

RTCA Special Committee 209

Working Group #1

Mode S Transponder Development & Maintenance

Meeting #2

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**Proposed Changes to Both DO-181D and ED-73C for the CA
Transponder Capability Field as defined by Changes to the ICAO
SARPs documented in Working Paper
WP B10-18R1**

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SUMMARY

This Working Paper defines necessary changes to both DO-181D and ED-73C as a result of changes to the CA Transponder Capability Field that were proposed and accepted for a change to the ICAO SARPs as defined in Working Paper WP B10-18R1 by Eric Potier of Eurocontrol.

Introduction

During the 10th meeting of Working Group B of the ICAO Aeronautical Surveillance Panel (ASP) in Montreal in May 2006, Working Paper WP B10-18R1 was presented by Eric Potier of Eurocontrol, and accepted by the Working Group, and later by the ASP, which identified the following changes to the ICAO SARPs in Annex 10, Volume 4, §3.1.2.5.2.2.1. This change will be effective in the SARPs as of November 2007.

The Working Paper indicates to modify Annex 10, Vol 4, §3.1.2.5.2.2.1 as follows:

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3.1.2.5.2.2.1 CA: Capability. This 3-bit (6-8) downlink field shall ~~contain an encoded definition of the communications capability of~~ convey information on the transponder level, the additional information below, and shall be used in the ~~all-call reply formats (DF=11)~~ DF=11 and DF=17.

Coding

- 0 signifies ~~no communications capability~~ Level 1 transponder (surveillance only), and no ability to set CA code 7 and either airborne or on the ground
- 1 reserved
- 2 reserved
- 3 reserved
- 4 signifies ~~at least Comm A and Comm B capability~~ Level 2 or above transponder and ability to set CA code 7 and on the ground
- 5 signifies ~~at least Comm A and Comm B capability~~ Level 2 or above transponder and ability to set CA code 7 and airborne
- 6 signifies ~~at least Comm A and Comm B capability~~ Level 2 or above transponder and ability to set CA code 7 and either airborne or on the ground
- 7 signifies the DR field is not equal to 0 or the FS field equals 2, 3, 4 or 5, and either airborne or on the ground

When the conditions for CA code 7 are not satisfied, Level 2 or above transponders in installations that ~~have communications capability but~~ do not have automatic means to set the on-the-ground condition shall use CA code 6.

Aircraft with automatic on-the-ground determination shall use CA code 4 ~~when on the ground or~~ and 5 ~~when airborne.~~

Data link capability reports (3.1.2.6.10.2.2) shall be available from aircraft installations that set CA code 4, 5, 6 or 7.

Note.— CA codes 1 to 3 are reserved for use by Mode S transponders that do not have the ability to set CA code 7. Transponders with these codes will provide a data link capability report (3.1.2.6.10.2.2). No data link transactions other than GICB extraction including aircraft identity, ACAS RA extraction, and downlink broadcast extraction, should be attempted with these transponders. ~~to maintain backward compatibility.~~

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PROPOSED ACTIONS:

- (1) In order to bring the proposed **DO-181D** into compliance with the identified change, the same changes must be made in §2.2.14.4.6.
- (2) In order to bring the proposed **ED-73C** into compliance with the identified change, the same changes must be made in §3.18.4.5.

These proposed changes to DO-181D and ED-73C do not imply or currently propose any changes to the corresponding Test Procedures. I leave it to my colleagues in SC-209 and WG-49 to determine whether or not there need to be any changes in the Test Procedures of these documents as a result of these requirements changes.

Note: *These changes will also require corresponding changes in RTCA/DO-260A, §2.2.3.2.1.2, §2.4.3.2.1.2, and potentially other changes to test procedures as they may be identified.*

END