

**RTCA Special Committee 186, Working Group 3
EUROCAE WG-51, SG-1**

ADS-B 1090ES MOPS Maintenance

Meeting #27

**United Airlines Headquarters, Chicago, Illinois (ORD)
12 – 15 May, 2009**

**Updated Proposal for BDS 6,2
Target State and Status Message
Revision 1**

**Prepared by: Robert H. “Bob” Saffell, Rockwell Collins, Inc.
Revised by Gary Furr and Tom Pagano
Presented by: Bob Saffell**

Summary

Response to Action Item 25-20.

WP26-22_R1 presented an updated definition for the BDS 6,2 Target State and Status message which was reviewed at Meeting #26 at RTCA on April 1, 2009. The review indicated that the document needed to be updated to provide for the “Backward Compatibility” and “ADS-R” bits. This Revision provides Table 1 which updates the BDS 6,2 deletes the “Backward Compatibility bit (formerly bit 11) and retains the “ADS-R” bit as bit 51. This document also moves the Selected Heading, Barometric Pressure and Mode bits in order to provide backward compatibility for the NAC_P, SIL, NIC_{BARO} and Emergency/Priority bits such that those bits remain in the same position as in DO-260A. The Subtype is proposed to REMAIN at “0” to allow partial backward compatibility. The proposed format will allow Version 1 receivers to correctly interpret accuracy and integrity parameters that are necessary to be received from Version 2 transmitters to meet their minimum update requirements. Since no manufacturer is using the Target Altitude, Heading, or Mode fields defined in the Version 1 BDS 6,2, then there would be no impact to Version 1 receivers to receive a Version 2 Subtype 0. Version 2 receivers will need to distinguish between Version 1 and Version 2 BDS 6,2 Subtype 0 Messages in order to correctly interpret the modified fields by receiving and decoding the ADS-B Version Number in the Operational Status Message.

Table 1. BDS 6,2 UPDATED PROPOSED TARGET STATE AND STATUS MESSAGE

| “MB” FIELD DEFINITION | | |
|------------------------------|--------|---|
| 1 | MSB | |
| 2 | | |
| 3 | | FORMAT TYPE CODE = 29 |
| 4 | | |
| 5 | LSB | |
| 6 | MSB | SUBTYPE CODE = 1 |
| 7 | LSB | Set Subtype “1” for Version 2, e.g., DO-260B. |
| 8 | | SPARE |
| | | Deleted DO-260 Backward Compatibility Bit |
| 9 | | SELECTED ALTITUDE TYPE (0 = MCP/FCU, 1 = FMS) |
| 10 | MSB | = 32,768 feet |
| 11 | | MCP / FCU SELECTED ALTITUDE |
| 12 | | (when Selected Altitude Type = 0) |
| 13 | | FMS SELECTED ALTITUDE |
| 14 | | (when Selected Altitude Type = 1) |
| 15 | | Coding: 111 1111 1111 = 65,472 feet |
| 16 | | *** **** * |
| 17 | | 000 0000 0010 = 32 feet |
| 18 | | 000 0000 0001 = 0 feet |
| 19 | | 000 0000 0000 = No Data or Invalid |
| 20 | LSB | = 32 feet |
| 21 | MSB | = 204.8 millibars |
| 22 | | BAROMETRIC PRESSURE SETTING (MINUS 800 millibars) |
| 23 | | Range = [0, 408.0] Resolution = 0.8 millibars |
| 24 | | Coding: 1 1111 1111 = 408.00 millibars |
| 25 | | * **** * |
| 26 | | 0 0000 0010 = 0.800 millibars |
| 27 | | 0 0000 0001 = 0.000 millibars |
| 28 | | 0 0000 0000 = No Data or Invalid |
| 29 | LSB | = 0.8 millibars |
| 30 | STATUS | (0 = valid, 1 = invalid) |
| 31 | Sign | (0 = positive, 1 = negative) |
| 32 | MSB | 90.0 degrees |
| 33 | | |
| 34 | | SELECTED HEADING |
| 35 | | Range = [+/- 180] degrees Resolution = 0.703125 degrees |
| 36 | | (Typical Selected Heading Label = “101”) |
| 37 | | |
| 38 | | |
| 39 | LSB | 0.703125 degrees (180/256) |
| 40 | MSB | |
| 41 | | NAVIGATION ACCURACY CATEGORY__POSITION (NAC_P) |
| 42 | | |
| 43 | LSB | |
| 44 | | NAVIGATION INTEGRITY CATEGORY_BARO (NIC_{BARO}) |
| 45 | MSB | |
| 46 | LSB | SYSTEM INTEGRITY LEVEL (SIL) |
| 47 | | STATUS OF MCP / FCU MODE BITS (0 = INVALID, 1 = VALID) |
| 48 | | AUTOPILOT ENGAGED (0 = NOT ENGAGED, 1 = ENGAGED) |
| 49 | | VNAV MODE ENGAGED (0 = NOT ENGAGED, 1 = ENGAGED) |
| 50 | | ALTITUDE HOLD MODE (0 = NOT ENGAGED, 1 = ENGAGED) |
| 51 | | Reserved for ADS-R Flag (ADS-B Rebroadcast) (see section 2.2.18.4.6) |
| 52 | | APPROACH MODE (0 = NOT ENGAGED, 1 = ENGAGED) |
| 53 | | TCAS OPERATIONAL (0 = Not Operational, 1 = Operational) |
| 54 | MSB | |
| 55 | | EMERGENCY / PRIORITY STATUS |
| 56 | LSB | |