



**WORKING PAPER**

**ASSEMBLY — 39TH SESSION**

**TECHNICAL COMMISSION**

**Agenda Item 33: Aviation safety and air navigation monitoring and analysis**

**GLOBAL AERONAUTICAL DISTRESS AND SAFETY SYSTEM (GADSS) CONCEPT:  
AN OPPORTUNITY FOR THE IMPROVEMENT OF SAR IN ICAO REGIONS**

(Presented by the 54 African States, members of African Civil Aviation  
Commission (AFCAC)<sup>2</sup>)

**EXECUTIVE SUMMARY**

For several years the implementation of search and rescue (SAR) operations in many States, particularly the developing States including those in the Africa-Indian Ocean (AFI) Region, has been beset with persistent deficiencies and challenges, with most States being unable to find viable solutions and responses to them. Clearly, the new concept of operations relating to the Global Aeronautical Distress and Safety System (GADSS) developed by ICAO in collaboration with the industry, will introduce at global level real improvements to the management of aircraft in abnormal and in distress situations. This paper examines GADSS and highlights related aspects, which, if properly implemented, may help Contracting States improve the level of efficiency of SAR services.

**Action:** The Assembly is invited to:

- a) take note of the support of AFCAC member States for the GADSS operational concept and its diligent implementation;
- b) request ICAO to fast track the development, publication and dissemination of GADSS application procedures;
- c) request ICAO to seize the opportunity when implementing the GADSS to initiate intensive awareness, through training programmes and projects for the improvement of SAR services in the regions;
- d) support AFCAC's initiatives in organizing a high-level conference on SAR in the AFI Region, in coordination with ICAO, the industry and international partners; and
- e) call upon Contracting States to encourage ICAO effort towards securing with the International Telecommunication Union (ITU) the protection of aviation spectrum requirements related to Global Flight Tracking (GFT), and accordingly support the position to be developed by ICAO for the next ITU WRC on issues of critical concern to aviation, including the protection of aviation requirements related to GFT.

*Strategic  
Objectives:*

This working paper relates to the Safety Strategic Objective.

<sup>1</sup> English and French versions provided by AFCAC.

<sup>2</sup> Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cap Verde, Central African Republic, Chad, Comoros, Congo, Cote D'Ivoire, Democratic Republic of the Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Swaziland, Togo, Tunisia, Uganda, United Republic of Tanzania, Zambia, Zimbabwe.

<i>Financial implications:</i>	This paper has no significant financial implications.
<i>References:</i>	Annex 12 — <i>Search and Rescue</i> Doc10046, <i>Report of the Second High-Level Safety Conference (2015)</i> AHWG report on GADSS ( <a href="http://www.icao.int/safety/globaltracking/Pages/Homepage.aspx">http://www.icao.int/safety/globaltracking/Pages/Homepage.aspx</a> ) APIRG/20 report ( <a href="http://www2010.icao.int/ESAF/pages/apirg20.aspx">http://www2010.icao.int/ESAF/pages/apirg20.aspx</a> ) AFI PLAN Steering Committee: Sixteenth and Seventeenth Meeting Reports ( <a href="http://www.icao.int/safety/afiplan/Pages/default.aspx">http://www.icao.int/safety/afiplan/Pages/default.aspx</a> ) ITU World Radiocommunication Conference Report ( <a href="http://www.itu.int/en/ITU-R/conferences/wrc/2015/Pages/default.aspx">http://www.itu.int/en/ITU-R/conferences/wrc/2015/Pages/default.aspx</a> )

## 1. INTRODUCTION

1.1 Over the years, many tragedies affecting aircraft operations in the AFI Region and in other regions worldwide including recent tragedies, such as the cases of Air France flight AF447 and Malaysia Airlines flight MH370, have highlighted serious deficiencies in the systems supporting SAR which have hampered timely identification and determination of the position of the aircraft in distress, and prevented an effective conduct of search and rescue and recovery operations.

1.2 In May 2014, an Ad-Hoc Working Group (AHWG) set up by ICAO and an Aircraft Tracking Task Force (ATTF), constituted by IATA, worked together to develop the concept of operations of the Global Aeronautical Distress and Safety System (GADSS). The GADSS concept was endorsed at the Second High-level Safety Conference (HLSC 2015) held in Montreal from 2 to 5 February 2015.

1.3 The implementation of GADSS in the AFI Region and other regions will be a major opportunity to enhance the efficiency of SAR organizations.

## 2. DISCUSSION

### 2.1 GADSS Concept of Operations

2.1.1 In supplementing and furthering existing ICAO documents, the GADSS concept identifies current issues under four headings: Aircraft Systems, Air Traffic Services (ATS), the Search and Rescue (SAR) system and Information Management (IM).

2.1.2 To address these issues, the GADSS entails the following main components:

- a) aircraft tracking system;
- b) Autonomous Distress Tracking (ADT) System; and
- c) flight data recovery.

2.1.3 The implementation of GADSS will contribute to enhancing the capacity of SAR services to timely determine that an aircraft is in distress, locate it and rescue survivors in the event of an accident. Moreover, the capacity of GADSS to determine a reduced search area means a reduction in the scope of SAR operations, and therefore improved efficiency and reduced risk for SAR operations crew members.

2.1.4 It will also ensure that flight data can be recovered efficiently, making easier the identification of all issues relating to the circumstances of an aircraft accident.

## 2.2 SAR in the AFI Region

2.2.1 In the AFI Region, the lack of resources continues to slow down the pace of implementation of efficient SAR services. Deficiencies highlighted by the APIRG and ICAO USOAP activities are related to the absence of: SAR legislation, SAR cooperation agreements, effective implementation of emergency locator transmitters (ELT) 406 MHz beacons, suitably equipped SAR units, sufficient trained and qualified personnel and regular SAR exercises.

2.2.2 The provision of effective SAR services entails the mobilization of essential State assets including those of the Air Force, Navy and other State institutions and entities. Additionally, assets of neighbouring States and other organizations are most likely to be involved in SAR missions. Hence the critical need for continuous sensitization on SAR issues at all levels, including high-level authorities.

2.2.3 With respect to regional initiatives, the sixteenth meeting of the Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan) Steering Committee (Montreal, November 2015) identified the need for urgent action to increase the capacity of AFI States to provide effective SAR services and recommended that SAR be included in the AFI ANS Performance Indicators and Targets.

2.2.4 In addition, the Twentieth meeting of APIRG (APIRG/20, Yamoussoukro, November 2015) recognizing the importance and need for improvement of SAR service delivery, called upon AFCAC and ICAO to establish a regional framework to facilitate operational cooperation and efficiency in SAR, establishment of SAR Team of Experts and SAR Support Project.

2.2.5 Furthermore, APIRG/20 adopted a set of AFI ANS Key Performance Indicators and Targets including the requirement to establish effective and operational Search and Rescue (SAR) organization by 31 December 2016.

2.2.6 The seventeenth meeting of the AFI Plan Steering Committee held in Malabo on 30th June 2016 adopted ANS performance indicators and targets including SAR as well as related implementation projects to assist States in key priority areas.

2.2.7 AFCAC has included in its work programme for 2017 the organization of a highlevel conference on SAR as recommended by the Third AFI Safety Symposium (Malabo, 28 June 2016). AFCAC also recognizes the support provided by ICAO to the enhancement of SAR and cooperation among States and regions through a special implementation project (SIP) on an AFI/MID/APAC interregional workshop held in Seychelles, in July 2016.

## 2.3 Advantages of GADSS

2.3.1 For the time being, GADSS is a high-level general concept. It seeks to ensure that relevant information is provided in a timely manner to the appropriate persons involved in search and rescue activities. The same goes for recovery of flight data, flight data recorders and investigations on aircraft accidents. Furthermore, the implementation of GADSS will bring down the costs of these activities.

2.3.2 All stakeholders worldwide will benefit from the application of the provisions of GADSS especially areas where SAR operation is difficult.

2.3.3 The improvements expected from the GADSS concept will essentially be given by aircraft tracking systems in normal and in distress situations.

2.3.4 With regard to AFI SAR, in addition to operational improvements expected with the implementation of GADSS, the AFI Region will benefit from the publication and dissemination of GADSS provisions which can be used to sensitize the high level authorities and various SAR stakeholders.

## 2.4 GADSS Frequency Spectrum Issues

2.4.1 AFCAC has noted with satisfaction the inclusion of the International Telecommunication Union (ITU) World Radiocommunication Conference of 2015 (WRC-15), with respect to the frequency band (1090 MHz) allocated to the Global Flight Tracking (GFT) for space-based ADS-B operation, as well as the inclusion of an agenda item for ITU WRC-19 in order to facilitate the development of Global Aviation Distress and Safety System (GADSS). Contracting States are called upon to support ICAO's position for the ITU WRC-19 as well as its effort towards securing the protection of aviation spectrum requirements for network communications associated with remote storage of flight information.

## 3. CONCLUSION

3.1 Globally States have longstanding deficiencies in the implementation of Annex 12.

3.2 At a regional level, AFCAC and ICAO, through the APIRG and the AFI Plan, have collaborated to improve compliance of Annex 12.

3.3 It is expected that the implementation of the GADSS concept of operations will result in significant improvement in the efficacy of SAR services. In the AFI Region and other regions, its implementation should also be the opportunity for greater sensitization of States to the importance of, and need to, set up an efficient SAR system.

3.4 In view of the benefits expected from the full operational capability of the GADSS, AFCAC and African States will support, and calls upon the aviation community to support, the position to be developed by ICAO for the next ITU WRC on issues of critical concern to aviation such as the protection of aviation requirements related to Global Flight Tracking.