RTCA Special Committee 209

Working Group #1

Mode S Transponder MOPS Development/Maintenance

Meeting #1

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Proposed Changes to Comm-B Requirements Section
§2.2.19.2.3.3 in the working draft of DO-181D

John Van Dongen
WJH FAA Technical Center

SUMMARY
This Working Paper highlights issues with Comm-B protocol requirements for discussion with SC-209.

Introduction

During the process of developing a revised Comm-B protocol test procedure (#18) it was discovered that there are some issues with the requirements in the MOPS related to Comm-B protocol. This working paper highlights the issues for discussion within Working Group 1 of SC-209 and offers a possible solution to each.

Multisite Comm-B Closeout

The working draft of DO-181D, section §2.2.19.2.3.3 contains the requirements for multisite Comm-B closeout protocol. This section identifies one interrogation format that will result in a multisite Comm-B closeout. The SARPS Annex 10 section §3.1.2.6.11.3.2.3 identifies four interrogation formats that will cause a multisite Comm-B closeout. The Comm-B protocol flowchart in DO-181 agrees with the SARPS in that the four interrogation formats identified in the SARPS will all result in closing out a multisite Comm-B message. To be consistent with the SARPS and Figure 2-19, section §2.2.19.2.3.3 should be modified as follows:

2.2.19.2.3.3   **Multisite Comm-B Closeout**

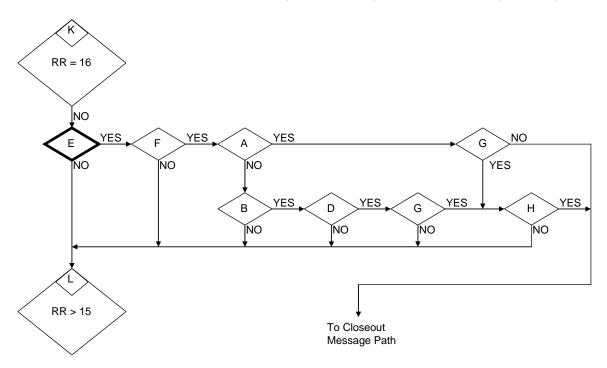Multisite Comm-B closeout is accomplished using a surveillance or Comm-A interrogation containing:

either:	DI	=	1 (multisite SD format).
	IIS	=	Interrogator site number.
	MBS	=	2 (Comm-B closeout).
or:	DI	=	0, 1 or 7
	IIS	=	Interrogator site number.
	PC	=	4 (Comm-B closeout).

If IIS of the interrogation equals the stored Comm-B IIS, the stored Comm-B **shall** be cleared, the B-timer stopped, the DR code 1 for this message reset and the message itself canceled. If the site numbers do not match, the message **shall** not be canceled and the stored Comm-B IIS, B-timer and DR code **shall** remain unchanged. The transponder **shall** not close out a multisite air-initiated Comm-B message unless it has been read out at least once by the reserved site.

Figure 2-19 Comm-B Closeout

The requirements for non-multisite Comm-B closeout protocol are contained in the MOPS section §2.2.19.1.12.4 and in the SARPs section §3.1.2.6.11.3.3.2. In both of these documents the Comm-B closeout is achieved by the reception of an interrogation containing PC=4. This is precluded by the conditions that the multisite timer is not running and the message has been extracted at least one time. However, according to

Figure 2-19, an interrogation with PC=4 will not successfully closeout a message unless the RR field in the same interrogation is equal to 16. This appears to be an error in the flowchart. The following figure offers a suggested correction to the section of flowchart on the center left between the decision K (RR = 16, NO) and the test for L (RR > 15):

Multisite Reservation with IIS = 0

Multisite Comm-B reservation with IIS=0 is not to be accepted by the transponder (DO-181D, §2.2.19.2.3.1). However, the Comm-B reservation path in the flow chart (Figure 2-19) currently shows no means to reject such a request. This could be rectified by adding to the series of notes below the figure as shown below:

10. THE B-TIMER IS STARTED ONLY IF IIS≠0