



## **HIGH-LEVEL SAFETY CONFERENCE 2010**

**Montréal, 29 March to 1 April 2010**

**Theme 3: Other safety issues**

**Topic 3.2: Safety initiatives arising from recent accidents**

### **AF447 SAR OPERATION**

(Presented by Brazil)

#### **SUMMARY**

This document aims at presenting a summary of the Search and Rescue activities conducted by Brazil in what concerns the AF447 flight accident and presenting recommendations for the sake of the operational safety enhancement in the world.

**Action:** The Conference is invited to:

- a) note the discussion presented in section 2 of this working paper; and
- b) consider the recommended actions detailed in section 3.

## **1. INTRODUCTION**

1.1 On the 1st of June, 2009, after taking off from the city of Rio de Janeiro towards Paris, an Air France Airlines Airbus A330 scheduled to perform flight AF447 disappeared just before the limit between the Atlântico and Dakar FIRs. The disappearance triggered the biggest oceanic Search and Rescue Operation in Brazilian history, which was coordinated by the Atlântico Rescue Coordination Center (RCC AO).

## **2. DISCUSSION**

2.1 At 01:33 UTC, over the INTOL position, under the coordination of the ACC-Atlântico, the AF447 made its last voice communication.

2.2 Immediately after this communication, at 01:35 UTC, the ACC-Atlântico contacted the ACC-Dakar to coordinate the traffic transfer, which estimated time to reach TASIL position (limit between the Atlântico and Dakar FIRs) would be at 02:20 UTC, when the traffic transfer should happen (Attachment).

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<sup>1</sup> English version submitted by Brazil.

2.3 The ACC-Atlântico didn't receive any information from the aircraft via ADS-C (ACW) during its flight course. It is worth emphasizing that, at the time the accident took place, the ACW System showed a connection establishment percentage (log) of 19,26% per day (average in June 2009). As of 30 Jul 09, the ADS-C/CPDLC System was declared operational within the ACC-Atlântico region and, since then, shows a success rate of 70% of connection establishment between aircraft and the ACC-Atlântico.

2.4 The effective Operational Agreement between the ACC-Atlântico and the ACC-Dakar describes the procedure to be followed in case there is no bilateral contact between the aircraft crossing the FIRs limit and the correspondent ACC, according to the following transcription:

*“Every time the receiving ATS unity is not able to make contact with an aircraft within three minutes after the estimated time for the overfly of the control transfer point, the receiving unity will inform the transferring ATS unity so that appropriate measures can be taken.”*

2.5 Within the period from 04:21 UTC to 05:12 UTC, the ACC-Atlântico kept contact with the ACC-Dakar and the ACC-Sal. At 05:23 UTC the ACC-Atlântico triggered the RCC-Atlântico informing that the aircraft had reported the INTOL position at 01:33 UTC and estimated TASIL at 02:20 UTC, but no other contact had been established. In the same way, no other ATC unity knew anything about the aircraft.

2.6 At 06:40 UTC, even without having received further information about the flight from the company or any other source and without capturing the ELT distress alert, the RCC AO activated the Search and Rescue resources of the Brazilian Air Force and the maritime vessels from Brazilian Navy.

2.7 At 09:57 UTC, Air France informed RCC AO that the aircraft had been sending automatic messages, even though the last one was received by the company at 02:14 UTC, reporting “cabin pressurization and yet some power failure, power off electricity”.

2.8 Although the RCC AO had been aware of the geographic location of the last known position (LKP) only at 13:05 UTC, when the company sent the AOC data message by fax, the RCC AO had already tasked the available resources, aeronautical and maritime, in compliance to the provisions set forth in Annex 12, in relation to the Alert Phase (Annex 12, item 5.2.2).

#### “5.2.2 Alert phase

Upon the occurrence of an alert phase the rescue coordination centre shall immediately alert search and rescue units and initiate any necessary action.”

2.9 It is worth emphasizing that no COSPAS-SARSAT alert signal was captured during the event, which encloses special importance, if we consider that the number of victims from aeronautical accidents in which the activation of COSPAS-SARSAT beacons has benefited their location is much lower than the number of those who have been benefited due to maritime accidents, as shown in the graphic (Attachment) made available by the COSPAS-SARSAT Program (<http://www.cospas-sarsat.org/index.php/en/operatons/sar-events-rescue-stories/statistics.html>):

2.10 Despite the “inexistence of reasonable hope of finding survivors”, which would be fundamental for declaring the SAR Operation suspended right after its first days, as specified in ICAO'S Annex 12, item 5.5.1, the Brazilian Government decided to maintain the efforts applied in the support of the accident investigation, helping in the recollection of debris, as part of the accident investigation process under the responsibility of the Bureau d'Enquêtes et d'Analyses (BEA).

2.11 The SAR Operation, coordinated by the ACC Atlântico over an area around the last known position (LKP), 615 NM far from Brazil, was declared suspended only on the 26<sup>th</sup> of June.

2.12 Brazilian efforts: Fourteen aircraft from the Brazilian Air Force and eleven ships from the Brazilian Navy were engaged; Total flight time 1.344:55h, covering a visual search area of 345.566 Km<sup>2</sup> and an electronic search area of 2.097.569 Km<sup>2</sup>; and financial resources over US \$70,000,000.00.

2.13 Given the possibility that other accidents involving a great number of victims may occur in places of difficult access, over the sea or on the ground, it is crucial that some measures be taken by the Contracting States, in order to allow the enhancement of SAR operations effectiveness and to guarantee a safe flight to all air transportation users.

### 3. RECOMMENDATIONS

3.1 That ICAO should review the information provided at Annex 12, 5.1 – “Information concerning emergencies” in order to improve the merit of ATS informing RCCs of any doubt about the safety of an aircraft at the earliest opportunity to facilitate early Search and Rescue planning;

3.2 That ICAO should review the information provided at Annex 12, 5.1 – “*Information concerning emergencies*” and produce guidance material that allows everyone involved in aircraft operations to know the importance of presenting to the pertinent ATC or SAR unities all the information related to the search object, as well as to know what procedures should be adopted to transmit them.

3.3 That ICAO should review the information provided at Annex 6, 2.4.12 – “*Emergency Locator Beacon (ELT)*” and consider the recommendation bellow to be inserted:

“Contracting States shall develop specific ELT crew activation procedures, in case of real or imminent emergency”

3.4 That ICAO should review the information provided at Annex 12, 4 – “*Preparatory Measures*” and consider the recommendation bellow to be inserted:

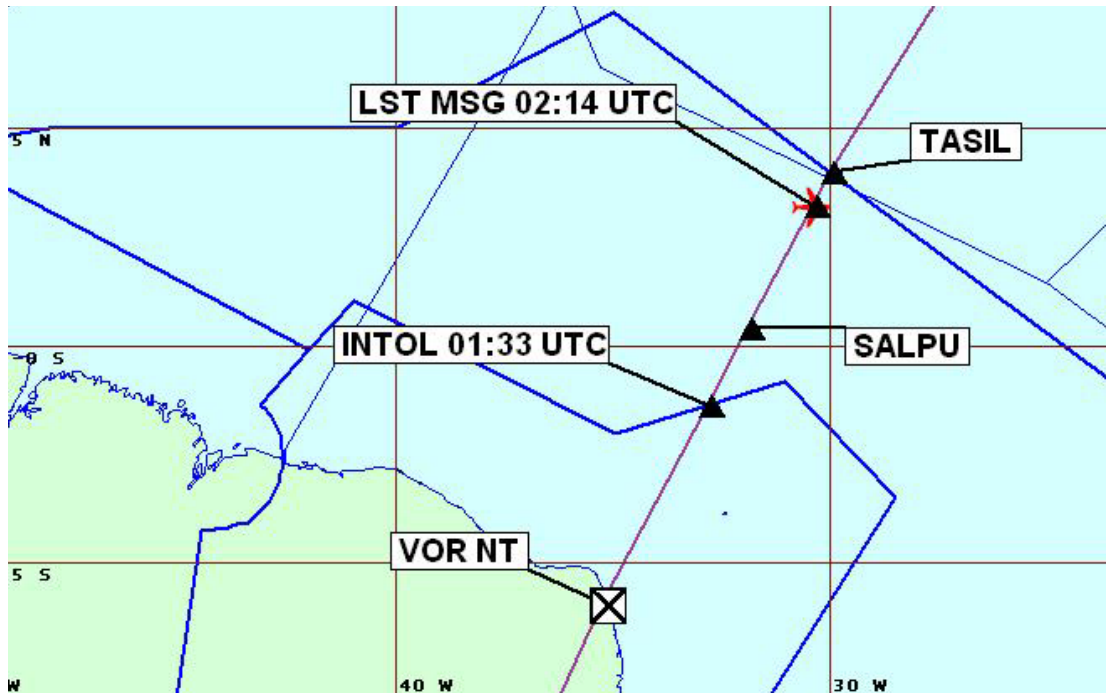
#### “**Lessons Learned**”

Recommendation – Considering the particularity of each Search and rescue Operation and the valuable contribution that each lesson learned can make to other SAR Services, Contracting States should organize periodically “Lessons Learned” meetings and divulgate its results.”

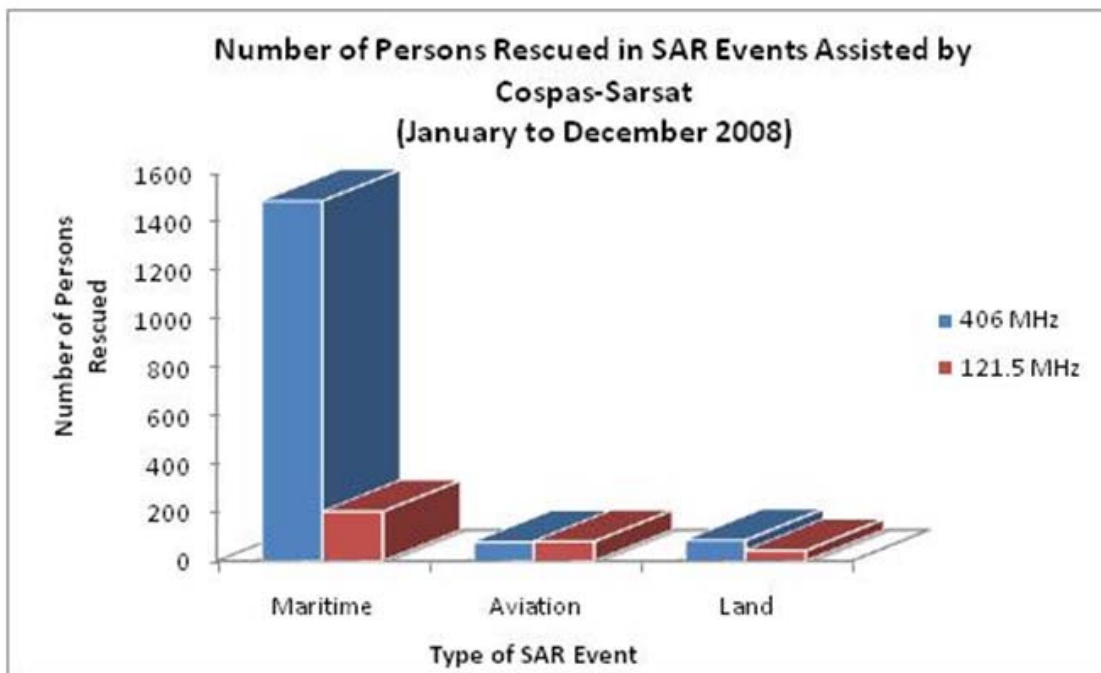
3.5 That ICAO should encourage Contracting States to conduct a wide national campaign to divulgate information about the ATS and SAR unities that shall be engaged in case of an aeronautical emergencies, minimizing the response time and the mismatch of information on the search object.

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ATTACHMENT



AF447 route



Number of persons rescued in SAR Events assisted by Cospas-Sarsat