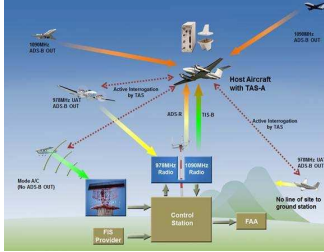


An ADS-B update for Canadians



We've written articles in the past about the US's American ADS-B aircraft tracking/locating/surveillance system and the FAA requirement for all aircraft flying in the US to have this technology on board by the year 2020. Since we wrote those articles in May of 2012, manufacturers have introduced new ADS-B compliant equipment, Maxcraft has installed a few several systems, and our customers have gained some real-life experience of using this new technology. We've heard the same numbers from multiple informed sources: if every avionics shop started working full time on ADS-B installations they would have to maintain a rate of 125 installations per day in order to have all aircraft compliant by 2020. FAA says they cannot extend their deadline past 2020! Of course this doesn't even account for the many Canadians that fly into the US. At Maxcraft we have been advising our southbound clients to upgrade to ADS-B whenever their aircraft are in for other avionics work. As you will see below there are many cost effective options available now to help you reap the benefits of free traffic, weather and preferential routing.

System Infrastructure Status

According to the FAA, 525 ADS-B ground stations were in service on June 30th and the full US network of 794 ground stations will be operational by early 2014. The existing ground stations are already broadcasting TIS-B and FIS-B information with good coverage over much of the United States with nationwide coverage expected by late 2013. For current ADS-B infrastructure status see: <http://www.faa.gov/nextgen/flashmap/>

ADS-B System Hardware Availability

Since the FAA finalized ADS-B performance standards in 2010, avionics manufacturers have been racing to bring compliant products to market. The following is a summary of avionics products availability today or expected soon.



Garmin GTX330/GTX33 Transponders:

The Extended Squitter (ES) versions of these transponders are ADS-B "Out" capable when interfaced with an approved GPS Position source. They are STC approved for installation into hundreds of GA

aircraft models. Existing GTX330 and GTX33 transponders can be factory upgraded to add ADS-B capability. Availability - **Now**



Garmin GDL-88 UAT:

The GDL 88 is a dual-link Universal Access Transceiver (UAT) that provides ADS-B “Out” compliance, but also includes ADS-B “In” capability for subscription-free weather and advanced traffic display to the cockpit. It can be interfaced with an existing approved GPS position source or it is optionally available with an internal WAAS GPS receiver. This system is STC approved for installation into hundreds of GA aircraft. Availability – **Now**



Garmin GDL-39:

The GDL 39 is a portable ADS-B “In” device which utilizes built-in Bluetooth capability to link to the iPad or aera795/796. This system does not have ADS-B out capability but works well on aircraft equipped with a separate ADS-B “Out” only system. Availability - **Now**



Freeflight Ranger 978 UAT:

FreeFlight produces a family of lightweight ADS-B devices. The FDL-978-TX Universal Access Transceiver (UAT) is a fully compliant ADS-B “Out” device with “In” capability. Availability - **Now**



Trig Avionics TT31 Transponder:

This transponder which was designed to fit into the popular KT 76A mounting tray and is ADS-B “Out” capable when interfaced with an approved GPS Position source. An FAA STC approves its installation into a number of common GA aircraft. Availability – **Now**



Aspen Avionics ARX100/ATX200/ATX200G:

Aspen offers a full line of ADS-B solutions. The ARX100 is a certified dual band ADS-B “In” receiver. The ATX200 is similar to the ARX100 but adds ADS-B “Out” capability on 978 MHZ. The ATX200G adds a WAAS GPS Receiver for a fully integrated “In & Out” solution. Availability – **Soon**



Bendix/King KT74 Transponder :

This new transponder was designed as a slide-in replacement for existing KT76A/KT78A transponders and is ADS-B “Out” capable when interfaced with an approved GPS Position source. Availability - **Soon**



Avidyne AXP340 Transponder:

The new AXP-340 transponder was designed as a slide-in replacement for existing KT76A/KT78A transponders is ADS-B “Out” capable when interfaced with an approved GPS Position source. Availability - **Soon**



Rockwell Collins:

Rockwell Collins has announced their plans to meet the latest ADS-B requirements by introducing a new TDR-94/94D-5XX transponder which will be available by late 2013.

Honeywell Primus II: Honeywell recently announced an ADS-B “Out” upgrade program for aircraft equipped with the Honeywell Primus II avionics. Availability - March 2014

Real Life ADS-B Experience

It’s one thing to talk about technology and the features it should bring to pilots, but the real test is to see how well it actually functions in the air, and in real-life situations. Last year, Daryl and Steve attended an FAA seminar where it was stated that although compliance to ADS-B regs is mandatory by 2020,

controllers would be giving preferential treatment to ADS-B equipped aircraft immediately. This makes perfect sense because from a controller's perspective ADS-B is really a certificate of positional accuracy on an ATC scope. Here is some feedback from two of our clients on their ADS-B experience:

- Twin engine Baron – Garmin G600 display, dual GTN750 Nav/Coms, GTX330-ES transponder, GDL88 ADS-B receiver



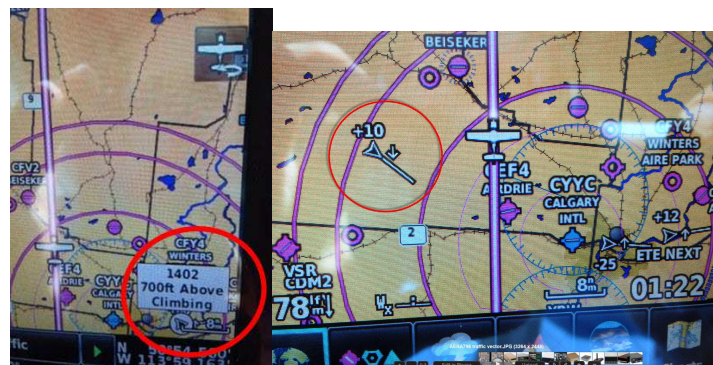
- First flight into the US since ADS-B to Palm Springs
 - Picking up his IFR clearance over Truckee/Tahoe CA on the way home
 - Pilatus PC-12 calls first for his IFR clearance to Bellingham
 - Baron calls in next for his IFR clearance to Abbotsford
 - He thinks somebody else might have called as well
 - Baron gets cleared first, as filed!
 - Wx worked as indicated but customer has XM weather already
 - Traffic is seen on his G500 but also on the GTN750's with Garmin' unique "Target Trend" showing relative motion of traffic

- Cessna 182 – Garmin GNS530 Nav/Com, Aspen EFD1000 display, GTX330-ES transponder, GDL39 ADS-B receiver Bluetooth link to display on Garmin AERA796



- First flight in the US since ADS-B install across all of the US from East cost to Pitt Meadows!
- A very good test ship as our customer has a standalone traffic system, TIS traffic over the major airports in the US, and of course ADS-B so he could compare all they systems

- He found that in real-life conditions he was able to pick up ADS-B signal most times at circuit altitude.
- ADS-B weather was not nearly as good as XM weather
 - Resolution of graphics was not as good and seemed to have some missing sections
 - Seemed slower to display
 - It is an acknowledged fact that ADS-B weather has limitations but also it doesn't have a \$50 monthly fee
- Traffic worked extremely well displaying on the AERA796
 - At one point he thought there was misleading data as it showed two traffic hits 1200 ft. below him when he was only at 1300ft.!
 - Turns out it were two crop dusters working the fields over Illinois !!
 - He really liked the relative motion vector showing up on his AERA796 and the ability to click on it for more detail (see pics below).
 - Despite being in Canada customer was seeing traffic via ADS-B through the air to air communication of ADS-B compliant aircraft
 - These are real shots of an Air Canada aircraft over Calgary.
 - Note relative motion vector on traffic
 - Note details of traffic after clicking on traffic icon (that's AC flight 1402)



These are but two early examples with two very different ADS-B installations. The bottom line is that our customers are happy with their systems, they're getting value now, and they beat the inevitable mad rush that will come in 2020. As you can see, there are many ways to get your aircraft compliant. ADS-B is somewhat complex, so feel free to drop in to Maxcraft for a chat on how ADS-B could work for you.