

CHANGE ISSUE – RTCA/DO-242

MASPS for ADS-B Rev. A

Tracking Information (committee secretary only)	
Change Issue Number	61
Submission Date	2/14/02
Status (open/closed/deferred)	DEFERRED
Last Action Date	2/22/02

Short Title for Change Issue:	Need guidance on coping with duplicate A/V addresses
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MASPS Document Reference: WP-11-01		Originator Information:	
Entire document (y/n)		Name	Tom Mosher
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Table/Figure number(s)		Other	Bill Flathers (AOPA)

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

Nature of Issue:	<input type="checkbox"/>	Editorial	X	Clarity	<input type="checkbox"/>	Performance	<input type="checkbox"/>	Functional
Issue Description:								
<p>Clarify whether an ADS-B receiver must be able to cope with targets that are transmitting duplicated A/V addresses. This situation could arise either through either self-assigned temporary addresses (anonymous), inadvertent anomalous reception of surface vehicles beyond the nominal range from an airport (see 242A-WP-11-01 Section 2.1.2.3 Note 1), or problems arising from equipment maintenance issues.</p> <p>Clearly two targets with the same address but with different SV reports can be identified as unique targets, if some additional portion of the SV is used for discrimination. The MASPS should be clear whether this is required, or if receiving units need only observe the A/V address.</p> <p>Clearly, the “unique address” requirement (R2.10) is not sufficient to guarantee that duplicate addresses never occur in practice.</p>								

Originator's proposed resolution:

Two proposed resolutions are provided:

Preferred resolution:

Delete Requirement R2.10, which contains the "uniqueness" provision, and add a note that specifically states that ADS-B receiving equipment should be capable of coping with reception of duplicated addresses.

Note that in the text below, the existing Note 2 has been deleted, in anticipation of approval of a separate Issue Paper. A new Note 2 has been provided.

In specific, revise the proposed text of 242A-WP-11-01A/B/C as follows:

Section 2.1.2.2.2 Participant Address and Address Qualifier

The ADS-B system design shall (R2.8) include a means (e.g., an address) to (a), correlate all ADS-B messages transmitted from the A/V and (b), differentiate it from other A/Vs in the operational domain.

Those aircraft requesting ATC services may be required in some jurisdictions to use the same address for all CNS systems. Aircraft with Mode-S transponders using an ICAO-assigned 24 bit address shall (R2.9) use the same 24 bit address for ADS-B.

The ADS-B system design shall (R2.6) accommodate a means to ensure anonymity whenever pilots elect to operate under flight rules permitting an anonymous mode.

Notes:

1. *Some flight operations do not require one to fully disclose either the A/V call sign or address. This feature is provided to encourage voluntary equipage and operation of ADS-B by ensuring that ADS-B messages will not be traceable to an aircraft if the operator requires anonymity.*
2. *ADS-B receiving equipment should anticipate that the Participant Address may not be unique in all cases, and provide a means to differentiate targets by considering other information fields, such as Flight ID, Address Mode Qualifier, or other State Vector Report elements.*

Comments: In essence, this deletes the stated requirement for uniqueness because (1) no one can guarantee it, (2) no one can prove that the condition will always be met, (3) there has to be some provision on the receive side for the occasional duplicate, (4) the intent of uniqueness is captured in part (b) of the opening sentence, and (5) by not requiring uniqueness in the address, it gives the receive side the freedom to consider other message elements to provide distinction if necessary. A note has been added to reinforce the need for ADS-B receiving equipment to cope with duplicated Participant Addresses.

See the next sheet for a second proposed solution.

Originator's proposed resolution (continued):

Less-preferred solution:

In this proposed solution, the requirement R2.10 is softened into a "should", and places the advice about handling duplicate addresses in the text body, rather than in a note. Again, the existing Note 2 has been assumed deleted.

In specific, revise the proposed text of 242A-WP-11-01A/B/C as follows:

2.1.2.2.2 Participant Address and Address Qualifier

The ADS-B system design shall (R2.8) include a means (e.g., an address to (a) correlate all ADS-B messages transmitted from the A/V and (b) differentiate it from other A/Vs in the operational domain.

A/V addresses should be unique within the applicable operational domain. In the extremely rare case where two A/Vs have the same address in the same operational domain, other message elements such as the address qualifier, call sign, or other parts of the state vector report can be used to distinguish messages from the respective A/Vs.

Those aircraft requesting ATC services may be required in some jurisdictions to use the same address for all CNS systems. Aircraft with Mode-S transponders using an ICAO-assigned 24 bit address shall (R2.9) use the same 24 bit address for ADS-B.

The ADS-B system design shall (R2.6) accommodate a means to ensure anonymity whenever pilots elect to operate under flight rules permitting an anonymous mode.

Note: Some flight operations do not require one to fully disclose either the A/V call sign or address. This feature is provided to encourage voluntary equipage and operation of ADS-B by ensuring that ADS-B messages will not be traceable to an aircraft if the operator requires anonymity.

Working Group 6 Deliberations:

February 22, 2002: This Issue Paper was reviewed by WG6 at their February 2002 meeting. Since this IP was received so close to the completion date for revision A, and the fact that there will need to be proper coordination with all ADS-B links on this issue – especially the Mode-S community – it was decided this Issue Paper will be deferred for a future revision of the MASPS.