International Civil Aviation Organization

ELEVENTH MEETING OF THE SOUTHEAST ASIA AND BAY OF BENGAL SUB-REGIONAL ADS-B IMPLEMENTATION WORKING GROUP (SEA/BOB ADS-B WG/11)

New Delhi, India 17 – 19 November 2015

Agenda Item 3: Review implementation and co-ordination activities and sub-regional implementation plans

3.7) Review outcome of Ad-hoc Working Group at previous meetings

OUTCOME OF THE TENTH MEETING OF SOUTH-EAST ASIA BAY OF BENGAL SUB-REGIONAL ADS-B IMPLEMENTATION WORKING GROUP (SEA/BOB ADS-B WG/10)

(Presented by Secretariat)

SUMMARY

This paper reviews the outcome of the Tenth Meeting of the South-East Asia and Bay of Bengal Sub-regional ADS-B Implementation Working Group.

1. Introduction

1.1 APANPIRG/18 in 2007 agreed to establish a South-East Asia sub-regional ADS-B implementation working group (SEA ADS-B WG) and adopted Conclusion 18/38.

1.2 The following meetings of the WG have been held:

- SEA ADS-B WG/1 15-16 November 2007 in Singapore
- SEA ADS-B WG/2 27-29 February 2008 in Bali, Indonesia
- SEA ADS-B WG/3 2-3 July 2008 in Putrajaya, Malaysia
- SEA ADS-B WG/4 9-10 February 2009 in Melbourne, Australia
- SEA ADS-B WG/5 21-22 January 2010 in Jakarta, Indonesia
- SEA ADS-B WG/6 24-25 February 2011 in Singapore
- SEA/BOB ADS-B WG/7 28-30 November 2011 in Chennai, India
- SEA/BOB ADS-B WG/8 5-7 December 2012 in Yangon, Myanmar
- SEA/BOB ADS-B WG/9 30 Oct. - 1 Nov. 2013 in Beijing, China
- SEA/BOB ADS-B WG/10 11-13 November 2014 in Singapore
- SEA/BOB ADS-B WG/11 17-19 November 2015 in New Delhi

1.3 One day Seminar on space based ADS-B was organized in conjunction with the SEA/BOB ADS-B WG/10 meeting. 70 participants from Australia, Bangladesh, China, India, India, Indonesia, New Zealand, Pakistan, Singapore, Sri Lanka, Thailand, Viet Nam, CANSO, IATA and IBAC participated in the Seminar and the meeting. Representatives from ENAV and NAVCANADA contributed the events. Industry from Aireon, Thales Alenia Space and GomSpace also provided input to the Seminar.

1.4 The whole report of the meeting is available on the ICAO APAC website: http://www.icao.int/APAC/Meetings/Pages/2014-SEABOB-ADSBWG10.aspx

2. Discussion

2.1 The SEA/BOB ADS-B WG/10 meeting reviewed the outcome of APANPIRG/25 on ADS-B related discussions.

Review of sub-regional implementation plans based on discussions at SEA/BOB ADS-B WG/10 meeting as follows:

ADS-B and MLAT Implementation Plan in Bangladesh (IP/02)

2.2 The meeting was informed that Bangladesh had undertaken a Public – Private Partnership project that included installation of primary and secondary surveillance radars (PSR and SSR) at Dhaka and Chittagong, and 4 ADS-B ground stations at Dhaka, Cox's Bazaar, Barisal and Saidpur. The ADS-B installations were intended as both a backup to current and proposed radar systems, and to fill the surveillance coverage gap in the Bay of Bengal area.

2.3 The project also included a Multilateration (MLAT) system at Dhaka to provide surveillance for surface movement control, supplemental TMA coverage and as a backup to SSR.

2.4 Surveillance data from ADS-B, PSR/SSR and MLAT systems would be integrated with the new ATM automation system. The project was expected to be completed by December 2017.

2.5 Bangladesh was willing to share ADS-B data and VHF air/ground communications with neighboring States.

Update on ATC Surveillance Activities in Australia (IP/03)

2.6 Australia provided updates on ATM surveillance activities including the Australian Mode S Terminal Area Radar Replacement (AMSTAR) project and En-Route Radar Replacement Project (ERRP), the Wide Area Multilateration (WAM) systems in Tasmania and Sydney, and the Advanced Surface Movement Guidance and Control Systems (A-SMGCS) at Melbourne, Sydney and Brisbane.

2.7 33 ADS-B sites were currently operational, and additional ADS-B data was received from operational WAM systems. 13 new ADS-B ground stations were planned to be installed from 2014 to 2016, together with improvements to the digital communications network carrying ADS-B data from the ground stations to ATC centres.

2.8 The Defense Radar Filter (DRF) Project was progressively transitioning data from military-operated radars that were used for civilian ATC purposes to a new IP-based radar data communications system.

2.9 An update in figure and table forms were provided on ADS-B equipage rates for aircraft operating above F285 before and after the effective dates of equipage mandates.

2.10 The next significant date would be the introduction of a a mandate for the carriage and use of ADS-B for all aircraft operating within 500NM East/North of Perth to enhance ATC services in Western Australia, and for all aircraft operating at A-SMGCS airports to have Mode S. This applies in Australian airspace (domestic and foreign aircraft) from 4th February 2016.

ADS-B Implementation Plan in Sri Lanka (IP/05)

2.11 The meeting was informed of Sri Lanka's ADS-B implementation plan, including the establishment of 5 ADS-B ground stations. A central processor for distribution of received ADS-B data, including the capability for sharing ADS-B data with neighbouring States, was also planned. Stand-alone Air Situation Displays (ASDs) would initially be used, with ADS-B data later integrated into the Colombo Area Control Centre and Bandaranaike International Airport ATM systems.

2.12 It was estimated that the ground stations and central processor would be ready for operational trials by 4th Quarter 2014. An AIC on the introduction of ADS-B services within TMA of Colombo FIR had been issued on 10 November 2014 (A02/14) with effective date from 1 September 2015.

ADS-B Implementation in Sanya FIR (IP/06)

2.13 China informed the meeting that in order to provide ADS-B based surveillance capability for ATS routes L642 and M771 to achieve seamless implementation, China undertook an implementation ADS-B project in Sanya FIRs. The project includes four ADS-B ground stations, ATM Automatic system upgrading, ADS-B information network and GPS RAIM system. The structure and configuration of the system was introduced. It was also clarified that ADS-B trial operations was provided and the ATM Automatic System was being upgraded to be integrated with ADS-B input. It was further informed that Sanya FIR was covered by SSR.

Indonesia Updates

2.14 It was informed that Indonesia planned to mandate ADS-B equipage from 25 June 2015 for 3 ATS routes: B472, M768, R592, subject to safety assessment process. IATA commented that this was different from the existing AIP SUPP (for a defined air space), and urged Indonesia to at least issue a NOTAM to promulgate the amended requirements.

Update on the ADS-B Collaboration Project in the South China Sea (WP/12)

2.15 Singapore presented the progress of the South China Sea collaboration project among Indonesia, Singapore and Vietnam and announced that it has been operationalised. The separation between aircraft were reduced from 50NM to 40NM on 12 Dec 2013 and further reduced to 30NM on 24 Jul 2014. It is expected that the separation will be further reduced in 2015. Singapore also highlighted some issued faced during the implementation. These issues include the difficulties faced when doing the safety case for ADS-B under radar environment.

Benefits of Cross Border ADS-B Data Sharing (WP/10)

2.16 Singapore presented the benefits of cross-border data sharing. The benefits include improved situation awareness for ATC as the controller is able to detect unreported deviations and get better traffic information. With the implementation of ADS-B, longitudinal separation between

suitably equipped aircraft has been reduced from 50NM to 30NM. More aircraft is assigned their optimum heights. Less greenhouse gases were emitted due to better fuel efficiency.

2.17 The meeting recalled that previously, CANSO together with CAAS, FAA and IATA conducted a cost benefit study on the South China Sea collaboration project, based on projected figures and several assumptions. In view that the project is now operational, the meeting recommended that a similar cost benefit study should be done based on actual figures.

2.18 Accordingly, Singapore agreed to work with CANSO, FAA and IATA to examine the previous cost-benefit study with a view to quantifying the benefits and dis-benefits of the ADS-B mandate. As follow-up, papers were prepared for ADS-B SITF/14 and DGCA Conf/52.

Review of outcome of South East Asia (SEA) and Bay of Bengal (BOB) Sub-regional Projects

2.19 The meeting reviewed the updates of the Sub-regional ADS-B implementation projects as presented by the Ad Hoc working groups at SEA/BOB WG/10 meeting. The discussions were based on the outcome of previous meetings of the SEA/BOB WG/9. The outcome of discussions by Ad Hoc working groups is consolidated in **Attachment A to** this paper which could serve as a basis for further development of the sub-regional implementation plans at its next meeting.

2.20 The meeting urged India and Myanmar to sign the agreement on data sharing by the end of 2014.

2.21 IATA suggested that Philippines' intentions for ADS-B implementation were not clear, and that this was a significant component of South China Sea surveillance improvement. In this connection, meeting may wish to note the information presented by the Philippines to ADS-B SITF/14 meeting in April 2015. (Summary is shown below)

ADS-B Implementation Plan of the Philippines (IP/22 to ADS-B SITF/14)

2.22 A new CNS/ATM system development project was currently being implemented, including the installation of terminal and en-route radars, ADS-B, ADS-C, and microwave and VSAT links, was in progress.

2.23 An ADS-B ground station would be installed in the Manila ATM Centre and trial operations were expected to commence in Q4 of 2016. 3 Additional ground stations at Palawan, Pangasinan and Ilocos Norte were under study and programmed to be integrated with the ATM Center by the end of 2016.

Monitoring of the ADS-B stations and the avionics (WP/11)

2.24 Singapore presented her monitoring of the ADS-B stations and the avionics. It was observed that while the performances of the ADS-B stations are good enough for operations, the performance is nowhere close to the theoretical figure. Singapore shared that, about 90% of the airframes were equipped with DO-260 avionics, about 6% were equipped with DO-260A avionics and 4% were equipped with DO-260B avionics.

2.25 In October, an aircraft indicated good NUC while the showing misleading position data. It was observed that initially, the ADS-B data reflected the correct position. When the aircraft made a turn at a way-point, the ADS-B data indicated that the aircraft was still travelling straight. The transponder corrects this error only after more than 30NM of misleading data. Air service Australia

has reported the problem to Boeing and Boeing is conducting the investigation with the support of Australia, Canada and Singapore. Australia advised that this anomaly was had been observed in one new aircraft only, and had been rectified by replacement of the aircraft's integrated surveillance equipment. The relevant avionics parts were sent back to Boeing for analysis. (Action Item, provided feedback to States/Administrations).

ATC Procedures for Surveillance Anomalies (WP/07)

2.26 Australia presented the paper sharing their operational ATC procedures to ensure overall system integrity through the systematic identification and reporting of radar or ADS-B anomalies.

2.27 Australia agreed to prepare working papers and a tutorial on the reporting and analysis processes, and recommendations, for consideration by next meeting of the ADS-B SITF The meeting also discussed the need to update the Regional ADS-B Implementation and Operations Guidance Document (AIGD). Australia, Singapore and Thailand would jointly address this task, with Singapore agreeing to take the lead role.

ADS-B Implementation Related Issues (WP/08)

2.28 India identified some issues in the working paper related to regulatory approval for use of ADS-B. While analysis of ADS-B data had indicated that the latest ATM automation systems were equipped with robust checking and alerting functions, the regulatory authority's interpretations of potential vulnerabilities had impeded ADS-B implementation.

2.29 India suggested that those States that had approved ADS-B for operational use could share their experience in the context of potential vulnerabilities, to best practices to be considered by other States seeking regulatory approval. The meeting was invited to consider that ADS-B SITF should develop guidance material addressing potential vulnerabilities, to support States' regulatory framework for operational use of ADS-B.

2.30 The meeting discussed security vulnerabilities, including the need to ensure that the safety benefits of ADS-B were not sacrificed for overly conservative responses to perceived vulnerabilities that already existed in other surveillance systems. It was further mentioned that State laws should have already provided legal protecting safety services from security threats.

Updates on ADS-B Implementation in Hong Kong China (IP/04)

2.31 Hong Kong China was unable to participate in the meeting. The following updates on the latest development were provided to the meeting through the Secretariat.

2.32 Implementation of ADS-B operation in Hong Kong FIR was re-scheduled to December 2016. An AIP Supplement was issued on 29 August 2014 to notify airspace users on the change.

2.33 Regarding the proposal to establish an ADS-B Avionics Problem Reporting Database (APRD) for sharing of monitoring results of avionics performance of ADS-B aircraft for the region, Hong Kong China has been working with the ICAO RSO to develop detailed specifications of the database, as well as a prototype to illustrate the look-and-feel of the database, with inputs/comments from Singapore and Australia. During the CNS SG/18 meeting held in July 2014, Hong Kong China presented a working paper outlining the proposal and progress in establishing the APRD with a view to enhancing aviation safety for the Region, which gained support and endorsement from the

meeting. A Discussion Paper would be presented in the coming 51st DGCA Conference to provide the latest update while seeking support from the Conference.

Future Focus of the Working Group (WP/09)

2.34 A proposed future direction for the SEA/BOB ADS-B WG was presented by Singapore. The paper noted that while many States had either implemented or commenced implementation of ADS-B, the progress of regional collaboration was slow. Since establishment of the Working Group 7 years ago it had identified at least 8 collaboration projects. Only 4 collaboration agreements had been made and implemented, involving only 6 Administrations (Australia, China, Hong Kong China, Indonesia, Singapore and Viet Nam).

2.35 The Working Group discussed the possible areas of focus for the Working Group in future. It was noticed that while several data-sharing projects were identified in the past, the implementation progress has been slow. Data sharing is the key to provide seamless ATM and is therefore important. The Working Group discussed and was of the view that it would be useful if ICAO could highlight the importance of data-sharing to the top management of administrations.

2.36 The meeting also noted that there were a lack of separation minima standards for ADS-B with CPDLC and ADS-B with "DCPC" type (i.e., without operators) of Satcom voice, in remote areas. The availability of such standards would provide benefits to the aviation community. In view of this, the Working Group formulated the following draft conclusion:

Draft Conclusion SEA/BOB ADS-B WG 10/4 – Need guidance on separation Minima

That, ICAO (SASP) be invited to study the separation minima that can be applied using ADS-B with CPDLC and ADS-B with "DCPC" type (i.e., without operators) of Satcom voice in remote area space outside the range of VHF voice communications of the responsible ATC unit.

This Draft Conclusion was not considered by APANPIRG/26 as the ATM SG/3 meeting did not endorse it.

2.37 With the emerging of space-based ADS-B, it would also be useful to study its application in the Asia Pacific region. For benchmarking individual system's performance, it would be necessary to work out the required ADS-B performance standards. The Working Group formulated the following draft Decision:

Draft Decision SEA/BOB ADS-B WG 10/5 – Study the application of space based ADS-B

That, the ADS-B SITF Task Force be invited to

a) study the application of space-based ADS-B in the Asia Pacific region; and

b) develop recommendations on the required performance standards for ADS-B.

This draft Decision was considered and accepted by the ADS-B Study and Implementation Task Force.

2.38 It was noted in the paper that some States may have faced a number of challenges including political, resource, ATC automatic system upgrading and communication between ANSPs.

2.39 It was also informed that OPLINK Panel (Operational Data Link working group) was developing the concept of Performance Based Communications and Surveillance (PBCS), for which the Working Group or the ADS-B Study and Implementation Task Force could establish a list of Required Surveillance Performance (RSP) specifications for ADS-B, with consequent monitoring of performance against the specifications. Navcanada recommended that the WG may also consider to develop operational concept of using combinations of different communication means with ADS-B such as CPDLC and SATCOM Voice which would contribute study by relevant panel at global level.

2.40 The member Administrations participated meeting provided their view on the future direction and focus of the WG. Some common points included the following:

- *Based on current TOR, focusing on phase II of South China Sea. Documented case studies of successes and of problems and solution;*
- *Addressing of operational approval for using ADS-B based surveillance service issues with DGCA;*
- *Continue efforts on data sharing and collaborations projects;*
- *Identification of implementation issues and solutions;*
- *Clear distinction of roles between WG and SITF, and ensuring WG won't do unnecessary duplication work with other groups;*
- *Better documentation of the challenges and successes for the benefit of other States that could learn from the world-leading work of Asia/Pacific;*
- *Need to study using ADS-B to replace SSR, with a view to making recommendations to States with little resources.*

2.41 The meeting discussed the need for greater understanding and engagement by regulatory authorities. It was recommended that a seminar oriented specifically towards regulator education and guidance should be organized.

Review of Terms of Reference of the SEA/BOB ADS-B Working Group (WP/03)

2.42 The meeting reviewed the ToR of the SEA/BOB ADS-B Working Group. Based on the discussions on WP/09, the meeting agreed to slightly amend the ToR to include "to identify implementation issues and to propose solutions for the identified issues". Accordingly, the meeting made a Decision on adoption of the revised TOR.

2.43 SEA/BOB ADS-B WG/9 meeting developed a readiness checklist which was reviewed by the ADS-B SITF/13 meeting (Appendix L to the Task Force meeting report) and noted by CNS SG/18 meeting. This checklist provided in **Attachment B** to this paper is considered useful and requires further updates by the meeting.

3. Action by the meeting

3.1 The meeting is invited to:

a) refresh relevant issues progressed by the SEA/BOB ADS-B WG/10 and ADS-B SITF/14 meetings;

b) review the outcome of Ad Hoc Groups meetings further updated during ADS-B SITF/14 meeting as provided in **Attachment A**.

c) update the readiness checklist initially developed by the SEA/BOB WG/9 which is provided in **Attachment B**.

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REPORT FROM SOUTHEAST ASIA AD HOC WORKINGN GROUP

New Zealand, 14-17 April 2015

The South East Asia updated at ADS-B STITF/14 meeting.

States Present

Australia
China
Indonesia
Singapore
The Philippines
Hong Kong China
Macau China

Previously Identified Projects

The South East Asia Group provide an update on the near term implementation of the following projects that were identified in the last task force meeting.

Project 1 – ADS-B Data Sharing Between Australia and Indonesia

Phase 1a
Indonesia and Australia sharing data from the following stations:

- Saumlaki ADS-B (Indonesia) (Installed)
- Merauke ADS-B (Indonesia) (Installed)
- Waingapu ADS-B (Indonesia) (Installed)
- Kintamani - Bali (Indonesia) (Installed)
- Thursday Island ADS-B (Australia) (Installed)
- Gove ADS-B (Australia) (Installed)
- Broome ADS-B (Australia) (Installed)
- Doongan ADS-B (Australia) (Installed)

Data Sharing Agreement signed in Nov 2010;
Benefits
Data used for air situational awareness and safety nets.
Enhanced Safety at FIR boundary.
Operational service commenced by Australia in Feb 2011.
Indonesia has been using the data for Tier 2 services since Sep 2014

Phase 1b
Indonesia and Australia sharing data from the following additional stations:

- Semarang (Indonesia) (Installed) – Target to commence data sharing by end 2015
- Alor (Indonesia) (Installed) – Target to commence data sharing by end 2015
- Timika (Indonesia) (Installed) - Commenced data sharing
- Kupang (Indonesia) (Installed) - Commenced data sharing
- Christmas Island (Australia) (Not yet installed)
- Timor Sea oil rig (Australia) (Not yet installed)

Data Sharing Agreement signed on 18 Jun 2014;

Indonesia published mandate on 24 July 2014 for situation awareness. The effective date of this mandate is from 18 Sep 2014 to 25 June 2015. Subsequently, Indonesia published mandate on 30 April 2015 for ADS-B operations (Tier 1 services) above FL290. The effective date of this mandate is from 25 June 2015.

Project 2 – ADS-B Data Sharing In South China Sea

Phase 1
Under the near term implementation plan, China, Hong Kong China, Indonesia, Singapore and Vietnam have commenced ADS-B data sharing the ADS-B data from the following stations:

- Singapore ADS-B (Singapore provide data to Indonesia)
- Natuna ADS-B (Indonesia provide data to Singapore)
- Matak ADS-B (Indonesia provide data to Singapore)
- Con Son ADS-B (Viet Nam provide data to Singapore)
- Sanya FIR ADS-B (China provide data to Hong Kong China)

VHF radio communication services (DCPC) were provided from the following stations to Singapore and Hong Kong China. This is to enable implementation of radar-like separations in the non-radar areas within the Singapore FIR as well as routes L642 and M771.

- Natuna VHF (Install for Singapore by Indonesia) (Installed)
- Matak VHF (Install for Singapore by Indonesia) (Installed)
- Con Son VHF (Install for Singapore by Viet Nam) (Installed)
- Sanya VHF (Install for Hong Kong China by China) (Installed)

ADS-B Data sharing and DCPC services agreement between Singapore and Indonesia signed in Dec 2010.
ADS-B Data sharing and DCPC services agreement between Singapore and Vietnam signed in Nov 2011.
DCPC services agreement between China and Hong Kong China signed in 2005.
ADS-B Data sharing agreement between China and Hong Kong China signed in 2013.

Operational Status
Singapore agreed on separation minima with Vietnam and have commenced on ADS-B operations. Singapore updated they have commenced 30nm separation between Singapore and Ho Chi Minh FIR. The plan is to further reduce to 20nm separation.

All 4 administrations (China, Hong Kong China, Singapore and Vietnam) agreed that operational approval is not required.

Initial Benefits
The above sharing arrangement will benefit L642, M771, N891, M753, N892 and L644. Enhanced safety and reduced separation has been applied. Mandate was effective in Singapore FIR 2013. Sanya will publish Mandate with effect from Jul 2015.

Phase 2
The Philippines will install 4 ADS-B stations (Manila, Palawan, Pangasinan and Ilocos Norte). These ADS-B stations are targeted to complete by end 2016

Singapore signed an MOU with the Philippines to share ADS-B data from the Philippines.

The proposed site at Quezon Palawan is not able to provide surveillance for Singapore FIR effectively. Singapore requested the Philippines to explore alternative sites which will be able to provide coverage at the North Eastern area of Singapore FIR.

The Philippines indicated that there is a surveillance gap at north western of Manila FIR. China mentioned that ADS-B stations in Sanya FIR will be able to cover part of the surveillance gap. China is prepared to share ADS-B data with neighbouring states. The Philippines will explore with China on data sharing. Technical details will be discussed further.

Brunei signed an MOU with Singapore agreeing in principal to share ADS-B data with Singapore and provide the VHF facilities for Singapore ATC use. The Brunei CNS ATM project includes ADS-B stations. The locations of the stations are yet to be determined.

Phase 3
Vietnam has ADS-B coverage at the Southern part of L625 and N892 and Vietnam is willing to share the ADS-B data with the Philippines and Singapore.

Project 3 – ADS-B data sharing between Indonesia and Malaysia

Indonesia and Malaysia are willing to share the ADS-B data from the following stations:

- Aceh ADS-B (Indonesia) (installed) - to help cover Kuala Lumpur FIR
- Genting (Malaysia) – To be installed by 2019

The project is still under discussion between Malaysia and Indonesia.

Initial benefits
Enhanced Safety at FIR boundary

Malaysia currently has one ADS-B station at Terrengganu. Malaysia is willing to share the ADS-B data from Terengganu station with Singapore for technical evaluation. Malaysia plans to install more ADS-B stations before 2020. The data from the stations may be shared in future.

Project 4 – ADS-B data sharing between Cambodia, Thailand and Viet Nam
(no updates, info based on previous reports)

Cambodia is willing to share the ADS-B data from the following stations:

- Phnom Penh International Airport ADS-B (installed)
- Siem Reap International Airport ADS-B (installed)
- Stung Treng City ADS-B (installed)

Vietnam is planning to install stations in the south of HCM FIR from 2015 to 2016. Vietnam is willing to share with Cambodia and Thailand.

Discussions between the three States are on-going.

Initial benefits
For redundancy

Project 5 – ADS-B data sharing between Indonesia and the Philippines

Indonesia is willing to share the ADS-B data from the following stations:

- Manado ADS-B (installed)
- Galela ADS-B (installed)
- Tarakan ADS-B (installed)

Where possible, Indonesia would like to receive ADS-B data from the Philippines from ADS-B stations near the Manila FIR – Ujung Pandang FIR boundary. Currently, the Philippines has no plans to install ADS-B stations at the South-eastern part of Manila FIR.

The project is still under discussion between Indonesia and the Philippines.

Initial benefits
Situational awareness

Project 6 – ADS-B data sharing between Australia, Indonesia and Papua New Guinea

Data Sharing between Australia and Papua New Guinea

- Thursday Island (Australia) (installed)
- Gove (Australia) (installed)
- Kintore (Australia) Not yet installed – Target to be installed by 2018
- Burns Peak – Port Moresby (PNG) (tender awarded)
- Mt Dimo Dimo (PNG) (tender awarded)
- Mt Robinson (PNG) (tender awarded)

Data Sharing between Indonesia and Papua New Guinea

- Burns Peak (PNG) (tender awarded)
- Mt Nauwein (PNG) (tender awarded)
- Mt Robinson (PNG) (tender awarded)
- Merauke (Indonesia) (installed)
- Timika (Indonesia) (installed)
- Biak (Indonesia) (installed)

The project is still under discussion between Australia, Indonesia and Papua New Guinea. They will probably sign a three-party agreement for data sharing.

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Harmonization Plan for L642 and M771			
No.	**What to harmonize**	**What was agreed**	**Issue / what needs to be further discussed**
1	Mandate Effective	SG, HK, VN: 12 Dec 2013 CN: Jul 2015.	
2	ATC Operating Procedures	No need to harmonize	Refer to SEACG for consideration of the impact of expanding ADS-B surveillance on ATC Operating Procedures including Large Scale Weather procedures.
3	Mandate Publish Date	No need to harmonize	To publish equipment requirements as early as possible.
4	Date of Operational Approval	All states agreed that there is no need for operational approval	
5	Flight Level	SG, HK, VN: - At or Above FL290 (ADS-B airspace) - Below FL290 (Non-ADS-B airspace) CN: To be confirmed SG: AIC issued 28 Dec 2010, AIP Sup issued 6 Nov 13 VN: AIP Sup issued 31 Oct 13 HK: AIC issued 24 May 2011, AIP Sup issued 29 Oct 13	
6	Avionics Standard (CASA/AMC2024)	SG,HK,VN,CN allow CASA or AMC2024 or FAA (ES) SG, HK and VN confirmed that their ADS-B GS can accept DO260, DO260A and DO260B.	States should include supplement to include the FAA standard. Status for CN to be confirmed. Indonesia is planning to upgrade their stations by end

			of 2016
7	Aircraft Equipage		
7a)	Procedures if Aircraft not equipped with a Serviceable ADS-B Transmitting Equipment before Flight	SG: FL280 and below. HK, CN, VN: Dependent on situation. ADS-B equipped aircraft will be given priority to operate above FL280.	
7b)	Aircraft equipped Approved but Transmitting Bad Data (Blacklisted Aircraft)	For known aircraft, treat as non-ADS-B aircraft. (China, Hong Kong - China and Singapore)	Share information on aircraft observations among concerned States/Administration.(Hong Kong China, Singapore and Vietnam) China to be confirmed.
8	Contingency Plan		
8a)	Systemic Failure such as Ground System / GPS Failure	Revert back to current procedure.	
8b)	Avionics Failure or Approved Aircraft Transmitting Bad Data in Flight	Provide other form of separation, subject to bilateral agreement. From radar/ADS-B environment to ADS-B only environment, ATC coordination may be able to provide early notification of ADS-B failure.	Address the procedure for aircraft transiting from radar to ADS-B airspace and from ADS-B to ADS-B airspace.
9	Commonly Agreed Route Spacing	SEACG	Need for commonly agreed minimal in-trail spacing throughout.

REPORT FROM BAY OF BENGAL AD HOC WORKING GROUP
(Singapore, 12-13 November, 2014)

States Presented:

Bangladesh
India
Indonesia
Pakistan
Sri Lanka
Thailand

Maldives and Myanmar were not present in the WG meeting.

The participants met to update the status of implementation of ADS-B and possible Data sharing between the neighboring States.

1. Bangladesh has planned to install ADS-B ground stations at four locations i.e. Dhaka, Barisal, Saidpur and Cox's Bazar by 2H2016. Bangladesh is willing to share ADS-B data with India and Myanmar.

2. India informed that 21 ADS-B ground receivers have already been installed and AIP SUPP has been prepared to use ADS-B in the provision of ATS surveillance service. The AIP Supplement will be issued once the approval for operational use of ADS-B data for surveillance is obtained from the regulator. The data sharing agreement between India and Myanmar can be signed by 2H2014. India is willing to share ADS-B data with Bangladesh, Indonesia, Maldives and Sri Lanka.

3. Indonesia informed that ADS-B ground station at Aceh is already operational and will share data with India (Portblair – Aceh) by 2H2015.

4. Maldives has installed and commissioned ADS-B ground stations at three locations. The integration of data to the ATM systems has already been completed. Maldives is willing to share ADS-B data with India and Sri Lanka (Expected date: 2015). Also, Maldives has planned to implement exclusive ADS-B airspace at and above FL290 by 2016.

5. Nepal is planning to install ADS-B ground stations in future. New MSSR system is going to install and the project will be completed by 2015. MLAT is under the process for a tender.

6. Pakistan has informed the meeting that most of the Pakistan airspace currently is already under RADAR surveillance; some gaps in the West, Northern mountain regions and some portion in the South and the South-West airspace need to be brought under positive feasibility or surveillance. PCAA considers ADS-B, a potential option to fill up the gaps in radar surveillance and also considers using ADS-B to provide partial back-up to the existing radar. Regarding data sharing neighboring countries will be coordinated through PCAA.

7. Sri Lanka is planning to install ADS-B ground stations at five locations and the system will be ready for test operations by October, 2015. AIC has been recently issued. Sri Lanka is willing to share data with India and Maldives.

8. Thailand informed that a new ATM system with capability of processing ADS-B data is expected to be operational in 2017.

ADS-B DATA SHARING

The following locations for data sharing were agreed upon during the sub-group (Ad hoc) Meeting:

INDIA – BANGLADESH
Agartala and Dhaka (2H2016)

BANGLADESH – MYANMAR
Coxs Bazaar and Sittwe (2H2016)

INDIA – MYANMAR
Agartala – Sittwe (2H2015)
Portblair – Coco Island (2H2015)

INDIA – INDONESIA
Portblair – Aceh (2H2015)

INDIA – MALDIVES
Trivandrum – Kulhudhuffushi (2H2015)

MALDIVES – SRI LANKA
Male – Colombo (2H2016)

INDIA – SRI LANKA
Trivandrum – Colombo (2H2016)

Following three States updated information at ADS-B SITF/14 meeting.

States Present: Pakistan

Malaysia
Thailand

Bangladesh, India, Maldives, Nepal, Sri Lanka and Myanmar were not present in the meeting

The participants met to update the status of implementation of ADS-B and possible data sharing between the neighboring States.

1. Bangladesh has planned to install four ADS-B ground stations at Dhaka, Barisal, Saidpur and Coxs Bazaar by 2H2016. (**Note**: Information as presented at the ADS-B SITF/13)

2. India informed that 21 ADS-B ground receivers have already been installed and AIP SUPP has been published to use ADS-B in the provision of ATS surveillance service. The data sharing agreement between India and Myanmar can be signed by 2H2014. (**Note**: Information as presented at the ADS-B SITF/13)

3. Maldives has installed and commissioned ADS-B ground stations at three locations. The integration of data to the ATM systems has already been completed. Maldives is willing to share ADS-B data with India and Sri Lanka (Expected date: 2015). Also, Maldives has planned to implement exclusive ADS-B airspace at and above FL290 by 2016. (**Note**: Information as presented at the ADS-B SITF/13)

4. Nepal is planning to install ADS-B ground stations in future. New MSSR system is going to install and the project will be completed by 2015. MLAT is under the process for a tender. (**Note**: Information as presented at the ADS-B SITF/13)

5. Pakistan informed that it has invited open tender action for procurement of five ADS-B Ground Stations for installation at Pasni, Lakpass, Rojhan, Dalbandin and Laram-top. The contract is expected to be finalize by the end of 2015. The objective is to provide ADS-B coverage in areas where there is no or limited Secondary Surveillance Radar (SSR) coverage. The data from the above ADS-B ground stations will be integrated with existing ATM systems at both Area Control Centres in Karachi and Lahore. Pakistan expects the ground stations to be DO-260B compliant and operational by the end of 2016.

6. Malaysia is currently in the progress of building new Air Traffic Control Centre for KL FIR and upgrading current CNS/ATM System, including installing two ADS-B ground stations. The project is expected to be completed by the end of 2019.

7. Thailand informed that ADS-B Ground Stations (DO-260B compliant) have been installed in Thailand for internal research and development project. ADS-B is planned to be part of future surveillance infrastructure. New ATM System with the capability of processing ADS-B data is expected to be operational in 2017.

IFALPA – a pilot's perspective (extracted from Pacific ad hoc group during ADS-B SITF/14)

Acknowledged that ADS-B delivers that cost effective surveillance system that provides significant benefits to airline users and operators. Education is required for some operators: pilots need to understand the implications of ADS-B being on or off; and some operators are good at educating crew while others need to do more.

Terminology used in the region should be standardised and consistent, and recognise what crew need to know.

States need to develop procedures for the use of DAPS in relation to operating procedures, for example the use of selected altitude information being displayed on the controllers' screens and related pilot practices: pilots and controllers need to be aware of each other's operating practices.

The QNH error detection feature is an important safety net feature particularly when conducting a non-precision approach.

There is a need to consider the capture, storage, and potential uses of ADS-B data. For example, in some states those data might be used to draw premature conclusions about the causes of an accident or incident and result in inappropriate or unwarranted enforcement action. In addition, there were concerns about who can access ADS-B data and for what purposes. Examples of inaccurate data being used by members of the public to make complaints about aircraft flight paths and noise impost are a concern.
System redundancy was highlighted as an issue in an environment increasingly dependent on GNSS.

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READINESS CHECKLIST TABLE

Readiness	AUS	SING	INDO	VIET	CHINA	HK	INDIA	MAL	BAN
ADS-B targets displayed on operational ATC screen?	✓	✓	✓	SEP	✓	○	✓	Nov13	✓
Blacklist filtering system & procedures	✓	✓	○	○	TBC	✓	○	✗	✓
Foreign Filter system and Datasharing capability/willingness	✓	✓	✓	✓	TBC	✓	✓	✗	✓
ATC procedures & ATC training 7 ATC manual	✓	✓	○	✓	✓	○	✓	✗	✓
Maintenance support contract or arrangements	✓	✓	○	✓	TBC	✓	✓	✓	✓
Maintenance staff training & certification	✓	✓	✓	✓	TBC	○	✓	✓	✓
Mandate & process for ADS-B avionics failure	✓	✓	○	✓	✓	✓	○	✗	✓
Extensive publicity about mandate	✓		○	○	✗	✓	○	✗	✓
Recording, monitoring, analysis and feedback capability?	✓	✓	✓	✓	TBC	✓	✓	✓	✓
Avionics installer community engaged (GA &/or Bizjet)	✓		○	○	TBC	Biz	○	✗	NA
Contacts in Airlines, A/C Manufacturers, Avionics Co	✓	AL	○	AL	○	✓	✓	✓	A/L
Regulator & ATC management of Exemption flights inc state aircraft	✓	✓	○	○	✓	✗	○	✗	TBD
Fitment rate (do NOT include NUC=0 aircraft)	>90%	75	NA	60	85	85	60	75	
Remove display if without "operational approval"	✗	✗	✗	✗	✗	✗	○	✗	✗
AIP SUP or AIC	✓	✓	○	✓	✗	✓	soon	✗	✓
Flight ID correction & pilot performance	✓	✓	○	○	✓	○	✓	✗	✓
Has State given operational approval to own aircraft	✗	✓	✗ will	✓	✓	✓	✗ will	TBD	✗ will
Airline Flight planning OK	✓	✓	○	✓	○	○	○	adhoc	✓