

CHANGE ISSUE – RTCA/DO-242

MASPS for ADS-B Rev. A

Tracking Information (committee secretary only)	
Change Issue Number	8
Submission Date	1/11/01
Status (open/closed/deferred)	Rev. A – CLOSED
Last Action Date	2/22/02

Short Title for Change Issue:	The current NUC definition is insufficient. Accuracy and Integrity need to be separate components.
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MASPS Document Reference:		Originator Information:	
Entire document (y/n)		Name	James Maynard / UPS AT
Section number(s)		Phone	(503) 391-3281
Paragraph number(s)		E-mail	James.Maynard@at.ups.com
Table/Figure number(s)		Other	

Proposed Rationale for Consideration (originator should check all that apply):	
<input type="checkbox"/>	Item needed to support of near-term MASPS/MOPS development
X	DO-260/ED-102 1090 MHz Link MOPS Rev A
<input type="checkbox"/>	ASA MASPS
<input type="checkbox"/>	TIS-B MASPS
X	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
X	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 type="checkbox"/> Performance	X	Functional
<u>Issue Description :</u>					
<p>The attached comments questioning the selection of type codes based on accuracy information (HFOM) in the absence of integrity information (HPL) were presented to the SC-186 plenary in reference to the ballot on the 1090 MHz ADS-B MOPS (DO-260). It was agreed that these issues would be deferred from consideration in DO-260 until they were first considered for inclusion in a future revision of the ADS-B MASPS. Included with the attached comments is the official response from working group 3, which was charted with development of DO-260.</p> <p><u>Further Description:</u> <i>(Note: The following is material originally from IP24. It was agreed at the May, 2001 ad hoc meeting to close IP24 and consolidate that information into this Issue Paper.)</i></p> <p>The NAC concept as used by SC-186 may not be to a level of precision needed to support the envisioned (by RTCA SC-193) airport surface applications, for example, detection of an imminent runway incursion / pilot deviation on the airport surface. SC-186 may therefore need to specify additional NAC's. Also, is NUC / NIC also at issue?</p>					

Originator's proposed resolution: Proposed resolution is attached with comments from DO-260 ballot.

Working Group 6 Deliberations:

January 24, 2001: This Issue Paper was discussed by the ad hoc group at their January 2001 meeting. It was agreed that this Issue Paper will be addressed in Revision A of DO-242.

May 24, 2001: The title of this Issue Paper was slightly modified per discussions at the May meeting of the ad hoc group. A major update to a proposed resolution for this IP will be discussed at the July 2001 meeting. It was also agreed to reference IP24 which specifically dealt with NAC for Surface Movement Applications.

July 19, 2001: At the July WG6 meeting, Jim Maynard presented 242A-WP-6-03, which documented a possible 1090 MHz ADS-B MOPS (DO-260A) implementation of the proposed accuracy and integrity changes for DO-242A. It was agreed that the tables presented in this paper would serve as the basis for the NIC, NAC, and SIL values for DO-242A. A white paper was drafted (242A-WP-6-12) based on WG4's initial paper recommended NUC_p have its accuracy and integrity components separated.

August 30, 2001: A final draft of the NIC/NAC white paper (242A-WP-7-02) was reviewed and accepted with minor comments by WG6 at its August meeting. Other feedback received from earlier drafts of the white paper on topics such as overall latency and continuity will be forwarded to WG4 as issues for consideration in development of the Airborne Separation Assurance (ASA) MASPS. Once the remaining feedback is incorporated into 242A-WP-7-02, it will be considered WG6's official white paper on the planned accuracy and integrity changes for DO-242A. This paper will be circulated to the other SC-186 working groups and be the basis for the specific changes to the MASPS text for DO-242A.

December 14, 2002: The work done to date on separating integrity and accuracy component of NUC into NIC and NAC as well as the concept of SIL were briefed to plenary at the December SC186 meeting. Plenary agreed that WG6 should proceed with developing this material and including it in DO-242A.

February 1, 2002: This Issue Paper was discussed as part of the review of 242A-WP-11-01.

February 22, 2002: Final MASPS text NIC, NACP, NACV, and SIL were agreed to by WG6 at their February meeting as part of their review of 242A-WP-12-01.

Working Group 6 Final Resolution:

Sections 2.1.2.12 through 2.1.2.17 of the draft DO-242A delivered to RTCA March 4, 2002 define the new fields in which integrity and accuracy of position and velocity information are to be categorized within ADS-B. Further, Sections 3.4.3.18 and 3.4.4.11 through 3.4.4.15 define how these fields are contained as report elements within the State Vector or Mode Status reports. The reader is referred to the draft of DO-242A to read this material.

**ADS-B 1090 MHz Rev A Comments Related to MASPS Changes
RTCA SC-186 WG-3/EUROCAE WG-51 SG-1**

#	Comment Author	DO-260 Section	Page	Comment / Rationale	Suggested Resolution
10	James Maynard (22)	2.2.3.2.3.1.2	42	<p>Selecting the type code based on accuracy information (HFOM) in the absence of integrity information (HPL) is bogus. The type code carries <u>integrity</u> information (NUC_P, which should later be renamed NIC for Navigation Integrity Level). HPL is an <u>integrity</u> bound, but HFOM is only an <u>accuracy</u> bound.</p> <p>WG#3 Position: <i>Items #10, 11, and 12: Will accommodate these items if NIC/NAC is incorporated into DO-242A. However, WG#3 has seen great difficulty in getting this information (especially NUCR), and cautions that to now require this data in a more specific manner will not be easy. WG#3 would like to see writeups on exactly how this information is to be derived.</i></p>	<p>a. <u>Leave the text as it stands for the initial version of this MOPS.</u></p> <p>b. Address this as a recommended change to the DO-242 MASPS and to “Rev A” of this MOPS.</p>
11	James Maynard (34)	2.2.3.2.4.1.2	56	<p>Same comment as James Maynard (22) above, but for the type code in the Surface Position Message.</p> <p>WG#3 Position: <i>See item 19 above.</i></p>	<p>Same proposed resolution as for James Maynard (22) comment.</p>
12	James Maynard (37)	2.2.3.2.4.1.4.c	57	<p>Same comment as James Maynard (22) above, but for the Surface Position Message.</p> <p>WG#3 Position: <i>See item 19 above.</i></p>	<p>Same proposed resolution as for James Maynard (22) comment.</p>