International Civil Aviation Organization

Twenty Ninth Meeting of the Communications/ Navigation and Surveillance Sub-group (CNS SG/29) of APANPIRG

Bangkok, Thailand, 16-20 June 2025

Agenda Item 8: Surveillance

8.1 Review Report of Tenth Meeting of the Surveillance Implementation Coordination Group (SURICG/10)

OUTCOME OF THE TENTH MEETING OF THE SURVEILLANCE IMPLEMENTATION COORDINATION GROUP (SURICG/10)

(Presented by the Secretariat)

SUMMARY

The paper presents the discussions and relevant outcomes of the Tenth Meeting of the Surveillance Implementation Coordination Group (SURICG/10) for meeting review.

1. INTRODUCTION

1.1 The Tenth Meeting of the Surveillance Implementation Coordination Group (SURICG/10) was held at the ICAO APAC Regional Office, Bangkok, Thailand, from 21 – 23 April 2025. The Meeting was attended by **53** participants from **18** Member States/Administrations and **1** International Organizations. The Meeting report, working papers, information papers, and other resources can be accessed by the following link:

https://www.icao.int/APAC/Meetings/Pages/2025-SURICG10.aspx

1.2 This paper summarized relevant information and updates with the highlight on the reviewed outcomes of SURICG/10.

2. DISCUSSION

2.1 The summary of discussions in the Meeting is given in the following paragraphs.

Review of Relevant Meetings - Sec (WP/02)

2.2 The Co-Chair shared information about a recent event, the ICAO APAC Radio Navigation Symposium, which was held in New Delhi, India, from 07-09 April 2025. The theme of the Symposium was ***GNSS RFI: Collectively Bridging Gaps and Shaping the Path Forward*** and that the symposium aimed to provide a collaborative platform to exchange experiences and insights on GNSS RFI, analyze its impact and challenges and facilitate in-depth discussion on mitigation measures and future development to build a resilient aviation system. It was added that Singapore presented *ADS-B spoofing and mitigating measures* in the symposium, and the symposium developed recommended actions to guide future efforts in managing GNSS RFI.

Outcomes of ADS-B Implementation Workshop for APAC LDCs - Sec (WP/03)

2.3 The paper presented the key outcomes of the ICAO APAC ADS-B Implementation Workshop, which was held from 14 to 16 August 2024 in Bangkok, Thailand. The SURICG/10 Meeting shared its appreciation to the ICAO APAC Office, New Zealand and Singapore for organizing and supporting the Workshop and recommended organizing more events in the future. Lao PDR shared that the event helped them resolve some of the key issues faced last year related to ADS-B implementation. It was added that the ICAO Secretary provided extensive support to the Lao PDR, following up on the request made during the Workshop and for the ADS-B Go Team's needs analysis. Lao PDR informed that it is soon going to share more details with the ICAO Secretariat about the ADS-B Go implementation team's scope of work requested by Lao PDR.

Finalization of APAC Common SWIM Information Services – Sec (WP/17)

2.4 According to the outcome of the SWIM survey conducted in 2022, it was recommended that a list of the common set of SWIM information services for APAC be developed. SWIM TF Task Leads on Information Services undertook the work, in coordination with relevant subject matter experts, to identify the types of information to be exchanged via APAC SWIM and propose the necessary business functionality to be supported by APAC Common SWIM Information Services for addressing the operational needs in APAC.

2.5 The SURICG/10 Meeting reviewed the proposed initial set of APAC Common SWIM Surveillance Information Services→**Surveillance data sharing services**. With assistance from Hong Kong China, the list was modified and further consulted with SURSG/4 delegates by email. After incorporating all inputs, the ***final list of APAC Common SWIM Surveillance Information Services*** was prepared by the SURICG/10 meeting, that would be considered by the SWIM TF/10 to finalize the list of APAC Common SWIM Information Services.

2.6 It was added that the proposed list could be considered by SWIM TF/10 for publishing the first APAC Common SWIM Surveillance Information Services. In addition, SURSG will review the list and provide further updates, if any, to publish in the next version of APAC Common SWIM Surveillance Information Services. **ACTION ITEM 10-1**

Outcomes and lessons learned from the Joint Event of SWIM over CRV demonstration and surveillance data sharing in the SWIM trial - Hong Kong China (WP/04)

2.7 This paper presented the outcome and lessons learned from the Joint Event of SWIM over CRV Demonstration and Surveillance Data Sharing in SWIM Trial, conducted by Surveillance Sharing in SWIM Trial Implementation Group (S3TIG) in Hong Kong, China, from 28 - 29 May 2024. For the Joint Event, several potential SWIM services were devised and demonstrated, covering the full spectrum of existing SWIM data exchange models and the proposed surveillance data exchange models. To showcase the operational benefits brought by SWIM, S3TIG identified **three operational scenarios** with a higher probability of realization as SWIM use cases for demonstration. A 2-tier hierarchical architecture, as proposed by the SWIM Implementation Pioneer Group (SIPG), was adopted for the Joint Event. S3TIG designed three data exchange models for sharing surveillance data over SWIM, along with the corresponding message headers.

2.8 The lessons learned from the Joint Event included both the SWIM and CRV perspectives. The Meeting learned that message headers/metadata, including the names of the fields and format of the contents, must be properly considered and standardized to maintain interoperability within the region and across different regions. It was noted that the 2 Mbps bandwidth tentatively offered to each State/Administration in the pseudo-CRV and adopted by most States/Administrations is insufficient for sharing surveillance data at a 1-second data rate for some States/Administrations,

depending on their FIR traffic volume and their roles in sharing or consuming ADS-B surveillance data within the SWIM environment in the future. This situation necessitates subscribing to a higher CRV bandwidth.

Outcome of SURSG/4 - Sec (WP/05)

2.9 The Fourth Meeting of the Surveillance Study Group (SURSG/4) was held in Hong Kong, China, as an In-Person Meeting from 30 to 31 May 2024, after the Joint event of SWIM over CRV Demonstrations and Surveillance data sharing over SWIM trial from 28-29 May 2024 in Hong Kong, China. The SURSG/4 Meeting recalled SURSG's journey since its establishment and reviewed its work plan. The Meeting deliberated on the proposed plan and updated the timelines and deliverables of the remaining tasks. The SURSG/4 Meeting discussed the proposed framework of guidance material and requested volunteers to lead the work on the draft of guidance material. The SURSG/4 also discussed the outcomes of the Joint event and agreed to dissolve the S3TIG. Hong Kong China shared the outcomes of the Study on bandwidth used for ADS-B data being transmitted on SWIM CRV. The SURSG/4 Meeting discussed the date and venue of the next SURSG Meeting. It was advised that the SURSG could work on the remaining deliverables offline and coordinate by email. The next SURSG Meeting should be held after completing all remaining deliverables. The Meeting agreed that the next Study Group Meeting could be conducted online or in person based on the anticipated level of discussion.

Progress update of SURSG - Hong Kong China (WP/06)

2.10 Hong Kong China shared the progress of the work of SURSG after 2024. It informed that after the successful conduct of the Joint Event of SWIM Demonstration over CRV and surveillance data in SWIM trial held in Hong Kong China, from 28 – 29 May 2024, SURSG has started to prepare the last deliverable of the Study Group (i.e., guidance material), based on the proposed framework. The complete draft is planned to be ready by mid-2025 to seek further comments from SURSG members. The finalized version is targeted for endorsement by SURICG/11 in 2026. During the discussion of the next meeting date of SURSG, it was stated that the next Meeting will be planned before the SURICG/11 Meeting in 2026. **ACTION ITEM 10-2**

Review of SUR information in CNS TABLES in e-ANP Vol II - Sec (WP/07)

2.11 The ICAO Secretariat summarized the need for review and update to the TABLE CNS II-3- SURVEILLANCE specified in ICAO APAC e-ANP Vol II by APAC States / Administrations. It reminded States/Administrations to review the data affecting their administration and provide feedback to ICAO on the data's accuracy in the requisite format to update the relevant CNS requirements in all volumes of e-ANP. The SURICG/10 Meeting discussed the significance of updated information in the Asia-Pacific Regional Air Navigation Plan and adopted the **Draft Conclusion SURICG/10/01-** Update the TABLE CNS II-APAC-3 for CNS SG/29 adoption. It will be presented to CNS SG/29 for adoption by WP/17.

Progress on ADS-B planning and implementation

2.12 The Meeting reviewed the reports on the Sub-regional ADS-B implementation plan/projects presented by BOB and SEA Ad Hoc working groups, which were led by India and Singapore, respectively. The reports updated by BOB and SEA Ad Hoc groups are provided in **Appendices A and B,** which could serve as a basis for further development of the sub-regional implementation plans and follow-up actions for coordination by States/Administrations.

2.13 The SURICG/10 Meeting reviewed the updated table on ADS-B Data Sharing Implementation Status, in which states and administrations provided updates during the ad-hoc working group sessions. The updated table is provided in **Appendix C** of this paper.

ADS-B Equipage and Quality Performance Observed in Thailand (IP/05)

2.14 This paper provided a brief summary of observed NIC/NACp values to assess the performance quality of aircraft using ADS-B in Thailand, along with ADS-B equipage status in Thailand. Thailand informed that since September 2024, seven ADS-B ground stations have been installed and integrated into the Air Traffic Management Automation System (ATMAS) in Thailand to enhance the efficiency, flexibility, and coverage of ATS surveillance within the Bangkok Area Control Center and selected Approach Control Centers. It was added that to address concerns regarding ADS-B performance within the Bangkok FIR, the Aeronautical Radio of Thailand, AEROTHAI (Thailand's ANSP), has initiated a monitoring program to assess ADS-B quality indicators at each ADS-B station.

2.15 This paper focused on ADS-B reports (ASTERIX CAT021) collected over a one-year period in 2024 of four ADS-B receivers, with site monitor reports excluded. ADS-B messages encompassed positional performance indices (NIC and NACp) whose values were analyzed, but the information concerning avionics installation issues (SDA, SIL, NACv) was not used to evaluate the performance of aircraft. Thailand presented statistical results for all collected ADS-B data that indicated that the ADS-B position quality met/not meet the requirements of 14 CFR 91.227. Thailand also presented the coverage of 12 SSRs and 4 ADS-B systems within the Bangkok FIR, along with displaying the intersection coverage of SSRs and ADS-B, which were used to evaluate the number of ADS-B-equipped aircraft within the FIR.

ADS-B Performance Monitor under Development at ENRI - Japan (IP/06)

2.16 Japan introduced an ADS-B performance monitor that is currently being developed at ENRI, Japan. It was informed that the Electronic Navigation Research Institute (ENRI) created an algorithm for appropriately analyzing ADS-B messages and is now developing a performance monitor to evaluate the quality of ADS-B performance based on this algorithm. This monitor can be used to assess the current ADS-B situation in Japanese airspace and to identify erroneous aircraft that do not meet surveillance requirements.

Update on IP/18 SURICG/9 Challenges Finding the cause of non-compliant ADS-B data – New Zealand (IP/07)

2.17 New Zealand presented a brief update on the challenges of finding the cause of Non-Compliant ADS-B data in New Zealand. New Zealand informed that in 2024, Airways presented a paper that identified several issues in finding the cause of non-compliant ADS-B data and resolving these issues. This paper provided an update on the progress to find a resolution and identified another issue found in late 2024. The SURICG/10 Meeting deliberated on the issue, and it was stated that the presented issue is related to a specific model of ADS-B transponders. It was added that the USA has encountered the same issue and it is engaging with the manufacturer to resolve the problem.

GNSS vulnerabilities and the significance of ADS-B central data processor - Hong Kong China (WP/10)

2.18 Hong Kong China presented the critical role of the ADS-B Central Data Processor System (CPS) in enhancing air traffic surveillance. Hong Kong China highlighted that the implementation of an ADS-B CPS could be effective in addressing the issues of falsified target displays caused by GNSS spoofing and encouraged States to consider its implementation based on their needs.

Analysis of Abnormal Tracks Caused by Electromagnetic Environment - China (WP/12)

2.19 China presented missing targets, erratic tracks, and reflection targets caused by trees and lightning arrestors, and it put forward solutions and recommendations for electromagnetic environment protection and lightning arrestor construction of radar stations.

Assessing a New Surveillance System for Operational Use – New Zealand (WP/13)

2.20 This paper presented Airways' use of the EUROCONTROL Specification for ATM Surveillance System Performance (ESASSP) document to assess a new surveillance system for use within the Air Traffic Management System (ATMS). As a result of this assessment, Airways has decided not to use this Radar for surveillance separation and will employ it solely for situational awareness. The assessment of the new PSR against established standards for more accurate surveillance equipment, such as MSSR, ADS-B, and Multilateration, revealed that the PSR is unable to meet **all** the required mandatory and recommended standards required for 5NM surveillance separation in New Zealand's environment.

2.21 The SURICG/10 Meeting noted that a Performance-Based Surveillance Sub-Group (PBSSG) is discussing using a cooperating surveillance system for separation, not for non-cooperative systems. However, the proposal to add non-cooperative sensors can be shared with the group by Alex from the USA during next week's Meeting from 28 – 30 April 2025. **ACTION ITEM 10-3** It was added that future versions of the RSUR manual could be modified to add guidance for this. USA will provide outcomes of the discussion in future SURICG meetings.

Surveillance Activities in Singapore - Singapore (IP/02)

2.22 This paper provided a summary of surveillance activities in Singapore, including radars, A-SMGCS, ADS-B, ADS-C/CPDLC and DAPS. This paper also shared the equipage requirements for ADS-B out exclusive airspace and airport surface, and ADS-B equipage, which was monitored over the past few years.

Update on Surveillance Status in China - China (IP/03)

2.23 This paper updated the status of surveillance sensors as of the end of 2024 in China, as well as the construction of sensors in 2024, including the progress of the Surveillance Radar, ADS-B, SMR, MLAT and the ADS-B Level-1 Data Center Upgrade Project. The Meeting noted that China had begun constructing the upgrade project for the ADS-B Level-1 data center, which is expected to be completed in the first half of 2026. Upon completion, the ADS-B Level-1 data center will have the capability to serve 40 whole airspace data users and will also have enhanced cybersecurity protection capabilities.

Surveillance Activities in Sri Lanka (IP/04)

2.24 This paper provided an update on the surveillance activities in Sri Lanka in 2024, including the replacement schedule for radars and the implementation and usage of ADS-B. The Meeting noted the challenges Sri Lanka faced during the integration of ADS-B into the new Approach Control Air Traffic Management (ATM) system, where unexpected ground clutter was observed on ATM displays. Subject to satisfactory resolution of altitude information in ADS-B, the Co-Chair has recommended Sri Lanka to consider using an altitude filter in ATM system to filter ground clutter. Singapore informed that it also used Ground Bit Setting to check if aircraft are on the ground.

Update on New Zealand Surveillance Status – New Zealand (IP/08)

2.25 New Zealand provided an update on the surveillance activities in New Zealand in 2025. It was reported that from 1 January 2024, New Zealand's surveillance structure was based on ADS-B as the primary surveillance source. Further Surveillance is provided by MSSRs and an MLAT system, providing a contingency cooperative surveillance backup, and PSRs provide a non-cooperative backup where required.

2.26 It was noted that New Zealand regulatory requirements require ADS-B surveillance to be backed up by a non-GNSS contingency surveillance system covering the main trunk Jet routes. Additionally, consideration should be given to the use of PSR for airports that have what is termed "dense complex airspace" (i.e., airspace with over 100,000 RPT movements a year). It was added that the use of low-cost ADS-B avionics, such as EC devices, is not permitted in controlled airspace, as regulatory rules do not cover them.

Surveillance activities in India – India (IP/09)

2.27 This paper provided information on surveillance activities in India. India informed that presently, almost 100% of Indian FIRs are covered by surveillance facilities, and around 70% of them are covered by redundant Surveillance. India concluded that it continued to augment its capabilities for Surveillance of its airspace as well as airfield ground movements and is now making greater use of ADS-B and Mode S Radars with the introduction of space-based ADS-B for oceanic airspace surveillance. India added that in India, there is a mix of Mode A/C and Mode S Radars. Eventually, all the radars will be Mode S. There is an integration of various surveillance sensors to provide 3 NM separation in the final approach phase in approach control unit at major airports.

Surveillance activities in Maldives (IP/10)

2.28 Maldives summarized the status of the current Surveillance infrastructure in the Maldives, including radars, ADS-B, and Surveillance Data Processors (SDP). The Meeting noted that the carriage of ADS-B Out equipment is not yet mandatory in the Maldives FIR. ADS-B-based surveillance services are provided on a capability basis. SSR continues to serve as the primary source of Surveillance within a 230 NM radius of VIA.

2.29 It was added that the existing Surveillance Data Processor (SDP), in operation since 2008, has become increasingly difficult to maintain due to the discontinuation of support for its COTS hardware. In light of this, a decision was made in 2023 to upgrade and extend the operational life of the current ATM system until the implementation of a new system planned for 2027. The Flight Data Processor (FDP) component was successfully upgraded in 2024, and the SDP upgrade is currently in progress, with completion targeted for Q4 2025. Lastly, it was added that a consultancy process is currently underway to define the scope and requirements for the new ATM system aimed for 2027.

ICAO Surveillance Panel Activities - ICAO Surveillance Panel (WP/11)

2.30 This paper provided an overview of the recent and upcoming activities of the ICAO Surveillance Panel (SP) and its Working Groups, the Aeronautical Surveillance Working Group (ASWG) and the Airborne Surveillance Working Group (AIRBWG). It highlighted the establishment of the Performance-Based Surveillance Sub-Group (PBSSG) to develop measurable technical performance specifications for surveillance systems. The PBSSG has been working on a draft RSUR Manual. A discussion was held at the recent SP-ASWG held in Montreal from 17 – 21 March 2025 pertaining to the next steps for finalizing the RSUR manual. Along with the ICAO SP Secretary, the ASWG decided to initiate inter-panel coordination to obtain ICAO Panel feedback prior to the official submittal for publication.

2.31 It was informed that the Eighteenth Meeting of the Airborne Surveillance Working Group (AIRBWG) and the Twentieth Meeting of the Aeronautical Surveillance Working Group (ASWG) were held as consecutive hybrid meetings in Montreal at ICAO Headquarters. AIRBWG/18 was held from 18 to 20 September 2024; ASWG/20 was held from 23 to 27 September 2024. AIRBWG/18 is considered a Change Proposal (CP) to the Manual on Airborne Collision Avoidance Systems (Doc 9963). The CP suggested incorporating information and guidance to clarify recent amendments to the manual further. The Airborne Collision Subgroup was also tasked to investigate further ICAO documents referencing ACAS to ensure alignment with the introduction of the ACAS III provisions.

2.32 In addition, a significant discussion was held about an increase in recent GNSS interference cases. Several recommendations were presented and discussed, including mechanisms to help controllers and Air Navigation Service Providers identify when a GNSS RFI event was taking place. The Meeting agreed on the importance of further researching ways in which these types of events can be identified in a timely manner. The ICAO Technical Subgroup was tasked with taking on such discussions and determining potential mitigations. Additionally, it was shared that ICAO published the State Letter AN7/65.1.2-24/94 on 26 November 2024. The State Letter is related to the introduction of the new ICAO Annex 10 Volume III and IV SARPS, which include the updates for transponder functionality and ADS-B Version 3. The new effective date for these SARPS will be 26 November 2026. The SP Working Group timeline for the next Panel meeting was shared with the Meeting.

Process and Requirements of IC Coordination and Assignment for APAC - Singapore (WP/08)

2.33 Singapore proposed the process for States to request and coordinate interrogator codes (IC) for mode S interrogators. The following draft conclusion was endorsed by the SURICG/10 Meeting for CNS SG/29 adoption.

<table>
<tr><td colspan="3">Draft Conclusion SURICG/10/02 - Workflow for the request and coordination of IC codes with the ICAO APAC Office.</td></tr>
<tr><td colspan="2">What: Interrogator Codes (IC) of Mode S interrogators in the Asia Pacific region are to be coordinated and assigned through the ICAO APAC Regional Office. States/Administrations requiring ICs should request to the ICAO APAC Regional Office following the approved workflow as per Appendix D to facilitate the request.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td colspan="2"></td><td>Follow-up: ☐Required from States</td></tr>
<tr><td colspan="2">When: 23-Apr-25</td><td>Status: Draft to be adopted by CNS SG</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: SURICG</td></tr>
</table>

Presentation of the 6th edition of Mode S Downlink Aircraft Parameters Implementation and Operations Guidance Document – China, Singapore, New Zealand and USA (SP01)

2.34 China, Singapore, New Zealand, and the USA proposed the revised draft of Edition 6.0 of the Mode S DAPs Implementation and Operations Guidance Document, which was developed based on the adopted Edition 5.0. The revised draft supplemented the guidance material on the following topics:

a) Add the general strategy on the assignment of and migration to the SI code that was adopted during the 35th APANPIRG meeting in section 7.3.2 and Appendix 6;
b) Supplement the information about the management of the 1030/1090 MHz utilization in section 7.8;

2.35 The document was presented and deliberated during the Meeting, and further modifications were made. Subsequently, the **Decision SURICG/10/03** – Adoption of Mode S DAPs Implementation and Operation Guidance Document Edition 6.0 was adopted by the SURICG/10 meeting. The Mode S DAPs Implementation and Operation Guidance Document Edition 6.0 has been modified to add the general strategy on the assignment of and migration to SI code and some information about the management of the 1030/1090 MHz utilization to update the general strategy on the assignment of and migration to the SI code was adopted during the 35th APANPIRG meeting.

Review ToR of SURICG and Action Items - Sec (WP/09)

2.36 The SURCIG/10 Meeting reviewed the ToR and considered that there was no need to modify it. The consolidated action items of SURICG were reviewed and updated at the Meeting.

Update on SSR module of Frequency Finder tool – Sec (WP/16)

2.37 This paper presented the latest work, enhancements and functionalities brought to the SSR module of the Frequency Finder tool to assist ICAO Regional Offices and States to manage and coordinate SSR Mode S II/SI codes. The Meeting noted that the modified version of the Frequency Finder tool will be distributed to the Regional Offices upon the completion of the current testing phase. States/Administrations were encouraged to utilize the tool extensively, discuss any pertinent matters, and provide feedback on FF tool usage, suggestions, bugs, and recommendations.

Date and Venue for the Next Meeting

2.38 The Meeting considered that the next SURICG meeting would be held for 3 days, tentatively planned for ***23-25 March 2026***. Any States/Administrations interested in hosting the Meeting may contact the ICAO APAC Office for hosting discussions at least 4 months before the Meeting. The exact dates and venue will be communicated to the member states in due course.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) adopt the draft conclusion formulated by SURICG/10; and

c) discuss any relevant matter as appropriate

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REPORT FROM BAY OF BENGAL AD HOC WORKING GROUP
21 April to 23 April 2025

States Presented:
China
Indonesia
Malaysia
Thailand
India
Maldives
~~Nepal~~ (not present)
Sri Lanka
Pakistan
~~Bangladesh~~ (not present)
~~Bhutan~~ (not present)

Observer:
~~IATA~~
~~Japan~~

Participants met to update the status of implementation of ADS-B in their states and possible Data sharing between the neighbouring States.

Implementation Updates

1. Bangladesh (no update provided in 2024 and 2025)
Not Present

We are trying to modernize our systems through the implementation of ATM project. At first it was in PPP & now it is on G2G with France. This was under the process of government approval. Government approval is granted, and 5 ADS-B receivers will have been installed at detailed below,

Cox's Bazar, Barisal, Saidpur, Dhaka and Sylhet, there is another one for Extended Economic Zone at new area in the Bay of Bengal which is 200NM at south of the country.

2. Bhutan (no update provided in 2024 and 2025)
Not Present

Bhutan cannot join previous SEA/BOB ADS-B meeting as we do have plan to implement ADS-B, but now we are targeting to complete ADS-B feasibility study by mid of 2019 and now it is extended up to mid of 2020.We found out that feasibility study (Coverage and ground station location) is necessary as Bhutan is surrounded by mountain terrain.

As per the result of feasibility study we are going to implement installation of ground station.

Bhutan do not have any national policy or regulation about data sharing, so we will be sharing data with any neighbouring countries/states as per the regional norms and conditions.

3. China (status same in 2025**)**

China has been continuously promoting to push forward the application of ADS-B technology. China provided update on the installation and related activities regarding ADS-B surveillance system as follows:

- 5 UAT ADS-B stations are used for flight training of CAFUC. The upgrade to 1090ES ADS-B stations project has already started in 2017, and the project is finished by 2022;
- 4 ADS-B station in operational in Sanya FIR since 2008;
- Chengdu - Lhasa route with 7 ADS-B stations;
- 9 ADS-B stations deployed on the routes H15 and Z1 by the end of 2015;
- 19 ADS-B station at the small airport; and
- 308 ADS-B stations nationwide have already finished in operation ~~stallation and~~ ~~SAT by~~ at the end of 2018. And there are 2 level-1 data processing centres working in main-standby mode for redundancy, 8 level-2 data processing centres to concentrate data from data stations within its area of responsibility, as well as 36 data stations to collect received data from GSs. All the installation and SAT of GSs, level-2 data processing centres and level-1 data processing centres have already complete. The trial operation has started from October 10, 2019 and the ADS-B mandate had also been published on October 1, 2019, which is effective from October 10.2019.

4. Indonesia (update in 2025**)**

Indonesia earlier informed that ADS-B ground station at Aceh is already operational and updated to comply with DO-260B (ver 2) and expressed willingness to share data with India (It was earlier decided to have Port Blair-Aceh data sharing, but for better coverage and usability it was suggested in the meeting to have data sharing of upcoming Campbell Bay ADS-B - Aceh when India is ready).

Indonesia now will share the data with Campbell Bay ADS-B – Aceh only.
Indonesia is proposing to share ADS-B data using CRV Network.
Campbell Bay ADS-B is installed.

Letter of Agreement between Indonesia and India regarding ADS-B data sharing is on progress
Letter of agreement is agreed by Indonesia and India, yet to be signed.

5. Malaysia (update in 2025**)**

Malaysia has completed the installation of the two new ADS-B ground station in Langkawi and Genting and were now fully integrated into the new ATM system. Both stations are compliant with DO-260B with output data handling function as plot and tracks (ASTERIX CAT21 ver. 0.23, ver. 0.26 and ver. 2.1.)

Malaysia is venturing to share ADS-B data with Indonesia, India and Thailand. Data sharing from India (Port Blair or Campbell Bay ADS-B GS), or from Indonesia (Aceh ADS-B GS)or from Thailand will close the surveillance gap within the KL FIR.

The ADS-B data (from Genting and Langkawi) processed through ADS-B central processing system is now integrated into new ATC Systems and is now ready for data sharing. Malaysia is reviewing the sample agreement proposed by India and Indonesia and will revert as soon as possible.

6. Maldives (update in 2025**)**

Maldives started using ADS-B to enhance ATS surveillance capability in Male FIR on 7th February 2016.

With 4 ground stations (2 autonomous stations at Male; 2 unduplicated ground stations: 1 at an island in the North and the other in the South), the ADS-B provides coverage up to 90% of Male FIR above FL290.

~~ADS-B serves as the backup for Male radar and is in use for vectoring and 5NM separation commensurate with Radars~~

As part of the effort towards full implementation of ADS-B, from March 2017 aircraft imported for commercial air transport in the Maldives are required to be equipped with ADS-B Out, as published in AIP ENR 1.6-3.

~~The full implementation, which require carriage of ADS-B Out, was implemented for the year 2021~~

~~Maldives is making efforts to complete the airworthiness approval for all locally registered aircraft, already equipped with ADS-B.~~

~~Maldives is in the process of installing five additional ADS-B Ground Station in 2024, to improve the coverage at low flight levels.~~

Five new ADS-B ground stations were installed in 2024. These stations extend the existing infrastructure and significantly improve surveillance in areas with dense seaplane operations, especially in VFR corridors. Integration of these new ground stations into the ATM system is underway and is expected to be completed by the third quarter of 2025. With this implementation, the Maldives will look into the possibilities of sharing ADS-B data with neighboring FIRs.

The carriage of ADS-B Out equipment is not yet mandatory within the Maldives FIR. SSR remains as the primary surveillance method.

The complete implementation of ADS-B, which includes mandatory carriage requirement, is targeted for 2027.

7. Myanmar (no update provided in 2024 and 2025)
Not Present

The 5 ADS-B ground stations have been installed in Myanmar. Among them, Sittwe and Co Co Island ground stations are installed in 2014 and they are DO260 compliant, and Yangon, Mandalay and Myeik airports ground stations are DO260B compliant and installation was finished in 2016.

All ADS-B data are fused with MSSR data target in the Top Sky ATC Automation system (Thales) in 2016, and using as MSSR backup and surveillance monitoring in Yangon ACC.

In addition, Myanmar have planned to install new ADS-B Station in the First quarter of 2020 at Lashio Airport located in north-eastern part of Myanmar closed to the China-Myanmar border near the LINSO transfer point on A599 ATS route. After the installation finished, the ADS-B data sharing process can be proceeded between Myanmar and China *after March, 2020*.

For the communication links between Yangon and Beijing, it can use the existing 2M E1 IPLC link which is now using for AFTN messaging and (AIDC Testing) Voice, and also can be used the existing Yangon-Beijing VSAT link as backup.

Myanmar also willing to participate the special coordination meetings to promote relevant works in terms of the surveillance data sharing among the countries to enhance the safety and surveillance capability in the sub-region.

Lashio installation will be completed by First quarter of 2020.
Redundant Communication link via Land line / CRV / V-SAT is proposed under discussion.

8. Thailand (update in 2025**)**

Thailand provided update on the installation and related activities regarding ADS-B and other related surveillance system as follows:

ADS-B Ground Infrastructure and ATC System Readiness or Implementation Plan

- 4 ADS-B ground stations (DO260B and lower compliant) have been installed at Doi Inthanon (Chiangmai), Hatyai Airport (VTSS), Samui Airport (VTSM) and Ubon Ratchathani Airport (VTUU). Moreover, 3 SSRs at Surat Thani Airport (VTSB), Ubon Ratchatani Airport (VTUU), and Phuket Airport (VTSP) have been upgraded with ADS-B capability. In total, ~~7 ADS-B stations are under approval process and is expected for air traffic services by the end of 2024.~~ Seven ADS-B are in operation. This integrated surveillance system is designed to complement the existing radar infrastructure, enhancing the efficiency, reliability, and coverage of Thailand's air traffic surveillance from 5 September 2024 onwards.
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Data sharing

- ATS surveillance data sharing with adjacent FIRs was approved in principle in October 2018.
- User requirements, particularly ATS routes to be served, and communication link test plan are discussed in 2018.

9. India (update till 2025)

ADS-B Usage and Mandate in India:

India has installed 36 ADS-B ground receivers to enhance redundancy in existing Radar airspace and also to extend Surveillance coverage in low density airports and in certain oceanic airspace. It will also facilitate extension of Surveillance coverage for low altitude (below existing Radar coverage) leading to more efficient use of airspace. ADS-B data is being used for Terminal as well as Enroute Surveillance operations.

Out of 36 ADS-B ground receivers presently ~~30~~ 34 receivers have already been operationalized and efforts are on to operationalize remaining ~~6~~ 2 ADS-B ground receivers soon. Further, India has entered into a contract with M/s Aireon in July 2019 to receive ADS-B data for Oceanic regions of Indian FIR to ensure seamless Surveillance coverage across its oceanic airspace, Space Base ADS-B system has been successfully integrated with Data fusion systems of Mumbai, Chennai, Kolkata and Guwahati and presently being used for situational awareness only.

In order to promote ADS-B usage in India, the Director General of Civil Aviation (DGCA) India has issued ADS-B avionics mandate w.e.f. 01st January 2020, all aircrafts flying over Indian continental airspace at or above FL290, are to be equipped with on-board ADS-B equipment.

10. Sri Lanka (update in 2025**)**

Sri Lanka has installed 5, ADS-B stations and data received by the stations have been integrated and available for sharing. The ADS-B coverage is approximately 350NM from Piduruthalagala, the highest mountain situated in central Sri Lanka. Sri Lanka is willing to share this data with ~~India and Maldives~~ neighbouring FIRs. ~~India is requested to provide a soft copy of draft agreement for sharing of ADS-B data with Sri Lanka so as to enable Sri Lanka to look into the terms and conditions of draft agreement~~.

11. Nepal (Not present**)**

Nepal has also completed installation of 4 ADS-B GS at Mt. Phulchowki (Kathmandu), Nepalgunj, Bhairahawa and Dhangadhi Airports and have been integrated with MSDPS.
They are in test operation.

12. **Pakistan (update in 2025)**

Pakistan has installed a network of nine (9) redundant ADS-B ground stations to enhance its surveillance coverage in areas traditionally underserved by radar, known as grey areas or cones of silence.

Pakistan has phase wise deployed a network of multivendor ADS-B ground stations to enhance surveillance coverage within its airspace. Out of 09 (nine) stations 06 (six) are collocated with MSSR Mode S, however remaining 03 (three) ground stations are deployed independently to enhance surveillance coverage and performance in Grey Areas of Radar Coverage.

In the first phase installation, deployment, and Site Acceptance activities for Islamabad, Rojhan, Pasni and Lakpass were completed in 2019. The remaining 05 sites of Lahore, Karachi, Dalbandin, Zhob and Laramtop were deployed and commissioned in 2023.

The system meets Tier 1 service capabilities as defined in APANPIRG/18, ensuring baseline ADS-B service performance parameters are met. Dalbandin, Zhob, Laramtop, Lahore and Karachi ADS-B ground stations are version 2 i.e. DO-260B compliant. And output target reports in data protocol formats Asterix CAT 21 v2.4, CAT 23 v1.2, CAT25 v1.1 and CAT 247 v1.2.

Islamabad, Lakpass, Rojhan and Pasni ADS-B ground stations are version 2 i.e. DO- 260B compliant. And output target reports in data protocol formats Asterix CAT 21 v1.8, CAT 23 v1.2 and CAT 247 v1.2.

ADS-B Data Sharing

Project 1 - ADS-B Data Sharing between China, Laos and Myanmar

Phase 1 *China and Laos sharing ADS-B data from following:*
Kunming ADS-B data processing Centre (china), which can customize the output of ADS-B data in version, specific area and height range depend on Laos's requirement.

Route to be affected B465.

China and Myanmar sharing ADS-B data from the following sites:

Lashio (Myanmar) Not yet installed – Target to be installed by March 2020.Route to be affected A599

China and Myanmar sharing ADS-B data from the following:

Kunming ADS-B Data Processing Centre (China), which can customize the output of ADS-B data in version、specific area and height range depend on Myanmar's requirement.

Operational Status
N/A

Expected benefits

- Enhanced air navigation safety at FIRs boundary.
- Promoting air traffic control work efficiency.

Project 2 - ADS-B Data Sharing between India and Indonesia

Phase 1

Aceh – Indonesia
Camp Bell Bay – India

Route to be affected B466, P574 and N563

Operational Status
ADS-B data from Campbell Bay (India) is proposed to be integrated with Jakarta (Indonesia) ATC centre. Similarly, data from Banda-Aceh (Indonesia) ADS-B is proposed to be integrated with Chennai (India) ATC centre. Draft Letter of Agreement (LOA) has been shared with Indonesia and necessary Government approval is awaited for implementation of data sharing.

Benefits

Enhanced safety by reduction in occurrences of LHDs and LLDs in BOB region.

Project 3 - ADS-B Data Sharing between India and Malaysia

Phase 1

Port Blair/Campbell Bay - Langkawi ~~(2023)~~
Route to be affected N571, P628, L510, P627, L645 and P574

Operational Status

ADS-B data from Campbell Bay (India) is proposed to be integrated with Kuala Lumpur (Malaysia) ATC centre. Similarly, data from Langkawi (Malaysia) ADS-B is proposed to be integrated with Chennai (India) ATC centre. Draft Letter of Agreement (LOA) has been shared with Malaysia and necessary Government approval is awaited for implementation of data sharing. India and Malaysia are exchanging comments on the Draft LOA.

Expected benefits

Enhanced safety by reduction in occurrences of LHDs and LLDs in BOB region.

Project 4 - ADS-B Data Sharing between India and Myanmar (updates till 2025)

Phase 1

The ADS-B data sharing between Kolkata and Yangon FIR was an initiative taken by India and Myanmar to enhance safety and reduce LHDs along Kolkata-Yangon FIR boundary.

In 6 May 2015, Myanmar and India have signed the MOU agreement for ADS-B data sharing between the two countries.

As per the data sharing agreement, ADS-B data sharing test between Agartala(India) and Sittwe (Myanmar) and Port Blair(India) and Coco Island(Myanmar) has been accomplished between technical teams since June 2018. Kolkata has integrated the ADS-B feed from Sittwe and Co Co Island in its Automation system. Presently the data is given in the back up automation system at Kolkata for test purpose and ADS B equipped aircrafts are tracked from as far as 250 nm west of Bangkok.

But for Myanmar side, India's data is just received to Yangon ACC technical management room and need to discuss with ATM Manufacturer (Thales) of Surveillance Display System to integrate India's ADS-B data to existing Surveillance Display System for operational use in Yangon ACC. Because the multicast address and port from India's ADS-B data are different with existing setup.

The communication link used for ADSB data transfer between Yangon and Kolkata is the existing E1 IPLC link which is used for DSC phone between the two ATS units.

Route to be affected A201, A599, B465, G463, L507, P646, P762, G472, L524, M770 and L759

Operational Status

Operationalized for situational awareness. India-Myanmar data sharing has been completed successfully through under sea cable between Mumbai (India) and Yangoon (Myanmar). Data from Sittwe (Myanmar) and Coco Island (Myanmar) has been successfully integrated with Kolkata Automation system, and there were no reported instability issue. Similarly, data from Agartala (India) and Port Blair (India) has been provided to Yangoon ATC centre.

Expected benefits

Enhanced safety by reduction in occurrences of LHDs and LLDs in BOB region.

Project 5 - ADS-B Data Sharing between Indonesia and Malaysia (updates till 2025)

Phase 1

Langkawi - Aceh (TBD)
Route to be affected B466, N571, P628, L510, P627, L645 and P574.

ADS-B data from Aceh (Indonesia) is proposed to be integrated with Kuala Lumpur (Malaysia) ATC centre. Similarly, data from Langkawi (Malaysia) ADS-B is proposed to be integrated with Jakarta

(Indonesia) ATC centre. ~~Draft Letter of Agreement (LOA) has been shared with Indonesia and Malaysia and necessary Government approval is awaited for implementation of data sharing.~~

Malaysia and Indonesia is planning to use CRV for the data sharing link.
CAT21 Ver 0.26 format to be used for data sharing.

Operational Status

New ATM Automation system in Kuala Lumpur has been completed and ready for data sharing.

Expected benefits

Enhanced safety at FIR boundary

Project 6 - ADS-B Data Sharing between Malaysia and Thailand (updates till 2025)

Phase 1

Langkawi - Phuket

General discussion about possibility to share ADS-B data for route N571, P628, L510, P627, L645 and P574. Malaysia and Thailand to continue discussion to exchange views of the possible ADS-B data sharing.

Operational Status

~~Currently on hold until further discussion~~
Malaysia has initiated technical discussion with Thailand on ADS-B Data Sharing for Phuket, Hatyai, Langkawi and Kuala Terengganu sensors as the initiative to reduce the surveillance GAP at the BOB area within both FIRs.

Expected benefits

- Enhanced visibility of surveillance targets in Bay of Bengal.
- Enhanced situational awareness at FIR boundary.

Project 7 - ADS-B Data Sharing between India and Sri Lanka (~~no update provided in 2018 - 2022)~~ (updates till 2025)

Phase 1

In view of integration of Space Based ADS-B data, India's requirement of ADS-B data from Sri Lanka is supplemented, by the data from Aireon. Hence there is no further follow up from India on the data sharing. However, in case Sri Lanka desires to have ADS-B data from India, project may be approached, afresh by Sri Lanka.

Operational Status
Feasibility studies are being conducted by Sri Lanka

Expected benefits

Enhanced safety at FIR boundary

General remark for all the above projects: As agreed at previous ADS-B Task Force, WG and SURICG meetings, sharing of ADS-B data should include sharing of VHF radio facilities/services, where possible

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REPORT FROM SOUTHEAST ASIA SUBGROUP

Bangkok, Thailand, *21 to 23 April 2025*

States Present

~~Australia~~
~~Cambodia~~
China
Hong Kong, China
Indonesia
Malaysia
Lao PDR
The Philippines
Singapore
Thailand
Viet Nam

Observer

~~Fiji~~
Japan
New Zealand
Macao, China
USA

Previously Identified Projects

The South East Asia Group provided an update on the near-term implementation of the following projects that were identified in previous meetings.

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

Phase 1a
Indonesia and Australia sharing ADS-B data from the following sites:

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

Data Sharing Agreement signed in Nov 2010;
Communications links between Australia and Indonesia were upgraded from VSAT to terrestrial links in Mar 2016. The service quality was improved.

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

Phase 1b
Indonesia and Australia plan to share ADS-B data from the following additional sites:

- Timika (Indonesia) (Installed) - Commenced data sharing
- Kupang (Indonesia) (Installed) - Commenced data sharing
- Christmas Island (Australia) (Not yet installed)
- Browse Basin oil rig (Australia) (installed in 2018 and not yet operational)
-

- Based on previous data as Australia was not present.

Data Sharing Agreement signed on 18 Jun 2014.

Sharing agreement extended from 2023 to 2026.

Project 2 – ADS-B Data Sharing In Southeast Asia

Phase 1
Under the near term implementation plan, the parties have commenced ADS-B data sharing from the following sites:

- Singapore (Singapore provide data to Indonesia)
- Natuna (Indonesia provide data to Singapore)
- Matak (Indonesia provide data to Singapore)
- Con Son (Viet Nam provide data to Singapore)
- Sanya FIR (China provide fused data from four ADS-B stations 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 Viet Nam and have commenced on ADS-B operations since Dec 2013. Singapore commenced with 40nm separation and subsequently reduced to 30nm separation between Singapore and Ho Chi Minh FIR. Further reduction to 20nm longitudinal separation was implemented on 10 Nov 2016.

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

Initial Benefits

The above sharing/collaboration arrangements will benefit L642, M771, N891, M753, N892 and L644. Enhanced safety and reduced separation have been achieved. Mandate was effective in Singapore FIR from Dec 2013. China published the mandate in Oct 2019. Mandate for domestic fleet was effective on 10 Oct 2019. Mandate for international fleet will effective on 31 Dec 2020. Hong Kong China's ADS-B mandate was effective from Dec 2016 for aircraft at FL290 and above.

Phase 2
The Philippines has installed ADS-B station at Manila ATM Centre and Bataraza. It is planning to install other ADS-B stations within Manila FIR.

Singapore and the Philippines signed an MOU in Oct 2015 to make available ADS-B data and VHF facilities at Bataraza, Palawan for Singapore. The project was completed in Aug 2017. The ADS-B of Bataraza is yet to be integrated into Manila ATM Centre and it will be done after the hardware is upgraded.

The Philippines indicated that there is a surveillance gap at Northwestern part of Manila FIR and is studying acquisition of space-based ADS-B data to cover the surveillance gap.

China's four ADS-B ground stations deployed in Sanya FIR may be able to cover parts of the surveillance gap. China is prepared to share its ADS-B data, via its ADS-B data processor, with neighbouring states.

Brunei signed an MOU with Singapore in April 2019 where Brunei shared ADS-B data with Singapore and provide the VHF facilities for Singapore ATC use. Data sharing commenced 1 September 2021.

Singapore and Viet Nam signed an agreement in Jul 2016 to make available ADS-B data and VHF facilities at Ca Mau for Singapore. The facilities were commissioned in Nov 2018.

Phase 3
Vietnam has ADS-B coverage at the Southern part of L625, N892, N884, M767 and M772 and Vietnam is willing to share the ADS-B data with the Philippines and Singapore. The discussion between Singapore and Vietnam is in progress.

The Philippines is studying the use of space-based ADS-B to cover its surveillance gaps.

In addition to sharing ADS-B data from its ADS-B station in Terengganu, Malaysia is also willing to share the ADS-B data from its ADS-B stations in Kuching, Bintulu, Kota Kinabalu and Sandakan. The data from these four stations are also useful to Indonesia and will be shared under Project 3. Singapore will share data from its Singapore ADS-B station with Malaysia.

Malaysia and Singapore will initiate discussions on data sharing from the following sites:

- Terengganu (Malaysia) - Installed
- Bintulu (Malaysia) – Installed
- Kota Kinabalu (Malaysia) – Installed
- Kuching (Malaysia) – Installed
- Sandakan (Malaysia) - Installed
- Singapore (Singapore) - Installed

Initial benefits

Enhanced Safety at FIR boundary and coverage redundancy

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

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

- Pontianak (Indonesia) – Installed
- Tarakan (Indonesia) - Installed
- Bintulu (Malaysia) – Installed
- Kota Kinabalu (Malaysia) – Installed
- Kuching (Malaysia) – Installed
- Sandakan (Malaysia) - Installed

Malaysia and Indonesia are reviewing the collaboration agreement.

Initial benefits
Enhanced Safety at FIR boundary and coverage redundancy

Project 4 – ADS-B data sharing between Cambodia, Thailand and Viet Nam

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

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

Based on previous data as Cambodia is not present.

Viet Nam completed installing 11 new ADS-B stations in the HCM FIR in 2023. Viet Nam is willing to share data with Cambodia and Thailand.

Thailand has 4 ADS-B ground stations (DO260B and lower compliant) installed at Doi Inthanon (Chiangmai), Hatyai Airport (VTSS), Samui Airport (VTSM) and Ubon Ratchathani Airport (VTUU). Moreover, 3 SSRs at Surat Thani Airport (VTSB), Ubon Ratchathani Airport (VTUU), and Phuket Airport (VTSP) have been upgraded with ADS-B capability. In total, 7 ADS-B stations implemented and operational since~~are under approval process and is expected for air traffic service by end of 2024.~~ 5 September 2024.

Initial benefits
For redundancy

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

Indonesia and the Philippines initiated discussion in 2019 on data sharing:

- Melonguane (Indonesia) (installed)
- General Santos (The Philippines) (~~(The plan to install to be reviewed)~~Under procurement)

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 2027
- Burns Peak – Port Moresby (PNG) (installed)
- Mt Robinson (PNG) (to be installed by 2018) or Mt Nauwein (to be installed by 2018)

The above data sharing proposal will be re-evaluated due to implementation of space-based ADS-B in Papua New Guinea

Based on previous data as Australia and Papua New Guinea were not present in the meeting.
~~Note that the above information from Papua New Guinea was based on previous updates as Papua New Guinea was not present at the meeting.~~

Data Sharing between Indonesia and Papua New Guinea

- Mt Nauwein (PNG) (to be installed by 2018) – Phase 1
- Merauke (Indonesia) (installed) – Phase 1
- Jayapura (Indonesia) (installed) – Phase 2

Based on previous data as Papua New Guinea were not present in the meeting.

New ATM system installed in PNG.
The parties have yet to sign the agreement.

The above data sharing proposal will be re-evaluated due to implementation of space-based ADS-B in Papua New Guinea.

Project 7 – Lao PDR

Data Sharing between Lao PDR and Thailand

Lao PDR is willing to share the ADS-B data from the following site:

- Savannakhet (installed in 2017)

Lao PDR expressed desire to obtain data from Thailand to cover surveillance gaps.

There will be further discussion between Lao PDR and Thailand

General remark for all the above projects: As agreed at previous APAC ADS-B Task Force, WG and SURICG meetings, sharing of ADS-B data should include sharing of VHF radio facilities/services, where possible

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ADS-B Data Sharing Implementation Status in the Asia/Pacific Region

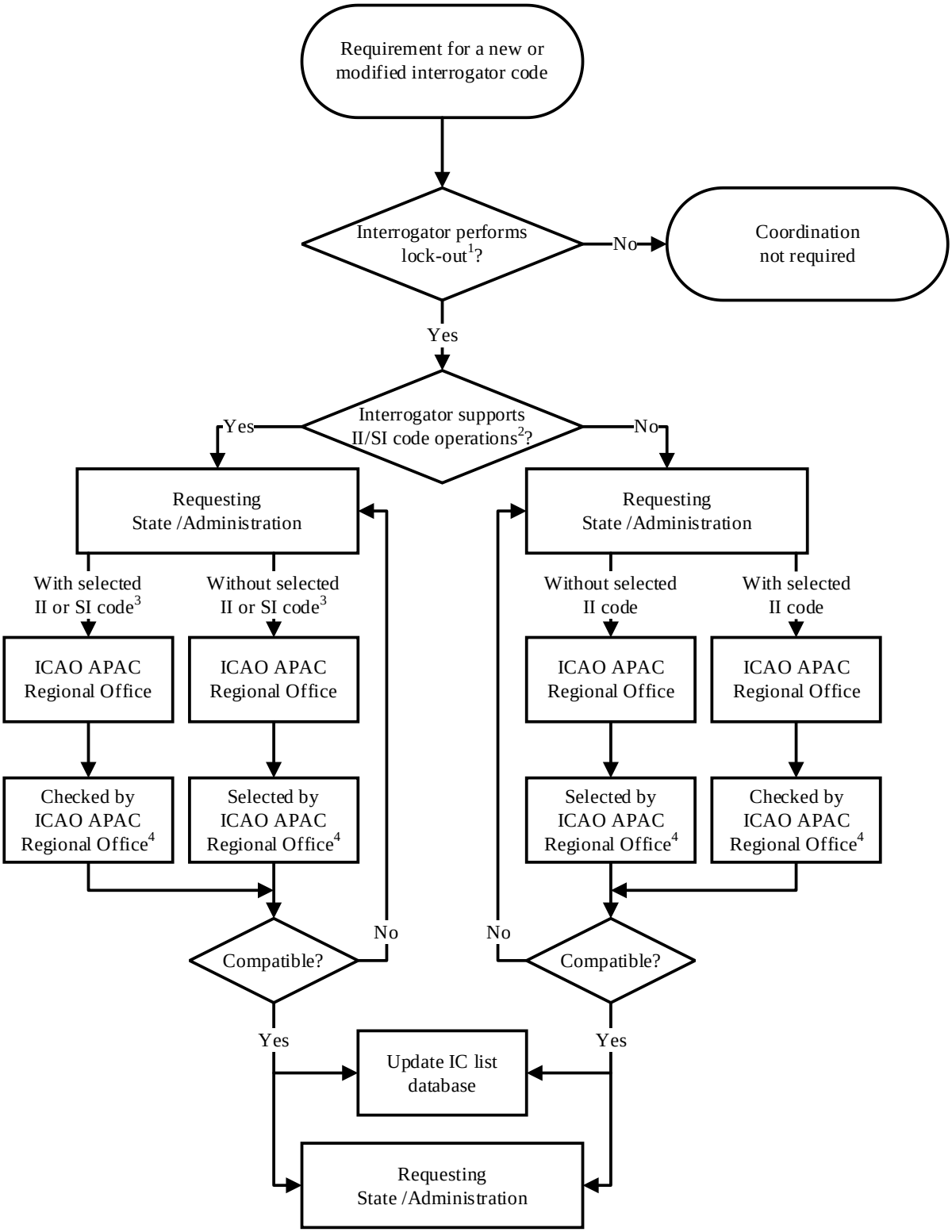
Related States/Administrations	ATS Route Served	Initiation Year	Agreement Date	Target Data Sharing Year	Implementation Status	Remarks/Challenges
Australia - Indonesia	Phase 1a L511, R592, G578, B349, M735, G326, A587, M768, A461, R340, B472, B473, G459	2010	2010	2010	Completed	SEA Report: Project 1
	Phase 1b M774, A458, J199, M766, G326, A587, L895, A585	2014	2014	TBD	Ongoing	Browse Basin oil rig (Australia) awaiting acceptance testing
	~~Phase 2~~ ~~L895, A585~~	~~2017~~	~~2019~~	~~TBD~~	~~Completed~~	~~SEA Report: Project 2~~
Australia - Papua New Guinea	TBN				Ongoing	SEA Report: Project 6 (to be re-evaluated due to the implementation of space-based ADS-B in Papua New Guinea)
Brunei - Singapore	M758, M768, M767	2015	2019	2021*	Completed	SEA Report: Project 2 *Data sharing start Sep 2021
China – Hong Kong, China	Project 1 M771, L642	2010	2013	2013	Completed	
	Project 2 M771, L642, A1	2017		2018	Completed	Supplementary data sharing of Route A1
China - Lao PDR	A581, B465	2019		TBD	Ongoing	BOB Report: Project 1
China - Myanmar	A599	2019		TBD	Ongoing	BOB Report: Project 1
India - Indonesia	B466, P574, N563	2018		~~2024~~2025	Ongoing	BOB Report: Project 2 ~~Data Sharing LoA on progress by end of 2022~~. ADS-B data from Campbell Bay (India) is proposed to be integrated

Related States/Administrations	ATS Route Served	Initiation Year	Agreement Date	Target Data Sharing Year	Implementation Status	Remarks/Challenges
						with Jakarta (Indonesia) ATC centre. Similarly, data from Banda-Aceh (Indonesia) ADS-B is proposed to be integrated with Chennai (India) ATC centre. Draft Letter of Agreement (LOA) has been shared with Indonesia and necessary Government approval is awaited for implementation of data sharing.
India - Malaysia	N571, P628, L510, P627, L645, P574	2017		~~2024~~2025	Ongoing	BOB Report: Project 3 ~~Data Sharing LoA on progress by 2023.~~ ADS-B data from Campbell Bay (India) is proposed to be integrated with Kuala Lumpur (Malaysia) ATC centre. Similarly, data from Langkawi (Malaysia) ADS-B is proposed to be integrated with Chennai (India) ATC centre. Draft Letter of Agreement (LOA) has been shared with Malaysia and necessary Government approval is awaited for implementation of data sharing. India and Malaysia are exchanging comments on the Draft LOA.
India - Myanmar	A201, A599, B465, G463, L507, P646, P762, G472, L524, M770, L759	2015	05/06/2015	2018	Completed	BOB Report: Project 4 Myanmar side: Discussion with ATM manufacturer for operational use at ACC is needed. Indian side completed.
Indonesia - Papua New Guinea	R204, A215, B462, B456	2018	~~2019~~	TBD	Ongoing	SEA Report: Project 6 (to be re-evaluated due to the implementation of space-based ADS-B in Papua New Guinea)

Related States/Administrations	ATS Route Served	Initiation Year	Agreement Date	Target Data Sharing Year	Implementation Status	Remarks/Challenges
Indonesia - Malaysia	B466, N571, P628, L510, P627, L645 and P574	2017		TBD	Ongoing	BOB Report: Project 5
Indonesia-Malaysia	**Project 3** R455, M772, B648, R223, M522, M768 and A211	2023		TBD	Ongoing	SEA Report: Project 3
Indonesia - Philippines	A461, R590, B472	2018	~~2019~~	TBD	Ongoing	SEA Report: Project 5
Indonesia - Singapore	M646, M758, M761, N875	2010		2013	Completed	SEA Report: Project 2
Malaysia - Singapore	**Project 1** M758, M768, L649,	2017		TBD	Ongoing	SEA Report: Project 2
	Project 2 M904, M765, N875, N891	2018		TBD	Ongoing	SEA Report: Project 2
Malaysia - Thailand	N571, P628, L510, P627, L645, P574	2018		TBD	Ongoing	BOB Report: Project 6
Myanmar - India	Project 1: Effect on Myanmar A201, A599, B465 Effect India: G463, L507, P646, N895	2018	2015	TBD	Ongoing	Data communication between Myanmar and India is stable with two links. Different Multiaircraft Address from India ADS-B Data
	Project 2: L301, M770	2019	2016	2020/2021	On trial	
Philippines - Singapore	N884, M522, M754, M767, M772, L649	2018		2018	Completed	SEA Report: Project 2

Related States/Administrations	ATS Route Served	Initiation Year	Agreement Date	Target Data Sharing Year	Implementation Status	Remarks/Challenges
Singapore - Vietnam	**Project 1** N892, N891, M771, M753, M758, L642, L644	2007		2013	Completed	SEA Report: Project 2
	Project 2 N892, N891, M771, M753, M758, M904, L642, L644	2014	2016	2018	Completed	SEA Report: Project 2
Lao PDR – Thailand	A202, A1	2025	TBD	TBD	Ongoing	SEA Report: Project 7

WORKFLOW FOR THE REQUEST AND COORDINATION OF INTERROGATOR CODES



Note:

1) Interrogators that do not perform lock-out do not require coordination for IC. Example of such interrogator is the interrogator of an active MLAT
2) Interrogators must support II/SI code operations before it is allowed to use SI code.
3) States/Administrations are encouraged to use SI codes for interrogators that support II/SI code operations. But States/Administrations may choose to use II code for reasons such as safety assessment for the use of SI code has yet to be completed.
4) II=0, SI=16, 32 and 48 will not be assigned by ICAO APAC Regional Office.