

**INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE**



**REPORT OF THE SPECIAL ATS COORDINATION MEETING ON THE
RVSM IMPLEMENTATION IN THE INCHEON, NAHA AND TOKYO FIRs**

BANGKOK, THAILAND

5 – 7 JULY 2004

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

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SCM RVSM Japan/Republic of Korea
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1.1 Introduction

1.1.1 The Special ATS Coordination Meeting on the RVSM Implementation in the Incheon, Naha and Tokyo FIRs (SCM RVSM Japan/Republic of Korea) was held at the Kotaite Wing of the ICAO Asia and Pacific Regional Office in Bangkok, Thailand from 5 to 7 July 2004.

1.2 Attendance

1.2.1 The meeting was attended by 26 participants from China, Hong Kong China, Indonesia, Japan, Philippines, Republic of Korea, Singapore, 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 (CAAS), Singapore, Chairman of the ICAO RVSM Implementation Task Force (RVSM/TF) presided over the meeting. Mr. David J. Moores, Regional Officer ATM, ICAO Asia and Pacific Office, Bangkok served as the Secretary for the meeting. He was assisted by Mr. Kyotaro Harano, Regional Officer ATM.

1.3.2 Mr. Udaka Keizo, Special Assistant to the Director ATS System Planning Division of the Japan Civil Aviation Bureau (JCAB), Japan and Mr. Kim Geun-Soo, Director, ATS Planning Division, Civil Aviation Safety Authority (CASA), Republic of Korea were Co-Chairmen of the ATC Operations Work Group (ATC/WG). Mr. Yufandri Gona, Head of Performance & Flight Test Section, Directorate General Air Communication (DGAC), Indonesia was the Chairman of the Aircraft Operations & Airworthiness Work Group (OPS/AIR/WG). Mr. Nopadol Sangngurn, Senior Vice-President (Training), AEROTHAI, Thailand was the Chairman of the Safety & Airspace Monitoring Work Group (SAM/WG).

1.4 Opening of the Meeting

1.4.1 Mr. David J. Moores, on behalf of the ICAO Regional Director of the Asia and Pacific Office, Mr. Lalit B. Shah, warmly welcomed the delegates. He recalled that at the RVSM/TF/18 meeting held at the Asia and Pacific Regional Office, Bangkok, Thailand in July 2003, Japan and the Republic of Korea had indicated that they would like the ICAO RVSM/TF to participate in the RVSM implementation planning for the Incheon, Naha and Tokyo FIRs. Consequently, this meeting was convened to obtain an update on progress with the implementation and planning process, and to consider the impact of RVSM implementation on the broader issues of air traffic management and the traffic flows in the adjacent FIRs. It was noteworthy that this was the last major RVSM implementation in the international oceanic airspace in the Asia/Pacific Region.

1.4.2 Mr. Sydney Maniam welcomed the participants and opened the meeting. He highlighted that the extension of RVSM in the Tokyo and Naha FIRs, as well as implementation in the Incheon FIR, was an important milestone in the overall RVSM plan for the Asia and Pacific Region.

1.4.3 Mr. Maniam stressed that RVSM should be introduced according to the ICAO RVSM Implementation Strategy to ensure that key elements of the implementation process are put in place. To this end, the ICAO RVSM Implementation Task Force could provide the necessary expertise and guidance to the States concerned. The meeting should therefore review the requirements of RVSM implementation and ascertain the need for the support of the Task Force in the implementation process. To facilitate planning for the target date of implementation of 9 June 2005, the operational concept plan and related activities should also be addressed.

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 Seven (7) Working Papers and four (4) 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 and adopted it as the agenda for the meeting. The agenda is at **Appendix C**.

Agenda Item 2: ICAO Implementation Strategy

RVSM implementation status in the Asia/Pacific Region

2.1 The Chairman updated the meeting on the status of RVSM implementation in the Asia and Pacific Region. The Ninth Meeting of the Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/9, August 1998) established the ICAO RVSM Implementation Task Force to implement RVSM within the Asia Pacific Region. The implementation was based on operational needs to improve airspace capacity and enhance the management of air traffic in the region. RVSM was implemented in different airspaces of the Asia and Pacific Region since as shown in the Implementation Status at **Appendix D**.

2.2 RVSM was implemented in the Pacific area in February 2000. RVSM was subsequently introduced in the Western Pacific/South China Sea area in two phases. In Phase I, RVSM was implemented on 21 February 2002 in the following airspace:

Phnom Penh, Kuala Lumpur, Kota Kinabalu, Manila, Singapore, Bangkok and Ho Chi Minh FIRs and a part of Sanya AOR.

Under Phase II, RVSM was implemented on 31 October 2002 in the following airspace:

Hong Kong, Bali, Jakarta, Ujung Pandang, Vientiane and Ha Noi FIRs and the rest of Sanya AOR.

2.3 The next phase of implementation would focus on the remainder of the Tokyo and Naha FIRs and the Incheon FIR.

ICAO Strategy for planning and implementation of RVSM

2.4 The ICAO strategy for RVSM implementation is contained in *the Manual on Implementation of a 300m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive* (Doc 9574). It employs a formal collision risk assessment methodology as a decision-making tool in support of operational judgment. It consists of a 5-step approach:

- 1) Identify the need for RVSM;
- 2) Preliminary assessment of system safety;
- 3) Planning and preparation;
- 4) Verification phase; and
- 5) Operational use of RVSM.

- 2.5 In regard to the planning and preparation phase, this should include:
- a) the continued consultation, cooperation and commitment of regulatory authorities, ATS providers and airspace users;
 - b) the development of a detailed work programme and identification of those issues which lie on the critical path; and
 - c) regional agreement on the implementation time scales.

2.6 The meeting was reminded that before commencing the verification phase, it was essential that a high proportion of the anticipated RVSM aircraft population met RVSM requirements. Also, at the beginning of the operational application of RVSM, a comprehensive evaluation of all elements of RVSM operations should be carried out.

2.7 The meeting noted the ICAO process for RVSM implementation and the progress being made by Japan and the Republic of Korea in their planning and implementation process.

Agenda Item 3: ATS Operational Considerations (including Letters of Agreement)

Japan's RVSM Implementation Plan for the Tokyo and Naha FIRs

3.1 Japan provided information on their planning requirements to introduce RVSM in the non-oceanic airspace of the Tokyo and Naha FIRs. International flights in Japan mainly use Narita and Kansai airports, and there were approximately 450 and 310 per day respectively using these airports. On the other hand, the primary domestic airports were Tokyo (Haneda), Fukuoka and Nagoya and the traffic volume was about 780, 390 and 330 per day, respectively at these three airports. The total number of flights in the Tokyo and Naha FIRs were about 3,700 per day including about 1,000 international flights.

3.2 The international traffic flow had two peak periods, one in the morning with departures and arrivals to/from South-East Asia, and a second peak in the afternoon with arrivals from North America (departures in the evening).

3.3 Focusing on one typical sector of the Tokyo ACC, Kanto East Sector, this sector usually controls traffic for departures/arrivals to/from Narita Airport and overflights for North America and Hawaii. In the afternoon, many arrivals at Narita Airport and overflights originating in North America, operate into the Kanto East Sector via oceanic sectors. At times a controller deals simultaneously with more than 10 inbound flights to Narita Airport and more than 5 overflights bound for Kansai, Taipei and Hong Kong, etc.

3.4 Because at present in Japan RVSM airspace was only being applied in oceanic airspace, all westbound traffic entering the domestic airspace at even flight levels must transition to standard levels such as FL310, FL350 or FL390. With RVSM implemented in domestic airspace, this would remove the transition requirement, create greater airspace capacity and enhance safety and efficiency.

3.5 Japan updated the meeting on RVSM implementation progress with a target date of 9 June 2005. The planned flight level stratum was from FL290 to FL410 inclusive utilizing the single alternate flight level orientation scheme (FLOS). The RVSM airspace would be defined as exclusive airspace with the exception of some special flights. The number of RVSM approved aircraft were currently about 70 percent, but this was expected to exceed 94 percent by the implementation date. With regard to carriage of ACAS II, all aircraft had upgraded to TCAS version 7.

3.6 The ENRI (Electronic Navigation Research Institute) carried out the safety assessment for RVSM implementation and the technical risk was calculated as 1.56×10^{-9} , which was well within the required target level of safety (TLS) of 2.5×10^{-9} fatal accident per flight hour. Planning includes provision for a further assessment of operational risk before implementation.

3.7 PARMO had been undertaking the RVSM monitoring service for the oceanic RVSM airspace in the Tokyo and Naha FIRs since implementation in February 2000 and would continue to provide monitoring support.

3.8 The contact point for Japanese domestic RVSM implementation is:

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3.9 The meeting noted the implementation progress being made by Japan.

Republic of Korea's RVSM Implementation Plan for the Incheon FIR

3.10 The Republic of Korea provided information on their RVSM implementation plan and current preparation status for the Incheon FIR. The air traffic volume within Incheon FIR, which was under the responsibility of the Civil Aviation Safety Authority (CASA), had been growing annually and aircraft were increasingly requesting to be assigned economic flight levels. Accordingly, CASA had reviewed the need for RVSM implementation within Incheon FIR to improve the efficient use of airspace.

3.11 RVSM would be implemented on all ATS routes in the Incheon FIR except for some portion of routes, and included establishment of transition areas with adjacent States not implementing RVSM, the flight level orientation scheme and ATC procedures.

Transition areas

3.12 Transition areas, which were covered by radar, were required to be established on route segments adjoining the airspaces of the People's Republic of China and the Democratic People's Republic of Korea, which were non-RVSM airspaces, as follows:

- G597: AGAVO-NOPIK (80 NM)
- A593: SADLI-NIRAT (46 NM)
- B467: INTOS-TENAS (20 NM)

3.13 In regard to the above, the following route segments were excluded from the RVSM plan:

- on B467 between TENAS and KANSU (due to the transition area adjoining the Pyongyang FIR where RVSM did not apply)
- the entire airway B332 in the Incheon FIR (due to the segment of the route in the Incheon FIR being too short and the remainder of the route being in the Pyongyang FIR where RVSM did not apply)

- on A593 between LAMEN and SADLI (due to this portion being under Shanghai ACC responsibility beyond the transition area where RVSM did not apply)

3.14 The meeting was advised that flight level arrangements and transition procedures on A593 (Shanghai/Incheon FIRs), known as the AKARA-FUKUE Corridor would be subject to further discussions by China, Japan and the Republic of Korea. The Task Force would be updated on developments at the next Task Force meeting in October 2004.

3.15 In regard to operator readiness, about 86 percent of aircraft operated by national carriers and the operators had been approved for RVSM operation. All approved aircraft were equipped with the ACAS II (TCAS version 7).

3.16 The airspace safety assessment and oversight would be conducted in coordination with PARMO and ICAO.

3.17 The point of contact for RVSM implementation in Incheon FIR is:

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3.18 The meeting noted the implementation progress being made by the Republic of Korea.

Provisional Operational Concept Plan

3.19 In light of the information provided by Japan and the Republic of Korea, the meeting reviewed the planning and implementation progress being made. In this regard, Japan and the Republic of Korea requested the support of the ICAO RVSM/TF to progress their implementation planning. In particular, the Republic of Korea requested that priority be given to conducting the safety assessment of the RVSM airspace in the Incheon FIR. With the concurrence of the ICAO Asia and Pacific Regional Office, the Task Force agreed to provide the necessary expertise and guidance to Japan and the Republic of Korea for this phase of implementation.

3.20 The meeting reviewed the provisional Operational Plan for the FIRs concerned. RVSM would be applied from FL290 to FL410 (inclusive) in the domestic airspace of Tokyo and Naha FIRs and the Incheon FIR, using the single alternate FLOS. The airspaces where RVSM would be introduced would be exclusive for RVSM-approved aircraft, except for specific areas which would be defined by the States concerned. In addition, the transition areas and corresponding transition procedures would be developed by the States involved. The target date of implementation was 9 June 2005.

Publication of Documents

3.21 Japan informed the meeting that the AIC on RVSM implementation had been published on the AIRAC date, 27 May 2004. The meeting agreed that the Republic of Korea should publish the advance NOTAM by 31 July 2004 to provide operators with early notification of RVSM implementation. A draft AIC is provided at **Appendix E**.

3.22 The meeting agreed that Japan and the Republic of Korea should finalize details on the policies and procedures for RVSM operations and publish the corresponding AIP Supplements by 31 October 2004 (AIRAC date 28 October). A draft AIP Supplement is provided at **Appendix F**. In

addition, a Trigger NOTAM (**Appendix G** refers) should be published in May 2005 to serve as a final reminder to operators on RVSM implementation.

3.23 The meeting agreed that the MID/ASIA Regional Supplementary Procedures (Doc 7030) would need to be amended to designate the Incheon FIR for RVSM to apply on the implementation date of 9 June 2005. The Republic of Korea agreed to propose the amendment and this would be progressed in coordination with the Regional Office.

Letters of Agreement

3.24 The meeting agreed that Japan and the Republic of Korea should liaise with adjacent States and finalize ATC coordination procedures, including transition arrangements to facilitate the implementation of RVSM. These procedures should subsequently be incorporated in the respective Letters of Agreement.

3.25 In regard to RVSM issues related to the Taipei FIR, IFATCA advised the meeting that they would convene a coordination meeting with the parties concerned in September 2004 and provide an update at the RVSM/TF/23 meeting in October 2004.

Updating of Task List

3.26 The meeting adopted the list of tasks used by the RVSM/TF in its previous implementation plan to progress the overall RVSM implementation process and set the time frames for the completion of related activities for the Japan and Republic of Korea FIRs. The meeting updated the task list for ATC operations as shown in **Appendix H**.

Harmonization of the Flight Level Orientation Schemes

3.27 Hong Kong, China reported that Hong Kong and Taipei ACCs adopted the double alternate FLOS for the implementation of RVSM to accommodate traffic operating to and from Naha, Tokyo and Incheon FIRs. However, it was anticipated that upon the implementation of RVSM in the above airspace in 2005, a change to the RVSM FLOS between Hong Kong and Taipei ATC may be required.

3.28 To assess the impact on the planned RVSM implementation in Incheon FIR and the domestic airspace of Naha/Tokyo FIRs on 9 June 2005, Hong Kong, China carried out a study based on various FLOS modes. The results of the study indicated that a more homogeneous FLOS environment facilitates a safe and efficient operation through a reduction in level transition activities. A comparison of level transition activities under different FLOS scenarios in the Terminal Control Area of the Hong Kong FIR, through which most traffic between Tokyo and Bangkok transit was undertaken. The study showed that it would be most desirable if the single alternate FLOS could be applied uniformly throughout all FIR/AORs concerned. Apart from avoiding a high level of flight level transition operations, the single alternate FLOS could allow operators to be assigned all the flight levels within the entire RVSM stratum in these FIRs. Hong Kong, China would continue to study the matter and update the Task Force in due course.

3.29 The meeting noted the results of the Hong Kong, China study and that they supported a change from the modified single alternate to the single alternate FLOS, particularly for the east-west traffic flow between Tokyo and Bangkok.

3.30 The meeting recalled that at the RVSM/TF/18 meeting in July 2003 (one-year review of the WPAC/SCS RVSM implementation), the Task Force considered the need to harmonize the FLOSs. At that meeting, the Philippines presented the results of a study they carried out to transition to the single alternate FLOS. Also, Thailand and Viet Nam both indicated their interest to change to

the single alternate FLOS. However, RVSM/TF/18 decided to continue with the modified single alternate FLOS for the WPAC/SCS area, with the intent to review the FLOS when studies by States concerned were completed. The Secretariat reminded the meeting that the FLOS review would be carried out by RVSM/TF/22 meeting on 20-24 September 2004 at the Regional Office. The meeting urged States and international organizations to complete their studies and be fully prepared at the RVSM/TF/22 meeting to make a decision on the FLOS to be applied in the WPAC/SCS area.

Transition procedures between China metric and RVSM levels

3.31 The Secretariat provided information on the RVSM/TF/20 proposed RVSM transition procedures to replace the existing procedures between the Kunming and Yangon FIRs for transition from China metric to RVSM levels and vice versa. At present, westbound flights on A599 were required to carry out a double transition from China metric levels to conventional non-RVSM levels (CVSM) and then to RVSM levels. To avoid potential conflict between flight levels during transition procedures, FLs 310, 350 and 390 were not permitted eastbound. Also, the westbound levels were restricted and fixed so that the China metric levels transition to pre-assigned CVSM and RVSM levels, i.e. 9600m/FL310/FL320, 10800m/FL350/FL360 and 12000m/FL390/FL380. Under this arrangement, transition to RVSM was carried out in the Yangon FIR. For eastbound flights, the procedure was more straight forward as the eastbound RVSM levels used were the same as for CVSM, i.e. FLs 330, 370 and 410 (FL290 was not available on A599 in the Yangon FIR), and aircraft transition to China metric levels after passing LINSO in the Kunming FIR. The Yangon transition procedures include provision for a loss of two-way radio communications by aircraft with Yangon ACC.

3.32 Operators had found the westbound transition procedure requiring a double transition to be unnecessarily restrictive and inefficient, and IATA had requested that the procedure be improved by removing the requirement for a double transition.

3.33 Subsequent to the RVSM/TF/20 meeting (October 2003), the ICAO Asia/Pacific Regional Office held discussions with the Air Traffic Management Bureau (ATMB), CAAC in Beijing, China in March 2004 and later with Myanmar. There was agreement in principle between China and Myanmar to change the Yangon/Kunming transition procedures to remove the double transition and to adopt Option 2 proposed by RVSM/TF/20. Under the proposed revised procedure for westbound aircraft, transition would be carried out from China metric to RVSM levels in the Yangon FIR after passing LINSO, thereby removing the double transition.

3.34 China and Myanmar were expected to take formal action to change the transition procedure and amend the Letters of Agreement between Kunming and Yangon ACCs as soon as practicable.

3.35 The meeting recognized that it was desirable to have a common RVSM procedure from China metric to RVSM levels and vice versa, and the proposed transition procedures for the Yangon/Kunming FIRs could provide a basis for consideration for the transition procedures required between the Shanghai FIR and the Incheon/Tokyo FIRs.

Impact of RVSM on ATS route operations

3.36 IFALPA requested that in conjunction with RVSM implementation, the ATS route (s) affected should be reviewed to ensure that the increased capacity and traffic flows would be efficiently managed.

3.37 The meeting agreed that RVSM implementation could lead to a redistribution and increase in traffic and the existing route (s) may require realignment, and ATM arrangements adjusted accordingly. In this regard, the ATS Route Network Review Task Force (ARNR/TF) would be

requested to take into consideration the impact of RVSM implementation for the existing and future traffic flows.

Agenda Item 4: Aircraft Operations and Airworthiness Considerations

Future OPS/AIR Work Programme

4.1 The meeting reviewed and updated the task list for the Aircraft Operations and Airworthiness activities as shown in Appendix H.

4.2 The meeting agreed that an RVSM seminar should be held as part of the implementation effort. It was felt that in particular, as the Republic of Korea had not previously experienced RVSM implementation, that this would be extremely helpful for the ATS provider, regulatory authority, and operators. The meeting agreed that this seminar should focus on updating on RVSM issues such as, the global implementation and safety assessment status; new requirements for airworthiness and operational approval and monitoring; Minimum Monitoring Requirements (MMR); height-keeping performance and monitoring programme; new version of the GPS Monitoring Unit (GMU); follow-on monitoring and continuous airworthiness programme; training programme (Pilot-Dispatcher-Maintenance); in-flight contingency procedures; large height deviation reports, as well as lessons learnt from the SCS and Bay of Bengal implementations. In addition, military operations in the Japan and Republic of Korea FIRs and weather and turbulence data should be considered.

4.3 In regard to the date and venue for the seminar, Japan and the Republic of Korea agreed to coordinate on the details and to inform the Regional Office in due course. The meeting agreed to combine the seminar (three days), followed by the RVSM/TF/23 meeting (two days) in October 2004.

Agenda Item 5: Safety and Airspace Monitoring Considerations

Review of Regional Monitoring Agency (RMA) Functions

5.1 The meeting reviewed the monitoring and safety assessment required as part of the RVSM implementation process. In this regard, the meeting noted that the monitoring functions of the airspace planned for RVSM implementation in the Japan and Republic of Korea FIRs were under the responsibility of the PARMO. To date, PARMO had not confirmed the level of support that they would be able to provide in view of domestic RVSM implementation in the United States of America. As an interim measure, in view of the urgency to progress the readiness and safety assessment for the Incheon FIR, the meeting requested MAAR to undertake the readiness and safety assessment work involved. In this regard, MAAR agreed that they were willing to provide the necessary monitoring services. ICAO would coordinate with PARMO on the proposed arrangements and advise MAAR accordingly.

5.2 The meeting reviewed the overall RMA functions, including information on the height-keeping performance of aircraft, as well as the process for collecting reports on large height deviations (LHDs). In addition, the readiness and safety assessments to achieve the agreed target level of safety for the RVSM implementation were considered.

5.3 MAAR presented the forms for reports on LHD and traffic movement sample data (TSD) together with associated instructions (**Appendices I and J** respectively refer). To facilitate the readiness and safety assessments, Japan and the Republic of Korea agreed to submit the monthly LHD reports to MAAR in addition to PARMO, starting from March 2004. The meeting recognized and

appreciated that the TSD template adopted by the Asia/Pacific RVSM/TF had been developed by the Caribbean and South American Monitoring Agency for use in the CAR/SAM Region.

5.4 The meeting discussed the optimum period to capture peak traffic movements for the readiness and safety assessments of the planned RVSM airspace in Japan and Korea. The meeting agreed that traffic data for the period 1 August to 30 September 2004 would be submitted to MAAR no later than 31 October 2004.

5.5 The meeting reviewed and updated the list of tasks relating to Safety and Airspace Monitoring for the RVSM implementation process as shown in Appendix H.

5.6 In regard to a query on the readiness of operators, the meeting noted the information provided by Japan and the Republic of Korea above, and agreed to adopt a target of 90 percent operator approval (the figure adopted for RVSM implementation in the Asia/Pacific Region) for RVSM implementation in the FIRs concerned, in order to avoid having a mixed environment of operations.

Agenda Item 6: Any Other Business

Future work

6.1 The meeting agreed to progress the implementation plan based on the following schedule of meetings:

| | | |
|---|----------------|-----------|
| RVSM Seminar/6 – RVSM/TF/23 | October 2004 | venue TBD |
| RVSM/TF/25 | February 2005 | Bangkok |
| RVSM/TF/26 (Go/No-go meeting) | May 2005 | Bangkok |
| RVSM/TF/27 (90-day follow-up review) | September 2005 | Bangkok |
| RVSM/TF/28 (One-year-follow-up review) | June 2006 | Bangkok |

7. Closing of the Meeting

7.1 The Chairman expressed his appreciation to the participants for the excellent progress made at the meeting. He noted that there remained a substantial amount of work to be completed to meet the target RVSM implementation date of 9 June 2005. In this context, he urged all parties concerned to continue to work actively to complete the outstanding tasks for the implementation.

7.2 He also thanked the Regional Office for the outstanding facilities and support provided both prior to and during the meeting.

SCM RVSM Japan/Republic of Korea
Appendix A to the Report

LIST OF PARTICIPANTS

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SCM RVSM Japan/Republic of Korea
Appendix A to the Report

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SCM RVSM Japan/Republic of Korea
Appendix A to the Report

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SCM RVSM Japan/Republic of Korea
Appendix A to the Report

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LIST OF WORKING PAPERS AND INFORMATION PAPERS

WORKING PAPERS

| WP No. | Date | Agenda Item | Presented by | Subject |
|---------------|-------------|--------------------|---------------------|---|
| 1 | 5/7/04 | - | Secretariat | Provisional Agenda |
| 2 | 5/7/04 | 2 | RVSM/TF Chairman | Review of ICAO RVSM Implementation Process |
| 3 | 5/7/04 | 3 | RVSM/TF Chairman | ICAO RVSM Implementation Process (List of Tasks) |
| 4 | 5/7/04 | 3 | Secretariat | Status of RVSM Implementation in the Asia/Pacific Region |
| 5 | 5/7/04 | 3 | Secretariat | Proposed RVSM Transition Procedures Between the Kunming and Yangon FIRs |
| 6 | 5/7/04 | 3 | Hong Kong, China | RVSM Flight Level Orientation Scheme (FLOS) |
| 7 | 5/7/04 | 3 | Republic of Korea | Airspace Safety Assessment |

INFORMATION PAPERS

| IP No. | Date | Agenda Item | Presented by | Subject |
|---------------|-------------|--------------------|---------------------|---|
| 1 | 5/7/04 | - | Secretariat | List of Working/Information Papers |
| 2 | 5/7/04 | 3 | Japan | RVSM Implementation Plan in the Tokyo and Naha FIRs |
| 3 | 5/7/04 | 3 | Japan | Necessity of RVSM in Japanese Domestic Airspace |
| 4 | 5/7/04 | 2 | Republic of Korea | RVSM Implementation Plan |

AGENDA FOR SCM RVSM JAPAN/REPUBLIC OF KOREA

- Agenda Item 1: Adoption of Agenda
- Agenda Item 2: ICAO Implementation Strategy
- Agenda Item 3: ATS Operational Considerations (including Letters of Agreement)
- Agenda Item 4: Aircraft Operations and Airworthiness Considerations
- Agenda Item 5: Safety and Airspace Monitoring Considerations
- Agenda Item 6: Any Other Business

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SCM RVSM Japan/Republic of Korea
Appendix D to the Report

RVSM IMPLEMENTATION STATUS IN THE ASIA/PACIFIC REGION

| FIR/AOR | RVSM Implementation Date | Comments |
|-----------------------|-----------------------------|--|
| Anchorage Arctic | 24 Feb 2000 | RVSM Transition Airspace only |
| Anchorage Continental | 24 Feb 2000 | RVSM Transition Airspace only |
| Anchorage Oceanic | 24 Feb 2000 | |
| Auckland Oceanic | 24 Feb 2000 | |
| Bali | 31 Oct 2002 | |
| Bangkok | 21 Feb 2002 | Specific routes on 21 Feb 2002. Whole FIR on 27 Nov 2003 |
| Beijing | TBD | |
| Biak | Not applicable | Subject to Indonesia upper airspace consolidation |
| Brisbane | 24 Feb 2000 | Oceanic East of Australia 24 Feb 2000 - Remainder of FIR 1 Nov 2001 |
| Calcutta | 27 Nov 2003 | |
| Chennai | 27 Nov 2003 | |
| Colombo | 27 Nov 2003 | |
| Delhi | 27 Nov 2003 | |
| Dhaka | 27 Nov 2003 | |
| Guangzhou | TBD | |
| Hanoi | 31 Oct 2002 | |
| Ho Chi Minh | 21 Feb 2002 | |
| Hong Kong | 31 Oct 2002 | |
| Honiara | 24 Feb 2000 | |
| Jakarta | 31 Oct 2002 | |
| Karachi | 27 Nov 2003 | |
| Kathmandu | 27 Nov 2003 | |
| Kota Kinabalu | 21 Feb 2002 | |
| Kuala Lumpur | 21 Feb 2002 | Eastern part on 21 Feb 2002. Western part 27 November 2003 |
| Kunming | TBD | |
| Lahore | 27 Nov 2003 | |

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| FIR/AOR | RVSM Implementation Date | Comments |
|------------------------|-----------------------------|--|
| Lanzhou | TBD | |
| Male | 27 Nov 2003 | |
| Manila | 21 Feb 2002 | |
| Melbourne | 1 Nov 2001 | |
| Mumbai | 27 Nov 2003 | |
| Nadi | 24 Feb 2000 | |
| Naha | 24 Feb 2000 | Pacific Oceanic on 24 Feb 2000. Whole FIR planned on 9 June 2005. |
| Nauru | 24 Feb 2000 | |
| New Zealand (Domestic) | 13 July 2000 | Non-exclusive |
| Oakland Oceanic | 24 Feb 2000 | |
| Phnom Penh | 21 Feb 2002 | |
| Port Moresby | 13 Apr 2000 | |
| Pyongyang | TBD | |
| Sanya AOR | 31 Oct 2002 | N892 within the oceanic airspace of Sanya AOR on 21 February 2002 |
| Shanghai | TBD | |
| Shenyang | TBD | |
| Singapore | 21 Feb 2002 | |
| Incheon | 9 Jun 2005 | Planned implementation |
| Tahiti | 24 Feb 2000 | Non-exclusive RVSM airspace |
| Taibei | 21 Feb 2002 | |
| Tokyo | 24 Feb 2000 | Pacific Oceanic on 24 Feb 2000. Whole FIR planned on 9 June 2005. |
| Ujung Pandang | 31 Oct 2002 | Phased Implementation |
| Ulaan Baatar | TBD | |
| Urumqi | TBD | |
| Vientiane | 31 Oct 2002 | |
| Wuhan | TBD | |
| Yangon | 27 Nov 2003 | |

DRAFT

AERONAUTICAL INFORMATION CIRCULAR

RECOMMENDATION: ATS Service Providers planning to implement RVSM on 9 June 2005 should have published an advance RVSM implementation NOTAM or AIC based on the example below by 31 July 2004.

ADVANCE NOTAM OR AIC TO BE PUBLISHED BY 31 JULY 2004

This (NOTAM or AIC) serves as Notice of Intent to implement RVSM in the _____ FIR on 9 June 2005.

Reduced Vertical Separation Minimum (RVSM) is vertical separation of aircraft by 1,000 ft above FL 290. By 9 June 2005, operators should have received RVSM aircraft (airworthiness) and operational approval from the appropriate State authority. Operator/aircraft approval will enable air traffic service providers to plan for orderly RVSM implementation.

Starting 9 June 2005, only RVSM compliant aircraft will be cleared to operate in the _____ FIR between FLs 290 and 410 (inclusive). Aircraft that are not RVSM compliant (e.g., ferry and maintenance flights) will only be cleared to operate in the _____ FIR between FLs 290 and 410 (inclusive) after prior coordination with the appropriate ACC. 2,000 ft vertical separation will be applied to such aircraft. _____ ACC contacts will be published on web sites and in follow-up NOTAMS.

RVSM will be implemented in the _____ FIR in accordance with ICAO regional agreements. ICAO recommends that State authorities and operators use FAA Interim Guidance 91-RVSM (as amended), Joint Airworthiness Authorities Temporary Guidance Leaflet 6 or equivalent State documents as the basis for approving aircraft and operator programs for RVSM. Current information and RVSM approval documents, including revisions, can be found on the web site maintained by the FAA on behalf of the ICAO Asia/Pacific RVSM Implementation Group and on individual State web sites. To access the FAA RVSM web site, type:

<http://www.faa.gov/ats/ato/rvsm1.htm>

The RVSM Documentation section of the FAA website contains guidance on aircraft/operator approval. Operators must begin coordination with the appropriate State authority as soon as possible to ensure that they are approved to begin RVSM operations on 9 June 2005.

For questions on the aircraft and operator approval process, the following contacts may be used:

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DRAFT AIP SUPPLEMENT

**AIRAC
Xx xxx 04**

RVSM Policy and Procedures in the xxxx FIR

**(NOTE THESE ARE OCEANIC AIRSPACE PROCEDURES BUT SOME MATERIAL
APPLICABLE IN NON-OCEANIC (RADAR) AIRSPACE)**

1.0 Introduction

1.1 The International Civil Aviation Organization (ICAO) Third Asia/Pacific Regional Air Navigation Meeting (RAN/3) recommended that Reduced Vertical Separation Minimum (RVSM) should be introduced in the Asia and Pacific Region This is due to the significant benefits to be gained by aircraft operators and air traffic services (ATS) providers. ICAO Document 9574, *Manual on Implementation of a 300 m [1 000 ft] Vertical Separation Minimum Between FL 290 and FL 410 Inclusive* contains an explanation of RVSM.

1.2 Benefits to be gained from RVSM include:

- (a) adoption of an ICAO endorsed navigation requirement;
- (b) improved utilization of airspace for ATC conflict resolution;
- (c) fuel savings of $\approx 1\%$ for flight closer to optimum cruise altitude; and
- (d) reduction in ground delays.

1.3 CONTENT. The ICAO Asia/Pacific RVSM Task Force has harmonized the basic content of this document. The following policies are addressed in the paragraphs of this document:

- 2.0 Identification of RVSM Airspace
- 3.0 Airworthiness and Operational Approval and Monitoring
- 4.0 ACAS II and Transponder Equipage
- 5.0 In-flight Procedures Within RVSM Airspace
- 6.0 Special Procedures for In-flight Contingencies in Oceanic Airspace
- 7.0 In-flight Contingency Procedures for Subsonic Aircraft Requiring Rapid Descent, Turn-back or Diversion in Oceanic Airspace
- 8.0 Weather Deviation Procedures
- 9.0 Special Procedures to Mitigate Wake Turbulence Encounters and Distracting Aircraft System Alerts in the Oceanic Airspace
- 10.0 Transition Areas
- 11.0 Flight Planning Requirements
- 12.0 Procedures for Operation of Non-RVSM Compliant Aircraft in RVSM Airspace
- 13.0 Delivery Flights for Aircraft that are RVSM Compliant on Delivery
- 14.0 Procedures for Suspension of RVSM
- 15.0 Guidance for Pilot and Controller for Actions in Event of Aircraft System Malfunction or Turbulence Greater than Moderate
- 16.0 Procedures for Air-Ground Communication Failure

2.0 Identification of RVSM Airspace

2.1 REPUBLIC OF KOREA. Effective 9 June 2005 at TBD UTC, RVSM airspace is prescribed within the Incheon FIR within controlled airspace between FL 290 and FL 410 (inclusive).

3.0 Airworthiness and Operational Approval and Monitoring

3.1 APPROVAL DATE. Operator/aircraft approval by x Month 2005 will enable air traffic service providers to plan for orderly RVSM implementation.

3.2 APPROVAL PROCESS. (Source Document: FAA Interim Guidance (IG) 91-RVSM/JAA TGL #6) Operators must obtain airworthiness and operational approval from the State of Registry or State of the Operator, as appropriate, to conduct RVSM operations. On behalf of the Pacific ATS providers, the FAA is maintaining a website containing documents and policy for RVSM approval. The Internet address is: <http://www.faa.gov/ats/ato/rvsm1.htm>. In the “RVSM Documentation” section, under “Documents Applicable to All RVSM Approvals”, the “Aircraft/Operator Approval Events Outlines” for US and Non-US Operators provides an outline of approval process tasks with references to related documents.

3.3 AIRCRAFT MONITORING. (Source Document: IG 91-RVSM/TGL #6, Pacific Minimum Monitoring Requirements) Operators are required to participate in the RVSM aircraft monitoring program. This is an essential element of the RVSM implementation program in that it confirms that the aircraft altitude-keeping performance standard is being met. The Pacific Approvals Registry and Monitoring Organization (PARMO) will process the results of monitoring. For further information on RVSM monitoring, the PARMO web site can be accessed by:

- (a) Accessing the “RVSM Documentation” section of the FAA RVSM website and clicking on the link to the PARMO website or...
- (b) Using this Internet address:
http://www.tc.faa.gov/niaab/act500/rvsm/aparmo_intro.html

3.3.1 Monitoring accomplished for other regions can be used to fulfill the monitoring requirements for the Asia/Pacific Region. The PARMO will coordinate with other monitoring agencies to access this information. For monitoring services in the Asia/Pacific region, operators should contact the APARMO monitoring contractor as follows:

Phone: +1 202 863 2175
Fax: +1 202 862 2398
Email: monitor@cssiinc.com

4.0 ACAS II and Transponder Equipage

4.1 The ICAO Asia/Pacific RVSM Implementation Task Force recommends that those aircraft equipped with ACAS and operated in RVSM airspace be equipped with ACAS II. (TCAS II systems with Version 7.0 incorporated meet ICAO ACAS II standards).

4.1.1 Operators must take action to inform themselves of ACAS II equipage requirements and plan for compliance. ICAO and individual States have established policies requiring ACAS II equipage and schedules for compliance. In addition, the APANPIRG has endorsed early ACAS II equipage in the region.

4.2 INTERNATIONAL GENERAL AVIATION (IGA) TRANSPONDER EQUIPAGE. ICAO Annex 6, Part II, states that, starting x Month 2005, IGA airplanes shall be equipped with a pressure altitude reporting transponder certified by the appropriate State authority as meeting the provisions of Annex 10.

5.0 In-flight Procedures within RVSM Airspace

5.1 Before entering RVSM airspace, the pilot should review the status of required equipment (see Appendix 4 of FAA IG 91-RVSM for pilot RVSM procedures). The following equipment should be operating normally:

- (a) two primary altimetry systems;
- (b) one automatic altitude-keeping device; and
- (c) one altitude-alerting device.

5.2 See Attachment A to this AIP Supplement or Appendix 5 of FAA IG 91-RVSM for pilot and controller actions in contingencies. The pilot must notify ATC whenever the aircraft:

- (a) is no longer RVSM compliant due to equipment failure; or
- (b) experiences loss of redundancy of altimetry systems; or
- (c) encounters turbulence that affects the capability to maintain flight level.

5.3 TRANSITION BETWEEN FL's. (Source Document: 91-RVSM/TGL #6) During cleared transition between levels, the aircraft should not overshoot or undershoot the assigned FL by more than 150 ft (45 m).

5.4 PILOT LEVEL CALL. (Source Document: State AIP Supplement) Except in an ADS or radar environment, pilots shall report reaching any altitude assigned within RVSM airspace.

5.5 CONTINGENCY PROCEDURES. (Source Document: State AIP Supplement) Paragraphs 6.0, 7.0, 8.0 and 9.0 below contain procedures for in-flight contingencies that have been updated for RVSM operations. The contingency procedures in paragraphs 6.0-7.0 and the off-set procedures in paragraph 9.0 should be applied in Oceanic operations. The weather deviation procedures in paragraph 8.0 may be applied in all airspace in the region.

6.0 Special Procedures for In-flight Contingencies in Oceanic Airspace in the ____ FIR (Source Document: State AIP Supplement)

(NOTE THIS PROCEDURE APPLIES IN OCEANIC AIRSPACE AND NOT IN RADAR AIRSPACE)

General procedures

6.1 The following general procedures apply to both subsonic and supersonic aircraft and are intended as guidance only. Although all possible contingencies cannot be covered, they provide for cases of inability to maintain assigned level due to:

- (a) weather;

- (b) aircraft performance;
- (c) pressurization failure; and
- (d) problems associated with high-level supersonic flight.

6.2 The procedures are applicable primarily when rapid descent and/or turn-back or diversion to an alternate airport is required. **The pilot's judgment shall determine the sequence of actions to be taken, taking into account specific circumstances.**

6.3 If an aircraft is unable to continue flight in accordance with its air traffic control clearance, a revised clearance shall, whenever possible, be obtained prior to initiating any action, using a distress or urgency signal as appropriate.

6.4 If prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time and, until a revised clearance is received, the pilot shall:

- (a) if possible, deviate away from an organized track or route system;
- (b) establish communications with and alert nearby aircraft by broadcasting, at suitable intervals: flight identification, flight level, aircraft position, (including the ATS route designator or the track code) and intentions on the frequency in use, as well as on frequency 121.5 MHz (or, as a back-up, the VHF inter-pilot air-to-air frequency 123.45);
- (c) watch for conflicting traffic both visually and by reference to ACAS (if equipped); and
- (d) turn on all aircraft exterior lights (commensurate with appropriate operating limitations).

7.0 In-flight Contingency Procedures for Subsonic Aircraft Requiring Rapid Descent, Turn-Back or Diversion in Oceanic Airspace in the ___FIR. (Source Document: State AIP Supplement)

(NOTE THIS PROCEDURE APPLIES IN OCEANIC AIRSPACE AND NOT IN RADAR AIRSPACE)

Initial action

7.1 If unable to comply with the provisions of paragraph 6.3 to obtain a revised ATC clearance, the aircraft should leave its assigned route or track by turning 90 degrees right or left whenever this is possible. The direction of the turn should be determined by the position of the aircraft relative to any organized route or track system (for example, whether the aircraft is outside, at the edge of, or within the system). Other factors to consider are terrain clearance and the levels allocated to adjacent routes or tracks.

Subsequent action

7.2 AIRCRAFT ABLE TO MAINTAIN LEVEL. An aircraft able to maintain its assigned level should acquire and maintain in either direction a track laterally separated by 25 NM from its assigned route or track and once established on the offset track, climb or descend 500 ft (150 m).

7.3 AIRCRAFT UNABLE TO MAINTAIN LEVEL. An aircraft NOT able to maintain its assigned level should, whenever possible, minimize its rate of descent while turning to acquire and maintain in either direction a track laterally separated by 25 NM from its assigned route or track. For subsequent level flight, a level should be selected which differs by 500 ft (150 m) from those normally used.

7.4 DIVERSION ACROSS THE FLOW OF ADJACENT TRAFFIC. Before commencing a diversion across the flow of adjacent traffic, the aircraft should, while maintaining the 25 NM offset, expedite climb above or descent below levels where the majority of aircraft operate (*e.g., to a level above FL 400 or below FL 290*) and then maintain a level which differs by 500 ft (150 m) from those normally used. However, if the pilot is unable or unwilling to carry out a major climb or descent, the aircraft should be flown at a level 500 ft above or below levels normally used until a new ATC clearance is obtained.

7.5 ETOPS AIRCRAFT. If these contingency procedures are employed by a twin-engine aircraft as a result of an engine shutdown or a failure of an ETOPS critical system, the pilot should advise ATC as soon as practicable of the situation, reminding ATC of the type of aircraft involved and requesting expeditious handling.

8.0 Weather Deviation Procedures in the ____FIR.
(Source Document: State AIP Supplement)

(NOTE THIS PROCEDURE APPLIES IN OCEANIC AIRSPACE AND NOT IN RADAR AIRSPACE)

General procedures

8.1 The following procedures are intended to provide guidance. All possible circumstances cannot be covered. The pilot's judgment shall ultimately determine the sequence of actions taken and ATC shall render all possible assistance.

8.2 If the aircraft is required to deviate from track to avoid weather and prior clearance cannot be obtained, an air traffic control clearance shall be obtained at the earliest possible time. In the meantime, the aircraft shall follow the procedures detailed in paragraph 8.9 below.

8.3 The pilot shall advise ATC when weather deviation is no longer required, or when a weather deviation has been completed and the aircraft has returned to the centerline of its cleared route.

8.4 When the pilot initiates communications with ATC, rapid response may be obtained by stating "WEATHER DEVIATION REQUIRED" to indicate that priority is desired on the frequency and for ATC response.

8.5 The pilot still retains the option of initiating the communications using the urgency call "PAN PAN" to alert all listening parties to a special handling condition, which may receive ATC priority for issuance of a clearance or assistance.

8.6 When controller-pilot communications are established, the pilot shall notify ATC and request clearance to deviate from track, advising, when possible, the extent of the deviation expected. ATC will take one of the following actions:

- (a) if there is no conflicting traffic in the horizontal dimension, ATC will issue clearance to deviate from track; or

- (b) if there is conflicting traffic in the horizontal dimension, ATC will separate aircraft by establishing vertical separation or, if unable to establish vertical separation, ATC shall:
 - i) advise the pilot unable to issue clearance for requested deviation
 - i) advise pilot of conflicting traffic
 - iii) request pilot's intentions

SAMPLE PHRASEOLOGY:

“Unable (requested deviation), traffic is (call sign, position, altitude, direction), advise intentions.”

8.7 The pilot will take the following actions:

- (a) Advise ATC of intentions by the most expeditious means available.
- (b) Comply with air traffic control clearance issued or...
- (c) Execute the procedures detailed in 8.9 below. (ATC will issue essential traffic information to all affected aircraft).
- (d) If necessary, establish voice communications with ATC to expedite dialogue on the situation

Actions to be taken if a revised air traffic control clearance cannot be obtained

8.8 The pilot shall take the actions listed below under the provision that the pilot may deviate from rules of the air (e.g., the requirement to operate on route or track center line unless otherwise directed by ATC), when it is absolutely necessary in the interests of safety to do so.

8.9 ***If a revised air traffic control clearance cannot be obtained*** and deviation from track is required to avoid weather, the pilot shall take the following actions:

- (a) if possible, deviate away from an organized track or route system;
- (b) establish communication with and alert nearby aircraft by broadcasting, at suitable intervals: flight identification, flight level, aircraft position (including the ATS route designator or the track code) and intentions (including the magnitude of the deviation expected) on the frequency in use, as well as on frequency 121.5 MHz (or, as a back-up, the VHF inter-pilot air-to-air frequency 123.45).
- (c) watch for conflicting traffic both visually and by reference to ACAS (if equipped);
- (d) turn on ***all*** aircraft exterior lights (commensurate with appropriate operating limitations);
- (e) for deviations of less than 10NM, aircraft should remain at the level assigned by ATC;
- (f) ***for deviations of greater than 10NM***, when the aircraft is approximately 10 NM from track, initiate a level change based on the following criteria:

| Route center line track | Deviations >10 NM | Level change |
|--------------------------|-------------------|--|
| EAST 000-179 magnetic | LEFT RIGHT | <i>DESCEND 300 ft</i> <i>CLIMB 300 ft</i> |
| WEST 180-359 magnetic | LEFT RIGHT | <i>CLIMB 300 ft</i> <i>DESCEND 300 ft</i> |

Note: 8.9 (b) and (c) above calls for the pilot to: broadcast aircraft position and pilot's intentions, identify conflicting traffic and communicate air-to-air with near-by aircraft. If the pilot determines that there is another aircraft at or near the same FL with which his aircraft might conflict, then the pilot is expected to adjust the path of the aircraft, as necessary, to avoid conflict.

- (g) if contact was not established prior to deviating, continue to attempt to contact ATC to obtain a clearance. If contact was established, continue to keep ATC advised of intentions and obtain essential traffic information.
- (h) when returning to track, be at its assigned flight level, when the aircraft is within approximately 10NM of center line.

9.0 Special Procedures to Mitigate Wake Turbulence Encounters and Distracting Aircraft System Alerts in the Oceanic Airspace of the _____ FIR (Source Document: State AIP Supplement)

(NOTE: TO BE REVIEWED IN LIGHT OF REVISIONS TO ICAO GUIDELINES FOR LATERAL OFFSET PROCEDURE ALSO THIS PROCEDURE DOES NOT APPLY IN RADAR AIRSPACE)

9.1 The following special procedures are applicable to mitigate wake turbulence or distracting aircraft system alerts (e.g., ACAS, Ground Proximity Warning System (GPWS)) in Asia and Pacific airspace where RVSM is applied:

NOTE: in the contingency circumstances below, ATC will not issue clearances for lateral offsets and will not normally respond to actions taken by the pilots.

9.2 An aircraft that encounters wake vortex turbulence or experiences distracting aircraft system alerts shall notify ATC and request a flight level, track or speed change to avoid the condition. However, in situations where such a change is not possible or practicable, the pilot may initiate the following temporary lateral offset procedure with the intention of returning to center line as soon as practicable:

- (a) the pilot should establish contact with other aircraft, if possible, on the appropriate VHF inter-pilot air to air frequency; 123.45 MHz, and
- (b) one (or both) aircraft may initiate lateral offset(s) not to exceed 2 NM from the assigned track, provided that:
 - i) as soon as practicable to do so, the offsetting aircraft notify ATC that ***temporary*** lateral offset action has been taken and specify the reason for doing so (*ATC will not normally respond*); and
 - ii) the offsetting aircraft notify ATC when re-established on assigned route(s) or track(s) (*ATC will not normally respond*).

10.0 Transition Areas (Source Document: State AIP Supplement)

10.1 Transition areas and procedures for transition from RVSM to non-RVSM airspace within the _____ FIR's are identified in _____.

11.0 Flight Planning Requirements (Source Document: State AIP Supplement)

11.1 Unless special arrangement is made as detailed below, RVSM approval is required for operators and aircraft to operate within designated RVSM airspace. The operator must determine that the appropriate State authority has granted them RVSM operational approval and they will meet the RVSM requirements for the filed route of flight and any planned alternate routes. The letter "W" shall be inserted in item 10 (Equipment) of the ICAO standard flight plan to indicate that both the aircraft and operator are RVSM approved.

12.0 Procedures for Operation of Non-RVSM Compliant Aircraft in RVSM Airspace (Source Document: State AIP Supplement)

12.1 FLIGHT PRIORITY. It should be noted that RVSM approved aircraft will be given priority for level allocation over non-RVSM approved aircraft.

12.2 VERTICAL SEPARATION APPLIED. The vertical separation minimum between non-RVSM aircraft operating in the RVSM stratum and all other aircraft is 2,000 ft.

12.3 PHRASEOLOGY. Non-RVSM compliant aircraft operating in RVSM airspace should use the phraseology contained in Attachment B.

12.4 CONTINUOUS CLIMB/DESCENT OF NON-COMPLIANT AIRCRAFT THROUGH RVSM AIRSPACE (Source Document: State AIP Supplement). Non-RVSM compliant aircraft may be cleared to climb to and operate above FL____or descend to and operate below FL____ provided that they:

- a) Do not climb or descend at less than the normal rate for the aircraft and
- b) Do not level off at an intermediate level while passing through the RVSM stratum.

12.5 SPECIAL COORDINATION PROCEDURES FOR CRUISE OPERATION OF NON-RVSM COMPLIANT AIRCRAFT IN RVSM AIRSPACE (Source : State AIP Supplement). Non-RVSM compliant aircraft may not flight plan between FL ____ and FL____ inclusive within RVSM airspace. After special coordination as detailed in 12.5.1 below, the following non-RVSM aircraft may flight plan at RVSM flight levels in the RVSM stratum:

- (a) Is being initially delivered to the State of Registry or Operator (see Paragraph 13.0 for additional details and information); or
- (b) was formally RVSM approved but has experienced an equipment failure and is being flown to a maintenance facility for repair in order to meet RVSM requirements and/or obtain approval; or
- (c) is transporting a spare engine mounted under the wing; or
- (d) is being utilized for mercy or humanitarian purposes; or

- (e) State aircraft (those aircraft used in military, custom and police services shall be deemed state aircraft)

12.5.1 Aircraft operators requesting approval as above shall:

- (a) if departing within _____ FIR, obtain approval from _____ Center normally not more than 72 hours and not less than 4 hours prior to intended departure time. The _____ Center will provide notification of approval via Telephone, AFTN, FAX or email as appropriate; or
- (b) if transiting _____ FIR, obtain approval from the first RVSM affected Center. (Note: the first center will coordinate with next Center.)
- (c) Included the “STS/APVD NONRVSM” in Field 18 of the ICAO Flight Plan.

(NOTE: APPROVAL MEANS ABLE TO OPERATE IN THE RVSM STRATUM. AIRCRAFT CRUISING LEVELS WILL BE SUBJECT TO AIR TRAFFIC CONTROL.)

12.5.2 Contact details for approval request are as follows:

_____ Center –
Telephone:
AFTN:
FAX:
E-Mail:

12.5.3 This approval process is intended exclusively for the purposes indicated above and not as a means to circumvent the normal RVSM approval process.

13.0 Delivery Flights for Aircraft that are RVSM Compliant on Delivery (Source Document: State AIP Supplement)

13.1 An aircraft that is RVSM compliant on delivery may operate in RVSM airspace provided that the crew is trained on RVSM policies and procedures applicable in the airspace and the responsible State issues the operator a letter of authorization approving the operation. State notification to the APARMO should be in the form of a letter, e-mail or fax documenting the one-time flight. The planned date of the flight, flight identification, registration number and aircraft type/series should be included. Email address is _____. Fax number is _____.

14.0 Procedures for Suspension of RVSM (Source Document: State AIP Supplement)

14.1 Air traffic services will consider suspending RVSM procedures within affected areas of the _____ FIR when there are pilot reports of greater than moderate turbulence. Within areas where RVSM procedures are suspended, the vertical separation minimum between all aircraft will be 2,000 ft.

15.0 Guidance for Pilots and Controllers for Actions in the Event of Aircraft System Malfunction or Turbulence Greater than Moderate (Source Document: State AIP Supplement)

15.1 See Attachment A for guidance in these circumstances.

16.0 Procedures for Air-Ground Communication Failure (Source Document: State AIP Supplement)

16.1 The air-ground communication failure procedures specified in ICAO PANS-RAC Doc 4444 should be applied, in conjunction with AIP (XXXX).

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ATTACHMENT A

CONTINGENCY SCENARIOS. The following paragraphs summarize pilot actions to mitigate the potential for conflict with other aircraft in certain contingency situations. They should be reviewed in conjunction with the expanded contingency scenarios detailed on pages ____ which contain additional technical and operational detail.

***Scenario 1: The pilot is: 1) unsure of the vertical position of the aircraft due to the loss or degradation of all primary altimetry systems, or 2) unsure of the capability to maintain cleared flight level (CFL) due to turbulence or loss of all automatic altitude control systems.**

| The Pilot should: | ATC can be expected to: |
|---|--|
| Maintain CFL while evaluating the situation; | |
| Watch for conflicting traffic both visually and by reference to ACAS, if equipped; | |
| If considered necessary, alert nearby aircraft by 1) making maximum use of exterior lights; 2) broadcasting position, FL, and intentions on 121.5 MHz (as a back-up, the VHF inter-pilot air-to-air frequency, 123.45MHz, may be used). | |
| Notify ATC of the situation and intended course of action. Possible courses of action include: | Obtain the pilot's intentions and pass essential traffic information. |
| 1) maintaining the CFL and route provided that ATC can provide lateral, longitudinal or conventional vertical separation. | 1) If the pilot intends to continue in RVSM airspace, assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum. |
| 2) requesting ATC clearance to climb above or descend below RVSM airspace if the aircraft cannot maintain CFL and ATC cannot establish adequate separation from other aircraft. | 2) If the pilot requests clearance to exit RVSM airspace, accommodate expeditiously, if possible. |
| 3) executing the contingency maneuver shown in paragraphs 6.0 and 7.0 of this AIP Supplement to offset from the assigned track and FL, if ATC clearance cannot be obtained and the aircraft cannot maintain CFL. | 3) If adequate separation cannot be established and it is not possible to comply with the pilot's request for clearance to exit RVSM airspace, advise the pilot of essential traffic information, notify other aircraft in the vicinity and continue to monitor the situation. |
| | 4) Notify adjoining ATC facilities/sectors of the situation. |

Scenario 2: There is a failure or loss of accuracy of one primary altimetry system (e.g., greater than 200 foot difference between primary altimeters)

| The Pilot should |
|--|
| Cross check standby altimeter, confirm the accuracy of a primary altimeter system and notify ATC of the loss of redundancy. If unable to confirm primary altimeter system accuracy, follow pilot actions listed in the preceding scenario. |

EXPANDED EQUIPMENT FAILURE AND TURBULENCE ENCOUNTER SCENARIOS. Operators may consider this material for use in training programs.

***Scenario 1: All automatic altitude control systems fail (e.g., Automatic Altitude Hold).**

| The Pilot should | ATC can be expected to |
|--|--|
| Initially | |
| Maintain CFL | |
| Evaluate the aircraft's capability to maintain altitude through manual control. | |
| Subsequently | |
| Watch for conflicting traffic both visually and by reference to ACAS, if equipped. | |
| If considered necessary, alert nearby aircraft by 1) making maximum use of exterior lights; 2) broadcasting position, FL, and intentions on 121.5MHz (as a back-up, the VHF inter-pilot air-to-air frequency, 123.45MHz, may be used.) | |
| Notify ATC of the failure and intended course of action. Possible courses of action include: | |
| 1) maintaining the CFL and route, provided that the aircraft can maintain level. | 1) If the pilot intends to continue in RVSM airspace, assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum. |
| 2) requesting ATC clearance to climb above or descend below RVSM airspace if the aircraft cannot maintain CFL and ATC cannot establish lateral, longitudinal or conventional vertical separation. | 2) If the pilot requests clearance to exit RVSM airspace, accommodate expeditiously, if possible. |
| 3) executing the contingency maneuver shown in paragraphs 6.0 and 7.0 of this AIP Supplement to offset from the assigned track and FL, if ATC clearance cannot be obtained and the aircraft cannot maintain CFL. | 3) If adequate separation cannot be established and it is not possible to comply with the pilot's request for clearance to exit RVSM airspace, advise the pilot of essential traffic information, notify other aircraft in the vicinity and continue to monitor the situation. |
| | 4) Notify adjoining ATC facilities/sectors of the situation. |

***Scenario 2: Loss of redundancy in primary altimetry systems**

| The Pilot should | ATC can be expected to |
|--|--|
| If the remaining altimetry system is functioning normally, couple that system to the automatic altitude control system, notify ATC of the loss of redundancy and maintain vigilance of altitude keeping. | Acknowledge the situation and continue to monitor progress |

Scenario 3: All primary altimetry systems are considered unreliable or fail

| The Pilot should | ATC can be expected to |
|--|--|
| Maintain CFL by reference to the standby altimeter (if the aircraft is so equipped). | |
| Alert nearby aircraft by 1) making maximum use of exterior lights; 2) broadcasting position, FL, and intentions on 121.5 MHz (as a back-up, the VHF inter-pilot air-to-air frequency, 123.45MHz, may be used). | |
| Consider declaring an emergency. Notify ATC of the failure and intended course of action. Possible courses of action include: | Obtain pilot's intentions, and pass essential traffic information. |
| 1) maintaining CFL and route provided that ATC can provide lateral, longitudinal or conventional vertical separation. | 1) If the pilot intends to continue in RVSM airspace, assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum. |
| 2) requesting ATC clearance to climb above or descend below RVSM airspace if ATC cannot establish adequate separation from other aircraft. | 2) If the pilot requests clearance to exit RVSM airspace, accommodate expeditiously, if possible. |
| 3) executing the contingency maneuver shown in paragraphs 6.0 and 7.0 of this AIP Supplement to offset from the assigned track and FL, if ATC clearance cannot be obtained. | 3) If adequate separation cannot be established and it is not possible to comply with the pilot's request for clearance to exit RVSM airspace, advise the pilot of essential traffic information, notify other aircraft in the vicinity and continue to monitor the situation. |
| | 4) Notify adjoining ATC facilities/sectors of the situation. |

Scenario 4: The primary altimeters diverge by more than 200ft (60m)

| The Pilot should |
|--|
| Attempt to determine the defective system through established trouble-shooting procedures and/or comparing the primary altimeter display to the standby altimeter (as corrected by the correction cards, if required). |
| If the defective system can be determined, couple the functioning altimeter system to the altitude-keeping device. |
| If the defective system cannot be determined, follow the guidance in Scenario 3 for failure or unreliable altimeter indications of all primary altimeters. |

***Scenario 5: Turbulence (greater than moderate) which the pilot believes will impact the aircraft's capability to maintain flight level.**

| The Pilot should | ATC can be expected to |
|--|---|
| Watch for conflicting traffic both visually and by reference to ACAS, if equipped. | |
| If considered necessary, alert nearby aircraft by: 1) making maximum use of exterior lights; 2) broadcasting position, FL, and intentions on 121.5 MHz (as a back-up, the VHF inter-pilot air-to-air frequency, 123.45MHz, may be used). | |
| Notify ATC of intended course of action as soon as possible. Possible courses of action include: | |
| 1) maintaining CFL and route provided ATC can provide lateral, longitudinal or conventional vertical separation. | 1) Assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum. |
| 2) requesting flight level change, if necessary. | 2) If unable to provide adequate separation, advise the pilot of essential traffic information and request pilot's intentions. |
| 3) executing the contingency maneuver shown in paragraphs 6.0 and 7.0 of this AIP Supplement to offset from the assigned track and FL, if ATC clearance cannot be obtained and the aircraft cannot maintain CFL. | 3) Notify other aircraft in the vicinity and monitor the situation |
| | 4) Notify adjoining ATC facilities/sectors of the situation. |

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ATTACHMENT B

Phraseology Related to RVSM Operations

Controller-pilot phraseology:

| Message | Phraseology |
|---|---|
| For a controller to ascertain the RVSM approval status of an aircraft: | (call sign) CONFIRM RVSM APPROVED |
| For a pilot to report non-RVSM approval status: i. on the initial call on any frequency within the RVSM airspace (controllers shall provide a readback with this same phrase), and ii. in all requests for flight level changes pertaining to flight levels within the RVSM airspace; and iii. in all read-backs to flight level clearances pertaining to flight levels within the RVSM airspace. Additionally, except for State aircraft, pilots shall include this phrase to read back flight level clearances involving the vertical transit through FL 290 or FL 410. <i>See examples that follow.</i> | NEGATIVE RVSM* |
| For a pilot to report RVSM approval status. | AFFIRM RVSM* |
| For a pilot of a non-RVSM approved State aircraft to report non-RVSM approval status, in response to the phrase (call sign) CONFIRM RVSM APPROVED . | NEGATIVE RVSM STATE AIRCRAFT* |
| Denial of clearance into the RVSM airspace: | (call sign) UNABLE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN [or DESCEND TO, or CLIMB TO] FLIGHT LEVEL (number) |
| For a pilot to report when severe turbulence affects the aircraft's capability to maintain the height-keeping requirements for RVSM. | UNABLE RVSM DUE TURBULENCE* |
| For a pilot to report that the aircraft's equipment has degraded enroute below that required for flight within the RVSM airspace. (See Attachment A) <i>(This phrase is to be used to convey both the initial indication of the non-MASPS compliance, and henceforth, on initial contact on all frequencies within the lateral limits of the RVSM airspace until such time as the problem ceases to exist, or the aircraft has exited the RVSM airspace.)</i> | UNABLE RVSM DUE EQUIPMENT* |
| For a pilot to report the ability to resume operations within the RVSM airspace after an equipment or weather-related contingency. | READY TO RESUME RVSM* |

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| Message | Phraseology |
|--|-----------------------------------|
| For a controller to confirm that an aircraft has regained its RVSM approval status, or to confirm that the pilot is ready to resume RVSM operations. | REPORT ABLE TO RESUME RVSM |

Example 1: A non-RVSM approved aircraft, maintaining FL 260, subsequently requests a climb to FL 320.
Pilot: (call sign) REQUEST FL 320, NEGATIVE RVSM
Controller: (call sign) CLIMB TO FL 320
Pilot: (call sign) CLIMB TO FL 320, NEGATIVE RVSM

Example 2: A non-RVSM approved aircraft, maintaining FL 260, subsequently requests a climb to FL 430.
Pilot: (call sign) REQUEST FL 430, NEGATIVE RVSM
Controller: (call sign) CLIMB TO FL 430
Pilot: (call sign) CLIMB TO FL 430, NEGATIVE RVSM

Example 3: A non-RVSM approved aircraft, maintaining FL 360, subsequently requests a climb to FL 380.
Pilot: (call sign) REQUEST FL 380, NEGATIVE RVSM
Controller: (call sign) CLIMB TO FL 380
Pilot: (call sign) CLIMB TO FL 380, NEGATIVE RVSM

Example 4: A non-RVSM approved civil aircraft maintaining FL 280, subsequently requests a climb to FL 320.
Pilot: (call sign) REQUEST FL 320, NEGATIVE RVSM
Controller: (call sign) UNABLE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN FL 280

Coordination between ATS units:

| Para | Message | Phraseology |
|------|--|--|
| 1 | To verbally supplement an automated estimate message exchange which does not automatically transfer Item 18 flight plan information. | NEGATIVE RVSM or NEGATIVE RVSM STATE AIRCRAFT [as applicable] |
| 2 | To verbally supplement estimate messages of non-RVSM approved aircraft. | NEGATIVE RVSM or NEGATIVE RVSM STATE AIRCRAFT [as applicable] |
| 3 | To communicate the cause of a contingency relating to an aircraft that is unable to conduct RVSM operations due to severe turbulence or other severe weather-related phenomenon [or equipment failure, as applicable]. | UNABLE RVSM DUE TURBULENCE [or EQUIPMENT , as applicable] |

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TRIGGER NOTAM

FOR RVSM IMPLEMENTATION IN THE INCHEON, NAHA AND TOKYO FIRS

(To be issued on 30 May 2005)

- E) TRIGGER NOTAM (name of State/authority) AIRAC AIP SUP
(reference number),
EFFECTIVE xxxx UTC 9 JUN 2005, REDUCED VERTICAL
SEPARATION MINIMA WILL BE IMPLEMENTED IN THE
INCHEON FIR AND NON-OCEANIC AIRSPACE OF THE NAHA
AND TOKYO FIRS**

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| SN | Activity | Start | Complete | Status | Group Responsible |
|---|--|-----------|-----------|-----------|--|
| 1 Identify Operational Need | | | | | |
| 2 | Agree operational concept for Japan Domestic Airspace and Incheon FIR, Korea | 5-Jul-04 | 7-Jul-04 | completed | ATC/WG, RVSM Task Force |
| 3 Safety Assessment | | | | | |
| 4 | Review available summary data (non-compliant aircraft, aberrant aircraft etc) | 5-Jul-04 | 31-May-05 | | SAM/WG, MAAR, RVSM Task Force |
| 5 | Examine history of height keeping errors related to ATC clearances and assess possible RVSM impact | 5-Jul-04 | 31-May-05 | | SAM/WG, MAAR, RVSM Task Force |
| 6 | Confirm RVSM risk model assumptions/parameters are consistent with airspace where RVSM is to be applied | 5-Jul-04 | 31-May-05 | | SAM/WG, MAAR, RVSM Task Force |
| 7 | Conduct simulations to predict occupancy after RVSM implementation | 5-Jul-04 | 31-May-05 | | SAM/WG, MAAR, RVSM Task Force |
| 8 | Collect weather and turbulence data for analysis | 5-Jul-04 | 31-May-05 | | SAM/WG, OPSAIR, RVSM Task Force |
| 9 | Report monthly large height deviations to MAAR or equivalent monitoring agency (including operational errors) | 1-Mar-04 | 31-May-05 | | ATS Providers, Users |
| 10 | Collect traffic sample data for safety assessment for RVSM implementation | 1-Aug-04 | 30-Sep-04 | | ATS Providers |
| 11 Feasibility Analysis | | | | | |
| 12 | Examine the operational factors and workload associated with RVSM implementation | 5-Jul-04 | 31-May-05 | | ATC/WG, RVSM Task Force |
| 13 Determination of Requirements (airborne & ground systems) | | | | | |
| 14 | States assess the impact of RVSM implementation on controller automation systems and plan for upgrades/modernization | 5-Jul-04 | 31-May-05 | | States |
| 15 Aircraft & Operator Approval Requirements | | | | | |
| 16 | Promulgate the operational approval process | 5-Jul-04 | 31-May-05 | | OPS/AIR/WG, RVSM Task Force |
| 17 | Notify States when significant changes occur to RVSM documentation | 5-Jul-04 | 31-May-05 | | OPS/AIR/WG, RVSM Task Force |
| 18 Perform Rulemaking (if required) | | | | | |
| 19 | Recommend State airspace regulatory documentation | 5-Jul-04 | 31-May-05 | | States |
| 20 Perform Necessary Industry & International Co-ordination | | | | | |
| 21 | Establish target implementation date | 5-Jul-04 | 7-Jul-04 | | RVSM Task Force, States |
| 22 | Report to ATM/AIS/SAR/SG/15 | 00 Jun 05 | 00 Jun 05 | | RVSM Task Force Chairman |
| 23 | Process Doc 7030 amendment | 5-Jul-05 | 31-Dec-04 | | ICAO Regional Office (to include BOB FIRs) |
| 24 | Publish advance AIC | 5-Jul-04 | 31-Jul-04 | | States |
| 25 | Publish AIP Supplement containing RVSM policy/procedures | 5-Jul-04 | 31-Oct-04 | | States |
| 26 | Review inter-facility coordination procedures | 5-Jul-04 | 31-May-05 | | States |
| 27 | Finalize changes to Letters of Agreement | 5-Jul-04 | 31-May-05 | | States |
| 28 | Disseminate information on RVSM policy and procedures through RVSM Website | 5-Jul-04 | 31-May-05 | | OPS/AIR WG, RVSM Task Force |
| 29 Approval of Aircraft & Operators | | | | | |
| 30 | Establish approved operations readiness targets | 5-Jul-04 | 31-May-05 | | IATA, ATC/WG, RVSM Task Force |
| 31 | Assess operator readiness | 5-Jul-04 | 31-May-05 | | IATA, OPS/AIR/WG |

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| SN | Activity | Start | Complete | Status | Group Responsible |
|-----------|--|-----------|-----------|--------|--|
| 32 | Develop Pilot & ATC Procedures | | | | |
| 33 | Review application of tactical offset procedure to mitigate the effects of wake turbulence and TCAS alerts | 5-Jul-04 | 28-Feb-05 | | RVSM Task Force |
| 34 | Review weather and contingency procedures for applicability under RVSM | 5-Jul-04 | 28-Feb-05 | | RVSM Task Force |
| 35 | Publish appropriate Pilot/ATC policy & procedures on RVSM website | 5-Jul-04 | 28-Feb-05 | | RVSM Task Force |
| 36 | Identify transition areas and procedures | 5-Jul-04 | 31-Oct-04 | | States, ATC/WG |
| 37 | Conduct simulation modelling to assess impact of RVSM operations | 5-Jul-04 | 31-May-05 | | States, ATC/WG |
| 38 | Report on simulation activity | 5-Jul-04 | 31-May-05 | | ATC/WG, RVSM Task Force |
| 39 | Coordinate use of ACAS II (TCAS V.7) for RVSM operations | 5-Jul-04 | 31-May-05 | | OPS/AIR/WG, RVSM Task Force |
| 40 | Develop procedures for handling non-compliant aircraft (inc ferry & mtce) in ATS documentation | 5-Jul-04 | 31-May-05 | | OPS/AIR/WG, ATC/WG, RVSM Task Force |
| 41 | Develop mutually acceptable ATC procedures for non-approved State acft to transit RVSM airspace | 5-Jul-04 | 31-Oct-04 | | ATC/WG, RVSM Task Force |
| 42 | Implement procedures for suspension of RVSM | 5-Jul-04 | 31-Oct-04 | | ATC/WG, RVSM Task Force |
| 43 | Liaise with State defense authorities regarding military operations | 5-Jul-04 | 31-Oct-04 | | States |
| 44 | Pilot & ATC Training | | | | |
| 45 | Provide Pilot/ATC training documentation based on past experience | 31-Oct-04 | 31-Oct-04 | | IATA, RVSM Task Force |
| 46 | Conduct local RVSM training for air traffic controllers | 5-Jul-04 | 31-May-05 | | States, ATC/WG |
| 47 | Perform System Verification | | | | |
| 48 | Height keeping performance monitoring needed to undertake initial safety analysis | 5-Jul-04 | ongoing | | APARMO, MAAR and SAM/WG, RVSM Task Force |
| 49 | Provide representative traffic movement data to MAAR | 1-Aug-04 | 30-Sep-04 | | States |
| 50 | Undertake initial safety analysis | 1-Oct-04 | 31-Oct-04 | | SAM/WG, RVSM Task Force |
| 51 | Prepare/maintain regional status report detailing RVSM implementation plans | 5-Jul-04 | 9-Jun-05 | | RVSM Task Force |
| 52 | Final Implementation Decision | | | | RVSM Task Force |
| 53 | Review aircraft altitude-keeping performance and operational errors | 5-Jul-04 | 31-May-05 | | SAM/WG, OPS/AIR/WG |
| 54 | Complete ATS State documentation | 5-Jul-04 | 31-May-05 | | States |
| 55 | Publish Trigger NOTAM | 31-May-05 | 31-May-05 | | States |
| 56 | Complete readiness assessment | 31-May-05 | 31-May-05 | | APARMO, MAAR and SAM/WG, RVSM Task Force |
| 57 | Complete safety analysis | 31-May-05 | 31-May-05 | | APARMO, MAAR and SAM/WG, RVSM Task Force |
| 58 | Declare Initial Operational Capability | | | | APARMO, MAAR and SAM/WG, RVSM Task Force |
| 59 | Monitor System Performance | | | | |
| 60 | Perform Follow-On Monitoring | 5-Jul-04 | On-going | | APARMO, MAAR, OPS/AIR/WG, SAM/WG |
| 61 | Adopt the global use of Minimum Monitoring Requirements (MMR) | 5-Jul-04 | On-going | | RVSM Task Force |
| 62 | Declare Full Operational Capability | | | | RVSM Task Force |

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| SN | Activity | Start | Complete | Status | Group Responsible |
|-----------|---|--------------|-----------------|---------------|--------------------------|
| 63 | Special ATS Coordination Meeting (Bangkok) - Japan & Korea Implementation - 3 days | 5-Jul-04 | 7-Jul-04 | | RVSM Task Force |
| 64 | Task Force/22 (Bangkok) - Review of FLOS for Western Pacific/South China Sea - 5 days | 20-Sep-04 | 24-Sep-04 | | RVSM Task Force |
| 65 | RVSM Seminar/6 - 3 days | 18-Oct-04 | 20-Oct-04 | | RVSM Task Force |
| 66 | Task Force/23 (Bangkok) - Japan & Korea Implementation - 2 days | 21-Oct-04 | 22-Oct-04 | | RVSM Task Force |
| 67 | Task Force/24 (Bangkok) - 1 year follow up Bay of Bengal and Beyond implementation - 5 days | 8-Nov-04 | 12-Nov-04 | | RVSM Task Force |
| 68 | Task Force/25 (Bangkok) - Japan & Korea Implementation - 5 days | 00 Feb 05 | 00 Feb 05 | | RVSM Task Force |
| 69 | Task Force/26 (Bangkok) - Japan & Korea Implementation (Go/ No-Go Meeting) - 5 days | 00 May 05 | 00 May 05 | | RVSM Task Force |
| 70 | Task Force/27 (Bangkok) - 90 days follow up Japan-Korea implementation - 3 days | 00Sep05 | 00Sep05 | | RVSM Task Force |
| 71 | Task Force/28 (Bangkok) - 1 year follow up Japan-Korea implementation - 3 days | 00Jun06 | 00Jun06 | | RVSM Task Force |

**MONITORING AGENCY FOR ASIA REGION
(MAAR)**

Large Height Deviation Report

Report to the Monitoring Agency for Asia Region (MAAR) of an altitude deviation of 300 ft or more, including those due to TCAS, turbulence and contingency events.

Name of FIR: _____
(Please complete Section I or II as appropriate)

SECTION I:

There were no reports of large altitude deviation for the month of _____

SECTION II:

There was/were _____ report(s) of an altitude deviation of 300 ft or more between FL290 and FL410. Details of the altitude deviation are attached (Form A).
(Please use a separate form for each report of large height deviation).

SECTION III:

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

E-Mail: maar@aerothai.co.th
Fax: 66-2-287-8155

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

Form A

Report of an Altitude Deviation of 300 ft or More
Between FL 290 and FL 410

- (1) Reporting agency
- (2) Location of deviation
- (3) Date of occurrence (UTC)
- (4) NOPAC/CENPAC/CEP/SOPAC/Japan-Hawaii/South China Sea/BOB/Incheon
FIR/Naha and Tokyo FIRs (non-oceanic)
- (5) Flight identification and type
- (6) Flight level assigned
- (7) Observed/reported final level Mode C/Pilot report
- (8) Duration at flight level
- (9) Cause of deviation
- (10) Other traffic
- (11) Crew comments, if any, when noted
- (12) Remarks

INSTRUCTIONS FOR COMPLETION OF TRAFFIC SAMPLE DATA TEMPLATE

1 - Introduction

This guidance is to standardize the completion of the data collection template, aiming to obtain an air traffic movement sample for the safety assessment of operations in the Asia Pacific airspace. This template should be used for RVSM and RNP data. Microsoft "EXCEL" electronic format should be used and all air traffic movements for each day of the entire requested period should be shown in chronological sequence without any interposed blank lines or headings etc. All times should be in UTC. The completion of all fields is mandatory, except the fields contained in the "Optional Fields" area which should only be filled out if there is any change of flight level and/or airway.

Note: The Data Sample should describe daily air traffic movements at FL290 and above during the requested period, by FIR and on all air routes in the FIR.

| MANDATORY FIELDS | | | | | | | | | | | | OPTIONAL FIELDS | | | | | | |
|---------------------|--------------------------|------------------|---------------------|--------------------------|---------------------------------------|----------------------------|--------------------------|------------------------------|--------------------------------------|---------------------------|-------------------------|------------------------------|---------------------|-------------------|-------|---------------------|-------------------|--------------------------|
| FIR IDENTIFICATION: | | | | | | | | | | | | PROGRESSING IN RVSM AIRSPACE | | | | | | |
| DATE | AIRCRAFT CALL SIGN | AIRCRAFT TYPE | ORIGIN AERODROME | DESTINATION AERODROME | ENTRY FIX INTO RVSM AIRSPACE | TIME AT ENTRY FIX | FL AT ENTRY FIX | AIRWAY AT ENTRY FIX | EXIT FIX FROM RVSM AIRSPACE | TIME AT EXIT FIX | FL AT EXIT FIX | FIX 1 | TIME AT FIX 1 | FL AT FIX 1 | FIX 2 | TIME AT FIX 2 | FL AT FIX 2 | CONTINUE IF NECESSARY |
| 07/07/04 | MAS879 | B744 | WMKK | VHHH | DOLOX | 12:20 | 320 | M771 | DUMOL | 16:29 | 340 | DAGAG | 13:03 | 340 | | | | |
| 07/07/04 | | | | | | | | | | | | | | | | | | |
| 07/07/04 | | | | | | | | | | | | | | | | | | |
| 08/07/04 | | | | | | | | | | | | | | | | | | |

2 - Mandatory Fields

• **Line 02: FIR Identification**

Complete using ICAO designators contained in Doc. 7910.
Examples: VLVT, WSJC, RPHI.

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- **Column A: Date**
Enter only numeric characters in the following way : dd/mm/yy
Examples: February 01, 2004 enter 01/02/04.
- **Column B: Aircraft Call Sign**
Enter a maximum of seven alphanumeric characters, with no blank spaces
hyphens etc.
Examples: BAW10, QFA08, SIA123.
- **Column C: Aircraft Type**
Complete using ICAO designators contained in Doc. 8643.
Examples: for Airbus A320-211 enter A320;
for Boeing B747-438 enter B744.
- **Column D: Origin Aerodrome**
Complete using ICAO designators contained in Doc. 7910.
Examples: VDPP, VHHH, VTBD.
- **Column E: Destination Aerodrome**
Complete using ICAO designators contained in Doc. 7910.
Examples: WSSS, WMKK, WIII
- **Column F: Entry Fix into RVSM/RNP Airspace**
Complete using a maximum of five alphabetical characters, normally the
name of the fix/waypoint of entry into the relevant airspace.
Examples: IBOBI, DOLOX, KABAM
RMK: For flights climbing into the RVSM or RNP airspace, that do not cross the FIR boundary,
the entry fix will be the fix prior to the first fix that the aircraft passes maintaining cruise level.
- **Column G: Time at Entry Fix**
Complete in UTC using numeric characters in the form: hh:mm
Examples: for 01 hour and 09 minutes enter 01:09;
for 12 hours and 23 minutes enter 12:23.

SCM RVSM Japan/Republic of Korea
Appendix J to the Report

- **Column H: Flight Level at Entry Fix**

Complete using the three numeric characters corresponding to the flight level at the entry fix of RVSM or RNP airspace.

Examples: for FL290 enter 290; for FL310 enter 310.

- **Column I: Airway at Entry Fix**

Complete using a maximum of five alphanumeric characters, without space or hyphen.

Examples: L642, M771, L628

RMK: When aircraft change airways during the flight, the new airway must be reported after the first one separated by the character "/".

Example: L625/B348

- **Column J: Exit Fix from RVSM/RNP Airspace**

Complete using a maximum of five alphabetical characters, normally the name of the fix/waypoint of exit of the relevant airspace.

RMK: This fix will normally be the FIR limit, or the last one crossed by the aircraft while in level flight.

Examples: KABAM, VEPAM, ENREP

- **Column K: Time at Exit Fix**

Complete in UTC using numeric characters in the form: hh:mm

Examples: for 08 hours and 07 minutes enter 08:07;

for 00 hour and 48 minutes enter 00:48.

- **Column L: Flight Level at Exit Fix**

Complete using the three numeric characters corresponding to the flight level at the exit fix.

Examples: for FL330 enter 330; for FL350 enter 350.

3 – Optional Fields (“Progress of the flight through the Airspace”)

• **Column M: Fix 1**

Complete using a maximum of five alphabetical characters, according to the name of the fix where flight level and/or airway changes have been made.

Note: This fix will be the last one the aircraft has crossed in level (cruise) flight.

• **Column N: Time at Fix 1**

Complete in UTC using numeric characters in the form: hh:mm

Examples: for 10 hours and 05 minutes enter 10:05;

for 12 hours and 23 minutes enter 12:23.

• **Column P: Flight Level at Fix 1**

Complete using the three numeric characters corresponding to the flight level at the fix 1.

Examples: for FL370 enter 370;

for FL410 enter 410.

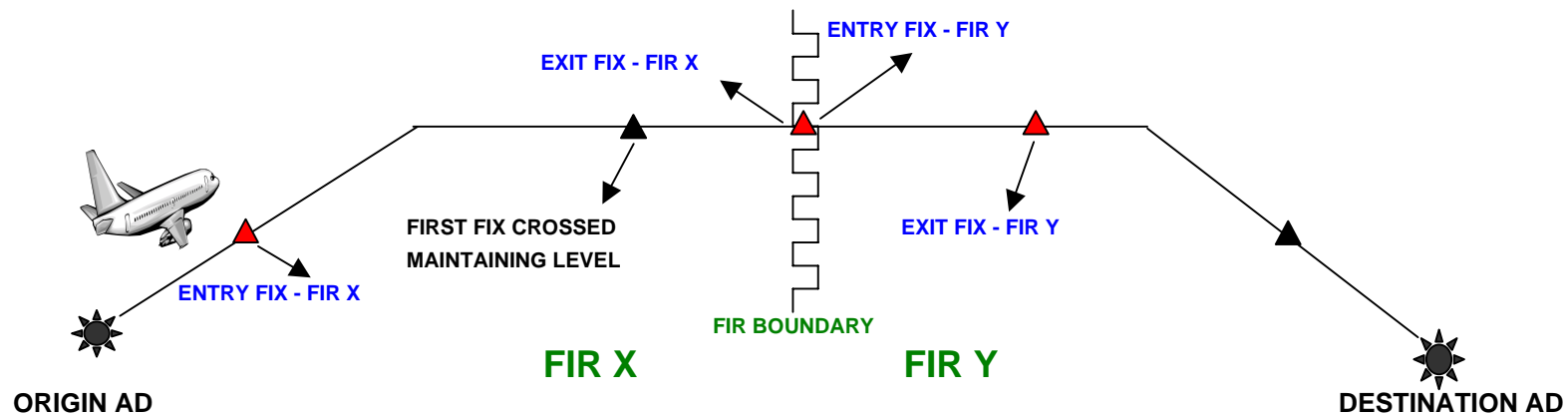
Note: Complete as many "Fix/Time/Flight-Level" fields as are required to describe every change that occurred.

APPENDIX

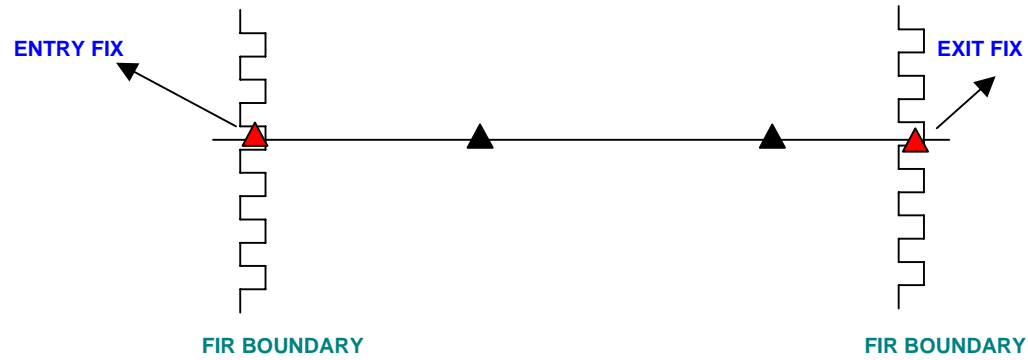
Example 1: Flight with origin and destination in the same FIR.



Example 2: Flight with origin and destination in different FIR



Example 3: Flight crossing FIR boundaries.



Example 4: Flight with change of FL and/or AWY (OPTIONAL FIELDS)

