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A Communication from the
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/*TERF/Background

Automatic Dependent Surveillance-Broadcast (ADS-B) is a surveillance technology being deployed in selected areas of the National Airspace System (NAS). ADS-B avionics broadcast a radio transmission approximately once per second containing the aircraft's position, velocity, identification, and other information. Since the aircraft's position is normally derived from the Global Positioning System, the broadcast position information is highly accurate. ADS-B-equipped aircraft with cockpit displays can receive ADS-B reports from other suitably-equipped aircraft within reception range (Nominally 200 nautical miles.) Additionally, these broadcasts can be received by ground-based transceivers (GBT) to provide air traffic surveillance services, along with fleet operator monitoring of aircraft.

In the United States (U.S.), two different data links have been adopted for use with ADS-B: 1090 MHz extended squitter (1090 ES) and the universal access transceiver (UAT). The 1090 ES link is intended for air transport aircraft and above, whereas the UAT link is intended for general aviation aircraft. From a controller or pilot standpoint, the two links operate similarly.

In addition to ADS-B, these data links also support broadcast uplink services. Both UAT and 1090 ES support Traffic Information Service-Broadcast (TIS-B) and the UAT link supports Flight Information Services-Broadcast (FIS-B).

The FAA is developing policy and guidance material for ADS-B, TIS-B, and FIS-B that, when mature, will be published in traditional source references such as the Aeronautical Information Manual (AIM), advisory circulars, etc. In the meantime, preliminary reference material pertaining to this emerging technology, including details about initial operational applications and operational approval guidance, is posted on the FAA-managed Web site: www.flyadsb.com. This Web site maintains the current status on ADS-B and TIS-B/FIS-B availability and is the FAA's official source of ADS-B, TIS-B, and FIS-B guidance until the material is formally published.

Automatic Dependent Surveillance–Broadcast (ADS-B)

ADS-B provides surveillance service in areas without radar and can enhance existing radar by providing greater target accuracy and higher update rate. Initial air-to-air applications of ADS-B are for ***advisory use only***, enhancing a pilot's visual acquisition of other nearby similarly-equipped aircraft either when airborne or on the airport surface. ADS-B may enable fleet operators to monitor aircraft. Future applications of ADS-B may include enhanced search and rescue operations and advanced air-to-air applications such as spacing, sequencing, and merging.

Typical ADS-B avionics allow pilots to enter the aircraft's call sign and air traffic control-assigned transponder code, which will be transmitted to other aircraft and ground receivers. Pilots are being cautioned to use care when selecting and entering the aircraft's identification and transponder code. UAT systems provide a visual flight rules (VFR) "privacy" mode switch position that may be used by pilots not wanting to receive air traffic services. This feature will broadcast a "VFR" identification to other aircraft and ground receivers, similar to the "1200" transponder code.

Traffic Information Services-Broadcast (TIS-B)

TIS-B is the broadcast of traffic information to ADS-B-equipped aircraft from ADS-B GBTs. The source of this traffic information is derived from air traffic surveillance radars. TIS-B is intended to provide ADS-B-equipped aircraft with a more complete traffic picture in situations where not all nearby aircraft are equipped with ADS-B. This advisory-only application will enhance a pilot's visual acquisition of other traffic. TIS-B service is becoming available in selected locations where there is both adequate radar surveillance coverage and adequate broadcast coverage from GBTs.

For an aircraft to receive TIS-B services, the following conditions must exist:

- The aircraft must be equipped with an ADS-B transceiver and a cockpit display of traffic information (CDTI). TIS-B services are currently only available on the UAT data link.
- The aircraft must fly within the coverage volume of a compatible GBT that is configured for TIS-B uplinks.
- The target aircraft must be within the coverage of, and detected by, at least one of the ATC radars serving the GBT in use.

TIS-B relies on the secondary radar detection of aircraft with an operating transponder (Mode A/C or Mode S). Radar siting may result in limited radar surveillance coverage at lower altitudes near some general aviation airports. If an area has no radar coverage, then that area will have no TIS-B coverage.

Flight Information Services–Broadcast (FIS-B)

FIS-B is the ground-to-air broadcast of meteorological and aeronautical information. FIS-B products may be textually or graphically depicted. FIS-B allows the pilot to passively collect and display weather and other operational data. In addition to textual weather products such as aviation routine weather report (METAR), aviation special selected weather reports (SPECI), and terminal aerodrome forecasts (TAF), graphical weather products such as radar composite/mosaic images, temporary flight restricted airspace, and other notices to airmen (NOTAM) may be provided to the cockpit. FIS-B reception is line of sight and can be expected within 200 nautical miles (nominal range) of each UAT GBT.

Limitations of ADS-B and TIS-B

The cockpit display of ADS-B/TIS-B traffic is NOT intended to be used as a collision avoidance system and does not relieve the pilot of responsibility to "see and avoid" other aircraft. The CDTI is intended only to assist pilots with the visual acquisition of other aircraft and will not be used for avoidance maneuvers during times when there is no visual contact with the other aircraft.

Presently, no air traffic services or handling is predicated on the availability of an ADS-B/TIS-B cockpit display. A "traffic-in-sight" reply to Air Traffic Control (ATC) must be based on seeing an aircraft out-the-window; ***NOT*** on the cockpit display.

GBT Deployment and ADS-B Activities in the NAS

To date, 37 GBT sites have been installed. These include 15 in Alaska and 22 in the 48 contiguous states, mainly along the east coast and in the area around Phoenix, AZ. All GBTs provide broadcast services. Those in Alaska additionally provide air traffic services. (See the Web site [www.flyadsb.com] for the most current coverage tables and coverage charts.)

In the western area of Alaska around Bethel, the Anchorage Air Route Traffic Control Center (ARTCC) has been using ADS-B as an approved source of ATC surveillance outside radar coverage since January 1, 2001. The Capstone Program has equipped over 200 commercial aircraft in southwest Alaska with ADS-B avionics. Plans are underway to expand the area of ADS-B surveillance coverage to other portions of Alaska and to further examine the benefits of this new technology.

Announcements of Temporary Disruptions in ADS-B Broadcast Services

ADS-B broadcast services (TIS-B and FIS-B) are presently a "developmental service." This means that while the services are being provided today, they are being done so through a developmental infrastructure system undergoing rapid growth and expansion. Consequently, new ground stations are being added and periodic outages may likely occur as the system matures. In the future, outages will be announced via NOTAM.

In this publication, the option(s) for which a briefing is required are indicated by an asterisk (*) followed by one or more letter designators, i.e., ***T** = Tower, combined tower/approach control,* ***R** = TRACON,* ***E** = ARTCC (En Route), or* ***F** = AFSS/FSS. (Reference 7210.3, para. 2-2-8.)*

This table lists bulletins published since 2000. They can also be found on the Internet at www.faa.gov/atpubs

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