



*International Civil Aviation Organization*

**SIXTEENTH MEETING OF THE  
COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND  
METEOROLOGY SUB-GROUP (CNS/MET SG/16) OF APANPIRG**

Bangkok, Thailand, 23 – 27 July 2012

**Agenda Item 6: Surveillance**

**SHARING OF ADS-B DATA AND ESTABLISHMENT OF SAFETY DATABASE  
FOR THE ASIA AND PACIFIC REGIONS**

(Presented by Hong Kong, China)

**SUMMARY**

This paper highlights current progress of ADS-B implementation in the Asia and Pacific (APAC) Regions and explores how States could make the best use of safety-related information available from ADS-B data stream. With ADS-B data properly shared, analysed and results promulgated through early establishment of a regional database, States could reap the early benefits of enhanced surveillance using ADS-B with improved safety monitoring and streamlined ATC operations, especially along major traffic flow routes and over busy airspace.

This paper relates to –

**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-1 Flexible use of airspace

GPI-2 Reduced vertical separation minima

GPI-5 RNAV and RNP (Performance-based navigation)

GPI-6 Air Traffic Management Flow

GPI-7 Dynamic and flexible ATS route management

GPI-9 Situational awareness

GPI-12 Functional integration of ground systems with airborne systems

GPI-17 Data link applications

**1. Introduction**

1.1 ADS-B has been identified as an essential radar-like surveillance component in enhancing aviation safety and achieving efficiency objectives. It is also one of the well-known key enablers to bring tangible operational benefits to aviation stakeholders. Australia has been using ADS-B to provide radar-like aircraft separation service, while other States are using ADS-B to improve situational awareness and streamline ATC operations.

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1.2 With recent endorsement by ICAO Separation and Airspace Safety Panel (SASP) and the Regional Monitoring Agencies Coordination Group (RMACG), ADS-B data could now be used for monitoring height-keeping performance of RVSM approved aircraft. IATA expressed their support on the use of ADS-B for such a purpose in the RASMAG/16 held on 20-24 February 2012, while the Australian Airspace Monitoring Agency (AAMA) has also commenced this application.

1.3 The ICAO Regional Office has recently launched a comprehensive survey with APAC States to provide their ADS-B implementation plan for consolidation of a Regional ADS-B Implementation Plan. Taking advantages of current progress in ADS-B implementation in APAC Regions (see Attachments 1a and 1b), on top of providing enhanced and alternative means of surveillance, ADS-B offers potential significant cost-saving for height-keeping performance monitoring without imposing specific operational requirement for an aircraft to overfly a ground-based system or fit with an on-board data collection unit.

**2. Discussion***Sharing of ADS-B Data and Establishment of a Regional Database*

2.1 Apart from the use of ADS-B for surveillance and height-keeping monitoring, ADS-B data stream contains air traffic information enabling continuous measurement on individual aircraft, which is highly useful in determining aircraft group performance and altimetry system error (ASE) stability. When sharing of ADS-B data in the APAC Regions takes shape, a regional database storing safety monitoring results could be established based on ADS-B data collected from strategic geographical locations. Data analysis, correlation and trend analysis could be conducted enabling compilation of height-keeping deviation trends over major traffic flow (MTF) routes and busy airspace. The standard ADS-B format would enable a more complete and automated means for data collection to replace and/or supplement the existing Traffic Sample Data composed from States. This will certainly allow a more consistent data compilation methodology for assessment of collision risk on RVSM operations and possible track conformance monitoring over MTF in the Regions.

2.2 Despite various benefits, caution should be taken to eliminate the use of erroneous ADS-B data in various applications induced by onboard ADS-B avionics or GPS receivers. For safety reasons, such erroneous ADS-B data shall be screened out either from ATC for aircraft separation, or for height monitoring. With experience so gained and significant effort spent, Australia has recently migrated from maintaining a database of approved ADS-B aircraft (white list) to a simple list of aircraft transmitting erroneous ADS-B data (black list) based on the ADS-B mandates for aircraft flying in the Australian airspace. Through the regional database, States could better manage the ADS-B black list to enhance their ATC operations.

*Cooperation of CNS SG and RASMAG in Establishment and Management of the Database*

2.3 Currently, there is no mechanism on ADS-B data sharing for safety monitoring. Some monitoring agencies have to approach individual State for collection of ADS-B data. To reconcile this fragmented approach, it is useful for the CNS SG and RASMAG to commence early work and adopt a holistic approach in collecting and managing ADS-B information from States. A single or multiple parties/monitoring agencies could be established, with data exchange and/or synchronisation on regular basis, to build a regional database for analysing and promulgating monitoring results to States for information and action. For example, the State of Registry could make use of the results to follow-up with airline operators having problematic aircraft. The scheme could initially cover monitoring of aircraft height-keeping performance and blacklisting ADS-B

aircraft with erroneous data transmission, and further be expanded to cover safety monitoring of flights over MTF routes and busy airspace at a later stage.

**3. Action by the Meeting**

3.1 The meeting is invited to:

- a) support ICAO Regional Office in formulating a Regional ADS-B Implementation Plan based on inputs from States;
- b) agree on sharing of ADS-B data for improved safety monitoring;
- c) endorse the idea of establishing a regional database on aircraft height-keeping performance, blacklisted ADS-B aircraft transmitting erroneous data, and other useful monitoring results that could be derived from ADS-B data;
- d) give support for CNS SG to work closely with RASMAG with a view to determining the best arrangements for parties/monitoring agencies to upkeep and manage the regional database, with regular data exchange, and promulgate monitoring results to the States;
- e) give support for CNS SG to work closely with RASMAG to formulate a sustainable scheme of data sharing, identify and analyse data from strategic locations along MTF routes and over busy airspace; and
- f) seek assistance from the ICAO Headquarters for cooperation with other regions in exchanging safety monitoring results with other regions.

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