International Civil Aviation Organization

Twenty Fifth Meeting of the Communications/ Navigation and Surveillance Sub-group (CNS SG/25) of APANPIRG

Video Tele-Conference, 18 – 22 October 2021

Agenda Item 5: Navigation

5.4 Other navigation related issues

THE BDS STANDARDIZATION AND APPLICATION IN CIVIL AVIATION

(Presented by China)

SUMMARY

This paper presents the status of the BeiDou Navigation Satellite System (BDS) standardization activities in ICAO and the BDS application practices in search and rescue in civil aviation.

1. INTRODUCTION

1.1 Civil Aviation Administration of China (CAAC) is actively promoting the BDS standardization work in ICAO. Great efforts have been made in the promotion of the BDS in civil aviation application.

2. DISCUSSION

2.1 China has completed the BDS Standards and Recommended Practiced (SARPs) development and validation in ICAO NSP and is actively participating in the DFMC GNSS standardization work in civil aviation.

2.2 The BDS-3 system (the third phase of BDS) was fully commissioned on July 31, 2020. In November 2020, the BDS SARPs was fully approved at the NSP/6 meeting and was submitted to the Air Navigation Commission for follow-up approval procedures. ICAO has sent the GNSS SARPs amendment proposal to the contracted states in the form of State Letters to call for comments on July 6, 2021.

2.3 China has been promoting the incorporation of the BDS in the NSP DFMC GNSS standards since 2021. The incorporation of the BDS in the NSP DFMC GNSS standardization Ad-hoc groups has been initiated from all aspects, which include the GNSS Manual, the DFMC GBAS, the SBAS authentication, the advanced airborne receiver autonomous integrity monitoring (ARAIM) SARPs and the IGM (Ionospheric Gradient Monitoring) ad-hoc groups. The BDS DFMC MOPS development in EUROCAE has also been initiated. The GBAS ground stations installed in Dongying Shengli Airport and Zhoushan Putuoshan Airport are being upgraded to be compatible with GPS,

Galileo and BDS by Beihang university and Tianjin 712 Communication and Broadcasting Company, in order to support the ICAO DFMC GBAS standardization.

2.5 The BDS has already been put into practice in the field of civil aviation search and rescue, with BDS application in civil aviation being promoted gradually in China. In September 2018, a general aviation helicopter of Yunnan Fengxiang General Aviation Co., Ltd. lost contact during an aerial survey mission in Hotan, Xinjiang. Owing to the BDS terminal devices installed on the aircraft, the search and rescue personnel were able to, in a timely fashion, access the positioning information and determine the location where the helicopter went missing, and as a result people on board the helicopter were rescued. This represents a classic case of BDS in aviation supporting search and rescue operation.

2.6 In an effort to improve the capability in aircraft tracking and surveillance, CAAC launched the BDS-based demonstrative application. From 2019 to 2020, China retrofitted a total of 10 Boeing 737 and 10 Airbus A320 of Air China with BDS tracking and positioning devices which could provide positioning and tracking of civil aircraft. It is expected that by the end of 2025, all China's civil aviation fleet will be equipped with the devices to realize global aircraft tracking and surveillance based on BDS DFMC GNSS.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) recognize the important role BDS already plays in aviation operation and search and rescue;

b) support BDS DFMC GNSS standardization.

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