



International Civil Aviation Organization

**SIXTEENTH MEETING OF THE  
COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND  
METEOROLOGY SUB-GROUP (CNS/MET SG/16) OF APANPIRG**

Bangkok, Thailand, 23 – 27 July 2012

**Agenda Item 2: Review**

5) outcome of meetings of other related Sub-Groups of APANPIRG

**ATM/AIS/SAR SUB-GROUP OUTCOMES**

(Presented by the Secretariat)

**SUMMARY**

This paper presents the key outcomes relevant to the CNS/MET SG from the Twenty-second Meeting of the APANPIRG Air Traffic Management/Aeronautical Information Services/Search and Rescue Sub-Group (ATM/AIS/SAR/SG/22), Bangkok, Thailand, 25 - 29 June 2012)

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-5 RNAV and RNP (Performance-based navigation)

GPI-7 Dynamic and flexible ATS route management

GPI-9 Situational awareness

GPI-12 Functional integration of ground systems with airborne systems

GPI-15 Match IMC and VMC operating capacity

GPI-16 Decision support systems and alerting systems

GPI-17 Data link applications

GPI-19 Meteorological Systems

GPI-20 WGS-84

GPI-21 Navigation systems

GPI-22 Communication infrastructure

GPI-23 Aeronautical radio spectrum

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**1. Introduction**

1.1 The Twenty-second Meeting of the APANPIRG Air Traffic Management/ Aeronautical Information Services/Search and Rescue Sub-Group (ATM/AIS/SAR/SG/21) was held at the ICAO Asia/Pacific Regional Office, Bangkok, Thailand, from 25 – 29 June 2012. The meeting was attended by 98 participants from 27 States, two Special Administrative Regions of China and three International Organizations.

**2. Discussion**Review of APANPIRG/22 Outcomes

2.1 The ATM/AIS/SAR Sub-Group noted the 2013 APANPIRG structure would include an Aerodrome Operations (AOP) Work-group, reporting to the renamed ATM Sub-Group (ATM/SG).

2.2 The meeting plan for 2013 was to hold APANPIRG/24 from 24 to 26 June 2013, followed by the Regional Aviation Safety Group (RASG) APAC on 27 to 28 June. Due to the truncated period available before APANPIRG/24, some compression of normal ATM schedules was required, so a tentative 2013 ATM schedule was provided to assist planning.

Review of the 48<sup>th</sup> Conference of Directors General of Civil Aviation Outcomes

2.3 The 48<sup>th</sup> Conference of Directors General of Civil Aviation Asia and Pacific Regions (DGCA/48) meeting (10 to 14 October 2011, New Caledonia) endorsed APANPIRG's establishment of the Asia/Pacific Seamless ATM Planning Group (APSAPG) to guide ATM modernization, collaboration and harmonization in the Asia/Pacific. The Conference also agreed on the need to identify the benefits, business case and the critical minimum system needs under the Aviation System Block Upgrade (ASBU) concept.

2.4 The Conference reaffirmed the need for expedited implementation of Performance-based Navigation (PBN), Continuous Descent Operations and Amendment 1 to ICAO Doc 4444, as well as deployment of other technology enablers. Hong Kong, China also highlighted the need for a regional Air Traffic Flow Management (ATFM) strategy within the Asia-Pacific in the future.

Performance Frameworks and Metrics

2.5 The ATM/AIS/SAR Sub-Group meeting reviewed and updated the Asia/Pacific Performance Framework Forms (PFF) within the scope of the seven Regional Performance Objectives related to the ATM, AIS and SAR fields (APANPIRG Conclusion 20/3). The meeting noted that the PFF would be modified to the Air Navigation Report Form (ANRF), effective from 2013.

2.6 Regarding APANPIRG Conclusion 20/4, the meeting noted that only one of the four Asia/Pacific Performance Metrics were within the scope of the Sub-Group, and requested that the Secretariat prepare a working paper on this topic for APANPIRG/23:

**APAC Metric 4** - Average delays for departures at State's primary international airports for the busiest hour on a weekly basis.

Regional Airspace Safety Monitoring Advisory Group Outcomes

2.7 The Australian Airspace Monitoring Agency (AAMA) reported to RASMAG/16 (Bangkok, 20-23 February 2011) meeting that the Indonesian Reduced Vertical Separation Minimum (RVSM) airspace total collision risk estimate was  $5.47 \times 10^{-9}$ . The risk had reduced notably since the last report to RASMAG, and remained marginally in excess of the overall Target Level of Safety (TLS). Indonesia was asked about the current status of ATS Inter-facility Data-link Communication (AIDC) in their Air Traffic Control (ATC) Centres. Indonesia stated that the recent AIDC trial revealed a technical problem which is being addressed, however currently the system was confined to Transfer of Control (TOC) and Acceptance (AOC) Messages between Makassar and Brisbane Centres. Indonesia informed the meeting that it was expected that full AIDC functionality would be trialled and restored from mid-2012.

2.8 The RVSM safety assessment made by the Monitoring Agency for the Asia Region (MAAR) indicated Mongolian airspace RVSM collision risk estimates had reduced dramatically since the advent of ATS surveillance monitoring in mid-2011. The estimate of total risks at  $3.47 \times 10^{-9}$  was now below TLS. Mongolia stated that there would be full radar control capability by June 2012, which had been delayed due to airspace organization and radio coverage issues. Mongolia intended to implement Automatic Dependent Surveillance – Broadcast (ADS-B) over the next five years to fill Air Traffic Services (ATS) surveillance gaps.

2.9 MAAR also presented the RVSM safety assessment collision risk estimates for West Pacific/South China Sea (WPAC/SCS) airspace. The estimation of total risks was  $5.28 \times 10^{-9}$ , which was above the overall TLS. MAAR explained that this was mainly due to a number of high risk-bearing LHDs involving aircraft operating in the incorrect direction. In this regards, MAAR was coordinating with States to have preventive measures to minimise the likelihood of this type of incident re-occurring.

Asia/Pacific Seamless ATM Planning Group Outcomes

2.10 In discussing Seamless ATM, the ATM/AIS/SAR Sub-Group meeting noted the draft Principles from the Seamless ATM Ad Hoc Meeting, APSAPG/1 and subsequent Seamless ATM discussion. The Principles had also been reviewed by the Southeast Asia and South Asia/Indian Ocean ATM Coordination Groups. APSAPG/1 noted that ATM Coordination Groups were very important in terms of implementation of Seamless ATM planning outcomes.

2.11 It was noted that Satellite-Based Augmentation Systems (SBAS) were included under item 27 of the Draft Seamless ATM Principles, but Ground-Based Augmentation Systems (GBAS) were not. While GBAS was intended for more local implementation, it may be a component of seamless operations.

Regional Civil/Military Coordination

2.12 A key recommendation from the Civil/Military Cooperation Seminar/Workshop (Bangkok, 28 February to 01 March 2012) was that civil/military cooperation/coordination principles and practices should be elevated to the highest political level in the States in the Asia/Pacific regions, including, *inter alia*, the following:

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- a) civil/military working arrangements where discussion of both civil and military needs were able to be negotiated in a balanced manner;
- b) the importance of the interoperability of civil air transport infrastructure and national security was recognized;
- c) the interoperability of civil and military systems, including data sharing, was emphasized;

ATM Automation in India

2.13 India presented information on the progress of ATS automation systems infrastructure development in 38 Indian airports, including some Area Control Centres (ACC). The automation systems had multiple surveillance sensor integration to facilitate enhanced surveillance capability. In addition, Decision Support Tools (DST) such as Short Term Conflict Alert (STCA), Medium Term Conflict Detection (MTCD), Minimum Safe Altitude Warning (MSAW), and the monitoring of probable entry into Special Use Airspace (SUA) were provided.

2.14 The meeting noted that while ideally the ATM system should be common to all FIR within a State, the timing of each FIR's ATM system upgrade may lead to changed business and regulatory circumstances, resulting in the selection of a different system.

2.15 India stated that one of the major challenges in the near term included successful completion of AIDC trials and real time implementation within India, especially with interoperability issues between three different ATS Automation systems. Although Delhi, Ahmedabad, Varanasi, and Nagpur had different ATM systems, AIDC operations between these Centres commenced successfully from 01 June 2012.

2.16 India was ready to test AIDC with neighbouring ANSPs, and wanted to know if ICAO had a global AIDC Inter-Connection Document (ICD) yet. The meeting noted that the ICD for AIDC was being consolidated and updated by an informal group of experts, and that a proposed joint Asia/Pacific – NAT AIDC Task Force would be further discussed at the CNS/MET SG/16 for endorsement and consideration by APANPIRG/23.

Surveillance Based Service Requirements in the South China Sea

2.17 IATA discussed progress on ATS surveillance separation capability in the South China Sea area. They suggested that service delivery outcomes and efficiency objectives should drive efforts, and a focus was required to deliver surveillance-based outcomes for all MTF South China Sea routes. IATA stated that the key to delivering an optimized ATM service was ATS surveillance, with associated communications infrastructure using shared information (Collaborative Decision-Making – CDM) and AIDC.

2.18 IATA noted that within the South China Sea, planning for enhanced surveillance using radar, ADS-B and ADS-C (Contract) for remote areas had been underway for some time. However, planning had not progressed in a synchronized fashion in order to result in the development of a complete surveillance capability. Despite a positive business case, forthcoming ADS-B mandates, and equipage up 79% in the area, it was still not clear when users could expect surveillance-based service delivery.

2.19 IATA had conducted an analysis for the Singapore to Hong Kong, China city pair, and found that from 2004 to 2011 the average 'block to block' times had increased in the order of 2.9 to 3.9 minutes per flight; thus it was clear that the current ATM system was not providing the efficiencies of reduced fuel burn and emissions per flight that it needed to.

2.20 The meeting noted that the current planning for Seamless ATM through the APSAPG and the adoption of the Asia/Pacific Air Navigation Concept of Operations were initiatives developed to give an overall framework for implementation planning for the region. Moreover, SEACG/19 had taken an initiative to establish a number of small working groups, one of which focused on ATS Surveillance. IATA suggested that where direct surveillance was available, 10NM separation should be provided by December 2014, and 30NM separation on all other South China Sea routes by December 2016, supported by ADS-C and Controller Pilot Data-link Communications (CPDLC).

2.21 The meeting discussed concerns about the volume of traffic to be handled on the Hong Kong – Singapore City Pair routes if a 10NM surveillance based separation standard was implemented. The Secretariat explained that there was a clear distinction between a separation standard, and ATFM initiatives, which were tailored to suit the tactical situation. It was further noted by the meeting that implementation of surveillance-based separation standards would improve airspace capacity.

2.22 The meeting noted that there were a number of other significant city-pair routes crossing the Hong Kong – Singapore routes, and that surveillance based separation was also required at these route crossings to ensure safety and airspace capacity. The meeting noted that any separation based on either ADS-B or RNP4 was dependent on aircraft equipage.

2.23 IATA commented that there had been no capacity improvement in this area for ten years, and that the ATM system was not keeping pace with traffic growth. The capability to deal with rapid traffic growth, similar to the capability in Europe and North America, was needed.

2.24 Hong Kong, China commented that the following timelines were consistent with the Asia/Pacific Regional PBN Implementation Plan:

- 30NM surveillance based separation on all other South China Sea routes should be implemented by Dec 2016, supported by ADS-C and CPDLC; and
- the implementation of a full route redesign based on RNP4 (30NM Lateral) by December 2016 should be conducted to improve route efficiency.

Next Generation Air Transportation System (NextGen) Overview

2.25 The United States provided an update on the progress of the NextGen initiative, including the development and implementation of systems and procedures to improve ATM within their National Airspace System (NAS). More than 300 ADS-B ground stations were providing weather and traffic situational awareness information to equipped aircraft. Air traffic controllers are also using ADS-B to provide air traffic separation services in some areas. Some of the other capabilities being developed within the NextGen programmes were:

- a network of PBN routes and procedures, including Optimized Profile Descents (OPD) and Wide Area Augmentation System (WAAS)-based procedures;
- Point-in-Space/Point-in-Time Metering;
- digital textual mode of communication; and
- ASBU integration.

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Satellite Communication Meetings and Seminar Outcomes

2.26 IATA informed the ATM/AIS/SAR/SG meeting that they currently did not support SATVOICE as a Long Range Communication System (LRCS) for routine ATS air-ground communications, as the removal of one High Frequency (HF) set, which was used as a justification for SATVOICE, did not provide sufficient cost benefit.

2.27 The meeting noted that the first edition of the Satellite Voice Guidance Material (SVGM) had not yet been finalised, but would be available before APANPIRG/23. The ATM/AIS/SAR Sub-Group reviewed the final draft version of the SVGM, and did not propose any changes.

Realisation of Increased Efficiency and Capacity via AIDC

2.28 Hong Kong, China described their experience on trials of AIDC using a standalone system while engineering a new ATM System with integrated AIDC capability that would enable a smooth implementation of AIDC with all the neighbouring ANSPs in 2013. Hong Kong, China stated that despite ICAO AIDC guidance material, there were grey areas and different interpretations in data field and Cyclic Redundancy Check (CRC) algorithm mismatch settings by equipment manufacturers that could lead to compatibility issues. Hong Kong, China supported a coordinated regional AIDC plan and requested that capable neighbouring ANSPs arrange AIDC tests with their system.

Optimization of Airspace and Procedures in Major Metropolitan Regions

2.29 The United States of America presented material on their Optimization of Airspace and Procedures in Major Metropolitan Regions (OAPM) initiative, which had a strong focus on PBN structures to reduce flight miles, delays and emissions. OAPM considered multiple airports and the airspace surrounding a metropolitan area, including all types of operations, as well as connectivity with other 'metroplex' areas.

GNSS Approaches for Non-Instrument Runways

2.30 India presented information on the progress of GNSS approach procedures and augmentation support for GNSS procedures in India. They illustrated that the coverage of the GAGAN (GPS-aided geo-augmented navigation) system indicated that SBAS approach operations for APV1/1.5 operations at all airports in India could be supported.

2.31 India had implemented its first LNAV/LNAV-VNAV (Lateral/Vertical Navigation) procedure at Cochin International airport linked to Basic RNP-1 STARs (Required Navigation Performance-1 Standard Terminal Arrivals). An RNP-AR (Authorization Required) approach procedure had been developed for Runway 32 at Mumbai airport, with an RF (Radius to Fix) leg to avoid Trombay hill that was expected to reduce landing minima requirement from 4,000m to 2,400m.

Consideration of Obstructions beyond ILS Critical and Sensitive Areas

2.32 India had completed a study on the critical and sensitive area of Instrument Landing Systems (ILS) maintained in accordance with Annex 10, whereby structures containing certain metallic structures, despite being below the coverage volume, caused ILS course quality problems. It was stated that the control of critical areas, designation of sensitive areas on the airport and the restriction of structures below the minimum elevation requirements may not be sufficient to protect an ILS from multipath effects caused by large, fixed ground structures.

2.33 The meeting noted that the Conventional Navigation Testing Group was responsible for guidelines for ILS critical areas, and recommended that India submit this paper to CNS/MET SG/16 for consideration.

ADS-B SI/TF Outcomes (WP16)

2.34 ICAO provided information on the ADS-B Seminar and Eleventh Meeting of the ADS-B Study and Implementation Task Force (ADS-B SITF/11, Jeju, Republic of Korea, 24 to 27 April 2012) relevant to ATM. The meeting discussed the need for a single, global database of aircraft equipage such as PBN, ADS-B etc. IATA advised that ICAO were creating such an integrated Airline Operating Certificate (AOC) database.

Report of Federal Aviation Administration (FAA) ADS-B Activities

2.35 The United States presented a brief summary of ADS-B implementation activities in the United States, including the ADS Rebroadcast (ADS-R) service, Traffic Information Service – Broadcast (TIS-B), and Flight Information Service - Broadcast (FIS-B).

2.36 The FAA was currently investing in development for three ADS-B applications: Oceanic In-Trail Procedures (ITP), Flight-deck-based Interval Management - Spacing (FIM-S), and Traffic Situation Awareness with Alerts (TSAA).

Flight Plan & ATS Messages Implementation Task Force Outcomes

2.37 The Secretariat presented information from the Fifth Meeting of the Flight Plan & Air Traffic Services Messages Implementation Task Force and Seminar (FPL&AM/TF/5& Seminar, Manila, Philippines, 7 to 9 November 2011), and an update on current implementation issues.

2.38 French Polynesia described an issue with Date-of-Flight (DOF) regarding AIDC messages being received when Field 18 was filed with zero '0', then FPL Field 18 could be overwritten. Australia had elected not to translate any AIDC messages during the transition, as the only fields applicable to Amendment 1 changes were 10 and 18, which were optional in AIDC messages.

2.39 Responses to the agreed quarterly questionnaire had generally been poor. Questionnaire responses were used to update the ICAO Flight Plan Implementation Tracking System (FITS) website. There had been considerable schedule slippage within the region.

2.40 In order to quantify the degree of concern about the Asia/Pacific Region's progress, and to prioritize any ICAO activities to assist States in their transition to NEW FPL and ATS message format, the Regional Office conducted a risk assessment to determine the level of risk to the regional ATM network inherent in any administration's potential failure to transition to NEW format on or before 15 November 2012. The risk was assessed by using a simple likelihood and consequence risk analysis model. In the case of States and Administrations which have not provided quarterly questionnaire updates, the maximum level of likelihood assessment was applied.

2.41 A revised questionnaire was circulated for completion by 11 May 2012. The revised questionnaire included specific questions on the planned or achieved timing of each of the three implementation phases. Only nine replies were received by the due date, and as at 15 June 2012 only seventeen States/Administrations had responded. Seventeen administrations had not provided a response to any questionnaire in 2012, and were thus invited to update the ATM/AIS/SAR Sub-Group on progress.

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2.42 Information received in the updated questionnaire of April 2012 indicated that some States may now be planning a ‘hard’ cutover from PRESENT to NEW format message processing on 15 November, without a transitional phase of operational mixed mode processing. This strategy would introduce a number of risks, including those associated with the volume of traffic being handled by Asia/Pacific States at the cutover time (0000 UTC on 15 November). It may also cause significant difficulty for airspace users in determining when all ANSPs along their planned routes had commenced accepting NEW format FPL.

2.43 In order to avoid the risks involved in a rapid cutover, and to align with strategies from other Regions, the ATM/AIS/SAR/SG meeting agreed to the following Draft Conclusion for approval by APANPIRG:

***Draft Conclusion ATM/AIS/SAR/SG/22/1 – Transition to NEW FPL Format***

*That, States are urged to commence operational acceptance and processing of both PRESENT and NEW format FPL and ATS messages as early as possible, and in any event no later than 0000 UTC on 12 November 2012, in order to avoid the risks involved in direct transition from PRESENT to NEW processing.*

2.44 Amendment 1 required that RNAV5 en-route navigation capability was indicated by insertion of the letter ‘R’ in field 10 of the flight plan, and the relevant indicators after PBN/ in field 18. As LORAN was rarely used, this would require the flight plans of most RNAV 5 aircraft to file PBN/B2B3B4B5 in Field 18. When added to other combinations of PBN indicators applicable to Oceanic, Terminal and Final flight phases, this may exceed the 16 character limit specified in PANS/ATM.

2.45 The solution being considered was to use B1 to indicate all permitted sensors except LORAN. ICAO was currently considering a globally coordinated response to address this issue.

2.46 During operational testing two other anomalies were found in the Asia/Pacific Guidance Material, relating to the syntax and semantics of elements filed in Field 18 of the flight plan. The ATM/AIS/SAR Sub-Group meeting agreed to the following Draft Conclusion:

***Draft Conclusion ATM/AIS/SAR/SG/22/2 – FPL Guidance Material Version 5***

*That, the Asia/Pacific Guidance Material for the Implementation of Amendment 1 to the 15th Edition of the Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444) is updated as Version 5 in accordance with excerpts contained in Appendix D to this Report.*

2.47 Successful implementation of the Amendment 1 changes were the highest priority ATM activity currently being undertaken in the Asia/Pacific Region. States were urged to ensure that all necessary resources are applied to this work, and to keep the ICAO Regional Office informed of progress and developments.

**Indonesia – Malaysia AIDC Trial**

2.48 Indonesia and Malaysia provided information on the AIDC trial between Ujung Pandang and Kota Kinabalu.



South-East Asia Route Review Task Force Outcomes

2.49 The Secretariat described the outcomes of the Sixth Meeting of the South-East Asia Route Review Task Force (SEA-RR/TF/6, Bangkok, 30 April 2012).

2.50 Hong Kong, China advised that 30NM longitudinal separation minimum on Routes A1 and A202 had been implemented since 5 April 2012. The meeting noted that while 30NM was a good improvement, the area was covered by ATS surveillance, so separation should be based on this capability. Hong Kong, China stated that they needed a six month 'no procedure change' either side of their new 2013 ATM system implementation.

2.51 The Task Force reviewed the task list and resolved all outstanding tasks. The meeting noted that any outstanding work would continue in other bodies, and an 'empowered' SEACG would be able to maintain a strategic view of the tasks as they progressed. The ATM/AIS/SAR Sub-Group meeting agreed to the following Draft Decision:

***Draft Decision ATM/AIS/SAR/SG/22/3 – Dissolution of the Southeast Asia Route Review Task Force***

*That, the South East Asia Route Review Task Force (SEARR/TF), be dissolved and any on-going tasks be delegated to existing bi-lateral or multilateral groups as identified in the South East Asia Implementation Plan.*

South-East Asia ATM Coordination Group Outcomes

2.52 The Secretariat presented the outcomes from the Nineteenth Meeting of South-East Asia ATM Coordination Group (SEACG/19, Bangkok, 1 to 4 May 2012).

2.53 SEACG noted the continued lack of compliance in the West Pacific/South China Sea and Indonesian airspace with the RVSM TLS. Recalling the importance of AIDC to minimize LHD, which constituted a major cause or factor of RVSM safety issues, a SEACG Capability Planning ad hoc survey was conducted of matters such as AIDC implementation status. The survey revealed that no SEACG administrations were using AIDC operationally except for China (Sanya) and Hong Kong, China – partial implementation. Only two other trials (Singapore-Viet Nam and Malaysia-Indonesia) were taking place, despite APANPIRG *Conclusion 19/19*, urging administrations to expedite AIDC implementation.

2.54 Hong Kong, China highlighted good progress in aircraft equipage of ADS-B along two ATS routes, L642 and M771. Within the Hong Kong FIR for the same period, a total of 2,163 ADS-B airborne targets had been detected out of 3,041 aircraft (71% equipped), and 66% (2,008) of these had good NUC values. Hong Kong, China felt that ADS-B mandates provided a very clear message to aircraft operators to plan for retro-fitting and forward-fitting their fleets. IATA advised that they saw ADS-B as the key for long-term height keeping monitoring.

2.55 The Philippines advised that resumption of Manila FIR ADS/CPDLC trial operations could not commence until the Department of Transportation and Communications had finalized its review. As soon as issues with the equipment had been settled, the Philippines would be working to resume the ADS/CPDLC trial.

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2.56 IATA acknowledged the extraordinary traffic growth in Asia, and stated that it was time to approach planning and start providing an ATC service like Europe using ATS surveillance as the basis. IATA further noted the increasing delays, so suggested that we needed to make major changes to the way ATM was conducted. The meeting was asked, as a first step to provide a more effective and seamless service to flights, to commit to providing surveillance separation where surveillance capability was available, and where areas with overlapping radar coverage existed, commit to providing seamless surveillance separation between the busy city pairs that they serve.

2.57 Hong Kong, China would consider a proposal to amend ATS route A583 (designated as RNP) to the northeast, allowing an additional RNP4 route east of M771. The Philippines were not able to consider this proposal at this juncture due to its issues with the current radar system.

2.58 The SEACG meeting noted that although the Asia/Pacific Air Navigation Concept of Operations included reference to certain PBN airspace capabilities<sup>1</sup> and expected safety net standards (such as Airborne Collision Avoidance Systems), there was no equivalent to *Conclusion 22/8 - ADS-B Airspace Mandate* for these areas in terms of airspace mandates and application of priorities. As some administrations were planning to mandate requirements within international airspace such as RNP4 and other PBN specifications, the SEACG developed Draft Conclusion SEACG 19/1 – *Asia/Pacific Air Navigation Concept of Operations Mandates* for APANPIRG's consideration. However, this was later superseded by an amendment from the South Asia/Indian Ocean ATM Coordination Group.

2.59 The SEACG/19 ad hoc survey revealed a large number of States were either not planning to use AIDC in the near future or did not have this capability. It was also clear from the survey that all States except one had the capability of using a separation standard based on ATS surveillance.

2.60 The Philippines used 40NM longitudinal separation within radar coverage due to lack of redundancy concerns, but advised that it was planning to reduce this separation with the future installation of additional ATS surveillance.

2.61 The survey indicated that those administrations which had airspace not served by radar, MLAT or ADS-B and Very High Frequency (VHF) communications had either already implemented 50NM separation using ADS-C and CPDLC, or planned to do so. Only Indonesia and Viet Nam had not planned to implement the 30NM standard based on RNP4. However, it was evident that none of these separation applications had been planned from a regional or sub-regional basis, which had led to a fragmented approach in the Southeast Asian and South China Sea area

2.62 Vietnam clarified that while the Ha Noi FIR was entirely within radar coverage, some parts of the Ho Chi Minh FIR were not. Vietnam was ready to implement 30NM horizontal separation for suitably equipped aircraft in accordance with regional agreements.

2.63 The inconsistency in approach in the AIDC, ATFM and ATS surveillance fields meant it was important to approach the planning, development and implementation of these areas in a much more disciplined and coordinated manner, with regular appraisal of the status of progress, barriers, and solutions that supported SEACG future planning. The ATM/AIS/SAR/SG noted SEACG Decision 19/2, which established three Small Working Groups (SWG) to assess the current status and planning for AIDC, ATFM and ATS surveillance.

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<sup>1</sup> 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 Regional Navigation Strategy.

Bay of Bengal Reduced Horizontal Separation Task Force Outcomes

2.64 The Secretariat provided the outcomes from the Bay of Bengal Reduced Horizontal Separation Task Force (BOB-RHS/TF/7), Bangkok, 21 May 2012).

2.65 The first phase of the BOB-RHS project was implemented on 30 June 2011. Due to operational issues, 50NM separation was only implemented on two ATS routes (N571 and P762) of the proposed four routes. The second phase was planned in three tranches on 15 December 2011, 12 January 2012 and 08 March 2012 on the majority of RNP10 routes transiting through Bay of Bengal, Arabian Sea and the Kabul FIR. However, 50NM was not implemented in accordance with the agreed schedule within the following FIRS: Chennai, Colombo, Jakarta, Kuala Lumpur, Mumbai, and Muscat.

2.66 India, Malaysia, and Indonesia were still finalizing the ATS Letter of Agreement (LOA) and the date of 50NM implementation on four routes. The BOB-RHS/TF meeting agreed that an ATS LOA could be signed before an ANSP was capable, as the usage could be described as conditional on availability.

2.67 It was advised that the Sultanate of Oman had three issues: airlines not filing their data-link status properly ('J' in the PRESENT format), training and the ATM system capability. Oman had issues with identifying RNP10 capable aircraft from flight plan information but stated that they would be able to accept 50NM for westbound flights by July 2012.

2.68 The final phase of 50/50NM horizontal separation was partially implemented on 08 March 2012. However, there were some route connectivity problems, so a Special Coordination Meeting was held with Afghanistan, India (by telephone), and Pakistan at the ICAO Regional Office in Bangkok from 19 to 20 March 2012 to resolve these issues.

2.69 India identified the following problems, *inter alia*, for the post-implementation review:

- low percentage of data-link equipped aircraft and VHF coverage limitations; and
- commissioning of new ATM automation systems which had interoperability issues.

2.70 The Secretariat noted that the aircraft equipage, communications and non-RNAV issues should have been identified in the State safety assessment. The latter was not an issue as long as the route waypoints were able to be coded in RNAV databases. India suggested that non-RNAV route segments should be converted to PBN, consistent with the Air Navigation Concept of Operations.

2.71 Regarding the lack of ATM system inter-operability, the meeting noted that this was a key area for Seamless ATM planning improvement, which would focus on future collaborative design and procurement processes. Improved military cooperation was also a Seamless ATM focus area.

2.72 The meeting noted that, despite the urging of the Regional Office, many States did not appear to have completed an adequate safety assessment, including a 'Know your Airspace' analysis that should have picked up many of the issues noted in the post-implementation review. While the experience will have improved the knowledge of many States, more collaboration in developing these assessments and the forwarding of safety assessments to the Regional Office may be necessary in the future.

2.73 With the implementation of 50/50NM separation and the Post-Implementation Review at TF/7, the work of the Task Force had essentially been completed. Any residual tasks thereafter could be delegated to the South Asia/Indian Ocean ATM Coordination Group (SAIOACG) or other appropriate bodies. The ATM/AIS/SAR Sub-Group agreed to the following Decision:

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***Draft Decision ATM/AIS/SAR/SG/22/4 – Dissolution of the BOB-RHS/TF***

*That, the Bay Of Bengal Reduced Horizontal Separation Task Force (BOB-RHS/TF) be dissolved and any outstanding tasks be delegated to South Asia/Indian Ocean ATM Coordination Group (SAIOACG).*

**South Asia/Indian Ocean ATM Coordination Group Outcomes**

2.74 The Second Meeting of the South Asia/Indian Ocean ATM Coordination Group (SAIOACG/2, Bangkok, 22 to 25 May 2012) noted there had been difficulty in completing safety data sharing LOA, as many States had administrative issues signing agreements with foreign entities. The meeting noted that MAAR had advised that the Bay of Bengal airspace RVSM risks were below TLS, however, since 1 July 2010, there had been no LLD or LLE report for the Bay of Bengal area. India suggested that air traffic controllers needed to be trained and directed to understand the importance of reporting correctly.

2.75 The SAIOACG/2 meeting agreed that Draft Conclusion SEACG 19/1 should include reference to ADS-C and CPDLC, and therefore needed some additional text. The ATM/AIS/SAR/SG/22 meeting also discussed the implications in Draft Conclusion SEACG 19/1 of mandating of carriage of ACAS and TAWS, and the continuing need for Minimum Equipment List (MEL) relief in the event of either of these systems being unserviceable. The Draft Conclusion was amended to remove reference to these systems. The ATM/AIS/SAR SG meeting agreed to the following Draft Conclusion for APANPIRG's consideration:

***Draft Conclusion ATM/AIS/SAR/SG/22/5 – 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 supporting data-link equipage (ADS/CPDLC); and
- b) mandating the carriage and use of an operable Automatic Dependent Surveillance-Contract/ Controller Pilot Data-link Communications Systems (ADS-C/CPDLC) system, and mode A/C and/or mode S transponder.

2.76 India announced plans to install ADS-B at 14 locations, while Myanmar advised of its intentions to install six ADS-B stations before the end of 2013. This would assist the management of conflicts with ATS surveillance based separation instead of using procedural and Flight Level Allocation Scheme (FLAS) procedures. The meeting recalled that the lateral spacing between ATS routes was 50NM or more, and that FLAS was utilized at various crossing points, so the current scheme was very conservative. Thus, the meeting was urged to commit to providing the full range of ATM separation services commensurate with the potential ATM capability available, based on the Asia/Pacific Air Navigation Concept of Operations, Seamless ATM, and a focus on ADS-B implementation and data-sharing.

2.77 India was willing to share ADS-B data with neighbouring states. This was recognised by the meeting as a means of improving safety (through the use of safety nets such as conflict alerts), confidence/trust in adjacent operations, and overall efficiency in identifying impending traffic.

2.78 The meeting was advised that Oman was studying a proposal for a floating platform for ADS-B and VHF which is connected by fibre in the Arabian Sea, and stated the return on investment would be very positive. IATA stated that innovative solutions like a floating platform were required, and would assist Seamless ATM.

2.79 It was advised that the Sultanate of Oman would shortly commence an AIDC testing programme. The Maldives were completing an ATM upgrade project and once that was finished they would start AIDC trials with India. IATA emphasised that it was very important to ensure that ATM systems were interoperable with neighbours and included in the vendor specifications.

2.80 The Secretariat noted the speech circuit communications issues between Pakistan and India, which had been the case since 2011. Controllers had been resorting to public landlines and mobile phones. The data communications between Kabul and other States had also been problematic, so a Communications Coordination Meeting was planned during 18-19 June 2012 at Karachi.

2.81 IATA proposed the establishment of a small working group to act as a steering group for ATFM, including BOBCAT, and the application of the correct service delivery. The ATM/AIS/SAR/SG meeting noted the SAIOCG2/2 Decision to establish SWG to manage the ATM specifications and planning for ATFM, ATS communications and ATS surveillance.

2.82 The Secretariat advised the meeting that the Regional Office sometimes received Basic Air Navigation Plan amendment proposals from States without accurate data and appropriate supporting information. Additionally, there was often no information on whether the route had been coordinated with other affected FIRs. All these issues led to unnecessary delays while the Regional Office sought clarification, and increased workload. The ATM/AIS/SAR Sub-Group meeting discussed the format and agreed to the following Draft Decision for consideration by APANPIRG:

***Draft Decision ATM/AIS/SAR/SG/22/6 – Basic Air Navigation Plan Amendment Procedure Template***

*That, for ease of reference and reduction of submission errors, the ICAO Regional Office should provide the Doc 9673 Amendment Procedure on the Asia/Pacific website, including requirements to provide detailed and accurate information, an appropriate chart in the case of ATS route amendments, and information on prior consultation with any affected States.*

**Informal Pacific ATC Coordinating Group (IPACG) Outcomes**

2.83 The United States presented an update from IPACG/35 (Sapporo, Japan, 7-11 November, 2011) and IPACG/36 (San Diego, USA, 14-18 May, 2012). These meetings were held in conjunction with the Future Air Navigation System (FANS) Interoperability Team (FIT/22) and FIT/23 respectively.

2.84 Japan informed the meeting of its future expansion of the cross-boundary trial using ADS-C based 30/30NM separation between the Anchorage and Fukuoka FIRs, in concert with the trial between the Oakland Oceanic and Fukuoka FIRs.

2.85 The IPACG meeting discussed Climb Descend Procedures (CDP), which requires ADS-C, CPDLC, and RNP-4. It was noted that some operators, even with RNP-4 operational approval, were not filing for RNP-4 in their flight plans due to the perception that the additional data-link charges for higher ADS-C update rates were not offset by operational savings. Currently, only 25.5% of aircraft within the Oakland Oceanic Control Area flight plan with RNP-4 equipage and only 50% of the aircraft use ADS-C.

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2.86 The FAA described the efforts and progress to expand the ADS-B ITP operational trial that was being conducted in the Pacific, and requested that Japan join the trial by enabling support for ITP within the Fukuoka FIR.

Informal South Pacific ATS Coordinating Group Outcomes

2.87 The outcomes from the 26<sup>th</sup> Meeting of the Informal South Pacific ATS Coordinating Group (ISPACG/26, Nadi, Fiji, 1-2 March 2012) were presented by New Zealand.

2.88 The meeting noted the activities of the APSAPG and that activities to support seamless ATM within the South Pacific such as UPR, DARP, 30/30NM separations, AIDC, ADS-B, ADS-C, CDP, and ITP were already well established. To provide increased focus, the ISPACG Planning Team would develop a matrix of desired attributes against which each State would report and/ or develop plans where necessary.

Combined ASIOACG/INSPIRE Working Group Outcomes

2.89 WP22 provided information on the Combined Arabian Sea/Indian Ocean ATS Coordination Group (ASIOACG) and Indian Ocean Strategic Partnership to Reduce Emissions (INSPIRE) Working Group (Dubai, United Arab Emirates, 22 and 23 May 2012).

2.90 A series of Aeronautical Fixed Telecommunication Network (AFTN) messaging trials would be conducted between Melbourne, Male and Colombo ACCs commencing in August 2012. This would be followed by AIDC messaging trials in the latter part of 2012. India and the Maldives announced that Mumbai and Chennai would trial AIDC from mid-2012.

Review of BOBASIO/02 Meeting at Chennai

2.91 The Second Bay Of Bengal, Arabian Sea and Indian Ocean Region meeting (BOBASIO/02) was held in Chennai, India from 11 to 13 April, 2012. India was considering plans to mandate for carriage and use of ADS-B equipment in the entire Indian airspace and to operationalize ADS-B stations by December 2013.

East Asia Air Traffic Management Coordination Group Outcomes

2.92 IFATCA presented the outcomes from the 5<sup>th</sup> Meeting of the East Asia Air Traffic Management Coordination Group (EATMCG/5, 18 to 20 April 2012). EATMCG had been instrumental in developing the route structure in the area and a basic strategic ATFM process involving Hong Kong, Japan and Taiwan.

2.93 Japan reported that Fukuoka and Naha ACCs and Taipei ACC commenced AIDC trials on 22 March 2012. All parties noted the reduction in controller workload due to the reduction of coordination telephone calls. Hong Kong, China reported that during the AIDC initial test phase between Hong Kong ACC and Taipei ACC, a number of software problems were encountered, so it was hoped to recommence trials by mid-2012.

Asia/Pacific Region ATS Route Catalogue

2.94 The Asia/Pacific Region ATS Route Catalogue was reviewed by the meeting. The meeting noted that the Route Catalogue did not adequately capture or record actions taken by States to assess and implement route proposals, or reasons for their rejection. The ATM/AIS/SAR Sub-Group discussed this, and agreed to a Draft Conclusion 22/7 for APANPIRG's approval regarding the update of the ATS Route Catalogue.

AIS-AIM Implementation Task Force Outcomes

2.95 The Seventh Meeting of the Aeronautical Information Services – Aeronautical Information Management Implementation Task Force (AAITF/7) was held at Hanoi, Viet Nam from 13 to 16 March 2012. IATA reflected on several recent regional examples of non-adherence to ICAO standards and recommended procedures and/or quality and accuracy of information in respect of location indicator and ATS routes, noting the adverse effect this had on aviation systems. The meeting noted that aeronautical information should be published 28 days before the effective date for normal changes, but in the case of major changes such as airspace or airport changes, the lead time should be 56 days.

2.96 The meeting discussed the possible reasons for the systemic issues and noted that project planning that took into account AIM issues should be an automatic part of a State's responsibilities under their Safety Management System (SMS) requirements. The main reasons for the failure of some administrations to adhere to Annex 15 lead times 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 which did not comply with Annex 15 requirements.

2.97 Acknowledging the serious and systemic nature of this issue, the ATM/AIS/SAR Sub-Group discussed and agreed to the Draft Conclusion for APANPIRG's approval:

***Draft Conclusion ATM/AIS/SAR/SG/22/8 – 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) creating a mechanism to allow AIS personnel to decline requests that did not comply with Annex 15, except for urgent corrections, emergencies, and matters of national security.*

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

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***Draft Conclusion ATM/AIS/SAR/SG/22/9 – AIS-AIM Transition State Plans***

*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.*

2.99 The AAITF/TF/7 meeting discussed the matter of data integrity quality assurance. It was clarified that the specific metrics had been removed from Annex 15, although it was emphasised that there was still a continuing need to ensure data integrity to an acceptable level. Of serious concern in terms of AIM implementation progress was the number of States that had not completed the Quality Assurance element of Phase 1 (P-17). After the AAITF/7 meeting, further discussion between States indicated a worldwide need for more guidance on this subject, so an AIM Quality Assurance Seminar for Asia/Pacific States was considered just prior to the next AAITF meeting. The ATM/AIS/SAR Sub-Group agreed to the Draft Conclusion for APANPIRG's approval:

***Draft Conclusion ATM/AIS/SAR/SG/22/10 – AIM Quality Assurance Seminar***

*That, ICAO should conduct an AIM Quality Assurance Seminar in conjunction with the Aeronautical Information Services – Aeronautical Information Management Implementation Task Force (AAITF).*

2.100 There was considerable discussion regarding duplicated 5 Letter Name Codes (5LNCs) and amendment procedures, which clarified that Annex 11 required that each code had to be unique. Notwithstanding this, the United States advised that there were many duplicated codes within their system and worldwide, so logic checks were written into their software to ensure there were no safety issues and to bring the pilot into the decision-making process. The Seminar noted that there was worldwide pressure on the number of waypoint codes available, especially with the implementation of new PBN procedures. The meeting noted that some FMS had logic which enabled identification of duplicated codes, but this was not universal. The ATM/AIS/SAR Sub-Group agreed to the following Draft Conclusion for APANPIRG's approval:

***Draft Conclusion ATM/AIS/SAR/SG/22/11 – Duplication and Amendment of 5LNC***

*Recognising that with the increasing use of Five Letter Name Codes (5LNC), it was not practical to avoid any duplication of 5LNC worldwide, and that States often used discretion in managing both duplications and minor changes of waypoint position that may not strictly be in accordance with the provisions of Annex 11, Appendix 1, ICAO is requested to consider:*

- a) reviewing and updating Annex 11 to ensure its provisions related to 5LNC are appropriate; and*
- b) standards for Flight Management Systems (FMS) that ensure logic checks of inputted waypoints that are duplicated are highlighted to pilots.*



Improving SAR Capability in the Asia/Pacific Region

2.101 As a measure towards addressing the lack of discussion in relation to Search and Rescue (SAR) matters and lack of conclusions related to SAR, Australia proposed the establishment of an Asia/Pacific Regional SAR Workgroup (APSAR/WG) reporting to the ATM/AIS/SAR/SG. WP29 noted that cooperation between, and collaboration with, neighbouring and regional Rescue Coordination Centres (RCCs) was essential to ensure that the best possible SAR response is provided to persons in distress regardless of State boundaries. This included measures such as the activation of SAR assets for cross-boundary responses, and preparatory measures (sharing of SAR expertise, knowledge and experience amongst neighbouring and regional SAR Coordination personnel). The ATM/AIS/SAR/SG meeting agreed to the following enhanced Draft Decision for APANPIRG's approval:

***Draft Decision ATM/AIS/SAR/SG/22/12 – Establishment of APSAR Workgroup***

*That, an Asia/Pacific Regional SAR Workgroup (APSAR/WG) be established, reporting to the ATM Sub-Group of APANPIRG, in accordance with the Terms of Reference as shown in Appendix J to this Report.*

Air Navigation Service Deficiencies List

2.102 A list of Air Navigation Deficiencies noted by the APANPIRG/22 in the ATM/AIS/SAR fields was reviewed by the meeting. The following States submitted requests to close ATM/AIS/SAR Deficiencies.

- China (ATS Routes, WGS 84 implementation)
- Democratic People's Republic of Korea (WGS 84 implementation)
- Solomon Islands (WGS 84 implementation)
- Timor-Leste (WGS 84 implementation)
- Tonga: (ACAS II and Carriage of Pressure Altitude Reporting Transponder)
- Viet Nam: (ICAO Airspace Classification implementation)

2.103 The ATM/AIS/SAR SG meeting agreed to the following enhanced Draft Conclusion for APANPIRG's approval:

***Draft Conclusion ATM/AIS/SAR/SG/22/13 – Update of ATM/AIS/SAR Deficiency List***

*That, the ATM/AIS/SAR Deficiency List be amended as detailed in Appendix K to this Report.*

Election of ATM Sub-Group Chairperson and Vice-Chairperson

2.104 The First Meeting of the ATM Sub-Group (ATM/SG/1) was tentatively due to be held from 20 to 24 May 2013, at Bangkok, Thailand.

2.105 Mr Colman Ng, Chairman of the ATM/AIS/SAR/SG, had announced that he would step down from the Chair of the Sub-Group at the end of the meeting. The meeting acknowledged the long and significant contribution of Mr. Ng. IATA stated that the users were very grateful for the manner in which Mr Ng had guided the Sub-Group through many difficult areas in order to make progress.

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2.106 Mr. Kuah Kong Beng, Director of Air Traffic Services, Civil Aviation Authority of Singapore, was elected to chair the ATM Sub-Group. Mr. Mukesh Chand Dangi, General Manager (ATM), Airports Authority of India, was elected as Vice-Chairperson.

**3. Action by the Meeting**

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) discuss the proposal for a joint Asia/Pacific/NAT AIDC Task Force; and
- c) discuss any other relevant matters as appropriate.

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