

**55<sup>th</sup> CONFERENCE OF  
DIRECTORS GENERAL OF CIVIL AVIATION  
ASIA AND PACIFIC REGION**

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AGENDA ITEM 4: AIR NAVIGATION

**ADS-B IMPLEMENTATION AND EMPLOYING ADS-B  
SURVEILLANCE IN RADAR AND NON-RADAR AIRSPACE:  
INDIAN SCENARIO**

Presented by India

**INFORMATION PAPER**

**SUMMARY**

This paper presents a brief overview of the implementation of ADS-B in India and the operationalization of ADS-B based surveillance services in Radar and Non-radar airspace.

## **ADS-B IMPLEMENTATION AND EMPLOYING ADS-B SURVEILLANCE IN RADAR AND NON-RADAR AIRSPACE: INDIAN SCENARIO**

### **1. INTRODUCTION**

1.1 The Indian ADS-B plan aims at providing complementary surveillance in areas where Radar coverage exists, at medium capacity airports where no surveillance exists and also fill in the surveillance gaps particularly in remote areas.

1.2 In line with ICAO Global Plan Initiative and Aviation System Block Upgrades (ASBU) and consistent with ICAO APAC Regional implementation plan in terms of augmentation of surveillance coverage and adherence to time-lines, India has already installed twenty-one ADS-B ground stations at various strategic locations, to augment the existing radar coverage towards seamless surveillance coverage.

1.3 India is currently installing ten more ADS-B ground receivers (at Kadapa, Shamshabad, Mithapur (for Mumbai OCC), Indore, Jabalpur, Bikaner, Goa, Aurangabad and Dhanbad) to cover the surveillance gaps in continental airspace and at Campbell-Bay for oceanic airspace. Campbell-Bay is an island in the Bay of Bengal near the common boundaries of Chennai, Jakarta and Kuala Lumpur FIR, which will also help ADS-B data sharing with neighboring States of Indonesia and Malaysia.

1.4 Six more ADS-B ground stations are planned to be installed in the second stage (at Agatti Island in the Arabian Sea, Raipur & Pantnagar) for Enroute surveillance and at three major metro airports (Bengaluru, Chennai and Kolkata) for third layer of surveillance and redundancy.

### **2. DISCUSSION**

2.1 ADS-B ground stations at these 37 locations will enhance surveillance coverage in addition to the existing Radars (PSR/MSSR) providing redundant surveillance coverage. Also, it will facilitate the extension of the surveillance coverage for low altitudes (below existing radar coverage) and areas where no radar coverage currently exists, leading to more efficient use of airspace.

2.2 The AIP Supplement 18/2014 on ADS-B implementation in India has been issued in line with the APANPIRG conclusion 19/37, 22/8, 22/36 & 26/42 and the proposal for amendment of Regional Supplementary Procedure (Doc 7030) pertaining to amendment of Chapter 5- Surveillance Section 5.5 which include Chennai, Kolkata, Delhi and Mumbai FIR among others.

2.3 ADS-B training, assessment & endorsement of Air Traffic Controllers holding surveillance rating at stations where ADS-B data is integrated with ATS Automation system has been completed.

2.4 ADS-B based surveillance service has been integrated with en-route services at five TMA's (Varanasi, Lucknow, Nagpur, Trivandrum & Ahmedabad) in RAD environment. Trial operations have also commenced in three stations (Kolkata TMA (for UAH), Cochin and at Chennai OCC).

2.5 ADS-B based surveillance service has also been operationalized within the jurisdiction of Ahmedabad, Trivandrum and Calicut Terminal Approach Control. Trial operations in Approach surveillance using ADS-B are being done at seven airports (Coimbatore, Agartala, Jaipur, Amritsar, Cochin, Patna and Trichy).

2.6 Trial operations within Non-radar airspace (below 10000 feet) with exclusive ADS-B Approach surveillance services is being provided at some of the above airports viz. Coimbatore, Trichy, Agartala, Patna, Jaipur. In Chennai OCC, ADS-B Enroute surveillance service is being provided on trial basis in non-radar airspace up to FL460 using Port Blair ADS-B.

2.7 All actions mentioned in the AIGD have been followed before the commencement of surveillance services using ADS-B.

2.8 Radar data from adjacent stations are integrated into the automation systems of the ADS-B-only stations for integrity checks and to enhance situational awareness of incoming non ADS-B equipped aircraft to ATCOs.

2.9 A bilateral agreement has been signed between India and Myanmar for ADS-B data sharing in the year 2015. Myanmar is now sharing the data from the ADS-B ground station at SITTWE and COCO ISLAND. India is sharing AGARTALA and PORT BLAIR ADS-B data. The 2 Mbps under sea link available between Mumbai and Yangon is being used for the data sharing.

2.10 India is installing an ADS-B at the Campbell-Bay Naval station in the South Andaman Sea for enhancing the surveillance coverage in Bay of Bengal region. ADS-B data from ADS-B stations at Langkawi in Malaysia and Aceh in Indonesia will be shared with India. ADS-B data sharing with Malaysia and Indonesia will help to reduce the LHDs and LLDs in the FIR boundary. A draft MoU for ADS-B data sharing has been sent to Malaysia and Indonesia for further action.

2.11 India is actively considering the possible utilization of Space based ADS-B for surveillance on its vast oceanic airspace. The EOI (Expression of Interest) has been uploaded by AAI for Space Based ADS-B.

2.12 India is committed to the timely implementation of APANPIRG & DGCA Conference Conclusions. DGCA, India is planning for the issuance of a regulatory instruction, mandating the carriage on board ADS-B OUT equipage in all aircraft within Indian FIR. A Draft AIP SUP has been prepared for mandating ADS-B equipage with specific timelines for different Flight level bands.

### **3. ACTION BY THE CONFERENCE**

3.1 The Conference is invited to note the information contained in this Paper.

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