

## REVISED SURVEILLANCE STRATEGY FOR THE APAC~~ASIA/PACIFIC~~ REGION

### Considering that:

1. States are implementing CNS/ATM systems to gain safety, efficiency and environmental benefits, and have endorsed the move toward satellite and data link technologies;
2. The future air traffic environment will require increased use of aircraft-derived surveillance information for the implementation of a seamless automated air traffic flow management system;
3. The 11th Air Navigation Conference endorsed the use of ADS-B as an enabler of the global air traffic management concept and encouraged States to support cost-effective early implementation of ADS-B applications;
4. The 12th Air Navigation Conference endorsed the ICAO Aviation System Block Upgrades (ASBU) Framework with Modules specifying effective use of ADS-B/MLAT and associated communication technologies in bridging surveillance gaps and its role in supporting future trajectory-based ATM operating concepts. Cooperation between States is the key to achieve harmonized ATM system operations;
5. APANPIRG has decided to use the 1090MHz Extended Squitter data link for ADS-B air-ground and air-air applications in the Asia/Pacific Region, noting that in the longer term an additional link type may be required;
6. Use of surveillance systems that do not require GNSS ~~SSR and ADS-C~~ will continue to meet many critical surveillance needs for the foreseeable future;
7. SARPs, PANS and guidance material for the use of ADS-B have been developed;
8. Mode S and ADS-B avionics (including DAPs) and ~~ground~~ processing systems ~~are for these data~~ are available;
8. ~~Multilateration is a technology that can supplement SSR, ADS-B and SMR; and~~
10. ADS-B IN applications and equipment are now available in commercial airliners and ICAO ASBUs include ADS-B IN applications; -  
~~in Block 0, and Block 1. Block 2 and Block 3.~~
11. There are continuing significant pressures on the radio spectrum for purposes outside aviation, particularly in the primary radar spectrum; and
12. ADS-B security issues are addressed by the regional guidance material and may need to be further considered in the future.

13. ~~That aircraft operators and their representative organizations continue to argue that primary radars (or their future replacement) are is not required for civilian purposes for en-route surveillance.~~

**THE SURVEILLANCE STRATEGY FOR THE ASIA/PACIFIC REGION IS TO:**

1. Minimize the reliance upon pilot position reporting, particularly voice position reporting, for surveillance of aircraft;
2. Maximize the use of ADS-B on major air routes and in terminal areas, giving consideration to the mandatory carriage of ADS-B Out as specified in Note 1 and use of ADS-B for ATC separation service;
3. Reduce the dependence on Primary Radar for area surveillance, consider the ongoing need for primary radars in terminal areas, and the potential use of alternate technologies or procedures (e.g transponder veil regulations);
- 3.4. Encourage deployment of Mode S systems instead of Mode A/C only radars when replacement is required;
- 4.5. Provide maximum contiguous ATS surveillance coverage of air routes using 1090MHz Extended Squitter ADS-B, Wide Area Multilateration and Mode S SSR based on operational requirements;
- 5.6. Make full use of ~~SSR~~ aircraft Mode S capabilities **where suitable surveillance systems** are available ~~where radar surveillance is used and~~ to reduce reliance on 4-digit octal codes. Mode S capabilities such as DAPs should also be used to support ATM services where appropriate.↔
- 6.7. Make use of ~~ADS-C~~ alternative technologies (e.g. ADS-C) where technical constraint or cost benefit analysis does not support the use of ADS-B, SSR or Multilateration;
- 7.8. Make use of Multilateration for surface, terminal and area surveillance where appropriate and feasible.↔
- 8.9. Closely monitor ADS-B OUT ~~avionics~~ developments such as Version 2 (DO260B) equipage rate and ~~Version 2 ES (DO260B) implementation and~~ Space-d-bBased ADS-B application programs. At an appropriate time (circa 2018<sup>6</sup>) APAC States ~~should~~ review progress and consider development of transition plans where cost/benefit studies indicate positive advantages for the region; and
10. Carefully monitor ADS-B IN development and cost benefits to ensure that ~~ASIA~~/APAC States are able to take advantage of ADS-B IN benefits when appropriate, through procedures, rules and ATC automation capabilities.
11. To the extent possible, implement ~~ADS-B~~ in the non-radar environment as a priority. In the radar or other surveillance environment, use ADS-B to supplement or replace existing surveillance coverage, subject to local factors and risk assessment.

12. Monitor the outcomes of the Global Aircraft Tracking initiatives and ensure they are included in the Regional- strategy for implementation;

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13. Implementation of surveillance capability should also include consideration of contingency surveillance -requirements; and

9.14.

14. Monitor development of surveillance systems to support integration of RPAS (UAS) operations .

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**Note 1:**

- a) *Version 0 ES as specified in Annex 10, Volume IV, Chapter 3, Paragraph 3.1.2.8.6 (up to and including Amendment 82 to Annex 10) and Chapter 2 of Technical Provisions for Mode S Services and Extended Squitter (ICAO Doc 9871) (Equivalent to DO260) to be used till at least 2020.*
- b) *Version 1 ES as specified in Chapter 3 of Technical Provisions for Mode S Services and Extended Squitter (ICAO Doc 9871) (Equivalent to DO260A);*
- c) ~~*Version 2 ES (including provisions for new set of 1 090 MHz extended squitter (ES) messages and traffic information service broadcast (TIS-B) being developed by the Aeronautical Surveillance Panel (ASP) and scheduled to be incorporated in Annex 10 Vol. IV Surveillance and Collision Avoidance System as part of Amendment 86 with target applicable date in November 2013. (Equivalent to DO260B and EUROCAE ED-102A which were issued in December 2009)*~~ *Version 2 ES as specified in Chapter 4 of Technical Provisions for Mode S Services and Extended Squitter (ICAO Doc 9871) (Equivalent to DO260B).*