

**RTCA Special Committee 209**

**Working Group #1**

**Mode S Transponder MOPS Development/Maintenance**

**Meeting #1**

**RTCA, Washington DC**

**3-5 April 2007**

**Proposed changes to Reply Request (RR) Uplink Field  
to encompass EHS registers.**

**Revision 1**

**Prepared and Presented by Andy Leone, FAA**

**SUMMARY**

This Working Paper presents a change proposal to the draft DO-181D Mode S MOPS in order to update the RR field with the EHS registers.

## 1.0 Introduction

This paper presents a proposed change to the MOPS to amend the Reply Request (RR) field defined in §2.2.14.4.35 with the three EHS registers that are coincident with the next RR codes available. This change is consistent with the RR Code definition, which encompasses all of the GICB registers with a BDS2 of ZERO (0).

## 2.0 Issue

This change provides additional clarity, to illustrate the most convenient way to obtain the EHS registers. All registers that have a BDS2 of ZERO can be obtained with either of the following conditions being met:

- a.  $RR = (16 + BDS1)$  and  $DI \neq 3$  or  $7$ , or
- b.  $RR = (16 + BDS1)$ ,  $DI = 3$  or  $7$ , and  $RRS = 0$ .

The proposed changes are applicable to either case, and are highlighted below:

### 2.2.14.4.35 RR Reply Request

This 5-bit (9-13) uplink field contains length and content of the reply requested by the interrogators. RR is part of the surveillance and Comm-A interrogations UF=4, 5, 20, 21. The codes are outlined below:

RR Code	Reply Length	MB Content
0-15	Short	-----
16	Long	Air-Initiated Comm B (§2.2.19.1.12.4)
17	Long	Long Data Link Capability Report (§2.2.19.1.12.5)
18	Long	Flight ID (§2.2.19.1.13)
19	Long	TCAS Resolution Advisory Report (§2.2.22.3.4)
20	Long	Aircraft Intention (§2.2.25.4)
21	Long	Track and Turn Report (§2.2.25.5)
22	Long	Heading and Speed Report (§2.2.25.7)
23-31	Long	Not Assigned

**Note:** *If the first bit of the RR code is ONE, the last four bits of the 5-bit RR code, if transformed into their decimal equivalent, designate the number (BDS1) of the requested source. BDS2 is assumed to be ZERO if not specified by DI=3 or 7 and RRS. As an alternative to the standard GICB read out protocol, this method represents a subset of the GICB protocol, and can be applied to requesting EHS registers 40<sub>16</sub>, 50<sub>16</sub>, or 60<sub>16</sub>, utilizing the respective RR codes of 20, 21 and 22.*