

**RTCA Special Committee 186**

**Working Group 3**

**Teleconference and WebEx**

**ADS-B 1090ES MOPS Corrigenda**

**Additional Items to be Considered for Inclusion in DO-260B Corrigenda**

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**Summary**

This working paper presents additional issues found in DO-260B that need to be considered for inclusion in the proposed DO-260B Corrigenda.

This is my attempt to present some recommended clarifications for specific areas of DO-260B/ED-102A that we believe would enhance the readability and implementation of the requirements.

1. **For Event Driven Squitters**, both the Emergency/Priority State and a TCAS RA can occur simultaneously and both squitters (Emergency/Priority Status with Mode A Code and 1090ES TCAS RA squitter shall be transmitted at the nominal 0.8 second rate. [This needs to be clearly stated as other people have also misinterpreted these requirements.]

I suggest modifying paragraph §2.2.3.3.1.4.6.1.a to add a new bullet (4):

(4). If a TCAS RA is active and the Emergency State is declared, both the TCAS RA Broadcast and Emergency/Priority Status with Mode A Code Messages shall be transmitted using the Event Driven protocol with the priority ordering identified above.

2. **For the Velocity squitter**, the minimum variable data required to start the Velocity squitter is velocity data (Velocity over Ground or Heading/Airspeed). Any variable data field is not sufficient (e.g., Barometric Vertical Rate) to start the Velocity squitter. [Similar to the requirement for Airborne Position, such that position data is needed to initialize the position squitters].

I suggest modifying paragraph §2.2.3.3.2.1.2.a: **Start Up**. Modify the 2<sup>nd</sup> and 3<sup>rd</sup> paragraphs as follows:

The ~~single~~ two exceptions ~~is~~ are presented by Altitude data in the Airborne Position Message, and Airborne Velocity Messages which ~~is~~ are processed as follows:

The ADS-B Transmitting Subsystem **shall not** initiate broadcast of the Airborne Position Message until horizontal position data has been received. That is, that altitude data alone **shall not** be sufficient to initiate broadcast of the Airborne Position Message. The ADS-B Transmitting System shall not initiate broadcast of the Airborne Velocity Message until velocity data (velocity over ground or heading/airspeed) has been received.

3. **For Event Driven squitters**, replace paragraph §2.2.3.3.1.4.3.1.1.b with:  
When transitioning from an Emergency State to a non-Emergency state where the Mode A Code was previously set to “1000,” the new Mode A Code=1000 shall be broadcast for 24 +/- 1 seconds at the high rate to allow receivers to know that the emergency condition has passed, then the Emergency/Priority Status Message with Mode A Code shall not be broadcast.

4. **For ADS-B Message Timeout**, add the following new sentence on to the end of paragraph §2.2.3.3.2.11.e:
  - e. The ADS-B Transmitting Subsystem **shall** clear each of the Selected Altitude, Selected Heading, or Barometric Pressure Setting subfields of the Target State and Status Message (see §2.2.3.2.7.1) if no new data is received within 2.0 seconds of the previous input data update for the respective subfield. Each of the subfields **shall** be cleared independently of the other subfields. That is, each of the three specified subfields **shall** be processed mutually exclusively of the other two specified subfields. The remaining subfields of the Target State and Status Message **shall not** be cleared, as they contain other integrity, mode, or status information. The Target State and Status Message does not timeout until Airborne Position Messages timeout and are terminated (see §2.2.3.3.2.12.a and §2.2.3.3.2.12.e).
5. **For ADS-B Message Timeout**, add the following new sentence on to the end of paragraph 2.2.3.3.2.11.f:
  - f. The ADS-B Transmitting Subsystem **shall not** clear the Operational Status Messages (see §2.2.3.2.7.2) since the subfields of the Message contain various integrity, mode, or status information. Aircraft Operational Status Messages do not time-out nor terminate until the respective Airborne Position Message or Surface Position Message times out and is terminated (see §2.2.3.3.2.12.f).
6. If the TEST Message is not going to be used in DO-260B Version 2 implementations, why not remove it from DO-260B, or qualify its non-use.

Suggest adding a requirement on to the end of paragraph §2.2.3.3.2.8.1: **Type Code = 23 (TEST) ADS-B Event Driven Message Broadcast Rate:**

The “TEST” Message with Subtype=0 ADS-B Event-Driven Messages **shall** be broadcast **NOT MORE Than** ONCE each time the Event-Driven Test Information is updated to the ADS-B Transmitting Subsystem. The delay conditions specified in §2.2.3.3.2.9 **shall** be observed. For implementations designed to comply with these MOPS, the TEST Message (Type Code = 23) shall not be transmitted, except under the requirements of §2.2.3.2.7.3.