



International Civil Aviation Organization

Nineteenth Meeting on the improvement of Air Traffic Services over the South Atlantic (SAT 19)

(Buenos Aires, Argentina, 04-08 Aug 2014)

SAT/19-WP/16-Rev.

01/08/14

Agenda item 2: Air traffic management (ATM) (by the ATM working group)

Large Height Deviation and unknown traffic in the South Atlantic

(Presented by the Secretariat)

SUMMARY

This working paper requests the meeting to address the Unknown traffic and the increasing number of Large Height Deviation in the South Atlantic airspace, due to the lack of coordination and information of the flights coming from and going to Falkland Islands (Malvinas)*. This circumstance puts at risk the safety of air traffic in the airspace of the South Atlantic, since it causes a gap in the coordination chain that is necessary among the FIRs involved in the provision of air traffic services to aircraft using such airspace.

References:

- Joint Statement of the Governments of Argentina and the United Kingdom of 25th September 1991.
- Letter of Operational Agreement between the Comodoro Rivadavia Area Control Centre and the Air Traffic Services Unit of Monte Agradable Airport, Falkland Islands (Malvinas)*.
- ATM/CNS Trilateral Meeting Argentina, Brazil and Uruguay, (SAM ATM/CNS South).
- Ninth Meeting of the GREPECAS Scrutiny Working Group.
- Tenth Meeting of the GREPECAS Scrutiny Working Group.
- Twelfth Meeting of the GREPECAS Scrutiny Working Group.
- Thirteenth Meeting of the GREPECAS Scrutiny Working Group.

1. Introduction

1.1 A reliable provision of air traffic service by the ATS units involved contributes to the safety of operations in any airspace, mainly in oceanic ones, like the South Atlantic airspace.

1.2 One of the most important issues to be taken into consideration is that ATS units must have all the available information provided by a suitable ATS service, in accordance with the applicable rules and procedures.

* Text in accordance to the ICAO Regional Office Manual (ROM).

* A dispute exists between the government of Argentina and the government of Great Britain and Northern Ireland concerning the sovereignty of the Falkland Islands (Malvinas).

1.3 The Caribbean and South American Regional Planning and Implementation Group (GREPECAS) has delegated to the Caribbean and South American Monitoring Agency (CARSAMMA) the safety monitoring function in support of the implementation and use of RVSM airspace in the Caribbean and South American Regions. One of the main responsibilities of the CARSAMMA is to verify the risk associated to the RVSM operations and recommend the best practices to guarantee a suitable coordination between ATS Facilities.

1.4 CARSAMMA has observed a significant increase number of Large Height Deviation in South Atlantic, resulting in a higher risk associated with operations in South Atlantic RVSM Airspace.

2. Discussion

2.1 Basically the Large Height Deviation in the affected region is caused by the lack of coordination between the Monte Agradable ATS Unit and the Comodoro Rivadavia ACC, via AFTN (FPL, DEP, etc) or oral communication. Thus, some aircraft take off from the Falkland Islands (Malvinas)* without prior coordination with the responsible ACC by the FIR, in the case, Comodoro Rivadavia. Furthermore, Argentina informed that Monte Agradable ATS Unit does not contact the Comodoro Rivadavia ACC to transfer the responsibility on the aircraft when they are leaving the CTR Monte Agradable.

2.2 In some cases aircraft establish contact with the Comodoro Rivadavia ACC and/or Ezeiza ACC and this ACC makes the coordination with the Montevideo ACC and so on with the Atlantico ACC. However, there are several cases in which the aircraft does not make any contact with the Comodoro Rivadavia ACC.

2.3 The aircraft cannot make any contact with the Montevideo ACC due to unavailability of ADS-C/CPDLC and HF equipment in the Montevideo FIR (Atlantic Sector) (ADS-C/CPDLC is in process of implementation through SITA). In such cases, the aircraft normally makes contact with the Atlantico ACC, flying a long way without any contact with an ATC unit and thus constituting a risk to operational safety, affecting the risk analysis calculated by the CARSAMMA, taking into account the Collision Risk Model Methodology applied.

2.4 Several meetings of the GREPECAS Scrutiny Working Group have dealt with Large Height Deviation in South Atlantic. The ATM/CNS Trilateral Meeting Argentina, Brazil and Uruguay, (SAM ATM/CNS South) also took into consideration the LHD in the region and developed several actions to be taken in order to solve the information/coordination issues. The main conclusions of these meeting are attached as an **Appendix A** to this working paper.

2.5 Several SAT meetings also discussed the issue regarding lack of coordination between Monte Agradable ATS Facility and Comodoro Rivadavia ACC, and its consequences to the neighboring ACC's (Montevideo and Atlantico). SAT/15 formulated the Conclusion SAT/15-07 whereas "the SAT Group expresses its concern about the unknown traffic coming to/from Malvinas Islands, Ascension Islands and other uncontrolled flights in the South Atlantic and calls for the involvement of ICAO to find a solution". SAT/16 took note of the results of the ATM/CNS Trilateral Meeting Argentina, Brazil and Uruguay, (SAM ATM/CNS South), mentioned in item 2.4 above. The SAT/16 has observed that the aim of this meeting was the improvement of operational procedures to ensure safety in the area concerned. The three States committed to implement all remedial actions identified during the ATM/CNS Trilateral Meeting. However, the meeting also noted the persistency of unsafe conditions occurring in the area concerned. Numerous safety concerns were still raised with respect to the operations in that area, among which unknown or uncoordinated traffic flying through many airspaces. The meeting was of the view that more efforts should be taken by all stakeholders to tackle these occurrences. In this sense, the SAT/16

Meeting formulated the Conclusion SAT/16-1. The conclusions of the SAT/15 and SAT/16 are included in the Appendix A to this working paper.

2.6 During GREPECAS/17 meeting, Caribbean and South America Monitoring Agency (CARSAMMA) presented the preliminary Total Risk estimated for 2013 in the FIRs under its jurisdiction, prior to the analysis by the Scrutiny Working Group. The value achieved was $1,19 \times 10^{-8}$, which is about 2,38 times **above** the TLS of $5,0 \times 10^{-9}$. Such value may vary, depending on the results of the Fourteenth GTE Meeting.

CAR/SAM RVSM Airspace – Estimated annual flight hours = 157.438:46 hours – (Note: Time estimated based on November 2013 sample)			
Source of Risk	Estimated Risk	TLS	Observation
Technical Risk	$9,10 \times 10^{-12}$	$2,5 \times 10^{-9}$	Below
Operational Risk	$1,19 \times 10^{-8}$	-	-
Total Risk	$1,19 \times 10^{-8}$	$5,0 \times 10^{-9}$	Above

Annual risk estimates for CAR/SAM RVSM airspace in 2013

2.7 The GTE/13Meeting concluded that the estimated annual total vertical collision risk for **2012** in CAR/SAM RVSM airspace had been below the TLS recommended by ICAO (3.39×10^{-9} fatal accidents per flight hours), based on the CRM methodology. Accordingly, it could be said that it had been a safe airspace during 2012.

2.8 It can be observed an about 3,5 times higher annual total vertical collision risk in a comparison between 2012 and 2013. This significant raise on the risk in 2013 is mainly associated to the higher number of LHD in the South Atlantic. It can be verified a 110 LHD that occurred in 2013 and 33 LHD that occurred in 2014 in the **Appendix B** of this working paper.

3. Information provided by Argentina

3.1 Air traffic from and to the Malvinas Islands should be carried out in accordance to what was agreed in the Joint Statement of the Governments of Argentina and the United Kingdom of 25 September 1991, pursuant to the terms of the sovereignty formula contained in item 2 of the Joint Statement of 19 October 1989.

3.2 Communications, navigation and surveillance management of air traffic from and to the Falkland Islands (Malvinas)* are regulated by the Letter of Operational Agreement between the Comodoro Rivadavia Area Control Centre and the Air Traffic Services Unit of Monte Agradable Airport, Falkland Islands (Malvinas)*, on the establishment of a Terminal Control Zone (CTR) and on the establishment of air traffic routing procedures. The CTR Monte Agradable Airport is within the Comodoro Rivadavia Flight Information Region (FIR). Such Operational Agreement entered into force on 9 October 1991 and was presented to ICAO by Argentina and the United Kingdom jointly, under the above-mentioned sovereignty formula.

3.3 In accordance with the Argentinean air navigation authorities the Monte Agradable ATS Unit has constantly failed to provide information about aircraft flying from and to the Falkland Islands (Malvinas)*, which is considered a breach of item III(2) of the Joint Statement between the Governments of Argentina and the United Kingdom of 25 September 1991 and items IV - 4.1 (Scope) VI – 6.6 (coordination – in paragraphs 6.6.1 and 6.6.5) of the Letter of Operational Agreement. This situation should be considered as a safety risk for aviation over the South Atlantic and it might also be considered as lack of compliance from an ICAO member State.

3.4 Argentina has presented its formal protest to the United Kingdom about such breach and notified this situation to the ICAO Secretary General (Note ARG066-13 from Argentina's Permanent Mission to ICAO).

3.5 Argentina has provided information regarding a higher degree of compliance in the presentation of Filed Flight Plans (FPL) and Departure Messages (DEP) by the Monte Agradable ATS Unit. However, it is still needed to observe what has been agreed regarding the request for traffic information and coordination of flights taking off from Monte Agradable Airport (Current Flight Plan – CPL).

3.6 Also in accordance with information provided by Argentina, the crews of the aircraft that fly from the Falkland Islands (Malvinas)* to the mainland communicate with the Comodoro Rivadavia ACC through satellite telephones and/or HF for the purpose of requesting traffic clearance and informing their estimated entry into the FIR. This procedure makes it possible to partially mitigate the risk posed by the lack of compliance with the Letter of Operational Agreement.

3.7 In the case of flights to Ascension Island or Antarctica, Argentina has informed that the Comodoro Rivadavia and Ezeiza ACC, as the case may be, the Monte Agradable ATS Unit does not communicate the flight plans (FPL) and departure message (DEP), therefore only details of the flight route are received, provided that the aircraft communicates with the control towers.

3.8 The lack of compliance with the Letter of Operational Agreement with the Comodoro Rivadavia ACC puts at risk the safety of air traffic in the airspace of the South Atlantic, since that situation causes a gap in the coordination chain that is necessary among the various FIRs involved in the provision of air traffic services to aircrafts using such airspace.

4. **Suggested action**

4.1 The Meeting is invited to:

- Take note of the information provided in this working paper.
- Recall the need that all the ATS Units involved in the South Atlantic airspace provide information to their respective ACCs in accordance with the international arrangements in force (among them, the Letters of Operational Agreements) and with the applicable ICAO rules and procedures, in order to enhance the coordination among the FIRs involved.
- Make recommendations to mitigate Large Height Deviations (LHD) events in the South Atlantic airspace.

APPENDIX A

GTE 9

1.1 The Meeting took note that there was an increment in LHD reports in the Atlantic Ocean airspace, known as AORRA (Atlantic Ocean Random Routing Area) in flights between Ascension Island (Ascension Auxiliary Airfield) and Falkland Islands (Malvinas)* (Mt. Pleasant Airport), involving Argentina, Brazil and Uruguay. Such LHDs have the characteristic that commercial flights operate during several hours without communication with the control centres involved, which considerably increases the total risk in the Region. The agreements reached among the three States were informed to the Meeting. The Meeting also requested the analysis of this situation in detail in order to coordinate procedures that would mitigate the occurrence of large height deviations, and to coordinate procedures, as reported to CARSAMMA, and that are resulting in an important risk increment within the South Atlantic airspace.

LHD increment in the Oceanic area of the South Atlantic

1.2 The Meeting took note that there was an increment in LHD reports in the oceanic airspace of the South Atlantic, known as AORRA (Atlantic Ocean Random Routing Area) in the flights between Ascension Island and Falkland Island (Malvinas)* involving Argentina, Brazil and Uruguay. This LHD have the characteristic that commercial aircraft operate during several hours without communication with the control centres involved, which considerably increases the total risk in the Region. The Meeting was informed on the agreements reached among the three States. The Meeting also requested that this situation be thoroughly analyzed among the States involved in order to reach a definite solution to these events.

1.3 In addition, the Meeting concluded that the LHD reported in this airspace sector should be taken into account for the total risk analysis, but CARSAMMA should make an additional assessment without considering these LHD in order to avoid distort safety information in the Region due to these reports.

ATM/CNS Trilateral Meeting among Argentina, Brazil and Uruguay, (SAM ATM/CNS South)

2.1 The ATM/CNS Trilateral Meeting among Argentina, Brazil and Uruguay, (SAM ATM/CNS South) was carried out in Lima, Perú, on 13 August 2010. Nine participants from the above-mentioned States assisted to this meeting.

2.2 The main objective of the Meeting was to analyse the result of the Ninth Meeting of the Scrutiny Group (GTE/9), with respect to the South Atlantic airspace (AORRA); the communication means ground-ground between ATS and ground-air units in the South Atlantic, as well as the ATS and SAR procedures were analysed.

2.3 First, the Meeting took note of large height deviations produced in the South Atlantic, and particularly in the Aeronautical Information Regions of States involved, and also the metrics used to measure implementation progress of mitigating measures in order to reduce safety risk.

2.4 As a basis, the Meeting took into consideration that the GTE Ninth Meeting (GTE/9) was held during the week from 8 to 12 March 2010, where a significant increase was identified regarding large height deviations (LHD) in the Oceanic airspace of the South Atlantic, *Atlantic Ocean Random Routing Area* - AORRA in flights between Ascension Island and Falkland Islands (Malvinas)*, involving Argentina, Brazil and Uruguay FIRs. These LHDs do not have origin in aircraft instrument failures but are related to aircraft flying for several hours without communications with the ACCs involved; therefore, without the necessary coordination among them, which considerably increases the total risk in the Region.

2.5 During the GTE/9 Meeting, it was also informed on the agreements reached among the three aforementioned States, and it was requested that this situation be thoroughly analysed among them, in order to reach a definitive solution to these events, formulating Conclusion GTE/9-1 – *Actions to be adopted by States to reduce coordination errors between adjacent ACCs*, where States are requested to take actions proposed in such conclusion, in order to reduce coordination errors between adjacent ACCs. These actions are additional to the error prevention measures in the communication cycle between adjacent ACCs approved through Conclusion GREPECAS 15/36.

“Conclusion GTE/9-1 - Actions to be adopted to reduce coordination errors between adjacent ACCs

That CAR/SAM International Organizations, in addition to the error programme in the communication cycle between adjacent ACCs, take into account the following matters:

- a) Develop training programmes for air traffic controllers, and to include the importance of air traffic coordination between ATC units within the curricula of basic courses;*
- b) Carry out a revision of letters of agreement between ACCs, so as to contemplate the inclusion of procedures and mechanisms for information exchange of coordination incidents among ATC units; and*
- c) Include the implementation technology that permits automatic coordination between ATS units within the development plans.”*

2.6 The Uruguayan delegation presented the process carried out after taking note of the situation presented in the Oceanic Sector of Montevideo FIR. This process has been initiated after receiving the LHD report of January 2010 made by CARSAMMA, which was timely sent by the SAM Regional Office, where several deviation situations occurred due to the lack of ATC coordination in flights within the AORRA, from EGYPT (Mount Pleasant) with destination FHAW (Ascension Island).

2.7 The meeting noted that the Air Traffic Head Office had sent an AFTN message to EGYPT during the first days of March, formally requesting to send FPL, DEP, ETO and CPL messages for flights that affect the Eastern Montevideo FIR. In addition to this action, a statistics estimate was made from 12/02/2010 until 12/03/2010 of AFTN messages received with the information on flights between FHAW and EGYPT, and vice-versa.

2.8 The meeting satisfactorily noted the actions adopted by Uruguay and requested to continue with the follow-up of flight plans reception and other related messages, and to notify the corresponding points of contact from Argentina and Brazil, when the same were not received, in order to continuously monitor the situation. Argentina offered to carry out the same task, collecting information on flight plans and DEP, DLA, CPL, EST, etc. messages associated to such flight plans, and to transmit such information to Uruguay, in order to make a wider follow-up.

2.9 On the other hand, Argentina informed that the reception/coordination of FPL, DLA, CPL, EST, etc. of the above-mentioned flights has been very poor up to date, and in spite of having communication channels that enable ATS messages exchange with the ACCs and ATS units in their respective jurisdictions in the South Atlantic Oceanic airspace *Atlantic Ocean Random Routing Area - AORRA*.

2.10 Brazil also informed that during the ATM/CNS Multilateral Meeting held from 14 to 18 September 2009, they presented some large-height deviations (LHD) occurred in the South Atlantic and the consequent difficulties being faced by the Atlántico ACC, with regard to flights from Falkland Islands (Malvinas)*, with destination to Ascension Island in view of the lack of transference of flights in the Atlántico FIR boundary.

2.11 In such event, ATS coordination transitory procedures in the South Atlantic AORRA were prepared. These procedures were preliminarily adopted until States establish a Letter of Operational Agreement where more appropriate operational measures may be agreed upon.

2.12 The meeting analysed the situation of the airspace under revision and considered that additional measures should be taken to those proposed by GREPECAS, in order to solve or reduce the lack of information of flights operating in the area and further become LHD reports.

2.13 Based on the previous analysis, and the exchange of points of view among the three delegations, the following actions were agreed for implementation:

1. Argentina will review and update the ATS/SAR letter of Agreement between Comodoro Rivadavia ACC (Argentina) and Islas Malvinas/Monte Agradable Falklands/Mount Pleasant (United Kingdom) CTR, in order to respond to current air traffic and safety requirements. Finalization date of this task has been set to 31 December 2010.
2. Uruguay will take actions in order to provide air traffic services in the oceanic area of Montevideo FIR, implementing means that enable such provision. To comply with this service, Uruguay will analyse the different alternatives, among which there is the availability of HF equipment in SAM 2 frequency family, or will additionally implement ADS-C and CPDLC to manage air traffic in the airspace mentioned before, or the implementation of both alternatives. Finalization date of this task has been set to 31 August 2011.
3. In case the above is not feasible, it will evaluate the possibility to reach an operational agreement with Argentina or Brazil to provisionally delegate the Oceanic Sector of Montevideo FIR, until they count with appropriate means to provide the corresponding ATS services and ensure safety in the area under analysis. Finalization date of this task has been set to 31 August 2011.
4. Among coordination procedures in the airspace of Comodoro Rivadavia and Ezeiza FIRs (Argentina), Montevideo FIR (Uruguay) and Atlántico FIR (Brazil), the following procedures established were evaluated and agreed:
 - a) To continue and if not done so, implement the error prevention programme in the communication cycle between adjacent ACCs approved through GREPECAS Conclusion 15/36.
 - b) To analyse and improve and if possible, implement transitory procedures for ATS coordination among mentioned FIRs.
 - c) When appropriate, to include such procedures, as well as other air traffic en-routing measures in the area, in a letter of operational agreement (LOA) among administrations involved.

- d) That Uruguay continues with the coordination initiated, collecting the information carried out so far as regards FPL reception and associated messages, as well as the statistics of such information, and that the same is sent to parties involved.
- e) That Argentina initiates the same data collection of FPLs and associated messages and shares such information with the concerned States.
- f) That when Brazil identifies a LHD send it as soon as possible to States involved, in order enabling an immediate analysis of causes that lead to the LHD report.
- g) Any other measure that States deem pertinent.

2.14 It is expected that once the above-mentioned measures are reduced, the number of incidents and related LHD related with the lack of air traffic coordination between Atlántico FIR (Brazil), Montevideo FIR (Uruguay), Ezeiza and Comodoro Rivadavia FIRs (Argentina), as follows:

- 40% after the first year of implementing measures agreed;
- 70% after the second year; and
- 90 % after the third year.

GTE 12

3.1 GTE resolved that the risk for safety operations of civil aircraft in the South Atlantic airspace FIRs, as for example Ezeiza, Montevideo and Atlantico, has increased due to the lack of notification of flight plans when a civil aircraft leaves Port Stanley, in the Falkland Islands (Malvinas)*, and that such risk is not mitigated due to the missing position notification by the flight crew, as required by ICAO SARPs.

GTE 13

LHDs in the South Atlantic

4.1 The Meeting took note of the efforts being made by Uruguay to complete the coverage of the Montevideo FIR with ADS-C information. It was estimated that the provider, SITA, would implement this functionality before the end of 2013.

4.2 Likewise, the Meeting took note of the lack of flight plans or communication with aircraft flying this route, making it difficult to estimate traffic or, at least, to be aware of it.

4.3 The Meeting urges the Administrations of Argentina and Uruguay to strengthen their efforts to substantially reduce LHD reports in the South Atlantic, in the Comodoro Rivadavia, Ezeiza, and Montevideo FIRs, and thus reduce safety risk.

SAT/15

Conclusion SAT/15-07 – Unknown traffic in the South Atlantic

That:

- *The SAT Group expresses its concern about the unknown traffic coming to/from Malvinas Islands, Ascension Islands and other uncontrolled flights in the South Atlantic, and calls for the involvement of ICAO to find a solution;*
- *Argentina, Brazil and Uruguay agree to hold a coordination meeting to improve operational procedures in order to enhance safety in the area concerned.*

SAT/16

5.1 The meeting particularly extended on the follow-up of Conclusion SAT-15/07 “*Unknown traffic in the South Atlantic*”. It was reported that Argentina, Brazil and Uruguay held a coordination meeting in Lima, Peru, the 13 August 2010 with the participation of ICAO, with the aim to improving operational procedures to ensure safety in the area concerned. The three States committed to implement all remedial actions identified during the coordination meeting.

5.2 The meeting however noted the persistency of unsafe conditions occurring in the area concerned. Numerous safety concerns are still raised with respect to the operations in that area, among which unknown or uncoordinated traffic flying through many airspaces. The meeting was of the view that more efforts should be taken by all stakeholders to tackle these occurrences.

5-3 The meeting therefore formulated the following conclusion:

Conclusion SAT/16-01 - Unknown traffic in the South Atlantic (follow-up on Conclusion SAT/15-07)

That in view of the longstanding problems of unknown traffic and coordination issues in the South Atlantic,

- a) *Argentina, Brazil and Uruguay will continue joining their efforts to address all the challenges in terms of infrastructure and operational procedures in order to enhance the safety in the area concerned.*
- b) *The three States will develop a Safety Case covering the area concerned, in order to determine the hazards, assess the safety risks and propose resolution/mitigation actions, under the leadership of the ICAO SAM Regional Office.*
- c) *Any other SAT member may participate in the Safety Case on request, by providing traffic data/information.*
- d) *The States will ask SAM Regional Office to send the finding of the Safety Case to be discussed at high level within ICAO, and ICAO to ensure the corrective actions are implemented.*

APPENDIX B

LHD IN THE SOUTH ATLANTIC

2013 AND 2014