INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

REPORT OF THE FIRST MEETING OF THE SOUTHEAST ASIA ROUTE REVIEW TASK FORCE (SEA-RR/TF/1)

BANGKOK, THAILAND, 8 – 11 DECEMBER 2009

The views expressed in this Report should be taken as those of the Meeting and not the Organization

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

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1.1 Introduction

1.1.1 The First Meeting of the Southeast Asia Route Review Task Force (SEA-RR/TF/1) was held at the ICAO Asia and Pacific Regional Office, Bangkok, Thailand from 8 to 11 December 2009.

1.2 Officers, Secretariat and Participants

1.2.1 The meeting was chaired by Mr. Peter Rabot, Head (Air Navigation Services Safety Office), from the Civil Aviation Authority of Singapore (CAAS). Mr. John E. Richardson, ATM Expert, ICAO Asia and Pacific Office, acted as Secretary to the Meeting, assisted by Mr. Kyotaro Harono, ATM Officer, ICAO Asia and Pacific Office.

1.2.2 Forty-four (44) participants from Cambodia, China, Hong Kong China, India, Indonesia, Lao PDR, Malaysia, Philippines, Singapore, Sri Lanka, Thailand, United States, Viet Nam, IATA and IFATCA attended the meeting. A list of participants is in **Appendix A.**

1.3 Opening of the Meeting

1.3.1 The Chairman, Mr. Peter Rabot, welcomed all participants to the meeting. He mentioned that many of the participants were also present at the RNP SEA Task Force which successfully completed its initial phase of work in the implementation of 50/50 NM separation on RNP 10 routes L642 and M771. The benefits of that work are clear to see in the increased efficiency of traffic flows on those routes.

1.3.2 Mr. Rabot advised that ICAO recognizes the importance of the Southeast Asia/Northeast Asia regions by identifying it as a major traffic flow (AR9) in the regional air navigation plan. IATA has also highlighted that 22 of the 40 busiest airports in Asia/Pacific region (excluding West Coast USA) lie within this important area. With 21 FIRs interfacing within this part of the Asia and Pacific region, there are many challenges to overcome and it is timely that the agenda for this meeting has been framed to look at these matters in an attempt to overcome many of the issues facing States and international airlines.

1.3.3 The Chairman also advised the meeting that, at the ATM/AIS/SAR/19 Sub-Group meeting, the Route Review Task Force was established to undertake a review of ATS routes in this area. After much deliberation and discussion, the Meeting agreed to rename the RNP SEA Task Force to the Southeast Asia Route Review Task Force and set a prime task of reviewing the ATS route structure in the Western Pacific/South China Sea airspace south of the Fukuoka FIR boundary. The sub-group agreed to suitable terms of reference to enable the Task Force to carry out this important and timely assignment. Subsequently, APANPIRG/20 endorsed the establishment of Route Review Task Force and the Terms of Reference.

1.3.4 The purpose of the Task force in collaboration with stakeholders was to achieve regional harmonization, analyse, develop and implement appropriate measures to improve en-route airspace efficiency while taking into account environmental and safety issues. The Chairman also advised the meeting that the Task Force activities should be largely based on the PBN concepts and in accordance with the provisions of the regional PBN Implementation Plan.

1.3.5 It was the view of the Chairman that the work of the task force could be achieved in two ways. One option could be to conduct a review of the existing routes and identify those that could be enhanced to improve efficiency. This approach would be similar to the work previously done to establish 50/50 NM horizontal separation on L642 and M771. The second option would be to complete a full review of the routes in this sub- region. This could be by starting with a blank sheet of paper. The Chairman mentioned that this has been previously accomplished both in the South China Sea and over the Bay of Bengal.

1.3.6 The Chairman advised that he looked forward to working with the Task Force knowing that the participants would cooperate and respond with valuable inputs to achieve the desired results.

1.3.7 On behalf of Mr. Mokhtar A. Awan, Regional Director, ICAO Asia and Pacific Regional Office, Mr. John Richardson, ATM Expert and Secretary for the meeting welcomed all participants from States and aviation organizations to the first meeting of the South East Asia Route Review Task Force. He advised that Southeast Asia has seen significant strides forward over the past decade or so in improving procedures and route design in this important area of the Asia and Pacific region. Items such as a parallel route structure created in the middle 90's, followed by the introduction of RVSM at the turn of the century, greatly improved the efficiency of service to the airlines and the travelling public. Mr. Richardson mentioned that, as air traffic continues to grow, the aviation challenges in this large region of the Asia and Pacific area have increased demands on our systems and air traffic controllers, which is mainly due to the expansion in economic terms of many of the APAC States. Although the economic crisis over the last 18 months has caused a severe downturn in the aviation industry, including the resultant effect on air navigation service providers, positive signs have lately shown a reverse upwards trend towards continued growth in this area. He also mentioned that change is part of culture in the aviation industry and it is imperative that we continue to adjust to new ATM systems and aircraft avionics in a progressive and timely manner in order to provide a safe, efficient and improved service to the travelling public.

1.4 Documentation and Working Language

1.4.1 The meeting was conducted in English. All meeting documentation was in English.

1.4.2 Eleven (11) working papers and one (1) information papers were presented to the meeting. A list of the papers is at **Appendix B**.

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Agenda Item 1: Adoption of Agenda

1.1 The meeting adopted the following agenda:

Agenda Item 1:	Adoption of Provisional Agenda
Agenda item 2:	Review Outcomes of Related Meetings
Agenda item 3:	Review of ADS/CPDLC Implementation
Agenda item 4:	Review Current Operations across South-East Asia and Identify Problem Areas
Agenda item 5:	Implementation of the New CNS/ATM Systems in the Region
Agenda Item 6:	ATS Route Development
Agenda Item 7:	Develop a Coordinated Plan for Implementation of Actions Agreed by the Meeting including safety, environmental and operational efficiency issues
Agenda Item 8:	Any other business
Agenda Item 9:	Date and Venue for the Next Meeting

Agenda Item 2: Review Outcomes of Related Meetings

2.1 The meeting noted that, over the past decades, there has been several ICAO Groups or Task Forces which were established in this high profile area of the Asia and Pacific region for the purpose of enhancing air traffic management capabilities to benefit the aviation community and air traffic service providers alike. The area of Southeast Asia comprising States and FIRs south of the Fukuoka FIR, which is the area under consideration by the task force, comprises 14 FIRs and 12 States. It also involves a mixture of international oceanic as well as continental airspace which may require attention.

2.2 Apart for some minor downturns in traffic numbers due to unusual circumstances such as the SARS epidemic, the H1NI virus and more recently the economic crisis which was felt by not only this region but worldwide, the traffic growth has considerably exceeded forecast expectations over the past 10 years. In fact, statistics have shown that the Asia and Pacific regions has advanced in traffic movements faster in percentage terms than most if not all of the other regions of the world.

Review of other associated meetings in the SEA Sub-region

2.3 The meeting noted that other ICAO forums are also doing work in this area, therefore it seemed appropriate that any decisions taken at this meeting should not be in conflict with work in progress by these groups.

Extracts from the SEACG/16 and FIT-SEA/9 meetings

2.4 The meeting recalled that during these two meetings, Singapore gave an overview of the data link performance in the Singapore FIR with detailed analysis of delivery performance in the following areas:

i) uplink performance;
ii) downlink performance;
iii) message reject rate;
iv) system availability; and
v) automatic transfer handover (NDA).

2.5 Generally, the performances met the FANS Operational Manual (FOM) requirements except for the downlinks. An analysis of the traffic numbers, mix and operators were also presented.

2.6 Resolution measures were taken to address the uncharacteristic marginal downlink performance. With the cooperation of SITA, each of the messages was analyzed over a few months. The results indicated that the downlink performance of the B777 type were lower than the other aircraft types which may have brought down the overall performance for the downlink. Discussions with Boeing CRA indicated that a software release to provide a fix was imminent, both with AIM-2 and AIM-1 software, respectively. Singapore stated that they would continue to monitor the situation closely.

Note: - Boeing confirmed that system performance monitoring had detected some data link performance problems with the Boeing 777 type aircraft. Boeing CRA determined that the problem was related to VHF to SATCOM link transitions. After spending many hours in their avionics labs with an aim of trying to reproduce the problem. Boeing advised that the root cause had been identified and a free of charge software update fix would be available in late May 2010 for AIMS II configured 777s and in August 2010 for AIMS I configured aircraft.

2.7 It was noted that Data link provided by ARINC to Viet Nam was mostly stable in providing ADS/CPDLC applications however there were some brief occasions in which the link went to standby. Civil Aviation Administration of Vietnam (CAAV) has instructed Vietnam Air Navigation Service Corporation (VANSCORP) to closely work with ARINC and CRA-Japan in analysing this matter as well as improving the overall performance.

2.8 It was also noted by the meeting that the Philippines budget approval had been granted for the ACC replacement project, which will replace the current equipment with built-in data link capability. This had been graded as a priority project and data link trials were planned for the third and fourth quarter of 2010. In conjunction with this project, the Philippines would commence ADS/CPDLC refresher courses and enhanced simulator training courses from May 2009.

Establishment of Singapore SMA – SEASMA

2.9 Recognizing that safety assessment and monitoring capability was urgently necessary to enable the implementation of 50NM lateral/longitudinal reduced separations on RNAV routes L642 and M771 in the South China Sea area, it was announced to the meeting that Singapore has now established the safety monitoring agency SMA for the South China Sea area with the title “South East Asia Safety Monitoring Agency” (SEASMA).

Expand December Traffic Sample Data (TSD) for airspace planning

2.10 The meeting recalled that at the ICAO Asia/Pacific Air Traffic Flow Management (ATFM) Seminar/Workshop (October 2008) which was held in Fukuoka, Japan, the Seminar/Workshop recognized the fundamental and critical need for accurate and timely data to be continuously available to support implementation and ongoing ATFM operations as well as other initiatives in this region. This was essential in two aspects:

a) static data identifying historical traffic loadings, for use as a strategic planning tool; and

b) dynamic real-time data that was used for the tactical management of traffic.

2.11 Although vertical and horizontal traffic data was currently used exclusively for airspace safety monitoring purposes, the ATFM Seminar/Workshop considered it likely that this annual traffic count would provide a very useful source of data for airspace planning purposes in general and specifically to identify peak traffic loadings for ATFM purposes. Consequently, the Seminar/Workshop recommended that RASMAG review the situation, with the objective of expanding the use of the annual December RVSM data collection for airspace implementation planning and implementation in general (ATFM, PBN, ATS routes etc) and, under supervision of the Regional Office, enabling this data to be made available to implementation groups as required to support all regional ATM implementations.

Impact on Air Traffic Management Due to Time Restriction on M771

2.12 The meeting noted that Singapore had reported that there were at least 61 occasions where time restrictions were imposed on M771 during the period from 3 July 2008 to 20 April 2009. The time restrictions required Singapore ATC to provide a time buffer for either all flights or between flights bound for the same destination, regardless of flight level. The time restrictions imposed varied from 5 to 30 minutes between flights and the duration where these time restrictions were imposed ranged from 1 to 12 hours. Usually explanations given for such restrictions included weather deviations and flow control measures, etc.

2.13 This made it difficult for the controllers to adapt, as different types of restrictions were imposed. Workload on controllers had increased as No-Pre-Departure Coordination (No-PDC) arrangements with adjacent ACCs had to be suspended when restrictions were imposed by downstream ACCs. Request had to be made for individual flights prior to departure. At times, in order to meet the restrictions from downstream ACCs, aircraft had to be taken off the route and radar vectored for delay to meet the required buffering, thus causing increased workloads for pilots and controllers. The extra fuel burned would also have adverse impact on the environment and the operating cost of airlines.

2.14 For the four month period between 1 January and 20 April 2009, there were 39 occasions where capacity reduction measures were initiated by downstream ACCs, with only one occasion due to Large Scale Weather Deviations (LSWD) in the Sanya FIR. The rest were due to the imposition of ad-hoc time restrictions on M771.

2.15 The time restrictions imposed by adjacent ACCs were not in accordance with longitudinal separation standards requirements. From 1 Jan 2009 to 20 April 2009, time restrictions were imposed on M771 for flights bound for Guangzhou and/or Shenzhen. Prior to 1 Jan 2009, there were time restrictions imposed on M771 for flights to North Asia and Northeast Asia. It should be noted that M771 is a route with high traffic volume used by flights from Indonesia, Malaysia and Singapore, and the imposition of such ad-hoc time restrictions greatly impacted the efficiency of

flights and shifted the tactical traffic management of downstream ACCs onto upstream ACCs. This had increased the complexity in traffic management, controllers' coordination and workload. At times when no reasons were given for the restrictions from the downstream ACCs, controllers' radio communication and coordination workload would increase as pilots and adjacent ACCs would query the need for the restrictions.

2.16 Hong Kong, China remarked that the traffic flow regulation on M771 placed on aircraft bound for Guangzhou and Shenzhen in China was mainly due to the limited number of transfer of control points/flight levels that are available for those flights between Hong Kong and China as well as the high traffic density in the Hong Kong terminal control area (TMA). Hong Kong, China agreed to regularly review the situation and endeavour to place the traffic regulation restrictions only as the last resort so as to minimize the impact on the upstream ACCs.

Notification of Large Scale Weather Deviation (LSWD) Procedures

2.17 Singapore informed the meeting that the LSWD procedures on the six trunk routes over SCS area, i.e. L625, L642, M767, M771, N884 and N892, were utilized when required during the months from July to December 2008. Very often, ACC initiating the LSWD procedures did not provide an estimated time when operations could revert to normal. This created uncertainty for upstream ACCs and airspace users. As discussed at WPAC/SCS RSG/6, the LSWD were further refined including the need on the issuance of a NOTAM by the ACC which activated the LSWD procedures.

2.18 In the period of about nine months from 3 July 2008 to 20 April 2009, there were at least 22 occasions of the LSWD procedures being applied on the SCS routes that include L625, L642, M767, M771, and N884. The duration of the application of LSWD procedures ranged from 30 minutes to 17 hours.

2.19 The meeting recalled that the LSWD procedures were activated in circumstances where deviations of more than 10 NM are experienced or anticipated by five or more aircraft and the deviations are not wholly contained in one FIR. Therefore, the LSWD procedures must be activated simultaneously by more than one FIR. The meeting confirmed that NOTAMs would be issued by the ATS providers who activate the LSWD procedures and agreed with the following shortlist of NOTAM offices (NOF) to which these NOTAM should be sent:

China, Hong Kong China, Indonesia, Taipei, Japan, Malaysia, Singapore, Philippines, Vietnam

2.20 In regard to the procedures mentioned in para 2.19, the Secretariat further reported that selective addressees in promulgating a NOTAM was not feasible as this would contravene standard procedure in NOTAM issuance. The meeting therefore agreed that the promulgation of activating and cancelling a LSWDCP by NOTAM would have to be to all the addressees on the distribution list of the AIS concerned.

Flow Control Restriction on A1/G86

2.21 Thailand advised that there were many occurrences in the past of flow control restriction imposed by Taipei ACC, due to system maintenance between 1525 – 1840 UTC (2225 – 0140 Thailand time). Traffic affected by the restriction were via A1, B348, G86 and M750; inbound Taipei FIR via points ELATO (A1), ENVAR (M750), KAPLI (G86) and POTIB (B348) with the spacing requirement of 3 minutes or 20 NM regardless of flight levels. As a result, Bangkok ACC being the most upstream FIR, was required to impose a 6 minutes flow rate for ATS route A1 ELATO/M750 ENVAR and 3 minutes for traffic on G86 KAPLI during the above time which had

caused significant delays on eastbound departures from Bangkok International Airport and other airports within the Bangkok FIR.

2.22 It was understood that this issue was also shared by other air navigation service providers (ANSP) in this area and that the passing on of flow control restrictions from one ACC to another was a common practice. With today's economic situation, however, Thailand believed it was the airlines that would be most affected by the constraint which would translate to delays, increased fuel burn and in some cases the inability to maintain connecting schedules. Further, the imposed time of 1525 – 1840 UTC was the prime period for departures from Southeast Asia to destinations in Japan and the Republic of Korea, and there were 15-20 flights which had been affected with the restriction.

2.23 The meeting noted the situation and its consequences mentioned by Thailand and discussed ways to alleviate the affect on operators. Hong Kong China and Japan would bring this forward to the attention of Taipei ACC at the East Asia ATM Coordination Group in June 2009.

2.24 The SEA-RR/TF/1 meeting was advised that this meeting had been delayed and was now scheduled to be held on the week commencing 14 December 2009.

Radar Coverage Chart of the South China Sea Area and the Status Matrix of Application of Radar Handover Procedures

2.25 The meeting was advised that, at the SEACG/14 (May 2007, Hanoi), Thailand suggested that the existing radar facilities and coverage should be utilized to allow for radar spacing and procedures to apply from the Bangkok FIR to the Taipei FIR through the Ho Chi Minh, Sanya, Hong Kong FIRs and vice versa along ATS routes A1, G581 and M750. This spacing had already been applied between some of the FIRs but limitations were still compromising full optimization and benefits due to non-uniformity of radar spacing between all FIRs.

2.26 SEACG/14 reviewed the radar coverage chart of the South China Sea and was of view that there was merit in implementing radar spacing along many ATS routes.

Summary of the Fourth Meeting of South-East Asia RNP (RNP-SEA/TF/4) Implementation Task Force

Safety Analysis and Airspace Monitoring Issues

2.27 Singapore presented RNP-SEA/TF/4 with the post-implementation safety assessment since implementation of 50 NM lateral and 50 NM longitudinal separation on RNAV routes L642 and M771.

2.28 From 3 July through the end of October 2008, there was no report of lateral errors of 15 NM or greater magnitude for operations on L642 and M771. Also, there had been no reports of large individual-aircraft longitudinal errors or loss of longitudinal separation between pairs of aircraft.

2.29 RNP-SEA/TF/4 accepted that the safety assessment and agreed that the application of RNP 10 (50 NM/50 NM) horizontal separation would continue on L642 and M771. There was also agreement that the 2008 TSD from the Ho Chi Minh, Hong Kong, Sanya and Singapore FIRs should be used to re-estimate the opposite-direction lateral occupancy parameter of the lateral collision risk model and the aircraft-pair distributions of initial separation and separation loss or gain used in the longitudinal collision risk model when the TSDs become available in early 2009.

Future Direction and Arrangements

2.30 RNP-SEA/TF/4 was invited to review the PBN Regional Plan and provide feedback. RNP-SEA/TF/4 noted in the regional plan that RNP 4 is preferred (RNAV 10 is acceptable) in oceanic airspace in the short term (2008-2012) and RNP 2 is preferred (RNP 4 and RNAV 10 are acceptable) in the medium term (2013-2016). RNP-SEA/TF/4, however, recognized that there was no need to wait for these dates to conduct implementations and, where States were agreeable, implementations could take place earlier than the guidelines given in the PBN regional plan. Hong Kong, China highlighted to the meeting that they would most likely adhere to the interim PBN Regional Plan which was adopted by APANPIRG/19 to implement RNP 4 in the region.

2.31 With regard to the further reduction of the separation utilizing radar, Hong Kong, China informed the meeting that their radar marginally covered the transfer of control points between the Hong Kong and the Sanya FIRs. Radar signal was partly fed from the Sanya FIR but their confidence level to the radar system in that area was not good enough to move on to the further reduced separation of 30 NM/30 NM.

More Efficient Routings in the South China Sea Airspace

2.32 The meeting was invited to review their route realignment proposals, considering the benefits in route capacity, greater ATM efficiency, substantial fuel savings and corresponding reduction in CO_2 emissions through relatively minor adjustments.

Efficient Routing for Bangkok/Hong Kong/Pearl River Delta

2.33 The meeting noted that there are high traffic levels from Bangkok to Hong Kong/Pearl River Delta and Bangkok to Taipei/Japan and beyond. Major improvements had been achieved in ATM capabilities to cater for this increased traffic. In particular the surveillance capability in the area concerned has improved to the extent that the entire area between Pearl River Delta and Bangkok is under radar surveillance.

2.34 At a previous meeting of SEACG, it was agreed that it was entirely feasible to implement radar spacing along some ATS routes in the area under discussion. The current enroute longitudinal spacing applied on A1 is 40 NM. This translates to about five minutes between successive aircraft, in a surveillance environment. This could possibly be reviewed in line with adjacent FIRs who would welcome a smaller spacing for operational simplicity.

2.35 It was also suggested that for greater efficiency, a pair of appropriately spaced uni-directional parallel routes may be considered, with associated ATC procedures based on surveillance capability. States concerned were requested to review the proposal for a unidirectional parallel route structure between Bangkok and Hong Kong.

Realigning L642 and M771

2.36 Regarding L642 and M771, it was noted that they were parts of the South China Sea parallel unidirectional route structure and were originally designed to be RNAV routes laterally separated by 60 NM, with convergence of routes occurring within surveillance coverage. However, as a consequence of the improved surveillance and communications they have been upgraded to RNP 10 routes but left at 60NM spacing to allow further enhancements to RNP4.

2.37 Re-aligning L642 and M771 would reduce the route lengths by 10NM and 14NM. More than 2 100 flights per month operate on L642 and a similar number on M771. The meeting was

informed that annual fuel savings were estimated in the region of 12 700 tonnes (5 300 tonnes for L642 and 7 400 tonnes on M771). CO_2 emissions reduction was estimated at 40 000 tonnes.

2.38 In addition to the re-alignment, it was mentioned that with the implementation of RNP 4, there would be an increase route capacity by 40 %.

2.39 Hong Kong, China responded that realignment of L642 and M771 would likely to affect operations on adjacent ATS routes such as A1 and P901, and require safety assessment. A more holistic plan acceptable to all and comprehensive concerned parties could need to be looked at.

2.40 It was noted that Manila ACC had recently issued a NOTAM informing users that M772 would no longer be available for flights from Jakarta to Hong Kong for a lengthy period because Manila HF radio was unserviceable. This had resulted in flights having to route via M754, which is 101 NM longer, and caused an additional fuel burn of between 1 500 to 1 600 kg per flight. Accordingly, IATA proposed that an additional route be established to the west of M772 which routes via the Ho Chi Minh and the Sanya FIRs, rather than via the Manila FIR. Moving the route to the west would take advantage of the existing radar and the data link surveillances and VHF communication capability that were available to the west of M772.

2.41 In implementing the change of FLAS in the South China Sea and the adjoining areas, WPAC/SCS RSG had recognised that implementing additional crossing routes would enhance the flight level availability for flights operating across the uni-directional parallel route structure. IATA informed WPAC/SCS RSG that one such crossing route was M768, which is currently allocated No-PDC eastbound flight levels of FLs 270, 330 and 410, and westbound flight levels of FLs 300 and 380.

2.42 It was suggested that with the establishment of an additional crossing route parallel to M768, a uni-directional flow could be provided. The same flight levels could then be used in both directions. The routes could be merged when they were clear of the parallel route structure. For example, in the easterly direction, the route can merge at MAMOK (N0405.1 E11547.2) to join B583, which has access to eastbound FLs 290. 330, 370 and 410, and westbound FLs 300, 340 and 380. Towards the west, merging could take place at Phnom Penh or beyond.

Agenda Item 3: Review of ADS/CPDLC Implementation

3.1 This agenda item has been integrated into other areas of this Report.

Agenda Item 4: Review Current Operations across South-East Asia and Identify Problem Areas

Statistical Aircraft Data Collection and Analysis

4.1 The meeting agreed that a thorough analysis of aircraft data was required to ensure that proposals for an appropriate route review is based on updated data in regards to present and forecast traffic operating in the area under consideration. This data collection would also be required for the present major parallel route structure as well as crossing routes.

4.2 The meeting noted that, since the implementation of RVSM in the Asia and pacific region many years ago, traffic data collection has been undertaken by States to assist in determining that the Target Level Safety has, and continues to be met, in RVSM airspace. It was agreed that this same traffic data could also be used when a route review in airspace is contemplated. Nevertheless

this traffic data sample for RVSM is generally only for one month and it was considered that a more expansive data collection covering many aspects should also be undertaken when a major route review is contemplated in an area like South East Asia. For example, there are certain factors which needs to be assessed across a broader timeframe such as:

a) Seasonal figures;
b) Identifying busy periods, both on the major routes and crossing routes; and,
c) The number of FANS equipped aircraft operating in the area.

4.3 In order to achieve this additional traffic collection, cooperation from States is required over the period of the data sample and in addition, the assistance of an organization who can then translate the data into a useful product to present the best way to structure the review of a new ATS route structure in the area concerned.

Establishment of a Data Statistics and Analysis Working Group

4.4 The meeting decided to establish a Data Statistics and Analysis Working Group. Each State would provide a contact point and for the purpose of the data collection process, In addition, States were also invited to participate in the working group.

4.5 The meeting further discussed the subject of data collection of aircraft operating in this area as well as analysis of that data to judge strategies to be used in advancing the Task Force in the construction of a new or revised route structure. Data collected may also be used for other purposes, especially in the development of a safety assessment of any changes made to the present route structure.

4.6 It was the meeting view that this subject was an important issue. What data should be collected and analysed was also raised and it was finally agreed that live data would give a better picture of the status of aircraft rather than flight plan information.

4.7 Thailand and Singapore graciously offered their services to carry out the task of collation and analysis of the data. Both States have shown extensive past experience in producing effective results in this important area. The meeting agreed that States involved in data collection would supply one week data catch every month to Thailand and Singapore commencing in January 2010 together with the name of their designated representative on this working group. In addition, the email address and phone number of their representative would be required. The selected week is planned to be the third week of each month commencing in January 2010 at 0001UTC on the third Sunday. This will be confirmed well in advance of the start date, together with a copy of standardized data sheets to each State. It was stressed to the meeting that, to gain full value from the data collection, it was imperative that the notified dates for data collection be followed, otherwise value would be impaired in comparison of aircraft movements through the designated area.

4.8 The meeting considered that this procedure along with the data collected during the RVSM sample in December each year would be sufficient to enhance decisions required by the task force.

IATA Outlook on Southeast Asia Route Review

4.9 IATA advised the meeting that the AR9 traffic flow encompasses operations within Southeast Asia, China, Republic of Korea and Japan. It incorporates 21 FIRs and 22 of the 40 busiest airports in the Asia Pacific Region.

4.10 The meeting recalled that the AR9 traffic flow also feeds into every other ASPAC major traffic flow except for AR7 and AR8 (between Australasia and North/ South America). Therefore considerations of changes to the route structure in the area under discussion may extend far beyond the basic AR9 area (i.e. feeding into the north and mid Pacific).

4.11 The meeting noted that, in accordance with the IATA User Expectations concept, which were submitted and accepted by APANPIRG, routes should be designed to enable the shortest possible distance between airports, as well as delivering aircraft into and out of the Terminal environment with the maximum efficiency. Primary routes should be unidirectional enabling greater capacity and increased safety.

4.12 It was also suggested to the meeting that routes should be based on RNAV/RNP utilising existing aircraft capabilities with separation standards applied based on ATM capabilities. Where possible, ATM capability should be enhanced with direct surveillance and communication capability.

4.13 Taking into consideration the Regional PBN Plan, in areas with direct surveillance and communication capability, routes should be based on RNAV5/ RNAV2 and the routes structure predicated on RNAV1/ RNP2 implementation in accordance with the Plan.

4.14 The meeting was advised that over flight (or transiting) traffic should not be restricted by terminal airspace requirements. To avoid congestion in this type of airspace, the establishment of "bypass routes" around busy terminals areas may be necessary.

4.15 The meeting was further requested to consider that crossing routes and/or conflict points should be planned to occur within direct surveillance coverage where possible. An extended track of a few nautical miles may be more beneficial for all stakeholders to enable the utilisation of greater surveillance capability and reduced separations.

Agenda Item 5: Implementation of the New CNS/ATM Systems in the Region

5.1 This agenda item has been integrated into other areas of this Report.

Agenda Item 6: ATS Route Development

Proposals for the establishment and revision of ATS routes

6.1 Viet Nam advised the meeting that they fully support all ICAO past initiatives in the area of South East Asia as well as the work contemplated by the SEA-RR/Task Force. They expressed a willingness to also take into account proposals which may be put forward by the users of the ATM service.

6.2 The meeting noted the progress by Viet Nam of ATS route implementation between 2001 to 2008 which is summarized as follows:

a) The revised ATS route structure applying RNP 10 since November 2001.

b) 4 new domestic routes (W3, W19, W20, and W21) and 1 international route (RNAV route L644) since January 2005.

c) 3 new international routes (ATS route A206 and R575, RNAV route M755), 6 revised routes (use of domestic route W1 for international traffic; revised routes W8, M768, R474; renaming route B465A as B468 and extending route L644 from Con Son Island to NDB ANLOC) since September 2005.

d) New ATS route R471 serving traffic between Hanoi and Kunming and consequently revised ATS R474 since April 2008.

e) 4 revised domestic ATS routes (W2, W7, W11, and W15) since November 2008.

6.3 During 2009, the meeting was advised that Viet Nam developed a comprehensive Plan to establish or revise ATS routes within their FIRs, both domestic and international. The Civil Aviation Administration of Viet Nam (CAAV) has closely coordinated with Vietnam Airlines, Vietnam Air Navigation Services Corporation (VANSCORP), Regional Airport Corporations and respective Military Agencies in finalizing this Plan comprising optimum ATS route options. This initiative is aimed at efficiencies to reduce flight distance and time as well as facilitate aircraft and ATC operations. The meeting was further advised that this Plan would be progressed and implemented in coordination with the ICAO Regional Office, Civil Aviation Authorities of China, Laos, Cambodia, Thailand and IATA.

6.4 The meeting noted that some of the domestic routes have already been implemented since July 2009 to gain significant operational and economical advantages to airlines during the World economic downturn.

6.5 In regard to international ATS routes, coordination meetings between CAAV and the SSCA of Cambodia, Lao DCA and CAAC were convened. As a result of these meetings, it has been agreed between the parties to establish new and revised ATS routes in December 2009 as follows:

a) New ATS route B214 NASAN – LADON – AKSAG serving traffic between Ha Noi and Europe. CAAV and Lao DCA agreed to establish this route.

b) Extension of ATS route B329 from PAKSE to VILAO – NAMHA (Ha Noi FIR) serving traffic between Ha Noi and Siem Riep/Phnom Penh. CAAV and Lao DCA agreed to establish this route segment.

c) New RNAV route Q15 DVOR/DME Cam Ranh – MESOX within Ho Chi Minh FIR serving traffic between Ho Chi Minh City and Northeast Asia as well as future international traffic to/from Cam Ranh airport.

d) Extension of ATS route G221 from BUNTA to DVOR/DME Phu Cat within Ho Chi Minh FIR serving traffic between Ho Chi Minh City/Kuala Lumpur and Hong Kong (China)/Northeast Asia as well as future traffic between Ho Chi Minh City and Hainan island. CAAV and CAAC have agreed to implement this route segment.

e) Revised routes A206 (supplementing 1 Non-Compulsory reporting Point), B468 (re-aligned via LADON) and route W2.

Proposed new or revised ATS routes

6.6 Vietnam also advised the meeting that the following new or revised ATS routes will be addressed over the short/medium and long term periods. Target dates are mentioned as follows:

Short Term – 1st or 2nd Quarter of 2010
Medium Term – 3rd Quarter of 2010
Long Term – 3rd Quarter of 2011

6.7 Short - Medium Term solutions:

a) New ATS route R213 Can Tho – VOR/DME Phnom Penh serving future traffic between Can Tho City and Phnom Penh/Bangkok/Vientiane. CAAV and SSCA have agreed to establish this route segment.

b) Extension of ATS route R334 Bangkok – Koh Kong to Shihanoukville and Phu Quoc serving future traffic between these cities. CAAV and SSCA have agreed to establish this route segment.

c) New RNAV route M756 Tan Son Nhat – ENREP serving traffic between Ho Chi Minh City and Singapore as well as future traffic between Can Tho City and Singapore.

d) ATS route Cat Bi – NANKANG serving traffic between Ha Noi/Haiphong and Hongkong/Northeast Asia. CAAV and CAAC have agreed to establish this route.

6.8 Long Term solutions

a) ATS route Cat Bi – Haikou and ATS route Cat Bi – Sanya

b) ATS/RNAV route DVOR/DME Phu Cat – LENKO/IKELA.

c) Direct ATS route Vientiane - Siem Riep/Phnom Penh within Vientiane, Bangkok and Phnom Penh FIRs serving traffic Vientiane and Siem Riep/Phnom Penh/Ho Chi Minh City. Lao DCA and SSCA fully support and agree to re-align this route.

6.9 The proposed ATS route details (Short – Medium Solution) and illustrated Chart are shown at **Appendices C and D** respectively. The meeting was advised that Viet Nam would be willing to coordinate bilaterally with Cambodia China, Lao PDR, Singapore and Thailand for new routes that may be required in the route revue which could affect one or more of these States.

6.10 Thailand noted the route revision proposals mentioned by Vietnam. They were of the view that these proposals should be in line with the overall regional route strategy resulting from the on-going work of the task force. Further considerations on the proposal should be based on the soon-to-be-developed overall regional route concept and should also fulfil airlines' expectations.

6.11 Based on the meeting discussions, IATA was tasked to present a graphical representation that could be used for short-term benefits as part of the Route review process.

6.12 IATA presented the radar coverage chart (ref. **Appendix E**) from the SEACG/16 meeting noting that although not represented, SANYA FIR is fully covered by radar. The chart

reflects almost complete radar coverage overland as well as the primary SCS routes of M771 and L642. As such, routes and separation standards within this coverage could be based on RNAV 2 and/or RNAV 5 principles. The surveillance coverage will also be enhanced with the near term ADS-B implementation plans of States, in particular China and Hong Kong, Indonesia, Singapore and Vietnam.

6.13 The eastern SCS routes were not covered by direct surveillance and must be based on RNAV 10 and RNP 4 principles. Implementation of RNAV 10 50 nm longitudinal and RNP 4 30/30 will be reliant on the implementation of ADS-C/ CPDLC within Manila FIR, which is expected to commence trialling in late 2010.

6.14 IATA advised the meeting that the route revisions proposed were indicative only. They were not meant to be considered exact points but rather for States to consider and define their own requirements that would meet the intent of each proposal.

6.15 The first proposal was the establishment of uni-directional routes and realignment of A1 and A202 between Hong Kong and Bangkok shown in **Appendix F**. The routes were completely covered by radar surveillance and VHF communication therefore could be RNAV 5 (or RNAV 2) routes in alignment with the ICAO Regional PBN plan. Traffic is increasing on these routes, in particular with A1 supporting flights between Japan/ Taipei and Thailand. The current routes should be straightened where able to do so and utilising radar spacing in the longitudinal plane. A1may also be moved further north, clearing the area used for arrivals and departures by Hong Kong.

6.16 Vietnam observed that both A1 and A202 crossed W1 in their airspace and that traffic on W1 was increasing. It will be important that these crossing routes are considered with every new proposal ensuring that the needs of all stakeholders are met.

6.17 With the realignment of A1, the primary SCS routes of L642 and M771 could also be realigned through Sanya FIR into Hong Kong FIR. The routes are currently RNAV 10 utilising 50/50 separations and while RNP4 could be available, they are also completely covered by surveillance and VHF communication. As such, rather than an interim change utilising RNP4, it is proposed that the routes undergo a minor change in the short term and plan in the longer term for the establishment of RNAV 5 (or RNAV 2) routes utilising radar type separation.

6.18 Routes crossing the six SCS routes were seeing increasing traffic numbers but were still not as heavily utilised. They are however bi directional at present and the establishment of uni-directional routes could potentially realise increased level availability on the primary routes.

6.19 Crossing routes that could be established as uni-directional routes in the short term are L628 (Manila to Bangkok) described in **Appendix G,** M768 between Brunei and Ho Chi Minh/ Bangkok) described in **Appendix H** and finally A461 (Hong Kong to Manila). These routes should be realigned where possible but due to incomplete coverage could only be established as RNAV 10 routes in the short term.

6.20 States involved were asked to consider the proposals as concepts, review the basic requirements and assess the operational impact within their own FIRs. States could then outline specific issues at the next meeting of the Task Force where the actual routes could be more defined.

Safety Assessments and Monitoring Requirements

6.21 The meeting was reminded that ICAO PANS/ATM (DOC4444), para. 2.6.1- *Need for Safety Assessments* lists details when a safety assessment will be carried out in respect of proposals for significant airspace reorganizations, for significant changes on the provision of ATS procedures

applicable to an airspace or an aerodrome, and for the introduction of new equipment, systems or facilities.

6.22 Included in this list of requirements are items such as:

a) a reduced separation minimum to be applied within an airspace;
b) a new operating procedure;
c) a reorganization of the ATS route structure; and,
d) implementation of new communications, surveillance or other significant systems and equipment, including those providing new functionality and/or capability.

6.23 The meeting was advised that, to ensure that the introduction of PBN en-route applications within the Asia/Pacific Region is undertaken in a safe manner in accordance with relevant ICAO provisions, implementation shall only take place following conduct of a safety assessment that has demonstrated that an acceptable level of safety will be met. This assessment may also need to demonstrate that levels of risk associated with specific PBN en-route implementations are acceptable. Additionally, ongoing periodic safety reviews shall be undertaken where required in order to establish that operations continue to meet the target levels of safety.

Regional Performance Framework and Metrics

6.24 The meeting noted that, at the APANPIRG ATM/AIS/SAR/SG/19 meeting, held on 22 – 26 June 2009, the ICAO planning objective was to achieve a performance based global air traffic management (ATM) system through the implementation of air navigation systems and procedures in a progressive, cost-effective and cooperative manner.

6.25 The performance-based approach to planning stems from requirements associated with the results based environment that ICAO, industry and States have been steadily moving toward. The ICAO *Global ATM Operational Concept* (Doc 9854) provides a clear statement of the expectations of the Air Traffic Management (ATM) Community. Eleven of these expectations, also referred to as key performance areas (KPAs), have been identified in the operational concept. To support this approach, the *Manual on Global Performance of the Air Navigation System* (Doc 9883) was developed. Doc 9883 provides a step by step approach to performance-based planning on the basis of the KPAs identified in the operational concept. The performance-based approach is structured upon the following principles:

a) strong focus on desired/required results through adoption of performance objectives and targets;

b) informed decision making, driven by the desired/required results; and

c) reliance on facts and data for decision making.

6.26 The advantages of a performance-based approach include:

a) results oriented, transparency and promoting accountability;

b) shift from prescribing solutions to specifying desired performance;

c) employs quantitative and qualitative methods;

d) avoids a technology driven approach;

e) helps decision makers to set priorities;

f) makes the most appropriate trade-offs; and

g) allows optimum resource allocation.

6.27 APANPIRG/19, recognising the benefits to be gained through the performance based planning process including alignment of the work programmes of the States, regions and ICAO Headquarters, adopted the following Conclusion:

Conclusion 19 /1 — Regional performance framework

That, a regional performance framework be adopted on the basis of ICAO guidance material and aligned with the Global Air Navigation Plan and the Global ATM Operational Concept. The performance framework should include identification of regional performance objectives taking into consideration user expectations (to be mapped against current work) and completion of regional performance framework forms based on the sample shown in Appendix A to the report on Agenda Item 3.

Review Sub-Group Task List

6.28 A review of the ATM/AIS/SAR Task List, as adopted under Decision 19/13, was undertaken. The meeting recalled that the Task List had been comprehensively reviewed and updated by the last two Sub-Group meetings and represented the current work programme of the Sub-Group. Accordingly, the matters on the Task List were appropriate for consideration in the preparation of regional performance objectives.

Comparison of User Expectations with Regional Work Programme

6.29 The meeting reviewed a comparative analysis (ref. **Appendix I**) that had been completed by the Secretariat and which sought to compare the IATA user expectations 2008-2015 against the existing work programmes throughout the region. The Secretariat highlighted that due to the size and complexity of the Asia/Pacific region and relative lack of resources at the Regional Office, in some cases the work programmes undertaken by the 'informal' ATS Coordination Groups (i.e. ISPACG, IPACG, ASIOACG, EATMCG) had been included in the analysis as they supplemented the items in work through the ICAO groups.

6.30 Although there was room for improvement in some areas, the comparative analysis demonstrated that, that with one exception, current work underway either by ICAO working groups or informal State working groups addresses the elements of the IATA ATM user expectations for 2008-15. The exception identified by the analysis was that no programme had been established that included an overall review of the Southeast Asia/Northeast Asia route structure, as had been raised in the IATA user expectations.

Identification of Regional Performance Objectives

6.31 The meeting noted that the Regional Airspace Safety Monitoring Advisory Group (RASMAG) had recently drafted a regional safety performance objective termed *APAC ATM 1 - Airspace Safety monitoring to achieve regional TLS*, which was supported by draft Conclusion RASMAG 11/4 adopting the safety objective.

6.32 Based on the review of APANPIRG Key Priorities, Sub-Group Task List and comparative analysis with IATA user expectations, the meeting prepared PFFs for the ATM, AIS and SAR regional performance objectives listed below:

APAC ATM 1 (*RASMAG)* – Airspace Safety Monitoring to achieve regional TLS.

APAC ATM 2 – Optimise Traffic Flow

APAC ATM 3 – Optimise Route Structure in En-route Airspace

APAC ATM 4 – Optimise Route Structure in Terminal Airspace

APAC ATM 5 – Implementation of New ICAO Flight Plan Provisions

APAC AIS 1 – Enhanced Provision of AIS/AIM

APAC SAR 1 – Enhanced Search and Rescue Capability

6.33 The PFFs describing the Regional Performance Objectives above and generic explanatory notes on the PFF composition have been included as **Appendices J and K** respectively. In comparing the PFFs against the Key Priorities List, the meeting considered that the ATM related aspects of Key Priorities 1 and 2 had been adequately included in APAC ATM 3 and APAC ATM 4, Key Priority 7 had been included in APAC ATM 4, Key Priority 9 had been included in APAC ATM 1 and Key Priority 10 had been included in APAC ATM 2. Accordingly, the meeting considered that any ATM-related aspects of the Key Priorities List had been sufficiently incorporated into the PFFs and could be removed from the Key Priorities List. The Secretariat would draw this outcome to the attention of the 13th meeting of the CNS/MET Sub-group (CNS/MET/SG/13) meeting in late July, along with the suggestions that the CNS and MET Priorities also be considered for inclusion in the relevant PFF and the Key Priorities List be discontinued.

Agenda Item 7: Develop a Coordinated Plan for Implementation of Actions Agreed by the Meeting (including Safety, Environmental and Operational efficiency issues)

Proposals for improvements to South China Sea airspace operations

7.1 Singapore presented the meeting with a comprehensive working paper detailing the background to the methodology used in the implementation of RNP 10 procedures, both lateral and longitudinal, on RNAV routes L642 and M771.

7.2 The meeting noted that, taking into consideration the amount of work required, especially in regard to the required safety assessment process as well as other considerations, after a consistent and methodical process over two and a half years, the L642 and M771 were approved for use for 50NM lateral and 50NM longitudinal separation on 2 July 2008.

Communications, Navigation and Surveillance Requirements for 30NM and 50NM Separation Minima

7.3 The meeting was advised that the communications, navigation and surveillance (CNS) requirements supporting these separation minima are listed in table 1. These requirements, synthesized from the *Procedures for Air Navigation Services - Air Traffic Management (PANS - ATM)* and Attachment B to Annex 11, have typically been associated with application of the 50NM and 30NM separation minima in remote and oceanic airspace where line-of-sight communications and surveillance systems are unavailable. As noted in reference 4, very high frequency radio and secondary surveillance radar coverage are available throughout almost the entire extent of the RNAV routes L642 and M771, with the exception of a roughly 100NM extent in the northern portion of the Singapore FIR. As a result, the CNS requirements for 50NM longitudinal separation are satisfied almost everywhere on the two routes using line-of-sight communications and surveillance equipment.

Separation Standard	Communications Requirement	Navigation Requirement	Surveillance Requirement
50NM Lateral	High Frequency (HF) Radio	RNP (RNAV) 10	HF Position Reports
50NM Longitudinal	Direct Controller-Pilot Communications	RNP (RNAV) 10	Aircraft Position Report at Least Every 27 min (RNP 10) or 32 min (RNP 4)
30NM Lateral	CPDLC	RNP 4	Automatic Aircraft Position Report when 5 NM or More from Cleared Route Centerline
30NM Longitudinal	CPDLC	RNP 4	Aircraft Position Report at Least Every 14 min

Table 1- PANS - ATM/Annex 11 CNS Requirements Associated with Reduced Separation Minima

7.4 The meeting was also advised that significant portions of the other four RNAV routes are beyond these line-of-sight systems, thus necessitating the availability of data-link-based CPDLC and ADS for application of 50NM longitudinal and 30NM longitudinal and lateral separation minima. It is important, then, that the Task Force understand the data link equipage of aircraft using these routes – as well as that of aircraft operating on L642 and M771 – in order to plan properly for more efficient use of the airspace for which it is responsible under its terms of reference.

Data Link Capabilities of Aircraft Using the Six South China Sea RNAV Routes

7.5 The meeting recalled that, in December of each year, there is a one-month collection of traffic movements in all Asia and Pacific Region FIRs where the Reduced Vertical Separation Minimum is applied. Although this data collection, termed the Traffic Sample Data (TSD), is intended to support the work of the Asia and Pacific Regional Monitoring Agencies, the traffic movement information is useful for other purposes, such as ongoing monitoring by SEASMA of the safety of horizontal-plane separation minima applied to the six RNAV routes in the South China Sea.

7.6 The results of the December 2008 TSD collection were examined in order to offer a tentative assessment of the data link capabilities of aircraft using the six South China RNAV routes. In order to assess these capabilities, the four-alphanumeric ICAO aircraft designator associated with each flight was mapped into an aircraft group in accordance with table 2. The intent of the aircraft grouping is to associate aircraft types and series which are similar in design, initial manufacturing date and intended principal area of application – such as continental or oceanic – so that they may be further grouped into two classes: those which are likely fitted with data link systems upon delivery to an operator and those which are likely not. In developing the aircraft group designators, no attempt was made to determine whether individual operators had arranged for retrofit of data link systems to a particular type which was not originally delivered with such equipment.

Four-Letter ICAO Aircraft Designator(s) Recorded in TSD	Aircraft Group Description	Aircraft Group Designator Used in Assessment of Aircraft Data Link Capability
A306	Airbus A-300	A306
A310	Airbus A-310	A310
A319, A320, A321	Airbus A320 family	A320
A330, A332, A333, A343, A345, A346	All models of Airbus A-330 and A-340	A330/A340
A388	Airbus A-380	A380
B733, B735, B73E	Boeing 737 classic family	B737 C
B737, B738, B739	Boeing Next Generation 737	B737 NG
B742	Boeing 747 classic family	B747 C
B744	Boeing 747-400	B747-400
B752	Boeing 757-200	B757
B763	Boeing 767 family	B767
B772, B773, B777, B77W	Boeing 777 family	B777
DC8, DC87	Douglas DC 8 family	DC8
DC10	Douglas DC 10 family	DC10
MD11	Boeing MD 11 family	MD11
C17	U.S. Air Force C-17	MIL
F900, GALX, H25B, CRJ1, GLEX, GLF4, GLF5, LJ35, LJ45, LJ60, WW24	Various International General Aviation (IGA) aircraft types, plus a regional-jet type	IGA

Table 2 - Definition of Aircraft Groups Derived From December 2008 TSD

7.7 Table 3 presents the counts of the aircraft groups shown in table 2 by South China Sea RNAV route. As will be observed when examining the rightmost column, the predominant aircraft groups are the A320, the A330/A340 the B747-400 and the B777. It is important to note, however, that some of these groups are not always as high a proportion of traffic on an individual route as they are in the aggregate count for all routes. The routes in table 3 are grouped to allow inspection of the traffic movements on the three route-pairs comprising the three major South China Sea flows. The L642/M771 pair provides, principally, for the southwest flow from Hong Kong to Singapore and Kuala Lumpur (L642) and the reciprocal flow from Singapore and Kuala Lumpur to Hong Kong (M771). The L625/N892 pair supports, principally, traffic movements between the South China Sea and North-East Asia, and the N884/M767 pair provides, principally, a conduit for traffic between Singapore/Kuala Lumpur and Philippines with M767 also supporting movements from Singapore and Kuala Lumpur to North-East Asia. As a result of these operational uses of the route pairs, Table 3 indicates that shorter-range aircraft types are a higher proportion of total traffic on the L642/M771 route-pair and on N884 and a lower proportion on the L625/N892 route-pair and on M767.

Aircraft Group	Singapore FIR 2008 TSD Count of Flights by Route						
	L642	M771	N892	L625	N884	M767	Total
A300	57	56	1	2	0	0	116
A310	0	18	3	0	7	0	28
A320	511	616	46	44	351	346	1914
A330/A340	241	319	172	159	46	84	1021
A380	0	0	5	31	0	26	62
B737 C	35	1	0	0	0	0	36
B737 NG	231	252	21	22	1	1	528
B747 C	14	16	0	0	1	1	32
B747-400	144	225	183	122	6	107	787
B757	55	49	4	1	45	27	181
B767	65	84	53	76	9	74	361
B777	630	514	276	388	94	238	2140
DC8	0	0	0	2	6	8	16
DC10	0	0	0	0	1	0	1
MD11	22	0	0	26	0	29	77
MIL	0	0	3	3	0	0	6
IGA	16	27	26	3	30	1	103
Total	2021	2177	793	879	597	942	7409

Table 3 - Counts of Aircraft Groups by South China Sea RNAV Route from the December 2008 Singapore FIR TSD

7.8 Table 4 presents an allocation of the aircraft groups of table 2 based on assumed data link capability. An aircraft group is assigned to the "Assumed Data Link Capable" category if it is known that, as delivered by the manufacturer, the typical aircraft in the group is data-link equipped. No attempt has been made to account for post-delivery installation of data link equipage, with the exception of one aircraft type for which the majority of flights are associated with an operator known to retrofit aircraft with advanced CNS systems.

Data Link Capability	Aircraft Group
Assumed Data-Link Capable	A330/A340, A380, B747-400, B777, MD11
Assumed Not Data-Link Capable	A300, A310, A320, B737 C, B737 NG, B747 C, B757, B767, DC8, DC10, MIL, IGA

Table 4 - Allocation of Aircraft Groups According to Data Link Equipage

7.9 Table 5 presents application of the data-link-capable allocation of aircraft groups to the South China Sea operations presented in table 3. As will be observed, the proportion of data-link-capable and not-data-link-capable operations on both members of the L642/M771 route-pair is close. On the other hand, the proportion of data-link capable operations on each member of the N892/L625 predominates by a ratio of roughly 4 to 1. In contrast to the other two route-pairs, the proportions of data-link-capable versus not data-link-capable operations on the two members of the N884/M767 pair differ.

Data Link Capability	Proportion by Route					
	L642	M771	N892	L625	N884	M767
Assumed Data-Link Capable	0.513	0.486	0.802	0.826	0.245	0.514
Assumed Not Data- Link Capable	0.487	0.514	0.198	0.174	0.755	0.486
Total	1.000	1.000	1.000	1.000	1.000	1.000

Table 5 - Proportion of December 2008 Singapore FIR TSD Operations Conducted by Aircraft Judged Data-Link Capable and Not Data-Link Capable

7.10 The meeting noted that, given the requirements for introduction of data-link-based horizontal-plane separation minima and the traffic characteristics described above, it would be possible to formulate some immediate and near-term actions for consideration. As a consequence, a series of recommendations, with each recommendation accompanied by associated necessary prerequisites and proposed time period for implementation were presented to the meeting which are mentioned in subsequent paragraphs of this Report.

Introduction of 50NM as the Basic Lateral Separation Standard for South China Sea RNAV Routes

7.11 The meeting recalled that, notwithstanding that a comprehensive safety assessment established 50NM as the lateral separation between L642 and M771, the air navigation service providers (ANSPs) responsible for these routes chose to leave the spacing of these route unchanged at 60 NM. Nevertheless they opted to use the 50NM lateral minimum on a tactical basis, allowing air traffic controllers to move aircraft up to 10NM from route centerline for weather deviations without affecting the operation of aircraft on the laterally adjacent route.

7.12 Considerable discussion took place regarding this initiative and it was finally decided that the same philosophy should also be used for the other established parallel routes in the South China Sea area. The meeting therefore endorsed Recommendation 1 as follows:

Recommendation 1: That South China Sea ANSPs adopt 50NM as the lateral separation standard for the six RNAV routes, with controllers using this 50NM value on a tactical basis when required. and that, as the Task Force proceeds with its work of route realignment, this reduced lateral separation minimum value be kept in mind.

7.13 The meeting was given information on the methodology used by the FAA in the introduction of 30NM/30NM separation in the Oakland FIR. Part of that methodology was the use of a phased approach in that the gradual extension of a reduced longitudinal minimum was accompanied by expert examination of data-link, automation-system and aircraft navigational performance. In addition, an internal FAA scrutiny group, with members drawn from the FAA's regulatory and air traffic services organizations and supported by FAA Technical Center data collection and analysis, provided expert examination at periodic meetings.

Recommendation 2: That the Task Force adopts a phased approach to introducing horizontal-plane separation minima based on advanced CNS requirements.

7.14 The meeting was reminded that, regardless of the manner in which the Task Force chooses to proceed, it will need to have confidence that requisite performance in all relevant aspects is satisfactory. One source which can help to build this confidence is the work of the South East Asia FANS Implementation Team (FIT SEA). It is important to note, however, that the focus of the FIT SEA is only on the technical performance of data link.

Recommendation 3: That the Task Force confirm that the air traffic procedures and automation systems of those ANSPs who will provide data link services for operations in South China Sea airspace are capable of providing 50NM and 30NM longitudinal separation minima safely, based on the recommendation by the FANS Implementation Team, Southeast Asia, and that the navigational and data link performance of aircraft in the airspace will support safe introduction of such minima.

7.15 The meeting agreed that SEASMA has a support role to play in this proposed comprehensive review. It was also considered that, if the FAA model is adopted, is may be desirable to establish a similar group of experts to assist in this review.

Use of a 50NM Longitudinal Separation Standard on a Tactical Basis

7.16 The information from table 5 indicates that there is a high level of data link equipage of aircraft conducting operations on L625, M767 and N892. In light of the fact that full data link capability is not yet available for all South China Sea FIRs through which these routes pass, an incremental approach to use of 50NM longitudinal separation suggests the following:

Recommendation 4: That the Task Force establish operational-trial use of 50NM longitudinal separation standard between suitably equipped pairs of aircraft on N892, L625, N884 and M767 in those South China Sea FIRs with current capability for managing data-link communications and surveillance, with the first phase of the trial limited to application of the 50NM longitudinal standard as a means of facilitating climbs and descents.

7.17 The start of the trial will depend on a successful outcome of the review cited in Recommendation 3 and a supporting safety assessment from SEASMA. That safety assessment can follow the form of such examinations already presented by SEASMA to RASMAG, but should reflect information developed during the comprehensive review proposed in Recommendation 2 – including actual aircraft data-link position reports from the routes in question. The proposed operational trial should be able to start within six months of completion of the comprehensive review.

7.18 The meeting noted that, assuming that the Task Force or a body established by it, determines through review of the results of the first phase of the operational trial that the system is operating safely in all operational aspects, it should be possible to transition smoothly to the second phase, which would be the use of the 50NM longitudinal minimum between suitably equipped aircraft pairs in level cruise.

Use of a 30NM Longitudinal Separation Standard on a Tactical Basis

7.19 Using an interim report by FAA on the operational trial use of reduced longitudinal separation minima to the Informal Pacific ATC Coordinating Group in October 2006, aircraft able to be approved for 50NM longitudinal separation operations are readily approvable for 30NMlongitudinal separation operations. Hence:

Recommendation 5: That the Task Force, assuming a satisfactory outcome of the use of 50NM longitudinal separation on N892, L625, N884 andM767, adopt as the next phase of its incremental plan the application of a30NM longitudinal separation on those routes.

7.20 Safety assessment should be conducted prior to the introduction of 30NM standard and it should be straightforward, following the model of that of the 50NM longitudinal separation standard case.

Use of a 30NM Longitudinal Separation Standard on L642 and M771

7.21 The data of Table 3 indicate that roughly 57 percent of all RNAV route operations occur on L642 and M771. Table 5 indicates that there is a relative even mix of data-link and non-data-link capable operations on these routes. As a result of higher density and lower data-link equipage, introduction of a 30NM longitudinal separation standard on these routes between suitably equipped aircraft pairs may not offer as much benefit as on other RNAV routes. This matter should be considered carefully by the Task Force. Hence:

Recommendation 6: That the Task Force examine, in light of the current and projected data link capability of South China Sea ANSPs and of relevant traffic characteristics, the feasibility of applying a 30NMlongitudinal separation standard on a tactical basis to operations on L642 and M771.

7.22 The meeting had extensive discussion on Recommendation 5 & 6 and felt that more in-depth study would be required. The meeting agreed to further discuss the two recommendations at the next SEA-RR/TF/2 meeting.

High Level Objectives of the SEA-RR/TF

7.23 The meeting was advised that the work of the Task Force should be focused around two high level objectives:

a) To develop a route structure capable of meeting the expected/forecast traffic growth over the next 10-20 years; and,

b) To minimise the production of carbon emissions to the greatest extent possible.

7.24 It was agreed that any plans developed should be assessed against these two high level objectives in the areas of Safety, Operational Efficiency and Environmental Impact. Taken together this would form a qualitative methodology which could satisfy the needs and responsibilities of all stakeholders.

7.25 The meeting recalled that in October, a high-level meeting of ICAO Member States representing 93% of global commercial air traffic reached agreement on further reducing aviation's impact on climate change, in cooperation with the air transport industry, through, inter alia, a global goal of 2% annual improvement in fuel efficiency until the year 2050 and submission of States' action plans and annual reporting on CO_2 emissions to ICAO.

7.26 The meeting further noted that IATA had also set targets with respect to the environment, namely an average annual fuel efficiency improvement of 1.5 % from now until 2020, carbon neutral growth from 2020, and a 50% reduction in carbon emissions by 2050, compared with 2005 figures.

7.27 In recognising the need to provide an operational environment which could cater for the forecast traffic growth and, at the same time, adequately address environmental issues, the meeting was of the opinion that full surveillance coverage over the area under consideration (radar,

ADS-B Out; ADS-CPDLC as appropriate) and the harmonisation of the operational application of this surveillance across FIR boundaries was fundamental in planning to achieve these targets.

7.28 Finally, the meeting agreed to include environmental considerations (reduction of CO2 emissions) to the agenda in order to capture and address this important subject in the work of future meetings of the task force.

Initiate Teams/Groups to address specific measures with regard to the Route Review

7.29 The meeting recalled that, under the Terms of Reference of the SEA-RR/Task Force, mention was made in para. f) that the Task Force shall "*Consider setting up appropriate teams/groups which might but not necessarily, include the entire Task Force, to address and implement specific agreed measures within specific airspaces."*

7.30 The meeting was reminded that many issues have already been dealt with in the South East Asia area over the last decade, however as more modern ANS system are implemented, as well as upgrades to aircraft avionics to new or retro-fitted aircraft, we are constantly being required to take advantage of these upgrades by re-looking at the airspace under consideration so that full advantage can be acquired by the providers and users of the ATM service.

7.31 The meeting also noted that the costs to aviation administrations in the purchase of new ATM systems, together with airlines in the re-equipage of aircraft fleets, needs to be taken into consideration when developing and implementing updated procedures in accordance with ICAO provisions and standards, in order to gain maximum benefits to all concerned.

7.32 The area under consideration covers a considerable amount of airspace and is managed by many FIRs. To influence a beneficial result in all areas under consideration, it is considered that when appropriate, management of the changes should be specific to the many sub-areas within the whole framework of the SEA. As an example, there are two major traffic flows in the area; the major flow from southwest to northeast and the other flow, although not as large in traffic numbers, from West to East.

7.33 By establishing appropriate teams/groups within the Task Force, it enables agreed changes to be made which enhances the coordinated work accomplished by the task force in an appropriate time frame.

7.34 An example of this type of working arrangement was the EMARSSH project which covered changes to the ATS route structure from Australia to the Eastern shores of the Black Sea. This involved States from three ICAO Regions, 32 States and around 38 FIRs. Although the format of such groups was slightly different in that the meetings commenced looking at the eastern sections and working towards the western States involved, the concept was similar to what is being proposed for the SEA Task Force. The meeting recalled that the EMARSSH project was implemented in less than two years from the first meeting of the Task Force.

7.35 As this was the first meeting of the task force, it was decided to concentrate on the route structure itself. Discussion took place as to whether two groups would be established; one to look at the southern section of the airspace and the second group focussing on the northern area. It was finally agreed that, as this was the first operational task, it would be more appropriate to have all involved, due to the relatively small area under consideration.

Draft Task List

7.36 A draft task list to review and update the work of the SEA-RR Task Force is at **Appendix L**.

Agenda Item 8: Any Other Business

8.1 There was no other discussion.

Agenda Item 9: Date and Venue for the Next Meeting

9.1 It is proposed that the next meeting be held on 22-26 March 2010.

Closing of the Meeting

9.2 In his closing address, The Chairman, Mr. Peter Rabot thanked all participants for their positive contribution during the four days of the SEA-RR/TF/1 meeting. He pointed out that the area under consideration is a vital transiting link between Southeast Asia and North Asia which has a high population of aircraft and many States involved in the management of the present ATS route structure. There is a strong need to combine all States' energies in working together to manage the change required in this important area of the region. The vast majority of aircraft have the capability of improved airborne technology and it will not be long before all ACCs have the equipment to interact so that a more efficient and cost effective use of airspace can be employed.

9.3 The Chairman advised that this first meeting has set the tone for future meetings with a strong agenda, and asked all present to be prepared for additional positive work to enable a substantial route review to be established as soon as possible. The focus should continue to be driven on the most efficient use of surveillance and communications capability. This will give significant advantages to both the providers of the service as well as the users.

……

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LIST OF WORKING PAPERS (WPs) AND INFORMATION PAPERS (IPs)

WORKING PAPERS

NUMBER	AGENDA	WORKING PAPERS	PRESENTED BY
WP/1	1	Provisional Agenda	Secretariat
WP/2	2	Terms of Reference of SEA-RR/TF	Secretariat
WP/3	2	Review of RNP-SEA/TF/4, SEACG/16 and FIT-SEA/9 Meetings	Secretariat
WP/4	6	Safety Assessments and Monitoring Requirements	Secretariat
WP/5	6	Regional Performance Framework and Metrics	Secretariat
WP/6	4	IATA Position	IATA
WP/7	7	Task List	Secretariat
WP/8	6	Proposals for the Establishment and Revision ATS Routes	Viet Nam
WP/9	7	Initiate Teams/Groups to address Specific Measures within Specific Airspaces	Secretariat
WP/10	4	Statistical Aircraft Data Collection and Analysis	Secretariat
WP/11	7	Some Proposals for Task Force Activities	Singapore

INFORMATION PAPERS

NUMBER	AGENDA	INFORMATION PAPERS	PRESENTED BY
IP/1	-	List of Working Papers (WPs) and Information Papers (IPs)	Secretariat

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VIET NAM

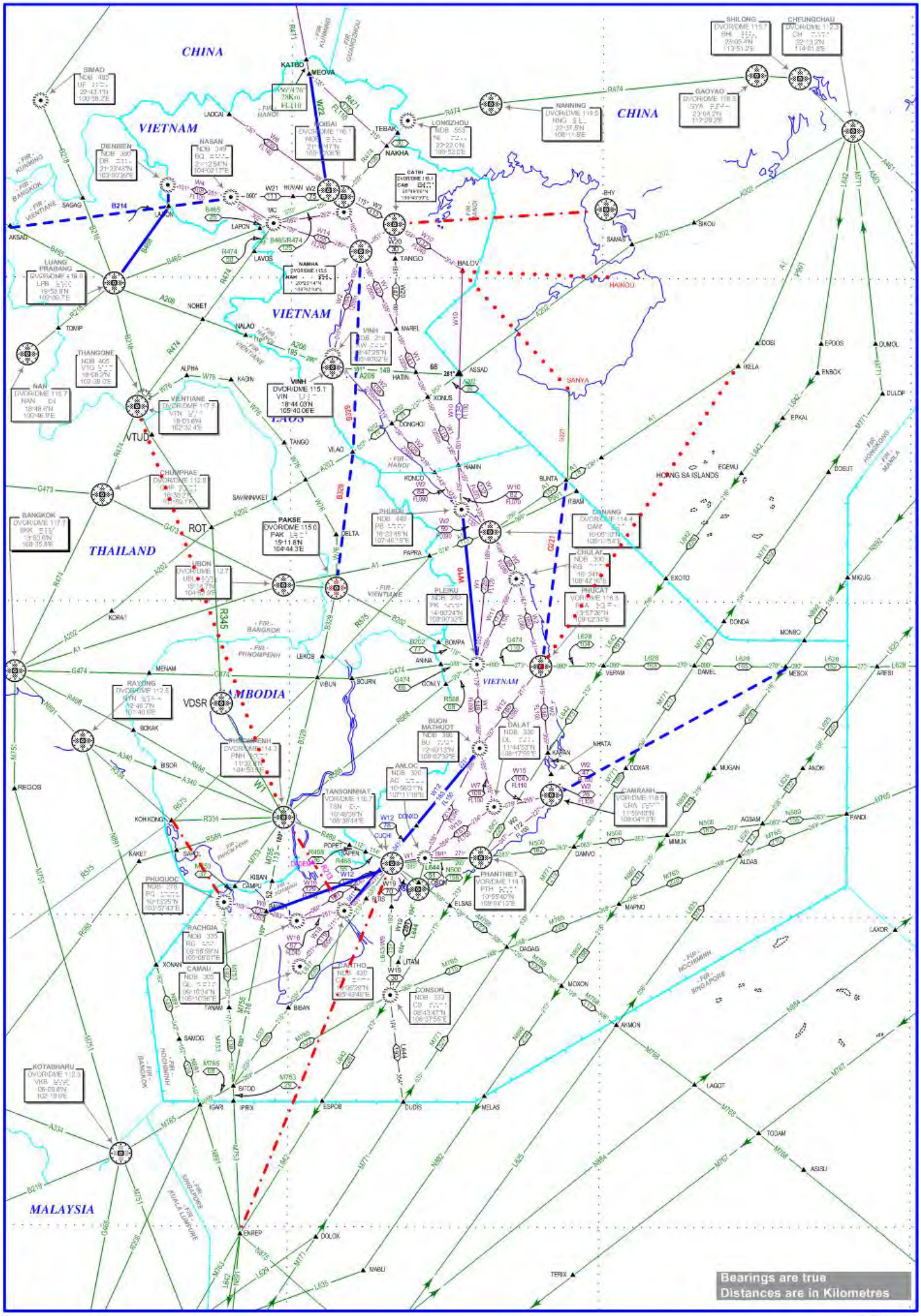
DETAILS OF NEW PROPOSED ATS ROUTES

Route designator Names of significant point Coordinates	True track DIST	Upper limits Lower limits Min. Flight Altitude	Lateral limits	Direction of Cruising Levels Odd / Even	Remarks Controlling unit Frequency
1	2	3	4	5	6
3. R213					
▲CANTHO DVOR/DME (TRN) N10°05'00" E105°42'20"					HCM ACC
	330 150 *104 Km*	FL460 FL100 1200M	30 Km	↓	
▲*DADEM* *N10°53'44" E105°13'41"*					PNH ACC
	329 *149* *83 Km*	*(To be assigned by SSCA)*		↑	
▲ VOR/DME (PNH) N11°32'38.4" E104°50'38.1"					
4. R334					
▲PHU QUOC VOR/DME (ZDG) N10°13'36" E103°57'34"					HCM ACC
	318 *138* *30 Km*	FL460 FL100 1200M	30 Km	↓	
▲*PADMA* *N10°25'45.5" E103°46'25.2"*					PNH ACC
	318 *138* *22 Km*	*(To be assigned by SSCA)*		↑	
▲ KANGG N10°34'36" E103°38'24"					
5. M756				↓	
▲ TÂN SƠN NHẤT VOR/DME (TSN) N10°48'59" E106°38'44"	202 022 *325 Km*				
▲VADMA * *N08°05'30" E105°31'57.5"*	202 022 *130 Km*	FL460 FL210 4250M	30 Km		*- Intersection with route M765
▲*MADEM* *N07°00'00" E105°05'48"*	*202* *022* *253 Km*	*(To be assigned by CAAS)*		↑	
▲ENREP *N04°52'23" E104°14'42"*					
9. B224					
▲ CÁT BI VOR/DME (CAB) N20°49'06" E106°43'39"	*073* *253* *159Km*	FL460 FL200 4250M	30 Km	↓	
▲*TATAM* *N21°14'14.7" E108°11'18"*		*(To be assigned by CAAV)*		↑	
▲NANKANG VOR/DME (BHY) N21°35'00" E109°26'06"					

Note: The data in italic letters are subject to discussion, coordination.

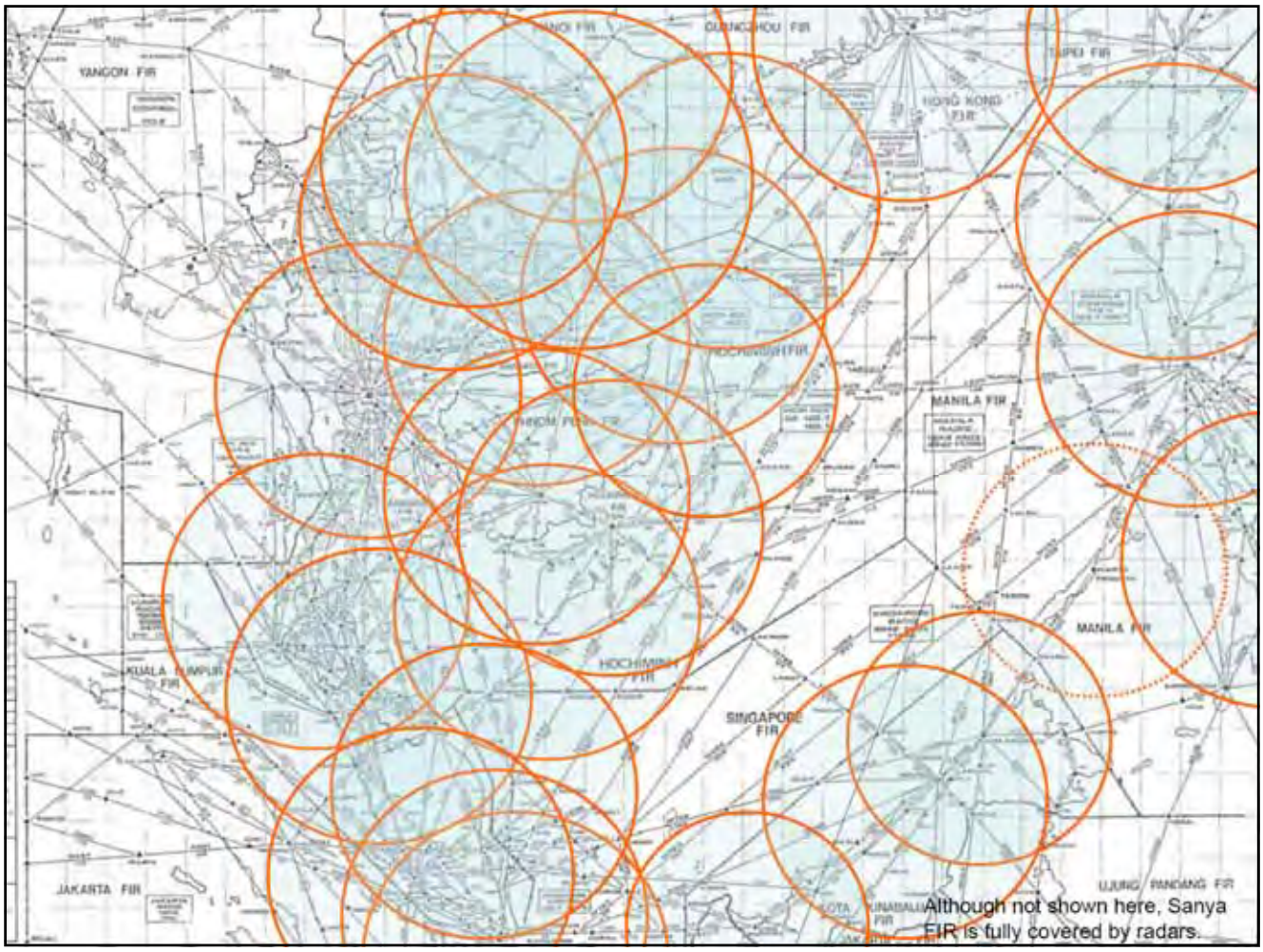
VIET NAM

PROPOSED NEW AND REVISED ATS ROUTES

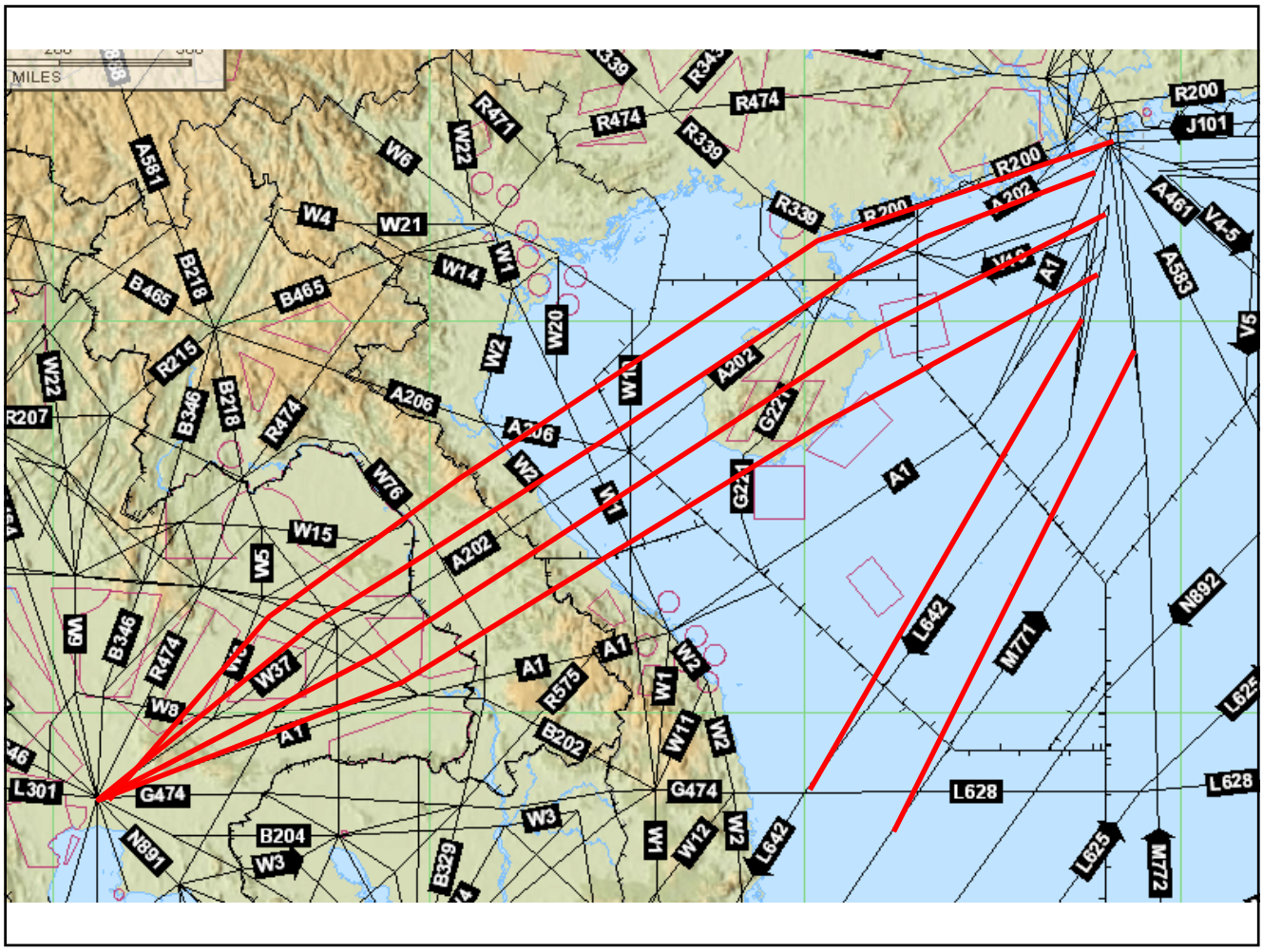


12/2009

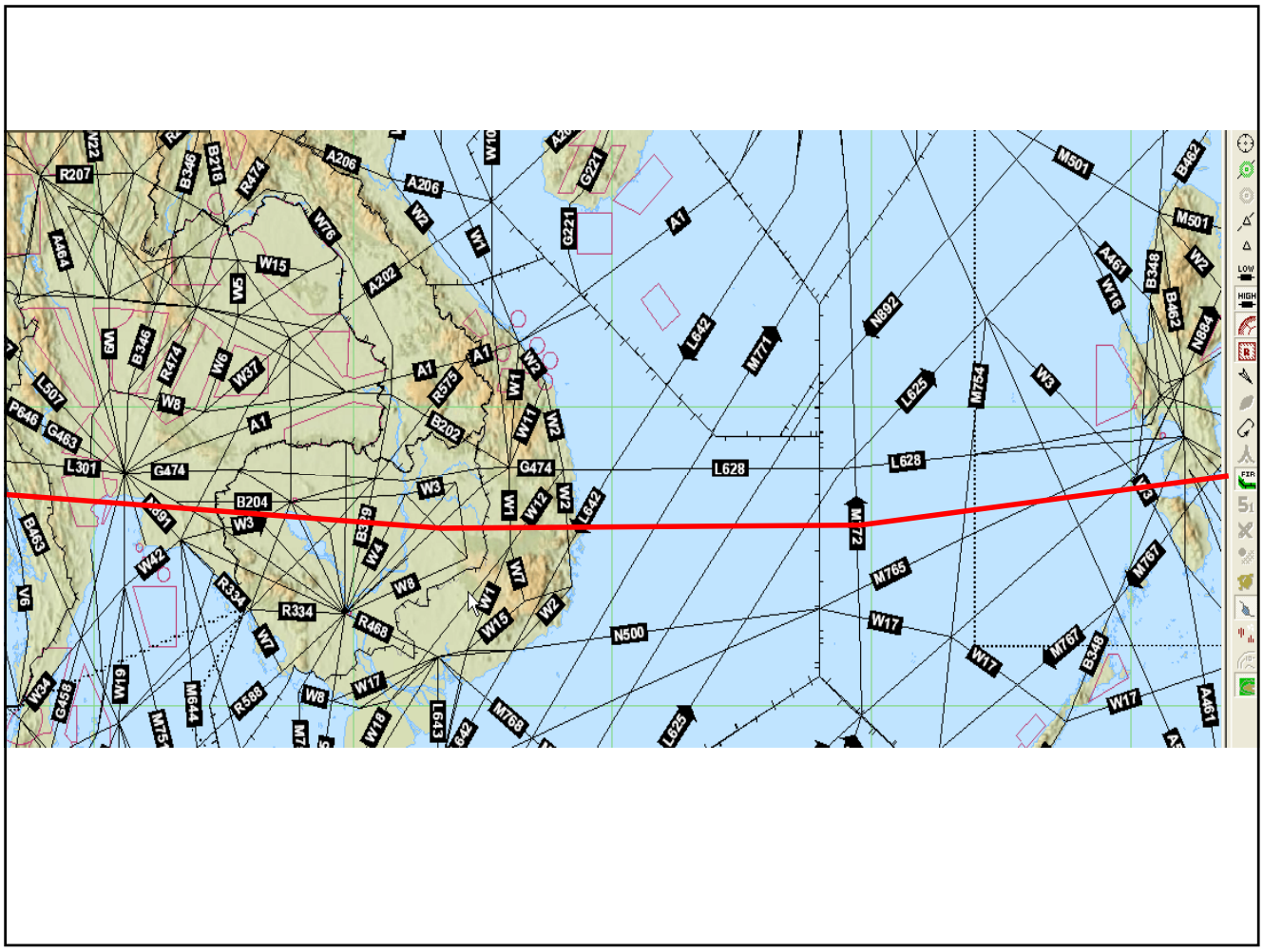
SEA-RR/TF/1
Appendix E to the Report



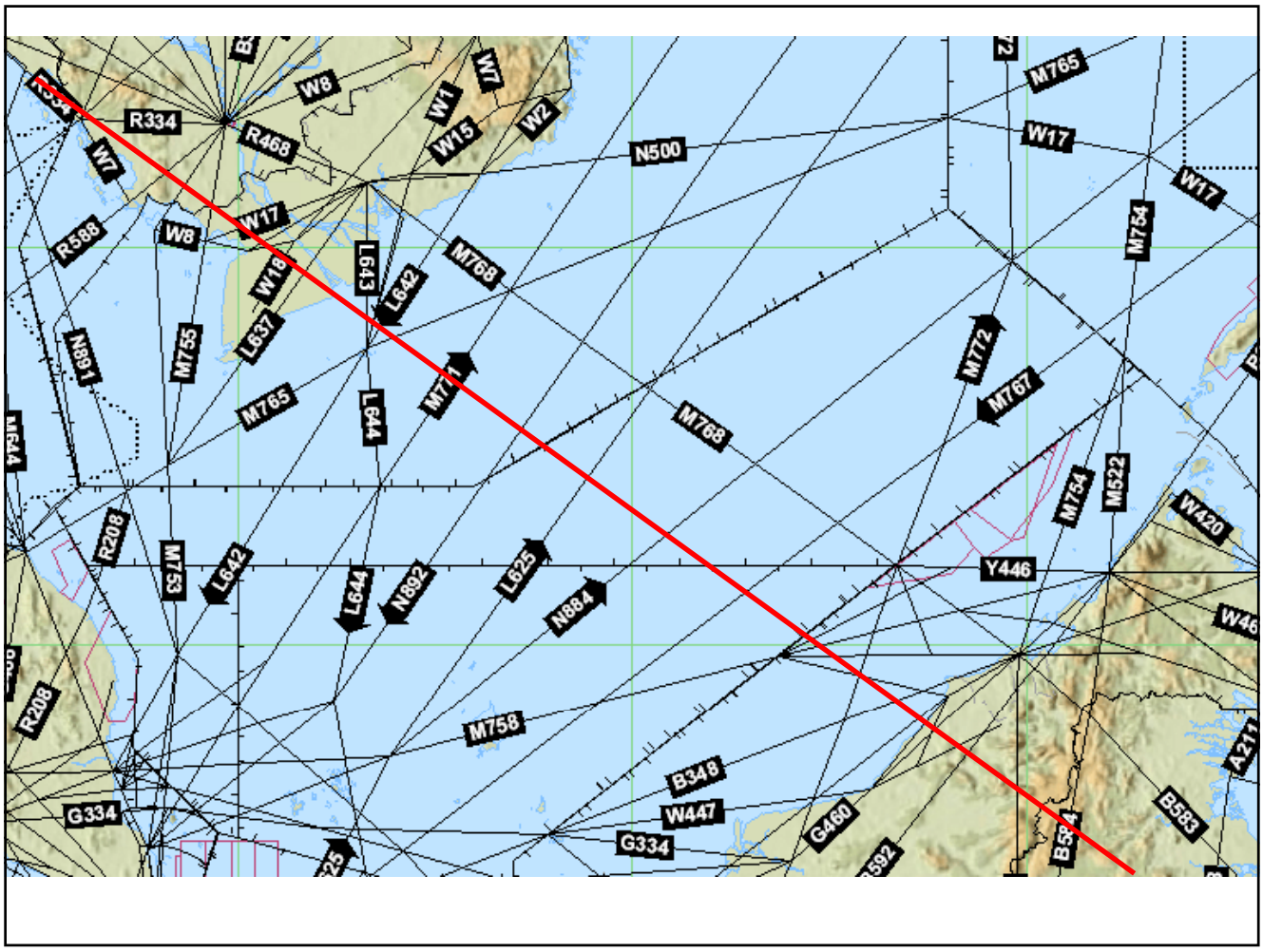
SEA-RR/TF/1
Appendix F to the Report



SEA-RR/TF/1
Appendix G to the Report



SEA-RR/TF/1
Appendix H to the Report



Comparison of Asia/Pacific (ASIA/PAC) Region Homogeneous ATM areas and major traffic flows/routing areas in Doc 9750 Global Air Navigation Plan and primary traffic flows in the IATA ATM User Expectations 2008-2015, as presented in WP15 to APANPIRG/19 (September 2008)

AR1	Asia/Australia and Africa	Bangkok, Chennai, Colombo, Jakarta, Kuala Lumpur, Malé, Melbourne, Mumbai, Singapore, Yangon [and African FIR/UIRs]	Oceanic low density	Major traffic flow AFI/ASIA/MID	Not included by IATA
AR2	Asia (Indonesia north to China, Japan and the Republic of Korea), Australia/New Zealand	Auckland, Bangkok, Beijing, Brisbane, Fukuoka, Guangzhou, Hanoi, Ho-Chi-Minh, Hong Kong, Honiara, Incheon, Jakarta, Kota Kinabulu, Kuala Lumpur, Manila, Melbourne, Nadi, Nauru, Oakland, Phnom-Penh, Port Moresby, Shanghai, Singapore, Taibei, Ujung Pandang, Vientiane, Wuhan, Yangon	Oceanic high density	Major traffic flow ASIA/PAC	IATA 2 Australia/SEA (Oceanic region)
AR3	Asia and Europe via north of the Himalayas	Almaty, Bangkok, Beijing, Fukuoka, Guangzhou, Hanoi, Ho-Chi-Minh, Hong Kong, Incheon, Kathmandu, Kunming, Lanzhou, Phnom-Penh, Pyongyang, Shanghai, Shenyang, Taibei, Ulaanbaatar, Urumqi, Vientiane, Wuhan, Yangon [and Russian Federation FIRs, and European FIRs]	Continental high density/continental low density	Major traffic flow ASIA/EUR/MID	IATA 4 ASIA/ME/EUR (continental region)
AR4	Asia and Europe via south of the Himalayas	Bangkok, Colombo, Delhi, Dhaka, Hanoi, Ho-Chi-Minh, Hong Kong, Jakarta, Karachi, Kathmandu, Kota Kinabulu, Kolkata, Kuala Lumpur, Kunming, Lahore, Chennai, Manila, Mumbai, Phnom-Penh, Singapore, Ujung Pandang, Vientiane, Yangon [and Middle East/European FIR/UIRs]	Continental high density/oceanic high density	Major traffic flow ASIA/EUR/MID	IATA 5 ASIA/ME/EUR (continental region)
AR5	Asia and North America via the Russian Far East and the Polar Tracks via the Arctic Ocean and Siberia	Anchorage, Beijing, Canadian FIRs, Fukuoka, Guangzhou, Hong Kong, Incheon, Pyongyang, Russian Far East of 80E, Shanghai, Shenyang, Wuhan and Ulaanbaatar	Continental low density/continental high density	Major traffic flow ASIA/EUR/NAM/ NAT	IATA 4 ASIA/ME/EUR (continental region)
AR6	Asia and North America (including Hawaii) via the Central and North Pacific	Anchorage, Fukuoka, Hong Kong and Manila, Oakland (at and north of a line drawn by LAX-HNL-Guam-MNL), Taibei, Vancouver	Oceanic low density	Major traffic flow ASIA/NAM/PAC	IATA 3 Pacific Routes (Oceanic region)
AR7	New Zealand/Australia and South America	Auckland, Brisbane, Nadi, Tahiti [and South America FIR/UIRs]	Oceanic low density	Major traffic flow ASIA/PAC/SAM	Not included by IATA
AR8	Australia/New Zealand, the South Pacific Islands and North America	Auckland, Brisbane and Port Moresby, Honiara, Nadi, Nauru, Oakland (southern region), Tahiti	Oceanic low density	Major traffic flow ASIA/NAM/PAC	Not included by IATA
AR9	South-East Asia and China, Republic of Korea, and Japan	Bangkok, Beijing, Fukuoka, Guangzhou, Hanoi, Ho-Chi-Minh, Hong Kong, Jakarta, Kota Kinabulu, Kuala Lumpur, Kunming, Manila,Phnom-Penh, Pyongyang, Shanghai, Shenyang, Singapore, Incheon, Taibei, Ujung Pandang, Vientiane, Wuhan, Yangon	Oceanic high density	Major traffic flow ASIA	IATA 1 NEA/SEA Flow **(**continental region**)**

IATA ATM user expectations 2008-2015	Regional Activity
Terminal	
RNAV 1	Arrival and departure. RNAV 1 in radar environment and with adequate navigation infrastructure. Basic-RNP 1 in non-radar environment. (APAC PBN Implementation Plan)
SSR or ADS-B (or MLAT)	APAC ANP and APANPIRG Regional Surveillance Strategy,, AIGD and MLAT concept of use
VHF and CPDLC	APANPIRG Regional AMS strategy. In terminal area for datalink application should focus on DFIS.
Continuous Descent Arrivals	State responsibility (APANPIRG/19 Conc 19/28 Refers)
Traffic Flow management	State responsibility,
Remote Continental and Oceanic	
RNP 4 30/30	RNP – 4 preferred, RNAV 10 acceptable (APAC PBN Implementation Plan)
ADS-C CPDLC	APANPIRG Regional AMS Strategy
Capacity	
End to end consideration of flow with choke point identification	ATFMTF for BOB Continue harmonized RVSM Implementation (DPRK, Mongolia) More RNP10 and RNP4 routes to be implemented per APAC PBN plan; ATFMTF for BOB Also, relevant outcomes and recommendations from October 2008 ICAO ATFM Workshop for consideration by ATM/AIS/SAR/SG
Strategic plan to manage capacity	
ATFM or Strategic Optimised Scheduling	

IATA ATM user expectations 2008-2015	Regional Activity
Route Continental	
RNAV 2	RNAV - 2, RNAV – 5 (APAC PBN Implementation Plan)
SSR or ADS-B (or MLAT)	APANPIRG Regional Surveillance Strategy/MLAT concept of use
VHF and CPDLC	APANPIRG Regional AMS strategy
Traffic Flow Management	State responsibility ATFMTF for BOB outcomes and recommendations from October 2008 ATFM Workshop for consideration by ATM/AIS/SAR/SG
Airports	
Infrastructure capable supporting planned increases in movements	State responsibility
Synergy between airport design/ development and airspace	State responsibility

IATA Key Work Area 1 – NEA/SEA Traffic Flow

	IATA ATM user expectations 2008-2015	Regional Activity
	NEA/ SEA FLOW Improving traffic flow and ATM efficiency through airport and route capacity enhancement (including reduced longitudinal separation), route realignments and flow management measures if necessary. • The traffic flow between the Pearl River Delta/ Mainland China airports and airports in Taipei, Japan and Korea. Airports concerned are those in Hong Kong, Guangzhou, Shenzhen, Taipei, Fukuoka, Osaka, Tokyo, Inchon. • The overflying traffic between South East Asian airports and the above airports. Airports concerned are in: Jakarta, Singapore, Kuala Lumpur, and Bangkok. The overflying traffic from South East Asian airports, Pearl River Delta, mainland China, Taipei, Japan and Korea and airports in North America	Paper to 45th DGCA describes efforts by Hong Kong, Macau and mainland China to address PRD over near term SEACG has responsibilities, some route proposals and large scale weather deviations in work with WPAC/SCS RSG Paper to 45th DGCA re PRD. Japan progressing proposal for East Asia ATFM Centre. East Asia ATM Coordination group run by Japan is active
2009	Commence a review of the SEA/ NEA Route Structure Analyse traffic flow and identify choke points Initiate action to establish a Core team/Task Force comprising ICAO, affected states, IATA & CANSO Complete detailed design of the revised route structure in synergy with airport and terminal airspace design Implement RNP10 on all SCS routes	RNP SEA Task Force implemented RNP10 on L642 & M771 in July 2008, work continues
2011	Commence application of RNP 4 30 long on selected SCS routes Implement route enhancements identified during analysis	RNP SEA Task Force ToR currently indicates a phase-by-phase approach, beginning with the 50 lateral/50 longitudinal separations based on RNP 10 operations on RNAV routes L642 and M771 as Phase 1 – implemented July 2008. RNP 4 being considered for L642 7 M771
2013	Implement New Route Structure	

IATA Key Work Area 2 – ADS-B (OUT) AUSTRALIA/SEA

	IATA ATM user expectations 2008-2015	Regional Activity
	2 ADS-B (OUT) - AUSTRALIA/SEA (in accordance with IATA policy) • Expansion of surveillance capability based on traffic flows • Regional agreement on sharing of data • Reduction in separation minima	Australia is heavily committed to ADS-B, already using operationally in some airspace to apply ICAO approved 'radar like' separations, more areas to come in near term. ADS-B Study and Implementation Task Force and SEA Working Group are progressing these issues Sample agreement on sharing of data APANPIRG 19/36
2009	Implement ADS-B OUT (at least on a trial basis) in the: • Singapore FIR • Ho Chi Minh FIR (contingent on traffic data from data analysis Dec 2008. The trial will ensure data integrity for operational use)	Southeast Asia Sub-Regional ADS-B Implementation Working Group developing implementation plan
2011	Application of reduced separations Singapore Ho Chi Minh Manila FIR (trial) Kota Kinabalu FIR (trial) UPRs Thailand Indonesia Malaysia Singapore	See above UPRs more difficult to accommodate in heavily trafficked areas – USA has returned to fixed routes between west coast and Hawaii as more efficient that UPRs, ADS-B surveillance will help UPRs but more suitable for 'radar like' separation.
2013	Application of reduced separation Kuala Lumpar	Bay of Bengal is working towards RNP10 in 2009/2010 timeframe. This will reduce separation in KL FIR to 50NM longitudinal

IATA Key Work Area 3 – PACIFIC ROUTES

	IATA ATM user expectations 2008-2015	Regional Activity
	3 PACIFIC ROUTES Central and North Pacific including Russian Trans-East to/ from Asia.	
	• Consistent application of RNP10 50/50	50/50 already fairly widespread, from first quarter 2009 50 NM on R591 and G344 between Anchorage and Fukuoka with procedures similar to current 50 NM seamless operation between Fukuoka and Oakland.
	• Improvement of ATM infrastructure (including automation allowing CPAR and AIDC)	Oakland already operating ATOP, Anchorage will ATOP shortly, USA and Japan already working towards AIDC ver 2 implement first quarter 2009
	• Planned migration to RNP4 30/30	Japan and USA trialing widespread 30/30, APANPIRG encouraging RNP4 equipage for Pacific fleets to realize benefits from 30/30 separation
	• UPRs / DARPs	UPR trials between Japan and Hawaii since August 2008, with opportunity to DARP while en-route. Reduction in constraints on the Pacific Organized Track System (PACOTS) in discussion
	Review and enhance current operations	IPACG meets twice yearly, very active work programme
2009	Complete a review of the Pacific/ Russian Trans East current operations (2008)	Cross Polar Trans-East ATM Providers Working Group (CPWG), TRASAS
	Identify regulatory changes to support flexible routing	USA has long term experience with DARPS and UPRs in this area, Japan participating with UPR/DARPS to Hawaii
	UPR – OAK, ANC, FUK, YVR (Bny to Bny)	
	RNP4 – ANC	PBN Regional Plan specifies RNP 4 preferred, RNAV – 10 is acceptable
	DARPS – OAK (Bny to Bny)	USA has long term experience with DARPS and UPRs in this area
	Initiate UPR trial with Manila and Taipei	
2011	UPR – Manila, Taipei, East Malaysia	
	RNP 4 – FUK	PBN Regional Plan specifies RNP 4 preferred, RNAV – 10 is acceptable
	DARPS – FUK, ANC	State responsibility USA has long term experience with DARPS and UPRs Japan participating with UPR/DARPS to Hawaii

IATA Key Work Area 4 – ASIA/ME/EUR North of the Himalayas

	IATA ATM user expectations 2008-2015	Regional Activity
	4 ASIA / ME / EUR NORTH OF THE HIMALAYAS INCLUDING POLAR INTERFACE (INTO & TRANSITTING CHINA)	
	• New routes implementation to release the congestion in PRD region	Paper to 45th DGCA describes efforts by Hong Kong, Macau and mainland China to address PRD over near term
	• PRD TMA realignment	Paper to 45th DGCA describes efforts by Hong Kong, Macau and mainland China to address PRD over near term
	• China Flexible entry/exit points serving cross polar, EUR-CHN and CHN-ME (should also include other Asian and NAM flights)	In work with CMRI, CPWG, TRASAS
	• Joint use of restricted area in China	GPI-1 State responsibility
	• RVSM implementation in Mongolia, Russia, CIS states, DPR Korea and Polar	RVSM - DPRK in July 2009 with assistance from China, Mongolia in 2011 in company with Russian Federation
	• Implementation of identified routes structure in China	State responsibility
	• RNP2 parallel route structure in China	State responsibility, based on regional and national PBN plans
2009	Review airspace, route structure and ATM procedures within China, Mongolia, Russia, CIS States and DPRK including use of restricted airspace (2008)	Perhaps under TRASAS, CPWG, CMRI
	Extension of existing Polar route interface (flexible entry and exits points) into other areas of China (including supporting routes within) based on user requirements. This includes the allowance for flexible entry and exit points based on tactical flight planning requirements (on a flight by flight basis)	State responsibility, assistance from Cross Polar Trans-East ATM Providers Working Group (CPWG), CMRI and TRASAS
	Increased operational civil access to restricted areas in China.	State responsibility
	New routes implementation to release the congestion in PRD region	Paper to 45th DGCA describes efforts by Hong Kong, Macau and mainland China to address PRD over near term

2011	RVSM implementation in Mongolia, Russia, CIS states, DPR Korea and Polar region	State responsibility, RVSM - DPRK in 2009 with assistance from China, Mongolia in 2011 in company with Russian Federation
2013	Parallel Route Implementation between major cities in China by PBN applications.	State responsibility, using national PBN Plan
2015	PRD TMA realignment, Civil-Military Joint ATC, Imperial system Implementation in Southern Sector of PRD TMA Implementation of identified routes in China	State responsibility Paper to 45th DGCA describes efforts by Hong Kong, Macau and mainland China to address PRD over near term State responsibility

IATA Key Work Area 5 – ASIA/ME/EUR South of the Himalayas

	IATA ATM user expectations 2008-2015	Regional Activity
	5 ASIA / ME / EUR SOUTH OF THE HIMALAYAS (NOT INCLUDING CHINA)	
	• Consistent application of RNP10 50/50	Regional PBN Plan. Bay of Bengal is working towards RNP10 in 2009/2010 timeframe
	• Planned migration to RNP 4 30/30	Regional PBN Plan
	• UPRs / DARPs	In work with ASIOACG
	• Increased Route structure in Kabul FIR	UL333 and B466 opened August 2008.
	• Entry/ exit IND-PAK	A number of route changes imitated by ATFM/TF are in work in Pakistan, will include interface with India
	• ATM infrastructure	Relevant outcomes and recommendations from October 2008 ICAO ATFM Workshop for consideration by ATM/AIS/SAR/SG
	• Strategic plan to manage capacity including review of requirements for ATFM	
	• Joint use of restricted airspace	GPI -1 Flexible use of Airspace
	• AIS	AAITF
2009	Review airspace, route structure and ATM procedures within India, Pakistan, Afghanistan, Sri Lanka and Myanmar including use of restricted airspace (2008)	
	RNAV 5 enroute on Delhi-Mumbai sector	PBN Regional Plan specifies RNAV 5. State responsibility
	ATFM BOM/ DEL FIRs	State responsibility
2011	RNP 10 Oceanic Routes	PBN Regional Plan specifies RNP 4 preferred, RNAV – 10 is acceptable
	UPR Southern Oceanic of BOB/ AS and IO	In work with ASIOACG
	ATFM all major traffic flows within India (not including overflights)	State responsibility
2013	RNP4 30/30	PBN Regional Plan has RNP 2 for 2013 – 2016 as preferred, RNP – 4 is acceptable

IATA Key Work Area 6 – PBN

	IATA ATM user expectations 2008-2015	Regional Activity
	6 PBN • Implementation of ICAO, APAC and State plan • All PBN implementation in accordance with ICAO PBN Manual	
2009	Develop ICAO State PBN plan – PBN Task Force Develop ICAO Regional PBN Plan (2008) RNAV SIDS/STARS – Indonesia IATA/ICAO initiative (Jun 2008) Complete CNS ASPAC Fleet capability survey to support PBN implementation (2008) Priority/ expedite work areas - Jakarta - Medan - Denpasar - Surabaya Identify how to address critical staffing shortages for the expeditious implementation of PBN	PBN Task Force established APAC PBN Implementation Plan adopted by APANPIRG/19 State responsibility IATA State responsibility ICAO has established a Procedures Design Programme to address designer shortfall.
2011	Implementation as per ICAO state and regional plan	APAC PBN Implementation Plan adopted by APANPIRG/19
2013	Implementation as per ICAO state and regional plan	APAC PBN Implementation Plan adopted by APANPIRG/19
2015	Implementation as per ICAO state and regional plan	APAC PBN Implementation Plan adopted by APANPIRG/19 and to address RCP for the implementation

IATA Key Work Area 7 – Airports

	IATA ATM user expectations 2008-2015	Regional Activity
	7 Airports Ensure synergy of development between airport capacity/expansion and ATS Includes • Runways and Manoeuvring Areas • CTRs • TMAs • Arrival and Departure Procedures Airport capacity will be dependent on strategic plan to manage regional capacity	State responsibility
2009	Review airports against user requirements identifying priorities Commence implementation of Airport plan in synergy with ATS requirements and in conjunction with work undertaken within Key Areas 1-6	State responsibility State responsibility

ASIA/PACIFIC REGION

PERFORMANCE FRAMEWORK FORM
(REGIONAL)

REGIONAL PERFORMANCE OBJECTIVE: APAC – ATM 1

AIRSPACE SAFETY MONITORING TO ACHIEVE REGIONAL TLS

Benefits	
Safety	• Improved safety management, • Compliance with regional Target Level of Safety (TLS)

Strategy
Short term/medium term (2009-2015)

ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
AOM *(Airspace Organization and Management)*	• Facilitate cooperative arrangements between States to undertake airspace safety assessments • Review airspace safety monitoring that supports reduction in vertical and horizontal aircraft separation standards	2009-2015	RASMAG	In progress
	• Assist States to achieve established regional Target Levels of Safety (TLS) • Provide advice to States to establish aspects of ATS safety management systems that support compliance with the regional TLS	2009-2015	RASMAG SEA RR/TF BOB RHS/TF PBN/TF	In progress
GPIs	GPI/2 Reduced vertical separation minima, GPI/5 Performance based navigation, GPI/7 Dynamic and Flexible ATS route management			
References	• *Asia/Pacific Guidance Material for ADS/CPDLC/AIDC Ground Systems Procurement and Implementation;* • *Guidance Material for End-to-End Safety and Performance Monitoring of Air Traffic Service (ATS) Data Link Systems in the Asia/Pacific Region* • *Asia/Pacific En-route Monitoring Agency (EMA) Handbook* • *Regional Monitoring Agency (RMA) Manual* • *Global Operational Data Link Document (GOLD).*			

ASIA/PACIFIC REGION

PERFORMANCE FRAMEWORK FORM
(REGIONAL)

REGIONAL PERFORMANCE OBJECTIVE: APAC – ATM 2

OPTIMISE TRAFFIC FLOWS

Benefits	
Environment	• reductions in fuel consumption
Efficiency	• reduction in weather and traffic induced holding • improved and smoother traffic flows • improved predictability • optimized demand and capacity balancing through the efficient exchange of information

Strategy
Short term (2009-2010)
Medium term (2011–2015)

ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
DCB *(Demand and capacity management)*	**Bay of Bengal** • Enhance and facilitate the orderly flow of traffic across the Bay of Bengal and south Asia	2009-2010	Air Traffic Flow Management Task Force (ATFM/TF)	Implemented and reviewed regularly by the Bay of Bengal ATFM/TF ATM/AIS/SAR/SG/19 drafted Conclusion to establish regional ATFM steering group
DCB *(Demand and capacity management)*	**South China Sea** • Enhance and facilitate the orderly flow of traffic in the South China Sea area	2011-2015	SEACG	ATM/AIS/SAR/SG/19 drafted Conclusion to establish regional ATFM steering group
DCB *(Demand and capacity management)*	**Northeast Asia/Southeast Asia** • Enhance and facilitate the orderly flow between Northeast Asia and Southeast Asia, as well as within and between the North and the South Pacific regions	2009/2015	IPACG, ISPACG, EATMCG SEA RR/TF (ATS routes)	ATM/AIS/SAR/SG/19 drafted Conclusion to establish regional ATFM steering group
GPIs	GPI/6 air traffic flow management, GPI/7 Dynamic and Flexible ATS route management, GPI/8 Collaborative airspace design and development, GPI/16 Decision support and alerting system			
References	• *Draft Air Traffic Flow Management Communications Handbook for the Asia/Pacific Region* *APANPIRG Conclusions XX, YY and ZZ*			

ASIA/PACIFIC REGION

PERFORMANCE FRAMEWORK FORM
(REGIONAL)

REGIONAL PERFORMANCE OBJECTIVE: APAC – ATM 3

OPTIMISE ROUTE STRUCTURE IN ENROUTE AIRSPACE

Benefits	
Environment	• reductions in fuel consumption
Efficiency	• increase airspace capacity • ability of aircraft to conduct flights more closely to preferred trajectories • facilitate utilization of advanced technologies thereby increasing efficiency • optimized demand and capacity balancing through the efficient exchange of information
Safety	• enhance safety by use of modern capabilities onboard aircraft

Strategy
Short term (2010)
Medium term (2011 - 2015)

ATM OC COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
AOM *(Airspace Organization and Management)*	• Implement ATS route enhancements in the Asia Pacific Region, in collaboration with stakeholders, based on new technologies and procedures and in accordance with APANPIRG PBN Regional Plan, to improve en-route airspace efficiency. • Identify ATS and aeronautical communications problems in the Asia Pacific Region including Indian Ocean and the Arabian Sea, and prepare coordinated plans for actions for their resolution.	2009 -2015	**Bay of Bengal and Arabian Sea** BBACG, FIT-BOB, Bay of Bengal Reduced Horizontal Separation Implementation Task Force (BOB-RHS/TF) (Informal Arabian Sea/Indian Ocean ATS Coordination Group - ASIOACG)	Target for 50NM longitudinal separation in Bay of Bengal is 2010
		2009-2015	**Southeast Asia AR9 Flow** SEACG, FIT-SEA Southeast Asia Route Review Task Force (SEA RR/TF)	ATM/AIS/SAR/SG/19 established the SEA Route Review Task Force (SEA RR/TF)

		2009-2015	**<u>Pacific Area</u>** No APANPIRG regional working group established (Informal • South Pacific ATS Coordination Group – ISPACG, • Pacific ATS Coordinating Group – IPACG, and • East Asia ATM Coordination Group EATMG)	50 NM longitudinal implemented North Pacific in 2008 30/30 NM (RNP4) implemented Honiara, Nauru, Brisbane, Nadia Auckland Oceanic FIRs in January 2005 30/30 NM Operational trial Oakland FIR commenced 2007, Fukuoka FIR from August 2008, Anchorage FIR estimated 2011
AOM *(Airspace Organization and Management*	**Cross-Polar routes** • Improve alignment and use of cross polar routes at their south (Asian) ends.	2010-2015	Special ATS coordination meeting – China, Mongolia, Russian Federation, IATA (CMRI) Informal Cross Polar Working Group (CPWG)	In progress
GPIs	GPI/5 Performance based navigation, GPI/8 Collaborative airspace design and management			
References	• *Asia/Pacific Regional Performance Based Navigation Implementation Plan* • *ICAO Performance Based Navigation Manual (Doc 9613)*			

ASIA/PACIFIC REGION

PERFORMANCE FRAMEWORK FORM
(REGIONAL)

REGIONAL PERFORMANCE OBJECTIVE: APAC – ATM 4

OPTIMISE ROUTE STRUCTURE IN TERMINAL AIRSPACE

Benefits	
Environment	• reductions in fuel consumption
Efficiency	• increase airspace capacity • ability of aircraft to conduct flights more closely to preferred trajectories • facilitate utilization of advanced technologies thereby increasing efficiency • optimized demand and capacity balancing through the efficient exchange of information
Safety	• enhance safety by use of modern capabilities onboard aircraft

Strategy
Short term (2010)
Medium term (2011 - 2015)

ATM OC COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
AOM *(Airspace Organization and Management)* **AUO** *(Airspace Users Operations)*	Implement ICAO Performance Based Navigation (PBN) provisions for terminal area operations in collaboration with stakeholders based on the Regional PBN Implementation Plan agreed by APANPIRG, to improve terminal area efficiency by use of advanced navigation specifications for SIDs, STARs and instrument approach procedures.	In accordance with PBN Regional Plan	Performance Based Navigation Task Force (PBN/TF)	PBN/TF prepared Regional PBN Plan adopted by APANPIRG/19
GPIs	GPI/5 Performance based navigation, GPI/8 Collaborative airspace design and management. GPI/10 Terminal area design and management, GPI/11 GPI-11 RNP and RNAV Standard Instrument Departures (SIDs) and Standard Terminal Arrivals (STARs), GPI-12 Flight Management System (FMS) – based arrival procedures			
References	• *Asia/Pacific Regional Performance Based Navigation Implementation Plan* • *ICAO Performance Based Navigation Manual (Doc 9613)*			

ASIA/PACIFIC REGION

PERFORMANCE FRAMEWORK FORM
(REGIONAL)

REGIONAL PERFORMANCE OBJECTIVE: ATM – 5

IMPLEMENTATION OF NEW ICAO FLIGHT PLAN PROVISIONS

Benefits	
Environment	• reductions in fuel consumption and gaseous emissions as a result of efficiency gains.
Safety	• enhance safety by use of modern capabilities onboard aircraft
Continuity	• maintains continuity of aviation operations across the region
Efficiency	• ability of air navigation service providers to make maximum use of aircraft capabilities, • ability of aircraft to conduct flights more closely to their preferred trajectories, • facilitate utilization of advanced technologies thereby increasing efficiency, and • optimized demand and capacity balancing through the efficient exchange of information.

Strategy
Short/Medium Term (2009-2012)

ATM OC COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
SDM *(ATM Service Delivery Management)*	• Implement the provisions of Amendment 1 to the Fifteenth Edition of the PANS ATM (Doc 4444), comprising amended PANS ATM Chapter 4, Chapter 11, Appendix 2 and Appendix 3 provisions relating to the ICAO Flight Plan and associated ATS Message formats, with applicability date 15 November 2012.	2009-2012	ICAO Flight Plan and ATS Messages Task Force (FPL&AM/TF)	ATM/AIS/SAR/ SG/19 recommended that APANPIRG adopt the *Interim Strategy for the Implementation of New ICAO Flight Plan Format and supporting ATS Messages* prepared by FPL&AM TF/1
GPIs	GPI/5: Performance based navigation, GPI/9: Situational awareness, GPI/11: RNP and RNAV SIDs & STARs, GPI/17: Implementation of data link applications and GPI/18: Aeronautical Information			
References	• *Amendment 1 to 15th Edition of PANS-ATM (Doc 4444, ICAO State Letter Ref: AN13/2.1-08/50, dated 25 June 2008)* • *ICAO Guidance Material for Implementation (ICAO State Letter Ref: AN 13/2/1-09/9, dated 6 February 2009)* • *Asia/Pacific Region – Interim strategy for the implementation of new ICAO flight plan format and supporting ATS messages* • *APANPIRG Decision 19/6*			

ASIA/PACIFIC REGION

PERFORMANCE FRAMEWORK FORM
(REGIONAL)

REGIONAL PERFORMANCE OBJECTIVE: AIS – 1 **ENHANCED PROVISION OF AIS/AIM**				
Benefits				
Efficiency	• enhanced collaboration between flight crew and the ATM system, • improved collaborative decision making, • improved predictability, and • reduction of workload for aircrew and ATC.			
Strategy **Short to Medium term (2009 – 2012)**				
ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
SDM *(ATM Service Delivery Management)*	• Implement the enhanced provisions for AIM becoming available through the work of the Aeronautical Information Services-Aeronautical Information Management Study Group (AIS-AIMSG); • Monitor implementation progress	2009-2016	AAITF	In progress
GPIs	GPI/18: Aeronautical Information			
References	• *Annex 4 – Aeronautical Charts* • *Annex 15 – Aeronautical Information Services* • *AIS Manual (Doc 8126)* • *Aeronautical Chart Manual (Doc 8697)* • *EUROCONTROL Operating Procedures for AIS Dynamic Data (OPADD)*			

ASIA/PACIFIC REGION

PERFORMANCE FRAMEWORK FORM
(REGIONAL)

REGIONAL PERFORMANCE OBJECTIVE: SAR – 1 **ENHANCED SEARCH AND RESCUE CAPABILITY**				
Benefits				
Safety & Efficiency	• cost-efficient use of RCC accommodation and equipment on a shared basis, • development of a pool of experienced SAR mission coordinators skilled across both aviation and maritime domains thus reducing coordination and fragmentation, • proficient services provided near and within States with limited resources, • harmonization of aviation / maritime procedures, and • inter-operability of life-saving equipment			
Strategy **Short to Medium term (2009 – 2015)**				
ATM OC COMPONENTS	**TASKS**	**TIME FRAME**	**RESPONSIBILITY**	**STATUS**
IM *(Information Management)*	Implementation of Annex 12 Standards and Recommended Practices and related APANPIRG Conclusions to ensure appropriate SAR capabilities for the Asia/Pacific regions.			
	• Periodic review of SAR facilities, services and procedures in the region;	2009-2015	States, ATM/AIS/SAR Sub Group	In progress
	• Encourage States to delegate or negotiate SAR services in accordance with Annex 12 provisions;	2009-2015	States, ATM/AIS/SAR Sub Group	In progress
	• APANPIRG Asia/Pacific "SAR Capability Matrix" and "Register of SAR Agreements" be kept up to date and distributed to States for information and action;	2009 - 2015	States, ATM/AIS/SAR Sub Group	In progress
	• States designate an agency for registering ELT Beacons, coded with the country code of the State and unique code of that beacon in a database as required by Annex 10.	2010	States	In progress
GPIs	None applicable			
References	• *Annex 12 – Search and Rescue* • *International Aeronautical and Maritime Search and Rescue Manual (IAMSAR Manual, Doc 9731)* • *APANPIRG Conclusions 18/19 & 18/20*			

PERFORMANCE FRAMEWORK FORM - EXPLANATORY NOTES

1. **Performance framework form:** This form is an output and management form which is applicable to both regional and national planning and includes references to the Global Plan. Other formats may be appropriate but should contain as a minimum the elements described below:

2. **Performance objective:** Regional /national performance objectives should be developed using a performance based approach that best reflects the necessary activities needed to support regional/national ATM systems. During their life cycle, performance objectives may change depending on the ATM system's evolution; therefore, throughout the implementation process, these should be coordinated with and be available to all interested parties within the ATM Community. The establishment of collaborative decision making processes ensures that all stakeholders are involved in and concur with the requirements, tasks and timelines.

3. **Regional performance objective:** Regional performance objectives are the improvements required to the air navigation system in support of the global performance objectives, and are related to the operating environments and priorities applicable at the regional level.

4**.** **National performance objective:** National performance objectives are the improvements required to the air navigation system in support of the regional performance objectives, and are related to the operating environments and priorities applicable at the State level.

5**.** **Benefits:** The regional/national performance objectives should meet the expectations of the ATM community as described in the operational concept and should lead to benefits for stakeholders and be achieved through operational and technical activities aligned with each performance objective.

6. **Strategy:** ATM evolution requires a clearly defined progressive strategy including tasks and activities which best represent the national and regional planning processes in accordance with the global planning framework. The goal is to achieve a harmonized implementation process evolving toward a seamless global ATM system. For this reason, it is necessary to develop short (1 to 5 years) and medium term (6 to 10 years) work programmes, focusing on improvements to the system indicating a clear work commitment for the parties involved.

7. **ATM operational concept components;** Each strategy or set of tasks should be linked with associated components of the ATM operational concept. The designators for ATM components are as follows:

- AOM – Airspace organization and management
- DCB – Demand and capacity management
- AO – Aerodrome operations
- TS – Traffic synchronization
- CM – Conflict management
- AUO – Airspace user operations
- ATM SDM – ATM service delivery management

8. **Tasks:** The regional/ national work programmes, using this PFF template, should define tasks in order to achieve the said performance objective and at the same time maintain a direct relation with ATM system components. The following principles should be considered when developing work programme:

- The work should be organized using project management techniques and performance-based objectives in alignment with the strategic objectives of ICAO.

- All tasks involved in meeting the performance objectives should be developed using strategies, concepts, action plans and roadmaps which can be shared among parties with the fundamental objective of achieving seamlessness through interoperability and harmonization.

- The planning of tasks should include optimizing human resources as well as encouraging dynamic use of electronic communication between parties such as the Internet, videoconferences, teleconferences, e-mail, telephone and facsimile. Additionally, resources should be efficiently used, avoiding any duplication or unnecessary work.

- The work process and methods should ensure that performance objectives can be measured against timelines and the national and regional progress achieved can be easily reported to PIRGs and ICAO Headquarters respectively.

9. **Timeframe:** Indicates start and end time period of that particular task(s).

10. Responsibility: Indicates the organization/entity/person accountable for the execution or management of the related tasks.

11**. Status:** The status is mainly focused on monitoring the progress of the implementation of that task(s) as it progresses toward the completion date.

12**. Linkage to global plan initiatives (GPIs)*:*** The 23 GPIs, as described in the Global Plan, provide a global strategic framework for planning for air navigation systems and are designed to contribute to achieving the regional/national performance objectives. Each performance objective should be mapped to the corresponding GPIs. The goal is to ensure that the evolutionary work process at the State and regional levels will be integrated into the global planning framework.

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TASK LIST

SN	Activity	Start	Complete	Present Status	Group Responsible	
	Identify Operational Need					
	Agree operational needs for a route review in South China Sea area					
	Safety Assessment					
	Review available summary data (non-compliant aircraft, aberrant aircraft etc)					
	Examine history of navigational errors and assess possible impact on safety					
	Confirm collision risk model assumptions/parameters are consistent with airspace where the 50 NM longitudinal separation is to be applied					
	Collect weather and turbulence data for analysis					
	Report monthly navigational errors (including operational errors) to Enroute Monitoring Agency					
	Collect traffic sample data for safety assessment for the 50 NM longitudinal separation implementation					
	Feasibility Analysis					
	Examine the operational factors and workload associated with the 50 NM longitudinal separation implementation					
	Determination of Requirements (airborne & ground systems)					
	States assess the impact of the 50 NM longitudinal separation implementation on controller automation systems and plan for upgrades/modifications					
	Aircraft & Operator Approval Requirements					
	Promulgate the operational approval process of RNP 10					
	Notify States when significant changes occur to the 50 NM longitudinal separation documentation					
	Perform Rulemaking (if required)					
	Recommend State airspace regulatory documentation					
	Perform Necessary Industry & International Co-ordination					
	Establish target implementation date					
	Report to SEACG					
	Process Doc 7030 amendment					
	Publish advance AIC					
	Publish AIP Amendment containing the 50 NM longitudinal separation policy/procedures					
	Review inter-facility coordination procedures					
	Finalize changes to Letters of Agreement					
	Approval of Aircraft & Operators					
	Establish approved operations readiness targets					
	Assess operator readiness					
	Develop Pilot & ATC Procedures					
	Review weather and contingency procedures for applicability under the 50 NM longitudinal separation					
	Conduct simulation modelling to assess impact of the 50 NM longitudinal separation operations					

TASK LIST

SN	Activity	Start	Complete	Present Status	Group Responsible	
	Report on simulation activity					
	Develop procedures for handling non-compliant aircraft in ATS documentation					
	Develop mutually acceptable ATC procedures for non-approved State acft to transit the 50 NM longitudinal separation airspace					
	Implement procedures for suspension of the 50 NM longitudinal separation					
	Liaise with State defense authorities regarding military operations					
	Pilot & ATC Training					
	Provide Pilot/ATC training documentation based on past experience					
	Conduct local the 50 NM longitudinal separation training for air traffic controllers					
	Perform System Verificiation					
	Navigational performance monitoring needed to undertake initial safety analysis					
	Provide representative traffic movement data to Safety Monitoring Agency					
	Undertake initial safety analysis					
	Prepare/maintain regional status report detailing the 50 NM longitudinal separation implementation plans					
	Final Implementation Decision					
	Review aircraft navigational performance and operational errors					
	Complete ATS State documentation					
	Publish Trigger NOTAM					
	Complete readiness assessment					
	Complete safety analysis					
	Declare Initial Operational Capability					
	Monitor System Performance					
	Perform Follow-On Monitoring					
	Adopt RNP					
	Declare Full Operational Capability					
	Meetings					
	Task Force/1 (Bangkok)					