REPORT ON AGENDA ITEM 3 - ATC OPERATIONS ASPECTS (ATC/WG)

3.1 In accordance with its Terms of Reference and Work Programme *(See **Appendix 3A** to the Report on this agenda item)*, the ATC/WG is responsible for addressing all matters relating to air traffic services (ATS) within the RVSM and transition airspace. The Group met in separate sessions and the following subjects were addressed:

- Transition Areas and Procedures
- Operation of non-RVSM approved aircraft
- Suspension of RVSM Operation.
- Development of an AIC for implementation of RVSM
- Development of an AIP Supplement for implementation of RVSM
- Development of procedures to mitigate wake turbulence
- Development of contingency procedures
- State Aircraft Definition
- Training
- Letter of Agreement
- Other issues

3.1.1 It was agreed that the methodology indicated in the ICAO Manual on Implementation of 300 m (1000FT) Vertical Separation Minimum between FL 290 and FL410 inclusive (ICAO Doc 9574) will be used for ensuring the safe implementation of RVSM in the MID Region.

3.2 Transition Areas and Procedures

3.2.1 The meeting highlighted the need for the creation of transition areas and transition procedures for ensuring the safe implementation of RVSM in the MID Region. Concerns were raised on implementation plans from some States in the Region from which no information has so far been received and are not participating in the planning process. It was agreed that the ICAO Secretariat will follow-up the matter and will keep the Task Force apprised of the readiness and implementation plans from the States concerned with a view to assist in the elaboration of transition areas and procedures. It was also agreed that the Secretariat will, in line with implementation plans and timeframes from adjacent ICAO Regions provide adequate information for the establishment of the MID RVSM airspace.

3.3 Operation of non-RVSM approved aircraft

3.3.1 The operation of non- RVSM approved aircraft within RVSM airspace by the creation of non- exclusion areas was discussed, in particular, with a view to accommodate older generation aircraft. The operation of State aircraft was also addressed and the special provisions and procedures were developed to cater for these requirements and an AIP Supplement was accordingly developed in which all these elements were taken into account. A table was prepared indicating the type of RVSM airspace to be established within all FIRs of the Region and States were invited to update the table in accordance with their implementation plans (see **Appendix 3A** *to the Report on this agenda item*).

3.4 Suspension of RVSM Operation.

3.4.1 The meeting also developed procedures for the suspension of RVSM operations and these procedures are indicated in the AIP Supplement developed by the meeting indicated at **Appendix 3B** to the report on this agenda item.

3.5 Development of an AIC for implementation of RVSM

3.5.1 Pursuant to RVSM TF/2 meeting Decision 2/6, the meeting accordingly developed a draft AIC for implementation of RVSM in the MID Region. It was agreed that the AIC be promulgated on the AIRAC date of 29 November 2001. Based on the foregoing the meeting formulated the following conclusion:

CONCLUSION 3/5 - PROMULGATION OF AN AIC FOR THE IMPLEMENTATION OF RVSM IN THE MID REGION

That, the AIC on the implementation of RVSM in the MID Region indicated at **Appendix 3B** to the report on agenda item 3 be promulgated by States on the AIRAC date of 29 November 2001.

3.6 Development of an AIP Supplement for implementation of RVSM

3.6.1 Pursuant to RVSM TF/2 meeting Decision 2/6, the meeting was also requested to develop a draft AIP Supplement indicating all procedures to be applicable in an RVSM environment within the MID Region as from 27 November 2003. It was agreed that the AIP Supplement be promulgated on the AIRAC date of 15 May 2003. Based on the foregoing the meeting formulated the following Decision:

CONCLUSION 3/6 - PROMULGATION OF AN AIP SUPPLEMENT FOR THE IMPLEMENTATION OF RVSM IN THE MID REGION

That, the AIP Supplement on the implementation of RVSM in the MID Region indicated at **Appendix 3C** to the report on agenda item 3 be promulgated by all MID States on the AIRAC date of 15 May 2003.

Note: It was also agreed that the draft AIP Supplement will be further refined prior to promulgation based on experiences of other States implementing RVSM at an earlier date.

3.7 Development of procedures to mitigate wake turbulence

3.7.1 Procedures to mitigate the effects of wake turbulence were also developed by the meeting and have been included in the draft AIP Supplement indicated at **Appendix 3C** to the report on this agenda item.

3.8 Development of contingency procedures

3.8.1 Contingency procedures have been developed by the meeting and are indicated in the AIP Supplement at **Appendix 3C** to the report of this agenda item.

3.9 State Aircraft Definition

3.9.1 At the RVSM TF/2 Meeting which was held in Dubai from 9 to 11 April 2001 concerns were raised by some States regarding the exact interpretation of the term **"State aircraft"** as it was the subject of some confusion regarding exemption procedures to be applicable within RVSM airspace. Under Decision 2/7, the Secretariat was requested to clarify this term with a view to facilitate exemption procedures. The meeting was accordingly informed that in accordance with Article 3 of the Chicago Convention, the exact definition of the term **"State aircraft" shall apply only to aircraft that are used in military, customs and police services.** It was however noted that in the International Civil Aviation Vocabulary (Doc 9713), **"other law enforcement services of a State"** also fall into that

category. The meeting opted to use the definition as indicated in the Chicago Convention and in conformity with both the Asia/Pacific and European Regions and accordingly framed the following conclusion:

CONCLUSION 3/7 - DEFINITION OF THE TERM "STATE AIRCRAFT"

That, in the Middle East RVSM airspace, the term "State Aircraft" shall apply only to aircraft used in military, customs and police services and are eligible for exemptions for operation within RVSM airspace.

3.10 Training

3.10.1 The meeting emphasized the need for ensuring that all personnel involved with the implementation of RVSM in the MID Region, and in particular, air traffic controllers, be properly trained for handling traffic in an RVSM environment. The meeting was of the view that sharing of RVSM training modules with other regions be encouraged.

3.10.2 The meeting agreed that simulator assisted training modules be developed for the MID Region airspace for the handling of traffic in an RVSM environment and should also include contingency procedures. To this effect, the ICAO MID Regional Office was invited to explore ways and means of assisting States concerned through a Special Implementation Project (SIP) for ensuring that appropriate training be given to all States of the MID Region for the safe handling traffic in an RVSM environment. The need for organizing more Seminars/Workshops on RVSM was also emphasized and States were also invited to approach training institutions in globally for seeking training assistance. Based on the foregoing the meeting framed the following conclusion:

CONCLUSION 3/8 - TRAINING OF ALL PERSONNEL INVOLVED WITH THE IMPLEMENTATION OF RVSM IN THE MID REGION

That,

a) ICAO explores the possibility of assisting States of the MID Region through a Special Implementation Project (SIP) for training of personnel involved with the implementation of RVSM in the MID Region;

b) Seminars/Workshops be organized in the Region for training of air traffic services personnel in the RVSM field;

c) States are invited to approach training institutions for the development of a training module in the RVSM field representative of the MID Region .

3.11 Letters of Agreement

3.11.1 A pre-requisite for ensuring the safe implementation of RVSM in the MID Region is undoubtedly proper coordination and communications procedures between Area Control Centers and Approach Control Units and between adjacent Centers/FIRs. To this effect, the need for the elaboration of appropriate letters of agreement (LOAs) for the handling of traffic in an RVSM environment and within transition areas was emphasized. The meeting agreed to develop a standard format using the ICAO model for the inclusion of procedures for the handling of traffic in an RVSM environment, including transition areas. Furthermore, it was agreed that, States will inspire from procedures already developed in European and Asia/ Pacific Regions for the elaboration of LOAs.

3.12 Updating of the RVSM Task Force-Work Programme (Task List)

3.12.1 The meeting accordingly reviewed and updated its work programme (*task list)* concerning ATC operational (ATC/WG) issues and other joint tasks to be carried out by the Operations/Airworthiness (OPS/AIR/WG) and the Safety Assessment and Monitoring (SAM/WG). The Terms of Reference of the RVSM Task Force and the Work Programme are indicated at **Attachments A and B** to the report.

3.13 Awareness programme on RVSM

3.13.1 The meeting noted with appreciation that some States have already initiated RVSM awareness programmes with a view to sensitize ATS personnel on the procedures to be applicable in an RVSM environment.

APPENDIX 3A

ATC OPERATIONS WORK GROUP (ATC/WG)

Terms of Reference

The ATC/WG is responsible for addressing all matters relating to air traffic services within the RVSM and transition airspace, to include the following:

- To identify airspace in which RVSM will be applied based on statement of application and develop a regional operational concept, ensuring inter-regional harmonization;

- to develop procedures to mitigate wake turbulence;

- to establish transition areas and develop transition procedures;

- to develop contingency procedures; and

- to consider workload issues and identify the need for controller simulations

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APPENDIX 3B

DRAFT AERONAUTICAL INFORMATION CIRCULAR (AIC)

IMPLEMENTATION OF REDUCED VERTICAL SEPARATION MENIMA (RVSM) IN (…….) FIR

FIR/Airspace: (…….)
Effective date: 27 November 2003.
Type: Permanent.
Appendix 3 - A
This AIC serves as Notice of Intent to implement RVSM in the (……...) FIR effective 27 November 2003.

Reduced Vertical Separation Minimum (RVSM) is vertical separation of aircraft by 1,000 ft above FL 290. By 27 September 2003, operators should have received RVSM aircraft (airworthiness) and operational approval from the appropriate State authority. Operator/aircraft approval by 27 September 2003 will enable air traffic services (ATS) to plan for orderly RVSM implementation.

Starting 27 November 2003, 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 Center. 2,000 ft vertical separation will be applied to such aircraft. (…….) Center contacts will be published on websites (if established) 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 (JAA) Temporary Guidance Leaflet 6 (TGL 6) or equivalent State documents as the basis for approving aircraft and operator programs for RVSM.

The Middle East Region has established the Middle East Central Monitoring Agency for implementation of RVSM (MECMA), which would host the database of all information regarding the RVSM approval process. Current information and RVSM approval documents, including revisions, can be found on the website maintained by the FAA, Eurocontrol, MECMA and on individual State websites.

To access the FAA, Eurocontrol and MECMA RVSM websites, type:

http://www.faa.gov/ats/ato/rvsm1.htm
http://www.eur-rvs.com
http://www.mecma.com

The RVSM Documentation section of the FAA, Eurocontrol websites contain 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 27 November 2003.

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

MECMA:
MECMA : Tel : 971-2-405-4339; fax : 971-2-449-1599; e-mail : traffic@mecma.com

CAA (…….)

APPENDIX 3C

AIRAC
15 MAY 2003

DRAFT AERONAUTICAL INFORMATION PUBLICATIONS (AIP) SUPPLEMENT

RVSM Implementation Policy and Procedures in the (…….) FIR

1.0 Introduction

1.1 The International Civil Aviation Organization (ICAO) Sixth Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG) meeting in order to contribute to the reduction of congestion in the Middle East (MID) region, agreed that Reduced Vertical Separation Minimum (RVSM) should be introduced in MID region after successful implementation in the North Atlantic, European and Asia/Pacific regions. 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 ≈ 1% for flight closer to optimum cruise altitude; and

d) reduction in ground delays.

1.3 CONTENT. The ICAO MID 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 within the MID Continental Airspace
7.0 Special procedures for In-flight Contingencies in Oceanic Airspace
8.0 In-flight Contingency Procedures for Subsonic Aircraft Requiring Rapid Descent, Turn-back or Diversion in Oceanic Airspace
9.0 Weather Deviation Procedures
10.0 Special Procedures to Mitigate Wake Turbulence Encounters and Distracting Aircraft System Alerts
11.0 Transition areas
12.0 Flight Planning Requirements
13.0 Procedures for Operation of non-RVSM Compliant Aircraft in RVSM Airspace
14.0 Delivery Flights for Aircraft that are RVSM Compliant on Delivery
15.0 Procedures for Suspension of RVSM
16.0 Guidance for Pilot and Controller for Actions in Event of Aircraft System Malfunction of Turbulence Greater than Moderate

2.0 Identification of RVSM airspace

2.1 All MID Region FIR'S. Effective 27 November 2003 at (…….) UTC, RVSM airspace is prescribed within the _____FIR's within controlled airspace between FL 290 and FL 410 (inclusive

3.0 Airworthiness and Operational Approval and Monitoring

3.1 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 MID Region ATS providers, the MID Region is maintaining a website containing documents and policy for RVSM approval. The Internet address is: http://www.mecma.com.

3.2 AIRCRAFT MONITORING. (Source Document: IG 91-RVSM/TGL #6, Asia/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 Middle East Central Monitoring agency (MECMA) will process the results of monitoring. For further information on RVSM monitoring, the MECMA web site can be accessed by:http://wwwe.mecma.com

3.2.1 Monitoring accomplished for other regions can be used to fulfill the monitoring requirements for the Middle East Region. MECMA will coordinate with other monitoring agencies to access this information. For monitoring services in the Middle East Region, operators should contact MECMA as follows:

Phone: 971-2-405-4339
Fax: 971-2-449-1599
Email: traffic@mecma.com

4.0 ACAS II and Transponder Equipage

4.1 All civil aircraft intending to operate within the Middle East RVSM airspace shall 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 MIDANPIRG 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 1 January 2000, 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 ____ 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, 9.0 and 10.0 below contain procedures for in-flight contingencies that have been updated for RVSM operations. The contingency procedures in paragraphs 7.0-8.0 and the off-set procedures in paragraph 10.0 should be applied in Oceanic operations. The weather deviation procedures in paragraph 9.0 will be applied in Oceanic airspace in the region.

6.0 SPECIAL PROCEDURES FOR IN-FLIGHT CONTINGENCIES INVOLVING A LOSS OF VERTICAL NAVIGATION PERFORMANCE REQUIRED FOR FLIGHT WITHIN THE MID CONTINENTAL RVSM AIRSPACE

6.1 General

6.1.1 An in-flight contingency affecting flight in the MID RVSM airspace pertains to unforeseen circumstances that directly impact on the ability of one or more aircraft to operate in accordance with the vertical navigation performance requirements of the MID RVSM airspace. Such in-flight contingencies can result from degradation of aircraft equipment associated with height-keeping and from turbulent atmospheric conditions.

6.1.2 The pilot shall inform ATC as soon as possible of any circumstances where the vertical navigation performance requirements for the MID RVSM airspace cannot be maintained. In such cases, the pilot shall obtain a revised ATC clearance prior to initiating any deviation from the cleared route and/or flight level, whenever possible. When a revised ATC clearance could not be obtained prior to such a deviation, the pilot shall obtain a revised clearance as soon as possible.

6.1.3 ATC shall render all possible assistance to a pilot experiencing an in-flight contingency. Subsequent ATC actions will be based on the intentions of the pilot, the overall air traffic situation and the real-time dynamics of the contingency.

6.2 Degradation of aircraft equipment – pilot reported

6.2.1 When informed by the pilot of an RVSM approved aircraft operating in the MID RVSM airspace that the aircraft's equipment no longer meets the RVSM MASPS, ATC shall consider the aircraft as non-RVSM approved.

6.2.2 ATC shall take action immediately to provide a minimum vertical separation of 600 m (2000ft) or an appropriate horizontal separation from all other aircraft concerned that are operating in the MID RVSM airspace. An RVSM compliant aircraft rendered non-RVSM approved shall normally be cleared out of the MID RVSM airspace by ATC when it is possible to do so.

6.2.3 Pilots shall inform ATC, as soon as practicable, of any restoration of the proper functioning of equipment required to meet the RVSM MASPS.

6.2.4 The first ACC to become aware of a change in an aircraft's RVSM status shall coordinate with adjacent ACCs, as appropriate.

6.3 Severe turbulence – not forecast

6.3.1 When an aircraft operating in the MID RVSM airspace encounters severe turbulence due to weather or wake vortex that the pilot believes will impact the aircraft's capability to maintain its cleared flight level, the pilot shall inform ATC. ATC shall establish either an appropriate horizontal separation or an increased minimum vertical separation.

6.3.2 ATC shall, to the extent possible, accommodate pilot requests for flight level and/or route changes and shall pass on traffic information as required.

6.3.3 ATC shall solicit reports from other aircraft to determine whether RVSM should be suspended entirely or within a specific flight level band and/or area.

6.3.4 The ACC suspending RVSM shall coordinate such suspension(s) and any required adjacent ACCs, as appropriate, to ensure an orderly progression to the transfer of traffic.

6.4 Severe turbulence - forecast

6.4.1 When a meteorological forecast is predicting severe turbulence with the MID RVSM airspace, ATC shall determine when RVSM should be suspended and, if so, the period of time and specific flight level(s) and/or area.

6.4.2 In cases where RVSM will be suspended, the ACC suspending RVSM shall coordinate with adjacent ACCs with regard to the flight levels appropriate for the transfer of traffic, unless a contingency flight level allocation scheme has been determined by letter of agreement. The ACC suspending RVSM shall also coordinate applicable sector capacities with adjacent ACCs as appropriate.

7.0 Special Procedures for In-flight Contingencies in Oceanic Airspace in the ____FIR (Source Document : State AIP Supplement)

General procedures

7.1 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.

7.2 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.

7.3 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.

7.4 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).

8.0 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)

Initial action

8.1 If unable to comply with the provisions of paragraph 7.3 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

8. 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).

8.3 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.

8.4 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.

8.5 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.

9.0 Weather Deviation Procedures in the ____FIR. (Oceanic Airspace)
(Source Document: State AIP Supplement)

General procedures

9.1 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.

9.2 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 9.9 below.

9.3 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.

9.4 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.

9.5 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.

9.6 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
ii) advise pilot of conflicting traffic
iii) request pilot's intentions

SAMPLE PHRASEOLOGY:
"Unable (requested deviation), traffic is (call sign, position, altitude, direction), advise intentions."

9.7 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 9.8 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

9.8 The pilot shall take the actions listed in 9.9 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.

9.9 *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 19 km (10NM), aircraft should remain at the level assigned by ATC;

f) for deviations of greater than 19 km (10NM), when the aircraft is approximately 19 km (10NM) from track, initiate a level change based on the following criteria:

Route center line track	Deviations > 19 km (10 NM)	Level change
EAST 000-179 magnetic	LEFT RIGHT	*DESCEND 300 ft* *CLIMB 300 ft*
WEST 180-359 magnetic	LEFT RIGHT	*CLIMB 300 ft* *DESCEND 300 ft*

Note: 9.9 b) 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 19 km (10NM) of center line.

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

10.1 The following special procedures are applicable to mitigate wake turbulence or distracting aircraft system alerts (e.g., ACAS, Ground Proximity Warning System (GPWS□Middle East Oceanic 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.

10.2 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)*.

11.0 Transition areas (Source Document: State AIP Supplement)

11.1 Transition areas and procedures for transition from RVSM to non-RVSM airspace within the _____FIR's are identified in_____.

12.0 Flight planning requirements (Source Document: State AIP Supplement)

12.1 Unless special arrangement is made as detailed below, RVSM approval is required for aircraft to operate within designated RVSM airspace. The operator must determine that the appropriate State authority has approved the aircraft and 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 the aircraft is RVSM approved aircraft.

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

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

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

13.3 PHRASEOLGY. Non-RVSM compliant aircraft operating in RVSM airspace should use the phraseology contained in Attachment ___.

13.4 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.

13.5 SPECIAL COORDINATION PROCEDURES FOR CRUISE OPERATION OF NON-RVSM COMPLIANT AIRCRAFT IN RVSM AIRSPACE (Source : State AIP Supplement).

13.5.1 Non-RVSM compliant aircraft may not flight plan between FL ____ and FL____ inclusive within RVSM airspace. However, after special coordination, 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 14.0 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)

Note:-

1) Include the "STS NONRVSM" in Field 18 of the ICAO Flight Plan.
2) Approval means able to operate in the RVSM stratum.
3) Aircraft cruising levels will be subject to air traffic control

13.5.2 Contact details for approval request are as follows:

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

13.5.3 These procedures are intended exclusively for the purposes indicated above and not as a means to circumvent the normal RVSM approval process.

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

14.1 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 MECMA 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 ____.

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

15.1 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.

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

16.1 See attachment _____ for guidance in these circumstances.

ATTACHMENT

CONTINGENCY SCENARIOS. 2 &($ 1 , & $, 5 6 3 $ &(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 7.0 and 8.0 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 7.0 and 8.0 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 7.0 and 8.0 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 displace 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.	

The Pilot should	ATC can be expected to
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 7.0 and 8.0 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.
