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WORKING PAPER

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Sixth NAM/CAR North American, Central American and Caribbean Working Group Search and Rescue Implementation Task Force (NACC/WG/SAR/TF/6)

Mexico City, Mexico, 28 to 30 October 2025

Agenda Item 3: SAR Coordination Affairs
3.5 Global Aeronautical Distress and Safety System

UPDATED GADSS TEXT, ASSOCIATED COSPAS-SARSAT TEXT AND ABBREVIATIONS

(Presented by United States)

EXECUTIVE SUMMARY	
This paper presents recommended text for an updated overview of the Global Aeronautical Distress and Safety System (GADSS) and the associated text for the Cospas-Sarsat System.	
Action:	Suggested Actions are in Section 3
Strategic Objectives:	• Safety
References:	• Caribbean (CAR) Region Search and Rescue (SAR) Plan, Version 1.0 November 2018.

1. Introduction

1.1 The *Caribbean* (CAR) *Region Search and Rescue* (SAR) Plan, Version 1.0 November 2018, published by the ICAO North American, Central American and Caribbean Regional Office is closely aligned with the global matters contained in the *Asia/Pacific SAR Plan* maintained by the ICAO Asia/Pacific Regional Office. Included among the many global matters are the Global Aeronautical Distress and Safety System (GADSS) and the Cospas-Sarsat system.

1.2 After extensive review, the *Asia/Pacific SAR Plan*, Version 5.0, May 2025, has been published. It is recommended that the current text on GADSS and the associated Cospas-Sarsat system text in the CAR Region SAR Plan Version 1 be reviewed considering that update.

2. Background

2.1 GADSS and associated text are mentioned in several places in the CAR Region SAR Plan. The **Appendix** to this Working Paper contains the text from the Asia/Pacific SAR Plan that could also be considered appropriate for the CAR Region SAR Plan regarding GADSS, associated Cospas-Sarsat system and certain abbreviations and acronyms. (The only change to the Asia/Pacific text is the editorial correction "The other major enhancement is that…" shown in grey font. It is proposed that the following specific actions be considered for future updating of the Car Region SAR Plan or related document:

a) Paragraph 2.5: No change. GADDS is mentioned but the text is adequate;

b) Section **Recent ICAO SAR Initiatives**, paragraphs 4.4 through 4.6: Consider replacing this with a new section titled GADSS as shown in the Appendix. Paragraph 4.7 on civil-military cooperation might need to be reconsidered;

c) If Section **Recent ICAO SAR Initiatives** is retained then other initiatives need to be added, and paragraph 4.7 on civil-military cooperation might need to be reconsidered;

d) Section **COSPAS-SARSAT System** paragraphs 4.8 through 4.14: replaced with the text shown in the Appendix;

e) Paragraph 4.12 on 121.5 MHz beacons: Consider if appropriate to retain; and

f) Insert the 4 additional entries shown in the Appendix to this paper into the CAR Region SAR Plan, Appendix A Abbreviations and Acronyms

3. Suggested Actions:

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) agree to the text proposed in the Appendix;

c) consider the actions outlined in paragraph 2.1; and

d) Discuss where it would be appropriate to retain the text recommended in the Appendix.

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APPENDIX
GADDS TEXT, ASSOCIATED COSPAS-SARSAT TEXT AND ABBREVIATIONS

ICAO Global Aeronautical Distress and Safety System (GADSS)

x.x In response to the tragedies of Malaysia Airlines flight MH370 in 2014 and Air France flight AF447 in 2009, the GADSS has been developed with the primary objective of addressing vulnerabilities in the air navigation system which had hampered the timely identification and location of aircraft in distress, particularly in remote oceanic areas, and which significantly hindered effective SAR efforts and recovery operations.

x.x The four main functions of the GADSS are aircraft tracking, location of an aircraft in distress, Post Flight Localization (PFL) and flight recorder data recovery. These functions are enabled through GADSS information management [such as the ICAO OPS Control Directory and the Location of an Aircraft in Distress Repository (LADR)] which allows for the sharing of information and efficient communication between stakeholders.

x.x The aircraft tracking function provides an automated position report every 15 minutes or less, which can help reduce the time to resolve the status of an aircraft or, if necessary, help locate an aircraft.

x.x The location of aircraft in distress function uses an Autonomous Distress Tracking (ADT) system which has the capability to automatically determine and transmit the position of an aircraft with an in-flight distress condition, at least every minute, in a manner which is resilient to failures of the aircraft's electrical power, navigation and communication systems. This function is expected to significantly improve the ability for SAR services to locate such aircraft in distress and rescue survivors.

x.x Following an aircraft accident, PFL provides accurate aircraft position information by means of an ELT and/or homing signals. To assist with localization of wreckage, this function specifies a number of requirements for ELTs and Underwater Locating Devices (ULDs). To ensure accident investigation authorities obtain timely access to flight recorder information, new types of large aircraft will be equipped with a means to recover the flight recorder data in a timely manner.

x.x RCCs need to implement updated SAR practices and procedures for the GADSS. RCCs need to be able to respond to ADT activations, including that the aircraft could remain in flight across multiple SAR regions. RCC staff also need to be provided with training to ensure understanding of the ADT system and processes. The GADSS relies on implementation by SAR services of:

- accurate delimitation of SAR regions to ensure proper transfer of the SAR operation to the next responsible RCC;
- effective and efficient coordination, and procedures between the ATS unit and responsible RCC; and
- harmonized operations between aeronautical and maritime SAR services.

x.x ICAO has not prescribed a specific technology for ADT. One ADT technology solution now in operational use is a new Cospas-Sarsat 406 MHz beacon type, the Emergency Locator Transmitter for Distress Tracking, or ELT(DT). The Cospas-Sarsat System section below has further information on ELT(DT)s.

x.x ADT notifications from the ELT(DT) will be delivered to RCCs by both the existing Cospas-Sarsat Data Distribution System and the ICAO LADR. RCCs and ATS units need to implement procedures

that take these two delivery methods into account to ensure effective coordination aligned with ICAO Annexes 11 and 12 provisions on alerting and SAR services.

x.x The IAMSAR Manual provides a comprehensive overview of ADT. The IAMSAR Manual Volume II Appendix V *Autonomous distress tracking of aircraft in flight* includes anticipated *flow of events arising from an ADT device activation* that serves as a flowchart of actions. Per the requirements of ICAO Annex 12, each RCC, and as appropriate, RSC is to:

- maintain up-to-date contact details in the OPS Control Directory; and
- subscribe and maintain access to the location of an aircraft in distress repository.

x.x The *Manual on Global Aeronautical Distress and Safety System* (ICAO Doc 10165) provides guidance and information on the implementation and operation of the GADSS and is intended to facilitate the uniform application of SARPs in ICAO Annex 6 – *Operation of Aircraft*, Part I – *International Commercial Air Transport – Aeroplanes* and provisions in the *Procedures for Air Navigation Services - Aircraft Operations* (PANS-OPS, ICAO Doc 8168). Additional practical guidance is provided in the *LADR and OPS Control User Manual* developed by ICAO and EUROCONTROL which is available within the LADR application Help menu.

Cospas-Sarsat System

x.x The International Cospas-Sarsat System is available to maritime and aviation users and to persons in distress situations who activate a 406 MHz distress beacon. Access is provided to all States on a non-discriminatory basis and is free of charge for the end-user in distress. On average, about 7 persons are rescued every day with the assistance of Cospas-Sarsat alert and location data. The system is composed of:

- distress beacons operating at 406 MHz, with a homing signal transmitting on 121.5 MHz and/or 243.0 MHz [except ELT(DT)s which do not transmit a homing signal in-flight];
- SAR payloads on satellites in low- and mid-altitude Earth orbit, and in geostationary orbit;
- ground receiving stations (LUTs) spread around the world; and
- a network of Mission Control Centres (MCCs) to distribute distress alert and location information to SAR authorities, worldwide.

x.x Cospas-Sarsat has been developing two major enhancements to its distress-alerting System of value to all System users, including the aviation industry. One is the introduction in 2020 of a new space-segment architecture based primarily on Medium-altitude Earth Orbit Search and Rescue (MEOSAR) payloads aboard the European Commission's Galileo system, the Russian Federation's Global Navigation Satellite System (GLONASS) and the United States' Global Positioning System (GPS) satellites. Another potential satellite system from China, the Beidou Navigation Satellite System, could become part of the Cospas-Sarsat Space Segment.

x.x This architecture permits determination of distress incident location (independent of any location data transmitted in the beacon message) beginning with the first burst from the distress beacon. This could mean near real-time and very frequent delivery of distress alerts.

x.x The SAR/Galileo space segment also provides a Return Link Service (RLS) that, among other possible future uses, provides an acknowledgment from the MCC back to the beacon to confirm that the distress message has been received.

x.x The other major enhancement is that the technical specifications for the second generation 406 MHz distress beacon have been approved, including for ELTs. This new generation of beacons based on wideband spectrum technology improves speed and accuracy in locating an activated distress beacon. The period from beacon activation to first transmission is reduced from 50 seconds to three seconds. The specification considers in-flight activation of ELTs when certain flight parameters are exceeded. Consequently, false alerts will affect real SAR events significantly.

x.x Cospas-Sarsat has introduced a new beacon type, the ELT(DT) which will activate autonomously when an aircraft exceeds certain predetermined flight parameters which, unless corrected, may result in an imminent crash. ELT(DT)s allows an aircraft in distress to be tracked in-flight, prior to any crash, without human intervention. ELT(DT)s use both the existing beacon transmission method (first-generation) and the second-generation (spread-spectrum) modulation schemes. Distress data from activated ELT(DT)s will be delivered directly to distress authorities as well as the ICAO LADR. A growing number of aeroplanes are now operating globally with ELT(DT)s fitted.

x.x States also need to ensure the critical requirement to provide for a suitable, clear and simple means for aircraft owners to register and keep updated their 406 MHz distress beacon details.

Note: information regarding beacon registration can be found at: https://www.cospas-sarsat.int/en/beacons-pro/beacon-regulations-pro/ibrd-user-information-for-professionals).

x.x Entries in the beacon register should be available to both aeronautical and maritime RCCs on a 24-hour basis (ICAO Annex 12 refers, although ICAO Annex 10 establishes the registration requirement).

x.x Further information for distress authorities can be found in the RCC Handbook, document C/S G.007 (https://www.cospas-sarsat.int/en/documents-pro/system-documents).

Insert into CAR REGION SAR PLAN, **APPENDIX A ABBREVIATIONS AND ACRONYMS**

ADT Autonomous Distress Tracking
ELT(DT) Emergency Locator Transmitter (Distress Tracking)
LADR Location of an Aircraft in Distress Repository
PFL Post Flight Localization

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