

**RTCA Special Committee 186, Working Group 3**

**ADS-B 1090 MOPS, Revision A**

**Meeting #4**

**WG3 concerns regarding ADS-B MASPS Issue Paper 12 requesting TCAS RA information be broadcast in ADS-B On Condition Message**

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**SUMMARY**

**This paper captures the consensus WG3 has reached regarding its collective concerns with ADS-B MASPS Issue Paper 12. (IP12 requests TCAS RA information be broadcast in ADS-B On Condition Message.) This paper will serve as a submission from WG3 to the ad hoc group developing Revision A of the ADS-B MASPS (DO-242A), and it is requested that this discussion be an attachment to IP12 and considered when the ad hoc group deliberates on the implementation of IP12 in DO-242A.**

## **Introduction:**

Issue Paper 12 for Revision A of the ADS-B MASPS requests that TCAS and CDTI capabilities and any current TCAS Resolution Advisory (RA) information be broadcast as part of On Condition Messages. WG-3 has accommodated the broadcast of TCAS and CDTI capabilities in the CC\_4 subfield of the Aircraft Operational Status Message. (See draft Table 2-54 of DO-260A.) However, WG-3 has concerns about the transmission of RA information as part of the ADS-B message set, and formally recommends to the Ad Hoc Working Group developing DO-242A to defer this part of IP12 until the future use of this information is better defined.

The rest of this Working Paper lists the concerns WG-3 has regarding the ADS-B broadcast of RA information, and states why it is their recommendation not to implement this in Revision A of the ADS-B MASPS.

## **Concerns regarding broadcast of RA information as part of the ADS-B message set:**

1. In the event of a TCAS equipped aircraft having an RA against an aircraft not equipped with TCAS, there is no coordination between the aircraft. Therefore, no ADS-B transmission of RA information is possible until the RA report is available in transponder register BDS 3,0 which may not occur until after the RA has been terminated.
2. During development of the ADS-B MASPS, it was understood that the ADS-B system should be kept independent and separate from the TCAS system. The broadcasting of RA information – even if it is only the sense of the RA – would be a contradiction to that philosophy. This integration of systems could be difficult if an aircraft is equipped with TCAS and a Mode-S transponder, but also implements an ADS-B system on either the UAT or VDL-4 link.
3. TCAS was mandated as a collision avoidance system operating independently from Air Traffic Control, which is the current separation assurance system. This independence is critical, for TCAS only becomes necessary when the separation assurance system has failed. If the Airborne Conflict Management system (ACM) is to be used to assist or replace the current separation assurance system in certain airspace or during certain operations, linking it to the collision avoidance system is a significant safety concern.
4. The request to transmit the RA information is directly related to the development of the ACM. This system, however, is being developed to work at ranges and times that are much greater than those for which TCAS was developed. If the ACM system is in a situation in which it needs TCAS RA information, hasn't the ACM system already failed to resolve the conflict in a timely manner?

5. Although WG-3 is not an operational group, some members have considerable experience with the operational issues relating to RA sense coordination. WG-3 questions the use of TCAS RA information by the ACM system. WG-3 is concerned about the dangers and complexities of the ACM issuing any avoidance maneuver recommendations in the vertical plane against another aircraft that is TCAS equipped and involved in an Active RA.