International Civil Aviation Organization

Second Meeting of the Southeast Asia Route Review Task Force (SEA-RR/TF/2)

Bangkok, Thailand, 22 – 26 March 2010

Agenda Item 2: Review Outcomes of Related Meetings

REVIEW OF SEA-RR/TF/1 MEETING

(Presented by the Secretariat)

SUMMARY

To purpose of this working paper is to provide a summary of important items discussed at the First Meeting of the South East Asia Route Review Task Force, held at the ICAO Regional Office in Bangkok, Thailand on 8 to 11 December 2009, and to use this information to continue work during this task force meeting.

1. INTRODUCTION

1.1 It was noted by the SEA-RR/TF/1 meeting that several items, especially in regard to ATS routing issues had been discussed at the RNP-SEA/TF/4, SEACG/16 and FIT-SEA/9 meetings, which had a direct affect on work to be included by this new task force.

1.2 The meeting was attended by 44 participants from 13 States and 2 International Organizations.

2. DISCUSSION

Closure of M772

2.1 The SEA-RRTF/1 meeting was advised that M772 used for flights from/to Jakarta/Hong Kong had been closed to these aircraft due to the un-serviceability of Manila HF. This caused these aircraft to be rerouted to M754, adding an additional 101NM to the overall distance. As a consequence, IATA had suggested that an additional route to the west of M772 should be considered that would allow aircraft to take advantage of data link services as well as some periods of this new route also being under radar and VHF services. It was further suggested that the route proposal should be structured to remain clear of the Manila FIR due to the un-serviceability of Manila HF facilities.

Additional Parallel Routes Crossing the Primary Route System

2.2 During the meeting, the concept of having additional crossing routes parallel to the present routes was also discussed. As these routes handled less traffic than the main southeast/northwest route system, it could be feasible to add an additional route alongside the present crossing route spaced at least 50 NM apart. This would allow aircraft to fly outside the radar coverage airspace at the same altitude on both routes, which in turn could free some of the levels now being used to be included in the level allocation for the major route system.

2.3 The concept of the proposal would be to have two routes from one location diverge to be at 50 NM minimum spacing between each route before they cross the 6 primary routes. One of these crossing routes would cater for westbound aircraft and the other for eastbound flights. Both crossing routes could then use the same cruising levels until clear of the primary route system and once within radar/VHF range of the next ACC, commence converging using radar procedures.

2.4 Routes crossing the six primary SCS routes were seeing increased traffic numbers but these figures were still far short of the heavily utilised primary route system. At the present time, the crossing routes are bi-directional and the establishment of uni-directional routes could potentially realise increased level availability on the primary route system.

2.5 Crossing routes that could be established as unidirectional routes in the short term are L628 (Manila to Bangkok), M768 between Brunei and Ho Chi Minh/ Bangkok, and finally A461 (Hong Kong to Manila). These unidirectional routes should be established as RNAV 10 routes in the short term until VHF/radar capability is installed.

2.6 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 further discussed.

Regional Performance Framework and Metrics

2.7 The meeting observed that 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.

2.8 The meeting also noted the principles of performance-based approach as well as the advantages in using this type of structure. It was therefore decided that this structure would be used when considering the Southeast Asia route review together with associated necessary work in future meetings of the task force.

2.9 SEA-RR/Task Force/1 decided to use the Regional Performance Framework, in particular the Performance Framework Forms during work on improvements to the route review and ancillary items to improve performance in the Southeast Asia area.

Establishment of Singapore SMA – SEASMA

2.10 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, the meeting noted 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).

Statistical Aircraft Data Collection and Analysis

2.11 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.

2.12 In order to achieve this additional traffic collection, cooperation from States would be 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. Accordingly it was 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. 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. Thailand and Singapore graciously offered their services to carry out the task of collation and analysis of the data.

2.13 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. The selected week was planned to be the third week of each month commencing in January 2010 at 0001UTC on the third Sunday. 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.

IATA Outlook on Southeast Asia Route Review

2.14 IATA 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.

2.15 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.

2.16 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.

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

Proposals for the establishment and revision of ATS routes

2.18 IATA presented a radar coverage chart of the area under consideration noting that 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 would also be enhanced with the near term ADS-B implementation plans of States, in particular China and Hong Kong, Indonesia, Singapore and Vietnam.

2.19 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.

2.20 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.

2.21 The first proposal was the establishment of uni-directional routes and realignment of A1 and A202 between Hong Kong and Bangkok.

2.22 The meeting was advised that, with the realignment of A1 further to the west, 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 was 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.

2.23 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.

Viet Nam initiatives

2.24 Viet Nam advised 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.

2.25 Viet Nam gave a discription of work already achieved and proposals which are planned for the near future, including implementation of several new domestic routes as well as improvements in their international route capability. Planned route implementation was divided into 3 categories:

a) Short Term – 1st or 2nd quarter of 2010
b) Medium term – 3rd quarter of 2010
c) Long term – 3rd quarter of 2011

2.26 A detailed list of routes which were placed in the 3 categories above was presented to the meeting. Thailand was 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.

Safety Assessments and Monitoring Requirements

2.27 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.

2.28 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.

Comparison of User Expectations with Regional Work Programme

2.29 The meeting reviewed a comparative analysis 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.

2.30 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. The work of this task force will assist in overcoming many of these issues.

Proposals for improvements to South China Sea airspace operations

2.31 Singapore presented 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.

2.32 The meeting was also advised that significant portions of the other four RNAV routes are beyond VHF/radar systems, thus necessitating the use of data-link-based CPDLC and ADS for application of 50NM longitudinal and 30NM longitudinal and lateral separation minima. It was therefore considered important 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 the terms of reference of the task force.

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

2.33 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.

2.34 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

2.35 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.

2.36 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.

2.37 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.

2.38 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.

2.39 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

2.40 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.

2.41 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.

2.42 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

2.43 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.

2.44 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

2.45 The data supplied indicated that roughly 57 percent of all RNAV route operations occur on L642 and M771 and 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.

2.46 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

2.47 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.

2.48 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.

2.49 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.

2.50 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.

2.51 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.

2.52 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

2.53 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."*

2.54 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 achieved by the providers and users of the ATM service.

2.55 The meeting also noted that, with the costs to aviation administrations in the purchase of new ATM systems, together with airlines in the re-equipage of aircraft fleets, careful consideration of these factors should be taken into account when developing and implementing updated procedures to gain maximum benefits to all concerned.

2.56 It was agreed that the area under consideration covers a considerable amount of airspace and is managed by many FIRs. To influence a beneficial result in all areas, it was 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 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 which crosses the major flow.

2.57 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 a cohesive and appropriate time frame.

2.58 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.

2.59 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 look at the project as a whole, due to the relatively small area under consideration.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) Note the positive work conducted by SEA-RR/TF/1

b) Complement this work with progress in the areas mentioned;

c) Harmonize other Task Force working papers presented at this meeting with agreed actions from TF/1;

d) Where necessary to do so, break into small working groups to cover all areas under consideration in a timely manner; and,

e) Endeavour to complete all tasks by an agreed target date for implementation.

……