International Civil Aviation Organization

MIDANPIRG STEERING GROUP

Fourth Meeting (MSG/4)
(Cairo, Egypt, 24 - 26 November 2014)

Agenda Item 5: Air Navigation Safety matters and Coordination with RASG-MID

MID RVSM SMR 2014 INITIAL RESULTS

(Presented by MIDRMA)

SUMMARY

This Information Paper details the initial results of the MID RVSM Safety Monitoring Report 2014 and tries to demonstrate according to the data received that the key safety objectives of the SMR in accordance with ICAO Doc 9574 were met in operational service in all the Middle East RVSM airspace except for Tripoli FIR.

Action by the meeting is at paragraph 3.

REFERENCES

- MIDANPIRG/14 Report
- MIDRMA Board/13 Report.
- MID RVSM SMR 2012/2013

1. INTRODUCTION

1.1 The Middle East Regional Monitoring Agency presents the MID RVSM Safety Monitoring Report 2014 to the Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG) for their endorsement.

1.2 The results for the SMR 2014 - were calculated for 13 FIRs in the Middle East Region (Tripoli FIR was excluded from the analysis due to the MIDRMA focal point in Libya failed to submit the required traffic data in accordance with the SMR 2014 working schedule which was approved by MIDANPIRG 14 for the development of the SMR).

Note: The final results will be subject to further review in accordance with the LHD reports received from the MIDRMA Member States for the remaining validity period of the SMR 2014.

1.3 The results present evidence that the key safety objectives, as set out in the MID RVSM safety policy in accordance with ICAO Doc 9574 (2nd Edition), continue to be met in the Middle East RVSM airspace except for Tripoli FIR.

2. DISCUSSION

2.1 The descriptions of the total traffic data collected from each MIDRMA Member State is depicted in the table below. A total of **220937** flights were gathered for all aircraft operated in the 13 FIRs, all these flights were evaluated and processed very carefully to ensure accurate results according to the data submitted.

SN	MID FIRs	Jun. 2009	Jan. 2011	Oct. 2012	15 Jan-15 Feb 2014
1	Bahrain FIR	24285	30099	39345	**25441** ↓
2	Muscat FIR	22520	28224	30357	↑ **31735**
3	Jeddah FIR	22422	25499	30944	↑ **44351**
4	Emirates FIR	15868	21076	24676	**24369** ↓
5	Tehran FIR	10479	10638	17523	↑ **24728**
6	Damascus FIR	9774	11719	8027	**4095** ↓
7	Amman FIR	8554	10689	6857	**4546** ↓
8	Kuwait FIR	3570	10364	13596	**10666** ↓
9	Sana'a FIR	3490	4305	5170	↑ **5620**
10	Beirut FIR	2949	3845	1286	**105** ↓
11	Khartoum FIR	0	0	0	**4776**
12	Baghdad FIR	0	0	10496	↑ **12694**
13	Cairo FIR	19228	14270	26332	↑ **27271**
14	Tripoli FIR	0	0	0	**0**
Total		**143,139**	**170,728**	**214,609**	**220937** ↑

MID States RVSM Traffic Data

2.2 MID RVSM Safety Monitoring Report 2014 Initial Results

2.2.1 RVSM 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 x 10^{-9} fatal accidents per flight hour.

The 2014 value computed for technical height risk is **$2.56x10^{-15}$**. This meets RVSM Safety Objective 1.

2.2.1.1 According to the technical risk values as shown in the table below from the previous SMRs, the TLS value decreased from the last SMR which is safe comparing to the ICAO TLS **2.5×10^{-9}**.

*Note: The calculated result measured without Tripoli FIR.

Technical Risk Values					
Year 2006	Year 2008	Year 2010	Year 2012	Year 2013	**Year 2014**
$2.17x10^{-14}$	$1.93x10^{-13}$	$3.96x10^{-15}$	5.08×10^{-14}	$6.37x10^{-12}$	**$2.56x10^{-15}$ ***

2.2.1.2 **Pz(1000) Compliance:**

The Pz(1000) is the probability that two aircraft at adjacent RVSM flight levels will lose vertical separation due to technical height keeping errors. The value of the probability of vertical overlap Pz(1000), based on the actual observed Altimetry System Error (ASE) and typical Assigned Altitude Deviation (AAD) data is estimated to be of **3.58×10^{-10}**. This value meets the Global System Performance Specification that the probability of two aircraft will lose procedural vertical separation of 1000ft should be no greater than **1.7×10^{-8}**.

2.2.1.3 **Middle East RVSM Airspace Horizontal Overlap Frequency (HOF):**

2.2.1.3.1 Due to lack of radar data available for most of the congested airspace in the Middle East Region were calculating the HOF is fundamental for the SMR, the MIDRMA decided to calculate the HOF for all the MID RVSM airspace and not only within the congested airspace by adopting the ICAO methodology developed for this purpose and by adding this feature in the MID Risk Analysis Software (MIDRAS).

a. The calculated horizontal overlap frequency for the MID RVSM Airspace was estimated to be **6.22×10^{-12}** per flight hour.

Horizontal Overlap Frequency (HOF)					
Year 2006	Year 2008	Year 2010	Year 2012	Year 2013	**Year 2014**
6.99×10^{-3}	5.1×10^{-11}	2.88×10^{-6}	6.49×10^{-5}	4.34×10^{-8}	**6.22×10^{-12}**

b. This is the first time for the MIDRMA to calculate the HOF for all the MID RVSM Airspace which enables the MIDRMA continuously monitor each FIR individually and will assist any Member State to overcome any problem associated with abnormal results.

2.2.2 **RVSM Safety Objective 2:**

2.2.2.1 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.

2.2.2.2 The computed 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 is **2.72×10^{-13}*** which meets the ICAO overall TLS of **5×10^{-9}** fatal accidents per flight hour, the table below reflects a comparison with the overall risk values calculated for the previous SMRs.

*Note: The calculated result measured without Tripoli FIR.

Overall Risk Values					
Year 2006	Year 2008	Year 2010	Year 2012	Year 2013	**Year 2014**
Not calculated due to the absence of suitable information on atypical errors	4.19×10^{-13}	6.92×10^{-12}	1.04×10^{-11}	3.63×10^{-11}	**2.72×10^{-13}***

2.2.3 **RVSM Safety Objective 3**

2.2.3.1 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.

2.2.3.2 Conclusions for RVSM Safety Objective 3:

a. The MIDRMA shall carry out continuous survey and investigation with the Member States and the RMA Global on the number and causes of non-approved aircraft operating in the MID RVSM airspace and shall issue immediate warning of any observed airspace violation.

b. The MIDRMA continue to identify all the MID Region RVSM approved aircraft required to be monitored by issuing the Minimum Monitoring Requirement (MMR) tables twice a year or whenever requested by any Member States to ensure the implementation of height monitoring requirements is conducted according to ICAO Annex 6.

c. The MIDRMA will continue to enhance the MIDRAS (Middle East Risk Analysis Software) and shall include other visualization features to identify airways bottlenecks and hotspots in phase 2 of the software project.

d. Ensure resolving all violations and information collected during the MID RVSM Scrutiny Group meeting in order to identify operational issues and potential mitigations.

e. The MIDRMA will continue to include in its work program briefings on RVSM safety assessment requirements to raise the awareness of ATC, RVSM approval Authorities and Air Operators personnel.
Therefore, it is concluded that this Safety Objective is currently met.

2.3 The meeting may wish to note that the Draft MID RVSM SMR 2014 will be reviewed by the ANSIG/1 meeting, Cairo, Egypt, 8-10 February 2014 and thereafter presented to MIDANPIRG/15 for endorsement.

3. ACTION BY THE MEETING

3.1. The meeting is invited to note the information contained in this paper.

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