



ICAO

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

WORKING PAPER

ANI/WG/SAR/TF/1 — WP/03  
16/08/19

**First NAM/CAR Air Navigation Implementation Working Group (ANI/WG) Search and Rescue (SAR)  
Implementation Task Force Meeting (ANI/WG/SAR/TF/1)  
Mexico City, Mexico, 17 – 19 September 2019**

- Agenda Item 4: ANI/WG Search and Rescue (SAR) Implementation Task Force Work Programme and Activities**  
**4.2 Follow-up to recommendations of 2018 NAM/CAR Search and Rescue (SAR) Implementation and Civil-military Coordination Meeting**

**GADSS APPENDIX TO THE CAR REGIONAL SEARCH AND RESCUE PLAN - FRANCE**

(Presented by United States)

<b>EXECUTIVE SUMMARY</b>	
This Working Paper presents follow-up action on Conclusion SAR/CM/2 of the Report of the NAM/CAR Search and Rescue (SAR) Implementation and Civil-military Coordination Meeting, Mexico City, Mexico, 5-7 November 2018.	
<b>Action:</b>	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>• Report of the NAM/CAR Search and Rescue (SAR) Implementation and Civil-military Coordination Meeting, Mexico City, Mexico, 5-7 November 2018</li></ul>

**1. Introduction**

1.1 The Report of the NAM/CAR Search and Rescue (SAR) Implementation and Civil-military Coordination Meeting, Mexico City, Mexico, 5-7 November 2018, contained:

*CONCLUSION SAR/CM/2*

*That, in order to support the functions of the Global Aeronautical Distress and Safety System (GADSS),*

- a) *the ANI/WG Search and Rescue Task Force develop basic guidelines to define search and rescue services requirements and interactions to support Global Aeronautical Distress and Safety System (GADSS), which shall be included as an Appendix to the CAR Search and Rescue Plan.*

1.2 Various ICAO regional and global forums are working on implementation of GADSS functions in general, and autonomous distress tracking (ADT) in particular due to its 1 January 2021 implementation date. It has become obvious that there are two levels of concern: (1) informing the stakeholders, and (2) developing operational procedures. This working paper has an **Appendix** with content to consider for inclusion in the Appendix to the CAR Regional SAR Plan.

## **2 Background**

2.1 The ICAO/International Maritime Organization (IMO) Joint Working Group on Search and Rescue (ICAO/IMO JWG) typically meets around September or early October of each year. A working paper has been submitted to the ICAO/IMO JWG on the topic of “Initial basic guidance and RCC checklist for the autonomous distress tracking phase”. This ICAO/IMO JWG paper has been submitted as part of a separate working paper to the ANI/WG/SAR/TF/1 Meeting and proposed that its “GADSS ADT Phase Basic Guidance” be the basis for the recommended CAR Regional SAR Plan appendix.

2.2 France submitted a Working Paper to the ICAO/IMO JWG on the topic of “Autonomous Distress Tracking (ADT) coordination procedure” (presented as Appendix to this working paper). France provides information and views which should be considered for the proposed CAR Regional SAR Plan Appendix on GADSS. It is recommended that Sections 2.3 and 2.4 of the Appendix to this Working Paper be considered concurrently as other ANI/WG/SAR/TF/1 Meeting Working Papers are discussed on this matter.

## **3 Suggested Actions**

3.1 The Meeting is invited to:

- a) note the information provided; and
- b) consider Sections 2.3 and 2.4 of the Appendix concurrently with related working papers on the matter of GADSS Appendix to the CAR Regional SAR Plan.

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International Civil Aviation Organization

**WORKING PAPER**

ICAO/IMO JWG-SAR/26-WP.20  
8 August 2019  
ENGLISH ONLY

Agenda item 3



**ICAO/IMO JOINT WORKING GROUP  
ON HARMONIZATION OF AERONAUTICAL  
AND MARITIME SEARCH AND RESCUE (ICAO/IMO JWG-SAR)**

**TWENTY-SIXTH MEETING**

Viña del Mar, Chile, 9 to 13 September 2019

**CONVENTIONS, PLANS, MANUALS AND OTHER DOCUMENTS AFFECTING SAR****Autonomous Distress Tracking (ADT) coordination procedure****Presented by France****SUMMARY*****Executive summary:***

GADSS implementation being scheduled on 1 January 2021, there is a need to agree and communicate on a coordination procedure when an ADT system is triggered. A coordination procedure based on FIRs and aeronautical SRRs is proposed to JWG discussion. This procedure allows expediting the inflight event assessment by Airline and ATS, the triggering of the appropriate emergency phase by ATS to RCC and designating the RCC in charge of the SAR response. This procedure is fully compatible with the use of Aircraft tracking systems, all ADT systems, and Cospas-Sarsat data distribution plan for beacons currently in use

***Action to be taken:*** Paragraph 3.1**1 INTRODUCTION****1.1 GADSS Implementation*****GADSS Schedule and IAMSAR publication cycle***

1.1.1 The implementation of GADSS should be effective on 1 January 2021. Next IAMSAR Manual issuance being scheduled in 2022, there should be a need to discuss new GADSS related items to be included in the next IAMSAR edition.

***Impact of GADSS implementation on Airline, ATS, and RCC***

1.1.2 As of 1 January 2021, airplanes fitted with ADT or airplanes complying with current ELT carriage requirements will share the same airspaces. Even in case of an ADT system transmission, there is a need for Airline and ATS to assess the situation on board the aircraft before considering any SAR action. GADSS is already about Aircraft Tracking by Airline or ATS. ADS-C, ADS-B, or CPDLC systems are already able to transmit at one-minute interval according to the criteria chosen by Airline or ATS.

***Inflight events: FIR remains the geographical reference***

1.1.3 Since discussions in the frame of aircraft tracking between Airline and ATS are based on ATS airspace reference (FIR), it makes sense to keep the same geographical reference for an inflight event detected by an ADT. ATS and Airline will have to coordinate events in the same airspace for aircraft with or without ADT.

**1.2 Coordination tools*****Point of contact***

1.2.1 The ICAO Operational Portal "DATA NETWORK for AVIATION (DNA)" should play a central role in the registration of the various stakeholders. Already available to airlines and ATS organizations as part of the "Aircraft tracking" concept of GADSS since November 2018, it will be made available to RCCs.

***DTR***

1.2.2 Sharing ADT data should be mandatory. The solution of a single ADT data repository, as promoted by ICAO, allow maintaining the consistency of coordination procedures between airlines and ATS, and between ATS and RCC when an emergency phase is declared. This also avoids the proliferation of distribution circuits and procedures and it helps to manage the workload and tools of RCCs.

**1.3 Open items after ICAO DTR functional workshop**

1.3.1 There are still open questions regarding ADT operational coordination procedure after ICAO DTR workshop. They are related to:

- .1 identification of the most appropriate RCC that ATS is required to alert, particularly when an aircraft is flying in the vicinity of several search and rescue regions. A coordination procedure is proposed in paragraph 2 below;
- .2 the need to define or not a maximum time to validate the data;
- .3 the definition of what is part of the same event if more than one transmission period; and
- .4 processing of incomplete data submitted but rejected or duplicated or dealing with an ADT that ceases to issue without transmitting.

## 2 DISCUSSION

### 2.1 Global objective of a coordination procedure

The objective of this paragraph is to propose a global coordination procedure between Airline, ATS, and RCC, when an ADT system transmits. GADSS being a global concept, this coordination procedure should allow a common understanding of the responsibilities between each of these operational stakeholders.

### 2.2 General principles

GADSS and ADT systems should not change current responsibilities of airlines, ATS, and RCC. In this frame, it appears of paramount importance to:

- .1 characterize an emergency phase by the situation encountered by the aircraft and not by the characteristics (frequency or distribution network) of each ADT system;
- .2 maintain the current logic for an aircraft in flight, where ATS sends emergency phases to RCC, after possible dialogue between ATS and airline; and
- .3 promote a single coordination procedure regardless of the ADT system used (Cospas-Sarsat, Iridium, Inmarsat, etc.).

### 2.3 ADT Coordination procedure – Responsibilities of Airline, ATS, and RCC.

2.3.1 When an ADT system transmits, Airline and ATS coordinate to assess the situation on board the aircraft.

2.3.2 Once the need for an emergency phase has been identified by ATS, ATS alerts the aeronautical RCC (ARCC) in charge of the aeronautical SRR interfering in its FIR with the position sent by ADT system. Thus even with ADT systems, ATS keeps sending the emergency phase to its usual referenced ARCC (as mentioned by ICAO regional navigation plans). Still to ease ATS task, it is also noticeable that aeronautical SRR boundaries are often the same as FIR boundaries footprint on the ground or at sea. In this paragraph, ARCC is a generic term meaning the SAR authority or the RCC responsible for SAR services into a given aeronautical SRR. According to each national SAR organisation, it may be an ARCC, a MRCC, or a JRCC.

2.3.3 Once the ATS has triggered an emergency phase, two main cases may happen depending on the Aircraft being still in flight or being on ground/at sea:

- .1 If ADT data show that the aircraft is still flying:
  - .1 if the track given by the ADT data evolves to another FIR, the ATS is responsible to coordinate with its neighbouring ATS units;
  - .2 each ATS unit remains responsible for alerting its "usual" ARCC interfering with its FIR; and
  - .3 alerted ARCCs coordinate together to identify the relevant SAR response (for instance ADT triggered after electrical failure at cruise level will not need an immediate triggering of SAR units by any RCC).

- .2 If ADT position data has stopped evolving (probably crashed aircraft), the Airline, the ATS unit and the ARCC try and confirm the accident (ADT data no longer available or not evolving, ELT-S or ELT-AF alert received, Aircraft Tracking data confirming the assessment that the aircraft reached the ground or sea). If "steady" ADT data indicate a location close to an aeronautical SRR boundary, the ARCC undertakes coordination with the other relevant ARCC/MRCC/JRCC, as it is currently performed.

### ***Coordination between RCCs***

2.3.4 After declaration of an emergency phase by ATS, the current regional or national SAR procedures between RCCs are used to initiate the appropriate SAR response. In this frame, each State in charge of a SRR should be responsible for registering its ARCC in the ICAO Operational Portal "DATA NETWORK for AVIATION (DNA)" and in the DTR. To improve information sharing and the coordination between RCCs, all ARCC, ARSC, MRCC or JRCC having to intervene in an aeronautical SRR should subscribe to the DTR.

## **2.4 Compatibility with Cospas-Sarsat data distribution plan.**

2.4.1 With GADSS, the DTR will be used for any type of ADT. The Cospas-Sarsat (C/S) ground segment may be seen as an addition to the DTR for ELT-DT distribution, particularly when the SPOC is not the ARCC of the relevant aeronautical SRR or when the SPOC is non-responsive.

2.4.2 For the other C/S distress beacons (PLB, EPIRB, and all ELT except ELT-DT), the distribution and distress criteria do not change. Thus, non-similarity between C/S Data Distribution Plan and an ADT "FIR-based" distribution plan is not a problem, because:

- .1 ELT-DT triggered in flight will "notify" all stakeholders (Airline, ATSU, RCC) through DTR according to first the geographical criterion based on "FIR", and then ICAO aeronautical SRR when the aircraft is on the ground or at sea (thus facilitating coordinations between Airline, ATS, and ARCC); and
- .2 the triggering at impact with ground or sea of an automatic ELT or the triggering of an ELT-S will remain routed according to the C/S Data Distribution Plan, which relies mainly on the maritime SRRs.

## **3 ACTION REQUESTED OF THE JWG**

3.1 The JWG is invited to:

- .1 take note of the ADT coordination procedure in paragraph 2.3;
- .2 share their views and comments on the proposed ADT coordination procedure; and
- .3 consider the need to include an ADT coordination procedure in the next IAMSAR 2022 edition.