International Civil Aviation Organization

Sixth Meeting of the Asia/Pacific Air Traffic Management Automation System Task Force (APAC ATMAS TF/6)

Bangkok, Thailand 2-4 June 2025

Agenda Item 3: Review of Outcomes of Relevant Meetings

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), which may be interested to ATMAS TF, for information and action.

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 presents relevant information and updates from the meeting.

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.

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)

2.4 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.

2.5 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)

2.6 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)

2.7 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)

2.8 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.

Progress on ADS-B planning and implementation

2.9 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 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.

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

2.10 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.

2.11 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)

2.12 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)

2.13 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)

2.14 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)

2.15 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)

2.16 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.

2.17 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.

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

2.18 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.

2.19 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.

2.20 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)

2.21 Singapore proposed the process for States to request and coordinate interrogator codes (IC) for mode S interrogators. It was decided that States/Administrations requiring ICs should request to the ICAO APAC Regional Office following the approved workflow as per **Appendix A** to facilitate the request. The **Draft Conclusion SURICG/10/02** - Workflow for the request and coordination of IC codes with the ICAO APAC Officewas endorsed by the SURICG/10 Meeting for CNS SG/29 adoption.

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

2.22 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;

2.23 The document was presented and deliberated during the SURICG/10 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.

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

2.24 SURICG/8 endorsed a revised version of the ToR of SURICG and further adopted in CNS SG/27 through Decision CNS SG/27/12 - Revised ToR of Surveillance Implementation Coordination Group to reflect the change due to the dissolution of Mode S and DAPs. 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)

2.25 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

2.26 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; and

b) discuss any relevant matter as appropriate

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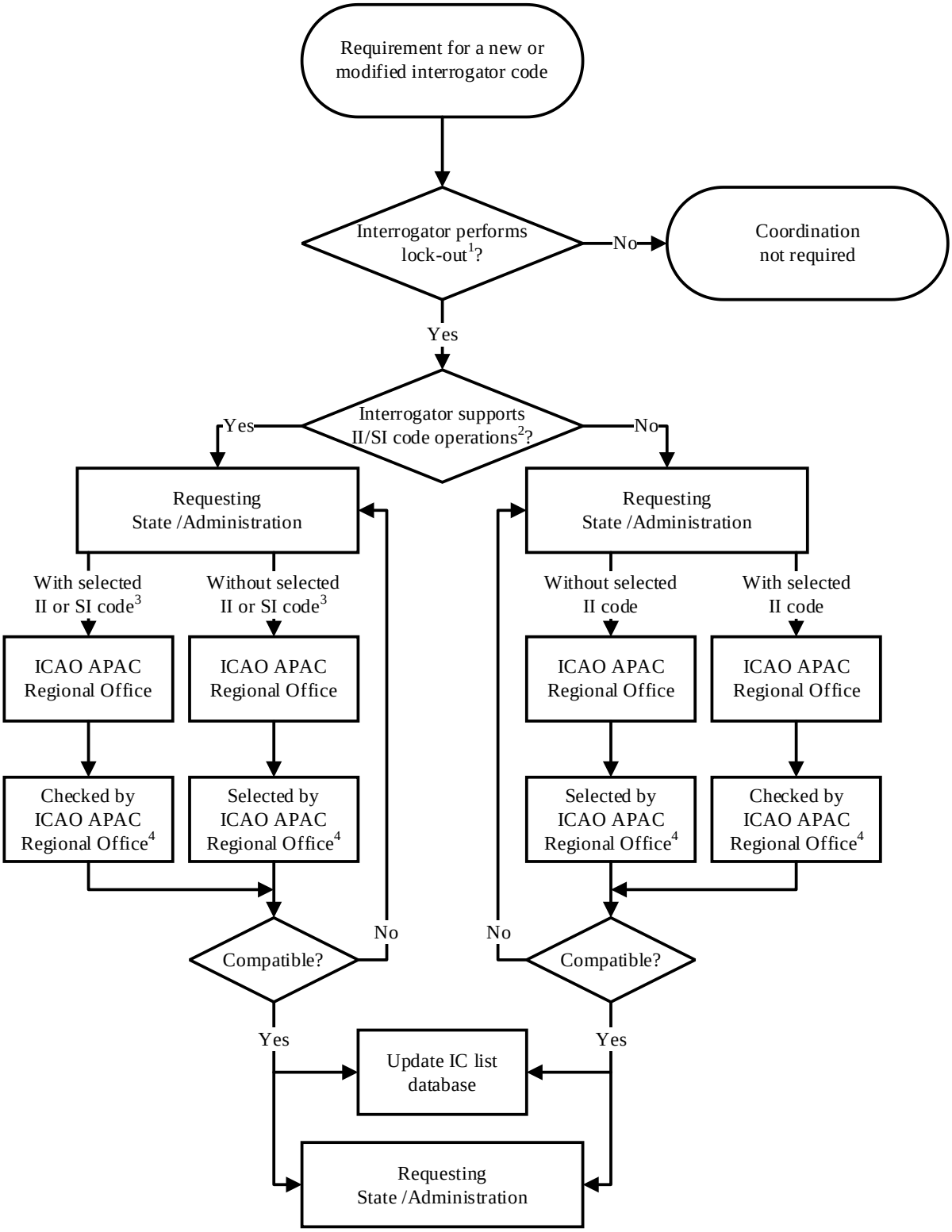
WORKFLOW FOR THE REQUEST AND COORDINATION OF INTERROGATOR CODES



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.