

AIRWORTHINESS DIRECTIVE

On the effective date specified below, and for the reasons set out in the background section, the CASA delegate whose signature appears below revokes Airworthiness Directive (AD) AD/RAD/91 and issues the following AD under subregulation 39.001(1) of CASR 1998. The AD requires that the action set out in the requirement section (being action that the delegate considers necessary to correct the unsafe condition) be taken in relation to the aircraft or aeronautical product mentioned in the applicability section: (a) in the circumstances mentioned in the requirement section; and (b) in accordance with the instructions set out in the requirement section; and (c) at the time mentioned in the compliance section.

Radio Communication and Navigation Equipment

**AD/RAD/91
Amdt 1**

**Rockwell Collins TDR-94/94D
Transponder - Air/Ground Discrete Inputs**

8/2010

Applicability: Rockwell Collins Mode S Transponders identified by type and Part Number (P/N) in Table 1.

Table 1

Type	P/N (all serial numbers)
TDR-94	622-9352-004, 622-9352-005, 622-9352-006, 622-9352-007, 622-9352-008, 622-9352-108, 622-9352-207, 622-9352-308 and 622-9352-408
TDR-94D	622-9210-004, 622-9210-005, 622-9210-006, 622-9210-007, 622-9210-008, 622-9210-108, 622-9210-207, 622-9210-308 and 622-9210-408

Note 1: These transponders are known to be installed on, but not limited to, the following aircraft models:

Manufacturer	Model
<i>Avions de Transport Régional</i>	<i>ATR 42 and ATR 72, all models</i>
<i>Bombardier (formerly Canadair)</i>	<i>CL-600-1A11, CL-600-2A12 (601 Variant), CL-600-2B16 (601-3A, 601-3R and 604 Variants), CL-600-2B19, CL-600-2C10, CL-600-2D15 and CL-600-2D24</i>
<i>Bombardier (formerly de Havilland Canada)</i>	<i>DHC-8, all models</i>
<i>Dassault Aviation</i>	<i>Mystère-Falcon 50 (including EX variant), Mystère-Falcon 900, Falcon 900EX, Falcon 2000 and Falcon 2000EX</i>
<i>Gulfstream</i>	<i>G-IV</i>

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<i>Hawker Beechcraft (formerly Raytheon, Beech)</i>	<i>200 and 400 series, all models</i>
<i>SAAB</i>	<i>SF340A and 340B</i>
<i>Sikorsky Aircraft Corporation</i>	<i>S-92</i>

- Requirement:
1. **For all affected aeroplanes (ie fixed wing)** - If not previously accomplished in accordance with the original issue of this directive, verify that the transponder Air/Ground discrete input connections are installed in accordance with Table 1 of Rockwell Collins Service Information Letter TDR-94() SIL 07-1 dated 25 May 2007 (document reference 523-0809129-001000). If the wiring installation is not compliant with the information provided in Table 1 of the SIL, modify the aeroplane Air/Ground discrete input connections in accordance with approved aeroplane modification instructions.

Note 2: This Amendment is not applicable to aeroplanes that have complied with the following Service Bulletins (SB) or have had the following modifications embodied:

- a. ATR aeroplanes modified in accordance with ATR (SB ATR42-34-0164 or SB ATR72-34-1093 (modification n° 05602), as applicable to aeroplane model, including those ATR aeroplanes on which modification n° 05602 was incorporated during production.*
 - b. Bombardier CL-600-2B19 aeroplanes if modified in accordance with Bombardier SB 601R-34-146.*
 - c. Bombardier DHC-8-100/200/300 series aeroplane if modified in accordance with MODSUM IS8Q2450012.*
 - d. Dassault aeroplanes modified in accordance with Dassault Aviation SB F50-457 (modifications M2966 and M2968), SB F50-469 (modification M2998), SB F900-354 (modification M3896), SB F900-368 (modification M5013), SB F900EX-239 (modification M3896), SB F900EX-270 (modification M5013), F2000-312 (modifications M2624 and M2632), SB F2000-327 (modification M2468), SB F2000EX-043 (modification M2624) or SB F2000EX-084 (modification M2468).*
2. **For all affected helicopters** - Verify that the transponder Air/Ground discrete input connections are installed in accordance with Table 1 of Rockwell Collins Service Information Letter TDR-94() SIL 07-1 dated 25 May 2007 (document reference 523-0809129-001000). If the wiring installation is not compliant with the information provided in Table 1 of the SIL, modify the aeroplane Air/Ground discrete input connections in accordance with approved aeroplane modification instructions.

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Note 3: EASA AD 2010-0067 refers.

Compliance: For Requirement 1 - Before 26 March 2011.

For Requirement 2 - Within 12 months after the effective date of this Amendment.

This Amendment becomes effective on 10 May 2010.

Background: Airservices Australia, the Australian Air Navigation Service Provider (ANSP) together with other national ANSPs, have implemented Advanced Surface Movement Guidance & Control Systems (A-SMGCS) to improve the surveillance and control of on-ground aeroplanes and vehicles, providing conflict detection and alerting on runways.

In order to ensure proper and effective operation of the A-SMGCS, transponder replies to Air Traffic Control Radar Beacon System (ATCRBS) and All-Call interrogations must be inhibited when the aeroplane is on ground.

Rockwell Collins TDR-94 and TDR-94D Mode S Transponders have two Air/Ground Discrete inputs that may be connected to the aeroplane Weight-On-Wheels system. A connection to the Air/Ground #2 discrete will implement an inhibition of ATCRBS, ATCRBS/Mode-S All-Call and Mode-S Only All-Call replies when the aeroplane is on the ground. No on-ground reply inhibition occurs if the connection is to the Air/Ground #1 discrete.

An aeroplane with this transponder interface problem, if not corrected, does not meet the specifications of International Civil Aviation Organisation (ICAO) Annex 10 to the Convention on International Civil Aviation Volume IV Amendment 77 Section 3.1.2.10.3.10 - *Inhibition of replies* which would lead to degradation of the functioning of the A-SMGCS, could affect the ATC functions in tower, approach and en-route sectors, increase the risk of undetected runway incursions and endangering the aeroplane, its occupants and persons on the ground.

For these reasons, the original issue of this Directive required a check of the transponder Air/Ground discrete input connections and, in case of discrepancies, the accomplishment of corrective action.

Since the original issue of this Directive was issued, the European Aviation Safety Agency (EASA) has advised that the Applicability of EASA AD 2009-0097 only referred to 'aeroplanes' in which the affected transponders could be installed, inadvertently implying that no helicopters could be affected. Some helicopters (eg Sikorsky S-92) are also known to be equipped with the affected transponders and it has been determined that the unsafe condition addressed by that AD can also occur during taxiing (weight-on-wheels) of helicopters.

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Since the original issue of this Directive reflected the requirements of EASA AD 2009-0097, this Amendment expands the applicability to include helicopters.

The original issue of this Directive became effective on 26 March 2010.

A handwritten signature in black ink, appearing to be 'MH' or 'Mike Higgins'.

Mike Higgins
Delegate of the Civil Aviation Safety Authority

16 April 2010