



International Civil Aviation Organization

**FIFTEENTH MEETING OF THE ADS-B STUDY AND IMPLEMENTATION
TASK FORCE (ADS-B SITF/15)**

Bangkok, Thailand, 18 - 20 April 2016

**Agenda Item 4: Review States' activities and interregional issues on implementation of
ADS-B and multilateralism**

"SELECTED LEVEL" TRANSPONDER DATA

(Presented by Australia)

SUMMARY

Some ATC transponders need upgrade to avoid misleading "Selected altitude" data.

1. Introduction

1.1 Australia has commissioned the operational use of Mode S and ADS-B "Selected altitude" data.

1.2 Pilot selected altitude is provided in both ADS-B messages and in response to Mode S interrogations.

1.3 The selected altitude data is conveyed to the ATC system and used to generate controller alerts if the selection is at variance with an ATC clearance.

2. The Australian Environment

2.1 The CASA regulations do NOT require Mode S EHS DAPs to be transmitted (except for Flight ID).

2.2 However, the regulations require that IF Mode S EHS DAPs are transmitted, they must be transmitted correctly so that misleading data is not broadcast. The Civil Aviation Order states:

9C.8 If the equipment transmits any Mode S EHS DAPs, the transmitted DAPs must comply with the standards set out in paragraph 3.1.2.10.5.2.3 and Table 3-10 of Volume IV, Surveillance and Collision Avoidance Systems, of Annex 10 of the Chicago Convention.

Note 1 Paragraph 3.1.2.10.5.2.3 includes 3.1.2.10.5.2.3.1, 3.1.2.10.5.2.3.2 and 3.1.2.10.5.2.3.3.

Note 2 Australian Mode S SSR are EHS DAPs-capable, and operational use of EHS DAPs is to be introduced in Australia. Implementation of Mode S EHS DAPs transmissions that are not in accordance with the ICAO standards may be misleading to ATC. Operators need to ensure that correct parameters are being transmitted.

3. Identified Problem

3.1 A number of aircraft have been detected whereby the “Selected altitude” has been unstable. Investigation has shown (at least in some cases) this to be related to aircraft with Rockwell TDR94 transponders.

3.2 Thanks to investigative work by Regional Express Airlines (Australia), it has been found that these can be attributed to TDR94 transponders that have not applied Service Bulletin SB 509 for TDR94, which corrects a design error that allows intermittent transmission of incorrect selected level flight data.

3.3 It can be noted that EASA has issued Airworthiness Directive AD 2010-0204 regarding this Service Bulletin with correction 07 June 2011. The AD states that it is applicable to

“Rockwell Collins Mode S Transponders identified by type and Part Number (P/N) as follows:

Type	P/N (all serial numbers)
TDR-94	622-9352-007, 622-9352-207, 622-9352-008, 622-9352-108, 622-9352-308, 622-9352-309, 622-9352-408, 622-9352-409
TDR-94D	622-9210-007, 622-9210-207, 622-9210-008, 622-9210-108, 622-9210-308, 622-9210-309, 622-9210-408, 622-9210-409

when installed in combination with certain Rockwell Collins Air Data Computers (ADC) as specified below, and the Rockwell Collins Commercial Standard Digital Bus (CDSB) databus is being used to transfer altitude information between the ADC and the transponder(s).

ADC Type	P/N (all suffixes, all serial numbers)
ADC-81A	622-4401-XXX
ADC-82A	622-6475-XXX
ADC-82C	622-8329-XXX
ADC-82L	622-8105-XXX
ADC-85	622-8051-XXX
ADC-85A	822-0370-XX

These transponders, in combination with CDSB altitude information transfer, are known to be installed on, but not limited to:

- Hawker Beechcraft 200 (King Air) series and 1900D aeroplanes,

*- Dassault Aviation Mystère-Falcon 20 and Mystère-Falcon 50 aeroplanes,
and*

- SAAB SF340A and 340B aeroplanes.”

4. Action by Operators

4.1 Operators with these TDR94 transponders and ADC types need to identify if their installation is susceptible and if so, either

- a) Disable Selected Altitude data transmission; or
- b) Action SB509 to correct the misleading transmissions.

4.2 The following statement was presented at a recent Australian industry Surveillance Technology Working Group meeting. It is repeated below for the benefit of SITF members:

Operators susceptible to this issue should immediately advise Airservices Australia, so that the affected airframes can be added to a “temporary blacklist” in the ATC automation system, which ensures that the potentially incorrect Selected Altitude is not presented to ATC, in the period before rectification.

5. Action by the Meeting

5.1 The meeting is invited to:

- a) note the information contained in this IP; and
- b) discuss any relevant matters as appropriate.
