

## CHANGE ISSUE – RTCA/DO-242

# MASPS for ADS-B Rev. A

Tracking Information (committee secretary only)	
Change Issue Number	66
Submission Date	07/01/02
Status (open/closed/deferred)	TBD
Last Action Date	None

Short Title for Change Issue:	Correlation of Flight-Plan and ID
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MASPS Document Reference:		Originator Information:	
Entire document (y/n)		Name	Steve Creamer
Section number(s)	2.1.2.1 Identification	Phone	907-271-5464
Paragraph number(s)		E-mail	Steve.creamer@faa.gov
Table/Figure number(s)		Other	Capstone

Proposed Rationale for Consideration (originator should check all that apply):	
	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
	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
	Item needed for harmonization with international requirements
X	Item identified during recent ADS-B development activities and operational evaluations
	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:		Editorial		Clarity	X	Performance	X	Functional
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Issue Description:

In order to foster implementation of ADS-B with the existing ground ATC infrastructure, a means needs to be provided to communicate in ADS-B Messages a unique identification to correlate with a specific Flight Plan. Today this communication is effected through use of the ATC assigned 4096 code.

The following are issues that are impacting the operational ADS-B system at Bethel, Alaska that have been addressed but are not resolved:

- Aircraft departing VFR from one airfield, then departing IFR from the next airfield and tagging with the previous/wrong portion of the flight plan
- Aircraft filing IFR flight plans for one aircraft, then being assigned another by company dispatcher at departure time and there is no update of the flight plan – the filed flight plan has the wrong hexadecimal ICAO code filed
- Aircraft continually filing IFR flight plans without filing the associated hexadecimal ICAO code
- Aircraft operators who are unfamiliar with their hexadecimal ICAO code and who continually refuse to ‘learn’ the new system.

*(Continued on next page.)*

Issue Description (continued):

In order to resolve the above, air traffic controllers have worked these issues to facilitate ADS-B usage. These are not ATC functions; controller frustrations and workload are increasing, and resolution is required.

Additional efficiencies that can be realized with use of a Flight-Plan ID include allowing surveillance of VFR flights for search and rescue purposes on non-certified systems without cluttering up ATC displays, and allowing surveillance of any flight to determine intent for possible security or airspace restriction purposes.

Originator's proposed resolution:

Add a Flight-Plan ID field to MASPS Identification requirements (Section 2.1.2.1). This should accommodate current Mode 3/A 4096 code, but be expandable for future US/international flight plan ID schemes in ground system automation.

Air traffic control issues discrete, changeable codes to IFR aircraft, such as the existing Mode 3/A 4096 transponder process, to link aircraft flight plans with events in the system plane. Eventually, the movement of aircraft within the NAS should automatically trigger most events that will support the pilot by updating pertinent weather tables, airport information or other data they'll need on the aircraft. To do this, the ground system automation needs to have the aircraft's intent and the way for that to happen is through a flight plan.

Should the ground system fail to automatically link the aircraft with the correct flight plan due to an incorrect aircraft ID, provide a means, via data link, for controllers to electronically match aircraft operating in the system to flight plans (this should be transparent with no entry required by the pilot). For example, an aircraft departs and tags with the incorrect flight plan leg. The controller can electronically re-tag the aircraft with the correct leg.

In short, create a means for discrete Flight-Plan IDs, for example Mode 3/A 4096 codes, to facilitate ADS-B integration into existing ground automation systems.

Working Group 6 Deliberations:

WG6 has not formally reviewed this Issue Paper yet. This Issue Paper was created in response to the final review and comment process on the UAT ADS-B link MOPS. The UAT MOPS was submitted to the SC-186 plenary for review in June, 2002 which was after the completion of DO-242A. WG6 will consider this Issue Paper when it reconvenes to begin considering revision B of the ADS-B MASPS.

**Dispatcher/Operator**

(1) File Flight Plan(s)

**Pilot**

(3) Start Avionics, Loads ACID  
(4) Request Clearance

(6) Reads Back Clearance (i.e.  
Routes, Altitude, BCN)

(7) Loads BCN

(8) ADS-B Running

(10) Aircraft Taxis

(11) Aircraft Ready For T/O

(13) Turns BCN Transponder  
ON

(17) Pilot Uses CDTI To  
Observe Other Traffic,  
Complies with Air-to-Air  
Separation Instructions

**Controller**

(5) Finds Flight Plan, Issues  
Clearance To include  
BCN

(12) Clears Aircraft For T/O

(16) Controller Observes  
Target, Applies Radar  
Rules

**ATC Computer**

(2) Generate CID, ACID<sup>1</sup>,  
BCN<sup>2</sup> On Strip in Radar

(9) GBT Network Sees Aircraft,  
Radar Display @  
Appropriate Positions  
(i.e. Ground Control)

(14) Radar Sees 24-bit ID And  
If In Radar Coverage  
BCN

(15) S/W Correlates ID To  
Flight Plan - Tags Target

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<sup>1</sup> ACID = Aircraft ID

<sup>2</sup> BCN = Mode 3A 4096 Transponder Beacon Code