



INTERNATIONAL CIVIL AVIATION ORGANIZATION

**TWENTY-SECOND MEETING OF THE
ASIA/PACIFIC AIR NAVIGATION PLANNING AND
IMPLEMENTATION REGIONAL GROUP (APANPIRG/22)**

Bangkok, Thailand, 5-9 September 2011

Agenda Item 3: Performance Framework for Regional air navigation planning and implementation (3.2 ATM/AIS/SAR)
ATM/AIS/SAR SUBGROUP OUTCOMES

(Presented by the Chairman of the ATM/AIS/SAR Sub-Group))

SUMMARY

This paper presents a summary of the Twenty-first Meeting of the APANPIRG Air Traffic Management/Aeronautical Information Services/Search and Rescue Sub-Group (ATM/AIS/SAR/SG/21, Bangkok, Thailand, 27 June – 01 July 2011). The meeting is invited to endorse the draft Decisions and Conclusions formulated as a result of the work of the Sub-group and its contributory work groups.

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:

All GPIs

1. INTRODUCTION

1.1 The Twenty-First Meeting of the APANPIRG Air Traffic Management/Aeronautical Information Services/Search and Rescue Sub-Group (ATM/AIS/SAR/SG/21) was held at the Kotaite Wing of the ICAO Asia and Pacific (APAC) Regional Office, Bangkok, Thailand from 27 June to 01 July 2011. The meeting was attended by 97 participants from 22 States, two Special Administrative Regions of China, two Dependent Territories and three International Organizations.

1.2 Mr. Colman Ng, Assistant Director-General, Civil Aviation Department of Hong Kong China presided over the meeting throughout its duration as Sub-Group Chairman. Mr. Len Wicks, Regional Officer ATM, ICAO Asia/Pacific Office, was the Secretary of the meeting.

1.3 ATM/AIS/SAR/SG/21 formulated seven draft Conclusions and two draft Decisions for consideration by APANPIRG/22. A copy of the full report of the meeting is available on the website of ICAO Asia and Pacific Office at <http://www.bangkok.icao.int/>.

ATM/AIS/SAR/SG/21 List of Draft Conclusions

Draft Conclusion SG 21/2 – FPL 2012 Implementation Co-ordination

That, ICAO was urged to instigate formal inter-regional coordination by ensuring regular dialogue, information-sharing and meetings between key personnel and organisations managing the FPL 2012 implementation process.

Draft Conclusion SG 21/3 – AIM Transition Table

That, the APAC Regional Office maintains the AIM Transition Table as a means of tracking State transition to AIM, and to provide current details on AIM capability for interoperability, by publishing the State AIS – AIM Transition Table at **Appendix A** on the APAC web site.

Draft Conclusion SG 21/5¹ – Draft APAC ATFM Regional Concept of Operations

That, the Draft APAC ATFM Regional Concept of Operations appended at **Appendix C** be adopted and provided as reference material on the APAC website as planning guidance.

Draft Conclusion SG 21/6 – 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 for CNS/ATM System (Doc 9750).

Draft Conclusion SG 21/8² – Asia/Pacific Air Navigation Concept of Operations

That, the Asia/Pacific Air Navigation Concept of Operations appended at **Appendix E** be included on the APAC website as guidance for State air navigation service facility and airline equipage planning, and States be advised of the Concept of Operations accordingly.

Draft Conclusion SG 21/9³– 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.

Draft Conclusion SG 21/10– Regional ATM Contingency Plan Task Force

That, a Regional ATM Contingency Plan Task Force (RACP/TF) be formed, reporting to the ATM/AIS/SAR Sub-Group, in accordance with the Terms of Reference appended in **Appendix F**.

¹ Draft Conclusion 21/5 was subject to endorsement by CNS-MET/SG/15

² Draft Conclusion SG 21/8 was subject to a subsequent minor modification by CNS-MET/SG/15

³ Draft Conclusion 21/9 was subject to endorsement by CNS-MET/SG/15

ATM/AIS/SAR/SG/21 List of Draft Decisions

Draft Decision SG 21/4 – Draft ATFMSG Terms of Reference

That, the ATFMSG TORs at **Appendix B** be adopted, noting that the ATFMSG was a forum that develops high-level regional guidance material and regional ATFM policies, which would meet in the future only when required.

Draft Decision SG 21/7 – BBACG Terms of Reference

That, the BBACG TORs be adopted as appended at **Appendix D**, with its scope covering a geographical area that included Major Traffic Flows AR-1, AR-4 and the proposed AR-10 routes, and for the Group to be renamed as the South Asia Indian Ocean ATM Coordination Group – SAIOACG.

2. DISCUSSION

Agenda item 2: Review APANPIRG/21 and Subsequent ANC/Council Actions

2.1 The meeting reviewed the list of Outstanding Conclusions and Decisions of the 21st meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/21, 6-10 September 2010) in the ATM/AIS/SAR fields and the subsequent follow-up actions. The meeting noted that each Conclusion and Decision action was completed or being actively dealt with and was the subject of a Sub-Group Working Paper.

2.2 With regard to Conclusion 21/1 (*States air navigation modernization plans*), India presented IP31, which provided information on the modernization of India's system, including automation features and safety nets, covering six major and 38 secondary airports. The system would provide complete radar and VHF coverage over Indian continental airspace, and the plan was to integrate radar and Automatic Dependent Surveillance – Broadcast (ADS-B). India urged States with adjoining centres to implement ATS Inter-facility Datalink Communications (AIDC).

2.3 With respect to Conclusion 21/7 (*Use of Global database for allocation of five-letter name codes in the Asia and Pacific Regions*), there were only 12 States/Administrations using the ICAO International Codes and Routes Designators (ICARD) system out of 42 administrations. The Chairman noted that it was disappointing that many APAC States had not registered for ICARD and urged action from administrations on this matter⁴.

Agenda Item 3: Regional Performance Framework and Metrics

2.4 The meeting reviewed the Regional Performance Framework Forms related to ATM, noting that there were Sub-Group papers on each of the following items:

- APAC Objective 1 (Airspace Safety Monitoring to achieve regional TLS);
- APAC Objective 2 (Optimise Traffic Flow);
- APAC Objective 3 (Optimise Route Structure in En-route Airspace);
- APAC Objective 4 (Optimise Route Structure in Terminal Airspace);
- APAC Objective 5 (Implementation of New ICAO Flight Plan Provisions);
- APAC Objective 6 (Enhanced Provision of AIS/AIM); and
- APAC Objective 7 (Enhanced Search and Rescue Capability).

Agenda Item 4: Review outcome of the RASMAG/13 and RASMAG/14

2.5 ATM/AIS/SAR/SG/20 had felt that a region-wide safety monitoring arrangement for data link operations with oversight by RASMAG would be preferred, but APANPIRG/21 was of the view that while RASMAG's responsibility was to oversight safety in the region, the arrangement for the establishment and operations of CRAs was the responsibility of the FIT and ATM/AIS/SAR/SG.

2.6 IATA mentioned that the original Sub-Group suggestion resulted from State reports using the incorrect FANS Operations Manual (FOM) standards, issues such as the lack of CRA oversight for South-East Asia after CRA-Japan planned to withdraw services, and the general Bay of Bengal situation regarding contracted CRA services.

⁴ Subsequently, one more APAC administration registered for ICARD.

2.7 ATM/AIS/SAR/SG/21 discussed the APANPIRG/21 response. Meeting participants did not recall the reason why APANPIRG/21 came to this conclusion, and nor could this be ascertained from the meeting report. The meeting believed that RASMAG was a suitable oversight safety body for datalink performance monitoring agencies, as this was consistent with RASMAG's role, so the meeting agreed that the original ATM/AIS/SAR/SG/20 Draft Conclusion was still appropriate. Recognizing that this needed to be further discussed by RASMAG/15, the Secretariat was tasked with coordinating with RASMAG with a view to formulating a coordinated Draft Conclusion to APANPIRG/22⁵.

Agenda Item 5: Review of other relevant meetings

ICAO Asia/Pacific Performance-Based Navigation (PBN) Task Force (PBN/TF/8)

2.8 The meeting discussed and endorsed the PBN/TF/8 Draft Conclusion to the CNS/MET Sub-Group regarding the minimum requirement of GNSS-enabled area navigation systems for all RNP navigation authorizations and that ICAO adopt, as a minimum requirement, GNSS-enabled area navigation systems for all RNP navigation specifications.

ICAO Flight Plan & ATS Messages Implementation Task Forces and Seminar (FPL & AM/TF/3, FPL & AM/TF/4 and Seminar)

2.9 The outcomes from the Asia/Pacific ICAO Flight Plan & ATS Messages Task Force (FPL & AM TF) responsible for overseeing implementation of Amendment 1 to the *Procedures for Air Navigation Services — Air Traffic Management, Fifteenth Edition* (PANS-ATM, Doc 4444) were presented by the Secretariat. FPL&AM/TF/3 was held from 23–24 August 2010, and FPL&AM/TF/4 and Seminar were held from 01–03 June 2011.

2.10 Many States had not completed the safety assessment for the change and had also not developed their system requirements. States needed to assess the safety risks of the transition as part of their Safety Case under Annex 11.

2.11 Some administrations were yet to engage vendors, or commence in-house software development. Singapore advised that some vendors were ready with converter solutions, although vendors varied as to their preparedness. The meeting noted that sharing of information was required between ANSPs regarding vendors and their testing programmes.

2.12 APANPIRG/21 had discussed Amendment 1 and agreed to Conclusion 21/13, which emphasised the need for urgent and appropriate coordination with neighbouring States and FIRs:

Conclusion 21/13 – Coordination for the Transition to the NEW Flight Plan Format among States

That, as the global and the regional harmonization is crucial in implementing the NEW flight plan format by 15 November 2012, States start close coordination soon with adjacent States/FIRs on transition about, but not limited to:

- i) difference of timing for transition between the States/FIRs;*
- ii) operations in the mixed environment of PRESENT and NEW;*
- iii) operational transition for AIDC; and*
- iv) procedures when ATS messages are not processed properly.*

⁵ A Draft Conclusion was subsequently developed by RASMAG/15 for consideration by APANPIRG/22

2.13 Most States that responded to the State Letter indicated a high level of compliance with the Amendment 1 transition dates, and either a minimal transition impact (with the exception of the USA) or no information on this matter was submitted. Almost all airlines surveyed confirmed their FPL 2012 readiness and support for State testing.

2.14 The Task Force considered that a transitional switchover to NEW format plan was preferable to a 'big bang', whereby everyone changed at the same time. Also of concern were converters, which may affect downstream data being forwarded, and may not support the advanced features required by aircraft operations.

2.15 A review of the flight plan related material in the Regional Supplementary Procedures (SUPPs, Doc 7030) compared to Amendment 1 of PANS-ATM (Doc 4444) was completed to ensure consistency.

2.16 An inter-regional contact group headed by ICAOHQ would discuss areas of inconsistency of interpretation in the application of the changes and clarify these for the next Flight Plan & ATS Messages Task Force.

2.17 Almost all APAC States⁶ had now submitted information for the Flight Plan Implementation Tracking System (FITS) website. Australia agreed to develop a FPL 2012 Training Template that could be used by other administrations involved in Amendment 1 training.

2.18 The meeting was asked if there was a go/no-go date for FPL 2012 implementation. The Secretariat advised there was no 'Plan B', as this may cause some administrations to be less motivated. IATA stated that the airlines were ready and expected the same from ANSPs. Moreover, IATA stated that if one State did not comply then it could potentially affect a lot of other States, so this is the reason why the question of contingency had not been formally discussed.

2.19 At the ATM/AIS/SAR/SG the United States observed (as a member of multiple groups dealing with the changes from Amendment 1) that there was a lot of diverse discussion and different interpretations; thus this paper proposed the creation of a multi-regional flight plan coordination group. The group would facilitate harmonized implementation and coordinate a globally harmonized approach to filing flight planning information which may not be explicitly covered by Amendment 1 (such as new technologies and capabilities).

2.20 The ATM/AIS/SAR/SG meeting noted that there was an ICAOHQ resource coordinating FPL 2012 regional implementation efforts, and that Regional Officers were informally coordinating as required. Notwithstanding this, and the short time before the testing regime was due to start on 1 January 2012, it was considered important to highlight the importance of formal coordination at this critical juncture.

2.21 IFATCA supported the need for such coordination, and noted that there were significant differences in interpretation. Hong Kong China noted that States may be reluctant to invest in changes if there were inconsistencies that had not been identified to date.

2.22 The ATM/AIS/SAR/SG Meeting agreed to the following Draft Conclusion:

Draft Conclusion SG 21/2 – FPL 2012 Implementation Co-ordination

That, ICAO was urged to instigate formal inter-regional coordination by ensuring regular dialogue, information-sharing and meetings between key personnel and organisations managing the FPL 2012 implementation process.

⁶ Afghanistan and Sri Lanka's information was still not available

AIS-AIM Implementation Task Force (AAITF/6)

2.23 The meeting was presented with the outcomes of the 6th Meeting of the Aeronautical Information Services – Aeronautical Information Management Implementation Task Force (AAITF/6), held at Bangkok, from 15 to 17 March 2011. The AAITF/6 had reviewed their TORs and proposed a minor amendment in terminology to implement Quality ‘Management’ Systems.

2.24 The AAITF noted that the AIS-AIMSG were reviewing the Electronic Terrain and Obstacle Data (eTOD) SARPS as these currently placed the responsibility for determining which obstacles are hazards to air navigation on the State as the provider of the data, rather than on the users of the data. This had significant liability issues, as it was only the end user that understands the context in which they will use the data and the impact of obstacles on their operations. In particular there were issues with Area 2 and 3 data standards, regarding the lack of operational purpose.

2.25 China reported that the last Chinese FIR (Kunming) to complete the transition to WGS-84 would achieve this task by the end of 2011.

2.26 AAITF/6 determined that a survey should be conducted to gain a better understanding of the current status of AIM implementation of States. The results were presented to the Sub-Group to indicate survey’s progress, but were intended to be analyzed by AAITF/7.

2.27 The AAITF agreed to a table based on the three stages of the Roadmap implementation plan and updated by States to give an overall indication of States’ progress towards transition from AIS to AIM and to identify regional deficiencies.

2.28 The Sub-Group agreed to the following Draft Conclusion and Decision.

Draft Conclusion SG 21/3 – AIM Transition Table

That, the APAC Regional Office maintains the AIM Transition Table as a means of tracking State transition to AIM, and to provide current details on AIM capability for interoperability, by publishing the State AIS – AIM Transition Table at **Appendix A** on the APAC web site.

ATM/AIS/SAR Sub-Group Decision 21/1 – AAIF Terms of Reference

That the AAITF TORs be amended amending c) to read: ‘assist States to implement Quality **Management** Systems for aeronautical information in an expeditious manner’, to reflect the changes introduced in Amendment 36 to Annex 15.

Asia/Pacific ATFM Steering Group (ATFM/SG/1)

2.29 The First Meeting of the Asia/Pacific Air Traffic Flow Management Steering Group (ATFMSG/1) was held in Tokyo, Japan from 8-10 December 2010.

2.30 The ATFMSG considered that each of the Main Traffic Flows (MTF) should have ATFM planning (conducted by States and ATM coordination groups), regardless of traffic density, to cater for contingency operations in addition to traffic loading. It was emphasized that ATFM measures were a positive, designed to optimize airspace and aerodrome capacity, especially in support of Seamless ATM initiatives. Thus, ATFM was viewed as maximizing capacity and minimizing inefficiencies.

2.31 There did not appear to be any outstanding tasks for the Steering Group, so a formal Task List was not developed. However, a draft Terms of Reference (TORs) was developed in case the Steering Group needed to be reconstituted, and these were endorsed by the Sub-Group. The Sub-Group agreed to the following Draft Decision:

Draft Decision SG 21/4 – Draft ATFMSG Terms of Reference

That, the ATFMSG TORs at **Appendix B** be adopted, noting that the ATFMSG was a forum that develops high-level regional guidance material and regional ATFM policies, which would meet in the future only when required.

2.32 ATFM/SG/1 developed a draft APAC ATFM Regional Concept of Operations, which were reviewed in detail by the Sub-Group. IATA stated that the Concept was a very good document, and suggested a minor text change. The Sub-Group agreed to the following Draft Conclusion:

Draft Conclusion SG 21/5 – Draft APAC ATFM Regional Concept of Operations

That, the Draft APAC ATFM Regional Concept of Operations appended at **Appendix C** be adopted and provided as reference material on the APAC web site as planning guidance.

MET/ATM Task Force (MET/ATM/TF/2)

5.1 The Secretariat provided a summary of the ICAO/WMO Asia/Pacific MET/ATM Seminar and the Second Meeting of the MET/ATM Task Force, which met in Fukuoka, Japan in January 2011, Fukuoka.

EURASIA RVSM Task Force

2.33 The Fourth and Fifth Meetings of the EURASIA RVSM Task Force were managed by the ICAO EUR/NAT Office, but were of considerable interest to APAC States, as the implementation of RVSM would be a significant improvement for Afghanistan and Mongolia, and their neighbours such as Pakistan and China.

2.34 The Eurasia RVSM Task Force agreed that RVSM should be simultaneously implemented in Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, Russian Federation, Tajikistan, Turkmenistan and Uzbekistan on 17 November 2011. The flight level orientation scheme (FLOS) to be used was feet (Appendix 3a, Annex 2), except for Mongolia, which was intending to use metres (Appendix 3b, Annex 2) for one year due to human factors reasons, before changing to feet.

2.35 The RMA EURASIA was established in Moscow and was expected to be responsible for the monitoring of the height-keeping performance of aircraft flying in Kazakhstan, Kyrgyzstan, Russian, Tajikistan, Uzbekistan, and Turkmenistan RVSM airspace. Afghanistan and Mongolia were expected to use the MAAR (Monitoring Agency for Asia Region). The RMA EURASIA provided the initial safety assessments that indicated the technical risk was 0.2015×10^{-9} and the overall risk level was 2.029×10^{-9} , which were below the ICAO RVSM Target Levels of Safety (TLS)⁷.

2.36 The go/no-go decision date for the introduction of RVSM in the planned area was 28 July 2011, based on promulgation notice of two AIRAC cycles. The Sub-Group noted that the EURASIA RVSM TF/6 was due to be held in Paris from 29 August until 02 September 2011.

⁷ The Safety Assessment for Mongolia presented to RASMAG/15 indicated a safety estimate of 11.2×10^{-9} , which significantly exceeded the target level of safety of 5.0×10^{-9} fatal accidents per flight hour

FANS Implementation Team - Bay of Bengal (FIT-BOB/13)

2.37 The Thirteenth Meeting of the FANS Implementation Team for the Bay of Bengal (FIT-BOB/13) was held in Bangkok from 07 to 08 February 2011. Unfortunately, there was no central reporting agency (CRA, provided by Boeing in the BOB area) represented at the meeting.

2.38 It was noted by the meeting that there had been a lack of Problem Reports (PRs), which should be encouraged as these were a vital part of the safety oversight of data link operations. FIT-BOB recognized that it was necessary for FIT-BOB as a technical oversight body, to be provided with datalink safety data from each concerned States and for appropriate technical experts to assess this data from a sub-regional perspective. States should be encouraged to continue providing such data to each FIT meeting.

2.39 FIT-BOB recognised that a review of the meeting's Terms of Reference (TOR) was necessary to clarify that was a technical assessment forum that was intended to deal with data link system issues and was not a safety monitoring steering body, and that such a review should take into account the possibility that FIT-BOB and FIT-SEA may be combined in future.

2.40 The meeting discussed the possibility of combining FIT-BOB and FIT-SEA to reduce meeting costs and make one 'FIT-Asia' which would include more experts that deal with similar issues, and enable lessons learnt in one sub-region to assist other areas. This body would address these issues as a separate body from the BBACG itself, which was mainly composed of ATM people.

2.41 The Sub-Group discussed this, recognizing the benefits of reducing the number of meetings and the knowledge transfer. The meeting noted that it might be useful to hold a FIT-Asia meeting immediately prior to RASMAG. Thus the safety performance output could be provided directly to this body, and then safety recommendations could be made to appropriate ATM Coordination Groups. The Sub-Group decided that the Secretariat should discuss this with the RASMAG and FIT-BOB and FIT-SEA chairs, in order to determine if a common position could be agreed, and thus a Draft Conclusion could be determined by RASMAG/15.

FANS Implementation Team for South-East Asia (FIT-SEA/11)

2.42 This meeting noted the report of the 11th Meeting of FIT-SEA, held at Bangkok on 03 May 2011. The key issues were as follows:

- PRs were from a single source; the meeting encouraged all States and airline operators to submit PRs to the CRA (at that time, the Japan CRA);
- there were performance issues for downlinks in both the Singapore and the Ho Chi Minh FIR, which was a known issue attributed to the B777 type (Boeing had since provided a fix to operators);
- from 14 February 2011, Manila progressed to the Phase 1B⁸ of the trial operations with seven airlines, with PRs and system performance reports being regularly submitted to CRA-Japan (which would continue to provide services to the Philippines on a bilateral basis); and
- CRA-Japan had terminated its services to the South China Sea area at the end of March 2011 at which time CRA services could be provided by Singapore.

⁸ This trial was subsequently terminated for an unspecified period of time

South-East Asia ATS Coordination Group (SEACG/18)

2.43 SEACG/18 was held in May 2011 in Bangkok, Thailand, following the 11th Meeting of FANS Implementation Team for Southeast Asia (FIT-SEA/11).

2.44 A side-bar meeting was held with Indonesia, the Philippines, Singapore, Viet Nam, MAAR and the Secretary, which dealt with the Category E (ATC coordination) issues identified at RASMAG/14. SEACG urged its members to enhance coordination between area control supervisors and requested Indonesia, the Philippines, Singapore and Viet Nam to implement AIDC as soon as possible. IATA noted that no ICAO group had responsibility for conducting an overall review of the Southeast Asia/Northeast Asia route structure (AR-9).

2.45 With the implementation of ADS-B in the Singapore FIR, there would be seamless surveillance coverage from end-to-end on South China Sea routes, so States were urged to discuss reductions of longitudinal spacing for ADS-B equipped flights. Singapore would apply ADS-B surveillance separation at or above FL350 on opportunity basis as the first phase of a trial and then in Phase Two offer priority at or above FL350 to ADS-B aircraft.

South East Asia Route Review Task Force (SEA-RR/TF/3 and SEA-RR/TF/4)

2.46 The Third and Fourth meetings of the South-East Asia Route Review Task Force (SEA-RR/TF), had been held in August and November 2010. There have been no further meetings of the Task Force, and the next meeting was scheduled to take place from 03 to 05 October 2011.

2.47 The Sub-Group noted that the overall achievements of this Task Force had been somewhat discouraging, with no specific deliverables. However a number of route proposals had been developed and a route concept had been established, including the use of unidirectional routing in the South China Sea area for crossing routes.

2.48 The Chairman stated that the Task Force was taking longer than expected to produce deliverables. The Sub-Group meeting then had an extensive discussion on whether the Task Force should be terminated, as the Chairman had stated that any Task Force that was not delivering or had achieved its aims should be wound up.

2.49 The Secretariat suggested that the SEA-RR/TF/5 must produce a plan with each ATS route assigned a conceptual outcome, priority, milestones, State stakeholders, and the means by which the route would be consulted. The latter could be by bilateral discussion, through the 'Mekong' ATM Coordination Group⁹, or a Small Working Group under SEACG itself.

2.50 IATA had no issue with reassigning reporting lines, or conducting the Task Force and SEACG in the same week. Hong Kong China was in support of the alternative means of delivering results, especially as the complexity of the task regarding each route varied. Singapore agreed with the Secretariat's plan, and emphasized that the stakeholders must try and meet the identified timeline. Thailand did not mind which format was used to deliver the results.

India-Myanmar-Thailand ATM Coordination Meeting (IMT-ATM/CM/1)

2.51 The First India-Myanmar-Thailand ATM Coordination Meeting (IMT-ATM/CM) was held in Bangkok, Thailand between 13 and 14 January 2011. The meeting focused on enhancing ATM cooperation between the three ANSPs concerned, while harmonizing with adjacent regions. The Sub-Group Chairman commented that it was very encouraging work.

⁹ Cambodia, Hong Kong China, Laos PDR, Thailand and Viet Nam

Bay of Bengal ATS Coordination Group (BBACG/21)

2.52 The Bay of Bengal ATS Coordination Group (BBACG/21) was held in Bangkok from 7-10 March 2011.

2.53 Bangladesh and India met during the BBACG/21 Meeting to immediately improve the coordination processes between Kolkata and Dhaka ATC Centres. Indonesia had a side-bar discussion with Malaysia, which resulted in good progress towards solutions to the issue of major traffic routes crossing RNAV route P627. Sri Lanka and India also met regarding the need for eastbound aircraft overflying Colombo from Africa to be descended from high level such as FL390 to sometimes FL290 before they entered Chennai airspace.

2.54 Malaysia advised that all area radar and non- area radar controllers in Kuala Lumpur ACC were now trained and ready for ADS-C and CPDLC (Automatic Dependent Surveillance – Contract). The ADS-C/CPDLC installation in Kuala Lumpur was not yet operationally stable however this matter was being worked for implementation of reduced horizontal separation standards.

2.55 Thailand presented information on the enhanced data capability being developed for BOBCAT Operations, to enhance capability of BOBCAT software and CDM development, allowing slot swapping, slot compression and the ability to allow airline CDM.

2.56 The BBACG agreed to an IATA proposal of ‘connector’ routes in the Mumbai FIR as a first stage towards User Preferred Routes (UPR). Seamless ATM imperatives promoted discussion on the need for BBACG to increase its scope to include Major Traffic Flows AR-1 and AR-4. As a result, the BBACG agreed to a change in its TOR to include the AR-1 and AR-4 MTF. The Sub-Group noted this and after some discussion preferred the new name South Asia Indian Ocean ATM Coordination Group.

2.57 It was recognized by the BBACG that the definition of Major Traffic Flows was outdated and did not include an important routes such as from the Middle East to Australia and SE Asia. India suggested the inclusion of a new traffic flow (AR-XX) to represent the traffic from the Middle East to both Australia and Southeast Asia.

2.58 The Sub-Group noted that the BBACG expected to meet before the end of 2011, and may meet more regularly than once a year if appropriate. The Sub-Group agreed to the following Draft Conclusion and Draft Decision¹⁰:

Draft Conclusion SG 21/6 – 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 for CNS/ATM System (Doc 9750).

Draft Decision SG 21/7 – BBACG Terms of Reference

That, the BBACG TORs be adopted as appended at **Appendix D**, with its scope covering a geographical area that included Major Traffic Flows AR-1, AR-4 and the proposed AR-10 routes, and for the Group to be renamed as the South Asia Indian Ocean ATM Coordination Group – SAIOACG.

¹⁰ BBACG had no established TORs

Bay of Bengal Reduced Horizontal Separation Implementation TF (BOB-RHS/TF/5)

2.59 The Fifth Meeting of the Bay of Bengal Reduced Horizontal Separation Implementation Task Force (BOB-RHS/TF/5, Bangkok, 08-11 February 2011) focussed on Phase One to implement Reduced Horizontal Separation (RHS).

2.60 A new ATS route ASARI-SAMAR-LAJAK (India-Pakistan) was developed that would provide a link with L509 mainly for aircraft operating to/from Bangkok during BOBCAT hours only, limited to flight levels at or above FL300.

2.61 The longitudinal collision risk was estimated by the Bay of Bengal Arabian Sea Monitoring Agency (BOBASMA, with assistance from the Southeast Asia Monitoring Agency SEASMA) as being 3.80×10^{-10} , which did not exceed the 5×10^{-9} fatal accidents per flight hour TLS.

2.62 The meeting unanimously agreed that Phase One implementation would go ahead on AIRAC date 30 June 2011 for the implementation of 50NM longitudinal separation on selected ATS routes. States were reminded that necessary items should be addressed using a special Check List that was required to be returned to the Regional Office prior to implementation, which included information on:

- ATC training in 50NM longitudinal separation;
- ATC Human Factors issues;
- contingency operations in the event of loss of system integrity, by aircraft and/or ACC CPDLC equipment; and
- ATC procedures for handling non-compliant aircraft.

2.63 States involved in the RHS project reported satisfactory progress in their preparation to accept 50NM longitudinal separation, either in Phase 1 or Phase 2 of the project¹¹. The ATFM/BOBCAT system would be adjusted to cater for the implementation of 50NM longitudinal spacing across the Bay of Bengal and transiting the Kabul FIR in a phased manner.

Bay of Bengal, Arabian Sea and Indian Ocean ATM Coordination Group (BOBASIO)

2.64 The meeting was informed that the Bay of Bengal, Arabian Sea and Indian Ocean ATM Coordination Group (BOBASIO) had been formed by India, and the first meeting of the Group had been held during 5-6 May 2011. The Sub-Group encouraged the work that had been conducted.

Cross Polar Trans-East ATM Providers Working Group (CPWG/11)

2.65 The Sub-Group was informed about the work of the Cross Polar Trans-East Air Traffic Management Working Group (CPWG), hosted by the State ATM Corporation, St. Petersburg, Russia, 7-10 June, 2011. The CPWG was composed of representatives from Russia, Canada, Iceland, Norway, Japan, China and the United States, and organizations such as IATA representing airlines that operate in Polar airspace.

¹¹ Phase 1 implementation was subsequently reduced to two ATS routes: N571 and P762

Informal Pacific ATC Coordinating Group (IPACG/33 & IPACG/34)

2.66 The 33rd Meeting of the Informal Pacific Air Traffic Control (ATC) Coordinating Group (IPACG/33) was held in Okinawa, Japan from 15-19 November 2010 and the 34th IPACG Meeting (IPACG/34) was held in Honolulu, Hawaii from 23-27 May 2011. Key discussion included:

- operational trials related to the implementation of 10 minute longitudinal separation without Mach Number Technique (MNT);
- RNP 4 30NM lateral/longitudinal distance-based separation implementation in Anchorage airspace and the NOPAC (North Pacific) by the end of 2011;
- ADS-B In-Trail Procedures (ITP) trials due to start in mid-2011 and ADS-C Climb Descent Procedures (CDP) were on-going until February 2012;
- User Preferred Route (UPR) implementation;
- Dynamic Airborne Reroute Procedures (DARP) operations, which must be requested at least 60 minutes prior to the FIR boundary to allow for adequate ATC coordination;
- Tailored Arrivals (TAs) in San Francisco began in 2007, Los Angeles International Airport (KLAX) began in 2009, and at Kansai Airport, Japan.

Informal South Pacific ATS Coordinating Group (ISPACG/25)

2.67 The 25th Meeting of the Informal South Pacific Air Traffic Services Coordinating Group (ISPACG/25), was held in Honolulu, Hawaii 24-25 March 2011.

2.68 Australia reported that ADS-B has been mandated for implementation in Australian Airspace by December 2013. A new CPDLC Editor was incorporated into the Australian Advanced Air Traffic System (TAAATS) in April 2010 and the implementation of the Flight Plan conflict function was planned for the third quarter of 2011.

2.69 Service d'Etat de l'Aviation Civile en Polynesie Francaise (SEAC-PF) reported that AIDC was now operational with the United States and New Zealand.

2.70 The United States advised that DARPs remain underutilized while User Preferred Routes were expanding rapidly in the South Pacific. San Francisco (KSFO) Oceanic Tailored Arrivals (TAs) continued to be successful with 33% of aircraft receiving a full TA benefits and even a higher percentage receiving a partial TA. At Los Angeles (KLAX), 17% of aircraft have received a full TA. The United States and Japan began cross boundary ADS-C based 30/30 separation in May 2011.

2.71 New Zealand reported that performance of FANS-1A overall system was improving, and AIDC was operational with Nadi and Oakland Centre (KZOA).

2.72 Chile reported that it continued to work on implementation of required navigation performance (RNP10) in its oceanic airspace. Chile was also working to improve the reliability of CPDLC and ADS systems as current high frequency (HF) communications capability was very poor.

2.73 Airport Fiji Limited (AFL) reported that it completed its automation upgrade in May 2010 and would completed an upgrade on Aurora, its common flight data processor (FDP), for approach control and towers by May 2011. MLAT and ADS-B solutions would be implemented at Nadi Airport and others by the fourth quarter of 2013. Fiji planned for non-FANS 1/A equipped UPRs and was testing DARPs with Oakland, Brisbane and Auckland Centres.

ADS-B Study and Implementation Task Force (ADS-B SITF/10)

2.74 The meeting noted the outcome of the Tenth Meeting of Automatic Dependent Surveillance-Broadcast (ADS-B) Study and Implementation Task Force (ADS-B SITF/10). The meeting was held from 26-29 April 201, Singapore.

2.75 IATA reconfirmed its full support to the implementation of ADS-B and stated that the Asia/Pacific Regions had embraced ADS-B more than any other area, noting that this technology was a key enabler for CNS/ATM technology increase ATM capacity and flight safety. IATA also recognized the required guidance material developed by the Task Force in facilitating implementation of ADS-B based surveillance service. It was noted that full consultation with airspace users was necessary to ensure aircraft equipage was appropriate for any mandated airspace.

2.76 The ATM/AIS/SAR SG/21 noted the target implementation date of 12 December 2013 for the sub-regional airspace that provided priority for ADS-B equipped aircraft within certain South China Sea area FIRs. The ATM-related operational issues with respect to implementation of ADS-B in the South China Sea area including requirements for safety assessment were also discussed.

Agenda Item 6: Provision of ATM/AIS/SAR in the Asia/Pacific Region, including associated CNS matters

Kabul ACC Status Report and Overview of Significant Events

2.77 Radio communications throughout the Kabul FIR continued to improve with the installation of Very Small Aperture Telecommunication (VSAT) systems at 13 locations. The current VSAT communications system complied with the requirement for continuous communications over Afghanistan to facilitate RHS on primary transit routes within the Kabul FIR. VSAT system capability would determine the surveillance potential.

2.78 Three ASR8 radars had been installed and flight checked with plans for an additional fourth sensor. The radar feeds are currently being integrated into Kabul ACC. These systems would initially provide situational awareness of air traffic within the Kabul FIR for the Kabul ACC, however there were coverage difficulties due to mountainous terrain.

2.79 Through the efforts of Germany and contributions from Australia, a multilateration (MLAT) surveillance system was progressing rapidly. It was planned to have 30 sensors installed at different locations throughout Afghanistan to fill in radar blind spot areas. Sixteen of the planned 30 sensors had already been installed, with the remaining 14 due for completion in October-November 2011. Once the sensors were flight checked, Kabul ACC would be able to start planning for the implementation of enroute surveillance operations.

Future APAC Airspace Concept of Operations

2.80 IATA presented a future Concept of Operations, which was intended as a planning tool for ANSP and airlines. The Concept was not intended to compel States, although this framework was expected to be followed unless there were compelling reasons to do otherwise. The Concept was likely to be iterative, although it was written in a generic fashion to minimize the need for updates.

2.81 Hong Kong China asked about the apparent incongruity with the Asia/Pacific Regional PBN Plan, in terms of the suggested navigation specifications and what was already in the Regional PBN Plan. It was explained that the Concept of Operations was a longer-term objective than the Regional PBN Plan milestones, and in any case the PBN Plan would need updating to incorporate the new PBN specifications expected in 2012.

2.82 IFATCA was happy with the Concept but suggested a minor amendment to remove the specific examples of surveillance separation standards. The Sub-Group meeting agreed to the following Draft Conclusion:

Draft Conclusion SG 21/8 – Asia/Pacific Air Navigation Concept of Operations

That, the Asia/Pacific Air Navigation Concept of Operations appended at **Appendix E** be included on the APAC website as guidance for State air navigation service facility and airline equipage planning, and States be advised of the Concept of Operations accordingly.

ADS-B Mandate

2.83 The Sub-Group discussed the matter of priority for ADS-B aircraft. Previous APANPIRG ADS-B Conclusions dealt with aircraft equipage but not the prioritization of ADS-B aircraft in airspace designated for the purpose of ADS-B.

2.84 The Sub-Group agreed on the following Draft Conclusion, 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):

Draft Conclusion SG 21/9 – 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.

Regional Civil/Military Cooperation

2.85 The Sub-Group was presented with information on civil/military coordination, emphasising 'cooperation' as much as communications because of the crucial need for efficiency and safety in both civil and military ATM systems. Increasingly, the requirement for reduced emissions and fuel use was placing pressure on inflexible and uncooperative systems to change, and this would only accelerate as Seamless ATM initiatives were developed. The Sub-Group noted a Civil/Military Cooperation Seminar/Workshop was planned for 28 February to 02 March 2012, Bangkok, Thailand.

Search and Rescue Capability

2.86 The Meeting noted that the lack of discussion at APANPIRG/21 related to SAR matters. A paper was presented that provided information on State SAR preparedness:

- a current the List of SAR Agreements held at Regional Office;
- a SAR Agreement Matrix (indicating potential agreements that were not in place; and
- the SAR Capability Matrix Table.

2.87 The Secretariat agreed that a State Letter containing all three SAR tables would be circulated, and States would be asked to update these.

Agenda Item 7: Air Navigation Service Deficiencies

2.88 The meeting discussed the list of Air Navigation Deficiencies. States were reminded to advise the Regional Office of any change in status of these deficiencies, and to respond accordingly to the State Letter that had been issued on this subject.

2.89 Regarding the ATS route deficiencies and the non-implementation of R216 into and out of China, IATA noted that seasonal approvals and the use of flexible entry/exit points were not always compatible with the effective date of new routes/ waypoints. IATA asked China to consider in the future if new routes/waypoints could be automatically included in these seasonal approvals and the flexible entry/exit points as appropriate. IATA had no objections to the deletion of ATS route R216. China noted that they have had some issues in coordinating with Kazakhstan. The Secretariat advised that the Regional Office could assist through the EUR/NAT Office if necessary.

Agenda Item 8: Future direction of APANPIRG ATM Bodies

ATM Contingency Plan Task Force

2.90 The meeting recalled that, given the global and trans-boundary nature of air traffic, the 47th Conference of Directors General of Civil Aviation, Asia and Pacific Regions (DGCA/47, Macao, China, 25-29 October 2010) recognized the need for ATM Contingency Plans to be developed and implemented on a regional basis in consonance with ICAO Annex 11. DGCA/47 had requested the Regional Office to consider the establishment of a task force for planning, coordination and implementation of a regional ATM Contingency Plan (Action Item 47/1).

2.91 The meeting considered a summary of key steps in the development of a regional contingency planning forum, as well as policies and resources that could be relevant to a Contingency Task Force.

2.92 Hong Kong China wanted to know how the level 1 (domestic) contingency planning fitted in, and was informed that it was not expected that regional contingency planning would invalidate this, but would probably form the lower echelon of a three tiered approach, recognizing that level 2 meant bilateral arrangements, and level 3 was a much wider regional event. Japan expressed its concerns about the endorsement of the proposed concept TORs and stated that the concept and TORs should be focused on the ATM Contingency planning described in Annex 11. China supported the Task Force, as did India, Singapore and Thailand.

2.93 The meeting reviewed the draft Task Force TOR prepared by the Secretariat and agreed to the following Draft Conclusion:

Draft Conclusion SG 21/10 – Regional ATM Contingency Plan Task Force

That, a Regional ATM Contingency Plan Task Force (RACP/TF) be formed, reporting to the ATM/AIS/SAR Sub-Group, in accordance with the Terms of Reference appended in **Appendix F**.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) review the summary of the ATM/AIS/SAR/SG/21 report provided;
- b) note that a significant number of APAC administrations had not registered for ICARD;
- c) note the Decision SG 21/1 (Paragraph 2.28);
- d) take action on Draft Conclusions SG 21/2 (Paragraph 2.22), 21/3 (Paragraph 2.28), 21/5 (Paragraph 2.32), 21/6 (Paragraph 2.58), 21/8 (Paragraph 2.82), 21/9 (Paragraph 2.84), 21/10 (Paragraph 2.93);
- e) take action on Draft Decisions SG 21/4 (Paragraph 2.31), 21/7 (Paragraph 2.58);
- f) take actions as appropriate in relation to other matters discussed in this paper.

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Appendix A: APAC FPL 2012 Software Questionnaire

Flight Information region (s)

1. Has a FPL 2012 cost and resource capability assessment been conducted?

2. Has the FPL 2012 Safety Assessment commenced?

a) If yes, what Safety Assessment step has been reached?

3. What other major changes to the ATM system are also being made?

4. Which agency is developing the FPL 2012 software?

5. What stage is the software development?

6. If a software vendor is contracted, advise which vendor?

7. Is your State using a front end converter?

a) If yes, when is the converter going to be replaced by a FPL 2012 compliant FDPS?

8. When will the internal testing commence and when is it expected to be completed?

9. When will testing be able to be conducted with other ANSPs?

10. When will testing start with airlines/operators?

Updated 25 August 2011

	Q1 Cost & Resource	Q2 Safety Assessment	Q2a Step	Q3 Major Changes	Q4 Software Agency	Q5 Software Stage	Q6 Software Vendor	Q7 Frontend Converter	Q7a Converter Time	Q8 Internal Testing	Q9 ANSP External Test	Q10 External User Test	Comments
Afghanistan • Kabul FIR													
Australia • YBBB Brisbane • YMMM Melbourne	Yes Business case has been agreed and Project work has commenced.	Yes A determination from the Regulator (CASA) has been made that a Safety Case is required	Work on a Safety Plan has commenced	Several systems require change and some will be decommissioned prior to the planned cutover	Airservices Australia (Australia's ANSP) and the Department of Defence are overseeing development of software by contractors.	Initial discussions and development of scope prior to contract finalisation.	Thales, Sensis/Nav Canada, Comsoft and Raytheon will be.	We are considering a converter to handle FPLs and associated messages into some systems.	Our FDPS will be compliant from July 2012. Internal FDPS not affecting other FIRs will continue as today and utilise the converter until replacement. This converter will be disabled after transition and once legacy systems are incorporated into our next generation Flight Plan management systems.	Internal testing is likely to commence in the 3 rd quarter 2011 with our CADAS system and in 1 st quarter 2012 for the balance of our ATM systems. It will be complete just prior to the commencement of transition in July 2012.	We are likely to be able to test some components late 2011 and most components in early 2012.	Testing planned to start in 1 st Quarter of 2012.	Australia
Bangladesh													
Bhutan													
Brunei Darussalam													
Cambodia • Phnom Penh FIR	Yes	Yes	Will be started in Oct 2011	Expand RDP and FDP	Thales	Done by supplier	Thales	No	-	Oct 2011 – Jan 2012	Jan 2012	Jan 2012	Cambodia
China													
Hong Kong, China • Hong Kong FIR	Yes	Yes	Safety implications were identified, mitigated and documented	Front End Processors (FEP) system is developed to handle PRESENT/NEW FPL&AM message format conversion for existing ATM systems	In-house	System testing/ acceptance in progress	In-house	Yes	End of 2013	Q3/2011 – commence testing Q4/2011 – complete testing. FEP system will be ready by 1 Jan 2012 in compliance with Phase 1 of APAC 3-phase transition strategy.	1 Apr 2012 In compliance with Phase 2 of APAC transition strategy	1 Jul 2012 In compliance with Phase 3 of APAC transition strategy	Hong Kong, China
Macao, China	Yes	Yes	Analysis have been performed to trigger a software upgrade which has been completed in Dec	The internal ATC (RDP/FDP) system needs to be upgraded regarding the FPL 2012. The ATC system is	ComSoft	Completed	ComSoft	No The supplier ComSoft can provide such converter but not purchased. If situa-	N/A	System module upgrade completed and successfully tested in Dec 2010	Subject to readiness of other ANSPs and further coordination for arrangement of Tests	N/A Airlines/ Operators are using the same system	Macao, China

Singapore • Singapore FIR	Yes	No	N/A	New ATM System which can accept and process NEW FPL will be installed Our new AIM System can receive and transmit both PRESENT and NEW FPL	Thales	In development for the new ATM system	N/A	Yes For the existing ATM system	By end of Year 2014	Between January and March 2012	Between April and June 2012	Between July and November 2012		
Solomon Islands														
Sri Lanka														
Thailand • Bangkok FIR	Yes We have already conducted both cost and capability assessment on the front-end system. Consequently, assessment on end-user systems (ATM Systems) has been planned.	In progress Partial assessment has been conducted on the front-end system. Consequently, assessment on end-user systems (ATM Systems) has been planned		Major changes have been made to the Flight Data Management System (Front-end system) and the Bay of Bengal Cooperative ATM System (BOBCAT). In addition technical refreshes on ATM systems within AEROTHAI has been planned for.		1.Front end-internally developed. 2.ATM System – to be determined.	1.Front end-under development. 2.ATM System – to be determined.	1.Front end-internally developed. 2.ATM System – to be determined.	Yes	The FPL 2012 compliant Front-end system is planned to be implemented by Q1 2012. Replacement/upgrades of other end-user systems are to be determined.	Planning in progress	Planning in progress	Planning in progress	DCA Thailand
Timor Leste														
Tonga														
Vanuatu														
Viet Nam														
USA ¹ • Oakland Oceanic (KZAK), New York Oceanic (KZWY) and Anchorage Oceanic (PAZN)	Yes	Yes (preliminary) All APAC region interfaces are with the Ocean 21 system used for these FIRs			FAA (via contractor)	Development is complete	Lockheed Martin	Not for this system		It is complete.	April 2012 Some early test opportunities might be available	Early to mid 2012	USA	
• 20 Domestic U.S. FIRs (KZAB, KZAU, KZBW, KZDC, KZDV, KZFW, KZHU, KZID, KZJX, KZKC, KZLA, KZLC, KZMA, KZME, ZKMP, KZNY, KZOA, KZOB, KZSE, KZTL)	Yes	No. Planning to start soon. Attempting to coordinate Safety Assessment across all affected systems.		Replacement of entire ATM System. Current Host and URET systems and new ERAM system will both have to be modified.	FAA (via contractor)	Preliminary Engineering complete SW development starting July 2011	Lockheed Martin	Not for these systems, although see Remarks. Host and URET systems will accept and pass NEW content flight plans but controllers will view PRESENT content.	When ERAM deployment is complete, Host and URET systems will be gone. Currently projected for 2014 time frame.	Host- Feb 2012 thru April 2012 ERAM- June 2011 thru Aug 2012	Host- April 2012, ERAM- August 2012 Note: These systems do not interface to any systems in the APAC region.	Host- July 2012, ERAM- Sept. 2012	USA	
• Anchorage domestic ARTCC (PAZA) Uses FDP-2000 Flight Data Processing system	Yes	No		None	FAA	Currently in Engineering Expect SW start in August 2011		No		Early 2012	Early to Mid 2012 Note: PAZA does not interface to any APAC FIRs	Mid 2012	USA	
• Oakland Oceanic FIR (Honolulu Control Facility and Guam CERAP) Uses Offshore Flight Data Processing System (OFDPS)	Yes	No		None	FAA	Engineering to start in October 2011 Expect SW start in January 2012		No		May 2012	N/A (no external interfaces)	August 2012		
France ²														

¹ Includes American Samoa, Guam, Johnston, Kingman, Midway, Mariana, Palmyra, Wake

² Includes French Polynesia, New Caledonia, Wallis and Futuna Islands

Appendix B: 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: 13 June 2011

	Phase 1 Consolidation				Phase 2 Going Digital								Phase 3 Information Management								
	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																					
Australia	√	√	√	90%	80%	√	√	√	60%	√	√	75%				10%	60%			90%	5%
Bangladesh																					
Bhutan																					
Brunei Darussalam																					
Cambodia	√	√	√																		
China	√	√		√													√			√	
Hong Kong, China	√	√	√	√	√	√															
Macao, China	√	√	√	√																	
Cook Islands																					
DPR Korea																					
Fiji	√	√	√				√	√		√		√	√		√	√	√				
India	√	√	√	√	√	√	√	√	√			√									
Indonesia	√	√	√		50%	50%	20%			50%					80%		60%	20%	10%	20%	
Japan	√	√	√	√	80%	80%	√	√	√	√	20%	20%		20%	20%	60%	80%	√		20%	20%
Kiribati																					
Lao PDR	√	√	25%																		
Malaysia	√	√	√							√											
Maldives																					
Marshall Islands																					
Micronesia																					
Mongolia	√	√	√	√	80%	80%	30%	√	√	√	10%	10%		60%	10%	50%	90%	√			
Myanmar	√	√	√				20%			80%	20%	20%				10%				25%	
Nauru																					
Nepal																					
New Zealand	√	√	√	√	√	√	√	√	75%	√	√	80%	15%	80%							
Niue (NZ)																					
Pakistan	√	√	√							√		√		√	√	√		√			√
Palau																					
Papua New Guinea	√	√	√	90%				√								10%					
Philippines	√	√	40%	√	√	√															
Republic of Korea																					
Samoa										√											
Singapore	√	√	√	√	√					√				√	√	√				√	
Solomon Islands																					
Sri Lanka	√	√	90%	90%						√					10%	25%	15%	25%			
Thailand	√	√	80%	10%						20%											
Timor Leste																					
Tonga										√											
Vanuatu																					
Viet Nam	√	√	√	25%	50%	50%	50%		√					√	√		70%	50%			
USA ¹	√			√	√		√	√	√	√	√	√	√	√	√					√	√
France ²																					

% means the percentage progress towards achievement of the element

¹ Includes American Samoa, Guam, Johnston, Kingman, Midway, Mariana, Palmyra, Wake

² Includes French Polynesia, New Caledonia, Wallis and Futuna Islands

**Appendix C:
Draft Terms of Reference**

AIR TRAFFIC FLOW MANAGEMENT STEERING GROUP (ATFMSG)

1. Having considered the *ATS Planning Manual* (Doc 9426), regional air traffic data and the Major Traffic Flows, and noting that recognized structural airspace capacity increasing measures have preference to use of ATFM, develop an Asia/Pacific Regional ATFM Concept of Operations(including principles and objectives);
2. Review and update the *ATFM Communications Handbook for the Asia Pacific Region* until superseded by Global Material;
3. Encourage and develop mechanisms for ATFM data gathering, collation and sharing between States, International Organizations and ICAO;
4. Research suitable and regionally harmonized benchmarks for airport acceptance rates (AAR) and the throughput of airspace (sector capacity) which may vary depending on weather conditions, and associated technique, e.g. the ground-delay programme and miles/minutes-in-trail (MIT).
5. Review the safety and efficacy of ATFM systems in the Asia and Pacific Region, and make specific recommendations regarding ATFM, including any adjacent airspace affecting the Asia and Pacific Regions;
6. Encourage the development of an ATFM web site by Asia and Pacific Region States with significant experience in ATFM, which contains information on regional ATFM, including *inter alia*, real time flight delay data.
7. The Group reports to the ATM/AIS/SAR Sub-Group.

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Appendix D: Draft Asia and Pacific Regional ATFM Concept of Operations

1. BACKGROUND

1.1 As a result of increasing regional Air Traffic Flow Management (ATFM) activities and the provisions of GPI- 6 (ATFM), the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/18, September 2007) adopted Conclusion 18/7 for the conduct of a regional ATFM Seminar. The ICAO Asia/Pacific ATFM Seminar/Workshop was hosted at Fukuoka, Japan by the Japan Civil Aviation Bureau (JCAB), Ministry of Land, Infrastructure, Transport and Tourism from 7 to 9 October 2008.

1.2 As a result of the ATFM Seminar and Workshop, APANPIRG/20 (Bangkok, September 2009) made the decision to constitute an ATFM Steering Group (ATFMSG/1), which was also held in Japan at Tokyo, from 8 to 10 December 2010. One of the key deliverables from the ATFMSG/1 was expected to be a Regional ATFM Concept of Operations.

1.3 It was considered inappropriate at the ATFMSG/1 for the Regional ATFM Concept of Operations to closely analyse specific Major Traffic Flows (MTF) or to determine actual ATFM systems to be used on these flows, as this would impinge upon the individual State responsibilities to determine the type and level of air traffic service (ATS). Moreover, States have a greater knowledge of the operational requirements, limitations and safety risks of any given airspace that they provide ATS within. In addition, Air Traffic Management Coordination Groups (ATMACG) are better placed to closely monitor and assess the need for ATFM measures within sub-regions (such as the NOPAC - North Pacific), recognising that these are more likely to be implemented on MTFs and not on a regional basis.

1.4 For these reasons, the ATFMSG/1 developed this Regional ATFM Concept of Operations based on broad principles and recommended practises that are intended to provide a framework for desired regional outcomes. Moreover, it was considered that optimal ATFM is a subset of a seamless Air Traffic Management (ATM) system, so further development of the Regional ATFM Operational Concept should be considered within the context of the Seamless ATM Concept.

2. ATFM CHARACTERISTICS

2.1 The ATFMSG/1 recognized that ATFM had a number of important characteristics, which are detailed as follows.

- a. ATFM is intended as a win-win enabler, to ensure the ATM system is compatible, balances capacity, and is responsive to user needs. ATFM supports the introduction of new technologies (such as probabilistic meteorological forecasting and ATS sector capacity assessment tools) and procedures that enhance airspace capacity.
- b. ATFM is evolutionary in nature, in order to manage a changing aeronautical environment. Thus the nature of ATFM is one of a system that is constantly reviewed in terms of the airspace, ATS routes and aerodromes, and the ATFM system effectiveness itself.
- c. ATFM is integral to world economies, as it maximises aviation economic efficiencies and returns, in turn supporting many other economic sectors such as tourism and freight carriage. ATFM supports predictability in terms of inventories, and the efficient carriage of passengers and freight.

- d. ATFM assists international cooperation, leading to an optimal seamless ATM environment.
- e. Even relatively simple ATFM systems such as slot management can be as effective as complex systems, to enable systems to cope with unexpected capacity deficiencies.
- f. ATFM traffic data analysis can yield significant strategic benefits, especially when used in conjunction with airspace and ATS route planning, in terms of future ATM systems and procedure improvements. This is part of a continuous safety and service improvement loop (Figure 1).
- g. Collaborative Decision-Making (CDM), as part of ATFM, ideally involves people skilled in facilitation.
- h. CDM is about sharing knowledge, which allows an understanding of user and ATM requirements, in order to achieve buy-in, cooperation, and predictability. In effect, CDM allows the system to work smarter, not harder.

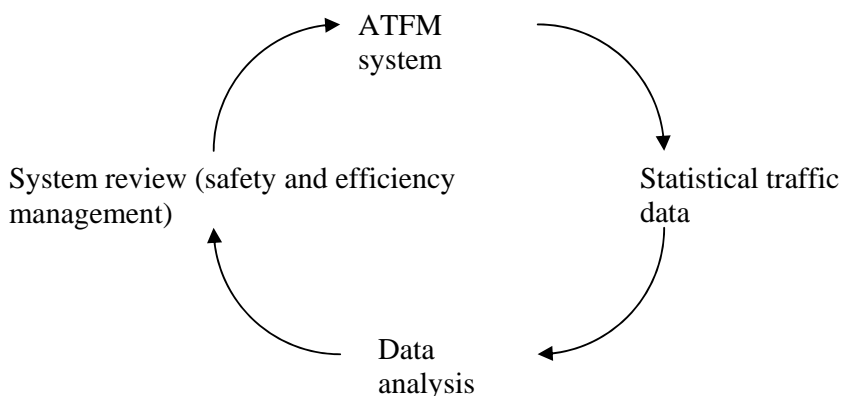


Figure 1: ATFM Cycle of Review and Improvement

3. REGIONAL ATFM OBJECTIVES

3.1 Asia and Pacific Regional ATFM has the following objectives:

- a. without compromising safety, to ensure an optimum flow of air traffic during times when demand exceeds, or is expected to exceed, available capacity of the air traffic control (ATC) system (Doc 9426*);
- b. to ensure the maximum utilisation of airspace, and balance the legitimate, but sometimes conflicting, requirements of all users (Doc 9426);
- c. to develop a seamless and harmonised ATM system and ensure compatibility with international developments (CAR/SAM ATFM Project, Doc 9426);
- d. to ensure that optimum capacity is provided in a flexible and timely manner (CAR/SAM ATFM Project); and
- e. to minimise inefficiencies that affect ATM capacity (ATFMMSG/1).

*Note: references in this document are not necessarily copied verbatim from the source, but have been amended in a minor manner from the original to ensure it is up-to-date, readable and in the correct context.

4 REGIONAL ATFM PRINCIPLES

4.1 ATFM in the Asia and Pacific Regions is expected to be implemented in accordance with the following principles:

- a. ATFM must seek to optimise available aerodrome and airspace capacity without compromising safety (CAR/SAM ATFM Project);
- b. ATFM must seek to balance the financial impact on stakeholders with safety, and operational and technical benefits, taking into account global interoperability (CAR/SAM ATFM Project);
- c. ATFM applications must be consistent with the ICAO Regional Air Navigation Plan (CAR/SAM ATFM Project);
- d. ATFM must entail timely and effective co-ordination with affected parties, including ATC units, aircraft operators, military authorities and aerodrome operators as appropriate. Civil/military co-ordination ideally results in airspace being shared, either simultaneously or on a time-share basis. ATFM must take into consideration the requirements of the military, law enforcement, and search and rescue (Doc 9426).
- e. Military aircraft operating as general air traffic should be subject to ATFM (CAR/SAM ATFM Project).
- f. ATFM recognises that airspace is a common resource for all users, ensuring fairness and transparency, while taking into account security and defence needs (CAR/SAM ATFM Project).

5. RECOMMENDED PRACTICES

- a. ATFM planning should be prioritised for appropriate major sub-regional traffic flows, instead of a focus on regional ATFM. ATFM WS and ATFMMSG
- b. December traffic sample data used by all States to satisfy airspace safety monitoring analysis may be utilised for airspace planning and implementation purposes. APANPIRG 20
- c. Recognising that the most efficient utilization of available airspace and airport capacity can be achieved only if all relevant elements of the air traffic system had been considered during the planning stage, applying a systems approach (Doc 9426). Quantitative data should be moderated by qualitative assessment using subject matter experts to ensure the following factors, inter alia, are taken into account:
 - airspace and airway complexity, structure and volume;
 - adjoining ATC sectors;
 - amount of climbing/descending traffic;
 - terrain;
 - military operations; and
 - special use airspace. ATFM Survey/ATFMMSG

- d. When flow management measures are necessary for certain areas, they should be applied in a timely manner only for the period when expected air traffic demand will exceed the capacity in those areas. ATFM measures should be kept to the minimum and, whenever possible, be applied selectively only to that part of the system that is constrained (Doc 9426).
- e. Advance information on overload situations should be provided to ATC and aircraft/aerodrome operators (Doc 9426).
- f. Relevant air traffic statistics should be generated in order to promptly identify bottlenecks in the system (Doc 9426). Accurate and timely data should be continuously available to support implementation and ongoing ATFM operations in the form of:
 - Static data identifying historical traffic loadings, for use as strategic planning and trend analysis, and
 - Dynamic real-time data used for the tactical management of traffic in terms of commencement of ATFM measures (ATFM Workshop/Seminar);
- g. Flow control measures should be established and coordinated in such a way that they will not cumulatively interact with each other on the same flights (Doc 9426);
- h. The following types of flights should be granted exemption from flow control measures:
 - emergency flights, including aircraft subjected to unlawful interference;
 - flights operating for humanitarian reasons;
 - medical flights specifically declared by medical authorities;
 - flights on search and rescue missions;
 - flights with “Head of State” status; and
 - other flights as specifically required by State authorities (Doc 9426).
- i. The use of appropriate automated tools should allow effective application of ATFM (ATFM Workshop/Seminar);
- j. Formalised CDM should be utilised to promote increased information sharing, awareness and acceptance (ATFMSG/1);
- k. States should ensure the use of the English language in a concise, non-verbose manner in ATFM operations, utilising the *Air Traffic Flow Management Communications Handbook for the Asia/Pacific Region* (ATFMSG/1);
- l. Whenever measures to control the flow of air traffic have to be applied in the form of delays, they should, if possible, be applied by ATC to aircraft on the ground rather than to aircraft in flight (Doc 9426).
- m. Whenever application of ATFM in the form of delays to airborne aircraft becomes unavoidable, the flights concerned should be informed as soon as possible (Doc 9426).
- n. The ATFM service should have the following basic strategic and tactical functions:

- collection, collation and analysis of data on air traffic, the air navigation infrastructure and on the capacities of the ATS system and selected aerodromes (Doc 9246);
- determination of available airspace, ATS and aerodrome capacity (ATFMSG/1);
- determination of a coherent picture of expected traffic demand (Doc 9426);
- identification of areas and time periods of expected critical traffic loadings (Doc 9426); and
- in order to accommodate the growth of air traffic, an appropriate ATFM plan should be established, aimed at optimising the airspace utilisation (Doc 9426).

6. GUIDANCE MATERIAL

6.1 Additional ATFM Guidance Material may be derived from the following sources:

- a. ICAO Annex 11 (Section 3.7.5)
- b. ICAO Doc 4444 (Section 3.2);
- c. ICAO Doc 9426 (Part II, Chapter 1);
- d. ATFM Communications Handbook for the Asia/Pacific Region (http://www.bangkok.icao.int/edocs/ATFMComms_Handbook.pdf); and
- e. FAA ATFM web site (<http://www.fly.faa.gov>).

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Appendix E: South Asia/Indian Ocean ATM Coordination Group (SAIOACG) Terms of Reference DRAFT

- 1) The scope and objective of the SAIOACG is to identify, plan and implement Air Traffic Management improvements within airspace serving the Asian Regional Major Traffic Flows:
 - AR-1 (Africa – Southeast Asia/Australia);
 - AR-4 (Europe – Southeast Asia);
 - AR-10 (Middle East – Southeast Asia/Australia).

- 2) To meet this objective the Task Force shall:
 - a. review and recommend improvements to relevant airspace and ATS route structures, in order to optimize the safety and efficiency of ATC operations;
 - b. review and recommend improvements to ATS facilities such as communication and surveillance capability in support of flight operations;
 - c. research and plan airspace and facility requirements based on future technologies, Performance Based Navigation and other capabilities that enhance flight operations;
 - d. coordinate with other bodies to establish appropriate navigation specifications;
 - e. identify ATM deficiencies with respect to ICAO Standards and Recommended Practices (SARPs), and make recommendations to achieve compliance;
 - f. cooperate with other bodies as required, to facilitate Seamless ATM;
 - g. create working groups as required to manage specific ATM-related projects; and
 - h. research and recommend appropriate means of minimizing the environmental consequences of flight operations.

- 3) The SAIOACG reports to the ATM/AIS/SAR Subgroup of APANPIRG.

The membership of the SAIOACG is open to States that provide ATS within the scope of airspace of SAIOACG, International Organizations and ICAO. The membership is also open to participants from outside the airspace or organizations that can contribute to SAIOACG by invitation from SAIOACG (such as military organizations that can facilitate civil/military cooperation).

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Appendix F: Draft Asia/Pacific Air Navigation Concept of Operations

1.1 The following principles supporting an APAC Concept of Operations are intended to be the 'default' operations environment so that States can specify expected facilities and standards in accordance with a specified timeframe, so airlines could plan for the appropriate equipage.

- The delivery of CNS/ATM services should be based primarily on the CNS/ATM capability. It is understood that a transition period for the enablement of capabilities and or enhancements may be necessary.
- **Flight Information Regions:** FIR boundaries should not limit the delivery of surveillance separation services (this requires Letters of Agreement and data sharing to facilitate seamless Transfer of Control). Where possible the number of FIRs should be minimized particularly along traffic flows. FIRs should not necessarily be based strictly on the boundaries of sovereign territories.
- **Special Use Airspace:** SUA should only be established¹ after due consideration of the impact on civil air traffic, and must be regularly reviewed by the appropriate State Airspace Authority to ensure that it is:
 - being used for the purpose that it was established;
 - being used regularly;
 - as small as possible; and
 - activated only when it is being utilised in accordance with the Flexible Use Airspace concept.
- **Communication:** areas where VHF (Very High Frequency) communications are not possible must be provided with a minimum communications services based on CPDLC (Controller Pilot Datalink Communications) capability, backed up by HF (High Frequency) or SATVOICE (Satellite Voice Communications).
- **Navigation:** 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.
- **Surveillance:** in areas where the provision of direct ATS surveillance is possible, ATC separation must be based on these surveillance systems (i.e. radar, multilateration and ADS-B). In areas where direct surveillance is not possible, ADS-C surveillance (and associated CPDLC capability) must be enabled providing reduced horizontal separations (i.e. RNP4 30/30 and planning for RNP2).
- Establishing equipage mandates requiring operators to equip with a specific technology is an acceptable concept provided the timeline for compliance is developed after due consultation and the benefits in equipage are clearly identified and agreed².

¹ Restricted areas must not be established over the high seas or over waters of undetermined sovereignty (reference: Annex 11 definition of restricted areas).

² Examples of this concept are the ADS-B mandate established by Australia, and those being established by Hong Kong China and Singapore.

- **Safety Nets:** powered aeroplanes operating above FL195 and within terminal controlled airspace (CTA and CTR) associated with major international aerodrome must have an operable mode S transponder, ACAS (airborne collision avoidance system), and the ATS surveillance systems must be fitted with STCA (Short Term Conflict Alert) and MSAW (Minimum Safe Altitude Warning).
- **Priority:** in each case where a minimum aircraft equipage is specified for this Concept, any aircraft that does not meet these requirements should receive a lower priority, except where prescribed (such as for State aircraft). States should require State aircraft to conform with the Concept of Operations wherever possible.
- **ATM Systems:** ATM system design should enable appropriate ATC capabilities including Conflict Prediction and Resolution (CPAR), AIDC (ATS Inter-facility Datalink Communications), and A/D-MAN (Arrival/Departure Management).
- **ATFM:** flow management requirements to enhance capacity should be implemented for all major traffic flows and major aerodrome terminal operations, using bi-lateral and multi-lateral agreements, as well as CDM (Collaborative Decision-Making) procedures.

1.2 The APAC Concept of Operations should be applied against the Major Traffic Flows identified in the GANP (Global Air Navigation Plan). The following table is not part of the Concept of Operations itself but is an example of how concepts could be applied with the expectation that the navigation specification would deliver appropriate separation standards.

Areas (AR)	Homogeneous ATM areas/ Major Traffic Flows/Routes	Operational Concept
AR1	Asia/Australia and Africa	RNP4 based on ADS-C/CPDLC and planned RNP 2
AR2	Asia (Indonesia north to China, Japan and the Republic of Korea), Australia/New Zealand	RNAV5/RNAV2 based on direct surveillance/ VHF and planned RNAV1/RNP2
AR3	Asia and Europe via north of the Himalayas	RNAV5/RNAV2 based on direct surveillance/ VHF and planned RNAV1/RNP2
AR4	Asia and Europe via south of the Himalayas	Combination of: <ul style="list-style-type: none"> • RNP4 based on ADS-C/CPDLC and planned RNP 2 • RNAV5/RNAV2 based on direct surveillance/ VHF and planned RNAV1/RNP2
AR5	Asia and North America via the Russian Far East and the Polar Tracks via the Arctic Ocean and Siberia	RNP4 based on ADS-C/CPDLC and planned RNP 2
AR6	Asia and North America via the Central and North Pacific	RNP4 based on ADS-C/CPDLC and planned RNP 2
AR7	New Zealand/Australia and South America	RNP4 based on ADS-C/CPDLC and planned RNP 2
AR8	Australia/New Zealand, the South Pacific Islands and North America	RNP4 based on ADS-C/CPDLC and planned RNP 2
AR9	South-East Asia and China, Republic of Korea, and Japan	RNAV5/RNAV2 based on direct surveillance/ VHF and planned RNAV1/RNP2

Appendix G: Draft Terms of Reference

Regional ATM Contingency Plan Task Force **(RACP/TF)**

1) The objective of the Regional ATM Contingency Plan Task Force is:

In collaboration with affected stakeholders and ensuring inter-regional harmonization, develop and implement a Regional ATM Contingency Plan that:

- i) provides a contingency response framework for States;
- ii) ensures a timely, harmonised and appropriate response to events that affect the provision of Air Traffic Services (ATS), or which ATS is involved in; and
- iii) provides a greater degree of certainty for airspace and aerodrome users during contingency operations.

2) To meet this objective the Task Force shall:

- a) Review the current status of ATM Contingency Plans and the contingency preparedness of Asia and Pacific Region States;
- b) Identify areas where ATM contingency planning requires improvement in terms of compliance with Annex 11 and accepted best practice, and to make recommendations on those areas of improvement;
- c) Analyse contingency procedures in use in other ICAO Regions, and cooperate with other groups which are involved with similar work in adjacent airspaces, in order to achieve harmonized inter-regional solutions;
- e) Develop a Regional ATM Contingency Plan that:
 - i) takes into account the varying levels of contingency response necessary, commensurate with precipitating events;
 - ii) takes into account the varying levels of State contingency capability;
 - iii) provides principles for Regional ATM Contingency planning;
 - iv) details recommended Regional contingency practices to events such as severe meteorological and geological phenomena, health emergencies (pandemics, etc), military conflicts and industrial relations issues; and
 - v) where practical, provides contingency planning templates for States.

The Task Force reports to the ATM/AIS/SAR Sub Group of APANPIRG.