

Safety Bulletin

26 March 2019

Correct Operation of Mode S Transponders

Mode S and ADS-B mandates were introduced to provide a range of safety benefits, including supporting enhanced ground surveillance capabilities at major airports.

Brisbane, Melbourne, Perth and Sydney Airports are equipped with Advanced Surface Movement Guidance and Control Systems (A-SMGCS), which displays radar and ADS-B surveillance information to Ground Controllers.

A-SMGCS is used to:

- provide routing, guidance and surveillance for the ground control of aircraft and vehicles
- detect entry errors of SSR codes
- detect entry errors of FlightID
- detect ADS-B hexadecimal code flight planning errors
- facilitate increased movement rates during Low Visibility Operations.

The effectiveness of A-SMGCS is critically dependent upon the correct data entry and mode selection of the Mode S transponders to ensure accurate surveillance information can be derived and displayed for ground traffic control.

Pilots are reminded on receipt of ATC clearance, or requesting the earlier of Push Back or Taxi, select TA/RA/XPDR/ON AUTO as applicable.

If AUTO mode is not available Select ON (e.g. XPDR) and assigned Mode A code.

Australia does not require TA/RA to be de-selected whilst aircraft are on the ground.

Squawking from the gate on departure and to the gate on arrival, is essential for A-SMGCS to detect and correctly display aircraft to ATC whilst on the ground.

For Mode S equipped aircraft taxiing without a flight plan, the appropriate Mode A code according to AIP ENR 1.6 para7.1.4, listed below, should be selected and the aircraft identification entered exactly as the call sign used in flight.

a. Civil flights in classes A, C and D airspace, or IFR flights in Class E airspace	3000
b. Civil IFR flights in Class G airspace	2000
c. Civil VFR flights in classes E or G airspace	1200
d. Military flights in classes A, C, D or E airspace	5000
e. Military flights in Class G airspace	6000
f. Civil flights not involved in special operations or SAR, operating in Class G airspace in excess of 15NM offshore	4000
g. Civil flights engaged in littoral surveillance	7615
h. Ground testing by aircraft maintenance staff	2100
i. Flights operating at aerodromes (in lieu of a., b., or c. when assigned by ATC)	0100
j. RPAS in all classes of airspace and when instructed to enable transponder.	7000

Vehicles operating on the maneuvering area of A-SMGCS equipped aerodromes are also required:

- a) to be fitted with:
 - i) serviceable electronic surveillance equipment; and
 - ii) serviceable radio communications equipment capable of maintain two-way radio communications with air traffic control; or
- b) to be accompanied by another vehicle that meets these requirements.

Aerodrome, vehicle and aircraft operators are requested to ensure that these procedures are embedded in appropriate checklists.

Australian reference: [AIP ENR 1.6 Section 7.1 Operation of SSR Transponders](#)

For more information

For further information please contact safety.communications@airservicesaustralia.com.

Or see <https://www.casa.gov.au/book-page/chapter-4-surveillance-and-ads-b>

** This Safety Bulletin replaces the 17 November 2010 publication - Operation of Mode S Transponders