

**REPORT ON AGENDA ITEM 3 SAFETY AND AIRSPACE MONITORING (SAM/WG) AND
REVIEW OF RESULTS FROM PRELIMINARY READINESS
ANALYSIS.**

3.1 Under this agenda item, the meeting noted with appreciation the offer by the United Arab Emirates to host the Middle East Central Monitoring Agency for the implementation of RVSM (MECMA). It was noted that a web page: <http://www.mecma.com> has been created to host the database of all information regarding the RVSM approval process.

3.2 Based on the foregoing the meeting formulated the following conclusion:

**CONCLUSION 2/1: ESTABLISHMENT OF A REGIONAL SAFETY AND
MONITORING AGENCY**

That:

- a) the task of monitoring safety in conjunction with implementation of RVSM in the Middle East Regions be assigned to a Central Monitoring Agency;
- b) the monitoring agency, referred to as the Middle East Central Monitoring Agency (MECMA), will be established and staffed
(UAE GCAA) and based at the Head Office in Abu Dhabi;
and
- c) the Terms of Reference of the MECMA is at **Appendix 3A** to the report on this Agenda Item.

3.3 The Safety & Airspace Monitoring Working Group (SAM W/G) reviewed its terms of reference as laid down by MID RVSM TF/1. It was noted that part of the associated tasking is a prerequisite for execution of certain tasks for the other working groups and therefore has **Appendix 1B.**

Furthermore, it was noted that SAM tasks do not end at implementation, but that safety and airspace monitoring will be an ongoing task to ensure continued safety in the RVSM environment.

3.4 During RVSM TF/1 it was agreed that traffic sampling should be carried out during the period 20 January 20 February 2001 to satisfy the dual requirements of providing and to ensure that the sample present a realistic picture from a safety point of view. The chosen period has the required duration while encompassing the inbound phase of the Haj season, thereby addressing both criteria.

3.4.1 Collection of traffic data was not complete. Different interpretations of the requirements and, particularly, the format of traffic data had led to delays and the working group discussed in some detail suitable formats and the MECMA provided a sample of the Excel file structure used successfully by a number of States. This sample will be posted on the MECMA website by 18 April 2001.

3.4.2 Four FIRs had submitted traffic data during the week before TF/2. Additionally, the FIRs represented undertook to provide data on an urgent basis and the status is as shown in the table below:

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RVSM Traffic Data 20 January 20 February 2001

FIR	OK	Proc.	Remarks
Afghanistan			Nil received
Amman			Nil received
Baghdad			Nil received
Bahrain	Yes	Yes	
Beirut	Yes	Yes	21 Jan - 19 Feb
Cairo		Yes	19 January 22 February 2001. Formatting / level info to be addressed
Damascus			Data by 30 Jun 01
Emirates	Yes	Yes	
Jeddah		Yes	Part of data received. Format issues to be resolved. Entry/Exit level. Will be complete by 30 Apr
Kuwait			Will be complete by 25 Apr
Muscat	Yes	Yes	
Sana'a			MECMA will contact Mr. Mohd. Jamra'a (DANS)
Tehran			Sent to Cairo 09 Apr - copy being sent to MECMA by 18 Apr
Tel Aviv			Nil received

3.4.3 Based on the available data, a partial preliminary readiness assessment had been carried with the aid of APARMO and is attached as **Appendix B** to this Report. The meeting noted that more comprehensive data will alter the results in a number of respects. However, the following important aspects were noted:

- For the core period, the traffic sample encompasses in excess of 1500 unique flights per day.
- The top 20 operators have modern fleets with aircraft types for which RVSM approval is relatively simple and without major cost implications.
- The flight level utilisation diagram correlates well with those of other regions and indicates a significant advantage in RVSM implementation.

The readiness assessment will be updated based on additional data as tabulated above and presented at TF/3.

3.5 The options for setting up a Central Monitoring Agency were considered by the host, equip and staff a Middle East Central Monitoring Agency (MECMA). The offer was

TF/1.

3.5.1 Additionally, a budgetary estimate of US\$ 100,000 was considered. The UAE GCAA had made budgetary provisions for the fiscal year 2001 and it was agreed that offers of support and advice from the US FAA (APARMO) and EUROCONTROL would not only serve to minimize costs, but also to accelerate implementation and improve harmonisation between Regions.

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3.5.2 The Task Force agreed that MECMA will be established by the UAE GCAA and

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Abu Dhabi
United Arab Emirates

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Email: traffic@mecma.com (for forwarding of traffic samples)

Website: www.mecma.com

3.6 The options for carrying out safety analysis were evaluated:

- Accept assistance from a qualified regional organization. This option had been chosen for the Asia/Pacific area and will be considered further.
- MECMA will undertake further liaison and submit proposal at RVSM TF/3.

3.7 The options for implementation of a height monitoring programme were discussed with the first and principal choice being between HMU and GMU. Accuracy of the two systems has been examined and found to be equal (approximately 25 ft) with good correlation.

3.7.1 HMUs yield a large volume of data and the height-keeping characteristics of individual airframes navigating via an HMU can be followed. The disadvantages of HMUs are the high cost (approximately USD \$8 Million for three units in Europe), that a suitably located Mode S radar is required and that only aircraft routing within 35 NM from the units can be monitored. The availability of European HMUs for a significant proportion of the Middle East fleets and funding considerations led to the conclusion that, despite the qualities of the HMU technology, this technology will not be appropriate for fielding in the MID Region.

3.7.2 GMUs give a much smaller volume of data, but monitoring is available on almost any route worldwide, meaning that the aircraft can be monitored on their normal routes without having to make detours via monitoring units or be dispatched on specific monitoring missions. Furthermore, GMUs are relatively inexpensive (approximately USD \$10,000 each), albeit other costs such as and operating staff and backup units have to be considered. Because of these considerations and because the total number of airframes requiring monitoring will be relatively small owing to monitoring being carried out as part of the approval process for other regions, the meeting favoured GMUs for the MID height monitoring programme.

3.7.3 Preferring GMU for height monitoring in the MID Region, the meeting considered the organization and funding issues with the following principal options:

- Purchase and operation of GMUs by a CAA and/or MECMA. The UAE GCAA had indicated that its offer to establish and operate the MECMA did not encompass provision of a height-keeping monitoring service and no other regional Authority had expressed a willingness to assume such a responsibility individually, or jointly. Consequently, this option was not found to be viable.

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- Approve one or more suitably qualified companies to carry out the task on a direct contractor-client basis with individual operators needing a monitoring service. Approval would be based on acceptance of measuring methodology and results by another regional monitoring agency such as APARMO or EUROCONTROL. This option will be considered further.
- Offer a height-keeping monitoring service through IATA, who will engage a suitably qualified company to provide a service provided:
 - a) the measuring methodology and results are accepted by another regional monitoring agency such as APARMO or EUROCONTROL; and
 - b) the service is available on equal terms to all users of MID airspace.

3.7.3.1 The meeting agreed to invite companies individually or under the auspices of IATA to present specific proposals at RVSM TF/3, based on which a decision on a height-keeping monitoring service for the MID Region will be made. Irrespective of the chosen funding solution, the meeting recognized the importance of making timely and adequate budgetary provisions for the costs associated with implementation of RVSM and recommended that this issue be adopted as a MIDANPIRG recommendation to States and operators.

3.7.4 The meeting noted that monitoring requirements differ between regions and States:

- The Asia/Pacific Region requires monitoring of two or three airframes per type per operator, depending on previous RVSM experience.
- The Russian FAA requires monitoring of each airframe for which RVSM approval is sought.
- The European Region (EUROCONTROL) does not directly link monitoring of airframes to RVSM approval. However, they make monitoring available free of (direct) charge.

3.7.4.1 The Group is required to develop a policy on monitoring requirements for the MID Region and set the target date of 29 August 2001 for completion of this task.

3.7.5 Large height deviations in the existing system are considered in two categories:

Assigned Altitude Deviations (AAD)
ATC Loop Errors

The meeting recognized that the risk associated with these deviations is likely to represent a greater challenge than the technical error and agreed to the following Conclusions:

CONCLUSION 2/2: REPORTING OF LARGE HEIGHT DEVIATIONS

That,

- a) all States institute procedures for reporting of height deviations of 300 ft or more with effect from 01 July 2001;
- b) reports be structured as shown in **Appendix 3B** to the report on Agenda Item 3 and forwarded to the Middle East Central Monitoring Agency (MECMA);

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- c) States report total number of IFR movements for each month to MECMA, and
- d) MECMA ensures further processing of this data in accordance with its terms of reference.

CONCLUSION 2/3: REPORTING OF ATC COORDINATION FAILURES

That,

- a) all States institute procedures for reporting of ATC/ATC coordination failures with effect from 01 July 2001;
- b) MECMA ensures further processing of this data in accordance with its terms of reference and develop a methodology for assessing risk associated with such failures.

3.8 The meeting also noted the five steps strategy for ensuring the safe implementation of RVSM. It was pointed out that step four recommends to verify the integrity of the total system operation, initially in the 2000 ft VSM environment and thence on a trial basis after implementation of 1000 ft VSM.

3.9 The meeting updated the SAM W/G work programme as shown on the task list as follows (*See Appendix A to this Report*):

- Finish Task 6 by 31 July 2001
- Task 7 was finished by 10 April 2001
- Finish Task 8 by 29 August 2001
- Finish Task 9 by 29 August 2001
- Task 10 was finished by 11 April 2001

3.10 Based on its Terms of Reference, the SAM W/G decided to extend its work programme with the following tasks:

3.10.1 Review of existing mathematical and statistical techniques to assure their appropriateness for MID Region RVSM.

While the mathematical models were considered to be suitable, the meeting was concerned that the previously applied values for lateral overlap probability does not make adequate allowance for the rapidly increasing horizontal navigational accuracy as a result of GNSS. In this context, the meeting considered a review of the Annex 2, Chapter 3, paragraph 3.6.2.1.1 regarding the requirement to operate on the defined route centre line necessary. An international standard for random lateral offset, subject to specific conditions, was viewed as a possible solution.
Start 11 April 2001. Finish January 2003.

3.10.2 Ensure transferability of aircraft data from other regions. Start 11 April 2001. Finish June 2002.

3.10.3 Devise suitable methodologies for incorporating the effects of projected traffic increases and system changes on occupancy and collision risk in the future environment. Start 11 April 2001. Finish June 2002.

3.10.4 Perform periodically other data collections (e.g ASE stability) in order to ensure that the parameter values used in the mathematical collision risk models remain current. Start 11 April 2001. On-going.
