

RTCA Special Committee 186
Working Group 3
and EUROCAE WG-51, Subgroup 1

Joint Teleconference for DO-260B/ED-102A Errata
16 August 2011

Proposal for Additional Errata to correspond to
Proposed Resolutions for the HDR flag, Selected Heading and
Difference from Baro Altitude Discussions

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Summary

This Working Paper addresses additional errata that are proposed to the draft of “Corrigendum-1 for DO-260B/ED-102A” as a result of discussions from the last Joint Teleconference on 7 June 2011 relating to the issues of Selected Heading, the HRD flag, and the issue of Difference from Baro Altitude in the Airborne Velocity Message.

1.0 Introduction

During the Teleconference held jointly by RTCA SC-186 WG-3 and EUROCAE WG-51, SG-1 on 7 June 2011, additional clarifications were proposed in [Working Paper 1090-WP33-06](#) for the Geometric Vertical Accuracy (GVA) parameter regarding the usage of the parameter with respect to the Baro-Geo Difference data field broadcast in the Airborne Velocity Message. The suggested changes in this Working Paper were approved, but it was pointed out by Johan Martensson that even though the ADS-B MOPS allows MSL, the currently published FAA AC20-165 and the upcoming EASA CS-ACNS specify the use of Height Above Ellipsoid (HAE). Action Item 33-02 was accepted by Johan and Jorg Steinleitner to draft a proposed Note to be suggested for the section dealing with the “Difference from Barometric Altitude” subfield in the Airborne Velocity Message to clarify that this proposed requirement may be coming from regulators. This proposed additional Note was to be reviewed by the ICAO ASP Technical Subgroup at their June Meeting in Paris, for additional inclusion into ICAO Doc 9871. That review was accomplished and the Note was approved, and the resulting proposed change appears in this Working Paper.

During the Joint Teleconference of RTCA SC-186 WG-3 and EUROCAE WG-51, SG-1 held on 17 May 2011, [Working Paper 1090-WP32-05](#), Bullet #2 dealt with a need for clarification of the usage of the Horizontal Reference Direction (HRD) flag broadcast in both the airborne and surface formats of the Aircraft Operational Status Message. Dean Miller suggested that there is a need to clarify the usage of the HRD to state that it only refers to the Heading / Ground Track field in the Surface Position Message (BDS Register 06₁₆) or the Heading field in the Airborne Velocity Message (BDS Register 09₁₆ Subtypes 3& 4) and not to the Selected Heading parameter in the Target State & Status Message. During the Joint Teleconference of 7 June and subsequently, Dean Miller offered proposed Notes for the HRD and for the Selected Heading sections of DO-260B/ED-102A. These proposed additional Notes were to be reviewed by the ICAO ASP Technical Subgroup at their June Meeting in Paris, for additional inclusion into ICAO Doc 9871. That review was accomplished and the Notes were approved, and the resulting proposed changes appear in this Working Paper.

2.0 Proposed Errata/Clarifications to DO-260B/ED-102A

Proposed Errata/Clarifications for the “Corrigendum-1 for DO-260B/ED-102A” appear in the attachment below. Once approved by WG-3/SG-1, they will be included in the next draft of the Corrigendum-1.

ATTACHMENT A

Additional errata/clarifications for the current draft of Corrigendum-1 for DO-260B/ED-102A

2.2.3.2.6.1.15 Difference from Baro Altitude in Airborne Velocity Messages (also in §A.1.4.5.6)

The “Difference From Barometric Altitude” subfield is a 7-bit (“ME” bits 50 – 56, Message bits 82 – 88) field that is used to report the difference between Geometric (GNSS or INS) Altitude Source data and Barometric Altitude when both types of Altitude Data are available and valid. The difference between barometric altitude and GNSS Height Above Ellipsoid (HAE) is preferred. However, GNSS Altitude (MSL) may be used when airborne position is being reported using TYPE Codes 11 through 18. If airborne position is being reported using TYPE Codes 9 or 10, only GNSS Height Above the Ellipsoid (HAE) may be used. For TYPE Codes 9 and 10, if GNSS Height Above the Ellipsoid (HAE) is not available, then the Difference from Barometric Altitude subfield shall be set to ALL ZEROS.

Notes:

1. *The basis for the barometric altitude difference (either GNSS HAE or Altitude MSL) must be used consistently for the reported difference.*
2. *Although the above requirements allows this subfield to be based on MSL in certain cases, it is expected that some regulators will only accept installations that report based on WGS-84 HAE. This could be standardized accordingly in future versions of these MOPS.*

Range, Resolution, and No Data encoding of the “Difference From Barometric Altitude” subfield **shall** be as shown in Table 2-31.

2.2.3.2.7.1.3.7 Selected Heading Subfield in Target State and Status Messages (also in § A.1.4.9.8)

- a. The “Selected Heading” subfield is an 8-bit (“ME” bits 32 – 39, Message bits 64 – 71) field that **shall** contain Selected Heading data encoded in accordance with Table 2-47.

Note: *The Selected Heading parameter does not have a flag bit in this version of these MOPS to indicate its reference orientation (True North or Magnetic North). Implementers of the Target State and Status Message are encouraged whenever possible to use input parameters to populate this field that utilize Magnetic North orientation, as that is the de facto standard utilized by most users of this data. However since many aircraft have flight decks that can operate in either True North or Magnetic North orientation, this field should be encoded with the current active value in the flight deck, regardless of orientation. Users of the Selected Heading data should be aware that there is no method defined in this version of these MOPS to indicate its reference orientation.*

Table 2-47. “Selected Heading Status, Sign and Data” Subfields Encoding

2.2.3.2.7.2.13 Horizontal Reference Direction (HRD) (also in § A.1.4.10.13)

The Horizontal Reference Direction (HRD) subfield of the ADS-B Aircraft Operational Status Messages is a 1-bit field (“ME” bit 54, message bit 86) that **shall** indicate the reference direction (true north or magnetic north) for horizontal directions such as heading, track angle. The Horizontal Reference Direction subfield shall be encoded as specified in Table 2-76.

Note: The HRD flag only applies to the Heading/Ground Track subfield in the Surface Position Message or the Heading subfield in the Airborne Velocity Message (Subtype 3 & 4).

Table 2-76: Horizontal Reference Direction (HRD) Encoding

Coding	Meaning
0	True North
1	Magnetic North