U.S. Department
of Transportation
Federal Aviation
Administration

SAFO

Safety Alert for Operators

SAFO 17002
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Flight Standards Service
Washington, DC

http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo

A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to air carriers in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest. Besides the specific action recommended in a SAFO, an alternative action may be as effective in addressing the safety issue named in the SAFO.

Subject: Improper Transponder and Automatic Dependent Surveillance-Broadcast (ADS-B) OUT Equipment Testing

Purpose: This SAFO informs 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.

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.

Discussion: 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 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.

Recommended Action: The FAA recommends that repair stations and maintenance personnel performing transponder and ADS-B OUT system testing evaluate the adequacy of their procedures and adhere to proper test procedures to prevent uninhibited system transmission that may affect ATC operations or airborne aircraft. The FAA also recommends that applicable maintenance personnel be aware of any local requirements to alert ATC of impending testing, and to review relevant guidance contained in the latest revisions of:

- AC 20-151, Airworthiness Approval of Traffic Alert and Collision Avoidance Systems (TCAS II), Versions 7.0 and 7.1 and Associated Mode S Transponders;
- AC 43-6, Altitude Reporting Equipment and Transponder System Maintenance and Inspection Practices; and
- AC 20-165, Airworthiness Approval of Automatic Dependent Surveillance - Broadcast OUT Systems.

Contact: Questions or comments regarding this SAFO should be directed to the Avionics Branch of the Aircraft Maintenance Division (AFS-300) at (202) 267-1675.