ADS-B IMPLEMENTATION IN INDIA

SITF / 12 I 15TH TO 18TH APRIL 2013 I KOLKATA, INDIA

S GHOSH, GM (CNS), KOLKATA
In line with ICAO Global Plan Initiatives and Aviation System Block Upgrade (ASBU) India has taken a lead in:

- Installing ADS-B ground stations to provide surveillance redundancy where Radar coverage exists,

- Filling surveillance gaps where surveillances coverage is not possible due to high terrain and remote areas,

- Sharing ADS - B data with the neighboring countries,
ADS-B IN INDIA – CURRENT & PLANNED

- ADS-B ground stations installed at 14 airports in redundant configuration:
  - Amritsar, Jaipur, Varanasi, Ahmedabad, Nagpur, Calicut, Lucknow, Cochin, Coimbatore, Mangalore, Port Blair, Trivandrum, Agartala and Guwahati,

- ADS-B ground stations to be installed at
  - Srinagar, Jaisalmer, Dibrugarh, Patna, Bhubaneswar, Trichy, Vijayawada, Jamnagar/ Kandla, Paykong, Agathi, Aurangabad, Behrampur, Belgaum, Kargil, Pantnagar and Ranchi.
ADS-B IN INDIA – PURPOSE OF USE

- As stand-by to Radar systems to provide supplementary surveillance coverage at:
  - Amritsar, Varanasi, Ahmedabad, Nagpur, Cochin, Mangalore, Trivandrum, and Guwahati.

- To fill the surveillance gaps in areas due to non-availability of radars at:
  - Jaipur, Lucknow, Srinagar, Jaisalmer, Agartala, Dibrugrah, Bubhneshwar, Patna, Trichy.
ADS-B IN INDIA INTEGRATION EFFORTS

- ADS-B data locally integrated with ATM automation systems installed at (under test)
  - Nagpur, Ahmedabad, Mangalore, Trivandrum, Guwahati, Varanasi, Cochin and Amritsar airports,

- ATM automation systems at Calicut, Coimbatore, Lucknow, Jaipur, Agartala, Patna, Bhubaneswar, Vijayawada and Trichy are being upgraded to process additional surveillance data of ADS-B,

- ATM automation system installed at Amritsar and Delhi to receive ADS-B (2nd phase) data from Srinagar and Jaisalmer to enhance surveillance coverage
Data from ADS-B ground station at Port Blair will provide surveillance coverage over Bay of Bengal up till the FIR boundary of Chennai / Kuala-Lumpur and Kolkata / Yangaon, and:

- has been integrated at Chennai,
- to be integrated at Kolkata

Surveillance sensors integrated in Chennai FIR enabling seamless upper airspace harmonization with lower limit as FL260.

Surveillance sensors to be integrated for Delhi and Mumbai ATC centers.
Some issues regarding integrating ADS-B data with ATM automation systems are:

- Existing ATM automation systems correlate ADS-B targets with SSR codes,
- Aircrafts compliant with DO260 and DO260A are not broadcasting mode 3/A code,
- Desirable that ADS-B targets be correlated with 24 bit codes,
- Existing ATM automation systems should have capability of processing DO 260A and 260 B replies also,
ADS-B IN INDIA - CHALLENGES

➢ Some other issues are:

- ATM automation systems should be capable of receiving both geometric and barometric altitude from an ADS-B equipped aircraft,

- In absence of barometric altitude automation system should display geometric altitude with warning and / or different coloured symbol,

- Geometric altitude is useful for RVSM monitoring, and also as an indicator of correct QNH setting in the aircraft.
ATM automation system should differentiate between surveillance targets from different type of sensors through different symbols and colours,

ATM automation system display ADS-B targets with NUC value > 5, and above,

Required to display ADS-B tracks of NUC < 5 with a different colour for situational awareness,
ATM automation system should have the capability of selecting different versions of ASTERIX-21 to take full advantage of future upgrades,

ATM automation system should have capability to display emergency status broadcast by aircraft through ADS-B reports,

ATM automation system should be capable of extending tools for ADS–B targets similar to that provided for Radar targets like RBL, minimum separation tool, warning alert etc.
S-Band ASR/MSSR
1. Delhi
2. Mumbai
3. Chennai (Replacement)
4. Kolkata (Replacement)
5. Ahmedabad (Replacement)
6. Hyderabad (HIAL)
7. Guwahati
8. Trivandrum (Replacement)
9. Bangalore (BIAL)

New S-Band ASR/MSSR
1. Cochin
2. Amritsar
3. Delhi
4. Mumbai

L-Band ARSR/MSSR
1. Delhi
2. Mumbai

MSSR only
1. Varanasi
2. Nagpur
3. Mangalore
4. Behrampur
5. Chennai
6. Kolkata
7. Porbandar
8. Bhopal
9. Bellary
10. Vizag
11. Jharsuguda
12. Katihar
13. Udaipur
Thanks for Kind Attention!