

**INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE**



**REPORT OF
THE FIRST MEETING OF THE
SURVEILLANCE IMPLEMENTATION COORDINATION GROUP (SURICG/1)**

(21-22 April 2016
Bangkok, Thailand)

The views expressed in this Report should be taken as those of the Meeting and not the Organization. This Report will be presented to the APANPIRG/27 for consideration through CNS Sub-group of APANPIRG.

Approved by the Meeting
and published by the ICAO Asia and Pacific Office, Bangkok

HISTORY OF THE MEETING	Page
Introduction	i-3
Attendance	i-3
Officers and Secretariat	i-3
Organization, Working arrangements and Language	i-3

SUMMARY OF DISCUSSIONS

Agenda Item 1: Election of Co-Chairs of SURICG	1
Agenda Item 2: Adoption of Agenda	1
Agenda Item 3: Review Outcomes of Relevant Meetings	1
Agenda Item 4: Review TOR of SURICG	2
Agenda Item 5: Review the Revised Surveillance Strategy for the Asia/Pacific Region.	3
Agenda Item 6: Review of Regional Requirements for Surveillance in the eANP, Seamless ATM Plan and ASBU	3
Agenda Item 7: Develop Working Methods and Initial List of Action Items	4
Agenda Item 8: Next Meetings	5
Agenda Item 9: Any Other Business	5

LIST OF APPENDICES

Appendix A: Revised Terms of Reference of the Surveillance Implementation Coordination Group (SURICG)	
Appendix B: Revised Surveillance Strategy for the APAC Region	
Appendix C: Agreed List of Action Items	

LIST OF ATTACHMENTS

Attachment 1: List of participants	
Attachment 2: List of working and information papers	

1. Introduction

1.1 The First Meeting of the Surveillance Implementation Coordination Group (SURICG/1), back to back with the Fifteenth Meeting of ADS-B Study and Implementation Task Force was held in the Koitate Wing of the ICAO Asia and Pacific Regional Office, Bangkok, Thailand, from 21 to 22 April 2016.

2. Attendance

2.1 The Meeting was attended by 74 participants from Australia, Bangladesh, Bhutan, Cambodia, China, Hong Kong China, Macao China, Fiji, India, Indonesia, Japan, Lao PDR, Malaysia, Maldives, Mongolia, New Zealand, Pakistan, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, USA, Viet Nam, CANSO, IATA and Airbus. A list of participants is at **Attachment 1**.

3. Officers and Secretariat

3.1 Mr. Hui Man Ho, Chief Electronics Engineer, Civil Aviation Department, Hong Kong China and Mr. Alexander (Alex) Milns, Chief Operating Authority – Surveillance, Airservices, Australia co-chaired the Meeting. Mr. Li Peng, Regional Officer CNS and Mr. Shane Sumner, Regional Officer ATM, ICAO Asia and Pacific Regional Office, acted as Secretaries.

4. Organization, working arrangements and language

4.1 The meeting met as a single body except on 21 April 2016, when an Ad hoc Working Group met to update the regional surveillance strategy. The working language was English inclusive of all documentation and this Report. A list of working and information papers presented at the meeting is at **Attachment 2**.

Agenda Item 1: Election of Chairperson

1.1 Nominated by Cambodia and seconded by New Zealand and Fiji, Mr. Hui Man Ho, Chief Electronics Engineer of the Civil Aviation Department of Hong Kong China, and Mr. Alex Milns, Chief Operating Authority – Surveillance, Airservices Australia were unanimously elected as co-chairs of the SURICG.

Agenda Item 2: Adoption of the Agenda**Provisional Agenda (WP/01)**

2.1 The provisional agenda was adopted by the Meeting without change, noting that if time permitted there would also be value in breaking into working groups to focus on sub-regional issues.

Agenda Item 3: Review of Outcomes of Relevant Meetings**Outcome of APANPIRG/26 and CNS/19 on Surveillance (IP/02)**

3.1 The Secretariat provided information reviewing the outcomes of the APANPIRG/26 and CNS SG/19 on surveillance. The meeting noted that APANPIRG made a decision on the establishment of the SURICG based on the recommendation of CNS SG/19 meeting.

Aeronautical Surveillance Working Group of the ICAO Surveillance Panel (IP/04)

3.2 The Secretariat and the Rapporteur of the Aeronautical Surveillance Working Group of the Surveillance Panel (SP-ASWG) highlighted relevant outcomes of the Third Meeting of SP-ASWG, held in London, United Kingdom, from 11 to 14 April 2016.

3.3 The meeting appreciated all information at global level highlighted in the paper which were relevant for the work programme of SURICG at regional level. Such information would avoid duplicated efforts at regional level and may contribute from APAC Region to the work at global level.

3.4 The meeting noted the change proposal for Doc 9871, Technical Provisions for Mode S Services and Extended Squitter, regarding the use of Mean Sea Level (MSL) referenced altitude. The change proposal outlines the areas of DO-260B/ED-102A and ICAO Doc 9871 that are inconsistent with current FAA and EASA published guidance (FAA AC 20-165B and EASA CS-ACNS). It was determined that geometric height data obtained from ADS-B sources is sufficient to estimate aircraft height-keeping performance if the Extended Squitter geometric altitude subfield contains only Height Above Ellipsoid (HAE). The Separation and Airspace Safety Panel (SASP) had strongly encouraged work to assess the viability of using ADS-B geometric height data as a means of estimating aircraft height-keeping performance. The Secretariat was requested to highlight this information to the APAC Regional Airspace Safety Monitoring Advisory Group (RASMAG).

3.5 Some proposed changes to the Annex 10 Vol. IV and to ICAO Doc 8071 were also noted. The meeting noted that ASWG/3 supported inclusion of the draft proposal of a guidance material on the inter-regional IC allocation coordination to be inserted in Doc 9924.

3.6 The meeting also noted the future meetings schedule of ASWG. Noting that Australia, China, Japan and Singapore from APAC Region have been active participants at different times in the ASWG meetings, the meeting encouraged participants from other States/Administrations to participate in and contribute to the work and study at global level. Australia also encouraged APAC States/Administrations to participate in the work of RTCA.

Agenda Item 4: Review of the TOR of SURICG

Terms of Reference of SURICG (WP/03)

4.1 The Terms of Reference (TOR) of SURICG were provided in **SURICG/1-WP/3 Attachment**, for review and update by the meeting.

4.2 The meeting discussed the need for the TOR to cover ADS-C. It was noted that ADS-C implementation and performance was currently managed under the TOR of the FANS Implementation Team-Asia (FIT-Asia) and ACSICG. The meeting agreed that ADS-C should be only considered by the SURICG when the regional Surveillance Strategy is reviewed and updated, but not in terms of implementation. Relevant outcomes from SURICG would be communicated to FIT-Asia and ACSICG by the Secretariat.

4.3 The meeting agreed to include consideration of existing and emerging technologies for detection of remotely-piloted aerial systems in the TOR.

4.4 The meeting further refined the TOR to *inter alia* ensure consideration of ADS-B IN, and to clarify the TOR references to Enhanced Mode S DAPS and the need for cost-benefit analyses in the study and identification of Mode S applications.

4.5 The revised TOR proposed by the meeting for consideration by the CNS Sub-Group of APANPIRG, are attached at **Appendix A** to this Report. Accordingly, the meeting formulated the following draft Decision.

Draft Decision SURICG/1/1 – Revised TOR of Surveillance Implementation Coordination Group

That, the revised Terms of Reference of the Surveillance Implementation Coordination Group (SURICG) provided in **Appendix A** to the Report be adopted.

4.6 The meeting also noted that the concept of project management principles to promote a more project-management-driven approach to regional air navigation planning and implementation is being included in the APANPIRG's handbook.

4.7 CNS SG/19 had suggested that SEA/BOB ADS-B WG which currently reports to ADS-B SITF would report to APANPIRG through SURICG from 2017 onwards. The meeting recommended that change to the reporting line should take place from Mid. July 2016 onwards after the CNS SG/20, when the report of ADS-B SITF/15 is reviewed and a recommendation for dissolving ADS-B SITF is made by the CNS SG.

Agenda Item 5: Review the Revised Surveillance Strategy for the Asia/Pacific Region**Surveillance Strategy for the Asia/Pacific Region (WP/02)**

5.1 The meeting reviewed the Surveillance Strategy for the Asia/Pacific Region adopted by APANPIRG/24 in June 2013 and the proposed amendments at the CNS/SG/19 meeting in July 2015.

5.2 The meeting established an ad hoc working group with members from Australia, Hong Kong China, New Zealand, Singapore, USA, Viet Nam and IATA for consolidating all proposed changes.

5.3 The meeting agreed to the revised regional surveillance strategy with all consolidated changes presented by the ad hoc working group and formulated the following Draft Conclusion:

Draft Conclusion SURICG/1/2 – Revised Surveillance Strategy for the APAC Region

That, the revised surveillance strategy for the APAC Region provided in **Appendix B** to the Report be adopted.

Agenda Item 6: Review of regional requirements for Surveillance in the eANP, Seamless ATM Plan and ASBU**Regional Surveillance Elements of the Seamless ATM Plan (WP/04)**

6.1 The meeting noted information on current and proposed ATS surveillance elements, including performance objectives, in the Asia/Pacific Seamless ATM Plan presented by the Secretariat. The meeting also noted the surveillance-related performance objective of the Version 1.0 of the Asia/Pacific Seamless ATM Plan.

6.2 The airspace categories in the ATM Seamless Plan including Preferred ATM Service Levels (PASL) for the Phase I (by 12 November 2015) and Phase II (by 8 Nov. 2018) in the current plan approved by the APANPIRG were introduced. The proposed changes as new version were also introduced. The surveillance elements in the plan should be in line with the regional surveillance strategy being revised by SURICG.

6.3 The Preferred Aerodrome/Airspace and Route Specifications (PARS) and Preferred ATM Service Levels (PASL) Phase II were proposed to be shifted to the end of 2019.

6.4 The draft performance expectations of the updated Seamless ATM Plan, to be presented to APANPIRG/27 in September 2017 for endorsement, included new elements related to the use of Mode S and ADS-B DAPS.

6.5 It was noted that the regional Seamless ATM Plan was processed and amended by ATM SG of APANPIRG.

6.6 The meeting noted that several of the DAPS referred to in APANPIRG *Conclusion 26/11 – Implementation of FPL 2012 Capability* were downlinked in some but not all ADS-B reports, and that the wording of the Seamless ATM Plan performance expectation should reflect this.

6.7 It was further noted that rather than Mode S SSR, the term Mode S surveillance or similar more generic term would be appropriate, as multi-lateration systems also interrogated in Mode S.

6.8 The meeting suggested that the Seamless ATM Plan's definition of airspace categories S, T and R should be amended to clarify the meaning of *third party communications service provider (CSP)*. It was noted that the intent was to differentiate between Category S and T airspaces where radar, ADS-B or multi-lateration surveillance and direct controller-pilot communications (DCPC) were available and Category R airspace, where ADS-C surveillance and CPDLC/HF were used.

6.9 The meeting noted the Asia/Pacific Regional priorities relating to ground surveillance, which were reflected in the performance objectives of the Seamless ATM Plan. While reporting of progress against the Seamless ATM Plan's expectations was already done by each State's focal point, there was a need for more detailed technical survey to facilitate the assessment and improvement of implementation progress by SURICG. In this respect, the Secretariat was requested to coordinate launching of the technical survey.

Agenda Item 7: Develop working methods and initial list of Action Items

Implementation of Mode S DAPs (Selected Flight Level) in Airways ATMS (IP/03)

7.1 This paper presents an update on Airways New Zealand's implementation of Mode S DAPS, specifically Selected Flight Level, within the Air Traffic Management System.

7.2 The project of introduction of MODE S DAPS data into its Skyline Air Traffic Management System was in the final testing stages before a planned implementation date of May 25th 2016. The intent of this enhancement is to provide controllers with a "Selected Flight Level" (SFL) data extracted from aircraft equipped with Mode S Enhanced Surveillance transponders (EHS). The selected altitude is available from BDS Register (4,0) and is interrogated for every 20 seconds by Airways MODE S radars and the Multilateration system or alternatively downlinked from ADS-B equipped aircraft with DO260A or DO260B transponders.

7.3 The extracted data enables the Air Traffic Management system (ATMS) to generate a safety alert when the SFL chosen by the crew DOES NOT match the cleared altitude given by the controller, alerting the controller to take appropriate action to remedy the issue.

7.4 Some issues encountered with the Implementation of Selected Flight Level were also introduced in the paper.

Actions Items referred to SURICG by ADS-B SITF

7.5 The meeting reviewed the initial list of task/action items referred to SURICG by ADS-B SITF (both list of outstanding issues and action items). The meeting also identify additional subject/task/action items for the members of SURICG to take follow up actions. The agreed list of action items is provided in **Appendix C** to the Report.

7.6 The meeting considered it necessary to establish a working group to investigate the wider application of Mode S technology in the Asia/Pacific Region.

Agenda Item 8: Next Meetings**Date and venue for the next meeting**

8.1 The meeting discussed dates and venue for the next meeting of SURICG. The meeting considered late April, May or early June 2017 would be suitable to most members of the SURICG. The duration of the meeting would be 4 or 5 days including one day seminar on Mode S technology. The meeting appreciated the offer from Mongolia to host the SURICG/2. The meeting also appreciated Fiji who also offered to host next meeting subject to approval by their administration. Secretariat was requested to coordinate with members of the Administrations to determine the venue and exact dates of the meeting and inform the States/Administrations and APANPIRG accordingly.

Agenda Item 9: Any Other Business

9.1 There was no other business discussed under this agenda.

**TERMS OF REFERENCE OF
SURVEILLANCE IMPLEMENTATION COORDINATION GROUP (SURICG)**

Consists of objectives and deliverables as follows:

The Objectives of the SURICG are to:

- 1) *Ensure continuous and coherent development of the Surveillance parts of the Asia/Pacific Regional Air Navigation Plan (APAC e-ANP) in a manner that is harmonized with adjacent regions, consistent with ICAO SARPs, the Global Air Navigation Plan and the Global Aviation Safety Plan;*
- 2) *Facilitate the implementation of Surveillance systems and services identified in the Aviation System Block Upgrades (ASBU) modules, APAC ANP, and Asia/Pacific Seamless ATM Plan elements using the project management principles where appropriate; and*
- 3) *Review, identify and address major issues in technical, operational, safety and regulatory aspects to facilitate the implementation or provision of efficient Surveillance services in the Asia and Pacific Regions.*

Deliverables to meet the Objectives:

- 1) *Progress report to be submitted to CNS SG addressing the SURICG deliverables (listed in 2 to 13 below);*
- 2) *Surveillance parts of the APAC ANP to be reviewed and aligned with work programme of States and, as necessary, amendment proposals prepared to update the APAC ANP to reflect changes in the operational and global requirements;*
- 3) *To review the outcome of the Surveillance Panel, SAS Panel, AN-Conf, APANPIRG and CNS SG related to surveillance, revise and update a tasks list and action items for the SURICG and formulate relevant Working Groups to work on those tasks / action items;*
- 4) *To develop regional targets/metrics for planning, implementation, measurement and monitoring of Surveillance systems and services;*
- 5) *To review and update the Surveillance Strategy by considering currently available and emerging technologies with respect to concept of operations, relative costing, technical and operational performance and maturity of alternative technology/solutions such as primary radar, secondary radar –including Mode-S, ADS-B, –Multilateration, ADS-C, multi-static primary radar (MPSR) and existing and emerging technology for detection of UAS including RPAS;*
- 6) *To study and identify applicable multilateration applications in the Asia and Pacific Regions considering:*
 - *Concept of use/operation*
 - *Required site and network architecture*
 - *Expected surveillance coverage*
 - *Cost Benefits Analysis*
 - *Recommended separation minimums*

- 7) *To study and identify applicable Mode S radar applications in the Asia and Pacific Regions considering:*
- *Concept of use/operation*
 - *Required site and network architecture*
 - *Expected surveillance coverage*
 - *Cost of system*
 - *Matching functionality required in ATC automation system*
 - *the use of Enhanced MODE S data (DAPS)*
- 8) *To develop an implementation plan for ~~near-term~~ ADS-B applications in the Asia and Pacific Regions including implementation target dates taking into account:*
- *available equipment standards*
 - *readiness of airspace users and ATS providers*
 - *identifying sub-regional areas (FIRs) where there is a positive cost/benefit for ~~near-term~~ implementation of ADS-B ~~OUT~~; and*
 - *developing a standardised and systematic task-list approach to ADS-B ~~OUT~~ implementation.*
- 9) *To coordinate ADS-B implementation plan and concept of operations with other ICAO regions where ADS-B implementation is going on and with relevant external bodies such as EUROCONTROL, EUROCAE, RTCA and Industry;*
- 10) *To encourage research and development, trials and demonstrations in the field of Surveillance and other relevant areas; ~~and, as necessary,~~*
- ~~10)11) Facilitate~~ *sharing of surveillance information and expertise between States through organizing educational seminars and ~~providing~~ providing guidance materials to educate States and airspace users;*
- ~~11)12) To support the ICAO in making specific recommendations, developing guidance materials, aimed at improving the Surveillance services by the use of existing and/or new procedures, facilities and technologies; and~~
- ~~12)13) Draft Conclusions and Decisions to be formulated relating to matters in the field of Surveillance that come within the scope of the APANPIRG or CNS Sub-group work plan.~~

[Note: The Implementation Coordination Group, while undertaking the tasks, should take into account of the work being undertaken by SAS, Surveillance Panels with a view to avoid any duplication.

The Implementation Coordination Group will report to CNS Sub-group and CNS Sub-group will coordinate with ATM Sub-group.]

Membership:

All APAC member States/Administrations providing air navigation services in the Asia and Pacific Regions.

The Surveillance Implementation Coordination Group shall normally invite representatives of International Organizations recognized by the ICAO Council and Industry partners as required by the group which ~~as~~ representing important civil aviation interests to participate in its work in a consultative capacity.

REVISED SURVEILLANCE STRATEGY FOR THE APACASIA/PACIFIC REGION

Considering that:

1. States are implementing CNS/ATM systems to gain safety, efficiency and environmental benefits, and have endorsed the move toward satellite and data link technologies;
2. The future air traffic environment will require increased use of aircraft-derived surveillance information for the implementation of a seamless automated air traffic flow management system;
3. The 11th Air Navigation Conference endorsed the use of ADS-B as an enabler of the global air traffic management concept and encouraged States to support cost-effective early implementation of ADS-B applications;
4. The 12th Air Navigation Conference endorsed the ICAO Aviation System Block Upgrades (ASBU) Framework with Modules specifying effective use of ADS-B/MLAT and associated communication technologies in bridging surveillance gaps and its role in supporting future trajectory-based ATM operating concepts. Cooperation between States is the key to achieve harmonized ATM system operations;
5. APANPIRG has decided to use the 1090MHz Extended Squitter data link for ADS-B air-ground and air-air applications in the Asia/Pacific Region, noting that in the longer term an additional link type may be required;
6. Use of surveillance systems that do not require GNSS SSR and ADS-C will continue to meet many critical surveillance needs for the foreseeable future;
7. SARPs, PANS and guidance material for the use of ADS-B have been developed;
8. Mode S and ADS-B avionics (including DAPs) and ~~ground processing~~ systems are available;
9. ADS-B IN applications and equipment are now available in commercial airliners and ICAO ASBUs include ADS-B IN applications; -
10. There are continuing significant pressures on the radio spectrum for purposes outside aviation, particularly in the primary radar spectrum; and
11. ADS-B security issues are addressed by the regional guidance material and may need to be further considered in the future.

THE SURVEILLANCE STRATEGY FOR THE ASIA/PACIFIC REGION IS TO:

1. Minimize the reliance upon pilot position reporting, particularly voice position reporting, for surveillance of aircraft;
2. Maximize the use of ADS-B on major air routes and in terminal areas, giving consideration to the mandatory carriage of ADS-B Out as specified in Note 1 and use of ADS-B for ATC separation service;

3. Reduce the dependence on Primary Radar for area surveillance, consider the ongoing need for primary radars in terminal areas, and the potential use of alternate technologies or procedures (e.g transponder veil regulations);
4. Encourage deployment of Mode S systems instead of Mode A/C only radars when replacement is required;
5. Provide maximum contiguous ATS surveillance coverage of air routes using 1090MHz Extended Squitter ADS-B, Wide Area Multilateration and Mode S SSR based on operational requirements;
6. Make full use of ~~SSR~~ aircraft Mode S capabilities where suitable surveillance systems are available to reduce reliance on 4-digit octal codes. Mode S capabilities such as DAPs should also be used to support ATM services where appropriate;
7. Make use of ~~ADS-C~~ alternative technologies (e.g. ADS-C) where technical constraint or cost benefit analysis does not support the use of ADS-B, SSR or Multilateration;
8. Make use of Multilateration for surface, terminal and area surveillance where appropriate and feasible;
9. Closely monitor ADS-B ~~OUT-avionics~~ developments such as Version 2 (DO260B) equipage rates and space-based ADS-B application programs. At an appropriate time (circa 2018~~6~~) APAC States ~~-~~should review progress and consider development of transition plans where cost/benefit studies indicate positive advantages for the region;
10. Carefully monitor ADS-B IN development and cost benefits to ensure that ASIA/APAC States are able to take advantage of ADS-B IN benefits when appropriate, through procedures, rules and ATC automation capabilities;
11. To the extent possible, implement -ADS-B in the non-radar environment as a priority. In the radar or other surveillance environment, use ADS-B to supplement or replace existing surveillance coverage, subject to local factors and risk assessment;
12. Monitor the outcomes of the Global Aircraft Tracking initiatives and ensure they are included in the Regional- strategy for implementation;
13. Implementation of surveillance capability should also include consideration of contingency surveillance -requirements; and
14. Monitor development of surveillance systems to support integration of UAS including RPAS operations .

Note 1:

- a) *Version 0 ES as specified in Annex 10, Volume IV, Chapter 3, Paragraph 3.1.2.8.6 (up to and including Amendment 82 to Annex 10) and Chapter 2 of Technical Provisions for Mode S Services and Extended Squitter (ICAO Doc 9871) (Equivalent to DO260) to be used till at least 2020.*
- b) *Version 1 ES as specified in Chapter 3 of Technical Provisions for Mode S Services and Extended Squitter (ICAO Doc 9871) (Equivalent to DO260A);*
- c) ~~*Version 2 ES (including provisions for new set of 1 090 MHz extended squitter (ES) messages and traffic information service broadcast (TIS-B) being developed by the Aeronautical Surveillance Panel (ASP) and scheduled to be incorporated in Annex 10 Vol. IV Surveillance and Collision Avoidance System as part of Amendment 86 with target applicable date in November 2013. (Equivalent to DO260B and EUROCAE ED-102A which were issued in December 2009)*~~ *Version 2 ES as specified in Chapter 4 of Technical Provisions for Mode S Services and Extended Squitter (ICAO Doc 9871) (Equivalent to DO260B).*

SURICG/1
Appendix C to the Report

LIST OF OUTSTANDING ACTION ITMES

No.	Subject	Forum Raised	Status / Target Date	Remarks / follow-up	Action Party	Status
1.	In MEL not included the effect of GNSS failure on ADS-B output which should be included.	SEA/BOB WG/9	SURICG/2	Contact Boeing and Airbus through operators	IATA and Hong Kong China	Initial result based on contact with AIRBUS & BOEING subject to confirmation
2.	States to advise when their ground stations can be upgraded to receive ADS-B DO260B compliant ADS-B data. A survey was conducted during ADS-B SITF/13 (Appendix E). On-going bases	SEA/BOB WG/9	On-going	Further updates the Table and report to SURICG/2	All States/ Administrations	On-going Table updated and maintained by SURICG
3.	General ADS-B Avionics Problem Reporting Database (APRD) (being implemented)	SEA/BOB WG/9	End of June 2016	Further progress to be achieved at ADS-B SITF/15 On-going	Hong Kong China and RSO Singapore, PNG, China, Indonesia	On-going Progressed at ADS-B SITF15
4.	Develop and implement regional collaboration project for ADS-B out operational use including data sharing in South Pacific and report on implementation progress.	Previous meeting of ADS-B SITF and ADS-B SITF/13	SURICG/2	ADS-B SITF/15	South Pacific States On-going Transferred to SURICG	On-going Initial stage Report by Ad Hoc WG at ADS-B SITF14
5.	Perform data collection and data analysis of ADS-B messages to examine GPS performance in different geographic areas.	Previous meeting of ADS-B SITF and ADS-B	SURICG/2	Report of data collected and analyzed - continuous	All Members On-going Transferred to SURICG	On-going
6.	ICAO Aircraft address management	Emerging issue	SURICG/2	To be addressed	Secretariat prepare initial paper	Initial
7.	Working arrangement (sub-working group) for SURICG relevant to Mode S Implementation	SURICG/1	SURICG/2	Prepare a paper	Secretariat prepare initial paper with support from sub-set of	

LIST OF OUTSTANDING ACTION ITMES

No.	Subject	Forum Raised	Status / Target Date	Remarks / follow-up	Action Party	Status
					members of the group (New Zealand, China, Indonesia, Japan, Mongolia, Singapore)	

Based on SEA/BOB WG/11 meeting report and ADS-B SITF/15 discussions, the following action item was developed

8.	<p>a) Inform member airlines/operators about the B787 ADS-B Deficiency and the service Bulletin (SB) B787-81205-SB340005-00 and accomplish the upgrade as soon as possible;</p> <p>b) Member States/Administrations of the SURICG to update the status whether their State registered B787s has already applied the service bulletin.</p>	<p>SEA/BOB WP/11</p> <p>ADS-B SITF/15</p>	SURICG/2	<p>Inform member airlines</p> <p>report status</p>	IATA & all member States/Administrations
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Following issues were identified by ADS-B SITF/15 for further consideration by SURICG.

All members States/Administrations to contribute with papers at next meeting on any of the following items.

- ASBUs relating to ADS-B IN
- Implementation of Space Based ADS-B
- ASBU B0-NET using ADS-B
- Use of lower cost, lower performance ADS-B systems (TSO199)
- Use of Mode S DAPS in APAC region
- Use of electronic scan primary radars in APAC region

SURICG/1
Appendix C to the Report

- Use of Mode C transponder veils in APAC region
- Use of Flight ID data from mode S interrogation and ADS-B
- Mode S problem reporting in APAC region
- Mode S analysis tools used in APAC region
- ADS-B test equipment used in APAC region
- Need to amend SUPPs 7030 on SIL matter
- Management issues with 24 bit ICAO codes in APAC
- Update and maintain ADS-B problem database
- Consider need for aircraft transponder Mode S mandates

**FIRST MEETING OF THE SURVEILLANCE IMPLEMENTATION
COORDINATION GROUP (SURICG/1)**

(Bangkok, Thailand 21 – 22 April 2016)

Attachment 1 to the Report

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International Civil Aviation Organization

**FIRST MEETING OF THE SURVEILLANCE IMPLEMENTATION
COORDINATION GROUP (SURICG/1)**

Bangkok, Thailand, 21 - 22 April 2016

LIST OF WORKING/INFORMATION PAPERS

WP/IP No.	Agenda Item	Subject	Presented by
LIST OF WORKING PAPERS			
WP/1	-	Provisional Agenda	Secretariat
WP/2	5	Surveillance Strategy for the Asia/Pacific Region	Secretariat
WP/3	4	Terms of Reference of SURICG	Secretariat
WP/4	6	Regional Surveillance Elements of the Seamless ATM Plan	Secretariat
LIST OF INFORMATION PAPERS			
IP/1	-	Meeting Bulletin	Secretariat
IP/2	3	Review Outcome of APANPIRG/26 and CNS SG/19 on Surveillance	Secretariat
IP/3	7	Implementation of MODE S DAPS (Selected Flight Level) in Airways ATMS	New Zealand
IP/4	3	The Third Meeting of the Aeronautical Surveillance Working group of Surveillance Panel (ASWG/3)	Secretariat/ Rapporteur
