Point of Communication

The space-based future of ADS-B

The Federal Aviation Administration's mandate to equip the U.S. fleet with ADS-B Out has Aircraft Electronics Association member shops scrambling, and business should be brisk for some time. Inasmuch as this is an "airspace rule," it also means that a lot of Canadian and Mexican aircraft, and indeed all aircraft that operate in continental U.S. airspace, must be ADS-B equipped. There is a sentiment that this will be a one-shot mandate like RVSM was, and that once the fleet is compliant, there will be little additional activity. Nothing could be further from the truth!


Barry Aylward

It is becoming increasingly clear that the future of ADS-B will be space-based – satellite monitoring as opposed to a massive installed ground network. In fact, I suggest that we have likely seen the last big ADS-B ground infrastructure play in the world.

There are now at least three entities developing space-based ADS-B monitoring systems. Nav Canada has partnered with Iridium and several other air navigation service providers around the world on a program called Aireon, which appears to have significant critical mass. Other entities include ADS-B Technologies on the Globalstar satellite network and Thales Alenia on GomSpace. These initiatives clearly define the future of ADS-B, in my opinion. The advantages of space-based monitoring are compelling, and include:

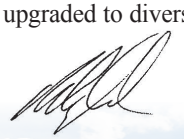
- Truly global coverage.
- Real-time oceanic surveillance and resulting significant operational efficiencies over water.
- Effective monitoring over mountainous and difficult/remote terrain.
- Real-time flight tracking and alerting (think Malaysia Airlines Flight 370).
- No massive cash outlay for ground-based ADS-B infrastructure.

It is interesting to note from an AEA member perspective that this satellite-based technology will inevitably dictate different hardware on the general aviation airborne platform. With satellite monitoring, it is painfully obvious that 1090 ES diversity transponders will become a requirement. (UAT is not likely to be used anywhere in the world other than the U.S.) Top-mounted transponder antennas will be a requirement with satellite monitoring.

In fact, Nav Canada is publicly touting the compatibility of the ground-based and space-based systems, which is somewhat misleading at best. The fact is that only transport category aircraft that are TCAS II equipped are truly interoperable with ground- and space-based ADS-B monitoring. The larger aircraft already equipped with TCAS II are already there. And, of course, the ANSPs are largely focused on the commercial air transport world.

There is a strong possibility that virtually every GA aircraft currently being equipped for compliance with the FAA mandate will not be compliant with future Canadian and other international ADS-B mandates! Consider this for a minute: We could be dealing with a second round of ADS-B equipage for international mandates just as the sun sets on the U.S. mandate – and with a lot of unhappy customers!

I believe that AEA member shops will be dealing with ADS-B equipage well past the deadline of the FAA mandate, and diversity will become a much more commonly used word in our vocabulary. The satellite-based future of ADS-B will inevitably have an impact on equipment recommendations as we go forward; in fact, it is in my shop now! We only recommend 1090 ES transponders that can at least be upgraded to diversity. ❑



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