the following cases:

2.1.1 EVENT 409: AVA137 en route from SKRG to SEFG crossed the boundary point BOKAN at 20:53 UTC without coordination, resulting in an E2 LHD event. However, the crew contacted the adjacent FIR only when requesting descent, 15 minutes later. At that time, the FIR SEFG identified the aircraft, as despite having radar coverage at the FIR boundary, it had not identified the aircraft earlier due to various workload issues. According to CARSAMMA's analysis, this results in an event duration of 900 seconds and a risk value of 46.

Report #: 409	POSITION: TEMOX	AVIANCA	TEMOX	MODE C, S o ADS: SI	HT LHD: 0
DATE: 20/06/2023	HOUR: 21:00	FLIGHT ID: AVA137	REGISTRATION: N951AV	CLRD FL:	DURATION: 900
ROUTE: UP778 - SKRG (Rio Negro) / SEFG (Guayaquil)		ACFT TYPE: A320	EVENT FL: 370	CODE: E1	
REPORTING UNIT: GUAYAQUIL	FIR ERROR: BOGOTA	IMC /VMC: IMC	XFL SAME: 0	XFL OPS: 0	
OTHER ACFT:	STATUS P' ACFT: #ND	DISTANCE (NM):	POSITION P' ACFT:	FL P' ACFT:	
CAUSE: OMISSION DE ESTIMA	STATUS RVSM: APPROVED	GTE TIME: 900	GTE CODE: E1		
EL AVA137, A LAS 21:00 NOTIFICA SOBRE LA POSICION TEMOX EN ESPACIO AEREO ECUATORIANO, LA CUAL ESTA UBICADA A 100 NM AL SUR DE LA POSICION BOKAN, LA QUE CRUZO A LAS 20:53, A FL 370, NO SE DISPONIA DE LA COORDINACION NI VLA ORAL NI AIDC. SE INFORMA AL RESPECTO A BOGOTA CONTROL.					
PROBABILIDAD: 1	DURACION: 3	GRAVEDAD: 3	RADAR / ADS: 5	WEATHER: 5	OTRO TRAFICO: 0
VALOR DEL RIESGO: 46		ACCION MITIGADORA: REQUIERE MONITOREO Y GESTION			
OBSERVACIONES: VALIDADO POR CARSAMMA CON LA AYUDA DE LOS POC DE LAS FIR INVOLUCRADAS - @CAR X SAM - 01/06/23					

2.1.2 EVENT 476: 8X en route from KTEB to SBFI crossed the point ABIDE at 19:47 without coordination, resulting in an E2 LHD event. However, the crew contacted the adjacent FIR at 20:09, 22 minutes after crossing the FIR boundary. At the ABIDE point, the radar coverage from the Amazon FIR is limited, and the surveillance coverage beyond this point is unknown. Considering the aircraft type and its average speed, it travelled approximately 160NM within the Amazon FIR. This event has a duration of 1320 seconds and resulted in a risk value of 51.

Report #: 476	POSITION: BRACO	SEA HUNT BOAT MANUFACTURING INC.	BRACO	MODE C, S o ADS: NO	HT LHD: 0
DATE: 30/07/2023	HOUR: 19:09	FLIGHT ID: NXX	REGISTRATION: NXX	CLRD FL:	DURATION: NA
ROUTE: UP793 - KTEB (Teterboro) / SBFI (Fox de Ipanema) - (BRACO UP793 DIGUM UL14 DUBGI ULA65)		ACFT TYPE: PA38	EVENT FL: 410	CODE: E2	
REPORTING UNIT: AMAZONICA	FIR ERROR: BOGOTA	IMC /VMC:	XFL SAME: 0	XFL OPS: 0	
OTHER ACFT:	STATUS P' ACFT: #ND	DISTANCE (NM):	POSITION P' ACFT:	FL P' ACFT:	
CAUSE: ERROR EN EL CICLO COORDINACIONES ATC	STATUS RVSM: APPROVED ?	GTE TIME: 1320	GTE CODE: E2		
EL ACC BOGOTA NO COORDINO EL TRANSITO. EL TRANSITO REALIZO EL PRIMERO CONTACTO A LAS 19:09 UTC, INFORMANDO QUE MANTENIA EL FL 410 Y QUE HABIA PASADO LA POSICION BRACO A LAS 19:47 UTC. *** CARSAMMA: LLAMA A LAS 20:09 E INFORMA QUE PASO TCP A LAS 19:47. SON 22 MINUTOS DE ANTELACION O 1320 SEGUNDOS. ***					
PROBABILIDAD: 3	DURACION: 3	GRAVEDAD: 3	RADAR / ADS: 10	WEATHER: 5	OTRO TRAFICO: 0
VALOR DEL RIESGO: 51		ACCION MITIGADORA: REQUIERE MONITOREO Y GESTION			
OBSERVACIONES: VALIDADO POR CARSAMMA CON LA AYUDA DE LOS POC DE LAS FIR INVOLUCRADAS - @CAR X SAM - 01/06/23					

2.2 This year, we have a similar event with flight ARG1371 en route from MMUN to SAEZ. The aircraft entered the SKED FIR from the MPZL FIR without coordination and called 13 minutes after crossing the FIR boundary, but not to the SKED FIR, instead contacting the SEFG FIR. Due to the lack of coverage by SKED, it was not identified by SKED, resulting in an E2 event reported by the SKED FIR to the MPZL FIR and an operational error self-report from the SKED FIR to the SEFG FIR.

2.3 Similarly, there are instances where flights occasionally deviate into sectors with limited radar coverage and enter adjacent FIRs that do not correspond to their original route. In such cases, the "invaded" FIRs do not have a flight plan on file for these deviations.

2.4 In SKED, we had an event of this nature with CENAMER in 2023, and during 2024, we had an event with traffic coming from FIR SEFG under similar conditions. However, pilots, who have references to FIR boundaries on their FMS displays and navigation charts, do not communicate with the FIR they are "invading." In SKED, a mitigation measure was implemented to notify any deviations that might result in an "invasion" of airspace not included in the original route.

3. Conclusions

3.1 If we consider that Document 4444 ATM501, Procedures for Air Navigation Services: Air Traffic Management, states:

4.11.1.1 On routes defined by designated significant points, the aircraft shall transmit position reports when passing 3ff lig as 3ff as 3ff lig after overflying each of the designated mandatory reporting points, except as provided in 4.11.1.3 and 4.11.3. The relevant ATS unit may request additional reports on other points.

4.11.1.2 On routes not defined by designated significant points, position reports shall be made by the aircraft as 3ff as 3ff lig after the first half hour 3ff light and then at hourly intervals, except as provided in

4.11.1.3. At shorter intervals, the appropriate ATS unit may request additional reports.

3.1 We can conclude that the crews are in complete non-compliance with the procedures established in Document 4444 ATM 501, paragraphs 4.11.1.1 and 4.11.1.2.

3.2 While it is true that the event occurs and may be assessed as high risk, the pilot's failure to comply with the established procedure increases the risk level of the event itself. This goes beyond the responsibility of the ATC, as the lack of communication from the pilot adds a significant risk factor.

4. Suggested Actions.

4.1 The Meeting is invited to:

- a) note of the information contained in this document.

- b) COLOMBIA, through this note, formally requests the GTE to consider the possibility of notifying two separate events when an incident of this category occurs. One of these events would be attributed to the ATC, either due to lack of coordination or coordination error (E1, E2), with a duration of 5 minutes. The other event would be attributed to the pilot, due to non-compliance with the regulation, with a duration corresponding to the time elapsed after the 5 minutes from crossing the FIR boundary point until the moment the pilot makes the first contact or is identified by radar or ADS.

— END —