

RTCA Special Committee 186

Working Group 4

Airborne Surveillance and Separation Assurance Processing

Meeting 15

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Action Item #74 Response

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Response to SC-186 ASSAP WG4 Action Item #74

The action item is as follows: “ASSAP will send traffic vertical rate values to the CDTI. The CDTI will use this value to calculate traffic vertical sense (decreasing or increasing). For example TCAS uses +/- 500 fpm for this calculation. The first source for vertical rate from traffic is GNSS based. This may be a problem since aircraft usually fly pressure. Sheila Conway has an action item to investigate if GNSS vertical rate is acceptable for this calculation.”

It is not recommended to use GNSS vertical velocity in any ASSAP and/or CDTI processing or application, either as a primary or secondary source. Modern transport aircraft utilize redundant air data and inertial systems which provide a continuous source of pressure altitude based vertical velocity. The total loss of this data is extremely improbable. The ASSAP MOPS do not need to specify a backup mode for these aircraft. Other classes of aircraft will need to provide a controlled source(s) of vertical velocity data that supports the system safety analysis if they are to utilize a CDTI and airborne applications.

There are no accuracy specifications in current GNSS industry specifications, including DO-229D, for vertical velocity. It is an uncontrolled parameter. Appendix U of the WAAS MOPS, “Guidance Material for Interfacing with ADS-B”, states in Section U.5 “there is no requirement on the accuracy of the velocity estimate so ADS-B integration should not assume any particular accuracy unless additional information is provided by the GPS/SBAS manufacturer.”

The use of GNSS based vertical velocity will introduce misleading data and potential safety hazards into the CDTI and airborne surveillance applications.