



1. Applicability

Aircraft fitted with Air Traffic Control Mode A/C Transponders.

2. Purpose

This AWB is issued to advise aircraft owners, operators and maintainers that anomalous transponder behaviour has been detected by Airservices Australia and of the actions CASA and Airservices intend to take to address the issue.

3. Background

Airservices is progressing the Australia Mode S Terminal Area Radar Project (AMSTARP) that will install a new generation of secondary surveillance radars (SSR) interrogators at the main airports in Australia.

The first site commissioned was Coolangatta with a transportable interrogator currently being commissioned in Melbourne. The other planned locations being Sydney, Brisbane, Adelaide, Cairns, Canberra and Perth airports.

These new interrogators have a range of up to 256 nautical miles and will operate to a tighter specification and as such will be less tolerant to transponder anomalies. Anomalies now being identified may have been in existence for some time having been previously ignored by the older SSR equipment.

The current AD/RAD/47 requires the mandatory testing of the transponder in accordance with the United States Federal Aviation Regulation (FAR) 43 Appendix F. This test does not cover all the output parameters of the transponder. The manufacturer's maintenance manual contains the tests necessary to confirm that the transponder is operating to the specification it was approved to.

During the commissioning phase of the new SSR at Melbourne airport six aircraft were detected transmitting Mode A code that exhibited uncommanded variations. An example of the code changes detected over a four day period is in the table below. Similar transponder faults have been detected by the Coolangatta radar.

Aircraft	Time (UTC)		Mode A Codes detected by the Transportable SSR
	From	To	
A	15:14:00	15:35:00	0002, 4002
B	23:02:00	23:12:00	7235, 7225
C	00:34:00	00:55:00	0535, 0525
D	06:42:00	07:01:00	0655, 0251, 0645, 0604, 0455
E	02:54:00	03:21:00	4043, 4003
F	20:04:00	20:24:00	3751, 3741



The transponders affected are most likely those older transponders utilising electron tube technology, with one model identified as the King KT-76A. Initial test result from a suspect transponder has indicated that excessive and varying rise time for the information pulses was resulting in false pulse widths.

4. Intended Actions

Airservices

- Air Traffic Control (ATC) will advise the pilot that their transponder is exhibiting anomalous behaviour and recommend that the transponder be checked.
- Advise CASA of the incident.
- May deny the aircraft an Airways Clearance except under the provisions of AIP GEN 1.5.6.2.2.
- Issue a NOTAM describing the above actions.

CASA

- Following receipt of advice from Airservices, CASA will issue a direction to the registered operator under Civil Aviation Regulation (CAR) 38(1) requiring the transponder fault to be rectified. This direction will be accompanied by an explanatory letter and a reminder to submit a Service Difficulty Report on the transponder.

5. Recommendations

The aircraft owner/operator act on the ATC notification and get their transponders serviced at the earliest opportunity.

CAR 30 organisations carrying out transponder maintenance ensure that:

- their test sets, both bench and ramp, are calibrated in accordance with the manufacturers instructions;
- are adequate to accomplish the required maintenance; and
- technicians are trained and familiar with the test set operation.

Situations may occur where a transponder, identified as having a serviceability issue by ATC, will check out as being within specification. This may require further investigation by the maintenance organisation to confirm the initial assessment. There may be a need to verify the operation of the test equipment or test procedure used.



Transponder Performance

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6. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link e-mail address:

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