

CHANGE ISSUE – RTCA/DO-242

# MASPS for ADS-B

## Rev B

Tracking Information (committee secretary only)	
Change Issue Number	74
Submission Date	05/01/03
Status (open/closed/deferred)	CLOSED
Last Action Date	09/15/2010

Short Title for Change Issue:	HPL levels for NIC
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MASPS Document Reference:		Originator Information:	
Entire document (y/n)		Name	Chris Moody
Section number(s)	2.1.2.12	Phone	703 883 5506
Paragraph number(s)		E-mail	cmoody@mitre.org
Table/Figure number(s)	Table 2-2	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 and SARPs
X	ASA MASPS
<input type="checkbox"/>	TIS-B MASPS
X	UAT MOPS and SARPs
<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 type="checkbox"/>	Performance	X	Functional
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Issue Description:

GPS sensors specified for navigation applications will be the main navigation source for ADS-B (perhaps the only source at this time for which we know how to assign an HPL). Many GPS sensors used to drive ADS-B may be limited in the integrity increments they can report to those Horizontal Alert Limit (HAL) thresholds used for navigation applications (i.e., 2.0 NM for Enroute, 1.0 NM for Terminal, 0.3 NM for Non-precision approach). HAL is directly related to HPL which is directly related to NIC. While 2.0 NM and 1.0 NM do map directly to NIC 4 and 5 respectively, the 0.3 NM HAL falls between NIC 6 and 7. GPS sensors limited in their HPL resolution to these standard navigation HAL values will be forced to always “under-report” their integrity when the Non-precision approach criteria are met. This could be a key operational NIC value that we may be arbitrarily doubling due to quantization noise. (The Australians are looking at 0.3 NM as their acceptable threshold for “radar-like” services).

**Originator's proposed resolution, if any:**

Change the  $R_C$  for NIC=7 from 0.2 to 0.3 NM

**Issue History:**

1 May 2003: This issue was first raised by Chris Moody of Mitre in 2003 with the creation of this Issue Paper. The issue was deferred at that time until further discussion could be held on the MASPS as well as Link MOPS.

February 2009: The issue was again raised during the discussion related to the ADS-B RAD SPR/Interop being prepared by the Requirements Focus Group, and based on discussions held in the Brussels meeting of the ADS-B RAD Subgroup in February 2009, Tony Warren of Boeing produced Working Paper 1090-WP26-07 to propose adding another NIC Supplement for NIC=7 for a radius of containment of 0.3 NM.

June 2009: WG-3/SG-1 and WG-5 accepted the need to implement this change, and after several Working Paper presentations and discussions on how to implement a change so that all Version ONE and Version TWO receivers would benefit, Working Paper 1090-WP28-29 was reviewed and approved as a proposal for how the implementation of this NIC Supplement would work for all versions of 1090ES Receivers. In order to implement the change for both airborne and surface, an additional NIC Supplement was added specifically for Surface 1090ES Messages. For UAT, a single NIC Supplement was added to represent  $R_C = 0.3$  NM.

2010: As the draft of DO-242B begins to be reviewed, this will need to be factored into section §2.1.2.12 and Table 2-2 for the definition of NIC.

**09/15/2010 – Meeting #17**

The reconvened WG-6 reviewed this Issue Paper and agreed that it should be closed since this issue has been discussed and dealt with in each of the respective Link MOPS and has been edited into the working draft of DO-242B for combining with DO-289.