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		25 OCT 2018

File No. AAI/ATM/AIS/09-09/2018

Following supplement is issued for information, guidance and necessary action.

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AUTOMATIC DEPENDENT SURVEILLANCE - BROADCAST **(ADS-B) OUT EQUIPAGE MANDATE IN INDIA**

1. INTRODUCTION

- 1.1** Automatic Dependent Surveillance-Broadcast (ADS-B) has been identified as an essential Radar-like component in enhancing global safety in ATS and achieving efficiency objectives that bring tangible operational benefits to aviation stakeholders. The ADS-B avionics is recognized as an enabler of the global ATM concept bringing cost-effective substantial safety & capacity benefits. India supports the early implementation of ADS-B in line with ICAO Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) Conclusion 19/37 and Conclusion 26/42
- 1.2** The ADS-B Out implementation in India is aimed at providing redundancy where Radar surveillance is already available. In addition, ADS-B Out enables the expansion of Air Traffic Control (ATC) surveillance services in remote & high terrain areas, oceanic airspace and also to fill the surveillance gap over the Continental airspace. The Automatic Dependent Surveillance Broadcast “(ADS-B) OUT” transmissions on 1090MHz Extended Squitter data link will be used (or provision of ATS surveillance services to eligible aircraft within notified portions of Indian airspace(s).
- 1.3** ADS-B avionics enables an aircraft to broadcast its position information derived from GNSS, its identity, velocity and other information with a high degree of accuracy and integrity. ADS-B ground stations receive the information transmitted by an ADS-B equipped aircraft and distributes the received ADS-B data to ATS Surveillance systems.

2. IMPLEMENTATION PLAN

- 2.1 With effect from 1st January 2019, all aircraft flying on PBN Routes in Indian continental airspace with Designators L, M, N, P, Q, T and routes A201, A347, A465, A474, A791, B211, B466, G450, R457, R460, R461, W15, W19, W20, W29, W41, W43, W45, W47, W56S/N, W67, W111, W112, W114, W115, W118, W153, at or above Flight Level 290 must carry serviceable 1090 MHz ES ADS-B transmitting equipment that has been certified as meeting the requirements mentioned in paragraph 3.0.
- 2.2 Aircraft not equipped with ADS-B would be permitted to fly on these routes below Flight level 290.
- 2.3 For all aircraft flying within the designated Indian continental airspace as referred as para 2.1, equipped with ADS-B equipages not complying with paragraph 3.0, the ADS-B equipages shall be:
- (a) deactivated; or
 - (b) Set to transmit only a value of zero for the Navigation Uncertainty Category (NUCp) or Navigation Integrity Category (NIC) or Navigation Accuracy Category (NAC) or Source Integrity Level (SIL).

3. ADS-B AVIONICS EQUIPAGE CERTIFICATION REQUIREMENTS AND AIRCRAFT OPERATIONAL APPROVAL

- 3.1 The aircraft must carry' serviceable 1090 MHz ES ADS-B transmitting equipment that has been certified as meeting:
- (a) European Aviation Safety Agency - Certification Considerations for the Enhanced ATS in Non Radar Areas using ADS-B Surveillance (ADS-B-NRA) Application via 1090 MHz Extended Squitter (AMC 20-24), or
 - (b) European Aviation Safety' Agency - Certification Specifications and Acceptable Means of Compliance for Airborne Communications, Navigation and Surveillance (CS-ACNS) Subpart D - Surveillance (SUR) (CS-ACNS.D.ADS-B), or
 - (c) Federal Aviation Administration - Advisory Circular No: 20-165A (or later versions) Airworthiness Approval of Automatic Dependent Surveillance - Broadcast (ADS-B) Out Systems, or

- (d) the equipment configuration standards in Appendix XI of Civil Aviation Order 20.18 of the Civil Aviation Safety Authority of Australia.

(Note 1: The avionics equipage certification requirements specified herein supersedes the specifications notified vide. Para 6.1 of AIP SUP NO. 18/2014 and DGCA operational Circular No. 17/2014.)

- 3.2 For Indian Operators, Airworthiness and Operational approval will be in accordance with the provisions of Civil Aviation Requirement Section 8, Aircraft Operation. Series 8. Part V, issue 1, 25th Nov, 2014 and Operational Circular No. 17/2014.

4. OPERATIONAL LIMITATIONS

- 4.1 Aircraft not complying with requirements specified in paragraph 3.0 will not be normally permitted to operate in the designated airspace and flight level assignments would be subjected to air traffic conditions.

5. FLIGHT PLANNING REQUIREMENTS

- 5.1 Aircraft operators complying with the requirement stipulated in paragraphs 3.0 shall indicate the appropriate ADS-B designator in item 10 of the flight plan.

- B1 ADS-B with dedicated 1090 MHz ADS-B "out" capability
- B2 ADS-B with dedicated 1090 MHz ADS-B "out" and "in" capability.

- 5.2 The aircraft identification (ACID) must be accurately recorded in item 7 of the ICAO Flight Plan form. The Aircraft Identification, not exceeding 7 characters, is to be entered both in item 7 of the flight plan and replicated exactly when set in the aircraft FMS (for transmission as Flight ID) in ADS-B transmissions as follows:

Either,

- (a) The ICAO three-letter designator for the aircraft operating agency followed by the flight identification (e.g. KLM511, BAW213, JAI25),

or,

- (b) The registration marking of the aircraft (e.g. VTAKO, 4XBCD, OOTEK), when the call sign used in radiotelephony consists of the registration marking alone (e.g. VTAKO), or preceded by the ICAO telephony designator for the operating agency (e.g. AIR INDIA VTAKO),

Note 2: No zeros, hyphens, dashes or spaces are to be added when the Aircraft Identification consists of less than 7 characters.

6. IN-FLIGHT CONTINGENCIES

- 6.1 The pilot-in-command, upon being aware of an onboard ADS-B equipment failure, must inform ATC as soon as possible. ATC would then provide the necessary clearance to ensure separation with other flights operating on the specified ATS routes.

7. APPLICABILITY

- 7.1 The ADS-B OUT equipage mandate is applicable for all aircraft operating in the Indian airspace as referred at Para 2.0.

Note 3: Refer AIP SUP NO. 18/2014 for general provisions, conditions and procedures for use of ADS-B OUT based surveillance services in Indian Airspace.