



International Civil Aviation Organization

The Second Meeting of the South Asia/Indian Ocean ATM Coordination Group (SAIOACG/2)

Bangkok, Thailand, 22 – 25 May 2012

Agenda Item 2: Review Outcomes of Related Meetings

RELEVANT MEETING OUTCOMES

(Presented by the Secretariat)

SUMMARY

This paper presents information on meeting outcomes relevant to the SAIOACG.

This paper relates to –

Strategic Objectives:

A: *Safety – Enhance global civil aviation safety*

C: *Environmental Protection and Sustainable Development of Air Transport – Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment*

Global Plan Initiatives:

- GPI-1 Flexible use of airspace
- GPI-2 Reduced vertical separation minima
- GPI-3 Harmonization of level systems
- GPI-4 Alignment of upper airspace classifications
- GPI-5 RNAV and RNP (Performance-based navigation)
- GPI-6 Air traffic flow management
- GPI-7 Dynamic and flexible ATS route management
- GPI-8 Collaborative airspace design and management
- GPI-9 Situational awareness
- GPI-10 Terminal area design and management
- GPI-11 RNP and RNAV SIDs and STARs
- GPI-12 Functional integration of ground systems with airborne systems
- GPI-13 Aerodrome design and management
- GPI-14 Runway operations
- GPI-15 Match IMC and VMC operating capacity
- GPI-16 Decision support systems and alerting systems
- GPI-17 Data link applications
- GPI-18 Aeronautical information
- GPI-19 Meteorological Systems
- GPI-20 WGS-84
- GPI-21 Navigation systems
- GPI-22 Communication infrastructure
- GPI-23 Aeronautical radio spectrum

1. INTRODUCTION

1.1 The Twenty Second Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/22) was held in Bangkok, Thailand from 5 to 9 September 2011.

1.2 The Fifth Meeting of the Asia/Pacific ICAO Flight Plan & ATS Messages Implementation Task Force and Seminar (FPL&AM/TF/5& Seminar) was held at Manila, Philippines from 7 until 9 November 2011. This Task Force was responsible for the implementation strategy for the new ICAO flight planning and ATS message formats specified in Amendment 1 to DOC 4444.

1.3 The First Meeting of the ICAO Asia/Pacific Seamless ATM Planning Group (APSAPG/1) was held in Bangkok from 31 January to 3 February 2012. This body was established by APANPIRG/22 under Decision 22/56 and reports directly to APANPIRG.

1.4 The Sixteenth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/16) was held in Bangkok from 20 to 23 February 2012.

1.5 The Seventh Meeting of the Aeronautical Information Services – Aeronautical Information Management Implementation Task Force (AAITF/7) and an International Codes and Routes Designators (ICARD) Seminar were held in Hanoi, Viet Nam from 13 until 16 March 2012.

1.6 The Ninth Meeting of the ICAO Asia/Pacific Performance-Based Navigation Task Force (PBN/TF/9) was held at Bangkok from 27 until 30 March 2012. An important part of the PBN/TF's work was to evaluate and facilitate the development of PBN-related standards which emanated from the PBN Study Group (PBNSG) and Separation and Airspace Safety Panel (SASP).

1.7 The Automatic Dependent Surveillance – Broadcast Seminar and Eleventh Meeting of Automatic Dependent Surveillance – Broadcast (ADS-B) Study and Implementation Task Force meeting (ADS-B SITF/11) was held at Jeju, Republic of Korea, 24-27 April 2012.

1.8 The Sixth Meeting of the South-East Asia Route Review Task Force (SEA-RR/TF/6) was held at ICAO Asia and Pacific Office on 30 April 2012. Subsequently, the Nineteenth Meeting of South-East Asia ATM Coordination Group (SEACG/19) was held from 1 to 4 May 2012 at the same venue.

2. DISCUSSION

APANPIRG/22

2.1 Regarding the traffic flows and ATM coordination involving Southeast Asia and the South Asia/Indian Ocean areas, APANPIRG/22 agreed to the following Conclusion and Decision:

Conclusion 22/5 - Major Traffic Flow (New)

That, the traffic flow between the Middle East airports such as Dubai and Abu Dhabi to Australasian or South East Asian airports such as Sydney and Singapore be recognized as APAC Major Traffic Flow AR-10 and recommended as an amendment to the Global Air Navigation Plan (Doc 9750).

Decision 22/6 – Establishment of SAIOACG

That, the BBACG be renamed as the South Asia Indian Ocean ATM Coordination Group – SAIOACG to cover a geographical area which includes Major Traffic Flows AR-1, AR-4 and AR-10, and that the TOR as appended at Appendix E to Report on Agenda item 3.2 be adopted.

2.2 APANPIRG/22 also agreed to the following Conclusion (some of these elements were planned to be updated by APSAPG and incorporated into the Asia/Pacific Seamless ATM Plan):

Conclusion 22/7 - Asia/Pacific Air Navigation Concept of Operations

That, the Asia/Pacific Air Navigation Concept of Operations provided in Appendix F to the Report on Agenda Item 3.2 be adopted and published on the APAC website as regional guidance material for navigation facility, service and avionics equipment planning.

2.3 The ATM/AIS/SAR Sub-Group had discussed the matter of priority for ADS-B aircraft, noting the work of the ADS-B Study and Implementation Task Force (ADS-B SITF/10). Previous APANPIRG ADS-B Conclusions had dealt with aircraft equipment but not the prioritization of ADS-B aircraft in airspace designated for the purpose of ADS-B.

2.4 The Sub-Group developed a Draft Conclusion for APANPIRG's consideration, which enabled a mandate for the use of ADS-B equipped aircraft and priority for ADS-B equipped aircraft in designated airspace, if the State desired such a requirement (note: this would not compel a State to designate ADS-B airspace). APANPIRG/22 agreed to the following Conclusion:

Conclusion 22/8 - ADS-B Airspace Mandate

That, States intending to implement ADS-B based surveillance services may designate portions of airspace within their area of responsibility:

- a) mandate the carriage and use of ADS-B equipment; or*
- b) provide priority for access to such airspace for aircraft with operative ADS-B as equipment over those aircraft not operating ADS-B equipment.*

2.5 The SAIOCG meeting should note that although the Asia/Pacific Air Navigation Concept of Operations included reference to certain PBN airspace capabilities¹ and expected safety net standards (such as Airborne Collision Avoidance Systems), there was no equivalent to Conclusion 22/8 for these areas in terms of airspace mandates and application of priorities. As some Asia/Pacific administrations were planning to mandate requirements within international airspace such as RNP4 and other PBN specifications, the SAIOACG is invited to endorse the following SEACG Draft Conclusion for APANPIRG's consideration on this area:

Draft Conclusion SEACG 19/1 - Asia/Pacific Air Navigation Concept of Operations Mandates

That, States intending to implement Performance-Based Navigation and Safety Nets may, after appropriate consultation with airspace users, designate portions of airspace within their area of responsibility:

- a) as providing priority for access to such airspace for aircraft with prescribed Performance-Based Navigation (PBN) specifications; and*
- b) mandating the carriage and use of an operable mode A/C and/or mode S transponder, Airborne Collision Avoidance System (ACAS) and Terrain Awareness Warning Systems (TAWS) as appropriate.*

¹ Air-routes above FL195 and within terminal controlled airspace (CTA and CTR) associated with major international aerodrome must be PBN-based with an appropriate specification determined by the Airspace Authority (such as en-route RNP2, terminal RNP1/0.3) based on the GANP and the Regional Navigation Strategy.

2.6 After considering the request from the 47th Conference of Directors General of Civil Aviation (Macao, China, 25-29 October 2010) for ATM Contingency Plans to be developed and implemented on a regional basis, APANPIRG/22 agreed to the following Conclusion:

Conclusion 22/9 - Regional ATM Contingency Plan Task Force

That, a Regional ATM Contingency Plan Task Force (RACP/TF) be formed¹, reporting to APANPIRG through the ATM/AIS/SAR Sub-Group for planning, coordination and implementation of a regional ATM contingency plan, with a link to the METWARN/I Task Force, in accordance with the Terms of Reference as provided in Appendix G to the Report on Agenda Item 3.2.

FPL&AM/TF/5

2.7 The FPL&AM/TF/5 was presented the results from the quarterly questionnaire, which was intended to keep the Flight Plan Implementation Tracking System (FITS, located at <http://www2.icao.int/en/FITS/Pages/home.aspx>) up-to-date. The FITS was also intended to raise awareness of issues associated with the transition phases as early as possible.

2.8 The Regional Office had received a relatively poor Questionnaire response from States², given the important nature of the changes, and had initiated a new Questionnaire that focused on the actual activation dates of the three planning phases:

- Phase 1–Air Navigation Service Provider (ANSP) software delivery and internal testing (1 January - 31 March 2012);
- Phase 2–ANSP external testing/implementation (1 April - 30 June 2012); and
- Phase 3–Airspace user testing/implementation (1 July - 15 November 2012).

2.9 As a result of the Questionnaire response, an initial risk assessment had been completed. Each administration that did not update their information was assumed to have a high risk of not implementing as expected, although the risk results were expected to change as further information became available. The risk assessment took into account the probability of not implementing effectively, and the consequences of this.

2.10 Further information on Amendment 1 implementation progress can be found in IP02.

¹ The first RACPTF meeting was held at Bangkok from 17-20 April 2012.

² Only Lao PDR had responded to the 1 April Questionnaire of the SEACG States. Hong Kong, China, Indonesia, Malaysia, the Philippines and Singapore have provided one update in January 2012. No updates had been received since November 2011 from Brunei Darussalam, Macao, China, Thailand, and Viet Nam.

APSAPG

2.11 APSAPG was tasked with developing a plan that facilitated inter-operable and harmonised systems related to ATM across the Asia/Pacific Regions. A key part of the planning process was the assessment of current aircraft equipage mandates and Air Traffic Service (ATS) capabilities in order to determine the areas that need improvement to reach a minimum regional specification. Minimum aircraft equipage levels had previously been established in other regions within certain portions of airspace, but the intent in the Asia/Pacific was to also apply minimum airspace and Air Navigation Service specifications, in order to harmonise standards from ‘gate to gate’ where possible.

2.12 The APSAPG was required through its Terms of Reference to ensure that the Aviation System Block Upgrades (ASBUs) were an important part of its planning. The ASBU consist of several elements, either technology or procedurally-based, that were assembled into a ‘block’ of available solutions.

2.13 APSAPG was expected to produce a final draft Asia/Pacific Seamless ATM Plan which guided the overall regional development of systems, including ASBU, for APANPIRG/24’s consideration (June 2013). During the development of this draft, it was expected that the APSAPG would identify areas of the Asia/Pacific that had not progressed as fast as other areas; thus this ‘gap’ analysis would inevitably provide valuable information on priorities for the SEACG.

2.14 The APSAPG/1 meeting noted there were three main areas which required the development of Seamless ATM principles: People, Facilities, and Technology and Information. Under these headings, a total of 53 draft Seamless ATM Principles were being considered by the APSAPG, which may be of interest to SEACG and are provided in **Appendix 1**.

RASMAG/16

2.15 RASMAG/16 was updated on the Reduced Vertical Separation Minimum (RVSM) risk trends within South Asian airspace. An overall image of regional RVSM compliance is provided in **Attachment A**.

2.16 India presented a revised airspace analysis and safety assessment from the Bay of Bengal, Arabian Sea and Indian Ocean Monitoring Agency (BOBASMA) in support of the 50NM separation being implemented on various RNP10 routes. The assessment had been peer reviewed by the AAMA and the Southeast Asia Safety Monitoring Agency (SEASMA).

2.17 The report noted there had been difficulty in completing Letters of Agreement (LOA) for data sharing, as many States had internal administrative issues in signing agreements with foreign entities, thus the provision of TSD from States in support of BOBASMA activity was on an informal basis. Data was not received from a number of States which hindered BOBASMA in undertaking the assessment, although Afghanistan, Pakistan and Sri Lanka provided data prior to the meeting.

2.18 **Table 1** provides the BOBASMA safety assessment summary for December 2011. Figure 1 indicates the results of the collision risk estimates using cumulative 12-month Large Lateral Deviation (LLD) and Large Longitudinal Error (LLE) reports since January 2011.

Type of Risk	Risk Estimation	TLS	Remarks
Lateral Risk	1.04405×10^{-9}	5×10^{-9}	Below Overall TLS
Longitudinal Risk	0.67326×10^{-9}	5×10^{-9}	Below Overall TLS

Table 1: Lateral and Longitudinal Risk Estimation

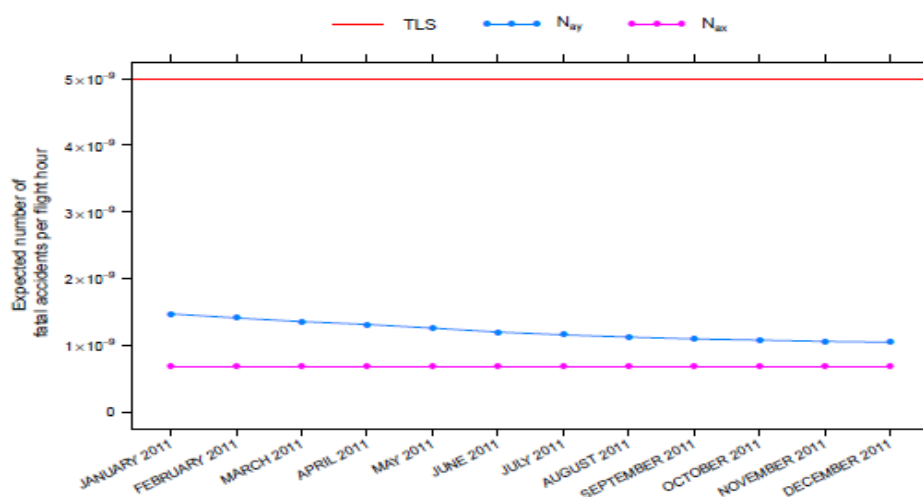


Figure 1: Assessment of compliance with lateral and longitudinal TLS Values

2.19 The Monitoring Agency for the Asia Region (MAAR) provided a summary of the Bay of Bengal (BOB) airspace RVSM technical, operational, and total risks (**Table 2**). **Figure 2** presents collision risk estimate trends from December 2010 until November 2011.

Bay of Bengal Airspace – estimated annual flying hours = 1,561,454 hours (note: estimated hours based on Dec 2010 traffic sample data)			
Source of Risk	Risk Estimation	TLS	Remarks
Technical Risk	0.54×10^{-9}	2.5×10^{-9}	Below Technical TLS
Operational Risk	0.62×10^{-9}	-	-
Total Risk	1.16×10^{-9}	5.0×10^{-9}	Below Overall TLS

Table 2: BOB Airspace RVSM Risk Estimates

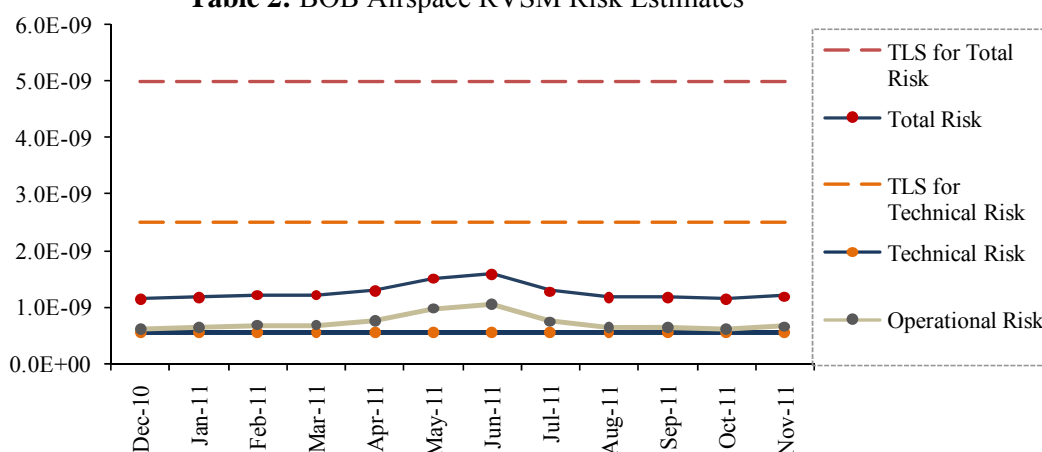


Figure 2: BOB Airspace RVSM Risk Estimate Trends

2.20 It was unclear about the status of ATS Inter-facility Data-link Communications (AIDC) in South Asia, which was a key enabler for the reduction of Large Height Deviations (LHD). An ad hoc survey at the SEACG revealed a fragmented and unplanned approach to AIDC.

2.21 The meeting noted that the new FIT-Asia (Future Air Navigation Interoperability Team) agency which reported to RASMAG would first meet on 27 August 2012. The purpose of FIT-Asia was to facilitate a cohesive Asia/Pacific approach and transfer of technical data-link monitoring information that supported the provision of reduced separations.

AAITF/7

2.22 The meeting discussed the possible reasons for the lack of compliance with Annex 15 requirements for major changes such as ATS routes, navigation aids and the status of aerodromes. Specifically, these issues involved lack of adequate notice and compliance with the Aeronautical Information Regulation and Control (AIRAC) cycle. The meeting noted that project planning that took into account AIM issues should be an automatic part of a State's responsibilities under Safety Management System (SMS) requirements. The main reasons for these issues appeared to be:

- Poor planning and coordination between change originators such as Air Traffic Management (ATM), resulting in AIS units receiving information for promulgation less than the required time before its effective date; and
- AIS units not being empowered to decline to promulgate information not complying with the Annex 15 requirements.

2.23 Acknowledging the serious and systemic nature of this problem, the meeting agreed to the following Draft Conclusion for the ATM/AIS/SAR Sub-Group's endorsement and APANPIRG's approval:

AAITF Draft Conclusion 7/1: Annex 15 Promulgation Requirements Compliance

That, States should be urged to recognise the importance of Annex 15 compliance in respect of aeronautical data affected by major projects, by:

- a) establishing formal coordination between change originators and Aeronautical Information Service (AIS) units to ensure appropriate planning and that promulgation requirements were taken into account; and*
- b) empowering AIS personnel to decline requests that did not comply with Annex 15, except for urgent corrections, emergencies, and matters of national security.*

2.24 The AAITF meeting considered the progress of AIS-AIM implementation to date, noting that the Transition Table (**Attachment B**) and the survey indicated that implementation had been inconsistent among States, and that many administrations had not progressed beyond Phase 1, despite this being expected several years ago (Phase 1 November 2010, Phase 2 November 2013).

2.25 Only 10 Asia/Pacific administrations had achieved the four Phase 1 elements, and eight had implemented eight of the 21 elements (only India and Pakistan from South Asia).

2.26 Given the slow progress in many States thus far, it was suggested that the AAITF place a much greater emphasis on individual State planning to achieve AIM transition as soon as practicable. The meeting agreed to the following Draft Conclusion for the ATM/AIS/SAR Sub-Group's endorsement and APANPIRG's approval:

AAITF Draft Conclusion 7/2: AIS-AIM Transition State Plan

That, States should develop a basic plan that identified when all the Aeronautical Information Service – Aeronautical Information Management (AIS-AIM) Transition elements in the AIS-AIM Roadmap would be completed, and submit these plans to the Asia/Pacific Regional Office prior to 1 January 2013.

2.27 The International Codes and Routes Designators (ICARD) Seminar provided direct assistance to numerous Asia/Pacific States present, and as a result, eight administrations successfully registered for 5LNC Planner status, bringing the total number of Asia/Pacific users to 22. These administrations were: Cambodia, India, Indonesia, Macao China, the Philippines, Sri Lanka, the Solomon Islands and Viet Nam. Of the South Asian nations, only Afghanistan, Bhutan, Maldives, Myanmar and Nepal did not have access to ICARD.

PBN/TF/9

2.28 The PBN Plan Review Team had undertaken assessments of 12 plans in 2012, and as a result there has been a significant improvement in the number of administrations with a ‘Robust’ status plan, so one-third of administrations now had satisfactory PBN planning. States that had achieved this status in the past 12 months were: Hong Kong, China, Myanmar, Nepal, the Philippines and Sri Lanka. **Table 1** provides an overall summary of the status of Asia/Pacific PBN Plan changes.

Asia/Pacific PBN Plan Status	(PBN/TF/8) 2011	(PBN/TF/9) 2012
Robust	9 (21%)	14 (33%)
Marginal	4 (10%)	5 (12%)
Incomplete	8 (19%)	5 (12%)
Total Plans	21 (50%)	24 (57%)
Administrations with no plan	21	18

Table 1: Asia/Pacific PBN Plan Overall Status Changes

2.29 Notwithstanding the overall improvement, a large number of States remained as either ‘Marginal’ or ‘Incomplete’ status plans, or had no plan. States with significant aviation activity in this category were Malaysia (‘Marginal’), Pakistan (‘Marginal’) and Indonesia (‘Incomplete’). Pakistan noted that their plan would be updated in the near future. In Indonesia’s case a significant amount of PBN development was currently being undertaken, with 90 PBN approaches and 50 PBN arrival/ departure procedures being planned by 2016.

2.30 Based on a proposal made by Australia, PBNTF/8 had earlier proposed to include the minimum requirement of GNSS-enabled area navigation systems for all RNP navigation authorizations in the Strategy for the Provision of Navigation Services in the Asia/Pacific Region. This had been reflected in the revised Navigation Strategy proposed by the CNS/MET SG/15 meeting. The increasing importance of GNSS in the Asia/Pacific Region was of interest to the ADS-B SITF as the enabling navigational source for ADS-B. APANPIRG/22 adopted the following Conclusion to support the requirement projected by PBN Task Force:

Conclusion 22/22 - GNSS minimum requirement for RNP Navigation Specifications

That, GNSS-enabled area navigation systems for all RNP navigation specifications be adopted as minimum requirement in the Asia/Pacific Region.

2.31 The PBN/TF/9 was apprised of global PBN developments from the PBNSG, which included the following navigation specifications:

- a) an RNP 2 navigation specification for en-route application, including remote and continental use, including high and low continuity applications;
- b) application of Radius-to-Fix (RF) turn principles beyond terminal airspace as Fixed Radius Turns for all RNP applications;
- c) an Advanced RNP navigation hierarchical specification applicable for en-route (RNP1), arrival, departure and approach to avoid the need for separate approvals for the different phases of flight and which includes parallel offset capability;
- d) an RNP 0.3 navigation specification for helicopter operations but which can also be applied by low speed fixed wing operations; and
- e) the RNP AR APCH (Required Navigation Performance Authorization Required) navigation spec was expected to be extended to departures and for one engine inoperative situations.

2.32 The new PBN standards being discussed may be implemented in a strategic manner by applying these on Standard Instrument Departures and Arrivals, Instrument Approaches, ATS Routes, with tactical monitoring by ATS surveillance such as ADS-B. To be effective, the SASP was working on separation standards for RNP 2 and also for ATS routes against Special Use Airspace such as danger areas.

2.33 The forthcoming ICAO PBN Symposium was highlighted to the PBN/TF, which was due to be held at Montreal, Canada from 16 to 19 October 2012 (<http://www.icao.int/Meetings/PBN-Symposium/Pages/default.aspx>).

2.34 Information about the Asia/Pacific Regional ATM Contingency Plan Task Force is provided in IP03.

ADS-B SITF/11

2.35 Further information on this meeting can be found in WP04.

SEACG/19

2.36 The SEACG meeting noted that although the Asia/Pacific Air Navigation Concept of Operations included reference to certain PBN airspace capabilities¹ and expected safety net standards (such as Airborne Collision Avoidance Systems), there was no equivalent to Conclusion 22/8 for these areas in terms of airspace mandates and application of priorities. As some Asia/Pacific administrations were planning to mandate requirements within international airspace such as RNP4 and other PBN specifications, the SEACG agreed to the following Draft Conclusion for APANPIRG's consideration:

Draft Conclusion SEACG 19/1 -Asia/Pacific Air Navigation Concept of Operations Mandates

That, States intending to implement Performance-Based Navigation (PBN) and Safety Nets may, after appropriate consultation with airspace users, designate portions of airspace within their area of responsibility:

- a) as providing priority for access to such airspace for aircraft with prescribed PBN specifications; and*
- b) mandating the carriage and use of an operable mode A/C and/or mode S transponder, Airborne Collision Avoidance System (ACAS) and Terrain Awareness Warning Systems (TAWS) as appropriate.*

¹ Air-routes above FL195 and within terminal controlled airspace (CTA and CTR) associated with major international aerodrome must be PBN-based with an appropriate specification determined by the Airspace Authority (such as en-route RNP2, terminal RNP1/0.3) based on the GANP and the Regional Navigation Strategy.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) endorse the Draft Conclusion concerning the Asia/Pacific Concept of Operations Mandates;
- c) update information on Amendment 1, Doc 4444 implementation (IP02 refers);
- d) discuss the Draft Seamless ATM Principles and support for the APSAPG;
- e) discuss the safety issues highlighted by RASMAG, and in particular the need to prioritize AIDC implementation;
- f) endorse the AAITF Draft Conclusions regarding Annex 15 and the AIS-AIM Transition State Plan;
- g) note the PBN implementation status and PBN Symposium;
- h) update information on current ATM Contingency Plan arrangements (IP03 refers);
- i) endorse the Draft SEACG Conclusion regarding Air Navigation Concept of Operation Mandates; and
- j) discuss any relevant matters as appropriate.

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Appendix 1: Draft Seamless ATM Principles

People: Cultural and Political Background

1. High-level political support for Seamless initiatives, including military cooperation.
2. Education and implementation of non-punitive reporting and continuous SMS improvement systems.
3. Recognition that a regulator - service provider split allows an optimal client focus and business approach to Seamless ATM development.

People: Aviation Regulations, Standards and Procedures

4. Harmonised regional or sub-regional rules and guidelines, modelled on the regional application of common regulations incorporated by reference into local legislation.
5. Shared ATM operational standards, procedures, guidance materials through common manuals and templates.
6. An emphasis on ATM personnel competence, selection, training and English proficiency, with the possibility of common licences or mutual recognition.
7. An emphasis on delivery of tactical ATM services based on CNS capability, resulting in flexible, dynamic systems.

People: ATM Coordination

8. The strengthening of cohesive ATM Coordination Groups to allow effective implementation of Seamless ATM.
9. Sub-regional ATFM based on system-wide CDM serving the busiest terminal airspace and MTF.
10. Cross-border/FIR cooperation for use of aeronautical facilities and airspace, collaborative data sharing, airspace safety assessment and ATM Contingency planning.
11. Encouragement of military participation in civil ATM meetings and in ATS Centres where necessary.

People: Airspace Organisation

12. Flexible use airspace arrangements implemented as far as practicable.
13. Special Use Airspace subject to regular review by an independent airspace authority (non-airspace user) to ensure it is appropriate in terms of purpose, size, activation and designation.
14. The minimisation of Flight Information Regions and complex airspace through amalgamation and technology.
15. Development of a regional ATC Sector capacity evaluation tool.
16. In accordance with the on-going activities for formulation of relevant ICAO SARPs for Remotely Piloted Aircraft (RPA), the integration of RPA/UAS into civil airspace dependent on key issues related to control and command of the aircraft, including 'lost link', over-the-horizon capabilities and the frequency spectrum, as well as 'sense and avoid' technologies.

Facilities: Aerodromes

17. A focus on an integrated transport system in terms of air, rail, land and maritime.
18. The need for aerodrome operators to have aeronautical experience, actively participating in aviation meetings and CDM development.

19. Planning and coordination with local authorities to take into account noise, obstacles, airport and PBN development issues.
20. Capacity and ground aid planning, including Low Visibility Operations (LVO) assessment, aerodrome complexity, taxiing and pushback, and runway capacity.

Facilities: ATS Units

21. Collaboration by ANSPs for evaluation and procurement of ATM facilities.
22. The minimisation of ATS units and Centres through amalgamation and technology.
23. The use of automation, satellite-based systems and remote facilities to provide Seamless ATM services where practicable.

Facilities: Navigation Aids

24. The continued transition from ground-based aids to satellite-based PBN procedures, while maintaining a necessary redundancy and contingency network.
25. Support for a GNSS-based, integrated regional PBN approval standard.
26. Regional cooperation for SBAS in terms of interoperability and increased service areas and a GNSS ionospheric monitoring network.

Facilities: Telecommunication

27. Encouragement of the ATN and diverse satellite communication systems (Inmarsat, Iridium, MTSAT, etc.).
28. The implementation of SATVOICE technologies and standards.
29. Enhancement of data-link capabilities (VHF, HF/DL, etc.).
30. In remote areas, the encouragement of VSAT networks for COM, SUR.
31. The prioritisation of AIDC systems to alleviate ATC coordination issues.

Facilities: ATS Surveillance

32. The encouragement of ADS-B and/or MLAT implementation to improve ATS surveillance coverage, redundancy and multiple tracking capability.
33. Establishment of ADS-C where radar, ADS-B and/or MLAT is not possible.
34. Expansion of ATS surveillance data-sharing initiatives.

Technology and Information: Flight Operations

35. Support for PBN specifications that include GNSS 'low end' aircraft and better spacing for terminal airspace, based on empirical data.
36. Implementation of UPR and DARP where practical.
37. Universal implementation of CDO and CCO, unless restricted by factors such as terrain, SUA, and noise constraints.
38. The encouragement of airborne capabilities such as of Self-Separation and Spacing and Advanced Strategic Lateral Offset Procedures (SLOP), in order to support Trajectory-Based Operations.

Technology and Information: Aeronautical Data

39. Early implementation of AIM (including SWIM) for advanced States.
40. Use of 'champion' States, seminars/workshops, special projects and combined resources for less developed States.

41. Cooperative development and use of aeronautical databases such as the European Aeronautical Database (EAD).
42. Development of information for political decision-makers on the importance of AIM.
43. Regulation of aeronautical data and its quality, to ensure interoperable operations.

Technology and Information: ATM Systems

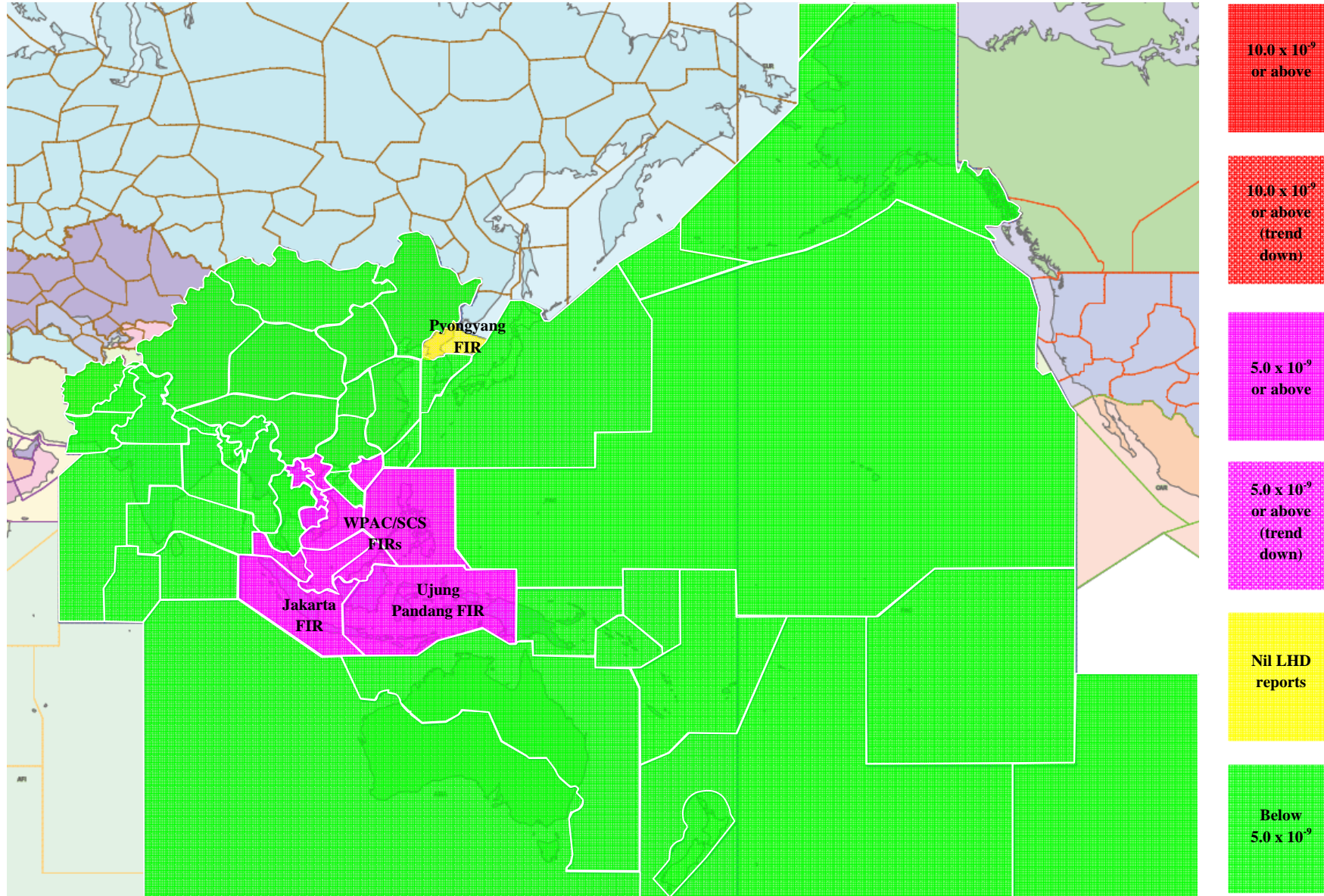
44. Encouragement of active conflict probing (tactical and strategic) support tools.
45. Inter-facility Flight Data Processing System capability.
46. Implementation of Amendment 1, ICAO Doc 4444 (PANS ATM, FPL 2012).
47. Collaborative development of CDM, ATFM, A/MAN and D/MAN support tools.
48. Encouragement of Digital ATIS and VOLMET information systems.
49. Integration of military ATM systems into civil ATM systems.

Technology and Information: Safety Nets

50. Regional mandates for MSAW, STCA, TCAS (ACAS), EGPWS (TAWS).

Technology and Information: ATM Modernisation Projects

51. Inter-regional cooperation ('clustering') for the research, development, tendering of contracts and implementation of ATM projects.
52. A focus on simpler universal technologies for earliest deployment and best cost benefits, using a staged implementation.
53. The encouragement of sub-regional and regional regulatory, service provision, research and development, and other industry bodies that cluster capabilities and optimise resources for Seamless ATM development.



State AIS AIM Transition Table

Phase 1

- P-03 — AIRAC adherence monitoring
- P-04 — Monitoring of States' differences to Annex 4 and Annex 15
- P-05 — WGS-84 implementation
- P-17 — Quality

Phase 2

- P-01 — Data quality monitoring
- P-02 — Data integrity monitoring
- P-06 — Integrated aeronautical information database
- P-07 — Unique identifiers
- P-08 — Aeronautical information conceptual model
- P-11 — Electronic AIP
- P-13 — Terrain
- P-14 — Obstacles
- P-15 — Aerodrome mapping

Phase 3

- P-09 — Aeronautical data exchange
- P-10 — Communication networks
- P-12 — Aeronautical information briefing
- P-16 — Training
- P-18 — Agreements with data originators
- P-19 — Interoperability with meteorological products
- P-20 — Electronic aeronautical charts
- P-21 — Digital NOTAM

Date Last Amended: 23 April 2012

	Phase 1 Consolidation (Am. 36 November 2010)				Phase 2 Going Digital (Amendment 37 November 2013)									Phase 3 Information Management (Amendment 38 November 2016)							
	P-03	P-04	P-05	P-17	P-01	P-02	P-06	P-07	P-08	P-11	P-13	P-14	P-15	P-09	P-10	P-12	P-16	P-18	P-19	P-20	P-21
Afghanistan										Link											
Australia	√	√	√	90%	80%	√	√	√	60%	Link	√	75%				10%	60%			90%	5%
Bangladesh	√	√	25%							Link											
Bhutan										Link											
Brunei Darussalam																					
Cambodia	√	√	√																		
China	√	√	√	√													√			√	
Hong Kong, China	√	√	√	√	√	√				Link	10%	10%					20%				
Macao, China	√	√	√	√						Link											
Cook Islands																					
DPR Korea			√																		
Fiji	√	√	√				√	√				√	√		√	√	√				
India	√	√	√	√	√	√	√	√	√	Link		√									
Indonesia	√	√	√		50%	50%	20%			50%					80%		60%	20%	10%	20%	
Japan	√	√	√	√	80%	80%	√	√		Link	20%	20%		20%	20%	60%	80%	√		20%	20%
Kiribati																					
Lao PDR	√	√	25%																		
Malaysia	√	√	√	10%						Link											
Maldives										Link											
Marshall Islands																					
Micronesia																					
Mongolia	√	√	√	√	80%	80%	30%	√	√	Link	10%	10%		60%	10%	50%	90%	√			
Myanmar	√	√	√				20%			Link	20%	20%				10%				25%	
Nauru																					
Nepal																					
New Zealand	√	√	√	√	√	√	√	√	75%	Link	√	80%	15%	80%							
Niue (NZ)																					
Pakistan	√	√	√									√		√	√	√		√			√
Palau										Link											
Papua New Guinea	√	√	√	90%				√								10%					
Philippines	√	√	40%	√	√	√	√	√	√	Link											
Republic of Korea	√	√	√	√	80%					Link										40%	90%
Samoa																					
Singapore	√	√	√	√	√	√	√	√		Link				√	√	√	√	√		√	
Solomon Islands			√																		
Sri Lanka	√	√	90%	90%						Link					10%	25%	15%	25%			
Thailand	√	√	80%	10%																	
Timor Leste			√							Link											
Tonga																					
Vanuatu										Link											
Viet Nam	√	√	√	25%	50%	50%	50%		√					√	√		70%	50%			
USA ¹	√			√	√		√	√	√	Link	√	√	√	√	√					√	√
France ²										Link											

% means the percentage progress towards achievement of the element

¹ Includes American Samoa, Guam, Johnston, Kingman, Midway, Mariana, Palmyra, Wake² Includes French Polynesia, New Caledonia, Wallis and Futuna Islands

E-AIP Internet Addresses

Afghanistan	http://www.motca.gov.af/
Australia	http://www.airservicesaustralia.com/
Bangladesh	http://www.caab.gov.bd/adinfor/adinfor0.html
Bhutan	http://www.dca.gov.bt/aip
Brunei Darussalam	
Cambodia	
China	
Hong Kong, China	http://www.hkatc.gov.hk
Macao, China	http://www.aacm.gov.mo
Cook Islands	
DPR Korea	
Fiji	
India	http://www.aai.aero/public_notices/AIP_INDIA_MAIN.jsp
Indonesia	
Japan	https://aisjapan.mlit.go.jp
Kiribati	
Lao PDR	
Malaysia	http://aip.dca.gov.my/
Maldives	http://www.aviainfo.gov.mv
Marshall Islands	
Micronesia	
Mongolia	http://ais.mcaa.gov.mn/index.php?lang=en
Myanmar	http://www.ais.gov.mm
Nauru	
Nepal	
New Zealand	http://www.aip.net.nz/
Niue (NZ)	
Pakistan	
Palau	http://www.faa.gov/air_traffic/publications/atpubs/AIP/aip.pdf
Papua New Guinea	
Philippines	http://ats.caap.gov.ph
Republic of Korea	E-AIP Republic of Korea http://ais.casa.go.kr/eAIPRoot/Operations/history-en-GB.html
Samoa	
Singapore	http://www.caas.gov.sg/caas/en/Regulations/Aeronautical_Information/AIP/index.html
Solomon Islands	
Sri Lanka	http://www.airport.lk/AIS/AIP%20frameset.htm
Thailand	
Timor Leste	http://www.gov.east-timor.org/CAA/index.html
Tonga	
Vanuatu	http://www.airports.vu/Pilots%20&%20Aircraft%20Operators/aip.htm
Viet Nam	
USA	http://www.faa.gov/air_traffic/publications/atpubs/AIP/aip.pdf
France (Wallis et Futuna, Iles) (French Polynesia)	E-AIP France