

CHANGE ISSUE – RTCA/DO-242

MASPS for ADS-B Rev. A

Tracking Information (committee secretary only)	
Change Issue Number	52
Submission Date	12/17/01
Status (open/closed/deferred)	Rev. A - CLOSED
Last Action Date	2/22/02

Short Title for Change Issue:	IDENT transponder-like feature for ADS-B requested by Anchorage ARTCC in support of Capstone
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MASPS Document Reference:		Originator Information:	
Entire document (y/n)		Name	Chris Moody
Section number(s)	2.1.2.17	Phone	703 883 5506
Paragraph number(s)		E-mail	Cmoody@mitre.org
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
<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
<u>Issue Description:</u>					
<p>Anchorage ARTCC sent a letter to RTCA requesting ADS-B support for several functions currently supported by a transponder. These recommendations are based on their experiences using ADS-B to provide radar-like services as part of the Capstone project.</p> <p>One such capability is for an aircraft to IDENT in a way similar to pilots under SSR surveillance at the request of ATC. This would aid in positive identification and providing efficient service to “pop-up” flights that have not previously filed flight plans.</p> <p>Below is offered an approach to accommodating this with ADS-B with minimal bandwidth or backward compatibility impact.</p>					

Originator's proposed resolution:

(The resolution also includes items for Issue Papers 41 and 53.)

The least bandwidth impact approach to including this input may be to expand the Emergency Priority Status field by one bit, thus making this a four bit field. The encoding could then be as follows with coding 7 specifically resolving this Issue Paper:

Coding	Meaning
0	No emergency/not reported - <u>Receiving ATC Services</u>
1	General Emergency
2	Lifeguard/Medical
3	Minimum Fuel
4	No communications
5	Unlawful interference
6	<u>Downed aircraft</u>
7	<u>IDENT*</u>
8	<u>No emergency/not reported - NOT receiving ATC services e.g., "1200"</u>
9-15	Spare

*This code would persist for approximately 20 seconds upon pilot activation, after which the transmitter would revert to the previous code.

This should be backward compatible with DO-242. If we use this approach perhaps the name of the field should change to just "Status" rather than Emergency/Priority Status.

Notes:

1. "Downed Aircraft" is an addition to DO-242A proposed as a resolution to Issue Paper 41 which requests an Emergency Locator Transmitter (ELT) capability.
2. "No emergency/not reported - NOT receiving ATC services" is an addition to DO-242A proposed as a resolution to Issue Paper 53 which requests an IDENT feature to assist ATC in "pop-up" flights which have not previously submitted a flight plan.

Ad Hoc Group Deliberations:

December 14, 2001: This issue was brought to WG6 as part set of requests for ADS-B functionalities from Anchorage ARTCC based on their Capstone experiences (242A-WP-10-04). These issues were briefed to plenary (242A-WP-10-06), and it was agreed by WG6 and plenary that this issue would be addressed in revision A after an Issue Paper was produced.

February 1, 2002: This Issue Paper was reviewed at the WG6 January 2002 meeting as part of its review of 242A-WP-11-01. It was agreed by WG6 that the resolution of this Issue Paper will be an Operational Mode (OM) parameter within the Mode Status report, and not contained within the Emergency/Priority Status Field (also within MS).

February 22, 2002: Final language from 242A-WP-12-01 for this Issue Paper was agreed to by WG6 at their February 2002 meeting.

(Final resolution on next page.)

Working Group 6 Final Resolution:

The follow section from the draft DO-242A sent to RTCA on March 4, 2002 defines an “IDENT Switch Active Flag” operational mode (OM) code contained within the Mode Status report:

3.4.4.10.2 IDENT Switch Active Flag

The “IDENT Switch Active” Flag is a one-bit OM code that is activated by an IDENT switch. Initially, the “IDENT switch active” OM code **shall** (R3.114-A) be ZERO. Upon activation of the IDENT switch, this flag **shall** (R3.114-B) be set to ONE for a period of 18 ± 1 seconds; thereafter, it **shall** (R3.114-C) be reset to ZERO.

Note: This MASPS does not specify the means by which the “IDENT Switch Active” flag is set. That is left to lower-level documents, such as the MOPS for a particular ADS-B data link.