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WORKING PAPER

THIRTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 9 to 19 October 2018

COMMITTEE A

Agenda Item 2: Enabling the Global Air Navigation System 2.2: Integrated CNS and spectrum strategy

ESTABLISHING A RETURN LINK IN THE 1559-1610 MHz BAND UNDER THE GADSS

(Presented by the Russian Federation)

EXECUTIVE SUMMARY

This paper proposes that a space-to-Earth return link in the 1559-1610 MHz band be incorporated into the ICAO concept for the Global Aeronautical Distress and Safety System (GADSS), and that provisions enabling use of such a link be included in the International Telecommunication Union (ITU) Radio Regulations.

Action: The Conference is invited to agree to the Recommendation in paragraph 3.3.

¹ Russian version provided by the Russian Federation.

1. INTRODUCTION

1.1 The implementation of the Global Aeronautical Distress and Safety System (GADSS) Concept of Operations (ConOps), currently under development by ICAO, as well as the aircraft tracking standards in Annex 6 — *Operation of Aircraft*, Amendment 42, is intended to enhance the effectiveness of existing search and rescue services by improving upon a number of key elements during all phases of flight and in all circumstances, including distress situations.

1.2 The current GADSS ConOps, Version 6.0, makes provision for a functionality to allow the aircraft operator to activate the automatic distress tracking function (ADT) when there is uncertainty about the status of the aircraft and attempts to establish communications with the crew have failed.

1.3 In such cases, remote activation of the emergency locator transmitter should ensure the transmission of aircraft position information regardless of the situation on board the aircraft. However, there must be an appropriate communication link for this to function.

2. DISCUSSION

2.1 The Cospas-Sarsat requirements for second-generation 406 MHz distress beacons provide for a return link to transmit a message confirming reception of a distress signal. In future, this link may also be used for acquisition of an external command to activate the beacon, as envisaged by the GADSS ConOps.

2.2 The current interface control documents for the GLONASS and Galileo global navigation satellite systems (GNSS) provide for downlink (space-to-Earth) transmission of coded messages addressed to the emergency locator transmitter (ELT) within the structure of navigation signals at their operating frequencies in the L1 band (1602 and 1575.42 MHz, respectively). This potentially makes it possible to transmit the ELT activation command via the Galileo satellites and the new-generation GLONASS-K2 satellites.

2.3 Current second-generation beacon prototypes are equipped with a GNSS receiver to enable autonomous detection of the aircraft location, as well as ensure reception of messages transmitted by satellites of the GLONASS and Galileo constellations and addressed to the ELT. Second-generation ELT beacons under development in the Russian Federation are equipped with receivers capable of signal acquisition from satellites of the GLONASS, GPS and Galileo navigation systems.

2.4 In view of the above, it is advisable that a communication link to send a search and rescue centre message confirming reception of a distress signal from an aircraft, as well as to transmit other messages and commands addressed to the ELT, be added to the GADSS ConOps.

2.5 Furthermore, as the 1559-1610 MHz band is allocated on a primary basis to aeronautical radio navigation and radio navigation-satellite services, in accordance with the ITU Radio Regulations, and as information addressed to the ELT is unrelated to the above-mentioned services, it is proposed under Agenda Item 1.10 of the World Radiocommunication Conference 2019 (WRC-2019) that permission be granted to use signals from the radio navigation satellite system (space-to-Earth) in the 1559-1610 MHz band in the interests of GADSS to transmit a search and rescue centre message confirming reception of a distress signal from an aircraft, as well as other messages and commands addressed to the ELT.

3. CONCLUSION

3.1 The GADSS ConOps requires the addition of a communication channel to be implemented via GNSS satellites with the purpose of transmitting messages and commands addressed to the ELT.

3.2 In order to ensure that the above-mentioned communication channel operates in accordance with the ITU Radio Regulations, it is necessary to address the possibility of using signals from the radio navigation satellite system in the 1559-1610 MHz band to transmit messages confirming reception of a distress signal from an aircraft, as well as other messages and commands addressed to the ELT.

3.3 In view of the above, the Conference is invited to agree to the following recommendation:

Recommendation 2.2/x - Return Link for the Global Aeronautical Distress and Safety System (GADSS)

That the Conference:

- a) recommend to ICAO to consider the possibility of enhancing the GADSS Concept of Operations with a communication channel intended to transmit a search and rescue centre message confirming the reception of a distress signal from an aircraft, as well as other messages and commands addressed to the ELT.
- b) recommend to ICAO, under World Radiocommunication Conference 2023 (WRC-23) Agenda Item on GADSS, to support the inclusion in the Radio Regulations of provisions allowing the use of signals from the radio navigation-satellite services (space-to-Earth) to transmit messages confirming reception of a distress signal from an aircraft, as well as other messages and commands addressed to the ELT.

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