RTCA Special Committee 186, Working Group 3

ADS-B 1090 MOPS, Revision A

Meeting #26

Single Antenna Class
Compatibility with ICAO Annex 10 Vol IV §2.1.5.3
Response to Action Item 25-01

Presented by Richard Jennings

SUMMARY

During Meeting #25 concern was raised that single antenna ADS-B systems may not meet ICAO Annex 10 Vol IV §2.1.5.3. This ICAO requirement states that heavier and higher performance aircraft must have antenna diversity.

DO-260B does not aim to change the ICAO guidance, and specifically requires compliance with transponder and TCAS standards, (DO-181C/D and DO-185A/B). Recommend closing this action item.

ISSUE PAPER

Action Item 25-01 (Rich Jennings and Chip Bulger)
Check on the compatibility of single antenna ADS-B with existing text in ICAO Annex 10, Vol. IV, §2.1.5.3.

Annex 10 Vol IV §2.1.5.3: Mode S transponders installed on aircraft with gross mass in excess of 5,700 kg or a maximum cruising true airspeed capability in excess of 463 km/h (250 kt) shall operate with antenna diversity as prescribed in 3.1.2.10.4 if.....

Response: Provisions for a single antenna already exist in DO-260A. This DO-260B change proposal adds a new antenna/power class by allowing a single antenna with medium power. DO-260B can not change regulatory guidance and specifically requires compliance with transponder and TCAS standards. (DO-181C/D and DO-185A/B)

Recommendation: No Action. Already covered in DO-260 §3.3.1

DO-260A
3.3 Antenna Installation
3.3.1 General Considerations

*Antenna gain and pattern characteristics are major contributors to the system data link performance. The location and number of antennas required for aircraft ADS-B systems is determined by the equipage class. Class A1, A2, and A3 equipment require antenna diversity and **shall** have transmitting and receiving capability on both the top and bottom of the aircraft. Class B1 equipment requires antenna diversity and **shall** have transmitting capability on both the top and bottom of the aircraft. Diverse use of the installed antennas **shall** comply with the requirements of §2.2.13.6 and may be demonstrated by analysis.*

*If the ADS-B transmitter function is hosted in a Mode-S transponder, the antennas **shall** comply with the requirements of RTCA Document Number DO-181C.*

*If the ADS-B receiver function is hosted in a TCAS computer, the antennas **shall** comply with the requirements of RTCA Document Number DO-185A.*