



U.S. Department
of Transportation
**Federal Aviation
Administration**

SAFO

Safety Alert for Operators

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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: Transponder Use by Aircraft On Airport Movement Areas

Purpose: This SAFO advises all operators and pilots of the need to ensure that transponders are in the altitude reporting mode whenever their aircraft is on an airport movement area at all airports.

Background: The Federal Aviation Administration (FAA) uses airport surface surveillance capabilities at some of the busiest airports in the U.S. to determine aircraft and vehicle location when they are operating on an airport movement area. Runway safety systems, such as Airport Surface Detection Equipment-Model X (ASDE-X) and Advanced Surface Movement Guidance and Control System (A-SMGCS), use data from surface movement radar and aircraft transponders to obtain accurate aircraft and vehicle locations, thereby increasing airport surface safety and efficiency.

Discussion: As the FAA transitions to the Next Generation Air Transportation System, some Airport Surface Detection Equipment-Model 3 systems will be replaced with a multilateration (MLAT)¹/Automatic Dependent Surveillance–Broadcast (ADS-B) system, called Airport Surface Surveillance Capability (ASSC). This capability fuses MLAT sensor data with ADS-B aircraft information on FAA certified airport tower controller displays, tracks surface vehicles and aircraft providing information for Air Traffic Control (ATC) services, and is capable of providing data to other external FAA systems,² including compliance monitoring capabilities.

The effectiveness of ASSC and ASDE-X is dependent on operators equipping and operating cooperative surveillance capabilities (i.e., altitude reporting transponders). Nationwide, airports with ASDE-X report an average of twenty non-compliance transponder events per day, even with airport diagram or Automated Terminal Information Service (ATIS), or both, verbiage directing pilots to operate with transponders on. To proactively address these problems, aircraft operating on all airport movement areas at all airports, not just those that are ASDE-X equipped, must have their transponders on in the altitude reporting mode.

¹ MLAT provides accurate position and identification information by determining an aircraft or vehicle's location based on the time difference between transponder/transmitter signals received at multiple sensors.

² E.g., Surveillance Broadcast Services and Runway Status Lights.

Recommended Actions: Operators should ensure that their procedures and manuals clearly state that flightcrews and general aviation (GA) pilots enable transponders to the altitude reporting mode (consult the aircraft’s flight manual to determine the specific transponder position to enable altitude reporting) and enable ADS-B Out transmissions (if equipped) any time their aircraft is positioned on any portion of an airport movement area. This includes all defined taxiways and runways on all airports. Flightcrews and GA pilots must, per Title 14 of the Code of Federal Regulations (14 CFR) part 91 §91.9, part 121 §121.141 and part 135 §135.21, ensure that they comply with these procedures and manuals as well as pay particular attention to ATIS, Aircraft Communications Addressing and Reporting System (ACARS) messages, airport diagram notations, and General Notes (included on Jeppesen Airway Manual charts) which direct them to comply with directions pertaining to transponder and ADS-B usage.

Generally, these directions state:

- Departures. Select the transponder mode which allows altitude reporting and enable ADS-B (if equipped) during pushback. Select TA or TA/RA (if equipped) when taking the active runway.
- Arrivals. Maintain or select (if TA or TA/RA equipped) transponder to the altitude reporting position and maintain ADS-B Out transmissions (if equipped) after clearing the active runway. Select STBY or OFF for transponder and ADS-B (if equipped) upon gate arrival.

Operators and GA pilots should ensure their checklists reference transponders in the following places:

- “Before Starting Engines” or “Pushback” checklist
 TRANSPONDER..... Select the altitude reporting mode
 ADS-B..... Enabled (if equipped)
- “Before Takeoff” checklist
 TA or TA/RA (if equipped).....Enabled
- “After Landing” checklist
 TRANSPONDER.....Select the altitude reporting mode
 ADS-B..... Enabled (if equipped)
 TA or TA/RA.....Disabled
- “Parking” or “Shutdown” checklist
 TRANSPONDER.....STBY/OFF
 ADS-B.....STBY/OFF (if equipped)

Note: Both flightcrews and GA pilots should continue to comply with procedures relating to transponder operation which may be harmful to ground personnel (e.g., de-icing of Predictive Wind Shear (PWS) equipped aircraft).

Contact: Questions or comments regarding this SAFO should be directed to the Air Transportation division, Part 121 Air Carrier Operations Branch, AFS-220 at (202) 267-8166.