

ELEVENTH AIR NAVIGATION CONFERENCE

Montreal, 22 September to 3 October 2003

Agenda Item 1: Introduction and assessment of a global air traffic management (ATM) operational concept

1.2 Enabling concepts in support of the global ATM operational concept
:

ASIA/PACIFIC REGIONAL STRATEGIES FOR ADS-B IMPLEMENTATION

(Presented by Australia)

SUMMARY

ICAO's Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) established an Automatic Dependent Surveillance-Broadcast (ADS-B) Study and Implementation Task Force to establish direction for the implementation of ADS-B in the region.

The strategy that has been adopted for the Asia/Pacific Region focuses first on ground surveillance applications, particularly in areas that presently have no surveillance coverage, with a view to providing ADS-B based surveillance for air traffic control in these areas as early as the beginning of 2006.

Action by the conference is in paragraph 6.

REFERENCES

1. “Initial Automatic Dependent Surveillance-Broadcast (ADS-B) Applications for Global Interoperability”, AN-Conf/11-WP/41 presented by the United States.
2. “Initial Ground Surveillance and Airborne Surveillance Applications Enabled by ADS-B”, AN-Conf/11-WP/86 presented by Eurocontrol.
3. “Automatic Dependent Surveillance-Broadcast (ADS-B) Concept of Use”, AN-Conf/11-WP/6, presented by the Secretariat.
4. “United States Endorsement of Automatic Dependent Surveillance-Broadcast (ADS-B) Concept of Use”, AN-Conf/11-WP/66 presented by the United States.
5. “The UAT’s role in the United States FAA ADS-B link decision”, AN-Conf/11-IP/18, presented by the United States.
6. “Automatic Dependent Surveillance Broadcast (ADS-B) for Air-to-Ground Surveillance”, AN-Conf/11-WP/127, presented by Australia.

1. INTRODUCTION

1.1 The Asia and Pacific Regions, through the Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG), created an Automatic Dependent Surveillance — Broadcast (ADS-B) Study and Implementation Task Force to establish direction for the implementation of ADS-B in the region.

1.2 The APANPIRG ADS-B Task Force met in March 2003. Fifty-three experts from Australia, China, Hong Kong China, Fiji, India, Japan, New Zealand, Pakistan, Singapore, Thailand, United States, IATA, IFALPA and SITA attended the first meeting.

1.3 Australia, together with the other members of APANPIRG, subsequently reviewed and endorsed the conclusions of the Task Force at APANPIRG/14 in August 2003. A further meeting of the Task Force is planned for March 2004.

2. PLAN FOR ADS-B IMPLEMENTATION IN THE ASIA/PAC REGION

2.1 The Asia Pacific ADS-B Study and Implementation Task Force:

- a) identified near term applications of ADS-B in the ASIA/PAC Region;
- b) identified the associated near term benefits;
- c) unanimously recommended that Mode S extended squitter (1090 ES) be used as the data link for ADS-B radar like services in the ASIA/PAC Region in the near future;

- d) set a target date of January 2006 for the introduction in the ASIA/PAC Region of ground-based surveillance services based on “ADS-B out”; and
- e) urged ICAO to give priority to the inclusion of Standards for positional source data accuracy and integrity in ADS-B Standards and Recommended Practices (SARPs), and to the completion of separation standards for ADS-B surveillance.

2.2 The report of the work of the Task Force was adopted by the fourteenth meeting of APANPIRG held in August 2003. This meeting endorsed the recommendation that Mode S extended squitter be used as the data link for ADS-B in the ASIA/PAC Region, with the target date of January 2006.

3. COMPARISON WITH ADS-B PLANS FOR OTHER REGIONS

3.1 Reference 2, “Initial Ground Surveillance and Airborne Surveillance Applications Enabled by ADS-B”, AN-Conf/11-WP/86 presented by Eurocontrol, presents a “Roadmap of European ADS-B Applications”, divided into Packages 1, 2 and 3. Package 1 comprises five ground surveillance applications and seven airborne surveillance applications. The currently planned timescale for Package 1 in Europe is given as 2008 to 2012.

3.2 Reference 1, “Initial Automatic Dependent Surveillance-Broadcast (ADS-B) Applications for Global Interoperability”, AN-Conf/11-WP/41 presented by the United States, describes a proposed Package 1 of “Initial ADS-B Applications for Global Interoperability” comprising the same five ground surveillance applications and seven airborne surveillance applications.

3.3 The ADS-B implementation strategy identified for the ASIA/PAC Region is consistent with the applications identified in Package 1 described in AN-Conf/11-WP/86 and AN-Conf/11-WP/41, but brings forward the early introduction of ground-based surveillance applications in support of en-route and terminal area air traffic control in airspace not presently covered by radar. The standards for “ADS-B out” to support these applications are mature, allowing early implementation. This can occur ahead of the airborne surveillance applications listed in Package 1, for which some further work is required to complete the standards.

3.4 These applications are consistent with Reference 3, “Automatic Dependent Surveillance — Broadcast (ADS-B) Concept of Use”, AN-Conf/11-WP/6, presented by the Secretariat, and endorsed in Reference 4, “United States Endorsement of Automatic Dependent Surveillance-Broadcast (ADS-B) Concept of Use”, AN-Conf/11-WP/66 presented by the United States.

4. AVIONICS AVAILABILITY

4.1 Early implementation of ADS-B ground surveillance has been facilitated by the decision of aircraft and transponder manufacturers to include “ADS-B out” capabilities in the SSR transponder upgrades to meet the European mandates for Elementary and Enhanced Surveillance. This will result in aircraft operating through “core Europe” having ADS-B capabilities from 2005 onwards.

4.2 Many of these aircraft will also be flying through the Asia/Pacific Region. The date of January 2006 was chosen to leverage off the European mandate, and to provide aircraft operators with added early benefits from their investment in upgraded transponders when they are operating in the Asia/Pacific Region.

4.3 It has also been established that many of the new aircraft being purchased by airlines in the Asia/Pacific Region are being delivered with ADS-B installed as standard fit.

5. AUSTRALIAN IMPLEMENTATION PLAN

5.1 In line with the ASIA/PAC Regional strategy, Australia is commencing a programme to introduce, from the beginning of 2006, ADS-B based ground surveillance in the upper airspace over the large non-radar areas over the north and west of the Australian continent.

6. ACTION BY THE CONFERENCE

6.1 The conference is invited to:

- a) note that Mode S extended squitter (1090 ES) has been selected as the data link for ADS-B radar like services in the ASIA/PAC Region in the near future;
- b) note that the Asia Pacific Regional Strategy for ADS-B implementation focuses on very early implementation of ground surveillance applications in ADS-B Package 1, particularly in areas presently not covered by radar, and that this can bring significant safety and operational benefits in such airspace;
- c) note that the ground surveillance applications in ADS-B package 1 can be implemented in the immediate future, and do not have to be delayed until the standards for airborne surveillance applications have been completed;
- d) request ICAO to complete the development of separation standards for the use of ADS-B to provide air traffic control separation services; and
- e) request ICAO to include in the ADS-B SARPs requirements for ADS-B source data positional accuracy and integrity that will support the ADS-B separation standards.

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