

CHANGE ISSUE – RTCA / DO-242A

# MASPS for ADS-B Rev. A

Tracking Information (committee secretary only)	
Change Issue Number	39
Submission Date	5/14/01
Status (open/closed/deferred)	Rev. A - CLOSED
Last Action Date	2/22/02

Short Title for Change Issue:	Does the vertical height integrity (NIC) value need to be the same as the horizontal integrity level so suitably equipped aircraft can perform ACM functions against ADS-B equipped TARGET aircraft?
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MASPS Document Reference:		Originator Information:	
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Section number(s)		Phone	(202) 267-7954
Paragraph number(s)		E-mail	Garret.livack@faa.gov
Table/Figure number(s)		Other	livack@worldnet.att.net

Proposed Rationale for Consideration (originator should check all that apply):	
<input type="checkbox"/>	Item needed to support of near-term MASPS/MOPS development
<input type="checkbox"/>	DO-260/ED-102 1090 MHz Link MOPS Rev A
<input type="checkbox"/>	ASA MASPS
<input type="checkbox"/>	TIS-B MASPS
<input type="checkbox"/>	UAT MOPS
<input type="checkbox"/>	Item needed to support applications that have well defined concept of operation
<input type="checkbox"/>	Has complete application description
<input type="checkbox"/>	Has initial validation via operational test/evaluation
<input type="checkbox"/>	Has supporting analysis, if candidate stressing application
<input type="checkbox"/>	Item needed for harmonization with international requirements
<input type="checkbox"/>	Item identified during recent ADS-B development activities and operational evaluations
<input type="checkbox"/>	MASPS clarifications and correction item
<input type="checkbox"/>	Validation/modification of questioned MASPS requirement item
<input type="checkbox"/>	Military use provision item
<input type="checkbox"/>	New requirement item (must be associated with traffic surveillance to support ASAS)

Nature of Issue:	<input type="checkbox"/>	Editorial	<input type="checkbox"/>	Clarity	<input checked="" type="checkbox"/>	Performance	<input type="checkbox"/>	Functional
<u>Issue Description:</u>								
<p>How might the revised version of the ADS-B MASPS (DO-242A) be drafted so as to ensure that the vertical height integrity value is at the same "level" as the horizontal NIC level so that ACM can be accomplished. If we do not address this interoperability issue now, especially for Capstone 2 avionics, we may end up deploying systems that will not have the adequate vertical height attributes to act as the TARGET aircraft / system for ACM equipped aircraft. What might happen is with many systems deployed, we then might realize that these already deployed systems (e.g., Capstone 2 and future) are not backwards compatible (in vertical NIC) and thus would need to upgrade their systems to be targets for other aircraft equipped with ACM systems.</p>								

<u>Originator's proposed resolution:</u>	None submitted.
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Working Group 6 Deliberations:

May 24, 2001: The ad hoc group agreed that this Issue Paper will be addressed in Revision A of DO-242.

July 19, 2001: During a joint telecon with WG1, it was agreed to provide VPL when available and some bits will be reserved to identify the integrity of non-GPS altitude sources (ex. single barometric with no integrity, or dual altimetry with cross-checking).

January 29, 2002: This Issue Paper was discussed at the January WG6 meeting as part of the review of 242A-WP-11-01. It was agreed that two new fields would be created in the Mode Status report to categorize the quality of altitude data being reported. It was also agreed that values for the Barometric Altitude Quality Field would not be defined in revision A.

February 22, 2002: Final MASPS text was reviewed and accepted at the February WG6 meeting. These new sections will close this IP.

Working Group 6 Final Resolution:

Attachment A of this Issue Paper includes new sections included in the draft DO-242A which was delivered to RTCA March 4, 2002. These sections were authored to resolve this Issue Paper. Sections 2.1.2.16 and 2.1.2.17 give high level definitions of the newly created Barometric Altitude Quality and NIC<sub>baro</sub> fields, and sections 3.4.4.14 and 3.4.4.15 define how these fields are used as elements of the Mode Status report.

**2.1.2.16 Barometric Altitude Quality Code (BAQ)**

The Barometric Altitude Quality Code, BAQ, is a 2-bit field which **shall** (R.32) be ZERO for equipment that conforms to this version (DO-242A) of the ADS-B MASPS.

Notes:

1. *Non-zero values of the barometric altitude accuracy code will be defined in future versions of this MASPS. One proposed encoding is given in Table 2.1.2.16; however, it is not certain that this encoding will be the one specified in future versions of this MASPS.*

**Table 2.1.2.16: Possible Future Encoding for Barometric Altitude Quality.**

<i>BAQ</i>	<i>Meaning</i>
<i>0</i>	<i>Barometric altitude not certified for IFR use</i>
<i>1</i>	<i>Barometric altitude with 100 feet resolution</i>
<i>2</i>	<i>Barometric altitude with 25 feet resolution</i>
<i>3</i>	<i>Barometric altitude meets RVSM requirements</i>

2. *BAQ, the barometric altitude accuracy code, is reported in the Mode-Status report (§3.4.4.14 below).*

**2.1.2.17 Barometric Altitude Integrity Code (NIC<sub>baro</sub>)**

The Barometric Altitude Integrity Code, NIC<sub>baro</sub>, is a one-bit flag that indicates whether or not the barometric pressure altitude provided in the State Vector Report has been cross-checked against another source of pressure altitude.

Note: NIC<sub>baro</sub>, the barometric altitude integrity code, is reported in the Mode-Status report (§3.4.4).

**3.4.4.14 (Reserved for) BAQ Field**

A 2-bit field in the MS Report is reserved for future use as a “Barometric Altitude Quality” field. In the current version (DO-242A) of this MASPS, the “Reserved for Barometric Altitude Quality” field **shall** (R3.119) be ZERO.

Note: *A possible future encoding of the BAQ field is described in §0 in Section 2 above.*

**3.4.4.15 NIC<sub>baro</sub> Field**

The NIC<sub>baro</sub> field in the MS report is a one-bit flag that indicates whether or not the barometric pressure altitude provided in the State Vector Report has been cross-checked against another source of pressure altitude. A transmitting ADS-B participant **shall** (R3.120-A) set NIC<sub>baro</sub> to ONE in the messages that it sends to support the MS report only if there is more than one source of barometric pressure altitude data and cross-checking of one altitude source against the other is performed so as to clear the “barometric altitude valid” flag in the SV report if the two altitude sources do not agree. Otherwise, it **shall** (R3.120-B) set this flag to ZERO.