INTERNATIONAL CIVIL AVIATION ORGANIZATION

FINAL REPORT

REPORT OF THE TWENTY EIGHTH MEETING OF THE ASIA/PACIFIC AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG/28)

Bangkok, Thailand, 11 to 14 September 2017

The views expressed in this Report should be taken as those of the APANPIRG and not of the Organization. This Report will be presented to the Air Navigation Commission/Council and any formal action taken will be published in due course as a supplement to the Report.

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

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PART I – HISTORY OF THE MEETING

1.1 Introduction

1.1.1 The Twenty Eighth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/28) was held at ICAO APAC Office, Bangkok, Thailand from 11 to 14 September 2017.

1.2 Attendance

1.2.1 The meeting was attended by 163 participants from 27 Member States, 2 Special Administrative Regions of China, 6 International Organizations (CANSO, IATA, IBAC, ICCAIA, IFAIMA and IFALPA).

1.2.2 A list of participants is provided at **Attachment 1** to the Report.

1.3 Opening of the Meeting

Welcome address by Mr. Arun Mishra, Regional Director, ICAO Asia/Pacific Office and Secretary of APANPIRG.

1.3.1 Mr. Mishra welcomed the participants from the Member States, International Organizations and delivered the welcome address. He highlighted the progress achieved on the regional activities by the APAC States since the last meeting. The full text of the address by the ICAO Regional Director is included as **Attachment 2** to this Report.

Opening remarks by Mr. Graeme Harris, Director of Civil Aviation, Civil Aviation Authority of New Zealand and Chairman of APANPIRG.

1.3.2 Mr. Graeme Harris, Director of Civil Aviation, Civil Aviation Authority of New Zealand and Chairman of APANPIRG welcomed the members and delivered the opening address.

1.4 Officers and Secretariat

1.4.1 Mr. Harris, Director of Civil Aviation, Civil Aviation Authority of New Zealand and Chairman of APANPIRG presided over the meeting.

1.4.2 Mr. Arun Mishra, ICAO Regional Director, Asia/Pacific Office, was the Secretary of the meeting.

1.4.3 The meeting was assisted by Mr. Manjit Singh, Deputy Regional Director, Mr. Raphael Guillet, Chief of RSO, Mr. Len Wicks and Mr. Shane Sumner, Regional Officers/ATM, Mr. Li Peng and Mr. Frederic Lecat, Regional Officers/CNS, Mr. Peter Dunda, Regional Officer/MET, Mr. Punya Raj Shakya, Regional Officer/AGA and Capt. Pu, Fanghui, Associate Safety Oversight Officer. The meeting was also supported by Mr. Erwin Lassooij, Chief Programmes Coordination and Implementation (C/PCI), International Civil Aviation Organization, HQs, Air Navigation Bureau, ICAO Headquarters.

1.5 Agenda of the Meeting

1.5.1 The meeting adopted the following Agenda:

Agenda Item 1A: Follow-up on the outcomes of APANPIRG/27 Meeting

- 1.1 Review of the action taken by the ANC/Council on the Report of APANPIRG/27
- 1.2 Review status of implementation of APANPIRG/27 Conclusions and Decisions
- 1.3 Review status of implementation of APANPIRG outstanding Conclusions and Decisions

Agenda Item 1B: Aviation Safety and RASG-APAC activities

Agenda Item 2: Global and Inter Regional Activities

Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation

- 3.0 Regional and National Performance Framework
- 3.1 AOP
- 3.2 ATM
- 3.3 RASMAG
- 3.4 CNS
- 3.5 MET
- 3.6 Other Air Navigation Matters

Agenda Item 4: Regional Air Navigation Deficiencies

Agenda Item 5: Future Work Programme

Agenda Item 6: Any other business

1.6 Working Arrangements, Language and Documentation

1.6.1 The working language of the meeting was English inclusive of all documentation and this Report. Information Papers (IP) and Working Papers (WP) considered by the meeting are listed in the **Attachment 3** to this Report and available at APAC web site.

1.7 Conclusions and Decisions - Definition

1.7.1 The APANPIRG records its actions in the form of Conclusions and Decisions with the following significance:

1) Conclusions deal with matters which, in accordance with the Group's Terms of Reference, require the attention of States or actions by ICAO in accordance with established procedures; and

2) Decisions deal with matters of concern only to the APANPIRG and its contributory bodies.

1.7.2 Lists of Conclusions and Decisions are given on pages i-5 to i-7.

1.8 Terms of Reference of APANPIRG

1.8.1 The Terms of Reference of APANPIRG was approved by the Council of ICAO (6th Meeting of its 171st Session on 27 February 2004) and revised consequent to the Decision of the Council [C-DEC 183/9, March/April 2008 and C-WP/13558, C190/4 on 25 May 2010]. The revised Terms of Reference are:

1. Membership

All ICAO Contracting States, who are service providers in an air navigation region and part of that region's ANP, should be included in the membership of that region's PIRG. Furthermore user States are entitled to participate in any other PIRG Meetings as a non-member. International Organisations recognised by the Council may be invited as necessary to attend PIRG meetings as observers.

2. The Terms of Reference of the Group are:

a) to ensure continuous and coherent development of the Asia/Pacific Regional Air Navigation Plan and other relevant regional documentation in a manner that is harmonized with adjacent regions, consistent with ICAO SARPs and Global Air Navigation Plan for CNS/ATM Systems (DOC 9750) and reflecting global requirements;

b) to facilitate the implementation of air navigation systems and services as identified in the Asia/Pacific Regional Air Navigation Plan with due observance to the primacy of air safety, regularity and efficiency; and

c) to identify and address specific deficiencies in the air navigation field.

3. In order to meet the Terms of Reference, the Group shall:

a) review, and propose when necessary, the target dates for implementation of facilities, services and procedures to facilitate the coordinated development of the Air Navigation Systems in the Asia/Pacific Region;

b) assist the ICAO Asia/Pacific Regional Office in fostering the implementation of the Asia/Pacific Regional Air Navigation Plan;

c) in line with the Global Aviation Safety Plan (GASP), facilitate the conduct of any necessary systems performance monitoring, identify specific deficiencies in the air navigation field, especially in the context of safety, and propose corrective action;

d) facilitate the development and implementation of action plans by States to resolve identified deficiencies, where necessary;

e) develop amendment proposals to update the Asia/Pacific Regional Air Navigation Plan to reflect changes in the operational requirements;

f) monitor implementation of air navigation facilities and services and where necessary, ensure interregional harmonization, taking due account of organizational aspects, economic issues (including financial aspects, cost/benefit analyses and business case studies) and environmental matters;

g) examine human resource planning and training issues and propose where necessary human resource development capabilities in the region that are compatible with the Asia/Pacific Regional Air Navigation Plan;

h) ~~review the Statement of Basic Operational Requirements and Planning Criteria and recommend to the Air Navigation Commission such changes as may be required in the light of new developments in the air navigation field~~;[1]

i) request financial institutions, on a consultative basis as appropriate to provide advice in the planning process;

j) maintain close cooperation with relevant organizations and State grouping to optimize the use of available expertise and resources;

k) conduct the above activities in the most efficient manner possible with a minimum of formality and documentation and call meetings of the APANPIRG when deemed necessary to do so; and

l) coordinate with RASG APAC on safety issues.

[1] With regard to item h) of the APANPIRG Terms of Reference secretariat informed that AN 186-6 confirmed that the BORPC was no longer used. The Council on 18th June 2014 approved the format of the new e ANP without a BORPC. Therefore, the need to review the BORPC was no longer required as part of the TOR of PIRGs.

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List of Conclusions

Conclusion 28/27 – Proposal for Amendment of the Asia/Pacific Air Navigation Plan, Volume I and Volume II, Part V – MET

Conclusion 28/28 – Proposal for Amendment of the common Air Navigation Plan Template, Volume I and Volume II, Part V – MET

Conclusion 28/29 – Removal of AN deficiencies AP-MET-03 and AP-MET-06 from the APANPIRG Open List

Conclusion 28/30 – SIGMET coordination in the APAC Region

Conclusion 28/31 – Update of information in APANPIRG Air Navigation Deficiencies Reporting Form

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List of Decisions

Decision 28/2	**–**	**APA-CDM/TF Terms of Reference**
Decision 28/3	**–**	**Amendment of Water Aerodrome Small Working Group's TOR**
Decision 28/4	**–**	**ATFM/SG Terms of Reference**
Decision 28/6	**–**	**APUAS/TF Terms of Reference**
Decision 28/17	**–**	**Dissolution of CRV Task Force**
Decision 28/26	**–**	**Dissolution of APAC/NAT ADS-C reporting intervals Task Force**

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Agenda Item 1A: Follow-up on the Outcome of APANPIRG/27 Meeting

Review of the Actions of the Air Navigation Commission (ANC) on the Report of the APANPIRG/27 (WP/02)

1A.1 The Meeting noted that the ANC, on 23 November 2016, approved the Report of the APANPIRG/27 Meeting (Bangkok, 5 to 8 September 2016). The Attachment 'A' to the APANPIRG/28 Working Paper/02 presented the action taken by the ANC on the Conclusions and Decisions of APANPIRG/27 based on the recommendations of the Working Group of the Whole for Strategic Review and Planning (WG/SRP).

1A.2 The Paper invited meeting to note the action taken by the Commission on the APANPIRG/27 Report and include the follow-up actions in the work programme of APANPIRG as necessary.

Review of Status of Implementation of APANPIRG/27 Conclusions and Decisions (WP/03)

1A.3 The Meeting reviewed the action taken by States/ICAO and the progress made on the APANPIRG/27 Conclusions and Decisions.

1A.4 The Meeting noted that out of the 50 Conclusions and 6 Decisions action has been taken to close/complete 48 Conclusions and 6 Decisions. Action on the remaining 2 Conclusions [12 & 52] was ongoing. Appendix A to APANPIRG/28 Working Paper/03 presented the updated status.

Review of Status of Implementation of APANPIRG Outstanding Conclusions and Decisions (WP/04)

1A.5 The Meeting reviewed the action taken by States/ICAO and progress made on the APANPIRG Outstanding Conclusions and Decisions up to its Twenty Sixth Meeting.

1A.6 APANPIRG noted that out of the outstanding 8 Conclusions, the follow-up actions on 7 Conclusions have been completed or closed. Action on the remaining 1 Conclusion [26/50] was ongoing.

1A.7 The Meeting acknowledged that significant progress had been made in completing required action on the Outstanding APANPIRG Conclusions and Decisions. Appendix A to APANPIRG/28 Working Paper/04 presented the updated status.

Review of the Action Taken by the ANC and the Council on the Report of the APANPIRG/27 (WP/13)

1A.8 The Meeting noted that the Council reviewed a consolidated annual report on Planning and Implementation Regional Groups (PIRGs) and Regional Aviation Safety Groups (RASGs) covering the period from April 2016 to March 2017 presented jointly by ANC and the Air Navigation Bureau (ANB).

1A.9 The Meeting also noted the action taken by the ANC and the Council on the Report of APANPIRG/27 and action to be taken by the APANPIRG related to the Council Decision. The Meeting further noted that the Council had expressed concern of the limited involvement of some States' authorities in the work, meetings and related activities of Planning and Implementation

Regional Groups (PIRGs) and Regional Aviation Safety Groups (RASGs), thus limiting the implementation of their objectives and conclusions as well as overall outcomes.

1A.10 The Paper invited the meeting to take action on the Council Decisions and suggest measures that would enhance participation by Member States in the PIRGs and RASG.

Response Mechanism against Jamming in Indonesia (IP/20)

1A.11 This Paper presented activities against interference in Aeronautical Spectrum in Indonesia. The Ministry of Communications and Informatics of Indonesia had deployed more than 64 Transportable Radio Frequency Monitoring System (RFMS) in 2016 mostly near the airport in Indonesia including major airports such as Jakarta, Medan, Surabaya, Denpasar and Makassar to detect jammer. The paper shared that the source of interference and jammer location was difficult to find because the aircraft at the time of report was in flying position. Until now there were no reports of interference in GNSS frequency spectrum.

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Agenda Item 1B: Aviation Safety and RASG APAC Activities

APRAST/10 and RASG/7 Meeting Outcomes (WP/22)

1B.1 APANPIRG/28 noted the activities undertaken by the RASG-APAC and APRAST in 2017 and outcomes of APRAST/10 and RASG-APAC/7 meetings which were held on 17 to 21 April 2017 and 3 to 5 July 2017, respectively, in Bangkok.

Report of the Fourth Coordination Meeting between APANPIRG and RASG-APAC (WP/26)

1B.2 APANPIRG/28 noted that the Fourth APANPIRG/RASG–APAC Coordination Meeting was held in Bangkok, Thailand, on 6 July 2017 and was attended by the APANPIRG Chair and Vice-Chair, RASG-APAC Chair, APRAST Co-Chair (States), Senior Officials from ICAO HQ and Secretariat.

1B.3 APANPIRG/28 also noted that the Coordination Meeting reviewed the templates for reporting Conclusions/Decisions and agreed to expand the current template of Conclusion/Decision used in APANPIRG, RASG-APAC and their contributory bodies, to include references, such as, Working Paper (WP). APANPIRG/28 also noted that the APANPIRG was assigned lead regional group for activities, such as, "airspace contingency, natural disaster/crisis, conflict" in the region as per table below.

Coordination item	**RASG-APAC**	**APANPIRG**
Safety management, safety oversight system and flight operations safety aspects	√	
Air navigation facilities and services implementation aspects		√
AGA and **ANS** safety areas	**Required coordination**	
English Language Proficiency	**Required coordination**	
Airspace Contingency, Natural disaster/Crisis, Conflict		√

1B.4 APANPIRG/28 also noted that the Coordination Meeting discussed different options for the enhancement of the States participation in RASG and PIRG meetings reviewing PIRG/RASG structures, work methods, and meetings.

Enhancing Support for Safety Management Implementation (WP/27)

1B.5 This paper presented the tasks identified and completed by ICAO to enhance the support for the implementation of State Safety Programmes (SSPs) and Safety Management Systems (SMS) subsequent to the adoption of Amendment 1 to Annex 19. APANPIRG/28 noted these tasks as followed:

a) a revision to the *Safety Management Manual (SMM)* (Doc 9859);

b) the development of an ICAO Safety Management Implementation website with examples to complement the 4th edition of the SMM;

c) updated SSP tools;

d) an update to the ICAO Safety Management Training Programme; and

e) ICAO SSP implementation promotional activities.

1B.6 Recognizing the challenges faced in implementing SSP and Safety Management System (SMS) "commensurate with the size and complexity" of each organization and the wide range of service providers addressed by Annex 19, the ICAO Safety Management Implementation website as a complement to the 4th edition of the Safety Management Manual would include some examples currently found in the third edition of SMM (updated) and provide a mechanism for the sharing of multiple tools and examples. This will emphasize the need for an SSP or an SMS to be tailored to the specific needs of each State and service provider. In addition, as experience in the implementation of safety management grows and the tools continue to evolve, the web-based format would allow for continuous update. States, regional and international organizations would be invited to share their examples beginning in October 2017. In view of the above, APANPIRG/28 adopted the following Conclusion:

<table>
<tr><td colspan="3">Conclusion APANPIRG/28/1 : Safety Management Implementation</td></tr>
<tr><td colspan="2">What: That, States, regional and international organizations are invited to share tools and examples which support effective safety management implementation to be considered for posting on the ICAO safety management implementation website.</td><td>Expected impact:
☒ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: For the sharing of multiple tools and examples in support of effective safety management implementation.</td><td colspan="2">Follow-up: ☒Required from States</td></tr>
<tr><td>When: 14-Sep-17</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☐Sub groups ☒APAC States ☐ICAO APAC RO ☒ICAO HQ ☒Other: International Organizations</td></tr>
</table>

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Agenda Item 2: Global and Inter Regional Activities

Air Navigation Bureau Global Update (Flimpsy)

2.0.1 This presentation provided an overview of global activities by ICAO pertaining to planning and effective implementation.

2.0.2 The meeting was briefed about the developments regarding the Global Air Navigation Plan (GANP). The 2016 GANP includes the move to a six year cycle, performance-based approach and creation of a GANP webpage. The most comprehensive improvement will however come from the 2019 GANP which will introduce a four-tier layer approach that will include a global managerial level, Global technical level, a Regional and national plan layer. The 2019 GANP will also include the addition of the Basic Building Blocks (BBB) to the Aviation System Block Upgrades (ASBUs) that from the backbone requirements of an air navigation system. The development of the 2019 GANP is currently in full flow. The first announcement will be during the GANIS/SANIS in December, then envisaged to be reviewed by the Air Navigation Conference in October 2018 and approved by the Council in May 2019 before the 40th Assembly.

2.0.3 The meeting was then informed about the new developments in the Air Navigation Bureau at the ICAO Headquarters regarding improved Programmes Coordination and Implementation processes. To this end a new section, the Programmes Coordination and Implementation was established. This Section will be the single liaison between the ICAO HQ and the Regional Offices on the technical/operational level. In this capacity the meeting was informed about the efforts undertaken by this Section on improving the implementation facilitation. In this respect it was indicated that ICAO need to work in a more project oriented way, starting with the problem statement until the Regional coordination of implementation. Pertinent to this activity is that Global Plans (GANP and GASP) will form the main basis for prioritization of the projects to be undertaken. In order to ensure that any future SARPs will be better aligned with realistic implementation objectives, the Regional Offices will be involved in the project from the start.

2.0.4 In light of the above, project oriented work-method, it was emphasized that appropriate feed-back loops are instrumental. The PIRGs would have an important role in providing potential recommendations on changes to the project. In this respect, the meeting was then made aware about the review of the TORs of the PIRGs/RASGs that will be discussed at the upcoming GLOBAL PIRG/RASG forum.

2.0.5 At last the meeting was informed about several Global and Regional ICAO meetings.

Initiatives by Hong Kong China in Supporting the ICAO Next Generation Aviation Professionals Programme (WP/16)

2.0.6 The paper highlighted the initiatives taken by Hong Kong China in supporting the ICAO NGAP Programme to cope with the global challenge in shortage of skilled aviation professionals both locally and regionally. The paper shared the initiatives and experience of Hong Kong China, especially on provision of competency-based training to attract young generation to pursue their professional qualification and career development in Air Traffic Safety Electronics Personnel (ATSEP). The paper also encouraged ICAO, States, ANSPs and aviation communities to steer and pursue professional recognition for ATSEP qualification through cooperation with international professional engineering institutions to promote career development in ATSEP and channel continuous flow of engineering workforce into the aviation domain, and their further effort in supporting the ICAO NGAP Programme.

ICAO ATFM Global Symposium in Singapore, from 20 to 22 November 2017 (IP/16)

2.0.7 ICAO would organize the ATFM Global Symposium in Singapore, from 20 to 22 November 2017. The symposium would provide participants with a unique opportunity to discover new flow management techniques and practices focusing on long range solutions for the advancement of regional and global ATFM. The Member States in the APAC Region were encouraged to take advantage of this forum and to plan for attendance.

PBN Approach Charts – Transition from RNAV to RNP (IP/17)

2.0.8 This paper provided high-level information on the transition plan that is under development by ICAO for feedback from the regions. ICAO Regions would be requested to consider the transition from RNAV to RNP in the regional plans and ensure sufficient time is allocated to this task to successfully implement the new charts. The ICAO Secretariat would refer the matter to the AAITF for the development of Regional implementation strategy as a matter of priority.

Implementation Strategy for Aeronautical Charting (IP/18)

2.0.9 This paper provided a high-level description of the ICAO implementation strategy to increase quality in aeronautical charting products and their compliance with the ICAO standards. The ICAO proposed a two-phases approach for the implementation of the strategy: PHASE 1 (“short-term” strategy) and PHASE 2 (“long-term” strategy). Phase 1 of the implementation strategy would be initiated on the second half of this year (October/November 2017). Phase 2 would be initiated only when the first phase would be considered robust enough and creates the baseline for further steps. The ICAO Secretariat would refer the matter to the AAITF for the development of Regional implementation strategy as a matter of priority.

Planning and Implementation Regional Group (PIRG) Activities in Other Regions (IP/19)

2.0.10 This paper provided an update on the activities of other Planning and implementation Regional Groups (PIRGs) that had been held since the last APANPIRG Meeting.

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Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation

3.0: Regional and National Performance Framework

Adopting the ICAO GANP KPI Framework for Asia/Pacific (WP20)

3.0.1 Singapore, United States and EUROCONTROL presented information on a joint project to develop harmonised measurement procedures for selected Key Performance Indicators (KPIs). These were intended to support benchmarking of Air Traffic Management (ATM) performance. WP20 provided an update on the project's Phase One results and demonstrated the benefits of performance benchmarking.

3.0.2 In late 2016, the Fifth Edition of the ICAO Global Air Navigation Plan (GANP) identified 16 KPIs to measure the operational performance of Air Navigation Service Providers (ANSPs). Two of these KPIs were chosen for an initial comparative analysis at Singapore, United States and European airports: *Taxi-Out Additional Time* (GANP KPI02) and *Additional Time in Terminal Airspace* (GANP KPI08).

3.0.3 WP20 urged States to support the Regional ATM Performance Measurement Framework Small Working Group (RAPMF/SWG) to develop a performance measurement framework aligned to the GANP, and taking into account the benchmarking work conducted by Singapore, United States and EUROCONTROL.

3.0.4 Japan requested to join the Singapore, United States and EUROCONTROL performance measurement group. China stated that the appropriate forum to develop KPIs was the RAPMF/SWG. ICAO invited Singapore, United States and EUROCONTROL to work with the RAPMF/SWG, so the results of such collaboration could be reported to the ATM/SG, which would ultimately provide the outcomes to APANPIRG. Singapore emphasised the need for other States to become involved with the RAPMF/SWG – which was endorsed by APANPIRG.

Japan's Contribution to the No Country Left Behind Initiative (IP09)

3.0.5 Japan provided information on its efforts to support the No Country Left Behind (NCLB) initiative with technical assistance in the following areas:

- Air Traffic Flow Management (ATFM) capability in Southeast Asia;
- Leveraging of Japan's Collaborative Actions for Renovation of Air Traffic Systems (CARATS) ATM modernisation programme, collaboration with relevant parties such as research institutes, airlines and aircraft equipment manufacturers; and
- Performance Based Navigation (PBN) courses for PBN designers.

Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation

3.1 AOP

Review of the First Meeting of Aerodrome Operations and Planning (AOP) Sup Group (WP/05)

History of the Meeting

3.1.1 The First Meeting of the AOP Sub Group (AOP/SG) was held from 14 to 16 June 2017 at APAC Office in Bangkok.

3.1.2 Based on the outcome of discussions, the meeting adopted 2 Conclusions and 1 Decision that were of a technical or purely operational nature. The AOP/SG/1 formulated 4 Draft Decisions for further consideration by APANPIRG/28.

Outcomes of AOP/WG/4

3.1.3 The progress on the establishment of the Small Working Group to develop Guidelines for aerodrome operations personnel competency was presented to AOP/SG/1 and urged China, Macao China and Malaysia to nominate their experts to the group. The AOP/SG/1 meeting noted that the first meeting of the Working Group would be held tentatively in first quarter of 2018 at APAC Office, Bangkok.

Report of the Airport Collaborative Decision-Making (A-CDM) Seminar and the First Meeting of the Asia Pacific Airport Collaborative Decision Making Task Force (APA-CDM/TF/1)

3.1.4 The Report of the Airport Collaborative Decision-Making (A-CDM) Seminar and the First Meeting of the Asia Pacific Airport Collaborative Decision Making Task Force (APA-CDM/TF/1) held in Kunming, China on 19 to 21 April 2017 was presented to AOP/SG/1.

3.1.5 Noting the objective of the APA-CDM/TF in relation to reviewing the current status of A-CDM implementation in APAC Region and an agreement to develop a survey questionnaire for circulation to APAC States, the AOP/SG/1 meeting adopted the following Conclusion which was noted by APANPIRG/28:

Conclusion AOP/SG/1/1 – APAC Regional A-CDM Implementation Status

3.1.6 The APANPIRG/28 meeting adopted the following Decision formulated by APA-CDM/TF/1 and endorsed by the AOP/SG/1:

Decision APANPIRG/28/2: APA-CDM/TF Terms of Reference	
What: That, the revised APA-CDM/TF Terms of Reference at **Appendix A to the Report on Agenda Item 3.1** be adopted.	**Expected impact:** ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical

Why: To adjust the APA-CDM/TF TOR for better clarity, and assist in identifying deliverables.	**Follow-up:** ☐Required from States
When: 14-Sep-17	**Status:** Adopted by PIRG
Who: ☐Sub groups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other: Task Force	

Amendment of Water Aerodrome Small Working Group's TOR

3.1.7 The information on progress made by the Water Aerodrome Small Working Group (WASWG) was presented to AOP/SG/1.

3.1.8 The AOP/SG/1 noted that as per TOR of WASWG, the tasks assigned to working group were to be completed within two years (i. e. by 4 June 2017). Due to the postponement of the WASWG/3 meeting it was proposed to extend the term of the WASWG by another year. The WASWG/3 meeting had been tentatively planned for February 2018. The draft "Sample Requirements for the Design and Operations of Water Aerodromes for Sea Plane Operations" would be discussed by the WASWG/3 in February 2018 and subsequently presented for endorsement by AOP/SG/2 tentatively in June 2018 and adoption by APANPIRG/29 in September 2018**.**

3.1.9 The AOP/SG/1 further noted that the changes proposed by the Working Group in its Second Meeting held in Colombo, Sri Lanka from 29 February to 2 March 2016 and the additional time to complete the remaining tasks by the WASWG necessitated in the amendment of the TOR. APANPIRG/28 adopted the following Decision for the amendment of WASWG TOR formulated by AOP/SG/1.

Decision APANPIRG/28/3: Amendment of Water Aerodrome Small Working Group's TOR	
What: That, amended WASWG Terms of Reference placed at **Appendix B to the Report on Agenda Item 3.1** be adopted.	**Expected impact:** ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To complete the remaining works by the WASWG on developing Sample Requirements for the Design and Operations of Water Aerodromes for Sea Plane Operations.	**Follow-up:** ☐Required from States
When: 14-Sep-17	**Status:** Adopted by PIRG
Who: ☒Sub groups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other: Working Group	

Status of Implementation of Requirements for Certification of Aerodromes in the APAC Region

3.1.10 The AOP/SG/1 reviewed the results of USOAP audits in AGA area in Asia Pacific Region and noted that there were 21 States in Asia and Pacific Regions with USOAP EI below 60% in aerodrome certification.

3.1.11 The AOP/SG/1 urged the Champion States/Administrations to nominate their experts/advisors to the ICAO Regional Office in order to provide assistance to low EI States in AGA area. The AOP/SG/1 noted and expressed its appreciation to the Hong Kong, China who had nominated an Expert. USA agreed to extend support to the APAC Region in organising workshops/seminars on Annex 14 requirements including course materials. In addition USA also agreed to support States on aerodrome certification and specific areas by providing subject matter experts.

3.1.12 The AOP/SG/1 meeting urged States which need assistance in specific areas should inform ICAO APAC Office.

APANPIRG AOP/SG Task List

3.1.13 APANPIRG/28 noted that the AOP/SG/1 had updated their subject/task list, related actions, responsibility and target dates through Decision AOP/SG/1/5.

Decision AOP/SG/1/5 – AOP/SG Work Programme

3.1.14 The AOP/SG/1 meeting discussed the need to: 1) develop an effective mechanism to realize the objectives of the AOP/SG set out in the Task List, 2) assist States to resolve the identified AOP Air Navigation Deficiencies listed in APANPIRG database in a timely manner thereby enhance safety and 3) assist the States with low EI in USOAP CMA activities.

3.1.15 The AOP/SG/1 discussed two options to address the challenges: Option 1 – Establishing an Asia/Pacific Aerodrome Assistance Team (AAA Team) comprised of subject matter experts from champion APAC States and experts nominated by International Organizations (IOs). Option 2 - Without AAA Team.

3.1.16 While recognizing the merits in establishing the AAA Team in enhancing the safety of aviation, APANPIRG/28 directed AOP/SG to discuss the Terms of Reference developed for the establishment of AAA Team at the its next meeting of AOP/SG giving due consideration to existing fora, such as COSCAPs, APAC CAT and in achieving the objectives described in paragraph 3.1.14. The Meeting also suggested AOP/SG to coordinate with the RASG-APAC Secretariat regarding this matter due to coordination requirements between APANPIRG and RASG-APAC on aerodrome safety matters.

3.1.17 The AOP/SG/1 meeting also noted that of late States had been receiving amendment proposals to Annex 14 Volumes I and II SARPs and the related guidance material for study and comments. In order to make meaningful contribution on these proposals including a study on the impact of the amendment proposals on existing aerodromes, the AOP/SG/1 proposed to establish a Task Force comprising of subject matter experts in the areas of aerodrome planning and design Standards, visual aids and aerodrome operations. The AOP/SG/1 meeting formulated a draft Decision for the establishment of the Asia/Pacific Aerodrome Design and Operations Task Force. APANPIRG/28 directed AOP/SG to discuss the TOR of the proposed Task Force at its next meeting of AOPSG.

Engineered Material Arresting System Update (IP/11)

3.1.18 The United States shared FAA works to improve Runway Safety Areas (RSAs) at commercial service airports. Various practices were implemented to mitigate the risk of runway excursions, which were a common problem with aviation accidents. In certain cases, it was not practicable to achieve the full standard RSA because there might be a lack of available land. There also might be obstacles such as bodies of water, highways, railroads, and populated areas or severe

drop-off of terrain. Working in concert with the University of Dayton, the Port Authority of New York and New Jersey, and the Engineered Arresting Systems Corporation (ESCO) of Logan Township, NJ, a new technology emerged to safely arrest overrunning aircraft. Engineered Material Arresting System (EMAS) used crushable material placed at the end of a runway to stop an aircraft that overruns the runway. The paper invited meeting to consider adoption or implementation of the technologies and/or processes discussed to address the on-going safety challenges faced by airports.

CANSO Efforts in Airport Collaborative Decision Making (IP/12)

3.1.19 CANSO highlighted an importance of a close partnership among airports, airspace users and Air Navigation Service Providers (ANSPs) to reduce congestion and delays and improve safety and efficiency at airports. The success of such partnerships was demonstrated through the application of Airport Collaborative Decision-Making (A-CDM). This paper described the efforts of CANSO in helping States and ANSPs implement A-CDM and provided a preview of its future work to support and encourage ANSPs to actively participate in A-CDM implementation both globally and in the region.

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Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation

3.2: ATM

ATM/SG/5 Outcomes

3.2.1 The Fifth Meeting of the APANPIRG Air Traffic Management Sub-Group (ATM/SG/5) was held at the ICAO Regional Office, Bangkok, Thailand from 31 July to 04 August 2017. The meeting was attended by 102 participants from 23 States, two Special Administrative Regions of China and three International Organizations.

3.2.2 A total of 37 Working Papers (WP), 25 Information Papers (IP) and three flimsies were considered by the meeting. Five Draft Conclusions and two Draft Decisions were endorsed for consideration by APANPIRG/28. The ATM/SG/5 also agreed to ten Conclusions under the delegated authority vested in the Subgroup by APANPIRG for Conclusions that were of a technical or purely operational nature (note: no technical Decisions were made by the ATM/SG/5).

FIT-Asia/5 and RASMAG/21 Outcomes (WP05)

3.2.3 The meeting discussed the outcomes of the Twenty-Second Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/22, 10 – 13 July 2017, Bangkok, Thailand.

3.2.4 The safety assessment of the AKARA Corridor in the southern portion of the Incheon Flight Information Region (FIR) was noted by the ATM/SG/5. Due to the high opposite direction passing frequency, only one vertical deviation per annum of more than 0.125 minutes (approximately 7.5 seconds) would breach the Corridor Target Level of Safety (TLS), highlighting the extreme sensitivity of the airspace to any Large Height Deviation (LHD) event. Moreover, operational factors which may contribute to deviations were noted as including the:

a) operation of several Area Control Centres (ACCs) in the same portion of airspace on different frequencies, which is non-compliant with Annex 11;

b) possible presence of non-Reduced Vertical Separation Minimum (RVSM) aircraft;

c) possibility of turbulence (reported regularly southwest and south of Japan), either not allowing adequate height-keeping, or necessitating a descent or climb;

d) lack of any emergency descent procedures;

e) possibility of non or under-reporting (in some cases due to lack of awareness of all traffic due to the Flight Level Allocation Scheme FLAS);

f) lack of a voice communication link between Shanghai and Incheon ACCs (including Air Traffic Service (ATS) Inter-facility Datalink Communication – AIDC); and

g) inconsistent use of Strategic Lateral Offset Procedure (SLOP).

3.2.5 The ATM/SG/5 noted that China, ROK, Japan and ICAO should endeavor to normalize ICAO standard compliance within the AKARA Corridor. Until the AKARA Corridor arrangements were such that the safety risks were acceptable and compliant with ICAO standards, the ATM/SG urged that States should consider short-term measures.

3.2.6 The ATM/SG/5 had been advised that a meeting to discuss the AKARA Corridor was planned between the ROK and Japan during August 2017 at Tokyo. China stated at the ATM/SG/5 that it had noted the safety risk in the airspace near AKARA, and China and Japan would enhance their AIDC capability. At APANPIRG/28, China stated that it disagreed with the safety risks identified by the ATM/SG/5 report. China noted that the AKARA Corridor issues were complex, but there had not been an accident in three decades of operations. ICAO informed the meeting that the safety concern regarding AKARA corridor had been elaborated in the RASMAG/22 report.

Application of ATC Separation Standards (WP07)

3.2.7 In an endeavour to track the effectiveness implementation of the Seamless ATM element related to the use of tactical ATC separation standards, a survey had been conducted that requested respondents to advise the minimum horizontal separation standards authorized for use by controllers in Category R (remote) and Category S airspace (ATS surveillance by radar, Automatic Dependent Surveillance – Broadcast (ADS-B) or multilateration) and at FIR Transfer of Control (TOC) Points.

3.2.8 **Figure 1** provides an indication of the ATC separation applied reported by 20 respondent administrations (red indicated not meeting the *Asia/Pacific Seamless ATM Plan*'s expectations, green indicated meeting expectations).

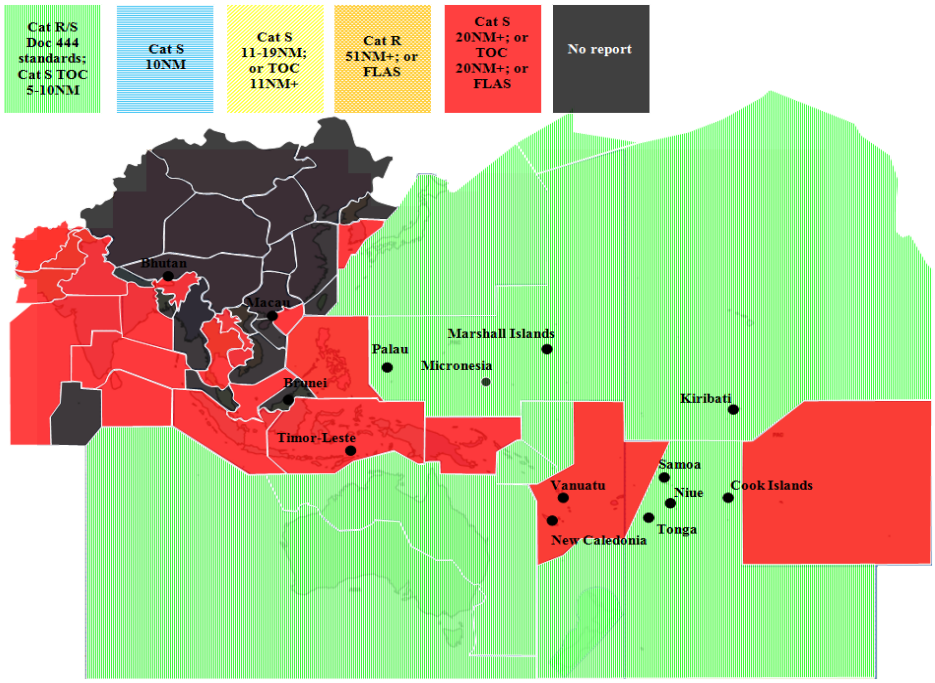

Figure 1: Compliance with Seamless ATM Horizontal Separation Standards

3.2.9 The ATM/SG/5 had noted that there appeared to be no specific technical reasons why developed States were able to provide more efficient levels of service than States in Asia, using essentially the same Communications, Navigation and Surveillance (CNS)/ATM equipment; therefore only human decision-making at management level could be responsible for this poor result, indicating a region-wide paradigm shift in organisational culture was necessary.

3.2.10 As the cost of new CNS/ATM systems were generally not providing a commensurate increase of efficiency in service, the ATM/SG/5 observed that States should consider the ramifications of this in terms of safety (especially ATC workload), efficiency for airlines and environmental consequences, which ultimately had a political dimension when the public became aware of the comparatively poor performance.

3.2.11 Given the increasing air traffic, ICAO urged that Asian States should recognise the problem and establish policies, rules and procedures for ANSPs to improve the benefits from CNS/ATM systems, including training for senior managers to recognise the gap between current and best practices.

RAPMF/SWG Outcomes (WP08)

3.2.12 China presented information on the outcomes of the Regional ATM Performance Measurement Framework Small Working Group (RAPMF/SWG). The RAPMF/SWG had identified Six Key Performance Areas (KPAs) for the performance measurement framework: capacity, efficiency, predictability, safety, environment and cost-efficiency and proposed that a Asia/Pacific ATM Performance Analysis Review Work Group was necessary in the Asia/Pacific Region in order to deal with the large volume of data generated in daily operations.

3.2.13 Japan did not support the proposal as ICAO was working on Key Performance Indicators (KPIs) at the global level, so would prefer to wait until the *Global Air Navigation Plan* (GANP) was revised, otherwise the global and regional Key Performance Indicators (KPIs) could be divergent.

3.2.14 ICAO commended China for refining the KPIs but expressed caution about data collection difficulties, noting that the KPIs should not be complex for less developed States. ICAO suggested that the SWG continue its work to mature the KPIs and methodology, and better define what was meant by a formal monitoring agency before the ATM/SG could endorse a regional system.

3.2.15 New Zealand asked the meeting to consider the relevancy of KPIs to some States. The United States advised that they had variable KPIs, dependent on complexity, and offered to support the SWG to mature the proposed system.

Air Traffic Flow Management Steering Group Outcomes (WP10)

3.2.16 The meeting was informed of the outcomes of the Seventh Meeting of the Air Traffic Flow Management (ATFM) Steering Group (ATFM/SG/7, Fukuoka, Japan, 15 to 19 May 2017).

3.2.17 During the Joint Plenary Session of ATFM/SG/7 and the Sixth Meeting of the Meteorological Requirements Working Group (MET R/WG/6) the *Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services* to Support ATM Operations, developed by an ad hoc group of the MET R/WG to support State implementation of the performance expectations of the Regional Framework for Collaborative ATFM, was presented.

3.2.18 The ATM/SG/5 was informed that further coordination was being conducted by the Chair and Secretary of the MET R/WG, before presentation of the guidance document to APANPIRG/28 for approval. Noting the different levels of complexity and demand/capacity imbalance at airports and in airspace, the ATM/SG/5 agreed to the following Conclusion:

Conclusion ATM/SG/5-2: Asia/Pacific Regional Guidance for Meteorological Information Supporting ATM

3.2.19 The meeting was informed of ATFM/SG/7 discussions noting that there were parallel ATFM projects in the Asia/Pacific Region, some using different means of achieving demand-capacity balancing including the extensive use of tactical ATC interventions rather than the use of ground delay programs (GDPs) emphasized in the *Regional Framework for Collaborative ATFM*. ICAO had reminded ATFM/SG/7 that the distributed multi-nodal ATFM network and focus on use of GDP/Calculated Take-Off Times (CTOT) formed the core concepts and expectations of the *Regional Framework for Collaborative ATFM*, as adopted by APANPIRG.

3.2.20 ATFM/SG/7 had identified that the Cross Regional ATFM Collaborative Platform under development for use by China, Japan and ROK and its supporting Interface Control Document (ICD) had significant differences from the regionally agreed multi-nodal ATFM network concept and other provisions of the *Regional Framework for Collaborative ATFM*, particularly the emphasis on GDP to improve predictability and reduce fuel used in airborne delays when managing flows to constrained destination airports.

3.2.21 The ATM/SG/5 endorsed the use of a Regional ATFM Monitoring and Reporting Form that would be used to analyse ATFM implementation against the performance objectives of the *Regional Framework for Collaborative ATFM* (complimenting the other Seamless ATM monitoring schemes). The ATM/SG/5 agreed to the following Conclusion:

Conclusion ATM/SG/5-3: Asia/Pacific Regional Framework for Collaborative ATFM Amendment

3.2.22 APANPIRG/28 agreed to the following Decision amending the Terms of Reference (TOR) of the ATFM/SG, to reflect changes in the groups with which ATFM/SG had linkages:

<table>
<tr><td colspan="3">Decision APANPIRG/28/4: ATFM/SG Terms of Reference</td></tr>
<tr><td colspan="2">What: That, the ATFM/SG Terms of Reference at Appendix A to the Report on Agenda Item 3.2 be adopted.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To update the APANPIRG groups with which ATFM/SG closely coordinates.</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 14-Sep-17</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☐Sub groups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:</td></tr>
</table>

Achieving Operational Predictability for M771 Flow Restrictions (WP11)

3.2.23 Singapore presented a proposal to address operational issues arising from flow restrictions from downstream ACCs on ATS Route M771, to enhance predictability for all stakeholders in the upstream FIRs and better manage traffic on the route. Flow restrictions ranging from 25 to 240 minutes, regardless of flight level had been imposed for flights bound for airports such as Fuzhou, Pudong, Quanzhou and Xiamen, and were typically imposed with little or no notice for other stakeholders to make necessary adjustments to traffic flow.

3.2.24 Due to the convergence of flights joining ATS Route M771, scheduled flights would often experience delays of between two to 20 hours, greatly affecting the operations of multiple airports, airlines and ANSPs. Singapore was conceptualising the implementation of ATFM measures on M771, including the back-calculation of GDP from a Calculated Time-Over (CTO) a waypoint. This would require the full cooperation from all involved ANSPs, departure aerodromes and airlines.

CRACP Project in Northeast Asia (WP13)

3.2.25 China, Japan and the ROK presented an outline of the operational procedure of their Cross Region ATFM Collaborative Platform (CRACP), which was an ATFM/CDM tool that had been proposed by China in 2015. The three participating States planned to use the CRACP for cross-border ATFM information exchange in a first stage by the end of 2017.

3.2.26 China, Japan and ROK would use their own ATFM systems, calculating CTOT from an assigned CTO and electing to assign delay on the ground or in the air according to their traffic situation and constraints. Considering that Hong Kong, China was managing a large number of departures from Hong Kong/Macao airports as well as overflights into China's airspace; Hong Kong, China suggested the North Asia Region ATFM Harmonisation Group (NARAHG) consider its participation.

3.2.27 It was observed that the Distributed Multi-Nodal ATFM network concept, and the *Regional Framework for Collaborative ATFM*, included the future use of CTO for airborne flights, and CTOT for flights which had not departed. It was also noted that the use of CTO for flights crossing many FIR boundaries between the departure aerodrome and the en-route fix (RFIX) at which the CTO applied presented significant challenges.

3.2.28 Singapore suggested that the NARAHG States would be invited to attend the next meeting of the Distributed Multi-Nodal ATFM Network Operational Trial in order to work on a harmonized ICD. It was further proposed that the groups should be invited to each other's meetings to work on harmonization of ATFM measures.

3.2.29 China, Japan and the ROK would continue to promote the CRACP project within the NARAHG group under the facilitation of ICAO and discuss with other working groups for the operating procedure and draft ICD (**ATM/SG/5/WP13 Attachment A** refers).

3.2.30 The ATM/SG/5 meeting was reminded that the agreed date for implementation of cross-border ATFM was 2018, and that any proposal to amend the *Regional Framework for Collaborative ATFM* should be agreed by ATFM/SG and have due regard for the 08 November 2018 milestone. China, Japan and the ROK would prepare an amendment proposal for the *Regional Framework for Collaborative ATFM* to be presented to the ATFM/SG/8 meeting for consideration.

Centralised Flight Plan Processing Project (CFPP) (WP14)

3.2.31 China presented information on a centralized flight plan processing project, intended to address problems in flight plan management that had impacted on the safety of ATC operations and the implementation of traffic flow predictions. Statistical analysis from the Beijing ATC area during 2016 indicated that a Flight Plan (FPL) message had not been received from 2,732 foreign flights, and 14,552 foreign flights for with no DEP message was received. Of approximately 70,000 messages processed every day, there were about 4,000 with errors requiring manual intervention.

3.2.32 Since 08 December 2016, China had required that aircraft movement messages for all departure, arrival or overflights should be addressed to the additional AFTN addressees ZBPEZMFP and ZSHAZMFP. China stated that all such messages should be sent to those two ATFN addresses only from the end of June 2018, the exact date being published by AIP or NOTAM. In discussion, China advised that two years ago a NOTAM had been issued reminding of the requirement to correctly submit and address flight plans, but many cases of missing flight plans continued to occur. The ATM/SG/5 agreed that the current ATFM/SG work to analyse missing DEP messages should be expanded to address missing FPL messages. China was invited to participate in this activity.

3.2.33 ICAO stated that FPL addressing requirements and other ATS messages were determined by the standards and procedures detailed in Annex 10 – *Aeronautical Telecommunications* Vol. II and ICAO Doc 4444 – *Procedures for Air Navigation Services – ATM* (PANS-ATM). A summary of relevant sections of Annex 10, PANS-ATM and ICAO Doc 8585 – *Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services* was provided in **ATM/SG/5/Flimsy 1**.

3.2.34 IATA expressed concern about the number of FPL messages that were not available to ATC in China, and welcomed the expansion of the ATFM/SG analysis to include missing FPL. IATA supported the following of ICAO policies and procedures for the addressing of FPL and ATS messages as they formed the foundation of ATM, ensuring consistency and standardization.

Alphanumeric Call Signs (WP16)

3.2.35 The Secretariat presented information on the use of alphanumeric aircraft identification to avoid radiotelephony call-sign confusion, recalling ***Conclusion APANPIRG/27/15 – Use of Alphanumeric Call Signs for Scheduled Airline Operations***.

3.2.36 A survey on State readiness to accept and process alphanumeric aircraft identification had been conducted. Issues from the survey included:

- inability of pilot briefing/flight plan submission systems of some airlines to process alphanumeric aircraft identification (one administration);
- lack of regulations and/or procedures in State AIPs supporting the use of alphanumeric aircraft identification (four administrations);
- lack of operational procedures to mitigate radiotelephony call sign similarity/confusion in ATC and related air-ground communications (one administration); and
- no processes in place to ensure that flight plans with alphanumeric aircraft identification were correlated correctly with the associated flight number used for overflight/arrival/departure approvals (four administrations).

3.2.37 The ATM/SG/5 meeting agreed to the following Conclusion:

Conclusion ATMSG/5-5: State Readiness for Alphanumeric Aircraft Identification

Alphanumeric Call Sign Project Phase Two (WP17)

3.2.38 IATA proposed to commence Phase Two of the Asia/Pacific Alphanumeric Call Sign Project. Etihad Airways had agreed to be the airline lead, building on their successful involvement in a similar project in the ICAO Middle East (MID) Region.

3.2.39 A draft Alphanumeric Call Sign Phase 2 Project Plan was provided in **ATM/SG/5 WP/17 Attachment A**. The ATM/SG/5 agreed to the following Conclusion:

Conclusion ATMSG/5-6: Asia Pacific Alphanumeric Call-Sign Project

SID STAR New Procedure and Phraseology (WP18)

3.2.40 The meeting was provided with information on changes to Standard Instrument Departure (SID) and Standard Arrival Route (STAR) procedures, particularly phraseologies, specified in ICAO Doc 4444 – PANS-ATM, applicable from 10 November 2016. The State Letter informing States of the new procedures together with other explanatory information on the new phraseology was available on the ICAO website. A technical Conclusion on SID/STAR phraseology was agreed by the meeting under WP25 (***Conclusion ATM/SG/5-17: SID/STAR Phraseology***).

3.2.41 IATA commented that there was a significant lack of implementation of this standard around the world, and urged everyone to properly comply. New Zealand noted that the STAR steps were not always a matter for ATC restrictions, but were often for terrain.

3.2.42 Australia mentioned that it would be implementing the new phraseologies in November 2017 but noted that it was a significant body of work to implement the new phraseology, given the short timeframe for implementation and one State that implemented but then withdrew the phraseology following implementation issues. Hong Kong, China highlighted that there would be a need to consider systems and necessary modification in order to facilitate the implementation.

Pacific Airspace Reorganisation (WP19)

3.2.43 Kiribati discussed the proposal for the re-organisation of upper airspace as recommended in several reports dating back to 1999 as a new ‘Pacific FIR’, noting that this had been discussed at the diplomatic level by the Pacific Islands Forum (PIF), with ANS being provided by a third party following a tender process.

3.2.44 ATM/SG/5/WP19 stated that the establishment of a large FIR, rather than several smaller FIRs was consistent with the ICAO policy on improving airspace efficiency. The paper also stated that ATS in the proposed FIR would be provided more efficiently than at present. At APANPIRG/28, Fiji queried this statement, as it could be misunderstood as meaning that the current Air Navigation Service Providers (ANSPs) were not providing efficient services.

3.2.45 Kiribati requested the ATM/SG/5 to consider establishing a task force to examine the proposals by Kiribati and associated issues, and to make recommendations for airspace change to the 2018 Air Navigation Conference. ICAO stated that the task of determining the merits of any such change requests were managed by the Air Navigation Plan Proposal for Amendment (PfA) process, with information and analysis from the States and airspace users concerned.

3.2.46 The ATM/SG/5 agreed that concerned States should make a formal joint PfA submission if they wished to further this proposal, noting that only Kiribati had submitted the paper. Moreover, it was clarified that the meaning of the term *task force* as proposed in this paper related to the formation of an informal group of stakeholders to discuss and potentially advance the proposal. French Polynesia, the United States and IATA indicated that they would like join the discussions.

Civil/Military Cooperation Update (WP22)

3.2.47 ICAO stated that civil/military cooperation remained one of the highest priorities in the Asia/Pacific Region, as referenced in the *Asia/Pacific Seamless ATM Plan*. ICAO observed that it had received reports of ballistic launch in several places around the Asia/Pacific Region which had caused significant delays and disruption to civil air traffic, and recalled the coordination element in the *Asia/Pacific Seamless ATM Plan* related to this activity.

3.2.48 ATM/SG/5 participants were requested to update details contained within the [Kabul FIR bypass] Inter-regional Afghanistan ATM Contingency Arrangements if possible. Unfortunately Afghanistan did not attend, so there was no opportunity to update the ATM/SG/5 on its current air navigation and aerodrome facilities, and services related to civil/military cooperation.

3.2.49 Recalling that civil/military cooperation issues have been reported in parts of the Asia/Pacific had been reported to ATM/SG/3 (Bangkok, 03 – 07 August 2015) and also in 2016, ICAO noted that the Regional Office continued to receive reports from States and IATA of major delays and arrangements/procedures that may be considered for improvement by States concerned, as part of a region-wide effort to improve traffic capacity (the ATM/SG/5 noted that China requested deletion of reference to ATM/SG/3 discussions):

- the need for centralised ATFM systems within States and participation in regional cross-border ATFM initiatives;
- a need for more ATS routes to be available for international airlines;
- the need for more FIR boundary waypoints; and
- the need for minimisation of short-notice closures of airspace.

3.2.50 Examples of significant delays to airlines were provided in **ATM/SG/5/WP22**. At RASMAG/22, the Philippines had also described lengthy holding delays as causing safety issues, such as aircraft diverting for fuel, en-route conflictions, and controller workload in already busy sectors.

3.2.51 ICAO clearly acknowledged that only part of the delays and capacity issues may be attributable to civil/military cooperation issues, thus urged concerned States to consider appropriate measures, to alleviate the reported problems. As China had previously assured the ATM/SG/3 that measures were being implemented to address such issues, ICAO suggested the possibility of supporting China with a closed civil/military cooperation conference at Beijing.

3.2.52 China updated the meeting with its efforts and improvements in airspace optimization to accommodate the major growth of traffic flow in its airspace. IATA expressed its appreciation to China for its efforts. China stated that it understood the concern about the delays but stated that the delays were due to many factors and by pointing out the civil/military cooperation issues as the root cause of delay according to WP22 could be confusing because according to a CAAC report, about 56% of flight delays were due to weather in 2016; noting that growth in the Chinese aviation system had been achieved with the close cooperation between civil aviation authorities and the military.

3.2.53 China further informed the ATM/SG/5 that a high level ATM meeting had been held with Hong Kong, China and Macao, China to enhance cooperation. Hong Kong, China acknowledged the efforts made by China and welcomed all measures that would enhance civil operations. China noted that its ATFM policies were harmonised but acknowledged that improvement was necessary. China also described anecdotal examples of tactical civil/military cooperation.

3.2.54 IATA, while acknowledging that regional delay issues remained and needed addressing, thanked China for its efforts to try and improve matters. IATA noted that NOTAM issued by some States referenced flow control restrictions from China and were extremely restrictive on flight operations. IATA urged that the *Regional ATFM Framework* be utilised to reduce delays, mentioning the example of delays of more than five hours for flights departing from Tokyo/Haneda.

3.2.55 China further advised the ATM/SG/5 that China and Japan had signed a new Letter of Agreement (LOA) in March 2017 agreeing to pre-tactical ATFM measures. China noted that it planned a centralized ATFM system with three levels, and a new National ATFM Centre was being constructed.

eANP (FIRs/SRRs) (WP23)

3.2.56 WP23 provided an update on the electronic Air Navigation Plan (ANP) for the Asia/Pacific. ATM/SG/5 participants were invited to review the data affecting their administration and urged to provide feedback to ICAO on the data's accuracy.

3.2.57 In the past two years, three State Letters had been issued to determine the current status of the FIR and Aeronautical Search and Rescue Region (SRR) boundaries. Although 60% of States had now responded, this is still far from satisfactory. Moreover, only one FIR description had been determined to be accurate for inclusion in the eANP (Fukuoka). Therefore, the eANP FIR table would not be able to be submitted in 2017, which meant there had been little progress since 2015.

3.2.58 Given the lack of progress, the Seventh South Asia/Indian Ocean ATM Coordination Group (SAIOACG/7, Bangkok, 01 – 03 March 2017) and the Twenty-Fourth Meeting of the South-East Asia ATM Coordination Group (SEACG/24, Bangkok, 03 – 06 March 2017) meetings had agreed to a Draft Conclusion to highlight the need for greater resources and urgency in responding to the FIR/SRR review for the ANP, APANPIRG/28 agreed to the following Conclusion:

<table>
<tr><td colspan="3">Conclusion APANPIRG/28/5: FIR/SRR Air Navigation Plan Review</td></tr>
<tr><td colspan="2">What: That, Asia/Pacific States and Administrations having responsibility for the provision of services within a Flight Information Region (FIR) or Aeronautical Search and Rescue Region (SRR), should conduct a review of the ICAO data related to the FIR or SRR and provide a verification to the ICAO Regional Office as early as possible, but in any event not later than 31 December 2017.</td><td>Expected impact:
☒ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: The poor response from States and Administrations has resulted in insufficient verification of the data for the ANP Volume I FIR and SRR Tables.</td><td colspan="2">Follow-up: ☒Required from States</td></tr>
</table>

When:	31-Dec-17	Status:	Adopted by PIRG
Who:	☐Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other:		

Regional ATM Contingency Planning Status Reporting (WP24)

3.2.59 ICAO presented a proposal for a Regional ATM Contingency Plan status reporting strategy to enable the tracking of State implementation of the performance expectations of the Plan. Similar to the proposal discussed under WP10 relating to ATFM implementation reporting, it was intended that this reporting strategy would enhance current Seamless ATM monitoring and reporting. The ATM/SG/5 meeting agreed to the following Conclusion:

Conclusion ATM/SG/5-8: Asia/Pacific Regional ATM Contingency Plan Amendment

Indonesian ATM Contingency Plan Implementation (IP20)

3.2.60 Indonesia first published an ATM Contingency Plan in 2007. Given that the *Regional ATM Contingency Plan* included template examples of contingency plans and that Indonesia had since updated its contingency plan from the original used as a regional template, the ATM/SG/5 agreed to remove the previous Indonesian template from the ICAO Asia/Pacific website with the following Conclusion:

Conclusion ATM/SG/5-9: Indonesian ATM Contingency Plan Template

SAIOACG/7 and SEACG/24 Meeting Outcomes (WP25)

3.2.61 Afghanistan, India, Iran and Pakistan were urged to provide capacity enhancements for daily improvement, not just for contingency – this included the urgent implementation of at least 20NM longitudinal spacing all along the axis formed by Iran-Pakistan-India and Afghanistan-Pakistan-India routes. Afghanistan, India and Pakistan did not attend SAIOACG/7.

3.2.62 The outcomes from the Fourth Meeting of the South China Sea Traffic Flow Review Group (SCSTFRG/4) had been presented to the SEACG/24 meeting. ICAO noted the progress of the SCSTFRG, and asked about the non-standard Flight Level Orientation Scheme (FLOS) used in the SCS, which had been a past safety concern of IFALPA and RASMAG. SEACG/24 was informed that the FLOS (and FLAS) would be considered after the first steps to develop greater capacity.

3.2.63 Malaysia informed the ATM/SG/5 that a tri-partite meeting between India, Indonesia and Malaysia had discussed LHD hotspots, and agreement had been reached on AIDC messaging that would help to address this issue. India informed the meeting that one of the hotspots had arisen during the period when ATS in the Sana'a FIR was not available, but this was no longer an issue.

3.2.64 Further, recently implemented arrangements for early contact with Mumbai by aircraft crossing the Mogadishu FIR eastbound had improved the situation for that hotspot. Indonesia proposed to provide assistance to mitigate the hot spot issues with reference to the Indonesian capabilities of surveillance and communication in the area.

3.2.65 During the ATM/SG/5, India and Bangladesh had a side line meeting to discuss measures addressing the LHDs occurring at Kolkata/Dhaka/Yangon airspace interface.

3.2.66 The ATM/SG/5 meeting was informed of ***Decision SAIOACG/7-2: Bay of Bengal Traffic Flow Review Group***, forming a group to identify and implement airspace safety and efficiency initiatives. Moreover, in **ATM/SG/5/WP26** India informed the ATM/SG/5 about important CNS/ATM operational improvements taken by India to reduce the increasing safety risk within Bay of Bengal, Arabian Sea and Indian Ocean (BOBASIO) airspace.

ATS Route Catalogue (WP27)

3.2.67 ICAO presented the *Asia and Pacific Region ATS Route Catalogue* Version 16 for review and update, for uploading to the ICAO Asia/Pacific website.

3.2.68 States were urged to categorise route proposals as 'not possible', 'short term' (within 12 months), 'medium term' (within 12-36 months) and 'long term' (possible after 36 months).

Asia/Pacific Unmanned Aircraft Systems Task Force Outcomes (WP28)

3.2.69 The meeting was informed of the outcomes from the First Meeting of the Asia/Pacific Unmanned Aircraft Systems Task Force (APUAS/TF/1, Bangkok, Thailand 03 to 05 April 2017).

3.2.70 The ATM/SG/5 was informed of ***Decision APUAS/TF/1-1 – APUAS/TF/SWG***, to form a small working group of experts who would draft the *Asia/Pacific Regional Guidance for the Regulation and Safe Operation of Small Unmanned Aircraft*.

3.2.71 A second meeting of APUAS/TF had been tentatively planned in November 2017. However, there may be global developments arising from the Second Global Remotely-Piloted Aircraft Systems (RPAS) and DRONE ENABLE symposiums (Montreal, Canada, 19 – 23 September 2017) relating to defining a global framework for regulation of unmanned aircraft system (UAS) in a UAS traffic management systems (UTM) environment. Therefore, the ATM/SG/5 meeting noted that the APUAS/TF/2 would be deferred in order to avoid duplication of work that may be conducted at the global level, and to avoid any potential divergence between global and regional policies.

3.2.72 Noting that a number of Asia/Pacific States had either commenced or finalized regulations for the safe operation of small UAS in their national airspace, the APUAS/TF/1 agreed to the following Conclusion:

Conclusion ATM/SG/5-10: State UAS Regulations

3.2.73 A web resource of information relating to UAS had been developed, including a UAS Toolkit of information on operations, rules, guidelines and special authorizations. The resource was available on the ICAO website at https://www4.icao.int/uastoolkit/home/about.

3.2.74 APUAS/TF/1 had proposed some amendments to its TOR. The ATM/SG/5 amended the wording of the proposal, and forwarded it to APANPIRG for consideration. APANPIRG/28 agreed to the following Decision:

<table>
<tr><td colspan="3">Decision APANPIRG/28/6: APUAS/TF Terms of Reference</td></tr>
<tr><td colspan="2">What: That, the amended Terms of Reference for the Asia/Pacific UAS Task Force at Appendix B to the Report on Agenda Item 3.2 be adopted.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To update the TOR of APUAS/TF as a result of discussions from the APUAS/TF/1 meeting</td><td colspan="2">Follow-up: ☒Required from States</td></tr>
<tr><td>When: 14-Sep-17</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other:</td></tr>
</table>

AIS – AIM Implementation Task Force Outcomes (WP30)

3.2.75 The outcomes of the Twelfth Meeting of the Aeronautical Information Services (AIS) – Aeronautical Information Management (AIM) Implementation Task Force (AAITF/12, Bangkok, Thailand, 05 to 09 June 2017) were provided to the ATM/SG/5.

3.2.76 The AAITF/12 proposed changes to AIS-related deficiencies as follows:

- World Geodetic System 1984 not implemented – Kiribati removed from the list;
- AIP Format – Papua New Guinea removed from the list; and
- Quality Management System not implemented – Papua New Guinea removed from the list, and Myanmar and Sri Lanka added to the list.

3.2.77 The AAITF/12 was informed of ongoing issues relating to poor adherence to Annex 15 *Aeronautical Information Services* Standards and Recommended Practices (SARPS) relating to Aeronautical Information Regulation and Control (AIRAC) and the Quality Management (QM) of aeronautical information.

3.2.78 In all cases where evidence of significant failure of AIRAC adherence or quality management processes was provided, ICAO Regional Office would formally notify the Director-General of Civil Aviation of the State, raise a new AIS Air Navigation Deficiency against the State concerned and amend the Regional AIM Implementation Table to reflect that the State had not implemented AIRAC and QM-related AIM Roadmap transition steps. APANPIRG/28 agreed to the following Conclusion:

<table>
<tr><td colspan="3">Conclusion APANPIRG/28/7: State Actions to Ensure the Quality Management of Aeronautical Information</td></tr>
<tr><td colspan="2">What: That, States are urged to:
1. Examine and update where necessary the relevant primary legislation and aviation regulations to ensure that all originators and publishers of aeronautical information are required to comply with the Annex 15 standards and recommended practices relating to quality management and promulgation of aeronautical information;
2. Examine all available guidance for quality management of aeronautical information, including the Guidance Manual for Aeronautical Information Services in the Asia/Pacific Region; and
3. Ensure that robust quality management procedures are developed, implemented and used by all originators and publishers of aeronautical information, supported by formal agreements to ensure timeliness and quality.</td><td>Expected impact:
☒ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To improve state performance in the promulgation and quality management of aeronautical information.</td><td colspan="2">Follow-up: ☒Required from States</td></tr>
<tr><td>When: 14-Sep-17</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☐Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other:</td></tr>
</table>

3.2.79 An analysis of Universal Safety Oversight Audit Programme – Continuous Monitoring Approach (USOAP-CMA) AIS/AIM protocol question (PQ) responses indicated an average compliance of 58.92% with AIS/AIM-related PQs. The major areas of weakness were in the areas of Safety Management Systems (SMS) applicability for AIS services, AIS data quality and resolution, and training of both AIS inspectors and the staff that provided the AIS and charting services.

3.2.80 Regional AIM transition progress, as reported to the ICAO, was tracked in the AIM Transition table available on the APAC Regional office website. Overall implementation of Phase 1 of the ICAO Roadmap for Transition from AIS to AIM was approximately 71%, compared to 61% at AAITF/11 (2016).

3.2.81 Phase 2 implementation was approximately 34% compared to 32% at AAITF/11. Overall implementation of Phases 1 and 2 of the Roadmap, expected to be implemented by November 2013, was poor, at only 41%.

3.2.82 In response to reported difficulty in State AIS procuring copies of the AIP of other States, APANPIRG/28 agreed to the following Conclusion:

Conclusion ATM/SG/5-13: Provision of AIP to other Contracting States

3.2.83 The International Codes and Route Designators (ICARD) application was the sole global source of unique, pronounceable 5-letter name codes (5LNC) marking significant points not associated with a radio-navigation aid, to ensure compliance with Annex 11 *Air Traffic Services* paragraphs 3.1 to 3.5. Bhutan, Cook Islands, Marshall Islands, Micronesia, Nepal, Palau, Samoa and Tonga had no ICARD_5LNC_PLANNER registered.

3.2.84 ICAO presented a proposal to include additional AIM provisions that were supported by a range of previous APANPIRG Conclusions in the Asia/Pacific Region Air Navigation Plan. APANPIRG/28 agreed to the following Conclusion:

<table>
<tr><td colspan="3">Conclusion APANPIRG/28/8: Proposal for Amendment to the Asia and Pacific Regions Air Navigation Plan</td></tr>
<tr><td colspan="2">What: That, ICAO prepares and circulates for Regional Air Navigation Agreement a proposal for amendment (PfA) to the Asia and Pacific Regions Air Navigation Plan Volume II, as provided in Appendix C to the Report on Agenda Item 3.2.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☒ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To improve APAC regional performance in aeronautical information services and the transition to aeronautical information management by encouraging better State focus on aeronautical information requirements.</td><td colspan="2">Follow-up: ☒Required from States</td></tr>
<tr><td>When: 14-Sep-17</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:</td></tr>
</table>

3.2.85 The meeting discussed the need for conclusion of the work on a range of important and long-delayed ICAO publications, both new and updated, and agreed that there was a need for a strong statement on this issue. APANPIRG/28 agreed to the following Conclusion:

<table>
<tr><td colspan="2">Conclusion APANPIRG/28/9: AIM-specific Working Group to Finalize ICAO Guidance Material</td></tr>
<tr><td>What: That, ICAO be urged to form an AIM-specific working group to focus on the finalization of overdue AIS-related guidance material, with Doc 9839 Manual of the QMS for AIM, Doc 9991 AIM Training Development Manual and Doc 8126 Aeronautical Information Service Manual having the highest priority.</td><td>Expected impact:
☒ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
</table>

Why: To communicate APAC concerns on the continuing, rolling delay of key AIM-related publications, and to request appropriate global action be taken by ICAO HQ.	Follow-up: ☒Required from States
When: 14-Sep-17	Status: Adopted by PIRG
Who: ☒Sub groups ☐APAC States ☒ICAO APAC RO ☒ICAO HQ ☒Other:	

Asia/Pacific Search and Rescue Update (WP33)

3.2.86 ICAO provided an update on Search and Rescue (SAR) for the Asia/Pacific, noting the outcomes of the Second Meeting of the Asia/Pacific SAR Workgroup (APSAR/WG/2, Bangkok, 30 May – 01 June 2017).

3.2.87 The update included SAR status information as follows:

a) the SAR Agreement Matrix; and

b) the 20 element SAR Capability Matrix Table.

3.2.88 **Figure 2** provides the current overview for SAR capability based on the 20 element Annex 12 assessment (noting that the image is based on FIRs, not Search and Rescue Regions for ease of comparison with other performance metrics), which highlighted that significant weaknesses exited in the Southwest Pacific and some parts of South and Southeast Asia.

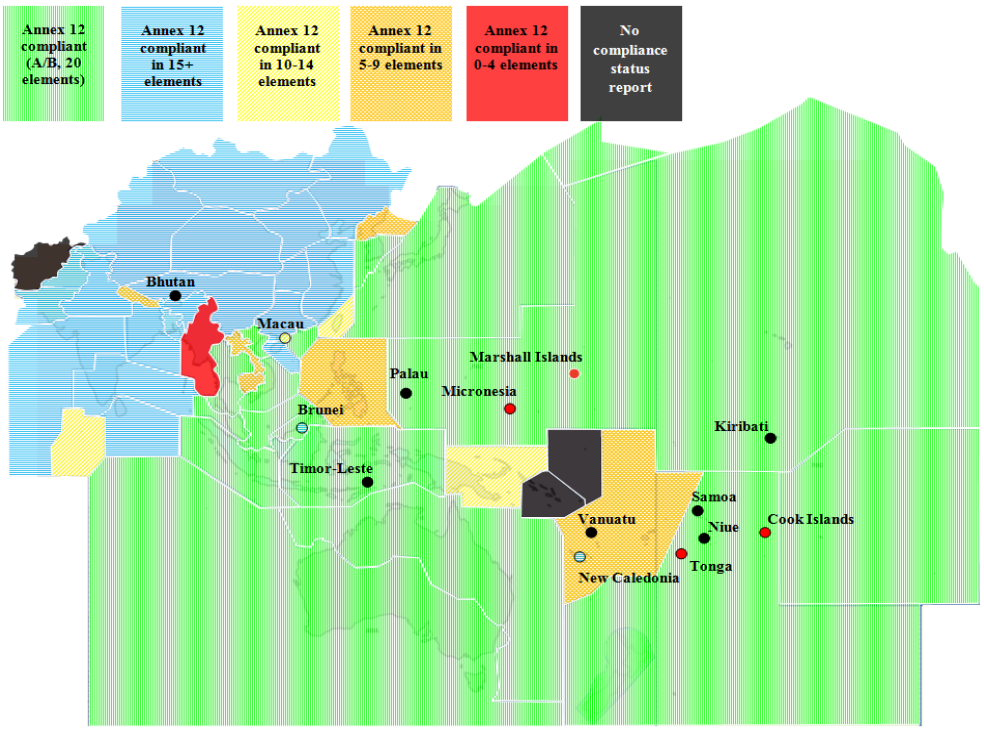

Figure 2: Asia/Pacific Regional SAR Overview

3.2.89 The Asia/Pacific SAR Plan-based 41 element assessment as agreed by APANPIRG/27 in **Figure 3** was provided to familiarize the 16 States which had not yet responded to the survey (Bhutan, Brunei, China, Cook Islands, DPRK, Kiribati, Micronesia, Mongolia, Nauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor Leste, Tonga and Vanuatu). The meeting was informed that updated information would be provided by Cook Islands and Kiribati in the near future.

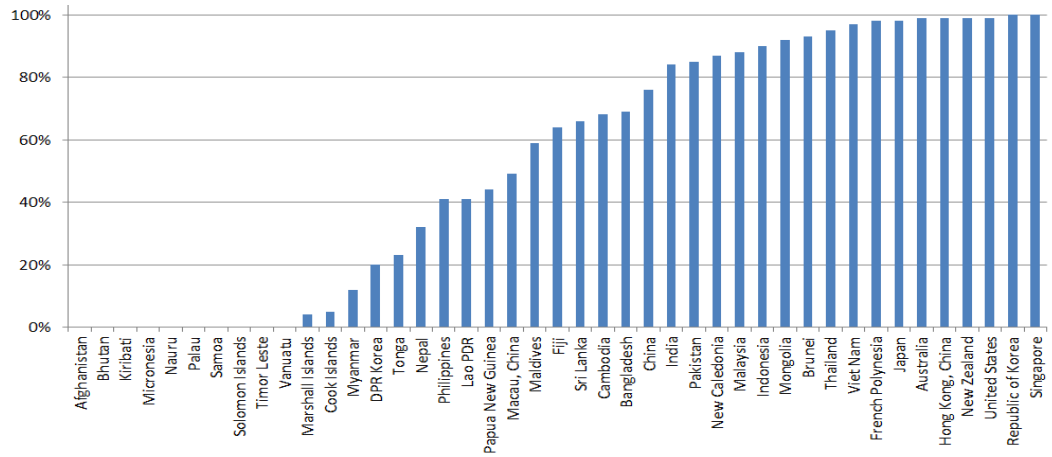

Figure 3: Asia/Pacific SAR Capability Ranking

3.2.90 The APSARWG/2 meeting had discussed the continued lack of progress in key areas of SAR capability and agreed to a Draft Conclusion, which was endorsed by the ATM/SG/5. APANPIRG/28 agreed to the following Conclusion:

Conclusion APANPIRG/28/10: Search and Rescue Capability Focus Areas	
What: That, given the continuing overall poor levels of implementation of Search and Rescue (SAR) coordination with adjacent States, effective SAR regulatory oversight and the training of both SAR inspectors and personnel that provide the SAR services, Asia/Pacific States should provide greater resources and high level support to enable a focus on these areas.	Expected impact: ☒ Political / Global ☒ Inter-regional ☒ Economic ☐ Environmental ☒ Ops/Technical
Why: APSAR/WG has noted systemic weaknesses in these vital SAR focus areas.	Follow-up: ☐Required from States
When: 14-Sep-17	Status: Adopted by PIRG
Who: ☐Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other:	

3.2.91 The United States emphasised the importance of monitoring systems for SAR. ICAO commented that the monitoring enabled a greater focus on reviewing the *Asia/Pacific SAR Plan*.

3.2.92 India complimented the APSAR/WG for its work and highlighted the importance of SAR coordination. Indonesia and Sri Lanka noted the difficulties of signing SAR agreements at a high level. ICAO recalled that the SAR Plan provided guidance on this aspect, emphasising that SAR agreements did not need to be formally signed at high level, but ATM/SG/5 WP33 paragraph 2.13 and the Asia/Pacific SAR Plan could be referenced for developing a working level technical arrangement.

Air Navigation Service Deficiencies List (WP34)

3.2.93 The meeting reviewed and discussed the ATM/AIS/SAR Deficiency List also incorporating RASMAG Deficiencies) and agreed to forward the list for consolidation and presentation by APANPIRG/28 (**Appendix A to the Report on Agenda Item 4**).

3.2.94 New Zealand advised that some deficiencies recorded against Cook Islands and Samoa might no longer be valid, and would contact those Sates to encourage them to report accordingly. India advised that work was underway to enable data link monitoring and reporting in all of India's FIRs, and the related deficiencies would be addressed soon. Indonesia advised that a QMS had been implemented but there had been implementation challenges in the handling of a large quantity of data.

The Necessity of Collaboration among Stakeholders and Clarification of Respective Roles for the Challenge (WP14)

3.2.95 Japan described its efforts to promote modernisation during implementation of the Collaborative Actions for Renovation of Air Traffic Systems (CARATS). Japan urged stakeholders to continue collaborative efforts to support harmonised Asia/Pacific Region ATM modernisation.

3.2.96 The United States supported Japan's collaborative efforts. CANSO stated that it had working groups working on harmonisation, focused on the ten priority items identified in the Seamless ATM Plan. ICAO invited Asia/Pacific States and International Organisations to present input from such collaboration prior to the next iteration of the Seamless ATM Plan, due in 2019.

Air Traffic Growth in Asia/Pacific and the Role of ATFM (WP17)

3.2.97 Hong Kong, China presented information on operational difficulties in the Hong Kong FIR due to growth in overflight traffic and its geographical location in relation to the two main ATFM development groups in the Region. The paper highlighted operational complexity and inefficiency that would be caused by any divergence in ATFM, and urged harmonization into a single network across the APAC Region in line with the ICAO *Asia/Pacific Seamless ATM Plan* and *Regional Framework for Collaborative ATFM*.

3.2.98 China invited Hong Kong, China's participation in the NARAHG. Singapore also supported Hong Kong China's effort to harmonize ATFM. ICAO recalled that the vehicle for ATFM harmonisation was the *Regional Framework for Collaborative ATFM*, noting that the ATM/SG had invited collaboration between the States concerned.

Support for a Global TBO Concept (WP18)

3.2.99 The United States presented WP18, which recalled that Trajectory Based Operations (TBO) had been a cornerstone of NextGen and involved pilots, controllers, air traffic managers, airlines and other operators exchanging four-dimensional trajectories (4D) for flight planning, strategic operations management, aircraft sequencing, spacing and separation.

3.2.100 WP18 described how the FAA TBO development and implementation efforts were tied to the Global Air Traffic Management (ATM) Operational Concept (GATMOC, Doc 9854) and sought APANPIRG support for the Global TBO concept in regional air traffic modernization planning, as defined in the GATMOC and the *Asia/Pacific Seamless ATM Plan*. This was intended to align global developments, interpretations and nomenclature, and remove ambiguities and inconsistencies in the use of elements of TBO.

3.2.101 ICAO invited the United States to provide the value of their experience in implementing TBO as guidance material for the next iteration of the *Asia/Pacific Seamless ATM Plan*.

Achieving Operational Predictability for Demand and Capacity Imbalance on ATS Routes and Harmonisation of ATFM for the Asia/Pacific Region (WP23)

3.2.102 Indonesia, Malaysia and Singapore presented a paper discussing air traffic congestion on ATS routes arising from air traffic flow restrictions from downstream ACCs, proposing that a stronger emphasis be placed on harmonization. They stated that there was a need for further ATFM training guidance to be developed to assist States/Administrations to build up the necessary capabilities.

3.2.103 APANPIRG/28 was reminded that the information and performance objectives provided in the *Regional Framework for Collaborative ATFM* as adopted by APANPIRG provided a harmonized strategy for ATFM implementation, provided that all States complied with its performance expectations and timelines.

3.2.104 In response to the proposal to develop formalized training, the Secretariat agreed to request that the ICAO Global Aviation Training (GAT) Administrator include consideration of an ATFM train-the-trainer course for inclusion in the list of training requiring development Standardized Training Programme (STP).

Transition from AIS to AIM (IP03)

3.2.105 Hong Kong, China urged States to support the transition from AIS to AIM. In particular, States were invited to work together with support from ICAO to address duplicated 5LNC issues. Guidance was requested from ICAO to address the incompatibility issues between AIXM 4.5 and AIXM 5.1 which would hinder the pace of AIM transition.

C-ATFM in India (IP04)

3.2.106 The meeting was provided information on the progress of implementation of the Central ATFM System (C-ATFM) in India.

Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation

3.3 RASMAG Report

RASMAG Outcomes (WP08)

3.3.1 The Twenty-Second Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/22) was held from 10 – 13 July 2017 at Bangkok, Thailand. A total of 51 participants attended RASMAG/22 from 14 States and three International Organizations.

3.3.2 RASMAG/22 reviewed 32 Working Papers (WPs), seven Information Papers (IPs) and four Flimsies.

3.3.3 RASMAG/22 developed two Draft Conclusions to be considered by APANPIRG/28 (note: two other Draft Conclusions were forwarded to the ATM/SG and CNS/SG). RASMAG/22 also agreed to eight Conclusions under the delegated authority vested in the Subgroup by APANPIRG for Conclusions that were of a technical or purely operational nature.

FIT-Asia/6 Meeting Outcomes (WP03)

3.3.4 The Sixth Meeting of the Future Air Navigation Services (FANS) Interoperability Team – Asia (FIT-Asia/6) was held in Bangkok, Thailand, from 03 to 05 July 2017. A total of 15 WPs, nine IPs, six presentations and one Flimsy were presented to the meeting.

3.3.5 All FIT-Asia administrations currently providing or expected to provide data link services were registered on the FIT-Asia Central Reporting Agency (CRA) website for data link problem reporting, which was an improvement since 2015. However, FIT-Asia/6 noted the implausibly low number of Problem Reports (PR), and urged all FIT-Asia States that were providing data link services to report PRs.

3.3.6 FIT-Asia/6 noted that a significant number of PRs could not be fully analysed as they had been provided to CRA in a block of reports, many of which were more than 30 days old; but Data Link Service Providers (DSPs) and many Air Navigation Service Providers (ANSPs) normally only retained their logs for approximately 30 days. It was also noted that it may take several days for the CRA to obtain logs or the permission to use them, and without the availability of logs most issues could not be investigated. RASMAG agreed to the following Conclusion:

Conclusion RASMAG/22-1: Timely Submission of Data Link Problem Reports to the CRA

3.3.7 It was noted that a significant number of failed or poorly configured automation system processes for the transfer of Controller-Pilot Data Link Communications (CPDLC) data authority continued to occur, as had also been the case for several years. The failure to transfer communications at Flight Information Region (FIR) boundaries carried safety risks associated with a previous ATC sector/centre maintaining continuous CPDLC communications with an aircraft that had already entered the airspace of another ATC sector/centre. RASMAG/22 endorsed the following Conclusion, which was directed for endorsement to the ATM/SG/5:

Draft Conclusion RASMAG/22-2: Transfer of CPDLC Connections

3.3.8 Performance reports submitted by India, Indonesia and Singapore were measured against Required Communications Performance (RCP) 240 and Required Surveillance Performance (RSP) 180 expectations defined in Doc 9869 – Performance Based Communications and Surveillance (PBCS) Manual. China monitored performance against RCP400 and RSP400.

3.3.9 Communication Service Providers (CSPs) and aircraft operators had raised valid concerns around the difficulty, time and cost involved in establishing or modifying contractual arrangements between individual stakeholders related to PBCS. ICAO HQ was developing a PBCS charter listing requirements of each stakeholder to promote implementation of PBCS that would satisfy the intent of the Doc 9869 guidance. It was proposed that all stakeholders involved in PBCS operations would sign up to the charter which would, when finalized, be posted on the CRA website.

3.3.10 A survey planning chart to monitor the progress of implementation of performance-based separation circulated by State Letter had resulted in responses from only four Administrations. The lack of information from States together with the current poor performance of a considerable number of FIT-Asia States in pre-PBCS performance monitoring and reporting, and informal reports of inadequate preparation for the deferred PBCS implementation date of 29 March 2018, indicated the need for follow-up action, and for the results to be prepared for consideration if necessary by APANPIRG/28 in September 2017. RASMAG/22 agreed to the following Conclusion:

Conclusion RASMAG/22-3: Performance-Based Separation Implementation Survey

3.3.11 IATA presented issues and concerns regarding the implementation of PBCS, globally and regionally, that required timely resolution before the planned implementation date and was supported by four APANPIRG/27 Conclusions.

3.3.12 The ATM/SG/5 meeting noted a number of concerns by IATA on PBCS (especially lack of State readiness to issue operational authorization for PBCS by 29 March 2018). An action item was noted for inclusion in the FIT-Asia Task List, relating to coordination with ICAO Headquarters and the ICAO NAT Region on the issues of operational authorization for legacy aircraft, the development of the proposed PBCS Charter, and consideration to further defer the agreed implementation date.

3.3.13 The lack of responses to the survey discussed under FIT-Asia/6 WP/8, together with the items discussed under FIT-Asia/6 WP/9 and informal reports, indicated that few Asia/Pacific States had taken action to comply with *Conclusion APANPIRG/27-7: PBCS Operator Requirements*. Noting the potential ramifications for flights if the PBCS operational authorizations had not been issued, and the burden on the ATM systems of other States in cases where such aircraft would be separated by non-performance-based horizontal minima, APANPIRG/28 agreed to the following Conclusion:

<table>
<tr><td colspan="3">Conclusion APANPIRG/28/11: PBCS Operational Authorizations</td></tr>
<tr><td colspan="2">What: That, noting the expected implementation of Performance-Based Communications and Surveillance (PBCS) provisions of ICAO Annexes, PANS and Guidance Material by not later than 29 March 2018, Asia/Pacific States are urged to:
1. Expedite the development and implementation of the PBCS authorization process;
2. Share information through the ICAO Asia/Pacific Regional Office on the availability of PBCS regulatory material and on the expected readiness of their aircraft operators; and
3. Monitor communications and surveillance performance against RCP240 and RSP 180 specifications as described in Doc 9869 – PBCS Manual for all individual aircraft using datalink in their area of responsibility, and make the performance data available on request to all States of Registry.</td><td>Expected impact:
☒ Political / Global
☒ Inter-regional
☒ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To ensure that communication and surveillance requirements are continuously met and inform States of approval, FIT-Asia, RASMAG and APANPIRG accordingly.</td><td colspan="2">Follow-up: ☒Required from States</td></tr>
</table>

When:	14-Sep-17	Status:	Adopted by PIRG
Who:	☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:		

3.3.14 FIT-Asia/6 was presented with an updated template for data link performance reporting to FIT-Asia, addressing an action item from the FIT-Asia Task List. It was noted that the template would continue to be useful to States monitoring and reporting data link performance in the pre-PBCS environment, pending the development of a new reporting template (FIT-Asia/6/WP/13). RASMAG/22 agreed to the following Conclusion:

Conclusion RASMAG/22-5: Data Link Performance Reporting Template and Guidance

3.3.15 FIT-Asia/6 had noted that PBCS implementation in High Seas airspace would require supporting procedures to be included in ICAO Doc 7030 – Regional Supplementary Procedures. RASMAG/22 agreed to the following Conclusion:

Conclusion RASMAG/22-6: PBCS-related Procedures in ICAO Document 7030

3.3.16 The meeting was reminded that the legacy Global Operational Data Link Document (GOLD) version 2 remained posted on the ICAO Asia/Pacific Regional Office website. This document had become redundant with the publication of Doc 10037 and Doc 9869. RASMAG/22 endorsed the following Conclusion, to be directed to the Communications, Navigation, Surveillance Subgroup (CNS/SG):

Draft Conclusion RASMAG/22-7: Withdrawal of the GOLD

RASMAG/MAWG/4 and RMACG/12 Reports (WP04)

3.3.17 WP04 provided information from the RASMAG Fourth Monitoring Agencies Working Group (MAWG/4) Meeting held in San Francisco, USA in December 2016 and the Twelfth Regional Monitoring Agencies Coordination Group (RMACG/12) Meeting held in Salvador, Brazil in May 2017.

3.3.18 Topics discussed by the MAWG/4 meeting included ICAO Document 10063 (*Manual on Monitoring the Application of Performance-Based Horizontal Separation Minima*), which had differences with the En-route Monitoring Agency (EMA) Manual; specifically, differences in the definition for a Large Lateral Deviation (LLD) and a Large Longitudinal Error (LLE), thus 10NM was proposed as a new LLD value. RASMAG/22 agreed to the following Conclusion:

Conclusion RASMAG22-8: Asia/Pacific Reporting of Large Lateral Deviations

3.3.19 MAWG/4 reviewed the assignment of PBCS oversight responsibility within the Asia/Pacific Region – as a result of this RASMAG/22 agreed to changes to EMA oversight responsibility, with AAMA would providing EMA oversight for the Port Moresby, Honiara, and Nauru FIRs, and may consider providing oversight of the Ujung Pandang and Jakarta FIR.

3.3.20 PARMO would provide EMA oversight of the Tahiti, Auckland and Nadi FIRs as agreed at the Thirty-First Meeting of the Informal South Pacific ATS Coordinating Group (ISPACG/31).

3.3.21 SEASMA and AAMA agreed at RASMAG/22 that SEASMA would provide oversight of Ujung Pandang and Jakarta FIRs as the EMA.

3.3.22 MAWG/4 discussed the development of a ‘virtual’ monitoring organization and discussed the possibility of the current five Asia/Pacific RMAs and five EMAs to be consolidated into two organizations (RASMAG/22/WP31 refers).

Progress made in China's LHD Reporting (WP07)

3.3.23 China discussed progress made in Large Height Deviation (LHD) reporting by ATS units and measures taken to make improvements during 2016. The measures included:

- the establishment of an LHD Scrutiny Group formally, with representatives from China RMA, ANSP, and the China airline pilots association;
- quarterly reports by the China RMA to the ANSP (Air Traffic Management Bureau, ATMB) and the Civil Aviation Administration of China (CAAC); and
- technical exchange meetings with DPRK.

3.3.24 China described its commitment to the 'Just Culture' principles at RASMAG/22, noting that there had been an obvious improvement in China's safety reporting. ICAO reiterated the importance of an 'aviation culture' that aligned with Asia/Pacific Seamless ATM Plan and was enshrined in the *Global Aviation Safety Plan* (GASP). ICAO stated that experience from developed nations had shown that educating operational personnel was not enough to achieve open reporting objectives. Emphasizing that group punishment for an incident should never be acceptable as it deterred individuals from reporting a safety occurrence, RASMAG/22 agreed that States should enact policies and rules to ensure that open reporting was enhanced (Conclusion RASMAG/22-12 refers).

JASMA Vertical Safety Report (WP08)

3.3.25 Japan presented the results of the airspace safety assessment of the Fukuoka FIR by the JASMA. The report showed that the Fukuoka FIR did not meet the TLS, with the assessed risk calculated as **9.16×10^{-9}**, mainly due to 19 Category I (Turbulence or other weather related cause) LHDs and eight Category E LHDs, mainly on the FIR boundary with the Manila FIR. However this was a marked improvement from the 2015 result, which was 22.11×10^{-9}. **Figure 4** presents Japanese airspace collision risk estimate trends during 2016.

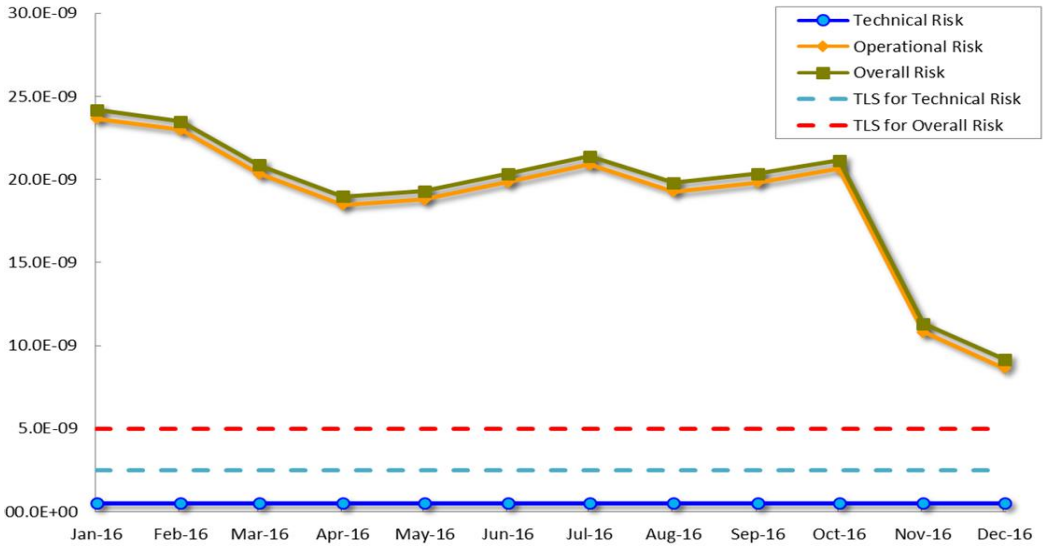

Figure 4: Fukuoka FIR RVSM Risk Estimate Trends

MAAR Safety Report (WP09)

3.3.26 The Monitoring Agency for Asia Region (MAAR) provided the airspace safety oversight results for the RVSM operation in the Bay of Bengal Arabian Sea and Indian Ocean airspace (BOBASIO), Western Pacific/South China Sea (WPAC/SCS), and Mongolian airspace for 2016.

3.3.27 The BOB/South Asian RVSM airspace overall risk was estimated to be 27.75 x 10^{-9}, which did not meet the TLS by a substantial margin. **Figure 5** presents BOBASIO airspace collision risk estimate trends during 2016.

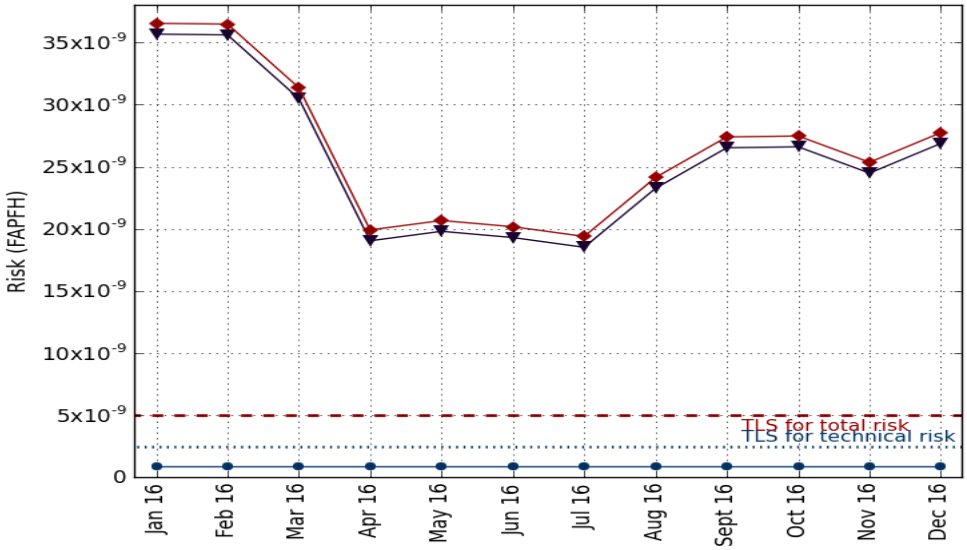

Figure 5: BOBASIO Airspace RVSM Risk Estimate Trends

3.3.28 Category E LHDs (*breakdown in coordination in the ATC to ATC transfer of control responsibility as a result of human factors issues*) remained the most prominent LHD category in the region, accounting for 725 risk-bearing incidents or approximately 96% of risk-bearing LHDs in BOBASIO airspace. Transfer of Control (TOC) points between the Kolkata FIR and Dhaka/Yangon FIRs and the Chennai and Kuala Lumpur FIRs remained a hotspot in the region. Although 2016 operational risk had decreased from 2015, there were still several reports of LHDs in this hotspot.

3.3.29 MAAR had also analysed two hot spots on the Mumbai FIR western boundary with the Mogadishu, Sana'a, and Muscat FIRs. These had been identified in 2015, but the Muscat interface now had more prominence than the Mogadishu hot spot. India advised that new direct voice communication systems and AIDC and additional ATC sectors were being implemented at Muscat and Mumbai ACCs. Regular meetings were now being conducted between the ATC units concerned.

3.3.30 The WPAC/SCS RVSM airspace total risk was estimated to be **9.44 x 10^{-9}**, which did not achieve the TLS. **Figure 6** presents WPAC/SCS RVSM collision risk estimate trends during 2016.

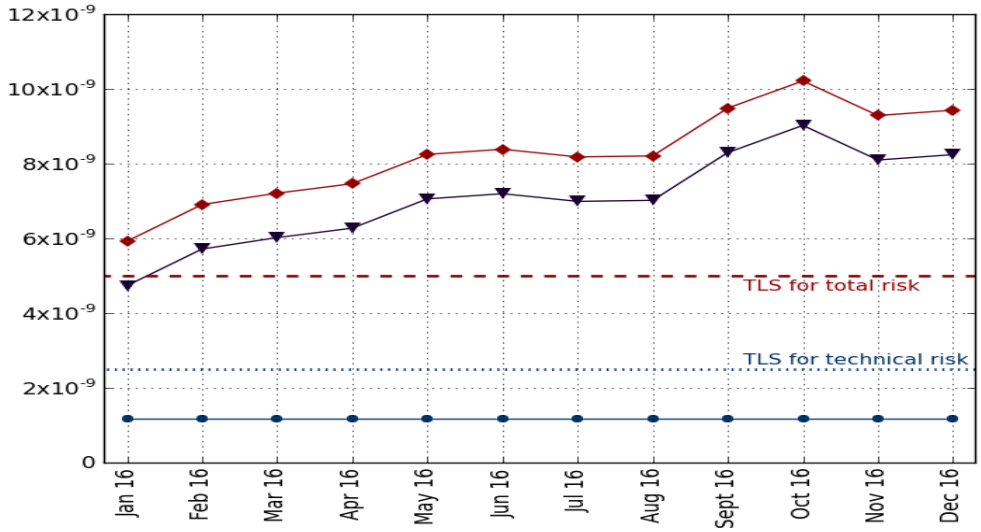

Figure 6: WPAC/SCS Airspace RVSM Risk Estimate Trends

3.3.31 The 2016 result had deteriorated from 2015, which was largely due to a major increase in reported Category E events (251). These were concentrated around the boundary of the Manila FIR. This hot spot had also been identified in 2015; thus operational measures to reduce the overall risks had not been effective to date.

3.3.32 Indonesia stated that direct speech circuits were being installed between the Ujung Pandang and Manila FIRs, instead of relying on normal telephone lines. The meeting discussed the ATC workload within these FIRs, which the Philippines advised was exacerbated by flight level restrictions, excessive airborne holding and spacing delays emanating from airspace west of the Manila FIR, and the fact that Manila currently only operated four ATC sectors.

3.3.33 ICAO stated that the Philippines needed to take urgent action on improvements, such as more ATC sectors and expedition of the ATC modernisation programme, which had been delayed. The Philippines updated progress of its Automatic Dependent Surveillance-Contract (ADS-C)/Controller Pilot Datalink Communication (CPDLC) implementation. An interim ATM system was operational. ADS-C/CPDLC trials had been conducted since July 2015, and would continue until full system capability. The Philippines anticipated ADS-C/CPDLC availability by mid-2018.

3.3.34 ICAO urged States to conduct regular scrutiny meetings between adjacent ACCs to discuss matters such as LHDs, which should also involve airspace users. RASMAG/22 noted that IATA and IFALPA could play an active role in assisting ANSPs to identify appropriate responses to safety reports. RASMASG/22 agreed that Asia/Pacific RMAs should forward LHD information to IATA and IFALPA where it was clear that pilot/airline input would assist. The meeting agreed that the Asia/Pacific Region could develop a safety bulletin from the collaborative scrutiny, in conjunction with IATA and IFALPA.

3.3.35 The Philippines reiterated that many of the Category M events on the Singapore/Manila interface were due to inaccurate time estimates. Many of the LHD occurrences on the Singapore FIR boundary were caused by accumulated error in time estimates within operational limits of ATC and pilots. It was suggested that the RASMAG/MAWG reassess the risk associated with this type of occurrences to improve reporting criteria at its next meeting.

PARMO Vertical Safety Report (WP11)

3.3.36 The Pacific Approvals Registry and Monitoring Organization (PARMO) presented a safety assessment of RVSM for the Pacific and the Republic of Korea's (ROK) airspace for 2016. The Incheon FIR RVSM total risk was estimated to be **5.30×10^{-9}**, which marginally did not meet the TLS. The analysis of risk included did not include the airspace referred to as the AKARA Corridor (ATS route A593).

3.3.37 The ROK advised the meeting that AIDC had been implemented between Dalian Area Control Centre (ACC) in the Shenyang FIR and the Incheon ACC in November 2016, and this had resulted in a significant reduction of LHDs. IATA stressed that States had agreed to provide formal updates to RASMAG on actions to mitigate LHDs, together with results (note: Conclusion RASMAG/22-11 refers).

WP12 AKARA Safety Assessment

3.3.38 The Incheon FIR AKARA Corridor interface with Shanghai/Fukuoka/Taibei FIRs was identified by RASMAG/20 as an LHD Hot Spot with the PARMO, China Regional Monitoring Agency (RMA), Japan Airspace Safety Monitoring Agency (JASMA), and MAAR as the RMAs assigned to this task. WP12 presented analyses of the AKARA corridor airspace using TSD and LHD reports for calendar years 2015 - 2016.

3.3.39 Vertical collision risk estimates for calendar years 2015 – 2016 for the AKARA corridor airspace are shown in **Figure 7**, which indicated the extreme sensitivity to any safety event; thus the results were volatile from year to year.

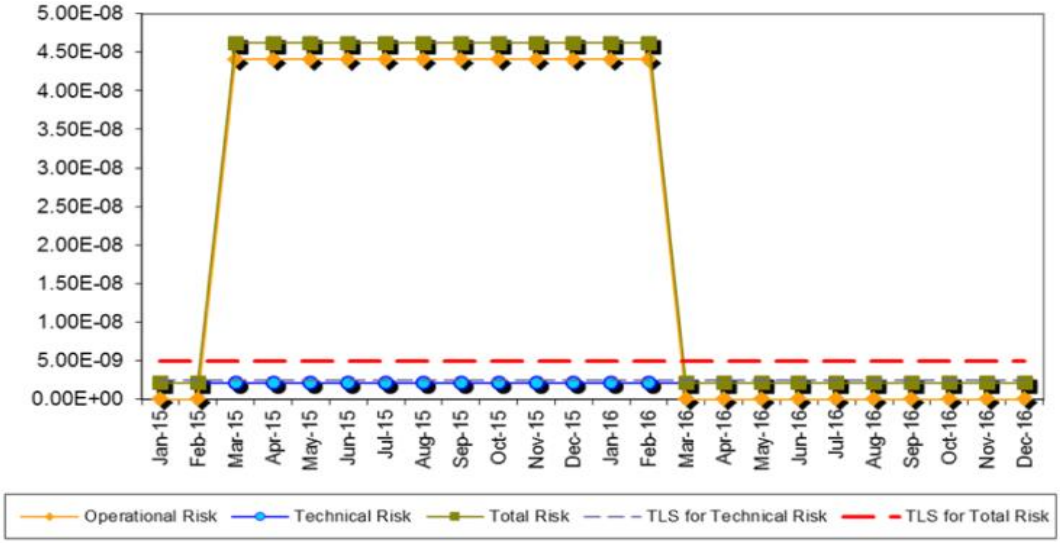

Figure 7: AKARA Corridor Vertical Collision Risk Estimates, 2015-2016

3.3.40 The vertical risk estimate from March 2015 to February 2016 was a very high value of **46.2 x 10^{-9}** fatal accidents per flight hour (fapfh), while December 2016 was **2.08 x 10^{-9}** fapfh. There had been no operational risk events reported in 2016.

3.3.41 The maximum number of LHD minutes allowed in order to meet the TLS within the AKARA Corridor was estimated to be only 0.125 minutes (approximately 7.5 seconds). This was due to the Flight Level Allocation Scheme (FLAS) and the observed opposite direction and crossing vertical occupancy.

3.3.42 IFALPA asked about the vertical occupancy rate inside the AKARA Corridor (value = 1.5). PARMO commented that rates of this nature may be the highest in the world (Tasman Sea and SCS compared at 0.2). Air traffic operating on airway A593 was very concentrated between FL280 and FL310, and on crossing routes similarly concentrated at FL270/FL310.

EMA Handbook and ICAO Doc 10063 Content Comparison (WP17)

3.3.43 The MAWG had been tasked with a comparison between the ICAO Document 10063 *Manual on Monitoring the Application of Performance-Based Horizontal Separation Minima* and the Asia/Pacific's regional guidance material, the *En-route Monitoring Agency Handbook*. The United States provided a comprehensive review to RASMAG/22, which agreed that ICAO Document 10063 could replace the EMA Handbook as guidance on implementation and maintenance of horizontal performance-based separations. RASMAG/22 endorsed the following technical Conclusion:

Conclusion RASMAG/22-9: EMA Handbook and ICAO Doc 10063 Content

Consolidated Asia/Pacific Safety Monitoring Report (WP29)

3.3.44 The United States provided a consolidated report of Asia/Pacific RMA and EMA data in response to an action item from the MAWG. While there was enhancements necessary in formatting and further analysis to highlight root causes of incidents, RASMAG/22 acknowledged the work as being very useful. RASMAG/22 also noted that this sort of deliverable would strengthen working relationships along the lines of the envisaged two 'virtual' Asia/Pacific monitoring agencies.

Regional Safety Monitoring Assessment (WP30)

3.3.45 **Figure 8** provided the Asia/Pacific regional RVSM TLS compliance for 2016:

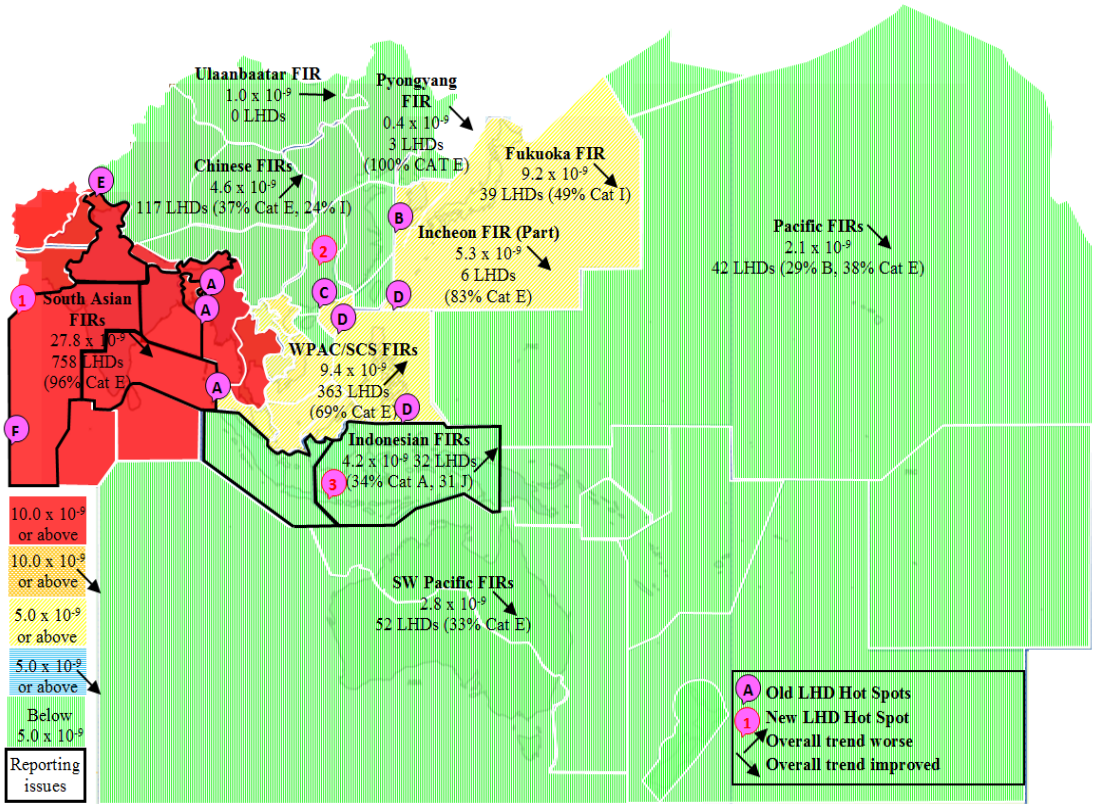

Figure 8: Asia/Pacific TLS compliance reported to RASMAG/22

3.3.46 **Figure 8** indicated the following sub-regional RVSM trends.

3.3.47 South Asia: The risk at Mogadishu – Mumbai interface significantly decreased, but remained an issue with nine LHDs reported at position ORLID (old **Hot Spot F**). However the operational risk and LHDs along the interface between Mumbai FIR and Muscat FIR increased, with 33 LHDs reported along this boundary (new **Hot Spot 1**).

3.3.48 According to the Monitoring Agency for the Asian Region (MAAR), the western boundary of the Mumbai FIR accounted for 74% of total operational risk in South Asian airspace, with contributing factors for the Mogadishu interface including 'coordination difficulty', and poor communications and surveillance capability (however this should not be the case for the Muscat – Mumbai interface). Actions to address these trans-regional shortcomings should be prioritised, in conjunction with the ICAO MID Region.

3.3.49 The Kolkata/Chennai – Yangon FIR and Chennai/Kuala Lumpur FIR interfaces had been previously identified as old **Hot Spot A.** Although total operational risk decreased in 2016 with the LHDs being of short and moderate duration, the number of LHDs inevitably impacts on ATC workload and the overall risk is still one of the highest in the Asia/Pacific Region.

3.3.50 The implementation of AIDC had been previously urged as a high priority, but was not yet operational, and any operational measures that may have been used to minimize the incidence of LHDs had not proven to be effective. Therefore, a concerted effort to bring this situation to the attention of senior decision-makers in the affected States was considered necessary, so the monitoring agencies could be empowered to take appropriate action.

3.3.51 Southeast Asia: The Southeast Asian area has also not met the TLS, with a significant increase in LHD reports from 166 (of which 143 were Category E, *ATC transfer of control coordination errors due to human factors*) in 2015 to 363 (251 Category E) in 2016. This deteriorating situation was largely attributed to the poor performance of the Manila FIR; however RASMAG/22 noted that in Flimsy 1 the Philippines indicated that a significant proportion of incidents were caused by errors emanating from other FIRs.

3.3.52 The Philippines had reported an improvement plan to modernize their ATC system for some years, but this has not yet yielded any improvement in performance. As mentioned by RASMAG/21 when identifying old **Hot Spot D**, this problem should be highlighted to the Philippines' authorities, to ensure the highest priority was given to urgent improvement in equipment and human performance within the Manila FIR; otherwise RASMAG/22 noted that temporary delegation of parts of the Manila FIR may be necessary to ensure safety.

3.3.53 East Asia: Chinese airspace met the TLS, although a new **Hot Spot 2** emerged within the Guangzhou FIR, and the overall conformance had deteriorated close to TLS, which would require concerted attention to manage.

3.3.54 The Hong Kong FIR – Guangzhou/Sanya FIRs interface (old **Hot Spot C**) LHDs were reported as being mainly due to a late revision of time or altitude. China advised that considerable attention was being paid to systems that supported enhanced human performance, including AIDC.

3.3.55 Regarding old **Hot Spot E** on the Urumqi FIR – Lahore FIR interface, China was continuing to work with Pakistan to improve the surveillance and communication situation and the number of LHDs had reduced.

3.3.56 Mongolian airspace achieved TLS, although no LHDs were reported.

3.3.57 The Pyongyang FIR airspace risk estimate achieved the TLS.

3.3.58 The Incheon FIR failed to meet the TLS. The special AKARA Corridor safety assessment (old **Hot Spot B**) highlighted the extreme sensitivity of the airspace to any LHD event. RASMAG/22 noted operational factors associated with the AKARA Corridor which may contribute to a deviation should be taken into account when considering the probability and severity of any safety event for safety mitigation actions. RASMAG/22 stressed that the States concerned should establish safety mitigation measures in the airspace concerned until improvements to the safety of the airspace were possible and report the progress of such improvements to the ATM/SG.

3.3.59 Japanese airspace also failed to meet the TLS, although this was largely because of the LHDs on the Manila FIR boundary (old **Hot Spot D**), and a number of severe turbulence events commonly reported southwest and south of the Japanese mainland (note: RASMAG/21 suggested an emphasis on special meteorological forecasting in that area was required so that appropriate avoidance action might be taken).

3.3.60 Southwest Pacific: The Southwest Pacific achieved TLS, exhibiting a downward trend in reported LHDs.

3.3.61 Regarding Indonesian airspace, this met the TLS but a new **Hot Spot 3** was identified near Surabaya, which could have been due to increased reporting.

3.3.62 Pacific: The Pacific easily met TLS, although two long duration events in April 2016 affected the result. The events occurred in the western part of the Oakland FIR with the aircraft operating from Palau to the Manila FIR without a flight plan and no ATC approval within Oakland oceanic airspace.

3.3.63 **Table 1** provides a comparison of Asia/Pacific RVSM risk as a measure against the TLS, either by RMA 'sub-region' (*APANPIRG Conclusion 20/4 − Asia/Pacific Performance Metrics* refers), or by FIRs. The result for 2016 had been an overall improvement to 51% conformance with TLS, but this was still far from acceptable, given significant 'hot spot' problem areas in much of South and Southeast Asia.

3.3.64 RASMAG/22 noted that if possible, an individual FIR assessment of compliance would provide a better measure than these coarse metrics. APANPIRG/28 noted that an assessment by FIRs was more appropriate than the past metric of 'sub-regions'.

	RASMAG19	RASMAG20	RASMAG21	RASMAG22
RMA 'sub-regions'	22%	67%	33%	56%
FIRs	16%	53%	32%	51%

Table 1: Comparison of Sub-Regional and Regional RVSM TLS Achievement

Non-RVSM Approved Aircraft

3.3.65 **Table 2** compared the number of non-RVSM airframes reported by each RMA:

Report	AAMA	China RMA	JASMA	MAAR	PARMO	Total
RASMAG/18	98	43	47	118	15	321
RASMAG/19	90	33	40	130	19	312
RASMAG/20	8	45	15	234	26	328
RASMAG/21	5	6	15	106	11	143
RASMAG/22	7	40	11	163	22	243

Table 2: Trend of Non-RVSM Airframes Observed by Asia/Pacific RMAs

3.3.66 Overall, the non-RVSM airframe trend was now increasing again, despite a 56.4% reduction in observed non-compliant airframes from 2014 to 2015 due to the proactive work of State authorities, RMAs and the APANPIRG *Conclusion 24/26 Repetitive Non-RVSM Approved Aircraft Operating as RVSM Approved Flights* (**Figure 9**).

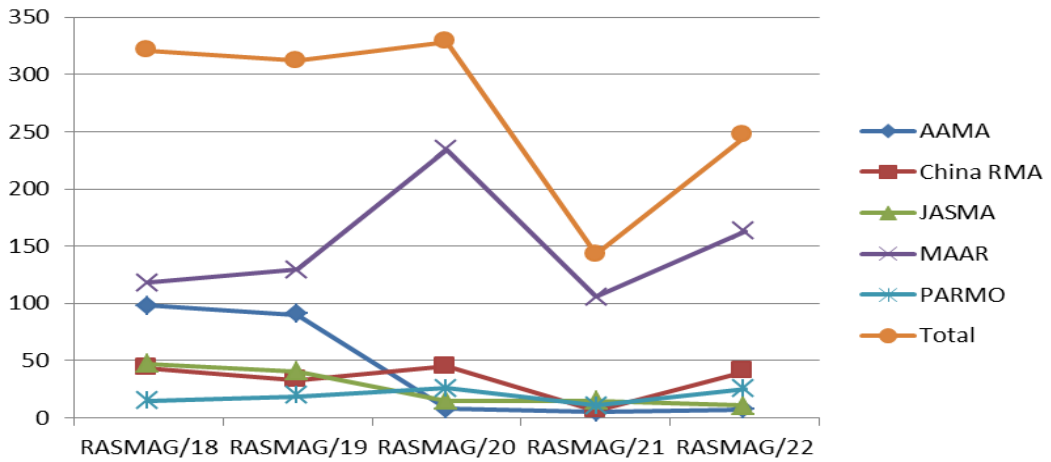

Figure 9: Trend of Non-RVSM Airframes Observed by Asia/Pacific RMAs

3.3.67 All RMAs except JASMA had noted an increase of non-RVSM airframes, with China observing 34 more aircraft than 2015, and MAAR observing a major increase of 57 aircraft. The RMA Coordination Group (RMACG) had also observed a global increase, and had urged ANSPs to impose a more stringent stance under the direction of State authorities. RASMAG/22 considered it was necessary to direct APANPIRG's attention to the main Asia/Pacific States concerned (China, India, Indonesia, Philippines, ROK and Viet Nam), and to additionally request the PIRGs from other concerned regions to be advised of the situation.

3.3.68 Given the gravity and the long-term problem posed by non-RVSM airframes, APANPIRG/28 agreed to the following Conclusion:

<table>
<tr><td colspan="3">Conclusion APANPIRG/28/12: Management of Non-RVSM Aircraft</td></tr>
<tr><td colspan="2">What: That, due to the continuing problem of non-Reduced Vertical Separation Minimum (RVSM) aircraft operating inappropriately within the RVSM stratum on a long-term basis:

(a) Asia/Pacific States should respond in a timely manner to Regional Monitoring Agency (RMA) recommendations; and

(b) Asia/Pacific States and Administrations should enact policies, legislation (including appropriate enforcement actions), and procedures to ensure such non-approved aircraft are identified and refused entry into the RVSM stratum unless specifically exempted, or they have Air Traffic Control (ATC) approval, and

(c) ICAO should survey Asia/Pacific States and Administrations to determine whether such policies, legislation and procedures to exclude non-RVSM aircraft have been implemented; and

(d) RMAs should treat aircraft with an unverified RVSM approval status by its State of Approval for more than one month, starting from the first RMA notification, as a non-RVSM approved aircraft and that information provided to relevant State authorities for appropriate action; and

(e) RMAs should be empowered by APANPIRG to have direct communication with concerned ministries/authorities if required in the event of inadequate action by the State.</td><td>Expected impact:
☒ Political / Global
☒ Inter-regional
☒ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: The actions taken to prevent non-RVSM aircraft from inappropriately operating within the RVSM stratum have not proved to be effective; thus the Regional Monitoring Agencies (RMAs) needed to have greater empowerment, and States need to enact stronger measures.</td><td colspan="2">Follow-up: ☒Required from States</td></tr>
<tr><td>When: 14-Sep-17</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☐Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other: RMAs</td></tr>
</table>

RMA Monitoring Burden

3.3.69 **Table 3** compares the outstanding monitoring burden reported by each RMA:

Report	AAMA	China RMA	JASMA	MAAR	PARMO	Total
RASMAG/20	113	105	14	176	20	428
RASMAG/21	85	72	14	172	20	363
RASMAG/22	82	68	18	148	6	322

Table 3: Outstanding Monitoring Burden of Asia/Pacific RMAs

3.3.70 **Table 3** indicates that all RMAs had been either reducing their monitoring burden or the burden was relatively stable, with the overall Asia/Pacific burden reducing by approximately 25% from 2015 (428 to 322).

3.3.71 The MAAR burden still constituted about 46% of the Asia/Pacific's total, so it was clear that the States it served needed to take increased action to ensure aircraft were monitored in accordance with Annex 6 requirements. It was noted that Thailand had greatly improved its height-keeping monitoring performance since 2015, from 43% to 25% resultant burden.

3.3.72 **Table 4** indicates the States that had relatively high remaining monitoring burdens over 25%.

State	2015%	Requirement	Burden	2016%
Pakistan (MAAR)	64%	40	27	68%
Bangladesh (MAAR)	65%	18	11	61%
Indonesia (AAMA)	48%	120	67	56%
Malaysia (MAAR)	44%	45	20	44%
Nepal (MAAR)	-	5	2	40%
Philippines (MAAR)	31%	52	18	35%
Myanmar (MAAR)	46%	10	3	30%

Table 4: Comparison of State Monitoring Burden

Regional Horizontal TLS Compliance

3.3.73 The following Asia/Pacific EMAs reported horizontal risk assessments as follows, which all met the TLS of 5.0×10^{-9} (**Table 5**):

ATC Separation	EMA	2015 Estimated Risk	2016 Estimated Risk
50NM Lateral	BOBASMA	1.70×10^{-9}	2.67×10^{-9}
	JASMA	0.49×10^{-9}	0.03×10^{-9}
	SEASMA	0.66×10^{-9}	1.99×10^{-9}
30NM Lateral	PARMO	0.51×10^{-9}	2.70×10^{-9}
50NM Longitudinal	BOBASMA	3.97×10^{-9}	4.45×10^{-9}
	PARMO	2.32×10^{-9}	2.22×10^{-9}
	SEASMA	0.38×10^{-9}	0.38×10^{-9}
30NM Longitudinal	BOBASMA	0.14×10^{-9}	0.25×10^{-9}
	JASMA	0.04×10^{-9}	0.002×10^{-9}
	PARMO	3.74×10^{-9}	4.08×10^{-9}

Table 5: Comparison of Horizontal Risk Assessments

3.3.74 The application of all horizontal standards met the TLS. However the trend for the Indian/Bay of Bengal airspace was increasing towards the TLS, and should be closely monitored.

Safety Reporting

3.3.75 RASMAG/22 analysis suggested that the Asia/Pacific had a wide range of reporting cultures, although the ratio of LHDs/flight hours could not be viewed as a direct indicator in isolation, as some operating environments were more complex and others more prone to air safety incidents. BOBASIO airspace was an example of the latter, which had doubled the number of LHD reports; yet there was evidence that many more deviations had not been reported, as noted by RASMAG/21.

3.3.76 RASMAG/22 discussed the effect of reports deemed to be 'non-risk bearing' being hidden from scrutiny or not even reported by ATC in the case of some States, because the error was detected by ATS surveillance (some of which were 'zero duration', being detected before an FIR boundary). ICAO recalled that all deviations, whether deemed to be 'risk bearing' or not, were reportable incidents, and that such occurrences should be analysed for root cause and mitigation, as they may be contributors to a serious safety event in the future. RASMAG/22 agreed to the following Decision:

Decision RASMAG/22-11: State Assessment of Airspace Risk

3.3.77 Comparative analysis of FIR boundary reports between adjacent States also indicated a lack of reporting in Indonesian airspace beyond the vicinity of Jakarta and Surabaya.

3.3.78 The Japanese reporting ratio was quite low at 1:37,304; and Mongolian airspace had no LHDs reported during 2016. It was noted that PARMO had reported LHDs on the Fukuoka FIR, which did not appear on the JASMA assessment.

3.3.79 RASMAG/22 agreed that it was appropriate to remind States, even those which had taken significant positive steps to improve reporting, to continually monitor their reporting culture and systems to optimise reporting. Experience from developed nations had shown that educating operational personnel was not enough to achieve the open reporting objective of the 'aviation culture' described in the Asia/Pacific Seamless ATM Plan.

3.3.80 Noting that punitive action against a group for an incident was not acceptable; RASMAG/22 agreed that States should enact policies to ensure that there was a safe airspace safety reporting culture in place. RASMAG/22 agreed to the following Conclusion (the results of the survey would be presented to RASMAG/23, the RASG-APAC/7 and APANPIRG/29):

Conclusion RASMAG22-12: Airspace Safety Reporting Policy Survey

APANPIRG Deficiencies

3.3.81 Regarding the list of APANPIRG Air Navigation Service (ANS) Deficiencies in the ATM field relating to data link performance monitoring and analysis, RASMAG/22 agreed to propose to APANPIRG/28 that the following current Deficiency be deleted, as recommended by FIT-Asia/6:

China - *Post-implementation monitoring not implemented - PRs not provided to CRA.*

3.3.82 RASMAG/22 proposed that the following current Deficiencies be modified, as recommended by FIT-Asia/6:

Indonesia – *Post implementation monitoring not implemented* – Performance monitoring and analysis was conducted, but problem reports were not provided to the CRA.

Sri Lanka – *Post implementation monitoring not implemented* – Problem reports were not provided to CRA, performance monitoring and analysis was not reported to FIT, but Sri Lanka was now registered with a competent CRA.

3.3.83 RASMAG/22 also agreed to propose that the following new Deficiencies be recorded, as recommended by FIT-Asia/6:

India- *Performance monitoring and analysis was reported for the Chennai FIR*, but was not reported for the Kolkata and Mumbai FIRs.

3.3.84 **Table 4** (Comparison of State Monitoring Burden) indicated that the following States should be recommended for the issuance of an APANPIRG Deficiency, for not meeting the requirements of Annex 6 (paragraph 7.2.7), in respect of a monitoring burden of more than 50% or more airframes remaining to be monitored: Bangladesh, Indonesia and Pakistan.

3.3.85 RASMAG/22 also agreed to propose the following States to be added to the APANPIRG List of Deficiencies in the ATM/AIS/SAR fields, related to *Conclusion 16/6 – Non Provision of safety related data by States*: Bangladesh (was on the Deficiencies List previously), Lao PDR and the Maldives.

Election of Chairs

3.3.86 As Mr. Rob Butcher was retiring in 2017, elections were held during RASMAG/22 for a new RASMAG Chairperson and Vice-Chairperson. APANPIRG/28 formally recorded its gratitude to Mr. Butcher for his meritorious service to the Asia/Pacific Region over an extended period of time.

3.3.87 Ms. Saifon Obromsook, Engineering Manager of AEROTHAI and MAAR was nominated by Australia as Chairperson of RASMAG, which was seconded by China, India, Indonesia, Singapore and the United States. As there were no other nominations, Ms. Saifon Obromsook was duly elected as the new Chairperson of RASMAG, for the period 2018 – 2021 (inclusive).

3.3.88 Mr. John Warburton, Operations Research Analyst, Federal Aviation Administration was nominated by Australia for the position of Vice-Chairperson of RASMAG, which was seconded by India, Japan and Thailand. As there were no other nominations, Mr. John Warburton was duly elected as the new Vice-Chairperson of RASMAG, for the period 2018 – 2021 (inclusive).

APANPIRG Monitoring of Data Link Performance and Problem Reporting (WP19)

3.3.89 ICAO discussed the need for APANPIRG to ensure that all States providing data link services report the results of performance monitoring and analysis, and forward problem reports, to authorized monitoring agencies. RASMAG was the APANPIRG Subgroup required under its TOR to maintain the *List of Competent Airspace Safety Monitoring Organizations*.

3.3.90 The Informal Pacific ATC Coordinating Group (IPACG) – which provided FIT and CRA services for Fukuoka FIR oceanic airspace – and Anchorage/Oakland FIRs, and the Informal South Pacific ATS Coordinating Group (ISPACG) – which provided FIT and CRA services for certain South Pacific FIRs, did not formally report to APANPIRG or any of its Subgroups or technical bodies. Therefore RASMAG and APANPIRG had no visibility of the activities of IPACG and ISPACG States relating to data link performance monitoring, analysis and problem reporting.

3.3.91 The meeting was reminded of ***Conclusion APANPIRG/26/25 – ANS Deficiencies Relating to Data Link Performance Monitoring and Analysis***, supporting the raising of Air Navigation Deficiencies against non-implementation of data link performance monitoring by FIT-Asia States.

3.3.92 The United States understood the need for all States to report but expressed concern about a formal Conclusion. Australia suggested that the onus should be on States rather than the ISPACG/IPACG. ICAO reminded the meeting that IPACG/FIT and ISPACG/FIT were formally recognized as competent monitoring agencies by RASMAG. The United States undertook to take an action item to the IPACG/ISPACG on this matter. After discussion, the meeting agreed to the following Conclusion:

Conclusion APANPIRG/28/13: Asia/Pacific Region Data Link Performance Monitoring	
What: That, IPACG/FIT and ISPACG/FIT are requested to provide to the RASMAG meeting each year a list of IPACG and ISPACG States that have: 1) made arrangements for the reporting and analysis of data link problems to a competent CRA as identified by the Regional Airspace Safety Monitoring Advisory Group (RASMAG); and 2) Reported data link problems to the CRA; and 3) provided data link problem analysis reports to a recognized FANS Interoperability/Implementation Team (FIT); and 4) provided data-link performance analysis reports to a recognized FIT.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical

Why: To ensure APANPIRG and its relevant technical Sub-Groups have visibility of data link performance monitoring and analysis activities conducted by all APAC Administrations providing data link services	Follow-up: ☒Required from States
When: 14-Sep-17	Status: Adopted by PIRG
Who: ☐Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

3.3.93 APANPIRG/28 noted that Annex 6 – Operation of Aircraft and Doc 4444 – Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM) had since November 2016 included new requirements for data link performance monitoring and analysis which were expected to be implemented in the APAC Region by not later than 29 March 2018 (***Conclusion APANPIRG/27/9 – Asia/Pacific Region PBCS Transition Strategy***).

3.3.94 APANPIRG/28 agreed to the following Conclusion updating ***Conclusion APANPIRG/26/25***:

Conclusion APANPIRG/28/14: ANS Deficiencies Relating to Data Link Performance Monitoring and Analysis	
What: That, an Air Navigation Deficiency should be raised against non-implementation of the relevant provisions of Annex 6, Annex 11and PANS/ATM when any Asia/Pacific Administration has implemented operational ADS-C/CPDLC services and: a) has not made arrangements for the reporting and analysis of data link problems to a competent CRA as identified by the Regional Airspace Safety Monitoring Advisory Group (RASMAG); or b) does not report data link problems to the CRA; or c) does not provide data link problem analysis reports to a recognized FANS Interoperability/Implementation Team (FIT); or d) does not provide data-link performance analysis reports to a recognized FIT at least once annually. This Conclusion supersedes Conclusion APANPIRG/26/25.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To ensure APANPIRG and its relevant technical Sub-Groups have visibility of data link performance monitoring and analysis activities conducted by all APAC Administrations providing data link services	Follow-up: ☒Required from States
When: 14-Sep-17	Status: Adopted by PIRG
Who: ☐Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

Regional Supplementary Procedures for PBCS (WP09)

3.3.95 ICAO presented Proposals for Amendment (PfAs) to ICAO Doc 7030 – *Regional Supplementary Procedures* (SUPPS) supporting the implementation of ICAO provisions for performance-based separation in airspace over the High Seas. New provisions in the Annexes and Procedures for Air Navigation Services (PANS) for PBCS supporting performance-based separation had become applicable in November 2016.

3.3.96 As prior to APANPIRG/28 no Asia/Pacific States had either individually or collectively submit PBCS-related Proposals for Amendment (PfAs) to SUPPS in accordance with ***Conclusions APANPIRG/27/7: State Implementation of ICAO Provisions for PBCS*** and ***APANPIRG/27/9: Asia/Pacific Region PBCS Transition Strategy***, it was necessary for APANPIRG to authorize ICAO to submit appropriate PfAs to ensure conformance with the provisions of the Annexes and PANS.

3.3.97 Draft PfAs to SUPPS enabling performance-based separation conforming with the applicable provisions of ICAO Annexes and PANS in airspace over the High Seas were provided in **Appendixes A and B to the Report on Agenda Item 3.3**. The PfAs were based on the templates approved under ***Conclusion RASMAG/22-6: PBCS-related Procedures in ICAO Document 7030***, updated following consultation with ICAO Headquarters to refine the presentation of the information.

3.3.98 The meeting noted that the WP had omitted reference to the following FIRs that had current provisions in SUPPs for performance-based separation: Ho Chi Minh, Hong Kong, Kuala Lumpur, Sanya and Singapore.

3.3.99 In response to a request from the Chair, APANPIRG/28 was reminded that in cases where States did not implement PBCS in accordance with the provisions of the Annexes and PANS aircraft from their registry that operated in airspace where PBCS was implemented may be disadvantaged through tactical interventions by ATC. In the case of States that currently applied or planned to apply performance-based separation minima, failure to update Doc 7030 to support such separations and to then implement PBCS would result in ATC separation procedures that were not compliant with SARPS.

3.3.100 The meeting agreed to the following Conclusion:

<table>
<tr><td colspan="3">Conclusion APANPIRG/28/15: PBCS-Related Proposals for Amendment to Regional Supplementary Procedure</td></tr>
<tr><td colspan="2">What: That, ICAO Asia/Pacific Regional Office is requested to circulate to States and then submit for consideration by the Council of ICAO the Proposals for Amendment to Regional Supplementary Procedures MID/ASIA and PAC to support performance-based separation.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To ensure that Regional Supplementary Procedures conform with the performance-based separation provisions of ICAO Annexes and PANS, and to provide procedural support for States that have implemented or plan to implement performance-based separation in airspace over the High Seas.</td><td colspan="2">Follow-up: ☒Required from States</td></tr>
<tr><td>When: 14-Sep-17</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☐Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:</td></tr>
</table>

3.3.101 APANPIRG/28 noted that the process of circulating the PfAs to States provided the opportunity for States to register any objections. In the event of an objection being received, the FIRs of State concerned would be removed from the list of FIRs in the PfA before submission for approval by the Council of ICAO. This would also result in the removal of current non-compliant SUPPS provisions for affected FIRs.

3.3.102 Australia noted that even if a State didn't want to utilize performance-based separations, any aircraft from that State that flew into airspace where PBCS was being applied, the State still needed an approvals process in place for those aircraft.

3.3.103 IATA expressed its concern regarding the lack of knowledge about PBCS in the Asia/Pacific Region.

Asia/Pacific Region Readiness for PBCS Implementation (WP24)

3.3.104 The Secretariat presented an assessment of APAC Region's readiness for implementation of PBCS by the APANPIRG-agreed date of not later than 29 March 2018.

3.3.105 11 Administrations responded to a survey circulated in June 2016 and re-circulated in June 2017. A summary of all of the responses received, and a summary of the responses received from the six responding States known to be currently applying performance-based separation minima, are provided in **Appendixes C and D to the Report on Agenda Item 3.3**.

3.3.106 Noting that requirements for the development of PBCS policies and objectives supporting safety oversight of aircraft operator and aircraft system PBCS operations applied to ALL States of Registry, the following results of the survey were highlighted:

- PBCS Policies and Objectives supporting safety oversight of aircraft operator and aircraft system PBCS operations:
  - Four of the 11 responding Administrations will not be ready to implement by 29 March 2018, including two that do not plan implementation at all.
- Aircraft Operator Readiness:
  - Six of the 11 responding Administrations will not undertake activities to ensure aircraft operator readiness by 29 March 2018, including three that have no plan to conduct these activities at all.
- PBCS monitoring, analysis and reporting – post implementation
  - Seven of the 11 responding Administrations will not be ready to implement PBCS monitoring, analysis and reporting, including five that do not plan implementation at all.

3.3.107 Three of the six administrations currently applying performance-based separation minima did not intend to submit the necessary PfA to SUPPs supporting the application of performance-based separations in airspace over the high seas (**APANPIRG/28/WP09** referred).

3.3.108 As there would be a special FIT-Asia meeting planned for 11-13 December 2017 to discuss PBCS readiness, IATA requested that the FIT-Asia be empowered to defer the Asia/Pacific PBCS implementation date of 29 March 2018 if necessary. IATA noted that the North Atlantic (NAT) was considering a six month transition period to cater for legacy aircraft that had not been PBCS authorized by their regulators due to the lack of a Statement of Compliance issued by the aircraft manufacturer. Noting that while States were not planning 'exclusionary' airspace, aircraft may be disadvantaged by an inability of the ANSP to provide performance-based separation if the aircraft was not PBCS authorized.

3.3.109 The meeting agreed that the APANPIRG Chair and Vice Chairs be empowered to consider, and if necessary change, the current transition arrangements and milestones for the implementation of PBCS provisions by APAC ANSPs providing performance-based separations in the event the FIT-Asia recommended such action. The meeting noted that no changes should be made to the current milestones for the introduction of operational authorization processes for aircraft and aircraft operators.

Agenda Item 3: Performance Framework for Regional air navigation planning and implementation

3.4 CNS Matters

3.4.1 APANPIRG/28 reviewed the outcomes of the Twenty First Meeting of the Communications, Navigation and Surveillance Sub-group (CNS SG/21) of APANPIRG held at the ICAO Regional Office, Bangkok, Thailand, from 17 to 21 July 2017 (WP/6). The meeting noted with appreciation the work done and achievements by the SG and the contributory bodies reporting to APANPIRG through the SG. The meeting discussed CNS related matters and took following actions on the report of CNS SG/21 and other papers presented under Agenda Item 3.4.

3.4.2 The meeting noted that the full report of the SG and meeting document were posted on the following webpage: https://www.icao.int/APAC/Meetings/Pages/2017-CNS-SG21.aspx

3.4.3 The meeting also noted that the SG had adopted following 5 Conclusions in accordance with APANPIRG Decision 26/65 that empowered the APANPIRG Sub Groups to adopt Conclusions and Decisions on technical matters. The ICAO APAC office had issued follow-up letters to these Conclusions:

Conclusion CNS SG/21-C1	-	Withdrawal of the GOLD (the legacy "Global Operational Data Link Document edition 2).
Conclusion CNS SG/21-C4	-	CRV common provisions and implementation of pilot Project
Conclusion CNS SG/21-C7	-	AIDC Implementation and Operation Guidance Document
Conclusion CNS SG/21-C14	-	Asia/Pacific ADS-B Problem Reporting Database (APRD)
Conclusion CNS SG/21-C15	-	Revised ADS-B Implementation and Operations Guidance Document (AIGD)

Aeronautical Fixed Service (AFS)

3.4.4 The Fourth Meeting of the Aeronautical Communication Services Implementation Co-ordination Group (ACSICG/4) of APANPIRG was held in Bangkok in May 2017. The full report of the meeting is available at: http://www.icao.int/APAC/Meetings/Pages/2016-ACSICG3.aspx

3.4.5 The updates on ATN/AMHS implementation progress achieved by States/Administrations including their near term plan was consolidated in **Appendix A** to the Report on Agenda Item 3.4.

3.4.6 The meeting noted the encouraging progress provided to ACSICG by New Zealand, Samoa, Tonga, Tuvalu, and Kiribati in 2017. The CNS SG meeting discussed that there should be an interconnection between PASNet and CRV to ensure the regional integration, and that small Pacific Islands not using PASNet would use CRV. A specific affordable package had been negotiated, consisting in an IPSec secured connection over a local internet access. In addition, a CRV VSAT solution with MIR/CIR would allow a guaranteed SLA, but at a higher cost.

3.4.7 The meeting noted that ACSICG accepted the arrangement proposed by France to establish an AFTN/AMHS alternate routing for AFS traffic to/from French Polynesia and New Caledonia. France was therefore requested to forward the request to the ICAO Regional Office and the States concerned for consideration and necessary action when the link between Noumea-Tontouta and Tahiti is implemented.

3.4.8 The meeting noted ACSICG's discussions about the requirement to support ICAO meteorological information exchange model (IWXXM) which would become a standard applicable from November 2020 by AMHS.

3.4.9 In order to meet the minimum requirement for the exchange of IWXXM messages, the meeting urged States/Administrations to implement Extended AMHS or Basic ATS Message Handling Service plus File Transfer Body Parts sub-set of extended AMHS for Binary data exchange (FTBP) functional groups as defined in Doc 9880 Part IIB section 3.4.1. Accordingly, the meeting adopted the following Conclusion:

Conclusion APANPIRG/28/16: Upgrade AMHS to support IWXXM traffic	
What: That, In order to support the requirement to exchange MET information in IWXXM format, States/Administrations be urged to upgrade AMHS systems (AMHS server and User Agent) by November 2020 to either Extended AMHS or Basic ATS Message Handling Service plus File Transfer Body Parts sub-set of extended AMHS for Binary data exchange (FTBP) functional groups as defined in Doc 9880 Part IIB section 3.4.1.	Expected impact: ☐ Political / Global ☒ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: need to support IWXXM format data by AMHS	Follow-up: ☐Required from States
When: 30-Dec-17	Status: Adopted by PIRG
Who: ☒Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other:	

CRV Task Force

3.4.10 The CRV TF/6 meeting was held in Bangkok on 14 and 15 December 2016. The CNS SG noted steps of the CRV evaluation process and in particular the approval of the evaluation report by the ICAO Contracts Board for the CRV Project (reference RAS/14/801 - PR 21101272 – Sealed Tender 22501631) was notified to the ICAO APAC Regional Office on 28 November 2016.

3.4.11 The meeting further noted that the ICAO Regional Office sent an ICAO State letter to all States in APAC region in order to notify the CRV common provisions are available along with necessary instructions. The meeting further noted with satisfaction the deliverables of CRV Task Force:

- MSA/DOA delivered in 2015;
- Cost Benefit Analysis in 2015, with further iterations in 2016 and 2017;
- Users requirements (including performance and safety requirements) in 2015;
- Request For Information (benchmarking of market) in 2016;
- Sealed Tender in 2016;
- Implementation plan in 2016; and
- Setting up of CRV OG in 2016.

3.4.12 As a result, the APANPIRG/28 meeting adopted the following Decision:

<table>
<tr><td colspan="3">Decision APANPIRG/28/17: Dissolution of CRV Task Force</td></tr>
<tr><td colspan="2">What: Noting that the terms of reference b/ to d/ have been completed and that completion of a/ and e/ will be performed by CRV OG on the basis of mature CRV implementation plan, and CRV Operating Manual, That, the CRV Task Force be dissolved.</td><td>Expected impact:
☐ Political / Global
☒ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: The CRV TF terms of reference b/ to d/ have been completed and completion of a/ and e/ will be performed by CRV OG on the basis of mature CRV implementation plan, and CRV Operating Manual.</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 14-Sep-17</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☒APANPIRG ☒Other: MID States</td></tr>
</table>

CRV Operations Group

3.4.13 The First Meeting of the Common Regional VPN Operations Group (CRV OG/1) of APANPIRG was held in Bangkok, Thailand on 16 December 2016. The meeting urged concerned States to deliver their Cost Benefit Analysis at CRV OG/3 in December 2017 and noted the ongoing coordination between MID and APAC Region regarding CRV implementation and that further formalization of the coordination mechanism between the two regions would be undertaken by CRV OG.

3.4.14 The Second Meeting of the Common Regional VPN Operations Group (CRV OG/2) of APANPIRG was held on 15 May 2017. The APANPIRG meeting noted that Australia, Fiji New Zealand and USA, were developing the CRV proof-of-concept for pioneer implementation and would validate 10 engineering key points to make sure that the CRV design meets the overall expected performance.

3.4.15 The CNS SG/21 meeting adopted Conclusion CNS SG/21-C4 urging States/Administrations to consider implementing CRV at their earliest convenience. Australia, Fiji New Zealand and USA were urged to implement CRV pilot implementation in coordination with ICAO Regional Office and provide a proof-of-concept on the engineering package by CRV OG/3.

3.4.16 The meeting further noted the updated CRV Implementation Table placed at **Appendix B** to the Report on Agenda Item 3.4 and appreciated the momentum existing regarding CRV implementation.

Strategy for Implementation of ATN and Communication Infrastructure

3.4.17 The meeting reviewed the revised regional strategy for the implementation of ATN and Communication Infrastructure based on the recent developments (GANP, seamless ATM plan, requirements to support digital FIXM, AIXM and IWXXM data, AIDC applications and emerging SWIM based applications). Accordingly, the meeting adopted the following Conclusion:

Conclusion APANPIRG/28/18: Revised Strategy for Implementation of Communication systems to support Air Navigation Service		
What: That, the revised Strategy for implementation of Communication systems to support Air Navigation Service provided in **Appendix C** to the Report on Agenda Item 3.4 is adopted.		Expected impact: ☐ Political / Global ☐ Inter-regional ☒ Economic ☐ Environmental ☒ Ops/Technical
Why: The Strategy for implementation of Communication systems for APAC Region was adopted by APANPIRG in 2010. The strategy requires to be updated based on the development.	Follow-up: ☐Required from States	
When: 14-Sep-17	Status: Adopted by PIRG	
Who: ☒Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other:		

Cmmon Regional Virtual Private Network (CRV) Proposed Way Forward Regarding the MSA (RAS 14801), USA on behalf of Fiji, Hong Kong China, New Zealand, USA and the Secretariat

3.4.18 The eighteen CRV Pioneer States/Administrations (Australia, China, Hong Kong China, Macao China, Democratic People's Republic of Korea, Fiji, France, India, Japan, Malaysia, Myanmar, New Zealand, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, and USA), have established Management Service Agreement (MSA) with ICAO Technical Cooperation Bureau (TCB) to select a common service provider for telecommunication service in the region. As a result, a common service provider was selected. A decision was needed as to the use of remaining funds. The meeting adopted the following Conclusion, which was endorsed by the CNS SG:

Conclusion APANPIRG/28/19: Amendment of the Management Service Agreement for CRV project (RAS14801)		
What: Recognizing that ICAO Technical Cooperation Bureau satisfactorily completed all the defined work items in the initial Management Service Agreement (MSA) and Project Document of RAS14801, that the required payments were settled, and that in end 2016, all the requirements of both parties have been fully completed and closed on record, That, i) all Pioneer States are encouraged to counter-sign the amended Pro Document provided in **Appendix D** to the Report on Agenda Item 3.4; ii) any Pioneer State not countersigning is entitled to get its share of the remaining fund balance back; and iii) a Pioneer State for which a direct CRV connection is not considered feasible in 2017 by the selected vendor is entitled to get its initial contribution in full.		Expected impact: ☐ Political / Global ☐ Inter-regional ☒ Economic ☐ Environmental ☒ Ops/Technical
Why: The initial scope of MSA was completed by ICAO TCB which allowed for a successful evaluation process and selection of a best and final offer; a majority of Pioneer States is willing to use the rest of their initial contribution to continue to support CRV implementation.	Follow-up: ☐Required from States	
When: 31-Mar-18	Status: Adopted by PIRG	
Who: ☐Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other: CRV Pioneer States		

Outcome of the First Meeting of System Wide Information Management Task Force (SWIM TF/1)

3.4.19 The First Meeting of the APAC SWIM Task Force (SWIM TF/1) was held in Bangkok in May 2017 and attended by 67 participants from 17 States/Administrations and International Organizations. The meeting noted the information on SWIM planning from 2017 to 2022, trials, demonstration and implementation presented by a number of States/Administrations at the Task Force meeting. The meeting also noted the robust program management approach and tasks assignment to task leads and members of the Task Force and the work plan agreed by the SWIM Task Force, including coordination mechanisms inside the region and with the concerned panels.

3.4.20 The meeting noted that the Task Force was established by the CNS SG (CNS SG/20 - D3) and its original reporting path is to the Sub-group through ACSICG. Considering the nature of Task Force work plan and the statements of work developed, the meeting recommended that the report of SWIM Task Force should be presented directly to CNS SG for consideration. This proposed change should be considered by the next meeting of the Task Force. In any case, a specific task of the SWIM Task Force was designed to perform the horizontal coordination with all the TF/WG in the region which have a contribution to or a dependency on the SWIM implementation.

Report of Third Meeting of AP AIDC Task Force

3.4.21 The meeting reviewed the report of the third meeting of the ATS Inter-facility Data Communication Task Force (APA TF/3) held in Makassar, Indonesia from 26 to 28 April 2017.

3.4.22 A summary of the analysis of the issues were tabulated for the 62 issues previously collected from Australia, India, Indonesia, Malaysia, Maldives and Singapore. States/Administrations were urged to report the AIDC implementation issues using the revised format to the ICAO Regional Office for updates. The meeting noted the steps recommended for the identified issues that require software or firmware modification by the vendors to resolve the issues.

3.4.23 The AIDC Task Force meeting endorsed the AIDC Implementation Guidance Document (IGD Version 0.9) developed by the APA IGD working group through six meetings. The meeting noted that the CNS SG adopted the AIDC Implementation and Operations Guidance Document guidance material through Conclusion CNS SG/21-C7.

3.4.24 The meeting also noted that the APA IGD working group was dissolved as the task on the development of the AIDC IGD had been completed and the maintenance of the document would be done through AIDC Task Force and/or CNS Sub-group.

Updates on AIDC implementation activities

3.4.25 The significant implementation achievements are listed in the CNS SG/21 report.

3.4.26 The implementation issues and important lessons learnt are as follows:

- AFTN Latency issues (in abnormal condition such as via alternate routing) have been identified by China, India and Singapore. Possible solutions including parameters adjustment and use of dedicated lines instead of AFTN and through joining the CRV project.
- Invalid DEP and/or missing FPL messages; and
- Cyclic Redundancy Check (CRC) errors due to a lack of standardization. AIDC guidance document recommends a unique standard to implement.

Development implementation Plan focusing those connections identified with priorities by APANPIRG

3.4.27 The meeting recalled safety issues related to human errors during ATS transfer human errors which had been identified APANPIRG. Considering that AIDC is an important means of minimizing Large Height Deviations (LHD), the meeting noted the updated implementation plan for the significant LHD interface areas:

- Jakarta and Chennai/Ujung Pandang/Melbourne FIRs is rescheduled for Jan. 2019;
- Chennai and Kuala Lumpur was implemented on 15 May 2017 with a limited set of messages;
- Manila and Fukuoka: Technical tests scheduled in 4Q2017;
- Manila and Taipei: 2Q2018;
- Manila and Hong Kong: technical tests scheduled in 4Q2017;
- Manila and Ho Chi Minh: technical tests scheduled in 2Q2018;
- Manila and Singapore: 4Q2017;
- Manila and Kota Kinabalu: Technical tests schedule to be confirmed by Malaysia;
- Manila and Ujung Pandang: target date of implementation in 4Q2017;
- Urumqi/Lahore: VSAT voice communication being established to replace IDD and the target date of implementation of the VSAT link is 4Q2017;
- Beijing/Ulaanbaatar: testing scheduled in 2017;
- Hong Kong/Guangzhou AIDC technical and interoperability tests were successfully completed in April and June 2017 respectively, while operational test is scheduled for end of 2017.

3.4.28 The meeting was reminded of the minimum a set of 5 AIDC messages that should be implemented in accordance with APANPIRG Conclusion. Some States are taking a phased approach for their implementation.

Review ANP Table CNS II APAC-1 – AIDC Implementation Plan

3.4.29 The CNS SG/21 meeting further updated the information in the planning table for AIDC i.e. Table CNS II APAC-1-AIDC Implementation Plan. Accordingly the meeting adopted the following Conclusion:

<table>
<tr><td colspan="3">Conclusion APANPIRG/28/20: Revised ANP Table CNS II APAC-1 – AIDC Implementation Plan</td></tr>
<tr><td colspan="2">What: That, the revised Table CNS II APAC-1-AIDC Implementation Plan provided in Appendix E to the Report on Agenda Item 3.4 be amended in accordance with the established procedure.</td><td>Expected impact:
☐ Political / Global
☒ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: The Table CNS II APAC-1-AIDC Implementation Plan was updated by the APAC AIDC Task Force and it should be approved through an amendment procedure (PfA).</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 30-Dec-17</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other:</td></tr>
</table>

3.4.30 The meeting noted that the AIDC Task Force would provide assistance till 2019 for the AIDC implementation between numerous ATSU pairs identified with priorities.

Aeronautical Mobile Service (AMS)

3.4.31 Japan informed the CNS SG meeting about its decision to introduce controller pilot data link communication in continental area (Continental CPDLC), which could be beneficial in respect of increase control processing capacity, improve safety, reduce of communication time and prevent human errors related to communication.

Necessity of New Performance Test for ATC Communication System and Related Proposal

3.4.32 Republic of Korea reported to the CNS SG meeting the new performance test for ATC communication system at Incheon International Airport (IIA) has been designing to overcome limitations and problems (such as fragmentary system) of the current performance test which measures individual equipment.

Anomalous Propagation of VOR/ILS LOC by Sporadic E Layer, Japan

3.4.33 Japan presented the CNS SG meeting the measurement results of anomalous propagation of VOR and ILS LOC signals by the sporadic E (Es) layer around Japan. Anomalous propagation could occur in a distance range of 600–2000km from the radio source and signal levels of anomalous propagation as undesired signal could be as high as a desired signal, which may cause interference to other VHF ground-based navigation aids and VHF communications.

SELCAL Survey

3.4.34 A survey on the Selective Calling (SELCAL-32) system code was conducted by the Aviation Spectrum Resources Inc. (ASRI) which is responsible for administering SELCAL codes on behalf of ICAO. The SELCAL 32 proposal is now in final approval process by the ICAO Communications Panel (CP) for inclusion in ICAO's Standards and Recommended Practices (SARPs). More information on this can be found at www.asri.aero/SELCAL .

Outcomes of the PBNICG/4 meeting

3.4.35 The meeting was informed about the outcomes of the PBN Workshop 2017 and the fourth Meeting of the Performance Based Navigation Implementation Coordination Group (PBNICG/4) meeting held in March 2017 and necessary follow-up work to be conducted.

3.4.36 At PBNICG/4, India raised the issue that SBAS providers such as GAGAN, BDSBAS and KASS were ready to provide services or preparing for providing services in the region, but that LPV implementation would be delayed as long as the appropriate coding of Asia-Pacific SBAS service provider IDs in the avionics, or an appropriate workaround, is not available in Navigation databases. In this regard, the meeting adopted the following Conclusion:

Conclusion APANPIRG/28/21: Coding of Asia-Pacific SBAS service provider IDs in the avionics	
What: That, ICAO, with the support of ICCAIA, be urged to: a) coordinate the appropriate coding of Asia-Pacific SBAS service provider IDs in the avionics as early as possible through the implementation of ARINC Nav data specification (revision 21); and b) advise about the advantages and disadvantages to use the SBAS service provider ID 15 currently available with revision 20 as a workaround pending the implementation of a).	Expected impact: ☐ Political / Global ☒ Inter-regional ☒ Economic ☒ Environmental ☒ Ops/Technical

Why: LPV implementation will be delayed as long as the appropriate coding of Asia-Pacific SBAS service provider IDs in the avionics, or the workaround, is not available in Navigation databases.	Follow-up: ☐Required from States
When: 30-Dec-17	Status: Adopted by PIRG
Who: ☐Sub groups ☒APAC States ☐ICAO APAC RO ☒ICAO HQ ☒Other: Navigation system panel, PBN Study Group	

3.4.37 The meeting reviewed a table showing challenges of PBN implementation, potential impact and proposed way forward and agreed the need on the establishment of a national PBN stakeholder's forum to deal with the challenges. Also recognizing the efficiency of a national PBN forum as implemented by some States/Administrations, the meeting agreed to the following Conclusion:

Conclusion APANPIRG/28/22: Establishment of National PBN stakeholders forums	
What: Noting that the insufficient articulation between the regulatory and implementation processes is a major cause for the slow implementation of PBN, a lack of efficiency and an increased risk in operations: That, States be urged to establish a national PBN stakeholders forum (or a similar mechanism) to review and coordinate on an ongoing basis: a) the national PBN implementation and regulatory roadmaps, taking into account the global and regional objectives, the fleet readiness, the best equipped/best served principle, and the reduction of environmental impacts; b) the training policies and programmes for all stakeholders; c) the necessary changes to the legal and regulatory framework; and d) the expected and actual benefits of PBN implementation in terms of safety, efficiency, schedule reliability, CO_2 emissions and noise exposure, airport accessibility, and reduced infrastructure costs. The forum should include regulator, ANSP, aerodrome operators, Instrument Flight Procedure Design organizations, all airspace users, and as required communities impacted by noise exposure and carbon emission levels. *Note: the PBN implementation plan is an appropriate tool to support such a national coordination; IFSET is an appropriate tool to demonstrate the expected and actual benefits of PBN implementation.*	Expected impact: ☐ Political / Global ☐ Inter-regional ☒ Economic ☒ Environmental ☐ Ops/Technical
Why: The insufficient articulation between the regulatory and implementation processes is a major cause for the lack of PBN implementation, a lack of efficiency and an increased risk in operations.	Follow-up: ☐Required from States
When: 16-Mar-18	Status: Adopted by PIRG
Who: ☐Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

3.4.38 Regarding the outcomes of the PBN Workshop 2017, the meeting noted that States were recommended to start with a best equipped/best served policy and then mandate the necessary equipage if the uptake of operators was still insufficient, instead of mandate of GNSS and RNP 2 in the Doc 7030. The meeting also noted that a workshop on the surveillance of instrument fight procedures would be held in conjunction with PBNICG/5 by the APAC Regional Sub Office.

3.4.39 In relation to the change in chart identification for PBN approaches, the meeting was informed of ICAO Electronic Bulletin 2017/05 which contains following recommendations until new transition planning guidance material is available in summer 2017.

3.4.40 Recognizing the necessity of flight validation on PBN implementation, the meeting adopted the following Conclusion regarding the survey and the update of the Catalogue of Flight Inspection Units Asia and Pacific Regions initially published in October 2009:

<table>
<tr><th colspan="3">Conclusion APANPIRG/28/23: Update of the Catalogue of Flight Validation and Inspection Service providers in Asia and Pacific Region</th></tr>
<tr><td colspan="2">What: That, a) States provide their flight validation and inspection unit's capabilities to reflect PBN procedure flight validation and flight inspection capabilities through an ICAO RSO's survey; and b) ICAO Asia and Pacific Regional Office update the Catalogue of Flight Inspection Units Asia and Pacific Regions based on the survey outcomes.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☒ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To facilitate PBN Implementation through shortening the PBN flight validation period.</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 28-Feb-18</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☐Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other: ICAO RSO</td></tr>
</table>

Development Plan of the Beidu Satellite-based Augmentation System

3.4.41 China presented to the CNS SG the development plan of the BeiDou Satellite-Based Augmentation System which will be launched by 2020 and have two downlink frequencies, L1/B1C (1575.42 MHz) L5/B2a (1176.45MHz). The service level of BDSBAS will be APV-I in the first place and provide CAT-I performance later. The system will reach full operational capability by 2022 and provide service for aircraft that are equipped with DO-229 (or equivalent) compliant equipment.

Need for Standardization of Certification for Determining Facility Status of Ground-based Radio Navigation Aids

3.4.42 Nepal presented the challenges being faced by Nepal in maintaining its ground-based radio navigation aids in accordance with ICAO SARPs, which requires periodic ground and flight tests. Following a small group discussion to share experiences on flight inspection, States were encouraged to review the flight inspection reports together with their flight check inspector, prior to their finalization, as there is no need to define the time bounding or similar conditions since it is State's responsibility.

Current Status and Plans for PBN Implementation in Pakistan

3.4.43 Pakistan had implemented RNP APCH procedures for 37 out of 40 runway ends, resulting overall in 92.5% implementation. In addition, 8 out of 9 aerodromes listed in the ICAO APAC Regional Air Navigation Plan (APAC ANP) had reportedly RNP1 STAR procedures. For en-route implementation, Pakistan implemented RNAV5 and RNP 10 ATS routes to serve regional major traffic flows and was under study for RNP2 ATS route implementation with neighboring States in accordance with APAC Seamless ATM Plan.

Status of ISTF Technical Paper Publication

3.4.44 The meeting noted the current status of publication of a technical paper presenting the APAC GBAS ionospheric threat model as outcomes of activities of Ionospheric Studies Task Force (ISTF). The technical paper will be published in the technical journal "GPS Solutions" (http://www.gps-solutions.com) with the title of "Ionospheric delay gradient model for GBAS in the Asia-Pacific region" in late 2017.

Further Analysis of Ionospheric Gradient for GBAS in Japan

3.4.45 Japan introduced a three-year program to analyze ionospheric data over Japan for GBAS by Electronic Navigation Research Institute (ENRI), which was launched from April 2017. The program consists of two major objectives, which are the development of a GBAS ionospheric threat model for the transition region between low and mid-latitude regions and further analysis of low latitude ionospheric delay gradients. The Secretariat encouraged States to share data gained through their own study and recommended to use ISTF portal which is available in the ICAO Secure Portal to exchange experiences.

MSAS Status and Future Plan

3.4.46 Japan informed the CNS SG that MTSAT-2 will be decommissioned in 2020 and Quasi-Zenith Satellite System (QZSS) will start operations from 2018 with four (4) satellites consisting of one GEO and three QZOs (Quasi-zenith orbit satellites). QZSS will take over the function of MTSAT in 2020 (MSAS V2) and LPV service will be provided in 2023 (MSAS V3).

GBAS Implementation Status Update in Japan

3.4.47 Japan informed the CNS SG that GBAS implementation in Haneda airport started in 2016 and the installation of GBAS system will be completed by the end of March in 2019. The commencement of CAT-I operation is planned by the end of March in 2021 after the evaluation operation of the system. Regarding the ionospheric threat model, the common ionospheric threat model for GBAS in the APAC Region is used together with the ionospheric environment over Haneda.

Australian-New Zealand SBAS Trial

3.4.48 Australia presented the SBAS trial program to the CNS SG which has been conducted by Australia and New Zealand. The meeting was informed that the objective of the program is to examine performance available to various industry sectors, including aviation, in an effort to establish a benefits analysis for the technology. The SBAS Testbed will include a L1 SBAS Service, a Precise-Point-Positioning (PPP) Service and the next generation Dual-Frequency Multi-constellation (DFMC) SBAS Service with the timeline of 1 June, 1 August and 1 October this year respectively and will continue its operation through to January 2019.

DFMC SBAS Testbed

3.4.49 ICCAIA provided information to the CNS SG on DFMC SBAS characteristics, LPV 200 availability, and various advantages as well as SBAS system overview. ICCAIA encouraged government and industry partners of other ICAO States to participate in SBAS testbed in the areas of formal coordination through provision of CORS data, sharing of testbed performance data and analysis, data collection and validation of SBAS signal reception, participation in a program of SBAS demonstrations, and rigorous benefits analysis to support future investment decision.

Surveillance

The Second Meeting of the Surveillance Implementation Coordination Group

3.4.50 The meeting reviewed the outcome of the Second Meeting of the Surveillance Implementation Coordination Group (SURICG/2) and Surveillance Seminar held in Ulaanbaatar, Mongolia from 12 to 15 June 2017. The report of meeting and other relevant documents are provided on the following webpage: https://www.icao.int/APAC/Meetings/Pages/2017-SURICG2.aspx

3.4.51 The Twelfth Meeting of the South East Asia and Bay of Bengal Sub-Regional ADS-B Implementation Working Group (SEA/BOB ADS-B WG/12) was held in Guangzhou, China from 8 to 10 November 2016. The meeting report available on the following webpage was reviewed by the SURICG/2 meeting:
https://www.icao.int/APAC/Meetings/Pages/2016-SEA-BOB-ADS-B-WG12-.aspx

Review definition of ADS-B airspace in Seamless ATM Plan expectations

3.4.52 The meeting noted the need identified by the SURICG/2 meeting to amend the definition of ADS-B airspace and noted the performance expectations in the Seamless ATM Plan 2.6 (expected implementation 2015) and 2.25 (expected implementation 2019), and agreed to explore amending the definition of ADS-B airspace taking into account other surveillance technologies that may be equally or more suitable for certain airspace than ADS-B. States that are at present at 0% in the matrix can gain some percentage increase if they are using ADS-B for example for situational awareness but have no mandate. The CNS SG meeting agreed to the suggested definition of ADS-B airspace based on the proposal made by SURICG and requested the Secretariat to add the following indicator to the Regional Picture:
"% of FIRs where Category S and Category T airspace supporting high-density aerodromes are able to utilize ADS-B for situational awareness and/or separation."

Avionics Requirements Template amendment

3.4.53 SURICG/2 meeting proposed to revise APANPIRG Conclusion 26/42 adopted in September 2015 to reflect new development of standards and improvements. On 7 December 2015 the Federal Aviation Administration (FAA) had published the FAA Advisory Circular (AC) No. 20-165B, which superseded the FAA AC No. 20-165A. It also was noted that, while the FAA AC No. 20-165A was superseded, equipment previously pursuant to AC No. 20-165A was still valid for operations. The European Aviation Safety Agency (EASA) had issued Certification Specifications and Acceptable Means of Compliance for Airborne Communications, Navigation and Surveillance (CS-ACNS).

3.4.54 Update of the Requirements Template would ensure that the latest standards were supported, while continuing to allow certification against older standards. This was consistent with the Asia Pacific region supporting the use of DO-260, DO-260A and DO-260B (Version 0, 1 and 2) standards. Accordingly, the meeting adopted the following Conclusion:

Conclusion APANPIRG/28/24: Revised Template for Promulgation of ADS-B Avionics Equipage Requirements	
What: That, 1) States intending to implement ADS-B based surveillance service for a defined airspace and having not published regulations be urged to promulgate mandating rules for ADS-B Avionics Equipage Requirements as soon as possible using the revised Template provided in **Appendix F** to the Report on Agenda Item 3.4; 2) States that have implemented ADS-B based surveillance services are also urged to update their ADS-B avionics equipage requirements to align with the template; *Note: States are urged to include at least the standards stated in the template. States may include other standards allowed by the State's regulations.* 3) The template adopted under Conclusion APANPIRG/26/42 be superseded by the revised template; and 4) The relevant parts in the ADS-B Implementation and Operations Guidance Document (AIGD) be updated accordingly.	Expected impact: ☒ Political / Global ☐ Inter-regional ☒ Economic ☐ Environmental ☒ Ops/Technical
Why: to update the reference documents in the Template adopted earlier by APANPIRG.	Follow-up: ☐Required from States
When: 30-Dec-17	Status: Adopted by PIRG
Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

Amendments to Doc 7030 – ADS-B Provisions

3.4.55 SURICG/2 meeting endorsed Proposals for Amendment (PfAs) to the MID/ASIA and PAC sections of ICAO Doc 7030 – Regional Supplementary Procedures. The PfAs proposed by Australia provided updates to the requirements for ADS-B equipment standards, clarification of requirements about use of zero values for NACp, and also included a new sentence relating to ADS-B data quality thresholds. There were currently no requirements in PAC procedures for ADS-B; these were also proposed for a PfA for the PAC Region.

3.4.56 In view of the foregoing, the meeting adopted the following Conclusion:

Conclusion APANPIRG/28/25: Regional Supplementary Procedures for ADS-B Operation	
What: That: 1) the Proposal for Amendment (PfA) to the Regional Supplementary Procedure (SUPP Doc 7030) be processed in accordance with established procedure, based on information provided in **Appendix G** to the Report on Agenda Item 3.4; and 2) ICAO be requested to coordinate the PfA as required, with the objective of achieving inter-regional alignment of requirements for Operation of ADS-B.	Expected impact: ☐ Political / Global ☒ Inter-regional ☒ Economic ☐ Environmental ☒ Ops/Technical
Why: need to update relevant provisions in SUPPs based on the developments of the equipment standards and need to issue PfA for PAC Region.	Follow-up: ☐Required from States
When: 14-Sep-17	Status: Adopted by PIRG
Who: ☐Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

Updated status of Surveillance Activities and ADS-B Implementation

3.4.57 A number of States/Administrations including Australia, China, Hong Kong China, Fiji, Japan, Malaysia, Mongolia, New Zealand, Republic of Korea, and USA provided updated status of ADS-B implementations. The updated information on ADS-B implementation plan and project is also consolidated into **Appendix H** to the Report on Agenda Item 3.4.

Surveillance System Implementation and Planning in Mongolia

3.4.58 The meeting noted that the Civil Aviation Authority of Mongolia (CAAM) had confirmed a plan for implementing ADS-B technology and air navigation surveillance services in 2017. Currently, CAAM had installed 7 Mode S SSR and 13 ADS-B stations supporting DO-260 and 260A/B to cover the main en-route areas. CAAM planned to procure one more Mode S SSR and 5 more ADS-B Stations. All ADS-B stations were connected to the ATM automation system, and CAAM had been using ADS-B for situational awareness since 23 March 2016. CAAM was studying the use of ADS-B for separation in some high level airspace in 2018, prior to mandating ADS-B by 2022.

U.S. ADS-B Avionics Performance Report

3.4.59 The FAA has fielded a new reporting capability to assist operators in understanding their aircraft's ADS-B avionics performance relative to the requirements of the U.S. ADS-B mandate. The "User's Guide" for the ADS-B avionics performance report capability is available at the URL: https://adsbperformance.faa.gov/PAPRRequest.aspx

U.S. FAA Exemption 12555 Applicability and Process

3.4.60 Early-generation GPS receivers may experience brief periods where they do not meet the FAA's required performance for ADS-B Out. Exemption 12555 is a time-limited grant of exemption from the Navigation Integrity Category (NIC) and Navigation Accuracy Category for Position (NACp) requirements specified in Title 14 of the U.S. Code of Federal Regulations (CFR). Exemption 12555 is valid from January 1, 2020 through December 31, 2024 and is subject to certain conditions and limitations. The operator must notify the FAA of their intent to adopt the conditions and limitations of the exemption. Operators are encouraged to use the notification letter template at: http://www.faa.gov/nextgen/equipadsb/media/12555ExemptionLetterofNotificationTemplate.docx

3.4.61 As part of the exemption, the operator must create, maintain and update a GPS equipage plan for airplanes equipped with ADS-B Out (meeting the requirements of U.S. Title 14 CFR 91.225) and will meet the performance requirements of U.S. Title 14 CFR 91.227(c). The plan must be submitted to the FAA by August 1, 2018 and updated as needed, but at least annually thereafter.

Implementation of ADS-B Avionics Problem Reporting Database

3.4.62 The meeting noted that the development of the APAC ADS-B Avionics Problem Reporting Database (APRD) had completed with supports from Australia, Hong Kong China, Singapore, ICAO RO/RSO and ATMB, China. The fully functional APRD was launched on the 21 July 2017. The database is placed at ICAO APAC website in the restricted area with name: APAC ADS-B Avionics Problem Reporting Database. Accordingly, the meeting adopted Conclusion CNS SG/21-C14 urging States/Administrations to nominate focal points for APRD and make full use of the APRD for reporting issues/problems and sharing experience as well as follow-up actions through the APRD.

SEA/BOB ADS-B WG/12 Report

3.4.63 The CNS SG noted that the Report of the Twelfth Meeting of the South-East Asia/Bay of Bengal Sub-Regional ADS-B Implementation Working Group (SEA/BOB ADS-B WG/12, November 2016 was reviewed by SURICG/2 meeting and outcome was consolidated in the meeting report of SURICG/2.

Collaboration in the South China Sea

3.4.64 The CNS SG noted the updates on the developments of ADS-B collaboration in the South China Sea. Under the collaboration between Singapore and Indonesia/Vietnam, surveillance and communications gaps on L642 and M771 were covered. This enabled separation to be progressively reduced from 50NM before Dec 2013 to 20NM in Nov 2016. Singapore was also working with Brunei, the Philippines and Vietnam to further cover surveillance and communications gaps in the Singapore FIR.

Space-Based ADS-B Update

3.4.65 Aireon is in the process of deploying 72 ADS-B receiver payloads, aboard IRIDIUM NEXT satellites in a Low Earth Orbit (LEO), to form the Airborne ADS-B receiver segment of a global Air Traffic Service (ATS) Surveillance system. The associated ground based infrastructure processes ADS-B data from Space prior to delivery to Air Navigation Service Providers (ANSP).

3.4.66 Analysis of data received from ADS-B transponders on dedicated test aircraft plus targets of opportunity from aircraft worldwide, and from a Ground Based Reference Transponder has shown performance which exceeds ADS-B performance requirements for surveillance as established by EUROCAE and RTCA. The current launch cycle will enable implementation of global Space Based ADS B Surveillance in the 3rd Quarter 2017.

Enhancing Aviation Safety through the Use of ADS-B

3.4.67 Due to well-known limitations in traditional radar technology, radar signals could be susceptible to terrain blockage, signal garbling/reflection, transponder busy in replying to interrogations etc., causing known aircraft display issues on radar screens including false targets, aircraft positions temporarily not displayed, and split targets, irrespective of brands of Air Traffic Management System (ATMS) being used. The meeting recognized ADS-B as one of the cost-effective means in overcoming such limitations and urged States/Administrations to adopt a phased approach for gradual implementation of ADS-B within their airspace after all relevant safety assessments and reviews are satisfactorily completed. The meeting agreed to incorporate the above into the AIGD.

Boeing 787 ADS-B Deficiency Update

3.4.68 In following up an Action Item transferred from ADS-B SITF/15, Australia, Singapore, USA and Boeing provided an update on extrapolation errors identified in Boeing 787 aircraft, and reported that the necessary software upgrade would be available for deployment to the in-service B787 fleet via no-cost Service Bulletin B787-81205-SB340036-00 by the end of June 2017. IATA & all States/Administrations were urged to inform their member or registered airlines of the updated information. The meeting agreed to include information in the AIGD.

The Necessity of Mode S 24 Bit Address Monitoring

3.4.69 The CNS SG noted the activity conducted by Japan on ICAO Aircraft Address management including monitoring, tool functions and outcomes. The CNS SG meeting agreed to develop guidance material on ICAO aircraft address for inclusion in the AIGD.

3.4.70 The CNS SG meeting noted the consolidated updates to the ADS-B Implementation Operations and Guidance Document (AIGD) by the SURICG/2 meeting and adopted a Conclusion CNS SG/21-C15 on the revised ADS-B Implementation and Operations Guidance Document.

Use of Mode S DAPS Data - IAS and MACH

3.4.71 New Zealand presented an update on their continuing implementation of Mode S Downlinked Aircraft Parameters (DAPs) within the Air Traffic Management System (ATMS), and issues found during the implementation work. Selected Flight Level (SFL) had already been implemented since May 2016, and had demonstrated its effectiveness in alerting ATC to a possible loss of separation. Indicated Airspeed (IAS) and MACH Speed (Mach) were being added to further enhance the ATMS.

The Performance of Mode S Radar and Data Analyses

3.4.72 Half of the more than 100 radars operated by China had Mode S capability. The site sample tests covered radar models from four vendors, and an analysis of overall aircraft transponder capability for elementary surveillance (ELS) and enhanced surveillance (EHS) replies. Based on a statistical analysis, 97% of flights operated in the airspace of China were equipped with a Mode S transponder.

Application of Mode S Radar Data in ATM Systems

3.4.73 Mode S data processing functions has been implemented in some ATC systems in China since 2013 to enhance capabilities which covered extra information display, tracking function, Select Altitude Mismatch Alert and correlation function. System track contributed by Mode S radar can display extra information to controllers in the way of Extended Label. ATC system also makes use of the Inertial Vertical Velocity in DAPS to realize optimized Cleared Flight Level (CFL) protection in STCA and MSAW analysis function. ATC system uses the select altitude data extracted from the Mode S DAPS to provide an optimized Cleared Level Adherence Monitoring (CLAM) alert for controllers.

Formation of a Mode S DAPS Working Group

3.4.74 The meeting noted that SURICG had made a Decision on the establishment of a Mode S DAPS Working Group to progress the subject and tasks relating to DAPS as specified in the TOR of SURICG. The TOR of SURICG include the requirement to study and identify applicable Mode S radar applications in the Asia and Pacific Regions, considering inter alia the use of Enhanced Mode S data (DAPs). China, Hong Kong China, Japan, Malaysia, New Zealand, Republic of Korea, Singapore and Thailand agreed to join the Working Group with Rapporteurs from China and Singapore.

Regional SSR Mode S Interrogator Identifier Codes

3.4.75 The meeting noted the status of Mode S Interrogator Identifier (II) codes coordinated by and registered with the ICAO APAC Regional Office. States/Administrations were urged to review information of II codes provided in the ICAO portal site (RO-APAC group) under CNSDOCS, and coordinate with the ICAO Regional Office for registration of II codes before use, particularly at radar sites located close to the airspace of adjacent States, for registration of II codes.

Data Synchronization between ATC Automation Systems

3.4.76 China presented the application of operational data synchronization technology between main/standby ATC automation systems on the same site to the CNS SG. With the operational data synchronization, the dual configured ATC automation systems will be able to share their situational data in real time and change main/standby role smoothly, significantly minimizing the risk for controllers to restore their situational awareness in the event of unexpected system outage. In view of the encouraging discussion made, States were encouraged to actively consider organizing a workshop for experience sharing on the overall planning, design, acceptance tests, HMI adaptation, etc.

Tier 2 operations in New Caledonia

3.4.77 France informed the CNS SG meeting about implementation of ADS-B Tier 2 operations in New Caledonia. Three ADS-B ground stations are able to cover all TMA. An initial end-to-end safety case was produced considering AMC2024 certified aircraft in order to pave the way forward.

ATS surveillance coverage expansion in Kathmandu FIR

3.4.78 Nepal informed the CNS SG meeting of the implementation of MSSR-S (Terminal and En-route) project. Recently, Terminal and En-route MSSR-S installation have been completed. The commissioning flight inspection is scheduled to be completed by September 2017. The Terminal MSSR-S installed in TIA will provide service up to 50 NM for Approach Control and En-route MSSR-S installed in Bhattedanda will provide service up to 200 NM for Area Control.

Review implementation of Multilateration

3.4.79 Republic of Korea updated the CNS SG meeting about the operation status and some issues of the new Multilateration (MLAT) at Incheon International Airport. The MLAT system eliminates a shaded area though the construction of the MLAT system. In addition, the automatic labelling function of departing aircraft, arriving aircraft, towing aircraft, and de-icing aircraft increases the efficiency of control of ground mobile aircraft and enhances the safety of moving areas.

ADS-B Implementation Status in Sri Lanka

3.4.80 Sri Lanka updated the meeting that the ADS-B system installed in April 2017 consists of five (05) ADS-B Receiving Stations at Pidurutalagala; Bandaranaike International Airport (BIA); Mattala Rajapaksa International Airport (MRIA); Kilinochchi and Suriyakanda. The system achieves Island wide coverage. Central Processing System is co-located with Area Control Centre (ACC) at Colombo Airport, Ratmalana [RMA]. ADS-B system was flight inspected in May 2017 where coverage, MSAWs, ATM system accuracy, SIDs and STARs were successfully verified.

Surveillance Update

3.4.81 Following 2 February 2017 ADS-B fitment mandate for Australian- and foreign-registered aircraft, more than 98% of flights conducted under the IFR are fitted with ADS-B avionics. Airservices Australia continues to improve ADS-B coverage with the planned installation of 6 ground stations within the next 18 months. Australia has almost complete coverage of the continent at FL200 and good coverage in regional areas at FL100. Airservices decommissioned the en-route Paraburdoo radar in mid-June 2017 and will use existing ADS-B coverage to provide air traffic services in the area. Two more radars will be decommissioned in the near future near Perth (Kalamunda) and on the central east coast (Mount Boyce).

Dissolution of APAC/NAT ADS-C Reporting Interval Task Force (WP/21)

3.4.82 The Asia and Pacific/North Atlantic Automatic Dependent Surveillance – Contract Reporting Interval Task Force (APAC/NAT ADS-C RITF) was established by NAT IMG Decision 45/11 and APANPIRG Conclusion 26/46. The APANPIRG/27 was provided with an interim report of the Task Force which was highlighted in *Appendix O* to APANPIRG/27-WP/9. The Fiftieth meeting of the North Atlantic Implementation Management Group (NAT IMG/50) in May 2017 and the Fifty-Third Meeting of the North Atlantic Systems Planning Group (NAT SPG) in June 2017 agreed to disband the APAC/NAT ADS-C RI Task Force and forward the outcome of the Task Force to appropriate ICAO group (NAT SPG Conclusion 53/14).

3.4.83 Considering that the assigned tasks were completed and the proposal for amendment to the *ICAO Global Operational Data Link Manual* (Doc 10037) as indicated in *Appendix A* to WP/21 being forwarded to the appropriate ICAO group for further consideration, APANPIRG/28 meeting agreed to the following Decision:

<table>
<tr><td colspan="3">Decision APANPIRG/28/26: Dissolution of APAC/NAT ADS-C reporting intervals Task Force</td></tr>
<tr><td colspan="2">What: That, noting that the assigned tasks having been completed and proposals for amendment to ICAO relevant document being forwarded to appropriate ICAO groups for consideration, the APAC/NAT ADS-C reporting intervals Task Force is dissolved.</td><td>Expected impact:
☐ Political / Global
☒ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td colspan="2">Why: proposal and coordination for dissolving APAC/NAT ADS-C reporting intervals Task Force was received from NAT Region and assigned tasks were completed.</td><td>Follow-up: ☐Required from States</td></tr>
<tr><td>When: 14-Sep-17</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:</td></tr>
</table>

Aeronautical electromagnetic spectrum utilization
Regional Preparatory Group Meeting for ITU WRC-2019

3.4.84 In accordance with APANPIRG Conclusion 27/45, a Regional Preparatory Group Meeting for ITU World Radiocommunication Conference – 2019 (WRC19) was held in Bangkok in March 2017. The meeting was organized in conjunction with the Fourth Meeting of the Fourth Working Group Meeting of the Frequency Spectrum Management Panel (FSMP-WG/4).

3.4.85 The meeting reviewed the requirement of aeronautical spectrum management and processes of the ICAO position. The States/Administrations were urged to follow ICAO Assembly Resolution A38-6 to support ICAO position and preparations for WRCs. IATA on behalf of member airlines expressed support to ICAO position.

3.4.86 The important WRC-19 agenda items relevant to aviation identified and discussed at the meeting are as follows:

- Agenda Item 1.10- GADSS;
- 9.1.4 – Stations on –board sub-orbital vehicles; and
- WRC-19 agenda items which may negatively affect spectrum access for aeronautical systems (1.7, 1.8, 1.9, 1.11, 1.12, 1.13, 1.14, 1.16, 9.1.3, 9.1.6)

3.4.87 Frequency use for small Remotely Piloted Aircraft Systems (RPAS) and potential frequency bands for RPAS line of sight links were explored. Current SARPs and radio regulatory issues around using the fixed satellite service (FSS) for the RPAS C2 link were discussed, and a potential solution co-using the 5 GHz (5030 – 5091 MHz) band for both line-of-sight (terrestrial) and beyond-line-of-sight (satellite) was introduced.

Approved ICAO position for ITU WRC-19

3.4.88 The ICAO Position on issues of critical concern to aviation which are on the agenda of the International Telecommunication Union (ITU) World Radiocommunication Conference (2019) (WRC-19) developed by the Frequency Spectrum Management Panel was approved by the Council at the eighth meeting of its 211th Session in June 2017. The State Letter for distribution of the ICAO position was issued on 14 July 2017. The approved ICAO position was also submitted to APT APG19-2 meeting. The executive summary of ICAO position is provided in *Appendix A* and the ICAO position for ITU WRC-19 is provided in *Appendix B* to CNS SG/21-WP/9.

3.4.89 States were encouraged by CNS SG to update the list of focal points for WRC-2019 designated by States which is posted on ICAO APAC webpage.

APT Regional Preparatory Forum for WRC-19

3.4.90 The WRC-19 preparations being undertaken in the Asia-Pacific Telecommunity (APT) APT Preparatory Group (APG) were introduced. The second meeting of APT Preparatory Group (APG19-2) was held in Indonesia in July 2017. One of the objectives of the meeting was to develop APT's Preliminary Views on WRC-19 Agenda Items based on result of Member's contribution and study results available at ITU-R Study Groups.

Aeronautical Frequency Management in APAC

3.4.91 Current aeronautical frequency management provision and procedure adopted in APAC through Conclusion APANPIRG/26/47 – Strategic planning and tactical use of VHF frequencies in the APAC Region from 2015 onwards was reviewed. The meeting noted that transition to a new global database for VHF communication bands coordination using the ICAO Frequency Finder tool had occurred in November 2016.

Improvements to the Regional Air Navigation System: Progress Against Seamless ATM Plan Objectives, Secretariat

3.4.92 The meeting noted the progress of implementation by APAC States/Administrations of the objectives set forth in the Seamless ATM plan.

3.4.93 As the second cycle of the Seamless ATM planning is starting, this mobilization should be translated into a national seamless plan, making a gap analysis between the current baseline of the national air navigation system and the projected objectives of phase 2 (Nov. 2019) and phase 3 (Nov. 2022).

3.4.94 The CNS SG meeting therefore encouraged Champion States above the regional average completion of 56.5% for phase 1 to organize a regional workshop on Master plans/national Seamless ATM plans including diagnostics and action plans.

Paving Way for Interoperability of Air traffic management System, Hong Kong, China

3.4.95 Hong Kong China reported that in November 2016, the Hong Kong Civil Aviation Department commissioned their new Air Traffic Management System (ATMS) which has successfully demonstrated its performance in coping with the challenges of peak traffic demands during the holiday and adverse weather seasons. A risk-based approach was adopted throughout system development, testing/acceptance, system and operations transition, handling of teething issues with good lessons learned. Hong Kong China would pioneer forming an international Users' Group to share operational and technical experience, and map out the future system development roadmap. The meeting also encouraged those States/Administrations in a position to do so to organize a user's workshop or meeting to share their ATM system roadmaps, functionalities, and lessons learned.

ICAO Competency Based Training Workshop for Air Traffic Controllers (ATCO) and Air Traffic Safety Electronics Personnel (ATSEP), Secretariat

3.4.96 The Secretariat presented the outcomes of the ICAO Competency-Based Training (CBT) Workshop for Air Traffic Controllers (ATCO) and Air Traffic Safety Electronics Personnel (ATSEP) which was held in Bangkok, Thailand from 19 to 21 June 2017, gathering a total of 72 participants from 15 States/Administrations.

3.4.97 The workshop was facilitated by 7 instructors from CANI (Air Navigation Services of the Czech Republic, FAA, IFATCA, IFATSEA, NATCA (National Air Traffic Controllers Association in USA) and NATS (Air Navigation Services, United Kingdom), as a follow-up to Conclusion APANPIRG/27/47: Workshop on competency-based training and assessment for the ATSEP made by APANPIRG in 2016.

3.4.98 APANPIRG noted the key outcomes of the workshop:

1) It was noted that the PANS-TRG 4th amendment introducing the competency-based framework for ACTO and ATSEP is applicable since November 2016;

2) The manuals (Doc 10056 - Manual on Air Traffic Controller Competency-based Training and Assessment and Doc 10057 - Manual on Air Traffic Safety Electronics Personnel Competency-based Training and Assessment) provide guidance on how to identify the ATCO/ATSEP competencies, design the training and assessment for them to perform assigned duties in their specific environment at the required standard. Both manuals are available and published as unedited versions on the ICAO-NET;

3) The introduction of CBT for ATCO and ATSEP provides several benefits;

4) PANS-TRG and guidance materials to support implementation of CBT are well established by ICAO. Those materials outline key features of the CBT approach and describe how it is to be used by course developers, instructors and examiners;

5) The manuals also describe how appropriate authorities can establish an adapted competency model that is appropriate for their specific environment; and

6) The transition from current practices was discussed and should be managed as a gradual introduction of Competency Based Training.

Competency of ATSEPs - China

3.4.99 China informed CNS SG of its practices to keep improving the competency of ATSEPs to meet the requirements in maintaining reliable and continuous CNS facilities operations with the introduction of comprehensive concepts in training processes. The personnel certifying process is also restructured into 2 parts: 3 types of basic licenses for communication, navigation and surveillance respectively, 16 professional endorsements for different critical equipment or systems. The amendments and additional management rules helped the establishment of approved training institutions, lowered the cost and saved time significantly.

3.4.100 In addition, the Philippines explained the main principles of their competency-based training, and agreed to share their practice at the next CNS SG meeting.

Human Factors Influencing the ATSEP Job Performance and Means of Measuring the Safety Job Performance of ATSEP, India

3.4.101 India reported that to cope up with the expected traffic and safety levels, there is a need to find an effective way to measure the value of training given to ATSEP. This can be done through measuring the application of learning to job performance. India plans to assure the required level of safety, capacity and efficiency.

Identification of Scope of Activities Pertaining to Categories of ATSEP Sri Lanka

3.4.102 Sri Lanka explained that different staff levels of ATSEP are involved in the activities, which requires different levels of competencies to perform their assigned tasks. An example of possible categories of ATSEP was engineer, senior technician and technician. Therefore, Sri Lanka found that a guideline for identifying the categories of ATSEP in assigning the respective scopes of activities would be of help to ANSPs.

3.4.103 The meeting invited States, and in particular Philippines, to share experience on categories of ATSEPs for the next CNS SG meeting.

Cybersecurity of CNS/ATM systems

3.4.104 The Secretariat made a presentation highlighting ICAO cybersecurity framework for civil aviation and its related activities. Some resources on the information security were also identified.

3.4.105 Assembly Resolution 39-19 has called on States and industry stakeholders to:

- encourage government/industry coordination with regard to aviation cybersecurity strategies, policies, and plans, as well as sharing of information to help identify critical vulnerabilities that need to be addressed; and
- Develop and participate in government/industry partnerships and mechanisms, nationally and internationally, for the systematic sharing of information on cyber threats, incidents, trends and mitigation efforts.

3.4.106 The ICAO framework consists of:

- ICAO Annex 17
- ICAO Aviation Security Manual, Doc 8973
- Global Risk Context Statement (RCS)
- ICAO ATM Security Manual, Doc 9985
- Civil Aviation Cybersecurity Action Plan

Effective Cyber Security Measures to achieve a safe, secured and efficient ATC System in Hong Kong China

3.4.107 Hong Kong China shared the meeting with their key elements of an effective cyber security management framework for a safe and secured ATC system as well as the latest status achieved by Hong Kong China in pursuing the ICAO's ATM Cyber Security Manual Doc 9985 published in 2013. Given the satisfactory assessments, Hong Kong China has met the Level 1 control requirements stated in ICAO Doc 9985 and successfully completed the transition to the new ATC system operations in November 2016.

3.4.108 The Chairman suggested and the meeting agreed to form a small group discussing the justifications and scope of formulating a Task Force or organizing a workshop. The small group suggested to conduct a workshop with the scope provided in the *Appendix K* to the report of CNS SG/21 meeting.

3.4.109 States/Administrations were urged to pursue appropriate level of compliance to the cyber security control requirements as stated in the ICAO Doc 9985 ATM Security Manual and make collaborative efforts to effectively address cyber security threats.

Cyber Security Models, Immediate Measures by ANSP for protecting the critical information of CNS/ATM Systems

3.4.110 India highlighted that the Modern CNS/ATM systems and their complex network architectures changed considerably to meet the global air traffic growth and flexible requirement of stakeholders. The proposed immediate measures that can be done by any ANSPs include: protection on physical access to the information assets and network access to the information assets; well defined network users' responsibility; counter measures to configuration weakness of the network devices; counter measures to configuration weakness of the software and action during malfunctions. Some long term measures that can be taken up by the system developers were also suggested by India.

Cyber Security Threats to Information Exchange Models under SWIM Concept

3.4.111 Hong Kong China highlighted the potential cyber security threats related to defined information exchange models and raises awareness of the need to define security elements in Aeronautical Fixed Services (AFS). The Chairman of ACSICG agreed to discuss this issue with respect to requirement for exchanging IWXXM data as a start.

Certification, procurement procedures of CNS/ATM systems

Update on the CARATS

3.4.112 Japan updated the CNS SG with the status the long-term vision for the future air traffic systems in Japan, namely "CARATS: Collaborative Actions for Renovation of Air Traffic Systems". Japan shared some challenges in promoting modernization in line with GANP.

Safety Regulation of the One Sky Australia Join Program

3.4.113 Australia presented their approach to the safety regulation of the OneSky Australia Joint Program (OSAJP) – a joint effort between the civil and military air navigation service providers to procure and operate a common ATM platform for Australia: the Civil Military Air Traffic Management System (CMATS). Through the close collaboration of its military and civil service providers and regulators, Australia will be providing air traffic control services using the new system. This approach adopts the philosophy used in the type certification of aircraft and other systems, rather than a formal standards development and certification process as has been considered in other forums.

Outcome of Workshop on Development and Certification procedures for CNS/ATM systems

3.4.114 The CNS SG reviewed the outcome of the Workshop and two side meetings held with the all stakeholders. The outcome of these meeting with further refinements and processes discussed at the workshop could be turned into guidance for the development and certification procedures for CNS/ATM systems and addressed the needs raised by Nepal and Republic of Korea. The outcome of the workshop and sides meeting is provided in *Appendix L* to the report of CNS SG/21 meeting.

Acknowledgement of Contribution

3.4.115 The meeting expressed appreciation to Mr. Lo Weng Kee for his dedication and contribution to the improvements and development of CNS facilities and services in the APAC Region as Chairman of CNS Sub-group of APANPIRG.

3.4.116 The CNS SG thanked Mr. Ian Mallett for his significant contributions over the years for development and implementation of PBN in APAC Region as Chairman of the PBNICG.

3.4.117 The CNS SG thanked the CRV Task Force Chair Mr. Chonlawit Banphawatthanarak and CRV Task Force participants for their achievements.

3.4.118 Mr. Frederic Lecat Regional Officer, CNS is leaving in October 2017 after 4.5 years of service with ICAO. The meeting recorded its appreciation and gratitude to Mr. Frederic Lecat for his dedication and contribution to CNS implementation in the APAC Region.

IPs provided under this Agenda Item

3.4.119 IP/05 – India provided a brief overview of the latest status of ADS-B implementation in India and the operationalization of ADS-B based surveillance services.

3.4.120 IP/06 – Updates was provided by India on its major accomplishment of GAGAN-SBAS certification for both enroute and landing operations in the equatorial anomaly region and thus becoming the third state to develop and certify APV 1 operations and first state to do so in the Asia Pacific Region.

3.4.121 IP/07 – India provided information on the initiative towards implementation of Local Area Augmentation System (GBAS) at Chennai Airport. Installation and stability test of GBAS at Chennai had been completed. The current status of GBAS Implementation in India was highlighted.

3.4.122 IP/08 – Pakistan provided information on their Air Navigation Improvement being under taken to ensure safe and efficient air navigation. The improvements are essential towards the provision of enhanced infrastructure by incorporating the technological advancements as well as implementation of operational improvements / procedures in the system.

3.4.123 IP/10 – Japan provided information on their ICAO Aircraft Address management activity including monitoring, tool function, and outcomes. Based on the discussions on the subject, the SURICG/2 meeting agreed to include the guidance on aircraft address monitoring into AIGD.

3.4.124 IP/13 – CANSO shared the meeting with its Best Practice Guide addressing the impediment caused by the disparities and the lack of automated connectivity between adjacent ANSPs. States and ANSPs were encouraged to expedite the implementation of AIDC between neighboring FIRs and in doing so, to take into consideration the information from CANSO.

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Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation

3.5. MET

Review of MET SG/21 meeting (WP/10)

Meeting details

3.5.1 APANPIRG/28 noted that the twenty-first meeting of the Meteorology Sub-Group (MET SG/21) was held at the ICAO Regional Office, Bangkok, Thailand from 28 May to 1 June 2017, and was attended by 61 experts from 20 States and Special Administrative Regions and 3 international organizations.

3.5.2 MET SG/21 had considered, in total, 27 working papers, 16 information papers, 3 slide presentations and 3 flimsies resulting in the formulation or adoption of 3 Draft Conclusions encompassing recommendations for action that required further guidance from APANPIRG and 5 Decisions on matters of solely internal interest to the MET SG.

3.5.3 Full details of the MET SG/21 meeting discussions and outcomes were available in the MET SG/21 report and supporting documentation at the ICAO APAC website: www.icao.int/apac.

Election of Chairperson and Vice Chairperson

3.5.4 APANPIRG/28 congratulated the former Chairperson of MET SG, Ms. Susan O'Rourke, on her valuable and significant contributions and service to the MET SG and APANPIRG, and the newly elected Chairperson of MET SG, Mr. Jun Ryuzaki from Japan Meteorological Agency (JMA), and Vice Chairperson, Ms. Sharon Lau from Hong Kong Observatory.

Review of ANP

3.5.5 APANPIRG/28 noted that MET SG/21 had agreed to proposed amendments to the Asia/Pacific Regional Air Navigation Plan (ANP), Volume I and Volume II, Part V – MET, which included changes to text in the "General regional requirements" and "Specific regional requirements" sections, updates to data contained in Table MET I-1 (State Volcano Observatories) and changes to the "Explanation of the table" in Table MET II-2 (Aerodrome Meteorological Offices).

3.5.6 Furthermore, MET SG/21 had recognized that the proposed amendments concerning the "General regional requirements" would need to be coordinated and circulated, through all Regional Offices, for an amendment of all the regional plans and, therefore, such amendments would be subject to adequate support from the other Regional Offices.

3.5.7 The Secretariat advised the meeting that subsequent to the MET SG/21 discussions, correspondence with the other Regional Offices had indicated that it would be premature at this time for the proposed amendments concerning the "General regional requirements" to be supported by the other Regional Offices.

3.5.8 Rather, the Secretariat advised that it would be prudent to forward those proposed amendments to the ICAO ANP working group for further consideration in the context of developing improvements of a global nature to the common ANP template for use by all ICAO Regions.

3.5.9 Furthermore, as the proposed changes to the "General regional requirements" and "Specific regional requirements" were connected and the proposed changes to the "Explanation of the table" in Table MET II-2 also concerned the common ANP template; the Secretariat recommended that those parts of the proposed ANP amendment should also be forwarded to the ICAO ANP working group for further consideration.

3.5.10 The Secretariat also reminded APANPIRG/28 that MET SG/21 had supported an additional amendment proposal initiated by IATA and supported by Philippines to change the requirement in Table MET II-2 for validity period of aerodrome forecast in TAF form at location RPLC from 12/18/24-hours to 30-hours. APANPIRG/28 noted that this would be reflected by the Secretariat in a revision to the **Appendix A to the Report on Agenda Item 3.5**.

3.5.11 In view of the discussion above, APANPIRG/28 adopted the following Conclusions:

Conclusion APANPIRG/28/27: Proposal for Amendment of the Asia/Pacific Air Navigation Plan, Volume I and Volume II, Part V – MET	
What: That, the proposed amendments at Appendix A to the Report on Agenda Item 3.5 concerning requirements for services and facilities contained in Volume I, Table MET I-1 (State Volcano Observatories) and Volume II, Table MET II-2 (Aerodrome Meteorological Offices), are endorsed and circulated to States in a Proposal for Amendment of the Asia/Pacific Air Navigation Plan, Volume I and Volume II.	**Expected impact:** ☒ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To reflect the current requirements concerning provision of volcano observatory in Japan and Indonesia and provision of meteorological service by aerodrome meteorological offices in Philippines as advised by States concerned.	**Follow-up:** ☐Required from States
When: 14-Sep-17	**Status:** Adopted by PIRG
Who: ☐Sub groups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other: APANPIRG	

Conclusion APANPIRG/28/28: Proposal for Amendment of the common Air Navigation Plan Template, Volume I and Volume II, Part V – MET	
What: That, the proposed amendments at Appendix B to the Report on Agenda Item 3.5 concerning the "General regional requirements" in Volume I and Volume II, "Specific regional requirements" in Volume II and "Explanation of the table" in Volume II, Table MET II-2, be forwarded to the ICAO Air Navigation Plan working group (ANP WG) for further consideration in the context of developing improvements of a global nature to the common ANP template for use by all ICAO Regions.	**Expected impact:** ☒ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To reflect changes to the ANP proposed by members of the MET SG.	**Follow-up:** ☐Required from States
When: 14-Sep-17	**Status:** Adopted by PIRG
Who: ☒Sub groups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other: APANPIRG	

Review of air navigation deficiencies

3.5.12 APANPIRG/28 noted that MET SG/21 reviewed the list of APANPIRG air navigation deficiencies in the field of aeronautical Meteorology (MET), as recorded in the *Reporting Form on Air Navigation Deficiencies* at Appendix D to the Report on Agenda Item 4, identified next steps required to progress the resolution of the deficiencies and requested the Secretariat to coordinate accordingly with the States concerned.

3.5.13 APANPIRG/28 noted that MET SG/21 had determined that the corrective actions by Indonesia on the rectification of deficiencies AP-MET-03 and AP-MET-06 related to the provision of volcanic ash information and SIGMET information for volcanic ash were validated and therefore, subject to the concurrence of the States concerned, the status of the deficiencies AP-MET-03 and AP-MET-06 be reviewed and removed from the Open List (of air navigation deficiencies) accordingly.

3.5.14 In view of the above, APANPIRG/28 adopted the following Conclusion:

<table>
<tr><td colspan="3">Conclusion APANPIRG/28/29: Removal of AN Deficiencies AP-MET-03 and AP-MET-06 from the APANPIRG Open List</td></tr>
<tr><td colspan="2">What: That, the AN Deficiencies AP-MET-03 and AP-MET-06 be removed from the APANPIRG Open List.</td><td>Expected impact:
☒ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td colspan="2">Why: Evidence provided by Indonesia, which is supported by the VAAC Darwin and results from a SIGMET monitoring activity, validated the corrective action taken to rectify the air navigation deficiencies AP-MET-03 and AP-MET-06 in the APANPIRG database.</td><td>Follow-up: ☐Required from States</td></tr>
<tr><td>When: 14-Sep-17</td><td>Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☐Sub groups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other: APANPIRG</td></tr>
</table>

Volcanic ash exercises

3.5.15 APANPIRG/28 noted that the APAC VOLCEX/SG had organized, conducted and completed debriefing on two volcanic ash exercises in the APAC Region: VOLPHIN 16/02 in Philippines, 18 August 2016; and VOLPHIN 17/01 in Indonesia, 23 February 2017. The future work plan included volcanic ash exercises for the following locations/dates:

- Papua New Guinea/ Feb 2018 (APAC VOLCEX 18/01)
- Indonesia, Sumatra/Aug 2018 (APAC VOLCEX 18/02)
- Solomon Islands, Tonga or Vanuatu/Feb 2019 (APAC VOLCEX 19/01)
- North-east Asia, Republic of Korea/Aug 2019 (APAC VOLCEX 19/02)
- Philippines/Feb 2020 (APAC VOLCEX 20/01)

International SIGMET coordination

3.5.16 APANPIRG/28 noted positive outcomes from two international SIGMET coordination and collaboration projects conducted by States in the Asia Region. The *Pilot Project on SIGMET Coordination in Southeast Asia*, conducted in collaboration with the WMO, facilitated the

transition to full 24/7 operational SIGMET coordination between the meteorological watch offices (MWOs) of Indonesia, Malaysia and Singapore with effect from 1 August 2017. The *collaborative SIGMET issuance demonstration project*, which had been conducted since 2015, facilitated the harmonization of SIGMET information issued by MWOs in Japan, Lao PDR, Myanmar, Philippines, Thailand and Viet Nam as well as the improvement of SIGMET issuance capabilities of the MWOs and development of an effective advisory framework for SIGMET information (which is under discussion by the METP).

3.5.17 Japan congratulated all project member States involved, noting that the *Collaborative SIGMET Issuance Demonstration Project* has achieved improvement of en-route hazardous weather information, and added support to the Draft Conclusion 21/3 tabled by MET SG/21 because improvement and harmonization of SIGMET information through close coordination between States is quite helpful for this region to address increasing air traffic volume.

3.5.18 Thailand also supported the draft conclusion mentioned above noting, as a project Member State, the benefits for the suppliers and users of SIGMET information and towards the resolution of SIGMET deficiencies in the APAC region.

3.5.19 In view of the positive outcomes reported above, which supported APANPIRG Conclusion 26/62 – *Cross-border MET Collaboration and Coordination*, APANPIRG/28 adopted the following Conclusion:

<table>
<tr><td colspan="3">Conclusion APANPIRG/28/30: SIGMET coordination in the APAC Region</td></tr>
<tr><td colspan="2">What: That, States and Administrations are encouraged to: a) Participate in cross-FIR-boundary SIGMET coordination on a bilateral or multilateral basis for seamless hazardous weather information for the benefit of aviation users, as well as advancing the capabilities of participating MWOs in the issuance of SIGMETs for cross-border hazardous weather phenomena; and b) Continue to share outcomes from SIGMET coordination activities and consider a step-by-step integration of SIGMET coordination activities in the region when operationally ready.</td><td>Expected impact:
☒ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td colspan="2">Why: International SIGMET coordination projects in the Region have facilitated improved harmonization of SIGMET service between participating States and improved capabilities of participating MWOs in the issuance of seamless SIGMET service at FIR boundaries.</td><td>Follow-up: ☒Required from States</td></tr>
<tr><td>When: 14-Sep-17</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☐Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other: APANPIRG</td></tr>
</table>

SIGMET tests/monitoring

3.5.20 APANPIRG/28 noted that annual SIGMET tests and SIGMET monitoring activities continued to be a core activity under the MET SG work programme to assist with identification and resolution of air navigation deficiencies related to the availability of SIGMET information.

Implementation of IWXXM and AMHS

3.5.21 APANPIRG/28 noted that MET SG/21 supported outcomes from the Fourth Meeting of the Aeronautical Communication Services (ACS) Implementation Co-ordination Group (ACSICG/4) of APANPIRG, held in Bangkok, Thailand, from 16 to 18 May 2017 concerning recommendations to upgrade AMHS to support IWXXM traffic and noted that implementation of IWXXM is already required to support existing ICAO recommended practice, which is expected to become an ICAO Standard with the amendment to Annex 3 applicable from 5 November 2020.

3.5.22 APANPIRG/28 noted that Hong Kong, China will host a workshop on the implementation of IWXXM for the exchange of OPMET data, from 10-12 October 2017, to facilitate implementation projects by States in the APAC Region.

MET/ATM coordination

3.5.23 APANPIRG/28 noted that results of the *ICAO Asia/Pacific survey of State Meteorological information supporting Air Traffic Management*, conducted in October/November 2015, would be circulated for broader review by experts in the ATFM and ATM fields and that a future extension of the survey may be conducted.

Pacific Island States coordination

3.5.24 APANPIRG/28 noted that closer coordination between the MET SG and Pacific Island States was being facilitated by interaction with the Secretariat of the Pacific Regional Environment Program (SPREP), Pacific Meteorological Council (PMC) and Pacific Islands Aviation Weather Services (PIAWS) Panel.

Regional guidance material

3.5.25 APANPIRG/28 noted that MET SG/21 had adopted updates to the Regional SIGMET Guide for use in the APAC Region based on the template endorsed by the Meteorology Panel (METP) to align with Amendment 77 to Annex 3, with some additional modification.

3.5.26 APANPIRG/28 noted that progress had been made on the draft *Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management (ATM) Operations*. MET SG/21 had reviewed the guidance document and, although some suggestions were made for improvements, no objections were raised concerning suitability of the document for dissemination to and use by States in the Region.

3.5.27 As the document was not formally endorsed by MET SG/21 and therefore not presented to APANPIRG for final endorsement in the MET SG/21 Report, the Secretariat advised that, in accordance with the *APANPIRG Procedure for the Endorsement and Application of Asia/Pacific Regional Guidance Materials in various Air Navigation Fields*, and in order for the document to be made available more speedily for use by States in accordance with the Conclusion ATM/SG/5-2, it would be appropriate for the material to be circulated to States for appropriate action following consultation with the APANPIRG Chairperson and examination by ICAO Headquarters.

Future work programme

3.5.28 APANPIRG/28 noted that MET SG/21 had reviewed and updated the MET SG work programme, which included tasks both planned or completed by its contributory expert groups, namely the Meteorological Requirements Working Group (MET/R WG), the Meteorological Services Working Group (MET/S WG), the Meteorological Information Exchange Working Group (MET/IE WG) and the APAC Volcanic Ash Exercises Steering Group (VOLCEX SG).

3.5.29 APANPIRG/28 noted that the next meeting of the MET SG (MET SG/22) was tentatively scheduled for 25-28 June 2018.

Proposal for a regional air navigation agreement on requirements for meteorological service at aerodromes (WP/25)

3.5.30 APANPIRG/28 noted that IATA presented a case for regional air navigation agreement on meteorological service requirements, specifically for aerodrome forecasts (in TAF code) with validity period of 30-hours to be implemented by States at specified locations in support of ultra-Long Range Operations, taking into account the Amendment 74 to ICAO Annex 3 — *Meteorological Service for International Air Navigation* which enables the extension of the validity period of TAF to meet requirements for very long-haul flights.

3.5.31 IATA had previously initiated a proposal for amendment of the ANP to reflect the above requirements but, as the Secretariat had ascertained that the proposal did not have adequate support from the States whose facilities or services will be affected, the proposal for amendment of the ANP was not pursued (apart from at one of the locations concerned, which did have support from the State responsible for the provision of TAF – paragraph 3.5.10, above, refers).

3.5.32 APANPIRG/28 noted that, in view of the apparent impasse between the users and providers of the aerodrome forecasts with respect to the mandatory requirements at the aerodrome locations concerned, IATA had invited the APANPIRG to consider the development of a regional air navigation agreement on the mandatory requirements to be implemented by States for the validity period of aerodrome forecasts in TAF form, especially in support of ultra-Long Range Operations in the APAC Region.

3.5.33 In view of the paper presented by IATA, New Zealand informed APANPIRG/28 that due to various reasons of a technical nature, including those related to the geographical location of New Zealand in an oceanic region, New Zealand had determined that at this stage it was not appropriate for New Zealand to support an amendment of the ANP to include requirements for aerodrome forecasts with validity period of more than 24 hours at locations within New Zealand's area of responsibility. However, New Zealand advised APANPIRG/28 that it would support the future development of service requirements for aerodrome locations it is responsible for through direct dialogue with the users concerned and IATA.

3.5.34 The United States advised APANPIRG/28 that, in view of ICAO provisions which enable States to decide which of their airports are designated aerodrome operational planning (AOP) and the respective TAF service level to be provided (i.e., period of validity <12hrs, 12, 24, or 30 hours), the United States would not support a proposal where ICAO would determine a certain service level for a State, but suggested it would be in a State's best interest to determine any requirements for 30-hour TAF service based on market (i.e., traffic demand) considerations.

3.5.35 To assist the discussion, the Secretariat reminded the meeting that in addition to the ICAO Annex 3 [Par. 6.2] provisions for aerodrome forecast, which require the period of validity of a routine TAF should be determined by regional air navigation agreement, the Annex 3 general provisions also stipulate the following:

- The objective of meteorological service for international air navigation shall be to contribute towards the safety, regularity and efficiency of international air navigation [Par. 2.1.1];

- This objective shall be achieved by supplying users with the meteorological information necessary for the performance of their respective functions [Par. 2.1.2];
- Each Contracting State shall determine the meteorological service which it will provide to meet the needs of international air navigation, in accordance with regional air navigation agreement [Par. 2.1.3]; and
- Close liaison shall be maintained between those concerned with the supply and those concerned with the use of meteorological information on matters which affect the provision of meteorological service for international air navigation [Par. 2.2.1].

3.5.36 Australia agreed that the issue raised by IATA in respect to requirements for the availability of long duration TAF was highly significant, but considered the information provided in WP/25 and associated discussion was not sufficient for the meeting to make a decision on development of a regional air navigation agreement. Australia noted information in the paper that the proposal for amendment of the ANP did not have adequate support from the States concerned and sought clarification on the process that had been followed, noting that the PIRG would benefit from coordinated advice from both the ATM/SG and MET/SG in moving forward. This position was supported by Hong Kong, China.

3.5.37 The Secretariat clarified that the extent of MET/SG discussion on the matter thus far had been limited to discussion on the proposal for amendment of the ANP initiated by IATA and coordinated by the Regional Office which, in accordance with the procedure for amendment of the ANP, was not pursued any further once the Regional Office had ascertained that sufficient support would not be available from States whose facilities or services will be affected.

3.5.38 IATA added that, as the procedure for amendment of the ANP was followed and was unable to proceed as discussed above and in WP/25, and that bilateral discussion with States concerned had not been successful in reaching agreement on the service requirements determined by IATA and States at the aerodrome locations concerned, IATA had submitted WP/25 to seek assistance from APANPIRG in moving forward towards resolving the differences and reaching a regional air navigation agreement on the requirements for the validity period of TAF to support ultra-Long Range Operations in the APAC Region.

3.5.39 The First Vice-Chair thanked IATA for raising this issue in WP/25 and, in view of the discussion above and in addition to the required liaison between those concerned with the supply and those concerned with the use of meteorological information, APANPIRG/28 requested the MET/SG and ATM/SG to carry on the discussion at the appropriate technical level in order to facilitate agreement between IATA, users and States concerned on the requirements for the validity period of TAF.

Collaborative SIGMET issuance demonstration project (IP/15)

3.5.40 A group of States (Japan, Lao PDR, Myanmar, Philippines, Thailand and Viet Nam) provided information on the outcomes and progress of the *Collaborative SIGMET Issuance Demonstration Project*, which is an ongoing project conducted since 2015. Benefits from the project included improved harmonization of SIGMET information issued by the participating meteorological watch offices (MWOs), improved capabilities of the MWOs in SIGMET issuance and support for the development of an effective hazardous weather advisory framework, which is a matter under development by the ICAO Meteorology Panel.

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Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation

3.6 Other Air Navigation Matters

Past and Future Activities of the ICAO Asia and Pacific Regional Sub-Office (WP/15)

3.6.1. The APAC Regional Sub-Office (RSO) was established in 2013 in Beijing with the aim to assist APAC States to comply with the implementation targets agreed in the APAC Seamless ATM plan, mainly on PBN, ASM (Airspace Management), CMAC (Civil Military ATM Cooperation) and ATFM (Air Traffic Flow Management). During the first three years, the RSO was fully staffed (one person from ICAO and nine secondees from China, Japan, Malaysia, Republic of Korea and Singapore). After a reduction in staff in 2016, three new staff will join RSO in October 2017.

3.6.2. The RSO was acting as Secretariat of regional/specific working groups to ease coordination between States in the region (PBN Implementation Coordination Group (PBNICG), South China Sea Traffic Flow Review Group (SCSTFRG), Northeast Asia Regional ATFM Harmonization Group (NARAHG), organizing dedicated workshop/training for several States (example: Foundation ATFM workshop), and providing specific assistance on request from a State (example: PBN Go Team).

3.6.3. In 2016, besides the meetings of PBNICG, SCSTFRG and NARAGH, RSO organized a workshop on ATFM with CAAC, a workshop on CMAC for China with the support of CAAC, EUROCONTROL and EASA and a workshop on PBN for Air Traffic Controllers. RSO is currently preparing a workshop for the APAC Region on CMAC (Bangkok, 1 to 3 November 2017) and planning a second workshop on PBN for ATC in February 2018. Taking advantage of the next PBNICG5 in March 2018, a two day workshop will be held focusing on PBN implementation issues on Pacific Island States and Instrument Flight Procedure (IFP) surveillance.

3.6.4. The RSO was also planning an SBAS/GBAS Implementation Seminar on the purpose of sharing information and experiences. The RSO was also providing specific assistance to some APAC States. Discussions were going on for the visit of PBN Go Teams to Lao PDR, Mongolia, Myanmar and Sri Lanka. And dedicated workshops on ASM, ATFM and CMAC were also scheduled with Malaysia and Myanmar.

3.6.5. The RSO can be contacted through email at APAC-RSO@icao.int or via the website at http://www2010.icao.int/APAC/APAC-RSO/.

Update on The FAA's UAS Integration Efforts (IP/21)

3.6.6. United States provided an update on the Federal Aviation Administration (FAA) activities to integrate Unmanned Aircraft Systems (UAS) into the U.S. National Airspace System (NAS).

Surveillance and Broadcast Services Advanced Surveillance Enhanced Procedural Separation (SBS ASEPS) Project

3.6.7. United States provided an overview of the FAA's Surveillance Broadcast Services (SBS) Advanced Surveillance Enhanced Procedural Separation (SBS ASEPS) project, including the current status of the FAA's analysis of a Space-Based Automatic Dependent Surveillance-Broadcast (ADS-B) system.

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Agenda Item 4: Regional Air Navigation Deficiencies

4.1 Status of Air Navigation Deficiencies in the Asia/PAC Region

4.1.1 Under the Terms of Reference, the APANPIRG has been regularly reviewing the status of implementation of the Asia Pacific Air Navigation Plan through its subgroups to identify and address the air navigation deficiencies according to the uniform methodology approved by the ICAO Council. In meeting this objective, APANPIRG facilitated the development and implementation of action plans by States to resolve identified deficiencies, where necessary.

Deficiencies in the ATM/AIS/SAR fields

4.1.2 APANPIRG/28 noted the List of Air Navigation Deficiencies in the ATM/AIS/SAR field which was reviewed and updated by ATM/SG/5. Appendix A to APANPIRG Working Paper/11 presented the updated List of Air Navigation Deficiencies in the ATM/AIS/SAR fields.

Deficiencies in the AOP field

4.1.3 APANPIRG/28 noted the List of Air Navigation Deficiencies in the AOP field which was reviewed and updated by AOP/SG/1. Appendix B to APANPIRG Working Paper/11 presented the updated List of Air Navigation Deficiencies in the AOP field.

Deficiencies in the CNS field

4.1.4 APANPIRG/28 noted the list of Air Navigation Deficiencies in CNS field which was reviewed and updated by CNS/SG/21. Appendix C to APANPIRG Working Paper/11 presented the updated List of Air Navigation Deficiencies in the CNS field.

Deficiencies in the MET field

4.1.5 APANPIRG/28 noted the list of Air Navigation Deficiencies in MET field which was reviewed and updated by MET/SG/21. Appendix D to APANPIRG Working Paper/11 presented the updated List of Air Navigation Deficiencies in the MET field.

Discussions

4.1.6 Secretariat informed the meeting that in AOP area:

a) **Maldives** had provided RESA (90m x 240m) at both ends at GAN International Airport;

b) **Fiji** has provided airfield signage and runway strip in accordance with ICAO Annex 14, Volume I at Nadi International Airport;

c) **Sri Lanka** provided enhanced taxiway centerline markings as per ICAO Annex 14, Volume I at Bandaranaike International Airport; and

d) **Viet Nam** had provided enhanced taxiway centerline markings and RESA at both ends of RWY 11L/29 R & RWY 11R/29L at Noi Bai International Airport, Hanoi and enhanced taxiway centerline markings at Tan Son Nhat International Airport, Ho Chi Minh City.

The above Deficiencies would be removed from the Deficiency list.

4.1.7 Lao PDR, Brunei and Mongolia were yet to provide the corrective action taken in respect of Deficiencies identified in AGA mission in 2011. Samoa, Solomon Islands and Tonga were yet to provide the corrective action taken in respect of Deficiencies identified in AGA mission in 2015.

4.1.8 Secretariat informed the meeting that in ATM/AIS/SAR fields the progress in following Deficiencies were expected:

a) Implementation of WGS 84 requirements of Annex 15: – 12 APAC States;

b) Implementation of AIS Quality Management system requirements of Annex 15: – 22 APAC States;

c) Airspace classification requirements of Annex 11: – 3 APAC States;

d) AIP format requirements of Chapter 4 of Annex 15: – 2 APAC States;

e) SAR Capability – Annex 12 requirements: – 24 APAC States/Administrations;

f) Non provision of Safety Related Data, Annex 11 requirement: – 4 APAC State;

g) Non-provision of RVSM Approval Data to the RMA: – 1 State; and

h) Data Link Performance Monitoring and Analysis: – 6 APAC States.

4.1.9 Sri Lanka requested that the deficiency relating to Data Link Performance Monitoring and Analysis be updated to reflect that the required performance monitoring and analysis would commence in September 2017, and reporting to the recognized FIT would commence in 2018.

4.1.10 Secretariat informed the meeting that one COM. Deficiency was resolved since 2016 and removed from the list in CNS fields; however:

a) Regarding air/ground communication deficiency in Yangon FIR, DCA Myanmar had made efforts in improving the ground COM. facilities and ATM system including the solar power supply. At CNS SG/21 meeting, IFALPA and IATA expressed appreciation to DCA Myanmar for their efforts made in improving the air/ground communication in Yangon FIR. However, further improvements were still expected;

b) Regarding the ground/ground communication between Urumqi, China and Lahore, Pakistan, States had made initial improvement through changing the service provider. However, further jointly efforts needed to be made in accordance with the remedial action plan agreed at the COM. Coordination meeting; and

c) Afghanistan and Pakistan were expected to do more coordination regarding improvements of ground/ground data and voice communication.

4.1.11 Secretariat informed the meeting that in MET area:

a) Updates on CAP implementation provided by **Indonesia** validate the rectification of the two AN deficiencies concerning provision of volcanic ash information and SIGMET information for volcanic ash (AP-MET-03 and AP-MET-06) – in accordance with APANPIRG Conclusion 28/29, these may now be considered for removal from the open list;

b) Updates on CAP implementation provided by **Tonga** with respect to the dissemination of required volcano observation information indicate that the AN Deficiency AP-MET-17 may be removed from the open list subject to the concurrence of the ATS units, MWOs and VAACs concerned; and

c) Updates on CAP implementation provided by **Philippines** with respect to dissemination of SIGMET information for volcanic ash indicate that the AN Deficiency AP-MET-07 may be removed from the open list subject to the concurrence of the airlines and VAACs concerned.

4.1.12 APANPIRG/27 urged States with Deficiencies to put in additional resources to resolve the Deficiencies and inform the Regional Office the action taken. The meeting noted that it was the responsibility of States with Deficiencies to update the information in the Deficiency database. The Regional Office will update the Deficiencies based on written confirmation provided by their respective Administrations.

4.1.13 The Secretariat stressed the importance of resolving the Deficiencies and urged States to update the status on resolving the Deficiencies. The meeting reviewed the Air Navigation Deficiencies and adopted the following Conclusion:

<table>
<tr><th colspan="3">Conclusion APANPIRG/28/31: Update of information in APANPIRG Air Navigation Deficiencies Reporting Form</th></tr>
<tr><td colspan="2">What: that, States/Administrations be urged to establish: a) action plan with defined target dates for resolution of deficiencies, update the status on the corrective action taken and report progress in the Reporting Form of Air Navigation Deficiencies identified in ATM/SAR/AIM, AOP, CNS and MET fields as detailed in Appendices A, B, C & D to the Report on Agenda Item 4; and b) a Focal Point to coordinate actions to resolve the Deficiencies.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: The resolution of Air Navigation Deficiencies in the ATM, SAR, AIM, AOP, CNS and MET fields (in the APANPIRG database) have lacked significant progress over several years, due in part to inadequate information in the Reporting Form, e.g., infrequent updates and lack of concise and concrete Corrective Action Plans with defined target dates.</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: Official reports providing full details of the corrective actions taken where deficiencies have been resolved be reported to sub group in 2018.</td><td colspan="2">Status: Adopted by PIRG</td></tr>
<tr><td colspan="3">Who: ☐Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:</td></tr>
</table>

4.1.14 The Secretariat informed the APANPIRG/28 meeting that the eANP Working Group would review the unified methodology for identification, assessment and reporting of Air Navigation Deficiencies taking into consideration proposal from regions. The eANP Secretariat would share the methodology with regions. The mature draft would be presented to ANC and the Council in order that this methodology uniformly applied by all PIRGs and regions and included in the eANP.

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Agenda Item 5: Future Work Programme

Schedule of Future Meetings

5.0.1 APANPIRG/28 agreed with the tentative schedule of meetings for the rest of 2017, 2018 and 2019 and noted that a formal letter of invitation will normally be issued by the Secretariat at least 2 months prior to each event.

5.0.2 The meeting appreciated the kind offer by Sri Lanka to host SEA/BOB ADS-B WG/13 meeting from 14 to 16 November 2017.

5.0.3 The meeting appreciated Hong Kong China offer to host an ATM/SG/6 Meeting in Hong Kong China from 30 July to 3 August 2018.

5.0.4 The meeting also appreciated Hong Kong China to host a Cyber Security Workshop in Hong Kong China in 2018. The exact dates and venue will be further coordinated with the ICAO Secretariat.

5.0.5 The meeting appreciated India offer to host ATFM/SG/8 meeting from 7 to 11 May 2018. The venue will be further coordinated with the ICAO Secretariat.

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	2017 – Outstanding Meetings	
SEA/BOB ADS-B WG/13	14 - 16 November	Colombo, Sri Lanka
A-CDMTF/2	30 November - 01 December	Hong Kong, China
CRV OG/3	05 - 07 December	Bangkok
FIT-Asia/7	11 - 13 December (TBC)	Bangkok
	2018	
WASWG/3	07 - 09 February	Maldives
AOPCWG/1	26 - 28 February	Bangkok
APUASTF/2	February	TBD
PBNICG/5	6-9 March	Bangkok/Fiji (TBC)
APA TF/4 (AIDC TF)	13 - 15 March	Bangkok
MET/IE WG/16	19 - 21 March	Bangkok
MET/S WG/8	21 - 23 March	Bangkok
VOLCEX/SG/5	26 - 27 March	Bangkok
SAIOACG/8 and SEACG/25	26 - 30 March	Siem Reap City, Cambodia
CRV Workshop (Pacific) and CRV OG/4	10 - 12 April	Nadi, Fiji
ACDMTF/3	25 - 27 April	Bangkok
SURICG/3	April/May	Fiji (TBC)
FPP 9th SCM	1st quarter	Hong Kong, China
ATFM/SG/8	7 - 11 May	India
SWIM TF/2	9 - 11 May	Bangkok
DAPS WG/1	TBC	TBD
SRWG/5	May (TBC)	Bangkok
MET/R WG/7	May/June (TBC)	TBD
AAITF/13	4 - 8 June	TBD
ACSICG/5	12 - 14 June	Bangkok
APSAR/WG/3	25 - 27 June	TBD
MET/SG/22	25 - 28 June	Bangkok
AOP/SG/2	27 - 29 June	Bangkok
FIT-Asia/8	27 - 29 June	Bangkok
RASMAG/23	June/July	Bangkok
CNS SG/22	16 - 20 July	Bangkok
APAC-AIG/6	30 July - 3 August	Bangkok
ATM/SG/6	30 July - 3 August	Bangkok
APUASTF/3	August/September	TBD
APANPIRG/29	03 - 06 September	Bangkok
SEA/BOB ADS-B WG/14	November	TBD

(Note: Refer Table below for Acronyms)

2019		
WASWG/4	February	TBD
AOPCWG/2	February	Bangkok
APUASTF/3	February	TBD
MET/IE WG/17	March	Bangkok
MET/S WG/9	March	Bangkok
VOLCEX/SG/6	March	Bangkok
SAIOACG/9 and SEACG/26	March	TBD
APA TF/5 (AIDC TF)	March	Bangkok
CRV Workshop (Pacific) and CRV OG/5	April	TBD
ACDMTF/4	April	Bangkok
SURICG/4	April/May	TBD
FPP 10th SCM	1st quarter	TBD
ATFM/SG/9	May	TBD
SWIM TF/3	May	Bangkok
SRWG/6	May	Bangkok
MET/R WG/8	May/June (TBC)	TBD
AAITF/14	June	TBD
ACSICG/6	June	Bangkok
APSAR/WG/4	June	TBD
MET/SG/23	June	Bangkok
AOP/SG/3	June	Bangkok
FIT-Asia/9	June	Bangkok
RASMAG/24	June/July	Bangkok
CNS SG/23	July	Bangkok
APAC-AIG/7	July/August	Bangkok
ATM/SG/7	July/August	Bangkok
APUASTF/4	August/September	TBD
APANPIRG/30	09 - 13 September	Bangkok
SEA/BOB ADS-B WG/15	November	TBD

(Note: Refer Table below for Acronyms)

ACRONYMS

AAITF	Aeronautical Information Services – Aeronautical Information Management Implementation Task Force
ACDMTF	Aerodrome Collaborative Decision Making Task Force
ACSICG	Aeronautical Communication Services (ACS) Implementation Co-ordination Group
ADS-B SITF	ADS-B Study and Implementation Task Force
AOPCWG	Aerodrome Operational Personnel Competency Working Group
AOP/SG	Aerodrome Operations and Planning Sub Group
APAC AIG	Asia Pacific Accident Investigation Group
APANPIRG	Asia/Pacific Air Navigation Planning and Implementation Group
APA/TF	Asia/Pacific ATS Inter-Facility Data-Link Communication (AIDC) Implementation Task Force (APA/TF)
APSARWG	Asia Pacific Search and Rescue Working Group
APUASTF/1	Asia Pacific Unmanned Aircraft System Task Force
ATFM/SG	Air Traffic Flow Management Steering Group
ATM/SG	ATM/Sub Group
ATN IC G	Aeronautical Telecommunication Network Implementation and Coordination Group
CMRI	China, Mongolia, Russian Federation and IATA ATS coordination Meeting
CNS/SG	CNS Sub-Group of APANPIRG
CRV	Common Regional Virtual Private Network (VPN)
CRV OG	Common Regional Virtual Private Network (VPN) Operations Group
FIT-Asia	FANS Interoperability Team-Asia
FPP SCM	Flight Procedure Programme Steering Committee
ISTF	Ionospheric Study Task Force
MET/IE WG	Meteorological Information Exchange Working Group (of the MET/SG)
MET/R WG	Meteorological Requirements Working Group (of the MET/SG)
MET/SG	Meteorology Sub-Group of APANPIRG
MET/S WG	Meteorological Services Working Group (of the MET/SG)
PBNICG	Performance Based Navigation Implementation and Coordination Group
RACP/TF	Regional ATM Contingency Planning Task Force
RASMAG	Regional Air Space Monitoring Advisory Group of APANPIRG
SAIOACG	South Asia/Indian Ocean ATM Coordination Group
SEACG	South East Asia ATS Coordination Group
SEA/BOB ADS-B WG	South East Asia and Bay of Bengal Sub-regional ADS-B Implementation Working Group
SRWG	Spectrum Review Working Group
SURICG	Surveillance Implementation Coordination Group
SWIMTF	System Wide Information Management Task Force
VOLCEX/SG	(APAC) Volcanic Ash Exercises Steering Group
WASWG	Water Aerodromes Small Working Group

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Agenda Item 6: Any other business

Review of effectiveness of APANPIRG Sub Groups' works after empowerment to adopt Conclusions and Decisions on technical matters to report to APANPIRG/29

6.0.1 As per Decision APANPIRG/26/65, the new structure of APANPIRG Sub Groups, revised Terms of Reference and empowerment of Sub Groups to adopt Conclusions and Decisions on technical matters (especially those concerning guidance to States in the implementation of ICAO SARPs, GANP, RANP, Seamless ATM Plan) that do not have additional economic, environmental or political effects became effective from 2017 meeting year. It was also decided that the empowerment would be subject to further review in 2018 based on the experience gained in 2017.

6.0.2 APANPIRG/28 agreed to form a small working group to carry out an analysis of effectiveness of APANPIRG Sub Groups' works after empowerment and report to APANPIRG/29 and recommend whether this empowerment to Sub Groups be further continued. The small working group will work through video conference/electronic means. The review of the Sub Group works will cover 2017 – 2018 period. The meeting invited States/Administration to nominate members for the working group and inform the ICAO Regional Office by 30 October 2017.

Frequency of APANPIRG Meeting (IP/14)

6.0.3 Based on 2017 APANPIRG/28 experience the meeting decided that future APANPIRG meetings would likely be conducted for duration of three days and consideration will be given to holding APANPIRG/RASG-APAC meeting back to back.

6.0.4 The meeting noted the frequencies of other PIRGs and RASGs Meetings in ICAO Regions as provided in IP/14.

6.0.5 The meeting was informed that a Global Forum on Regional Aviation Safety Groups (RASGs) and Planning and Implementation Regional Groups (PIRGs) will take place in Montreal on 13 December 2017 during GANIS/SANIS to discuss and define the future strategy path for these regional mechanisms. The First Vice–Chair will attend this Global Forum and will share the outcomes of the forum at APANPIRG/29.

Workshop Session – Review of States implementation status of APANPIRG Conclusions

6.0.6 Preselected 12 Conclusions from APANPIRG/26 & 27 related to ATM, CNS and MET (4 Conclusions from each field) were discussed during the workshop sessions to review the implementation status by States. The workshop was facilitated by the ICAO Secretariat. The Facilitators recorded the outcomes of the workshop sessions and presented to the APANPIRG/28 Plenary Session which were provided in **Attachment 4**.

The Chairman of APANPIRG and the Regional Director of ICAO APAC Office thanked all participants for their active participation in the meeting.

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Asia/Pacific Airport Collaborative Decision-Making Task Force (APA-CDM/TF)

TERMS OF REFERENCE

The scope and objective of the APA-CDM/TF is to identify, plan and assist in implementation of A-CDM at high density international aerodromes (100,000 scheduled movements per annum or more). To achieve the above objective, the Task Force shall:

1) Review the current status of A-CDM implementation in APAC Region;
2) Review the effectiveness of existing A-CDM programmes in the APAC Region and the degree of harmonization with global guidance material;
3) Analyse the ICAO Global A-CDM guidance in Doc 9971 to determine the need for and develop any necessary APAC Regional implementation guidance;
4) Conduct workshops on A-CDM implementation for the APAC Region;
5) Assist States to implement A-CDM at high density aerodromes and monitor the progress of implementation;
6) Promote the interoperability of A-CDM systems with tactical ATM (AMAN and DMAN), ATM automation, ATFM and Aircraft Operator systems; and
7) Establish close working arrangements with other relevant ICAO Regional groups such as the Air Traffic Flow Management Steering Group (ATFMSG), System-Wide Information Management Task Force (SWIM/TF) and other groups working on related issues.

Composition: The APA-CDM Task Force will be a multidisciplinary group composed of subject matter experts in aircraft operations, air traffic management, aerodrome operations and systems engineering, supplemented with other members as and when required.

Working Methods: The Task force will hold at least one three day face-to-face meeting each year.

Time Lines: Deliverables addressing the objective of the Task Force are expected to be developed by the Task force and delivered by November 2019.

TERMS OF REFERENCE OF WATER AERODROMES SMALL WORKING GROUP

(Adopted by APANPIRG/28)

Deliverable(s)

a) Draft Requirements for the design and operations of water aerodromes for sea plane operations.

Scope of work

The following are the broad principles describing the scope of work:

a) take into account the best practises and proven SARPS available related to water aerodromes and float operations ; and

b) be consistent with the ICAO Annex 14, Volume I ~~and international maritime requirements;~~ and

c) take into consideration international maritime requirements where applicable.

Composition

The ~~Task Force~~ Working Group would be composed of experts nominated by Indonesia, Maldives, Sri Lanka, New Zealand and USA. Other APAC States with experience in water aerodromes be invited to nominate experts to the small working group. Additional membership could be invited from other regions if required.

Conduct of the work and schedule

The ~~Task Force~~ Working Group shall complete its work ~~in two years' time frame~~ by 30 September 2018. The work would be carried out by means of electronic correspondence as far as practicable. Minimum amount of face to face meetings would be planned.

Terms of Reference

AIR TRAFFIC FLOW MANAGEMENT STEERING GROUP (ATFMSG)

1. Having considered relevant documents such as the *Manual on Collaborative Air Traffic Flow Management* (Doc 9971), regional air traffic data and the Asia/Pacific Region city pairs and associated airspace and ATS routes experiencing the most significant traffic demand, and noting the Asia/Pacific Seamless ATM Plan provisions for structural airspace capacity increasing measures, develop an Asia/Pacific Regional ATFM Framework which addresses ATFM implementation and ATFM operational issues in the Asia/Pacific Region;

2. Identify, research and recommend appropriate guidance regarding:

   a. capacity assessment and adjustment mechanisms;

   b. regular review for all aerodromes and ATC sectors where traffic demand is expected to reach capacity, or is resulting in traffic congestion;

   c. mechanisms for ATFM data gathering, collation and sharing between States, International Organizations and ICAO, which may include;

      i. capacity assessments, including factors affecting capacity such as special use airspace status, runway closures and weather information;

      ii. traffic demand information which may include flight schedules, flight plan data, repetitive flight plan data as well as associated surveillance updates of flight status; and

      iii. ATFM Daily Plan;

   d. compliance by airspace users with ATFM measures; and

   e. any other guidance relevant to the Regional ATFM Framework.

3. Maintain an overview of CDM/ATFM programs being conducted within the Region, with a view to facilitating their coordination and alignment.

4. Review the effectiveness of existing and planned ATFM programs in the Asia and Pacific Region, and make specific recommendations regarding ATFM, including any adjacent airspace affecting the Asia and Pacific Regions, and research and recommend appropriate mechanisms for the on-going review of such programs.

5. The Group ~~has linkages to~~ coordinates closely with other relevant bodies such as the Airport Collaborative Decision-Making Task Force (APA-CDM/TF), ~~Aerodromes Operations and Planning Working Group (AOP/WG)~~, ~~Regional ATM Contingency Plan Task Force (RACP/TF)~~ ~~and~~ the Meteorological Requirements Working Group ~~Task Force~~ (MET R/WG~~TF~~ and System-Wide Information Management Task Force (SWIM/TF).

6. The Group reports to the ATM Sub-Group.

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Terms of Reference

Asia/Pacific Unmanned Aircraft Systems Task Force (APUAS/TF)

Objectives: the objective of the APUAS/TF will be to develop guidance material that supports an Asia/Pacific Seamless ATM Plan element: B1-UAS. This element is expected to incorporate Aviation System Block Upgrade (ASBU) BI-RPAS (Remotely Piloted Aircraft Systems) but in addition, to include regional expectations for the regulation and safe operation of small UAS within ~~national~~ non-segregated airspace from an ATM perspective by November 2019, for consideration by the ATM/SG and APANPIRG. The guidance material for small UAS (generally 25kg or less) may include, *inter alia*:

- reference to systems designed to ensure a commensurate safety against obstacles, protected airspace, aircraft and non-involved people;
- communication and surveillance systems for Air Traffic Services (ATS) that allow the effective management of safety risks in controlled and uncontrolled airspace; and
- model regulations that manage the manufacturing, ~~import and~~ sale and operation of UAS; *Note: This point to be discussed/amended ref. Draft Report paragraph 3.5*
- education processes to provide all UAS users or potential users with information on appropriate UAS operations; ~~and~~
- recommended methods of safety data collection and analysis for UAS incidents;
- integration of regulations for small UAS with existing regulations for model aircraft;
- Consideration of regulations relating to small UAS operation both within and beyond visual line of sight;
- Safety assessments for small UAS operations; and
- Coordination with the ~~S~~UAS-AG~~/~~ and JARUS, or other appropriate specialist body.

The APUAS/TF should report its progress with an interim update at the ATM/SG/5 (2017) and ATM/SG/6 (2018).

Meetings: the APUAS/TF will normally meet at least once a year, but twice a year when agreed by the APUAS/TF if required.

Membership:

The APUAS/TF membership will be formed by Asia/Pacific States/Administrations and International Organizations. Other non-Asia/Pacific States, and organizations involved in UAS manufacturing, regulation and operations may join the APUAS/TF at the invitation of the ICAO Regional Office.

Reporting: the APUAS/TF reports to the ATM/SG. The ATM/SG will coordinate with the RASMAG, CNS/SG, and the APRAST/RASG as appropriate before consideration by APANPIRG.

PROPOSAL FOR AMENDMENT OF THE ASIA AND PACIFIC REGIONS AIR NAVIGATION PLAN

(Serial No.: APAC XX/X – ATS)

a) **Plan:**

Asia and Pacific Regions Air Navigation Plan Volume II Part VII Section 3

b) **Proposed by:**

[ATM Sub-Group of APANPIRG or APANPIRG]

c) **Proposed amendment:**

Add paragraphs as follows:

3.1 The priority regional requirements for AIM implementation are:

a) Establishment of AIS either as a separate entity within or, ideally, separated from the civil aviation administration in accordance with the guidance provided in ICAO Doc 8126 – AIS Manual Chapter 3.

b) Implementation of Quality Management Systems for aeronautical information;

c) Establishment of formal agreements between AIS providers and aeronautical data originators specifying the content, quality, maintenance and timing of provision of aeronautical data that is required to be promulgated in AIP, and the quality management process that shall be applied.

d) Implementation of internet-accessible electronic AIP generated from a digital database of aeronautical information.

Note: some existing aeronautical information products may not be suitable for migration into digital datasets.

e) The taking of all necessary measures to develop and implement AIM training programs for AIS personnel, including training in digital data management, and end-to-end quality management processes.

f) Provision of full access to the relevant ICAO Annexes and Documents to all personnel having responsibility for the origination, reception, management and/or distribution of aeronautical information and aeronautical data.

d) **Date when proposal received:**

[Regional Office Use Only]

e) **Proposers reason for amendment:**

Four priority AIM transition steps were identified by the ICAO Asia/Pacific AIS-AIM Implementation Task Force (AAITF), and the interim guidance material developed by AAITF was subsequently adopted by APANPIRG under ***Conclusion APANPIRG/26/17 – Interim AIM Transition Guidance*** and included in the *Guidance Manual for AIS in the Asia/Pacific Region*.

The four steps were:

P17 – Quality;

P-16 – Training;

P-18 – Agreements with data originators; and

P-11 – Electronic AIP.

AAITF identified that many States did not provide AIS personnel with necessary access to ICAO publications. ***Conclusion APANPIRG/25-14: Access to ICAO Annexes and Documents*** urged States to provide full access to relevant ICAO Annexes and Documents.

It is proposed that eANP be amended to include provisions for the four priority transition steps, and to ensure AIS personnel are appropriately equipped with the ICAO publications necessary for the understanding and performance of their functions.

The inclusion of these items among the Specific Regional Requirements of the eANP will provide AIS with an appropriate level of Regional planning support, with the intention of improving organizational focus in AIM. It will also provide APANPIRG with more support in advancing the Regional transition to AIM.

These items may appropriately be included in eANP due to their being supported by the following APANPIRG Conclusions:

Conclusion 24/19: Electronic AIP

That, considering that Electronic AIP (eAIP) is part of Phase 2 of the AIS-AIM Transition Roadmap, due for completion by 14 November 2013 to coincide with the publication of Amendment 37 to Annex 15, and that few Asia/Pacific States' internet-accessible eAIP as reported to ICAO Regional Office comply with the Annex 15 requirements for Integrated Aeronautical Information Packages, States are urged to:

a) implement internet-accessible electronic AIP (eAIP) as soon as possible;

b) ensure the eAIP has the unconditional authority of the State, without disclaimers referring to a separately published paper product;

c) permit open access to the eAIP either without the need for registration or, if registration is required, access to eAIP is automatically and immediately available;

d) provide the facility to register for an update/amendment notification service;

e) ensure the eAIP complies with Annex 15 requirements for content and structure;

f) report eAIP implementation and its internet hyperlink to the ICAO Asia/Pacific Regional Office; and

g) having implemented internet-accessible eAIP, on receipt of advice from the ICAO Asia/Pacific Regional Office, discontinue the forwarding of paper or CD copies of AIP, AIP SUP, AIC and NOTAM Checklists to the Regional Office.

Conclusion APANPIRG/25-14: Access to ICAO Annexes and Documents

That, States are urged to ensure that all personnel having responsibility for the origination, reception, management and/or distribution of aeronautical information and aeronautical data have full access to the relevant ICAO Annexes and Documents, either in up-to-date hard copy form or by arranging internet access through the ICAO Secure Portal.

Conclusion APANPIRG/26/16 – eAIP from Digital Database

That, States providing updated AIM transition information in accordance with Conclusion APANPIRG/25-15 should advise whether their eAIP is generated from a digital database of aeronautical information.

Conclusion APANPIRG/26/17 – Interim AIM Transition Guidance

That, the Guidance Manual for Aeronautical Information Services (AIS) in the Asia/Pacific Region be updated to include as an appendix the Interim AIM Transition Guidance appended at ***APANPIRG/26/WP07/Appendix J***.

AAITF also considered that organizational structures were in many cases impeding the development of full AIS/AIM capability. The meeting agreed to include in the PfA a specific regional requirement referencing the establishment of AIS as a separate entity, in accordance with the guidance provided in ICAO Doc 8126 – *AIS Manual* Chapter3.

This PfA is supported by the following Conclusion:

Conclusion [xxxxx] – Proposal for Amendment to the Asia and Pacific Regions Air Navigation Plan

That, ICAO prepares and circulates for Regional Air Navigation Agreement a proposal for amendment (PfA) to the Asia and Pacific Regions Air Navigation Plan Volume II, as provided in **Attachment A**.

f) **Proposed implementation date of the amendment:**

Upon approval by the Council.

g) **Action by the Regional Office:**

The proposal is circulated to the following States.

(i) xxxx, (ii) xxxx, (iii) xxxx, (iv) xxxx, ……

Note: The list should include the States or organisations affected by the route change. The proposal for amendment may also be circulated to some interested states, for information.

h) **Secretariat's comments:**

1. xxxxxxxxxxxxxxxx
2. xxxxxxxxxxxxxxxx

Note: States should ensure that-

a) detailed and accurate information with regard to the route is provided;

b) an appropriate chart be provided for reference; and

c) prior consultation and agreement is sought with the affected FIRs, and information on such consultation and agreement be provided (joint proposals are recommended).

DRAFT

PROPOSAL FOR AMENDMENT OF THE REGIONAL SUPPLEMENTARY PROCEDURES MIDDLE EAST/ASIA (MID/ASIA) REGION (Doc. 7030/5)

a) Regional Supplementary Procedures:

MID/ASIA

b) Proposed by:

APANPIRG

c) Proposed amendment:

Editorial Note: Amendments are arranged to show deleted text using strikeout (~~text to be deleted~~), and added text with grey shading (text to be inserted).

Glossary

…

RCP	required communication performance
RSP	required surveillance performance
PBC	performance-based communication
PBCS	performance-based communication and surveillance
PBN	performance-based navigation
PBS	performance-based surveillance

…

Chapter 2. FLIGHT PLANS

2.1 CONTENT – GENERAL
(A2 – Chapter 3; P-ATM – Chapter 4 and Appendix 2)

…….

2.1.5 Required communication performance (RCP) specifications

2.1.5.1 From 29 March 2018, all aircraft authorized for performance-based communication (PBC) and planning to operate in the MID/ASIA Region shall insert the appropriate descriptor(s) in Item 10a of the flight plan to indicate the compliance with the relevant required communication performance (RCP) specification(s).

2.1.6 Required surveillance performance (RSP) specifications

2.1.6.1 From 29 March 2019, all aircraft authorized for performance-based surveillance (PBS) and planning to operate in the MID/ASIA Region shall insert relevant required surveillance performance (RSP) specification(s) (e.g. RSP 180) in Item 18 of the flight plan following the SUR/ indicator.

2.1.6 Required surveillance performance (RSP) specifications

2.1.6.1 From 29 March 2019, all aircraft authorized for performance-based surveillance (PBS) and planning to operate

2.1.~~5~~7 Reduced vertical separation minimum (RVSM)-approved aircraft

2.1.~~5~~7.1 the aircraft registration shall be inserted in item 18 of the flight plan.

Editorial Note. — All remaining paragraphs in Chapter 2 are renumbered accordingly.

2.1.~~14~~16 Controller-pilot data link communications (CPDLC)

2.1.14.1 All aircraft planning to operate in the MID/ASIA Region and intending to use controller-pilot data link communications (CPDLC) shall insert the appropriate descriptor(s); (J2, J3, J4, J5, J6 and/or J7) in Item 10a of the flight plan.

2.1.17 Automatic dependent surveillance –contract (ADS-C)

2.1.16.1 All aircraft planning to operate in the MID/ASIA Region and intending to use automatic dependent surveillance — contract (ADS-C) services shall insert the D1 descriptor in Item 10b of the flight plan.

Chapter 3. COMMUNICATIONS

3.1 PERFORMANCE BASED COMMUNICATIONS (PBC)

(A6, Part I – Chapter 7; A6, Part II – Chapter 2.5; A6, Part III, Sections II and III – Chapter 5; A11 – Chapters 2, 3 and 6; A15 – Chapter 7, P-ATM – Chapters 4 and 5, and Appendix 2)

Note.— Additional guidance can be found in the ICAO Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869).

3.1.1 Required communication performance (RCP) Specifications

3.1.1.1 RCP 240

3.1.1.1.1 RCP 240 is applicable to communication systems used to support the separation minima specified in 6.2.1.3 and 6.2.2.

Note. As of 29 March 2018, the separation minima specified in 6.2.1.3 and 6.2.2 will be applied in portions of the MID/ASIA Region, as notified in State AIPs.

Means of compliance

3.1.1.1.2 The aircraft operator shall:

a) implement provisions for receiving the reports of observed performance and taking corrective actions for aircraft identified as not complying with RCP specification (s); and

b) be authorized by the State of the Operator or the State of Registry, as appropriate, in order to qualify for the separation minima specified in 6.2.1.3 and 6.2.2.

3.1.1.1.3 The air navigation services providers (ANSPs) shall:

a) ensure that the communication system satisfies RCP 240 when applying the separation minima specified in 6.2.1.3 and 6.2.2;

b) establish PBCS monitoring programmes; and

c) apply the appropriate flight plan designator to determine aircraft eligibility for the application of relevant separation minima.

Editorial Note. — All remaining paragraphs in Chapter 2 are renumbered accordingly.

3.~~3~~4 CONTROLLER-PILOT DATA LINK COMMUNICATIONS (CPDLC)

Nil.

Editorial Note.— All remaining paragraphs in Chapter 3 are renumbered accordingly.

Editorial Note.— Chapter 4 is included for reference and consequential amendments resulting from PBCS Pfa.

Chapter 4. NAVIGATION

4.1 PERFORMANCE-BASED NAVIGATION (PBN)

Note.— As the Middle East/Asia (MID/ASIA) Region transitions to PBN as contained in the Performance-based Navigation Mid(PBN) Manual (Doc 9613), the contents of 4.1 will be amended.

4.1.1 Area navigation (RNAV) specifications

4.1.1.1 RNAV 10 (RNP 10)

Note.— RNAV 10 retains the RNP 10 designation, as specified in the Performance-based Navigation (PBN) Manual (Doc 9613~~)~~, 1.2.3.5.

4.1.1.1.1 The RNAV 10 (RNP 10) specification shall be applicable to navigation systems used to support the separation minima specified in 6.2.1 and 6.2.2.

~~4.1.1.1.1 For flights on designated controlled oceanic routes or areas within the Auckland Oceanic, Brisbane, Fukuoka, Ho Chi Minh, Hong Kong, Honiara, Kuala Lumpur, Melbourne, Nauru, New Zealand Port Moresby, Sanya and Singapore FIRs, a lateral separation minimum of 93 km (50 NM) may be applied.~~

~~4.1.1.1.2 For flights on designated controlled oceanic routes or areas within the Auckland Oceanic, Brisbane, Fukuoka, Ho Chi Minh, Hong Kong, Honiara, Kuala Lumpur, Melbourne, Nauru, New Zealand Port Moresby, Sanya and Singapore FIRs, a longitudinal separation minimum of 93 km (50 NM) derived by RNAV may be applied between RNAV-equipped aircraft approved to RNP 10 or better, in accordance with the provisions of the PANS-ATM, 5.4.2.6.~~

Means of compliance

4.1.1.1.~~3~~2 For application of 4.1.1.1.1 and 4.1.1.1.2, the aircraft and the operator must have been approved by the State of Registry or the State of the Operator, as appropriate, to meet the following requirements (or equivalent):

a) aircraft navigation performance shall be such that the standard deviation of lateral tracks shall be less than 8.7 km (4.7 NM) (or the aircraft approved to RNP 10); and
b) operator programmes shall be established to mitigate the occurrence of large navigational errors due to equipment malfunction or operational error:

   1) operator in-flight operating drills shall include mandatory navigation cross-checking procedures to identify navigation errors in sufficient time to prevent aircraft from inadvertent deviation from ATC-cleared route; and

   2) the operator shall establish programmes to provide for the continued airworthiness of aircraft navigation systems necessary to navigate to the degree of accuracy required.

…

4.1.2 Required navigation performance (RNP) specifications

4.1.2.1 RNP 4

4.1.2.1.1 The RNP 4 specification is applicable to navigation systems used to support the separation minima specified in 6.2.1 and 6.2.2.

~~4.1.2.1.1 For flights on designated controlled oceanic routes or areas within the Auckland Oceanic, Brisbane, Fukuoka, Honiara, Melbourne, Nauru, New Zealand and Port Moresby FIRs, a lateral separation minimum of 55.5 km (30 NM) may be applied.~~

~~4.1.2.1.2 For flights on designated controlled oceanic routes or areas within the Auckland Oceanic, Brisbane, Fukuoka, Honiara, Melbourne, Nauru, New Zealand and Port Moresby FIRs, a longitudinal separation minimum of 55.5 km (30 NM) derived by RNAV may be applied between RNAV-equipped aircraft approved to RNP 4 or better, in accordance with the provisions of the PANS-ATM, 5.4.2.6.~~

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Chapter 5. SURVEILLANCE

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5.1 PERFORMANCE-BASED SURVEILLANCE (PBS)

(A6, Part I – Chapter 7; A6, Part II – Chapter 2.5; A6, Part III, Sections II and III – Chapter 5; A11 – Chapters 2, 3 and 6; A15 – Chapter 7, P-ATM – Chapters 4 and 5, and Appendix 2)

Note.— Additional guidance can be found in the ICAO Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869).

5.1.1 Required surveillance performance (RSP) specifications

5.1.1.2 RSP 180

5.1.1.2.1 RSP 180 is applicable to surveillance systems used to support the separation minima specified in 6.2.1.3 and 6.2.2.

Note. As of 29 March 2018, the separation minima specified in 6.2.1 and 6.2.2 will be applied in portions of the MID/Asia Region, as notified in State AIPs.

Means of compliance

5.1.1.2.3 The aircraft operator shall:

a) implement provisions for receiving the reports of observed performance and taking corrective actions for aircraft identified as not complying with RSP specification(s); and

b) be authorized by the State of the Operator or the State of Registry, as appropriate, in order to qualify for the separation minima specified in 6.2.1.3 and 6.2.2.

5.1.1.2.3 The air navigation services providers (ANSP) shall:

a) ensure that the communication system satisfies RSP 180 when applying the separation minima specified in 6.2.1 and 6.2.2;

b) establish PBCS monitoring programmes; and

c) apply the appropriate flight plan designator to determine aircraft eligibility for application of relevant separation minima.

…

Editorial Note.— All remaining paragraphs in Chapter 5 are renumbered accordingly.

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Chapter 6. AIR TRAFFIC SERVICES

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6.2 SEPARATION

6.2.1 Lateral

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6.2.1.3 The minimum lateral separation shall be 93 km (50 NM) between aircraft meeting ~~the provisions in~~ RNAV 10 (RNP 10) or RNP 4 in accordance with 4.1.1.1 on designated controlled oceanic routes or areas within the Auckland Oceanic, Brisbane, Fukuoka, Honiara, Kuala Lumpur, Melbourne, Nauru, New Zealand, Port Moresby, Sanya and Singapore FIRs.

6.2.1.4 The minimum lateral separation shall be 42.6 km (23 NM) between aircraft meeting ~~the provisions in 4.1.2.1, provided~~ on designated controlled oceanic routes or areas within the Auckland Oceanic, Brisbane, Fukuoka, Honiara, Melbourne, Nauru, New Zealand, and Port Moresby FIRs. This minimum is applied in accordance with 5.4.1.2.1.6 b) of PANS-ATM and provided that the following conditions are met:

~~a) the aircraft are approved by the State of Registry or the State of the Operator to RNP4;~~

~~b) direct controller-pilot voice communications or controller-pilot data link communications (CPDLC) are maintained;~~

~~c) surveillance is maintained using an automatic dependent surveillance (ADS) system;~~

~~d) an ADS lateral deviation change event contract is established, with a lateral deviation threshold of 9.3 km (5 NM).~~

a) communication – CPDLC RCP 240 per para. 3.1.1.2;

b) navigation – RNP 4, per para. 4.1.1 and 4.1.2;

c) surveillance – ADS-C RSP 180 per para. 5.1.1.2.

…

6.2.2 Longitudinal

(P-ATM – Chapters 5 and 13)

...

6.2.2.2 The minimum longitudinal separation shall be 93 km (50 NM) ~~derived by RNAV between aircraft meeting the provisions in 4.1.1.1~~ between aircraft on designated controlled oceanic routes or areas within the Auckland Oceanic, Brisbane, Fukuoka, Ho Chi Minh, Hong Kong, Honiara, Kuala Lumpur, Melbourne, Nauru, New Zealand, Port Moresby, Sanya and Singapore FIRs. This minimum is applied in accordance with 5.4.2.9 of PANS-ATM and provided the following conditions are met:

a) communication – CPDLC RCP 240 per para. 3.1.1.2;

b) navigation – RNAV 10 (RNP 10) or RNP 4 per para. 4.1.1 and 4.1.2;

c) surveillance – ADS-C RSP 180 per para. 5.1.1.2.

6.2.2.3 The minimum longitudinal separation shall be 55.5 km (30 NM) between aircraft ~~meeting the provisions in 4.1.2.1~~ on designated controlled oceanic routes or areas within the Auckland Oceanic, Brisbane, Fukuoka, Honiara, Melbourne, Nauru, New Zealand and Port Moresby FIRs. This minimum is applied in accordance with 5.4.2.9 of PANS-ATM and provided the following conditions are met:

a) communication – CPDLC RCP 240 per para. 3.1.1.2;

b) navigation – RNP 4 per para. 4.1.2;

c) surveillance – ADS-C RSP 180 per para. 5.1.1.2.

~~*Note.- ADS is required for the application of this minimum; therefore, the applicable provisions will be those of PANS-ATM, 5.4.2.6.1 to 5.4.2.6.3 and 5.4.2.6.4*~~.

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Chapter 7. SAFETY MONITORING

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7.2 AIRSPACE MONITORING

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7.2.4 PBCS

7.2.4.1 Adequate monitoring shall be conducted to assess continuing compliance of the communication and surveillance systems with the prescribed RCP and/or RSP specifications.

…

Editorial Note.— All remaining paragraphs in Chapter 7 are renumbered accordingly.

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-END-

DRAFT

PROPOSAL FOR AMENDMENT OF THE REGIONAL SUPPLEMENTARY PROCEDURES PACIFIC (PAC) REGION (Doc. 7030/5)

a) Regional Supplementary Procedures:

PAC

b) Proposed by:

APANPIRG

c) Proposed amendment:

Editorial Note: Amendments are arranged to show deleted text using strikeout (~~text to be deleted~~), and added text with grey shading (text to be inserted).

Glossary

…

RCP	required communication performance
RSP	required surveillance performance
PBC	performance-based communication
PBCS	performance-based communication and surveillance
PBN	performance-based navigation
PBS	performance-based surveillance

…

Chapter 2. FLIGHT PLANS

2.1 CONTENT – GENERAL
(A2 – Chapter 3; P-ATM – Chapter 4 and Appendix 2)

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2.1.5 Required communication performance (RCP) specifications

2.1.5.1 From 29 March 2018, all aircraft authorized for performance-based communication (PBC) and planning to operate in the PAC Region shall insert the appropriate descriptor(s) in Item 10a of the flight plan to indicate the compliance with the relevant required communication performance (RCP) specification(s).

2.1.6 Required surveillance performance (RSP) specifications

2.1.6.1 From 29 March 2019, all aircraft authorized for performance-based surveillance (PBS) and planning to operate in the PAC Region shall insert relevant required surveillance performance (RSP) specification(s) (e.g. RSP 180) in Item 18 of the flight plan following the SUR/ indicator.

2.1.6 Required surveillance performance (RSP) specifications

2.1.6.1 From 29 March 2019, all aircraft authorized for performance-based surveillance (PBS) and planning to operate

2.1.~~5~~7 Reduced vertical separation minimum (RVSM)-approved aircraft

2.1.~~5~~7.1 the aircraft registration shall be inserted in item 18 of the flight plan.

Editorial Note. — All remaining paragraphs in Chapter 2 are renumbered accordingly.

2.1.~~14~~16 Controller-pilot data link communications (CPDLC)

2.1.14.1 All aircraft planning to operate in the PAC Region and intending to use controller-pilot data link communications (CPDLC) shall insert the appropriate descriptor(s); (J2, J3, J4, J5, J6 and/or J7) in Item 10a of the flight plan.

2.1.17 Automatic dependent surveillance –contract (ADS-C)

2.1.16.1 All aircraft planning to operate in the PAC Region and intending to use automatic dependent surveillance — contract (ADS-C) services shall insert the D1 descriptor in Item 10b of the flight plan.

Chapter 3. COMMUNICATIONS

3.1 PERFORMANCE BASED COMMUNICATIONS (PBC)

(A6, Part I – Chapter 7; A6, Part II – Chapter 2.5; A6, Part III, Sections II and III – Chapter 5; A11 – Chapters 2, 3 and 6; A15 – Chapter 7, P-ATM – Chapters 4 and 5, and Appendix 2)

Note.— Additional guidance can be found in the ICAO Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869).

3.1.1 Required communication performance (RCP) Specifications

3.1.1.1 RCP 240

3.1.1.1.1 RCP 240 is applicable to communication systems used to support the separation minima specified in 6.2.1.3 and 6.2.2.

Note. As of 29 March 2018, the separation minima specified in 6.2.1.3 and 6.2.2 will be applied in portions of the PAC Region, as notified in State AIPs.

Means of compliance

3.1.1.1.2 The aircraft operator shall:

a) implement provisions for receiving the reports of observed performance and taking corrective actions for aircraft identified as not complying with RCP specification (s); and

b) be authorized by the State of the Operator or the State of Registry, as appropriate, in order to qualify for the separation minima specified in 6.2.1.3 and 6.2.2.

3.1.1.1.3 The air navigation services providers (ANSPs) shall:

a) ensure that the communication system satisfies RCP 240 when applying the separation minima specified in 6.2.1.3 and 6.2.2;

b) establish PBCS monitoring programmes; and

c) apply the appropriate flight plan designator to determine aircraft eligibility for the application of relevant separation minima.

Editorial Note. — All remaining paragraphs in Chapter 2 are renumbered accordingly.

3.~~3~~4 CONTROLLER-PILOT DATA LINK COMMUNICATIONS (CPDLC)

Nil.

Editorial Note.— All remaining paragraphs in Chapter 3 are renumbered accordingly.

Editorial Note.— Chapter 4 is included for reference and consequential amendments resulting from PBCS Pfa.

Chapter 4. NAVIGATION

4.1 PERFORMANCE-BASED NAVIGATION (PBN)

Note.— As the Pacific (PAC) Region transitions to PBN as contained in the Performance-based Navigation (PBN) Manual (Doc 9613), the contents of 4.1 will be amended.

4.1.1 Area navigation (RNAV) specifications

4.1.1.1 RNAV 10 (RNP 10)

Note.— RNAV 10 retains the RNP 10 designation, as specified in the Performance-based Navigation (PBN) Manual (Doc 9613~~)~~, 1.2.3.5.

4.1.1.1.1 The RNAV 10 (RNP 10) specification shall be applicable to navigation systems used to support the separation minima specified in 6.2.1 and 6.2.2.

~~4.1.1.1.1 For flights on designated controlled oceanic routes or areas within the Anchorage Oceanic, Auckland Oceanic, Nadi, Oakland Oceanic and Tahiti FIRs, a lateral separation minimum of 93 km (50 NM) may be applied.~~

~~4.1.1.1.2 For flights on designated controlled oceanic routes or areas within the Anchorage Arctic, Anchorage Continental, Anchorage Oceanic, Auckland Oceanic, Nadi, Oakland Oceanic and Tahiti FIRs, a longitudinal separation minimum of 93 km (50 NM) derived by RNAV may be applied between RNAV-equipped aircraft approved to RNP 10 or better, in accordance with the provisions of the PANS-ATM, 5.4.2.6.~~

Means of compliance

4.1.1.1.~~3~~2 For application of 4.1.1.1.1 and 4.1.1.1.2, the aircraft and the operator must have been approved by the State of Registry or the State of the Operator, as appropriate, to meet the following requirements (or equivalent):

a) aircraft navigation performance shall be such that the standard deviation of lateral tracks shall be less than 8.7 km (4.7 NM) (or the aircraft approved to RNP 10); and
b) operator programmes shall be established to mitigate the occurrence of large navigational errors due to equipment malfunction or operational error:

   1) operator in-flight operating drills shall include mandatory navigation cross-checking procedures to identify navigation errors in sufficient time to prevent aircraft from inadvertent deviation from ATC-cleared route; and

   2) the operator shall establish programmes to provide for the continued airworthiness of aircraft navigation systems necessary to navigate to the degree of accuracy required.

…

4.1.2 Required navigation performance (RNP) specifications

4.1.2.1 RNP 4

4.1.2.1.1 The RNP 4 specification is applicable to navigation systems used to support the separation minima specified in 6.2.1 and 6.2.2.

~~4.1.2.1.1 For flights on designated controlled oceanic routes or areas within the Anchorage Arctic, Anchorage Continental, Anchorage Oceanic, Auckland Oceanic, Nadi, Oakland Oceanic and Tahiti FIRs, a lateral separation minimum of 55.5 km (30 NM) may be applied.~~

~~4.1.2.1.2 For flights on designated controlled oceanic routes or areas within the Anchorage Arctic, Anchorage Continental, Anchorage Oceanic, Auckland Oceanic, Nadi, Oakland Oceanic and Tahiti FIRs, a longitudinal separation minimum of 55.5 km (30 NM) derived by RNAV may be applied between RNAV-equipped aircraft approved to RNP 4 or better, in accordance with the provisions of the PANS-ATM, 5.4.2.6.~~

…

Chapter 5. SURVEILLANCE

…

5.1 PERFORMANCE-BASED SURVEILLANCE (PBS)

(A6, Part I – Chapter 7; A6, Part II – Chapter 2.5; A6, Part III, Sections II and III – Chapter 5; A11 – Chapters 2, 3 and 6; A15 – Chapter 7, P-ATM – Chapters 4 and 5, and Appendix 2)

Note.— Additional guidance can be found in the ICAO Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869).

5.1.1 Required surveillance performance (RSP) specifications

5.1.1.2 RSP 180

5.1.1.2.1 RSP 180 is applicable to surveillance systems used to support the separation minima specified in 6.2.1.3 and 6.2.2.

Note. As of 29 March 2018, the separation minima specified in 6.2.1 and 6.2.2 will be applied in portions of the PAC Region, as notified in State AIPs.

Means of compliance

5.1.1.2.3 The aircraft operator shall:

a) implement provisions for receiving the reports of observed performance and taking corrective actions for aircraft identified as not complying with RSP specification(s); and

b) be authorized by the State of the Operator or the State of Registry, as appropriate, in order to qualify for the separation minima specified in 6.2.1.3 and 6.2.2.

5.1.1.2.3 The air navigation services providers (ANSP) shall:

a) ensure that the communication system satisfies RSP 180 when applying the separation minima specified in 6.2.1 and 6.2.2;

b) establish PBCS monitoring programmes; and

c) apply the appropriate flight plan designator to determine aircraft eligibility for application of relevant separation minima.

…

Editorial Note.— All remaining paragraphs in Chapter 5 are renumbered accordingly.

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Chapter 6. AIR TRAFFIC SERVICES

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6.2 SEPARATION

6.2.1 Lateral

…

6.2.1.3 The minimum lateral separation shall be 93 km (50 NM) between aircraft meeting ~~the provisions in~~ RNAV 10 (RNP 10) or RNP 4 in accordance with 4.1.1.1 on designated controlled oceanic routes or areas within the, Anchorage Oceanic, Auckland Oceanic, Nadi, Oakland Oceanic and Tahiti FIRs.

6.2.1.4 The minimum lateral separation shall be 42.6 km (23 NM) between aircraft meeting ~~the provisions in 4.1.2.1, provided~~ on designated controlled oceanic routes or areas within the Anchorage Oceanic, Auckland Oceanic, Nadi, Oakland Oceanic and Tahiti FIRs. This minimum is applied in accordance with 5.4.1.2.1.6 b) of PANS-ATM and provided that the following conditions are met:

~~a) the aircraft are approved by the State of Registry or the State of the Operator to RNP4;~~

~~b) direct controller-pilot voice communications or controller-pilot data link communications (CPDLC) are maintained;~~

~~c) surveillance is maintained using an automatic dependent surveillance (ADS) system;~~

~~d) an ADS lateral deviation change event contract is established, with a lateral deviation threshold of 9.3 km (5 NM).~~

a) communication – CPDLC RCP 240 per para. 3.1.1.2;

b) navigation – RNP 4 per para. 4.1.1 and 4.1.2;

c) surveillance – ADS-C RSP 180 per para. 5.1.1.2.

…

6.2.2 Longitudinal

(P-ATM – Chapters 5 and 13)

...

6.2.2.2 The minimum longitudinal separation shall be 93 km (50 NM) ~~derived by RNAV between aircraft meeting the provisions in 4.1.1.1~~ between aircraft on designated controlled oceanic routes or areas within the Anchorage Oceanic, Auckland Oceanic, Nadi, Oakland Oceanic and Tahiti FIRs This minimum is applied in accordance with 5.4.2.9 of PANS-ATM and provided the following conditions are met:

a) communication – CPDLC RCP 240 per para. 3.1.1.2;

b) navigation – RNAV 10 (RNP 10) or RNP 4 per para. 4.1.1 and 4.1.2;

c) surveillance – ADS-C RSP 180 per para. 5.1.1.2.

6.2.2.3 The minimum longitudinal separation shall be 55.5 km (30NM) between aircraft ~~meeting the provisions in 4.1.2.1~~ on designated controlled oceanic routes or areas within the Anchorage Oceanic, Auckland Oceanic, Nadi, Oakland Oceanic and Tahiti FIRs This minimum is applied in accordance with 5.4.2.9 of PANS-ATM and provided the following conditions are met:

a) communication – CPDLC RCP 240 per para. 3.1.1.2;

b) navigation – RNP 4 per para. 4.1.2;

c) surveillance – ADS-C RSP 180 per para. 5.1.1.2.

~~*Note. ADS is required for the application of this minimum; therefore, the applicable provisions will be those of PANS-ATM, 5.4.2.6.1 to 5.4.2.6.3 and 5.4.2.6.4*~~.

….

Chapter 7. SAFETY MONITORING

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7.2 AIRSPACE MONITORING

…

7.2.4 PBCS

7.2.4.1 Adequate monitoring shall be conducted to assess continuing compliance of the communication and surveillance systems with the prescribed RCP and/or RSP specifications.

…

Editorial Note.— All remaining paragraphs in Chapter 7 are renumbered accordingly.

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-END-

Appendix C to the Report on Agenda Item 3.3

SUMMARY OF 11 SURVEY RESPONSES RECEIVED

RED = Concerns ALL States ORANGE = Concerns States Providing Performance-Based Separations				Y	By 29 March 2018	After 29 March 2018	Not Planned
1. Has your State completed any of the following preparations for PBCS implementation?							
PBCS Implementation Task List	**Task Group**	**Task ID**	**TASK descriptor**				
	Group A	A-1	AIP (Prescription of an RCP/RSP specification. Also see B-3 below)	**2**	**5**	**1**	**3**
		A-2	PBCS policies, objectives supporting safety oversight of ANSP PBCS operations	**2**	**3**	**2**	**4**
		A-3	PBCS policies, objectives supporting safety oversight of Aircraft Operator and Aircraft System PBCS operations	**4**	**3**	**2**	**2**
		A-4	Proposal for Amendment to ICAO Doc 7030 - *Regional Supplementary Procedures* for PBCS operations , if applicable	**2**	**2**	**1**	**6**
	Group B	B-1	PBCS Implementation Plan	**4**	**2**	**1**	**4**
		B-2	Target dates for PBCS and relevant ATM operations	**5**	**-**	**2**	**4**
		B-3	RCP/RSP specifications	**5**	**-**	**2**	**4**
		B-4	PBCS awareness	**6**	**-**	**2**	**3**
	Group C	C-1	Operational concepts and procedures for PBCS operations	**4**	**1**	**2**	**4**
		C-2	ATM automation system changes to use flight plan RCP/RSP indicators	**3**	**2**	**2**	**4**
		C-3	ATM automation changes for PBCS monitoring	**4**	**-**	**2**	**5**
		C-4	Confirm initial ANSP compliance with RCP/RSP specifications	**3**	**2**	**2**	**4**
	Group D	D-1	Aircraft operator readiness	**3**	**2**	**3**	**3**
		D-2	Confirm initial operator and/or aircraft type/system compliance with RCP/RSP	**3**	**2**	**3**	**3**
	Group E	E-1	PBCS monitoring, analysis and reporting - post implementation	**2**	**2**	**2**	**5**

RED = Concerns ALL States **ORANGE** = Concerns States Providing Performance-Based Separations				**Y**	**By 29 March 2018**	**After 29 March 2018**	**Not Planned**
2. Does your State submit data link problem reports to a recognized Central Reporting Agency (CRA)				**4**	**1**	**-**	**6**
3. Does your State monitor and analyze data link performance in accordance with the following specifications and report the analysis to a recognized FANS Interoperability Team (FIT)?							
Communication Specifications & Interoperability Standards	**Normal**	**RCP240**	FANS1/A CPDLC	**4**	**1**	**2**	**4**
	Alternate	RCP400	SATVOICE	**2**	**1**	**1**	**7**
		RCP400	HF	**2**	**1**	**1**	**7**
Surveillance Specifications & Interoperability Standards	**Normal**	**RSP180**	FANS1/A ADS-C	**4**	**1**	**2**	**4**
	Alternate	RSP400	SATVOICE	**2**	**1**	**1**	**7**
		RSP400	HF	**2**	**-**	**1**	**8**
4. Has your State implemented or planned to implement the following performance-based horizontal separation minima?							
Navigation Specifications & Applicable ATM Operations	**RNAV/RNP**	RNAV/RNP 10	50 NM Lateral Separation	**5**	**-**	**1**	**4**
			50 NM Longitudinal Separation	**5**	**1**	**-**	**4**
		RNP 4	30 NM Longitudinal Separation	**4**	**-**	**1**	**6**
			30 NM Lateral Separation	**4**	**-**	**1**	**6**
			23 NM Lateral Separation	**-**	**1**	**1**	**9**
		~~RNP2~~	~~30NM Climb-Descend Through~~	**1**	**-**	**-**	**10**

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SUMMARY OF 6 SURVEY RESPONSES FROM STATES APPLYING PERFORMANCE-BASED SEPARATIONS

RED = Concerns ALL States ORANGE = Concerns States Providing Performance-Based Separations				Y	By 29 March 2018	After 29 March 2018	Not Planned
1. Has your State completed any of the following preparations for PBCS implementation?							
PBCS Implementation Task List	**Task Group**	**Task ID**	**TASK descriptor**				
	Group A	A-1	AIP (Prescription of an RCP/RSP specification. Also see B-3 below)	**2**	**4**		
		A-2	PBCS policies, objectives supporting safety oversight of ANSP PBCS operations	**2**	**3**	**-**	**1**
		A-3	PBCS policies, objectives supporting safety oversight of Aircraft Operator and Aircraft System PBCS operations	**3**	**2**	**-**	**1**
		A-4	Proposal for Amendment to ICAO Doc 7030 - *Regional Supplementary Procedures* for PBCS operations , if applicable	**2**	**1**	**-**	**3**
	Group B	B-1	PBCS Implementation Plan	**4**	**1**	**-**	**1**
		B-2	Target dates for PBCS and relevant ATM operations	**5**	**-**	**-**	**1**
		B-3	RCP/RSP specifications	**5**	**-**	**-**	**1**
		B-4	PBCS awareness	**5**	**-**	**-**	**1**
	Group C	C-1	Operational concepts and procedures for PBCS operations	**4**	**1**	**-**	**1**
		C-2	ATM automation system changes to use flight plan RCP/RSP indicators	**3**	**2**	**-**	**1**
		C-3	ATM automation changes for PBCS monitoring	**4**	**-**	**-**	**2**
		C-4	Confirm initial ANSP compliance with RCP/RSP specifications	**3**	**2**	**-**	**1**
	Group D	D-1	Aircraft operator readiness	**2**	**3**	**-**	**1**
		D-2	Confirm initial operator and/or aircraft type/system compliance with RCP/RSP	**2**	**3**	**-**	**1**
	Group E	E-1	PBCS monitoring, analysis and reporting - post implementation	**2**	**2**	**-**	**2**

RED = Concerns ALL States **ORANGE** = Concerns States Providing Performance-Based Separations				**Y**	**By 29 March 2018**	**After 29 March 2018**	**Not Planned**
2. Does your State submit data link problem reports to a recognized Central Reporting Agency (CRA)				**4**	**1**	**1**	**-**
3. Does your State monitor and analyze data link performance in accordance with the following specifications and report the analysis to a recognized FANS Interoperability Team (FIT)?							
Communication Specifications & Interoperability Standards	**Normal**	**RCP240**	FANS1/A CPDLC	**3**	**1**	**2**	**-**
	Alternate	RCP400	SATVOICE	**2**	**2**	**-**	**2**
		RCP400	HF	**2**	**2**	**-**	**2**
Surveillance Specifications & Interoperability Standards	**Normal**	**RSP180**	FANS1/A ADS-C	**3**	**1**	**2**	**-**
	Alternate	RSP400	SATVOICE	**2**	**2**	**-**	**2**
		RSP400	HF	**2**	**1**	**-**	**3**
4. Has your State implemented or planned to implement the following performance-based horizontal separation minima?							
Navigation Specifications & Applicable ATM Operations	**RNAV/RNP**	RNAV/RNP 10	50 NM Lateral Separation	**6**	**-**	**-**	**-**
			50 NM Longitudinal Separation	**5**	**1**	**-**	**-**
		RNP 4	30 NM Longitudinal Separation	**4**	**-**	**1**	**1**
			30 NM Lateral Separation	**4**	**-**	**1**	**1**
			23 NM Lateral Separation	**-**	**1**	**1**	**4**
		~~RNP2~~	~~30NM Climb-Descend Through~~	**1**	**-**	**-**	**5**

— END —

ATN/AMHS/AIDC Implementation Status in the APAC Region

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
AFGHANISTAN					
AUSTRALIA	ATN tests were conducted. BIS Router and Backbone BIS Router and AMHS implemented. 64 kbps IPLC established with Fiji for basic AMHS will be migrated to CRV when successful CRV pilot project is completed. Connection with Singapore using AMHS was implemented October 2016; Another AMHS connections pending CRV pilot project (target date for December 2017) including both connection with New Zealand and USA. Plan to upgrade AMHS support IWXXM traffic from Nov. 2020.	COMSOFT	AFTN/AMHS based AIDC Implemented between Brisbane and Melbourne, Oakland, Nadi and Auckland; Implemented between Melbourne and Johannesburg; AIDC is also in use between Melbourne and Mauritius; Operational trial between Brisbane and Ujung Pandang since May 2013. Implementation in July 2017.		
BANGLADESH	In Q1/2013, Bangladesh installed ATN/AMHS and BIS Router at Dhaka (VGHS) with User Agents at Chittagong (VGEG) and Sylhet (VGSY).	COMSOFT	Tentative date of implementation of AIDC is Q4 of 2018 with Kolkata and Myanmar.		The Bangladesh ATM Upgrade Project (BATMUP) under Public Private Partnership (PPP) in Dhaka is expected to be completed by

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
					2018. As soon as the ATM up-gradation is completed hopefully Bangladesh will be able to implement AIDC with Kolkata and Myanmar by the end of 2018.
BHUTAN	IP Router and UA service planned for 2017. AMHS was installed in 1st half 2017.			Aerothai for AMHS and IP router	
BRUNEI DARUSSALAM	ATN BIS Router planned for 2015 and AMHS planned for 2015				
CAMBODIA	BIS Router and AMHS installed. Cambodia (CATS) AMHS connected with Bangkok via VSAT IP link since 10 December 2013	AVITECH	AIDC function and capability made available. Ready for testing with neighbors ATS Facilities starting from 2017 and target date of implementation with Bangkok in 2018	THALES which supports AIDC ICD Version 1.	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
CHINA	ATN Router and AMHS including NCC deployed in 2008 which is being upgraded to support ATN/IPS with target date of completion in December 2013. Tripartite BBIS trial completed with Bangkok and Hong Kong, China in Jan. 2003. ATN trial with Hong Kong using XOT over internet conducted in 2006, Further trials conducted in 2009. Plan for ATN/AMHS implementation with Hong Kong, China (2017). AMHS/ATN technical tests with Macau completed in 2009. Plan for ATN/AMHS implementation with Macau, China (2018). ATN/AMHS circuit with ROK put into operational use since June 2011. ATN/AMHS tests with India has been put into operation since 2016. ATN and AMHS technical trial with Mongolia is TBD. Interoperability test with Thailand is completed over internet. Connection tests with Nepal is TBD	IN-HOUSE (Aero-Info Technologies Co., Ltd)	AIDC between some of ACCs within China has been implemented. AIDC between several other ACCs are being implemented. AIDC between Sanya and Hong Kong put in to operational use since 8 Feb 2007. AIDC between Dalian and Incheon implemented in Nov. 2016; Guangzhou with Nanning/Zhanjiang/Zhuhai implemented; Nanning and Kunming/Guiyang/Zhanjiang implemented in 2011; Zhanjiang/Haikou; Chengdu and Chongqing/Guiyang implemented in 2011; Guiyang and Chongqing/Kunming implemented in 2011; For Beijing/Ulaanbaatar, planned date of testing in 2017.		

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
HONG KONG, CHINA	Hong Kong China had completed the Interoperability Test (IOT) with Beijing successfully in April 2016. The leased line between Beijing and Hong Kong has also put in place in June 2017. Hong Kong is now coordinating with Beijing for another round of IOT and Pre-operational Test (POT) through the leased line. The planned implementation date of Beijing-Hong Kong AMHS link would be by the end of 2017. ATN/AMHS circuit with Bangkok put into operation use in Sept 2014. ATN/AMHS interoperability tests with other adjacent communications centres commenced in late 2009, viz Taibei (2009), Japan (Planned Q2/2018 after implementation of CRV), Philippines (Planned Q1/2018 after CRV) and Viet Nam (Planned 2018).	COMSOFT	AFTN-based AIDC with Sanya put into operational use in Feb 2007AIDC technical trial with Taibei conducted in 2010 and completed in 2012 and put into operational use in Nov. 2012 AIDC technical and interoperability tests with Guangzhou conducted successfully in April and June 2017 respectively. AIDC tests with Manila is under coordination and targeted in Q4 2017.	Raytheon ATM system Support AIDC ICD Version 3 commissioned in November 2016.	Already support exchange of IWXXM messages based on FTBP
MACAO, CHINA	ATN/AMHS interoperability test with Beijing commenced in March 2009. ATN/AMHS circuit with Hong Kong put into operational use in end Dec. 2009. ATN/AMHS implementation with mainland China planned for 2018	COMSOFT	(Not applicable for using AIDC, looking into the possible application (some way) between TWR and ACC/APP).		

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
COOK ISLANDS					
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	The ATN BIS Router and AMHS planned for in 2011.		With neighboring ACCs to be implemented		
FIJI ISLANDS	ATN BIS Router and AMHS implemented Connection with USA and Australia has been implemented to support basic AMHS traffic. Plan to upgrade these connections using CRV and IP after the implementation of CRV pilot project. For connections with sub-regional centres: For New Caledonia using AMHS in 2017; For connection with Kiribati using UA/AMHS implemented in 2015.	COMSOFT	AFTN based AIDC implemented between Nadi/ Brisbane, Auckland and Oakland.	- Support and implemented AIDC messaging: ABI, EST, CPL, CDN, ACP, TOC, AOC with all three centers - AIDC ICD version 2.0 implemented with Auckland and Oakland. - AIDC ICD Version 1.0 implemented with Brisbane	
FRANCE ***(French Polynesia Tahiti)***	Planned for implementation of AMHS in 2020. Planned for using IP to replace X.25 with New Zealand shortly.		Implementation of AIDC (based on Version 3) with adjacent centres (Oakland and Auckland) since 2009	THALES EUROCAT for AIDC	Alternate routing for backup between Tahitti and Christchurch via Tahitti/New Caledonia IP link

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
INDIA	Dual stack ATN/IP router and AMHS implemented at Mumbai in 2011. Operational AMHS connections with Bangkok, Dhaka, Singapore, Kathmandu, Karachi implemented. With Beijing implemented in 2016; With Colombo planned for May 2017; With Bhutan and Nairobi planned for 2017.	COMSOFT	-AIDC planned with Bangladesh, Myanmar, Pakistan, Nepal, Seychelles, Malaysia, Indonesia, Sri Lanka, Oman and Maldives and Mauritius. -15-May-2017, AIDC implemented between Chennai and Kuala Lumpur with ABI and EST messages. CDN is done with voice confirmation. TOC/AOC to be implemented -Chennai-Colombo in testing phase; - Chennai-Male to be implemented by 15 Aug.17.	1) Raytheon at New Delhi, Mumbai and Chennai 2) Selex at Hyderabad and Bengaluru. 3) INDRA at 39 locations	1) Major Indian airports and ATC centres have integrated ATS Automation Systems having AIDC capability. Successful AIDC trials have been carried out amongst major ATSUs within India. 2) AIDC implemented between Chennai and Mumbai. 3) AMHS implemented and working between A. BBIS: Mumbai-Singapore, Bangkok B: BIS: Mumbai, Kathmandu, Dhaka
INDONESIA	AMHS implementation with Brisbane waiting for direct link BNE – UPG will be finished 2Q2017 For successful testing conducted between UPG and BNE; ATN BIS Router and AMHS trial (POT) with Singapore conducted in March 2017;	ELSA	Implementation Jakarta (new ATM system in 4Q in 2018) The target date of AIDC implementation will commence in 2019 including following pairs. Jakarta-Singapore (testing in 1Q 2019); Jakarta-Chennai; Jakarta-Ujung Pandang; Jakarta-Melbourne;		

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			Jakarta – Kuala Lumpur Ujung Pandang -Brisbane; plan for implementation with Brisbane in July 2017. Ujung Pandang – Manila; - Successful testing conducted ; - Target date of implementation in 4Q2017. Ujung Pandang - Kota Kinabalu - Testing conducted; - Implementation date TBC -	Thales in Makassar able to support ICD Version 3 since December 2015	Between PNG – Ujung Pandang, the implementation are waiting for PNG's ATM system upgraded. Between Oakland – Ujung Pandang is not planned yet, due to traffic volume consideration (very low).
JAPAN	ATN BBIS router and AMHS installed at 2000. Connection tests with USA 2000 - 2004 and put into operational use in 2005. ATN BBIS router (to apply to Dual Stack) and AMHS (to upgrade in 2015. The connection test with each country which is not currently connecting is started after update. Upgrading connection with Hong Kong using VPN will be implemented in 2018 after implementation of CRV; Coordinating for all other circuits upgrading.	NEC	AIDC implemented between Fukuoka ATMC and Oakland ARTCC in 1998. AIDC implemented between Fukuoka ATMC and Anchorage ARTCC in 2005. AIDC implemented between Tokyo ACC/Fukuoka ACC and Incheon ACC in 2010. Implemented between Fukuoka and Incheon since June 2009. AIDC implemented between Fukuoka ACC/Naha ACC		Japan and USA conducting testing AIDC over AMHS and cutover date is 5 May 2017.

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			and Taibei ACC implemented. AIDC between Fukuoka ACC and Shanghai ACC under negotiation.		
KIRIBATI	Connection with Nadi using UA/AMHS implemented in 2015.				
LAO PDR	ATN BIS Router and AMHS completed, planned for operation with Bangkok since 4Q 2016.	THALES	AIDC testing with Bangkok since late 2016. Testing with Hanoi planned for 2017, with Ho Chi Minh2017; with Cambodia for 2017	THALES which is able to support ICD Version 2.	
MALAYSIA	ATN BIS Router completed 2007. AMHS implementation planned for Q42017;	FREQUENTIS	AIDC testing with Bangkok ACC conducted since 2016. Operational trial will commence 4Q 2017. AIDC between Kuching and KK ACC already implemented since 2014 using OLDI. Between Kuala Lumpur/ Chennai implemented in phases from May 2017 implementation for ABI, EST and MAC along with response messages LAM,	SELEX which is able to support ICD Version 3.	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			LRM and ACP. Review on the CDN message implementation to be conducted in Aug. 2017. AIDC testing with Singapore on going since 2016. Target date for operational trial from 4Q2017. Planned testing with Ho Chi Minh ACC – 4Q2017; AIDC KK ACC and Philippines and Ujung Pandang planned for 4Q2017; AIDC for Kuching ACC with Singapore planned in 4Q2017.		
MALDIVES	Planned for 2016 as existing AFTN was upgraded recently to make it compatible with protocols of interconnected AMHS systems and the flight plan format 12.		System is AIDC ready. Implementation with ACC's (Planned testing with Chennai in 4Q2017; Planned testing with Mumbai in 4Q2017; with Colombo, Melbourne and Mauritius plan for 2017)	SELEX which is able to support ICD Version 3.	
MARSHALL ISLANDS					

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
MICRONESIA (EDERATED STATES OF)					
Chuuk					
Kosrae					
Pohnpei					
Yap					
MONGOLIA	AMHS/AFTN gateway implemented 2012. ATNBIS router implemented in 2014. Coordinating with China using ATN/AMHS connection technical trials conducted in 2014.	COMSOFT	ATM automation system supports both AIDC and OLDI. Coordinating with Russia on OLDI connection in target date 2016. Coordinating with China on AIDC connection between Beijing/Ulaanbaatar technical trial in progress. Planned date of testing in 2017.	INDRA Aircon 2100 supporting AIDC ICD Version 2.	
MYANMAR	AMHS including ATFN/AMHS gateway implemented in Nov. 2011; Connection with Thailand implemented in 4Q2016; Planned for AMHS connection with Beijing. Target date TBC.	THALES	AIDC connection test with Thailand conducted in late 2016; AIDC testing with Kunming in April 2017; Planned for AIDC connection with India.	THALES Automation system upgraded to Thales Topsky ATC system in January 2017 which supports AIDC Ver. 2 and AMHS connections	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
NAURU					
NEPAL	BIS Router and AMHS commissioned with Kathmandu Mumbai circuit on 2 June 2014.	COMSOFT	AIDC between Kathmandu and Beijing and planned testing between KTM-BBN and KTM-CCU for 3Q2018		
NEW CALEDONIA	New router and AMHS commissioned December 2016	COMSOFT			
NEW ZEALAND	IP based AMHS connections with USA June 2016 and plan to upgrade the connections using CRV and IP after the implementation of CRV pilot project.	COMSOFT	AIDC implemented between New Zealand, Australia, Fiji, Tahiti, Chile and USA.	Supported the Basic 5 message set. ATM systems are LEIDOS and ADACEL	
PAKISTAN	ATN/AMHS connections with Mumbai since 2015. Planning for AMHS connection with Beijing and Kuwait after upgrading existing facilities between the Countries. Target dates for implementation TBC.	COMSOFT	Implemented between Karachi and Lahore ACCs Testing between Delhi and Karachi and AHM and Karachi conducted since 2014. Planned testing between Mumbai and Karachi for 2018 and For Lahore/Delhi on-going testing since 2014. For Muscat planned for 2018.	ATM system from Intra AIRCON 2100	Existing Radar system being upgraded.
PAPUA NEW GUINEA	Plans to create a newly duplicated digital communications line connecting with existing and new sites and AMHS system implemented in 4Q2014	COMSOFT	Plan to implement with all neighboring FIRs in 3Q 2018. Negotiation with Indonesia for AIDC with Ujung Pandang in May	COMSOFT which is able to support ICD Version 3	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			2017.		
PHILIPPINES	New ATN/AMHS was installed at the New CNS/ATM Center in Manila. Site Acceptance was successfully done on October 2015. Transition from AFTN to AMHS using the new AMHS is planned in the 4thQuarter of 2017. The AMHS Interoperability test with Hong Kong is planned in Q1/2018. For Singapore 1st Quarter 1Q/2018. AMHS interoperability test with Oakland USA is planned for 4Q2018.	COMSOFT	Technical Trials on the interim system: On-going with Singapore, Ujung Pandang and Taipei ACCs; Planned technical trial over new ATM system with other ACCs from 4Q2017 to 4Q2018: Planned implementation with interim system: 4Q2017 – Singapore ACC; 4Q2017 – Ujung Pandang ACC; 2Q2018 – Taipei ACC;	THALES which is able to support ICD Version 2.	
REPUBLIC OF KOREA	ATN/AMHS circuit with China put into operational use in June 2011.	SAMSUNG	AIDC implemented between ACC and Fukuoka ATMC. AIDC between Incheon and Dalian implemented in Nov. 2016.	Rockheed Martin System	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
SINGAPORE	AMHS implemented. ATN/AMHS circuit with India put into operational use in March 2011. ATN/AMHS circuit with UK put into operational use in March 2012. ATN/AMHS circuit with Thailand put into operational use in December 2014. On-going ATN/AMHS trial with Indonesia and Malaysia. With Australia implemented in Oct. 2016.	COMSOFT	Operational with Ho Chi Minh implemented July 2014. Planned operational trial with Kuala Lumpur ATCC in 4Q2017. Technical trials with Manila ACC ongoing since Dec. 2014. Revised planned operational implementation by 4Q 2017. Technical trials with Jakarta ACC will be initiated once the Jakarta ACC ATMS renewal is completed.	THALES currently support ICD Version 1 and to be upgraded to Version 3 in 4Q 2017.	
SRI LANKA	ATN BIS Router Planned for 2013. IP based AMHS implemented by Oct. 2017. - Mumbai tested May 2017 operational planned for Q4 2017; - Singapore testing in Q4 2017 operational for 2018; - Male testing and operational date TBD.	IDS	Trials with Male' planned for in 2017. Trial with Chennai on-going. Plan for implementation in 4Q2017 and with Melbourne plan for 4Q2017 and implementation for 1Q2018.	INTELCAN which is able to support ICD Version 3.	
THAILAND	BBIS/BIS Routers already implemented. AMHS has been implemented since July 2011. Connection with Cambodia, India, Singapore, Hong Kong China implemented. Pre-operational test (POT) with Bangladesh, Lao	AEROTHAI's AMHS System and UBITECH System	AIDC Connection test with Lao PDR, Cambodia, Myanmar and Malaysia underway since 2016. Planned for operation trial with these States from late	THALES which is being implemented with planned completion in Early 2017. AIDC feature supports APAC AIDC ICD V.3.	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
	PDR, Malaysia, Myanmar and Bhutan completed, implementation planned for end of 2017. Interoperability Test (IOT) with Beijing, China completed, pre-operational test planned for end of 2017. Interoperability Test; with Italy and Vietnam planned for end of 2017.		2017 to early 2018. Target date of implementation is around mid. 2018.		
TONGA	AMHS planned for 2008. The provider is linked to the New Zealand AFTN				CPDLC and ADS-C is not considered for lower airspace
UNITED STATES	AMHS implemented. (Salt Lake City & Atlanta). Transition using AMHS when counter parts ready Planned for AMHS implementation with Philippines 4Q2018	IN-HOUSE	AFTN based AIDC implemented. Planned for AIDC implementation with Philippines 4Q2018	IN-HOUSE which is able to support APAC and NAT ICDs currently Version 2.	
VANUATU					
VIET NAM	AMHS (basic) implemented. Trial phase from Q4/2015 to Q3/2017 IOT with Thailand in progress from Q4/2017 Plan to use AMHS in Q4/2017; Planned for IOT with Hong Kong and Singapore in 2017 For IOT with Laos PDR. TBC.	IN-HOUSE	Operational with Singapore since April 2014. Trial with Singapore for additional messages sets in 2016. Negotiating for implementation with Philippines in June 2017; Technical testing with Cambodia already done; Plan for trials with Lao.	Support ICD Version 1.0 with THALES at Ho Chi Minh ATM system. Support ICD Version 3.0 with Selex at Hanoi ATM System.	

State/Organization	ATN G/G Boundary Intermediate System (BIS) Router/AMHS	AMHS Vendors Selected	AIDC	ATM System selected to support AIDC and Associated ICD (Implementation Status of the Basic 5 message set supported)	Remarks
			PDR in 2016 and with Malaysia to be confirmed. Testing with Cambodia on – going; For operation trial TBC.		
Wallis and Futuna (FRANCE)	AMHS implementation planned for end of 2017			COMSOFT	

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CRV Implementation Table – 15/05/2017

State/ Administration	Intended date for CRV cut-over	Applications targeted	Envisaged SLA (peers)	Migration scheme	Prerequisites/ dependencies
Australia	Dec. 2017	AFTN, ADS-B, AMHS, voice		staged approach	Termination of current COM contract
Cambodia	As early as convenient				Internal decision making
China	To be confirmed	Data (AFTN, AMHS) then voice		staged approach	
Democratic People's Republic of Korea	To be confirmed				
Hong Kong, China	To be confirmed	To be confirmed		To be confirmed	Our joining of CRV will be subject to the local CBA. A number of factors would need to be considered in formulating the implementation plan, including safety assessment for migration, end dates / termination of existing contracts, and coordination with relevant CAAs/ANSPs in joining CRV in a harmonized manner,etc.
Macao, China	To be confirmed				CBA migration from X25 to IP
Fiji	Dec. 2017	ADS-B, AMHS, voice	USA New Zealand Australia		CBA is now confirmed OK

State/ Administration	Intended date for CRV cut-over	Applications targeted	Envisaged SLA (peers)	Migration scheme	Prerequisites/ dependencies
France (New Caledonia and French Polynesia)	As soon as CRV is available				CBA, cost must be affordable *Wallis and Futuna: no dedicated connection to CRV*
India	As soon as CRV is available	BBIS first, then BIS States		staged approach	CBA, safety case
Indonesia	As early as convenient	AFTN, AMHS, ADS-B and voice			CBA
Japan	As soon as CRV is available	Data first		staged approach	
Malaysia	2019	AFTN, AMHS, ADS-B and voice		staged approach	Leased line contract until 2018 New ATC center in 2020
Myanmar	As early as convenient	AFTN, AMHS, ADS-B and voice			CBA
New Zealand	Dec. 2017	AFTN, AMHS, ADS-B and voice			CBA attractive if all counterparts join in
Philippines	Around 2018	1- AMHS and 2- voice-		staged approach	New ATM center in 2017 and migration of telecom local service provider
Republic of Korea	As soon as CRV is available	1/ AFTN/AMHS 2/ AIDC		staged approach	as soon as CRV pilot project has delivered outcomes
Singapore	As soon as CRV is available	1/ AFTN/AMHS 2/ Voice/AIDC/ADS-B		staged approach	CBA attractive if all counterparts join in

State/ Administration	Intended date for CRV cut-over	Applications targeted	Envisaged SLA (peers)	Migration scheme	Prerequisites/ dependencies
Sri Lanka	As soon as CRV is available	AMHS connectivity with Mumbai, Singapore and Male. Direct Speech facilities with Chennai, Trivendrum, Mumbai, Male, Jakarta, Melbourne, Singapore		Phased approach with the implementation of CRV	CBA
Thailand	As soon as CRV is available	Data first Then voice, subject to safety case		Staged approach	CBA attractive if all counterparts join in, safety case
United States	Dec. 2017	1/ AFTN to AMHS over IP with NZ, Australia 2/ other FIRs as opportune (French Pol., Samoa etc) 3/ ATFM, AMHS with attachment 4/ AMHS with Japan and Fiji		Staged approach	No dependencies

STRATEGY FOR IMPLEMENTATION OF COMMUNICATION SYSTEMS TO SUPPORT AIR NAVIGATION SERVICE IN THE ASIA/PACIFIC REGION

Considering that:

1) legacy AFTN circuits are required until the ground systems of ATM Service Providers (ASP) and Airspace Users (AU) in reliant states are compatible with ATS Message Handling Service (AMHS), the successor implementation of the Aeronautical Fixed Service (AFS);

2) the Aeronautical Telecommunication Network (ATN) is specified in ICAO SARPs and technical manuals as the network supporting AFS—implemented using either OSI protocols (ATN/OSI) or the Internet Protocol Suite (ATN/IPS)—for both ground-ground and ground-air services;

3) many states have implemented ATN and AMHS in accordance with ICAO guidance (regional BBIS providing dual OSI/IPS stack routing at the AMHS level);

4) AN Conf/12 endorsed the Global Air Navigation Plan version 4 including the Aviation System Block Upgrades of the Globally Interoperable Services and Data improvement area based on System-Wide Information Management (SWIM) message exchange patterns (specified in the SWIM Operational Concept as IP-based web services);

5) APANPIRG adopted the Seamless ATM Plan (Version 2) in 2016 which includes the regional objective for SWIM and Common Regional VPN (CRV) implementation; and

6) operational precedents of slightly different implementations of this SWIM concept exist in North America and Europe.

THE GENERAL STRATEGY FOR THE IMPLEMENTATION OF THE NECESSARY INTER-STATE COMMUNICATION SERVICES TO SUPPORT THE GLOBAL AIR NAVIGATION PLAN IN THE ASIA/PACIFIC REGION IS AS FOLLOWS:

a) continue deploying the ground-ground backbone network of ATN routers and AMHS Message Transfer Agents (MTA) needed to support operational ground-ground services (as the infrastructure supporting AFTN such as X.25 becomes obsolete) and the air-ground services expected to migrate to ATN/IPS.

b) acknowledge ICAO's acceptance of IP sub-networking and the precedent of PENS in Europe and FTI in North America and consider the consequent potential for superior approaches to APAC's ATN which is deployed as an aggregation of private leased point-to-point and other circuits including the Public Internet;

c) apply guidance from ICAO technical panels—primarily the Information Management and Communications panels—in progressing regional planning and co-ordination in terms of inter-state exchange of aeronautical, meteorological, flight information, voice communication services and surveillance data;

d) permit non-backbone States, and States in other regions with connections to the Asia/Pacific region, to connect their Message Transfer Agents (MTA) to backbone States using either the OSI-based ATN Internet Communications Services (ICS) or the ATN IPS on a bilateral basis;

e) permit States with limited traffic to operate only UA terminals connected to the MTA of another State, subject to bilateral agreement. Such connections should use the CRV's IP VPN. In cases where is not practical, use of the public Internet subject to appropriate security provisions and access control is acceptable;

f) complete migration from AFTN to AMHS within the time frame specified in the Regional Air Navigation Plan;

g) once a robust ATN has been established, transition from the OSI-based ATN ICS to the AMHS MTA network using the ATN/IPS as specified in ICAO Doc 9896;

h) consider options for augmenting the operational regional ATN to meet future operational requirements (including virtualizing the ATN over generic sub-networking infrastructure/services capable of supporting other higher-level communication services in addition to the ATN).

IN ORDER TO ACHIEVE THE ABOVE STRATEGY THE FOLLOWING ACTIONS ARE REQUIRED:

i) Enhance AMHS to include the File Transfer Body Part (FTBP) sub-set of extended AMHS in order to support the exchange of IWXXM data using FTBP;

j) Australia, Fiji, New Zealand and USA to replace their obsolete South Pacific AFS Network equipment with a subscription to the CRV managed service. In addition to sustaining operational voice and ground-ground data services, validate the 10 key points of the CRV proof-of-concept;

k) Remaining APAC states to monitor outcomes of the proof of concept and consider subscription to the CRV service if it is beneficial given their particular circumstance;

l) States and ASP/AU to participate in the SWIM Task Force and nominate subject matter experts to implement Phases 2 and Phase 3 of the Seamless ATM plan Version 2 adopted by APANPIRG in 2016. Three phases are identified in the SWIM Task Force's work plan:

    a. Definition phase
    b. Implementation phase 1 - expansion of services and preparation of phase 2
    c. Implementation phase 2 – generalization.

m) Support the transition to FIXM with initial focus on the regional ATFM.

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INTERNATIONAL CIVIL AVIATION ORGANIZATION

ANNEX 1 TO THE MANAGEMENT SERVICE AGREEMENT
BETWEEN THE INTERNATIONAL CIVIL AVIATION ORGANIZATION
AND THE CIVIL AVIATION AUTHORITIES AND/OR RELATED AIR NAVIGATION SERVICE
PROVIDERS HAVING SIGNED THE AGREEMENT

Project Title:	Common Regional Virtual Private Network (CRV) multinational service with a common service provider
Project No.:	RAS/14/801
Initial duration:	20 April 2015 to 31 December 2018
Sector and Sub-Sector:	Transport and Civil Aviation
Country Implementing Agency:	Civil Aviation Authorities and/or related ANSPs
Executing Agency:	International Civil Aviation Organization (ICAO)
Location:	Asia Pacific
Estimated Start Date:	20 April 2015
Estimated Project Cost:	US$ 179,818

Brief Description: ICAO will assist the Civil Aviation Authorities and/or related ANSPs in the procurement management (i.e. Stage 1) of the APAC CRV Project, in the selection of a common service provider and in procuring common services or expertise to support the implementation of the CRV Network (Stage 2). The ICAO assistance covers the specific work scope outlined in this project document.

Background:

1. The Civil Aviation Authorities and/or related ANSPs as listed in Appendix A, hereinafter collectively referred to as the "Parties" and individually as the "Party", have determined that the Common Regional Virtual Private Network (CRV) multinational service with a common service provider can more effectively:
   - provide network services to the Parties;
   - support a common Internet Protocol (IP) network;
   - establish services based on Voice over IP (VoIP); and
   - enhance network diversity and timely service implementation and delivery.

2. All Parties jointly agree to appoint ICAO Technical Cooperation Bureau or TCB to assist in the procurement management (i.e. Stage 1) of the CRV project and in the selection of the common Service Provider. Upon selection of the common service provider after a Sealed Tender (ST) process through TCB, a Party shall subscribe to the Services by signing an individual Service Contract with the Service Provider for the procurement, installation, training, testing, commissioning and operation of the CRV network and the associated services. All Parties may agree to procure common services or expertise to support the implementation of the CRV Network (Stage 2).

Services to be provided:

1. Through this Annex to the above-mentioned Management Service Agreement, the following services will be provided by ICAO:

   - Tender Preparation Stage

   - Review the technical specifications provided by the CRV Task Force with the aim to have SMART (Simple, Measurable, Assignable, Realistic and Time-related) and consolidated requirements;
   - Develop the evaluation criteria for CRV Task Force consideration and finalization;
   - Prepare tender documents including integrating the technical specifications, and any other information required in the tender documents.

   - TCB Publication of Sealed Tender

   - Investigate market and propose and identify suitable suppliers to register with ICAO, including those having participated in the Request For Information (RFI), which is handled by the ICAO APAC Regional Office;
   - Advertise Sealed Tender (ST) on ICAO's tendering website and notify the appropriate suppliers.

   - Consultation & RFP Response

   - Coordinate any site survey needed by RT, as appropriate;

- Handle all the tender clarifications including consultation with the CRV Task Force, organization of tender clarification meetings (by telephone, webconference, etc), and fair dissemination of information to all RT;
- Optionally, to set up a Face to Face meeting with RT to exhaust questions before submission of responses.

  - Selection

- Receive tender responses at ICAO's tendering website, carry out a pre-evaluation, and provide support to the CRV Tender Evaluation Committee meetings, including a final physical evaluation meeting;
- Award the tender.

  - General On-going Assistance

- Participate as a technical advisor to the CRV Task Force ;
- Any other related services.

  - Procurement of common services or expertise to support the implementation of the CRV Network (Stage 2)

- Procuring common goods and/or services from the awarded vendor (such as training, safety management, customized tools or other as part of the contract 22501631: Sealed Tender 22501631 - CRV) for all Parties to support the implementation of the CRV Network; and
- Procuring common goods and/or services from other sources as required.

The corresponding job description is placed at Appendix B (revision b).

Budget:

The detailed budget is as attached at Appendix A revision b.

1. Funds will be equally shared among the Civil Aviation Authorities and/or related ANSPs that have signed the MSA, and provided by them in advance of commencement of the project.
2. The total estimated amount is of US$ 109,300 as per Appendix A revision b. This amount is the total estimated amount including administrative and technical support.

Risk Assessment

Initial Major Risk Factor

1.1 Delay in the signing of this project document and remittance of funds.

Risk Level: Medium

Mitigation: ICAO will work through the Chairman of the CRV Task Force with the Civil Aviation Authorities and/or related ANSPs to facilitate the signing of the project document and the remittance of required funds.

Other Risk Factors

1.2 None

Project Plan (CRV planning):

The CRV Project planning as per September 2014 is attached at Appendix C.

Procurement of common services or expertise to support the implementation of the CRV Network (Stage 2)

In case the Parties want to procure common goods and/or services from other sources in the stage 2, ICAO will provide turn-key services for the procurement of goods and services as requested by the State. The procurement of any good or service not explicitly indicated in the present Project Document may be done, provided the requisite funds are made available and the project budget is revised, as appropriate.

In the case of procurement items, the ICAO administrative overhead CAPS rates are as shown below. The exact amount of said fee will only be known once the final supplier (s) are/is selected and the final costs of the equipment are known.

Range USD	%
< $10,000	**13.0%**
$10,000 – $100,000	**8.0%**
$100,001 – $1,000,000	**6.0%**
$1,000,001 – $4,000,000	**4.9%**
> $4,000,000	**negotiable**

In particular, the procurement of equipment or services are carried out in accordance with ICAO's Procurement Code, Financial Regulations and Rules, and applicable process and procedures.

	Procurement of common services or expertise to support the implementation of the CRV Network (Stage 2)
Performance Indicator	*- Successful completion of the procurement process within prescribed timeframe*
Deliverable	**Delivery of the services by the selected supplier(s) with support from ICAO's**

	procurement services	
Activity #	*Activity description*	*Responsible*
1	Assist in defining the equipment and/or services needs and the maintenance requirements	ICAO, Parties
2	Development and submission of technical specifications/SOW (Statement of works)	ICAO, Parties
3	Development and submission of the evaluation criteria	ICAO, Parties
4	Approval of the technical specifications and evaluation criteria	Parties
5	Coordination of a bidders' meeting	ICAO
6	Launch an international tender in accordance with ICAO Procurement Code , policies and practices	ICAO
7	Evaluation of proposals using established and published evaluation criteria.	ICAO, State
8	Preparation and submission of evaluation report.	ICAO
9	Agree and approve the evaluation report	Parties
10	Negotiation of contract with selected supplier(s).	ICAO, Parties
11	Award and signature of contract with the selected supplier(s).	ICAO
12	Implementation of project in accordance with applicable terms and conditions	Selected supplier(s)
13	Provide assistance on the SDD, FAT, provisional SAT and SAT including the revision of the applicable protocols	ICAO
14	Agreement on the final SDD, FAT, provisional SAT and SAT including the revision of the applicable protocols	Parties
15	Monitoring and oversight of contractual terms and conditions, including SDD, FAT, PSAT and SAT	ICAO, State
16	Provide advice during the after sale and warranty period	ICAO

Appendix A (revision b)

PROJECT BUDGET COVERING MSA CONTRIBUTION
(IN UNITED STATES DOLLARS)

COUNTRY: REGIONAL PROJECT
PROJECT NO: RAS14801
PROJECT TITLE: ASSISTANCE WITH THE PROCUREMENT OF A CRV (COMMON REGIONAL V
WORK ORDER: RAS14801-01

	TOTAL		2015	
	w/m	$	w/m	$
PROJECT PERSONNEL				
INTERNATIONAL PROFESSIONAL POSTS				
B554A CONSULTANTS FOR TSS	2.0	81 800	2.0	81 800
SUB-TOTAL (INTERNATIONAL PROFESSIONAL POSTS)	2.0	81 800	2.0	81 800
TOTAL (PROJECT PERSONNEL)		81 800		81 800
MISCELLANEOUS				
B807L REPORTING COSTS		5 000		5 000
B807M MISCELLANEOUS EXPENSES		4 300		4 300
B754A OVERHEAD CHARGES		18 200		18 200
TOTAL (MISCELLANEOUS)		27 500		27 500
PROJECT TOTAL		109 300		109 300

Amend the line for International professional post based on revised Appendix B hereafter)
Add a line PROCUREMENT and allocate what remains from the 179,818USD

Appendix B (revision b)

International Civil Aviation Organization
Technical Cooperation Bureau – Job Description

POSITION INFORMATION

Generic Title:	Communications expert	Position Number (ID):	900226
Specific Title:	Aeronautical communications procurement expert	Skill Code: (By FRU)	1B07C
Project Number:	RAS/14/801	Classification Level: (By FRU)	
Duty Station:	Home and Bangkok	Starting Date:	20 April 2015
Duration:	• Stage 1: 58 days at Home and 9 in Bangkok (3 missions to Bangkok of 3 w/d each) • Stage 2: 25 days at Home and 8 in Bangkok/Hong Kong (2 missions of 4 w/d each)		

ORGANISATIONAL SETTING

The Technical Cooperation Bureau (TCB) of ICAO is responsible for planning, development, implementation, and evaluation of the ICAO Technical Co-operation Programme. TCB provides assistance in identifying priority development needs of the civil aviation sector and provides technical cooperation to the receiving States. The Field Operations Section (FOS) implements projects and programmes in accordance with the policies and practices of TCB.

The objective of the CRV project (Common Regional Virtual Private Network) is to build the Asia Pacific aeronautical network that will carry aeronautical data and voice communications between the States of this region from end of 2016 onwards, and that will also be connected to other regional networks as needed and practicable. The project consists in procuring a service of transportation (and not equipment) through a virtual network provided by a Telecommunication Service Provider.

The CRV project constitutes a follow-up to the decision 24/32 made by APANPIRG in June 2013 that a Task Force with Subject Matter Experts be established to study the virtual private network and develop a detailed proposal by 2016. It is conducted by the CRV Project management team composed of the CRV Task Force chairman in coordination and the ICAO APAC CNS Officer. The ICAO TCB is in charge of facilitating the procurement process.
The stage 2 (implementation of CRV) is conducted by the CRV Operations Group chairman or co-chairs in coordination and the ICAO APAC CNS Officer.

IMPACT OF OUTCOME OF THE POSITION

Selection of a single Communication Service Provider (CSP) for the CRV network in APAC region.
Support to the implementation of the CRV Network.

MAJOR DUTIES AND RESPONSIBILITIES

Under the supervision of the Director, Technical Cooperation Bureau, the consultant will:

1. Main Tasks:

    1. Review all documentation developed for this project in order to understand the Concept of Operations developed for CRV

2. Review the user requirements (general, technical and process) provided by the CRV Task Force with the aim to have consolidated requirements;
3. Develop the evaluation criteria for CRV Task Force consideration and finalization;
4. Assist TCB, if required, to handle the tender technical clarifications including consultation with the CRV Task Force,
5. If needed, participate in a Face to Face meeting with Registered Tenderers to exhaust questions before submission of responses;
6. Carry out a pre-evaluation, and provide support to the CRV Tender Evaluation Committee meetings, including a final physical evaluation meeting;
7. Participate as a technical advisor to the CRV Task Force for tender preparation and evaluation.
8. Support the CRV OG by reviewing the common vendor's engineering package and contributing to the CRV implementation plan;
9. Perform any other task related to the points mentioned above, as required.

Specifically, On-Site work at ICAO Regional Office facilities in Bangkok, Thailand, will consist in the following tasks:

- Provide technical support for the review of CRV user requirements with APAC States as appropriate;
- Provide technical and Secretariat support to the Face to Face meeting with Registered Tenderers and some APAC States to clarify the project technical requirements before submission of responses; and
- Provide technical support to the final CRV Tender Evaluation Committee meeting.

2. Deliverables include:

a) A consolidated List of CRV validated user requirements (general, technical and process);
b) Draft evaluation criteria for CRV Task Force consideration;
c) Provide technical support for clarifications requested by the Registered Tenderers,
d) A pre-evaluation of the proposals from Tenderers;
e) A final evaluation of the proposals from Tenderers including recommendation of the winner;
f) A summary report of the procurement process; and
g) Reviews of deliverables from the Common Vendor and inputs to the CRV implementation plan.

3. Reporting duties:

a) Prepare and submit Periodic Progress and Final Reports to CRV Project Management Team and TCB, in accordance to the approved project Work Plan Report. Participate in periodic teleconferences CRV Project Management Team and TCB, as appropriate.

4. Coordination duties:

a) Coordinate with ICAO TCB and CRV Project management team/CRV OG, the preparation of the Work Plan, and submission of the Work Plan report within 5 working days of start of assignment.

b) Act as focal point liaising with CRV Project management team/CRV OG, TCB, and other stakeholders as appropriate.

c) Perform any other project management/coordination duties as required.

QUALIFICATIONS AND EXPERIENCE

Educational background

University degree in Telecommunications Engineering or Equivalent acceptable academic and technical qualifications

Professional experience and knowledge

Minimum 10 years of professional experience with aeronautical telecommunications
Minimum 5 years of professional experience in the preparation of specifications, negotiations and acquisition of aeronautical telecommunications services

Minimum 5 years of professional experience in the Planning, installation, operation and maintenance of aeronautical telecommunications facilities
Experience in safety cases related to Air Traffic Services
In-depth experience with review of tender documentation and recommendation for selection of suppliers
In-depth Knowledge of related ICAO SARPS regarding Aeronautical Fixed Services, fault/configuration/safety/security management of communications networks, typical designs for IP networks, Voice over IP

Language Skills

1. Expert must to be fluent in English (both written and verbal).

Competencies

1. Judgment/decision–making: Proven ability to take ownership of all responsibilities and to honour commitments, to exercise mature and fair judgment, to recognize key issues and analyse relevant information, to make feasible recommendations and to make sound decisions.

2. Communication: Ability to write clearly and concisely and to present articulate verbal reports.

3. Teamwork: Ability to work with colleagues to achieve the project goals and maintain harmonious working relationships in a multinational environment.

4. Client Orientation: Ability to establish and maintain partnerships with external collaborators, to work and advocate effectively in a consensus-based system and to successfully manage and resolve conflict.

5. Commitment to continuous learning: Willingness to keep abreast of new developments in professional field.

6. Technological awareness: Ability to use contemporary office automation equipment, software, databases.

SALARY

TBD by FPS/FRU

TABLE CNS II-APAC-1-ATS INTER-FACILITY DATA COMMUNICATION (AIDC) IMPLEMENTATION PLAN

EXPLANATION OF THE TABLE

Column

1 State/Administration – the name of the State/Administration;

2 Location of AIDC end system – the location of the AIDC end system under the supervision of State/Administration identified in column 1;

3 AIDC Pair – the correspondent AIDC end system;

Location – location of the correspondent AIDC end system

State/Administration – the name of the State/Administration responsible for management of the correspondent AIDC end system

A "/" is placed between the location and State/Administration

4 Transmission Means – the transmission means used for the AIDC messages exchanged between the corresponding AIDC pair, AFTN, AFTN/AMHS;

5 Target Date of Implementation – date of implementation of the AIDC end system in the form of xQyyyy or yyyy (quarter year);

6 Remarks – any additional information describing the AIDC end system or the AIDC service between the corresponding AIDC pair.

State/Administration	Location of AIDC System ATSU1	AIDC System Pair ATSU2 /Correspondent State – Administration	Transmission Means	Target date of Implementation xQyyyy or yyyy	Remarks
1	2	3	4	5	6
AFGHANISTAN	Kabul ACC	Kabul ACC /Afghanistan	AFTN/AMHS		
		Karachi ACC/Pakistan	AFTN		
AUSTRALIA	Brisbane ACC	Oakland ARTCC /USA	AFTN	Implemented	
			AFTN/AMHS		
		Auckland ACC /New Zealand	AFTN	Implemented	
			AFTN/AMHS		
		Melbourne ACC /Australia	AFTN	Implemented	
			AFTN/AMHS		
		Ujung Pandang ACC /Indonesia	AFTN	3Q2017	
			AFTN/AMHS		
		Nadi ACC /Fiji	AFTN	Implemented	
			AFTN/AMHS	Implemented	
		Port Moresby/PNG	AFTN		
			AFTN/AMHS	3Q2016	
	Melbourne ACC	Brisbane ACC /Australia	AFTN	Implemented	
			AFTN/AMHS		
		Jakarta ACC /Indonesia	AFTN		
			AFTN/AMHS		
		Colombo ACC/Sri Lanka	AFTN/AMHS	1Q2017	
		Mauritius ACC /Mauritius	AFTN	Implemented	
			AFTN/AMHS		
BANGLADESH	Dhaka ACC	Kolkata ACC /India	AFTN/AMHS	4Q2018	
		Yangon ACC /Myanmar	AFTN/AMHS	4Q2018	ICD V.2.0
CAMBODIA	Phnom Penh ACC	Bangkok ACC /Thailand	AMHS	3Q2018	
		Vientiane ACC/Laos PDR	AMHS	2016	
		Ho Chi Minh ACC/Viet Nam	AFTN/AMHS	2016	
CHINA	Beijing ACC	-	-		
		Ulaanbaatar ACC/Mongolia	AFTN		
	Sanya ACC	Hong Kong ACC /HK China	AFTN	Implemented	
		Ho Chi Minh ACC /Vietnam	AFTN		

	Kunming ACC	Yangon ACC /Myanmar	AFTN	4Q2017	ICD V.2.0
	Guangzhou ACC	Hong Kong ACC /HK China	AFTN		
	Taibei ACC	Hong Kong ACC /HK China	AFTN	Implemented	
		Fukuoka ATMC/Japan	AFTN	Implemented	ICD V.3.0
		Manila ACC/Philippines	AFTN	2Q2018	
	Urumqi ACC	Lahore ACC /Pakistan	AFTN/AMHS		
	Dalian ACC	Incheon ACC /Republic of Korea	AFTN	Implemented	
	Shanghai ACC	Fukuoka ATMC /Japan	AFTN		
HONG KONG, CHINA	Hong Kong ACC	Guangzhou ACC /China	AFTN	AIDC technical test completed in April 2017. AIDC interoperability test completed in June 2017.	
		Sanya ACC /China	AFTN	Implemented	
		Manila ACC /Philippines	AFTN		AIDC technical tests on – going and continue in 2017
		Taibei ACC /China	AFTN	Implemented	
MACAO, CHINA	Macao ATZ				Automatic transfer of control with adjacent ATC units is applicable instead of AIDC
FIJI	Nadi ACC	Auckland ACC /New Zealand	AFTN	Implemented	ICD V.1.0
		Brisbane ACC /Australia	AFTN/AMHS	Implemented	ICD V. 1.0
		Oakland ARTCC /USA	AFTN/AMHS	Implemented	ICD V.1.0
FRANCE ***FRENCH POLYNESIA NEW CALEDONIA***	Papeete ACC	Auckland ACC /New Zealand	AFTN	Implemented	ICD V. 2.0
		Oakland ARTCC /USA	AFTN	Implemented	
INDIA	Ahmedabad ACC	Karachi ACC /Pakistan	AFTN	2Q2018	
	Chennai ACC	Colombo ACC / Sri Lanka	AFTN/AMHS	4Q2017	
		Jakarta ACC /Indonesia	AFTN	2019	
		Kuala Lumpur ACC / Malaysia	AFTN	2Q2017	ICD V.3.0
		Male ACC /Maldives	AFTN		
		Yangon ACC /Myanmar	AFTN	4Q2018	ICD V.2.0
	Delhi ACC	Karachi ACC /Pakistan	AFTN		

		Lahore ACC /Pakistan	AFTN		
	Kolkata ACC	Dhaka ACC /Bangladesh	AFTN/AMHS	4Q2018	
		Yangon ACC /Myanmar	AFTN		ICD V.2.0
		Kathmandu ACC /Nepal	AFTN		
	Mumbai ACC	Karachi ACC /Pakistan	AFTN/AMHS	2018	
		Male ACC /Maldives	AFTN		
		Muscat ACC /Oman	AFTN		
		Seychelles ACC / Mauritius	AFTN		
	Varanasi ACC	Kathmandu ACC /Nepal	AFTN		
INDONESIA	Jakarta ACC	Melbourne /Australia	AFTN/AMHS		
		Colombo ACC / Sri Lanka	AFTN/AMHS		
		Singapore ACC /Singapore	AFTN/AMHS		
		Kuala Lumpur ACC / Malaysia	AFTN		
		Kota Kinabalu ACC /Malaysia	AFTN		
		Chennai ACC /India	AFTN	2019	
	Ujung Pasndang ACC	Brisbane ACC /Australia	AFTN	3Q2017	
			AFTN/AMHS		
		Manila/Philippines	AFTN/AMHS	4Q2017	
JAPAN	Fukuoka ATMC	Port Moresby ACC/ PNG	AFTN		
		Manila ACC /Philippines	AFTN		Technical Tests until 4Q2018
			AFTN/AMHS		
		Anchorage ACC /USA	AFTN	Implemented	ICD V.2.0
		Incheon ACC /Republic of Korea	AFTN	Implemented	ICD V.1.0
		Oakland ARTCC /USA	AFTN	Implemented	ICD V.2.0
		Shanghai ACC /China	AFTN		
		Taibei ACC /Taibei, China	AFTN	Implemented	ICD V.3.0
LAO PEOPLE'S DEMOCRATIC REPUBLIC	Vientiane ACC	Bangkok ACC /Thailand	AMHS	3Q2018	
		Hanoi ACC /Veitnam	AFTN	2017	
		Phnom Penh ACC /Cambodia	AMHS	2016	
		Yangoon/ Myanmar	AFTN	4Q2018	ICD V.2.0
		Ho Chi Minh/ Vietnam	AFTN/AMHS	2017	
MALAYSIA	Kuala Lumpur ACC				
		Bangkok ACC /Thailand	AFTN	3Q2018	ICD V.3.0
		Singapore ACC /Singapore	AFTN	4Q2017	ICD V.3.0

		Chennai ACC /India	AFTN	2Q2017	ICD V.3.0
		Ho Chi Minh ACC /Vietnam	AFTN		
		Jakarta ACC /Indonesia	AFTN		ICD V.3.0
	Kota Kinabalu ACC	Ujung Pandangr ACC /Indonesia	AFTN		
		Manila ACC /Philippines	AFTN/AMHS		ICD V.3.0
		Singapore ACC /Singapore	AFTN/AMHS		ICD V.3.0
		Jakarta ACC /Indonesia	AFTN		
	Kuching ACC	Singapore ACC /Singapore	AFTN		ICD V.3.0
MALDIVES	Male ACC	Mumbai ACC / India	AFTN		
		Chennai ACC /India	AFTN		
		Mauritius ACC/Mauritius	AFTN	2017	
		Colombo ACC/ Sri Lanka	AFTN	2017	
		Melborne ACC /Australia	AFTN	2017	
MONGOLIA	Ulaanbaatar ACC	Beijing ACC/ China	AFTN		
MYANMAR	Yangon ACC	Bangkok ACC /Thailand	AFTN/AMHS	3Q2018	ICD V.2.0
		Kolkata ACC /India	AFTN	4Q2018	
		Chennai ACC /India	AFTN	4Q2018	
		Kunming ACC /China	AFTN		
		Vientianne ACC /Lao PDR	AFTN	4Q2018	
		Dhaka ACC /Bangladesh	AFTN/AMHS	4Q2018	
NEPAL	Kathmandu ACC	Kolkata ACC /India	AFTN		
		Varanasi ACC/India	AFTN		
		Lhasa ACC /China	AFTN		
NEW ZEALAND	Auckland ACC	Brisbane ACC /Australia	AFTN	Implemented	ICD V.1.0
		Nadi ACC /Fiji	AFTN	Implemented	ICD V.1.0
		Oakland ARTCC /USA	AFTN	Implemented	ICD V.2.0
		Papeete ACC /French Polynesia	AFTN	Implemented	ICD V.2.0
			AFTN/AMHS		
PAKISTAN	Karachi ACC	Mumbai ACC /India	AFTN		
		Muscat ACC /Oman	AFTN		
		Tehran ACC /Iran	AFTN		
		Delhi ACC /India	AFTN		
		Ahmadabad ACC /India	AFTN	2Q2018	
		Kabul ACC /Afghanistan	AFTN		

	Lahore ACC	Delhi ACC /India	AFTN		
		Urumqui ACC /China	AFTN/AMHS		
		Tajakistan ACC /Tajakistan	AFTN		
PAPUA NEW GUINEA	Port Moresby	Brisbane ACC/Australia	AFTN		
			AFTN/AMHS	3Q2016	
PHILIPPINES	Manila ACC	Hong Kong ACC /Hong Kong, China	AFTN		Coordination for Technical test on the new ATM system –on going
			AFTN/AMHS		
		Singapore ACC /Singapore	AFTN	4Q2017	
			AFTN/AMHS		
		Taibei ACC/Taibei, China	AFTN	2Q2018	
			AFTN/AMHS		
		Kota Kinabalu ACC /Malaysia	AFTN		
			AFTN/AMHS		
		Ho Chi Minh ACC /Viet Nam	AFTN		Technical Tests on the new ATM system will continue with other ACCs until 4Q2018
			AFTN/AMHS		
		Oakland ARTCC /USA	AFTN		
			AFTN/AMHS		
		Fukoka ATMC /Japan	AFTN		
			AFTN/AMHS		
		Ujung Pandang ACC /Indonesia	AFTN	4Q2017	
			AFTN/AMHS		
REPUBLIC OF KOREA	Incheon ACC	Fukoka ATMC /Japan	AFTN	Implemented	ICD V.1.0
		Dalian ACC/China	AFTN	Implemented	ICD V.3.0
SINGAPORE	Singapore ACC	Ho Chi Minh ACC /Vietnam	AFTN/AMHS	Implemented	ICD V.3.0
		Manila ACC /Philippines	AFTN/AMHS	4Q2017	
		Jakarta ACC /Indonesia	AFTN/AMHS		
		Kuala Lumpur ACC /Malaysia	AFTN/AMHS	4Q2017	ICD V.3.0
		Kota Kinabalu ACC /Malaysia	AFTN/AMHS		
		Kuching /Malaysia	AFTN/AMHS		
SRI LANKA	Colombo ACC	Male ACC /Maldives	AFTN/AMHS	2017	
		Jakarta ACC / Indonesia	AFTN/AMHS		
		Chennai ACC /India	AFTN/AMHS	4Q2017	
		Melbourne ACC /Australia	AFTN/AMHS	1Q2017	

THAILAND	Bangkok ACC	Kuala Lumpur ACC /Malaysia	AFTN	3Q2018	ICD V.3.0
		Phnom Penh ACC /Cambodia	AMHS	3Q2018	
		Vientiane ACC /Lao PDR	AMHS	3Q2018	
		Yangon ACC /Myanmar	AFTN/AMHS	3Q2018	ICD V.2.0
UNITED STATES	Oakland ARTCC	Auckland OAC /New Zealand	AFTN	Implemented	ICD V.2.0
		Fukuoka ATMC /Japan	AFTN	Implemented	ICD V.2.0
		Nadi ATMC /Fiji	AFTN	Implemented	ICD V.2.0
		Brisbane ACC /Australia	AFTN	Implemented	ICD V.2.0
		Tahiti ACC /Tahiti	AFTN	Implemented	ICD V 2.0
		Port Moresby/PNG	AFTN	4Q2017	
		Manila /Philippines	AFTN		
	Anchorage ARTCC	Anchorage ARTCC /United States	AFTN	Implemented	ICD V 2.0
		Fukuoka ATMC /Japan	AFTN	Implemented	ICD V.2.0
		Oakland ARTCC /United States	AFTN	Implemented	ICD V.2.0
VIET NAM	Ho Chi Minh ACC	Sanya ACC /China	AFTN		
			AFTN/AMHS		
		Phnom Penh ACC /Cambodia	AFTN/AMHS	2016	
		Vientiane ACC /Lao PDR	AFTN/AMHS	2017	
		Singapore ACC /Singapore	AFTN/AMHS	Implemented	ICD V.3.0
		Manila /Philippines	AFTN		
		Kuala Lumpur /Malaysia	AFTN		
	Hanoi ACC	Vientiane ACC/Lao PDR	AFTN	2017	

Revised Template for Promulgation of ADS-B Avionics Equipage Requirements

On and after dd/mm/yyyy, if an aircraft operates on airways (insert routes)……at or above FLXXX……(or in defined airspace boundaries ……. at or above FLxxx):

the aircraft must carry serviceable 1090 MHz ES ADS-B transmitting equipment that has been certificated as meeting:

a) European Aviation Safety Agency - Certification Considerations for the Enhanced ATS in Non-Radar Areas using ADS-B Surveillance (ADS-B-NRA) Application via 1090 MHZ Extended Squitter (AMC 20-24), or

b) European Aviation Safety Agency - Certification Specifications and Acceptable Means of Compliance for Airborne Communications, Navigation and Surveillance (CS-ACNS) Subpart D – Surveillance (SUR) (CS-ACNS.D.ADS-B), or

c) Federal Aviation Administration – Advisory Circular No: 20-165A (or later versions) Airworthiness Approval of Automatic Dependent Surveillance – Broadcast (ADS-B) Out Systems, or

d) the equipment configuration standards in Appendix XI of Civil Aviation Order 20.18 of the Civil Aviation Safety Authority of Australia.

Note: States are urged to include at least the standards stated in the template. States may include other standards allowed by the State's regulations.

The template adopted under Conclusion APANPIRG/26/42 be superseded by the revised template

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Proposed amendment to MID/ASIA Regional Supplementary Procedures (MID/ASIA 5-3)

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

a)	~~Text to be deleted is shown with a line through it.~~	text to be deleted
b)	New text to be inserted is highlighted with grey shading.	new text to be inserted
c)	~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	new text to replace existing text

5.5 AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST (ADS-B)

5.5.1 The procedures contained in 5.5.2 – 5.5.4 shall be applicable in those portions of the following FIRs where an ADS-B-based ATS surveillance service is provided:

Auckland Oceanic (West of 180°), Bangkok, Beijing, Brisbane, Chennai, Colombo, Delhi, Dhaka, Fukuoka, Guangzhou, Hanoi, Ho-Chi-Minh, Hong Kong, Honiara, Incheon, Jakarta, Kabul, Karachi, Kathmandu, Kolkata, Kota Kinabaru, Kuala Lumpur, Kunming, Lahore, Lanzhou, Male, Manila, Melbourne, Mumbai, Nauru, New Zealand, Phnom Penh, Port Moresby, Pyongyang, Sanya, Shanghai, Shenyang, Singapore, Taibei, Ujung Pandang, Ulan Bator, Urumqi, Vientiane, Wuhan and Yangon.

5.5.2 An aircraft carrying 1 090 MHz extended squitter (1090ES) ADS-B equipment shall disable ADS-B transmission unless:

a) the aircraft emits position information of an accuracy and integrity consistent with the transmitted value of the position quality indicator; or

b) the aircraft always transmits a value of 0 (zero) for one or more of the position quality indicators (NUCp, NIC, NACp, or SIL); or

c) the operator has received an exemption granted by the appropriate ATS authority.

Note.— The following documents provide guidance for the installation and airworthiness approval of ADS-B OUT system in aircraft and ensure compliance with a) above:

1. *European Aviation Safety Agency (EASA) AMC 20-24; or*
2. *European Aviation Safety Agency (EASA) CS-ACNS (Subpart D – Surveillance – SUR); or*
3. *FAA AC No. 20-165A (or later versions) – Airworthiness Approval of ADS-B; or*
4. *Configuration standards reflected in Appendix XI of Civil Aviation Order 20.18 of the Civil Aviation Safety Authority of Australia*

5.5.3 Downlinked ADS-B data shall not be used by the ATC system for determining aircraft position when any of the position quality indicators (NUCp, NIC, NACp or SIL) have a value of 0 (zero).

5.5.4 Downlinked ADS-B data shall only be used by the ATC system for determining aircraft position when the position quality indicators (NUCp, NIC, NACp or SIL) have a value equal to or exceeding a minimum threshold, as determined by the appropriate ATS authority.

Proposed amendment to PAC Regional Supplementary Procedures (PAC 5-2)

5.5 AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST (ADS-B)

~~Nil~~

5.5.1 The procedures contained in 5.5.2 – 5.5.4 shall be applicable in those portions of the following FIRs where an ADS-B-based ATS surveillance service is provided:

Anchorage Oceanic, Auckland Oceanic (East of 180°), Easter Island, Nadi, Oakland Oceanic, and Tahiti

5.5.2 An aircraft carrying 1 090 MHz extended squitter (1090ES) ADS-B equipment shall disable ADS-B transmission unless:

a) the aircraft emits position information of an accuracy and integrity consistent with the transmitted value of the position quality indicator; or

b) the aircraft always transmits a value of 0 (zero) for one or more of the position quality indicators (NUCp, NIC, NACp, or SIL); or

a) the operator has received an exemption granted by the appropriate ATS authority.

Note.— The following documents provide guidance for the installation and airworthiness approval of ADS-B OUT system in aircraft and ensure compliance with a) above:

1. *European Aviation Safety Agency (EASA) AMC 20-24; or*
2. *European Aviation Safety Agency (EASA) CS-ACNS (Subpart D – Surveillance – SUR); or*
3. *FAA AC No. 20-165A (or later versions) – Airworthiness Approval of ADS-B; or*
4. *Configuration standards reflected in Appendix XI of Civil Aviation Order 20.18 of the Civil Aviation Safety Authority of Australia*

5.5.3 Downlinked ADS-B data shall not be used by the ATC system for determining aircraft position when any of the position quality indicators (NUCp, NIC, NACp or SIL) have a value of 0 (zero).

5.5.4 Downlinked ADS-B data shall only be used by the ATC system for determining aircraft position when the position quality indicators (NUCp, NIC, NACp or SIL) have a value equal to or exceeding a minimum threshold determined by the appropriate ATS authority.

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ADS-B IMPLEMENTATION STATUS IN THE APAC REGION

State/ Administration	ADS-B Ground Infrastructure and ATC System readiness or Implementation plan	Date of issue/ effectiveness date of equipage mandate	Mandated Airspace and/or ATS-routes	Intended separation criteria to be applied	Remarks
AFGHANISTAN	ADS-B & Multi Lateration system installed.				subject to safety assessment
AUSTRALIA	A total of 45 ADS-B ground stations and 28 WAM stations are operational (Total 73) ATC readiness since 2004 ADS-B data sharing with Indonesia operational since 2/2011. ADS-B data sharing planned with PNG ASMGCS using multilateration and ADS-B is operational in Brisbane, Sydney, Melbourne and Perth An additional 5 ADS-B ground stations are planned in 2017-2018. November 2016 – ADS-B converted to "radar like" Cat 48 for use in Melbourne Terminal Area. Perth to follow in 2017. Onesky replacing the current ATM system is expected to be fully operational in 2020 period.	2009/effective date of mandating in upper airspace 12/12/2013. An ADS-B mandate for all IFR aircraft applies from 2/2017.	All airspace for IFR aircraft from 2/2017	2.5NM, 3NM and 5 NM surveillance separations. 3/2016 - Manual of ATC updated to include 3 nautical mile separation using ADS-B in terminal control unit. 3/2017 – 2.5NM separation authorized using ADS-B when also used with radar. Vectoring allowed using ADS-B Precision Runway Monitoring for Sydney WAM	WAM is operating in Tasmania since 2010 with 5 NM separation service. WAM is also operating in Sydney for 3 NM separation service in TMA and for precision runway monitoring function.
BANGLADESH	Bangladesh has a plan to install four ADS-B ground stations to be installed at Dhaka, Cox's Bazar, Saidpur and Barisal Airports by 2019. ADS-B data will be integrated with new ATM system at Dhaka. Bangladesh has also a plan to install MLAT stations to provide surface movement control at HSIA, Dhaka as well as TMA coverage as a backup and complimentary RADAR coverage to the Dhaka MSSR.				Bangladesh is willing to share ADS-B data with neighbouring States to enhance the safety and surveillance capability in the sub-region.

State/ Administration	ADS-B Ground Infrastructure and ATC System readiness or Implementation plan	Date of issue/ effectiveness date of equipage mandate	Mandated Airspace and/or ATS-routes	Intended separation criteria to be applied	Remarks
CAMBODIA	3 ADS-B ground stations installed at Phnom Penh, Siem Reap and Stung Treng City since 2011 and able to provide full surveillance coverage for Phnom Penh FIR. Cambodia is willing to share data with others.				
CHINA	5 UAT ADS-B stations used for flight training at CAFUC to be upgraded to support 1090ES by 2017. 308 ADS-B stations nationwide will deployed as 1st phase by the end of 2018. 1 ADS-B station operational in Sanya FIR since 2008. Sanya ATC system ready since July 2009 to support L642 & M771. Additional 4 ground stations deployed in 2015. Chengdu-Jiuzhai project finished in 2008 with 2 ADS-B stations Chengdu - Lhasa route surveillance project completed with 7 ADS-B stations using 1090ES since 2010. Trials operated from May 2011. 9 ADS-B stations deployed on the routes H15 and Z1 in 2015 1 ADS-B station deployed on the route B345 in 2017.	NOTAM issued on ADS-B trial operation			
HONG KONG CHINA	A larger-scale A-SMGCS covering the whole Hong Kong International Airport put into operational use in April 2009. Data collection/ analysis on aircraft ADS-B equipage in Hong Kong airspace conducted on quarterly basis since 2004. ADS-B trial using a dedicated ADS-B system completed in 2007.	AIP supplement issued on 29 Aug 2014 with 8 Dec 2016 as effective date.	HKFIR at or above FL290	5NM surveillance separation	Adopt phased approach to gradually extend ADS-B coverage into the Air Traffic Management System covering the HKFIR by end 2017.

State/ Administration	ADS-B Ground Infrastructure and ATC System readiness or Implementation plan	Date of issue/ effectiveness date of equipage mandate	Mandated Airspace and/or ATS-routes	Intended separation criteria to be applied	Remarks
	ADS-B out operations over PBN routes L642 and M771 at or above FL 290 within HK FIR was effective in December 2013 and within HK FIR at or above FL 290 is planned for December 2016. ADS-B ground station infrastructure completed in 2013. ADS-B signal provided by Mainland China to cover southern part of Hong Kong FIR commenced in 2010 and will be put in operation use after commissioning of the new ATMS planned for November 2016.				
MACAO, CHINA	Mode S MSSR coverage available for monitoring purposes.				Airspace – ATZ only
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	ADS-B has been used as back-up surveillance of SSR since 2008.				
FIJI ISLANDS	ADS- B /multilateration ground stations installed. Situations awareness service provided in 2013. BY EMAIL	ADS-B mandate commencing form 31st December 2013			
FRANCE ***(French Polynesia)***	ATM system is ready for ADS-B sensors/Installation of 5 first GS expected at beginning of 2017. 2nd stage with implementation of 7 GS and associated VHF coverage.			5 NM for airspace under coverage.	
INDIA	ASMGCS (SMR + Multilat) is operational at Delhi, Mumbai, Chennai, Kolkata, Bangalore and Hyderabad Airports. ASMGCS is also being installed at 05 more international airports. ADS-B Ground Stations were installed at 21 locations across continental airspace and including	AIP supplement issued on 17th April 2014 with effective date of implementation from 29th May 2014.			ADS-B in India to provide redundancy for radar and filling the surveillance gaps. ADS-B data trial operations commenced in 2015 in both

State/ Administration	ADS-B Ground Infrastructure and ATC System readiness or Implementation plan	Date of issue/ effectiveness date of equipage mandate	Mandated Airspace and/or ATS-routes	Intended separation criteria to be applied	Remarks
	Oceanic airspace at Port Blair. Procurement of 10 more ADS-B Ground stations is under consideration in 2016. ATM automation systems at 22 ATC Centres are capable of processing ADS-B data and provide the information on Display.				Non-radar and radar environment, in En-route & Terminal phases of flight for ATC purposes. AIP SUP 18 of 2014 issued
INDONESIA	30 Ground Station successfully installed. An additional 7 locations are planned for Papua region. ADS-B data sharing with Australia and Singapore.	24 July 2014 AIP Supplement No. 10/14 for using ADS-B for situation awareness effective from 18 Sep. 2014. 25 June 2015 AIP Supplement 08/15 on ADS-B Implementation (Tier-1) published with effective date on 25 June 2015.	Mandate from January 2018 for Class A airspace from FL290 to FL460	Intended to use for 5 NM separation	
JAPAN	Multilateration Systems for surface monitoring have been implemented at eight airports PRM (WAM) has been implemented at Narita Airport. En-route WAM system is manufacturing and will be put into operation in FY2018 Plan to evaluate accuracy of ADS-B information under RAD condition.				
LAO PDR.	2 ADS-B ground stations were installed in Vientiane and Luangprabang Int'l Airport in 2015 and the ADS-B data is fused with MSSR data target in the ATM Automation system. 3 additional ADS-B ground stations (DO-260B compliant) will be				

State/ Administration	ADS-B Ground Infrastructure and ATC System readiness or Implementation plan	Date of issue/ effectiveness date of equipage mandate	Mandated Airspace and/or ATS-routes	Intended separation criteria to be applied	Remarks
	completed the installation at existing MSSR sites (Xiengkhouang, Savannakhet and Champasack) by 2016 to Q1 of 2017 to enhance the full ADS-B coverage of Lao FIR.				
MALAYSIA	Malaysia installing two (2) ADS-B ground stations in Genting Highland and Langkawi. The said ADS-B are expected to be commissioned by end of January 2017. Malaysia revised the plan to start mandate ADS-B requirement for implementation of ADS-B service for exclusive airspace/route without radar coverage within KL FIR by the end 2022. Specific Routes for ADS-B Implementation Plan: P574, N571, L510, P628, L645 & P627.	Revised Plan to issue mandate with target effective date by end of 2022.		ICAO approved surveillance separation.	
MALDIVES	4 ADS-B stations installed in Nov. 2012 (2 at Male' Ibrahim Nasir Intl Airport, 1 at Kulhudhuffushi Island in the North and 1 at Fuah Mulah Island in the South to cover 95% of the FIR at/above FL290. Maldives' ADS-B is integrated with the ATM system (in November 2013), and under observation prior to commencing trials. Maldives has planned to share ADS-B data with its adjacent FIRs. Updated by email				Seaplane in Maldives equipped with ADS-B for AOC purpose. These seaplanes have ADS-B IN functions as well.
MONGOLIA	Ten ADS-B ground stations for combination SSR and filled the surveillance gaps implemented in 2015 and integrated with ATM system and trial operation in early 2016.				

State/ Administration	ADS-B Ground Infrastructure and ATC System readiness or Implementation plan	Date of issue/ effectiveness date of equipage mandate	Mandated Airspace and/or ATS-routes	Intended separation criteria to be applied	Remarks
MYANMAR	ADS-B ground stations to be installed at Sittwe, Co Co Island by end of 2014 as 1st phase Yango , Lashio and Myeik -2015 as 2nd phase; Kengteng, Myitkyina in 2016. Completion of integration to Euro Cat. C. in 2014. Agreed to share ADS-B data with India, agreement on sharing being negotiated.				Supplement radar and fill the gaps to improve safety and efficiency ADS-C/CPDLC integrated in Yangon ACC since 2010.
NEPAL	ADS-B feasibility study conducted in 2007.				
NEW CALEDONIA	Three ADS-B ground stations commissioned in 2010 to cover international traffic at La tontouta airport serving Tontouta ACC & APP. It is used for Situation awareness and SAR.				
NEW ZEALAND	MLAT and ADS-B data is being used from the WAM system centred in the Queenstown area to provide surveillance coverage and surveillance separation (5 NM) over the southern half of the South Island of New Zealand. MLAT data from the Auckland MLAT system is used to support surface movement control at NZAA (Auckland). The New Zealand Navigation and Airspace and Air Navigation Plan "New Southern SKY" was issued in May 2014 34 ADS-B ground stations have been installed.	New Zealand has plans to introduce ADS-B OUT mandates as follows: ADS-B OUT equipment requirement for all aircraft operating in controlled airspace above FL 245 from 1 January 2019 ADS-B OUT equipment requirement for all aircraft operating in controlled airspace from 1 January 2022. A forward fit requirement for ADS-B equipage on all newly registered aircraft in 2017. The Rule will not specify particular		5 NM surveillance separation in en-route controlled airspace, and 3NM surveillance separation in terminal controlled airspace – where surveilled.	

State/ Administration	ADS-B Ground Infrastructure and ATC System readiness or Implementation plan	Date of issue/ effectiveness date of equipage mandate	Mandated Airspace and/or ATS-routes	Intended separation criteria to be applied	Remarks
		Technical Standing Orders (TSO), or transponder GNSS receiver models for position input into ADS-B.			
PAKISTAN	Tender for procurement of 5 ADS-B stations issued to be installed at Pasni, Lakpass, Rojhan, Dalbandin and Laram-top. Contract expected to be finalized by end of 2016. These stations will be DO260B compliant and operational by end of 2017.				
PAPUA NEW GUINEA	Initially 8 ADS-B sites to be deployed across PNG to provide seamless coverage above FL285. First site to be installed May/June 2016, with remainder to be completed between May-July 2017. Up to an additional 7 sites to be rolled-out in the 2018/19 timeframe. Site location will be dependent on infrastructure, security and an analysis of Phase 1 site performance. In late 2016, PNGASL (ANSP) will be implementing a replacement ATM automation system. The system will support fusion of ADS-B and RADAR data. From 2017 onwards, PNGASL will be looking to share ADS-B data with Indonesia and Australia.	An ADS-B mandate is on CASA PNG roadmap, however legislation yet to be developed. The Australian mandates will largely drive equipage for overflights (e.g. East-Asia to Australia/South Pacific). Expectation is that PNGASL (the ANSP) will lead development of ADS-B mandate framework. Initial steps may include mandate above F245 – but will depend on performance of Phase 1 ADS-B deployment. Country-wide mandate not envisaged before 2021/22.	None	**Air Traffic Control** <u>Approach/Arrivals</u> 2017 – 5NM 2018 – 3NM (approach) <u>Upper Airspace (>FL245)</u> 2017/18 – Situational awareness. 2018/19 – 5NM Note: Implementation dictated by training requirements and new ATM system transition priorities. **Flight Service** <u>Directed Traffic (FIS)</u> 2017 – Situational awareness	

State/ Administration	ADS-B Ground Infrastructure and ATC System readiness or Implementation plan	Date of issue/ effectiveness date of equipage mandate	Mandated Airspace and/or ATS-routes	Intended separation criteria to be applied	Remarks
PHILIPPINES	1. Manila ATM Center ADS B ground station to be completed in Q3 2017 and used for assessment/training purposes in Q2 2018 2. Bataraza, Palawan (Data sharing with Singapore , scheduled for completion in December 2017. 3. Phase I Projects to be completed in 2018: a. Palawan b. Iba, Zambales c. Bolinao, Pangasinan 3. Phase 2 Projects to be completed in 2019: a. Puerto Princesa, Palawan b. Jomalig Island c. Tambler Airport, GenSan d. Bojeador, Ilocos Norte				This should be completed and will be available on Q3 2017 for assessment / training purposes These four (4) ADS B ground stations will be completed in 2017. These four (4) ADS B ground stations will be completed in 2018.
REPUBLIC OF KOREA	ADS-B implemented 2008 for SMC in Incheon International Airport. ROK is developing ADS-B system since 2010 through R&D group. The testbed at Gimpor Airport supporting both 1090ES and UAT, undergoing operational testing (2013-16). At Incheon Intl Airport, promotion of surface surveillance (2014-17) In 2nd phase from 2015 to 2016, ADS-B ground stations will supplement to the radar in the terminal area and fill up the gap between radar coverage. The last phase from 2017 to 2020, ADS-B will be deployed for entire Incheon FIR.				
SINGAPORE	The airport MLAT system was installed in 2007 and "far-range" ADS-B sensor was installed in 2009. ATC system has been processing ADS-B data since 2013.	AIC was issued on 28 December 2010/effective from 12 Dec.2013. AIP supplement published in Nov 2013 to remind operators of ADS-B exclusive airspace	L642 and M771. At and above FL290. Also affect the following ATS routes N891, M753,	40nm on ATS routes L642, L644, M753, M771, N891 and N892 30nm implemented on 26th June 2014 on ATS routes L642,	Safety case was completed end of November. 2013.

State/ Administration	ADS-B Ground Infrastructure and ATC System readiness or Implementation plan	Date of issue/ effectiveness date of equipage mandate	Mandated Airspace and/or ATS-routes	Intended separation criteria to be applied	Remarks
		implementation. AIP updated in Jan 2015 to remove the need for ops approval and to include the FAA standard as an additional accepted means to meet the equipage requirements.	L644 & N892	M753, M771 and N892; 20nm implemented on 10 Nov 2016 on ATS routes L642, M771, M753 and N892	
SRI LANKA	Total of 5 ADS-B Ground Receiving Stations and 01 Central Processing Station have been installed in March 2017. ADS-B Data is fused with Multi-sensor Data, including MSSR and ADS-C in the ATM system at Colombo Area Control Centre and will soon be ready for trial operations. New ATM system planned to be operational at Approach Control Centre in 2018 will also be capable of fusing Multi-sensor Data, including MSSR and PSR	Revised Date of Equipage mandate would be 31st Dec 2020. Ref: AIC A02/16	All ATS Routes within Colombo TMA	Initially 5 Nm within Approach Radar Coverage, 8 Nm within Area Radar Coverage & Procedural Separation minima outside Radar Coverage.	On completion of a safety assessment, use of ADS-B alone for ATC separation purposes.
THAILAND	MLAT has been in operation at VTBS since 2006 and was installed at VTBD in 2016 with the expectation to be operational in late 2017. At VTCC and VTSP, it is planned that MLAT will be installed starting in 2018. 6 ADS-B ground stations (DO-260B compliant) have been installed covering airspace at and above 20,000 feet primarily for research and development purpose and are being undergone the certification process by the Civil Aviation Authority of Thailand (CAAT) with a target date by the end of 2017. Additional ground stations capable of dual functions, i.e. ADS-B and WAM are planned to be installed	Aircraft equipage mandate planned to be issued in 2020 with the expected target effective date in 2025.			

State/ Administration	ADS-B Ground Infrastructure and ATC System readiness or Implementation plan	Date of issue/ effectiveness date of equipage mandate	Mandated Airspace and/or ATS-routes	Intended separation criteria to be applied	Remarks
	starting from late 2017 aiming at providing coverage from 13,000 to 45,000 feet for en-route operation and from 2,000 to 11,000 feet for TMA operation at 8 airports. Multiple surveillance sensor data, including SSR, ADS-B, and WAM, will be integrated into the new ATM systems which are expected to be operational in late 2018. Legal assessment regarding ADS-B data sharing with neighboring States is being conducted.				
TONGA	Trial planned for 2017				
UNITED STATES	As of 1 April 2016, the "baseline" set of Service Volumes planned by the FAA in 2007 are operational, using data from over 600 radio sites installed by Harris. Since 2007, FAA has planned and funded activities to activate additional Service Volumes that Harris will service using additional radio sites; all but 16 of these radio sites have been installed and are operational as of 1 April 2016. As of 1 April 2016, 135 of the 226 U.S. air traffic control facilities are using ADS-B for ATC separation; all En Route Centers and major Terminal facilities are using ADS-B for ATC separation; all remaining facilities are planned to be using ADS-B by 2019.	The U.S. ADS-B Out rule (14 CFR 91.225 and 14 CFR 91.227) was issued in May 2010 and specifies that the ADS-B Out mandate is effective on 1 January 2020.	Class A, B, and C airspace, plus Class E airspace above 10,000 ft MSL. See 14 CFR 91.225 for details.	The U.S. is using both terminal and en route (5nm) separation criteria, depending on the specific airspace and available surveillance information. Terminal separation includes the following separation criteria: - 3nm - 2.5nm - independent parallel approach operations down to 4300 ft centreline separation - dependent parallel approach operations down to 2500 ft centreline separation (currently 1.5 nm diagonal distance).	

State/ Administration	ADS-B Ground Infrastructure and ATC System readiness or Implementation plan	Date of issue/ effectiveness date of equipage mandate	Mandated Airspace and/or ATS-routes	Intended separation criteria to be applied	Remarks
VIET NAM	Two phases ADS-B implementation plan adopted. Phase 1 implemented in March 2013. Phase 2 commenced in 2015 for whole lower and upper Hanoi FIR and 2018 for Ho Chi Minh FIR	AIC issued on 20 June 2013/ADS-B mandating effective from 12 December 2013 in Ho Chi Minh FIR.	M771, L642, L625, N892, M765, M768, N500 and L628 At/above FL290.		Operators required to have operational approval from State of aircraft registry.

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APAC ANP, VOLUME I

PART V – METEOROLOGY (MET)

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TABLE MET I-1
STATE VOLCANO OBSERVATORIES

Explanation of the Table

Column

1 Name of the State responsible for the provision of a volcano observatory

2 Name of the volcano observatory

State	Volcano observatory
1	**2**
China	Heilongjiang Wudalianchi Volcano Observatory
China	Jilin Changbai Mountain Tianchi Volcano Observatory
Japan	Fukuoka Regional Volcanic Observation and ~~Information~~Warning Center, Japan Meteorological Agency
Japan	Kagoshima Local Meteorological Office, Japan Meteorological Agency
Japan	Sapporo Regional Volcanic Observation and ~~Information~~Warning Center, Japan Meteorological Agency
Japan	Sendai Regional Volcanic Observation and ~~Information~~Warning Center, Japan Meteorological Agency
Japan	~~Tokyo~~ Volcanic Observation and ~~Information~~Warning Center, Japan Meteorological Agency
India	TBD
Indonesia	~~Directorate of~~ Center for Volcanology and Geological Hazard Mitigation (~~D~~CVGHM)
New Zealand	Wairakei Research Centre Institute of Geological and Nuclear Sciences
Papua New Guinea	Rabaul

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PART V – METEOROLOGY (MET)

TABLE MET II-2 - AERODROME METEOROLOGICAL OFFICES

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State	Aerodrome (listed in Tables AOP) where meteorological service is to be provided			Responsible aerodrome meteorological office		Observations and forecasts to be provided					METAR/SPECI and TAF availability
	Name	ICAO Location Indicator	Use	Name	ICAO Location Indicator	METAR/SPECI	State of the runway	Trend forecast	TAF	Temperature Tx/Tn	
1	2	3	4	5	6	7	8	9	10	11	12
….											
Philippines	DAVAO/FRANCISCO BANGOY INTL	RPMD	RNS	MANILA/NINOY AQUINO INTL	RPLL	Y		N	T		P
	DIOSDADO MACAPAGAL, PAMPANGA	RPLC	RS	MANILA/NINOY AQUINO INTL	RPLL	Y		Y	~~T~~ X		F
	LAOAG, LAOAG INTL	RPLI	AS	MANILA/NINOY AQUINO INTL	RPLL	Y		N	T		P
	LAPU-LAPU/MACTAN INTL	RPVM	RS	MANILA/NINOY AQUINO INTL	RPLL	Y		Y	X		F
	MANILA/NINOY AQUINO INTL	RPLL	RS	MANILA/NINOY AQUINO INTL	RPLL	Y		Y	X		F
	SUBIC BAY,SUBIC BAY INTL	RPLB	ANS	MANILA/NINOY AQUINO INTL	RPLL	Y		Y	T		P
	TAMBLER,GEN. SANTOS,SOUTH COTABATO	RPMR	RNS	MANILA/NINOY AQUINO INTL	RPLL	Y		N	T		P
	ZAMBOANGA INTL	RPMZ	RNS	MANILA/NINOY AQUINO INTL	RPLL	Y		N	T		P
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APAC ANP, VOLUME I

PART V – METEOROLOGY (MET)

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2. GENERAL REGIONAL REQUIREMENTS

World area forecast system (WAFS) and meteorological offices

2.1 In the Asia and Pacific Regions, WAFC **London and Washington** have been designated as the centres for the operation of the ~~aeronautical fixed service satellite distribution system, the~~ Internet-based Secure Aviation Data Information Service (SADIS) and the WAFS Internet File Service (~~SADIS 2G, Secure SADIS FTP and~~ WIFS), respectively~~)~~. The status of implementation of SADIS and WIFS by States in the Asia and Pacific Regions is detailed in Volume III.

2.2 In the Asia and Pacific Regions, WAFS products in digital form should be disseminated by WAFC **London** using ~~the~~ SADIS ~~2G satellite broadcast and the Secure SADIS FTP service~~ and by WAFC **Washington** using WIFS.

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VOLUME II

PART V – METEOROLOGY (MET)

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2. GENERAL REGIONAL REQUIREMENTS

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Meteorological observations and reports

2.2 In the Asia and Pacific Regions, routine observations, issued as a METAR, should be made throughout the 24 hours of each day at intervals of one hour or, for RS and AS designated aerodromes[1] if so determined by regional air navigation agreement, at intervals of one half-hour at aerodromes as indicated in **Table MET II-2**. For aerodromes included on the ~~VHF~~ HF VOLMET broadcast as indicated in **Table MET II-3**, routine observations, issued as METAR, should be made throughout the 24 hours of each day.

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Requirements for and use of communications

2.8 Operational meteorological information prepared as METAR, SPECI and TAF for aerodromes indicated in **Table MET II-2**, and SIGMET and AIRMET messages prepared for flight information regions or control areas indicated in **Table MET II-1**, should be disseminated to the international OPMET databanks designated for the Asia and Pacific Regions (namely Bangkok, Brisbane, Nadi, Singapore and Tokyo) and to the centres designated for the operation of the aeronautical fixed service ~~satellite distribution system (SADIS 2G) and the~~ Internet-based services, ~~(Secure~~ SADIS ~~FTP)~~ and WIFS, in the Asia and Pacific Regions.

2.9 SIGMET messages should be disseminated to other meteorological offices in the Asia and Pacific Regions in accordance with the regional OPMET bulletin exchange scheme.

2.10 Special air-reports should be disseminated to WAFCs without delay. Special air-reports of pre-eruption volcanic activity should also be sent to the VAAC. Special air-reports, received at the meteorological watch office, that are deemed to not warrant issuance of a SIGMET, shall be disseminated in the same way as SIGMET messages~~that do not warrant the issuance of a SIGMET should be disseminated to other meteorological offices in the Asia and Pacific Regions in accordance with the regional OPMET bulletin exchange scheme~~.

2.11 In the Asia and Pacific Regions, meteorological information for use by aircraft in flight should be supplied through VOLMET broadcasts.

~~2.12 In the Asia and Pacific Regions, the aerodromes for which METAR and SPECI are to be included in VOLMET broadcasts, the sequence in which they are to be transmitted and the broadcast time, is indicated in **Table MET II-3**.~~

3. SPECIFIC REGIONAL REQUIREMENTS

Service for operators and flight crew members.

3.1 In the Asia and Pacific Regions, ~~scheduled~~ VOLMET broadcasts and D-VOLMET uplink to aircraft in flight should include METAR and SPECI, together with trend forecasts where available ~~should contain TAF and SIGMET~~.

3.2 In the Asia and Pacific Regions, HF VOLMET and D-VOLMET should also contain SIGMET and TAF for at least those aerodromes defined in Table MET II-3~~METAR, SPECI and TAF should be available for uplink to aircraft in flight via D-VOLMET~~.

[1] Refer to Table AOP II-1, Explanation of the table

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TABLE MET II-2 - AERODROME METEOROLOGICAL OFFICES

EXPLANATION OF THE TABLE

Column

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7 Requirement for METAR/SPECI from the aerodrome concerned, where:
~~Y – Yes, required~~ F – Full availability: issued throughout the 24-hour period
P – Partial availability: not issued for the entire 24-hour period
N – No, not required

….

10 Requirement for TAF from the aerodrome concerned, where
T6 – Requirement for 12/18/24-hour validity aerodrome forecasts in TAF code (12/18/24H) issued 6-hourly
T3 – Requirement for 12/18/24-hour validity aerodrome forecasts in TAF code (12/18/24H) issued 3-hourly
X6 – Requirement for 30-hour validity aerodrome forecasts in TAF code (30H) issued 6-hourly
X3 – Requirement for 30-hour validity aerodrome forecasts in TAF code (30H) issued 3-hourly
N – No, not required

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12 Availability of ~~METAR/SPECI and~~ TAF from the aerodrome concerned, where:
F – Full availability: ~~OPMET~~ TAF ~~information as listed~~ issued ~~for the aerodrome all~~ throughout the 24-hour period
P – Partial availability: TAF ~~OPMET information as listed~~ not issued ~~for the aerodrome~~ for the entire 24-hour period

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ATM/AIM/SAR Deficiencies List (Updated 14 September 2017)

	Deficiencies			**Corrective Action**		
States/facilities	**Description**	**Date first reported**	**Remarks**	**Executing body**	**Target date**	**Priority ****
	WGS-84 Requirements of Paragraph 3.7.1 of Annex 15					
Afghanistan	WGS-84 - Not implemented	24/6/2014		Afghanistan	TBD	A
Bangladesh	WGS-84 - Not implemented	24/6/2014		Bangladesh	TBD	A
Bhutan	WGS-84 - Not implemented	2/7/1999	Data conversion completed, but not published	Bhutan	TBD	A
Brunei Darussalam	WGS-84 - Not implemented	24/6/2014		Brunei Darussalam	TBD	A
Cook Islands	WGS-84 - Not implemented	24/6/2014		Cook Islands	TBD	A
~~Kiribati~~	~~WGS-84 - Not implemented~~	~~-~~	~~-~~	~~Kiribati~~	~~TBD~~	~~A~~
Marshall Islands	WGS-84 - Not implemented	24/6/2014		Marshall Islands	TBD	A
Micronesia	WGS-84 - Not implemented	24/6/2014		Micronesia	TBD	A
Nauru	WGS-84 - Not implemented		Conferring with consultant	Nauru	TBD	A
Palau	WGS-84 - Not implemented	24/6/2014		Palau	TBD	A
Samoa	WGS-84 - Not implemented	24/6/2014		Samoa	TBD	A
Thailand	WGS-84 - Not implemented	24/6/2014		Thailand	TBD	A
Vanuatu	WGS-84 – Not implemented	2/7/1999	Implemented at main airports	Vanuatu	1999	A

	AIP Format Requirements of Chapter 4 of Annex 15					
~~Cook Islands~~	~~AIP Format - Not implemented~~	~~7/7/99~~	~~ATM/AIS/SAR/G/16 (June 2006) updated - AIP COOK ISLANDS in new format in progress with assistance of New Zealand~~	~~Cook Islands~~		~~A~~
Kiribati	AIP Format - Not implemented	7/7/99	ATM/AIS/SAR/SG/18 (June 2009) was advised AIP in draft stage	Kiribati		A
Nauru	AIP Format - Not implemented	7/7/99	ATM/AIS/SAR/SG/18 (June 2008) was advised work soon to start	Nauru		A
~~Papua New Guinea~~	~~AIP Format - Not implemented~~	~~7/7/99~~		~~Papua New Guinea~~	~~TBA~~	~~A~~
	AIS Quality Management System Requirements of Paragraph 3.2.1 of Annex 15 Quality Management System - Not implemented					
Afghanistan	AIS Quality Management System - Not implemented	24/6/2014		Afghanistan	TBD	A
Bangladesh	AIS Quality Management System - Not implemented	24/6/2014		Bangladesh	TBD	A
Bhutan	AIS Quality Management System - Not implemented	24/6/2014		Bhutan	TBD	A
Brunei Darussalam	AIS Quality Management System - Not implemented	24/6/2014		Brunei Darussalam	TBD	A
Cambodia	AIS Quality Management System - Not implemented	24/6/2014		Cambodia	TBD	A
Cook Islands	AIS Quality Management System - Not implemented	24/6/2014		Cook Islands	TBD	A
Indonesia	AIS Quality Management System - Not implemented	24/6/2014		Indonesia	TBD	A

Kiribati	AIS Quality Management System - Not implemented	24/6/2014		Kiribati	TBD	A
Lao PDR	AIS Quality Management System - Not implemented	24/6/2014		Lao PDR	TBD	A
Maldives	AIS Quality Management System - Not implemented	24/6/2014		Maldives	TBD	A
Marshall Islands	AIS Quality Management System - Not implemented	24/6/2014		Marshall Islands	TBD	A
Micronesia	AIS Quality Management System - Not implemented	24/6/2014		Micronesia	TBD	A
Myanmar	AIS Quality Management System - Not implemented	9/6/2016		Myanmar	TBD	A
Nauru	AIS Quality Management System - Not implemented	24/6/2014		Nauru	TBD	A
Nepal	AIS Quality Management System - Not implemented	24/6/2014		Nepal	TBD	A
Palau	AIS Quality Management System - Not implemented	24/6/2014		Palau	TBD	A
~~Papua New Guinea~~	~~AIS Quality Management System - Not implemented~~	~~24/6/2014~~		~~Papua New Guinea~~	~~TBD~~	~~A~~
Philippines	AIS Quality Management System - Not implemented	24/6/2014		Philippines	TBD	A
Samoa	AIS Quality Management System - Not implemented	24/6/2014		Samoa	TBD	A
Solomon Islands	AIS Quality Management System - Not implemented	24/6/2014		Solomon Islands	TBD	A
Sri Lanka	AIS Quality Management System - Not implemented	9/6/2016		Sri Lanka	TBD	A

Thailand	AIS Quality Management System - Not implemented	24/6/2014		Thailand	TBD	A
Timor Leste	AIS Quality Management System - Not implemented	24/6/2014		Timor Leste	TBD	A
Vanuatu	AIS Quality Management System - Not implemented	24/6/2014		Vanuatu	TBD	A
	Airspace Classification Requirements of Paragraph 2.6 of Annex 11					
China	Airspace Classification - Not implemented	7/7/99	Difference to Annex 11 is published in AIP, China.	China	APANPIRG/19 updated, implementation planned by end 2010.	A
~~Kiribati~~	~~Airspace Classification - Not implemented~~	~~7/7/99~~	~~-~~	~~Kiribati~~	~~TBD~~	~~A~~
Nauru	Airspace Classification - Not implemented	7/7/99		Nauru	TBD	A
~~Papua New Guinea~~	~~Airspace Classification - Not implemented~~	~~7/7/99~~	~~-~~	~~Papua New Guinea~~	~~Project in place~~	~~A~~
Solomon Islands	Airspace Classification - Not implemented	7/7/99		Solomon Islands	TBD	A
	SAR capability: Requirements of Annex 12					
Afghanistan	SAR Capability Matrix	6/07/2015	SAR Capability (no data)	Afghanistan	2016	U
Bhutan	SAR Capability Matrix	6/07/2015	SAR Capability (no data)	Bhutan	2016	U
Cambodia	SAR Capability Matrix	6/07/2015	SAR Capability (14 of 20)	Cambodia	2016	U
Cook Islands	SAR Capability Matrix	6/07/2015	SAR Capability (19 of 20)	Cook Islands	2016	U
Cook Islands	Annex 12 requirements not implemented.	31/1/95	Cook Islands - implement Annex 12 requirements and co-ordinate	Cook Islands	2009. SAR agreement with New Zealand	U

	No agreements with adjacent States.		LOA with adjacent States ICAO - assist to develop SAR capability and to co-ordinate with adjacent States		completed 2007.	
DPR Korea	SAR Capability Matrix	6/07/2015	SAR Capability (15 of 20 elements non- compliant)	DPR Korea	2016	U
Fiji	SAR Capability Matrix	6/07/2015	SAR Capability (13 of 20 elements non- compliant)	Fiji	2016	U
Kiribati	SAR Capability Matrix	6/07/2015	SAR Capability (no data)	Kiribati	2016	U
Lao PDR	SAR Capability Matrix	6/07/2015	SAR Capability (10 of 20 elements non- compliant)	Lao PDR	2016	U
Macau, China	SAR Capability Matrix	6/07/2015	SAR Capability (10 of 20 elements non- compliant)	Macau, China	2016	U
Maldives	SAR Capability Matrix	6/07/2015	SAR Capability (9 of 20 elements non- compliant)	Maldives	2016	U
~~Maldives~~	~~Annex 12 requirements not implemented. No agreements with adjacent States.~~	~~24/4/97~~	~~Maldives - implement Annex 12 requirements and co-ordinate LOA with adjacent States ICAO - assist to develop SAR capability and to co-ordinate with adjacent States. SAR services and facilities provided (details to be confirmed). SAR agreements with neighbouring States under development~~	~~Maldives~~	~~2009~~	~~U~~
Marshall Islands	SAR Capability Matrix	6/07/2015	SAR Capability (no data elements non- compliant)	Marshall Islands	2016	U
Micronesia	SAR Capability Matrix	6/07/2015	SAR Capability (20 of 20 elements non- compliant)	Micronesia	2016	U
Myanmar	SAR Capability Matrix	6/07/2015	SAR Capability (17 of 20 elements non- compliant)	Myanmar	2016	U
Nauru	SAR Capability Matrix	6/07/2015	SAR Capability (no data elements non- compliant)	Nauru	2016	U

Nepal	SAR Capability Matrix	6/07/2015	SAR Capability (12 of 20 elements non- compliant)	Nepal	2016	U
~~New Caledonia~~	~~SAR Capability Matrix~~	~~6/07/2015~~	~~SAR Capability (8 of 20 elements non- compliant)~~	~~New Caledonia~~	~~2016~~	~~U~~
Palau	SAR Capability Matrix	6/07/2015	SAR Capability (no data)	Palau	2016	U
Papua New Guinea	SAR Capability Matrix	6/07/2015	SAR Capability (11 of 20 elements non- compliant)	Papua New Guinea	2016	U
Philippines	SAR Capability Matrix	6/07/2015	SAR Capability (12 of 20 elements non- compliant)	Philippines	2016	U
Samoa	SAR Capability Matrix	6/07/2015	SAR Capability (no data elements non- compliant)	Samoa	2016	U
Solomon Islands	SAR Capability Matrix	6/07/2015	SAR Capability (no data)	Solomon Islands	2016	U
Timor Leste	SAR Capability Matrix	6/07/2015	SAR Capability (no data)	Timor Leste	2016	U
Tonga	SAR Capability Matrix	6/07/2015	SAR Capability (18 of 20 elements non- compliant)	Tonga	2016	U
Vanuatu	SAR Capability Matrix	6/07/2015	SAR Capability (no data)	Vanuatu	2016	U
	Non Provision of Safety-related Data Requirement of Paragraph 3.3.5.1 of Annex 11 (provision of data for monitoring the height-keeping performance of aircraft)					
Bangladesh	Annex 11 requirement not implemented	13/07/2017	Conclusion 16/6 – Non Provision of safety related data by States, established by RASMAG/22 - Failure to submit 2016 TSD - Failure to provide sufficient feedback regarding RVSM approval data	Bangladesh	RASMAG23	A

India	Annex 11 requirement not implemented.	13/07/2017	~~Established by RASMAG/20 failure to provide RVSM approvals summary data~~ Conclusion 16/6 – Non Provision of safety related data by States, established by RASMAG/22 - Failure to provide sufficient feedback regarding RVSM approval data	India	RASMAG23	U
Lao PDR	Annex 11 requirement not implemented	13/07/2017	Conclusion 16/6 – Non Provision of safety related data by States, established by RASMAG/22 - Failure to submit 2016 TSD - Failure to provide RVSM approvals update and RVSM annual snapshot	Lao PDR	RASMAG23	A
Maldives	Annex 11 requirement not implemented	13/07/2017	Conclusion 16/6 – Non Provision of safety related data by States, established by RASMAG/22 - Failure to submit LHD reports and 2016 TSD	Maldives	RASMAG23	A
	~~Failure to provide RVSM Approval Data to the RMA~~ State Responsibility to comply with the Annex 6 Height-Keeping Monitoring Requirement Annex 6 Part I Section 7.2.7 and Part II Section 2.5.2.7					
~~India~~	~~Annex 6 paragraph 7.2.6~~	~~RASMAG/20 and 21 and 22~~	~~Established by RASMAG/21 – Relevant APANPIRG Conclusions: *19/15 (Enhanced communications between States and RVSM RMAs); 23/15 (Long Term Non RVSM Approved Aircraft);* and *23/16 (Safety Monitoring Data Provision).*~~	~~India~~		~~U~~

Bangladesh	Requirements of Annex 6 paragraph 7.2.7 regarding the monitoring burden of more than 50% airframes to be monitored	RASMAG/22	Bangladesh was also identified for a deficiency at RASMAG/20	Bangladesh	RASMAG23	A
Indonesia	Requirements of Annex 6 paragraph 7.2.7 regarding the monitoring burden of more than 50% airframes to be monitored	RASMAG/22		Indonesia	RASMAG23	A
Pakistan	Requirements of Annex 6 paragraph 7.2.7 regarding the monitoring burden of more than 50% airframes to be monitored	RASMAG/22		Pakistan	RASMAG23	A
	Data Link Performance Monitoring and Analysis Requirements of Paragraph 2.27.5 of Annex 11 not met.					
~~China~~	~~Post-implementation monitoring not implemented~~	~~29/5/2015~~	~~Problem Reports not provided to CRA~~	~~China~~	~~TBD~~	~~A~~
India	Post-implementation monitoring not implemented	13/07/2017	Performance monitoring and analysis was reported for the Chennai FIR, but was not reported for the Kolkata and Mumbai FIRs.	India	TBD	A
Indonesia	Post-implementation monitoring not implemented	29/5/2015	Problem Reports not provided to CRA. ~~Performance monitoring and analysis not reported to FIT.~~ Performance monitoring and analysis was conducted, but problem reports were not provided to the CRA.	Indonesia	TBD	A
Malaysia	Post-implementation monitoring not implemented	29/5/2015	Problem Reports not provided to CRA. Performance monitoring and analysis not reported to FIT.	Malaysia	TBD	A
Myanmar	Post-implementation monitoring not implemented	29/5/2015	Problem Reports not provided to CRA. Performance monitoring and analysis not reported to FIT.	Myanmar	TBD	A
Maldives	Post-implementation monitoring not implemented	29/5/2015	Problem Reports not provided to CRA. Performance monitoring and analysis not reported to FIT.	Maldives	TBD	A

Sri Lanka	Post-implementation monitoring not implemented	29/5/2015	Problem Reports not provided to CRA. ~~Performance monitoring and analysis not reported to FIT.~~ Problem reports were not provided to CRA, performance monitoring and analysis was not reported to FIT, but Sri Lanka was now registered with a competent CRA.Agreed by FIT-Asia/~~5~~ 6, endorsed by RASMAG/~~21~~ 22	Sri Lanka	~~TBD~~ Post Implementation Monitoring partially implemented. Data Link Reporting based on the SITA AIRCOM ATS-622 Traffic & Performance Report will be submitted on monthly basis from Sept 2017 onward. Data Link Performance Reports will be submitted to FIT with effect from Feb 2018. (Target date) (APANPIRG/28)	A
~~Viet Nam~~	~~Post-implementation monitoring not implemented~~	~~29/5/2015~~	~~Problem Reports not provided to CRA. Performance monitoring and analysis not reported to FIT.~~ Performance monitoring and analysis was not reported to FIT, but Viet Nam provided post-implementation monitoring report to ICAO APAC Office after the conclusion of FIT-Asia/6. Problem reports had been submitted to CRA.	~~Viet Nam~~	~~TBD~~	~~A~~

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14, Volume I	**Nepal** **Kathmandu International Airport**	**Runway/ taxiways**	**ICAO Mission of February 2008**	Provision of RESA in accordance with section 3.5 of ICAO Annex 14, Volume I.	RESA will be provided	Tribhuvan International airport/ CAAN	Estimated Implementation Date (Start of work): 06/08/2017 dated of completion 31/01/2019	U
				Insufficient runway strip, refer recommendations given in section 3.4 of Annex 14, Volume I.	Provide runway strip as per ICAO recommendations		Master Plan Review of TIA is in process from Intl. Consulting firm.	A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14, Volume I	**Maldives** **Male International Airport**	**Runway/ Taxiways**	**AGA Mission Report April 2008**	Insufficient runway strip.	Runway strip available	Maldives Airports Company Pvt Ltd	Runway strip of 150m for both sides is available Apron is still within the runway strip. New master plan work is in progress, new runway construction on-going, estimated date of completion: December 2018. Exemption granted by the State to Aerodrome Operator till December 2018.	U
				Provision of RESA in accordance with section 3.5 of ICAO Annex 14, Volume I.	RESA will be provided	Maldives Airports Company Pvt Ltd	RESA available for RWY36 end- 240m RESA available for RWY18 end- 55m These figures have been published in the AIP Exemption granted by the State to Aerodrome Operator till December 2018.	U
	~~**Gan International airport**~~	~~**Runway**~~	~~**AGA Mission Report**~~	~~Provision of RESA in accordance with section 3.5 of ICAO Annex 14, Volume I.~~	~~RESA will be provided~~	~~Addu International airport Pvt. Ltd.~~	RESA (90 m * 240 m) for both ends runway 28/10 provided. [CLOSED by APANPIRG/28]	A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
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Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14 Volume I	**India** **Chennai International Airport**	**Runway**	**AGA mission January 2009**	RESA not provided in accordance with Para 3.5 of Annex 14, Volume I requirements;	RESA will be provided	AAI	December 2012 RESA provided, however desired strength is yet to be provided.	U
				Runway strip is insufficient-300m strip width is not available for the full length of runway 07/25 in accordance with 3.4.3 of Annex 14, Volume I.	300m strip width for full length of runway 07/25 will be made available.	AAI	December 2013 Action initiated	A
Annex 14, Volume I	**Mumbai International Airport**	**Runway**	**AGA mission January 2009**	RESA not provided for R/W 09 and R/W 14 in accordance with Para 3.5 of ICAO Annex 14, Volume I;	RESA will be provided	MIAL	R/w-09 RESA provided R/w-14- June 2013	U
				Runway strip is insufficient-300m strip width is not available for the full length of runway 09/27 in accordance with 3.4.3 of Annex 14, Volume I	300m strip width for full length of runway 09/27 will be made available	MIAL	R/w 09/27- August 2013 R/w 14/32- June 2013	A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
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Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14 Volume I	**Cambodia** **Siem Reap International Airport**	**Runway**	**AGA mission of March 2009**	RESA not provided as per Para 3.5 of Annex 14, Volume I. ;	RESA will be provided		RESA provided. RESA improvement plan under consideration to satisfy Para's 3.587 to 3.5.10 of Annex 14.	U

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
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Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14 Volume I	**Bangladesh** **Hazrat Shahjalal International Airport, Dhaka**	**Runway/ Taxiway**	**ICAO mission April 2009**	Runway strip width insufficient(300m strip not available for the full length of runway);	runway strip in accordance with Annex 14, volume I will be provided	CAABD	Runway strip width 300m available for the full length of runway (mitigation measures for storm water drain on the western side strip under process. No obstructions on graded area)	A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
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Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14, Volume I	**Thailand** **Phuket International Airport**	**Runway**	**AGA mission of July 2009**	RESA to satisfy Section 3.5 of Annex 14, Volume I requirements;	RESA will be provided		Risk assessment study in process [DCA letter dated 9 April 2014)	U
				Runway strip width insufficient (300m runway strip for precision approach runways in accordance with Para 3.4.5 of Annex 14, Volume I;	300m runway strip width for full length of runway will be made available		Risk assessment study in process [DCA letter dated 9 April 2014)	A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
	Myanmar							
Annex 14 Volume I	**Yangon International Airport**	**Runway/ Taxiway**	**ICAO mission April 2010**	Runway shoulder higher than adjacent strip	Flush strip with adjacent runway shoulder	Department of Civil Aviation	October 2011	A
				Provision of enhanced taxiway centre line marking in accordance with standard in Para 5.2.8.11 of Annex 14, Volume I.	enhanced taxiway markings will be provided		DCA has planned to implement SMGCS. The system will start in 2012	A
				Provision of RESA in accordance with Section 3.5 of Annex 14, Volume I requirements;	RESA will be provided		March 2011	A
				Provisions of shoulders for taxiways	taxiway shoulders will be provided		Beginning of 2012	B
				Provision of road holding position signs at entrances to active runways	road holding position signs will be provided		October 2011	A
		Bird Hazard		Establishment of a national bird committee in accordance with APANPIRG Conclusion 18/1.	Establish National Bird Committee		DCA will establish National Bird committee.	B
Annex 14, Volume I	**Mandalay Airport**	**Runway/ Taxiway**	**April 2010**	Provision of RESA in accordance with Section 3.5 of Annex 14, Volume I requirements;	RESA will be provided	Department of Civil Aviation	Oct 2011	A
				Provision of enhanced taxiway centre line marking in accordance with standard in Para 5.2.8.11 of Annex 14, Volume I.	enhanced taxiway markings will be provided		DCA is reviewing the requirement for taxiway enhanced centerline marking	A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION

Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
				Provision of road holding position signs at entrances to active runways.	road holding position signs will be provided.		Oct 2011	A
Annex 14 Vol. I Amendment 6 ***§ 10.1*** ***§ 10.2***				A maintenance programme should be established to maintain facilities in a condition which does not impair safety of air navigation.	DCA establishes and implements producers to aerodrome operators meet national requirements for maintenance programme.		End of 2011	A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14 Volume I	**Fiji Islands** **Nadi International Airport**	**Runway/ Taxiway**	**ICAO mission June 2010**	~~Flush the strip with the adjacent runway shoulder~~	~~Flushed strip with adjacent runway shoulder~~	~~Civil Aviation Authority of Fiji~~	~~4th Quarter 2013~~ ACTION COMPLETED Runway shoulders have been flushed with the adjacent runway strip area. CLOSED by APANPIRG/28	A
				Provision of RESA in accordance with Section 3.5 of Annex 14, Volume I requirements;	RESA will be provided		~~3rd quarter 2012~~ ACTION TAKEN (PARTIALLY COMPLETED):- RESA provided for the runway ends:- RWY 09 – 90mx90m (compliant) RWY 20 - 90mx90m (compliant) RWY 02 – 30m x 90m (limited due to the Localizer aerial) RWY 27 – nil (limited due to sea located at the end of the strip area) Information published in the State AIP For the non-compliant RWY 02 and RWY 27, a Safety Case is being developed by the Aerodrome Operator requesting issuance of an Exemption until RESA is able to be provided. **Target date 4th Quarter 2025**	A
				~~Provision of Airfield signage in accordance with ICAO Annex 14, volume I, section 5.4~~	~~signage as per ICAO standards will be provided~~		~~4th Quarter 2013~~ ACTION COMPLETED All airfield signage is in accordance with ICAO Annex 14 requirements.	A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION

Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
							CLOSED by APANPIRG/28	
				Establishment of a national bird committee in accordance with APANPIRG Conclusion 18/1.	Established National Bird Committee		~~May 2012~~ ACTION TAKEN (PARTIALLY COMPLETED):- Wildlife Committees (membership includes Aerodrome Operators, CAA, Airline representatives and other industry stakeholders) have been established for each the two International Airports and meet on a monthly basis. A National Wildlife Committee which will bring together both committees will be established before the end of 2017. **Target date 4th Quarter 2017**	B
				~~Provision of 300m strip width for the full length of precision approach CAT I runway in accordance with the standard 3.4.3, Annex 14, Volume I; remove obstacles from runway strip; flush the strip with the adjacent runway shoulder~~	~~runway strip will be provided and strip flushed with adjacent runway shoulder~~		~~4th Quarter 2013~~ ACTION COMPLETED A 300m strip is provided for the full length of precision approach CAT I RWY02 in accordance with Annex 14 Volume 1 section 3.4.3. CLOSED by APANPIRG/28	A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION

Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14 Volume I	**Nausori International Airport**	**Runway/ Taxiway**	**June 2010**	Provision of RESA in accordance with Section 3.5 of Annex 14, Volume I requirements.	RESA will be provided		~~4th Quarter 2013~~ ACTION TAKEN (PARTIALLY COMPLETED):- RESA provided for runway ends:- RWY 10 – 30mx30m (limited due to airport boundary) RWY 28 - nil (limited due to public road) Information published in the State AIP A Safety Case is being developed by the Aerodrome Operator requesting issuance of an Exemption until RESA is able to be provided. Land has been acquired and work is due to commence 4th quarter 2017. **Target date 4th Quarter 2018**	A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
Updated on 14 September 2017N

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14 Volume I	**Sri Lanka** **Bandaranaike International Airport**	**Runway/ Taxiway**	**ICAO mission April 2010**	Provision of 300m strip width for the full length of precision approach CAT I runway in accordance with the standard 3.4.3, Annex 14, Volume I; remove obstacles from runway strip; flush the strip with the adjacent runway shoulder	runway strip in accordance with Annex 14, volume I will be provided, obstacles from strip will be removed and and flush strip with adjacent runway shoulder	CAASL	~~AASL has been granted a period of 12 years to cover the drains. Exemption for the period granted has been published in the AIP.~~ Safety study for the deficiency will be completed and submitted by August 2017.	A
				Provision of runway hold position lights in accordance with Para 5.3.19 of ICAO Annex 14, Volume I	runway hold position lights will be provided		~~Airside safety committee has been formed to study all runway makings, signs and lighting to determine the adequacy of the system in order to prevent runway incursion.~~ The stop bars will be provided in association with SMGCS at all A,B,C,D & E TWYs. The location will be 120m from RWY centre line for TWY A & E whereas 90m for TWY B,C & D. The target date of operation is JULY 2017.	A
				~~Provision of enhanced taxiway centre line marking in accordance with standard in Para 5.2.8.11 of Annex 14, Volume I.~~	~~Enhanced taxiway markings will be provided~~		~~February 2011~~ Enhanced taxiway centerline markings provided in conjunction with the runway overlay project. [CLOSED by APANPIRG/28	A
				Establishment of a national bird committee in	National Bird Committee will be		~~July 2010~~	A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION

Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
				accordance with APANPIRG Conclusion 18/1.	established		TOR for National Bird committee is being drafted. The committee will be convened by August 2017	

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION

Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14 Volume I	**Viet Nam** **Noi Bai International Airport, Hanoi**	**Runway/ Taxiway**	**ICAO mission March 2010**	~~Runway shoulder higher than adjacent strip and obstacles on strip~~	~~Flush strip with adjacent runway shoulder and remove obstacles~~	Civil Aviation Administration of Vietnam	Implemented in December 2014: Noi Bai Intl airport carried out flushing strip with adjacent runway shoulder and remove obstacles. At present, the surface of the runway strip is not higher than the runway shoulder. [CLOSED by APANPIRG/28	A
				~~Provision of enhanced taxiway centre line marking in accordance with standard in Para 5.2.8.11 of Annex 14, Volume I.~~	~~Provide enhanced taxiway markings~~		Implemented in December 2014: Noi Bai Intl airport enhanced taxiway markings with two black stripes along the centerline and provides this enhance annually (in accordance with the Circular 34/2014/TT-BGTVT dated 11/8/2014 of Ministry of Transportation of Viet Nam). [CLOSED by APANPIRG/28	A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
				~~Provision of RESA in accordance with Section 3.5 of Annex 14, Volume I requirements.~~	~~Provide RESA~~		Presently, Noi Bai Intl airport has developed RESA for runway ends as follows: - RWY 11L : 240x120 m - RWY29R : 300x120 m - RWY11R : 220x120 m - RWY29L : 240x120 m CLOSED by APANPIRG/28	A
		Bird Hazard		Wildlife strike report submission to ICAO for inclusion in IBIS.	Submission of wildlife strike reports to ICAO for inclusion in IBIS.		Quarter I, 2018 Airport Corporation of Viet Nam (ACV) annually reports to CAAV about wildlife strike, bird information as well as measures to control incidents from birds according to Regulation 399/CHK issued by CAAV about safety report. CAAV is developing data base and is preparing report submission to ICAO for inclusion in IBIS.	B

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14, Volume I	**Tan Son Nhat International Airport, Ho Chi Minh City**	**Runway/ Taxiway**	**March 2010**	~~Runway shoulder higher than adjacent strip and obstacles on strip.~~	~~Flush strip with adjacent runway shoulder and remove obstacles~~		Implemented in July 2015: Tan Son Nhat Intl airport carried out flushing strip with adjacent runway shoulder and remove obstacles. At present, the surface of the runway strip is not higher than the runway shoulder [CLOSED by APANPIRG/28	A
				~~Provision of enhanced taxiway centre line marking in accordance with standard in Para 5.2.8.11 of Annex 14, Volume I.~~	~~Provide enhanced taxiway markings~~		Implemented in October 2015: Tan Son Nhat Intl airport enhanced taxiway markings with two black stripes along the centerline and provides this enhance annually (in accordance with the Circular 34/2014/TT-BGTVT dated 11/8/2014 of Ministry of Transportation of Viet Nam). [CLOSED by APANPIRG/28	A
				Provision of RESA in accordance with Section 3.5 of Annex 14, Volume I requirements;	Provide RESA		December 2018 At present, Tan Son Nhat Intl airport is re-designed for upgrading the runways and setting up the RESA.	A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
				Wildlife strike report submission to ICAO for inclusion in IBIS.	Submission of wildlife strike reports to ICAO for inclusion in IBIS.		Quarter I, 2018 Airport Corporation of Viet Nam (ACV) annually reports to CAAV about wildlife strike, bird information as well as measures to control incidents from birds according to Regulation 399/CHK issued by CAAV about safety report. CAAV is developing data base and is preparing report submission to ICAO for inclusion in IBIS.	B

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION

Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
	Brunei Darussalam							
Annex 14 Volume I	**Brunei International Airport**	**Runway**	ICAO Mission of April 2011	vegetation along pavement edges and strip higher than the adjacent runway pavement; uneven earth mounds on strip				A
				faded centre line and other markings;				A
		Taxiway		non provision of enhanced taxiway centre line marking in accordance with Para 5.2.8 of Annex 14, Volume I				A
				Objects on taxiway strips; vegetation on pavement joints and maintenance of joints				A
		Apron		non provision of ICAO compliant signage in accordance with section 5.4 Annex 14, Volume I				A
		Rescue and Fire Fighting (RFF):		non provision of direct access for the rescue and fire fighting vehicles from the fire station into the runway;				A
				non provision of road holding position sign at all road entrances to a runway; and				A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
		Wildlife Hazards:		Establishing a national bird control committee in accordance with APANPIRG Conclusion 18/1;				B

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Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14 Volume I	**Lao PDR** **Wattay International Airport**	**Runway**	**ICAO Mission of March 2011**	Non provision of RESA in accordance with section 3.5 of Annex 14, Volume I rubber deposits and faded centre line markings.				U A
		Taxiway		Provision of runway hold position lights in accordance with Para 5.3.19 of ICAO Annex 14, Volume I Provision of enhanced taxiway centre line marking in accordance with Para 5.2.8 of Annex 14, Volume I				A
		Rescue and Fire Fighting (RFF):		Provision of road holding position sign at all road entrances to a runway;				A
		Wildlife Hazards:		Establishing a national bird control committee in accordance with APANPIRG conclusion 18/1.				B

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
	Luang Prabang International Airport	**Runway**		Provision of enhanced taxiway centre line marking in accordance with standard in Para 5.2.8.11 of Annex 14, Volume I				A
		Taxiway		Provision of runway hold position lights in accordance with Para 5.3.19 of ICAO Annex 14, Volume I on new taxiways	.			A
		Rescue and Fire Fighting (RFF)		Provision of road holding position sign at all road entrances to a runway				A

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Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14 Volume I	**Mongolia** **Ulaan Baatar International Airport**	**Runway**	**ICAO Mission of July 2011**	rubber deposits and faded centre line and other faded markings;				A
		Taxiway		Resealing cracks on pavement surface with sealants to prevent ingress of water and broken edges which could cause FOD issues.				A
				Provision of enhanced taxiway centre line marking in accordance with Para 5.2.8 of Annex 14, Volume I.				A
				faded taxiway markings				A
				Maintenance of pavement cracks				A
				provision of runway hold position lights in accordance with Para 5.3.19 of ICAO Annex 14, Volume I .				A

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Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
				provision of taxiway hold position signs on all hangar taxiways at entrances to the active taxiways/runway.				A
		Apron		sealing the cracks on the apron surface				A
		Airfield signage		Provision of ICAO compliant signage in accordance with section 5.4 Annex 14, Volume I and to cut the vegetation in front of the signs.				A
		Wildlife Hazards		establishing a national bird control committee in accordance with APANPIRG conclusion 18/1; collect wildlife reports and forward to ICAO for inclusion in the ICAO IBIS;				B B

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
Annex 14 Volume I	**Tonga** **Fua'amotu International Airport**	**Runway Strip**	**ICAO Mission of Sept. 2015**	Insufficient Runway Strip				A
Annex 14 Volume I	**Solomon Islands** **Honiara International Airport/Henderson Field**	**Runway Strip**	**ICAO Mission of Oct. 2015**	Insufficient Runway Strip				A
		RESA		RESA at both ends of runway not provided				U
		Aerodrome Pavements		Lack of maintenance of aerodrome pavements in accordance with Annex 14, 10.2				U
Annex 14 Volume I	**Samoa** **Faleolo International Airport**	**Runway Strip**	**ICAO Mission of Oct. 2015**	Insufficient Runway Strip				A

AIR NAVIGATION DEFICIENCIES IN AOP FIELD IN THE ASIA/PACIFIC REGION
Updated on 14 September 2017

Identification		Deficiencies			Corrective Action			
Requirements	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date of completion**	**Priority for action****
		Aerodrome Pavements		Lack of maintenance of aerodrome pavements in accordance with Annex 14, 10.2				U

* Priority for action to remedy the shortcoming is based on the following safety assessments:

"U" priority = Urgent requirements having a direct impact on safety and requiring immediate corrective actions. Urgent requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is urgently required for air navigation safety.

"A" priority = Top priority requirements necessary for air navigation safety. Top priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation safety.

"B" priority = Intermediate requirements necessary for air navigation regularity and efficiency. Intermediate priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation regularity and efficiency.

APANPIRG/27 (updated July 2017) | CNS SG/21 Appendix J to the Report

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE CNS FIELDS IN THE ASIA/PACIFIC REGION

Identification		Deficiencies			Corrective Action			
Requirement	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action**
Adequate and reliable VHF COM	Myanmar	Quality and reliability of RCAG VHF inadequate and unavailability of required coverage. Improvements had been observed with occasional communication problems reported. From 2 to 13 April 2012, a survey was conducted by IATA. 50 reported no communication had been established. Survey on 8 July 2016 indicated that ooverall 94% (514 flights) of aircraft successfully established communications of one form or another with Yangon ATC. Of the 548 responses, 6% (34 flights) could not establish communications with ATC at the FIR boundaries. In Flight Broadcast Procedure (IFBP) currently still in place	1998 June 2011 April 2012 July 2016	Improvements in the quality of link to RCAG stations and power supply system at some remote stations are required.	An action plan was developed to upgrade equipment at RCAG stations, replace VSAT stations at 5 VSAT location for the relay link to RCAG sites, to improve power supply system. Additional VSAT-RCAG station was installed at Coco Island in 2017. From 26 May 16, DCA Myanmar started using 4 VHF channel for 4 ACC sectors covering Yangon FIR. Further improvements at Sittwe and Pathin will be made by the DCA in August 2017. DCA was requested to keep ICAO APAC Office informed for coordination with IATA for the next survey.	DCA Myanmar	December 2017	A

Identification		Deficiencies			Corrective Action			
Requirement	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action**
Reliable ground to ground communication as specified in the regional air navigation plan (Doc.9673)	Afghanistan and Pakistan	Unreliability of AFS communication between Afghanistan and Pakistan was brought to the notice of APANPIRG/21. Lack of reliability in the AFS including data communication between Kabul and Karachi and ATS voice communication between Lahore and Kabul was identified.	September 2010	A COM coordination meeting – Afghanistan and Pakistan was held in June 2012 in Karachi, Pakistan. Further follow-up was made in end of 2014 and early 2015. A Remedial action plan was updated. New proposal for using landline has also proposed to be established between two States.	In March 2012, initial discussion on improvement of AFS communication was held at a special ATS coordination meeting. The COM coordination meeting in June 2012 developed a remedial action plan which was further updated in February 2015. 1. Near-term by end of September 2012, fully utilize the VPN circuit operational since January 2012 for exchange of AFTN traffic, organize users' training if required; (status quo) 2. Mid-term, harmonize VSAT terminal equipment and select common network service provider to recover the VSAT Links; Afghanistan has successfully changed the service provider in February 2015. Site visits in Pakistan by expert from the VSAT service provider were made in February and March 2016. Remedial recommendations were provided to CAA. Pakistan. 3. Long-term: establish a dedicated landline connection with multiplexers between Afghanistan and Pakistan to support both data and voice communication between COM centres and ACCs	Ministry of Transport and Civil Aviation Afghanistan and CAA. Pakistan	December 2017	A

Identification		Deficiencies			Corrective Action			
Requirement	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action**
Regional air navigation plan – FASID Table CNS 1D	Pakistan & China	Improvement of ATS Direct Speech circuit performance and A/G communication and surveillance coverage between China and Pakistan	May 2014 RASMAG/19	The ATS direct speech circuit via IDD between Urumuqi and Lahore was observed not stable. Issues reported were in 2013. In early 2017, a hotline connection changing to a new service provider at Pakistan side has been established. Some improvement has been achieved. Further efforts are required based on RASMAG report.	Remedial action plan was developed in May 2015 by both States through a COM coordination meeting. A VSAT is planned to be installed at Lahore for connection with Urumqi ACC and additional VHF station is required to be installed to cover the VHF gap at PURPA crossing point. Technical survey for VSAT site in Lahore was done in January 2016. Agreement for installation and operation being discussed by two States. MoU for equipment transfer and installation was discussed. Both States were urged to expedite implementation through actions in follow up agreement at COM coordination meeting.	China ATMB and CAA. Pakistan	December 2017	A

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		**Deficiencies**			**Corrective action**			
Requirements	**States/ Facilities** (Index No.)	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action ***
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCs (Annex 3: Chapter 9)	Cambodia (AP-MET-09)	Briefing and flight documentation not provided as required; WAFC forecasts not available	1999	Airlines do not receive the required flight documentation, including WAFC forecasts	Implement procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCs. **(Status of implementation of CAP to be verified by Cambodia – see Note 1, below. Cambodia and ICAO should work together to develop and properly record the remaining steps of the CAP to resolve the deficiency)**	SSCA, Cambodia	TBC	A
MWO and SIGMET service (Annex 3: Chapter 3, 3.4 and Chapter 7)	Cambodia (AP-MET-11)	Requirements for MWO and SIGMET service not established for Phnom Penh FIR	1992	MWO not established due to lack of trained personnel and technical facilities	Establish MWO to provide required service, including SIGMET information for Phnom Penh FIR. **(Status of implementation of CAP to be verified by Cambodia – see Note 1, below. Cambodia and ICAO should work together to develop and properly record the remaining steps of the CAP to resolve the deficiency)**	SSCA, Cambodia	TBC	A
MWO and SIGMET service (Annex 3: Chapter 3, 3.4 and Chapter 7)	Democratic Peoples' Republic of Korea (AP-MET-16)	Requirements for MWO and SIGMET service not established for Pyongyang FIR	2008	Reported by RO mission	Establish MWO to provide required service, including SIGMET information for Phnom Penh FIR. **(Details and status of implementation of CAP to be verified by Democratic Peoples' Republic of Korea, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	GACA, Democratic Peoples' Republic of Korea	TBC	A

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		**Deficiencies**			**Corrective action**			
Requirements	**States/ Facilities** (Index No.)	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action ***
Reporting of information on volcanic eruptions to civil aviation units. (Annex 3: 3.6, 4.8)	Indonesia (AP-MET-03)	Information on volcanic activity not provided regularly to ATS units, MWOs and VAACs.	1995	Observed by States concerned. Reported at the WMO/ICAO Workshop on Volcanic Ash Hazards (Darwin, 1995) **Removed from the open list in accordance with APANPIRG/28 CONCLUSION 28/XX**	Establish arrangements for State volcano observatories to send the required volcano observation information as quickly as practicable to the associated ACC/FIC, MWO and VAAC. **(Status of implementation of CAP has been updated by Indonesia – see Note 2 and 3, below. The deficiency may be removed from the open list subject to the concurrence of the States concerned, noting that MET SG/21 concluded corrective action taken by Indonesia to rectify AP-MET-03 and AP-MET-06 has been validated)**	BMKG, DGCA and CVGHM, Indonesia	TBC	A
Provision of SIGMET for volcanic ash (Annex 3: Chapter 7)	Indonesia (AP-MET-06)	Requirements for issuance and proper dissemination of SIGMET for volcanic ash have not been fully implemented	Dec 2003	Reported by airlines, noted by Volcanic Ash Advisory Centres and confirmed by ICAO mission **Removed from the open list in accordance with APANPIRG/28 CONCLUSION 28/XX**	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of volcanic ash. **(Status of implementation of CAP has been updated by Indonesia – see Note 2 and 3, below. The deficiency may be removed from the open list subject to the concurrence of the States concerned, noting that MET SG/21 concluded corrective action taken by Indonesia to rectify AP-MET-03 and AP-MET-06 has been validated)**	BMKG, Indonesia	TBC	U

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		**Deficiencies**			**Corrective action**			
Requirements	**States/ Facilities** (Index No.)	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action ***
Meteorological observations and reports. (Annex 3: Chapter 4)	Kiribati (AP-MET-02)	METAR from Kiribati not available on regular basis.	1998	Reported by airlines	Equipment to be installed and arrangements to be made for regular observations and reports, including: training of personnel; maintenance of equipment; calibration and verification of meteorological observations; and proper/secure transmission of data. **(Status of implementation of CAP to be updated by Kiribati, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	State designated MET authority	TBC	A
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCs (Annex 3: Chapter 9)	Kiribati (AP-MET-18)	WAFC forecasts not available for inclusion in flight briefings and documentation	2008	Reported by TCB CAEMSA-SP Technical Expert	Implement procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCs. **(Details and status of implementation of CAP to be verified by Kiribati, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	State designated MET authority	TBC	U

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		**Deficiencies**			**Corrective action**			
Requirements	**States/ Facilities** (Index No.)	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action ***
Provision of SIGMET information (Annex 3: Chapter 7)	Lao People's Democratic Republic (AP-MET-12)	Requirements for issuance and dissemination of SIGMET information for Vientiane FIR have not been fully implemented	2000	SIGMET frequently not available; as reported by airlines	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. **(Details and status of implementation of CAP to be verified by Lao People's Democratic Republic, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	State designated MET authority	TBC	A
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCs (Annex 3: Chapter 9)	Nauru (AP-MET-19)	WAFC forecasts not available for inclusion in flight briefings and documentation	2008	Reported by TCB CAEMSA-SP Technical Expert	Implement procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCs. **(Details and status of implementation of CAP to be verified by Nauru, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	State designated MET authority	TBC	U

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		**Deficiencies**			**Corrective action**			
Requirements	**States/ Facilities** (Index No.)	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action ***
Meteorological observations and reports. (Annex 3: Chapter 4)	Nauru (AP-MET-21)	METAR/SPECI service not provided	2008	Reported by TCB CAEMSA-SP Technical Expert	Equipment to be installed and arrangements to be made for regular observations and reports, including: training of personnel; maintenance of equipment; calibration and verification of meteorological observations; and proper/secure transmission of data. **(Details and status of implementation of CAP to be updated by Nauru, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	State designated MET authority	TBC	U
Provision of SIGMET information (Annex 3, Chapter 7)	Nauru (AP-MET-24)	Lack of SIGMET issued for the Nauru FIR.	Sep 2011	IATA deemed this situation unsafe and unacceptable to airline operations.	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. **(Details and status of implementation of CAP to be verified by Nauru, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	State designated MET authority	TBC	U

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		**Deficiencies**			**Corrective action**			
Requirements	**States/ Facilities** (Index No.)	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action ***
Provision of SIGMET information (Annex 3: Chapter 7)	Nepal (AP-MET-14)	Requirements for issuance and dissemination of SIGMET information for Kathmandu FIR have not been fully implemented	2000		Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. **(Details and status of implementation of CAP to be verified by Nepal, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	State designated MET authority	TBC	A
Reporting of information on volcanic eruptions to civil aviation units. (Annex 3, 3.6, 4.8)	Papua New Guinea (AP-MET-04)	Information on volcanic activity not provided regularly to ATS units, MWOs and VAACs.	1995	Observed by States concerned. Reported at the WMO/ICAO Workshop on Volcanic Ash Hazards (Darwin, 1995)	Establish arrangements for State volcano observatories to send the required volcano observation information as quickly as practicable to the associated ACC/FIC, MWO and VAAC. **(Details and status of implementation of CAP to be verified by Papua New Guinea, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	Rabaul Volcano Observatory, NWS and ASL of Papua New Guinea	TBC	A
Provision of SIGMET for volcanic ash (Annex 3: Chapter 7)	Papua New Guinea (AP-MET-08)	Requirements for issuance and proper dissemination of SIGMET for volcanic ash have not been fully implemented	Dec 2003	Reported by airlines, noted by Volcanic Ash Advisory Centres and confirmed by ICAO mission	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of volcanic ash. **(Details and status of implementation of CAP to be verified by Papua New Guinea, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	NWS of Papua New Guinea	TBC	U

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		**Deficiencies**			**Corrective action**			
Requirements	**States/ Facilities** (Index No.)	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action ***
Provision of SIGMET information (Annex 3, Chapter 7)	Papua New Guinea (AP-MET-22)	Lack of SIGMET issued for the Port Moresby FIR.	Sep 2011	IATA deemed this situation unsafe and unacceptable to airline operations.	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. **(Details and status of implementation of CAP to be verified by Papua New Guinea, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	State designated MET authority	TBC	U
Provision of SIGMET for volcanic ash (Annex 3: Chapter 7)	Philippines (AP-MET-07)	Requirements for issuance and proper dissemination of SIGMET for volcanic ash have not been fully implemented	Dec 2003	Reported by airlines, noted by Volcanic Ash Advisory Centres and confirmed by ICAO mission	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of volcanic ash. **(Status of implementation of CAP has been updated by Philippines – see Notes 4 and 5, below. The deficiency may be removed from the open list subject to the concurrence of the airlines and VAACs)**	PAGASA	TBC	U

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		**Deficiencies**			**Corrective action**			
Requirements	**States/ Facilities** (Index No.)	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action ***
Meteorological observations and reports. (Annex 3: Chapter 4)	Solomon Islands (AP-MET-01)	Weather information is inadequate and not provided on a regular basis	1996	Reported by airlines operating to Solomon Islands	Equipment to be upgraded and arrangements to be made for regular observations and reports, including: training of personnel; maintenance of equipment; calibration and verification of meteorological observations; and proper/secure transmission of data. **(Status of implementation of CAP to be updated by Solomon Islands, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	Solomon Is. MET Service	TBC	A
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCs (Annex 3: Chapter 9)	Solomon Islands (AP-MET-20)	WAFC forecasts not available for inclusion in flight briefings and documentation	2008	Reported by TCB CAEMSA-SP Technical Expert	Implement procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCs. **(Details and status of implementation of CAP to be verified by Solomon Islands, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	State designated MET authority	TBC	U

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		**Deficiencies**			**Corrective action**			
Requirements	**States/ Facilities** (Index No.)	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action ***
Provision of SIGMET information (Annex 3, Chapter 7)	Solomon Islands (AP-MET-23)	Lack of SIGMET issued for the Honiara FIRs.	Sep 2011	IATA deemed this situation unsafe and unacceptable to airline operations.	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. **(Details and status of implementation of CAP to be verified by Solomon Islands, which, with assistance from ICAO, should develop and properly record the remaining steps of the CAP to resolve the deficiency)**	State designated MET authority	TBC	U
Reporting of information on volcanic eruptions to civil aviation units. (Annex 3: 3.6, 4.8)	Tonga (AP-MET-17)	Information on volcanic activity not provided regularly to ATS units, MWOs and VAACs	2008	Reported by TCB CAEMSA-SP technical expert	Establish arrangements for State volcano observatories to send the required volcano observation information as quickly as practicable to the associated ACC/FIC, MWO and VAAC. **(Status of implementation of CAP has been updated by Tonga – see Notes 6 and 7, below – and Executing body – see next column. The deficiency may be removed from the open list subject to the concurrence of the ATS units, MWOs and VAACs concerned)**	MOI and MEIDECC	TBC	U

Notes:

1. Updates on CAP implementation provided by **Cambodia** (18 August 2016)

State Secretariat of Civil Aviation of Cambodia informed that:

A. **Re: AP-MET-09.** With respect to the necessary implementation of procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCs, the following has been completed:

i. Installation of equipment at the following aerodromes: Phnom Penh (VDPP), Siem Reap (VDSR) and Sihanouk (VDSV), to obtain the digital forecasts provided by the WAFCs, via the Secure Aviation Data Information Service (SADIS), with full operational status at the end of 2013; and

ii. Training of personnel to use the above system to generate the required forecasts for operators and flight crew members.

B. **Re: AP-MET-11.** With respect to the necessary establishment of the MWO to provide required service, including SIGMET information for Phnom Penh FIR, the following has been completed:

i. Arrangements for another Contracting State (China) to provide SIGMET service on behalf of Cambodia for the Phnom Penh FIR.

2. Updates on CAP implementation provided by **Indonesia** (August 2014)

BMKG informed that:

A. **Re: AP-MET-03.** With respect to the necessary establishment of arrangements for State volcano observatories to send the required volcano observation information as quickly as practicable to the associated ACC/FIC, MWO and VAAC, the following has been completed:

i. Arrangements for the dissemination of volcano observation information established in a memorandum of understanding (MOU) between the meteorological authority, State volcano observatory and the civil aviation authority;

ii. Implementation of a volcanic activity report dissemination system (1 May 2012); and

iii. Coordination meeting between the meteorological authority, State volcano observatory, civil aviation authority and the VAAC Darwin (June 2014).

B. **Re: AP-MET-06.** With respect to the necessary implementation of procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of volcanic ash, the following has been completed:

i. Coordination meeting between the meteorological authority, State volcano observatory, civil aviation authority and the VAAC Darwin (June 2014); and

ii. Procedures for the issuance of SIGMET information for the Jakarta and Ujung Pandang FIRs implemented at the designated MWOs (April 2013) and successful participation in ICAO Regional SIGMET tests.

3. Updates on CAP implementation provided by **Indonesia** (May 2017)

Re: AP-MET-03 and **AP-MET-06,** MET SG/21, WP/10; Indonesia advised that it has:

A. Established regulatory requirements for volcanic ash information (and SIGMET provision) in the Civil Aviation Safety Regulation (CASR 174), most recently updated in 2015;

B. Regularly participated in the annual SIGMET tests conducted in the ICAO Asia/Pacific Region;

C. Participated in a SIGMET coordination project to harmonize SIGMET information across neighbouring international FIR boundaries;

D. Participated in ICAO volcanic ash exercises to demonstrate appropriate responses to volcanic ash information by relevant agencies; and

E. Ensured that volcano observatory notice for aviation (VONA) information is regularly published by CVGHM.

4. Updates on CAP implementation provided by **Philippines** (6 June 2016)

PAGASA/CAAP informed that:

A. **Re: AP-MET-07.** With respect to the necessary implementation of procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of volcanic ash, the following has been completed:

i. Implementation of procedures (Ref: PM-WD-AMSS-05-05) for the issuance of SIGMET information (for volcanic ash) for Manila FIR by the designated MWO in accordance with the ICAO SARPs;

ii. Conducted ICAO volcanic ash exercises and participated in the ICAO APAC VOLCEX/SG;

iii. Participated in the ICAO Regional SIGMET tests (without errors in SIGMET test messages sent by Philippines);

iv. Implementation of procedures set forth in the Philippine Regulation (CAR-ANS Part 3 – Aeronautical Meteorological Service) including other related national documents; and

v. Establishment of a tripartite agreement between CAAP, PAGASA and PHIVOLCS stipulating the flow of volcanic ash information between the stakeholder agencies.

5. Updates on CAP implementation provided by **Philippines** (30 June 2016)

CAAP informed that:

A. **Re: AP-MET-07.** In addition to the information provided above, and in view of the adherence to national procedures, regulations and other documents supporting the implementation of ICAO Annex 3 SARPs, CAAP requests ICAO to remove the deficiency from the open list.

6. Updates on CAP implementation provided by **Tonga** (10 May 2013)

Ministry of Infrastructure (MOI), Civil Aviation Division informed that:

A. **Re: AP-MET-17.** With respect to the necessary establishment of arrangements for State volcano observatories to send the required volcano observation information as quickly as practicable to the associated ACC/FIC, MWO and VAAC, the following has been completed:

i. Establishment of a memorandum of understanding (MOU) between the national authority providing volcano monitoring (Ministry of Lands, Environment, Climate Change and Natural Resources – MLECCNR) and the national authority providing meteorological service for international air navigation (MOl) for the reporting of volcanic activity to the associated ACCs, MWOs and VAACs in accordance with the relevant ICAO SARPs.

7. Updates on CAP implementation provided by **Tonga** (29 May 2017)

Ministry of Infrastructure (MOI), Civil Aviation Division informed that:

A. **Re: AP-MET-17.** Relevant operating procedures have been implemented in the units concerned and case studies of real volcanic events were presented as evidence of the State volcano observatory's issuance of the required volcano observation information.

Acronyms/Abbreviations/Definitions:

ACC — Area control centre
ASL — Air Services Ltd.
ATS — Air traffic services
BMKG — Badan Meteorologi, Klimatologi, Dan Geofisika (Indonesian Agency for Meteorological, Climatological and Geophysics)
CAEMSA-SP — Cooperative Agreement for the Enhancement of Meteorological Services to Aviation - South Pacific
CAAP — Civil Aviation Authority Philippines
CAP — Corrective action plan
CVGHM — Centre of Volcanology and Geological Hazard Mitigation
DGCA — Directorate General of Civil Aviation
FIC — Flight information centre
FIR — Flight information region
GACA — General Administration of Civil Aviation

IATA — International Air Transport Association
MEIDECC — Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication
MET — Meteorological
METAR — Aerodrome routine meteorological report *(in meteorological code)*
MOI — Ministry of Infrastructure (Tonga)
MWO — Meteorological watch office
NWS — National Weather Service
PAGASA — Philippine Atmospheric, Geophysical and Astronomical Services Administration
PHIVOLCS — Philippine Institute of Volcanology and Seismology
RO — Regional Office (ICAO)
SIGMET — Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations
SPECI — Aerodrome special meteorological report *(in meteorological code)*
SSCA — State Secretariat of Civil Aviation
TBC — To be confirmed
TCB — Technical Cooperation Bureau (of ICAO)
VAAC — Volcanic ash advisory centre
VOLCEX/SG — Volcanic ash exercises steering group
WAFC — World area forecast centre
WMO — World Meteorological Organization

ATTACHMENT 1 to the APANPIRG/28 Report

TWENTY EIGHTH MEETING OF THE ASIA/PACIFIC AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG/28)

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TWENTY SEVENTH MEETING OF THE ASIA/PACIFIC AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG/27)

OPENING REMARKS BY

MR. ARUN MISHRA

REGIONAL DIRECTOR, ICAO ASIA AND PACIFIC OFFICE

11 SEPTEMBER 2017

- **Directors General & Heads of Delegations**
- **Chairmen of contributory bodies of APANPIRG**
- **Distinguished members of the States' Delegations**
- **Members of International Organizations, Participants, Colleagues**
- **Ladies and Gentlemen**

Good Morning and welcome to the 28th Meeting of APANPIRG. We are very happy to note that we have an almost record turnout for this meeting about 175 participants from 30 States and 6 International org. I would also specifically like to acknowledge the presence of four DGs and Heads of CAAs namely from Hong Kong China, New Zealand, Singapore and Thailand and the fifth one i.e. DG Malaysia would join us tomorrow. I also would like to introduce Mr. Erwin Lassooij, Chief of Programmes Coordination and Implementation (PCI), in the Air Navigation Bureau, who has come from Montreal to support this meeting.

2. Our greatest challenges on a sector-wide basis over the coming decades virtually all derive from how aviation will need to evolve in order to manage the doubling of capacity now being projected through 2030. All of our current goals, whether tactical or strategic, political or economic, will be magnified significantly by this expansion – as will the implications of the actions we take to address near- and longer-term connectivity challenges in terms of:

- Increased airspace and airport congestion and the risk to the safety and efficiency of air transport operations in general;
- The need to balance stringent security measures with facilitation; and
- Growing environmental pressures relating to greenhouse gas emissions, local air quality and noise around airports.

There is also an urgent need for massive investments in airport development, air navigation systems, ground and other related infrastructure in order to effectively cope with the expected doubling of passengers and aircraft movements.

3. Then there is the potential challenge of dealing with shortage of pilots, engineers, air traffic controllers etc. as well as the equivalent requirement to accelerate training and certification for these aviation professionals. Furthermore, the expected rapid evolution in new technological advancements and their application across all air transport domains will remain a dynamic challenge for regulators and operators in the years to come.

4. In my opening remarks today I would not to go into the details of the wonderful work done by the various subgroups supported by staff of Regional Office as these reports will be presented during

the course of the meeting by the respective sub-groups. However I would like to highlight some major developments since the last APANPIRG meeting as this will provide a good background for the discussions to follow during the next few days.

5. Following the last year's ICAO Assembly we in ICAO have taken significant steps to improve the implementation of our strategic objectives. We have developed Operating plans and business plans and align the activities of Regional Office with the ICAO HQs within this framework. The 39th ICAO Assembly decided to strengthen the functioning of the Regional Offices and have created three new positions relating to Safety, Air Navigation and Security in our Regional Office and RSO which would certainly translate into increased assistance activities in the region. We have also received generous support from some of the States in terms of secondments which has certainly strengthened our capacity towards attainment of our strategic objectives including our flagship program of No Country Left Behind.

6. ICAO is closely coordinating with the various bodies within the United Nations system to establish linkages between our strategic objectives with those of the UN Sustainable Development Goals for 2030. The objective is to bring in support and establish synergies for our ongoing programs from other UN agencies and International organizations.

7. One area where we can all continue to take great pride is Aviation Safety. 2016 was the safest year ever for scheduled commercial air travel, and here in the APAC region we have achieved an admirable 1.79 accidents per million departures compared to global average of 2.44. This represents a 27 per cent decrease compared to the previous year. Out of the two States under our radar for significant safety concerns in their safety audits, I am very happy to inform all of you that Nepal has successfully resolved their SSC and this month we would conduct the ICVM for Thailand and we are hopeful for a positive outcome.

8. I would also like to share and update you on the just concluded 54th DGCA Conference in Mongolia. With the RASG and RASCF separated from the DGCA Conference, we had five days devoted to the DGCA Conference – which allowed us to maximize the benefits of the various forums and test new concepts. This year's DGCA Conference was quite unique and the new concepts tested seem to have instilled some dynamism and fresh thinking into the conference agenda. The feedbacks received from the participants were very positive.

9. From an APANPIRG perspective, the Directors General this year deliberated on the very important issue of Civil Military Cooperation. During a breakout workshop session the Director Generals with their SMEs (subject matter experts) had an opportunity to be actively involved in interactive group discussions discussing the issue in depth, sharing their experiences and best practices, all ably facilitated by the Secretariat. I am happy to note that these fruitful discussions from the breakout workshops have delivered a robust Action Item on CIVMIL Cooperation where the DGCA Conference noted that Civil/Military Cooperation is a key enabler for both civil and military entities in the development of a safe and efficient air transport system that effectively served the nation and given the urgent need for greater safety, efficiency and environmental performance in the busiest aviation region. The Conference urged States/Administrations to enhance civil/military cooperation efforts with a whole-of government approach that recognizes that supporting civil aviation is consistent with the military mission to defend the nation;

10. In 2016 a new initiative from the Regional Office was started as a part of the No Country Left Behind program of ICAO. Combined Action Team program – CAT for short provides onsite support to States with low rates of Effective Implementation of ICAO SARPs with the help of champion States and industry partners. CAT missions were conducted for 11 States of the region which also included 3 Pacific Island States. This has been a very successful effort widely appreciated by the recipient States. The CAT missions in 2016 translated into a six fold increase in direct assistance to States by the Regional Office compared to 2015. To continue this initiative and further strengthen the foundations made in their first visit, the APAC Regional Office is conducting eight more CAT assistance missions in 2017, including a second follow-up visit to four States.

11. You will note that APANPIRG/27 endorsed and established the empowerment of APANPIRG Subgroups to approve their own Conclusions and Decisions on technical matters. This fundamental change required a change in focus on the matters that are to be discussed by APANPIRG – such as economic, environmental and political aspects that will not be dealt with by the Subgroups. However we notice that some States are having difficulty understanding this paradigm shift and are still proposing technical papers for presentation at APANPIRG level. I would like to re-iterate that APANPIRG would now need to devote its time deliberating on issues relating to slow implementation, adequate provision of resources, forging new partnerships and collaborative arrangements to achieve the goal of overall uniform development of APAC Region as the largest aviation region. Keeping in mind these changes it is imperative that the profile of the APANPIRG participants would need some changes. We would require more participation from senior decision makers like the DGCAs and the Heads of ANSPs as we will move away from discussing the ANS technical issues and their solutions to the area of implementation of solutions agreed by the contributory bodies.

12. It was also decided last year that we will review this new arrangement in 2018 and then present a report before this body on the efficacy of this new arrangement. During the course of this meeting we will be putting forth a proposal for the modalities of performing this review. In view of the empowerment of the sub groups to adopt conclusions and decisions on technical matters we also need to consider the duration and periodicity of APANPIRG meetings in future.

13. While we all recognize the immense contribution of APANPIRG in streamlining air navigation and associated services in the region, the decisions taken during the previous meetings of APANPIRG has not been implemented uniformly by the States over the years. Thus it is important to understand the reasons for lack or slow pace of implementation by some States so that remedial measures can be taken quickly for smooth implementation of our various plans. Keeping this in mind we have included a one day workshop focussing on the implementation aspect of important decisions of previous APANPIRG meetings. Necessary background materials for this workshop which will be held on 13th Sept have already been circulated and I am sure all of you are prepared to make this a successful exercise. The purpose of the workshop is not to identify slow moving States but to enable a process of self-appraisal and an opportunity for experience sharing to improve our processes for speedy implementation.

14. This year while we have fewer numbers of WPs and IPs, their quality is of very high standards for which we are thankful to the contributors and I am confident that these Papers would stimulate constructive and useful discussions for the benefit of all of us. I would like to thank the Chair of APANPIRG Mr. Greame Harris for his support and guidance as well as Chairs and Members of the various subsidiary bodies working under the APANPIRG for their significant contributions. I would also take this opportunity to acknowledge the hard work put in by the staff of the Regional Office and the Regional Sub-Office to implement the decisions of the APANPIRG. Special thanks to AEROTHAI for organizing a reception this evening for all of us.

15. In conclusion, whether we are talking about aviation safety or security, seamless skies, or any other aspect of international civil aviation, consistent and timely progress requires total and unfettered cooperation and collaboration. The global air transport system as we know it today was built on cooperation among Member States and Industry partners. In recent years, the emphasis has been on promoting partnerships between States and regional bodies, as well as with industry, where much of the expertise resides. Always, the result is to provide users with the safest and most efficient mode of transportation possible.

With these words I would wish all of us a very successful meeting and for the delegates a pleasant stay in Bangkok.

Thank you.

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INTERNATIONAL CIVIL AVIATION ORGANIZATION

TWENTY EIGHTH MEETING OF THE ASIA/PACIFIC AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG/28)

Bangkok, Thailand, 11 to 14 September 2017

LIST OF INFORMATION AND WORKING PAPERS

Paper No.	Agenda Item	Title	Presented by
INFORMATION PAPERS			
IP/01	—	Meeting Bulletin	Secretariat
IP/02	—	Paper withdrawan	—
IP/03	3.2	Transition from Aeronautical Information Services (AIS) to Aeronautical Information Management (AIM)	Hong Kong, China
IP/04	3.2	C-ATFM Implementation in India	India
IP/05	3.4	ADS–B Implementation Status in India	India
IP/06	3.4	GAGAN Status and Expansion	India
IP/07	3.4	Implementation of First GBAS in India	India
IP/08	3.4	Air Navigation Improvements in Pakistan	Pakistan
IP/09	3.0	Japan's Contribution to NCLB Initiative	Japan
IP/10	3.4	ICAO Aircraft Address Monitoring	Japan
IP/11	3.1	Engineered Material Arresting System Update	USA
IP/12	3.1	CANSO Efforts in Airport Collaborative Decision Making	CANSO
IP/13 **Revision 1**	3.4	Automation Interface between Flight Information Regions	CANSO
IP/14	6	PIRG and RASG Meetings in ICAO Regional Offices	Secretariat
IP/15	3.5	Collaborative SIGMET Issuance Demonstration Project	Japan, Lao PDR, Myanmar, Philippines, Thailand and Viet Nam
IP/16	2	ICAO ATFM Global Symposium in Singapore, from 20 to 22 November 2017	Secretariat
IP/17	2	PBN Approach Charts – Transition from RNAV to RNP	Secretariat
IP/18	2	Implementation Strategy for Aeronautical Charting	Secretariat
IP/19	2	Planning and Implementation Regional Group (PIRG) Activities in Other Regions	Secretariat
IP/20	1.2	Response Mechanism against Jamming in Indonesia	Indonesia

Paper No.	Agenda Item	Title	Presented by
IP/21	3.6	Update on the FAA's UAS Integration Efforts	USA
IP/22	3.6	Surveillance And Broadcast Services Advanced Surveillance Enhanced Procedural Separation (SBS ASEPS) Project	USA

LIST OF WORKING PAPERS

Paper No.	Agenda Item	Title	Presented by
WORKING PAPERS			
WP/01	-	Adoption of the Provisional Agenda	Secretariat
WP/02	1.1	Review of the Actions of the Air Navigation Commission on the Report of the APANPIRG/27	Secretariat
WP/03	1.2	Status of Implementation of APANPIRG/27 Conclusions and Decisions	Secretariat
WP/04	1.3	Status of Implementation of Outstanding APANPIRG Conclusions and Decisions	Secretariat
WP/05	3.1	Report on the First Meeting of AOP Sub Group	Secretariat
WP/06 **Revision 1**	3.4	Report on the Twenty First Meeting of CNS Sub-Group	Chairman of CNS SG
WP/07 **Revision 2**	3.2	ATM/SG/5 Report	Secretariat
WP/08	3.3	RASMAG/22 Outcomes	Secretariat
WP/09 **Revision 1**	3.3	Regional Supplementary Procedures for Performance-Based Communications and Surveillance	Secretariat
WP/10 **Revision 1**	3.5	Meteorology Sub-Group Report	Chairman of MET SG
WP/11 **Revision 3**	4	Status of Air Navigation Deficiencies in the Asia/PAC Region	Secretariat
WP/12 **Revision 1**	5	APANPIRG Work Programme 2018+	Secretariat
WP/13	1.1	Review of the Action taken by the ANC and the Council on the Report of APANPIRG/27	Secretariat
WP/14	3.2	The Necessity of Collaboration among Stakeholders and Clarification of Respective Roles for the Challenge	Japan
WP/15 **Revision 1**	3.6	Past and Future Activities of the ICAO Asia and Pacific Regional Sub-Office	Secretariat
WP/16	2	Initiatives by Hong Kong China in Supporting the ICAO Next Generation Aviation Professionals Programme	Hong Kong China
WP/17	3.2	Air Traffic Growth in Asia-Pacific and the Role of Air Traffic Flow Management	Hong Kong China
WP/18	3.2	Support for a Global TBO Concept	USA
WP/19 **Revision 1**	3.3	APANPIRG Monitoring of Data Link Performance and Problem Reporting	Secretariat

Paper No.	Agenda Item	Title	Presented by
WP/20	3.0	Adopting the ICAO GANP KPI Framework for Asia Pacific	Singapore, USA and EUROCONTROL
WP/21	3.4	Dissolution of APAC/NAT ADS-C Reporting Interals Task Force	Secretariat
WP/22	1B	APRAST/10 and RASG/7 Meeting Outcomes	Secretariat
WP/23	3.2	Achieving Operational Predictability for Demand and Capacity Imbalance on ATS Routes and Harmonisation of Air Traffic Flow Management for the Asia and Pacific Regions	Indonesia, Malaysia and Singapore
WP/24	3.3	Asia/Pacific Region Readiness for PBCS Implementation	Secretariat
WP/25	3.5	Proposal for a Regional Air Navigation Agreement on Requirments for Meteorological Service at Aerodromes	IATA
WP/26	1B	Report of the Fourth Coordination Meeting between the Chairpersons of APANPIRG and RASG-APAC	Secretariat
WP/27	1B	Enhancing Support For Safety Management Implementation	Secretariat

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APANPIRG/28 Workshop - Air Traffic Management

Len Wicks/Shane Sumner

Regional Officers, Air Traffic Management,
International Civil Aviation Organization (ICAO)

Bangkok, 13 September 2017

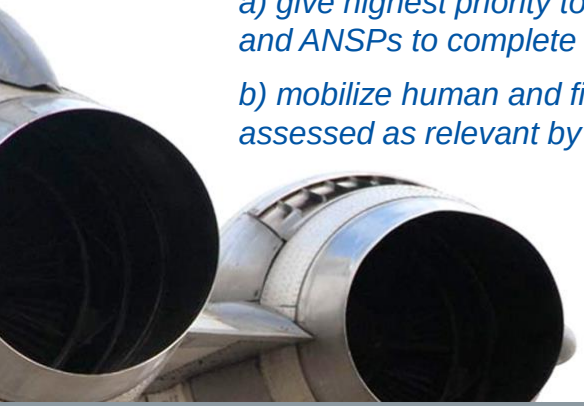
Conclusion C 27/1

Mobilization of human / financial resources to achieve the Seamless ATM Plan objectives

That, States/Administrations not achieving the expected implementation progress of regional priorities for Air Navigation Systems, should:

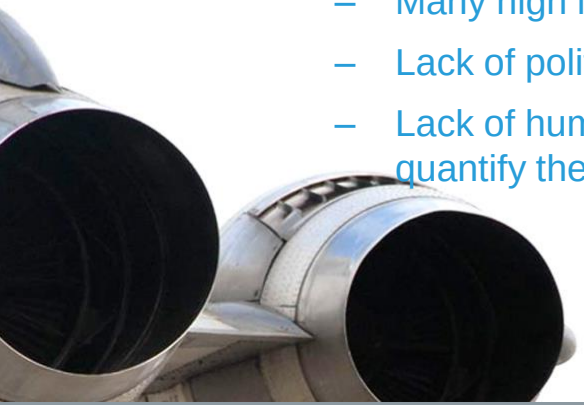
a) give highest priority to the implementation of regional priorities and provide human/financial resources to CAAs and ANSPs to complete Seamless ATM phase I implementation; and

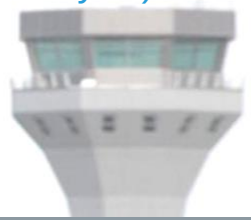
b) mobilize human and financial resources to plan for timely implementation of phase 2 and phase 3 elements assessed as relevant by their national gap analysis.



Conclusion C 27/1

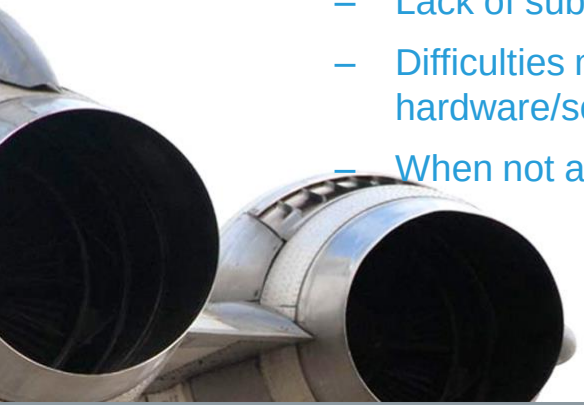
- Applicability: All
- Implementation status: probably less than 25%
- Barriers (Solutions):
  - Many high level issues for States and organisations, particularly at the political level
  - Lack of political understanding and knowledge (seminars are useful)
  - Lack of human and financial resources in many cases (but a national plan is important to quantify the needs through gap analaysis)





Conclusion C 27/1

- Applicability: All
- Implementation status: probably less than 25%
- Barriers (Solutions):
  - Lack of subject matter experts or expertise (need for more guidance from ICAO/experts)
  - Difficulties matching modernisation programmes and constant changes in hardware/software with regional priorities and planning
  - When not a SARP, lack of engagement



Conclusion C 27/1

- Applicability: All
- Implementation status: probably less than 25%
- Barriers (Solutions):
  - Need to better describe the benefits (could be part of advisory material)
  - States need to better engage with users and also cross-border considerations (the region needs more high level forums to drive harmonised regional policy)

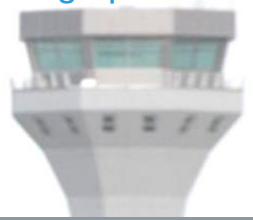
Conclusion C 27/22

Asia/Pacific Region AIM Information Sharing Website

That, States are urged to register on the Asia/Pacific Region AIM Information Sharing Website at http://aim-tracking.org/ and provide information for the purpose of sharing experience and knowledge of challenges and issues in AIM implementation.

Conclusion C 27/22

- Applicability: All
- Implementation status: about 50%
- Barriers (Solutions):
  - Misunderstanding about the Conclusion (some States thought that they needed to be well developed in AIM before they registered) – need more guidance material
  - State Letters are not getting to the right technical levels (informal follow up is required)
  - Meeting participants are not following up with their organisations (issues fall off the radar)



Conclusion C 27/8

State Implementation of ICAO Provisions for PBCS

That, States which apply or plan to apply 30 NM and/or 50 NM longitudinal separation minima and/or 23 NM lateral separation minimum are urged to:

a) implement the ATM system capability to process and use ICAO PBCS flight plan indicators to determine aircraft eligibility for performance-based separation by not later than 29 March 2018; and

b) apply common implementation dates using RCP/RSP indicators to establish performance-based separation in adjacent airspace, supported by joint submission of Proposals for Amendment (PfA) to ICAO Doc 7030 – Regional Supplementary Procedures.

Conclusion C 27/8

- Applicability: about 50%
- Implementation status: about 25%
- Barriers (Solutions):
  - System modernisation projects that have the main priority whereas PBCS is a later consideration
  - Vendors not always aware of what is required
  - States not always understanding the need for changes and how to submit a PfA
  - States not understanding very complex information in English (simple English guidance required)

Conclusion C 27/8

- Applicability: about 50%
- Implementation status: about 25%
- Barriers (Solutions):
  - Not understanding the purpose and requirements for Regional Supplementary Procedures
  - Not understanding the difference between the aircraft approval issue and the ANSP preparedness issue

Conclusion C 27/10

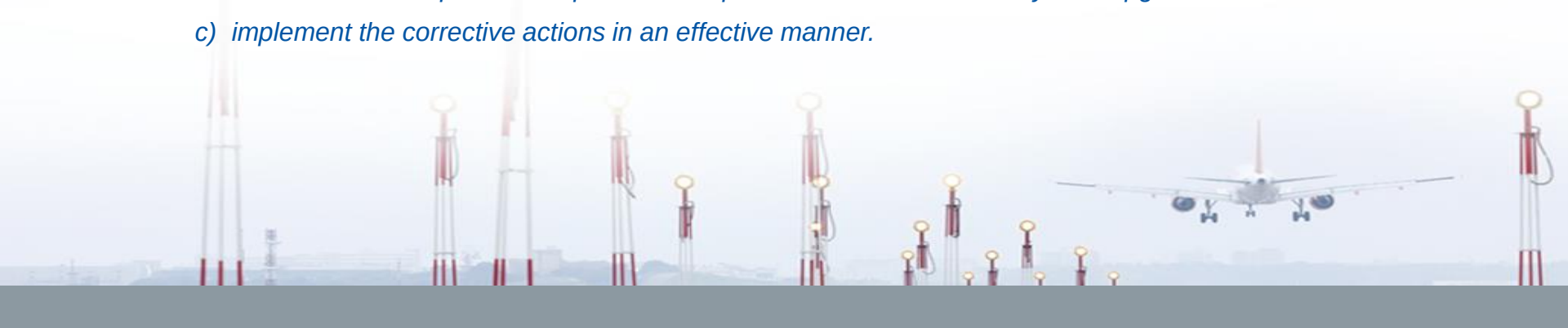
Airspace Safety Concern Response

That, the significant airspace safety issues and hot spots identified by RASMAG, Asia/Pacific States / Administrations are urged to take urgent action to:

a) review the RASMAG/21 Report;

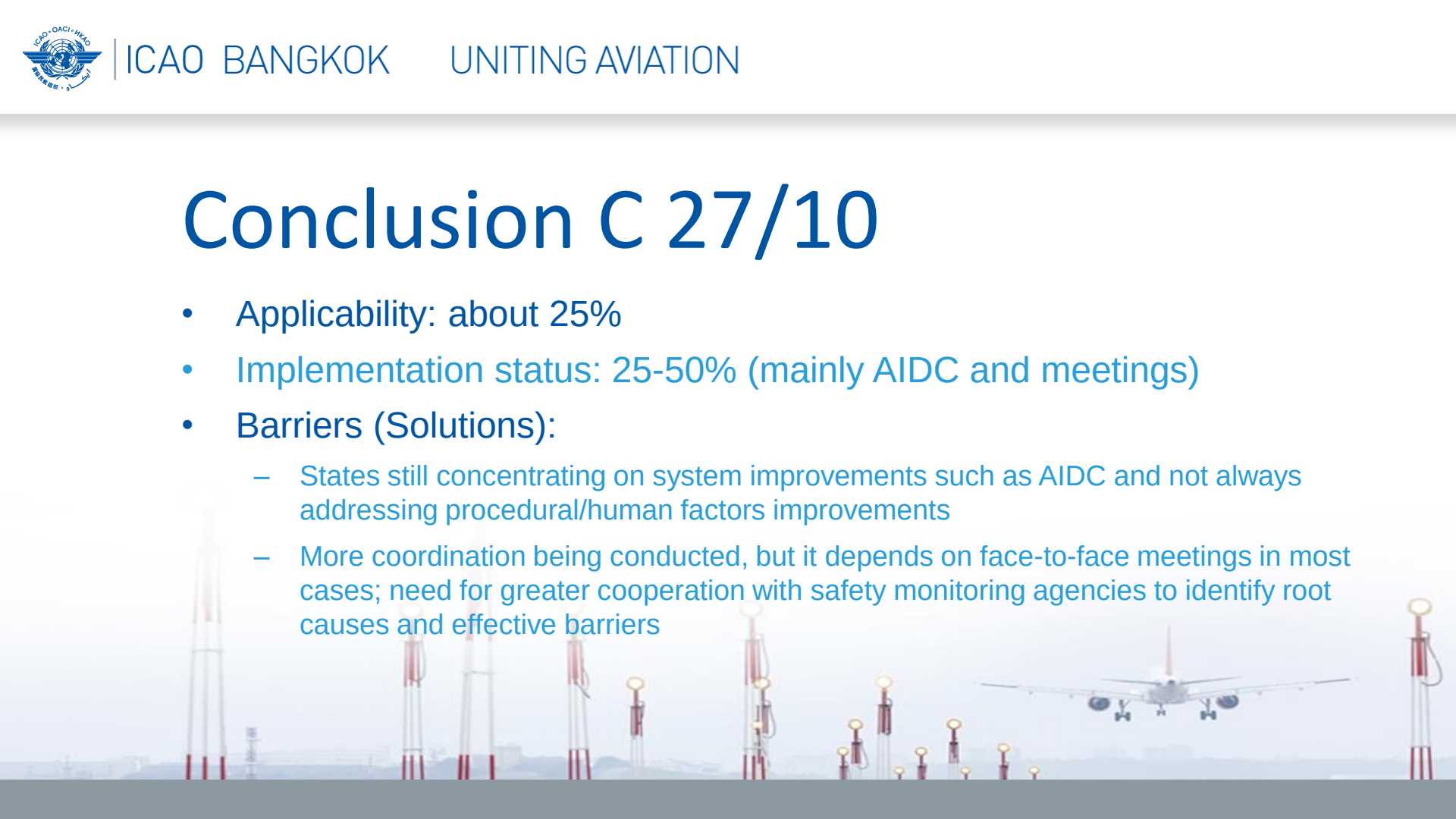
b) in cooperation with relevant Regional Monitoring Agencies (RMAs), determine corrective action plans (which should include an emphasis on operational improvements in addition to system upgrades; and

c) implement the corrective actions in an effective manner.



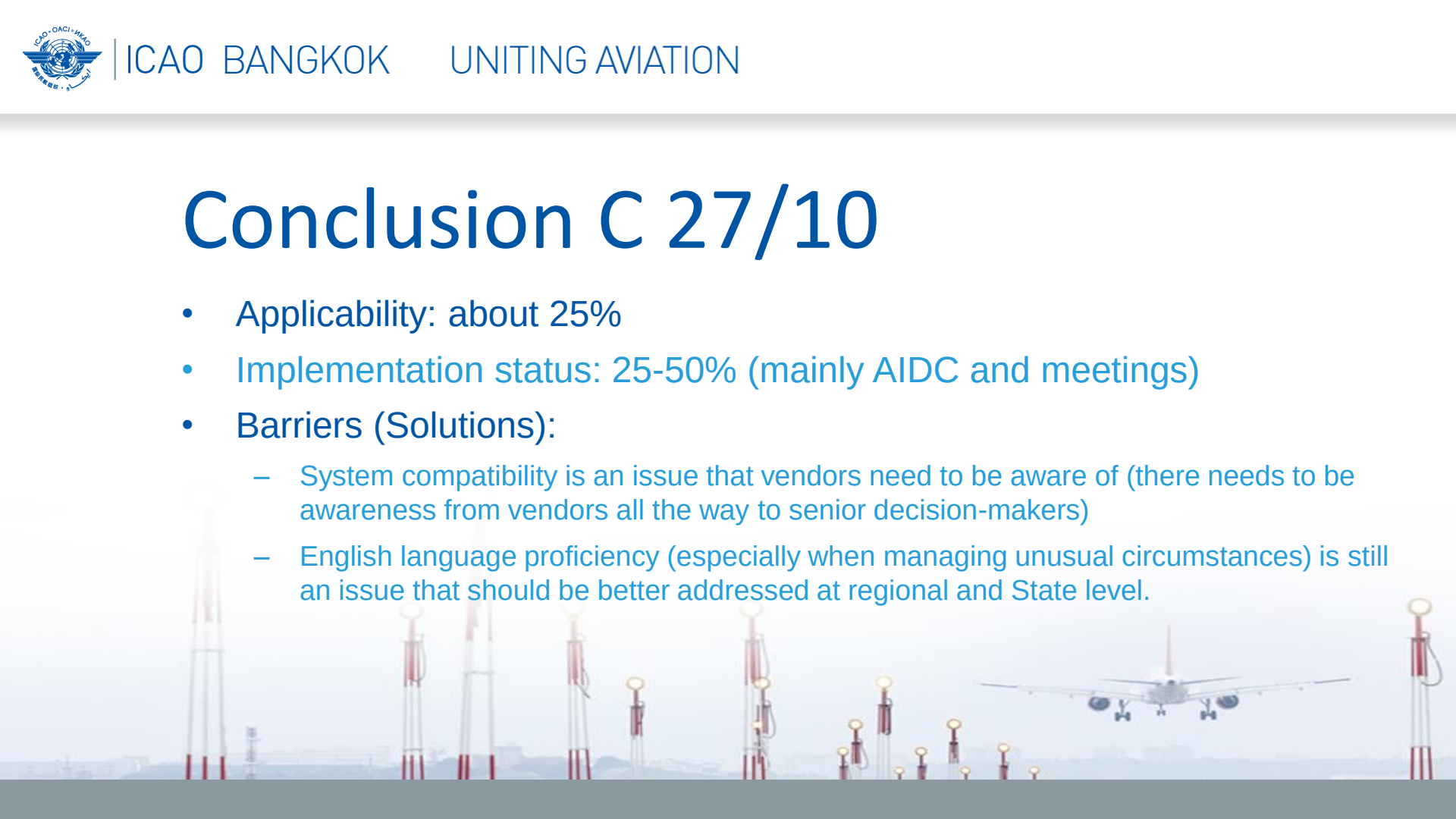
Conclusion C 27/10

- Applicability: about 25%
- Implementation status: 25-50% (mainly AIDC and meetings)
- Barriers (Solutions):
  - States still concentrating on system improvements such as AIDC and not always addressing procedural/human factors improvements
  - More coordination being conducted, but it depends on face-to-face meetings in most cases; need for greater cooperation with safety monitoring agencies to identify root causes and effective barriers



Conclusion C 27/10

- Applicability: about 25%
- Implementation status: 25-50% (mainly AIDC and meetings)
- Barriers (Solutions):
  - System compatibility is an issue that vendors need to be aware of (there needs to be awareness from vendors all the way to senior decision-makers)
  - English language proficiency (especially when managing unusual circumstances) is still an issue that should be better addressed at regional and State level.



ICAO

If you've done a gap analysis on which solutions have been implemented and which haven't, we now need to discuss why – what the barriers are, and how to overcome them!

THANK YOU

APANPIRG/28

Workshop - CNS session

13 September 2017

Background

- 4 APANPIRG conclusions in CNS area
- Was this APANPIRG Conclusion applicable in your context? If not, Why?
- Is this APANPIRG Conclusion implemented now?
- What implementation issues did you face/are you facing?
- If implemented, would you be able to assist other States through sending an expert team or sharing information/point of contact details to other States?

Conclusion No. C 26/32 CRV Cost Arrangement Framework

That,

noting that cost arrangements on current telecommunications exist between some States/Administrations and considering the result of the second iteration of the CRV Cost Benefit Analysis,

APAC States/Administrations be advised to:

- make their own local Cost benefit analysis as needed;
- start discussions of possible new or improved cost arrangement frameworks with other ICAO Member State(s)/Administration(s), based on the Request For Information results;
- and endeavor to establish arrangements for mid 2016.

Conclusion No. C 27/41 Regulators' active support and engagement with ADS-B Implementation and Data sharing

Considering that:

- **a) any delay in ADS-B deployment and operational use brings risks, liability and additional regulator responsibility as traffic grows in FIRs without surveillance and automated safety nets; and**
- **b) the risks in doing nothing whilst continuing to rely on ATC procedures with dependency on voice position reports and lack of automation.**

States (regulatory authorities) are urged to:

- **actively engage with ANSPs to support the ADS-B implementation, in particular the examination of risks, hazards, mitigations and benefits; and**
- **support the ADS-B data-sharing and collaboration among States to achieve harmonized implementation for maximizing benefits of ADS-B.**

Conclusion No. C 26/44 ADS-B OUT Forward Fit Equipage

That,

States/Administrations in APAC Region be strongly encouraged to **mandate**

that **registered aircraft** with a maximum certified take-off mass exceeding 5 700 kg or having a maximum cruising true airspeed capability greater than 250 knots,

with a date of **manufacture on or after 8 June 2018** (two years after the European forward fitment mandate is effective)

be equipped with **ADS-B avionics compliant with Version 2 ES (equivalent to RTCA DO260B) or later version**

Conclusion No. C 27/36 Protection of GNSS signal against jamming

That, considering the reported occurrences of jamming of GNSS signal in APAC Region and their effects on safety of civil aviation operations, States are urged to

- 1. protect all the Aeronautical Radio Navigation Service (ARNS) frequencies;
- 2. take proactive measures to educate public about potential consequences of GNSS spoofing and jamming on civil aviation operations;
- 3. detect and eliminate jamming through an efficient response mechanism, in particular in the vicinity of aerodromes; and
- 4. continue to report occurrences of GNSS interference and their effects to ICAO APAC Regional Office.

ICAO

THANK YOU

C 26/61
MET-ATM Collaboration at National and Sub-Regional Levels

That, States/Administrations are encouraged to strengthen MET-ATM collaboration at national and sub-regional levels, by engaging Meteorological Authorities at suitable ATM coordination meetings with a view to enhance MET support for ATM and develop harmonised requirements for MET to support ATM

OUTCOMES

- Applicable to all States/Administrations
- Implemented in terms of:
  - MoU, protocol, service agreement, LOA's
  - Regular meetings/forums between MET/ATM service providers within State
  - A few States have integrated MET in ATM operations
  - Specific international coordination such as volcanic ash exercises and SIGMET coordination
- Challenges:
  - Develop harmonized requirements for MET to support airspace users
  - Determining MET impacts on ATM ops
  - MET and ATM in different agencies

C 27/50
Expedited availability of extended AMHS

That, States are urged to expedite operational status of extended Air Traffic Services (ATS) message handling system (AMHS) services linking APAC Inter-Regional OPMET Gateways (IROGs) and Regional OPMET Centres (ROCs) to APAC National OPMET Centres (NOCs), and between APAC IROGs and IROGs in neighbouring Regions

OUTCOMES

- Required to support implementation of IWXXM
- Applicable to most States/Administrations
- Implemented in terms of:
  - Basic AMHS available in several States
  - Extended AMHS in test mode in some States
  - Supporting this is HKC workshop on IWXXM
- Challenges:
  - Coordinating implementation and testing with neighbors and other States
  - Resources $ and expertise

C 27/56
Update of information in APANPIRG Air Navigation Deficiencies Reporting Form

That, States/Administrations are urged to establish action plan with defined target dates for resolution of deficiencies, update the status on the corrective action taken and report progress in the Reporting Form of Air Navigation Deficiencies identified in ATM/SAR/AIM, AOP, CNS and MET fields as detailed in Appendices A to D of APANPIRG/27 Working Paper 11

OUTCOMES

- Implemented in terms of:
  - States concerned reported that the reporting form has been regularly updated or it's being worked on
- Challenges:
  - Communicating details to ICAO
- Possible solution:
  - Clearly identified contact person per State who is accountable for updating the Air Navigation Deficiencies Reporting Form
  - IFALPA has an annual deficiency report which may be shared

C 26/63
International Aviation and Climate Change

That, States/Administrations in APAC Region are invited to:

a) continue to consider environmental issues in the planning and implementation of regional air navigation systems;

b) bring to the attention of the ICAO Secretariat specific areas where additional guidance on environmental benefits would be valuable;

c) promote further collaboration with State action plan national focal points for all the operational measures that States wish to develop, implement and/or include in their action plans;

d) inform State action plan national focal points of the availability of further assistance, to be provided by the ICAO Secretariat, related to the preparation and submission of States' action plans; and

e) note that the ICAO Secretariat will keep PIRGs informed of its future activities and developments related to environmental protection.

OUTCOMES

- We only managed very little discussion on this
- Implemented in terms of:
  - Several States have State Action Plan Focal Points
  - Some States have provided ICAO with State Action Plans

ATTACHMENT 5 to the APANPIRG/28 Report

APANPIRG/28 Conclusions/Decisions – Action Plan

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/1 **A**	**Safety Management Implementation**	That, States, regional and international organizations are invited to share tools and examples which support effective safety management implementation to be considered for posting on the ICAO safety management implementation website.	ICAO APAC ICAO HQ APAC States International Organizations	IOM to ICAO HQ State Letter Action in accordance with the Conclusion	October 2017 Not specified Not specified
D 28/2 **A & B**	**APA-CDM/TF Terms of Reference**	That, the revised APA-CDM/TF Terms of Reference at **Appendix A to the Report on Agenda Item 3.1** be adopted.	ICAO APAC	State Letter Notify APA-CDM/TF	October 2017 November 2017
D 28/3 **A & B**	**Amendment of Water Aerodrome Small Working Group's TOR**	That, amended WASWG Terms of Reference placed at **Appendix B to the Report on Agenda Item 3.1** be adopted.	ICAO APAC	State Letter Notify WASWG	October 2017 February 2018
D 28/4 **A & B**	**ATFM/SG Terms of Reference**	That, the ATFM/SG Terms of Reference at **Appendix A to the Report on Agenda Item 3.2** be adopted.	ICAO APAC	State Letter Notify ATFM/SG	COMPLETED Ref. T 3/10.0 – AP114/17 dated 28 September 2017 May 2018

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/5 **A & B**	**FIR/SRR Air Navigation Plan Review**	That, Asia/Pacific States and Administrations having responsibility for the provision of services within a Flight Information Region (FIR) or Aeronautical Search and Rescue Region (SRR), should conduct a review of the ICAO data related to the FIR or SRR and provide a verification to the ICAO Regional Office as early as possible, but in any event not later than 31 December 2017.	ICAO APAC APAC States	State Letter with Implementation Guidance Material (GM) Action in accordance with the Conclusion	COMPLETED Ref. T 3/10.0 – AP115/17, 28 September 17 31 December 2017
D 28/6 **A & B**	**APUAS/TF Terms of Reference**	That, the amended Terms of Reference for the Asia/Pacific UAS Task Force at **Appendix B to the Report on Agenda Item 3.2** be adopted.	ICAO APAC	State Letter Notify APUAS/TF	COMPLETED Ref. T 3/10.0 – AP114/17, 28 September 17 August 2018
C 28/7 **A & B**	**State Actions to Ensure the Quality Management of Aeronautical Information**	That, States are urged to: 1. Examine and update where necessary the relevant primary legislation and aviation regulations to ensure that all originators and publishers of aeronautical information are required to comply with the Annex 15 standards and recommended practices relating to quality management and promulgation of aeronautical information; 2. Examine all available guidance for quality management of aeronautical information, including the *Guidance Manual for Aeronautical Information Services in the Asia/Pacific Region*; and 3. Ensure that robust quality management procedures are developed, implemented and used by all originators and publishers of aeronautical information, supported by formal agreements to ensure timeliness and quality.	ICAO APAC APAC States	State Letter with Implementation GM Action in accordance with the Conclusion	COMPLETED Ref. T 3/10.0 – AP116/17, 28 September 17 Not specified

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/8 **A & B**	**Proposal for Amendment to the Asia and Pacific Regions Air Navigation Plan**	That, ICAO prepares and circulates for Regional Air Navigation Agreement a proposal for amendment (PfA) to the Asia and Pacific Regions Air Navigation Plan Volume II, as provided in **Appendix C to the Report on Agenda Item 3.2**.	ICAO APAC ICAO APAC	State Letter (Circulation of PfA of ANP Vol. II) Implementation Guidance Material	COMPLETED Ref. T 3/10.0 – AP116/17, 28 September 17 COMPLETED
C 28/9 **A & B**	**AIM-specific Working Group to Finalize ICAO Guidance Material**	That, ICAO be urged to form an AIM-specific working group to focus on the finalization of overdue AIS-related guidance material, with Doc 9839 *Manual of the QMS for AIM*, Doc 9991 *AIM Training Development Manual* and Doc 8126 *Aeronautical Information Service Manual* having the highest priority.	ICAO APAC ICAO APAC ICAO HQ	IOM to HQ Implementation Guidance Material Action in accordance with the Conclusion	COMPLETED Ref. T 3/10.0 – AP116/17, 28 September 17 COMPLETED Not specified
C 28/10 **A & B**	**Search and Rescue Capability Focus Areas**	That, given the continuing overall poor levels of implementation of Search and Rescue (SAR) coordination with adjacent States, effective SAR regulatory oversight and the training of both SAR inspectors and personnel that provide the SAR services, Asia/Pacific States should provide greater resources and high level support to enable a focus on these areas.	ICAO APAC APAC States	State Letter with Implementation GM Action in accordance with the Conclusion	COMPLETED Ref. T 3/10.0 – AP117/17, 28 September 17 Not specified

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/11 **A & B**	**PBCS Operational Authorizations**	That, noting the expected implementation of Performance-Based Communications and Surveillance (PBCS) provisions of ICAO Annexes, PANS and Guidance Material by not later than 29 March 2018, Asia/Pacific States are urged to: 1. Expedite the development and implementation of the PBCS authorization process; 2. Share information through the ICAO Asia/Pacific Regional Office on the availability of PBCS regulatory material and on the expected readiness of their aircraft operators; and 3. Monitor communications and surveillance performance against RCP240 and RSP 180 specifications as described in Doc 9869 – *PBCS Manual* for all individual aircraft using datalink in their area of responsibility, and make the performance data available on request to all States of Registry.	ICAO APAC APAC States	State Letter with Implementation GM Action in accordance with the Conclusion	COMPLETED Ref. T 3/10.0 – AP118/17, 28 September 17 29 March 2018

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/12 **A & B**	**Management of Non-RVSM Aircraft**	That, due to the continuing problem of non-Reduced Vertical Separation Minimum (RVSM) aircraft operating inappropriately within the RVSM stratum on a long-term basis:	ICAO APAC	State Letter with Implementation GM	COMPLETED Ref. T 3/10.0 – AP119/17, 28 September 17
		a) Asia/Pacific States should respond in a timely manner to Regional Monitoring Agency (RMA) recommendations; and	APAC States	Action in accordance with the Conclusion	Not specified
		b) Asia/Pacific States and Administrations should enact policies, legislation (including appropriate enforcement actions), and procedures to ensure such non-approved aircraft are identified and refused entry into the RVSM stratum unless specifically exempted, or they have Air Traffic Control (ATC) approval, and			
		c) ICAO should survey Asia/Pacific States and Administrations to determine whether such policies, legislation and procedures to exclude non-RVSM aircraft have been implemented; and	ICAO APAC	Conduct survey	31 December 2017
		d) RMAs should treat aircraft with an unverified RVSM approval status by its State of Approval for more than one month, starting from the first RMA notification, as a non-RVSM approved aircraft and that information provided to relevant State authorities for appropriate action; and	RMAs	Action in accordance with the Conclusion (d)	Not specified
		e) RMAs should be empowered by APANPIRG to have direct communication with concerned ministries/authorities if required in the event of inadequate action by the State.			

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/13 **A & B**	**Asia/Pacific Region Data Link Performance Monitoring**	That, IPACG/FIT and ISPACG/FIT are requested to provide to the RASMAG meeting each year a list of IPACG and ISPACG States that have: 1) made arrangements for the reporting and analysis of data link problems to a competent CRA as identified by the Regional Airspace Safety Monitoring Advisory Group (RASMAG); and 2) Reported data link problems to the CRA; and 3) provided data link problem analysis reports to a recognized FANS Interoperability/Implementation Team (FIT); and 4) provided data-link performance analysis reports to a recognized FIT.	ICAO APAC APAC States (IPACG/FIT and ISPACG/FIT)	State Letter with Implementation GM Action in accordance with the Conclusion	COMPLETED Ref. T 3/10.0 – AP119/17, 28 September 17 Not specified

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/14 **A & B**	**ANS Deficiencies Relating to Data Link Performance Monitoring and Analysis**	That, an Air Navigation Deficiency should be raised against non-implementation of the relevant provisions of Annex 6, Annex 11and PANS/ATM when any Asia/Pacific Administration has implemented operational ADS-C/CPDLC services and: a) has not made arrangements for the reporting and analysis of data link problems to a competent CRA as identified by the Regional Airspace Safety Monitoring Advisory Group (RASMAG); or b) does not report data link problems to the CRA; or c) does not provide data link problem analysis reports to a recognized FANS Interoperability/Implementation Team (FIT); or d) does not provide data-link performance analysis reports to a recognized FIT at least once annually. This Conclusion supersedes Conclusion APANPIRG/26/25.	ICAO APAC APAC States	State Letter with Implementation GM Action in accordance with the Conclusion	COMPLETED Ref. T 3/10.0 – AP118/17, 28 September 17 Not specified
C 28/15 **A & B**	**PBCS-Related Proposals for Amendment to Regional Supplementary Procedure**	That, ICAO Asia/Pacific Regional Office is requested to circulate to States and then submit for consideration by the Council of ICAO the Proposals for Amendment to Regional Supplementary Procedures MID/ASIA and PAC to support performance-based separation.	ICAO APAC ICAO APAC	State Letter (Circulation of PfA of Regional Supplementary Procedures MID/ASIA and PAC to support performance-based separation) Implementation Guidance Material	COMPLETED Ref. T 3/10.0 – AP118/17, 28 September 17 COMPLETED

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/16 **A & B**	**Upgrade AMHS to support IWXXM traffic**	That, In order to support the requirement to exchange MET information in IWXXM format, States/Administrations be urged to upgrade AMHS systems (AMHS server and User Agent) by November 2020 to either Extended AMHS or Basic ATS Message Handling Service plus File Transfer Body Parts sub-set of extended AMHS for Binary data exchange (FTBP) functional groups as defined in Doc 9880 Part IIB section 3.4.1.	ICAO APAC APAC States	State Letter with Implementation GM Action in accordance with the Conclusion	30 December 2017 November 2020
D 28/17 **A & B**	**Dissolution of CRV Task Force**	Noting that the terms of reference b/ to d/ have been completed and that completion of a/ and e/ will be performed by CRV OG on the basis of mature CRV implementation plan, and CRV Operating Manual, That, the CRV Task Force be dissolved.	ICAO APAC	State Letter	October 2017
C 28/18 **A & B**	**Revised Strategy for Implementation of Communication systems to support Air Navigation Service**	That, the revised Strategy for implementation of Communication systems to support Air Navigation Service provided in **Appendix C** to the Report on Agenda Item 3.4 is adopted.	ICAO APAC APAC States	State Letter with Implementation GM Action in accordance with the Conclusion	October 2017 Not specified

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/19 **A & B**	**Amendment of the Management Service Agreement for CRV project (RAS14801)**	Recognizing that ICAO Technical Cooperation Bureau satisfactorily completed all the defined work items in the initial Management Service Agreement (MSA) and Project Document of RAS14801, that the required payments were settled, and that in end 2016, all the requirements of both parties have been fully completed and closed on record, That, i) all Pioneer States are encouraged to counter-sign the amended Pro Document provided in **Appendix D** to the Report on Agenda Item 3.4; ii) any Pioneer State not countersigning is entitled to get its share of the remaining fund balance back; and iii) a Pioneer State for which a direct CRV connection is not considered feasible in 2017 by the selected vendor is entitled to get its initial contribution in full.	ICAO APAC APAC States CRV Pioneer States	State Letter with Implementation GM Action in accordance with the Conclusion	October 2017 31 March 2018
C 28/20 **A & B**	**Revised ANP Table CNS II APAC-1 – AIDC Implementation Plan**	That, the revised Table CNS II APAC-1-AIDC Implementation Plan provided in **Appendix E** to the Report on Agenda Item 3.4 be amended in accordance with the established procedure.	ICAO APAC	State Letter (circulation of proposal for amendment of the ANP)	30 December 2017
C 28/21 **A & B**	**Coding of Asia-Pacific SBAS service provider IDs in the avionics**	That, ICAO, with the support of ICCAIA, be urged to: a) coordinate the appropriate coding of Asia-Pacific SBAS service provider IDs in the avionics as early as possible through the implementation of ARINC Nav data specification (revision 21); and b) advise about the advantages and disadvantages to use the SBAS service provider ID 15 currently available with revision 20 as a workaround pending the implementation of a).	ICAO APAC ICAO	IOM to HQ Letter to ICCAIA	October 2017 30 December 2017

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/22 **A & B**	**Establishment of National PBN stakeholders forums**	Noting that the insufficient articulation between the regulatory and implementation processes is a major cause for the slow implementation of PBN, a lack of efficiency and an increased risk in operations: That, States be urged to establish a national PBN stakeholders forum (or a similar mechanism) to review and coordinate on an ongoing basis: a) the national PBN implementation and regulatory roadmaps, taking into account the global and regional objectives, the fleet readiness, the best equipped/best served principle, and the reduction of environmental impacts; b) the training policies and programmes for all stakeholders; c) the necessary changes to the legal and regulatory framework; and d) the expected and actual benefits of PBN implementation in terms of safety, efficiency, schedule reliability, CO_2 emissions and noise exposure, airport accessibility, and reduced infrastructure costs. The forum should include regulator, ANSP, aerodrome operators, Instrument Flight Procedure Design organizations, all airspace users, and as required communities impacted by noise exposure and carbon emission levels. *Note: the PBN implementation plan is an appropriate tool to support such a national coordination*; *IFSET is an appropriate tool to demonstrate the expected and actual benefits of PBN implementation*.	ICAO APAC APAC States	State Letter with Implementation GM Action in accordance with the Conclusion	October 2017 16 March 2018

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/23 **A & B**	**Update of the Catalogue of Flight Validation and Inspection Service providers in Asia and Pacific Region**	That, a) States provide their flight validation and inspection unit's capabilities to reflect PBN procedure flight validation and flight inspection capabilities through an ICAO RSO's survey; and b) ICAO Asia and Pacific Regional Office update the Catalogue of Flight Inspection Units Asia and Pacific Regions based on the survey outcomes.	ICAO APAC APAC States ICAO RSO	State Letter with Implementation GM Action in accordance with the Conclusion (a) Action in accordance with the Conclusion (b)	October 2017 28 February 2018 28 February 2018
C 28/24 **A & B**	**Revised Template for Promulgation of ADS-B Avionics Equipage Requirements**	That, 1) States intending to implement ADS-B based surveillance service for a defined airspace and having not published regulations be urged to promulgate mandating rules for ADS-B Avionics Equipage Requirements as soon as possible using the revised Template provided in **Appendix F** to the Report on Agenda Item 3.4; 2) States that have implemented ADS-B based surveillance services are also urged to update their ADS-B avionics equipage requirements to align with the template; *Note: States are urged to include at least the standards stated in the template. States may include other standards allowed by the State's regulations.* 3) The template adopted under Conclusion APANPIRG/26/42 be superseded by the revised template; and 4) The relevant parts in the ADS-B Implementation and Operations Guidance Document (AIGD) be updated accordingly.	ICAO APAC APAC States ICAO APAC	State Letter with Implementation GM Action in accordance with the Conclusion Update the relevant parts of AIGD	October 2017 1) and 2): With sufficient lead time before mandate so that operators can equip 30 December 2017

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/25 **A & B**	**Regional Supplementary Procedures for ADS-B Operation**	That: 1) the Proposal for Amendment (PfA) to the Regional Supplementary Procedure (SUPP Doc 7030) be processed in accordance with established procedure, based on information provided in **Appendix G** to the Report on Agenda Item 3.4; and 2) ICAO be requested to coordinate the PfA as required, with the objective of achieving inter-regional alignment of requirements for Operation of ADS-B.	ICAO APAC	State Letter (circulation of Proposal for Amendment of the Regional Supplementary Procedure (SUPP Doc 7030)) with Implementation GM	October 2017
D 28/26 **A & B**	**Dissolution of APAC/NAT ADS-C reporting intervals Task Force**	That, noting that the assigned tasks having been completed and proposals for amendment to ICAO relevant document being forwarded to appropriate ICAO groups for consideration, the APAC/NAT ADS-C reporting intervals Task Force is dissolved.	ICAO APAC	State Letter (Notify to Members of the TF)	October 2017
C 28/27 **A & B**	**Proposal for Amendment of the Asia/Pacific Air Navigation Plan, Volume I and Volume II, Part V – MET**	That, the proposed amendments at **Appendix A to the Report on Agenda Item 3.5** concerning requirements for services and facilities contained in Volume I, Table MET I-1 (State Volcano Observatories) and Volume II, Table MET II-2 (Aerodrome Meteorological Offices), are endorsed and circulated to States in a Proposal for Amendment of the Asia/Pacific Air Navigation Plan, Volume I and Volume II.	ICAO APAC	State Letter (Circulation of Proposal for Amendment of the ANP Vol. I & II)	October 2017

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/28 **A & B**	**Proposal for Amendment of the common Air Navigation Plan Template, Volume I and Volume II, Part V – MET**	That, the proposed amendments at **Appendix B to the Report on Agenda Item 3.5** concerning the "General regional requirements" in Volume I and Volume II, "Specific regional requirements" in Volume II and "Explanation of the table" in Volume II, Table MET II-2, be forwarded to the ICAO Air Navigation Plan working group (ANP WG) for further consideration in the context of developing improvements of a global nature to the common ANP template for use by all ICAO Regions.	ICAO APAC	IOM to ICAO HQ	October 2017
C 28/29 **A & B**	**Removal of AN deficiencies AP-MET-03 and AP-MET-06 from the APANPIRG Open List**	That, the AN Deficiencies AP-MET-03 and AP-MET-06 be removed from the APANPIRG Open List.	ICAO APAC	State Letter	November 2017
C 28/30 **A & B**	**SIGMET coordination in the APAC Region**	That, States and Administrations are encouraged to: a) Participate in cross-FIR-boundary SIGMET coordination on a bilateral or multilateral basis for seamless hazardous weather information for the benefit of aviation users, as well as advancing the capabilities of participating MWOs in the issuance of SIGMETs for cross-border hazardous weather phenomena; and b) Continue to share outcomes from SIGMET coordination activities and consider a step-by-step integration of SIGMET coordination activities in the region when operationally ready.	ICAO APAC APAC States	State Letter with Implementation GM Action in accordance with the Conclusion	October 2017 Not specified

Conclusion/ Decision No --- Strategic Objective*	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Target date
C 28/31 **A & B**	**Update of information in APANPIRG Air Navigation Deficiencies Reporting Form**	That, States/Administrations be urged to establish: a) action plan with defined target dates for resolution of deficiencies, update the status on the corrective action taken and report progress in the Reporting Form of Air Navigation Deficiencies identified in ATM/SAR/AIM, AOP, CNS and MET fields as detailed in **Appendices A, B, C & D to the Report on Agenda Item 4**; and b) a Focal Point to coordinate actions to resolve the Deficiencies.	ICAO APAC APAC States	State Letter with Implementation GM Action in accordance with the Conclusion	October 2017 Before the respective Sub Group Meeting in 2018.

— END —