

Telephone: (65) 6595 6051
AFS: WSSSYNYX
Facsimile: (65) 6543 1826
caas_singaporeais@caas.gov.sg
www.caas.gov.sg

AERONAUTICAL INFORMATION SERVICES
CIVIL AVIATION AUTHORITY OF SINGAPORE
SINGAPORE CHANGI AIRPORT
PO BOX 1, SINGAPORE 918141

AIC
14/10
28TH DECEMBER

INTRODUCTION OF AUTOMATIC DEPENDENT SURVEILLANCE BROADCAST (ADS-B) OUT SERVICES WITHIN PARTS OF THE SINGAPORE FIR

1. INTRODUCTION

- 1.1 Pursuant to the ICAO Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) Conclusion 19/37 and Conclusion 21/39 (see **Attachment A**), this AIC informs aircraft operators on CAAS's plan to implement the use of Automatic Dependent Surveillance Broadcast (ADS-B) Out after 2013 within parts of the Singapore FIR, specifically, on ATS routes N891, M753, L642, M771, L644 and N892 at FL290 and above, to support future increase in airspace capacity and allow better flight accessibility to these routes.
- 1.2 ADS-B avionics is an aircraft surveillance system that uses ground stations to receive radio signals transmitted by an ADS-B equipped aircraft. ADS-B avionics enables an aircraft to broadcast its identity, position, velocity and other information with a high degree of accuracy and integrity.
- 1.3 ADS-B surveillance is a cost effective means to provide surveillance services over areas that are not currently provided with radar surveillance services.

2. ADS-B BASED SURVEILLANCE AIRSPACE AND AIRCRAFT OPERATOR APPROVAL

- 2.1 On and after 12th December 2013, if an aircraft operates on Airways L642, M771, N891, M753, L644 and N892 bounded within 073605N 1090045E 040713N 1063543E 041717N 1061247E (MABLI) 044841N 1052247E (DOLOX) 045223N 1041442E (ENREP) 045000N 1034400E thence north along the Singapore FIR Boundary to 070000N 1080000E (see **Attachment B**) at or above FL290:
 - a) the aircraft must carry serviceable ADS-B transmitting equipment that has been certified as meeting EASA AMC 20-24, or meets the equipment configuration standards in Appendix XI of Civil Aviation Order 20.18 of the Civil Aviation Safety Authority of Australia; and

- b) the aircraft operator must have the relevant operational approval from the State of Registry.
- 2.2 Aircraft that does not have the relevant ADS-B operational approval from the State of Registry will be assigned a flight level below FL290.

3. FLIGHT PLANNING REQUIREMENTS

- 3.1 Flight planning requirements are currently being developed by the ICAO Asia Pacific Regional Office. More information will be published when they are made available.

4. CONSULTATIONS

- 4.1 Please email hermizan_jumari@caas.gov.sg if you have any queries regarding this matter.

RELEVANT ICAO ASIA PACIFIC AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG) CONCLUSIONS ON MANDATING OF ADS-B EQUIPAGE

Conclusion 19/37 – Revised Mandate Regional ADS-B Out Implementation

States intending to implement ADS-B based surveillance service, be urged to

- a) determine ADS-B OUT equipage mandates based upon the ability to provide ADS-B OUT separation services;
- b) expedite the implementation of ADS-B OUT in accordance with the Regional Air Navigation Plan and the provision of separation services based on ADS-B OUT;
- c) publish their equipage mandates as soon as possible, with a target publication date of no later than 2010 so that operators can plan ahead their forward purchasing and retrofit;
- d) choose a date after mid 2012 on which the ADS-B out equipage mandate will become effective in airspace served by ADS-B ground stations with sufficient transition period to enable fleet equipage.

Note: The implementation would require aircraft equipped with avionics compliant with either:

- 1) *Version 0 ES as specified in ICAO Annex 10, Volume IV, Chapter 3, Paragraph 3.1.2.8.6 (up to and including Amendment 82 to ICAO Annex 10) and Chapter 2 of the Technical Provisions for Mode S Services and Extended Squitter (ICAO Doc 9871) (Equivalent to DO260) to be used till at least 2020.*

Or

- 2) *Version 1 ES as specified in Chapter 3 of the Technical Provisions for Mode S Services and Extended Squitter (ICAO Doc 9871) (Equivalent to DO260A).*

Conclusion 21/39 – Template for Promulgation of ADS-B Equipage Requirements

That, based on APANPIRG Conclusion 20/54, States intending to implement ADS-B based surveillance service for a defined airspace and having not published regulations be urged to promulgate mandating rule for ADS-B Avionics Equipage Requirements as soon as possible using the following template:

On and after dd/mm/yyyy, if an aircraft operates on airways (insert routes).....at or above FLXXX.....(or in defined airspace boundaries at or above FLXXX):

- a) *the aircraft must carry serviceable ADS B transmitting equipment that has been certificated as meeting EASA AMC 20-24, or meets the equipment configuration standards in Appendix XI of Civil Aviation Order 20.18 of the Civil Aviation Safety Authority of Australia; and*
- b) *the aircraft operator must have the relevant operational approval from the State of Registry.*

INTRODUCTION OF AUTOMATIC DEPENDENT SURVEILLANCE BROADCAST (ADS-B) OUT SERVICES WITHIN PARTS OF THE SINGAPORE FIR

