



International Civil Aviation Organization

**FOURTEENTH MEETING OF THE
COMMUNICATIONS/NAVIGATION/SURVEILLANCE
AND METEOROLOGY SUB-GROUP OF
APANPIRG (CNS/MET SG/14)**



Jakarta, Indonesia, 19 – 22 July 2010

Agenda Item 6: Implementation of the CNS/ATM Systems in the Region

- 1) review outcome of Regulator's Workshop on ADS-B avionics equipage requirements and report of the Ninth Meeting of ADS-B Study and Implementation Task Force

**THE FIFTH MEETING OF THE SOUTH EAST ASIA SUB-REGIONAL ADS-B
IMPLEMENTATION WORKING GROUP**

(Presented by the Secretariat)

SUMMARY

This paper presents a précis of the Fifth Meeting of the South East Asia Sub-Regional ADS-B Implementation Working Group held from 21 to 22 January 2010 at the Mandarin Oriental Hotel, Jakarta, Indonesia.

This paper relates to

Strategic Objectives:

- A: Safety – Enhance global civil aviation safety
- D. Efficiency – Enhance the efficiency of aviation operations

Global Plan Initiatives:

- GPI-7 Dynamic and flexible ATS route management
- GPI-9 Situational awareness
- GPI-17 Implementation of data link applications
- GPI-22 Communication network infrastructure

1. Introduction

1.1 The Fifth Meeting of the South East Asia Sub-Regional ADS-B Implementation Working Group hosted by Directorate General of Civil Aviation (DGCA), Indonesia was held from 21 to 22 January 2010 at the Mandarin Oriental Hotel, Jakarta, Indonesia.

1.2 The meeting was attended by 57 participants from Australia, Cambodia, Hong Kong China, Indonesia, Malaysia, and Singapore, CANSO, IATA and representatives from industries.

1.3 The ADS-B SEA WG was established by APANPIRG/18 in 2007.

1.4. The Working Group reports to APANPIRG through ADS-B Study and Implementation Task Force.

2. Discussion

2.1 The SEA ADS-B WG/1 meeting developed Terms of Reference for the working group based on a proposal made by Singapore. The SEA ADS-B WG/3 meeting had reviewed the Terms of Reference of the SEA ADS-B Working Group which was revised to include “Coordination for implementation of the plan” as sub-paragraph c). In addition to the ADS-B ground stations, the requirement for provision of VHF radio communication service had also been identified and included in the TOR.

2.2 The SEA ADS-B WG/4 meeting recognized that the area of interest to the working group for sharing ADS-B surveillance data is not only limited to air space between Australia and Singapore, and South East Asia but also covered most part of South China Sea area, the working group agreed to invite other States that have interest to participate in the future meetings of the working group. The Secretariat was requested to invite China and Hong Kong China to the next meeting of the working group.

2.3 At SEA ADS-B WG/5 meeting, Hong Kong China informed the meeting that Hong Kong China will confirm later its readiness for joining the working group as a member.

2.4 While reviewing the TOR, the SEA ADS-B WG/5 meeting discussed following relevant issues:

- The meeting agreed that closer coordination and information sharing with relevant ATS TF or groups of APANPIRG for South China Sea area should be encouraged to achieve maximum operational benefit for increasing capacity and efficiency;
- With regard to the requirement to identify optimum coverage of ADS-B ground stations and associated VHF radio voice communication in the sub-regional FIR boundary area, CANSO noted that in the previous meetings, some States had informed the Working Group of their plans to install such facilities on an ad-hoc basis. It was considered useful if coordination was carried out early on a Sub-regional basis to ensure optimum coverage. In this connection, Singapore agreed to take lead to further develop a coverage chart based on additional information for review by the working group. The updated chart based on the available information was reviewed by the meeting and is provided in **Appendix B** to this Report.

Activities updates and Issues on Regional Trials

Indonesia

2.5 Indonesia informed the meeting that 27 ADS-B Ground stations with dual system had been installed at Makassar, Sorong, Natuna, Kupang, Merauke, Banda Aceh, Matak, Cilacap, Soekarno Hatta Airport-Jakarta, Tarakan, Pangkalan Bun, Palu, Kintamani - Bali, Waingapu, Alor, Galela, Ambon, Saumlaki, Medan, Pekanbaru, Palembang, Pontianak, Timika, Biak, Kendari, Manado, and Surabaya. Amongst which 18 Stations in the Eastern part of Indonesia are connected to Makassar Air Traffic Service (MAATS) ATM system and 9 ADS-B Ground Station in the Western part of Indonesia are linked to the Remote Control Monitor System (RCMS) in JAATS-Jakarta. The Test-Bed system at DGCA Headquarters is able to monitor and control the ADS-B Data from these 27 ADS-B Ground Stations.

2.6 MAATS-Makassar has been upgraded from Eurocat-X version 2.4 to version 3.15 integrating with ADS-B capabilities and was commissioned in December 2009. DGCA will establish Implementation Team for ADS-B implementation. Required regulations such as Operational Concept, Safety Assessment, ADS-B Procedure will be developed and introduced into CASR. For Near Term, DGCA has a plan to use ADS-B for Situational Awareness in MAATS Center. Cross FIR boundary operational data sharing has been identified as the initial application of ADS-B Services. Based on experience gained in using ADS-B for situational awareness, Indonesia will provide separation services using ADS-B.

2.7 The meeting congratulated Indonesia for the work completed and significant milestone achieved. In response to a query, it was clarified that ADS-B based separation service is expected to be provided in 2013. The meeting also supported the intension of Indonesia for ADS-B data sharing from which huge benefits could be derived.

Singapore

2.8 Singapore informed the meeting that the Civil Aviation Authority of Singapore (CAAS) installed an ADS-B station and an ADS-B data processor in Singapore on 7 December 2009. The installation will:

- a) complement the existing surveillance coverage by the Long Range Radar;
- b) allow Singapore to perform operational trial using ADS-B data; and
- c) complement the coverage of Indonesia and Vietnam through data sharing.

2.9 The ground station supplied by Comsoft GmbH supports ASTERIX Cat 21 versions 0.23, 0.26 and 1.3 with coverage of about 290 NM based on targets of opportunity. The ADS-B data processor can also process versions 0.23, 0.26 and 1.3 of ASTERIX Cat 21. The processing system is able to fuse ADS-B data from various sources and customized filtered dataset for each user.

2.10 It was also informed that the ADS-B data is currently used mainly for technical evaluation and familiarization. CAAS considers purchasing a stand-alone controller position to conduct operational trials, before the commissioning of the new ATM automation system in early 2012. Singapore is ready to share ADS-B data with other States.

Malaysia

2.11 Malaysia provided following updates:

- DCA Malaysia had a discussion with DGCA Indonesia at Special Coordination Meeting which was held in June 2009 regarding ADS-B data sharing from Banda Aceh for ATC surveillance in Bay of Bengal. The discussion is still on-going;
- Malaysia had started upgrading the ATM System which will be able to integrate all the surveillance data inclusive of ADS-B. The project is scheduled to be completed in April 2011;
- Malaysian airspace is covered by radar except for a small portion in the Bay of Bengal which at the moment is covered by ADS-C. Nevertheless DCA Malaysia has submitted in 10th Malaysia Plan to install ADS-B station and also upgrade and refurbish the present radars;
- DCA Malaysia expects the timeline for ADS-B mandatory equipage in Kuala Lumpur and Kota Kinabalu FIRs to be before 2020.

2.11.1 Malaysia was encouraged to advance planning for providing ADS-B based

surveillance service for its air space in BoB area.

Hong Kong, China

2.12 Hong Kong China reconfirmed its plan for:

- mandate ADS-B carriage, by end 2013 for aircraft flying over ATS routes L642/M771;
- mandate ADS-B carriage, by end 2014, for aircraft flying within Hong Kong FIR; and
- mandate ADS-B carriage, after 2015 to be confirmed, for low flying aircraft including general aviation aircraft and helicopters.

Cambodia

2.13 The meeting was informed that airspace of Phnom Penh FIR is covered by radar. Cambodia has no immediate plan for the implementation of ADS-B. With assistance provided by JICA, Cambodia has developed a master plan for CNS/ATM systems implementation including ADS-B. Cambodia has coordinated the implementation plan with neighboring States – Laos and Viet Nam. Cambodia has also initiated coordination with Thailand.

Review of sub-regional implementation plan

2.14 Singapore and Indonesia agreed to prepare a paper on further updates to the data sharing template based on experience gained in using the template for next ADS-B SITF meeting to be held in May 2010.

Australia-Indonesia Data Sharing Project

2.15 Australia and Indonesia provided an update on their data sharing project. Airservices Australia has approved Phase 1A. Indonesia's DGCA has also approved Phase 1A and an ADS-B Filter has been installed in MAATS, Makassar. The ADS-B Filter has been tested and integrated into the ATC System in MAATS (Eurocat-X). The tests were conducted between two States and the result of the test was successful. The need to re-establish satellite channel previously used between Bali and Brisbane had been identified.

2.15.1 The meeting noted that four ADS-B ground stations at Saumlaki, Merauke, Thursday Island and Gove have been installed and are operating. A draft agreement is in the final stage of co-ordination for signature by the two States. The draft is based on large part of the sample agreement developed by SEA ADS-B WG. The meeting noted the planned schedule of the projects and target dates of some specified milestone. Recognising that the agreement needs approval from Foreign and Defence Ministries of Indonesia, the meeting encouraged DGCA to make every effort to get it approved by the authorities as early as possible.

2.15.2 It should be clarified that no issue of sovereignty is involved as the data derived from aircraft has been shared in ADS-C applications for years. The difference between ADS-C and ADS-B is updating rates. It is not like radar data which may involve liability concerns. The target date of using ADS-B data for situational awareness and safety nets by ATC is set for 2010 for Australia and 2011 for Indonesia. The expected outcome and benefits of the project Phase 1A are as follows:

- reduced numbers of safety incidents at the FIR boundary;

- earlier detection of ATC and pilot errors (co-ordination errors, incorrect Flight level etc);
- increased support and confidence in data sharing to allow introduction of radar-like separation at the FIR boundary in a future phase; and
- technical & operational analysis of data in preparation for future application of radar like separation services.

2.15.3 The project is expected to extend to Phase 1B and possibly Phase 2. The Phase 1A shall be operational before requesting approval to commence phase 1B which would comprise following additional sites:

Australia: Darwin, Broome, Doongan

Indonesia: Waingapu, Kintamani, Kupang

(All these stations are already operational except Darwin)

2.15.4 The Phase 2 would transit to radar-like separation when both parties have in place suitable infrastructure such as duplicated data communication links and DCPC capability. The meeting appreciated the progress made by the two States and supported the continued execution of the project.

Updates on ADS-B Data Sharing in South China Sea area

2.16 Singapore updated the implementation plan in the South China Sea area. Indonesia, Singapore and Vietnam have been jointly working on the installation of ADS-B ground stations and VHF radios. Discussions were also held between the parties concerned on the ADS-B data sharing and the use of the VHF radio facilities at other party's premises. It was explained that confirmation to the final version of the paper was not received from Viet Nam.

2.16.1 ADS-B operations will be implemented in the Singapore FIR in 2 phases. In Phase I, ADS-B operations will apply to ATS routes **L642 and M771** while other ATS routes in the Singapore FIR could be covered in Phase II. ADS-B operations will be exclusive and applicable between FL310 and FL410. Aircraft intending to operate in ADS-B airspace will need to be ADS-B equipped and certified accordingly. The task list and proposed milestones to achieve this is shown in **Appendix C** to this Report.

2.16.2 CANSO congratulated Indonesia, Viet Nam and Singapore for the project and for coming up with the project timeline and milestone so that all parties could work towards timely completion of the project. It was further stated that this was an excellent example of regional collaboration involving multiple ANSPs which would pave the way for the wider implementation of ADS-B in the ASIA/PAC Region.

2.16.3 IATA supported efforts made by the three States to enable ADS-B data and DCPC capability sharing. IATA totally endorsed the proposed steps and emphasized the very important role of the project with clear timelines. Member Airlines are expecting to receive early benefits as best equipage should be able to receive best service.

2.16.4 The meeting supported task and milestones as specified in the paper and provided in the **Appendix C**. States concerned were urged to progress the project according to the proposed timelines. Indonesia informed the meeting that JAATS will be ready by the end of 2012.

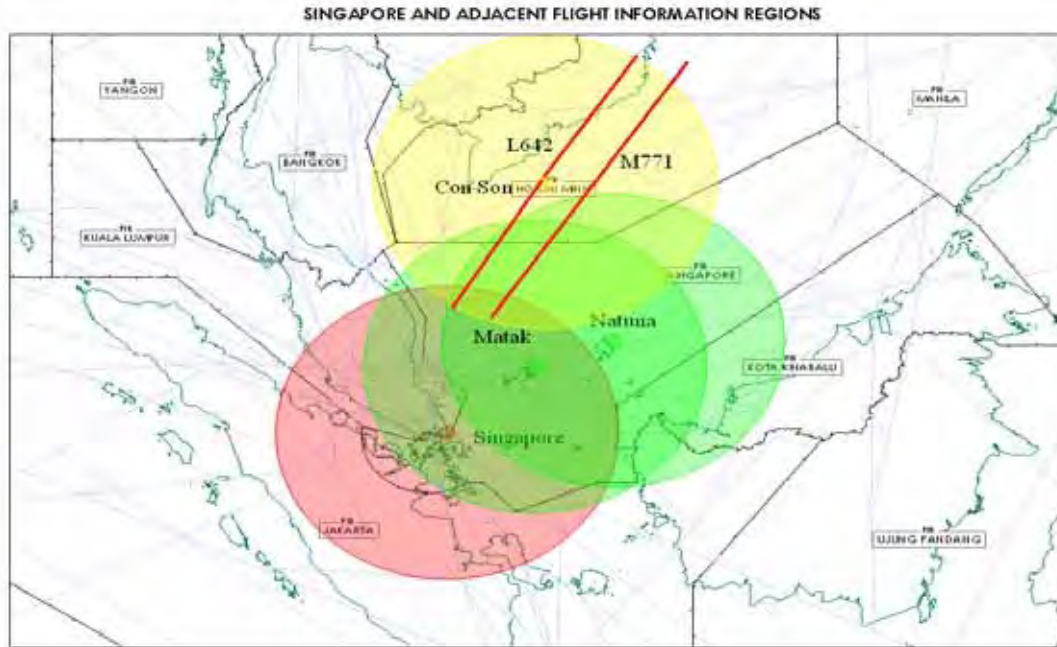
Time and Venue of the Next Meeting

Singapore would host the Sixth Meeting of the SEA ADS-B Working Group in early 2011.

3. Action required by the Meeting

3.1 The meeting is invited to note information provided in this paper and efforts being made by SEA ADS-B WG currently focusing Phase I, ADS-B operations which will apply to ATS routes **L642 and M771**. ADS-B operations would be applicable between FL310 and FL410.

SEA ADS-B WG/5
Appendix C to the Report



TASKS AND PROPOSED MILESTONES FOR THE SOUTH CHINA SEA PROJECT

- A) Installation of ADS-B ground stations
 - i) Natunas and Matak - completed
 - ii) Singapore - completed
 - iii) Con Son - 2H 2010

- B) Installation of VHF stations and links
 - i) Natunas and Matak - 2H 2010 (for 1 frequency without equipment redundancy) and 1H2011 (for 2 frequencies with equipment redundancy)
 - ii) Conson - 2H 2010

- C) Signing of ADS-B data and VHF radio facility sharing agreement
 - i) Between Indonesia and Singapore - 1H 2010
 - ii) Between Vietnam and Singapore - 2H 2010

- D) Conduct of Safety Assessment - 2H 2010

- E) Signing of LOA between Ho Chi Minh and Singapore ACCs - 2H 2010

- F) Issue AIP Supplement on aircraft equipage mandate - 2H 2010

- G) Integration with Singapore ATC system - 2H 2011

- H) Conduct of ADS-B monitoring - 1H 2011

- I) Operational trial without priority - 2H 2011

- J) Priority for suitably-equipped aircraft and Phase II - 2H 2012

- K) Implementation of ADS-B operations - 1H 2014

Note: the Proposed Milestones is subject to final confirmation from Viet Nam.