



International Civil Aviation Organization

**Middle East Air Navigation Planning and
Implementation Regional Group (MIDANPIRG)**

Fourteenth Meeting

(Jeddah, Saudi Arabia, 15-19 December 2013)

Agenda Item 5: Air Navigation Deficiencies and Safety Matters

5.2 Air Navigation Safety

RVSM OPERATIONS AND MONITORING ACTIVITIES IN THE MID REGION

(Presented by the Secretariat)

SUMMARY

This paper presents the latest developments related to RVSM operations and safety monitoring activities in the MID Region.

Action by the meeting is at paragraph 3.

REFERENCES

- ATM/AIM/SAR SG/13 Report
- MIDANPIRG/13 Report
- MIDRMA Board/12 Report

1. INTRODUCTION

1.1 The ATM/AIM/SAR SG/13 meeting (Cairo, Egypt, 30 September-03 October 2013) was apprised of the outcome of the MIDRMA Board/12 meeting (Kuwait, 16 - 19 December 2012).

2. DISCUSSION

MID RVSM SMR 2012-2013

2.1 The ATM/AIM/SAR SG/13 meeting recalled that MIDANPIRG/13, through Conclusion 13/65, requested States to provide required data on a regular basis and in a timely manner to the MIDRMA for the development of the RVSM Safety Monitoring Reports.

2.2 It was highlighted that the MIDRMA is still facing some difficulties related to the provision of required data by States, such as:

- late submission of the traffic data;
- corrupted traffic data; and
- missing items from the data submitted (e.g. no registrations or wrong type of aircraft, etc).

2.3 The meeting may wish to recall that through MIDANPIRG/13 Conclusion 13/64 and Conclusion 13/65, States were requested to submit the data related to both Altitude Deviation Reports (ADRs) and Coordination Failure Reports (CFRs) using the Large Height Deviation (LHD) form to the MIDRMA on monthly basis.

2.4 The status of reporting of LHDs and RVSM Approval Lists to the MIDRMA is summarized in the following Table:

States	LHDs		RVSM Approvals	
	Received	Regularity/ Timeliness	Received	Regularity/ Timeliness
Bahrain	Yes	Yes	Yes	Yes*
Egypt	Yes	Yes*	Yes	Yes*
Iran	Yes	Yes	No	No
Iraq	Yes	Yes	Yes	Yes
Jordan	Yes	Yes	Yes	Yes
Kuwait	Yes	Yes	Yes	Yes*
Lebanon	Yes	Yes*	Yes	Yes
Oman	Yes	Yes	Yes	No
Saudi Arabia	Yes	Yes	Yes	Yes*
Syria	Yes	Yes	Yes	Yes
UAE	Yes	Yes*	Yes	Yes*
Yemen	Yes	No	Yes	No

*Note: Irregularity in the provision of data has been observed intermittently.

2.5 The ATM/AIM/SAR SG/13 meeting noted with concern that several FIRs with high volume of traffic continue to report NIL LHDs, as shown in the table below, which affects the accuracy of the computed Targets Level of Safety:

	July 2011 - April 2012		May 2012 - Aug 2013	
	(ADR)/LHD	CFR	LHD	CFR
Bahrain	2	189	5	201
Egypt	0	28	6	6
Iran	0	37	3	21
Iraq	0	24	54	271
Jordan	27	21	28	0
Kuwait	0	54	0	125
Lebanon	1	0	0	0
Oman	0	96	0	52
Qatar	N/A	N/A	N/A	N/A
Saudi Arabia	3	25	4	0
Syria	0	2	0	7
UAE	10	30	2	3
Yemen	0	0	0	0

2.6 Based on the data provided by the MIDRMA as reflected in the table above, the ATM/AIM/SAR SG/13 meeting noted that the reporting of CFRs and LHDs to the MIDRMA was considered unsatisfactory for: Egypt, Iran, Kuwait, Lebanon, Oman, Saudi Arabia, Syria and Yemen. Accordingly, the meeting agreed that the mentioned States be included temporarily in the MIDANPIRG list of air navigation deficiencies, for unsatisfactory reporting of CFRs and LHDs, pending MIDANPIRG/14 approval. In this respect, the MIDRMA was requested to send evidences of unsatisfactory reporting to the RVSM managers/MIDRMA Board focal points of the concerned States to reach a consensus on the inclusion/exclusion of their States in the list of air navigation deficiencies.

2.7 The ATM/AIM/SAR SG/13 meeting recognized that the non-compliance with the requirement for reporting of data to the MIDRMA is a longstanding shortcoming in the MID Region, which needs to be addressed seriously. In this respect, it was re-iterated that the lack of awareness about the requirements for RVSM safety assessment activity is a major contributing factor. Moreover, the meeting recalled that, in accordance with MIDANPIRG Conclusion 13/67, with a view to improve the knowledge of the ATC and Air Operators personnel, the MIDRMA was requested to include in its work programme regular missions to the Member States, during which briefings on the MIDRMA activities and RVSM safety assessment requirements be provided to concerned personnel. In the same vein, the meeting agreed that such briefings could be provided in the MIDRMA premises in Bahrain to the personnel involved in RVSM safety assessment activity (ATC, RVSM Approval Authority and Air Operators) designated by member States, in coordination with the MIDRMA, when and where appropriate.

2.8 Accordingly, the ATM/AIM/SAR SG/13 meeting supported the following MIDRAMA Board/12 Draft Conclusion, which is proposed to replace and supersede the MIDANPIRG Conclusion 13/67:

Why	To raise the awareness related to the requirements for sustained RVSM safety assessment activity and improve the knowledge of the ATC and Air Operators personnel
What	Provide training/briefings on RVSM safety assessment requirements
Who	MIDRMA
When	through missions to concerned States or through familiarization visits organized in the MIDRMA premises

DRAFT CONCLUSION 12/5: TRAINING ON RVSM SAFETY ASSESSMENT

That, with a view to raise the awareness related to the requirements for sustained RVSM safety assessment activity and improve the knowledge of the ATC, RVSM approval Authority and Air Operators personnel, the MIDRMA include in its work programme training activity/briefings on RVSM safety assessment requirements to be provided to concerned personnel either through missions to concerned States or through familiarization visits organized in the MIDRMA premises, when and where appropriate.

2.9 The ATM/AIM/SAR SG/13 meeting was further apprised of the outcome of the RVSM Scrutiny Group meeting held in Kuwait, 16 December 2012. It was noted with concern that only five States (Bahrain, Egypt, Iran, Kuwait and Saudi Arabia) attended the meeting. The meeting underlined the importance of the tasks assigned to the RVSM Scrutiny Groups and in order to improve the efficiency of the MID RVSM Scrutiny Group, agreed that its work programme should be included in the agenda of the MIDRMA Board meetings. Based on the above, the meeting agreed to the following Draft Decision:

Why	To improve the MID RVSM Scrutiny Group efficiency
What	MID RVSM Scrutiny Group work programme be included in the agenda of the MIDRMA Board meetings
Who	MIDANPIRG
When	December 2013

DRAFT DECISION 13/7: SCRUTINY GROUP WORK PROGRAMME

That, in order to improve the efficiency of the MID RVSM Scrutiny Group, its work programme be included in the agenda of the MIDRMA Board meetings.

2.10 It was highlighted that a simplified LHD Template containing the minimum data necessary to trigger the process of reporting an ADR or CFR would be developed by the MIDRMA, with a view to facilitate the process of reporting of ADRs and CFRs by the Air Traffic Controllers.

2.11 In connection with the above, the ATM/AIM/SAR SG/13 meeting agreed that the development of an Online Reporting Tool for the submission of LHD reports to the MIDRMA, would also improve the level of reporting by States.

2.12 The meeting may wish to recall that in accordance with MIDANPIRG/13 Conclusion 13/71, States were requested to send their FPL/Traffic data for the period 01-31 October 2012 to the MIDRMA by 15 November 2012, for the development of the MID RVSM SMR 2012-2013.

2.13 The descriptions of the total traffic data collected from each MIDRMA member States is depicted in the table below. The total number of movements operating within the MID RVSM airspace was **214,609 flights**. The data related to these flights, as submitted by concerned States, was processed very carefully to ensure accurate results:

SN	MID States	June 2009	Jan 2011	Oct-12	Jan 2011 vs Oct 2012 (%)
1	Bahrain FIR	24285	30099	39345	23.5
2	Muscat FIR	22520	28224	30357	7.03
3	Jeddah/Riyadh FIR	22422	25499	30944	17.6
4	Cairo FIR	19228	14270	26332	45.81
5	Emirates FIR	15868	21076	24676	14.59
6	Tehran FIR	10479	10638	17523	39.29
7	Damascus FIR	9774	11719	8027	-45.99
8	Amman FIR	8554	10689	6857	-55.88
9	Kuwait FIR	3570	10364	13596	23.77
10	Sana'a FIR	3490	4305	5170	16.73
11	Beirut FIR	2949	3845	1286	-66.5
12	Baghdad FIR	-	-	10496	
	Total	143,139	170,728	214,609	20.45

2.14 The ATM/AIM/SAR SG/13 meeting noted with appreciation that the MIDRMA completed the assessment of the three safety objectives as set out by MIDANPIRG, through Conclusion 12/16, as follows:

Safety Objective 1: The risk of collision in MID RVSM airspace due solely to technical height-keeping performance meets the ICAO target level of safety (TLS) of 2.5×10^{-9} fatal accidents per flight hour. The computed value for the technical height risk in the SMR 2012-2013 is 6.37×10^{-12} . This meets RVSM Safety Objective 1.

2.15 The meeting may wish to note that the TLS value increased from the last SMR but it's still safe comparing to the ICAO TLS 2.5×10^{-9} .

2.16 The MIDRMA was able to measure the TLS through the new Vertical Collision Risk (VCR) software for each FIR in the Middle East Region, the table below reflects all the TLS results:

No	FIR	Flying Time	TLS Result
1	Baghdad	2,794 hours	1.73×10^{-11}
2	Kuwait	3,289 hours	1.70×10^{-11}
3	Bahrain	23,624 hours	1.61×10^{-11}
4	Cairo	24,904 hours	3.92×10^{-12}
5	Muscat	19,059 hours	3.68×10^{-12}
6	Jeddah/Riyadh	26,925 hours	3.49×10^{-12}
7	Tehran	19,836 hours	3.33×10^{-12}
8	UAE	5,384 hours	3.21×10^{-12}
9	Damascus	955 hours	2.47×10^{-12}
10	Amman	1,468 hours	1.97×10^{-12}
11	Sana'a	3,434 hours	1.96×10^{-12}
12	Beirut	195 hours	1.91×10^{-12}
	MID Region TLS	131,867 hours	6.37×10^{-12}

MIDRMA Member States TLS 2013

2.17 The meeting may wish to recall that the evidence concerning the risk of collision due to technical height-keeping performance is considered reliable if it can be shown, inter-alia, that the Pz(1000) – the probability of vertical overlap due to technical height-keeping performance, between aircraft flying 1000 ft separation in the MID RVSM airspace, is less than 1.7×10^{-8} . For the MID RVSM SMR 2012-2013, the computed value of the Pz(1000) is 5.26×10^{-9} , which meets the ICAO requirement.

2.18 The airspace to the northern part of Bahrain FIR continued to be the busiest and most complex airspace in the Middle East Region, however the northern and eastern part of Muscat FIR is also very complex and so is the airspace around HIL in Jeddah FIR. Accordingly, the determination of the Horizontal Overlap Frequency was measured in four different FIRs, Bahrain, Kuwait (including the southern part of Baghdad FIR), Muscat and the Central part of Jeddah FIR. The computed value for the Horizontal Frequency Overlap is estimated to be 4.33×10^{-8} per flight hour.

Safety Objective 2: The overall risk of collision due to all causes which includes the technical risk and all risk due to operational errors and in-flight contingencies in the MID RVSM airspace meets the ICAO overall TLS of 5×10^{-9} fatal accidents per flight hour. The computed value for the overall risk in the SMR 2012 is 3.63×10^{-11} . This meets RVSM Safety Objective 2.

2.19 The vertical risk estimation due to atypical errors has been demonstrated to be the major contributor in the overall vertical-risk estimation for the MID RVSM airspace, The final conclusions of the data processed have been severely limited by the continued NIL reporting of Large Height Deviations (LHDs) and Coordination Failure Reports (CFRs) from some members which does not support a high confidence in the result, the MIDRMA is reiterating the importance of submitting such reports especially from FIRs with high volume of traffic.

2.20 The effect of future traffic growth has also been assessed. The overall risk of collision will continue to meet the TLS of 2.5×10^{-9} fatal accidents per flight hour at least until 2015.

Safety Objective 3: address any safety-related issues raised in the SMR by recommending improved procedures and practices; and propose safety level improvements to ensure that any identified serious or risk-bearing situations do not increase and, where possible, that they decrease. This should set the basis for a continuous assurance that the operation of RVSM will not adversely affect the risk of en-route mid-air collision over the years.

2.21 The ATM/AIM/SAR SG/13 meeting noted that the analysis of operational error reports and coordination failure reports and the recommendations put forward in the SMR 2012-2013 provide sufficient evidence that RVSM Safety Objective 3 is being met.

2.22 Considering all the foregoing, the meeting agreed that the MIDRMA finalise the SMR 2012-2013 for presentation to and endorsement by MIDANPIRG/14.

Height Keeping Monitoring Requirements

2.23 The meeting may wish to recall that further to the amendment of Annex 6 Part I and Part II concerning long term monitoring requirements for height keeping performance, and based on the MIDRMA Minimum Monitoring Requirements, States are required to ensure 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.

2.24 Based on the latest RVSM approval lists received from MID States, the following Table has been consolidated by the MIDRMA to show the height-keeping Minimum Monitoring Requirements (MMR) for each of the MID States, as of September 2013:

ICAO MID STATES - MINIMUM MONITORING REQUIREMENTS

AS OF SEPTEMBER 2013

Seq. #	MID STATES	RVSM ACFT	Compliant	NOT Covered	NOT Covered in %	ACFT MMR	REMARKS
1	BAHRAIN	52	52	0	0%	0	Fully Compliant
2	EGYPT	128	116	12	9%	6	
3	IRAN	178	119	59	33%	30	
4	IRAQ	24	20	4	17%	4	
5	JORDAN	56	56	0	0%	0	Fully Compliant
6	KUWAIT	36	36	12	33%	0	Fully Compliant
7	LEBANON	37	28	9	24%	9	
8	OMAN	34	34	0	0%	0	Fully Compliant
9	QATAR	148	146	3	2%	2	
10	SAUDI ARABIA	262	241	25	10%	21	
11	SYRIA	6	6	0	0%	0	Fully Compliant
12	UAE	441	429	12	3%	11	
13	YEMEN	10	7	7	70%	6	
	TOTAL	1412	1290	143	10%	89	

2.25 The ATM/AIM/SAR SG/13 meeting noted with appreciation that the percentage of aircraft requiring height keeping monitoring in the MID Region was reduced from 46% to 10% since the last MIDRMA Board/11 meeting in September 2011; although the total number of RVSM approved aircraft increased by 18%.

2.26 The ATM/AIM/SAR SG/13 meeting noted with concern that 143 aircraft have valid RVSM approvals without known height-keeping monitoring results, considering that the MIDRMA is continuously coordinating very closely with other RMAs to exchange all available height monitoring results, particularly with the Euro RMA that is providing the results of any MID RVSM approved aircraft flying over the European Height Monitoring Units (HMUs). In order to fully comply with the Annex 6 requirements and the MIDRMA MMR, it was highlighted that 125 from the identified 143 aircraft should be monitored, taking into consideration the ICAO grouping categories

2.27 In connection with the above, the meeting agreed that Lebanon and Yemen be included in the MIDANPIRG list of air navigation deficiencies, for granting RVSM approvals for aircraft without known height-keeping monitoring results.

2.28 The ATM/AIM/SAR SG/13 meeting urged States to enforce the implementation of the MMR Tables to ensure that minimum monitoring requirements for all MID RVSM approved aircraft are continuously met. Accordingly, the meeting supported the following MIDRMA Board/12 Draft Conclusion which is proposed to replace and supersede the MIDANPIRG/13 Conclusion 13/69:

Why	To improve the compliance with the monitoring requirements for height keeping performance
What	State Letter
Who	ICAO MID Regional Office
When	February 2014

DRAFT CONCLUSION 12/6: RVSM MINIMUM MONITORING REQUIREMENTS

That,

a) States be urged to take necessary measures to:

- i) ensure that, before 30 June 2013, their aircraft operators fully comply with Annex 6 provisions related to long term height monitoring requirements, based on the MIDRMA MMR Tables;*
- ii) withdraw the RVSM approvals for their registered aircraft that would not be compliant with Annex 6 provisions related to long term height monitoring requirements; and/or when notified by the MIDRMA;*
- iii) ban any aircraft without confirmed RVSM approval status from entering the RVSM airspace; and*
- iv) report any case of handover at an RVSM Flight Level of an aircraft without confirmed RVSM approval status from adjacent ACCs to the MIDRMA and the ICAO MID Regional Office.*

b) the MIDRMA Board Members in coordination with the MID RVSM Programme Managers monitor and follow up this subject at the national level, in order to ensure efficient implementation.

2.29 The meeting may wish to recall that during the MIDRMA Board/11 meeting, it was agreed that effort should be made to reach the world average of 90% of RVSM approved aircraft having monitoring results in the MID Region. Taking into consideration, the latest progress made since the last Board meeting and the MIDRMA plans for GMU monitoring missions, it was agreed that the performance target to be reached is 95% of RVSM approved aircraft having monitoring results, by the MIDRMA Board/13 meeting (2014).

2.30 The meeting may wish to note that the subject of monitoring airframes that are RVSM compliant on delivery was addressed by the seventh meeting of RMA Coordination Group (RMACG/7) held in Beijing, China, 28 May – 1 June 2012. Accordingly, the meeting endorsed the MID Region RVSM Minimum Monitoring Requirements Conditions at **Appendix A** to this working paper, to be part of the Monitoring Requirements for the MID Region. In this respect, it was highlighted that, if an

operator adds new RVSM compliant airframes of a type for which it already has RVSM operational approval and has completed monitoring requirements for the type in accordance with the attached table, the new airframes are not required to be monitored. If an operator adds new RVSM compliant airframes of an aircraft type for which it has NOT previously received RVSM operational approval, then the operator must complete monitoring in accordance with the Tables 1 and 2 of **Appendix A** to this working paper.

2.31 The ATM/AIM/SAR SG/13 meeting agreed that the MID Region RVSM Minimum Monitoring Requirements Conditions at **Appendix A** to this working paper should be posted on the MIDRMA website and included in the MIDRMA Manual.

2.32 The ATM/AIM/SAR SG/13 meeting was apprised of the MIDRMA GMU activities. In this respect, it was noted with appreciation that since January 2010, the MIDRMA conducted GMU height monitoring for 165 Aircraft and it's expected to conduct the GMU height monitoring for more than 89 aircraft in the near future.

2.33 In connection with the above, the meeting recalled that MIDANPIRG/13 noted the difficulties which hindered the MIDRMA to purchase 2 GMU Units from the CSSI Company, as agreed by the MIDRMA Board through Draft Conclusion 10/6. Therefore, it was noted that the MIDRMA has officially ordered 2 Enhanced GMU units (with the condition that the processing of recorded data is done by CSSI).

2.34 The ATM/AIM/SAR SG/13 meeting was apprised of the difficulties that faced the MIDRMA Team for the conduct of some GMU monitoring missions, especially with the carriage of the GMU Unit which necessitates special authorization from national authorities. In order to avoid that the MIDRMA faces similar difficulties in the future, the meeting agreed that prior to the conduct of any GMU monitoring mission, and upon notification by the MIDRMA, the concerned MIDRMA Board Member should undertake necessary arrangements at the national level with concerned authorities (CAA, Customs, Security, etc.) to facilitate the MIDRMA Team mission. Accordingly, the meeting supported the following MIDRMA Board/12 Draft Conclusion:

Why	To facilitate the MIDRMA Team missions
What	Arrangements for the conduct of MIDRMA GMU Monitoring missions
Who	MIDRMA/MIDRMA Board Members
When	After MIDANPIRG/14

DRAFT CONCLUSION 12/7: ARRANGEMENTS FOR THE CONDUCT OF GMU MONITORING MISSIONS

That, prior to the conduct of any GMU monitoring mission:

- a) *the MIDRMA notify the concerned MIDRMA Board Member; and*
- b) *the MIDRMA Board member is to undertake necessary arrangements at the national level with concerned authorities (CAA, Customs, Security, etc.) to facilitate the MIDRMA Team mission.*

MIDRMA Vertical Collision Risk Software (MID VCR)

2.35 With regard to the methodology used for the assessment of RVSM operations in the MID Region, the ATM/AIM/SAR SG/13 meeting recalled that the MIDRMA, since its establishment, has been using the Collision Risk Model provided by EUROCONTROL. The meeting noted that this Model is more suitable for the European airspace and is over conservative and sometimes over estimates the collision risk for the MID Region.

2.36 The meeting may wish to recall that MIDANPIRG, through Conclusion 13/68, agreed that the MIDRMA initiate action for the development/purchase of suitable VCR software for the MID Region.

2.37 The ATM/AIM/SAR SG/13 meeting was apprised of the progress achieved for the development and validation of the MID VCR. In this respect, it is to be highlighted that the MIDRMA in close coordination with the Consultant/Vendor, received on 24th November 2013, the final phase of the project after the completion of the required training.

2.38 The ATM/AIM/SAR SG/13 meeting noted that the MID VCR was used for the development of the SMR 2012-2013. The meeting agreed that it is important to compare the computed TLS using the MID VCR with that computed using the EUROCONTROL Model.

2.39 The ATM/AIM/SAR SG/13 meeting noted that the following steps were followed in the process of validation of the different MID VCR Modules:

1. **Airspace Modelling:** This Module has been validated using Bahrain and Kuwait data. This includes modelling of airspace, waypoints, airways and restrictions.
2. **Radar/Flight plan Data processing Module:** This Module has been validated and the software can process the flight plan information and the radar track data.
3. **Parameter Estimation Module:** This Module has been validated and the software can analyse and classify events, compute the frequency of overlap as well as time spent in overlap.
4. **The Collision Risk model** is under development and its validation requires the availability of up-to-date data related to Airway structure and waypoints from all MID States.

2.40 Accordingly, the ATM/AIM/SAR SG/13 meeting supported the following MIDRMA Board/12 Draft Conclusion which is proposed to replace and supersede the MIDANPIRG Conclusion 13/65:

Why	To standardize and improve the reporting of required data to the MIDRMA.
What	Provision of required data to the MIDRMA on regular basis and in a timely manner
Who	States
When	On monthly basis

DRAFT CONCLUSION 12/8: PROVISION OF REQUIRED DATA TO THE MIDRMA

That, considering the on-going requirement for RVSM safety monitoring in the MID Region:

- a) *States provide the required data to the MIDRMA on a regular basis and in a timely manner. The data is to include, but is not necessarily limited to:*

- i) approval of operators and aircraft for RVSM operations (on monthly basis or whenever there's a change);
 - ii) Large Height Deviations (LHD) (on monthly basis);
 - iii) traffic data (as requested by the MIDRMA Board);
 - iv) radar data as, when and where required; and
 - v) airway structure (above FL 290) and waypoints.
- b) States not providing the required data to the MIDRMA on a regular basis and in a timely manner:
- i) be included in the MIDANPIRG list of air navigation deficiencies; and
 - ii) might not be covered by the RVSM SMRs.

Action Plan for the development of the MID RVSM SMR 2014

2.41 The ATM/AIM/SAR SG/13 meeting agreed that for the development of the SMR 2014, the Traffic Data Sample (TDS) will be collected for the period 15 January – 15 February 2014.

2.42 It was reiterated that the required data must be submitted in the right format and in the formulated excel sheet designed for this purpose which is the only sheet recognized by the MID RVSM Vertical Collision Risk Software, any data received in a different format, or in an excel sheet different from the one available on the MIDRMA website, www.midrma.com, will not be acceptable.

2.43 It is to be highlighted that the MID RVSM Vertical Collision Risk Software will be able to evaluate the submitted data by each Member States automatically and send an evaluation report in the data status with all the mistakes/inconsistencies, if any, with an official statement related to the acceptance (or non-acceptance) of data.

2.44 Therefore, the ATM/AIM/SAR SG/13 meeting agreed to the following Action Plan for the development of the MID RVSM SMR 2014:

No	Start	Activity	End
1	15/01/2014	States to collect flight plan traffic data (SMR's Traffic Data Sample) for all Traffic operating between FL290 and FL410 inclusive.	15/02/2014
2	15/01/2014	Collect Bahrain and Kuwait SSR radar data for January 2014 for all Traffic operating between FL290 and FL410 inclusive.	15/02/2014
3	15/01/2014	Collect Muscat SSR radar data for January 2014 for all Traffic operating between FL290 and FL410 inclusive.	15/02/2014
4	15/01/2014	Collect SSR radar data for HIL area for the month of January 2014 for all Traffic operating between FL290 and FL410 inclusive.	15/02/2014
5	March 2014	Review and analyze all Large Height Deviation Reports.	-
5	01/02/2014	Collect states TDS.	15/04/2014
6	01/03/2014	Ensure MID RVSM approvals up to date and ensure the ICAO minimum monitoring requirements achieved based on the TDS received from States.	15/04/2014
7	01/04/2014	Prepare New MID MMR for all MID Airline Operators.	30/04/2014
8	01/04/2014	MID RMA Calculations of all risk parameters	30/04/2014
9	01/05/2014	Production of the SMR 2014 initial results.	15/05/2014
10	01/07/2014	Production of the final MID SMR 2014 for presentation to and Endorsement by MIDANPIRG/15	30/09/2014

2.45 Based on the above, the ATM/AIM/SAR SG/13 meeting agreed to the following Draft Conclusion:

Why	To expedite the development of the MID RVSM SMR 2014
What	State Letter
Who	ICAO MID Regional Office
When	January 2014

DRAFT CONCLUSION 13/8: MID RVSM SMR 2014

That,

- a) *the FPL/traffic data for the period 15 January – 15 February 2014 be used for the development of the MID RVSM Safety Monitoring Report (SMR 2014);*
- b) *only the appropriate Flight Data form available on the MIDRMA website (www.midrma.com) should be used for the provision of FPL/traffic data to the MIDRMA;*
- c) *the initial results of the MID RVSM SMR 2014 be ready before 15/05/2014; and*
- d) *the final version of the MID RVSM SMR 2014 be ready for presentation to and endorsement by MIDANPIRG/15.*

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) urge States to provide necessary data to the MIDRMA as and when required; and
- b) approve the proposed Draft Conclusions and Decisions contained in this working paper.

MID REGION RVSM MINIMUM MONITORING REQUIREMENTS - CONDITIONS

1. UPDATE OF MONITORING REQUIREMENTS TABLE AND WEBSITE. As significant data is obtained, monitoring requirements for specific aircraft types may change. When Table 1 below, is updated, The MIDRMA will advise all State members. The updated table will be posted on the MIDRMA website.

2. MONITORING PROGRAM. All operators that operate or intend to operate in the Middle East Region airspace where RVSM is applied are required to participate in the regional RVSM monitoring programme. Table 1 addresses requirements for monitoring the height-keeping performance of aircraft in order to meet regional safety objectives. In their application to the appropriate State authority for RVSM approval, operators must show a plan for meeting the applicable monitoring requirements. Initial monitoring should be completed as soon as possible but not later than 6 months after the issue of RVSM approval, the State of Registry that had issued an RVSM approval to an operator would 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.

3. AIRCRAFT STATUS FOR MONITORING. Aircraft engineering work that is required for the aircraft to receive RVSM airworthiness approval must be completed prior to the aircraft being monitored. Any exception to this rule will be coordinated with the State authority.

4. APPLICABILITY OF MONITORING FROM OTHER REGIONS. Monitoring data obtained in conjunction with RVSM monitoring programmes from other Regions can be used to meet regional monitoring requirements. The RMAs, which are responsible for administering the monitoring programme, have access to monitoring data from other Regions and will coordinate with States and operators to inform them on the status of individual operator monitoring requirements.

5. MONITORING PRIOR TO THE ISSUE OF RVSM OPERATIONAL APPROVAL IS NOT A REQUIREMENT. Operators should submit monitoring plans to the responsible civil aviation authority and to the MIDRMA that show how they intend to meet the requirements specified in Table 1. Monitoring will be carried out in accordance with this table.

6. AIRCRAFT GROUPS NOT LISTED IN TABLE 1. Contact the MIDRMA for clarification if an aircraft group is not listed in Table 1 or for clarification of other monitoring related issues. An aircraft group not listed in Table 1 will probably be subject to Category 2 or Category 3 monitoring requirements.

7. TABLE OF MONITORING GROUPS. Table 2 shows the aircraft types and series that are grouped together for operator monitoring purposes.

8. TRAILING CONE DATA. Altimetry System Error estimations developed using Trailing Cone data collected during RVSM certification flights can be used to fulfill

monitoring requirements. It must be documented, however, that aircraft RVSM systems were in the approved RVSM configuration for the flight.

9. MONITORING OF AIRFRAMES THAT ARE RVSM COMPLIANT ON DELIVERY. If an operator adds new RVSM compliant airframes of a type for which it already has RVSM operational approval and has completed monitoring requirements for the type in accordance with the attached table, the new airframes are not required to be monitored. If an operator adds new RVSM compliant airframes of an aircraft type for which it has NOT previously received RVSM operational approval, then the operator must complete monitoring in accordance with the attached table.

Table 1: MONITORING REQUIREMENTS TABLE

MONITORING IS REQUIRED IN ACCORDANCE WITH THIS TABLE			
MONITORING PRIOR TO THE ISSUE OF RVSM APPROVAL IS <u>NOT</u> A REQUIREMENT			
CATEGORY		AIRCRAFT GROUP	MINIMUM OPERATOR MONITORING FOR EACH AIRCRAFT GROUP
1	GROUP APPROVED: DATA INDICATES COMPLIANCE WITH THE RVSM MASPS	A124, A300, A306, A310-GE, A310-PW, A318, A320, A330, A340, A345, A346, A3ST, AVRO, B712, B727, B737CL, B737C, B737NX, B747CL, B74S, B744-5, B744-10, B752, B753, B767, B764, B772, B773, BD100, CL600, CL604, CL605, C17, C525, C560, C56X, C650, C680, C750, CARJ, CRJ7, CRJ9, DC10, E135-145, E170-190, F100, F900, FA10, GALX, GLEX, GLF4, GLF5, H25B-800, J328, KC135, LJ40, LJ45, LJ60, MD10, MD11, MD80, MD90, PRM1, T154	Two airframes from each fleet* of an operator to be monitored
2	GROUP APPROVED: INSUFFICIENT DATA ON APPROVED AIRCRAFT	Other group aircraft other than those listed above including: A148, A158 , A380, A400 , AC90 , AC95, AN72, ASTR, ASTR-SPX, B701, B703, B703-E3, B731, B732, B787 , BD700, BE20, BE30, BE40, B744-LCF, B748, C130, C500, C25A, C25B, C25C, C441, C5, C510, C550-552, C550-B, C550-II, C550-SII, CRJ10 , D328, DC85, DC86-87, DC91 , DC93, DC94 DC95, E50P, E55P , EA50, F2TH, F70, FA20, FA50, FA7X, G150, G250 , GLF2, GLF2B, GLF3, GLF6 , H25B-700, H25B-750, H25C, HA4T, IL62, IL76, IL86, IL96, L101, LJ23 , LJ24 , LJ25 , LJ28 , L29B-2, L29B-731, LJ31, LJ35-36, LJ55, MU30, P180, PAY4 , PC12, SB20, SBR1, SBR2, T134, T204, T334, TBM, WW24, YK42	60% of airframes (round up if fractional) from each fleet of an operator or individual monitoring
3	Non-Group	Aircraft types for which no generic compliance method exists: BA11, R722, SJ30, STAR, B720, A225, GLEX-ASTOR, GLF5-AEW, VC-10, GSPN, B74S-SOFIA	100% of aircraft shall be monitored

Table 2: MONITORING GROUPS FOR AIRCRAFT CERTIFIED UNDER GROUP APPROVAL REQUIREMENTS

Monitoring Group	A/C ICAO	A/C Type	A/C Series
A124	A124	AN-124 RUSLAN	ALL SERIES
A148	A148	AN-148	100
A158	A158	AN-158	
A300	A30B	A300	B2-100, B2-200, B4-100, B4-100F, B4-120, B4-200, B4-200F, B4-220, B4-220F, C4-200
A306	A306	A300	600, 600F, 600R, 620, 620R, 620RF
A310-GE	A310	A310	200, 200F, 300, 300F
A310-PW	A310	A310	220, 220F, 320
A318	A318	A318	ALL SERIES
A320	A319 A320 A321	A319 A320 A321	CJ , 110, 130 110, 210, 230 110, 130, 210, 230
A330	A332 A333	A330 A330	200, 220, 240 300, 320, 340
A340	A342 A343	A340 A340	210 310
A345	A345	A340	500, 540
A346	A346	A340	600, 640
A380	A388	A380	800, 840, 860
A3ST	A3ST	A300	600R ST BELUGA
A400	A400	A400M	
AC90	AC90	COMMANDER 690 COMMANDER 840 COMMANDER 900	
AC95	AC95	AERO COMMANDER 695	A
AN72	AN72	AN-72 AN-74	ALL SERIES
ASTR	ASTR	1125 ASTRA	ALL SERIES
ASTR-SPX	ASTR	1125 ASTR SPX, G100	ALL SERIES
AVRO	RJ1H RJ70 RJ85	AVRO AVRO AVRO	RJ100 RJ70 RJ85
B701	B701	B707	100, 120B
B703	B703	B707	320, 320B, 320C
B703-E3	E3TF	B707	E-3

Monitoring Group	A/C ICAO	A/C Type	A/C Series
B712	B712	B717	200
B727	B721 B722	B727 B727	100, 100C, 100F, 100QF 200, 200F
B731	B731	B737	100
B732	B732	B737	200, 200C
B737CL	B733 B734 B735	B737 B737 B737	300 400 500
B737NX	B736 B737 B738 B739	B737 B737 B737 B737	600 700, BBJ 800, BBJ2 900
B737C	B737	B737	700C
B747CL	B741 B742 B743	B747 B747 B747	100, 100B, 100F 200B, 200C, 200F, 200SF 300
B74S	B74S B74R	B747	SR, SP
B744-5	B744 B74D	B747	400, 400D, 400F (With 5 inch Probes up to SN 25350)
B744-10	B744 B74D	B747	400, 400D, 400F (With 10 inch Probes from SN 25351)
B744-LCF	B744	B747	LCF
B748	B748	B747	8F, 81
B752	B752	B757	200, 200PF, 200SF
B753	B753	B757	300
B767	B762 B763	B767 B767	200, 200EM, 200ER, 200ERM, 300, 300ER, 300ERF
B764	B764	B767	400ER
B772	B772 B77L	B777	200, 200ER, 200LR, 200LRF
B773	B773 B77W	B777	300, 300ER
B787	B788 B789	B787-8 B787-9	
BD100	CL30	CHALLENGER 300	ALL SERIES
BD700	GL5T	GLOBAL 5000	ALL SERIES
BE20	BE20	200 KINGAIR	ALL SERIES
BE30	BE30 B350	B300 SUPER KINGAIR B300 SUPER KINGAIR 350	ALL SERIES
BE40	BE40	BEECHJET 400 BEECHJET 400A BEECHJET 400XP HAWKER 400XP	ALL SERIES

Monitoring Group	A/C ICAO	A/C Type	A/C Series
C130	C130	HERCULES	H, J
C17	C17	C-17 GLOBEMASTER 3	ALL SERIES
C441	C441	CONQUEST II	ALL SERIES
C5	C5	C5	ALL SERIES
C500	C500	500 CITATION 500 CITATION I 501 CITATION I SINGLE PILOT	ALL SERIES
C510	C510	MUSTANG	ALL SERIES
C525	C525	525 CITATIONJET 525 CITATIONJET I 525 CITATIONJET PLUS	ALL SERIES
C25A	C25A	525A CITATIONJET II	ALL SERIES
C25B	C25B	CITATIONJET III 525B CITATIONJET III	ALL SERIES
C25C	C25C	525C CITATIONJET IV	ALL SERIES
C550-552	C550	552 CITATION II (USN)	ALL SERIES
C550-B	C550	550 CITATION BRAVO	ALL SERIES
C550-II	C550	550 CITATION II 551 CITATION II SINGLE PILOT	ALL SERIES
C550-SII	C550	S550 CITATION SUPER II	ALL SERIES
C560	C560	560 CITATION V 560 CITATION V ULTRA 560 CITATION V ENCORE	ALL SERIES
C56X	C56X	560 CITATION EXCEL	ALL SERIES
C650	C650	650 CITATION III 650 CITATION VI 650 CITATION VII	ALL SERIES
C680	C680	680 CITATION SOVEREIGN	
C750	C750	750 CITATION X	ALL SERIES
CARJ	CRJ1 CRJ2 CRJ2 CRJ2	REGIONALJET REGIONALJET CHALLENGER 800 CHALLENGER 850	100, 100ER, 200, 200ER, 200LR ALL SERIES ALL SERIES
CRJ7	CRJ7	REGIONALJET	700, 700ER, 700LR
CRJ9	CRJ9	REGIONALJET	900, 900ER, 900LR
CRJ10	CRJ10	REGIONALJET	1000ER

Monitoring Group	A/C ICAO	A/C Type	A/C Series
CL600	CL60	CL-600 CL-601	CL-600-ALL SERIES CL-601- ALL SERIES,
CL604	CL60	CL-604	CL-604- ALL SERIES
CL605	CL60	CL-605	CL-605- ALL SERIES
DC10	DC10	DC-10	10, 10F, 15, 30, 30F, 40, 40F
D328	D328	328 TURBOPROP	100
DC85	DC85	DC-8	50, 50F
DC86-87	DC86 DC87	DC-8 DC-8	61, 62, 63 71, 72, 73
DC91	DC91	DC-9	10, 15
DC93	DC93	DC-9	30, 30F
DC94	DC94	DC-9	40
DC95	DC95	DC-9	51
E135-145	E135 E145	EMB-135 EMB-145	ALL SERIES
E170-190	E170 E170 E190 E190	EMB-170 EMB-175 EMB-190 EMB-195	ALL SERIES
E50P	E50P	PHENOM 100	ALL SERIES
E55P	E55P	PHENOM 300	E55P
EA50	EA50	ECLIPSE	ALL SERIES
F100	F100	FOKKER 100	ALL SERIES
F2TH	F2TH	FALCON 2000 FALCON 2000-EX FALSON 2000LX	ALL SERIES
F70	F70	FOKKER 70	ALL SERIES
F900	F900	FALCON 900 FALCON 900DX FALCON 900EX	ALL SERIES
FA10	FA10	FALCON 10	ALL SERIES
FA20	FA20	FALCON 20 FALCON 200	ALL SERIES
FA50	FA50	FALCON 50 FALCON 50EX	ALL SERIES
FA7X	FA7X	FALCON 7X	ALL SERIES
G150	G150	G150	ALL SERIES
G250	G250	G250	
GALX	GALX	1126 GALAXY G200	ALL SERIES
GLEX	GLEX	BD-700 GLOBAL EXPRESS	ALL SERIES
GLF2	GLF2	GULFSTREAM II (G-1159)	ALL SERIES
GLF2B	GLF2	GULFSTREAM IIB (G-	ALL SERIES

Monitoring Group	A/C ICAO	A/C Type	A/C Series
		1159B)	
GLF3	GLF3	GULFSTREAM III (G-1159A)	ALL SERIES
GLF4	GLF4	GULFSTREAM IV (G-1159C) G300 G350 G400 G450	ALL SERIES
GLF5	GLF5	GULFSTREAM V (G-1159D) G500 G550	ALL SERIES
GLF6	GLF6	G650	
H25B-700	H25B	BAE 125 / HS125	700A, 700B
H25B-750	H25B	HAWKER 750	ALL SERIES
H25B-800	H25B	BAE 125 / HS125 HAWKER 800XP HAWKER 800XPI HAWKER 800 HAWKER 850XP HAWKER 900XP HAWKER 950XP	800A, 800B ALL SERIES
H25C	H25C	HAWKER 1000	ALL SERIES
HA4T	HA4T	HAWKER 4000	ALL SERIES
IL62	IL62	ILYUSHIN-62	ALL SERIES
IL76	IL76	ILYUSHU-76	ALL SERIES
IL86	IL86	ILYUSHIN-86	ALL SERIES
IL96	IL96	ILYUSHIN-96	ALL SERIES
J328	J328	328JET	ALL SERIES
KC135	B703	KC-135	ALL SERIES
L101	L101	L-1011 TRISTAR	ALL SERIES
L29B-2	L29B	L-1329 JETSTAR 2	ALL SERIES
L29B-731	L29B	L-1329 JETSTAR 731	ALL SERIES
LJ23	LJ23	LEARJET 23	
LJ24	LJ24	LEARJET 24	
LJ25	LJ25	LEARJET 25	
LJ28	LJ28	LEARJET 28 LEARJET 29	
LJ31	LJ31	LEARJET 31	ALL SERIES
LJ35-36	LJ35	LEARJET 35 LEARJET 36	ALL SERIES ALL SERIES
LJ40	LJ40	LEARJET 40	ALL SERIES
LJ45	LJ45	LEARJET 45	ALL SERIES

Monitoring Group	A/C ICAO	A/C Type	A/C Series
LJ55	LJ55	LEARJET 55	ALL SERIES
LJ60	LJ60	LEARJET 60	ALL SERIES
MD10	MD10	MD-10	ALL SERIES
MD11	MD11	MD-11	COMBI, ER, FREIGHTER, PASSENGER
MD80	MD81 MD82 MD83 MD87 MD88	MD-80 MD-80 MD-80 MD-80 MD-80	81 82 83 87 88
MD90	MD90	MD-90	30, 30ER
MU30	MU30	MU-300 DIAMOND	1A
P180	P180	P-180 AVANTI	ALL SERIES
PAY4	PAY4	PA-42	1000 CHEYENNE
PC12	PC12	PC-12	ALL SERIES
PRM1	PRM1	PREMIER 1	ALL SERIES
SB20	SB20	SAAB 2000	ALL SERIES
SBR1	SBR1	SABRELINER 40 SABRELINER 60 SABRELINER 65	ALL SERIES
SBR2	SBR2	SABRELINER 80	ALL SERIES
T134	T134	TU-134	A, B
T154	T154	TU-154	A, B, M, S
T204	T204	TU-204 TU-224 TU-234	100, 100C, 120RR 200, 214, C
T334	T334	TU-334	ALL SERIES
TBM	TBM7 TBM8	TBM-700 TBM-850	ALL SERIES
WW24	WW24	1124 WESTWIND	ALL SERIES
YK42	YK42	YAK-42	ALL SERIES
