



International Civil Aviation Organization

Middle East Regional Monitoring Agency Board

Eleventh Meeting (MIDRMA Board/11)
(Cairo, 27–29 September 2011)

Agenda Item 4: RVSM Monitoring and related Technical Issues

MIDRMA Height Monitoring Activities

(Presented by MIDRMA)

SUMMARY

The aim of this working paper is to summarize all height monitoring activities conducted by the MIDRMA since last Board meeting.

Action by the meeting is at paragraph 3.

REFERENCES

- Annex 6
- ICAO Doc 9547
- ICAO doc 9937
- MIDRMA Board 10 Report.

1. INTRODUCTION

1.1 The height-keeping performance of aircraft is a key element in ensuring the safe operations of RVSM airspace, and because RVSM requires aircraft altimeters must be accurate enough to ensure safe vertical separation is applied, the Altimetry System Error (ASE) of aircraft must be measured according to ICAO requirements.

1.2 The Altimetry System Error (ASE) is the difference between the altitude that the pilot, ground controller and aircraft systems believe the aircraft to be at and the actual altitude, and in order to be compliant with international standards the ASE of an aircraft must be less than 245 ft.

1.3 The MIDRMA started a height monitoring program to help all member states to conduct height monitoring in response to the changes of ICAO Annex 6, Operation of Aircraft, Parts I & II, applicable on 18 November 2010, the following standard and recommended practice was adopted by ICAO:

Operators, that have been issued an U.S. RVSM approval, shall ensure that a minimum of two airplanes of each RVSM aircraft type grouping of the operator have their height-keeping performance monitored, at least once every two years or within intervals of 1,000 flight hours per airplane, whichever period is longer. If an operator aircraft type grouping consists of a single airplane, monitoring of that airplane shall be accomplished within the specified period.

2. DISCUSSION

2.1 One of the original assumptions about ASE that it was stable over time, i.e. the ASE characteristics of an aircraft would be constant, once confirmed as compliant with international standards there should be no requirement for the ASE to be re-evaluated, providing that the configuration of the aircraft remained the same. It is only since the evolution of practical height monitoring systems that the real picture has emerged and the evidence suggests that the facts may in some cases is significantly different to the theory, that's why continuous follow up by the RMAs is required to ensure maximum number of the MMR applicable for each state is achieved.

2.2 The height monitoring activities program started on 2009 when the MIDRMA coordinated with the I.R. of Iran Civil Aviation Organization to conduct height monitoring for 29 Iranian registered aircraft.

2.3 The meeting may wish to note that due to the increase demand of GMU monitoring from some of the Middle East Airline operators, the MIDRMA put a proposal to purchase 2 GMU units during Board 10 meeting for the purpose of conducting height monitoring by the MIDRMA, a Draft Conclusion was agreed by the meeting:

DRAFT CONCLUSION 10/6: MIDRMA GMU INFRASTRUCTURE

That, in accordance with the MID Region height-keeping monitoring Strategy, and with a view to conduct GMU Monitoring in the MID Region with self-sufficiency capability, the MIDRMA proceed with the purchase of two (2) GPS- based Monitoring Units (GMUs), with the required data processing software and necessary training package.

2.4 Unfortunately, due to technical constraints faced the manufacturing company the MIDRMA did not succeed to purchase the 2 GMU units with the required analysis software. To overcome this problem, the MIDRMA reached an agreement with the CSSI to conduct an urgent GMU height monitoring for 10 aircraft registered in the Middle East and to train the MIDRMA while monitoring the 10 aircraft (see attached **Appendix A**).

2.5 The GMU monitoring and training mission were successfully completed, the MIDRMA Team is certified to conduct GMU height monitoring and able work solo.

2.6 After intensive coordination with the CSSI, the Company agreed to lend the MIDRMA only one GMU unit to conduct GMU monitoring for the region, provided the Company will process the recorded data in their labs under the supervision of the FAA. The MIDRMA managed to conduct GMU monitoring for some of the Middle East airline operators that requested GMU monitoring during 2010/2011 (see attached **Appendix B**).

2.7 There are only two companies in the world available to manufacture the GMU (CSSI and ARINC), since there is no service agreement signed with the CSSI, the MIDRMA is forced to continue negotiating with this company to keep the GMU unit with the MIDRMA for conducting height monitoring for as long as possible until the MIDRMA reach to a permanent service agreement with the CSSI.

2.8 Currently the MIDRMA coordinating with the I.R. of Iran Civil Aviation Organization to conduct height monitoring for 24 aircraft registered in Iran to cover all the requirements as listed in the attached MMR table (**Appendix C**). Iran will be the first country in the Middle East region to be fully compliant for RVSM height monitoring when these 24 aircraft monitored.

2.9 At the same time the MIDRMA is coordinating to conduct GMU monitoring for Oman Air, DHL, Alexandria Airways, Nile Air and El Masria Air and recently the MIDRMA received requests from Russian airline operators based in the Middle East requesting to check their aircraft. These operators informed "priority for height monitoring is for aircraft registered in the Middle East Region" and their requests will be reviewed.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this working paper; and
- b) allow the MIDRMA to sign a Service Agreement with the CSSI as alternative solution for purchasing 2 GMUs.

APPENDIX A

MIDRMA / CSSI - GMU Monitoring and Training Mission

Mission Notes				Team Members			
Monitoring Start Date	Monitoring End Date	Number Of Travelers	2nd GMU Non Mission.xlsx	1- Fareed Abdullahi Alalawi - Bahraini	Contact Number	2- Fathi Ibrahim Althawadi - Bahraini	Contact Number
04 Nov 2010	08 Nov 2010	3		3- Randall Brooks - American	+973 33651596		+973 33676614
					1-330-635-6919		

S#	Day	Air Arabia / Etihad	Flt. No / Origin / Destination	ETA	ETD	ACFT Type / Reg.	Coordinator Name	Contact Number	Ground staff contact details	
			4-Nov-10		Note: GMU Monitoring team member travelling to SHJ on Air Arabia to start monitoring on the 5th					
1	G5 (1)		5-Nov-10 G5 121 / SHJ / KWI	0840	0810	A320 /	Sampath Perera	+971 50 6557189	B-MH - Hameed Anaidh - +97333978075	
2	EY (1)		5-Nov-10 EY 302 / KWI / AUH	1300	1020	A320 /	Sulaiman Yaqoobi	+971 50 6153167	KWI - Hassan - + 96557765881	
3	EY (2)		5-Nov-10 EY 303 / AUH / KWI	1650	1605	A320 / Other than the above ACFT	Sulaiman Yaqoobi	+971 50 6153167		
			One night stop at Kuwait							
			Watanhya Airways / Jazeera							
4	KW (1)		6-Nov-10 KW 101 / KWI / DXB	0930	0650	A320 /	Roulette Lobo	+965 2434 87 88 x 155	Ground staff contact details	
5	J9 (1)		6-Nov-10 J9 165 / DXB / KWI	1120	1030	A320 /	Ansanta Wijaya	+965 6700 9691	Bassam Al Ghambally +965 60697176	
6	KW (2)		6-Nov-10 KW 105 / KWI / DXB	1710	1430	A320/ Other than the above	Roulette Lobo	+965 2434 87 88 x 155	Midhat Khan +971 506503731	
			One night stop at Dubai							
			Fly Dubai / Air Arabia / Jazeera							
7	FZ (1)		7-Nov-10 FZ 053 / DXB / KWI	0745	0700	B738	Jamie Ainsworth	+971 50 1536953	Ground staff contact details	
8	G5 (2)		7-Nov-10 G5 124 / KWI / SHJ	1215	0845	A320/ other than the one checked on 5/11	Sampath Perera	+971 50 6557189	Jamie Ainsworth +971 50 1536963	
9	J9 (2)		7-Nov-10 J9 177 / DXB / KWI	0515 PM	0515 PM	A320/ other than the one checked on 6/11	Ansanta Wijaya	+965 6700 9691	KWI - Hassan - + 96557765881	
			One night stop at Kuwait							
			Fly Dubai							
10	FZ (2)		8-Nov-10 FZ 054 / KWI / DXB	1105	0825	B738 / other than the one checked on 7/11	Jamie Ainsworth	+971 50 1536963	Ground staff contact details	
			8-Nov-10 FZ 021 / DXB / BAH	2020	2005	Monitoring team Return flight			Jamie Ainsworth +971 50 1536963	
			Back home							

APPENDIX B

MIDRMA - GMU Monitored Airline Operators

S#	Seq No	Operator	Reg #	Serial	A/C Type	Flt #	Date of Flt	Origin	Destination
1	14350	Air Arabia Egypt	SUAAB	3152	A320	E5 3555	25/12/2010	OMAA	OKBK
2	14351	Air Arabia Egypt	SUAAA	2764	A320	E5 3556	26/12/2010	OKBK	OMAA
3	14289	Bahrain Air	A9CBAX	2700	A319	BAB464	17/11/2010	OBBI	OSDI
4	14292	Bahrain Air	A9CBAY	3861	A320	BAB465	18/11/2010	OSDI	OBBI
5	14282	Gulf Air	A9CMA	17000278	E170	GFA562	12/11/2010	OBBI	OOMS
6	14286	Gulf Air	A9CMC	19000372	E190	GFA562	13/11/2010	OBBI	OOMS
7	14545	Gulf Air	A9CAG	4188	A320	GF562	21/05/2011	OBBI	OOMS
8	14546	Gulf Air	A9CAA	3706	A320	GF562	22/05/2011	OBBI	OOMS
9	14526	MAE Aircraft Manag.	A9CTWC	89406B	B737 / 300	A9CTWC	10/05/2011	OBBI	OBBI

APPENDIX C

Table 1 of 4
I.R OF IRAN - APPROVED RVSM ACFT MINIMUM MONITORING REQUIREMENTS AS OF AUGUST 2011

Seq.#	RVSM List Ref.#	Operator	ACFT Reg. EP- Type	ACFT Type	Last Successful EUR Monitoring Date	MIDRMA GMU Monitoring Date	HMU or GMU Compliant	Expire Date	MMR Covered By ACFT Group	No. Of ACFT Required	Monitoring	Remarks
1	10	Iran Air	IBA	A306	19/07/2011		18/07/2013		Yes			
2	11	Iran Air	IBB	A306	12/08/2011		12/08/2013		Yes			
3	12	Iran Air	IBC	A306	13/08/2011		12/08/2013		Yes			
4	13	Iran Air	IBD	A306	11/08/2011		10/08/2013		Yes			
5	14	Iran Air	IBK	A306	13/08/2011		12/08/2013		Yes			
6	15	Iran Air	IBL	A306	15/01/2011		14/01/2013		Yes			
7	48	Iran Air	BG	A30B					Yes			
8	49	Iran Air	BH	A30B	17/03/2011		16/03/2013		Yes			
9	21	Iran Air	BI	A30B					Yes			
10	22	Iran Air	BJ	A30B					Yes			
11	17	Iran Air	BS	A30B					Yes			
12	18	Iran Air	BT	A30B					Yes			
13	19	Iran Air	BV	A30B		31/01/2010	30/01/2012		Yes			
14	20	Iran Air	BZ	A30B					Yes			
15	23	Iran Air	ICE	A30B	18/03/2011		17/03/2013		Yes			
16	24	Iran Air	ICF	A30B	24/09/2010		23/09/2012		Yes			
17	16	Iran Air	BP	A310					No	1		
18	53	Iran Air	BQ	A312					No	1		
19	50	Iran Air	IEB	A320	01/07/2010		30/06/2012		Yes			
20	25	Iran Air	IED	A320	06/06/2010		05/06/2012		Yes			
21	26	Iran Air	IEE	A320	04/07/2010		03/07/2012		Yes			
22	27	Iran Air	IEF	A320					Yes			
23	51	Iran Air	MHJ	A320					Yes			
24	52	Iran Air	IEG	A321					Yes			
25	34	Iran Air	IRR	B722		06/02/2010	05/02/2012		Yes			
26	33	Iran Air	IRS	B722		05/02/2010	04/02/2012		Yes			
27	32	Iran Air	IRT	B722					Yes			
28	47	Iran Air	AGA	B732					No	1		
29	5	Iran Air	IAG	B742	02/04/2010		01/04/2012		Yes			
30	6	Iran Air	IAH	B742	29/04/2010		28/04/2012		Yes			
31	8	Iran Air	IAI	B742					Yes			
32	7	Iran Air	IAM	B742	18/05/2010		17/05/2012		Yes			
33	9	Iran Air	ICD	B742	05/07/2010		04/07/2012		Yes			
34	1	Iran Air	IAA	B74S	07/01/2010		06/01/2012		Yes			
35	2	Iran Air	IAB	B74S	25/05/2010		24/05/2012		Yes			
36	3	Iran Air	IAC	B74S	22/06/2010		21/06/2012		Yes			
37	4	Iran Air	IAD	B74S	01/06/2010		30/05/2012		Yes			
38	35	Iran Air	CFD	F100					Yes			
39	36	Iran Air	CFE	F100					Yes			
40	37	Iran Air	CFH	F100		31/01/2010	30/01/2012		Yes			
41	43	Iran Air	CFI	F100		06/02/2010	05/02/2012		Yes			
42	40	Iran Air	CFJ	F100					Yes			
43	38	Iran Air	CFK	F100					Yes			
44	39	Iran Air	CFL	F100					Yes			
45	41	Iran Air	CFM	F100					Yes			
46	44	Iran Air	CFO	F100					Yes			
47	45	Iran Air	CFP	F100					Yes			

Table 2 of 4
I.R OF IRAN - APPROVED RVSM ACFT MINIMUM MONITORING REQUIREMENTS AS OF AUGUST 2011

48		Iran Air	CFQ	F100								Yes			
49		Iran Air	CFR	F100								Yes			
50		Iran Air	IDA	F100								Yes			
51		Iran Air	IDD	F100								Yes			
52		Iran Air	IDF	F100					02/02/2010			Yes			
53		Iran Air	IDG	F100								Yes			
RVSM Minimum Monitoring Requirements (ACFT):															
3															
Seq #	RVSM List	Operator	ACFT Reg. EP-	ACFT Type	Last Successful EUR Monitoring Date	MIDRMA GMU Monitoring Date	HMU or GMU Compliant Expire Date	MIMR Covered By ACFT Group	No. OF ACFT Required Monitoring	Mode S Known to USC					
1	54	Iran Aseman Airlines	ASA	B722				Yes							
2	55	Iran Aseman Airlines	ASB	B722				Yes							
3	56	Iran Aseman Airlines	ASC	B722		05/02/2010	04/02/2012	Yes							
4	57	Iran Aseman Airlines	ASD	B722		04/02/2010	03/02/2012	Yes							
5	58	Iran Aseman Airlines	ASG	F100				Yes							
6	59	Iran Aseman Airlines	ASH	F100				Yes							
7	65	Iran Aseman Airlines	ASI	F100				Yes							
8	60	Iran Aseman Airlines	ASJ	F100		04/02/2010	03/02/2012	Yes							
9	66	Iran Aseman Airlines	ASK	F100				Yes							
10	62	Iran Aseman Airlines	ASM	F100				Yes							
11	68	Iran Aseman Airlines	ASO	F100				Yes							
12	63	Iran Aseman Airlines	ASP	F100				Yes							
13	61	Iran Aseman Airlines	ASQ	F100				Yes							
14	64	Iran Aseman Airlines	ASR	F100				Yes							
15	67	Iran Aseman Airlines	AST	F100				Yes							
16	69	Iran Aseman Airlines	ASU	F100		04/02/2010	03/02/2012	Yes							
17	70	Iran Aseman Airlines	ASX	F100				Yes							
18	71	Iran Aseman Airlines	ASZ	F100				Yes							
19	72	Iran Aseman Airlines	ATB	F100				Yes							
20	73	Iran Aseman Airlines	ATC	F100				Yes							
21	74	Iran Aseman Airlines	ATD	F100				Yes							
22	75	Iran Aseman Airlines	ATE	F100				Yes							
23	76	Iran Aseman Airlines	ATF	F100				Yes							
24	77	Iran Aseman Airlines	ATG	F100				Yes							
RVSM Minimum Monitoring Requirements (ACFT):															
0															
Seq #	RVSM List	Operator	ACFT Reg. EP-	ACFT Type	Last Successful EUR Monitoring Date	MIDRMA GMU Monitoring Date	HMU or GMU Compliant Expire Date	MIMR Covered By ACFT Group	No. OF ACFT Required Monitoring	Mode S Known to USC					
1	105	Mahan Air	MNQ	A308	29/07/2010		28/07/2012	Yes							
2	88	Mahan Air	MNR	A308	01/08/2010		31/07/2012	Yes							
3	87	Mahan Air	MNS	A308				Yes							
4	89	Mahan Air	MNT	A308				Yes							
5	90	Mahan Air	MNU	A308	01/05/2011		30/04/2013	Yes							
6	82	Mahan Air	MHA	A308				Yes							
7	80	Mahan Air	MHF	A308				Yes							
8	79	Mahan Air	MHG	A308				Yes							
9	81	Mahan Air	MHL	A308				Yes							
10	86	Mahan Air	MHM	A308				Yes							

Table 3 of 4 I.R OF IRAN - APPROVED RVSM ACFT MINIMUM MONITORING REQUIREMENTS AS OF AUGUST 2011

Seq.#	RVSM List Ref.#	Operator	ACFT Reg. EP-	ACFT Type	Last Successful EUR Monitoring Date	MIDRMA GMU Monitoring Date	HMU or GMU Compliant Expire Date	MMR Covered By ACFT Group	No. of ACFT Required	Monitoring Mode S
11	83	Mahan Air	MHP	A30B				Yes		
12	106	Mahan Air	MNG	A30B				Yes		
13	96	Mahan Air	MNH	A30B				Yes		
14	97	Mahan Air	MNI	A30B				Yes		
15	98	Mahan Air	MNJ	A30B				Yes		
16	99	Mahan Air	MNK	A30B	29/04/2011		28/04/2013	Yes		
17	100	Mahan Air	MNL	A30B	23/01/2011		22/01/2013	Yes		
18	101	Mahan Air	MNM	A30B	24/04/2011		23/04/2013	Yes		
19	102	Mahan Air	MNO	A310	14/04/2011		13/04/2013	Yes		
20	84	Mahan Air	MNX	A310				Yes		
21	85	Mahan Air	MNO	A313	19/05/2011		18/05/2013	Yes		
22	103	Mahan Air	MNP	A313				Yes		
23	104	Mahan Air	AGB	A321				Yes		
24	78	Mahan Air	AGB	A321				Yes		
25	94	Mahan Air	MND	B743				No	1	Any Two
26	95	Mahan Air	MNE	B743				No		
27	91	Mahan Air	MNA	B744				No		
28	92	Mahan Air	MNB	B744				No	1	
29	93	Mahan Air	MNC	B744				No		
RVSM Minimum Monitoring Requirements (ACFT):										
1	113	Iranian Air Transport Company	AWZ	F100				No	1	Mode S known to USC
2	115	Iranian Air Transport Company	MIS	F100				No		
3	114	Iranian Air Transport Company	OPI	F100				No		Any Two
4	118	Iranian Air Transport Company	SUS	F100				No	1	
RVSM Minimum Monitoring Requirements (ACFT):										
1	120	Kish Air	LCL	MD82		30/01/2010	29/01/2012	Yes		Mode S known to USC
2	121	Kish Air	LCJ	MD82				No	1	
3	123	Kish Air	LCK	MD82				No		Any one
4	122	Kish Air	LCL	MD82				No		
RVSM Minimum Monitoring Requirements (ACFT):										
1	117	Mera Air	AJC	A322				No	1	Mode S known to USC
2	118	Mera Air	AJD	B703		01/02/2010	30/01/2012	Yes		
3	119	Mera Air	AJE	B703		03/02/2010	02/02/2012	Yes		
RVSM Minimum Monitoring Requirements (ACFT):										
1								Yes	1	
RVSM Minimum Monitoring Requirements (ACFT):										
1								Yes	1	

Table 4 of 4
I.R OF IRAN - APPROVED RVSM ACFT MINIMUM MONITORING REQUIREMENTS AS OF AUGUST 2011

Ref. #	EP-	Type	EUR Monitoring Date	Monitoring Date	Compliant	Expire Date	By ACFT Group	Required Monitoring	Known to USC			
1	111	Saha Airlines	SHG	B703	28/01/2010	27/01/2012	Yes					
2	112	Saha Airlines	SHV	B703	28/01/2010	27/01/2012	Yes					
3	109	Saha Airlines	SIF	A306			Nb	1				
4	110	Saha Airlines	SIG	A306			Nb	1				
RVSM Minimum Monitoring Requirements (ACFT):												
									2			
Seq#	RVSM List	Operator	ACFT Reg.	ACFT	Last Successful EUR Monitoring Date	MIDRMA GMU Monitoring Date	HMU or GMU Compliant	Expire Date	MMR Covered	No. OF ACFT	Mode S	Known to USC
1	107	Yes Air	GOL	IL76					Nb	1		
2	108	Yes Air	GOM	IL76					Nb	1		
RVSM Minimum Monitoring Requirements (ACFT):												
									2			

Total No. of IRAN RVSM ACFT MMR as of August 2011 is = 13