International Civil Aviation Organization

AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST SEMINAR AND ELEVENTH MEETING OF AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST (ADS-B) STUDY AND IMPLEMENTATION TASK FORCE (ADS-B SITF/11)

Jeju, Republic of Korea, 24-27 April 2012

Agenda Item 6: Review States' activities and interregional issues on trials and implementation of ADS-B and multilateration

SUCCESS OF ADS-B DATA SHARING BETWEEN INDONESIA AND AUSTRALIA

(Presented by Australia and Indonesia)

SUMMARY

Australia and Indonesia have developed and commissioned Automatic Dependent Surveillance Broadcast (ADS-B) data sharing. This capability has been operational for more than 12 months and feedback has been very positive.

1. Introduction

1.1 At **SEA ADS-B WG/4 (WP6)** Australia and Indonesia presented a proposal for an Automatic Dependent Surveillance Broadcast (ADS-B) data sharing project to improve safety and efficiency at the Flight Information Region (FIR) boundary between the two countries (specifically, between the Brisbane and Ujung Pandang FIRs).

1.2 Both Indonesia and Australia have extensive ADS-B coverage and display ADS-B data at operational positions. Australian ATC is authorised to use ADS-B for delivery of 5 nautical mile separation services to approved aircraft.

1.3 On 20 September 2010 Australia and Indonesia signed an ADS-B data sharing agreement for two years, which is automatically extended by a further two years unless the parties given written notice to terminate the agreement

1.4 Transition to full operation was achieved on 1 February 2011. ADS-B data from foreign FIRs is now on-screen in both Brisbane and Makassar ATC centres. Display of the foreign ADS-B dat increases situational awareness and supports safety nets. It is used to support procedural separation standards. It was expected to provide :

- reduced numbers of coordination incidents at the FIR boundary

- earlier detection of ATC and pilot errors (coordination errors, incorrect flight level, etc)

- technical and operational analysis of data in preparation for future application of radar like separation services

- increased support and confidence in data sharing to allow introduction of radar-like separation at the FIR boundary in a future phase

1.5 Over seventy percent (70%) of international flights crossing the FIR boundary between Australia and Indonesia are approved to receive ADS-B separation service in Australia.

1.6 On 27 March 2011, a successful EUROCAT-X upgrade at Ujung Pandang reconfigured the systrem to drop ADS-B data with a low accuracy indicator (FOM/PA below 5) and only display ADS-B data with FOM/PA more than 4 to ATC. This new configuration reduced the occurence of false STCA (Short Term Conflict Alert) warnings, which had caused ATC distraction. Before the configuration change, false STCAs were probably being generated between ADS-B tracks with good position data and other ADS-B tracks with poor ADS-B positional data and FOM/PA=0.

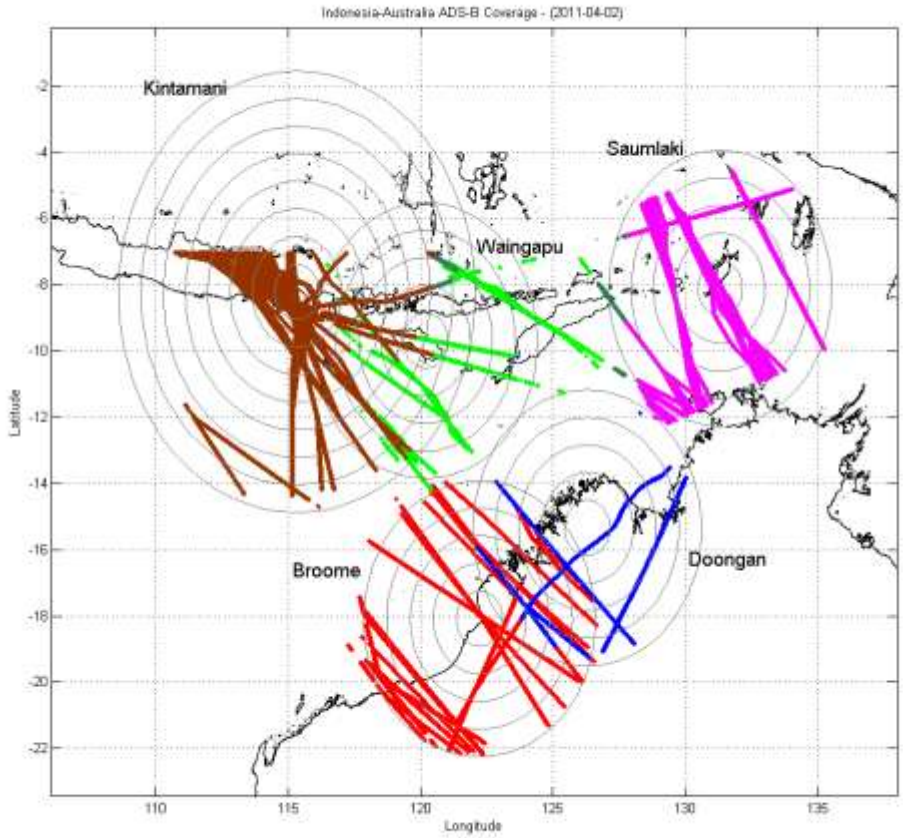
2. Post commissioning experience

2.1 Operational feedback in Australia has been very positive.

2.2 Soon after commissioning, the Indonesian ground station at Kupang was struck by lightning and was subsequently taken out of service. Indonesia agreed with Australia to quickly enable an additional ADS-B Ground station at Waingapu that was originally envisaged in Phase 1B of the data sharing program. Thus, the project has proceeded to partial transition to Phase 1B.

2.3 The new sharing environment is Gove / Thursday / Broome / Doongan from Australia and Merauke / Saumlaki / Kintamani / Waingapu from Indonesia. Kupang remains unserviceable.

2.4 The Waingapu coverage sometimes allows continuous coverage from Broome to Bali as shown below



2.5 Whilst phase 1B originally comprised Darwin (Australia) and Waingapu (Indonesia), Australia has not installed a ground station in Darwin because a new radar has been commissioned at this location. An alternate site, possibly on an offshore platform is being considered.

3. ADS-B Availability

3.1 From the Australian perspective, the availability and reliability of the ADS-B service delivered on the shared data link was measured. The service from Saumlaki & Kintamani well exceeded the requirements for situational awareness whereas Waingapu & Merauke had some longer outages.

3.2 AUSTRALIAN PERSPECTIVE:

- **Technical performance:** Whilst operating, the perfromance of the ground stations has been very good. In particular, the detection capability of Kintamani is exceptionally good.

- Only one issue has been identified - ADS-B data from some aircraft "on ground" is declared as good even when the aircraft is not equipped with GPS.

3.3 INDONESIAN PERSPECTIVE:

- **Technical performance :**

  - Performance and availability of all shared groundstations from Australia are very good.

  - Position of the aircraft which comes from ADS-B data and and Radar data show the same positions and have a good accuracy

4. ADS-B Operational Impact

4.1 AUSTRALIAN PERSPECTIVE

- Cross boundary ADS-B has allowed Australian ATCs to monitor aircraft approaching Australian airspace, and confirm operations are consistent with received coordination. Where aircraft are operating on weather diversions or at flight levels other than initially coordinated, the ADS-B display has permitted controllers to confirm crossing conditions with Indonesian ATC prior to the aircraft entering the Australian FIR

- The Indonesian ADS-B ground stations also provide coverage in the northern Oceanic Airspace (OCA) and therefore provide additional situational awareness and safety net alerting for aircraft in Australian airspace. The ADS-B data is used to establish and maintain non-surveillance separation standards, with reduced requirement for communications via HF radio or CPDLC.

4.2 INDONESIAN PERSPECTIVE

- Controller has reported that shared ADSB data from Australia has improved the situational awareness and reduce their workload in the boundary area. The quality and availability also reported as exceptionally good.

5. Next Phases

5.1 It is hoped that future phases will add more sites and extend the operational use of ADS-B at the FIR boundary.

5.2 Unfortunately, the Australian ATC system is limited in the geographic coverage size, and this will probably not be corrected before approximately 2018 when a new ATC automation system is commissioned. Until then, any additional ADS-B sites outside the current geographical constraints (eg Christmas Is) will not be able to be used in Australia and hence a business case for deployment will not succeed.

6. Recommendation

6.1 It is recommended that

a) the meeting note the success of ADS-B data sharing between Australia and Indonesia.

b) the meeting note that the benefits of data sharing will only be provided for ADS-B equipped aircraft; and

c) the meeting note the benefits of ADS-B data sharing, and recommend that other states consider deployment of ADS-B data sharing to achieve similar results.

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