International Civil Aviation Organization
North American, Central American and Caribbean Office

WORKING PAPER

ADS-B/OUT/M — WP/03
22/07/19

Automatic Dependent Surveillance – Broadcast OUT Implementation Meeting for the NAM/CAR Regions (ADS-B/OUT/M)

Ottawa, Canada, 21-23 August 2019

Agenda Item 2: **Update Status ADS-B Implementation for States**

2.2 Update ADS-B Status implementation and regulation development by States

ENSURING PREPAREDNESS FOR THE U.S. 2020 ADS-B EQUIPAGE MANDATE

(Presented by the United States)

EXECUTIVE SUMMARY

In 2010, the U.S. published a regulatory requirement for all aircraft operating within certain airspace to be equipped with ADS-B Out equipment after January 1, 2020. This requirement will affect all flights in the designated airspace. To prepare the aviation community and prevent any operational disruptions, the FAA is promoting the new mandate to the international community so foreign aircraft intending to operate within the affected airspace will be equipped with the appropriate ADS-B Out equipment by the compliance date.

Action:	Suggested action is presented in Section 4.
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency • Environmental Protection
References:	• Automatic Dependent Surveillance – Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service Final Rule (75 FR 30160, May 28, 2010; Docket No. FAA-2007-29305) • Title 14 of the U.S. Code of Federal Regulations (14 CFR) sections §91.225 and §91.227

1. Introduction

1.1 Automatic Dependent Surveillance – Broadcast (ADS-B) is an important underlying technology in the U.S. Federal Aviation Administration's (FAA's) plan to transform Air Traffic Control (ATC) from the current system to the Next Generation Air Transportation System (NextGen). ADS-B is bringing the precision and reliability of satellite-based navigation to surveillance in the U.S.

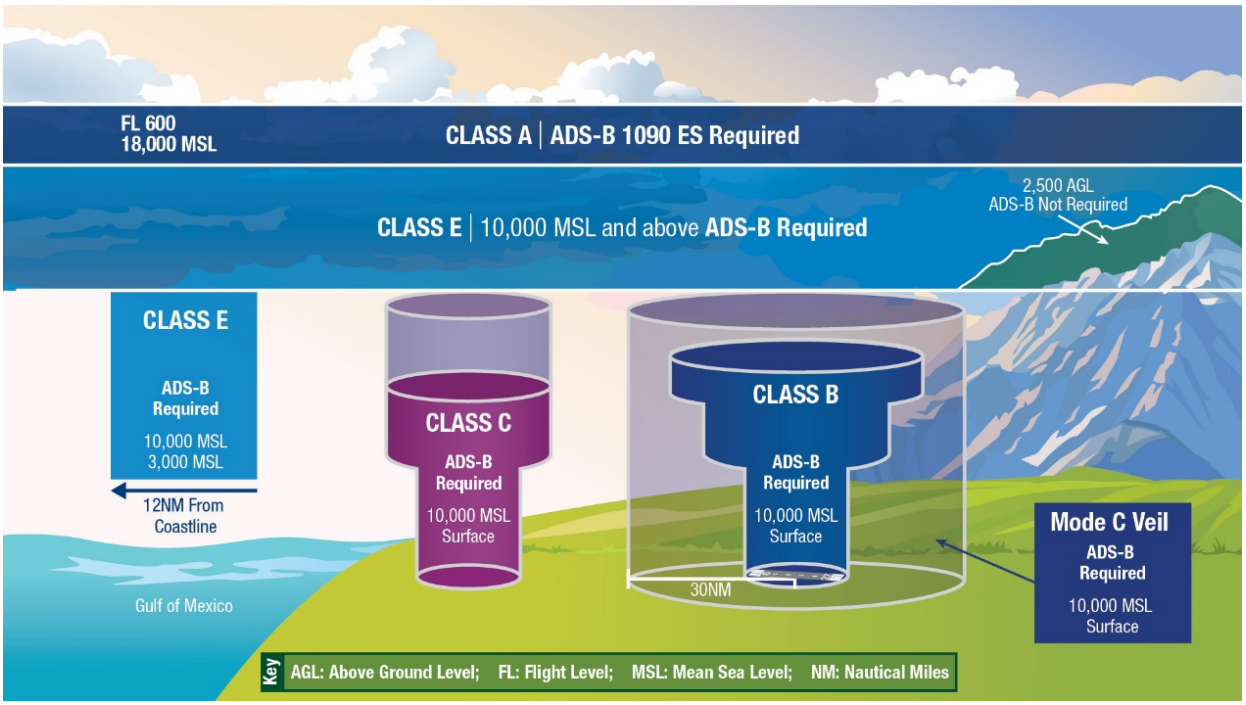
1.2 In 2010, the FAA published a regulatory requirement for all aircraft operating within certain airspace to be equipped with a specific version of ADS-B Out technology after January 1, 2020, in accordance with Title 14 of the U.S. Code of Federal Regulations (14 CFR), sections (§§) 91.225 and 91.227.

1.3 This requirement will affect all flights within the airspace specified in 14 CFR §91.225. To prepare the aviation community and prevent any operational disruptions, the FAA is promoting the mandate so foreign aircraft intending to operate within the affected airspace will be equipped with the appropriate ADS-B Out technology by the compliance date.

2.1 The FAA published "Automatic Dependent Surveillance – Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service Final Rule" (75 FR 30160; May 28, 2010; Docket No. FAA-2007-29305) 14 CFR §91.225 and §91.227 for ADS-B Out equipage after January 1, 2020. This final rule defined performance requirements for ADS-B Out equipment that will be required to fly in the specified airspace. The final rule does not preclude other position source methods, nor does it mandate equipage with ADS-B In systems (though FAA does encourage such equipage). Sections 91.225 and 91.227 do not apply to any aircraft that was not originally certificated with an electrical system or that has not subsequently been certified with such a system installed, including balloons and gliders.

2.2 Under U.S. law, the mandate only applies to the sovereign airspace of the United States. This is defined as any airspace which is over the land comprising the constituent States of the U.S., the District of Columbia, Puerto Rico, Guam, and all other territories or possessions of the United States, including the territorial waters surrounding these land regions out to 12 nautical miles from their coastlines. The mandate does not apply to U.S.-managed international airspace or to any airspace which the U.S. manages under an agreement with another country, unless it is specifically included in the agreement. Note however, that in U.S.-managed airspace where the mandate does not apply, aircraft which are equipped with ADS-B Version 2 (TSO-C166b or TSO-C154c) may receive preferential ATC services.

2.3 ADS-B in the U.S. is permitted to operate on two frequencies (links): 1090 megahertz (MHz) and 978 MHz.[1] Aircraft operating at or above Flight Level (FL) 180 must be equipped with a Mode S-transponder-based ADS-B transmitter which complies with the technical performance requirements of TSO-C166b. Aircraft operating below FL 180 and within the airspace described in 91.225 must be equipped with either a Mode S 1090ES transponder or UAT equipment (meeting the technical performance requirements of TSO-C154c). The graphic below illustrates these requirements.



2.4 The FAA has completed the deployment of ADS-B ground stations in 2014. Since 2012, the FAA has been using ADS-B surveillance information to provide ATC services; all FAA ATC facilities will use ADS-B by the end of 2019. The FAA has called on aviation users to equip their aircraft before the January 1, 2020 mandate.

2.5 The U.S. ADS-B mandate requires all operators to broadcast ADS–B Out information when operating in specified airspace, with few exceptions. States with operators that intend to operate within the specified U.S. airspace are encouraged to promote awareness of this approaching compliance date and the associated equipage and performance requirements. As previously indicated in regulatory publications and through public statements by FAA representatives, an aircraft that is not equipped to meet the requirements of the mandate may be denied access to the specified airspace.

[1] Note that 1090 MHz is the agreed frequency for global use of ADS-B surveillance. The FAA does not recommend that any other ICAO State use UAT for surveillance, as using two RF links for surveillance in the same airspace introduces significant complexity in an ADS-B ground station and related processing systems.

2.6 The FAA recognizes that extenuating circumstances will arise that require an aircraft without appropriate ADS-B avionics be permitted in airspace where it is required. The ADS-B mandate includes provisions for such circumstances. There are provisions for aircraft that are not equipped and aircraft on which the ADS-B system is inoperative. It is important to note that procedures to accommodate these aircraft are exceptions to the mandate and were not intended to grant routine access to the specified airspace.

2.7 Federal Regulations 14 CFR 91.225 stipulates that requests for authorization for an aircraft without appropriate ADS-B avionics to operate in ADS-B designated airspace must be made at least one hour before the operation. Requests for operation of an aircraft with an inoperative ADS-B system may be made at any time. The FAA is currently establishing procedures for requesting such authorizations. However, ATC authorizations may contain conditions necessary to provide the appropriate level of safety for all operators in the airspace. Furthermore, ATC may not be able to grant authorizations in all cases for a variety of reasons, including workload, runway configurations, air traffic flows, and weather conditions.

2.8 To clarify various matters related to the U.S. ADS-B mandate in more detail for operators, the FAA has issued two new Notices in the U.S. Federal Register as Docket No. FAA-2019-0239 and Docket No. FAA-2019-0539. States with operators planning to operate in the airspace designated in 14 CFR 91.225 are urged to read these Notices, which can be found at: https://bit.ly/2LEcCNK and https://bit.ly/2M4VTCx.

3. Conclusion

3.1 The safety and operational benefits of ADS-B Out within U.S. airspace are significant and the U.S. aviation community is collaboratively working to implement the specific requirements for the U.S.

3.2 States with operators that intend to operate within the affected U.S. airspace are encouraged to promote awareness of this upcoming requirement and the related policy statements published by the FAA. Timely installations will allow the approving authority to ensure that the equipage installations are compliant with the requirements; will allow the operators sufficient preparation to account for the expense and time needed to complete the installation; and will ensure that aircraft can operate in all U.S. airspace after January 1, 2020.

4. Suggested actions

4.1 The Meeting is invited to:

a) Note the information provided; and
b) Encourage States with operators that intend to operate within the affected U.S. airspace to promote awareness of this upcoming requirement.

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