

ADS-B Symposium

sponsored by *Southeast Aerospace*



What We Learned About ADS-B

Southeast Aerospace recently sponsored an ADS-B Symposium at our Melbourne, Florida location. This entirely ADS-B focused event was held for three days at a local convention hotel. During this unique event, 5 Major OEMs presented ADS-B information, concepts & product lines. In addition to OEMs in attendance, the FAA provided 3 different presentations focusing on the past, present & future of ADS-B from the FAA perspective.

Over 35 select industry individuals were in attendance. This event was very successful in bringing together aircraft operators, avionics shops, OEMs and the FAA in an open academic atmosphere. Along with presentations, an Open Forum was organized in which all ADS-B topics of interest to the attendees were discussed.

Listed below are topics that SEA representatives found of interest during the event & open forum.

[Contact SEA](#) today for more information on SEA Events & ADS-B Mandates.



What We Learned About ADS-B:

Does the 2020 ADS-B mandate include ADS-B “In”?

No, the 2020 FAA ADS-B mandate only covers ADS-B “Out” for aircraft surveillance. ADS-B In features (traffic and weather) are optional.

What can the ADS-B “In” traffic and weather information be displayed on?

As of 2011, there is no standard format for the display of the traffic and weather information that one can receive with a ADS-B receiver such as the 978 MHz UAT. Currently, manufacturers of 978 Mhz UATs and/or 1090 Mhz receivers are maintaining proprietary display formats for the traffic and weather received.

Is an STC required for an ADS-B system installation?

Yes, as of 2011, the FAA is requiring that you obtain a Supplemental Type Certificate for an ADS-B “Out” installation on any aircraft.

Several OEMs and engineering companies such as Southeast Aerospace are developing STCs to be processed and eventually approved by the FAA. The FAA has not advised if future ADS-B installations will be possible through FAA STC AML (Approved Model List) although it is a good probability once several STCs have been issued.

Why do I need an ADS-B system?

The current Air Traffic Control (ATC) surveillance system in the United States is outdated and must be changed. Surveillance through GPS tracking is much more reliable and offers more widespread coverage than the current ground radar system. Therefore, the FAA has mandated that all aircraft must comply with the ADS-B Out mandate by 2020. If you do not comply and/or your aircraft is not capable of providing ADS-B output information, then you cannot fly in U.S. airspace after 2020.

Furthermore, ADS-B Out provides better aircraft tracking and surveillance thus ensuring a higher level of safety for all. For those who obtain and integrate ADS-B In systems into their aircraft, you will enjoy free weather and traffic information services via the ADS-B broadcast stations.

Is there a possibility that the FAA will cancel the ADS-B mandate?

Considering the hundreds of ADS-B stations already installed and in use, years of research & development, and billions of tax dollars spent to implement ADS-B, the FAA has no plans to either change or cancel the ADS-B Out mandate.

Is a WAAS GPS the only GPS that can be used with ADS-B Out?

Technically, no a WAAS GPS is not the only GPS receiver that can be interfaced to a certified ADS-B Out system. Most WAAS GPS receivers provide all of the parameters and meet all of the performance requirements needed for an approved ADS-B Out system. Therefore, due to the popularity and availability of WAAS GPS receivers, most aircraft will be utilizing them in approved ADS-B systems.

In relation to ADS-B, why do I need a 1090ES transponder versus a 978 MHz UAT?

If you fly above FL180, you must use a transponder capable of 1090ES (extended squitter) for ADS-B Out. If you fly internationally, you must use 1090ES as well. Therefore, you must continue to use a transponder in these applications. The 978 MHz UAT is only for use below FL180.

Do I need antenna diversity for ADS-B Out compliance?

No, if you are currently operating an aircraft with one transponder antenna then the existing antenna configuration is acceptable for ADS-B Out compliance. The ADS-B Out mandate does not change any requirements for European Mode S antenna diversity or TCAS II antenna diversity in applicable aircraft.

What key component elements are needed for a certified ADS-B Out system?

- Transmitter (ex. Transponder, UAT, etc.)
- Position source (ex. WAAS GPS)
- Altitude encoder
- Air/Ground switch (ex. Squat switch)
- GPS Antenna
- Transponder antenna

Additional ADS-B Related Information:

What is ADS-B?

Automatic Dependent Surveillance-Broadcast (ADS-B) is a component of the Next-Generation (Next Gen) Air Transportation System. ADS-B is an advanced surveillance technology that combines an aircraft's positioning source (GPS), aircraft avionics, and a ground infrastructure to create an accurate surveillance interface between the aircraft & aircraft traffic control. ADS-B provides consistent position accuracy regardless of the aircraft's range from the receiver.

The improved accuracy and update rate of ADS-B is a critical segment of the NextGen infrastructure.

The FAA has determined that it will be necessary for all aircraft operating in specific airspaces to be equipped with ADS-B Out by 2020. A nationwide infrastructure of ground stations is scheduled for completion during 2013.

As of June 2010, only ADS-B Out is being mandated. ADS-B Out provides the ATC with real-time position information. ADS-B In is the aircraft's ability to receive and display other aircraft broadcasted information as well as the services provided by the ground stations.

ADS-B requires the use of a Positioning Source. As of June 2010, any positioning source is allowed; however, WAAS is the only positioning service that provides the equivalent availability required.

A Broadcast Link is also required for ADS-B functionality. There are two available options: 1090 MHz Extended Squitter (ES) or Universal Access Transceiver (UAT). FL 180 (the lower boundary of Class A airspace) is the ceiling for operating an aircraft equipped with UAT only.

ADS-B will eventually provide weather services, air traffic information, terrain maps and other flight information services for all pilots through satellite based data and ground stations. In accordance with NextGen, ADS-B will provide benefits that address some shortcomings over other, existing surveillance systems.

Some of these benefits include:

- Air-to-air surveillance capability
- Surveillance in remote areas where radar coverage is unavailable
- Real-time traffic information for aircraft not equipped with active traffic systems (ex. TCAS, TAS)
- Reduced separation between aircraft due to sharing of flight information between aircraft
- Better predictability in departure and arrival times

Ultimately, ADS-B will allow aircraft to fly at safe distances from each another.

What is Extended Squitter?

The word "squitter" refers to a random broadcast of data occurring usually in the absence of interrogation. As a component of the ADS-B system in the USA, Extended Squitter refers to a burst of extended data or message broadcasted on 1090 MHz. When connected to a GPS with the necessary integrity, a Mode S transponder with Extended Squitter capability will send a message providing position, velocity, and time.

What does Next Gen and ADS-B mean to you?

Click [here](#) to find the answer.