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## What is ADS-B and what do lenders and lessors need to know about ADS-B?

While compliance with the upcoming ADS-B requirements is primarily an issue for those responsible for maintenance and operation of aircraft, lenders and lessors should pay close attention to ADS-B compliance requirements and the upcoming January 1, 2020 deadline. This updated client alert is particularly relevant for financiers of business aircraft operated in the United States.

### WHAT IS ADS-B?

Automatic Dependent Surveillance – Broadcast, or ADS-B, is a satellite-based tracking system that increases the safety of flight operations. The technology provides precise location information for aircraft, including coverage in remote areas (such as the Gulf of Mexico) that do not have radar coverage. ADS-B In (the receiver part of the system), which is not mandated in the United States, provides air traffic controllers and pilots of equipped aircraft enhanced location and weather information. ADS-B Out (the broadcast part of the system) uses satellites to determine location and broadcasts that information to air traffic controllers and pilots with the ADS-B In receiver.

The FAA has mandated that by **January 1, 2020**, ADS-B Out capabilities are required for aircraft operation in most U.S. airspace (see 14 CFR 91.225 and 14 CFR 91.227). As of late 2018, the FAA estimated that only 30.3% of aircraft have ADS-B Out currently installed. Furthermore, the FAA projects that only 46.2% of aircraft will have ADS-B Out installed by the January 1, 2020 deadline. Industry commentators are warning that slots and equipment for the installation of ADS-B Out capabilities will be in short supply as the deadline approaches and that the shortfall will cause increased installation prices.

### WHERE IS ADS-B REQUIRED?

Aircraft flown in the following airspace on or after January 1, 2020 require ADS-B Out capability.

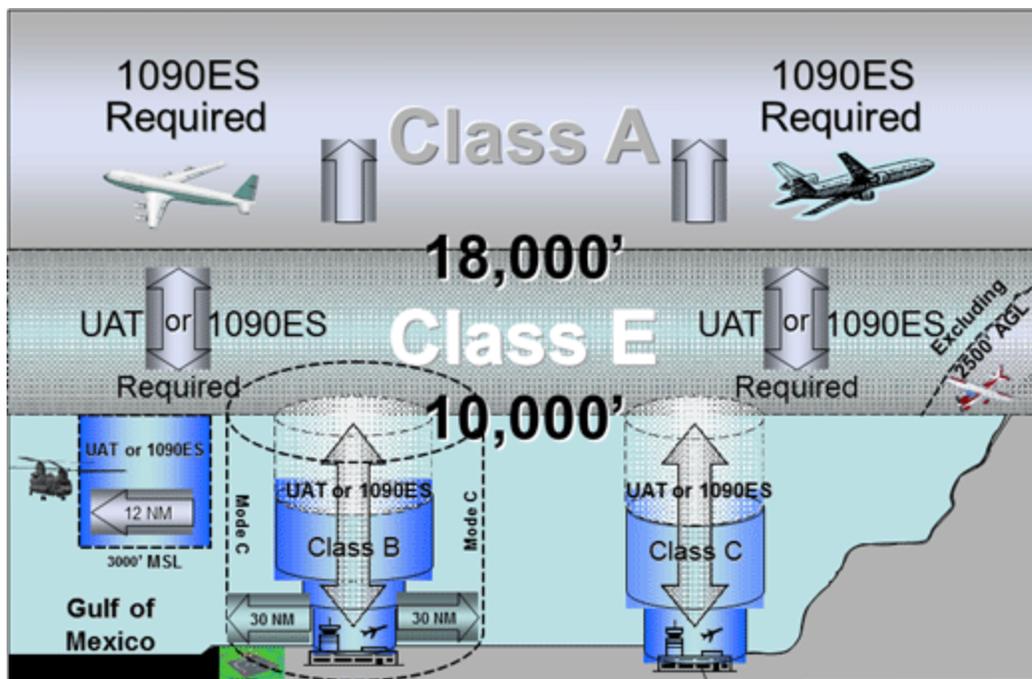


Airspace	Altitude
A	All
B	Generally, from surface to 10,000 ft mean sea level (MSL) including the airspace from portions of Class B that extent beyond the Mode C veil up to 10,000 ft MSL (i.e.-SEA, CLE, PHX)
C	Generally, from surface up to 4,000 ft MSL including the airspace above the lateral boundary up to 10,000 ft MSL
E	Above 10,000 ft MSL over the 48 states and DC, excluding airspace at and below 2,500 ft above ground level

Airspace within 30 nautical miles (Mode C veil) at all Class B locations from the surface up to 10,000 ft MSL

Airspace that requires the use of a transponder today will also require aircraft to be equipped with a Version 2 ADS-B Out system after the January 1, 2020 deadline. This can be either a 1090ES (DO-260B) ADS-B system or a UAT (DO-282B) ADS-B system.

For aircraft operating above 18,000 feet or to comply with ADS-B mandates outside the United States, the aircraft must be equipped with a Mode-S transponder-based ADS-B transmitter. For aircraft operating below 18,000 feet and within the United States ADS-B rule airspace, the aircraft must be equipped with either a Mode-S transponder-based ADS-B transmitter or with UAT equipment.



**WHY IS THIS IMPORTANT TO LENDERS AND LESSORS?**

Although the ADS-B upgrade is likely covered by the loan or lease documents that require the operator, whether the borrower or lessee, to comply with mandated modifications, lenders and lessors should consider the effects of this regulation. To prepare for the impending deadline, Lenders and lessors should immediately review their aircraft fleet and determine which aircraft are required to have ADS-B Out installed, confirm that the borrower or lessee is required to make



the mandated modification, send notice to the borrower or lessee regarding the requirement, and request information regarding how the borrower or lessee is intending to comply. Lessors should review the terms of the lease regarding mandated modifications carefully, especially if the aircraft will be returned prior to January 1, 2020. The lease agreement may require that the lessee perform the modification even if the compliance date is after the expiration of the lease term. However, depending on the lease termination date and the mandated modification requirements in the lease documents, the lessee may not be required to make modifications to comply with the ADS-B Out standard. Lenders and lessors should be prepared for the borrower or lessee being unable to comply with the regulation by the deadline and consider alternatives such as extending the term until the borrower or lessee is able to comply. Industry experts do not expect the January 1, 2020 deadline to be extended and flights in the affected airspace may be limited to inbound flights to a maintenance facility for installation of ADS-B Out equipment.

If the lessor is responsible for making the ADS-B Out upgrade, it may want to begin discussions with the lessee to perform the upgrade or reserve a slot with a maintenance provider for the upgrade well in advance of the deadline. At a recent conference, industry experts stated that slots are already in short supply and it will be difficult to reserve a slot with some maintenance shops if you are not a current customer. Additionally, maintenance shops are recommending scheduling the ADS-B Out installation with other maintenance to reduce the amount of time the aircraft is out of service.

Recovering the expense of the ADS-B Out upgrade will become more difficult as the deadline approaches and aircraft without the upgrade will become more difficult to sell after the deadline. Business aircraft appraisers have stated that the current rate of return on investment of ADS-B retrofits on business aircraft is about 50% on resale and is expected to reduce to zero by January 1, 2020 when selling aircraft that are not compliant is expected to be very difficult. Furthermore, noncompliance could affect the value of aircraft collateral pledged to lenders. Panelists at the November 2018 Corporate Jet Investor Conference agree that noncompliant aircraft will suffer a significant decrease in residual value.

Lenders and lessors should also pay attention to the type of ADS-B Out equipment installed on the aircraft. While a borrower or lessee may only be required to install equipment that complies with the FAA requirements, if the aircraft is U.S. registered, that equipment may not permit operation in ADS-B airspace outside of the United States. As of August 2017, only the United States has approved the 978UAT datalink. Operation in certain ADS-B airspace outside the United States will require 1090ES. There are also other technical points in the regulations, such as whether a Mode S transponder or an Extended Squitter is required based on the operation of the aircraft. Not surprisingly, different countries have varied dates and requirements for ADS-B equipment and some have not adopted an ADS-B standard. Parties may want to review the ADS-B requirements of other countries where the aircraft may be operated.

While the FAA mandate covers ADS-B Out, some aircraft owners or operators may also want to add ADS-B In. Lessors may want to consider the installation of ADS-B In to increase the resale value of the aircraft or to make the aircraft more attractive to the next lessee. Lenders may want to consider requiring their borrowers to install ADS-B In to maintain residual value of the aircraft collateral.

Compliance with the ADS-B requirements requires careful planning and immediate action by lenders and lessors in transactions involving the affected aircraft.



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<sup>1</sup> U.S. Department of Transportation Federal Aviation Administration, NextGen, Equip ADS-B, Research, Airspace. April 16, 2018 (<https://www.faa.gov/nextgen/equipadsb/research/airspace/>). (accessed January 2019)