INTERNATIONAL CIVIL AVIATION ORGANIZATION

ASIA AND PACIFIC OFFICE

REPORT OF THE TWENTY-FIRST MEETING OF THE ICAO REDUCED VERTICAL SEPARATION MINIMUM IMPLEMENTATION TASK FORCE (RVSM/TF/21)

BANGKOK, THAILAND

8 – 12 MARCH 2004

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

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1.1 Introduction

1.1.1 The Twenty-first Meeting of the Reduced Vertical Separation Minimum Implementation Task Force (RVSM/TF/21) was held at the Kotaite Wing of the ICAO Asia and Pacific Regional Office, Bangkok, Thailand from 8 to 12 March 2004.

1.2 Attendance

1.2.1 The meeting was attended by 42 participants from 12 States: Australia, China, India, Indonesia, Malaysia, Maldives, Myanmar, Pakistan, Republic of Korea, Singapore, Thailand, and Viet Nam, and 3 International Organizations: 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 (Standards), Civil Aviation Authority of Singapore (CAAS), Singapore, continued as Chairman of the Task Force. Mr. David J. Moores, Regional Officer ATM from the ICAO Asia and Pacific Regional Office, Bangkok served as the Secretary for the meeting.

1.3.2 Mr. Yusfandri Gona, Head of Performance & Flight Test Section, Directorate General Air Communication (DGAC) Indonesia, and Mr. Ron Rigney, Operations Manager (International Activities), Airservices Australia, continued as Chairman of the Aircraft Operations & Airworthiness Work Group (OPS/AIR/WG) and of the ATC Operations Work Group (ATC/WG), respectively. Mr. Nopadol Sangngurn, Senior Vice-President [Training], AEROTHAI, was the Chairman of the Safety & Airspace Monitoring Work Group (SAM/WG).

1.4 Opening of the Meeting

1.4.1 Mr. Sydney Maniam opened the meeting and welcomed the delegates to the 21st Meeting of the ICAO RVSM Implementation Task Force. He highlighted that the purpose of the meeting was to conduct a 90-day review of the implementation of RVSM in the Bay of Bengal and Beyond. To this end, the meeting would assess the overall application of RVSM in the area and address any difficulties encountered by operators and ATS providers. The meeting would also review the safety oversight of RVSM operations in the area to ensure that the required level of safety would continue to be maintained.

1.4.2 Mr. Maniam added that although additional levels were available with the introduction of RVSM, preliminary assessments done at the Special India-Pakistan Review Meeting in January 2004 indicated that the full benefits of RVSM had not been realised. Some measures had been put in place as part of an operational trial involving India, Malaysia, Pakistan, Singapore and Thailand. The meeting would review the effectiveness of these measures with a view to fine tune the RVSM operational plan for the Bay of Bengal and Beyond. He urged all concerned to continue to work to enhance the management of traffic in the area, in particular the westbound flows from Asia to Europe.

1.4.3 Mr. David Moores on behalf of Mr. Lalit Shah, Regional Director of the ICAO Asia and Pacific Regional Office, welcomed the participants. He congratulated the States, ATS providers, and international organizations involved in the implementation effort for the successful introduction of RVSM in the Bay of Bengal and Beyond area on 27 November 2003 in conjunction with the Middle East Region. The Council of ICAO on reviewing the APANPIRG/14 Report on 27 February 2004, congratulated APANPIRG on the successful implementation of RVSM. Also, the Air Navigation Commission in its review, recognized that there would be considerable safety, operational,

economic, environmental and passenger service benefits accrued as a result of RVSM implementation.

1.4.4 Notwithstanding the successful completion of RVSM implementation, Mr. Moores pointed out the importance of States and airspace users to continue to focus on the safety requirements of RVSM operations, which included the on-going monitoring programme. This would require States to continue full cooperation with the Monitoring Agency for the Asia Region (MAAR), the regional RVSM monitoring agency appointed by APANPIRG. In addition, the Regional Airspace Monitoring Advisory Group (RASMAG) established by APANPIRG/14, would hold its first meeting on 26-30 April 2004, thereby providing on-going safety oversight of all monitoring activities in the region.

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 Fourteen (14) Working Papers and five (5) 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 presented by the Chairman, amended Agenda Item 4 to the *Safety and airspace oversight issues*, and adopted the revised agenda for the meeting. This agenda is at **Appendix C** to the Report.

Agenda Item 2: Operational Issues

Implementation reports of States

2.1 The meeting was updated by States concerned on the implementation of RVSM in the Bay of Bengal and Beyond on 27 November 2003.

Bangladesh

2.2 Bangladesh, who had advised ICAO of their regrets at not attending the meeting provided information on RVSM implementation on 27 November 2003 in the Dhaka FIR. As reported to the RVSM/TF/20 meeting held at Delhi, India on 27-31 October 2003, the Civil Aviation Authority of Bangladesh completed its RVSM implementation arrangements on schedule in line with the ICAO RVSM Implementation Plan.

2.3 RVSM had been successfully implemented in the Dhaka FIR from FL290 to FL410 inclusive. The transition from to CVSM to RVSM went smoothly without any reported problems.

2.4 Although Bangladesh was late in starting its RVSM programme, a concerted effort had been made and all arrangements were successfully put in place. With the assistance of the ICAO Asia/Pacific Office and the generous support of the Civil Aviation Authority of Singapore (CAAS), RVSM training for controllers had been completed in a timely manner. The assistance given by CAAS was highly appreciated.

2.5 Bangladesh would continue its full cooperation for the RVSM monitoring programme and required information would be reported to the Monitoring Agency for the Asia Region (MAAR). In this regard, the traffic movement data for the period 19-25 January 2004 had been provided to MAAR, and data for the period 16-22 February 2004 would be submitted shortly. There were NIL Large Height Deviation (LHD) reports since implementation.

India

2.6 India reported that RVSM was implemented in the Indian FIRs (viz, Chennai, Delhi, Kolkata and Mumbai) as planned on 27 November 2003. The transition from CVSM to RVSM was smooth.

2.7 India informed the meeting that ATS units were assisting with the transition from RVSM to CVSM across the Kabul FIR by regulating traffic flows at FL300 and FL320 as one level and FL340 and FL360 as another level, when exiting via SAMAR and TIGER.

2.8 The meeting noted the traffic movement data presented by India which indicated that ground delays were still experienced at New Delhi for westbound departures.

2.9 With regard to safety of RVSM operations, India expressed the need to include non-RVSM approved aircraft in the on-going safety monitoring programme. The meeting agreed that MAAR should pursue this matter with the States and operators concerned.

Indonesia

2.10 Indonesia reported that the RVSM AIP Supplement was published in September 2003 and RVSM was implemented on 27 November 2003. RVSM was applied from FL290 to FL410 between aircraft operating on the EMARSSH routes and from FL310 to FL410 for traffic on other routes.

2.11 Indonesia informed the meeting that since the implementation of RVSM, there were no reports of large height deviations and airworthiness approvals were also proceeding smoothly. Indonesia was participating in the on-going RVSM monitoring programme and agreed with India with regard to the post implementation safety monitoring programme.

Maldives

2.12 Maldives reported that RVSM was implemented in the Male FIR on 27 November 2003. The transition was smooth, except for some minor coordination problems with adjacent ACCs, which had been resolved bi-laterally.

Malaysia

2.13 Malaysia, who had planned to attend the meeting, informed ICAO of their regrets at having to withdraw and they provided an update on Malaysia's concerns following the implementation of RVSM over the Bay of Bengal Area and Beyond.

2.14 RVSM was successfully implemented in the Kuala Lumpur FIR between FL290 to FL410 inclusive on 27 November 2003. Though the implementation had been reasonably smooth, there were areas that required further discussions to smoothen the implementation even further. Some of these concerns had already been identified and discussed during the BBACG/14 meeting, namely:

a) inability of B777s to cruise at M0.83 at FL280 on L759;

b) inability or unwillingness of certain operators to climb to FL320 under the no-PDC arrangement; and

c) conditions imposed on Kuala Lumpur and Singapore ACCs under the ATFMP for FL300.

2.15 The meeting noted Malaysia's concerns and these were taken into account by the ATC/WG.

Myanmar

2.16 Myanmar reported that RVSM was implemented in the Yangon FIR on 27 November 2003. There were several issues that had to be addressed with respect to transition arrangements from RVSM to CVSM and the provision of air-ground communications.

2.17 Myanmar informed the meeting that although Letters of Agreement had been signed with adjacent FIRs, some difficulties were encountered on the transition of aircraft from Kunming FIR to Yangon FIR. Although a NOTAM had been issued, Myanmar was still experiencing problems with westbound traffic on the assignment of correct levels.

2.18 Myanmar also advised of ATS coordination problems encountered between Yangon and Kolkata ACCs during peak traffic periods (1630-1830 UTC) when additional levels were not available for westbound traffic flows.

Nepal

2.19 Nepal had informed ICAO that they regretted not being able to attend the meeting. Information on the status of their implementation had not been provided.

Pakistan

2.20 The Civil Aviation Department of Pakistan who had planned to attend the meeting, informed ICAO of their regrets at having to withdraw. RVSM had been implemented as planned on 27 November 2003 and was operating smoothly. They provided information on the availability of FL280 which is presented under paragraph 2.53 below.

Singapore

2.21 Singapore reported that although the implementation of RVSM was smooth, ground delays were still experienced by westbound departures to Europe. An operational trial to optimize the use of RVSM levels for westbound departures from Bangkok, Kuala Lumpur and Singapore was in progress since February 2004. The meeting agreed that Thailand, Malaysia and Singapore should continue to work together to improve the assignment of RVSM levels for westbound traffic flows and consequently alleviate the ground delays experienced at international airports

Sri Lanka

2.22 Sri Lanka who was unable to attend the meeting, provided information on RVSM implementation in the Colombo FIR on 27 November 2003. RVSM had been successfully implemented at 0200 UTC in exclusive airspace utilizing a single alternate flight level orientation scheme (FLOS) to harmonize with the adjoining FIRs of Male, Chennai, Indonesia, and Melbourne. Flight Plans were received and dispatched indicating RVSM status, and RVSM flight levels within relevant fields of the ICAO flight plan format.

2.23 Change over to RVSM from CVSM took place without any reported problems and was completed by 0230 UTC. RVSM had been operationally beneficial, in particular to reduce crossing problems. The additional flight levels in the oceanic control airspace improved efficiency and was effective in reducing traffic delays.

2.24 There were no large height deviation reports for the last 18 months except for December 2003 when there were six reports of LHD Category D related to altitude deviation due to moderate turbulence reported by pilots. Also, in January 2004 there were two reports of LHD Category D. In all cases pilots were re-cleared to alternative levels without incident. Details of the monthly LHD reports and traffic movement data for the periods: 19 to 25 January 2004 and 16 to 22 February 2004 were sent to MAAR as requested by the RVSM Task Force.

Thailand

2.25 Thailand reported that RVSM was successfully implemented in the Bangkok FIR on 27 November 2003. With the application of RVSM, the flow of domestic traffic and international arrivals had improved significantly. In addition, Bangkok ACC was able to better manage the westbound traffic flows on L507 and P646.

2.26 Thailand informed the meeting that there were problems with operations on other routes, including R468, L301 and L759. These related mainly to the inflexible use of flight levels, especially the No-PDC arrangements for westbound traffic. The inefficient use and application of Mach Number Technique for aircraft operating on L759 also caused some problems in the operational air traffic management, which would be further coordinated with the concerned ATSUs.

2.27 In regard to a flexible approach to flight level allocation, Thailand considered that the No-PDC application should not be applied on a 24 hours basis. Adopting a flexible application, all available flight levels should be sorted and applied appropriately to cater for the traffic demand at any given period of the day. To facilitate a more dynamic and tactical approach to ATM, coordination methods among the ATSUs in terms of equipment and procedures should be improved.

2.28 Thailand highlighted difficulties faced with transitional arrangements for eastbound traffic exiting the Bay of Bengal area where a single alternate FLOS was applied, into the South China Sea area where the modified single alternate FLOS was applied.

2.29 In regard to the overall application of Air Traffic Flow Management (ATFM), the meeting noted Thailand's concern about increased traffic levels and the impact on ATC workload. Thailand informed the meeting that under current ATFM arrangements, FL300 was released to traffic operating on L759 at various times specified in the operational trial arrangements. However, as problems were still being experienced, Thailand recommended that discussions involving Thailand, Malaysia and Singapore should include India (Kolkata ACC) and Myanmar (Yangon ACC) to resolve the issues as soon as possible.

IATA

2.30 IATA advised the meeting that the implementation of RVSM in the Bay of Bengal and Beyond was successful. Overall, international operations had been improved and in some domestic airspace, there was better use of levels. However, in certain areas and at specific times of the day, problems were encountered, especially for westbound international traffic flows and flights departing from New Delhi, intending to join the westbound flows

2.31 IATA highlighted that the problems that were currently experienced were directly related to inefficient and/or inflexible use of levels. In this regard, the meeting was reminded that No-PDC procedures were originally adopted to overcome coordination difficulties between ATS units. The wide-spread use of No-PDC procedures had led to a rigid system of level assignment, IATA suggested that a review be conducted on the need to continue with the existing No-PDC arrangements for traffic operating in the Bay of Bengal area. In this context, an Air Traffic Flow Management system should be considered for the area.

IFALPA

2.32 IFALPA informed the meeting that the introduction of RVSM was a positive step toward the management of traffic in the Bay of Bengal and Beyond. IFALPA echoed the views of IATA on the problems encountered by westbound international traffic and the need for better use of RVSM levels.

IFATCA

2.33 IFATCA's perspective was that RVSM had been successfully implemented in the Bay of Bengal and Beyond. IFATCA stressed that the interface arrangements on the FLOS used in the Bay of Bengal and the South China Sea areas should be reviewed to ensure that controller workload would not be increased. IFATCA also informed the meeting that Japan was planning to implement domestic RVSM on 9 June 2005 using the single alternate FLOS.

ATM operational enhancements

2.34 IATA presented a paper reviewing the air traffic management situation over the Bay of Bengal, Indian Continental airspace and the Kabul FIR in the context of long haul flights from South East Asia to Western Europe, following RVSM implementation. All the parties involved with the planning, and execution of this project, were congratulated on a job well done.

2.35 With RVSM implementation, flight levels had doubled leading to overall easing of traffic congestion, and assignment of more economic levels to both overflying and Indian domestic traffic. However, there were a number of outstanding issues for example, longitudinal separation requirements for A466 and N644, flight level transition and communications in the Yangon FIR, air traffic management in the Bay of Bengal and overall optimization of the airspace capacity, which needed to be addressed to improve the overall traffic flow.

Longitudinal separation for traffic on N644 and A466

2.36 IATA reminded the meeting that, in regard to longitudinal separation for traffic on N644 and A466**,** at RVSM/TF/20 (October 2003), it had been decided at an earlier meeting in view of Pakistan's reservations over possible ATC problems in transitioning aircraft from RVSM levels to only two CVSM levels in Kabul FIR (FL280 was not available and FL310 and FL350 being the only practical levels for most of the long haul aircraft), traffic on these two routes would be regarded as being on a single route. A concession was given to traffic departing from Delhi to enter the Pakistan FIR at FL280 with a longitudinal separation of 5 minutes between such traffic and the overflying traffic, and no more than two aircraft were on the same route. Given that ATS service providers have had three months experience with RVSM operations, this arrangement should be reviewed and restrictions along these routes relaxed. With FL280 now available in the Kabul FIR, the capacity had increased to 3 useable levels on each of the two routes making a total capacity of 36 slots per hour. The meeting agreed to refer this matter to Pakistan for their consideration.

Use of L759/L750 and M770/A466 (or N644)

2.37 .The meeting reviewed existing trial arrangements for aircraft operating on A466 (or N644) to route via M770 instead of L759. This was to free up slots on L759/L750 which would otherwise be occupied by flights routing via A466 or N644 which could route via M770 instead. . The meeting discussed the possibility of making this a permanent arrangement. IATA informed the meeting that they had no objection to making permanent the current trial requesting operators to fly particular routes. However, if the intention was to fix the route operators could flight plan, they would need to coordinate with the operators who were affected and provide feedback on the proposal through ICAO.

Air traffic management plan

2.38 IATA recalled that traffic departing from some Southeast Asian airports continue to suffer lengthy delays from time to time. Available statistics indicated that traffic departing Singapore airport suffer lengthy delays on occasions when traffic bunched on a specific route because of

unfavorable winds and weight limitations. In particular, delays were significant when flights bunched on L759. Various measures to avoid such bunching had to date not led to significant improvement, as airlines had found it possible to flight-plan away from this preferred route only on rare occasions. Further downstream towards Kabul FIR, possible bunching of flights at the entry points could potentially result in re-routings. The availability of FL280 in the Kabul FIR had temporarily eased the situation by increasing the route capacity by 30 percent. The opening of P628 ASOPO/KANDAHAR route would provide a viable and attractive alternative to L759 and divert some of the traffic there. However, ultimately, with the inevitable increase of air traffic, in IATA's view a comprehensive air traffic management plan for the whole of the Bay of Bengal was the only viable long term solution.

2.39 IFALPA similarly expressed its concern with the ground delays, as such delay could become a safety issue.

2.40 IATA suggested that control over the slots through the Kabul FIR could be managed by the relevant ATS units by coordinating the flow, or through an automated system such as the Dynamic Oceanic Tracking System (DOTS) operated by the Federal Aviation Administration (FAA) of the United States for ATS routes over the Pacific Ocean. In view of the coordination that would be required, IATA considered that an automated system would offer a more efficient system as it was airline regulated. In this regard, if States agreed to a slot allocation scheme as a way to ease the current traffic flow not just over the Bay of Bengal but also to take care of departing flights out of Indian and Pakistani airports through Kabul FIR, IATA was prepared to review the potential of any automated system available.

2.41 The meeting appreciated the detailed information provided by IATA on the air traffic management issues they considered required further improvement in the Bay of Bengal area. These were referred to the ATC/WG for review and further information is provided below.

2.42 In regard to the DOTS, the meeting recognized the value of using an automated ATM system to enhance and optimize management of traffic. Since such a system would also be useful in other oceanic airspace environments in the region, this issue should be considered by the ATM/AIS/SAR Sub Group. IATA was requested to bring this matter to the attention of this Sub Group.

Transition procedures and communications problems in the Yangon FIR

2.43 IATA reminded the meeting that flights transiting the Yangon FIR continue to experience communications problems with Yangon ACC both in the northern and southern segments of the Yangon FIR. The implementation of a procedure for Mandalay Approach to relay for Yangon ACC provided some relief, but the intermittent operation meant that a substantial percentage of aircraft were not able to communicate with Yangon ACC for long periods while transiting the FIR. This was highly unsatisfactory in view of westbound aircraft operating between LINSO and Lashio VOR (LSO) in the Yangon FIR being required to transition from CVSM to RVSM levels. Also, eastbound aircraft west of LINSO were required to transition to China Metric levels. Experience had shown that while transitions between China Metric and ICAO CVSM levels were not a problem, radio communications with Yangon ACC were not always possible.

2.44 The Meeting was also reminded that the IATA IFBP procedures had been in force in the area since 29 August 2003. IATA stated that this situation must not continue for an indefinite period and all avenues must be explored to find a workable solution to ensure the safety of flights in the area. In regard to the RVSM transition procedures between the Yangon and Kunming FIRs, IATA considered that from a safety perspective, the best option was for transition from China Metric to RVSM and vice versa to be carried out in Kunming FIR where radio communications were assured.

2.45 IFALPA stated that it was dissatisfied by the communications deficiencies in the Bay of Bengal area, it urged the meeting to effect a solution to the problem.

2.46 The meeting agreed that it would be preferable for China to take responsibility for the transition procedures. However, recognizing that China was not in a position to implement the RVSM transition procedures in the Kunming FIR at this stage, the meeting agreed that the present arrangements should continue, and that contingency procedures should be provided when air-ground radio communications were not available.

2.47 The meeting reviewed existing procedures for transition of aircraft from CVSM to RVSM levels between Kunming and Yangon ACCs. The meeting noted the difficulties faced by operators with regard to the lack of continuous availability of air-ground communications with Yangon ACC (or Mandalay Approach). The meeting agreed that the procedures should be improved to cater for situations when there were no communications with Yangon ACC (or Mandalay Approach). IATA proposed a revised system for the transition of aircraft from CVSM to RVSM as shown in **Appendix D**. China and Myanmar concurred with the proposed arrangements. Myanmar would issue a NOTAM (**Appendix E** refers).

2.48 The meeting recognized the longstanding difficulties Myanmar had experienced with its communications infrastructure. The Secretariat advised the meeting that in recent discussions with Myanmar, plans to upgrade the communications for their air traffic services were being progressed. There were positive signs that these may be overcome in the short term. ICAO would be conducting a further high level mission to Myanmar in March 2004 to address these issues with the Myanmar Government.

Connecting RK to Kandahar

2.49 IATA expressed its appreciation to all concerned for the considerable effort made to extend P628 from ASOPO to RK (Rahim Yar Khan) to make this route a viable alternative to the frequently congested L759. IATA especially commended India and Pakistan for their cooperation to approve and implement the new route segment. The meeting endorsed IATA's comments and was pleased to note that further extension of the route segment RK to Kandahar direct to V390 would reduce the track distance by 100 NM was being progressed. In this regard, the Secretariat informed the meeting that the ICAO Middle East Office had followed-up on the outcome of the Special Coordination Meeting between India and Pakistan held on 7-9 January 2004 and coordinated with Afghanistan, Pakistan and the Coalition Forces to obtain approval for the route. Good progress had been made and approval granted by Afghanistan and Pakistan. The Coalition Forces were considering the matter and was expected to make a decision whether to implement the route in the near term. The meeting recognized that with the availably of this direct segment, considerable benefits would be achieved in relieving the congestion on L759.

2.50 The meeting further recognized the on-going effort by ICAO, States and IATA to seek the cooperation of the Coalition Forces to release Afghanistan airspace for international civil overflights. Further, the meeting urged ICAO to continue to give priority for further work with the Coalition Forces to approve the RK-Kandahar segment.

Dhaka FIR communication requirements

2.51 IATA presented a paper proposing that States review their ATC and pilot coordination procedures in the area surrounding the Dhaka FIR. IATA requested the meeting to note that the Dhaka FIR was surrounded by Kolkata FIR, except for a short segment in the southeast which shares a common boundary with the Yangon FIR for about 75 NM. Four international routes traverse

the Dhaka FIR, namely L507, B465/A599, G463 and A201. The transit times on these routes in the Dhaka FIR was of short duration ranging from 4 to 27 minutes. In the worst case scenario, an aircraft could fly through 4 FIRs within 27 minutes, or 215 NM.

2.52 At present communication procedures were published on Jeppesen charts and in the Bangladesh and Indian AIPs, which were not consistent leading to confusion for operators. IATA drew attention to the PANS-ATM, Doc 4444, paragraph 10.4.2.4.1, which states: *"where non-radar separation minima are being applied, the transfer of air-ground communications of an aircraft from the transferring to the accepting ATC unit shall be made five minutes before the time at which the aircraft is estimated to reach the common control area boundary, unless otherwise agreed between the two ATC units concerned."*

2.53 In regard to the Dhaka FIR communication procedures, to meet the various ATS communication requirements, pilots could experience the situation where they were required to transmit to three ACCs simultaneously. This situation was exacerbated by the fact that both air/ground and ground/ground communications were frequently patchy making it difficult for pilots to accomplish. Further complications arose from the RVSM transition procedures from CVSM to RVSM levels and vice versa between Lashio and LINSO.

2.54 IATA requested that the current procedures and practices be reviewed and streamlined, taking into consideration cockpit workload, current air-ground and ground-ground communications difficulties, and provisions in PANS-ATM (Chapter 10, paragraph 10.4.2.4.5 refers).

2.55 The meeting noted the information provided by IATA and recognized that the communication requirements imposed by Bangladesh, India and Myanmar should be rationalized and the situation reviewed by the States concerned, as there appeared to be an unreasonable communication burdened imposed on pilots. As this matter was outside the scope of the agenda for this meeting, it was agreed to refer the matter to the States concerned and the ATM/AIS/SAR/13 meeting on 28 June-2 July 2004 for follow-up.

Pakistan introduction of FL280

2.56 Pakistan had advised by e-mail received during the meeting that FL280 had been implemented in concurrence with India since 6 March 2004. The LOA was updated and aircraft operating on ATS route N644, A466 and L750 were accepted at SAMAR and TIGER at FL280 between 1930 to 2230 UTC to meet the time restriction enforced on the above ATS routes in the Kabul FIR. The departures from Delhi, Lahore and Islamabad were accommodated between time 2231 to 1929 UTC as per the arrangements agreed between India and Pakistan for transition of air traffic through Kabul FIR at the last RVSM Task Force meeting held at Delhi on 20-24 October 2004.

2.57 With these improvements delays would be minimized if the aircraft departing from Singapore and Kuala Lumpur elected to operate via ATS routing P628. The direct routing from RK-Kandahar was expected to be approved shortly by the Coalition Forces, and this would further reduce the flying time.

2.58 The meeting expressed appreciation to Pakistan for the action taken, which would provide additional capacity and flexibility for operators' flight planning. Operationally, improvements would be immediately felt and traffic delays would be reduced to some degree, but in the longer term, especially with continued traffic growth, there was a need to give priority to establishing a comprehensive ATFM Plan.

Review of No PDC-Procedure

2.59 The meeting recognized the need to further enhance the allocation of all RVSM flight levels during the night time peak traffic period for traffic operating over the Bay of Bengal. The meeting agreed that there needs to be a more flexible approach to sharing of levels based on the actual traffic demand. Singapore and Thailand agreed to coordinate with India, Malaysia, Myanmar, IATA, and IFALPA, and based on traffic statistics and operational requirements, to develop appropriate arrangements. Further, the meeting emphasized that prior to implementing any changes, the agreement of all parties concerned was required. To this end, a Special Coordination Meeting involving India, Malaysia, Myanmar, Singapore, Thailand and IATA would be held as soon as possible, to finalize details of the procedures.

2.60 The meeting also agreed that the changes in the assignment of RVSM levels should be introduced as part of an operational trial from 15 April 2004. The operational trial would last for 2 months and each State concerned would issue a NOTAM on the revised procedures.

2.61 India also highlighted the need for AIP amendments to be published on the revised assignment of RVSM levels. The meeting agreed that the AIP amendments should be issued on AIRAC Date 15 April 2004 subject to agreement being reached by all parties concerned.

Airspace Classification for RVSM Operations

2.62 ICAO informed the meeting that it was necessary for States that had implemented RVSM to classify the airspace according to the ICAO Classification of Airspace. The meeting agreed that States involved should review the airspace where RVSM was being applied and classify the airspace as appropriate.

Agenda Item 3: Issues Relating to Airworthiness and Operation of Aircraft

3.1 The Airworthiness and Operations Work Group considered the issues related to airworthiness and operations of aircraft. The meeting reviewed the report of the Work Group.

RVSM Minimum Monitoring Requirements

3.2 The meeting reviewed the draft updated Pacific RVSM Minimum Monitoring Requirements (MMR) as issued by the Pacific Approvals Registry and Monitoring Organization (PARMO) on 4 February 2004. The meeting noted some differences from existing minimum monitoring requirements on the subject of Monitoring Category (Experience and Non-experience Airlines); Aircraft Type (Group and Non-group Aircraft); Monitoring Time Limitation and Minimum Total Fleet for Monitoring. The meeting noted that some States of the Bay of Bengal and Beyond area were in the process of performing GMU height-keeping performance monitoring. In this regard, the meeting considered that GMU monitoring needs to be conducted by the States concerned with reference to existing requirements applicable as adopted by the ICAO Asia/Pacific RVSM/TF, and approved by APANPIRG.

3.3 The meeting was informed that the PARMO had recently proposed adoption of an MMR similar but not identical to that listed in the Draft RMA Handbook. In this regard, the meeting emphasized the need for consistency in applying global monitoring requirements. MAAR planned to adopt the global monitoring requirements when the RMA handbook was finalized and published by ICAO.

Monitoring Program for Height-Keeping Performance

3.4 The meeting noted that most domestic and regional operators of some States required their aircraft to be monitored. India expressed a concern that there were a limited number of GMUs available in the Asia Region, and this would require operators to wait for monitoring to be carried out by MAAR. The meeting noted that most of the fleets were issued their airworthiness approval before RVSM implementation on 27 November 2003, which would expire within the next 2 (two) months. In this regard and in order to avoid the suspension of the airworthiness approval, the meeting suggested that the airlines and the States concerned requiring GMU monitoring services, should closely coordinate with MAAR.

3.5 The Work Group meeting reviewed the monitoring programme for aircraft height-keeping performance and large height deviation. The Work Group reported there had been no LHDs reported due to aircraft system failure and adverse weather in the Bay of Bengal and Beyond area since RVSM implementation on 27 November 2003.

3.6 The Work Group reviewed the report presented to the meeting by MAAR on the Potential Non-Compliant Aircraft in the RVSM airspace of the Asia Region. The Group considered that non-compliant aircraft operating in RVSM airspace would significantly affect the operational safety risk and thus the total collision risk. In this regard, the meeting highlighted that it remained the responsibility of the State authority, ATS provides and airlines to prevent Non-Compliant Aircraft operated from entering RVSM airspace.

3.7 The meeting emphasized that it was important for the authorities responsible for RVSM approvals to ensure that the registry of RVSM approved aircraft was kept up-to-date. This would facilitate ATC verifying aircraft suspected not to be RVSM approved.

Large Scale Weather Deviation

3.8 The meeting reviewed a query made by IFALPA on large scale weather deviation procedures contained in the Jeppesen manual for the Bay of Bengal and Beyond area in regard to the weather deviation procedure, which specified that aircraft deviating due to weather, climb or descend 500 ft. In this regard, the meeting confirmed that the contingency procedure for large scale weather deviation in the Bay of Bengal should be in line with the procedure applied in South China Sea of 300 ft climbing or descending, and that the correct procedures had been incorporated within the respective State AIP SUP documents. The meeting agreed that Jeppesen should be informed of this matter and the Secretariat would take follow-up action.

Continuous Airworthiness Program and Monitoring

3.9 The meeting considered that the continuous airworthiness and post implementation height-keeping performance monitoring programme should be included in the State Authority Procedures and the Airline Manual. The meeting noted that the post implementation of aircraft height-keeping performance included sampling by GMU. The frequency of GMU monitoring should be established and harmonized on a global basis under the ICAO RVSM monitoring programme.

Agenda Item 4: Safety and Airspace Oversight Issues

Introduction of New MAAR Administrative Team and Updated Website

4.1 The meeting was informed that, due to the revision of the AEROTHAI organizational structure, the new administrative team was assigned to run the MAAR operations. In this regard, the

new MAAR coordinator is Mr. Polawat Chootai. All contact addresses remain unchanged. Thus, the new MAAR points of contact are summarized as follows:

Contact Person:	Mr. Polawat Chootai
E-Mail:	maar@aerothai.co.th polawat.ch@aerothai.co.th
Telephone:	+66-2-287-8154
Fax:	+66-2-287-8155
Address:	Monitoring Agency for Asia Region (MAAR) 102 Ngamduplee Tungmahamek, Sathorn, Bangkok 10120 Thailand
Website:	www.aerothai.co.th/maar

4.2 The meeting was also informed of the updated MAAR website, which contains more detailed information regarding the approval process, height-keeping performance monitoring programme, and RVSM approval records of aircraft registered with the concerned States in the Asia Region.

Review of Safety Oversight

4.3 The meeting reviewed the safety oversight for the post implementation of RVSM in the Bay of Bengal area presented by MAAR. The meeting took note of the report on the summary of the LHD reports, which occurred in the Bay of Bengal between October 2003 and January 2004, as shown in Table 1.

Month-Year	No. of "Non-NIL" LHD Reports Received	Duration of LHD (Minutes)
Oct 03	0	0
Nov 03	2	9
Dec 03	6	0
Jan 04	2	0
Total	**10**	**9**

Table 1: Summary of Non-Nil LHD Reports for the RVSM Implementation in BOB

4.4 Based on the summary of LHD reports, the meeting was informed that out of the 10 Non-Nil LHD reports, 8 occurrences reported by the Colombo ACC for the months of December 2003 and January 2004 involved weather-related deviations. These events caused changes in flight level which were acknowledged by the Colombo ACC. Therefore, the duration of LHD (in minute) of these occurrences was considered to be zero.

4.5 Based on the traffic sample data collected between 15 December 2002 and 15 February 2003, and the summary of the LHD reports, the technical and operational risks for the RVSM implementation in the Bay of Bengal were 1.83×10^{-9} and 1.25×10^{-9} fatal accidents per flight hour, respectively. The total risk attributed to all causes was 3.41×10^{-9}. The trends of collision risk estimates for each month using the appropriate 12-month interval of LHD reports received by MAAR are shown in Figure 1. Therefore, the meeting concluded that the risk estimates of both technical and total risks still satisfied the agreed TLS value of no more than 2.5×10^{-9} and 5.0×10^{-9} fatal accidents per flight hour due to the loss of a correctly established vertical separation standard of 1,000 ft and to all causes, respectively.

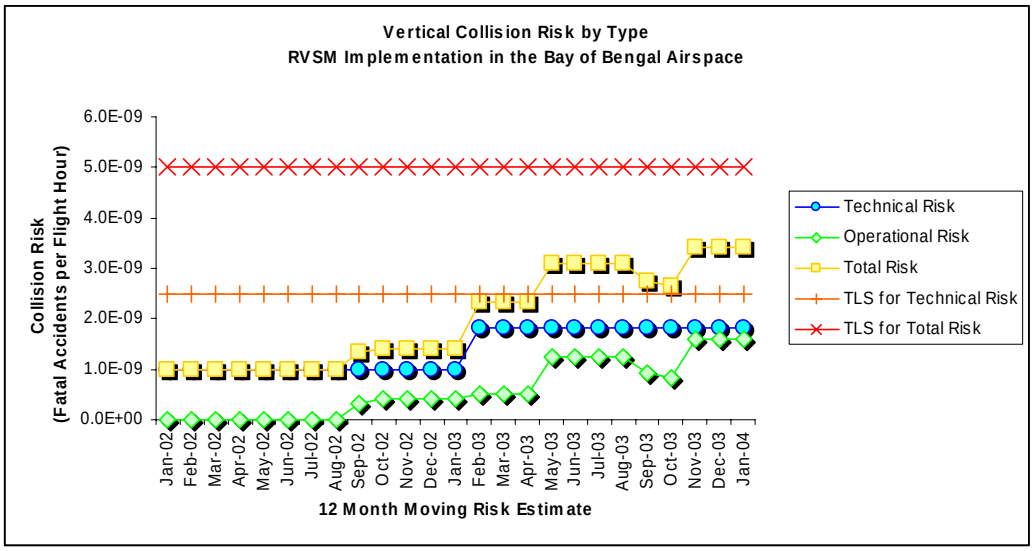

Figure 1: Trends of Risk Estimates for the Post RVSM Implementation in BOB

4.6 In light of the above, the meeting expressed concern over the increasing large height deviations but recognized that the overall collision risk was still well within the established TLS. The meeting requested MAAR to study potential causes of LHDs and to inform States as appropriate.

4.7 The meeting emphasized that all States must continue to provide MAAR with monthly reports on large height deviations, including a 'NIL' occurrence report. The LHD reports should be sent to MAAR via email or fax by the first week of the following month. The meeting noted that two States had provided verbal updates of NIL reports and requested that the States concerned follow-up with written reports to be submitted to MAAR on the format provided by MAAR.

4.8 The meeting was reminded that it would be necessary to collect the new traffic sample data to accurately represent the traffic volume for the 1-year review after RVSM was implemented in Bay of Bengal. Therefore, MAAR requested a one month traffic sample data for the month of **July 2004**. In order to allow sufficient time to prepare for the 1-year safety oversight, the traffic sample data should be submitted to MAAR via email **no later than 31 August 2004**. The template for traffic sample data collection is provided in **Appendix F**.

4.9 The meeting took note of the request from MAAR for the RVSM approval records of ALL aircraft registered with the concerned States in Asia Region as presented in WP/13. The paper addressed the importance for an RMA to maintain the updated information of the approval status of aircraft. Therefore, MAAR requested all States concerned to submit the new/changed RVSM approval records as soon as possible using the Form F2 or F3 as appropriate (**Appendix G**).

4.10 The meeting was informed of the concern raised by MAAR regarding the issue of non-compliant aircraft operating in the RVSM airspace from the DCA, Lao PDR. Based on the report, MAAR had checked the RVSM approval records with all available sources, and found that the majority of the aircraft with undetermined RVSM approval status were registered in China. Subsequently, MAAR had requested China to submit the RVSM approval status, but still had not received the requested information. Therefore, MAAR sought assistance from ICAO in obtaining the required RVSM approval status of aircraft registered in China.

4.11 To assist States concerned in the Asia Region, the template for reporting the non RVSM compliant aircraft is provided in **Appendix H**.

4.12 The meeting discussed the continuous monitoring for post RVSM implementation in the Asia Region and the need for the long-term monitoring requirements. In this regard, the meeting acknowledged the need for the development of the global long-term monitoring plan, which requires the consultation of ICAO and related RMAs.

4.13 The meeting urged that regions who had implemented or are planning to implement RVSM, when making changes to procedural requirements, such as minimum monitoring requirements which had global implication, should only do so as agreed through ICAO. The meeting noted that variations in the MMR already exist between the Asia/Pacific, North Atlantic, Middle East and European Regions.

Agenda Item 5: Implementation Management Issues

5.1 The meeting noted that the RVSM implementation plan had been executed in the main efficiently and in a timely manner. Two States had experienced difficulties training their air traffic controllers and assistance was arranged through ICAO with CAAS to provide the training, which was successfully completed in good time to meet the implementation date. Transition issues related to the Kunming and Yangon FIRs remained a matter of concern primarily due to the inadequate air-ground communications provided by Myanmar. Interim arrangements were put in place to make use of the Mandalay Approach Control Unit to relay for Yangon ACC in cases of lost communications. Also, the use of RVSM flight levels was restricted to avoid climb through problems during transition between eastbound and westbound aircraft. At this meeting, contingency procedures to improve the transition from China Metric levels to CVSM and RVSM had been agreed, which were expected to remove pilot concerns on action to be carried out during transition in the Yangon FIR when no communications was established with Yangon ACC and Mandalay APC.

5.2 Full benefits of RVSM could not be realized in the northern part of the Bay of Bengal on the main traffic flows from Asia to Europe due to airspace restrictions mainly in the Kabul FIR. With the concerted effort of India and Pakistan, significant improvements had been made to the route structure and minimum en-route altitude. Following the implementation of the extension to P628 ASOPO-RK, additional route capacity had been achieved. With the addition of the segment RK direct Kandahar to V390, a viable alternative parallel route would be available thus further enhancing the traffic flow. With FL280 available in the Kabul FIR, the improvements made to date to the air traffic flow management, and coupled with the initiatives arising from this meeting, it was expected that the longstanding delays to aircraft departing from the airports in Southeast Asia during the night time westbound peak traffic periods should be substantially eased.

5.3 Whilst considerable attention had been given to the air traffic management arrangements over the Bay of Bengal area, the meeting recognized the successful implementation and operation of RVSM that had taken place in the other FIRs where the full benefits of RVSM were being achieved. Those States concerned were commended for their efforts.

Agenda Item 6: Review of Action Items

6.1 The meeting reviewed and updated the list of tasks relating to the implementation of RVSM in the Bay of Bengal and Beyond on 27 November 2003, as shown in **Appendix I**.

Agenda Item 7: Future Work

7.1 The meeting recognized that the RVSM implementation plan had been substantially completed and as the outcome of this meeting showed, there were few significant items to be progressed related to RVSM. The primary on-going matters concerned the airspace safety monitoring programme, in particular reporting of LHD and maintaining an up-to-date approvals registry. The future follow-up on the RVSM monitoring programme would be undertaken by the RASMAG.

7.2 The meeting recalled that at the RVSM/TF/18 meeting held in Bangkok, Thailand on 30 June-4 July 2003, Japan and Korea informed the meeting of their plans to jointly implement RVSM in the Incheon, Naha and Tokyo FIRs on 9 June 2005. In this regard, the monitoring programme would come under the PARMO. Further, at RVSM/TF/18 Japan and Korea had indicated that they would be interested to work with the ICAO RVSM/TF to develop and implement their RVSM plan. The meeting agreed that in view of the successful implementation of RVSM in the Bay of Bengal area and follow-up, the Task Force was in a position to support Japan and Korea. In this regard, Korea requested ICAO to coordinate with Japan and PARMO to consider progress of their implementation planning, and to convene a meeting at the earliest convenience at a date and venue to be confirmed by the Secretariat.

7.3 The meeting recognized that with the implementation of RVSM in the FIRs in Northeast Asia in June 2005, RVSM would be implemented in the majority of FIRs in the Asia and Pacific Region.

7.4 The meeting agreed on the future work of the Task Force as follows:

Special Coordination Meeting on RVSM Implementation by Japan and the Republic of Korea: 31 May-4 June 2004, Bangkok (tentative)

RVSM/TF/22: 3 days September 2004, Bangkok
(Review of FLOS for Western Pacific/South China Sea area)

RVSM/TF/23: 1-3 November 2004, Bangkok (tentative)
(1-year follow-up review on Bay of Bengal and Beyond focus)

Agenda Item 8: Other Business

8.1 There was no other business.

9. **Closing of the Meeting**

9.1 Mr. Sydney Maniam expressed sincere appreciation to the members of the Task Force for their dedication and commitment to the work of the Task Force which had greatly contributed to the successful implementation of RVSM on 27 November 2003. He added that the issues dealt with at this meeting included air traffic management matters outside the scope of the agenda for the 90-Day review of RVSM implementation. The concerted effort of all to progress these issues was greatly appreciated and contributed to improving air traffic management and traffic flows in the Bay of Bengal and Beyond. The Chairman also expressed appreciation to the Regional Office for the~~ir~~ professional and cordial support for the meeting which facilitated the successful completion of the meeting.

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

WORKING PAPERS

WP No.	Date	Agenda Item	Presented by	Subject
1	8/3/04	1	Secretariat	Provisional Agenda
2	8/3/04	2	Secretariat	SCM/RVSM/IND-PAK Action Plan
3	8/3/04	2	Chairperson ATC/WG	Proposed Agenda for the ATC Operations Work Group
4	8/3/04	3	Chairperson OPS/AIR/WG	Proposed Agenda for the Aircraft Operations/ Airworthiness Work Group
5	8/3/04	4	Chairperson SAM/WG	Proposed Agenda for the Safety and Airspace Monitoring Work Group
6	8/3/04	2	Malaysia	Review on the Implementation of Reduced Vertical Separation Minimum (RVSM) in the Kuala Lumpur FIR
7	8/3/04	2	IATA	Air Traffic Management over the Bay of Bengal, Indian Continental Airspace and Kabul FIR concerning long haul flights from Southeast Asia to Western Europe following RVSM Implementation
8	8/3/04	5	RVSM Chairman	Implementation of RVSM in the Bay of Bengal and Beyond (Task List)
9	8/3/04	2	IATA	ATC and Pilot Coordination Procedures
10	8/3/04	4	Thailand	Summary of the Safety Oversight for the Post RVSM Implementation in the Bay of Bengal Airspace
11	8/3/04	4	Thailand	Summary of Large Height Deviation Reports in connection with the RVSM Implementation in Bay of Bengal
12	8/3/04	4	Thailand	Report of the Potential Non-Compliant Aircraft in the RVSM Airspace of Asia Region
13	8/3/04	4	Thailand	Request for RVSM Approval Records of all Aircraft registered with the States in the Asia Region
14	9/3/04	4	Thailand	Report of the Potential Non-Compliant Aircraft in the RVSM Airspace of Asia Region

INFORMATION PAPERS

IP No.	Date	Agenda Item	Presented by	Subject
1	8/3/04	-	Secretariat	List of Information and Working Papers
2	8/3/04	2	Sri Lanka	RVSM Implementation in Colombo FIR
3	8/3/04	2	Bangladesh	RVSM Implementation in Dhaka FIR
4	8/3/04	4	Thailand	Introduction of New MAAR Coordinator and Updated MAAR Website
5	9/3/04	2	Thailand	Update on RVSM Implementation in the Bangkok FIR

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AGENDA

Agenda Item 1: Adoption of Agenda

Agenda Item 2: Operational Issues

Agenda Item 3: Issues Relating to Airworthiness and Operation of Aircraft

Agenda Item 4: Safety and Airspace Oversight Issues

Agenda Item 5: Implementation Management Issues

Agenda Item 6: Review of Action Items

Agenda Item 7: Future Work

Agenda Item 8: Other Business

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Contingency Procedure for transition between CVSM (Conventional Vertical Separation Minima) and RVSM (Reduced Vertical Separation Minima) in case of no communications between aircraft and Yangon ACC or Mandalay Approach, while operating between LINSO and LASHIO.

Westbound aircraft

a. Aircraft will maintain CVSM altitude as cleared by Kunming ACC up to LINSO. 5 minutes before LINSO, aircraft will contact Yangon ACC or Mandalay Approach. Yangon ACC or Mandalay Approach will clear aircraft to transition to the corresponding published RVSM level.

b. In case of no contact with either Yangon ACC or Mandalay Approach, aircraft will transition to the corresponding published RVSM level between LINSO and LASHIO.

c. Aircraft will report maintaining RVSM level, and LASHIO, to Yangon ACC or Mandalay Approach. If no contact, to transmit blind.

Eastbound aircraft

a. Aircraft will maintain cleared RVSM level and report LASHIO and LINSO to Yangon ACC or Mandalay Approach. If no contact, transmit blind. 5 minutes before LINSO aircraft will contact Kunming ACC for clearance to transition to China Metric level. Aircraft will transition to the cleared China Metric level after passing LINSO.

Note: The table of flight levels contained in the AIP Supplement 01/03 dated 16 October 2003 published by Myanmar shall be used for transition from China Metric to CVSM to RVSM.

Table for transition between China Metric levels, ICAO CVSM levels and ICAO RVSM levels for A599 between LASHIO and LINSO

ICAO RVSM LEVEL	**ICAO CVSM LEVEL**	**CHINA METRIC LEVEL**
410 Eastbound	410 Eastbound	12600m (FL413) Eastbound
400 (not available)		
390(not available)		
380 Westbound	390 Westbound	12000m (FL393) Westbound
370 Eastbound	370 Eastbound	11400m (FL374) Eastbound
360 Westbound	350 Westbound	10800m (FL354) Westbound
350(not available)		
340(not available)		
330 Eastbound	330 Eastbound	10200m (FL334) Eastbound
320 Westbound	310 Westbound	9600m (FL315) Westbound
310(not available)		
300(not available)		
290 Eastbound	290 Eastbound	9000m (FL295) Eastbound
280 Westbound	280 Westbound	8400m (FL275) Westbound

MYANMAR **NOTAM 5/3/04**

A0045/03 NOTAMR A0041/03
A) VYYF
B) 0312040732 (04DEC03 0732U)
C) 0403130732 (13MAR04 0732U)EST
E) WIE/UFN THE FOLLOWING CONTINGENCY PROCEDURE WILL BE APPLICABLE FOR TFC OPERATING BETWEEN LASHIO AND LINSO:

WESTBOUND AIRCRAFT

a. AIRCRAFT WILL MAINTAIN CVSM ALTITUDE AS CLEARED BY KUNMING ACC UP TO LINSO. 5 MINUTES BEFORE LINSO, AIRCRAFT WILL CONTACT YANGON ACC OR MANDALAY APPROACH ON 133.2MHZ. YANGON ACC OR MANDALAY APPROACH WILL CLEAR AIRCRAFT TO TRANSITION TO THE CORRESPONDING PUBLISHED RVSM LEVEL (REFER TO THE AIP SUPPLEMENT 01/03 DATED 16 OCT 2003)
b. IN CASE OF NO CONTACT WITH EITHER YANGON ACC OR MANDALAY APPROACH ON 133.2 MHZ, AIRCRAFT WILL TRANSITION TO THE CORRESPONDING PUBLISHED RVSM LEVEL BETWEEN 45 NM WEST OF LINSO AND LASHIO.
c. AIRCRAFT WILL REPORT MAINTAINING RVSM LEVEL, AND LASHIO, TO YANGON ACC OR MANDALAY APPROACH. IF NO CONTACT, TO TRANSMIT BLIND.

EASTBOUND AIRCRAFT

a. AIRCRAFT WILL MAINTAIN CLEARED RVSM LEVEL AND REPORT LASHIO AND LINSO TO YANGON ACC OR MANDALAY APPROACH. IF NO CONTACT, TRANSMIT BLIND. 5 MINUTES BEFORE LINSO AIRCRAFT WILL CONTACT KUNMING ACC FOR CLEARANCE TO TRANSITION TO CHINA METRIC LEVEL. AIRCRAFT WILL TRANSITION TO THE CLEARED CHINA METRIC LEVEL AFTER PASSING LINSO.

WIE/UFN FL 290 IS NOT AVBL FOR EASTBOUND TFC ON A201&A599 IN YANGON FIR

Appendix F to the RVSM/TF/21 Report
Data Collection Template

DATE	AIRCRAFT	AIRCRAFT	US EQUIPMENT SUFFIX	ICAO EQUIPMENT CODE	AIRCRAFT	ORIGIN	DESTINATION	ENTRY	TIME	CLEARED	EXIT	TIME	CLEARED	ROUTING AND TIMES IN RVSM AIRSPACE								
(DD/MM/YY)	CALL SIGN	REGISTRATION			TYPE	AERODROME	AERODROME	FIX INTO	AT ENTRY	FLIGHT	FIX FROM	AT EXIT	FLIGHT	FIX 1 OR	TIME AT	CLEARED	FIX 2 OR	TIME AT	CLEARED			
								RVSM	FIX	LEVEL	RVSM	FIX	LEVEL	AIRWAY 1	FIX 1	FLIGHT	AIRWAY 2	FIX 2	FLIGHT	CONTINUE AS NECESSARY		
								AIRSPACE	(HH:MM	AT ENTRY	AIRSPACE	(HH:MM	AT EXIT		(HH:MM	LEVEL		(HH:MM	LEVEL			
									OR HHMM)			OR HHMM)			OR HHMM)			OR HHMM)				
(NECESSARY)	(NECESSARY)	(NECESSARY)	(OPTIONAL)	(OPTIONAL)	(NECESSARY)	(NECESSARY)	(NECESSARY)	(NECESSARY)	(NECESSARY)	(NECESSARY)	(NECESSARY)	(NECESSARY)	(NECESSARY)	(OPTIONAL)	(OPTIONAL)	(OPTIONAL)	(OPTIONAL)	(OPTIONAL)	(OPTIONAL)			

MAAR FORM F2
RECORD OF APPROVAL TO OPERATE IN ASIA REGION RVSM AIRSPACE

1. When a State of Registry approves or amends the approval of an operator/aircraft for operations within the Asia Region airspace, details of that approval must be recorded and sent to the Monitoring Agency for Asia Region (MAAR) to reach it by the tenth day of the month following the month that the approval was issued.

2. *Before providing the information as requested below, reference should be made to the accompanying notes* **(PLEASE USE BLOCK CAPITALS)**.

2.1 State of Registry:

2.2 Name of Operator:

2.3 State of Operator:

2.4 Aircraft Type:

2.5 Aircraft Series:

2.6 Manufacturers Serial No:

2.7 Registration No:

2.8 Mode S Address Code:

2.9 Airworthiness Approval:

2.10 Date Airworthiness Approval Issued:

2.11 RVSM Approval:

2.12 Date RVSM Approval Issued:

2.13 Date of Expiry (If Applicable):

2.14: Remarks:

When complete, please return to the following email (preferable), fax, or mailing address:

E-Mail: maar@aerothai.co.th
Fax: 662-287-8155

Monitoring Agency for Asia Region (MAAR)
ATS Operations Bureau, AEROTHAI
102 Ngamduplee Tungmahamek, Sathorn
Bangkok 10120 Thailand

MAAR FORM F3
WITHDRAWAL OF APPROVAL TO OPERATE IN ASIA REGION RVSM AIRSPACE

1. When a State of Registry has cause to withdraw the approval of an operator/aircraft for operations within the Asia Region RVSM airspace, details as requested below, must be submitted to the Monitoring Agency for Asia Region (MAAR) by the most appropriate method.

2. *Before providing the information as requested below, reference below, reference should be made to the accompanying notes* **(PLEASE USE BLOCK CAPITALS)**.

2.1 State of Registry:

2.2 Name of Operator:

2.3 State of Operator:

2.4 Aircraft Type:

2.5 Aircraft Series:

2.6 Manufacturers Serial No:

2.7 Registration No.:

2.8 Aircraft Mode S Address Code:

2.9 Date of Withdrawal of RVSM Approval:

2.10 Reason of Withdrawal of RVSM Approval:

2.11 Remarks:

When complete, please return to the following email (preferable), fax, or mailing address:

E-Mail: maar@aerothai.co.th
Fax: 662-287-8155

Monitoring Agency for Asia Region (MAAR)
ATS Operations Bureau, AEROTHAI
102 Ngamduplee Tungmahamek, Sathorn
Bangkok 10120 Thailand

TEMPLATE OF NON RVSM COMPLIANT AIRCRAFT REPORT FOR THE RVSM AIRSPACE IN ASIA REGION

Reporting Agency:		Name of FIR/ATS Provider			
Date	**Operator**	**Call Sign**	**A/C Type**	**Flight Level**	**ATS Route**
(dd/mm/yy)	3-letter ICAO Code		ICAO Code		

Appendix I to the RVSM/TF/21 Report
Task List

SN	Activity	Start	Complete	Present Status	Group Responsible	
1	**Identify Operational Need**	**18-Jan-02**	**30-Nov-02**	**Completed**		
2	Agree operational concept for Bay of Bengal and beyond (within ICAO Asia Region)	18-Jan-02	30-Nov-02	**Completed**	ATC/WG, RVSM Task Force	
3	**Safety Assessment**	**18-Jan-02**	**31-Oct-03**	**Completed**		
4	Review available summary data (non-compliant aircraft, aberrant aircraft etc)	18-Jan-02	31-Oct-03	**Completed**	SAM/WG, MAAR, RVSM Task Force	
5	Examine history of height keeping errors related to ATC clearances and assess possible RVSM impact	18-Jan-02	31-Oct-03	**Completed**	SAM/WG, MAAR, RVSM Task Force	
6	Confirm RVSM risk model assumptions/parameters are consistent with airspace where RVSM is to be applied	18-Jan-02	31-Oct-03	**Completed**	SAM/WG, MAAR, RVSM Task Force	
7	Conduct simulations to predict occupancy after RVSM implementation	18-Jan-02	31-Oct-03	**Completed**	SAM/WG, MAAR, RVSM Task Force	
8	Collect weather and turbulence data for analysis - this should include Himalayan standing wave analysis	18-Jan-02	27-Nov-03	**Completed**	SAM/WG, OPSAIR, RVSM Task Force	
9	Report monthly large height deviations to APARMO/MAAR or equivalent monitoring agency (including operational errors)	18-Jan-02	Ongoing	In progress	ATS Providers, Users	
10	Collect traffic sample data for the month of July 2004 for 1-year review of safety oversight	4-Jul-04	31-Aug-04	In progress	ATS Providers	
11	**Feasibility Analysis**	**18-Jan-02**	**27-Nov-03**	**Completed**		
12	Examine the operational factors and workload associated with implementation	18-Jan-02	27-Nov-03	**Completed**	ATC/WG, RVSM Task Force	
13	**Determination of Requirements (airborne & ground systems)**	**18-Jan-02**	**27-Nov-03**	**Completed**		
14	States assess the impact of RVSM implementation on controller automation systems (eg equipment suffixes) and plan for upgrades/modificati	18-Jan-02	31-Oct-03	**Completed**	States	
15	**Aircraft & Operator Approval Requirements**	**18-Jan-02**	**27-Nov-03**	**Completed**		
16	Promulgate the operational approval process	18-Jan-02	7-Jun-02	**Completed**	OPS/AIR/WG, RVSM Task Force	
17	Notify States when significant changes occur to RVSM documentation	18-Jan-02	31-Oct-03	**Completed**	OPS/AIR/WG, RVSM Task Force	
18	**Perform Rulemaking (if required)**	**18-Jan-02**	**27-Nov-03**	**Completed**		
19	Recommend State airspace regulatory documentation	18-Jan-02	27-Nov-03	**Completed**	States	
20	**Perform Necessary Industry & International Co-ordination**	**18-Jan-02**	**27-Nov-03**	**Completed**		
21	Establish target implementation date	18-Jan-02	18-Jan-02	**Completed**	RVSM Task Force	
22	Report to ATS/AIS/SAR/SG/13	23-Jun-03	27-Jun-03	**Completed**	RVSM Task Force Chairman	
23	Process Doc 7030 amendment	18-Jan-02	27-Nov-03	In progress	ICAO Regional Office (to include BOB FIRs)	
24	Publish advance AIC	18-Jan-02	31-Jan-03	**Completed**	States	
25	Publish AIP Supplement containing RVSM policy/procedures	18-Jan-02	7-Nov-03	**Completed**	States	
26	Review inter-facility coordination procedures	18-Jan-02	27-Nov-03	**Completed**	States	
27	Finalize changes to Letters of Agreement	18-Jan-02	27-Nov-03	**Completed**	States	
28	Disseminate information on RVSM policy and procedures through FAA RVSM Website	7-Jun-02	31-Oct-03	**Completed**	OPS/AIR WG, RVSM Task Force	
29	**Approval of Aircraft & Operators**	**18-Jan-02**	**27-Nov-03**	**Completed**		
30	Establish approved operations readiness targets	18-Jan-02	18-Jan-02	**Completed**	IATA, ATC/WG, RVSM Task Force	
31	Assess operator readiness	18-Jan-02	31-Oct-03	**Completed**	IATA, OPS/AIR/WG	
32	**Develop Pilot & ATC Procedures**	**18-Jan-02**	**27-Nov-03**	**Completed**		
33	Review application of tactical offset procedure to mitigate the effects of wake turbulence and TCAS alerts	18-Jan-02	4-Jul-03	**Completed**	RVSM Task Force	

SN	Activity	Start	Complete	Present Status	Group Responsible	
34	Review weather and contingency procedures for applicability under RVSM	18-Jan-02	4-Jul-03	**Completed**	RVSM Task Force	
35	Publish appropriate Pilot/ATC policy & procedures on RVSM website	18-Jan-02	Ongoing	**Completed**	RVSM Task Force	
36	Identify transition areas and procedures	3-Sep-03	5-Sep-03	**Completed**	States, ATC/WG	
37	Conduct simulation modelling to assess impact of RVSM operations	18-Jan-02	27-Nov-03	**Completed**	States, ATC/WG	
38	Report on simulation activity	18-Jan-02	27-Nov-03	**Completed**	ATC/WG, RVSM Task Force	
39	Coordinate use of ACAS II (TCAS V.7) for RVSM operations	18-Jan-02	31-Oct-03	**Completed**	OPS/AIR/WG, RVSM Task Force	
40	Develop procedures for handling non-compliant aircraft (inc ferry & mntce) in ATS documentation	18-Jan-02	30-Sep-03	**Completed**	OPS/AIR/WG, ATC/WG, RVSM Task Force	
41	Develop mutually acceptable ATC procedures for non-approved State acft to transit RVSM airspace	18-Jan-02	30-Sep-03	**Completed**	ATC/WG, RVSM Task Force	
42	Implement procedures for suspension of RVSM	18-Jan-02	27-Nov-03	**Completed**	ATC/WG, RVSM Task Force	
43	Liaise with State defense authorities regarding military operations	18-Jan-02	27-Nov-03	**Completed**	States	
44	**Pilot & ATC Training**	**18-Jan-02**	**27-Nov-03**	**Completed**		
45	Provide Pilot/ATC training documentation based on past experience	18-Jan-02	Ongoing	**Completed**	IATA, RVSM Task Force	
46	Conduct local RVSM training for air traffic controllers	18-Jan-02	27-Nov-03	**Completed**	States, ATC/WG	
47	**Perform System Verificiation**	**18-Jan-02**	**31-Oct-03**	**Completed**		
48	Height keeping performance monitoring needed to undertake initial safety analysis	18-Jan-02	31-Oct-03	**Completed**	APARMO, MAAR and SAM/WG, RVSM Task Force	
49	Provide representative traffic movement data to APARMO / MAAR	18-Jan-02	Ongoing	**Completed**	States	
50	Undertake initial safety analysis	18-Jan-02	31-Mar-03	**Completed**	SAM/WG, RVSM Task Force	
51	Prepare/maintain regional status report detailing RVSM implementation plans	18-Jan-02	Ongoing	**Completed**	RVSM Task Force	
52	**Final Implementation Decision**	**18-Jan-02**	**27-Nov-03**	**Completed**	RVSM Task Force	
53	Review aircraft altitude-keeping performance and operational errors	18-Jan-02	31-Oct-03	**Completed**	SAM/WG, OPS/AIR/WG	
54	Complete ATS State documentation	18-Jan-02	7-Nov-03	**Completed**	States	
55	Publish Trigger NOTAM	18-Jan-02	17-Nov-03	**Completed**	States	
56	Complete readiness assessment	18-Jan-02	31-Oct-03	**Completed**	APARMO, MAAR and SAM/WG, RVSM Task Force	
57	Complete safety analysis	18-Jan-02	31-Oct-03	**Completed**	APARMO, MAAR and SAM/WG, RVSM Task Force	
58	**Declare Initial Operational Capability**	**18-Jan-02**	**27-Nov-03**	**Completed**	APARMO, MAAR and SAM/WG, RVSM Task Force	
59	**Monitor System Performance**	**18-Jan-02**	**27-Nov-04**	In progress		
60	Perform Follow-On Monitoring	18-Jan-02	Ongoing	In progress	APARMO, MAAR, OPS/AIR/WG, SAM/WG	
61	Adopt the global use of Minimum Monitoring Requirements (MMR)	12-Mar-04	Ongoing	In progress	RVSM Task Force	
62	Complete transition of monitoring functions from FAA to AEROTHAI	30-May-02	2-Sep-03	**Completed**	SAM/WG, MAAR	
63	**Declare Full Operational Capability**	**18-Jan-02**	**27-Nov-04**	In progress	RVSM Task Force	
64	Task Force/15 (Bangkok)	3-Jun-02	7-Jun-02	**Completed**	RVSM Task Force	
65	Special Coordination Meeting (Manila) - Western Pacific/South China Sea Focus	29-Jul-02	31-Jul-02	**Completed**	RVSM Task Force	
66	Task Force/16 (Bangkok) - Western Pacific/South China Sea Focus	23-Sep-02	25-Sep-02	**Completed**	RVSM Task Force	

SN	Activity	Start	Complete	Present Status	Group Responsible	
67	1st Joint Interface Meeting with Middle East RVSM Task Force (Abu Dhabi)	19-Oct-02	20-Oct-02	**Completed**	RVSM Task Force	
68	Seminar/5 (Bangkok) - 3 days	15-Jan-03	17-Jan-03	**Completed**	RVSM Task Force	
69	Task Force/17 (Bangkok) - Bay of Bengal and Beyond Focus - 5 days	20-Jan-03	24-Jan-03	**Completed**	RVSM Task Force	
70	Task Force/18/19 (Bangkok) - 1 year/90 day follow up review on Western Pacific/South China Sea/ Bay of Bengal Focus - 5 days	30-Jun-03	4-Jul-03	**Completed**	RVSM Task Force	
71	Special ATS Coordination Meeting (Kuala Lumpur) - FLOS for Bay of Bengal and Beyond	11-Aug-03	13-Aug-03	**Completed**	ATC/WG	
72	2nd Joint Interface Meeting with Middle East RVSM Task Force (Abu Dhabi) - 3 days	27-Aug-03	28-Aug-03	**Completed**	ATC/WG	
73	Special ATS Coordination Meeting (Bangkok) - Transition for Bay of Bengal and Beyond	3-Sep-03	5-Sep-03	**Completed**	ATC/WG	
74	Task Force/20 (New Delhi) - **Go/No-Go** for Bay of Bengal and Beyond implementation - 5 days	27-Oct-03	31-Oct-03	**Completed**	RVSM Task Force	
75	Review of Air Traffic Management using RVSM in Bay of Bengal and Beyond (Bangkok) - 3 days	7-Jan-04	9-Jan-04	**Completed**	RVSM Task Force Chairman, ATC/WG, IATA, India and Pakistan	
76	Task Force/21 (Bangkok) - 90 day follow up review on Bay of Bengal and Beyond implementation - 5 days	8-Mar-04	12-Mar-04	**Completed**	RVSM Task Force	
77	Special ATS Coordination Meeting (Bangkok) - Japan & Korea Implementation -5 days	00 Jun 2004	00 Jun 2004		RVSM Task Force	
78	Task Force/22 (Bangkok) - Review of FLOS for Western Pacific/South China Sea - 3 days	00 Sep 04	00 Sep 04		RVSM Task Force	
79	Task Force/23 (Bangkok) - 1 year follow up Bay of Bengal and Beyond implementation - 3 days	00 Nov 04	00 Nov 04		RVSM Task Force	