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ADS-B and NextGen Gaining Momentum

In May, the FAA announced the performance requirements for avionics under the Next Generation Air Transportation System. The new avionics standards are intended to permit aircraft to be controlled and monitored with greater precision and accuracy by the satellite-based automatic dependent surveillance–broadcast (ADS-B) system.

Transportation Secretary Ray LaHood called this long-awaited announcement, “a major NextGen milestone.”

“This technology represents another step forward in our ability to make America’s skies the safest in the world,” LaHood said.

The announcement came in the form of a final rule incorporating the ADS-B requirements as required equipment in aircraft. The equipment requirements go into effect Jan. 1, 2020, nearly 10 years after the publication date for the new rule — providing plenty of time to establish the needed infrastructure to properly support the FAA’s desired NextGen system.

There are two ADS-B link options:

1090 extended squitter and universal access transceiver. The 1090ES equipment operates on 1090 MHz and has performance requirements specified in TSO-C166b. The UAT operates on 978 MHz and has per-

(between 18,000 feet and 60,000 feet), aircraft will need to be equipped with equipment that meets the requirements in TSO-C166b.

- For most flights in controlled airspace below 18,000 feet MSL

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formance requirements specified in TSO-C154c. Both forms of ADS-B are described under the new rule.

While the rule mandates the broadcast signal meet specific requirements in terms of accuracy, integrity, power and latency, the easiest way to understand the new requirements are to describe them in terms of the referenced technical standard orders.

Avionics Requirements

Under the new rule, aircraft are required to be equipped with the following equipment after Jan. 1, 2020:

- For flights in Class A airspace

(such as Class B and C airspace and other locations specified in the regulations), aircraft will need to be equipped with equipment that meets the new TSO-C166b ADS-B requirements or the TSO-C154c ADS-B requirements.

ADS-B Exceptions

There are a number of exceptions under the new ADS-B requirements. The new ADS-B requirements of the regulations do not apply to any aircraft not originally certificated with an electrical system. They also do not apply to balloons and gliders.

...It is important for any future maintenance or design changes to the interfacing components associated with the ADS-B installation to be accomplished in such a way that continued satisfactory performance of the overall ADS-B system is maintained.

Aircraft authorized to conduct operations without ADS-B Out (those covered by the exceptions) will be limited to certain airspace only.

Infrastructure Support

The FAA recently awarded three Next Generation Air Transportation System contracts totaling \$4.4 billion during the next 10 years. Under the contracts, Boeing, General Dynamics, and ITT Corp. will conduct large-scale demonstrations, including the use of aircraft as flying laboratories, to see how NextGen concepts, procedures and technologies can be integrated into the current system.

The contracts are part of System Engineering 2020 (SE2020). Two more contracts are expected under SE2020, which has a ceiling of \$7 billion, making it the largest set of awards in FAA history.

"NextGen is an intricate network of systems that involves everything from air traffic control to weather," said FAA Administrator Randy Babbitt. "We need to have the right

tools to make sure we integrate all these different components safely and smoothly."

Other New Guidance

The tools to support the next generation of air traffic control include appropriate guidance for installing and using ADS-B. With this in mind, the FAA has published a new "interim" policy concerning airworthiness and operational approval policy for ADS-B equipment.

Advisory Circular 20-165, "Airworthiness Approval of Automatic Dependent Surveillance-Broadcast (ADS-B) Out Systems," was published May 21. The new advisory circular guidance is specifically meant to support applicants for supplemental type certificate approval. It is particularly focused on STC applications for ADS-B installations.

The new advisory circular guidance provides installation and maintenance guidance. It will be important for all installers to be familiar with the new AC because it includes certain operations that will become the norm.

For example, it is important for any future maintenance or design changes to the interfacing components associated with the ADS-B installation to be accomplished in such a way that continued satisfactory performance of the overall ADS-B system is maintained. The maintenance instructions for any particular ADS-B installation should include procedures and checks to ensure the interface continues to work as expected.

What Else Does the Future Hold?

The FAA intends to publish a TSO for ADS-B that will be eligible to be used for in-trail procedures.

"NextGen is an economic opportunity that will challenge innovative companies to expand their workforce and help us modernize our National Airspace System," LaHood said. "Under NextGen, air travelers will be able to fly to their destinations safer and faster." □

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