



WORKING PAPER

ASSEMBLY — 40TH SESSION

TECHNICAL COMMISSION

Agenda Item 30: Other issues to be considered by the Technical Commission**IMPLEMENTATION OF THE GLOBAL AERONAUTICAL DISTRESS AND SAFETY SYSTEM STANDARDS AND ICAO ANNEX 12 RELATING TO SEARCH AND RESCUE**

(Presented by Australia and co-sponsored by New Zealand and South Africa)

EXECUTIVE SUMMARY

The Global Aeronautical Distress and Safety System (GADSS) aims to improve the management of aircraft in abnormal and distress situations.

Meeting the mandated global implementation timeframe of 1 January 2021 for Autonomous Distress Tracking (ADT) for certain aircraft at one minute intervals will be challenging for all ICAO States including Australia. Certain technology and equipment required to support the ADT component is still under active development.

There are also ongoing challenges for global, regional and national implementation of ICAO Annex 12 – *Search and Rescue* that warrant increased ICAO attention, to avoid hampering the safety benefits that the GADSS can provide.

Action: The Assembly is invited to:

- recommend that ICAO seek advice from Member States and industry on their preparedness for commencement of the GADSS ADT Standard from 1 January 2021; and
- recommend that ICAO increase efforts to improve the implementation of Annex 6 – *Operation of Aircraft* and Annex 12 – *Search and Rescue* capability at the global, regional and national level, which will also complement the implementation of the GADSS.

<i>Strategic Objectives:</i>	This working paper relates to the Safety Strategic Objective.
<i>Financial implications:</i>	The activities referred to in this paper will be subject to the resources available in the 2020-2022 Regular ICAO Programme Budget and/or from extra budgetary contributions.
<i>References:</i>	Annex 6 – <i>Operation of Aircraft</i> Annex 12 – <i>Search and Rescue</i> GADSS Concept of Operations Version 6.0

1. INTRODUCTION

1.1 The loss of Air France Flight AF447 in June 2009 and the disappearance of Malaysian Airlines Flight MH370 in March 2014 highlighted concerns surrounding aviation safety and tracking of aircraft, particularly where aircraft traverse large expanses of ocean. Chief among the concerns is the lack of timely notification and availability of accurate information on the location at which the flight of the aircraft in distress was terminated, which can hinder search and rescue (SAR) efforts and accident or incident investigation.

1.2 Global aviation safety through flight tracking anywhere in the world is crucial to provide timely and ongoing knowledge of where an aircraft is at anytime, anywhere. But the safety benefits that could be gained through efforts to provide faster and more accurate information on aircraft in distress can only be realised with effective regional and national implementation of ICAO Annex 12 – *Search and Rescue Standards and Recommended Practices* (SARPs) and addressing current global SAR system weaknesses.

1.3 In May 2014, the Ad-Hoc Working Group (AHWG) set up by ICAO and the Aircraft Tracking Task Force (ATTF) formed by International Air Transport Association (IATA) members, collaborated to develop the initial concept of operations of the Global Aeronautical Distress and Safety System (GADSS).

1.4 Since then, ICAO Annex 6 – *Operation of Aircraft*, Part I, Chapter 3, Standard 3.5 (*Global Aeronautical Distress and Safety System*) provisions were adopted by ICAO and became applicable on 8 November 2018. This was the first step to implement the GADSS and requires aircraft operators to track aircraft positions operating under normal flight conditions through automated reporting at least every 15-minutes, with an optional abnormal-event tracking capability.

1.5 The next step to implementing the GADSS, a further requirement for Autonomous Distress Tracking (ADT) of certain aircraft at one-minute intervals, is mandated for global implementation by 1 January 2021, pursuant to ICAO Annex 6, Part I, Chapter 6, Section 6.18 (*Location of an Aeroplane in Distress*). Meeting the mandated implementation timeframe will likely be challenging for all ICAO States including Australia.

1.6 The implementation of the GADSS in the Asia-Pacific Region and elsewhere, however, presents a major opportunity to enhance the management of aircraft in abnormal and distress situations, and enhance global, regional and national implementation of ICAO Annex 12, provided certain challenges can be overcome.

2. DISCUSSION

2.1 GADSS

2.1.1 The GADSS is being implemented in stages, which commenced in 2018. It aims to improve aviation safety through faster detection and location of aircraft in distress, facilitate a more efficient and effective SAR response, and assist with any accident or incident investigation efforts.

2.1.2 To achieve these objectives, the GADSS comprises the following components:

- a) a global aircraft tracking system;
- b) a global ADT system; and

c) global post-flight localization and data recovery.

2.1.3 The GADSS ADT Standard requiring more regular, autonomous tracking of distressed aircraft (by aircraft operators), per ICAO Annex 6, Part I, Chapter 6, Section 6.18 (*Location of an Aeroplane in Distress*), will take effect from 1 January 2021:

6.18.1 All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2021, shall autonomously transmit information from which a position can be determined by the operator at least once every minute, when in distress, in accordance with Appendix 9.

2.2 Implementation of the GADSS in Australia

2.2.1 Australia has not yet established regulations requiring Australian aircraft operators to meet the provisions of ICAO Annex 6, Part I, Chapter 3, Section 3.5 (*Aircraft Tracking*). Australia is working towards implementing the GADSS related Standards as part of a broader review of its flight operations regulations, currently anticipated to be finalised in 2021.

2.2.2 However, in March 2015 Australia announced a trial across its flight information region (FIR) in the South Pacific (later joined by several States) of enhanced flight tracking by the air navigation service provider, Airservices Australia. This initiative adapted the existing technology (FANS 1/A (CPDLC/ADS-C)) already used by more than 90 per cent of long-haul passenger aircraft, and saw air traffic control receive ‘operations normal’ reports at least every 15 minutes, well ahead of the previous standard tracking rate of 30 to 40 minutes.

2.2.3 The trial was successful and facilitated an increase to real time monitoring of aircraft positions should a distress situation arise. This service continues to operate across Australia’s entire FIR which covers 11 per cent of the world’s surface.

2.3 Challenges of implementing the GADSS

2.3.1 Despite efforts to progress the implementation of the GADSS in Australia, meeting the more stringent ADT requirement by 1 January 2021 will be challenging.

2.3.2 Full implementation of the ADT and accompanying post flight localisation and recovery (PFLR) requirements is dependent on the development, testing and certification of new technology and equipment, for successful installation into new and (optionally) retrofitting existing aircraft. Australia understands that work is underway by aircraft manufacturers to develop the required new technology and equipment to meet the mandated implementation date.

2.3.3 In addition, there appears to be inconsistent awareness across States and industry of the GADSS, and a lack of coordination and information sharing between relevant ICAO technical panels and those responsible for SAR, leading to potential misunderstandings and differing interpretations.

2.3.4 Consistent with ICAO’s *No Country Left Behind* initiative, Australia believes some States, including those within the Asia Pacific Region, will require assistance from ICAO to support the GADSS implementation. This includes the development of relevant operational procedures and training by aircraft operators, air traffic services units (ATSU) and rescue coordination centres (RCC), establishing emergency points of contact, and developing and implementing necessary regulations. Australia also understands there may be implications for some SAR service providers and their fleets.

2.3.5 In acknowledging these concerns and with under two years remaining, Australia believes it is timely for ICAO to seek advice from Member States and industry on their preparedness for commencement of the GADSS ADT Standard from 1 January 2021.

2.4 **Effective SAR capabilities will complement the GADSS**

2.4.1 While there is much work to be done, the full implementation of the GADSS will contribute to enhancing the overall capacity of SAR services to efficiently alert ground stations that an aircraft is in distress, locate it and rescue survivors in the event of an accident or incident. In addition, the capacity of the GADSS to determine a reduced search area means a reduction in the scope of SAR operations, resulting in significant time savings, improved overall SAR efficiency and reduced risk for crew members involved in SAR operations.

2.4.2 Australia strongly supports global efforts to improve measures for tracking aircraft and providing efficient and effective SAR capabilities across all ICAO regions. However, the benefits to be derived from the GADSS are also critically dependent on the capability of State SAR services to respond in the event of an aircraft accident or incident.

2.4.3 Noting there are significant areas for improvement in global Annex 12 implementation, Australia has actively participated on the ICAO Flight Operations Panel which has been instrumental in the development of the tracking and the GADSS initiative. In addition, Australia has actively supported global and regional efforts to improve Annex 12 implementation.

2.4.4 Australia's active support has included funding a two-year secondment of a SAR expert to ICAO Headquarters (2015-2017); funding and resourcing regional SAR capability improvement programs in Indonesia, Maldives, Mauritius and Sri Lanka; initiating and chairing the ICAO Asia/Pacific SAR Task Force (2013-2015) which developed ICAO's first Regional SAR Plan.

2.4.5 Australia continues to participate as a Member of the ICAO/International Maritime Organization Joint Working Group on Harmonization of Aeronautical and Maritime SAR; and ongoing participation in the ICAO Asia/Pacific SAR Work Group, which focuses on implementation of the Asia Pacific Regional SAR plan.

3. CONCLUSION

3.1 Meeting the 1 January 2021 ADT mandated global implementation timeframe will be challenging for all ICAO States, including Australia. Among the challenges, certain technology and equipment required to support the ADT system is still under active development.

3.2 Significant challenges also persist concerning global, regional and national implementation of ICAO Annex 12 SARPs that will hamper the safety benefits that could be gained through the GADSS and subsequent improved aircraft tracking unless otherwise addressed by ICAO, regions and States.