SAFETY ALERT BULLETIN

NO: 01/2017

DATE: 24/02/2017

TITLE: Improper transponder and Automatic Dependent Surveillance-Broadcast (ADS-B) OUT equipment testing.

OBJECTIVE: This Safety Alert Buletin (SAB) serves to alert personnel involved with ground testing of aircraft Air Traffic Control (ATC) transponders and ADS-B OUT equipment of the importance of adhering to proper test procedures and the hazards associated with improper testing.

This SAB contains information and recommended actions that the Civil Aviation Safety Authority of Papua New Guinea (CASA PNG) recommends, for air operator maintenance controllers, maintenance organizations and maintenance personnel to consider when conducting functional tests on ATC transponders and ADS-B OUT equipment.

APPLICABILITY: This SAB is applicable to:

(1) PNG Air Operator maintenance controllers who have aircraft Air Traffic Control (ATC) transponders and ADS-B OUT equipment installed on their aircraft; and
(2) Maintenance Organizations and maintenance personnel who perform transponder and ADS-B OUT systems testing.

BACKGROUND: The Federal Aviation Administration (FAA) has received reports of transponder and ADS-B OUT system ground test events in which information, including simulated altitude, was transmitted from the test aircraft and received by aircraft inflight. In at least one instance, an ADS-B OUT system ground test created a false airborne target that generated a Traffic Alert and Collison Avoidance System II (TCAS II) Resolution Advisory (RA) on a Boeing 737 aircraft on approach. Pilot reaction to this RA required unnecessary maneuvering in congested airspace and initiated ATC re-sequencing actions that affected multiple aircraft and negatively impacted operations in the area for about 30 minutes.

Transponders and ADS-B OUT systems operating under test conditions transmit specific information about the aircraft, including position and altitude data. These tests frequently involve a check of the aircraft's altimetry system in which air pressure is induced into the pitot static system to simulate operation at various altitudes. In cases where transmission lines are not attached directly to test

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equipment, antenna shielding must be used to prevent propagation of test signals with potential to interfere with ATC operations or TCAS-equipped aircraft operating in the area.

CASA PNG RECOMMENDED ACTION(S): Based on the above, CASA PNG recommends the following action(s):

(1) that maintenance controllers and aircraft Maintenance Organizations approved under CAR Part 145 and maintenance personnel performing transponder and ADS-B OUT system testing, evaluate the adequacy of their current test procedures and adhere to proper test procedures to prevent uninhibited system transmission that may affect ATC operations or airborne aircraft;
(2) that applicable maintenance personnel be aware of any local requirements to alert ATC of impending tests;
(3) Carry out a review using relevant guidance contained in the latest revisions of:
    - CASA PNG AC 91-11 Paragraph 5.2.3(a) - Functional Testing
    - FAA AC 29-151, Airworthiness Approval of Traffic Alert and Collision Avoidance Systems (TCAS II), Versions 7.0 and 7.1 and Associated Mode S Transponders;
    - FAA AC 43.6, Altitude Reporting Equipment and Transponder System Maintenance and Inspection Practices; and
    - FAA AC 20-165, Airworthiness Approval of Automatic Dependent Surveillance - Broadcast OUT Systems.

OTHER REFERENCE INFORMATION: Other related information on the above can be found in:

1. FAA SAFO 17002, Improper Transponder and ADS-OUT equipment testing. 06th February, 2017. http://www.faa.gov/news/press_releases/media/safo17002.pdf.