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APPROVAL OF UAE OPERATORS AND AIRCRAFT TO OPERATE IN REDUCED VERTICAL SEPARATION MINIMUM AIRSPACE

**Note: Enquiries regarding the content of this publication should be addressed to: Flight Operations Section,
email fops@gcaa.gov.ae**

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2 PURPOSE

This guidance material is intended for operators of UAE aircraft planning to operate in Reduced Vertical Separation Minima (RVSM) airspace. This CAAP provides information on the implementation plan, required equipment, the approval process, as well as guidance on operational procedures and training. This CAAP provides methods acceptable for determining compliance with ICAO, JAA and FAA requirements. GCAA procedures for processing applications are also provided. Operators must be aware that airspace restrictions and operational penalties may be incurred if the aircraft is not approved for operations in RVSM airspace.

3 STATUS OF THIS CAAP

This CAAP supersedes revision dated 10 October 2010. The change in introduced in this issue is concerning banning operators who fail to monitor periodic height keeping from operating in the RVSM airspace of the MID Region.

4 APPLICABILITY

All UAE registered aircraft planning to operate in RVSM airspace shall be required to obtain an operational approval from the GCAA before the commencement of operations. Operations in the North Atlantic (NAT) Region, which includes RVSM airspace, also require an additional MNPS approval (ref CAAP 6 MNPS) and operations in European Upper Information Regions (UIR), which can also be RVSM airspace, require a Basic Area Navigation approval.

5 REVISION HIGHLIGHTS

Affected section/para	Brief Description
Throughout the document	Editorial – formatting and numbering
Throughout the document	Websites link corrections
Throughout the document	Corrections to paragraph referrals
3	Amendment to the text
5	Table inserted
6	Addition of: <i>“As of 30 June 2013, operators who fail to monitor height keeping performance at the specified interval will be banned from flying in RVSM Airspace in MID region.”</i>
8.2	Addition of: <i>“For current ACAS requirements refer to CAR-OPS 1.668 Airborne Collision Avoidance System”</i>
9.2.6	Addition of: <i>“Initial introduction of any RVSM aeroplane in to UAE register after completing the E services application (Operations Specifications Amendment), requires the submission the following data to MID RMA through fops@gcaa.ae and/or copying their respective FOI (Flight Operations Inspector), with the following details: ...”</i> following formatted table
9.3	Moved from 9.4: <i>“or through MIDRMA by periodically checking this website: http://www.midrma.com/rvsm_approval_details.php?country=ae Note: The data will be amended monthly; therefore delay of up to 60 days is expected.</i>
10.6	Addition to the Note: <i>“The crew should be alert in order to avoid overshoot or to prevent unwanted ACAS RA when climbing at high vertical speed rate.”</i>
11.2	Addition of: <i>“As of 30 June 2013, operators who fail to monitor height keeping performance at the specified interval will be banned from flying in RVSM Airspace in MID region. Operators should submit on quarterly basis, the status of each fleet time remaining (FH and estimated date) to the next height monitoring exercise to fops@gcaa.gov.ae.”</i>
11.3.1	<i>“advice (Appendix 7 – Form F5) shall be sent to the appropriate RMA”</i> replaced by: <i>“notify MID RMA through fops@gcaa.ae.”</i>
Appendix 1	Addition of website references

6 BACKGROUND

In 1982 the International Civil Aviation Organisation (ICAO) initiated a series of world-wide studies to assess the feasibility of a reduction of the Vertical Separation Minimum (VSM) above FL 290 from 2000 ft to 1000 ft. The studies were co-ordinated by the Review of the General Concept of Separation Panel (RGCSPP), which included representation from the International Air Transport Association (IATA), International Federation of Airline Pilots Associations (IFALPA) and the International Federation of Air Traffic Controllers Associations (IFATCA).

The principal benefits, which the implementation of the reduced VSM were expected to provide, were a theoretical doubling of the airspace capacity between FL 290 and FL 410 and the opportunity for aircraft to operate at or closer to their optimum flight levels, with resulting fuel economy and time savings. Studies and data collections were conducted to determine the height keeping accuracy of the current aircraft population at and above FL 290 and the causes of height deviations > 300 ft as well as to define corrective measures. As a result, the RGCSPP concluded that a 1000 ft VSM between FL 290 and FL 410 was technically feasible without imposing unreasonably demanding technical or operational requirements.

The ICAO Air Navigation Commission endorsed these findings in 1990. The North Atlantic (NAT) was identified as the region best suited to the first application of the new minimum because of the better than average height keeping accuracy shown by NAT Minimum Navigation Performance Specifications (NAT MNPS) approved aircraft, together with the predominantly one-way traffic flow in the NAT Region. The trials were successful and resulted in RVSM being adopted.

This concept was introduced into designated European airspace on 24 January, 2002 and designated Pacific and Asian airspace, as well as FANS routes have a RVSM requirement. The implementation date for RVSM in designated Middle East airspace (MID) was 27 November, 2003.

The new height keeping monitoring requirement for UAE every two years or 1000 hrs was introduced on 18 November 2010 as of 30 June 2013, operators who fail to monitor height keeping performance at the specified interval will be banned from flying in RVSM Airspace in MID region.

7 REFERENCES

- a) Federal Aviation Administration (FAA)
 - i. Document 91 – RVSM – Interim Guidance Materials on the Approval of Operators/Aircraft for RVSM Operations.
- b) International Civil Aviation Organisation (ICAO)
 - i. ICAO Doc. 9574 – Manual on the Implementation of a 300 m (1000 ft) Vertical Separation Minimum Between FL 290 – FL 410 Inclusive.
 - ii. ICAO Doc. 7030 – Regional Supplementary Procedures (for appropriate region)
- c) Joint Aviation Authorities (JAA)
 - i. JAA Information Leaflet No. 6 – Guidance Material on the Approval of Aircraft and Operators for flight in Airspace above Flight Level 290 where a 300 m (1000 ft) Vertical Separation Minimum is applied (replaces JAA IL No. 23).

8 AIRCRAFT EQUIPMENT FOR RVSM OPERATIONS

8.1 RVSM

The minimum equipment fit will be subject to GCAA Airworthiness approval and should be:

- a) Two independent altitude measurement systems. Each system should be composed of the following elements:
 - i. Cross-coupled static source/system, provided with ice protection if located in areas subject to ice accretion.
 - ii. Equipment for measuring static pressure sensed by the static source, converting it to pressure altitude and displaying the pressure altitude to the flight crew.
 - iii. Equipment for providing a digitally coded signal corresponding to the displayed pressure altitude, for automatic altitude reporting purposes.
 - iv. Static source error correction (SSEC), if needed to meet performance requirements; and
 - v. The equipment fit should provide reference signals for automatic control and alerting at a selected altitude. These signals should preferably be derived from an altitude measurement system.
- b) One SSR altitude reporting transponder. If only one is fitted, it should have the capability for switching to operate from either altitude measurement system.
- c) An altitude alert system.
- d) An automatic altitude control system.

8.2 ACAS

ACAS Version II (TCAS Version 7.0) has improved compatibility with RVSM and ICAO Annex 6 has implemented the carriage of ACAS in turbine-engine aeroplanes above 15000 kg and certified for more than 30 passengers as a Standard from 01 January, 2003. However this version is already mandatory for European RVSM airspace operations and in the UAE FIR after 01 January, 2002. After 01 January, 2005, the ICAO Standard became applicable for all turbine engined aeroplanes above 5700 kg or certified for more than 19 passengers. RVSM operations throughout the MID region require ACAS II. For current ACAS requirements refer to CAR-OPS 1.668 Airborne Collision Avoidance System.

9 APPLICATION AND OPERATIONAL APPROVAL PROCESS

9.1 General

This paragraph gives detailed guidance on the required content of operational practices and procedures. It also describes the steps in the operational approval process and the granting of approval to operate in RVSM airspace. The approval process involves the operator applying for a RVSM approval for an aircraft; the GCAA determining the airworthiness requirements; and the GCAA notifying the appropriate Regional Monitoring Agency (RMA) in this case, MIDRMA that the aircraft is eligible for height monitoring. Notification to the RMA is only made after the operator meets the airworthiness requirements and the GCAA is satisfied that each operator can maintain high levels of height keeping performance. Once the RMA has confirmed the height accuracy, the GCAA further evaluates operational areas such as flight crew training, flight dispatch and operations manuals before a final Approval can be issued in the operations specifications.

Normally if the aircraft flies through UK/Europe where the monitoring is within their route, the GCAA recommends applying height monitoring even before registrations, as far as the mode S is recognised and height keeping can be monitored.

9.2 Content of Operator RVSM Application

The following describes the material that an operator should provide to the GCAA for evaluation, preferably at least 60 days before the intended start of RVSM operations. (Refer to Appendix 1 – for www.midrma.com websites for Forms)

9.2.1 Airworthiness

- a) Airworthiness Documents. Documentation should be available to show that the aircraft has been approved for RVSM by the appropriate airworthiness authorities (e.g. State of Manufacture). This documentation must be either the Aircraft Flight Manual (AFM), Service Bulletin (S/B), or Supplemental Type Certificate (STC).
- b) Description of Aircraft Equipment A description of the aircraft equipment appropriate to operations in an RVSM environment.
- c) Maintenance. At the time application is made for operational approval, the operator should submit a maintenance programme for approval. The programme must address continuing airworthiness procedures.

9.2.2 Training Programmes and Standard Operating Procedures (SOP's)

All operators should submit training syllabi and other appropriate material to the GCAA to show that the operating practices, procedures and training items related to RVSM operations are incorporated in initial, and where appropriate, recurrent training programmes. Guidance on the content of training programmes and operating practices and procedures is given in Section 10. In broad terms, this covers flight planning, pre-flight procedures, aircraft procedures before RVSM airspace entry, in-flight procedures, contingency procedures and flight crew training procedures.

9.2.3 Operations Manuals and Checklists

The manuals referred to include Operations, Aircraft Operating, Dispatch, Training and Engineering Manuals. The appropriate manuals and checklists should be revised to include information/guidance on standard operating procedures as detailed in Section 10. Appropriate manuals should include a statement of the airspeeds, altitudes and weights considered in RVSM aircraft approval, including identification of any operating restrictions established for that aircraft group. Manuals and checklists shall be submitted for review by the GCAA as part of the application process.

9.2.4 Past Performance

An operating history should be included in the application. The applicant should show any events or incidents related to poor height keeping performance that may indicate changes are needed in training, operating or maintenance practices.

9.2.5 Minimum Equipment List

A GCAA approved minimum equipment list (MEL), adapted from the master minimum equipment list (MMEL), and should include items pertinent to operating in RVSM airspace.

9.2.6 Authority Review and Evaluation of Applications

Once the application has been submitted and the GCAA Airworthiness Department is satisfied with the information provided, the GCAA will continue with the approval process and notify the Regional Monitoring Agency (MIDRMA) using appropriate form. Information may be sent by electronic transfer

direct from the approvals database through email by GCAA point of contact fops@gcaa.ae). The date of airworthiness approval issued by the GCAA should be the actual date that the modifications/inspections were completed for each airframe and the aircraft therefore becomes eligible for monitoring (if required) from the date of that approval. When, through monitoring, an operator has demonstrated acceptable height keeping performance by its fleet of the same type of aircraft, (or individual aircraft), the appropriate RMA will inform the GCAA so that the GCAA may grant RVSM approval for that particular fleet (or aircraft).

The RMA for NAT airspace is the UK CAA Central Monitoring Agency (CMA) and EUROCONTROL is the RMA for EUR airspace. For convenience the GCAA will process applications using the format of the MIDRMA forms www.midrma.com or <http://www.midrma.com/mdata.htm> for downloading various forms.

The Middle East Region has established the Middle East Regional Monitoring Agency (MIDRMA) for implementation of RVSM and this agency will host the aircraft approval data-base. MIDRMA may perform height keeping by onboard equipment GMU (GPS-based Monitoring Unit) however, the arrangement must be made well in advance through fops@gcaa.ae.

Initial introduction of any RVSM aeroplane in to UAE register after completing the E services application (Operations Specifications Amendment), requires the submission the following data to MID RMA through fops@gcaa.ae and/or copying their respective FOI (Flight Operations Inspector), with the following details:

Descriptions	Sample Data
Aircraft Make Model as per ICAO 8643 type designator	B77W or A346
MSN (Manufacture serial number)	13501
Current Mode S assigned	8967F1
Date of initial C of A issue	dd mmm yyyy
Date of overflying (GMU) if any	dd mmm yyyy

9.3 Over-flight Assessment

Once the aircraft has successfully conducted an over flight assessment, it will be also subject to further assessments every **1000 hours or 2 (TWO) years** whichever comes later. A successful over-flight assessment conducted by a RMA is acceptable for all RMAs. An over-flight assessment may not be a prerequisite for “group aircraft” but it is for “non-group aircraft” (refer to Notes 1 and 2). After the GCAA has granted airworthiness approval, operators of non-group aircraft should take steps to either overfly the Height Monitoring Unit (HMU) near the following locations:

- (a) Strumble, UK
- (b) Linz, Austria
- (c) Nattenheim, Germany
- (d) Geneva, Switzerland

or arrange with fops@gcaa.ae for GMU arrangement with MIDRMA for the carriage of a global positioning system (GPS) monitoring unit (GMU). If monitoring occurs before the GCAA has informed the appropriate RMA, the accrued data may still be used provided that it is dated after the modification/inspection was completed. In the case of aircraft added to an operator’s fleet of the same type, after initial application for RVSM operating authority, the appropriate RMA will determine whether any further monitoring is required and will inform the GCAA, which in turn will inform the operator.

Any monitoring conducted by a RMA is acceptable to the GCAA and to other RMAs. The applicant may also check periodically whether their aircraft have been monitored by EURMA, only if the aircraft has passed within RVSM height keeping and within geographical area mentioned above.

The Height keeping result may be checked in the following websites:

EURMA (for aircraft flying in (a)-(d) regions mentioned above)

http://www.ecacnav.com/RVSM/Height_Monitoring then selecting [Monitoring Results](#) or directly to <http://www.ecacnav.com/content.asp?PageID=66>

or through MIDRMA by periodically checking this website:

http://www.midrma.com/rvsm_approval_details.php?country=ae

Note: The data will be amended monthly; therefore delay of up to 60 days is expected.

The Operator should contact fops@gcaa.ae or MIDRMA websites for height monitoring result, or other inquiry or error. Operators SHOULD NOT contact other RMU (Regional Monitoring Unit).

Note 1: "Group aircraft" means aircraft that are of nominally identical design and build with respect to all details that could influence the accuracy of height keeping performance. (e.g. Passenger configuration Boeing 777, Airbus A330).

Note 2: "Non-group aircraft". Operators of these aircraft (e.g. GIV, LR 60 etc.) must apply on an individual aircraft basis and monitoring by an HMU or GMU is a pre-requisite to obtain RVSM (operational) approval unless flight test evidence can be provided to the GCAA to show that each airframe is compliant with Altimetry System Error (ASE) targets.

9.4 Approval Process

9.4.1 Validation Flight(s)

The content of the RVSM application and programmes may be sufficient to validate the aircraft. However, the final step of the approval process may require a validation flight through RVSM airspace with a GCAA Flight Operations Inspector to verify that all relevant procedures are applied effectively. If the performance is satisfactory, operational approval for RVSM airspace may be granted. If the performance is not adequate, then approval will be delayed.

9.4.2 GCAA Approval

Approval to operate in RVSM airspace will be granted by inclusion of the RVSM tick mark in each aircraft in the operations specifications paragraph **F.2.** below:

A	Authorised Aircraft : Manufacture make Model Series	EMBRAER	ERJ
		E135	190E
		BJ	CJ
B	Type of Operations:		
1	Passenger	✓	✓
2	Cargo	X	✓
3	Aerial	X	X
4	Ext Load	X	X
5	EMS	X	X
C	AWO [RVR (m)]:		
1	LVTO (Low Vis)	X	X
2	LVO (Low Vis Ops)	X	X
2.1	CATII [RVR(m)/DH(ft)]	X	X
2.2	CATIIIA [RVR(m)/DH(ft)]	X	X
2.3	CATIIIB [RVR(m)/DH(ft)]	X	X
2.4	CATIIIC [RVR(m)/DH(ft)]	X	X
D	Approach:		
1	Precision	✓	✓
1.1	ILS	✓	✓
1.2	RNAV(GNSS/GPS)	X	X
2	Non Precision	✓	✓
3	Circling	✓	✓
E	PBN(Performance Based		
1	RNP 0.1	X	X
2	RNP 0.3	X	X
3	RNP 1	✓	✓
4	RNP 3	✓	✓
5	RNP 4	X	X
6	RNP 5	✓	✓
7	RNP 10	✓	✓
8	BRNAV	✓	✓
F	CNS (Com, Nav & Surveillance) :		
1	ETOPS [Engine]	X	X
	[Range(Nm)/Time(min)]	X	X
2	RVSM	✓	✓
3	MNPS	✓	✓
4	CPDLC / ADS	X	X
5	Polar Operations	X	X
6	Metric Altimetry	✓	✓

Note: This Operations specification is for sample only (may not be updated), for Latest OpSpec descriptions, refer to CAAP 8. AOC.

10 TRAINING & OPERATING PROCEDURES

10.1 Introduction

The following items detailed in paragraphs 10.2 to 10.8 below should be standardised and incorporated into training programmes and operating practices and procedures. This document is written for all users of RVSM airspace, and as such is designed to present all required actions.

All operators should refer to ICAO Doc 7030 to ensure appropriate regional supplementary procedures are addressed in the approved Operations Manual and training programmes.

10.2 Training

Training is required for flight crew and dispatchers. In addition to the operating procedures below, the following items should also be included in flight crew training programmes:

- a) Knowledge and understanding of standard ATC phraseology used in each area of operations;
- b) Importance of crew members cross checking to ensure that ATC clearances are promptly and correctly complied with;
- c) Use and limitations in terms of accuracy of standby altimeters in contingencies. Where applicable, the pilot should review the application of static source error and pressure error correction through the use of correction cards;
- d) Problems of visual perception of other aircraft at 1,000 ft (300 m) planned separation during darkness, when encountering local phenomena such as northern lights, for opposite and same direction traffic, and during turns;
- e) Characteristics of aircraft altitude capture systems, which may lead to flight level overshoots.
- f) Relationship between the aircraft's altimetry, automatic altitude control and transponder systems in normal and abnormal conditions.
- g) Any airframe operating restrictions, if required for the specific aircraft group, related to RVSM airworthiness approval.
- h) Use of ACAS in RVSM airspace.
- i) Effect of wake turbulence.

10.3 Flight Planning

During flight planning the flight crew and the dispatcher should pay particular attention to conditions that may affect operation in RVSM airspace. These include, but may not be limited to:

- a) Verifying that the airframe is approved for RVSM operations;
- b) Reported and forecast weather on the route of flight;
- c) Minimum equipment requirements pertaining to height-keeping systems;
- d) If required for the specific aircraft group, accounting for any aircraft operating restriction related to RVSM airworthiness approval.
- e) Ensuring that "W" is stated in item 10 of the ATC flight plan to indicate RVSM approval.

10.4 Pre-flight Procedures

The following actions should be accomplished by flight crew during the pre-flight procedure:

- a) Review technical logs and forms to determine the condition of equipment required for flight in the RVSM airspace. Ensure that maintenance action has been taken to correct defects to required equipment;

- b) During the external inspection of aircraft, particular attention should be paid to the condition of static sources and the condition of the fuselage skin near each static source and any other component that affects altimetry system accuracy. This check may be accomplished by a qualified and authorised person other than the pilot (e.g., a flight engineer or ground engineer);
- c) Before take-off, the aircraft altimeters should be set to the QNH of the airfield and should display a known altitude, within the limits specified in the aircraft operating manuals. The two primary altimeters should also agree within limits specified by the aircraft operating manual.

Note: The maximum value for these checks cited in operating manuals should not exceed 75 ft.

- d) Before take-off, equipment required for flight in RVSM airspace should be operative, and any indications of malfunction should be resolved.

10.5 Procedures Prior to RVSM Airspace Entry

The following equipment should be operating normally at entry into RVSM airspace:

- a) Two primary altitude measurement systems
- b) One automatic altitude-control system
- c) One altitude-alerting device
- d) Operating Transponder

Note: Should any of the required equipment fail prior to the aircraft entering RVSM airspace, the pilot should request a new clearance to avoid entering this airspace.

10.6 In-flight Procedures

The following practices should be incorporated into flight crew training and procedures:

- a) Flight crews must comply with any aircraft operating restrictions, if required for the specific aircraft group, given in the RVSM airworthiness approval.
- b) Emphasis should be placed on promptly setting the sub-scale on all primary and standby altimeters to 1013.2 (hPa) when passing the transition altitude, and rechecking for proper altimeter setting when reaching the initial cleared flight level;
- c) In level cruise it is essential that the aircraft is flown at the cleared flight level. This requires that particular care is taken to ensure that ATC clearances are fully understood and followed. The aircraft should not intentionally depart from the cleared flight level without a positive clearance from ATC unless the crew is conducting contingency or emergency manoeuvres;
- d) When changing levels, the aircraft should not be allowed to overshoot or undershoot the cleared flight level by more than 150 ft (45 m);

Note: It is recommended that the level off be accomplished using the altitude capture feature of the automatic altitude-control system, if installed. The crew should be alert in order to avoid overshoot or to prevent unwanted ACAS RA when climbing at high vertical speed rate.

- e) An automatic altitude-control system should be operative and engaged during level cruise, except when circumstances such as the need to re-trim the aircraft or turbulence require disengagement. In any event, adherence to cruise altitude should be done by reference to one of the two primary altimeters;

- f) Ensure that the altitude-alerting system is operative;
- g) At intervals of approximately one hour, cross-checks between the primary altimeters should be made. A minimum of two must agree within ± 200 ft (± 60 m). Failure to meet this condition will require that the altimetry system be reported as defective and notified to ATC;
 - i. The usual scan of flight deck instruments should suffice for altimeter cross-checking on most flights.
 - ii. Before entering oceanic RVSM airspace, the initial altimeter cross check of primary and standby altimeters should be recorded

Note: Future systems may make use of automatic altimeter comparators.

- h) In normal operations, the altimetry system being used to control the aircraft should be selected for the input to the altitude reporting transponder transmitting information to ATC.
- i) If the pilot is advised in real time that the aircraft has been identified by a height-monitoring system as exhibiting a TVE greater than ± 300 ft (± 90 m) and/or an ASE greater than ± 245 ft (± 75 m) then the pilot should follow established regional procedures to protect the safe operation of the aircraft. This assumes that the monitoring system will identify the TVE or ASE within the set limits for accuracy.
- j) If the pilot is notified by ATC of an AAD error which exceeds ± 300 ft (± 90 m) then the pilot should take action to return to the cleared flight level as quickly as possible.

10.7 Contingency procedures after entering RVSM airspace

10.7.1 Notification

The pilot should notify ATC of contingencies, such as equipment failures, system inaccuracies and severe turbulence, which affect the ability to maintain the cleared flight level, and co-ordinate a plan of action. If unable to contact ATC and obtain an ATC clearance prior to deviating from the cleared flight level, the pilot should follow established contingency procedures as defined by the region of operation and obtain ATC clearance as soon as possible.

10.7.2 Equipment Failures that requires Notification

The types of equipment failures, which should be notified to ATC are:

- a) Failure of all automatic altitude-keeping devices
- b) Loss of redundancy of all, or part of, altimetry systems
- c) Failure of all altitude reporting transponders
- d) Loss of thrust on an engine necessitating descent
- e) Any other equipment failure affecting the ability to maintain the cleared Flight Level

10.8 Post Flight

In making technical log entries against malfunctions in height-keeping systems, the pilot should provide sufficient detail to enable maintenance to effectively trouble shoot and repair the system.

The pilot should detail the actual defect and the crew action taken to try to isolate and rectify the fault. The following information should be noted when appropriate:

- a) Primary and standby altimeter readings
- b) Altitude selector setting
- c) Subscale setting on altimeter
- d) Autopilot used to control the aeroplane and any differences when the alternate system was selected
- e) Differences in altimeter readings, if alternate static ports selected
- f) Use of air data computer selector for fault diagnosis procedure
- g) The transponder selected to provide altitude information to ATC and any difference noted when an alternative transponder was manually selected

11 OPERATOR/GCAA OVERSIGHT

11.1 Operator Responsibilities

The incidence of height-keeping errors that can be tolerated in an RVSM environment is small. It is incumbent upon each operator to take immediate action to rectify the conditions that cause an error. The operator should also report the event to the GCAA within 72 hours, through the appropriate channels, with initial analysis of causal factors and measures taken to prevent further events.

11.1.1 Error Reporting

Height-keeping errors fall into two broad categories; errors caused by malfunction of aircraft equipment and operational errors. Errors that should be reported to the GCAA and investigated are:

- a) Total Vertical Error (TVE), which is the vertical geometric difference between the actual pressure altitude flown by an aircraft and its assigned pressure altitude (flight level) equal to or greater than ± 300 ft (± 90 m);
- b) Altimetry System Errors (ASE), which is the difference between the pressure altitude displayed to the flight crew when referenced to ISA standard ground pressure setting of 1013.2 hPa, and the free stream pressure altitude, equal to or greater than ± 245 ft (± 75 m);
- c) Reported Assigned Altitude Deviation (AAD), which is the difference between the transponder Mode C altitude and the assigned altitude flight level, equal to or greater than ± 300 ft (± 90 m);
- d) Operational errors.

11.1.2 Aircraft Modification

The operator shall advise the GCAA of any rectification work or modifications, which may affect RVSM capability.

11.2 RVSM Periodic Monitoring Program

Considering new ICAO Annex 6 Part I & II, Amendment 9 (effective 18th November 2010), concerning RVSM long term monitoring requirements, UAE GCAA is accepting ICAO recommendation to perform periodic height monitoring.

As of 15th November 2010, GCAA has mandated that those operators who already obtained Operational approval (unless for flight monitoring) have to perform RVSM HMU/GMU height monitoring. Operators shall be required to establish a requirement which ensures that a minimum of two aeroplanes of each aircraft type grouping of the operator have their height keeping performance

monitored, **at least once every two years or within intervals of 1000 flight hours per aeroplane, whichever period is longer.** If an operator aircraft type grouping consists of a single aeroplane, monitoring of that aeroplane shall be accomplished within the specified period.

As of 30 June 2013, operators who fail to monitor height keeping performance at the specified interval will be banned from flying in RVSM Airspace in MID region.

Operators should submit on quarterly basis, the status of each fleet time remaining (FH and estimated date) to the next height monitoring exercise to fops@gcaa.gov.ae.

11.3 GCAA Action

11.3.1 Investigation

Any UAE operator found to be operating in RVSM airspace without approval or with faulty equipment could jeopardise the safety of other users of the airspace. An operator that consistently incurs equipment or operational errors may be required to forfeit authority for RVSM operations. The GCAA may consider revoking RVSM operational approval if the operator response to a height-keeping error is not effective or timely. The GCAA will also consider the operator's past performance record in determining the action to be taken.

If an operator shows a history of operational and/or airworthiness errors, then approval may be revoked until the root causes of these errors are shown to be eliminated and RVSM programmes and procedures effective. If a problem is identified, which is related to one specific aircraft type, then RVSM authority may be removed from the operator for that specific type. The GCAA will review each situation on a case-by-case basis. Should a RVSM approval be withdrawn, notify MID RMA through fops@gcaa.ae.

11.3.2 Reinstatement of Approval

Following any rectification work the operator would again be expected to demonstrate compliance with the RVSM requirements for monitoring by an independent height monitoring system.

APPENDIX 1: WEBSITES REFERENCES FOR FORMS AND LIST OF RVSM APPROVALS

The following are the reference to the Form, download location and its use

For form collection

Go to: <http://www.midrma.com/FormDataCollection.php>

To check your Operational approval (UAE aircraft)

Go to http://www.midrma.com/rvsm_approval_details.php?country=ae