



*International Civil Aviation Organization*  
**Baghdad FIR RVSM Implementation**

**Special Coordination Meeting (BFRI SCM)**

*(Bahrain, 29 - 30 September 2010)*

---

## **SUMMARY OF DISCUSSION**

### **1. INTRODUCTION**

1.1 With the support of Bahrain Civil Aviation Affairs and the Middle East Regional Monitoring Agency (MIDRMA), the Baghdad FIR RVSM Implementation Special Coordination Meeting (BFRI SCM) was successfully held in Bahrain from 29 to 30 September 2010. Fourteen (14) participants from Iraq, the MIDRMA/Bahrain, IATA and ICAO attended the meeting. The list of participants is at **Attachment B**.

1.2 The meeting recalled that during the MIDRMA Board/10 meeting (Tehran, Iran, 3-5 May 2010), Iraq requested that a coordination meeting between Iraq (with the presence of CSSI), the ICAO MID Regional Office, the MIDRMA and IATA be held in September 2010, in order to follow-up the status of implementation of the action plan for RVSM implementation and take necessary action to pave the way for the BFRI WG/2 meeting scheduled to be held in Cairo, 13-15 December 2010, to take the Go-no-Go decision for RVSM implementation within Baghdad FIR on 10 March 2011.

### **2. SUMMARY OF DISCUSSIONS**

2.1 The meeting recalled the actions agreed by MIDANPIRG/11, the ATM/SAR/AIS SG/11, the BFRI WG/1 and the MIDRMA Board/10 meetings related to the requirements for RVSM implementation within Baghdad FIR, in particular the 23 actions identified in the Action Plan for RVSM implementation within Baghdad FIR.

2.2 The meeting reviewed the progress achieved so far for the implementation of the different requirements.

#### ***Assessment of Operators Readiness for RVSM Implementation within Baghdad FIR***

2.3 The meeting noted that Iraq CAA (ICAA) analyzed the February 2010 sample of traffic data from the Baghdad ACC along with current Regional Monitoring Agency (RMA) RVSM approvals data to provide a projection of operators readiness to conduct RVSM operations within Baghdad FIR. The data largely indicates that current operators within Baghdad FIR are already approved to conduct RVSM operations. This finding is also supported by the fact that RVSM is applied in the FIRs surrounding the Baghdad FIR. Accordingly, it was confirmed that Operators readiness for the March 2011 implementation of RVSM in the Baghdad FIR is projected to be roughly 100%.

### ***Air Traffic Control Issues and Implementation Readiness Assessment***

2.4 The meeting agreed that one of the major questions to be answered affirmatively in order to support implementation of RVSM in a portion of airspace is: *Is air traffic control ready? Or: Is it reasonable to expect that necessary documentation, controller training and automation system modifications will be completed?*

2.5 It was emphasized that the changes necessary to support the implementation of RVSM in the Baghdad FIR should be achievable without derogation of the safety performance within the airspace. Accordingly, the following ATC issues were highlighted:

- a) ATCOs training;
- b) Letters Of Agreement (LOAs) with adjacent ACCs;
- c) Local operating procedures; and
- d) ATC Automation Systems.

2.6 The meeting noted that work is ongoing with no problems or delays anticipated and the ICAA is on target to complete all identified requirements in time for implementation.

### ***RVSM Pre-Implementation Safety Assessment***

2.7 The meeting recalled that the BFRI WG/2 meeting (Cairo, 13-15 December 2010) will consider, among other things, whether the introduction of RVSM into the airspace of the Baghdad FIR will be safe. This consideration is equivalent to determining whether the implementation will satisfy the RVSM safety objectives adopted by MIDANPIRG.

2.8 The meeting was presented with a preview of the pre-implementation safety assessment, developed by ICAA, which will be further validated by the MIDRMA and presented to the BFRI WG/2 meeting.

2.9 Based on the analysis of the February 2010 sample of traffic data from the Baghdad ACC, the following was highlighted:

- a) roughly 97% of operations in the sample operated on two unidirectional routes (UT888 and R784) with northern fixes of the routes at the boundary of the Ankara FIR and southern fixes at the boundary of the Kuwait FIR, and
- b) the route and flight-level structure of the Baghdad FIR changed significantly in early March 2010; due to agreement between Iraq and Turkey, the northern and southern unidirectional flows now operate on routings which allow northbound aircraft to use even RVSM flight levels and southbound aircraft to use odd RVSM flight levels, with 2000-ft vertical separation still provided between aircraft at adjacent flight levels on each of the routings.

### ***Preview of Technical Risk Assessment (Safety Objective 1)***

2.10 The meeting recalled that there are two key model parameters which affect technical risk directly: (1) the probability that two aircraft will lose planned 1000-ft vertical separation due to aircraft height-keeping performance capability, termed the probability of vertical overlap, and (2) the relative density of aircraft at adjacent RVSM flight levels, represented by either same-direction and opposite-direction occupancies or the equivalent passing frequencies.

2.11 Considering that the overwhelming majority of flights operate on two unidirectional routings with usable flight levels on each routing separated by 2000 ft and that there are no plans to change this structure upon RVSM implementation; it was noted that the effective same-direction and opposite-direction occupancies or passing frequencies in the Baghdad FIR will be very close to zero (0). As a result, the technical risk should be well below the applicable TLS value of  $2.5 \times 10^{-9}$  fatal accidents per flight hour.

Preview of Operational Risk Assessment and Overall Risk (Safety Objective 2)

2.12 The meeting noted that considering the success of scrutiny groups in other ICAO Regions, the ICAA established the Baghdad FIR RVSM implementation Scrutiny Group (BF/RSG) as part of its preparations for RVSM implementation. It was noted that the BF/RSG was presented with information concerning significant numbers of control-transfer errors during its First Meeting held on 11 August 2010. The BF/RSG identified problems with CNS infrastructure as a major cause of these errors. In this regard, the meeting noted that the ICAA has undertaken a series of improvements designed to improve the CNS infrastructure. In particular:

- the recent integration of the Kirkuk radar into the surveillance suite of the Baghdad ACC;
- further enhancement of the radar coverage at the Baghdad ACC by the integration of the Basra radar (expected end of October 2010), which will complete the radar coverage of the north-south flows, accounting for about 97% of the Baghdad ACC operations;
- improvement of the communications infrastructure, in particular, the fiber-optic and VSAT-based systems, which when complete, will provide redundant communications networks throughout the Baghdad FIR and with adjacent FIRs.

2.13 The meeting noted that the predominant effect on operational risk is time spent at incorrect flight level. It was further noted that control-transfer errors are the principal potential contributors to time at incorrect flight level in the Baghdad FIR.

2.14 In connection with the above, it was noted that the BF/RSG has agreed that, although control-transfer errors are occurring currently at a high frequency, the existing LOA arrangements and Baghdad ACC procedures combined with imminent complete surveillance coverage of the high-traffic portion of the FIR mitigate their effect on operational risk. As a result, the BF/RSG agreed that their effect on risk should be discounted.

2.15 As a result, considering the assessment of the current ATC operations, combined with the planned improvements listed above; the meeting agreed that the sum of estimated operational and technical risk should allow satisfaction of the overall TLS value of  $5 \times 10^{-9}$  fatal accidents per flight hour when RVSM is implemented in the Baghdad FIR.

Assessment of Safety Objective 3

2.16 The meeting recalled that in accordance with MIDANPIRG/11 Conclusion 11/22, to meet safety objective 3, there's a need to 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.

2.17 The meeting noted the ICAA has formed the BF/RSG to assist in the satisfaction of Safety Objective 3 within the Baghdad FIR. The meeting agreed that the MIDRMA, in coordination with the ICAA and the BF/RSG would ascertain the satisfaction of this safety objective as part of the Pre-Implementation Safety Assessment taking into consideration the traffic forecasts, long term trends and potential future safety issues.

***Update of the Action plan for RVSM implementation within Baghdad FIR***

2.18 Based on the above, the meeting noted with appreciation the progress made towards the implementation of RVSM within Baghdad FIR and updated accordingly the Action Plan as at **Attachment A**. The meeting agreed that the ICAA and the MIDRMA would present all supporting documentation, which demonstrates the fulfillment of all requirements to the BFRI WG/2 meeting, which is delegated the authority to take the Go-No-Go decision for RVSM implementation in the Baghdad FIR on 10 March 2011.

-----

## ACTION PLAN FOR RVSM IMPLEMENTATION IN BAGHDAD FIR

ID	ACTION	TO BE DELIVERED BY	TARGET DATE	STATUS	COMMENTS (As of 30 September 2010)
1	Nomination of RVSM Focal Point	Iraq	19 Jan 2010	Closed	Ali Khalil Ibrahim is RVSM Focal Point
2	Nomination of Baghdad FIR RVSM Program Manager	Iraq	1 Mar 2010	Closed	Ali Khalil Ibrahim is Baghdad FIR RVSM Program Manager
3	Promulgation of national regulation to enable the implementation of RVSM	Iraq	13 Jan 2011	Open	Iraq Civil Aviation Law currently under review; RVSM amendments will be incorporated into Law after review completed. Until review is complete, AIP will serve as regulatory document. Initially, an AIC will be published as advance notification to airspace users. Enroute section of Iraq AIP will be amended on AIRAC date of 13 Jan 2011.
4	Provide the MIDRMA with traffic data for the month of February 2010 (including A/C REG)	Iraq	15 Mar 2010	Closed	Submitted as required.
5	Submission of the latest airways structure for Baghdad FIR to the MIDRMA	Iraq	15 Apr 2010	Closed	Latest Baghdad FIR airways structure published in AIP. There will be no airspace changes to the ATS route network within Baghdad FIR affecting the current prospects of meeting the Target Level of Safety on RVSM implementation date.
6	Calculating the passing frequency for all Bagdad FIR airways	Iraq and MIDRMA	15 Nov 2010	Open	Passing frequency associated with heavily used portion of current route structure is very close to 0 for same-direction traffic; there is little to no opposite direction opposite-direction traffic at adjacent flight levels in the heavily used portion of current FIR route structure.

ATTACHMENT A

A-2

ID	ACTION	TO BE DELIVERED BY	TARGET DATE	STATUS	COMMENTS (As of 30 September 2010)
7	Conclusions of the passing frequency results, evaluation of the need for ATS Route Network amendments related to RVSM and follow up implementation of the proposals with Iraq	Iraq and MIDRMA	30 Sep 2010	Done	Traffic on the predominant unidirectional north-south routings accounts for roughly 97 percent of operations in FIR; the current estimates of passing frequency on these routes, very close to 0, precludes need for changes to route structure in order to ensure satisfaction of TLS on implementation date. Passing frequencies to be estimated prior to start of BFRI WG/2.
8	Submit RVSM approvals to the MIDRMA for all Iraqi registered aircraft or any airline operators certified by Iraq and to continue updating these approvals as necessary	Iraq	On monthly basis	Ongoing	Information submitted on regular basis as required.
9	Submit Coordination Failure Reports (CFR) and Altitude Deviation Reports (ADR) to the MIDRMA on a monthly basis	Iraq	On Monthly basis	Ongoing	Reports are being submitted as required
10	Develop ATC operational policy & procedures for normal RVSM operations	Iraq	1 Dec 2010	Open	Concept of Operation for Baghdad FIR RVSM completed in May 2010. Development of ATC operational policy and procedures initiated during first week in October. Policy and procedure development will proceed in accordance with plan to meet implementation date. Evidence of expected completion to be presented at BFRI WG/2.

A-3

ID	ACTION	TO BE DELIVERED BY	TARGET DATE	STATUS	COMMENTS (As of 30 September 2010)
11	Assess the impact of RVSM implementation on ATC automation systems, plan for upgrades/modifications and effectively implement necessary changes.	Iraq	31 Jan 2011	Ongoing	May 2010 Concept of Operation identified automation system upgrades required to support RVSM implementation. ICAA has confirmed that automation system upgrades are feasible within time period needed to support implementation. Evidence of expected completion to be presented at BFRI WG/2.
12	Develop ATC procedures for non-approved State aircraft to transit RVSM airspace	Iraq	1 Dec 2010	Open	Concept of Operation for Baghdad FIR RVSM, completed in May 2010, identified need to address non-approved State aircraft. See comments under Item 10 for current status. Evidence of expected completion to be presented at BFRI WG/2.
13	Develop procedures for handling non-compliant civil aircraft	Iraq	1 Dec 2010	Open	Concept of Operation for Baghdad FIR RVSM, completed in May 2010, identified need to address non-compliant civil aircraft. See comments under Item 10 for current status. Evidence of expected completion to be presented at BFRI WG/2.
14	Develop procedures for suspension of RVSM	Iraq	1 Dec 2010	Open	Concept of Operation for Baghdad FIR RVSM, completed in May 2010, identified need to address criteria and procedures for suspension of RVSM. See comments under Item 10 for current status. Evidence of expected completion to be presented at BFRI WG/2.
15	Development of Iraq national safety plan	Iraq	1 Dec 2010	Open	National Safety Plan drafting in progress. Several areas of plan complete in draft form; ATC portion of plan requires information from process to develop procedures and related items. Plan to be completed after conduct of early-October initial planning for ATC actions to support RVSM. Final draft to be presented to BFRI WG/2.

ATTACHMENT A

A-4

ID	ACTION	TO BE DELIVERED BY	TARGET DATE	STATUS	COMMENTS (As of 30 September 2010)
16	Simulations to support ATC training needs and assess ATC workload, identify eventual need for additional training and/or amendment of RVSM procedures	Iraq	Feb 2011	Open	Concept of Operation for Baghdad FIR RVSM, completed in May 2010, identified need to address simulation of RVSM procedures. See comments under Item 10 for current status. Evidence of expected completion to be presented at BFRI WG/2.
17	ATC training plan	Iraq	1 Dec 2010	Open	Concept of Operation for Baghdad FIR RVSM, completed in May 2010, identified need to address training. See comments under Item 10 for current status. Evidence of expected completion to be presented at BFRI WG/2.
18	Update of LOAs between Iraq and all adjacent FIRs	Iraq and neighboring States	15 Feb 2011	Open	Draft LOAs will be presented at BFRI WG/2. Signed LOAs required not later than 15 Feb, but preferably during BFRI WG/2.
19	ATCOs trained for RVSM operation	Iraq	15 Feb 2011	Open	Training to be completed near implementation date. Evidence of expected completion to be presented at BFRI WG/2.
20	Carry out pre-implementation safety analysis	Iraq and MIDRMA	1 Dec 2010	Open	The ICAA will conduct pre-implementation safety assessment in coordination with MIDRMA. Results will be presented to BFRI WG/2.
21	Carry out pre-implementation readiness assessment	Iraq	15 Feb 2011	Open	ICAA will conduct internal RVSM readiness assessment in accordance with established ICAO criteria and report results to MIDRMA and ICAO MID Office.
22	Prepare necessary proposal for amendment to Doc 7030 related to RVSM implementation within Baghdad FIR	ICAO MID Office	31 Dec 2010	Ongoing	Draft proposal to be presented to BFRI WG/2. Iraq to request that ICAO MID circulate Doc 7030 amendment after BFRI WG/2.



A-5

<b>ID</b>	<b>ACTION</b>	<b>TO BE DELIVERED BY</b>	<b>TARGET DATE</b>	<b>STATUS</b>	<b>COMMENTS (As of 30 September 2010)</b>
23	Go-No-Go Decision for RVSM Implementation effective 10 March 2011	BFRI WG	15 Dec 2010	Open	

<b>RVSM IMPLEMENTATION-DEPENDENT CNS REQUIREMENTS</b>					
<b>(Note: CNS Requirements are not part of ACTION PLAN adopted at BFRI WG/1; added at BFRI SCM)</b>					
	Integration of Basra and Kirkuk radars at Baghdad ACC	ICAA	Oct 2010	Ongoing	Kirkuk radar available at Baghdad ACC effective July 2010; Basra radar planned for integration by end of October 2010.
	Reliable ground-ground communications with adjacent FIRs	ICAA	1 Dec 2010	Open	Very Small Aperture Terminal (VSAT)-based satellite relay of communications exists in portions of FIR; funds have been allocated for expansion of VSAT system to meet minimum communications requirements.  Funds have been allocated to connect Baghdad ACC to the existing fiber-optic backbone in Iraq; funds also have been allocated for connections of adjacent FIRs to this backbone.

-----



*International Civil Aviation Organization*  
**Baghdad FIR RVSM Implementation**  
**Special Coordination Meeting (BFRI SCM)**  
*(Bahrain, 29 - 30 September 2010)*

---

**LIST OF PARTICIPANT**

NAME	TITLE & ADDRESS
<b>STATES</b>	
<b>BAHRAIN</b>  Mr. Fared Al-Alawi (MIDRMA)	MIDRMA Manager Bahrain Tel.: +973 14329160 E-mail: <a href="mailto:midrma@midrma.com">midrma@midrma.com</a>
Mr. Fathi Al-Thawadi (MIDRMA)	MIDRMA Officer Bahrain Bahrain Tel.: +973 14329160 E-mail: <a href="mailto:midrma@midrma.com">midrma@midrma.com</a>
Mr. Mike Boyd (Serco)	Manager ASMS Bahrain ACC Serco P.O. Box 144 Manama. Bahrain Tel: +973 17329104 Mobile:+973 36324876 E-mail: <a href="mailto:Mboyd@caa.gov.bh">Mboyd@caa.gov.bh</a>
<b>IRAQ</b>  Mr. Thamer Hamza Zabar	ACC Manager Baghdad-Iraq Tel: +964 7901235421 E-mail: <a href="mailto:thamirzabar@yahoo.com">thamirzabar@yahoo.com</a>

NAME	TITLE & ADDRESS
Mr. Ali Khalil Ibrahim	Deputy, Director General Iraq Civil Aviation authority Iraq Civil Aviation Authority Baghdad Int. Airport Baghdad- Iraq Tel.: +96418132570 Mobile: +9647901568252 E-mail: <a href="mailto:alikhali@iraqcaa.com">alikhali@iraqcaa.com</a>
Mr. David Maynard	Senior Aviation Advisor US Embassy Baghdad Baghdad- Iraq Tel: +1-240-553-0581 x3785 E-mail: <a href="mailto:maynarddm@state.gov">maynarddm@state.gov</a>
Mr. Najah Ali Raheem	Air Operation Manager Iraq Civil Aviation Authority Baghdad international Airport Baghdad – Iraq E-mail: <a href="mailto:ali_najah@yahoo.com">ali_najah@yahoo.com</a> <a href="mailto:najahali@iraqcaa.com">najahali@iraqcaa.com</a>
Mr. Nashaat Nadhir Zeky	Airworthiness inspector, Aviations Engineer Flight Safety Department Iraq, CAA, Baghdad, Iraq Tel.: +9647808490778 E-mail: <a href="mailto:nashaatnadhir@iraqcaa.com">nashaatnadhir@iraqcaa.com</a>
Mr. Damie Alan Flanders	Airspace Planner USF.I-ACCE Baghdad, Iraq Tel.: +964 7704 441 663 E-mail: <a href="mailto:damie.flanders@iraq.centcom.mil">damie.flanders@iraq.centcom.mil</a>
Mr. Brian Colamosca (CSSI)	Operations Research Specialist CSSI, Inc. Tel.: +1 484 3435269 E-mail: <a href="mailto:bcolamoscau@cssiinc.com">bcolamoscau@cssiinc.com</a>

NAME	TITLE & ADDRESS
Mr. Bruce Killian (Mitre)	Operations Analyst The Mitre Corporation Mclean, VA. 22102 Tel: +703983-6737 Mobile:+703994-7993
Dr. Omar Atice (Mitre)	The MITRE Corporation lead Commureatrous Engineer Office: 706-983-6602 7515 Coleghire Dr, Mclean, VA22102 E-mail: <a href="mailto:ootia@mitre.org">ootia@mitre.org</a>
<b>IATA</b>  Ruby Sayyed	Manager Safety, Operations & Infrastructure IATA MENA Office Amman, Jordan Tel: +9626-5939919, Ext. 5141 E-mail: <a href="mailto:sayyedr@iata.org">sayyedr@iata.org</a>
<b>ICAO</b>  Mr. Mohamed Smaoui	RO/ANS/AIM, ICAO Middle East Office Cairo, Egypt Tel.: +202 22674841 Ext. 108 Fax.: +202 22674843 E-mail: <a href="mailto:msmaoui@cairo.icao.int">msmaoui@cairo.icao.int</a>

-END-