

RTCA SC-209 / EUROCAE WG-49

ATCRBS / Mode S Transponder MOPS Maintenance

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**Minimum Update Rates versus Maximum Update Intervals
As they relate to Registers 40₁₆, 50₁₆ and 60₁₆**

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SUMMARY

This Working Paper brings to light potential errors in the Transponder MOPS (RTCA/DO-181D and EUROCAE ED-73C), as well as in ICAO Doc 9871, as it relates to the Maximum Update Intervals for Registers 40₁₆, 50₁₆ and 60₁₆, and offers the potential for discussion and resolution of the issues.

Issue

During the process of preparing the drafts of Change 1 to RTCA DO-181D and EUROCAE ED-73C, I had occasion to realize that there were a number of errors in the Transponder MOPS where there were references to “Minimum Update Interval” instead of what has been accepted in Register Allocation tables in the published DO-181D/ED-73C, Appendix B, Table B-2-1 and ICAO Doc 9871, §A.2.1 as “Maximum Update Interval.”

Upon further investigation, it was also recognized that are differences in the values in the text of several requirements sections of DO-181D/ED-73C versus the Maximum Update Interval values in the Register Allocation tables in Doc 9871 and in Table B-2-1 of the Transponder MOPS.

Comparisons

- 1) In ICAO SARPs, Annex 10, Volume III, Amendment 77, the Register Allocation tables contained the values for “Minimum Update Rates:”

Transponder Register	Minimum Update Rate
40 ₁₆	1.0s
50 ₁₆	1.0s
60 ₁₆	1.0s

- 2) When Amendment 82 was published, the Register Allocation tables had been removed from the SARPs and entered into ICAO Doc 9871. Additionally, the references have been changed to refer to “Maximum Update Intervals.” Therefore, in Doc 9871, Edition 1, and in the copy of the Register Allocation that appears in DO-181D/ED-73C, Appendix B, Table B-2-1, the Maximum Update Intervals for these Registers are:

Transponder Register	Maximum Update Interval
40 ₁₆	1.0s
50 ₁₆	1.3s
60 ₁₆	1.3s

Discrepancies

- 1) RTCA DO-181D, §2.2.25.5.3 [EUROCAE ED-73C, §3.30.5.3] is incorrectly entitled “**Minimum Update Interval of Register 40₁₆**.” Aside from the issue of changing “Minimum” to “Maximum,” this section deals with the basis of the maximum update interval being 1.0 seconds.
- 2) RTCA DO-181D, §2.2.25.6.3 [EUROCAE ED-73C, §3.30.6.3] is also incorrectly entitled “**Minimum Update Interval of Register 50₁₆**.” The basic text of this section deals with the basis of the maximum update interval being 1.3 seconds.
- 3) RTCA DO-181D, §2.2.25.8.3 [EUROCAE ED-73C, §3.30.8.3] is also incorrectly entitled “**Minimum Update Interval of Register 60₁₆**.” However, the basic text of this section deals with the basis of the maximum update interval being 1.0 seconds, as opposed to the value listed in the Register Allocation Table B-2-1 in Appendix B, and also in Doc 9871, Edition 1, Appendix A, as 1.3 seconds.

Resolution

After discussion with Robert Saffell of Rockwell Collins, it is the conclusion that the value in the Register Allocation Table B-2-1 in Appendix B of DO-181D/ED-73C and in Doc 9871, Edition 2, Appendix C should be revised for Register 60₁₆ back to 1.0 seconds.

The TSG is invited to review and discuss the issues raised in this Working Paper and to make a recommendation to be carried forward to the Joint Meeting of RTCA SC-209 and EUROCAE WG-49 for implementation into Change 1 to DO-181D/ED-73C, as well as any changes noted for ICAO Doc 9871, Edition 2.