INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

REPORT OF THE TWENTY-SECOND MEETING OF THE ICAO REDUCED VERTICAL SEPARATION MINIMUM IMPLEMENTATION TASK FORCE (RVSM/TF/22)
REVIEW OF FLIGHT LEVEL ORIENTATION SCHEMES

BANGKOK, THAILAND

20 – 24 SEPTEMBER 2004

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

Published by the ICAO Asia and Pacific Regional Office, Bangkok

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1.1 Introduction

1.1.1 The Twenty-second Meeting of the Reduced Vertical Separation Minimum Implementation Task Force (RVSM/TF/22) – Review of Flight Level Orientation Schemes (FLOS) was held at the Kotaite Wing of the ICAO Asia and Pacific Regional Office, Bangkok, Thailand from 20 to 24 September 2004.

1.2 Attendance

1.2.1 The meeting was attended by 33 participants from Bangladesh, Cambodia, Hong Kong China, India, Indonesia, Japan, Malaysia, Singapore, Sri Lanka, Thailand, IATA, IFALPA, and IFATCA. A complete list of participants is at **Appendix A**.

1.3 Officers and Secretariat

1.3.1 Mr. Sydney Maniam, Head (Air Traffic Services) Civil Aviation Authority of Singapore, continued as Chairman of the Task Force. Mr. Kyotaro Harano, Regional Officer ATM served as the Secretary for the meeting. He was assisted by Mr. David J. Moores, Regional Officer ATM.

1.4 Opening of the Meeting

1.4.1 Mr. Sydney Maniam welcomed the participants and opened the 22nd ICAO RVSM Implementation Task Force Meeting. He highlighted that the purpose of the meeting was to review operational issues relating to the Flight Level Orientation Scheme (FLOS) that had been implemented for the Western Pacific/South China Sea (WPAC/SCS) area. The modified single alternate FLOS had been adopted to cater for traffic movements in the area. However, in the Pacific and Bay of Bengal areas, the single alternate FLOS was used to harmonize operations with the adjacent regions. As a result of the different FLOS, there was a need for aircraft to be transitioned from one FLOS to another when operating into/out of the respective areas. He stressed that these factors had significant impact on existing RVSM operations. Therefore, it was necessary for the Task Force to re-examine the basic principles that had been adopted when RVSM was planned and subsequently implemented in the areas.

1.4.2 Mr. Maniam added that the modified single alternate FLOS had resulted in enhancements to the safety, efficiency and regularity of operations in the WPAC/SCS area. In addition, there had been significant reduction in ground delays at major airports and corresponding increases in airspace capacity. However, due to the transition requirements, some States had proposed to change the FLOS for the WPAC/SCS area. As agreed at RVSM/TF/18, detailed studies and corresponding safety assessments should be done to support any change to the existing FLOS arrangements. In this context, he urged all concerned to work together to review related issues and ensure that any recommendation for change would enable ATS providers to continue to apply RVSM in a safe and efficient manner. He added that ultimately the safety, efficiency and regularity of RVSM operations in the WPAC/SCS area should not be adversely affected with any change to the FLOS.

1.4.3 Mr. Kyotaro Harano on behalf of Mr. Lalit Shah, Regional Director of the ICAO Asia and Pacific Regional Office, welcomed the participants. He drew attention to the importance of progressing the issue of the WPAC/SCS flight level orientation scheme, which had been the subject of considerable discussion. With the implementation of RVSM by Japan and the Republic of Korea in June 2005 for the Naha, Tokyo and Incheon FIRs, it was becoming more urgent to resolve this matter.

1.5 **Documentation and Working Language**

1.5.1 The working language of the meeting as well as all documentation was in English.

1.5.2 Eleven (11) Working Papers and two (2) Information Papers were presented to the meeting. A list of papers is included at **Appendix B**.

Agenda Item 1: Adoption of Agenda

1.1 The meeting reviewed the provisional agenda and revised Agenda Item 4. The meeting adopted the revised agenda for the meeting. The agenda is at **Appendix C** to the Report.

Agenda Item 2: Operational Considerations

Review of current RVSM operations using the modified single and single alternate FLOS

2.1 The meeting recalled that following the implementation of RVSM in the Bay of Bengal and Beyond area on 27 November 2003 where the single alternate FLOS was adopted, and the planned implementation of RVSM by Japan and the Republic of Korea in June 2005 where the single alternate FLOS would also be adopted, it had been decided by the RVSM/TF/18 meeting (June-July 2003) to review the application of the modified single alternate FLOS with the use of the single alternate FLOS in the adjacent airspace of the WPAC/SCS areas. However, prior to undertaking the review, RVSM/TF/18 agreed that the States concerned should undertake a detailed study to support any change. This would include the necessary safety assessments relating to RVSM operations. Until the studies were completed, RVSM/TF/18 decided to continue with the modified single alternate FLOS.

2.2 The meeting recalled the background to the establishment of the modified single alternate FLOS for the WPAC/SCS areas. In this regard, at the RVSM/TF/9 meeting (January 2001) the operational plan for the implementation of RVSM was reviewed in conjunction with the revised ATS route structure for the South China Sea area. The RVSM/TF/9 meeting agreed that RVSM could be applied between FL290 and FL410 inclusive on the revised route structure using the single alternate flight level orientation scheme for the assignment of RVSM levels.

2.3 Further, at RVSM/TF/9, IATA proposed an alternative flight level orientation scheme for the initial phase of implementation for the six major ATS routes (viz, L642, M771, N892, L625, N884 and M767), whereby the EVEN flight levels, viz, FL320, FL340, FL360 and FL380 would be assigned to the six parallel uni-directional routes. For the bi-directional crossing tracks, the level assignment would be the corresponding ODD eastbound levels (FL330, FL370 and FL410) and westbound levels (FL310, FL350 and FL390). The meeting agreed to adopt this arrangement, which was called the modified single alternate FLOS.

2.4 The selection of the modified single alternate FLOS provided for the optimum arrangement of flight levels for the South China Sea uni-directional parallel route structure, which has a number of crossing bi-directional routes. The modified single alternate FLOS provided for a high level of safety of operations with the crossing routes using a combination of ODD flight levels, vertically separated from the parallel routes using EVEN levels. This arrangement was compatible at the time with the conventional flight level orientation scheme (CVSM) being used in adjacent non-RVSM airspace. Transition areas were established to change between the flight level orientation schemes.

2.5 The meeting noted that the Special ATS Coordination Meeting on Transition Procedures (SCM/Transition, September 2003) had recognized that some States had expressed concerns over transition problems that would arise when RVSM was implemented in the Bay of Bengal and Beyond area on 27 November 2003 where the single alternate FLOS would be used. This would result in additional transition problems with the modified single alternate FLOS being used in the adjacent airspace of the WPAC/SCS area.

2.6 Subsequently, the RVSM/TF/20 meeting (October 2003), which made the decision to go ahead with RVSM implementation in the Bay of Bengal and Beyond area on 27 November 2003, made provision to hold the RVSM/TF/22 meeting to review the RVSM FLOS for the WPAC/SCS area.

Review of RVSM operations using the modified single alternate FLOS

2.7 The States present provided an update on current RVSM operations in the WPAC/SCS area, using the modified single alternate FLOS, as described below.

Cambodia

2.8 Cambodia reported that RVSM operations were progressing well with the modified single alternate FLOS, and proposed to continue with the present FLOS arrangements.

Hong Kong, China

2.9 Hong Kong, China highlighted that the implementation of RVSM in Japan and the Republic of Korea in June 2005 would result in an increase in the number of transitions to be carried out for aircraft due to the single alternate FLOS that would be used. Therefore, Hong Kong, China proposed that the FLOS for the WPAC/SCS area be changed to minimize the need for transitions.

Indonesia

2.10 Indonesia reported that the single alternate FLOS was utilized for RVSM operations in Jakarta and Ujung Pandang FIRs. Indonesia proposed to continue with the existing FLOS until any regional change to the FLOS was agreed. In this regard, Indonesia urged that any change in FLOS should be reviewed in conjunction with the new routes, M772 and L644 to be established between Jakarta and Hong Kong.

Malaysia

2.11 Malaysia reported that controllers had no problems with the use of the modified single alternate FLOS in the WPAC/SCS area as transition was carried out within radar coverage. It was further noted that there were only a few flights per day overflying the Malaysian Peninsular between adjacent regions. Malaysia was not adverse to any change to the FLOS provided current safety, efficiency and capacity levels were maintained.

Singapore

2.12 Singapore highlighted the benefits of the modified single alternate FLOS in the WPAC/SCS area. Singapore also proposed that the existing FLOS should not be changed until further improvements to air traffic management and airspace capacity could be implemented. In this context, Singapore urged all concerned to work toward the implementation of RNP 4 routes and ADS/CPDLC applications in the region.

Thailand

2.13 Thailand highlighted difficulties faced by controllers with regard to the transition of aircraft from one FLOS to the other. Thailand supported the use of the single alternate FLOS for the WPAC/SCS area, in order to achieve seamless flow of traffic across the Asia/Pacific region and consequently reduce controller workload.

Other States

2.14 The meeting noting that China, Lao PDR, Philippines and Viet Nam were not present, requested the Regional Office to obtain updates on RVSM operations in the respective FIRs/AOR. The meeting recalled that at the RVSM/TF/18 meeting, in light of the planned implementation of the single alternate FLOS in the Bay of Bengal and Beyond area, the Philippines had proposed a change to the modified single alternate FLOS. This was based on the single alternate FLOS, in order to integrate and harmonize the FLOS used in the WPAC/SCS area with adjacent airspaces. Also, at the RVSM/TF/18 meeting Viet Nam proposed to use a single alternate FLOS for the WPAC/SCS area.

2.15 On behalf of the Philippines, the Secretariat presented information they provided, which outlined proposed changes to the FLOS for the WPAC/SCS area. The changes took into account the implementation of RVSM in Japan and the Republic of Korea in June 2005, and were further discussed under Agenda Item 4.

International Organizations

2.16 IATA highlighted the benefits of using the modified single alternate FLOS for the WPAC/SCS area. This included enhanced safety and efficiency, as well as reduction in controller workload. IATA stressed that they were not opposed to changes to the FLOS for the WPAC/SCS area and that any change required careful thought and planning to ensure that existing benefits would not be compromised. To this end, the due ICAO process involving safety assessments, regional simulation and controller training would have to be accomplished before any change to the FLOS was made.

2.17 IFALPA recognized the overall improvement in operational efficiency and air traffic management in the WPAC/SCS area, as a result of the modified single alternate FLOS. Therefore, IFALPA supported the continued use of the existing FLOS for the WPAC/SCS area, unless a better system could be introduced to meet the demands of increased traffic in a safe and efficient manner.

2.18 IFATCA proposed that the single alternate FLOS be adopted for the WPAC/SCS area to ensure uniform application with traffic that would operate in North East Asia with the implementation of RVSM in Japan and the Republic of Korea.

Operation of RVSM on the SCS routes

2.19 Singapore reminded the meeting that at the RVSM/TF/18 meeting (one-year review of Phase 1 and 90-day review of Phase 2) for the WPAC/SCS area, the States concerned noted that there was a significant improvement in the management of traffic due to the availability of additional cruising flight levels and the corresponding No Pre-Departure Clearance (No-PDC) arrangements. The States and international organizations, i.e. IATA, IFALPA and IFATCA concurred that operational efficiency had improved, in particular reduction in ground delays at international airports as well as workload of pilots and controllers. Furthermore, the safety level of operations had improved with the modified single alternate FLOS.

2.20 Singapore further advised that with the single alternate FLOS, the traffic situation could become complicated. Moreover, there was the possibility of assigning the same flight level to aircraft operating on the parallel RNAV routes and other aircraft on crossing routes. Also, by adopting the single alternate FLOS, the airspace capacity in the WPAC/SCS areas would be reduced by about 30 percent compared to the current capacity under the modified single alternate FLOS.

2.21 It was pointed out that under the current modified single alternate FLOS, 98.6 percent of aircraft flying on the parallel RNAV routes had operated at or close to optimum flight levels, i.e.

between FL320 and FL400, and 89.5 percent of aircraft flying on the crossing routes had operated between FL310 and FL390. With the single alternate FLOS, aircraft on crossing routes would have to share optimum flight levels with aircraft on the parallel routes resulting in lower flight levels being assigned. This would increase operating costs with higher fuel costs.

2.22 IATA informed the meeting that the SCS area was one of the busiest airspaces in the region. Both long haul and regional traffic originating from and terminating at the busiest aviation hubs in the region such as Bangkok, Kuala Lumpur, Singapore, Jakarta, Bali, Manila, Hong Kong, Guangzhou, Taipei, Seoul, Tokyo, Hanoi and Ho Chi Minh over flew the area.

2.23 IATA advised that introduction of the revised SCS route structure simplified the routes and improved capacity by utilizing laterally separated (60 NM) routes in uni-directions based on RNP 10 requirements. By adopting the modified single alternate FLOS, the greatest capacity could be achieved and identical flight levels could be used in both directions. Overall, the SCS new route structure and the subsequent flight level allocation system following RVSM implementation has been highly successful in provision of air traffic services in the region.

2.24 The meeting noting the benefits and success of the introduction of the SCS routes and implementation of RVSM agreed that before any change was effected to the current FLOS, the replacement system would be required to demonstrate that it was equally safe and efficient. This would be subject to the full ICAO process of a safety analysis including calculations of the established target level of safety (TLS). The meeting also agreed that sub-regional modeling and/or simulation exercise should be carried out to support any change to the WPAC/SCS FLOS.

IFATCA North East Asia Traffic (NEAT) Meeting

2.25 IFATCA informed the meeting of the outcomes of the Eighth North East Asia Traffic Meeting (NEAT/8) on 13-14 September 2004 convened to discuss the FLOS and flight level allocation schemes used in the WPAC/SCS area with representatives from Hong Kong China, Japan and Taipei Air Traffic Controllers' Associations.

2.26 The NEAT/8 meeting reviewed the Japan and Republic of Korea RVSM Implementation Plan for the Tokyo, Naha and Incheon FIRs planned for 9 June 2005. The status of RVSM implementation in the Asia/Pacific Region and the intention of various FIRs to change from the modified single alternate or double alternate FLOSs to the single alternate FLOS in order to harmonize with the FLOS of adjacent airspace were discussed. Proposed changes to the flight level assignment for No-PDC flight levels in the WPAC/SCS area and the adoption of a single alternate FLOS in the Manila FIR were noted.

2.27 The NEAT/8 meeting considered the effect of RVSM implementation on the level availability to various routes within the Manila FIR, and the anticipated changes resulting from the implementation of the final stage of RVSM by Japan and the Republic of Korea. In order to benefit all routes in addition to the parallel routes, a revised No-PDC system was proposed. The benefits of this system and the procedures to be taken during Large Scale Weather Deviation (LSWD) were also noted.

2.28 The NEAT/8 meeting agreed that in order to harmonize with the FLOS in the Incheon and Naha and Tokyo FIRs, the single alternate FLOS should be adopted in the Hong Kong, Manila and Taipei FIRs.

2.29 The meeting noted with appreciation the initiative taken by IFATCA to review and coordinate issues concerning the implementation of RVSM in the North East Asia Region, and to consider the FLOS matters being addressed by the ICAO RVSM Task Force.

Use of different RVSM FLOS worldwide

2.30 IFALPA provided information on the implementation of RVSM worldwide and the application of various FLOS to provide a better perspective and understanding of how the FLOS had been adapted to different route structures.

2.31 The basic principle was to adopt a FLOS that would meet the needs and demands of each particular region. It should be one that best facilitated the smoothest and most efficient flow of air traffic. Based on the various types of FLOS that were currently being applied throughout the world, it could be concluded that there was no standard FLOS that best suited application of RVSM worldwide.

2.32 In regard to the above, it should be noted that there were wide differences in the FLOS between different regions that had implemented RVSM. This ranged from exclusive airspace to non-exclusive airspace, uni-directional to bi-directional routes, single alternate FLOS to modified single alternate and double alternate FLOS. The type of FLOS eventually adopted by a region was influenced by the needs and demands of that particular region. Hence, different FLOS had been adopted. Consequently, ATS providers had to provide the necessary transition when traffic moved from one region to another.

2.33 IFALPA recognized the significant overall improvement in operational efficiency and air traffic management over the South China Sea as a result of the introduction of the restructured routes and the modified single alternate FLOS. This had resulted in flight safety being enhanced. IFALPA therefore strongly supported the continuation of the current modified single alternate FLOS over the South China Sea unless a better system could be devised which met the needs for a safe and more efficient system, and accommodate increased traffic.

2.34 The meeting appreciated the information provided by IFALPA which gave a good overall perspective of RVSM flight level usage worldwide. It was agreed that the FLOS adopted for a particular route system or airspace would have to be relevant to the operational environment. In this regard, changing the FLOS for the WPAC/SCS area would need to be carefully and thoroughly evaluated taking into account the issues raised.

Agenda Item 3: Review of safety assessments by MAAR on proposed change(s) to existing FLOS

3.1 MAAR reminded the meeting that one of the requirements for safety monitoring for RVSM implementation in the Asia Region was for States to submit monthly large height deviation (LHD) reports to MAAR. The LHD reports were used to estimate risks of technical and operational errors, which would facilitate the completion of the safety oversight for the Asia airspace where RVSM was implemented.

3.2 MAAR provided an update of reported LHD occurrences in the RVSM airspaces submitted by the concerned States in both the WPAC/SCS and Bay of Bengal and Beyond areas. The information provided summarized the number of LHD occurrences and LHD duration experienced between January 2003 and July 2004. Based on this information, it was found that the LHD occurrences were more significant in the WPAC/SCS. The majority of the LHD causes in the Asia Region, especially in the WPAC/SCS airspace, were the “Error in ATC-unit to ATC-unit transition message (category M)”, followed by the “Negative transfer received from transitioning ATC-unit (category N)”. The meeting requested MAAR to examine the LHDs in greater detail with a view to establishing the primary cause of the operational errors. The meeting also considered that the

categories M and N description should be amended to reflect that errors were related to a transfer of control message. In this regard, MAAR was requested to review the matter and to coordinate with PARMO and RASMAG.

Agenda Item 4: Review of need to harmonize the current FLOS

4.1 The meeting reviewed the basic principles that had been adopted for the implementation of RVSM in the WPAC/SCS area. This included the following:

a) implement and maintain a fail-safe system of operations;

b) alleviate congestion on international traffic flows;

c) reduce ground delays at major airports;

d) minimize the need for transition of aircraft;

e) enhance the overall management of traffic, in particular major traffic flows; and

f) changes to flight level assignment arrangements to take into account environmental considerations in respect to fuel consumption.

4.2 The meeting agreed that any modification to the FLOS for the WPAC/SCS area should be planned to coincide with the implementation of RVSM in Japan and the Republic of Korea, in order to avoid too many changes to operations in the region. Japan informed the meeting that the implementation of RVSM in Japan and the Republic of Korea could be delayed for 3 to 4 months from the original date of 9 June 2005. Japan would coordinate with the Republic of Korea and confirm the revised implementation date. ICAO would subsequently notify the States and international organizations of the RVSM Task Force.

Philippine's revised FLOS proposal for the WPAC/SCS

4.3 The meeting noted with regret that the Philippines could not attend this meeting. The Philippines had submitted a detailed proposal on changes to the flight level assignment for No-PDC ~~for~~ flight levels in the WPAC/SCS area. This would allow for the adoption of a single alternate FLOS to harmonize with the Bay of Bengal and beyond RVSM airspace and with the proposed RVSM implementation in the Incheon, Naha and Tokyo FIRs where a single alternate FLOS would be adopted.

4.4 The Philippines conducted a study of factors relating to the proposed change to the modified single alternate FLOS. These included:

- implementation of single alternate FLOS in the Bay of Bengal and beyond;

- transition tasks between FIRs in the SCS areas and the Bay of Bengal and beyond; and

- planned implementation of RVSM based on the single alternate FLOS in the Incheon FIR, and Naha and Tokyo domestic airspace in June 2005.

Proposed RVSM flight level assignment for WPAC/SCS area and No-PDC arrangements

4.5 For the purpose of the Philippine study and presentation of the proposal, the ATS routes for the WPAC/SCS area were categorized as follows:

Class I – Parallel routes (uni-directional)

Class II – Routes crossing Parallels (bi-directional)

Class III – Routes not crossing Parallels but crossing class II routes (bi-directional)

Class IV – Routes not crossing Parallels or Class II routes (bi-directional)

4.6 The Philippine study also included level assignment for LSWD.

4.7 In designing the arrangement of levels, the Philippines took the following factors into consideration:

- maintain 6 No-PDC levels for the parallel one-way RNAV routes;
- provide additional No-PDC levels for routes crossing the parallels;
- maintain the 'built-in' vertical separation at the crossing tracks, particularly those outside radar coverage, and with no direct controller-pilot communications;
- provide additional levels for LSWD;
- reduce transition areas/transition tasks; and
- allow for greater flexibility in level adjustments and crossing traffic separation.

4.8 The meeting recognized the considerable effort made by the Philippines to develop this proposal, and agreed that it would be a suitable basis for consideration.

Thailand's revised FLOS proposal for the WPAC/SCS

4.9 The meeting noted the information provided by Thailand on a proposed revised FLOS for the WPAC/SCS area, which was similar to the Philippine's proposal. In addition, in regard to safety issues relating to RVSM operation on A1/P901, Thailand proposed the following considerations to be taken into account by the States concerned:

a) parallel offset route along ATS route A1 (or A1/P901 realignment) to benefit RVSM operational safety and traffic flow capacity for flight operating between Bangkok, Ho Chi Minh, Hong Kong FIRs and Sanya AOR in conjunction with radar service provision;

b) RVSM single alternate FLOS full band to be used with radar provision on A1/P901, as a radar environment could reduce operational risk; and

c) establishing a uni-directional traffic flow on A202 eastbound and A1/P901 westbound.

4.10 IFATCA supported the proposal, but drew attention to restrictions prohibiting some airlines from using A202.

4.11 The Secretariat advised that the Second Meeting of ATS Route Network Review Task Force (ARNR/TF/2) and the SEACG/12 meeting would be held in early 2005. In this regard, the meeting advised Thailand to submit the proposal for A1/P901 to these groups for consideration.

4.12 The meeting reviewed the Philippine and Thailand proposals for flight level assignment in detail, taking into account the comments of the States and international organizations present as summarized above. Recognizing the need to maintain safety, efficiency and regularity of operations in the WPAC/SCS area, the meeting developed a provisional revised plan for the assignment of levels and corresponding No-PDC procedures. The proposed flight allocation and No-PDC levels for each route category as agreed to by the meeting are as follows:

Class I – Both ways: FL310, FL320, FL350, FL360, FL390, FL400

Class II – Eastbound: FL290, FL330, FL370, FL410
Westbound: FL280, FL300, FL340, FL380

Class III – Eastbound: FL310, FL350, FL390
Westbound: FL320, FL360, FL400

Class IV – All flight levels in the RVSM flight level band subject to bilateral agreement between FIRs to avoid 'bunching effect'

4.13 The proposed assignment of levels for the LSWD on the parallel routes agreed to by the meeting are as follows:

Northbound: FL310, FL350, FL390
Southbound: FL320, FL360, FL400

4.14 The proposed flight level allocation schemes are contained in **Appendix D**.

4.15 The meeting agreed that key issues relating to the FLOS for the WPAC/SCS area would have to be addressed before any change could be made. It was emphasized that in accordance with ICAO's safety management provisions in Annex 11, detailed safety assessments would need to be carried out by the States concerned. Also, MAAR would be required to undertake a safety assessment of the proposed FLOS for RVSM operations. In this regard, the traffic sample data previously collected for July 2004 in connection with the updating of the overall safety assessment for RVSM operations in the WPAC/SCS area, as agreed at RVSM/TF/18, would be used.

Action Plan

4.16 The meeting developed an Action Plan on critical activities that had to be completed to facilitate the changes in the FLOS. This would encompass the following:

- Review of operational factors relating to the FLOS
- Review of traffic movement data for the WPAC/SCS area
- Revised assignment of cruising levels
- Revised No-PDC procedures

- Identification of transition areas
- Development of transition procedures
- Completion of simulation trials
- Completion of safety assessments by ATS providers as part of SMS
- Completion of safety assessments by MAAR
- Completion of modeling of traffic flows
- Completion of controller training
- Publication of relevant documents
- Completion of amendments to Letters of Agreement

4.17 Details of the Action Plan including time lines are shown in **Appendix E.**

Agenda Item 5: Implementation Management Considerations

5.1 In developing a task list for the proposed change to the FLOS for the WPAC/SCS, the meeting adopted the task list for RVSM implementation in the area. The updated task list is at **Appendix F**.

Agenda Item 6: Any Other Business

Air Traffic Flow Management Plan for WPAC/SCS

6.1 India requested the meeting to consider the establishment of an air traffic flow management plan (ATFMP) for the WPAC/SCS area. India was of the view that traffic flows across the region could be optimized and better use made of available flight levels, if a more comprehensive system of flight level allocation and updating of traffic movement were put in place. India drew attention to planning presently underway by the BBACG to establish such a system for the Bay of Bengal and westwards traffic flows between South-East Asia and Europe.

6.2 The meeting recognized the benefits of a comprehensive ATFMP, in particular to facilitate collaborative decision making involving all relevant parties. Accordingly, this matter would be referred to the SEACG.

Implementation of 2 NM lateral offsets procedures

6.3 The Secretariat informed the meeting that ICAO had issued revised procedures for lateral offsets 2 NM right of centre line by State letter on 27 August 2004 (ref AN 13/11.6-04/85). Further, attention was drawn to APANPIRG/15 Conclusion 15/8 calling on States to adopt a coordinated approach to implementing the offset procedures in the Asia/Pacific Region simultaneously, and that the Regional Office should coordinate an implementation date coincident with an AIRAC date as soon as practicable.

6.4 IATA emphasized the importance for States to avoid an ad hoc implementation especially over contiguous airspaces, which could lead to confusion for operators.

6.5 The BBACG/15 meeting reviewed this matter and agreed that AIRAC date 25 November 2004 should be the date for implementation. The meeting considered that AIRAC date 20 January 2005 would be preferred as this would allow time for States to prepare and issue AIP Amendments. The Regional Office would undertake coordination with States for the date proposed.

6.6 The meeting agreed to include a draft AIP Amendment for implementation of the 2 NM lateral offset procedures as **Appendix G**.

ICAO seminars

ATM Safety Management Seminar – Beijing

6.7 The Secretariat brought to the attention of the meeting the ATM Safety Management Seminar hosted by the General Administration of Civil Aviation of China (CAAC) scheduled to be held in Beijing, China on 15-19 November 2004. This seminar would address matters related to Annex 11 provisions on ATS safety management. Also it would consider the safety of the operational ATM environment and would cover a wide range of safety related activities, in particular runway safety and human factors.

Regional Language Proficiency Seminar – Tokyo

6.8 The meeting was advised by the Secretariat of the first ICAO regional language proficiency seminar hosted by the Japan Civil Aviation Bureau to be held in Tokyo, Japan from 8 to 10 December 2004. Participants would receive practical advice on how to comply with the ICAO Standards and Recommended Practices concerning language proficiency.

Civil/Military Seminar – Bangkok

6.9 The meeting was informed that the Regional Office was planning to hold a seminar on civil/military coordination on 14-17 December 2004. A seminar on this subject had not been held in this region since 1998, and it was important that civil/military coordination matters were given priority, in light of events in recent times involving military action that closed strategic airspace used by international civil aviation at short notice.

Activities of RASMAG

6.10 In response to a question raised on the duties and responsibilities of RASMAG, the Secretariat advised the meeting that APANPIRG/14, (Conclusion 14/48) established the RASMAG to keep airspace safety monitoring activities under review and to provide support to APANPIRG and States in the Asia/Pacific Region as appropriate. The Group would also serve to bring together the diverse safety monitoring activities and bodies under a unified regional structure. It was envisaged in the initial stages of RASMAG's work that they would assist in the establishment of safety monitoring services for airspaces in the region where these were required, provide an ongoing review of the results of the established monitoring agencies' safety assessments, keep under review implementation of changes to international airspace requiring safety monitoring and safety assessments to be carried out, and to give advice on safety management issues in general as required. RASMAG would report its activities to the ATM/AIS/SAR Sub-Group and APANPIRG.

Future RVSM/TF meetings

6.11 The meeting agreed to the following schedule of meetings for the RVSM/TF:

RVSM/TF/23 (Japan/Republic of Korea)	18-22 October 2004	Bangkok
RVSM/TF/24 (One-year review BOB)	8-12 November 2004	Bangkok
RVSM/TF/25 and Seminar (Japan/Republic of Korea)	7-11 February 2005	Seoul (tentatively)
RVSM/TF/26 (FLOS)	April/May 2005	TBD
RVSM /TF/27 (Japan/Republic of Korea Go/No-Go)	TBD	TBD

7. Closing of the Meeting

7.1 In closing the meeting, Mr. Sydney Maniam thanked all participants for their active participation and efforts in addressing the key issues relating to the FLOS for the WPAC/SCS area. He reminded those concerned that all operational factors must be examined in detail, as part of the ICAO process before any change to the existing FLOS could be made. To this end, he urged all involved to accord a high priority to the completion of the critical activities that had been identified in the action plan. This, he added, would enable the Task Force to assess the situation accurately and decide whether to go ahead with the proposed changes to the FLOS.

7.2 Mr. Maniam also expressed appreciation to the ICAO Regional Office and its personnel for the excellent and professional support provided before and during the meeting. Their efforts had contributed significantly to the successful completion of the meeting.

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

NUMBER	AGENDA	WORKING PAPERS	PRESENTED BY
WP/1	1	Provisional Agenda	Chairperson/ Secretariat
WP/2	2, 4	Review of the Modified Single Alternate Flight Level Orientation Scheme in the Western Pacific/South China Sea Area	Secretariat
WP/3	2, 4	Review of the Modified Single Alternate FLOS	Philippines
WP/4	5	Review of the Task List	Secretariat
WP/5	4, 5	Flight Level Orientation Scheme for Western Pacific and South China Sea Areas	Singapore
WP/6	2, 5	Summary of Discussions and Recommendations from IFATCA 8th North East Asia Traffic Forum Meeting	IFATCA
WP/7	2	IATA's Position on the Proposal to change the South China Sea FLOS	IATA
WP/8	4	Review of the South China Sea FLOS and its Benefits	IATA
WP/9	2	Type of FLOS	IFALPA
WP/10	4	Air Traffic Management Consideration	Thailand
WP/11	4	Summary of Large Height Deviation Reports in connection with the RVSM Implementation in Asia Region	MAAR

NUMBER	AGENDA	INFORMATION PAPERS	PRESENTED BY
IP/1	-	List of Working Papers (WPs) and Information Papers (IPs)	Secretariat
IP/2	2, 4	RVSM Implementation Reports – Modified Single Alternate Flight Level Orientation Scheme (FLOS)	Malaysia

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AGENDA

Agenda Item 1: Adoption of Agenda

Agenda Item 2: Operational Considerations

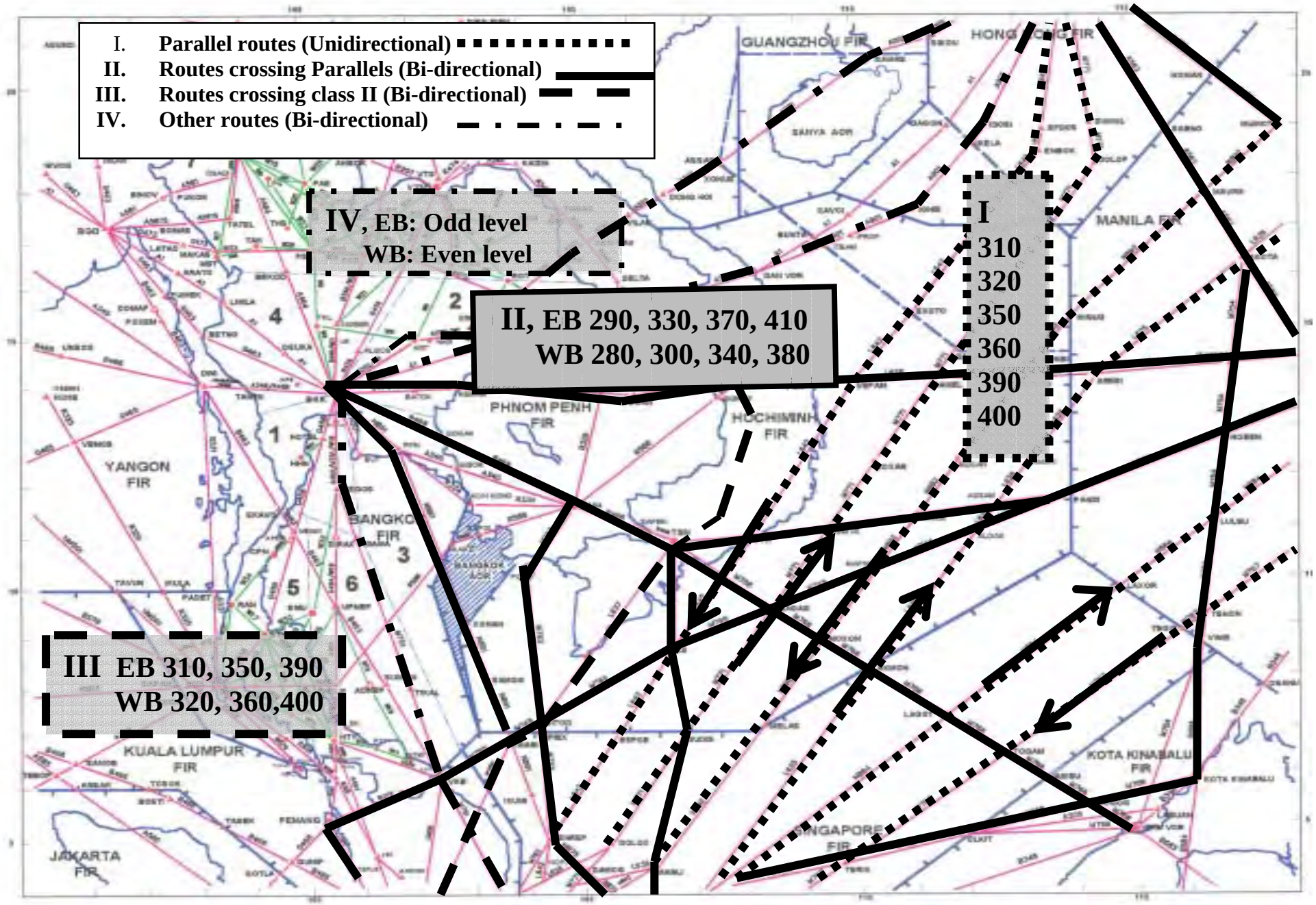
- Review of current RVSM operations using the modified single and single alternate FLOS~~s~~
- Transition issues relating to the use of the modified single and single alternate FLOS
- Review of simulation exercises on proposed change(s) to existing FLOS

Agenda Item 3: Review of safety assessments by MAAR on proposed change(s) to existing FLOS

Agenda Item 4: Review of the need to change the current FLOS for the SCS area

Agenda Item 5: Implementation management considerations

Agenda Item 6: Any other business


I. Parallel routes (Unidirectional)
II. Routes crossing Parallels (Bi-directional)
III. Routes crossing class II (Bi-directional)
IV. Other routes (Bi-directional)
IV, EB: Odd level
WB: Even level
II, EB 290, 330, 370, 410
WB 280, 300, 340, 380
I
310
320
350
360
390
400
III EB 310, 350, 390
WB 320, 360,400
GUANGZHOU FIR
HONG KONG FIR
MANILA FIR
PHNOM PENH FIR
HOCHIMINH FIR
YANGON FIR
BANGKOK FIR
KUALA LUMPUR FIR
KOTA KINABALU FIR
SINGAPORE FIR
JAKARTA FIR

REVIEW OF FLIGHT LEVEL ORIENTATION SCHEME FOR WESTERN PACIFIC AND SOUTH CHINA SEA AREA

SN	Activity	Start Date	End Date	Agency Responsible	Remarks
1	Review operational factors relating to FLOS for Western Pacific/South China Sea area	20 Sep 04	24 Sep 04	States	
2	Review actual traffic movement over the Western Pacific/South China Sea area	Sep 04	30 Nov 04	States IATA	
3	Develop revised FLOS for Western Pacific/South China Sea area taking into account: (a) Assignment of levels (b) No-PDC procedures (c) Capacity enhancements (d) Regularity of traffic flows (Subject to changes as necessary)	20 Sep 04	On-going	State ICAO to coordinate with China, Lao PDR, Philippines and Viet Nam,	
4	Identify transition areas	1 Jan 05	30 Apr 05	States	
5	Develop transition procedures	1 Jan 05	30 Apr 05	States	
6	Complete simulation trials to include: (a) Revised assignment of levels	1 Jan 05	30 Apr 05	States	

SN	Activity	Start Date	End Date	Agency Responsible	Remarks
	(b) No-PDC procedures (c) Transition procedures (d) Coordination procedures (e) Large scale weather deviation procedures				
7	Complete safety assessment for provision of ATS in FIR/AOR concerned	1 Jan 05	30 April 2005	States	
8	Complete safety assessment for Western Pacific/South China Sea area: (a) Revised assignment of levels (b) No-PDC procedures (c) Transition areas and procedures	1 Jan 05	30 April 2005	MAAR	
9	Review results of simulation trials done by States	9 May 05	13 May 05	States IATA IFALPA IFATCA	
10	Review results of safety assessments done by: (a) States (b) MAAR	9 May 05	13 May 05	States IATA IFALPA IFATCA	
11	Complete modeling of traffic flows in Western Pacific/South China Sea area	TBD	TBD	TBD	

SN	Activity	Start Date	End Date	Agency Responsible	Remarks
12	Agree and finalize: (a) Revised assignment of levels (b) No-PDC procedures (c) Transition areas (d) Transition procedures (e) Capacity enhancements (f) Issues on regularity of traffic flows (g) Large scale weather deviation procedures	9 May 05	13 May 05	States IATA IFALPA IFATCA	
13	Complete controller training on changes to RVSM operations	May 05	(Note: Target date RVSM Implementation in Incheon / Naha / Tokyo FIRs)	States	
14	Publish AIP Supplement/Amendment/NOTAM as appropriate: (a) Revised assignment of levels (b) No-PDC procedures (c) Transition areas (d) Transition procedures (e) Capacity enhancements (f) Issues on regularity of traffic flows (g) Large scale weather deviation procedures		AIRAC date in Jul 05	States	

SN	Activity	Start Date	End Date	Agency Responsible	Remarks
15	Finalize amendments to LOA	Apr 05	Jun 05	States	
16	Publish trigger NOTAM	TBD	(Note: Target date RVSM Implementation in Incheon / Naha / Tokyo FIRs)	States	
17	Implement: (a) Revised assignment of levels (b) No-PDC procedures (c) Transition areas (d) Transition procedures (e) Capacity enhancements (f) Issues on regularity of traffic flows (g) Large scale weather deviation procedures	TBD	(Note: Target date RVSM Implementation in Incheon / Naha / Tokyo FIRs)	States	

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Status of the Western Pacific/South China Sea RVSM Implementation Plan Task List

ID	Description	Start	Finish	Resource Names	Status
1	**Identify Operational Need**	**10-Apr-00**	**18-Jan-02**		
2	Agree on operational concept for South East Asia traffic flow	10-Apr-00	14-Sep-01	ATC/WG, RVSM Task Force	Completed
3	**Conduct Cost Benefits Analysis**	**10-Apr-00**	**4-May-01**		
4	Conduct preliminary benefit cost analysis	10-Apr-00	1-Sep-00	APARMO	Completed
5	Update preliminary benefit cost analysis	1-Sep-00	12-Jan-01	APARMO	Completed
6	Finalize benefit cost analysis	1-Sep-00	4-May-01	APARMO	Completed
7	**Safety Assessment**	**10-Apr-00**	**30-Sep-02**		
8	Review available summary data (non-compliant aircraft, aberrant aircraft etc)	10-Apr-00	1-Jan-02	SAM/WG, RVSM Task Force	Completed
9	Examine history of height keeping errors related to ATC clearances and assess possible RVSM impact	10-Apr-00	1-Jan-02	SAM/WG, RVSM Task Force	Completed
10	Confirm RVSM risk model assumptions/parameters are consistent with airspace where RVSM is to be applied	10-Apr-00	4-May-01	SAM/WG, RVSM Task Force	Completed
11	Conduct simulations to predict occupancy after RVSM implementation	1-Aug-00	4-May-01	SAM/WG, RVSM Task Force	Completed
12	Collect weather and turbulence data for analysis	10-Apr-00	31-Aug-02	SAM/WG, RVSM Task Force	Completed
13	Provide monthly reports on large height deviations to APARMO/MAAR	10-Apr-00	Ongoing	ATS Providers, Users	
14	Collect traffic movement data for APARMO/MAAR	1-Jan-03	Ongoing	ATS Providers	
15	Develop Policy and Procedures for investigation and identification of non-approved aircraft operating at RVSM FLs	1-Aug-00	4-May-01	SAM/WG, OPS/AIR/WG, ATC/WG, RVSM Task Force	Completed
16	Examine the need to conduct a safety assessment of transition areas	1-Aug-00	18-Jan-02	SAM/WG, ATC/WG	Completed
17	Examine the need to conduct a safety assessment in aircraft moving from exclusionary to non-exclusionary airspace where RVSM is applied	1-Aug-00	12-Jan-01	SAM/WG, RVSM Task Force	Completed
18	Recommend decision-making aids to support safety assessment	1-Aug-00	14-Sep-01	SAM/WG, RVSM Task Force	Completed
19	Supplement document containing detailed procedures and analyses used for safety assessment	1-Jan-01	14-Sep-01	SAM/WG, RVSM Task Force	Completed
20	Determine the overall procedure to be followed by APARMO in requesting Mode C data from monitored flights	1-Aug-00	12-Jan-01	ICAO Regional Office, RVSM Task Force	Completed
21	Prepare letter requesting establishment of process for obtaining Mode C data from ATS providers	1-Aug-00	12-Jan-01	ICAO Regional Office	Completed
22	**Feasibility Analysis**	**10-Apr-00**	**25-Sep-02**		
23	Examine the operational factors and workload associated with Phase I implementation	10-Apr-00	18-Jan-02	ATC/WG, RVSM Task Force	Completed
24	Examine the operational factors and workload associated with Phase II implementation	10-Apr-00	25-Sep-02	ATC/WG, RVSM Task Force	Completed
25	**Determination of Requirements (airborne & ground systems)**	**10-Apr-00**	**25-Sep-02**		
26	Determine need for additional GMUs	1-Aug-00	4-May-01	SAM/WG, RVSM Task Force	Completed
27	Evaluate the feasibility of NAMS as a ground-based height monitoring unit	10-Apr-00	12-Jan-01	JCAB	Completed
28	States assess the impact of RVSM implementation on controller automation systems (e.g., equipment suffixes) and plan for upgrades/modifications	10-Apr-00	18-Jan-02	States under Phase I implementation	Completed
29	States assess the impact of RVSM implementation on controller automation systems (e.g., equipment suffixes) and plan for upgrades/modifications	10-Apr-00	25-Sep-02	States under Phase II implementation	Completed

Status of the Western Pacific/South China Sea RVSM Implementation Plan Task List

ID	Description	Start	Finish	Resource Names	Status
30	**Aircraft & Operator Approval Requirements**	**10-Apr-00**	**31-Oct-02**		
31	Promulgate the operational approval process	10-Apr-00	31-Oct-02	OPS/AIR/WG, RVSM Task Force	Completed
32	Notify States when significant changes occur to RVSM documentation	10-Apr-00	31-Oct-02	OPS/AIR/WG, RVSM Task Force	Completed
33	**Perform Rulemaking (if required)**	**10-Apr-00**	**31-Oct-02**		
34	Recommend State airspace regulatory documentation for Phase I implementation	10-Apr-00	21-Feb-02	States under Phase I implementation	Completed
35	Recommend State airspace regulatory documentation for Phase II implementation	10-Apr-00	31-Oct-02	States under Phase II implementation	Completed
36	**Perform Necessary Industry & International Co-ordination**	**10-Apr-00**	**21-Oct-02**		
37	Develop transition plan from APARMO to MAAR	14-Sep-01	31-Oct-03	FAA, AEROTHAI	Completed
38	Establish target implementation date	10-Apr-00	Ongoing	RVSM Task Force	Completed
39	Develop a regional RVSM informational campaign	10-Apr-00	21-Feb-02	OPS/AIR/WG, RVSM Task Force	Completed
40	Distribute operational approval checklist and references	10-Apr-00	14-Apr-00	OPS/AIR/WG, RVSM Task Force	Completed
41	Report to ATS/AIS/SAR/SG	17-Jun-02	21-Jun-02	RVSM Task Force Chair	Completed
42	Process Doc 7030 amendment	10-Apr-00	14-Jan-02	ICAO Regional Office	Completed
43	Provide benefit-cost assessment for Doc 7030 amendment	4-May-01	14-Sep-01	SAM/WG, APARMO	Completed
44	Develop regional RVSM Guidance Material	10-Apr-00	25-Jun-00	RVSM Task Force	Completed
45	Provide comments on draft regional RVSM Guidance Material	10-Apr-00	30-May-00	ATC/WG, OPS/AIR/WG, SAM/WG	Completed
46	Publish regional RVSM Guidance Material	15-Oct-00	30-Nov-00	ICAO Regional Office	Completed
47	Publish advance AIC	28-Aug-00	18-May-01	States under Phase I implementation	Completed
48	Publish advance AIC	10-Jan-00	16-May-02	States under Phase II implementation	Completed
49	Distribute draft copy of the AIP Supplement to WG members for comment	4-May-01	1-Jul-01	ATC/WG, OPS/AIR/WG	Completed
50	Distribute final copy of the AIP Supplement to WG members for use in developing State AIP Supplements	1-Jul-01	1-Aug-01	ATC/WG, OPS/AIR/WG	Completed
51	Publish AIP Supplement containing RVSM policy/procedures	8-Jan-01	4-Oct-01	States under Phase I implementation	Completed
52	Publish AIP Supplement containing RVSM policy/procedures	8-Jan-01	10-Jul-02	States under Phase II implementation	Completed
53	Review inter-facility coordination procedures	4-May-01	30-Nov-01	States under Phase I implementation	Completed
54	Review inter-facility coordination procedures	4-May-01	25-Sep-02	States under Phase II implementation	Completed
55	Provide guidelines on the areas that should be included in Letters of Agreement to facilitate introduction of RVSM	12-Jan-01	14-Sep-01	ICAO Regional Office	Completed
56	Finalize changes to Letters of Agreement	4-May-01	21-Jan-02	States under Phase I implementation	Completed
57	Finalize changes to Letters of Agreement	4-May-01	25-Sep-02	States under Phase II implementation	Completed
58	Finalize changes to Letters of Agreement	10-Jan-02	15-Feb-02	Cambodia	Completed

Status of the Western Pacific/South China Sea RVSM Implementation Plan Task List

ID	Description	Start	Finish	Resource Names	Status
59	Publish Trigger NOTAM	11-Feb-02	11-Feb-02	States under Phase I implementation	Completed
60	Publish Trigger NOTAM	21-Oct-02	21-Oct-02	States under Phase II implementation	Completed
61	**Approval of Aircraft & Operators**	**10-Apr-00**	**18-Jan-02**		
62	Establish approved operations readiness targets	10-Apr-00	14-Sep-01	IATA, ATC/WG, RVSM Task Force	Completed
63	Assess readiness	1-Dec-01	18-Jan-02	IATA, OPS/AIR/WG	Completed
64	**Develop Pilot & ATC Procedures**	**10-Apr-00**	**7-Jun-02**		
65	Develop procedures for handling non-compliant aircraft (inc ferry & mntce) in ATS documentation	1-Sep-00	6-Sep-01	ATC/WG	Completed
66	Promulgate Procedures for Aircraft Found to be Non-Compliant through GMS Monitoring	10-Apr-00	4-May-01	OPS/AIR/WG, RVSM Task Force	Completed
67	Publish Procedures for aircraft found to be non-compliant through GMS monitoring on the RVSM website	4-May-01	15-Oct-01	APARMO	Completed
68	Review application of tactical offset procedure to mitigate the effects of wake turbulence and TCAS alerts	1-Jan-01	18-Jan-02	ATC/WG, OPS/AIR/WG, RVSM Task Force	Completed
69	Revise wake turbulence offset procedures to apply to multiple TCAS traffic alerts	10-Apr-00	1-Sep-00	OPS/AIR/WG, RVSM Task Force	Completed
70	Review weather and contingency procedures for applicability under RVSM	10-Apr-00	31-Dec-01	OPS/AIR/WG, ICAO Regional Office	Completed
71	Consider the need to develop weather contingency procedures (typhoons, etc) for addition to the Guidance Material	8-Jan-01	31-Dec-01	ICAO Regional Office, RVSM Task Force	Completed
72	Review the standard phraseology developed in the EUR Region and consider its applicability for Asia/Pacific	30-Apr-01	14-Sep-01	RVSM TF Chairperson, ATC/WG	Completed
73	Coordinate with the FANS Interoperability Teams to ensure that phraseology is contained in CPDLC message sets	14-Sep-01	31-Mar-03	OPS/AIR/WG Chair	
74	Process Doc 7030 amendment to weather and contingency procedures	10-Apr-00	31-Mar-03	ICAO Regional Office	
75	Review draft Random Strategic Lateral Offset Procedures developed for NAT and develop procedures as required	4-May-01	14-Sep-01	OPS/AIR/WG, ATC/WG	Completed
76	Consider establishment of regional RVSM website for dissemination of RVSM information	10-Apr-00	31-May-02	ICAO Regional Office	Completed
77	Establish a separate section on the RVSM website for the Western Pacific/South China Sea and publish appropriate documentation	4-May-01	21-Feb-02	United States	Completed
78	Include on the ICAO Asia Pacific Office website a link to the FAA RVSM website	18-Jan-02	31-May-02	ICAO Regional Office	Completed
79	Publish appropriate ATC policy & procedures on Western Pacific/South China Sea RVSM website	10-Apr-00	21-Feb-02	ATC/WG Chair	Completed
80	Identify transition areas and procedures	28-Aug-00	6-Sep-01	States under Phase I implementation	Completed
81	Identify transition areas and procedures	28-Aug-00	29-Jul-02	States under Phase II implementation	Completed
82	Conduct simulations for Phase I implementation	28-Aug-00	18-Jan-02	States under Phase I implementation	Completed
83	Conduct simulations for Phase II implementation	28-Aug-00	25-Sep-02	States under Phase II implementation	Completed
84	Report on simulation activity for Phase I implementation	28-Aug-00	18-Jan-02	States under Phase I implementation	Completed
85	Report on simulation activity for Phase II implementation	28-Aug-00	25-Sep-02	States under Phase II implementation	Completed
86	Continue to recommend that RVSM operators adopt TCAS V.7	10-Apr-00	Ongoing	OPS/AIR/WG, RVSM Task Force	
87	Establish procedures for non-approved acft to transit RVSM airspace	10-Apr-00	6-Sep-01	OPS/AIR/WG, ATC/WG, RVSM Task Force	Completed

Status of the Western Pacific/South China Sea RVSM Implementation Plan Task List

ID	Description	Start	Finish	Resource Names	Status
88	Develop mutually acceptable ATC procedures for non-approved State acft to transit RVSM airspace	1-Sep-00	6-Sep-01	ATC/WG, RVSM Task Force	Completed
89	Consider procedures for suspension of RVSM	28-Aug-00	6-Sep-01	ATC/WG, RVSM Task Force	Completed
90	Liaise with State defense authorities regarding "due regard" military operations	12-Jan-01	18-Jan-02	States under Phase I implementation	Completed
91	Liaise with State defense authorities regarding "due regard" military operations	12-Jan-01	1-Oct-02	States under Phase II implementation	Completed
92	Coordinate with Aeronautical Chart providers to establish a review process for significant chart revisions prior to publication	17-Apr-00	25-Jun-01	OPS/AIR/WG Chair	Completed
93	**Pilot & ATC Training**	**10-Apr-00**	**31-Oct-02**		
94	Provide ATC training documentation to States based on past experience	1-Sep-00	27-Apr-01	ICAO, RVSM Task Force Chairperson	Completed
95	Update the pilot training package for TCAS to include TCAS Chg 7	10-Apr-00	12-Jan-01	OPS/AIR/WG, RVSM Task Force	Completed
96	Conduct local RVSM training for air traffic controllers for Phase I implementation	1-Aug-01	21-Feb-02	States under Phase I implementation	Completed
97	Conduct local RVSM training for air traffic controllers for Phase II implementation	1-Aug-01	31-Oct-02	States under Phase II implementation	Completed
98	**Perform System Verificiation**	**10-Apr-00**	**31-Oct-02**		
99	Height keeping performance monitoring needed to undertake initial safety analysis	31-Aug-00	31-Aug-01	APARMO and SAM/WG, RVSM Task Force	Completed
100	Provide representative traffic movement data to APARMO	10-Apr-00	15-Dec-00	States	Completed
101	Provide representative traffic movement data to APARMO	15-Nov-01	14-Dec-01	States	Completed
102	Undertake initial safety analysis	10-Apr-00	14-Sep-01	SAM/WG, RVSM Task Force	Completed
103	Establish program for collection of large height deviations	10-Apr-00	12-Jan-01	OPS/AIR/WG, SAM/WG, RVSM Task Force	Completed
104	Review reports of large height deviations	8-Jan-01	Ongoing	OPS/AIR/WG, SAM/WG	
105	**Final Implementation Decision**	**1-Dec-01**	**1-Oct-02**	**RVSM Task Force**	
106	Review aircraft altitude-keeping performance and operational errors	10-Apr-00	Ongoing	SAM/WG, OPS/AIR/WG	
107	ATS State documentation complete for Phase I implementation	10-Apr-00	18-Jan-02	States under Phase I implementation	Completed
108	ATS State documentation complete for Phase II implementation	10-Apr-00	25-Sep-02	States under Phase II implementation	Completed
109	Publish Implementation Decision NOTAM/AIP Supplement	1-Dec-01	22-Oct-01	States	Completed
110	Complete readiness assessment for Phase I implementation	1-Dec-01	18-Jan-02	APARMO	Completed
111	Complete readiness assessment for Phase II implementation	18-Jan-02	25-Sep-02	APARMO	Completed
112	Complete safety analysis for Phase I implementation	1-Dec-01	18-Jan-02	APARMO	Completed
113	Complete safety analysis for Phase II implementation	18-Jan-02	1-Oct-02	APARMO	Completed
114	**Declare Initial Operational Capability for Phase I implementation**	**21-Feb-02**	**21-Feb-02**	States under Phase I implementation	Completed
115	**Declare Initial Operational Capability for Phase II implementation**	**31-Oct-02**	**31-Oct-02**	States under Phase II implementation	Completed
116	Set Southeast Asia post-implementation Follow Up Meeting	14-Jan-02	18-Jan-02	RVSM Task Force	Completed

Status of the Western Pacific/South China Sea RVSM Implementation Plan Task List

ID	Description	Start	Finish	Resource Names	Status
117	**Monitor System Performance**	**21-Feb-02**	**21-Feb-03**		
118	Perform Follow-On Monitoring	21-Feb-02	Ongoing	OPS/AIR/WG, SAM/WG	
119	Report large height deviations to MAAR	21-Feb-02	Ongoing	ATS Providers, Users	
120	**Declare Full Operational Capability**	**31-Oct-03**	**31-Oct-03**	**RVSM Task Force**	
121	APANPIRG ATS/AIS/SAR/SG (Bangkok)	26-Jun-00	30-Jun-00	RVSM Task Force Chair	Completed
122	Task Force/8 (Location TBD) - Asia Focus	28-Aug-00	1-Sep-00	RVSM Task Force	Completed
123	APANPIRG/11 (Bangkok)	2-Oct-00	6-Oct-00		Completed
124	Task Force/9 (Bangkok) - Asia Focus	8-Jan-01	12-Jan-01	RVSM Task Force	Completed
125	RVSM Seminar/4 (Kuala Lumpur) - Asia/Middle East Focus	25-Apr-01	27-Apr-01	RVSM Task Force	Completed
126	Task Force/11 (Kuala Lumpur) - Asia Focus	30-Apr-01	4-May-01	RVSM Task Force	Completed
127	APANPIRG ATS/AIS/SAR/SG (Bangkok)	25-Jun-01	29-Jun-01	RVSM Task Force	Completed
128	Task Force/12 (Denpasar) - Asia Focus	10-Sep-01	14-Sep-01	RVSM Task Force	Completed
129	APANPIRG/12 (Bangkok)	20-Aug-01	24-Aug-01	RVSM Task Force	Completed
130	Task Force/13 (Singapore) - Asia Focus	14-Jan-02	18-Jan-02	RVSM Task Force	Completed
131	Task Force/14 (Bangkok) - 90 Day Western Pacific/South China Sea Follow-up	30-May-02	31-May-02	RVSM Task Force	Completed
132	Task Force/15 (Bangkok) - Bay of Bengal and Beyond Focus	3-Jun-02	7-Jun-02	RVSM Task Force	Completed
133	Special ATS Coordination Meeting (Manila) - Western Pacific/South China Sea Focus	29-Jul-02	31-Jul-02	RVSM Task Force	Completed
134	Task Force/16 (Bangkok) - Western Pacific/South China Sea Focus	23-Sep-02	25-Sep-02		Completed
135	Joint Meeting with MID East RVSM Task Force (Abu Dhabi)	19-Oct-02	20-Oct-02	RVSM Task Force (ASIA/PAC and MID)	Completed
136	RVSM Seminar/5 (Bangkok)	15-Jan-03	17-Jan-03	RVSM Task Force	Completed
137	Task Force/17 (Bangkok) - Bay of Bengal and Beyond Focus	20-Jan-03	24-Jan-03	RVSM Task Force	Completed
138	Task Force/18 (Bangkok) - 90 day and 1 Year Western Pacific/South China Sea Follow-Up	30-Jun-03	4-Jul-03	RVSM Task Force	Completed
139	Task Force/19 (Bangkok) - Bay of Bengal and Beyond Focus	30-Jun-03	4-Jul-03	RVSM Task Force	Completed
140	Special ATS Coordination Meeting (Bangkok) - RVSM Transition Procedures	3-Sep-03	5-Sep-03	RVSM Task Force	Completed
141	Task Force/20 (New Delhi) - Bay of Bengal and Beyond Focus	27-Oct-03	31-Oct-03	RVSM Task Force	Completed
142	Task Force/21 (Bangkok) - 90 day Bay of Bengal and Beyond Follow Up	8-Mar-04	12-Mar-04	RVSM Task Force	Completed
143	Special ATS Coordination Meeting (Bangkok) - RVSM Implementation in the Incheon, Naha and Tokyo FIRs	5-Jul-04	7-Jul-04	RVSM Task Force	Completed
144	Task Force/22 (Bangkok) - Review of Flight Level Orientation Schemes	20-Sep-03	24-Sep-04	RVSM Task Force	
145	Task Force/23 (Bangkok) - Japan and Republic of Korea Focus	18-Oct-04	22-Oct-04	RVSM Task Force	

Status of the Western Pacific/South China Sea RVSM Implementation Plan Task List

ID	Description	Start	Finish	Resource Names	Status
146	Task Force/24 - 1 Year Bay of Bengal and Beyond Follow-Up (TBD)	8-Nov-04	12-Nov-04	RVSM Task Force	
147	Task Force/25 - Japan and Republic of Korea Focus (TBD)	7-Feb-05	11-Feb-05	RVSM Task Force	
148	Task Force/26 - Review of Flight Level Orientation Schemes (TBD)	Apr/May 05	Apr/May 05	RVSM Task Force	
149	Task Force/27 - Japan and Republic of Korea Focus (TBD)	TBD	TBD	RVSM Task Force	

STATE LETTER

REVISED GUIDELINES ON THE USE OF STRATEGIC LATERAL OFFSETS

Tel.: +1 (514) 954-8219 ext. 6711

Ref.: AN 13/11.6-04/85 27 August 2004

Subject: Revised guidelines on the use of strategic lateral offsets

Action required: As indicated in paragraphs 5 and 6

Sir/Madam,

1. I have the honour to invite your attention to the attached revised guidelines on the use of strategic lateral offsets as a safety measure to reduce the risk of collision in the event of loss of vertical separation. On 3 August 2004, the Commission approved the circulation of these guidelines to States and international organizations.

2. You will recall that the use of lateral offsets has been the subject of two previous State letters, AN 13/11.6-00/96 of 3 November 2000 and AN 13/11.6-02/21 of 31 May 2002. The guidelines contained in these letters were, in both cases, based on safety studies undertaken by the Separation and Airspace Safety Panel (SASP). Work has continued in the panel to evaluate the safety of the application of strategic lateral offsets in circumstances other than those permitted by the previous guidelines. As a result of these studies, it has been possible to develop revised guidelines which are less restrictive than the guidelines contained in the previous two State letters.

3. The previous guidelines restricted the offset to 1 NM to the right of track, and limited the use of offsets to global navigation satellite system (GNSS) equipped aircraft. The further safety analyses showed that, in oceanic and remote continental airspace under the conditions specified in the revised guidelines, the application of offsets of up to 2 NM right of track and the use of offsets by all suitably equipped aircraft were acceptable.

4. Annex 2 — *Rules of the Air*, Chapter 3, paragraph 3.6.2.1.1, states: "Unless otherwise authorized or directed by the appropriate air traffic control unit, controlled flights shall, in so far as practicable: a) when on an established ATS route, operate along the defined centre line of that route; or b) when on any other route, operate directly between the navigation facilities and/or points defining that route". As a consequence, the application of strategic lateral offsets in controlled airspace requires authorization by the appropriate air traffic services (ATS) authority. This can be achieved by initial publication of the approved offset procedures by NOTAM, followed subsequently by their incorporation in the Aeronautical Information Publication (AIP).

5. As it is desirable that offset procedures be standardized to the maximum extent possible, in order to reduce the likelihood of pilots inadvertently applying procedures different from those specified for the airspace in which they are operating, it is recommended that these strategic lateral offset procedures be implemented on a regional basis, after coordination between all States involved. Action should also be taken to incorporate the procedures and details of the airspace where the procedures will be applied in the *Regional Supplementary Procedures* (Doc 7030).

6. As the studies undertaken by SASP showed that the application of these procedures would result in an overall increase in the safety of operations in remote and oceanic airspace, all States who are responsible for the provision of air traffic services in such airspace are urged to authorize the use of strategic lateral offsets in accordance with these guidelines.

Accept, Sir/Madam, the assurances of my highest consideration.

Taïeb Chérif
Secretary General

Enclosure:
Revised guidelines on the use of lateral
Offsets and the effect on airspace safety

ATTACHMENT to State letter AN 13/11.6-04/85

REVISED GUIDELINES ON THE USE OF STRATEGIC LATERAL OFFSETS AND THE EFFECT ON AIRSPACE SAFETY

1. INTRODUCTION

1.1 These guidelines are based on studies carried out by the ICAO Separation and Airspace Safety Panel (SASP) to address airspace safety issues associated with pilots applying lateral offsets when operating aircraft with automatic offset tracking capability. The intent of offset procedures is to reduce the risk of collision due to a loss of planned vertical separation. The impact of the use of lateral offsets on overall airspace safety has been evaluated and SASP has carried out a technical analysis of safety-related issues. These guidelines are based on the results of this analysis and are provided to assist States and regional planning groups to identify air traffic services (ATS) routes and airspace where authorization of the use of strategic lateral offsets would enhance existing levels of safety.

1.2 The SASP studies took into account the effects of lateral offsets on the safety of parallel routes with a 60 NM route spacing where compliance with the minimum navigation performance specification (MNPS) is required; with a 50 NM route spacing where RNP 10 is specified; and a 30 NM route spacing where RNP 4 is specified, as well as in crossing track situations where navigational accuracies ranging from RNP 4 to RNP 20 were assumed.

1.3 In accordance with Annex 2 — *Rules of the Air*, intentional deviation from the centre line of an ATS route requires authorization. Annex 2, Chapter 3, paragraph 3.6.2.1.1, states:

> "Unless otherwise authorized or directed by the appropriate air traffic control unit, controlled flights shall, in so far as practicable:
>
> a) when on an established ATS route, operate along the defined centre line of that route; or
>
> b) when on any other route, operate directly between the navigation facilities and/or points defining that route."

1.4 As a consequence of this, the implementation of strategic lateral offset procedures requires authorization by the appropriate ATS authority.

2. AIRCRAFT NAVIGATION PERFORMANCE AND AIRSPACE SAFETY

2.1 ICAO separation minima, including lateral route spacings, are based on the assumption that aircraft operate on the centre line of a route. In general, unauthorized deviations from this requirement could compromise safety. However, the use of highly accurate navigation systems (such as global navigation satellite system (GNSS)) reduces the magnitude of lateral deviations from the route centre line and consequently increases the probability of a collision if a loss of vertical separation between aircraft on the same route occurs.

2.2 By using offsets to provide lateral spacing between aircraft, the effect of this reduction in random lateral deviations can be mitigated, thereby reducing the risk of collision. These guidelines provide information on how such a strategic lateral offset procedure should be implemented.

2.3 As the application of strategic lateral offsets, limited in magnitude and direction as prescribed in these guidelines, has the potential to reduce the risk of collision due to a loss of planned vertical separation, ATS authorities are encouraged to authorize the use of such offsets in oceanic and remote continental airspace.

3. IMPLEMENTATION CONSIDERATIONS FOR ATS AUTHORITIES

3.1 The following considerations shall be taken into account when planning authorization of the use of strategic lateral offsets in a particular airspace:

a) strategic lateral offsets shall only be authorized in en-route oceanic or remote continental airspace. Where part of the airspace in question is within radar coverage, transiting aircraft should normally be allowed to initiate or continue offset tracking;

b) strategic lateral offsets may be authorized for the following types of routes (including where routes or route systems intersect):

1) uni-directional and bi-directional routes; and

2) parallel route systems where the spacing between route centre lines is not less than 55.5km (30 NM);

c) in some instances it may be necessary to impose restrictions on the use of strategic lateral offsets, e.g. where their application may be inappropriate for reasons related to obstacle clearance;

d) these offset procedures should be implemented on a regional basis after coordination between all States involved;

e) the routes or airspace where application of strategic lateral offsets is authorized, and the procedures to be followed by pilots, shall be promulgated in aeronautical information publications (AIPs); and

f) air traffic controllers shall be made aware of the airspace within which strategic lateral offsets are authorized.

4. LATERAL OFFSET PROCEDURES TO BE APPLIED BY PILOTS

4.1 In the application of strategic lateral offsets, pilots should take the following points into consideration:

a) offsets shall only be applied in airspace where this has been approved by the appropriate ATS authority;

b) offsets shall be applied only by aircraft with automatic offset tracking capability;

c) the decision to apply a strategic lateral offset is the responsibility of the flight crew;

d) the offset shall be established at a distance of one or two nautical miles to the right of the centre line relative to the direction of flight;

e) the strategic lateral offset procedure has been designed to include offsets to mitigate the effects of wake turbulence of preceding aircraft. If wake turbulence needs to be avoided, one of the three available options (centreline, 1 NM or 2 NM right offset) shall be used;

f) in airspace where the use of lateral offsets has been authorized, pilots are not required to inform air traffic control (ATC) that an offset is being applied; and

g) aircraft transiting areas of radar coverage in airspace where offset tracking is permitted may initiate or continue an offset.

DRAFT AIP AMENDMENT

IMPLEMENTATION OF STRATEGIC 2 NM LATERAL OFFSET PROCEDURES

X. STRATEGIC LATERAL OFFSETS IN OCEANIC AIRSPACE

X.1 Offsets are only applied in the oceanic (or remote continental) airspace in the XXX FIR.

X.2 Offsets are applied only by aircraft with automatic offset tracking capability.

X.3 The following requirements apply to the use of the offset:

a. The decision to apply a strategic lateral offset is the responsibility of the flight crew.

b. The offset shall be established at a distance of one or two nautical miles to the right of the centre line relative to the direction of flight.

c. The strategic lateral offset procedure has been designed to include offsets to mitigate the effects of wake turbulence of preceding aircraft. If wake turbulence needs to be avoided, one of the three available options (centreline, 1NM or 2NM right offset) shall be used.

d. In airspace where the use of lateral offsets has been authorized, pilots are not required to inform air traffic control (ATC) that an offset is being applied.

e. Aircraft transiting areas of radar coverage in airspace where offset tracking is permitted may initiate or continue an offset.

— END —