



International Civil Aviation Organization

Middle East Regional Monitoring Agency Board

Fifteenth Meeting (MIDRMA Board/15)
(Muscat, Oman, 29 – 31 January 2018)

Agenda Item 4: RVSM Monitoring and related Technical Issues

MIDRMA MONITORING ACTIVITIES & MINIMUM MONITORING REQUIREMENTS

(Presented by MIDRMA)

SUMMARY

This working paper reflects the MIDRMA height monitoring activities for RVSM approved aircraft registered in the Middle East Region.

Action by the meeting is at paragraph 3.

REFERENCES

- MID RVSM SMR 2016 – Draft Version 0.1
- MIDRMA Board/14
- MMR Table June 2017
- MIDANPIRG/16 Reports.

1. INTRODUCTION

1.1 Since the implementation of height monitoring by ICAO Annex 6 Part 1, the MIDRMA believes, along with the support of MIDANPIRG, that the RVSM Minimum Monitoring Requirements (MMRs) adopted for global application by all ICAO Regional Monitoring Agencies (RMAs) shall be the basis for the implementation of this requirement.

1.2 In order to accomplish the ICAO Annex 6 part 1 height monitoring requirements, the MIDRMA continued to coordinate with all MIDRMA Member States to publish their minimum monitoring requirements through the new automated MMR system developed by the MIDRMA and published in the MIDRMA website to ensure the availability of these requirements all the time for the concerned MID Civil Aviation Authorities and the airline operators.

2. DISCUSSION

2.1 The MIDRMA consider height monitoring a high priority safety issue and failure to respond to the required height monitoring may jeopardise safety of aircraft as well as risk the implementation of RVSM. The MIDRMA continues to coordinate very closely with other RMAs to exchange all available height monitoring results, particularly with the Euro RMA who is providing height monitoring results to the MIDRMA for any MID RVSM Approved aircraft flying over their Height Monitoring Units (HMUs).

2.2 The meeting may wish to note that MIDRMA Board/12 agreed by request from the MIDRMA that the performance target for height monitoring needs to reach 95% or more of the total RVSM approved aircraft in the ICAO Middle East Region, this percentage of height monitored aircraft in the region require States to enforce their MMR on all airline operators required to be monitored and shall take all necessary measures for operators not complying with height monitoring, however the response of the MID States to comply with their MMRs vary from satisfactory to unsatisfactory.

2.3 The Auto Online MMR Tool enabled the Civil Aviation Authorities in the MID Region to check their MMR for each airline operator under their responsibility and identify aircraft that are non-compliant with the ICAO Annex 6 part 1 requirements for height-keeping performance. The MIDRMA is the only RMA that implemented such a unique Tool, which is available on the MIDRMA website (www.midrma.com).

2.4 The MIDRMA responded immediately to Draft Conclusion 14/1 as adopted by MIDRMA Board/14 Sudan – Khartoum 1 – 3 February to conduct height monitoring for 79 aircraft registered and approved by the I.R. of IRAN Civil Aviation Organization which provided a generous and professional support to the monitoring team.

*DRAFT CONCLUSION 14/1: IRANIAN AIRCRAFT HEIGHT KEEPING
PERFORMANCE MONITORING*

That,

- a) The MIDRMA urgently start the monitoring of the Iranian Aircraft as soon as practicable; and*
- b) Iran takes the necessary measures to facilitate and expedite the conduct of the MIDRMA GMU mission to its Operators.*

2.5 The height monitoring missions to Iran started after the US Department of Treasury - Office of Foreign Assets Control (OFAC) granted the MIDRMA a license for using the EGMU and the Altimetry System Error software to analyse the monitoring data for I.R. of IRAN Civil Aviation Organization RVSM approved aircraft, the MIDRMA succeeded to conduct height monitoring for the 79 aircraft in Iran during the validity period of the OFAC License which expired on 31st December 2016.

2.6 The MIDRMA applied for a renewal to the license granted by OFAC before the expiry date to continue providing the monitoring service to Iran CAO RVSM approved aircraft; unfortunately the approval to renew the license was delayed which forced the MIDRMA to stop conducting height monitoring in Iran and caused their Minimum Monitoring Requirement (MMR) to increase again and effected the performance target for height monitoring set for the region, this issue was raised to the MIDRMA Board Chairman and to the ICAO MID Office and were updated about the consequences of this decision taken by OFAC. The MIDRMA reacted by contacting the FAA and started to negotiate with all concerned parties in the US Department of Treasury and the FAA and held several conference calls and exchanged emails trying to fulfil the requirements for renewing the license, the result to all the works carried until now is no approval received yet.

2.7 The MIDRMA continued to coordinate with the remaining Member States which require height monitoring to close the violation of their aircraft operating without known height monitoring results and was very grateful for the support received from Iraq Civil Authorities (ICAA) to quickly check all their aircraft as soon as possible and to be fully compliant with height monitoring according to ICAO Annex 6 Part 1, the monitoring team was able to comply with ICAA request and finished the monitoring of 11 aircraft in Baghdad.

2.8 The MIDRMA raised their concern during MIDRMA /14 meeting related to the status of the Libyan aircraft granted RVSM approvals (based on the data received from the African RMA after the responsibility of the Libyan aircraft officially transferred to the MIDRMA) without information or feedback from the State on the status of their height-keeping performance results. Accordingly, the MIDRMA worked closely with the ICAO MID Office to ensure this issue addressed to the Libyan Civil Aviation Authority to avoid any disturbance hindering air traffic in the Middle East Region, but at the same time working in coordination with the responsible authorities in LCAA to arrange the inspection of all aircraft according to a specific schedule, however this issue is still pending with the ICAO MID Office.

2.9 The MIDRMA managed to conduct GMU monitoring for **158** aircraft registered in the Middle East region since MIDRMA Board/14 reflecting a decrease in the percentage of the monitored aircraft registered in the MID Region to **86%** with known height monitoring results and **9%** less than the performance target for height monitoring set by MIDRMA Board/12 meeting,

2.10 The table below reflects the status of each MID States MMR valid as of January 2018:

S#	MID States	RVSM Approved A/C	Have Results or Covered	Not Covered	Not Covered in %	A/C MMR	Remarks
1	Bahrain	49	46	3	6%	3	
2	Egypt	132	121	11	8%	11	
3	Iran	225	138	87	39%	23	
4	Iraq	38	38	0	0%	0	
5	Jordan	53	46	7	13%	5	
6	KSA	256	250	6	2%	4	
7	Kuwait	53	51	2	4%	2	
8	Lebanon	34	30	4	12%	3	
9	Libya	32	0	32	100%	23	ARMA
10	Oman	68	65	3	4%	2	
11	Qatar	249	239	10	4%	4	
12	Sudan	14	0	14	100%	11	
13	Syria	11	6	5	45%	5	
14	UAE	580	570	10	2%	9	
15	Yemen	9	0	9	100%	8	
	TOTAL	1803	1600	203	11%	113	

2.11 The MIDRMA was able to achieve higher percentage than **86 %** but due to the slow response by some Member States Airworthiness Authorities to achieve their monitoring targets and the lack of OFAC licence to monitor the Iranian aircraft and the RVSM approvals and monitoring constraints facing the Libyan aircraft prevented the MIDRMA from achieving the required **95%** of aircraft with known height monitoring results, therefor the MIDRMA propose the following draft conclusion concerning RVSM Minimum Monitoring Requirements in Appendix A and conditions in appendix B of this working paper and to forward it to MIDANPIRG for endorsement if accepted:

DRAFT CONCLUSION 15/XX: RVSM MINIMUM MONITORING REQUIREMENTS AND CONDITIONS

That, MIDRMA Member States:

- a) *comply with the latest version of RMA/CG MMR Tables published in the MIDRMA website and available in Appendix A of this working paper;*

- b) comply with the MID RVSM MMR Conditions published in the MIDRMA website - MMR section and available in appendix B of this working paper;*
- c) take necessary measures to ensure their aircraft operators fully compliant with ICAO Annex 6 Part 1 provisions related to long term height monitoring requirements, based on the MMR Tables; and*
- d) withdrawal RVSM Approval for aircraft not complying with the State MMR before 01st September 2018.*

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) discuss and review the status of Libya, Iran and Yemen MMR;
- b) urge States to comply with their MMR as published in the MIDRMA website (<http://midrma.com/monitoringResults/>); and
- c) discuss and agree the proposed Draft Conclusion in 2.9.

APPENDIX A

MIDRMA MEMBER STATES MONITORING BURDEN LIST AS OF JANUARY 2018

Bahrain

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
BFW	A9CBDF	RJ85	RJ85	AVRO	894011	20/11/2014	20/11/2016
BFW	A9CAWL	RJ1H	RJ100	AVRO	894042	22/01/2016	22/01/2018
MMR = 2							

Egypt

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
AMV	SUGBK	B735	566	B737CL	01001B	N/A	N/A
EAF	SUBRF	C680	680	C680	10137	11/03/2016	11/03/2018
EAF	SUBGU	GLF3	GIII	GLF3	01006E	02/04/2010	02/04/2012
EAF	SUBTV	FA7X	FA7X	FA7X	0101D1	N/A	N/A
EAF	SUBTU	FA7X	FA7X	FA7X	0101D0	N/A	N/A
LMU	SUGBJ	B735	566	B737CL	01001A	04/08/2015	04/08/2017
MSR	SUGBR	B772	266	B772	10029	01/05/2015	01/05/2017
MSR	SUGBS	B772	266	B772	01002A	01/02/2011	01/02/2013
RBG	SUAAD	A320	214	A320	0101CD	N/A	N/A
SME	SUSMG	BE30	B350	BE30	10155	30/09/2013	30/09/2015
SMM	SUSMM	GLF4	GIV	GLF4	0101CC	N/A	N/A
MMR = 11							

Iran

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
ATR	EPTTC	A320	231	A320	hx735283	N/A	N/A
CPN	EPCPZ	MD83	83	MD80	hx730E1A	N/A	N/A
CPN	EPCPX	MD83	83	MD80	hx730E18	27/02/2016	27/02/2018
IRA	EPIDG	F100		F100	hx732487	02/11/2003	02/11/2005
IRA	EPICF	A30B	203	A30B	hx732466	N/A	N/A
IRB	EPMDF	MD83	83	MD80	hx733486	N/A	N/A
IRC	EPAPO	B734	4H6	B737CL	hx73060F	27/02/2016	27/02/2018
IRG	EPSUS	F100		F100	hx734EB3	N/A	N/A
IRM	EPMNE	B743	3B3	B747CL	hx7335C5	N/A	N/A
IRM	EPMNU	A306	605	A306	hx7335D5	N/A	N/A
IRM	EPMNT	A306	603	A306	hx7335D4	N/A	N/A
IZG	EPZAK	MD83	83	MD80	hx73682B	N/A	N/A
IZG	EPZGB	A321		A320	hx7368E2	N/A	N/A
MRJ	EPAGB	A321	131	A320	hx7304E2	N/A	N/A
PYA	EPPUS	IL76	TD	IL76	hx7342B3	29/02/2016	01/03/2018

PYA	EPPUL	IL76	TD	IL76	hx7342AC	05/03/2016	05/03/2018
PYA	EPLDC	E145		E135-145	hx733083	N/A	N/A
PYA	EPLDA	E145		E135-145	hx733081	N/A	N/A
PYA	EPPUB	CL60		CL604	hx7342A2	N/A	N/A
QSM	EPFQX	RJ1H	RJ100	AVRO	hx731A38	N/A	N/A
QSM	EPFQJ	F100		F100	hx731A2A	01/03/2016	01/03/2018
TBM	EPTBG	RJ85	RJ85	AVRO	hx735047	N/A	N/A
TBM	EPTBJ	B734	400	B737CL	hx73504A	N/A	N/A
TBZ	EPTAC	A320	231	A320	hx735023	N/A	N/A

MMR = 24

Iraq

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
----------	--------------	-----------	--------	------------------	------------	----------------------	-----------------------

MMR = 0

Jordan

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
AWS	JYAWD	H25B	800XP	H25B-800	7406E4	N/A	N/A
JAV	JYJAL	B762	204	B767	74282C	26/02/2016	26/02/2018
JAV	JYJAI	B762	204	B767	742829	N/A	N/A
JAV	JYJAT	A320	211	A320	742834	13/10/2015	13/10/2017
RFJ	JYRFF	B734	4K5	B737CL	7448C6	07/04/2014	07/04/2016
RFJ	JYJRG	A320	212	A320	742A47	06/04/2014	06/04/2016
RJA	JYAGR	A310	304	A310-GE	7404F2	25/02/2016	25/02/2018
RJZ	RJAF361	IL76	MF	IL76	743596	21/03/2016	21/03/2018

MMR = 8

Kuwait

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
NL	9KPBD	A310	308	A310-GE	70600A	N/A	N/A

MMR = 1

Lebanon

A-3

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
EFB	ODMAF	H25B	800XP	H25B-800	748039	12/04/2015	12/04/2017
EFB	ODDTW	BE40	BE40	BE40	748033	25/11/2015	25/11/2017
EFB	ODTAL	CRJ2	CL600	CARJ	748035	04/08/2015	04/08/2017
MMR = 3							

Libya

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
AAW	5AONF	A332	200	A330	18041	N/A	N/A
AAW	5AONH	A332	200	A330	18043	N/A	N/A
AAW	5AONO	A332	214	A320	18070	N/A	N/A
AAW	5AONB	A320	214	A320	01802F	N/A	N/A
AMB	5ADRL	C56X	560XL	C56X	18039	N/A	N/A
BRQ	5ADMH	B737	8GK	B737NX	18020	N/A	N/A
BRQ	5ADMG	B737	800	B737NX	01801F	N/A	N/A
EACS	5AONE	A342	213	A340	18021	N/A	N/A
GHT	5AWAT	A320	211	A320	18083	N/A	N/A
LAA	5ALAE	CRJ9	2D24	CRJ9	18046	N/A	N/A
LAA	5ALAD	CRJ9	2D24	CRJ9	18045	N/A	N/A
LAA	5ALAU	A332	202	A330	18085	N/A	N/A
LAA	5ALAT	A332	200	A330	1807F	N/A	N/A
LAA	5ALAQ	A320	214	A320	1807A	N/A	N/A
LAA	5ADLZ	A306	622R	A306	18026	N/A	N/A
LAA	5ALAK	A320	214	A320	1806B	N/A	N/A
LAA	5ADLY	A306	622R	A306	18025	N/A	N/A
LWA	5AWLB	A319	112	A319	18087	N/A	N/A
LWA	5AWLA	A319	100	A319	18086	N/A	N/A
MOT	5AUAC	GL5T	BD700	BD700	01804E	N/A	N/A
MOT	5AUAB	GL5T	BD700	BD700	01803C	N/A	N/A
MOT	5AUAD	CRJ2	CL65	CARJ	18055	N/A	N/A
MOT	5AUAA	CL30	BD100	BD100	18030	N/A	N/A
MMR = 23							

Oman

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
SMA	A400VB	A320	214	A320	70C0F4	N/A	N/A
SMA	A400VA	A320	214	A320	70C0F3	N/A	N/A
MMR = 2							

Qatar

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
MIL	80202	C17	C17A	C17	hx06A249	27/11/2015	27/11/2017
MIL	140009	C17	C17A	C17	hx06A27C	N/A	N/A
QTR	A7BGA	B748	8F	B748	hx06A2C8	N/A	N/A
QTR	A7BGB	B748	8F	B748	hx06A2C9	N/A	N/A
MMR = 4							

KSA

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
MSD	HZMS1B	LI60	XR	LI60	hx71021E	31/12/2015	31/12/2017
PrivatAir Saudi Arabia	HZBRQ1	B350	B300	BE30	hx710025	27/01/2016	27/01/2018
SPD	HZSK13	E55P	PHENOM 300	E55P	hx71011A	N/A	N/A
SVA	HZ103	GLF4	G-IV	GLF4	hx71038B	11/02/2016	11/02/2018
SVA	HZ135	C550	550	C550-II	hx710395	04/10/2015	04/10/2017
MMR = 5							

Sudan

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
AAJ	STMRA	B737	500	B737NX	507983	N/A	N/A
BDR	STBDE	IL76	76TD	IL76	07C01F	N/A	N/A
BDR	STBDN	IL76	76TD	IL76	07C03C	N/A	N/A
KTV	STDAC	IL76	76TD	IL76	07C054	N/A	N/A
N/A	STEWX	IL76	76TD	IL76	07C024	N/A	N/A
NOV	STNVC	CRJ2	2B19	CARJ	07C03E	N/A	N/A
NOV	STNVD	CRJ2	2B19	CARJ	07C04D	N/A	N/A
NOV	STNVG	B737	58-E	B737NX	07C04E	N/A	N/A
SUD	STMKW	A320	214	A320	07C058	N/A	N/A
SUD	STATB	A306	622	A306	07C026	N/A	N/A
SUD	STATA	A306	622	A306	07C022	N/A	N/A
MMR = 11							

A-5

Syria

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
SAW	YKBAB	A320	211	A320	778822	N/A	N/A
SAW	YKBAA	A320	212	A320	778821	N/A	N/A
SYR	YKAYB	T134	B	T134	778721	N/A	N/A
SYR	YKATD	IL76	T	IL76	778684	N/A	N/A
SYR	YKAYE	T134	B	T134	778725	N/A	N/A
MMR = 5							

UAE

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
ABY	A6ANA	A320	200	A320	hx8962D0	N/A	N/A
CON	A6CAG	GLT5		BD700	hx8964BA	N/A	N/A
GSH	A6ASG	P180		P180	hx8964CB	N/A	N/A
GSH	A6ASM	LJ60		LJ60	hx8964D8	N/A	N/A
GSH	A6VGG	LJ60		LJ60	hx8964D7	N/A	N/A
RJD	A6RRA	E135	BJ	E135-145	hx89634B	25/08/2015	25/08/2017
ROJ	A6RJB	GLF4		GLF4	hx8960B0	16/03/2016	16/03/2018
UAE	A6DWC	E55P		E55P	hx8964F3	N/A	N/A
UAF	UAE1302	A332	MRTT	A330	hx896C3C	N/A	N/A
UAF	UAE1208	P180		P180	hx89602B	N/A	N/A
UAF	UAE1207	P180		P180	hx89602A	N/A	N/A
MMR = 11							

Yemen

Operator	Registration	ICAO Type	Series	Monitoring Group	Hex Mode S	Last Monitoring Date	Complaint Expiry Date
IGA	7OYMN	B745		B745	89001	25/07/2013	25/07/2015
IGA	7OADT	A332	200	A330	89000B	22/03/2015	22/03/2017
IGA	7OAFB	A320	200	A320	890021	21/03/2015	21/03/2017
IGA	7OAFB	A320	200	A320	890020	24/02/2015	24/02/2017
IGA	7OADW	A310	300	A310-GE	89001D	N/A	N/A
IGA	7OADV	A310	300	A310-GE	89001C	N/A	N/A
IGA	7OFAB	CRJ7		CRJ7	890012	N/A	N/A
IGA	7OFAA	CRJ7		CRJ7	890011	N/A	N/A
MMR = 8							

MID RVSM Minimum Monitoring Requirements (MMR) 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, email will be circulated by MIDRMA to the States concerned. The updated table is always available in MIDRMA website www.midrma.com.
2. **On-Line Minimum Monitoring Requirement.** The MMR for each MIDRMA Member State is published and always updated in the MMR section of MIDRMA website based in the latest RVSM approval list received, the Airworthiness Authority responsible for issuing RVSM approvals required to continuously monitor and comply with their MMR in the MIDRMA website.
3. **Initial Monitoring.** All operators that operate or intend to operate in airspace where RVSM is applied are required to participate in the RVSM monitoring program. Table 1 establishes requirements for initial monitoring associated with the RVSM approval process. In their application to the appropriate State authority for RVSM approval, operators must show a plan for meeting the applicable initial monitoring requirements.
4. **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.
5. **Applicability of Monitoring from Other Regions.** Monitoring data obtained in conjunction with RVSM monitoring programs from other regions can be used to meet regional monitoring requirements. The RMAs, which are responsible for administering the monitoring program, 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.
6. **Monitoring Prior to the Issue of RVSM Operational Approval.** Operators must submit monitoring plans to the responsible CAA and to MIDRMA to show how they intend to meet the requirements specified in Table 1, Monitoring will be carried out in accordance with this table. Temporary RVSM approval (valid for a certain period of time) can be issued under the responsibility of the concerned authority to allow the operator conduct height monitoring prior to issuing the RVSM operational approval as per ICAO Annex 6 Part 1.
7. **AIRCRAFT GROUPS NOT LISTED IN TABLE 1.** Contact the RMA 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 monitoring requirements.
8. **Table of Monitoring Groups.** Table 2 shows the aircraft types and series that are grouped together for operator monitoring purposes.
9. **Table of Non-Group Aircraft:** Table 3 shows the aircraft types and series that are Non-Group aircraft (i.e., Not certified under group approval requirements) for monitoring purposes.
10. **Trailing Cone Data.** ASE estimations developed using Trailing Cone data collected during RVSM certification flights can be used to fulfil monitoring requirements. It must be documented, however, that aircraft RVSM systems were in the approved RVSM configuration for the flight.
11. **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.
12. **Follow-on Monitoring.** Monitoring is an on-going program that will continue after the RVSM approval process. Long term minimum monitoring requirements are established in the Annex 6 to the Convention

on International Civil Aviation. On a regional basis, a programme shall be instituted for monitoring the height-keeping performance of aircraft operating in RVSM airspace in order to ensure that continued application of this vertical separation minimum meets regional safety objectives.

MID RVSM Minimum Monitoring Requirements (MMR) Table - Civilian
Valid 25 May 2017 - Version: 2017.0

Table 1: MONITORING REQUIREMENTS TABLE (Civilian)

MONITORING IS REQUIRED IN ACCORDANCE WITH THIS TABLE			
Monitoring prior to the issue of RVSM approval is not a requirement			
CATEGORY	GROUP DESCRIPTOR	MINIMUM MONITORING REQUIREMENTS	
1	GROUP APPROVED: AIRCRAFT WHICH DEMONSTRATE LONG TERM CONFIDENCE IN COMPLYING WITH RVSM MASPS	A124, A30B, A306, A310-GE, A310-PW, A318, A320, A330, A340, A345, A346, A380, A3ST, AVRO, B712, B727, B737C, B737CL, B737NX, B747CL, B74S, B744-5, B744-10, B752, B753, B764, B767, B772, B773, BD100, BE40, C25A, C25B, C510, C525, C560, C56X, C650, C680, C750, CARJ, CL600, CL604, CL605, CRJ7, CRJ9, DC10, E135-145, E170-190, E50P, E55P, F100, F900, FA7X, GALX, GLEX, GL5T, GLF4, GLF5, H25B-800, J328, LJ40, LJ45, LJ60, MD10, MD11, MD80, MD90, PC12, PRM1, T154	Operators of aircraft types contained in this category shall have a minimum of 2 airframes monitored every 2 years or 1,000 flight hours, whichever is longer calculated from the date of the last successful height monitoring. Operators with fleets consisting of aircraft from more than one Monitoring Group shall meet this requirement for each group in the fleet. In the event that an operator has a single airframe from a Group, then that aircraft shall be monitored every 2 years or 1,000 flight hours, whichever is longer calculated from the date of the last successful height monitoring.

2	<p>GROUP APPROVED: AIRCRAFT WHICH HAVE YET TO DEMONSTRATE CONFIDENCE IN LONG TERM PERFORMANCE</p>	<p>A148, A158, A350, AC90, AC95, AJ27, AN72, ASTR, ASTR-SPX, B701, B703, B731, B732, B744-LCF, B748, B787, BCS1, BE20, BE30, C25C, C441, C500, C550-B, C550-II, C550-SII, CRJ10, D328, DC85, DC86-87, DC91, DC93, DC94, DC95, E120, E45X, EA50, E545-550, F2TH, F70, FA10, FA20, FA50, G150, G280, GLF2, GLF2B, GLF3, GLF6, H25B-700, H25B-750, H25C, HA4T, HDJT, IL62, IL76, IL86, IL96, L101, L29B-2, L29B-731, LJ23, LJ24, LJ25, LJ28, LJ31, LJ35-36, LJ55, MU30, P180, P180 II, PC24, PAY4, SB20, SBR1, SBR2, SU95, T134, T204, T334, TBM, WW24, YK42</p>	<p>Operators of aircraft types contained in this category shall have a minimum of 60% of airframes monitored every 2 years or 1,000 flight hours, whichever is longer calculated from the date of the last successful height monitoring, (the number of airframes to be monitored shall be rounded up to the nearest whole integer). Operators with fleets consisting of aircraft from more than one Monitoring Group shall meet this requirement for each Group in the fleet.</p>
3	<p>NON-GROUP: RESERVED FOR AIRCRAFT WHICH ARE PRESENTED FOR RVSM APPROVAL ON AN INDIVIDUAL BASIS (i.e. NON-GROUP APPROVED AIRCRAFT)</p>	<p>A225, AN12, AN26, B190, B462, B463, B74S-SOFIA, BA11, BE9L, GSPN, H25A, L29A, M-55, PAY3, R721, R722, SJ30, STAR</p>	<p>Operators of aircraft types contained in this category shall have 100% of airframes monitored every 2 years or 1,000 flight hours., whichever is longer calculated from the date of the last successful height monitoring.</p>

MID RVSM Minimum Monitoring Requirements (MMR) Table - Military
Valid 25 May 2017 - Version: 2017.0

Table 1: MONITORING REQUIREMENTS TABLE (Military)

<u>MONITORING IS REQUIRED IN ACCORDANCE WITH THIS TABLE</u>		
<u>Monitoring prior to the issue of RVSM approval is not a requirement</u>		
<u>CATEGORY</u>	<u>GROUP DESCRIPTOR</u>	<u>MINIMUM MONITORING REQUIREMENTS</u>
1	<u>GROUP APPROVED: AIRCRAFT WHICH DEMONSTRATE LONG TERM CONFIDENCE IN COMPLYING WITH RVSM MASPS</u>	<u>C17, C130J, KC135</u> Operators of aircraft types contained in this category shall have a minimum of 2 airframes monitored every 2 years or 1,000 flight hours, whichever is longer calculated from the date of the last successful height monitoring. Operators with fleets consisting of aircraft from more than one Monitoring Group shall meet this requirement for each group in the fleet. In the event that an operator has a single airframe from a Group, then that aircraft shall be monitored every 2 years or 1,000 flight hours, whichever is longer calculated from the date of the last successful height monitoring.
2	<u>GROUP APPROVED: AIRCRAFT WHICH HAVE YET TO DEMONSTRATE CONFIDENCE IN LONG TERM PERFORMANCE</u>	<u>A400, E3, C5, C130, C550-552, P8</u> Operators of aircraft types contained in this category shall have a minimum of 60% of airframes monitored every 2 years or 1,000 flight hours, whichever is longer calculated from the date of the last successful height monitoring. (the number of airframes to be monitored shall be rounded up to the nearest whole integer). Operators with fleets consisting of aircraft from more than one Monitoring Group shall meet this requirement for each Group in the fleet.

3	<u>NON-GROUP: RESERVED FOR AIRCRAFT WHICH ARE PRESENTED FOR RVSM APPROVAL ON AN INDIVIDUAL BASIS (i.e. NON-GROUP APPROVED AIRCRAFT)</u>	<u>Aircraft types for which no generic compliance method exists:</u> <u>GLF5-AEW, GLEX-ASTOR</u> <u>Aircraft types for which the compliance method is not known:</u> <u>A30B-M, A310-M, A332-M, ASTR-M, B737-AWACS, C12, C21, C32, C40, C550-B-M, C550-M, C35, C9, CL60-M, E135-M, E4, E6, E8, FA10-M, FA20-M, FA50-M, GLF3-M, GLF4-M, C37, IL76-M, KC10, KC-390, KC46, P180-M, R135, VC25</u>	<u>Operators of aircraft types contained in this category shall have 100% of airframes monitored every 2 years or 1,000 flight hours, whichever is longer calculated from the date of the last successful height monitoring.</u>
---	---	---	--

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

Monitoring Group	A/C ICAO	Manufacturer Type	Additional Defining Criteria
A124	A124	AN-124 RUSLAN	
A148	A148	AN-148	
A158	A158	AN-158	
A30B	A30B	A300	
A306	A306	A300	
A310-GE	A310	A310	
A310-PW	A310	A310	
A318	A318	A318	
A320	A319 A320 A321	A319 A320 A321	
A330	A332 A333	A330 A330	
A340	A342 A343	A340 A340	
A345	A345	A340	
A346	A346	A340	
A350	A358 A359	A350-800 A350-900	
A380	A388	A380	
A3ST	A3ST	A300	600R ST BELUGA
AC90	AC90	COMMANDER 690 COMMANDER 840 COMMANDER 900	
AC95	AC95	AERO COMMANDER 695	
AJ27	AJ27	COMAC ARJ-21-700	
AN72	AN72	ANTONOV AN-72 ANTONOV AN-74	
ASTR	ASTR	1125 ASTRA	s/n 1-78, except 73
ASTR-SPX	ASTR	1125 ASTR SPX, G100	s/n 73, 79-145 s/n > 145
AVRO	RJ1H RJ70 RJ85	RJ100 Avroliner RJ70 Avroliner RJ85 Avroliner	
B701	B701	B707	
B703	B703	B707	
B712	B712	B717	
B727	B721 B722	B727 B727	
B731	B731	B737	
B732	B732	B737	

Monitoring Group	A/C ICAO	Manufacturer Type	Additional Defining Criteria
B737CL	B733 B734 B735	B737-300 B737-400 B737-500	
B737NX	B736 B737 B738 B739	B737-600 B737-700 B737-800 B737-900	B737-700 including the BBJ B737-800 including the BBJ2
B737C	B737	B737-700	
B747CL	B741 B742 B743	B747-100 B747-200 B747-300	
B74S	B74S B74R	B747SP B747SR	
B744-5	B744 B74D	B747-400	5 inch Probes up to s/n 25350
B744-10	B744 B74D	B747-400	10 inch Probes from s/n 25351
B744-LCF	BLCF	B747-400	
B748	B748	B747-8	
B752	B752	B757-200	
B753	B753	B757-300	
B767	B762 B763	B767-200 B767-300	
B764	B764	B767-400	
B772	B772 B77L B77L	B777-200 B777-F B777-200LR	
B773	B773 B77W	B777-300 B777-300ER	
B787	B788 B789	B787-8 B787-9	
BCS1	BCS1 BCS3	BOMBARDIER C-SERIES CS100 BOMBARDIER C-SERIES CS300	
BD100	CL30 CL35	CHALLENGER 300 CHALLENGER 350	Begins at s/n 20501
BE20	BE20	200 KINGAIR	
BE30	BE30 B350	B300 SUPER KINGAIR B300 SUPER KINGAIR 350	
BE40	BE40	BEECHJET 400 BEECHJET 400A BEECHJET 400XP HAWKER 400XP	
C441	C441	CONQUEST II	
C500	C500 C500 C501	500 CITATION 500 CITATION I 501 CITATION I SINGLE PILOT	

Monitoring Group	A/C ICAO	Manufacturer Type	Additional Defining Criteria
C510	C510	MUSTANG	
C525	C525	525 CITATIONJET 525 CITATIONJET 1 525 CITATIONJET PLUS C525-M2	
C25A	C25A	525A CITATIONJET II	
C25B	C25B	CITATIONJET III 525B CITATIONJET III	
C25C	C25C	525C CITATIONJET IV	
C550-B	C550	550 CITATION BRAVO	s/n 550-0801 and on
C550-II	C550 C551	550 CITATION II 551 CITATION II SINGLE PILOT	s/n 550-0001 to 550-0800
C550-SII	C550	S550 CITATION SUPER II	s/n starts with "S"
C560	C560	560 CITATION V 560 CITATION V ULTRA 560 CITATION V ENCORE	
C56X	C56X	560 CITATION EXCEL 560 CITATION XLS	
C650	C650	650 CITATION III 650 CITATION VI 650 CITATION VII	
C680	C680	680 CITATION SOVEREIGN 680-A LATITUDE	"A" in s/n
C750	C750	750 CITATION X	
CARJ	CRJ1 CRJ2 CRJ2 CRJ2	CRJ-100 CRJ-200 CHALLENGER 800 CHALLENGER 850	
CRJ7	CRJ7	CRJ-700	
CRJ9	CRJ9	CRJ-900	
CRJ10	CRJX	CRJ-1000	
CL600	CL60	CL-600 CL-601	s/n < 5000
CL604	CL60	CL-604 CL-601-3A CL-601-3R	s/n 5000-5700 s/n 5001-5134 s/n 5135-5300
CL605	CL60	CL-605	s/n > 5700
DC10	DC10	DC-10	
D328	D328	328 TURBOPROP	
DC85	DC85	DC-8	
DC86-87	DC86 DC87	DC-8 DC-8	
DC91	DC91	DC-9	
DC93	DC93	DC-9	
DC94	DC94	DC-9	
DC95	DC95	DC-9	

Monitoring Group	A/C ICAO	Manufacturer Type	Additional Defining Criteria
E120	E120	EMB-120 Brasilia	
E135-145	E135 E145 E35L	EMB-135 EMB-145 EMB-135BJ Legacy 600/650	
E45X	E45X	EMB-145 XR	
E170-190	E170 E170 E75S E190 E190	EMB-170 EMB-175 ERJ-170-200 (short wing) EMB-190 EMB-195	
E50P	E50P	PHENOM 100	
E545-550	E545 E550	EMB-545 Legacy 450 EMB-550 Legacy 500	
E55P	E55P	PHENOM 300	
EA50	EA50	ECLIPSE	
F100	F100	FOKKER 100	
F2TH	F2TH	FALCON 2000 FALCON 2000-EX FALSON 2000LX	
F70	F70	FOKKER 70	
F900	F900	FALCON 900 FALCON 900DX FALCON 900EX FALCON 900LX	
FA10	FA10	FALCON 10	
FA20	FA20	FALCON 20 FALCON 200	
FA50	FA50	FALCON 50 FALCON 50EX	
FA7X	FA7X FA8X	FALCON 7X FALCON 8X	
G150	G150	G150	
G280	G250 G280	G250 G280	
GALX	GALX	1126 GALAXY G200	
GLEX	GLEX	GLOBAL EXPRESS CLASSIC GLEX GLOBAL XRS GLOBAL 6000 BD-700-1A10	EXPRESS s/n > 9158 s/n > 9431, and 9313 and 9381
GL5T	GL5T	GLOBAL 5000 GLOBAL 5000-GVFD BD-700-1A11	s/n > 9434, and 9386 and 9401
GLF2	GLF2	GULFSTREAM II (G-1159)	
GLF2B	GLF2	GULFSTREAM IIB (G-1159B)	
GLF3	GLF3	GULFSTREAM III (G-1159A)	

A-15

Monitoring Group	A/C ICAO	Manufacturer Type	Additional Defining Criteria
GLF4	GLF4	GULFSTREAM IV (G-1159C) G300 G350 G400 G450	
GLF5	GLF5	GULFSTREAM V (G-1159D) G500 G550	
GLF6	GLF6	G650	
H25B-700	H25B	BAE 125 / HS125	
H25B-750	H25B	HAWKER 750	
H25B-800	H25B	BAE 125 / HS125 HAWKER 800XP HAWKER 800XPI HAWKER 800 HAWKER 850XP HAWKER 900XP HAWKER 950XP	
H25C	H25C	HAWKER 1000	
HA4T	HA4T	HAWKER 4000	
HDJT	HDJT	HONDAJET HA-420	
IL62	IL62	ILYUSHIN-62	
IL76	IL76	ILYUSHIN-76	
IL86	IL86	ILYUSHIN-86	
IL96	IL96	ILYUSHIN-96	
J328	J328	328JET	
L101	L101	L-1011 TRISTAR	
L29B-2	L29B	L-1329 JETSTAR 2	
L29B-731	L29B	L-1329 JETSTAR 731	
LJ23	LJ23	LEARJET 23	
LJ24	LJ24	LEARJET 24	
LJ25	LJ25	LEARJET 25	
LJ28	LJ28	LEARJET 28 LEARJET 29	
LJ31	LJ31	LEARJET 31	
LJ35-36	LJ35	LEARJET 35, 35A LEARJET 36, 36A	
LJ40	LJ40 LJ70	LEARJET 40 LEARJET 70	Begins at s/n 2001 Begins at s/n 2134
LJ45	LJ45 LJ75	LEARJET 45 LEARJET 75	Begins at s/n 456
LJ55	LJ55	LEARJET 55	
LJ60	LJ60	LEARJET 60	
MD10	MD10	MD-10	
MD11	MD11	MD-11	

Monitoring Group	A/C ICAO	Manufacturer Type	Additional Defining Criteria
MD80	MD81	MD-80	
	MD82	MD-80	
	MD83	MD-80	
	MD87	MD-80	
	MD88	MD-80	
MD90	MD90	MD-90	
MU30	MU30	MU-300 DIAMOND	1A
P180	P180	P-180 AVANTI	s/n < 1105 but not 1002
P180 II	P180 II	P-180 AVANTI II	s/n > 1104 and also 1002
PAY4	PAY4	PA-42 Cheyenne 400	1000 CHEYENNE
PC12	PC12	PC-12	
PC24	PC24	PC-24	
PRM1	PRM1	PREMIER 1	
SB20	SB20	SAAB 2000	
SBR1	SBR1	SABRELINER 40	
		SABRELINER 60	
		SABRELINER 65	
SBR2	SBR2	SABRELINER 80	
SU95	SU95	SUKHOI SUPERJET 100-95	
T134	T134	TU-134	
T154	T154	TU-154	
T204	T204	TU-204	
		TU-214	
		TU-224	
		TU-234	
T334	T334	TU-334	
TBM	TBM7 TBM8 TBM9	TBM-700	
		TBM-850	
		TBM-900	Begins at s/n 1000
WW24	WW24	1124 WESTWIND	
YK42	YK42	Yakovlev YAK-42	
		Yakovlev YAK-40	

A-17

**Table 3: Non-GROUP AIRCRAFT (i.e., Not certified under group approval requirements)
(Civilian)**

Non-Group Descriptor	A/C ICAO	Manufacturer Type	Additional Defining Criteria
A225	A225	ANTONOV AN-225	Non-Group
AN12	AN12	ANTONOV AN-12	Non-Group
AN26	AN26	ANTONOV AN-26	Non-Group
B190	B190	BEECH 1900	Non-Group
B462	B462	BAe-146-200	Non-Group
B463	B463	BAe-146-300	Non-Group
B74S-SOFLA	B74S	NASA B74SP with Sofia telescope	Non-Group: N747NA (s/n 21441)
BA11	BA11	BAC-111	Non-Group
BE9L	BE9L	King Air Model 90 except F90 and F90-1	Non-Group
GSPN	GSPN	GROB G-180 SPn Utility Jet	Non-Group
H25A	H25A	HS125-400, -600	Non-Group
L29A	L29A	L-1329 JETSTAR 6/8	Non-Group
M-55	M55	Myasishev M-55 Geophysica	Non-Group
PAY3	PAY3	PIPER Cheyenne 3	Non-Group
R721	R721	B-727-100: Re-engined	Non-Group
R722	R722	B-727-200: Re-engined	Non-Group
SJ30	SJ30	SWEARINGEN SJ-30	Non-Group
STAR	STAR	BEECH 2000 STARSHIP	Non-Group

- END -