



WORKING PAPER

ASSEMBLY — 40TH SESSION

TECHNICAL COMMISSION

Agenda Item 30: Other issues to be considered by the Technical Commission

ISSUES OF IMPLEMENTING AUTONOMOUS DISTRESS TRACKING (ADT) WITHIN THE GLOBAL AERONAUTICAL DISTRESS AND SAFETY SYSTEM (GADSS)

(Presented by the Russian Federation)

EXECUTIVE SUMMARY

In this paper, we address the implementation status of Recommendation 4.4/1 Search and Rescue (SAR) and the Global Aeronautical Distress and Safety System (GADSS), adopted at the Thirteenth Air Navigation Conference (AN-Conf/13); specifically, the part that charges ICAO with completing, as required, the development of GADSS-related Standards and Recommended Practices (SARPs) and the respective Procedures for Air Navigation Services (PANS) provisions.

Challenges in implementing SARPs are set forth in Annex 6, Part I, 6.18 – "Location of an aircraft in distress" and the incompleteness of ICAO provisions and procedures needed to use information during autonomous distress tracking (ADT). In connection with this, this paper expresses concern about whether ADT implementation plans are realistic under SARPs timelines.

Action: The Assembly is invited to:

- a) acknowledge that there are issues that must be resolved about ADT implementation, and concerns about the realism of current ADT implementation plans per the timeline set forth in Annex 6, Part I, 6.18 (1 January 2021); and
- b) enjoin the Council to:
 - 1) consider the status of SARPs and PANS provisions defining GADSS as a global ICAO system and its function; specifically, emergency tracking and using the ADT systems;
 - 2) based on results of the aforementioned, assess how realistic the current timelines are for the start of implementing ADT SARPS in Annex 6, Part I, 6.18 and whether it is advisable to revisit the timeline, considering the time needed for States in the process of developing provisions set forth in (1) to consider their adaptation in national rules; and
 - 3) based on the assessment in (2), take the corresponding actions, as needed.

<i>Strategic Objectives:</i>	This working paper relates to the Strategic Objective <i>Aviation Safety – Global Tracking of Aircraft</i>
<i>Financial implications:</i>	None

¹ Russian version provided by the Russian Federation.

<i>References:</i>	A40-WP/12, Report on the outcomes of the Thirteenth Air Navigation Conference (AN-Conf/13). <i>Report of the Thirteenth Air Navigation Conference</i> (Doc 10115). Annex 6— <i>Operation of Aircraft, Part I – International Commercial Air Transport Aeroplanes</i> . <i>Manual on Location of Aircraft in Distress and Flight Recorder Data Recovery</i> (Doc 10054). <i>Global Aeronautical Distress and Safety System</i> (GADSS). ConOps, Version 6.0.
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1. INTRODUCTION

1.1 At the Thirteenth Air Navigation Conference (AN-Conf/13, 9–19 October 2018), while addressing Item 4 of the agenda, sub-item 4.4 – *Implementing processes and procedures of search and rescue (SAR)*, it was noted that as helpful as the GADSS Concept of Operations (ConOps) was in providing valuable information on the direction that ICAO had taken and was likely to take in the future, there was **still an important role for States to fully assess the impact of these provisions and to have the opportunity to formally comment on them.**

1.2 The conference also acknowledged that additional ICAO provisions will be needed to support current Standards in Annex 6 – *Operation of Aircraft*, and, specifically, issues related to the amount of information received with the help of autonomous distress tracking (ADT) among operators of aircraft, air navigation services providers (ANSPs), rescue coordination centres (RCCs), military authorized agencies, and other parties.

1.3 As a result of the discussion, the Conference adopted Recommendation 4.4.1 d), charging ICAO with completing, as needed, the development of GADSS-related Standards and Recommended Practices (SARPs) and Procedures for Air Navigation Services (PANS).

2. STATUS OF DEVELOPING GADSS-RELATED ICAO MATERIALS

2.1 The GADSS ConOps was developed over several iterations. Version 6.0 was accepted by the Air Navigation Commission of ICAO as the basis for future development of the appropriate ICAO provisions. Information about the status of the concept was presented to States in October 2017 in the ICAO (№ EB 2017/46 AN 11/1.1.29) in order to "raise awareness of the GADSS ConOps Version 6.0 so that States and industry can plan accordingly."

2.2 In parallel, some amendments to Annex 6, Part I were developed and adopted, containing SARPs to ensure routine tracking starting in November 2018 and to equip, starting on 1 January 2021, newly issued airplanes with ADT equipment to locate aircraft in distress.

2.3 In support of implementing requirements of the aforementioned SARPs in the part relating to routine tracking, in 2017, Circular 347 – *Aircraft Tracking Implementation Guidelines* was published, containing primarily information on ensuring tracking 4D/15.

2.4 In the first half of 2019, the *Manual on Location of Aircraft in Distress and Flight Recorder Data Recovery* (Doc 10054) was published, containing, among other items, ADT guidance material.

3. REGULATORY ASPECTS OF GADSS IMPLEMENTATION

3.1 Right now, questions of the interaction among aviation agencies, search and rescue agencies, and other authorized agencies in emergency situations are regulated by several Annexes and accompanying PANS, ICAO manuals and circulars. Among them, the top posts are held by Annexes 6, 11 — *Air Traffic Services* and 12 — *Search and Rescue*, which define the principles, procedures, and language of interaction, as well as distress situation status and phase.

3.2 While noting progress in developing GADSS-related informational and guidance materials described above in section 2, as well as the awareness campaign to support the system, we must however point out that SARPs and PANS should remain the basis for implementing a global system (as it is believed GADSS will be) and they should, as much as possible, ensure uniform use and legal basis for their implementation in States.

3.3 At this stage, only SARPs in Annex 6, Part I, sections 3.5 and 6.18 have passed the procedure of consultations with States, are adopted by the Council of ICAO, and have the proper status for planning implementation on the national level. The applicability of these SARPs, however, is limited mainly by the scenarios of emergencies when flying over ocean areas.

3.4 It bears noting that integrating of GADSS functions and particularly the ADT function with its special nature, into the existing system of procedures and rules cannot be executed without the appropriate amendments/addenda to SARPs and appropriate Annexes and accompanying PANS. This work is in the initial stage and its results are subject to review in accordance with established ICAO procedures, including consultations with States.

3.5 As such, Recommendation 4.4.1 d) of the Thirteenth Air Navigation Conference, calling ICAO, as required, to finish developing GADSS-related SARPs and PANS, is still being executed.

4. UNCERTAINTIES AND QUESTIONS, NEEDING RESOLUTION

4.1 ICAO management (Doc 10054, *Manual on Location of Aircraft in Distress and Flight Recorder Data Recovery*) imagines GADSS ConOps as intended "as a high-level roadmap to provide context to the elements which are included in the Annexes." Meanwhile GADSS ConOps "does not imply any obligations on the part of the States."

4.2 Development and adoption of provisions that should support the implementation and use of ADT SARPs in Annex 6 starting on 1 January 2021, is forecasted to be finished at the end of 2020 (ANB Briefing to Council, 16 April 2019). Setting aside the issue of whether this forecast is realistic, the application date of future provisions in the form of amendments to existing Appendices and PANS, even if they are moderate, must account for time to adapt them to the normative base and implementation at the local level. Clearly, with the most optimistic expectations, the readiness of States for the use of ADT cannot be ensured by 1 January 2021.

4.3 Along with this, discussions on issues of receiving, processing, and exchanging ADT data and distributing the responsibility among aircraft operators, ANSP, RCC, and other interested parties are ongoing. A particular place in these discussions is occupied by the proposed use of centralized ADT database, known as a distress tracking data repository, or DTR. It's important to keep in mind that the use of this resource is linked with a broad set of issues that need to be resolved. One of those questions is determining the status of DTR as either a voluntary or a mandatory element of GADSS, the answer to

which determines how to resolve organizational/legal questions (including a subject containing and ensuring DTR operations), financial (funding sources and means), and operational/technical questions.

4.4 In the last category, the key question is how to identify emergency messages and the aircraft that initiated them in flight (for example, emergency locator transmitter ELT(DT) radio buoys), for automatic distribution of notices and location information using DTR. Decisions on these questions must be reflected in operational/technical specifications for DTR. These specifications, however, are still in the development stage, continue to be revisited and are subject to approval, presumably, in mid-2020, with possible consequences for national procedures of registering radio buoys and publication of registration databases.

4.5 In terms of implementing onboard ADT equipment, at this stage there are no contraindications in terms of the readiness of equipment and aircraft manufacturers to fulfill the provisions of Annex 6, Part I, 6.18 for proper equipment of new aircraft, starting on 1 January 2021. Nonetheless, schedules of development, testing, and certification are very tight and require extraordinary efforts to meet that goal. We know, however, that in the European region an amendment was adopted to the normative document EC No 965/2012CAT.GEN.MPA.210 to postpone from 1 January 2021 to 1= January 2023 the "deadline for supplying proper and automatic tools to accurately determine the location of where the flight stopped after an incident with severe damage to the aircraft" because "conditions have not yet been determined for satisfactory compliance" with this requirement.

5. CONCLUSION

5.1 Existing ICAO provisions for distributing and using information about distressing situations and search-and-rescue operations are based on many years of experience and are reinforced by national norms, rules, and procedures. Implementation of innovations and technical improvements within GADSS cannot be executed without ICAO provisions to define the system and its functions, their coordination with States, and provision of enough time to implement these provisions in the national normative documentation and practice.

5.2 Based on continuing discussions on a set of known and new questions among potential ADT providers and users, as well as said uncertainties, it seems premature to think that GADSS is ready for global use (in terms of ADT).

5.3 Considering the critical importance of ICAO provisions to consistently and effectively apply ADT, it would be advisable to conduct a realistic assessment of the status of developing these provisions, determine the appropriate deadlines, while accounting for the time needed to be adapted at the national level. Upcoming work should be focused on this area, using, if necessary, some resources from the GADSS informational support project.