International Civil Aviation Organization

AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST SEMINAR AND ELEVENTH MEETING OF AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST (ADS-B) STUDY AND IMPLEMENTATION TASK FORCE (ADS-B SITF/11)

Jeju, Republic of Korea, 24-27 April 2012

Agenda Item 6: Review States' activities and interregional issues on trials and implementation of ADS-B and multilateration

INDIA'S PREPAREDNESS TOWARDS IMPLEMENTATION OF ADS-B AND OUTCOME OF BOBASIO/2 ON ADS-B DATA SHARING

(Presented by India)

SUMMARY

This paper presents an update on India's preparedness towards ADS-B implementation plan to provide surveillance in remote areas, to cover existing Radar gaps and to provide complete surveillance over the continental airspace and around Port Blair for enhancing the safety and efficiency of aircraft operations. This paper also highlights the ADS-B data sharing among the States.

This paper relates to –

Relevant Strategic Objectives:

A: ***Safety*** *– Enhance global civil aviation safety*

C: ***Environmental Protection and Sustainable Development of Air Transport*** *– Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment*

Global Plan Initiatives:

GPI-6 Air traffic flow management
GPI-7 Dynamic and flexible ATS route management
GPI-8 Collaborative airspace design and management
GPI-9 Situational awareness

1. INTRODUCTION

1.1 India is accelerating towards seamless ATM through integrated surveillance coverage over its airspace with almost overlapping radar coverage and ADS-B coverage over the continental airspace. India has already implemented ADS-C for surveillance over oceanic airspace. India is also committed to APANPIRG 22 resolution on ADS-B and is determined to move from ground-based

surveillance and navigation to more dynamic and accurate airborne-based systems and procedures. ADS–B implementation in India will move Air Traffic Management from a radar based system to a satellite-derived aircraft surveillance system.

1.2 With the new generation surveillance and communication technologies and the concept of Upper Airspace Harmonization, a plan has been drawn for restructuring the entire Indian airspace, whereby, 11 ACCs will be amalgamated into 4 ACCs initially and finally into 2 centres. Each FIR will have only one Upper ACC with multiple sectors to be operated from four major ATC Centres. The entire airspace will have overlapping surveillance coverage through Radar/ADS-B/Multilateration combined with matching seamless air-ground communication and AIDC for ground to ground communication to facilitate efficient air traffic management. This will pave way for Regional Harmonisation for Seamless ATM.

1.3 As a part of its ambitious plans India is planning to install and commission 14 ADS-B stations by mid 2012 across the subcontinent in the first phase, including one station at Port Blair.

1.4 In next phase by end of 2014, it is proposed to install more ADS-B Ground stations depending on the traffic density at the airports as well as to provide redundancy to the existing Radar Systems. India is also planning to install ADS-B Ground Systems at Airport where terrain limitations are restricting Radar Installations in the North-East &Northern part of India.

2. DISCUSSION

Update from India on ADS-B implementation

2.1 India is in the process of implementing enhanced surveillance through the use of ADS-B on major air routes and in terminal areas. ADS-B ground stations at these locations will be with redundant configuration and will be integrated with the ATC Automation system for the purpose of supplementing the coverage of the existing Radars. New ATC Automation Systems installed at Nagpur, Ahmadabad, Mangalore, Trivandrum, Guwahati and Varanasi have the capability of processing ADS-B input and presenting on the Air-situation display.

2.2 ADS-B ground system at Amritsar, Varanasi, Ahmedabad, Nagpur, Cochin, Mangalore, Trivandrum and Guwahati will provide supplementary surveillance coverage as standby to radar systems. ADS-B ground stations at other airports i.e. Jaipur, Lucknow, will facilitate in filling the surveillance gap due to non-availability of radars at these airports.

2.3 India has successfully integrated Radars in Chennai FIR thus enabling seamless upper airspace with lower limit as FL 260. As a proof of concept, ADS-B has also been integrated with the ATC Automation System. India is also having a similar plan to integrate Surveillance sensors from the stations within Delhi and Mumbai FIRs with the ATM automation system of Delhi and Mumbai.

2.4 ADS-B ground station at Port Blair will provide the surveillance coverage over Bay of Bengal up to the FIR boundary of Chennai / Kuala Lumpur and Kolkata / Yangon. The data to be derived from Port Blair ADS-B station would be fed into ATC Automation Systems at Chennai and Kolkata respectively.

2.5 Analysis of upper air space around Port Blair for a distance of approximately 200 NM indicates that there are close to 200 aircraft over flying around Port Blair in addition to arrivals and departures at Port Blair.

2.6 Implementing ADS-B at Port Blair will enable provision of efficient air traffic services on ATS routes P628, L510, N877, N 571, P761, P762 and L759 and aid the controllers in better conflict detection and separation management over crossing points. The existing separation of 15 minutes over crossing points can be reduced to ATS surveillance separation minima allowing aircraft on crossing tracks to maintain optimum levels. The provision of ADS-B in Port Blair will permit efficient resolution of En route traffic particularly in the critical areas East of Port Blair.

India's preparedness towards implementation of ADS-B operations

2.7 ADS-B Site survey has been completed for all 14 locations. The 14 ADS-B ground stations installations would be completed by September, 2012. India has committed in RASMAG/16 that it would provide data from these ADS-B locations for RMA use in height monitoring.

2.8 The process for issuance of mandate for carriage and use of ADS-B equipment in the entire Indian airspace has already been initiated. India will operationalise ADS-B stations by December 2013 as per Asia/Pacific regional plan.

Outcome of SEA/BOB ADS-B WG/7

2.9 Following are the list of action items arrived at SEA/BOB ADS-B WG/07 meeting**:**

a) India to coordinate with Myanmar, Maldives and Sri Lanka for ADS-B data sharing; and

b) India to examine the possibility of sharing ADS-B data from potential ADS-B ground station from Coco Island and Pathein.

Outcome of BOBASIO/2 for sharing of ADS-B data

2.10 In the recently concluded BOBASIO/2 held in Chennai, India from 11-13 April 2012, Maldives informed their plan for two ADS-B stations. Maldives expressed their willingness to share ADS-B data with India and Sri Lanka. During the discussion, Maldives informed that ADS-B station is proposed to be installed at Hanimadhoo so as to have overlapping coverage with Chennai Upper ACC and Trivandrum ACC. This will not only provide redundancy of surveillance data to Chennai Upper ACC and Trivandrum ACC, but also permit reduction of separation in the area.

2.11 India announced its willingness to share ADS-B data with Indonesia and Maldives in BOBASIO/2 to enhance the surveillance capability in the Bay of Bengal and Indian Ocean. All the participating states in BOBASIO/2 viz. Nepal, Bangladesh, Thailand, Singapore, Indonesia, Maldives, Seychelles, Oman, were requested to take necessary action for sharing of ADS-B data with India. Airline Operators were also urged through IATA to equip their aircraft suitably in a time-bound manner to facilitate implementation of ADS-B in the Region.

2.12 ADS-B data sharing benefits are likely to exist between India and Maldives, Sri Lanka, Pakistan and Myanmar. There are only minor benefits in using Indonesian ADS-B data in India. and no identified benefits in sharing between Thailand and India. ADS-B data sharing between India and Bangladesh will be examined as and when Bangladesh develops its ADS-B plan.

3. ACTION TAKEN BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) consider ADS-B data sharing as committed in SEA/BOB ADS-B WG/7 and BOBASIO/2 meeting; and

c) discuss any relevant matters as appropriate.

_ _ _ _ _ _ _ _ _ _ _ _ _ _ _

ATTACHMENT 1