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EUROCAE WG-51, SG-1**

**ADS-B 1090ES MOPS Maintenance**

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**Proposed DO-260B Changes Required Because of Specification of Version=2  
In Response to Action Item 25-22**

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<b>Summary</b>
In response to Action Item 25-22, this Working Paper addresses the proposed changes in DO-260B that will have to be considered in order to transition to an ADS-B Version Number Two (2).

## Introduction:

Action Item 25-22 calls for a review of DO-260A++ for the purpose of identifying all of the potential changes that need to occur because of the decision to transition to ADS-B Version Number = 2. After a quick review and some discussion among other WG-3 members, what follows is some thoughts that may be refined during further Working Group discussion regarding proposed changes in the document.

## Proposals:

1. All of the places in the document where there is use of a phrase such as “*these MOPS (RTCA DO-260A)*”, as for example in §2.2.3.2.1.3, will have to be reviewed and changed.
2. In DO-260A, Appendix N defined the formats and coding for Extended Squitter ADS-B Messages that are broadcast by ADS-B Version Zero (0), RTCA DO-260 compliant 1090 MHz ADS-B Subsystems, and defines how the ADS-B Report Generation Function of Version One (1) 1090 MHz ADS-B Receiving Subsystems is to utilize messages received from targets that are broadcasting with Version Zero (0) Message formats.  
  
It is my proposal that in DO-260B, Appendix N will be dramatically expanded to include the formats and coding for 1090ES Extended Squitter ADS-B Messages that are broadcast by ADS-B Version Zero (0), RTCA DO-260 compliant 1090 MHz ADS-B Subsystems, **and** Version One (1), RTCA DO-260A compliant 1090 MHz ADS-B Subsystems, and will define how the ADS-B Report Generation Function of Version Two (2) 1090 MHz ADS-B Receiving Subsystems is to utilize messages received from targets that are broadcasting with Version Zero (0) and Version One (1) Message formats.
3. In DO-260A, section §2.2.3.2.3 defines the Airborne Position Message format. We have decided to replace the “Single Antenna Flag” in the Airborne Position Message with the “NIC Supplement.” We therefore have to insert a format for the Airborne Position Message for Version One (1) into Appendix N so that Version Two (2) receivers have the properly defined formats for Version Zero (0) and Version One (1) transmitters.
4. In DO-260A, section §2.2.3.2.6 defines the Airborne Velocity Message formats. We have decided to remove the “IFR Capability Flag” from the format of all Subtypes of this Velocity Message. We therefore have to insert a format for the Airborne Velocity Message for Version One (1) into Appendix N so that Version Two (2) receivers have the properly defined formats for Version Zero (0) and Version One (1) transmitters.
5. In DO-260A, section §2.2.3.2.7.1 defines the Target State and Status Message format. We have decided to change the contents of this Message in Version Two (2) transmitters. We therefore have to insert a format for the Target State and Status Message for Version One (1) into Appendix N so that Version Two (2) receivers have the properly defined formats for Version One (1) transmitters.
6. In DO-260A, section §2.2.3.2.7.2.3 defines the Capability Class (CC) Code Subfield in the Aircraft Operational Status Messages. This particular paragraph in DO-260A contains formats of the Version Zero (0) and Version One (1) formats for the Capability Class Codes. It is my proposal that the Version=0 and Version=1 formats be moved to Appendix N, leaving only the formats that we define for Version=2 in the body of DO-260B.

7. In DO-260A, section §2.2.3.2.7.2.4 defines the Operational Mode (OM) Code Subfield in the Aircraft Operational Status Messages. We have decided to revise the definition of the “Receiving ATC Services” Flag to “Reserved” and to insert the “Single Antenna Flag” into a previously reserved bit location. We therefore have to insert a format for the Operational Mode (OM) Code Subfield in the Aircraft Operational Status Message for Version One (1) into Appendix N so that Version Two (2) receivers have the properly defined formats for Version One (1) transmitters.

Additional consideration may be given during discussion of this bullet to whether or not additional sections of the Aircraft Operational Status Message, such as the NIC, NIC Supplement, SIL and A/V Length/Width definitions should also be represented separately in Appendix N as having unique properties in Version One (1) transmitters.

8. In DO-260A, section 2.2.3.2.7.3 defines the specific Subtype 7 of the ADS-B TEST Message which in Version One (1) transmitters broadcasts the Mode A Code. We have decided to switch the broadcast of the Mode A Code to the Emergency/Priority Status Message, and therefore, we have to insert a format for the ADS-B TEST Message for Version One (1) into Appendix N so that Version Two (2) receivers have the properly defined formats for Version One (1) transmitters.
9. In DO-260A, section 2.2.3.2.7.8 defines the format for the Emergency/Priority Message with Subtype=1. Because we have decided to switch the broadcast of the Mode A Code into Subtype=1 Messages and because we have additionally added a Subtype=2 Message for broadcasting the TCAS RA contents, we therefore have to insert a format for the Emergency/Priority Message for Version One (1) into Appendix N so that Version Two (2) receivers have the properly defined formats for Version One (1) transmitters.
10. In DO-260B, update all of section §2.2.8, ADS-B Report Characteristics, to reflect changes in the Version Two (2) Message formats because of the changes noted above and reflect those changes in the State Vector, Mode Status and Target State Reports that are assembled by the receiver.
11. Copy Version One (1) State Vector, Mode Status and Target State Report format specifications to Appendix N to define how the ADS-B Report Generation Function of Version Two (2) 1090 MHz ADS-B Receiving Subsystems is to utilize messages received from targets that are broadcasting with Version Zero (0) and Version One (1) Message formats.
12. Make all of the same changes in Appendix A that have been previously identified for the main body of the document.
13. Add an Appendix or section in the Main Body of the MOPS that summarizes the differences between Version One (1) and Version Two (2) highlighting the changes that impact Version One (1) receivers since there are changes that are not backward compatible.
14. Update §2.2.9 and §2.2.10 to reflect changes to ADS-B Report Types and ADS-B Report Assembly.