

RTCA Special Committee 209
ATCRBS / Mode S Transponder MOPS Maintenance
Meeting #12

In Joint Session with EUROCAE WG-49
EUROCAE Headquarters, Malakoff France
15 November to 19 November 2010

Use of Stale Flight ID Data in Register 08₁₆

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Summary

Flight ID information in Register 08₁₆ should not be set to ZERO (0) even if the control head fails, or the data becomes stale or corrupt. If one of these situations should occur, populating the Flight ID subfield on Register 08₁₆ with the last known valid data would be better than transmitting no data, which could increase controller and pilot workload and possibly diminish safety.

1. Introduction

This Working Paper discusses the reasons why Register 08₁₆ should not be zeroed out, even if the control head fails, or the data becomes stale or corrupt.

2 Discussion

The Flight ID subfield in Register 08₁₆ will be used by controllers and flight crews to refer to third party aircraft in the NAS. It is based on the Aircraft ID in the filed flight plan. Flight ID is typically static for the duration of a flight. Changing it in flight is an unusual occurrence.

Flight ID is entered manually by the flight crew in many installations. This is similar to the entry of the Mode A code. When the control head fails, the Mode A code is retained and the transponder continues to reply with the last known valid Mode A code. Since Flight ID data is more like Mode A code than any other data in the radio, this paradigm is more applicable than the paradigm used for zeroing the dynamic Registers.

Unlike dynamic Registers, the benefit of clearing the Flight ID is dubious. Freezing the Flight ID subfield with the last known valid data would minimize controller and pilot workload in the event of a data failure in flight. Setting the Flight ID to zero would cause the automation system to inform ATC that Flight ID does not correlate with the filed flight plan. This would guarantee an action by the ground controller after 2020 in US Airspace (possibly European airspace as well). In the event of a loss of Flight ID, the controller and surrounding flight crews would be better off using the existing stale Flight ID to refer to the reference aircraft. The alternative would be to refer to an aircraft with unknown Flight ID. It is unlikely that ADS-B operations would be permitted against an aircraft that cannot be positively identified electronically.

Failure of the control head, aircraft bus, or the transponder is a task historically relegated to the aircraft Built In Test (BIT) and failure indication system(s). This indication would then be used by the crew to initiate a maintenance action once the flight reaches its destination. It is unlikely that the flight crew would be able to resolve this issue during flight. Therefore it is unwarranted to introduce additional flight crew and controller workload.

The maintenance of Register 08₁₆ should be handled per DO-181D/ED-73C. Populating Register 08₁₆ with stale data, while not optimal, would allow some residual identification functionality.