



INFORMATION PAPER

FIFTH MEETING OF THE ALLPIRG/ADVISORY GROUP

(Montreal, 23 – 24 March 2006)

Agenda Item 2.1: Framework for global planning

A REGIONAL APPROACH TO ACCELERATE ADS-B IMPLEMENTATION

(Presented by SITA)

SUMMARY

This paper presents a high level summary of a recent initiative by the Australian air navigation service provider – Airservices Australia – and SITA to develop and promote a regional service provision model to accelerate ADS-B implementation and one that enables cross international FIR data sharing in the Asia and Pacific Regions. The ALLPIRG is invited to take note of the model adopted and take it into account as an ADS-B implementation option in other ICAO regions.

Action by ALLPIRG/5 is in paragraph 6.

1. INTRODUCTION

1.1 In September 2003 the 11th Air Navigation Conference adopted the following recommendation:

Recommendation 1/7 – Ground and airborne automatic dependent surveillance-broadcast (ADS-B) applications for global interoperability.

“That ICAO and States:

- a) recognize ADS-B as an enabler of the global ATM operational concept bringing substantial safety and capacity benefits;*
- b) support the cost-effective early implementation of packages of ground and airborne ADS-B applications, noting the early achievable benefits from new ATM applications; and*
- c) ensure that implementation of ADS-B is harmonized, compatible and interoperable with respect to operational procedures, supporting data link and ATM applications.”*

- 1.2 In August 2003, APANPIRG/14 adopted the following conclusion:

Conclusion 14/21 – Target date of ADS-B implementation

That States, where necessary to do so, be encouraged to implement “ADS-B Out” for ground based surveillance services in ASIA/PAC region on a sub-region by sub-region basis with a target date of January 2006.

- 1.3 In August 2004, APANPIRG/15 adopted the following conclusion:

Conclusion 15/26 – Exchange of ADS-B surveillance data with neighbours

That States be encouraged to share ADS-B surveillance data with neighbouring States and to develop mechanisms to achieve this as ADS-B ground infrastructure requirements are being identified during the design phase.

2. AIRSERVICES AUSTRALIA IMPLEMENTATION OF ADS-B

- 2.1 Airservices Australia is the first air navigation service provider in the world to proceed with the deployment of an ADS-B infrastructure across its entire domestic territory for operational surveillance of its airspace. This programme, referred to as the Upper Airspace Programme (UAP) includes:

- the deployment of dual redundant ADS-B receivers at twenty eight sites across Australian territory;
- the deployment required ground communications infrastructure;
- the upgrades to the air traffic management systems to receive, process and display ADS-B data;
- development of safety cases to utilise ADS-B data as a means of airspace surveillance;
- training of air traffic controllers to manage aircraft reporting their positions via ADS-B;

- 2.2 The initial operational capability of the ADS-B service is currently scheduled to be 1st quarter 2007.

3. ADS-B REGIONAL SERVICE PROVISION

- 3.1 ADS-B has similar performance to radar but is approximately 1/10th the cost to install and maintain. Basic ADS-B technology is now relatively mature and ADS-B receivers consume much less power than radar and have more installation flexibility. For example they can be installed on oil rigs and very small islands. ADS-B provides States and regions with an affordable electronic surveillance option with the potential to provide near seamless surveillance coverage of upper level airspace over land and for some distance off-shore.

3.2 Airservices Australia and SITA have recently established an Alliance that is developing and promoting the provision of regional ADS-B services to the air navigation service providers in the Asia and Pacific Regions as a means to accelerate ADS-B implementation in order to realise early safety, efficiency and operational benefits that the technology has the potential to deliver.

3.3 This service, that integrates Airservices' capabilities and experience with ADS-B in domestic airspace and SITA's experience as a global data link service provider, will enable the deployment of ADS-B in a timely, efficient, affordable and most importantly a uniform manner throughout the region.

3.4 The plan is to install ADS-B ground stations on selected SITA and/or air navigation service provider sites in the region. These sites will be connected to the SITA global network service and will therefore enable ADS-B data delivery to air navigation service providers both in the FIR and in adjacent State FIRs by agreement. It is envisaged that the service would be tailored to meet the needs of each air navigation service provider and could include assistance with the integration of ADS-B data into existing air traffic management systems along with associated safety assessment, procedure development and training.

4. CROSS FIR ADS-B DATA SHARING

4.1 Although the radars of some regional States can track aircraft in adjoining State airspace, there is limited exchange of real time aircraft position data between States on aircraft crossing adjoining flight information region (FIR) boundaries. Occasionally aircraft appear at the flight information boundaries at a time, altitude or in a position different than expected, resulting in safety concerns for airlines and air navigation service providers.

4.2 In most cases aircraft coordination errors at FIR boundaries can be effectively detected by an electronic surveillance capability. Radar is expensive and traditionally each State has located radars for optimum State FIR coverage, not optimum regional coverage because of sovereignty and security concerns. This has often resulted in overlapping surveillance system coverage and the inefficient use of resources from a regional interest view.

4.3 By deploying ADS-B ground stations at sites near FIR boundaries in an optimum way to minimize surveillance overlap and with the introduction of cross FIR data sharing mechanisms between States, effective surveillance can be provided at lower cost than each State installing ADS-B independently. Examples of possible sites from which such sharing could readily be achieved, include Norfolk Island (located within the Auckland FIR and adjacent to the Brisbane and Nadi FIRs), Christmas Island (within the Jakarta FIR and adjacent to the Melbourne FIR), and Port Blair (within the Chennai FIR and adjacent to the Kuala Lumpur, Yangon and Calcutta FIRs).

4.4 Cross FIR flight surveillance information exchange requires effective regional data communication networks and data exchange mechanisms that are neutral and do not compromise the sovereignty of individual States. SITA has been providing regional and global communication networks and flight critical surveillance data to the aviation industry on a neutral basis for many years. Therefore SITA, backed by Airservices ADS-B operational expertise, is well placed to provide a regional surveillance solution that does not compromise the sovereignty of individual States.

5. PILOT REGIONAL ADS-B TRIAL IN INDONESIA

5.1 The Directorate General Air Communications (DGAC) Indonesia is sponsoring the implementation of a pilot ADS-B trial in Indonesia. The Trial is supported by the Airservices/SITA Alliance and will involve the deployment of up to three ADS-B receivers at strategic sites on Indonesian territory as per Figure 1 below.

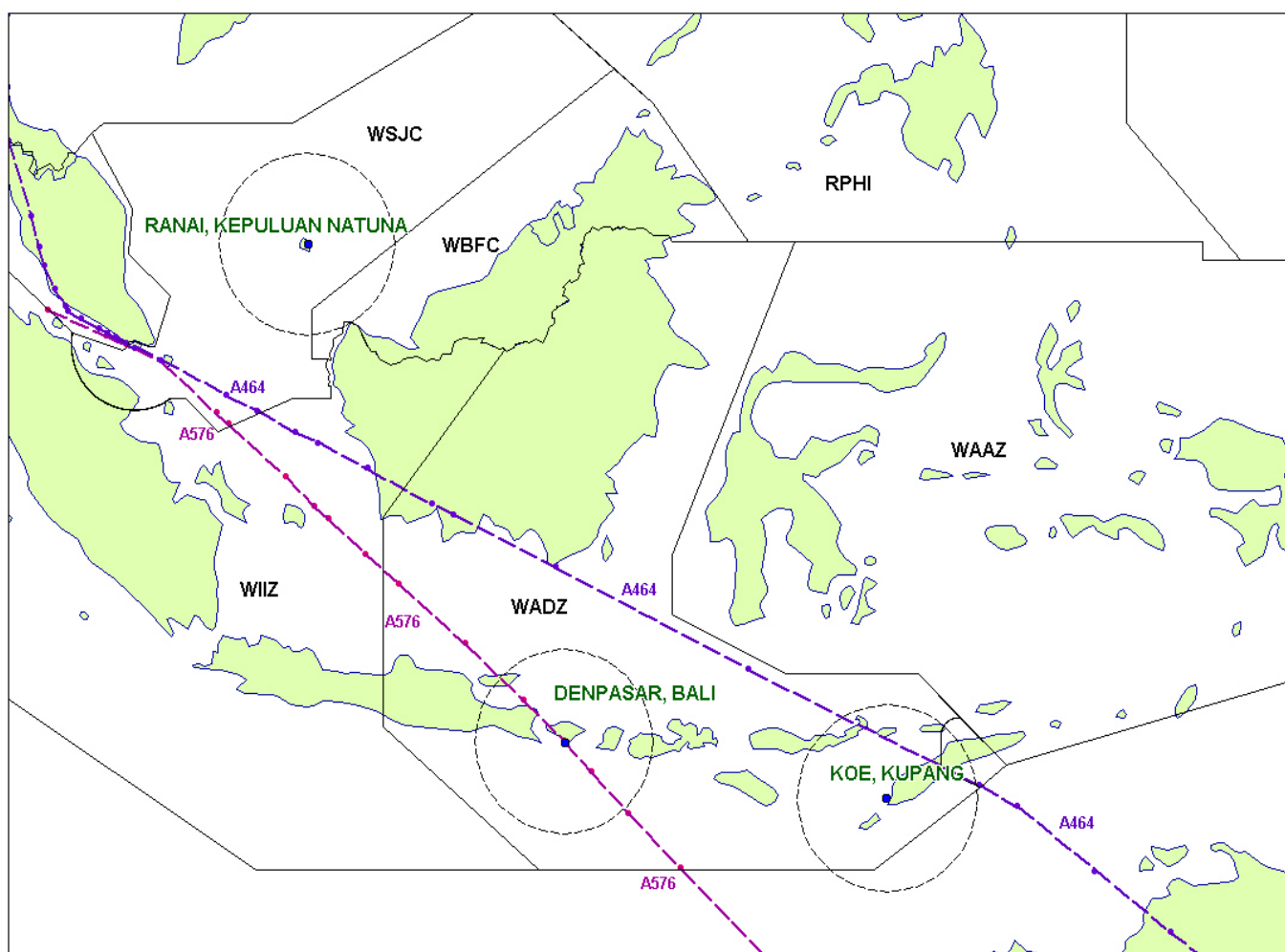


FIGURE 1 – DGAC INDONESIA ADS-B TRIAL SITES

5.2 The ADS-B data will be presented on stand-alone ADS-B displays in the Indonesian Area Control Centres in Makassar and Jakarta. In addition, in order to promote cross FIR border data sharing the DGAC Indonesia has agreed that ADS-B data received by the Natuna ADS-B receiver will be presented to the Singapore Area Control Centre and that received by the Kupang ADS-B receiver will be presented to the Brisbane Area Control Centre in Australia. Finally, DGAC Indonesia has also agreed to present all received data on an ADS-B display that will be installed at the regional ICAO office in Bangkok in order to demonstrate DGAC's promotion of regional co-operation and the benefits of airspace surveillance using ADS-B.

5.3 The Indonesian trial has the potential to expand to providing an operational ADS-B service across Indonesia and neighbouring States representing a significant shift in the provision of future regional CNS services. The trial has received much publicity in the recent aviation press and is supported by the Australian Minister of Transport and Regional Services as per Appendix A.

6. ACTION BY ALLPIRG

6.1 The ALLPIRG/5 Meeting is invited to note the regional approach to ADS-B service provision model being promoted in the Asia and Pacific Regions as an implementation option to be considered in all ICAO regions as a means to expedite the timely and uniform implementation of ADS-B enabled air traffic management.

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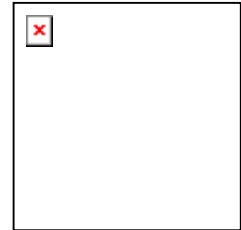
APPENDIX



MEDIA RELEASE

The Hon Warren Truss MP

Minister for Transport and Regional Services



16 February 2006

016WT/2006

NEW AIRSPACE SURVEILLANCE TECHNOLOGY TRIAL IN INDONESIA

The Indonesian Government is set to trial new airspace surveillance technology, developed by AirServices Australia in alliance with international airline data communications provider, SITA Inc., the Australian Government Minister for Transport and Regional Services, Warren Truss, announced today.

Mr Truss said the trial of new airspace surveillance technology, Automatic Dependant Surveillance-Broadcast (ADS-B), is set to commence in Indonesia by May 2006, under the Indonesian Directorate General for Air Communications.

“Around 60,000 international flights in and out of Australia travel through Indonesian airspace every year, 25,000 of which are Qantas flights,” Mr Truss said.

“This trial aims to improve air traffic safety in Indonesian airspace and promote flight data sharing across international boundaries.”

The sophisticated new technology involves aircraft broadcasting their positional data every second, which is received in radar-type format by ground-based ADS-B receivers and forwarded to Air Traffic Controllers.

“The new airspace surveillance system, ADS-B, provides an alternative to potential multi-million dollar investments in radar technology, realising savings of up to 90 percent and associated maintenance costs. It also significantly reduces the pressure on increasing air navigation service charges,” he said.

Mr Truss said ADS-B is well suited to countries with a large land mass and difficult terrain. Other countries in Asia and the Pacific will now also be able to sign up to use the new technology, he said.

“Wide-ranging take-up of the new system in the Asia-Pacific has the potential to accelerate co-operation in air traffic management system development in our region, and also to provide a model that can be useful to other regions such as Africa and Latin America.

“Australia is making plans to become the first country in the world to implement ADS-B technology nationally, which will provide radar-like service across the entire upper-level airspace by early 2007,” he said

Details of the alliance and the Indonesian trial were released today at the annual Air Navigation Services Provider conference, ATC Maastricht in The Netherlands.

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URL: http://www.ministers.dotars.gov.au/wtr/releases/2006/February/016WT_2006.htm

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