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# ASSEMBLY — 42ND SESSION

## TECHNICAL COMMISSION

**Agenda Item 24: Aviation Safety and Air Navigation Priority Initiatives**

## AVIATION SAFETY AND AIR NAVIGATION IMPROVEMENT: THE USE OF SPACE-BASED ADS-B

(Presented by Kazakhstan)


| EXECUTIVE SUMMARY | |
|---|---|
| This information paper provides information on the use of space-based automatic dependent surveillance — broadcast (ADS-B) in Kazakhstan and its contribution to maintaining a higher level of safety and security. | |
| *Strategic Goals:* | This working paper relates to *Every Flight is Safe and Secure.* |
| *Financial implications:* | |
| *References:* | Doc 9750, *Global Air Navigation Plan* |

## 1. INTRODUCTION

1.1 As detailed in Global Air Navigation Plan (GANP) portal aviation system block upgrade (ASBU) element ASUR-B1/1 “Reception of aircraft ADS-B signals from space (SB ADS-B)” the spacedbased automatic dependent surveillance — broadcast (ADS-B) provides an aircraft's identification, position, altitude, velocity, and other information to a receiver on an orbiting satellite.

1.2 The broadcasted aircraft position/velocity is normally based on the global navigation satellite system (GNSS) and transmitted at least once per second. Aircraft ADS-B signals are received on one or more orbiting satellites, and this information is passed through a data network to a service Delivery point at an air traffic service facility (or facilities). The main purpose is to provide surveillance coverage in locations where ground stations siting is not possible or not currently provided.

1.3 The use of the spacedbased ADS-B provides precise position/velocity information in an airspace where it is not cost-effective or even feasible to place ground surveillance infrastructure.

## 2. BACKGROUND INFORMATION

2.1 In Kazakhstan air navigation services provider (ANSP) RSE “Kazaeronavigatsia” air traffic control (ATC) system has been augmented by implementing the processing of space-based ADS-B data received from the IRIDIUM satellite constellation for the Astana, Almaty and Aktobe ATC centres.

2.2 The spacedbased ADS-B became available through a contract between ANSP and Aireon company (with the representative company in Kazakhstan) using satellite communications company Iridium Communications Inc. Spacebased ADS-B enables air traffic services units to track the location and coordinates of ADS-B-equipped aircraft in real time anywhere within the airspace of Kazakhstan through continuous and global data stream.

2.3 Where necessary, the use of spacebased ADS-B surveillance enables the provision of information to the search and rescue services (SAR) as well as the flight information service. Spacebased ADS-B increases situational awareness of air traffic services by extending the surveillance area to lower altitudes (below the current operating range of radars). Currently, spacebased ADS-B is in validation stage to ensure continuous and effective implementation.

2.4 These innovative technologies need to be tested, explored, accommodated and, in the longer term, fully integrated, while maintaining a high level of safety, security while ensuring the sustainability of associated operations.

## 3. CONCLUSION

3.1 We believe the use of the innovative technological solutions described in this document would contribute to the overall improvement of air navigation and reflect a progressive approach that would lead to a safer, sustainable and more coherent global air transport system.

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