

AERONAUTICAL INFORMATION CIRCULAR 2/22

NOTICE OF AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST OUT PERFORMANCE REQUIREMENTS MANDATE IN CANADIAN DOMESTIC AIRSPACE

Introduction

Beginning 23 February 2023, Canada will commence an automatic dependent surveillance – broadcast out (ADS-B out) performance requirements mandate for applicable Canadian Domestic Airspace (CDA). The mandate will be implemented using a phased approach to expand the delivery of safety and efficiency benefits made possible by the availability of space-based ADS-B surveillance.

This aeronautical information circular outlines the ADS-B out performance requirements mandate implementation phases, areas of applicability, and equipage requirements, and provides background on ADS-B usage in Canada. It also outlines safety and efficiency benefits associated with the capability for expansion of surveillance to areas where it was previously not available, thereby providing greater situational awareness for air traffic service personnel with safety and efficiency benefits for pilots.

Background

ADS-B out is an electronic surveillance technology on board an aircraft that automatically broadcasts flight information from the aircraft via a digital data link. The data is used by air traffic systems to depict the aircraft's position and altitude on display screens.

NAV CANADA, the air navigation service provider for Canada, has provided ground-based ADS-B surveillance service in portions of CDA at flight level (FL) 290 and above since 2008. The availability of space-based ADS-B in 2019 has enabled air traffic service (ATS) surveillance throughout the entirety of CDA. This has had a significant impact in areas and at altitudes where coverage was previously unavailable due to limitations associated with a traditional ground-based infrastructure, by enabling significant safety, operational and infrastructure efficiency gains. In areas where ATS surveillance already exists, the introduction of ADS-B for surveillance will provide value by removing coverage gaps, resulting in more seamless operations.

The implementation of the ADS-B out performance requirements mandate leverages advancements in satellite-based navigation and aligns with International Civil Aviation Organization (ICAO) and Transport Canada performance-based navigation (PBN) plans.

Equipage Requirements

To demonstrate compliance with the ADS-B out mandate, aircraft will be required to:

- be equipped with an appropriate transponder with ADS-B out capabilities and performance with the applicable standard of Radio Technical Commission for Aeronautics (RTCA) DO-260B, "Minimum Operational Performance Standards", or newer.
- have antenna capability for broadcast toward space-based ADS-B receivers emitting 1090 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.

Operators are expected to file the following ADS-B equipage in Item 10 of the ICAO flight plan:

- B1 ADS-B with dedicated 1090 MHz ADS-B "out" capability, or
- B2 ADS-B with dedicated 1090 MHz ADS-B "out" and "in" capability.

Area of Applicability and Phased Implementation

The ADS-B out mandate will be enabled through airspace classification designation and amendment to transponder airspace requirements, as described in the *Designated Airspace Handbook (DAH)*, TP 1820E.

Implementation is planned to occur in two phases:

- Class A and B airspace commencing 23 February 2023
- Class C, D and E commencing no earlier than 2026.

Class F and Class G airspace are not affected by the ADS-B out mandate.

This approach will help achieve the maximum benefits of a performance-based mandate within acceptable timelines, while providing aircraft operators and owners adequate time to meet the equipment requirements.



Benefits

The greatest benefits for ATS surveillance are achieved if all aircraft are appropriately equipped. Mandating the equipage of all aircraft within certain airspace enables the use of a common surveillance technology across the country, creating a more seamless operating environment and bringing significant safety and efficiency benefits.

Safety benefits include:

- Increased air traffic control (ATC) situational awareness through improved accuracy of aircraft position and trajectory
- Increased pilot situational awareness for aircraft equipped with ADS-B out capability
- Earlier warnings/alerts of unexpected aircraft deviations
- Support of remotely piloted aircraft system (RPAS) detect-and-avoid capabilities installed by several leading drone manufacturers
- Implementation of common surveillance technology to current and new airspace for a more seamless operating environment
- Improved emergency response for tracking and locating aircraft in distress.

Efficiency benefits include:

- More customer-preferred routes, speeds and flight levels.
- More flexible and efficient use of airspace — supporting new routes and separation standards, resulting in shorter flight times and reduced fuel consumption.
- Support for changes to airspace boundaries and sectors as space-based ADS-B service is deployed across Canada. The result will be improved capacity, as well as new traffic flows that significantly reduce fuel burn and greenhouse gas emissions.

Further Information

For further information, please contact:

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