Federal Aviation Administration

Memorandum

Date: July 29, 2010

To: Flight Technologies & Procedures Division, AFS-400

Attn: Pat Zelechoski, AFS ADS-B Team Lead

From: Rebecca B. MacPherson, Assistant Chief Counsel, AGC-200

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Subject: ADS-B/ATC Transponder Altimetry Source

This is in response to your request for interpretation of § 91.217, Data correspondence between automatically reported pressure altitude data and the pilot's altitude reference and § 91.227, Automatic Dependent Surveillance-Broadcast (ADS-B) Out equipment performance requirements. Specifically, you question whether the reference to ADS-B Out in 91.217(b), only addresses ADS-B Out, as provided for in § 91.227. You also question whether the term "same source" in § 91.217(b) includes a single encoder.

In setting forth the requirements for equipment and use of ADS-B, the FAA determined that aircraft must have equipment installed that meets TSO-C166b or TSO-C154c[1], as appropriate, and must meet the performance requirements articulated in § 91.227. Even though in the rulemaking process the FAA proposed earlier versions of the two TSOs stated above, the FAA concluded that mandating the use of TSO-C166b/TSO-C154c, which are the more mature standards, fully supports domestic and international ADS-B air traffic control surveillance. (See 75 Fed. Reg. 30163.)

Furthermore, in the preamble discussion of the final rule, the FAA responded to inquiries as to whether it would be operationally feasible to use previous versions of DO-260 avionics in radar and non-radar airspace before 2020. The FAA found that the existing DO-260 avionics does not meet the surveillance needs for ATC for several reasons: (1) DO-260 avionics do not independently report the accuracy and integrity metrics; (2) DO-260 avionics allows the integrity metric to be populated with accuracy information during integrity outages, which is unacceptable for aircraft separation services; (3) DO-260 avionics do not include a message element for Mode 3/A code, which is necessary for aircraft surveillance; and (4) the majority of existing DO-260 installations were accomplished on a noninterference basis under the transponder approval guidelines. Consequently and absent upgrades to the avionics, this equipment does not meet

[1] TSO-C166b adopted the standards in RTCA DO-260B and TSO-C154c adopted the standards in RTCA DO-282B. For historical purposes, please note that TSO-C166a adopted RTCA DO-260A and TSO-C154b adopted the standards in RTCA DO-282A.

surveillance needs in the NAS and cannot be used for separation of aircraft. (See 75 Fed. Reg. 30176.)

The contemporaneous amendment to § 91.217(b) in the ADS-B rulemaking linked together the ADS-B equipment requirements set forth in §§ 91.225 and 91.227 and the pressure altitude reporting requirements of § 91.217. Therefore, the ADS-B equipment referred to § 91.217(b) must meet the performance standards required in §§ 91.225 and 91.227. Equipment that does not meet §§ 91.225 and 91.227 is not subject to § 91.217(b).

With respect to your second question as to whether "same source" in § 91.217(b) also includes a single encoder, you offer the following information. The FAA recently identified approximately 100 aircraft in Alaska, equipped under the Capstone Program, with earlier versions of ADS-B equipment installed that meet the standards of TSO-C154a, TSO-166 and TSO-C166a. While these aircraft have a single altimeter, they also have two separate altitude encoders, one for the Mode C transponder and one for ADS-B. The use of two encoders could still result in the aircraft emitting two separate altitudes. As this is the exact scenario that the FAA intended to eliminate by amending § 91.217(b), we conclude that the term "same source" includes a single encoder. Therefore, aircraft equipped with ADS-B Out that meets the performance requirements of §§ 91.225 and 91.227 must derive the pressure altitude from the same source, which includes a single encoder, as the Mode C/S transponder.

This interpretation has been coordinated with the Flight Standards Aircraft Maintenance and Flight Technology and Procedures Divisions, the Avionics Systems Branch and the Surveillance and Broadcast Services Program Office.