International Civil Aviation Organisation

ASIA SUB-REGIONAL ADS-B IMPLEMENTATION WORKING GROUP
(SEA ADS-B WG/4)
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AIRSERVICES AUSTRALIA

Australian ADS-B aircraft mandate for flight in the upper airspace

Presented by Civil Aviation Safety Authority Australia

SUMMARY

This Information Paper is to inform SEA ADS-B WG/4 that the Civil Aviation Safety Authority (CASA) Australia will issue an ADS-B aircraft equipment mandate for flight in the upper airspace (at and above FL290) for all aircraft operations in Australian territorial airspace with a compliance date of 12 December 2013. This is first aircraft mandate for ADS-B carriage to be issued in Australia. It is applicable to Australian aircraft and foreign registered aircraft when operating in Australia.

1 Summary

1.1 The regulatory requirements for the first step in the transition to satellite technology for aircraft navigation and aircraft surveillance by ATC have been established by CASA.
The aircraft ADS-B equipment fitment mandate is for flight in the upper airspace at and above FL290. The compliance date has been set at 12 December 2013 to allow 5 years for airlines and other operators of turbojet aircraft to comply.

1.2 At FL290, ADS-B coverage as planned by Airservices Australia will extend over the whole of continental Australia outside radar coverage and also over significant areas of oceanic airspace within the FIR including sections of northern and eastern boundaries. Radar-like ATC surveillance of virtually all aircraft operations will result post 2013. This is a significant safety advance. After 12 December 2013, unequipped aircraft will not be permitted to operate at or above FL 290. However, there remain Class A enroute airspace levels between FL245 and FL290 that will be available for unequipped aircraft.

2. Brief Outline of Rules

2.1 The final rules (comprising Amendment Schedules to each of Civil Aviation Order (CAO) 20.18, CAO 82.1, CAO 82.3 and CAO 82.5, and a new Instrument of direction under Civil Aviation Regulation (CAR) 209, are to be promulgated by CASA this month (February 2009.)

2.2 CAO 20.18 contains the relevant rules and technical standards and is applicable to Australian registered aircraft. The Amendments to Civil Aviation Orders (CAO) 82.1, 82.3 and 82.5 are for extending applicability to all foreign registered aircraft flying at or above FL290 in Australian territorial airspace. The Instrument of direction under CAR 209(1) is to extend applicability to foreign registered aircraft undertaking private operations at or above FL290.

2.3 The corresponding Notice of Final Rule Making (NFRM) which includes the final rules will also be published by CASA in February 2009.

2.4 Existing rules promulgated in 2007 established the technical standards for aircraft ADS-B equipment configurations for compatibility with the Airservices ADS-B ground stations. These have not been changed.

2.4 The airlines (Australian and foreign) operating turbojet aircraft are those predominantly affected. A compliance date for ADS-B fitment has been set at 12 December 2013 to allow 5 years for the airlines and other operators to comply.

2.5 The justification for the rules is:

- Greater airspace capacity as a result of the reduction in the ATC separation standard from 50NM laterally and longitudinally to 5NM;
- Improved safety resulting from radar-like surveillance over the continent replacing procedural separation;
- Less holding of aircraft at non-preferred levels thus improving efficiency of operations on flexi-tracks; and
- Reduced fuel burns as a result of less holding at non-preferred levels.

3. ICAO APAC harmonisation

3.1 At its nineteenth meeting held in September 2008, the ICAO APANPIRG adopted:

"Conclusion 19/37 – Revised Mandate – Regional ADS-B OUT Implementation" relevant to States intending to implement ADS-B based surveillance service.

3.2 CASA has established the upper airspace ADS-B mandate in keeping with the above ICAO Asia-Pacific regional conclusion.

3.3 CASA believes that the upper airspace mandate will be the first step in a transition which provides significant operational, safety and financial benefits to civil aviation. The complete Australian transition of the complete fleet in all airspace classes may take up to a decade to reach finality.

4. A DRAFT copy of the rules is attached, for the information of the WG.

END

Civil Aviation Order 20.18 Amendment Order (No. 1) 2009

1 Name of instrument

This instrument is the *Civil Aviation Order 20.18 Amendment Order (No. 1) 2009*.

2 Commencement

This instrument commences on the day after it is registered.

3 Amendment of Civil Aviation Order 20.18

Schedule 1 amends Civil Aviation Order 20.18.

Schedule 1 Amendment

[1] Subsection 9B

substitute

9B Directions relating to carriage and use of automatic dependent surveillance – broadcast equipment

9B.1 This subsection applies to aircraft engaged in private, aerial work, charter or regular public transport operations.

9B.2 In this subsection and Appendix XI:

ADS-B means automatic dependent surveillance – broadcast.

ADS-B test flight means a flight to prove ADS-B transmitting equipment that is newly installed on the aircraft undertaking the flight.

aircraft address means a unique combination of 24 bits assigned to an aircraft by CASA or by a relevant RAAO for the purpose of air to ground communications, navigation and surveillance.

approved equipment configuration means an equipment configuration that:

(a) meets the conditions for approval set out in Appendix XI; or

(b) is approved in writing by CASA.

Note Equipment configurations approved by CASA are published in Appendix D of Advisory Circular 21-45.

ATSO means Australian Technical Standard Order of CASA.

EASA means the European Aviation Safety Agency.

ETSO means European Technical Standard Order of the EASA.

FAA means the Federal Aviation Administration of the United States.

FL 290 means flight level 290.

Note Flight level 290 is defined in subregulation 2 (1) of CAR 1988.

RAAO means a recreational aviation administration organisation that is recognised by CASA.

TSO means Technical Standard Order of the FAA.

9B.3 If an aircraft carries ADS-B transmitting equipment for operational use in Australian territory, the equipment must comply with an approved equipment configuration.

9B.4 If an aircraft carries ADS-B transmitting equipment for operational use in Australian territory, the equipment must transmit:

(a) a flight identification that corresponds exactly to the aircraft identification mentioned on the flight notification filed with air traffic control (***ATC***) for the flight; or

(b) if no flight notification is filed for the flight — a flight identification that is:

(i) for an aircraft registered on the Australian Civil Aircraft Register and operating wholly within Australian territory — the aircraft's registration mark; or

(ii) for an Australian aircraft registered by a RAAO — in accordance with the organisation's operations manual; or

(c) another flight identification directed or approved by ATC.

9B.5 If an aircraft carries ADS-B transmitting equipment that complies with an approved equipment configuration, the equipment must be operated continuously during the flight in all airspace at all altitudes unless the pilot is directed or approved otherwise by ATC.

9B.6 If an aircraft carries ADS-B transmitting equipment which does not comply with an approved equipment configuration, the equipment must be deactivated before the aircraft flies in Australian territory.

9B.7 However, the equipment need not be deactivated as mentioned in paragraph 9B.6 if the aircraft is undertaking an ADS-B test flight in VMC in airspace below FL 290.

9B.8 On and after 12 December 2013, if an aircraft operates at or above FL 290, it must carry serviceable ADS-B transmitting equipment that complies with an approved equipment configuration.

Note On and after 12 December 2013, an aircraft must carry and continuously operate compliant ADS-B transmitting equipment in accordance with paragraph 9B.8.

Apart from this, there is no obligation to carry compliant ADS-B transmitting equipment.

However, including the effect of subsection 9B.5 above, if compliant ADS-B transmitting equipment is in fact carried, whether voluntarily or in accordance with the obligation under 9B.8, it must be operated continuously in all airspace, at all altitudes.

9B.9 Paragraph 9B.8 does not apply to an aircraft if the aircraft owner, operator or pilot has written authorisation from CASA for the operation of the aircraft without the equipment.

[2] Appendix XI

substitute

Appendix XI

Approved equipment configuration — conditions for approval

1 An equipment configuration is approved only if it meets all of the conditions set out in this Appendix.

2 It is a condition of approval that the ADS-B transmitting equipment must be of a type that is:

(a) authorised:

(i) by the FAA in accordance with TSO-C166 as in force on 20 September 2004 or TSO-C166a a later version as in force from time to timeon 21 December 2006; or

(ii) by CASA in accordance with ATSO-C1004 as in force on 2 October 2003 or a later version as in force from time to time; or

(iii) by CASA in accordance with ATSO-C1005 as in force on 22 December 2004 or a later version as in force from time to time; or

(b) otherwise authorised by CASA for this purpose.

3 It is a condition of approval that, on and after 28 June 2012, the geographical position transmitted by the ADS-B transmitting equipment must be determined by:

(a) a GNSS receiver of a type that is authorised by the FAA in accordance with one of the following:

(A) TSO-C145a as in force on 19 September 2002;

(B) TSO-C146a as in force on 19 September 2002;

(C) TSO-C145b as in force on 5 March 2007;

(D) TSO-C146b as in force on 5 March 2007;

(E) TSO-C145c as in force on 2 May 2008;

(F) TSO-C146c as in force on 9 May 2008;TSO-C145a or TSO-C146a as in force on 19 September 2002 or a later version as in force from time to time; or

(b) another system authorised by CASA for this purpose.

4 It is a condition of approval that the pressure altitude transmitted by the ADS-B transmitting equipment must be determined by:

(a) a barometric encoder of a type that is authorised by :

(i) the FAA in accordance with TSO-C88a as in force on 18 August 1983 or TSO-C88ba later version as in force from time to timeon 6 February 2007; or

(ii) the EASA in accordance with ETSO-C88a as in force on 24 October 2003 or a later version as in force from time to time; or

(b) another system authorised by CASA for this purpose.

5 It is a condition of approval that, unless otherwise approved in writing by CASA, the ADS-B transmitting equipment must:

(a) allow the pilot to activate and deactivate it during flight; and

(b) transmit the current aircraft address.

Note The requirement in paragraph 5 (a) is met if the ADS-B transmitting equipment has a cockpit control that enables the pilot to turn the ADS-B transmissions on and off.

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