AERONAUTICAL INFORMATION CIRCULAR 30/22

NOTICE OF FURTHER EXPANSION OF AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST SERVICES BELOW FLIGHT LEVEL (FL) 290

(Supersedes AIC 12/22)

Introduction

NAV CANADA has commenced incremental provision of air traffic service (ATS) surveillance services using space-based automatic dependent surveillance – broadcast (ADS-B) below flight level (FL) 290 in Canadian Domestic Airspace (CDA). This aeronautical information circular provides some background and outlines the requirements for participation.

Background

The provision of space-based ADS-B service below FL 290 expands ATS surveillance service into areas where it was previously not available, thereby providing greater situational awareness for air traffic controllers with safety and efficiency benefits for pilots. An incremental approach to implementation has been undertaken to allow for ongoing evaluation and gather air operator and ATS feedback.

Benefits are expected to include:

- Increased ATS situational awareness through improved accuracy of aircraft position and trajectory.
- Added traffic visibility informing ATS picture.
- Earlier warnings and alerts to ATS of unexpected aircraft deviations.
- Improved emergency response for tracking and locating aircraft in distress.
- Implementation of common surveillance technology to current and new airspace for a more seamless operating environment.
- Increased flexibility for desired operations due to availability of ATS surveillance separation.

Equipage and Operator Participation

Operators wishing to take advantage of the benefits of ATS surveillance services using space-based ADS-B require:

- An appropriate transponder with ADS-B “Out” capabilities and performance that meets the avionics performance standard of Radio Technical Commission for Aeronautics (RTCA) DO-260B, “Minimum Operational Performance Standards,” or newer;
- Antenna capability for broadcast toward space-based ADS-B receivers emitting 1,090 MHz extended squitter. This requirement can be met either through antenna diversity (the use of a top and bottom antenna) or with a single antenna that is capable of transmitting both towards the ground and up towards satellites.; and
- Traffic alert and collision avoidance system (TCAS) reporting that it is serviceable and enabled as a means to predict antenna diversity prior to the ADS-B mandate.

Operators are to file the following ADS-B equipage in Item 10 of the International Civil Aviation Organization (ICAO) flight plan, as appropriate:

- B1 ADS-B with dedicated 1,090 MHz ADS-B “Out” capability.
- B2 ADS-B with dedicated 1,090 MHz ADS-B “Out” and “In” capability.

Operators that do not meet the criteria will be added to an ADS-B Exclusion List (AEL). The AEL is used to manage ADS-B data that is received by a radar data processor (RDP). The AEL contains a list of aircraft and their ICAO 24-bit aircraft address. ADS-B data associated with any 24-bit aircraft address found on the AEL is discarded and not used in the surveillance picture. Radar and other non-ADS-B surveillance information is still available; only ADS-B sources are discarded.

This AEL filtering is transparent to aircraft, as the ADS-B is still broadcasting and any receiver within range will still be able to detect the aircraft; only the RDP and its downstream systems are affected. Public aircraft tracking sites are also not affected by AEL filtering.

In areas where ADS-B is the only available form of surveillance, ATS will not display the aircraft and it will not receive ADS-B surveillance services. There is no impact to surveillance service in areas where there is another form of surveillance available.

As part of the ADS-B message, quality parameters are also transmitted. Any aircraft that has shown incorrect ADS-B position information associated with good ADS-B quality indicators is added to the AEL. Aircraft added for this reason are also shared among the ICAO North Atlantic (NAT) air navigation service providers (NAV CANADA, Isavia, NAV Portugal, UK NATS, and IAA) in accordance with ICAO Doc 7030.

ADS-B messages contain many additional items besides the positional information. When these data items are misconfigured or incorrect, they may cause processing issues within the ATS systems. These types of issues may result in an aircraft being added to the AEL until the problem is rectified.

The aircraft will remain on the AEL until the operator has corrected the problem.

Entry of Flight Identification (FLT ID)

ADS-B avionics transmit the Flight Identification (flight number or aircraft registration) set in the avionics or flight management system. ATS uses Flight Identification to correlate ADS-B position with the information contained in a filed flight plan.

When entering the Flight Identification (flight number), **pilots should ensure it exactly matches the Aircraft Identification in the ATS flight plan**. Example of Aircraft Identification/flight number: **ABC201**, as shown in the figure below.

Example Transponder Flight Identification

Area of Applicability

ATS now has space-based ADS-B available below FL 290 across CDA, with the exception of the Toronto flight information region (FIR). Expansion of ADS-B surveillance will evolve as equipage and performance continues to be monitored.

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