



INTERNATIONAL CIVIL AVIATION ORGANIZATION

**REPORT OF THE SIXTEENTH MEETING
OF THE MIDDLE EAST REGIONAL
MONITORING AGENCY BOARD**

MIDRMA Board/16

(Amman, Jordan, 14 – 16 January 2020)

The views expressed in this Report should be taken as those of the Middle East Regional Monitoring Agency Board (MIDRMA Board) and not of the Organization. MIDANPIRG will be informed of the outcome of this Report and any formal action taken will be included in the Report of the MIDANPIRG.

Approved by the Meeting
and published by authority of the Secretary General

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PART I - HISTORY OF THE MEETING

1. PLACE AND DURATION

1.1 The Sixteenth meeting of the Middle East Regional Monitoring Agency Board (MIDRMA Board/16) was kindly hosted by the Civil Aviation Regulatory Commission (CARC) – Jordan. The Meeting was successfully held at Le Royal Hotel & Resorts Amman, Jordan 14 – 16 January 2020 back-to-back with the ATFM TF/3 and FIFA World Cup 2022 TF/3 meetings (Amman, Jordan, 12 – 14 January 2020).

2. OPENING

1.1 The meeting was opened by Captain Haitham Misto, Chief Commissioner/CEO, Civil Aviation Regulatory Commission (CARC) – Jordan, who thanked ICAO for organizing these important meetings in Jordan and extended a warm welcome to all participants and wished them pleasant stay in Amman. Capt. Misto highlighted that these meetings provide an opportunity for sharing experience and agreeing on the way forward related to the implementation of a collaborative ATFM in the MID Region, which could not be achieved without collaboration, support and contribution from all stakeholders. Capt. Misto indicated that Jordan is an active member of MIDRMA and will continue to provide the required support for its activities. He thanks the MIDRMA Chairman and Team for their excellent efforts in making this programme a success.

1.2 In his opening address, Mr. Mohamed Smaoui, ICAO Deputy Regional Director, Middle East Office, welcomed all the participants to Amman. He expressed his gratitude and appreciation to H.E. Captain Haitham Misto, Chief Commissioner of CARC-Jordan for hosting the ATFM TF/3, FWC2022 TF/3 and MIDRMA Board/16 meetings in Amman, Jordan. Mr. Smaoui extended special thanks to the air navigation team for the preparation and facilitation of these meetings and for the excellent hospitality extended to the ICAO staff and all participants. He highlighted that CARC's support to the ICAO MID Regional Office activities is an evidence of its active role and reflects Jordan's commitment to enhance the overall safety and efficiency of air navigation in the Region. Mr. Smaoui highlighted the main role of the MIDRMA Board as well as the importance of the decisions that will be agreed upon by the meeting and their impact on the work of the MIDRMA Team and RVSM implementation in the MID Region. He extended ICAO's gratitude to the MIDRMA Chairman and Team for their dedication, commitment and professionalism in running the MIDRMA as well as for Bahrain for all the support/facilities provided in hosting the MIDRMA Office. Mr. Smaoui encouraged States to use and benefit from the MIDRMA services.

2.1 In closing, Mr. Smaoui thanked all the participants for their presence and wished the meeting every success in its deliberations.

3. ATTENDANCE

3.1 The meeting was attended by a total of thirty-two (32) participants from seven (7) States (Bahrain, Egypt, Iraq, Jordan, Qatar, Saudi Arabia, and UAE) and three (3) Organizations (ACAO, IATA and MIDRMA). The list of participants is at **Attachment A**.

4. OFFICERS AND SECRETARIAT

4.1 The meeting was chaired by Mr. Mohamed Zainal, Director Aviation Safety and Security. From Bahrain Civil Aviation Affairs.

4.2 Mr. Elie El Khoury, Technical Officer, Airspace Management and Optimization (AMO) Section at ICAO Headquarters Montreal, Canada, was the Secretary of the meeting, supported by Mr. Mohamed Smaoui, Deputy Regional Director, ICAO Middle East Office, Cairo, Egypt.

5. LANGUAGE

5.1 Discussions were conducted in English and documentation was issued in English.

6. AGENDA

6.1 The following Agenda was adopted:

Agenda Item 1: Adoption of the Provisional Agenda

Agenda Item 2: Follow-up on MIDANPIRG/17 and MIDRMA Board Conclusions and Decisions

Agenda Item 3: Progress Report on the MIDRMA Project

Agenda Item 4: RVSM Monitoring and related Technical Issues

Agenda Item 5: Review and update of the MIDRMA Project Action Plan/Timelines

Agenda Item 6: Future Work Programme

Agenda Item 7: Any other Business

7. CONCLUSIONS AND DECISIONS – DEFINITION

7.1 The MIDANPIRG records its actions in the form of Conclusions and Decisions with the following significance:

- a) **Conclusions** deal with matters that, according to the Group's terms of reference, merit directly the attention of States, or on which further action will be initiated by the Secretary in accordance with established procedures; and
- b) **Decisions** relate solely to matters dealing with the internal working arrangements of the Group and its Sub-Groups.

8. LIST OF DRAFT CONCLUSIONS AND DECISIONS

MIDRMA CONCLUSION 16/1: PAYMENT OF ARREARS TO THE MIDRMA PROJECT

MIDRMA DECISION 16/2: REQUEST FOR THE TRANSFER OF USD 400,000 TO THE MIDRMA ACCOUNT IN BAHRAIN

DRAFT CONCLUSION 16/1: REPORTING OF LHDS

DRAFT CONCLUSION 16/2: LHDS REPORTING CAMPAIGN

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- DRAFT CONCLUSION 16/3: PROCEDURE FOR PROCESSING SAFETY PROTOCOL*
- DRAFT CONCLUSION 16/4: PROCEDURE FOR GRANTING Temporary RVSM APPROVAL*
- DRAFT CONCLUSION 16/5: MID RVSM SMR 2020*
- DRAFT CONCLUSION 16/6: SOFTWARE TO COVER THE AIRSPACE FROM FL150 TO FL490*
- DRAFT CONCLUSION 16/7: PERFORMANCE BASED COMMUNICATION AND SURVEILLANCE (PBCS)*

PART II: REPORT ON AGENDA ITEMS

REPORT ON AGENDA ITEM 1: ADOPTION OF THE PROVISIONAL AGENDA

1.1 The meeting reviewed and adopted the Provisional Agenda as at Paragraph 6 of the History of the Meeting.

REPORT ON AGENDA ITEM 2: FOLLOW-UP ON MIDANPIRG/17 AND MIDRMA BOARD CONCLUSIONS AND DECISIONS

2.1 The subject was addressed in WP/2 presented by the Secretariat. The meeting noted the status of relevant MIDANPIRG/17 and MIDRMA Board Conclusions and Decisions and the follow-up actions taken by States, ICAO and other parties concerned as at **Appendix 2A**.

REPORT ON AGENDA ITEM 3: PROGRESS REPORT ON THE MIDRMA PROJECT

3.1 The subject was addressed in WP/3 presented by the Secretariat. The meeting recalled that the MIDRMA Board/15 meeting reviewed and approved the financial report of the MIDRMA project (RAB/05/802), the financial statement and associated bills related to the MIDRMA expenditures for years 2016 and 2017.

3.2 The meeting reviewed and approved the financial reports for the period 1 January 2018 to 30 September 2019. The meeting noted that the balance of the funds available in the MIDRMA account managed by ICAO HQ (RAB/05/802) were as follows:

- Fund Balance as at 31 December 2016:	US\$ 440,290
- Fund Balance as at 31 December 2017:	US\$ 421,766
- Fund Balance as at 31 December 2018:	US\$ 374,592
- Fund Balance as at 30 September 2019:	US\$ 167,053

3.3 The meeting reviewed the expenditures of the MIDRMA for years 2018 and 2019 and endorsed the estimated budget for years 2020 and 2021 as at **Appendix 3A**. The meeting noted that according to the latest Bank Statement dated 31 December 2017, the fund balance of the MIDRMA Bank account in Bahrain is: **US\$373,903.67**.

3.4 The meeting requested the MIDRMA to provide, starting from next Board meeting, detailed budget taking into consideration all mandated key activities, including the ones addressing emerging issues/projects; and including parameters/variables that would have an impact on the budget, the funding sources and a package of efficiency gains to be achieved. The objective is to ensure the sustainability of the MIDRMA and demonstrate increased efficiency by using a results-based management approach. The presentation of the budget should include also comparison with previous years to define the trend.

3.5 The meeting reviewed the status of States' contributions to the MIDRMA Project (RAB/05/802), as of 31 December 2019 as reflected at **Appendix 3B**. The meeting noted with concern that several States have arrears for the past years' contributions (not current with the annual payments). Accordingly, the meeting agreed to the following Conclusion:

MIDRMA CONCLUSION 16/1: PAYMENT OF ARREARS TO THE MIDRMA PROJECT

*That, States, that have not yet done so, pay their contributions to the MIDRMA Project prior to **30 March 2020**, based on the invoices issued by ICAO TCB.*

3.6 The meeting urged States to comply with the instructions for payment contained in the invoices sent by ICAO HQ (Project code, fund number, invoice number, Bank information, etc.) and underlined that the non-compliance with these instructions causes problems and delays in locating the transferred amounts.

3.7 The meeting reviewed the MIDRMA Funding Mechanism as per MIDRMA Conclusion 14/3, and agreed that it is still valid.

3.8 The meeting noted, with appreciation that since year 2010, the MIDRMA has been conducting GMU height monitoring missions and managed to generate income from checking of **629** aircraft. The total amount credited to the MIDRMA account from conducting the monitoring missions is **US\$ 1,014,248.64**, which had been used in the development of tools for the MIDRMA activities and covered some of the operational expenses.

3.9 In accordance with the agreed Funding Mechanism, and taking into consideration the expected expenditures of the MIDRMA for 2020 and 2021, the meeting agreed that the MIDRMA Board Chairperson certify, on behalf of the MIDRMA Member States, two requests for the transfer of the amount of US\$ 200,000 by 1 June 2018; and US\$ 200,000 by 1 June 2021, from the MIDRMA account managed by ICAO HQ to the MIDRMA Bank account in Bahrain. Accordingly, the meeting agreed to the following Decision:

MIDRMA DECISION 16/2: REQUEST FOR THE TRANSFER OF USD 400,000 TO THE MIDRMA ACCOUNT IN BAHRAIN

That, the MIDRMA Board Chairperson is delegated the authority to request the transfer of the amount of US\$ 400,000 from the MIDRMA account managed by ICAO HQ to the MIDRMA Bank account in Bahrain as follows:

- a) US\$ 200,000 by 1 June 2020; and*
- b) US\$ 200,000 by 1 June 2021.*

REPORT ON AGENDA ITEM 4: RVSM MONITORING AND RELATED TECHNICAL ISSUES***Large Height Deviation (LHD) Reporting***

4.1 The subject was addressed in WP/11 and WP/12 presented by the MIDRMA. The meeting underlined that several FIRs with high volume of traffic continue to report NIL or very few LHDs, Category E only, which has a negative impact on the computed Targets Level of Safety (i.e.: not representative/realistic).

4.2 The meeting noted with concern that without the LHDs reports related to all categories mainly A, B, C, D, E, H, J and K, the MIDRMA will not be able to assess compliance with Safety Objective 2 (Overall risk of collision due all causes).

4.3 The meeting recalled that MIDANPIRG urged States to include the LHD reporting as part of their SMS framework, and to provide the MIDRMA with the reports related to occurrences and incidents through the LHD Online Reporting Tool.

4.4 Based on the above the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 16/1: REPORTING OF LHDS

That, in order to assess compliance with Safety Objective 2, the MIDRMA Member States be urged to:

- a) take necessary measures to ensure that LHDs (Categories A, B, C, D, E, H, J and K) are reported in timely manner to the MIDRMA using the LHD Online LHD Reporting Tool available on the MIDRMA website (<https://midrma.com/lhd/home/login>);*
- b) provide urgently, not later than **15 March 2020**, their reported LHDs at least from 1 August 2018 (related to the above LHD Categories) to the MIDRMA for the development of the MID RVSM Safety Monitoring Report – 2018 and to ensure that RVSM implementation continue to be safe in the MID Region; and*
- c) coordinate with MIDRMA, as required.*

4.5 The meeting urged States to verify their LHDs prior to submission through the Online LHD Reporting Tool to avoid the efforts spent on the analysis of false reports by concerned ATS Units.

4.6 The meeting recognized the need to raise the awareness with respect to the importance of the LHD Reports and their impact on the assessment of the safe implementation of RVSM in the MID Region. Accordingly, the meeting agreed that the MIDRMA in coordination with the MIDRMA Board Members to carry out LHD Reporting Campaign that would include workshops and the development and distribution of leaflets, brochures, posters, etc.

4.7 Based on the above the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 16/2: LHDS REPORTING CAMPAIGN

That, in order to raise the awareness with respect to the importance of the LHD Reports and their impact on the assessment of the safe implementation of RVSM in the MID Region, the MIDRMA in coordination with the MIDRMA Board Members to carry out LHD Reporting Campaign that would include workshops and the development and distribution of leaflets, brochures, posters, etc.

4.8 The meeting noted the high level of reported LHDs by Yemen. Accordingly, the meeting agreed that ICAO MID Office to address the issue with the concerned AFI States through the ICAO ESAF Office, in coordination with ARMA and MIDRMA.

4.9 The meeting agreed that States that do not report the required LHDs to the MIDRMA would be added to the list of air navigation deficiencies (decision to be taken by MSG/7).

4.10 The meeting recalled that a Safety Protocol had been opened for the case of high reported LHDs between Muscat and Mumbai. The meeting noted that the issue had not been resolved and that the MIDRMA and ICAO MID Office are in close coordination with the concerned States, MAAR and ICAO APAC Office to explore mitigation measures.

4.11 The meeting recalled that the MIDRMA Board/15 meeting agreed that the MIDRMA in coordination with the ICAO MID Office to develop a procedure for the processing of a Safety Protocol to be approved by the MIDRMA Chairman and presented for the MIDRMA Board/16 meeting for endorsement. In this respect the meeting reviewed and agreed to the procedure at **Appendix 4A**.

4.12 Based on the above the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 16/3: PROCEDURE FOR PROCESSING SAFETY PROTOCOL

That, the procedure for the processing of Safety Protocol at Appendix 4A is endorsed.

Height-Keeping Monitoring Requirements

4.13 The subject was addressed in WP/4, WP/5 and WP/6 presented by the Secretariat and MIDRMA, respectively. The meeting was apprised of the outcome of MIDANPIRG/17 and ATM SG/5 meetings related to MIDRMA.

4.14 The meeting emphasized that failure to respond to the required height monitoring requirements may jeopardize safety 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 EUR RMA, which is providing height monitoring results to the MIDRMA for any MID RVSM approved aircraft flying over their Height Monitoring Units (HMUs).

4.15 The meeting noted with appreciation that the MIDRMA managed to conduct GMU monitoring for **198** aircraft registered in the Middle East Region since MIDRMA Board/15 meeting. The MID Region achieved **98.9%** with known height monitoring results, which exceeds by **3.9%** the 95% performance target for height monitoring set by the MIDRMA Board/13 meeting. However, and since the validity dates are changing by time, this percentage declined to **94%** by end of December 2019. The MID Region Monitoring burden for the **1869** RVSM approved aircraft are **68** aircraft.

4.16 The meeting was apprised of the Height Monitoring Missions conducted by the MIDRMA for Iraq, Iran, Libya, Sudan and Yemen.

4.17 The meeting noted with appreciation the high level of support provided to the MIDRMA Team by the concerned personnel from Iraq, Iran, Libya, Sudan and Yemen. The meeting extended its gratitude to Jordan for authorizing and facilitating the conduct of the GMU monitoring mission within Amman FIR for aircraft from States where the MIDRMA could not carry out the missions.

4.18 The meeting noted that the MIDRMA submitted an official request to the FAA to renew the USA Department of Treasury - Office of Foreign Assets Control (OFAC) license that will expire on 29 February 2020 to allow the use of the EGMU machines for the monitoring of the Iranian RVSM approved aircraft. The meeting noted that ICAO will follow-up with FAA, as required.

4.19 The meeting noted that the total number of RVSM approved aircraft registered by the MIDRMA Member States reached **1869** aircraft. The MIDRMA is continuously monitoring the validity dates of height monitoring for all these aircraft and keep all Member States fully aware of the validity status through the Auto Online Minimum Monitoring Requirement software available on the MIDRMA

website (<https://midrma.com/en/monitoringResults>). The Auto Online MMR Tool enables 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 requirements for height-keeping performance. The MIDRMA is the only RMA using this kind of tool, which is linked to the MID RVSM approvals database constantly updated with the Member States approvals list.

4.20 Since January 2019, the MMR Tool has been upgraded to send automatic reminders on a monthly basis for all Member States to submit their updated RVSM approval lists. The Tool sends also monthly summary reports with the validity status of all the RVSM approved aircraft in the MID Region. These reminders helped all MIDRMA Airworthiness focal points to react before the height monitoring expiry dates and instruct airline operators to conduct height monitoring when necessary.

4.21 The Table below reflects the MID Region Monitoring status as of December 2019:

MID States	RVSM APPROVED A/C	HAVE RESULTS OR COVERED	NOT COVERED	NOT COVERED IN %	A/C MMR
Bahrain	57	56	1	2%	1
Egypt	153	135	18	12%	14
Iran	212	188	24	11%	4
Iraq	39	37	2	5%	2
Jordan	44	39	5	11%	4
Saudi Arabia	266	260	6	2%	4
Kuwait	61	51	10	16%	7
Lebanon	28	24	4	14%	2
Libya	28	26	2	7%	2
Oman	75	60	15	20%	7
Qatar	284	284	0	0%	0
Sudan	21	18	3	14%	3
Syria	14	11	3	21%	3
UAE	581	562	19	3%	10
Yemen	6	0	6	100%	5
TOTAL	1869	1751	118	6%	68

4.22 The meeting re-iterated MIDANPIRG Conclusion 17/6 below and urged States to continuously check and comply with their Monitoring requirements as published on the MIDRMA website <https://midrma.com/en/monitoringResults>. The meeting encouraged States to use the Auto Online MMR Tool that was developed to enable the Civil Aviation Authorities to check their MMR for each air operator under their responsibility and identify aircraft that are non-compliant with the ICAO Annex 6 requirements for height-keeping performance.

MIDANPIRG CONCLUSION 17/6: RVSM MINIMUM MONITORING REQUIREMENTS AND CONDITIONS

That, the MIDRMA Member States be urged to:

- a) take necessary measures to ensure their aircraft operators fully comply with ICAO Annex 6 provisions related to long-term height monitoring requirements, based on the MMR Tables;*
- b) comply with the MID RVSM MMR Conditions published in the MIDRMA website; and*
- c) withdraw the RVSM Approvals of aircraft not complying with the State MMR before 1 July 2019.*

4.23 The meeting thanked all Member States' focal points for their continuous follow-up to comply with the RVSM height monitoring, as per ICAO Annex 6 requirements.

Temporary RVSM Approval Procedure

4.24 The subject was addressed in WP/7 presented by the MIDRMA. The meeting noted that the ICAO provisions do not address the initial process of granting RVSM approval for new aircraft type not previously part of the operator fleet and there is no procedure to guide the responsible authority to follow. Accordingly, and due to the increased enquiries recently received from several airworthiness inspectors, the meeting agreed to the procedure, developed by the MIDRMA, on granting Temporary RVSM Approval to the concerned airline operators under certain conditions.

4.25 Based on the above the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 16/4: PROCEDURE FOR GRANTING Temporary RVSM APPROVAL

That, the Procedure for Granting Temporary RVSM Approval at Appendix 4B is endorsed.

Assessment of Non-RVSM Approved Aircraft operating in the MID Region

4.26 The subject was addressed in WP/8 presented by the MIDRMA. The meeting noted that the MIDRMA has been carrying out periodic checks of the approval status of operators and aircraft using the MID RVSM airspace.

4.27 The data is compared against the collective approvals database as received from all RMAs on a monthly basis, which is always updated to reflect the valid RVSM approvals only. Any of these operations for which an RVSM approval was not found will be separated on a list for further examination and verification.

4.28 The verification process includes cross-checks with late update of RVSM approvals by RMAs, typo mistakes in the traffic data, code-sharing and lease arrangements between airline operators which will keep aircraft as RVSM approved duplicated in two Countries at some time.

4.29 Once the verification process is completed and there is assurance that the finding is valid, the concerned State Airworthiness Authority will be contacted for clarification of the discrepancy and requested to reply with their findings and corrective action taken to resolve the issue.

4.30 Experience has shown that the primary systematic reason for failure to match operations and approvals is the delay in State notification of the approval status of some operators to the appropriate RMA. Thus, the importance of timely notification by States of operator approval status to RMAs is emphasized by these results.

4.31 The meeting reviewed the MIDRMA Bulletin of the Non-RVSM Approved aircraft operating within the ICAO MID Region (based on Bahrain traffic data).

4.32 The meeting noted that UAE is the only State providing the required data on monthly basis, which is used by the MIDRMA as the main source of scrutinizing the non-RVSM approved aircraft in the MID Region.

4.33 The meeting re-iterated MIDANPIRG Conclusion 17/7 and urged States to comply with its provisions:

MIDANPIRG CONCLUSION 17/7: MIDRMA BULLETIN OF NON-RVSM APPROVED AIRCRAFT

That,

- a) the MIDRMA post on the MIDRMA website and share with the MIDRMA Board Members and focal points the Bulletin of non-RVSM approved aircraft on monthly basis; and*
- b) States be encouraged to:*
 - i. develop a mechanism to identify the non-RVSM approved aircraft operating in the RVSM Airspace without compliance with Annex 6 provisions;*
 - ii. submit their RVSM traffic data including aircraft registrations to be used for the RVSM risk analysis; and*
 - iii. coordinate with the MIDRMA in case they are able to provide their RVSM traffic data on a monthly basis.*

4.34 The meeting noted that Bahrain, Iraq and Jordan would provide the MIDRMA with the FPL data on monthly basis.

Development of the MID RVSM Safety Monitoring Report (SMR) 2018

4.35 The subject was addressed in WP/9 presented by the MIDRMA. The meeting reviewed the draft version of the SMR 2018 at **Appendix 4C**, which demonstrates that only Safety Objectives 1 and 3 as set out by MIDANPIRG continue to be met.

4.36 The meeting noted with concern that for the first time the Safety Objective 2 could not be assessed due to the lack of LHDs reports related to LHD Categories A, B, C, D, H, J and K. Accordingly, the MIDRMA was not able to demonstrate that safety within the RVSM Airspace is maintained. The meeting noted that Beirut, Damascus and Tripoli FIRs were excluded from the SMR 2018 due to the non-provision of required data.

4.37 Based on the above, the meeting agreed that the MIDRMA to prepare a revised version of the MID RVSM SMR 2018 for presentation to the MSG/7 (Cairo, Egypt, 13-15 April 2020) for endorsement, providing that States provide the required LHDs reports by **15 March 2020**.

Development of the MID RVSM Safety Monitoring Report (SMR) 2019

4.38 The meeting noted that all States provided the Flight Plan/Traffic Data collected for the period **1 – 31 August 2018** for the development of the MID RVSM SMR 2019.

4.39 The meeting noted with concern that similar to the SMR 2018, the MIDRMA would not be able to assess Safety Objective 2 in case the States do not provide the LHDs reports related to LHD Categories A, B, C, D, E, H, J and K.

Development of the MID RVSM Safety Monitoring Report (SMR) 2020

4.40 It was reiterated that the required data must be submitted in the right format using the excel sheet designed for this purpose which is the only sheet recognized by the MID Risk Analysis Software (MIDRAS). Any data received in a different format, or in an excel sheet different from the one available on the MIDRMA website (www.midrma.com) will not be acceptable.

4.41 Based on the above, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 16/5: MID RVSM SMR 2020

That,

- a) *the FPL/traffic data for the period **1 – 31 July 2020** and LHD Reports for the period **1 July 2020 to 31 July 2021** be used for the development of the MID RVSM Safety Monitoring Report (SMR 2020);*
- b) *only the appropriate Traffic Data as per MIDRMA requirements shall be submitted; any corrupted traffic data will be rejected;*
- c) *the traffic data must be submitted to the MIDRMA before **31 August 2020**; and*
- d) *the final version of the MID RVSM SMR 2020 be ready for presentation to and endorsement by MIDANPIRG/18.*

MID Risk Analysis Software and MID Visualization and Simulation of Air Traffic Tool

4.42 The meeting recalled that MIDANPIRG/17 meeting through Conclusion 17/24 tasked the MIDRMA to conduct assessment of the MID Region airspace structure based on the expected traffic movement from 1 November to 31 December 2022, in order to identify the peak periods, hotspots, bottle necks, etc.

4.43 The meeting noted that the MIDRMA is able to carry out the required assessment for the RVSM airspace (FL290-FL410) using the MID Risk Analysis Software (MIDRAS). However, to assess the airspace beyond RVSM airspace, changes should be introduced to the MIDRAS, which might require allocation of additional funds to cover the cost.

4.44 The meeting agreed that the MIDRMA to check with the supplier and provide feedback on the cost if the Software would be extended to cover the airspace from FL150 to FL490 to identify the peak periods, hotspots, bottle necks and count the traffic on Entry/Exist Points of each FIR in the MID Region. It was highlighted that the Software would provide a clear picture on the distribution of traffic flows across the Region, which would be used to support also the planning and implementation of ATM contingency and ATFM measures in a more effective manner.

4.45 The meeting recalled that the MIDRMA was in the process of developing the MIDRMA Visualization and Simulation of Air Traffic Tool (MIDRMA VSAT), which could be used for pre and post implementation analysis for any airspace. The software has the capability to analyze the data for a certain period of time, type of crossing and within any flight levels block.

4.46 Based on the above, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 16/6: SOFTWARE TO COVER THE AIRSPACE FROM FL150 TO FL490

That,

- a) *the MIDRMA:*
 - i. *check with the MIDRAS supplier and provide feedback to ICAO MID Office, by **15 March 2020**, on the cost related to the development of a tool similar to the MIDRAS (to be developed using the current MIDRAS) covering the airspace from FL150 to FL490, to identify the peak periods, hotspots, bottlenecks and count the traffic on Entry/Exist Points of each MID FIR; and*

- ii. *provide feedback on the funds required to finalize the MIDRMA Visualization and Simulation of Air Traffic Tool (MIDRMA VSAT), which is the last phase of the MIDRAS; and*
- b) *MIDRMA Board Chairman to communicate to the Board Members the cost-benefit analysis associated with the development of the Software to seek their thoughts and formal approval on the allocation of required and source of funds.*

ADS-B Height Monitoring System (AHMS)

4.47 The subject was addressed in WP/13 presented by the MIDRMA. The meeting was apprised of the advantages and the challenges related to the use of ADS-B for height-keeping performance monitoring (ADS-B Height Monitoring System (AHMS)).

4.48 The meeting supported in principle the concept related to the use of ADS-B for height-keeping performance monitoring in the MID Region. However, the meeting requested the MIDRMA to conduct further studies and analysis and present them along with a draft AHMS Roadmap to the MIDRMA Board/17 for appropriate action.

4.49 The meeting agreed that the subject should be addressed also by the CNS SG from a technical point of view.

4.50 The meeting encouraged States that have already implemented ADS-B, to share their ADS-B data for height monitoring purposes, which would foster the testing process.

Performance Based Communication and Surveillance (PBCS)

4.51 The subject was addressed in WP/14 presented by the MIDRMA. The meeting recalled that the airspace users shall comply with RCP and RSP when operating within PBCS airspaces. The RMAs were requested to monitor compliance with the set out requirements and share information among each other's. The meeting agreed that PBCS is not a requirement for the MID Region. However, a process should be in place to ensure that the information related to the aircraft from MID Region operating into PBCS airspaces are compliant. The meeting agreed that the subject should be addressed also by the RASG-MID, ATM SG and CNS SG.

4.52 Based on the above, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 16/7: PERFORMANCE BASED COMMUNICATION AND SURVEILLANCE (PBCS)

That,

- a) *States provide the MIDRMA on monthly basis with the information related to the aircraft complying with PBCS requirements;*
- b) *the MIDRMA is authorized to coordinate and share information with other RMAs with respect to PBCS compliant aircraft and follow-up with MID States, as required;*
- c) *the MIDRMA functions and responsibilities be amended accordingly; and*
- d) *the PBCS be addressed by the RASG-MID, ATM SG and CNS SG for appropriate actions.*

4.53 Additional information on the implementation of PBCS within the North Atlantic Region is provided at **Appendix 4D**.

REPORT ON AGENDA ITEM 5: REVIEW AND UPDATE OF THE MIDRMA PROJECT ACTION PLAN/TIMELINES

5.1 The subject was addressed in WP/15 presented by the Secretariat. The meeting recalled that the MIDRMA Board, in each meeting, reviews the progress made in the achievement of the actions included in the Action Plan and proceeds to its update.

5.2 Taking into consideration that other mechanisms are in place to ensure and monitor the implementation of MIDRMA Board meetings' outcome, the meeting agreed to cease the use of the Action Plan.

REPORT ON AGENDA ITEM 6: FUTURE WORK PROGRAMME

6.1 The meeting recalled that the MIDRMA Board meetings should be hosted by the MIDRMA Member States on rotation basis.

6.2 The meeting noted that the MIDRMA Board meetings have not yet been hosted by Qatar, Iraq, Syria and Yemen.

6.3 The meeting agreed that the ICAO MID Regional Office to coordinate with the MIDRMA Board Chairperson, MIDRMA and concerned States the hosting of the MIDRMA Board/17 meeting during the first quarter of 2022. Otherwise, the venue will be the ICAO MID Office (Cairo, Egypt).

REPORT ON AGENDA ITEM 7: ANY OTHER BUSINESS

7.1 The meeting reviewed and updated the list of MIDRMA Board Members, Alternates and Focal Points (ATC and Airworthiness/Flight Operations) as at **Appendix 7A**.

APPENDICES

FOLLOW-UP ACTION PLAN ON MIDANPIRG/17 CONCLUSIONS AND DECISIONS

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 17/2	<p>ANALYSIS OF LHDs</p> <p>That, as part of the MIDRMA Scrutiny Group activities, the MIDRMA conduct bilateral teleconferences with the MIDRMA ATC focal points to analyze the relevant LHDs and present a consolidated report to the MIDRMA Board or the ATM SG meetings for validation in order to finalize the SMR for endorsement by MIDANPIRG.</p>	<p>To Facilitate the analysis and validation of LHDs</p>	<p>New means to analysis LHDs</p>	<p>MIDANPIRG/17</p>	<p>Apr. 2019</p>	<p>Completed</p>
C.17/3	<p>PROCEDURE FOR THE FOLLOW-UP WITH STATES AND THE ISSUANCE OF WARNING RELATED TO RVSM APPROVED AIRCRAFT WITHOUT VALID HEIGHT-KEEPING PERFORMANCE MONITORING RESULTS</p> <p>That, the Procedure at Appendix 4C for the follow-up with States and the issuance of warning related to RVSM approved aircraft without valid height-keeping performance monitoring results, is endorsed.</p>	<p>aircraft without valid height-keeping performance monitoring results</p>	<p>Procedure for follow-up on issuance of warning</p>	<p>MIDANPIRG/17</p>	<p>Apr. 2019</p>	<p>Completed</p>

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 17/4	<p>MID RVSM SAFETY MONITORING REPORT CYCLE</p> <p>That, starting from 2018, the MID RVSM Safety Monitoring Report should be issued on annual basis (12 months) to facilitate tracking the risk trend of RVSM implementation in the MID Region.</p>	Change the SMR Cycle	Change the SMR Cycle to one year	MIDANPIRG	Apr. 2019	Completed
C. 17/5	<p>MID RVSM SMR 2019</p> <p>That,</p> <p>a) the FPL/traffic data for the period 1 – 31 August 2019 be used for the development of the MID RVSM Safety Monitoring Report (SMR 2019);</p> <p>b) only the appropriate Flight Data form available on the MIDRMA website (www.midrma.com) should be used for the provision of FPL/traffic data to the MIDRMA; and</p> <p>c) the final version of the MID RVSM SMR 2019 be ready for presentation to and endorsement by MIDANPIRG/18 or ATM SG/6 meetings.</p>	To develop the MID SMR 2019	State Letter Traffic Data	ICAO States	Aug 2019 30 Sep. 2019	<p>Actioned</p> <p>SL AN 6/5.10.15A-19/230 dated 25 July 2019</p> <p>Data Provided Issues with LHDs Reports</p>
C. 17/6	<p>RVSM MINIMUM MONITORING REQUIREMENTS AND CONDITIONS</p> <p>That, the MIDRMA Member States be urged to:</p> <p>a) take necessary measures to ensure their aircraft operators fully comply with ICAO Annex 6 provisions related to long-term height monitoring requirements, based on the MMR Tables;</p> <p>b) comply with the MID RVSM MMR Conditions published in the MIDRMA website; and</p> <p>c) withdraw the RVSM Approvals of aircraft not complying with the State MMR before 1 July 2019.</p>	States to comply with Annex 6 6 provisions related to long-term height monitoring requirements	State Letter	ICAO	Jul. 2019	<p>Actioned (to be closed)</p> <p>SL AN 6/5.10.15A-19/199 dated 1 July 2019</p>

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 17/7	<p>MIDRMA BULLETIN OF NON-RVSM APPROVED AIRCRAFT</p> <p>That,</p> <p>a) the MIDRMA post on the MIDRMA website and share with the MIDRMA Board Members and focal points the Bulletin of non-RVSM approved aircraft on monthly basis; and</p> <p>b) States be encouraged to:</p> <p>i. develop a mechanism to identify the non-RVSM approved aircraft operating in the RVSM Airspace without compliance with Annex 6 provisions;</p> <p>ii. submit their RVSM traffic data including aircraft registrations to be used for the RVSM risk analysis; and</p> <p>iii. coordinate with the MIDRMA in case they are able to provide their RVSM traffic data on a monthly basis.</p>	<p>To identify the non-RVSM approved aircraft operating in the RVSM Airspace without compliance with Annex 6 provisions and that the MIDRMA to share the Bulletin of non-RVSM approved aircraft on monthly basis</p>	State Letter	ICAO	Jul 2019	<p>Actioned (to be closed)</p> <p>SL AN 6/5.10.15A-19/199 dated 1 July 2019</p>
C. 17/8	<p>MID RVSM SAFETY MONITORING REPORT (SMR) 2017</p> <p>That, the MID RVSM Safety Monitoring Report (SMR) 2017 is endorsed.</p>	MID SMR 2017	Endorsement of MID SMR 2017	MIDANPIRG	Apr. 2019	Completed
C. 17/9	<p>THIRD EDITION OF THE MID REGION AIR NAVIGATION REPORT (2018)</p> <p>That, the Third Edition of the MID Region Air Navigation Report (2018) is endorsed and be posted by the ICAO MID Office on the website.</p>	Third Edition of the MID Region Air Navigation Report	Endorsement of MID SMR 2017	MIDANPIRG	Apr. 2019	Completed

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 17/10	<p>MID REGION AIR NAVIGATION REPORT (2019)</p> <p>That,</p> <p>a) States be urged to provide the ICAO MID Office, with relevant data necessary for the development of the Fourth Edition of the MID Region Air Navigation Report (2019), by 1 December 2019; and</p> <p>b) the MID Region Air Navigation Report (2019) be presented to the MSG/7 for endorsement.</p>	<p>Monitoring and Reporting of ASBU implementation in the MID Region</p>	<p>State Letter</p> <p>Data for AN Report 2017</p> <p>Air Navigation Report (2019)</p>	<p>ICAO</p> <p>States</p> <p>MSG/7</p>	<p>Dec. 2019</p> <p>Apr. 2019</p>	<p>Ongoing</p>
C. 17/12	<p>PUBLICATION OF FIR BOUNDARY POINTS</p> <p>That, States be urged to:</p> <p>a) take into consideration the Guidelines at Appendix 6.2B for the description of their FIR boundaries;</p> <p>b) review the Table ATM I-1 MID Region Flight Information Regions (FIRs)/Upper Information Regions (UIRs) at Appendix 6.2C and coordinate with neighboring States, as appropriate, the definition of common boundaries; and</p> <p>c) provide the ICAO MID Regional Office with their updates and comments before 15 August 2019.</p>	<p>To populate the MID ANP Table ATM I-1</p>	<p>State Letter</p> <p>Feedback from States</p>	<p>ICAO</p> <p>States</p>	<p>Jul 2019</p> <p>Aug 2019</p>	<p>Actioned</p> <p>SL AN 6/10-19/206 dated 2 July 2019</p>
C. 17/18	<p>MID RDWG AND MID REGION ATS ROUTE CATALOGUE</p> <p>That, States be urged to:</p> <p>a) use the MID Route Development Working Group (MID RDWG) as the main platform to facilitate bilateral and multilateral coordination related to the improvement of the ATS Route Network and airspace management in the MID Region; and</p> <p>b) review the MID Region ATS Route Catalogue and take actions related to the implementation of the ATS proposals relevant to their FIRs.</p>	<p>To use the RDWG as a platform for ATS route improvements</p>	<p>State Letter</p>	<p>ICAO</p>	<p>Jul 2019</p>	<p>Actioned</p> <p>SL AN 6/5.8-19/205 dated 2 July 2019</p>

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 17/19	<p>SAFETY ASSESSMENTS DUE TO CONTINGENCY WITH IMPACT ON ATS ROUTE NETWORK</p> <p>That,</p> <p>a) Bahrain, Iran, Oman, Qatar and UAE be urged to provide the outcomes of their safety assessment of the contingency routes and/or changes to the ATS Routes Network to the ICAO MID Office by 15 June 2019, as well as the relevant data for the analysis of the disruption and its impact to the network;</p> <p>b) the ATM SG/5, with the MIDRMA support, carry out analyses of the data/inputs received form States to identify the challenges and agree on necessary measures to mitigate any safety risk; and</p> <p>c) conduct a lessons-learned session during the ATM SG/5 meeting with the participation of affected stakeholders reviewing the impact of the disruption to the network, allowing all stakeholders to present their views and feedback.</p>	To assess the impact on safety during contingency	State Letter	ICAO	Jul 2019	<p>Actioned</p> <p>SL AN 6/1.2.1-19/200 dated 2 Jul 2019</p> <p>Bullet b) and c) were not implemented due to non-provision of the safety assessment by all States as per bullet a).</p>
C. 17/20	<p>ENHANCED FRAMEWORK FOR THE MID CCT</p> <p>That,</p> <p>a) States intending to restrict traffic or close all or part of their airspace be urged to consider adequate time before affecting the required change to minimize traffic disruption;</p> <p>b) States, under the framework of the CCT, in coordination with airspace users, agree on interim guidance with a progressive set of flow measures to address the current Air Traffic Flow disruption caused by the closure of Pakistan airspace; and</p>	To enhance the CCT framework	Interim guidance	ATM SG	Dec 2019	<p>Ongoing</p> <p>This will be part of the work of the MID ATM Contingency Plan Action Group that should prepare a draft for the ATM SG/6 meeting</p>

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
	<p>c) the ATM SG/5:</p> <ul style="list-style-type: none"> i. develop guidelines on how extended disruptions in the network are to be managed in a balanced manner; and ii. enhance the notification and coordination process of contingency operations in the frame of the MID CCT, particularly for: <ul style="list-style-type: none"> - consistency of interrelated contingency information promulgated by more than one State; and - agreement on recovery plan for each contingency situation. 					
C. 17/21	<p>MID REGION GUIDANCE MATERIAL ON CIVIL/MILITARY COOPERATION AND IMPLEMENTATION OF FUA CONCEPT</p> <p>That, the ATM SG/5 develop draft guidance material related to Civil/Military Cooperation and implementation of FUA Concept, including State aircraft operations under Due Regard in particular over the high seas, to be coordinated with States before presentation to MIDANPIRG for endorsement.</p>	<p>Guidance material for CIV/MIL Cooperation, FUA and due regard over high seas</p>	<p>Guidance material</p>	<p>ATM SG/5</p>	<p>Dec 2019</p>	<p>Ongoing</p> <p>An Action Group composed of experts from Bahrain, Egypt, Iraq, Jordan, Oman, Qatar, Saudi Arabia, UAE and ICAO was established by the ATM SG/5 meeting through Decision 5/3 to draft, by 30 April 2020, the guidance material</p>

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 17/22	<p>MULTI-NODAL ATFM SOLUTION FOR THE MID REGION</p> <p>That,</p> <p>a) the Multi-Nodal Concept be implemented in the MID Region, as a first phase, which would be evolved to a centralized ATFM system in the future; and</p> <p>b) the ATFM Task Force develop the ATFM Concept of Operations for MID Region, accordingly, including the minimum flight data that should be exchanged by ATFM Units.</p>	ATFM Multi-Nodal Concept	ATFM Multi-Nodal Concept	MIDANPIRG	Apr. 2019	Completed
C. 17/23	<p>ACTION PLAN FOR THE IMPLEMENTATION OF ATFM IN THE MID REGION</p> <p>That,</p> <p>a) the Action Plan for the implementation of ATFM in the MID Region at Appendix 6.2J is endorsed; and</p> <p>b) States and Stakeholders to support the work of the ATFM Task Force and implement the actions relevant to them</p>	the Action Plan for the implementation of ATFM	the Action Plan for the implementation of ATFM	MIDANPIRG	Apr. 2019	Completed
C. 17/24	<p>ASSESSMENT OF THE MID REGION RVSM AIRSPACE STRUCTURE BASED ON THE EXPECTED TRAFFIC MOVEMENT FROM 1 NOVEMBER TO 31 DECEMBER 2022</p> <p>That, the MIDRMA assess the MID Region RVSM airspace structure based on the expected traffic movement during FWC2022 to identify peak periods, Hotspots, Bottlenecks, etc. based on the FPL/traffic data provided by Qatar.</p>	To assess the impact of the forecast increase of traffic due to FWC2022	Assessment	Qatar MIDRMA	28 Feb 2020 30 Apr 2020	Ongoing MIDRMA Board/16 agreed to carry out the assessment for the RVSM Airspace only to be completed by 30 Apr 2020. Lower Airspace require MIDRMA Board decision in case funds are required for the Software

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
C. 17/25	<p>AMENDMENT OF THE MID REGION HIGH LEVEL AIRSPACE CONCEPT (MID DOC 004)</p> <p>That, the ATM SG/5 review and prepare a revised version of the MID Region High level Airspace Concept (MID Doc 004) taking into consideration the latest developments, in particular the outcome of MSG/6 and MIDANPIRG/16 and 17 meetings, for presentation to MIDANPIRG/18.</p>	Revised version of the MID Region High level Airspace Concept	Draft Revised version of the MID Region High level Airspace Concept	ATM SG/5	Dec 2019	<p>Ongoing</p> <p>A revised draft version was developed by the ATM SG/5 meeting that needs further improvements in coordination between ATM SG Secretariat and the States ATM Focal Point for presentation to ATM SG/6 or MIDANPIRG/18.</p>
C. 17/30	<p>UPDATE OF THE GUIDANCE FOR AIDC/OLDI IMPLEMENTATION IN THE MID REGION (MID DOC 006)</p> <p>That, the ICAO MID Doc 006 - Guidance for AIDC/OLDI Implementation in the MID Region, Edition April 2019 is endorsed and be posted by the ICAO MID Office on the website.</p>	Enhanced version of MID Doc 006	Endorsement of MID Doc 006 Edition April 2019	MIDANPIRG/17	Apr 2019	<p>Completed</p> <p>Endorsed by the MIDANPIRG/17 & RASG-MID/7 meeting and posted on the ICAO MID website.</p>

No.	CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
D. 17/45	<p>CHAIRMANSHIP OF MIDANPIRG AND SUBSIDIARY BODIES</p> <p>That, the MIDANPIRG Procedural Handbook be amended to reflect the following:</p> <p>“In case of absence of the Chairperson for two consecutive meetings, unless otherwise determined by special circumstances, the election of Chairperson should be included in the agenda of the second meeting for the election of a new Chairperson, unless otherwise decided by the meeting.”</p>	Amendment of MIDANPIRG Procedural Handbook	Endorsement of MIDANPIRG Procedural Handbook Edition April 2019	MIDANPIRG/17	Apr 2019	Completed
D. 17/46	<p>NEW EDITION OF THE MIDANPIRG PROCEDURAL HANDBOOK</p> <p>That, the Secretariat consolidate a new Edition of the MIDANPIRG Procedural Handbook, for review by the MSG/7 meeting before the formal endorsement by the MIDANPIRG/18 meeting.</p>	Amendment of MIDANPIRG Procedural Handbook	Endorsement of MIDANPIRG Procedural Handbook Edition April 2019	MIDANPIRG/17	Apr 2019	Completed

MIDRMA BOARD CURRENT DRAFT CONCLUSIONS AND DECISIONS

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE / TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
<p>MIDRMA CONCLUSION 15/1: PAYMENT OF ARREARS TO THE MIDRMA PROJECT</p> <p><i>That, Iran, Kuwait, Lebanon, Syria and Yemen be urged to pay their arrears to the MIDRMA Project prior to 15 April 2018.</i></p>	<p>Payment of arrears</p>	<p>Payment of Arrears</p>	<p>Iran, Kuwait, Lebanon, Syria Yemen</p>	<p>Apr 2018</p>	<p>Completed</p> <p>Only Kuwait paid. MIDRMA Board/16 agreed to MIDRMA Conclusion 16/1 urging States, that have not yet done so, to pay the arrears by 30 March 2020</p>
<p>MIDRMA CONCLUSION 15/2: PAYMENT OF THE 2018 CONTRIBUTIONS</p> <p><i>That, States, that have not yet done so, pay their 2018 contributions to the MIDRMA Project prior to 30 March 2018, based on the invoices issued by ICAO TCB on 19 December 2017.</i></p>	<p>Payment of 2018 contributions</p>	<p>Payment of 2018 contributions</p>	<p>All States</p>		<p>Completed (To be closed)</p> <p>MIDRMA Board/16 agreed to MIDRMA Conclusion 16/1 urging States, that have not yet done so, to pay the arrears by 30 March 2020</p>


<p>MIDRMA DECISION 15/3: REQUEST FOR THE TRANSFER OF USD 400,000 TO THE MIDRMA ACCOUNT IN BAHRAIN</p> <p><i>That, the MIDRMA Board Chairperson is delegated the authority to request the transfer of the amount of US\$ 400,000 from the MIDRMA account managed by ICAO HQ to the MIDRMA Bank account in Bahrain as follows:</i></p> <p><i>a) US\$ 200,000 by 1 April 2018; and</i></p> <p><i>b) US\$ 200,000 by 1 April 2019.</i></p>	<p>Transfer of funds to MIDRMA bank account in Bahrain</p>	<p>Request Letters</p> <p>Transfer Funds</p>	<p>MIDRMA</p> <p>ICAO TCB</p>	<p>Mar 2018 Mar 2019</p> <p>Apr 2018 Apr 2019</p>	<p>Completed</p> <p>1. The MIDRMA Letter of Request for transfer of USD 200,000 Dated 15 April 2018-Credited on 10 May 2018.</p> <p>2. The MIDRMA Letter of Request for transfer of USD 200,000 Dated 15 April 2018-Credited on 08 May 2019</p>
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**MIDRMA FINANCIAL STATUS OF EXPENDITURE POSITION
AS OF 31 December 2018**

S#	Description	Expenses USD
1	MIDRMA Manpower;	
1.1	Cost of 3 MIDRMA staff assigned for management & day to day operational tasks.	\$186,691.01
1.2	MIDRMA Staff One Year Health Insurance 10/12/2018 to 09/12/2019	\$10,694.96
1.3	MIDRMA Staff One Year travel insurance 13/04/2018 to 12/04/2019.	\$1,061.01
2	Computer Hardware & Software	
2.1	Nod32 Internet Security workstation Anti Viruses for one year, Annual maintenance of CMS & management module including technical support & hosting for the period from Feb2018 till Jan 2019.	\$4,320.95
	Purchasing (2) Enhanced2 GPS Monitoring Unit (E2GMU) Chargers with G-Type Plug, (2) E2GMU Chargers, (4) E2GMU Cable Sets.	\$3,238.73
2.2	Purchase of one Xerox Color Multifunction Printer & One Shredder Machine from Xerox Surface Book 2 laptops, One Year License Office 365 MS Office 2016 for 5 Pcs, SDK U/DUALF/DRV 128+16+32 GB & HDD BASIC 3TB USB3 and HDMI high speed cable.	\$11,087.53
3	Duty Travel;	
3.1	MIDRMA staff duty travel expense allowance (2x5 Days) and Air Tickets for attending Fifteen Meeting of the Middle East Regional Monitoring Agency Board (MIDRMA Board/15), in Muscat Oman 29 - 31 January 2018.	\$6,180.37
3.2	ICAO 3 staff duty travel expense allowance (2x5 Days), 3 Business Air Tickets and hotel accommodations for attending Fifteen Meeting of the Middle East Regional Monitoring Agency Board (MIDRMA Board/15), in Muscat Oman 29 - 31 January 2018 Paid from IDRMA budget for the following ICAO staff; Mr. Mohammed Smaoui, Mr. Elie Khoury and Ms. Dina Al Karimy	\$8,894.50
3.3	MIDRMA staff duty travel expense allowance (2x7 Days) and Air Tickets for attending Fourth Meeting of the MIDANPIRG ATM Sub-Group (ATM SG/4) and Third Meeting of the Advanced Inter-Regional ATS Route Development Task Force (AIRARD TF/3) in Jordan/Amman from 29th April to 03rd May 2018.	\$9,082.23
3.4	MIDRMA staff duty travel expense allowance (2x7 Days) and Air Tickets for attending First Meeting of the MIDANPIRG Air Traffic Flow Management Task Force and First Meeting of the MIDANPIRG World Cup 2022 Task Force (Muscat, Oman, 23 - 27 September 2018).	\$7,893.90
4	Miscellaneous;	
4.1	MIDRMA stationers, FAA ASE laptop mission carry bag + EGMU tablets bag, MIDRMA P.O.BOX rent for year 2018	\$784.68
4.2	DHL Shipment Charges for sending RVSM Height Monitoring Certificates to member States and others related issues as mentioned in the attached DHL Invoices.	\$1,411.64
Total Expenses of Year as of 31/12/2018		\$251,341.51

NET INCOME FROM GMU HEIGHT MONITORING FOR YEAR 2018

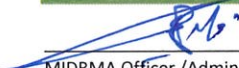
\$302,374.59



MIDRMA Officer /Admin
Date: 31/12/2018


MIDRMA Board Chairman
Date: 31/12/2018

MIDRMA FINANCIAL STATUS OF EXPENDITURE POSITION
AS OF 31 December 2019

S#	Description	Expenses USD
1	MIDRMA Manpower;	
1.1	Cost of 3 MIDRMA staff assigned for management & day to day operational tasks.	\$192,552.91
1.2	MIDRMA Staff One Year Health Insurance 10/12/2019 to 09/12/2020	\$10,666.67
1.3	MIDRMA Staff One Year travel insurance 13/04/2019 to 12/04/2020.	\$1,058.20
2	Computer Hardware & Software	
2.1	Purchase of one HP PAV Laptop for MIDRMA Secretary / Programmer for software development. MIDRMA Xerox Printer Consumable. Two Sandisk SSD Storage Harddisk.	\$2,968.25
2.2	(1). 25% last payment (MIDRMA Web site Revamp) and LHD Module Upgrade - (2). MIDRMA VPS Cloud Hosting - (3). Annual Maintenance - (4). Website Update Jan.2019.	\$3,640.21
2.3	Renewal of MIDRMA WEB site security SSL Certificate including Set up and installation from (May 2019 - May 2020). MIDRMA Manager Business Card - 350gsm art glossy - 4x4 pantone printing - Infovillage invoice no 3918/19 dated 10/08/2019 & Website update for July 2019 for LHD users report	\$907.16
2.3	On line software one year subscription software - cost 1- On line Admin Flight Radar 24 used to help analysis the SMR states traffic data. 2- Parallel Desktop for Mac Pro Edition Upgrade electronic for running windows apps on OS system.	\$653.84
3	Duty Travel;	
3.1	MIDRMA staff duty travel expense allowance (2x6 Days) and Air Tickets for attending Seventeenth Meeting of the Air Navigation Planning and Implementation Regional Group (MIDANPIRG/17) and Seven Meeting of the Regional Aviation Safety Group-Middle East (RASG-MID/7) (Cairo, Egypt, 15- 18 April 2019).	\$8,700.27
3.2	MIDRMA staff duty travel expense allowance (2x7 Days) and Air Tickets for attending the Seventh Meeting of the ICAO APANPIRG Air Traffic Management Sub-Group (ATM/SG7) - Bangkok Thailand, 05 - 09 August 2019.	\$11,893.90
3.3	MIDRMA staff duty travel expense allowance (2x6 Days) and Air Tickets for attending the Fifth meeting of the MIDANPIRG Air Traffic Management Sub-Group (ATM SG/5) (Cairo, Egypt, 8 - 11 September 2019)	\$9,442.97
3.4	Due to an foreseen circumstance the MIDRMA team was unable to attend the Fourteenth RMA Coordination Group Meeting, in Las Palmas, Gran Canaria, Spain from 17 to 21 June 2019. This payment was for the cancelation of the prepared requirements (Air tickets, Entry VISA and air tickets cancelation charges) .	\$1,361.54
4	Miscellaneous;	
4.1	1- Armors of excellence for 6 (Bahrain, Iraq, Kuwait, Oman, Sudai Arabia & Jordan) ICAO MIDRMA Memeber States that have achieved 98% of their MMR, prepared by MIDRMA and Handed over to ICAO in MIDNAPIRG/17 (14-18 April 2019 - Cairo). 2- MIDRMA Appreciation Gifts for Iraq CAA Airworthiness inspectors and their management for assisting the MIDRMA Monitoring team with all Iraqi registered operators to achieve their MMR target. 3- DHL Invoice payment for Invoice No. BAH0000291660 BD 21.85	\$894.30
4.2	1- MIDRMA Printer fixing the scanner and Wi-Fi problems. 2- DHL RVMS certificates shipment.	\$204.77
4.3	1- Two set RVSM EGMU Missions Carry bags MID: 006161180001 (Model;463518 x2 & 467713 x2). 2- Airport Baggage Wrapping for EGMU Equipment paid by admin for the period from Jan till Sep 2019 & Iran VISA	\$3,710.60
Total Expenses of Year as of 31/12/2019		\$248,655.59
NET INCOME FROM GMU HEIGHT MONITORING FOR YEAR 2019		\$114,412.00


MIDRMA Officer /Admin
Date: 31/12/2019


MIDRMA Board Chairman
Date: 31/12/2019

MIDRMA PRELIMINARY BUDGET ESTIMATION FOR NEXT CYCLE Year (2020 & 2021)

S#	Budget Items	Budget Estimation - USD	
		2020	2021
1	MIDRMA Manpower; 3 Staff (5% Salary Increase)	\$202,180.55	\$212,289.57
	1.1 Staff Health 3 Staff	\$16,836.69	\$16,836.69
	1.2 Travel Insurance 3 Staff	\$924.61	\$990.19
	1. Total	\$219,941.85	\$230,116.45
2	Computer Hardware;		
	2.1 Replacing MIDRMA Server due to lifespan	\$5,722.55	
	2.2 Replacing 3 workstation due to lifespan	\$3,968.25	
	2.3 Enhanced EGMU Monitroing Unit + tool kit		\$30,000.00
3	Computer Software;		
	3.1 MIDRMA server and workstation operating system	\$1,756.29	
	3.2 Upgrad MIDRMA MIDRAS Analysis Software		\$24,595.24
	2 & 3 Total	\$11,447.09	\$54,595.24
4	Duty Travel; (ICAO, RMAs Meeting)		
	4.1 MIDRMA Workshop for CARC ATC & (Third ATFM Task Force + FIFA World Cup 2022 Task Force) & MIDRMA Board Meeting /16	\$32,020.85	\$31,368.85
	4.2 ICAO MIDANPRIG MEETING		
	4.4 RMACG		
	4.5 ICAO ATM SG		
	4. Total	\$32,020.85	\$31,368.85
5	Training;		
	5.1 MIDRAS new features and factory test		\$15,873.02
	5.1 MIDRAS FIRs traffic data merging flow continuity		
	5.2 ADS-B data filtering and data extracting software	\$15,873.02	
	5.3 ASE data analysis software for ADS-B		
	5. Total	\$15,873.02	\$15,873.02
6	Miscellaneous;	\$5,291.01	\$5,291.01
	Estimated Total	\$284,573.82	\$337,244.57

ESTIMATED INCOME FROM EGMU HEIGHT MONINTORING	\$239,000.00	\$292,592.59
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Status of States' Contributions to the MIDRMA Project
(As of 16 January 2020)

Note. Currency in US Dollars

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Bahrain	Paid 30,000	Paid 20,000	Paid 30,000	Paid 30,000	Paid 30,000	Paid 29,978 27 Oct 11	Paid 30,000 29 Aug 12	Paid 30,000 15 Apr 13	Paid 29,975 6 May 15	Paid 29,975 13 May 15	Paid 30,000 18 Feb 16	Paid 30,000 16 May 17	Paid 29,975 12 Mar 18	Paid 29,975 13 Jan 2020	
Egypt	Paid 30,000	Paid 20,000	Paid 30,000	Paid 30,000	Paid 30,000	Paid 29,960 9 Sep 10	Paid 29,960 17 Jan 12	Paid 29,983 30 Jan 13	Paid 29,940 8 Apr 14	Paid 29,940 24 Feb 15	Paid 29,935 24 Dec 15	Paid 29,935 2 Jun 17	Paid 29,935 16 Jan 18	Paid 29,965	
Iran	Paid 30,000	Paid 20,000	Paid 30,000	Paid 30,000	Paid 30,000	Paid 29,946 27 Jul 13	Paid 29,935 27 Jul 13	Paid 89,965 4 Apr 16			Paid 29,960 12 May 16	Paid* 29,960 10 Mar 17 not received	Not Paid 30,000	Not Paid 30,000	
Iraq	N/A	N/A	N/A	N/A	N/A	Paid 10,000 on 16 Sep 11	Paid 10,000 on 5 Jul 12	Paid 10,000 5 Sep 13	Paid 10,000 22 Sep 14	Paid 10,000 23 Apr 15	Paid 10,000 1 Sep 16	Paid 10,000 20 Jun 17	Paid 10,000 20 Aug 18	Not Paid 10,000	
Jordan	Paid 30,000	N/A	Paid 1,250	Paid 10,000	Paid 10,000	Paid 10,000 on 10 Aug 10	Paid 10,000 on 28 Nov 11	Paid 10,000 04 Dec 12	Paid 9,924 4 Aug 14	Paid 9,924 3 Feb 15	Paid 9,924 11 Dec 15	Paid 10,000 19 May 17	Paid 9,921 16 Mar 18	Paid 9,984.93 6 Dec 2019	
Kuwait	Paid 30,000	N/A	Paid 1,250	Paid 10,000	Paid 10,000	Paid 10,000 on 27 Sep 10	Paid 9,849 on 21 Feb 12	Paid 10,000 20 Mar 13	Paid 10,000 5 May 14	Paid 10,000 12 Mar 15	Not Paid 10,000	Paid 10,000 28 Jul 17	Paid 10,000 14 Feb 18	Not Paid 10,000	
Lebanon	Paid 30,000	N/A	Paid 1,250	Paid 10,000	Paid 10,000	Paid 10,000 on 4 Feb 11	Paid 9,960 18 Dec 12	Paid 9,960 10 May 13	Paid 10,000 25 Jul 14	Paid 9,970 15 Dec 15	Paid 9,970 18 Oct 16	Paid 9,915 30 Jul 18	Not Paid 10,000	Not Paid 10,000	
Libya	Libya didn't sign the MIDRMA MOA yet.														
Oman	Paid 30,000	Paid 20,000	Paid 30,000	Paid 30,000	Paid 30,000	Paid 30,000 13 Sep 11	Paid 30,000 11 Jan 12	Paid 30,000 28 Feb 13	Paid 30,000 14 Mar 14	Paid 30,000 16 Dec 15	Paid 30,000 9 Mar 16	Paid 30,000 27 Apr 17	Paid 30,000 12 Feb 18	Paid 30,000 16 Dec 2019	
Qatar	Qatar joined the MIDRMA on 28 April 2015										Paid 9,978 19 Nov 15	Paid 9,970 10 Apr 17	Paid 9,978 20 Feb 18	Paid 10,000 7 Oct 2019	
Saudi Arabia	Paid 30,000	Paid 20,000	Paid 30,000	Paid 30,000	Paid 30,000	Paid 30,000 4 Mar 11	Paid 30,000 12 Jan 12	Paid 30,000 13 Mar 13	Paid 30,000 21 May 14	Paid 30,000 21 May 15	Paid 30,000 13 Apr 16	Paid 30,000 16 June 17	Not Paid 30,000	Paid 30,000 27 Nov 2019	
Sudan	Sudan joined the MIDRMA on 26 May 2014									Paid 9,607 17 Feb 15	Paid 9,278 10 Nov 15	Paid 10,000 16 May 17	Paid 9,863 2 Mar 18	Not Paid 10,000	
Syria^(*)	Paid 30,000	N/A	Paid 1,250	Paid (US\$ 1,250 + 42,789 +11,862+10,374 +7,778+9,970) = 84,023								Not Paid 10,000	Not Paid 10,000	Not Paid 10,000	
UAE	Exempted from payment up-to end of 2015										Paid 29,933 26 Apr 16	Paid 29,933 26 Apr 17	Paid 29,931 26 Feb 18	Paid 29,931 9 Oct 2019	
Yemen	Paid 30,000	N/A	Paid 1,250	Paid 10,000	Paid 10,000	Paid 10,000 on 17Aug10	Paid 9,975 on 17Apr12	Paid 19,973 for 2 years 26 Mar 15		Paid 9,987 26 Mar 15	Not Paid 10,000	Not Paid 10,000	Not Paid 10,000	Not Paid 10,000	

MID RVSM Safety Protocol Procedure

- 1- MIDRMA presents evidence concerning the safety case which required immediate attention consisting of the following:
 - a) Valid LHD reports including all archived reports for the same case, and or
 - b) Overall Operational Risk results.
- 2- Name the responsible ATCUs to overcome the risk effecting RVSM implementation.
- 3- Effects of the occurrence to RVSM implementation.
- 4- Review and evaluate all the above and agree in opening the MID RVSM Safety Protocol.
- 5- Decide a time frame and a working schedule to present a plan for closing the MID RVSM Safety Protocol.
- 6- MIDRMA oversees all concerned parties responsible for closing the MID RVSM Safety Protocol and shall keep them informed of their success/failure in meeting the time frame or complying with the working schedule.
- 7- MIDRMA shall inform ICAO MID Office and MIDRMA Board Chairman with the progress of closing of the MID RVSM Safety Protocol whenever it is deemed necessary.
- 8- Closing the MID RVSM Safety Protocol must be approved by MIDRMA after consulting the MIDRMA Board Chairman and the ICAO MID Office and shall reflect the closing process and the enhancement achieved in the MID RVSM Safety Monitoring Report.

TEMPORARY RVSM APPROVAL PROCEDURE

The Procedure below is for the issuance of Temporary RVSM approval by MIDRMA Member States Civil Aviation Airworthiness Authorities:

1. The responsible Airworthiness Authority must issue Airworthiness Approval first before granting the Temporary RVSM approval for the concerned operator aircraft type.
2. The responsible Airworthiness Authority must make sure the temporary RVSM approval is granted for new aircraft type not previously operated by the airline operator, or for the remaining number of the same aircraft type if already approved one aircraft from the same type, and incase the operator is fully compliant for height monitoring and add aircraft type already in service then the authority might grant full RVSM approval valid for two years.

Note1: Aircraft Category 1, operator required to height monitor two aircraft every two years.

Note2: Aircraft Category 2, operator required to height monitor 60% of their fleet.

Note3: Aircraft Category 3, Operators of aircraft types contained in this category shall have 100% of airframes monitored every 2 years.

3. The validity of the Temporary RVSM approval must not exceed **90 days**, during this period the responsible airworthiness authority shall instruct the operator to contact the MIDRMA to conduct height monitoring.

Note1: this period is not subject to extension unless the operator provide evidence to the responsible authority to justify their failure to comply.

Note2: in case there is a need to extend the validity of the Temporary RVSM Approval, the extended validity must not exceed another 30 days, further failure will result cancelling the RVSM Approval and withdrawal the aircraft from the state official RVSM approval list.

4. The MIDRMA shall keep the responsible authority aware of the progress of height monitoring of aircraft granted Temporary RVSM approval and update the height monitoring compliance status once the monitoring is successfully completed with valid result.



MID RVSM SAFETY MONITORING REPORT 2018
Prepared by the Middle East Regional Monitoring Agency (MIDRMA)

SUMMARY

The aim of the MID RVSM Safety Monitoring Report 2018 is to provide airspace safety review of the MID RVSM airspace and to highlight by means of arguments and supporting evidence that the implementation of RVSM in the Middle East is acceptably safe.

1. Introduction:

1.1 Executive Summary

The MID RVSM Safety Monitoring Report is issued by the Middle East Regional Monitoring Agency (MIDRMA) for endorsement by the Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG).

The report presents evidence that according to the data and methods used, only safety objectives No 1 and 3 set out in the MID RVSM Safety Policy in accordance with ICAO Doc 9574 (2nd Edition) continue to be met in operational services in the Middle East RVSM airspace .

To conclude on the current safety of RVSM operations, the three key safety objectives endorsed by MIDANPIRG have to be met:

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 2.5×10^{-9} fatal accidents per flight hour.

The value computed for technical height risk is estimated 1.587×10^{-11} this meets RVSM Safety Objective 1.

Objective 2 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.

This Report does not provide an estimate for the overall vertical-collision risk due to of the absence of suitable information on operational error reports therefore it is not possible to assess compliance with the ICAO overall TLS of 5×10^{-9} fatal accidents per flight hour.

Nevertheless, this Report provides recommendations to the MIDRMA for collecting that information for future assessments.

Objective 3 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.

1.2 Conclusions:

- (i) The estimated risk of collision associated with aircraft height-keeping performance is 1.587×10^{-11} and meets the ICAO TLS of 2.5×10^{-9} fatal accidents per flight hour (RVSM Safety Objective 1).
- (ii) Subject to the limitations of data available and the collision risk model used, this SMR demonstrates that the Middle East RVSM operations met two safety objectives (safety objectives #1 and #3) out of the three principal safety objectives
- (iii) Based on currently available information (including Tripoli, Damascus and Beirut FIRs), the MIDRMA cannot confirm that the continued operations of RVSM affects the overall vertical risk of collision.

1.3 Considerations on the RVSM Safety Objectives for MID RVSM SMRs

When considering the three safety objectives for RVSM, the following considerations should be borne in mind:

1. The assessment of risk against the TLS, both for technical and overall risk estimates, relies on height-keeping performance data to assess the risk in the vertical plane and studies of traffic density to calculate the risk in the horizontal plane. There are numbers of assumptions that must be verified to satisfy the reliability of the risk assessment, the verification of these assumptions deals primarily with monitoring of aircraft performance issues.
2. The Aircraft performance is assessed by individual airframe and by monitoring group. A monitoring group consists of aircraft that are nominally of the same type with identical performance characteristics that are made technically RVSM compliant using a common compliance method. Monitoring group analysis is necessary to verify that the Minimum Aviation System Performance Standards (MASPS) for that group is valid. Aircraft that are made RVSM compliant on an individual basis are termed non-group.
3. The RVSM Safety Objective 2, dealing with overall risk, takes into account the technical risk together with the risk from all other causes. In practice, this relates to the human influence and assessment of this parameter relies on adequate reporting of Large Height Deviation (LHD) Reports, and the correct interpretation of events for input to the CRM.
4. RVSM Safety Objective 3 requires the RMA to monitor long-term trends and to identify potential future safety issues, this compares the level of risk-bearing incidents for the current reporting period. It also highlights if there are issues that should be carried forward as recommendations to be adopted for future reports.

2.1 DISCUSSION

Scope:

The geographic scope of the MID RVSM Safety Monitoring Report covers the MID RVSM airspace, which comprises the following FIRs/UIRs:

Amman	Bahrain	Beirut*	Baghdad	Cairo	Damascus*	Emirates
Jeddah	Kuwait	Khartoum	Muscat	Sana'a	Tehran	Tripoli*

T-1: FIRs/UIRs of the Middle East RVSM Airspace

*Note: Beirut, Damascus and Tripoli FIRs were excluded from the safety analysis due to lack of data.

The Data Sampling periods covered by SMR 2018 are as displayed in the below table

Report Elements	Time Period
Traffic Data Sample	01/08/2018 - 31/08/2018
Operational & Technical Errors	01/08/2018 - 31/07/2019

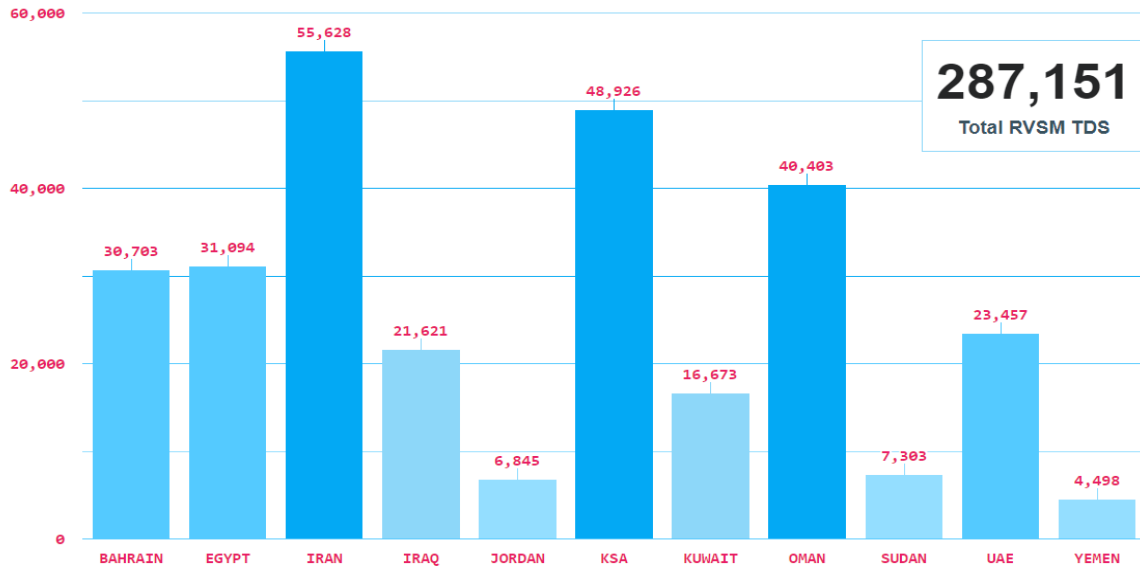
T-2: Time Period for the Reported Elements

MID States	Status	Remarks
Bahrain FIR	Accepted	Received on time (Corrupted)
Cairo FIR	Accepted	Received on time (Corrupted)
Amman FIR	Accepted	Received on time
Muscat FIR	Accepted	Received on time
Tehran FIR	Accepted	Received late (Corrupted)
Khartoum FIR	Accepted	Received on time
Emirates FIR	Accepted	Received on time
Damascus FIR	No TDS Submitted	Excluded
Sana'a FIR	Accepted	Received on time
Jeddah FIR	Accepted	Received late (Corrupted)
Beirut FIR	No TDS Submitted	Excluded
Baghdad FIR	Accepted	Received late (Corrupted)
Kuwait FIR	Accepted	Received late (Corrupted)
Tripoli FIR	No TDS Submitted	Excluded
Total	11 FIRs	

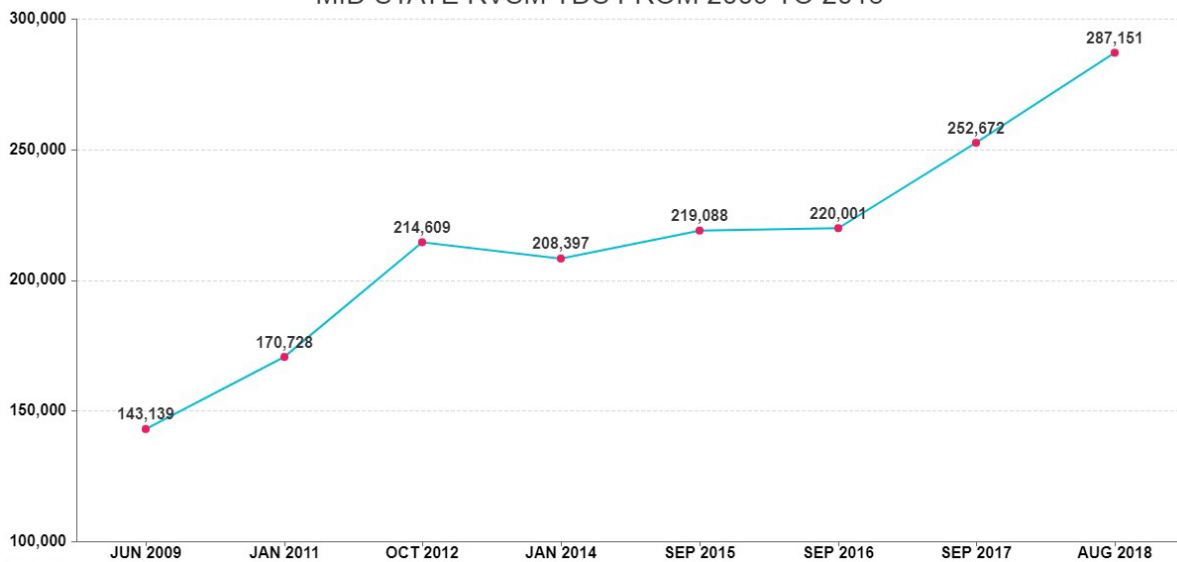
Table 1; Status of the MID States RVSM Traffic Data Sample (TDS) for August 2018

2.1.1 The description of the traffic data processed for each MIDRMA member state by the MID Risk Analysis Software (MIDRAS) is depicted in the graph below, a total of **287,151** flights were processed for the 11 FIRs, these flights were evaluated and processed very carefully to ensure accurate results according to the data submitted.

MID STATE AUGUST 2018 RVSM TDS



MID STATE RVSM TDS FROM 2009 TO 2018



SN	MID FIRs	No of TDS Sep 2017	No of TDS Aug 2018	Sep 2017 vs Aug 2018 (%)
1	Bahrain FIR	27736	30703	10.7
2	Cairo FIR	28225	31094	10.16
3	Amman FIR	6477	6845	5.68
4	Muscat FIR	40563	40403	-0.39
5	Tehran FIR	58331	55628	-4.63
6	Khartoum FIR	6717	7303	8.72
7	Emirates FIR	22125	23457	6.02
8	Damascus FIR	1671	No TDS	-
9	Sana'a FIR	4163	4498	8.05
10	Jeddah/Riyadh FIR	42378	48926	15.45
11	Beirut FIR	66	No TDS	-
12	Baghdad FIR	9732	21621	122.16
13	Kuwait FIR	4488	16673	271.5
14	Tripoli FIR	No TDS	No TDS	-
	Total	252,672	287,151	+13.65%

MID States RVSM TDS 2017 VS 2018

SN	Reporting Point	FIRs	No of Flights
1	TASMI	BAGHDAD / KUWAIT	8841
2	SIDAD	BAGHDAD / KUWAIT	8666
3	NINVA	BAGHDAD / ANKARA	8332
4	RATVO	BAGHDAD / ANKARA	7754
5	DAVUS	BAHRAIN / KUWAIT	7537
6	TUMAK	BAHRAIN / EMIRATES	6314
7	MIDSJ	BAHRAIN / TEHRAN	6265
8	GABKO	EMIRATES / TEHRAN	6215
9	BONAM	TEHRAN / ANKARA	5995
10	ORSAR	EMIRATES / TEHRAN	5370
11	ULADA	BAHRAIN / JEDDAH	4984
12	PASAM	CAIRO / JEDDAH	4883
13	TESVA	TEHRAN / ANKARA	4738
14	ALPOB	EMIRATES / BAHRAIN	4671
15	LONOS	BAHRAIN / KUWAIT	4594
16	ULINA	CAIRO / AMMAN	4500
17	ROTOX	BAHRAIN / TEHRAN	4430
19	PASOV	EMIRATES / MUSCAT	4104
20	DASIS	TEHRAN / ANKARA	4097

TDS 2018 Top 20 Busiest FIR Entry / Exit Points

2.1.2 As usual practice for the preparation of every safety monitoring report to ensure that attention is drawn to the need of collecting the traffic data sample, the MIDRMA circulated a reminder email to all the focal points responsible for submitting the TDS on **29th July 2018** to ensure their readiness

for this task before the effective date of MIDRMA Board DRAFT CONCLUSION 15/6, Unfortunately, the deadline for submitting the TDS to the MIDRMA passed and the same problems of corrupted data and late data submission still exist for this report

2.1.3 For the fourth consecutive Safety Monitoring Reports, Tripoli FIR excluded temporary from the RVSM safety analysis due to lack of TDS and LHD reports, taking into consideration the MIDRMA never done any risk analysis for Tripoli FIR RVSM airspace since Libya joint the MIDRMA, this issue require MIDANPIRG to decide what action should be taken if RVSM operations resume again within Tripoli FIR in the future.

2.1.4 The MIDRMA decided to exclude Damascus and Beirut FIRs from this risk analysis due to lack of traffic data for their RVSM airspace.

2.1.5 **The Collision Risk Model (CRM)**

2.1.6 The risk of collision to be modelled is that due to the loss of procedural vertical separation between aircraft flying above FL 290 in a given portion of an airspace. One collision between two aircraft is counted as the occurrence of two accidents. The risk of collision depends both on the total number and types of aircraft flying in the system and the system characteristics.

2.1.7 The CRM provides an estimate of the number of accidents within an airspace system that might occur per aircraft flight hour due to aircraft collisions resulting from the loss of procedural vertical separation in an RVSM environment analysis, is expressed in terms of quantifiable parameters. In the vertical dimension the CRM can be broken down in order to separately model a single route on which aircraft are flying in the same or opposite directions at adjacent flight levels, pairs of crossing routes and combinations of individual and intersecting routes, this model is applied equivalently to vertical, lateral and longitudinal separation.

2.1.8 Three parameters used within the CRM:

- a. The Vertical Overlap Probability, denoted as $P_z(1\ 000)$.
- b. The Lateral Overlap Probability, denoted as $P_y(0)$.
- c. The aircraft Passing Frequency are the most important quantities in determining the vertical collision risk. Of these, the vertical overlap probability is also an important parameter to calculate.

2.3 **TECHNICAL HEIGHT KEEPING PERFORMANCE RISK ASSESSMENT**

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 2.5×10^{-9} fatal accidents per flight hour.

2.3.1 **Direct evidence of compliance with TLS for Technical Height-Keeping Error**

The result shows the risk of collision due to technical height-keeping performance is estimated to be 1.587×10^{-11} fatal accidents per flight hour, which is less than the ICAO TLS 2.5×10^{-9} .

2.3.2 **Supporting evidence of compliance with TLS for technical height-keeping performance**

To demonstrate that the result is reliable, it is necessary to demonstrate that the following assumptions are true:

- a. The estimated value of the frequency of horizontal overlap, used in the computations of vertical-collision risk, is valid;

- b. $P_z(1000)$ – the probability of vertical overlap due to technical height-keeping performance, between aircraft flying 1000 ft. separation in MID RVSM airspace is estimated 1.981×10^{-10} valid and is less than the ICAO requirement of 1.7×10^{-8} .
- c. All aircraft flying with 1000ft vertical separation in MID RVSM airspace meet the ICAO Global Height Keeping Performance specifications for RVSM;
- d. All aircraft flying 1000ft separation in MID RVSM airspace meet the individual ICAO performance specification for the components of total vertical error (TVE).
- e. The monitoring target for the MID RVSM height-monitoring programme is an on-going process.
- f. The input data used by the CRM is valid.
- g. An adequate process is in place to investigate and correct problems in aircraft technical height-keeping performance.

2.3.3 Calculating the Probability of Lateral Overlap ($P_y(0)$)

The probability of lateral overlap $P_y(0)$ is the probability of two aircraft being in lateral overlap which are nominally flying on (adjacent flight levels of) the same route. The calculation of the $P_y(0)$ for the SMR 2018 has the following to consider:

- a. The MIDRMA continued to calculate the probability of lateral overlap $P_y(0)$ for all the MID RVSM airspace as per the ICAO methodology developed for this purpose and derived by the MID Risk Analysis Software (MIDRAS).
- b. The MIDRMA calculated the average of the probability of lateral overlap $P_y(0)$ for the whole MID RVSM airspace is estimated to be 1.248×10^{-11}
- c. Overall, the results are considered to be valid.

2.3.4 $P_z(1000)$ Compliance

The $P_z(1000)$ 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 $P_z(1000)$, based on the actual observed ASE and typical AAD data is estimated to be of 1.981×10^{-10} . This value meets the Global System Performance Specification that the probability that two aircraft will lose procedural vertical separation of 1000ft should be no greater than 1.7×10^{-8} .

According to the technical risk values as shown in the table below, the TLS value slightly and the MIDRMA continue to issue the minimum monitoring requirements (MMRs) for each MIDRMA member states according to the latest RVSM approvals received from all member states, the MMR table valid for SMR 2018 is available in **Appendix B**.

Note: The MIDRMA continuously update the MMR for all Member States; all members are required to check and comply with their MMR through the MIDRMA website (www.midrma.com).

Technical Risk Values				
Year 2006	Year 2008	Year 2010	Year 2011	Year 2012/13
2.17×10^{-14}	1.93×10^{-13}	3.96×10^{-15}	5.08×10^{-14}	6.37×10^{-12}
Year 2014	Year 2015	Year 2016	Year 2017	Year 2018
3.18×10^{-12}	3.056×10^{-10}	6.347×10^{-11}	4.966×10^{-11}	1.587×10^{-11}

According to the technical risk values as shown in the above graph the TLS values still, meet the ICAO TLS.

2.3.5 Conclusions on Technical Vertical Collision Risk:

- a. The current computed vertical-collision risk due to technical height-keeping performance meets the ICAO TLS.
- b. The probability of vertical-overlap estimate, $P_z(1000)$, satisfies the global system performance specification.
- c. Most monitoring groups are complying with ICAO TVE component requirements (also known as technical height-keeping group requirements).

2.3.6 Recommendations for Safety Objective 1:

- a. The MIDRMA shall continue to review the content and structure of its aircraft monitoring groups.
- b. The MIDRMA shall keep the methods of calculating the technical CRM parameters and the risk due to technical height keeping errors under review and explore more options to enhance the MID Risk Analysis Software (MIDRAS).
- c. The MIDRMA shall carry out continuous survey and investigation on the number and causes of non-approved aircraft operating in RVSM airspace.

2.4 Assessment of Overall Risk due to all Causes Against the TLS of 5×10^{-9} fatal Accidents Per Flight Hour

RVSM Safety Objective 2

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.

It was not possible to assess its compliance as no suitable information was available to provide an estimate for the overall vertical-collision risk.

Overall Risk Values				
Year 2006	Year 2008	Year 2010	Year 2011	Year 2012/13
Not calculated	4.19×10^{-13}	6.92×10^{-12}	1.04×10^{-11}	3.63×10^{-11}
Year 2014	Year 2015	Year 2016	Year 2017	Year 2018
4.91×10^{-11}	7.351×10^{-10}	5.691×10^{-10}	4.518×10^{-11}	Not Calculated

2.4.1 The vertical risk estimation due to atypical errors has been demonstrated to be the major contributor in the overall vertical-risk estimation for the MID RVSM airspace, The final conclusions of the data processed have been severely influenced by Large Height Deviations (LHDs) category E but without category A, B, C, D, H, J and K which is very important to calculate the overall risk (especially from FIRs with high volume of traffic) as without these LHDs it would be impossible to assess compliance with the ICAO overall TLS of 5×10^{-9} fatal accidents per flight hour.

2.4.2 The MIDRMA highlighted the limited numbers of LHD reports in all previous SMRs and noted the final results of Safety Objective No 2 does not support high confidence, although the online LHD reporting system was developed and reminders to all member states sent on a monthly basis with the monthly statistics distributed to all focal points concerned, the MIDRMA did not succeed in receiving the required reports from the vast majority of MIDRMA Member States.

2.4.3 Out of 15 member states only UAE continue to send their LHD reports of all categories as they always used to do for all the previous SMRs, while only a few member states sent NIL LHD reports or LHD reports category E which have no influence in calculating the overall vertical collision risk within the Middle East RVSM airspace.

MID FIRs	No. of Reported LHDs - CAT "A, B,C, D, H, J & K"
Bahrain	0
Baghdad	0
Amman	0
Tehran	0
Cairo	0
Damascus	0
Khartoum	0
Kuwait	0
Muscat	0
Jeddah	0
Riyadh	0
Tripoli	0
Emirates	4
Sanaa	0

MID FIRs	No. of Reported LHDs - CAT "E"	No. of Related LHDs - CAT "E"
Bahrain	54	9
Baghdad	12	18
Amman	5	0
Tehran	63	4
Cairo	5	35
Damascus	0	0
Khartoum	1	1
Kuwait	0	69
Muscat	44	91
Jeddah	52	991
Riyadh	19	16
Tripoli	0	0
Emirates	5	7
Sanaa	2181	1

MID States LHD Reports Received for SMR 2018 Reporting Period

2.4.4 The MIDRMA continued to monitor the LHD reports at the eastern FIR boundary of Muscat FIR filed by Mumbai, the MIDRMA indicated in SMR 2017 the level of LHD reports filed by Muscat, Mumbai and Karachi ATCUs related to each other's at their transfer of control points reached to a dangerous level and started to effect the ICAO TLS of RVSM implementation in the MID and APAC regions, therefore the MIDRMA requested from MIDRMA Board/15 meeting (Muscat – Oman 29 – 31 January 2018) to open a Safety Protocol for the purpose of resolving this issue as soon as possible.

2.4.5 However, the MIDRMA can't see much improvement during the reporting period of SMR 2018 and the level of reporting LHDs between Mumbai and Muscat remain high and the safety concern still exist at the common FIR boundary between the two FIRs while the level of reporting LHDs between Karachi and Muscat reduced and its back again to its normal reporting level.

Note: A Safety Protocol is a critical safety issue effecting the implementation of RVSM operations which require the concerned authority an immediate action to rectify/resolve the problem in a certain period of time under the supervision of MIDRMA and ICAO MID Office.

2.4.6 The MIDRMA Board/15 meeting agreed that a Special Coordination Meeting between Iran, India, Oman and Pakistan with the presence of MAAR, MIDRMA and ICAO APAC and MID Regional Offices, to meet during the ATM SG/4 on 02nd May 2018 to agree on clear action plan to mitigate the risk associated with the high level of coordination failures at the interfaces between the above mentioned States.

2.4.7 The special coordination meeting successfully held in Amman – Jordan during the ATM SG/4 but without the presence of Pakistan, the meeting adopted fruitful and effective short and long term solutions to be implemented by the concerned authorities to close the Safety Protocol.

2.4.8 The Safety Protocol is under continuous review by MIDRMA and MAAR and the LHD reports filed by all concerned ATC Units are investigated and evaluated through the MIDRMA online LHD system and further update will be addressed to the next MIDRMA Board meeting.

2.4.9 Table A below presents a summary of operational risk associated with Large Height Deviation (LHD) reports by LHD category, these reports are not enough to calculate the overall vertical collision risk for the MID RVSM airspace.

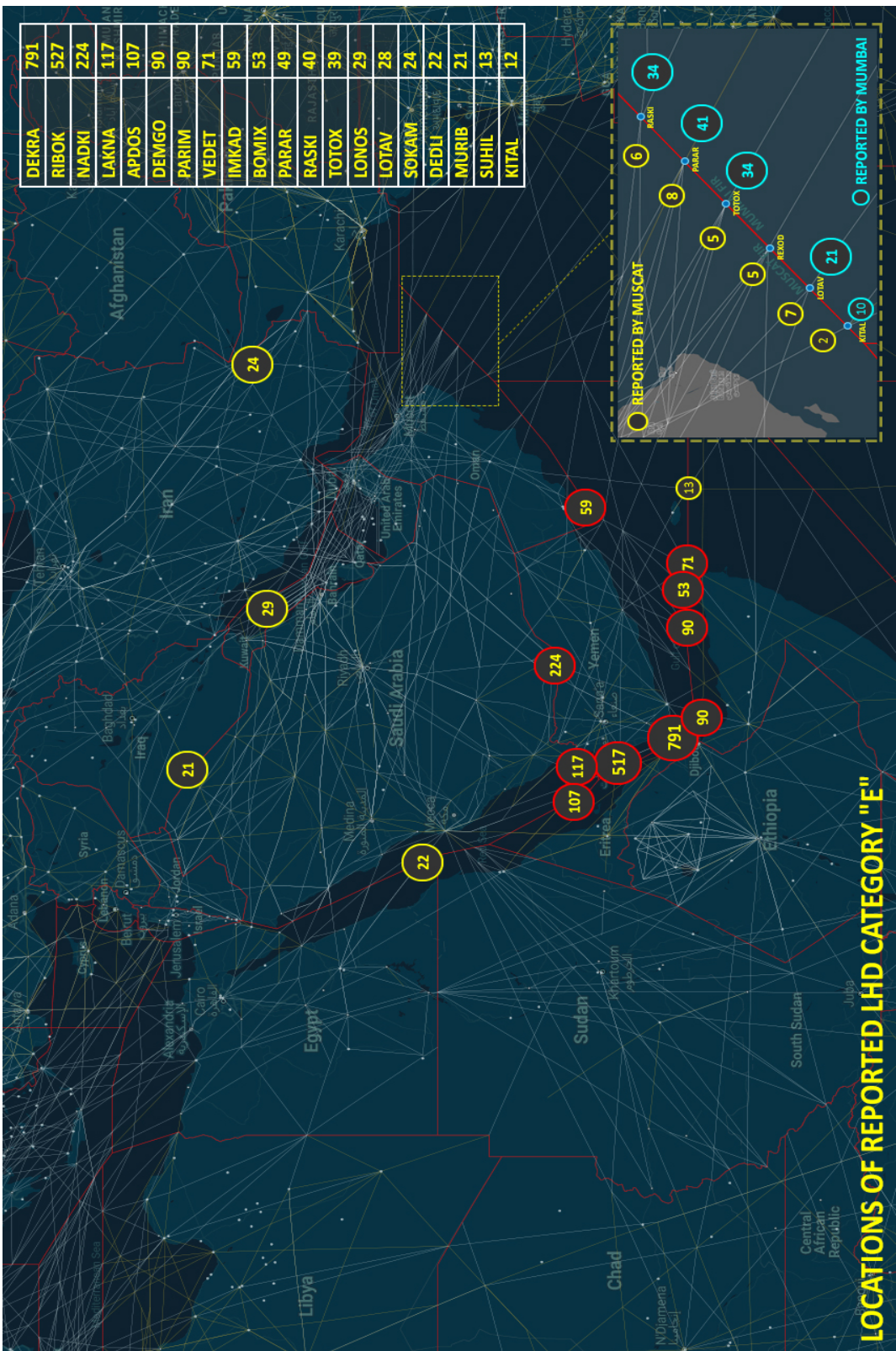
Code	Large Height Deviation (LHD) Category	No. of LHDs	Duration (Sec.)
A	Flight crew fails to climb or descend the aircraft as cleared	1	15
B	Flight crew climbing or descending without ATC clearance	2	80
C	Incorrect operation or interpretation of airborne equipment	0	0
D	ATC system loop error	0	0
E	ATC transfer of control coordination errors due to human factors	2437	0
F	ATC transfer of control coordination errors due to technical issues	0	0
G	Aircraft contingency leading to sudden inability to maintain level	0	0
H	Airborne equip. failure and unintentional or undetected FL change	1	60
I	Turbulence or other weather related cause	0	0
J	TCAS resolution advisory and flight crew correctly responds	0	0
K	TCAS resolution advisory and flight crew incorrectly responds	0	0

L	An aircraft being provided with RVSM separation is not RVSM approved	0	0
M	Other	0	0
	Total	2441	145

Table A: Summary of Operational Risk associated with Large Height Deviation

2.4.10 Table A reflects all the LHD categories received for SMR 2018 reporting period which represents nearly 3 million RVSM movements in one year, the number of LHD categories which have direct influence in calculating the overall vertical risk in the Middle East RVSM airspace does not support confidence to calculate the overall risk result, therefore the MIDRMA decided not calculate the overall TLS because it will be very close to the technical risk value.

2.4.11 The Map in the next page shows the approximate locations of the top 20 positions of reported LHD events category “E” received by the MIDRMA for SMR2018 reporting period.



LOCATIONS OF REPORTED LHD CATEGORY "E"

2.4.12 **Effects of Future Traffic Growth**

The effect of future traffic growth on the vertical collision risk can be evaluated on the assumption of a linear relationship between traffic growth and frequency of horizontal overlap, which will directly affect the two components of the risk: the risk due to technical height-keeping performance and due to atypical operational errors.

This Report does not provide an estimate for the overall vertical-collision risk due to the absence of suitable information on operational error reports therefore it was not possible to assess the effects of future traffic growth for this SMR.

2.4.13 **Conclusions on the Overall Vertical Risk:**

- a. 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, estimated from the operational and technical vertical risks was not calculated due to lack of operational error reports.
- b. The effect of future traffic growth was not assessed.

2.4.14 **Recommendations Applicable to Safety Objective 2:**

- a. MIDRMA to present the issue of lack of LHD reports other than category E to MIDRMA board/16 meeting and propose of including member states not submitting their reports in the ICAO MID Air Navigation Deficiencies Database (MANDD).
- b. The MIDRMA shall continue to encourage States to provide Large Height Deviation Reports (LHD) of all categories and not only related to handover issues.
- c. The MIDRMA, in coordination with concerned States, assure that incidents and violations which have direct impact on the implementation of RVSM within the MID Region are reported in a continuous basis through the MIDRMA LHD online reporting system in due time for operational safety assessment analysis.

2.5 **ASSESSMENT OF SAFETY-RELATED ISSUES RAISED IN THIS REPORT**

RVSM Safety Objective 3

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.

2.5.1 The identified safety-related issues are:

- a. Confirmation of the approval status of aircraft filling RVSM flight plan (W in field 10), this is done through Bahrain and Emirates TDS received on a monthly basis.
- b. Identification of operators requiring monitoring and address the minimum monitoring requirements to all MIDRMA member states.

2.5.2 **Conclusions for Safety Objective 3**

- a. The MIDRMA improved its monitoring capabilities with the new Enhanced GMUs which gave the ability to respond for more height monitoring requests even from outside the Middle East Region.
- b. The MIDRMA started to conduct studies and researches for implementing height monitoring using ADSB data.

- c. The MIDRMA address the Hot Spots of each MID FIR generated by the (MIDRAS) Software (for information only).
- d. Current risk-bearing situations have been identified by using the MIDRAS and the MID Visualization and Simulation of Air Traffic and actions will be taken to ensure resolving all violations to RVSM airspace by non-approved aircraft.

2.5.3 Recommendations for Safety Objective 3

- a. The MIDRMA will start coordinating with Member States, which have ADSB to provide the ADSB archived data for RVSM height monitoring.
- b. MIDRMA will continue to enhance the (MIDRAS) Software and shall include new features to overcome the issue of corrupted TDS (Traffic Data Sample).
- c. The MIDRMA will continue to include in its work program briefings to the focal points appointed for airworthiness issues to ensure their follow up with their monitoring targets and to resolve any non-compliant RVSM approved aircraft. At the same time the MIDRMA will coordinate with the focal points appointed for ATC issues to deliver RVSM safety assessment briefing as necessary or when requested.
- d. The MIDRMA shall continue to carry out continuous survey and investigation on the number and causes of non-approved aircraft operating in the MID RVSM airspace.
- e. The MIDRMA will continue to encourage States to submit their Large Height Deviation Reports using the MIDRMA online reporting tool which has been upgraded to improve the level of reporting.

Therefore, it is concluded that this Safety Objective is currently met.

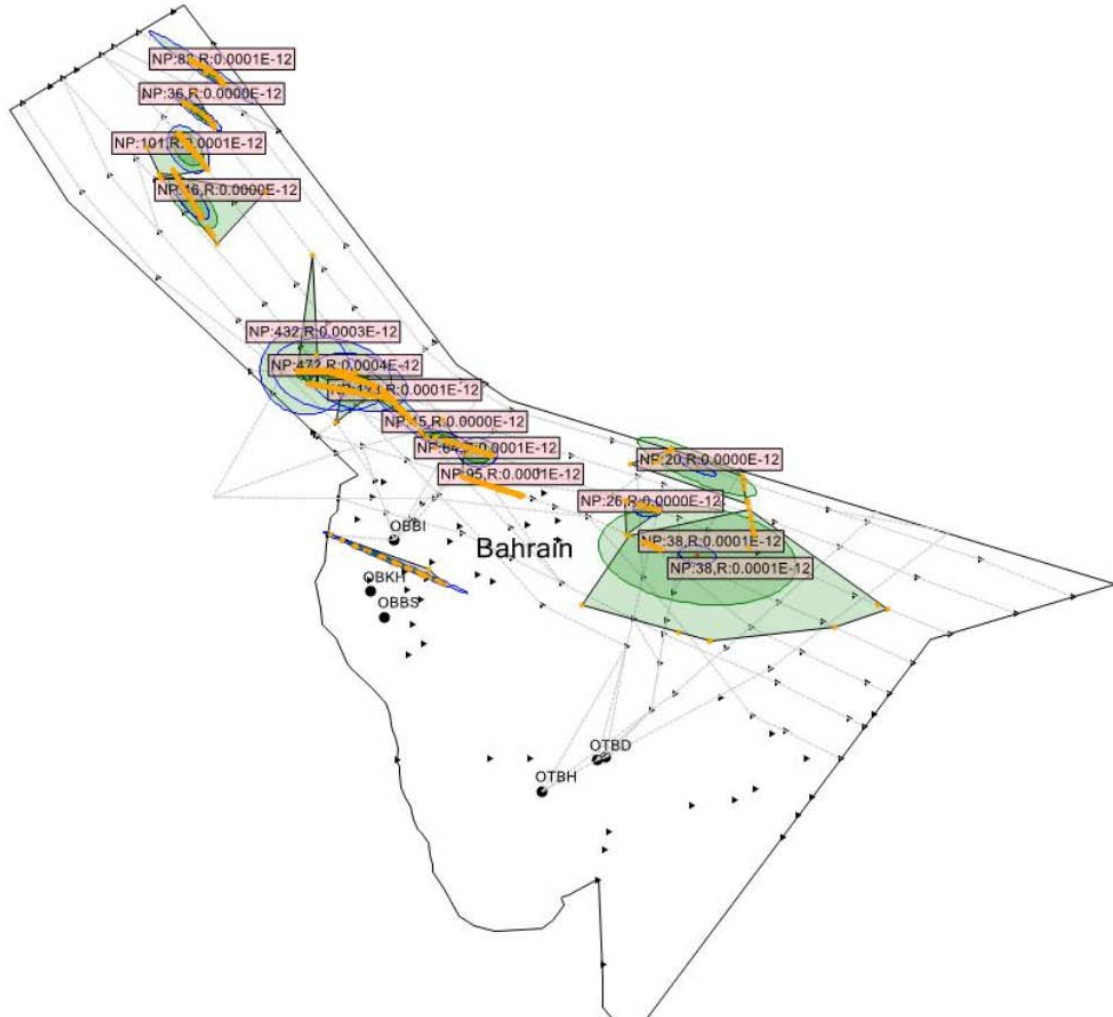
APPENDIX B

THE MID MMR as of October 2019

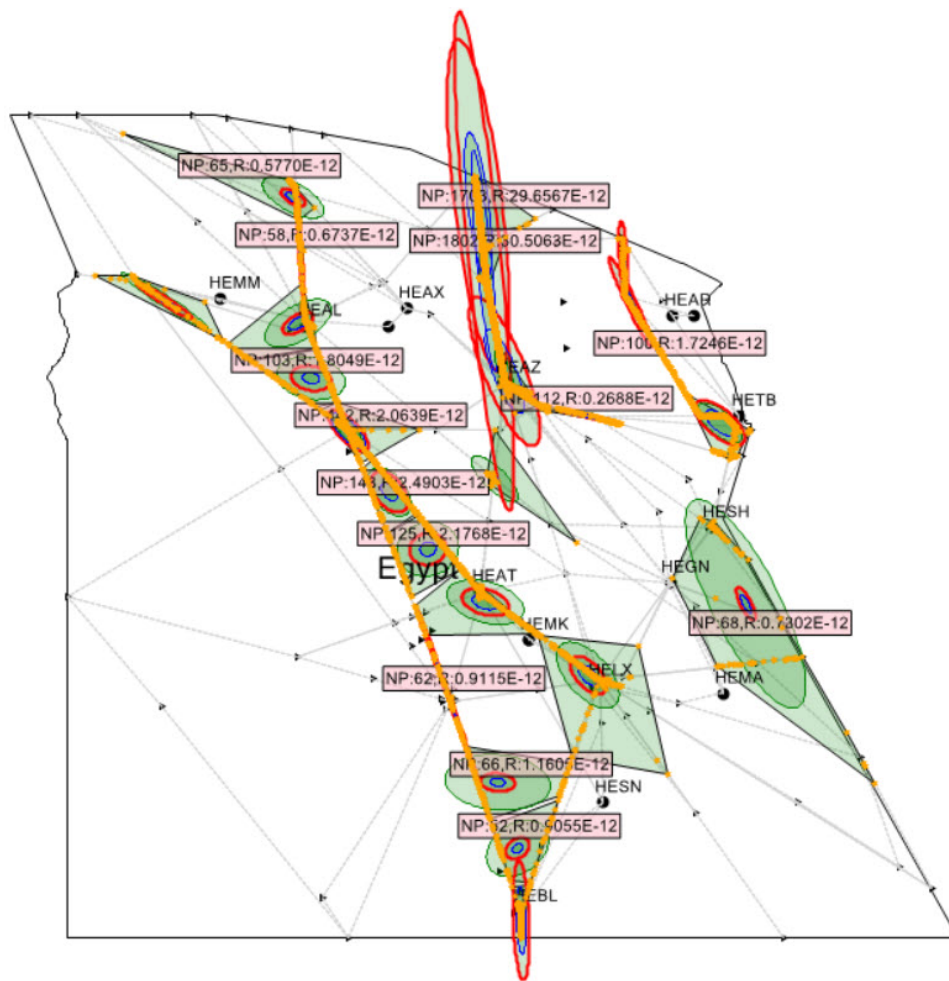
STATE	RVSM APPROVED A/C	RESULTS OR COVERED	NOT COVERED
BAHRAIN	57	57	0
EGYPT	149	127	22
IRAN	212	209	3
IRAQ	39	39	0
JORDAN	44	40	4
KSA	265	252	13
KUWAIT	60	51	9
LEBANON	28	28	0
LIBYA	27	26	1
OMAN	75	73	2
QATAR	272	272	0
SUDAN	21	17	4
SYRIA	14	11	3
UAE	593	584	9
YEMEN	6	0	6

APPENDIX C

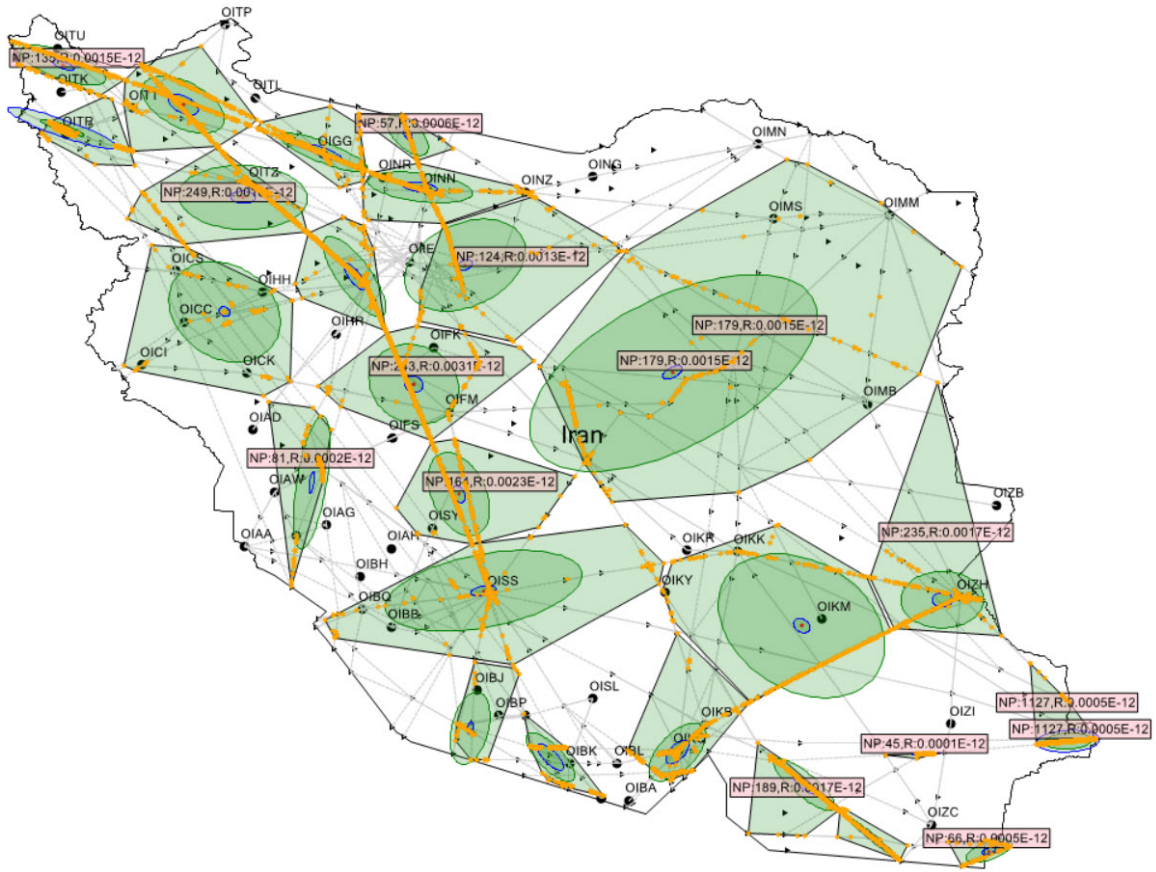
MIDRMA Member States Hot Spots Generated from September 2018 TDS
(for information ONLY)



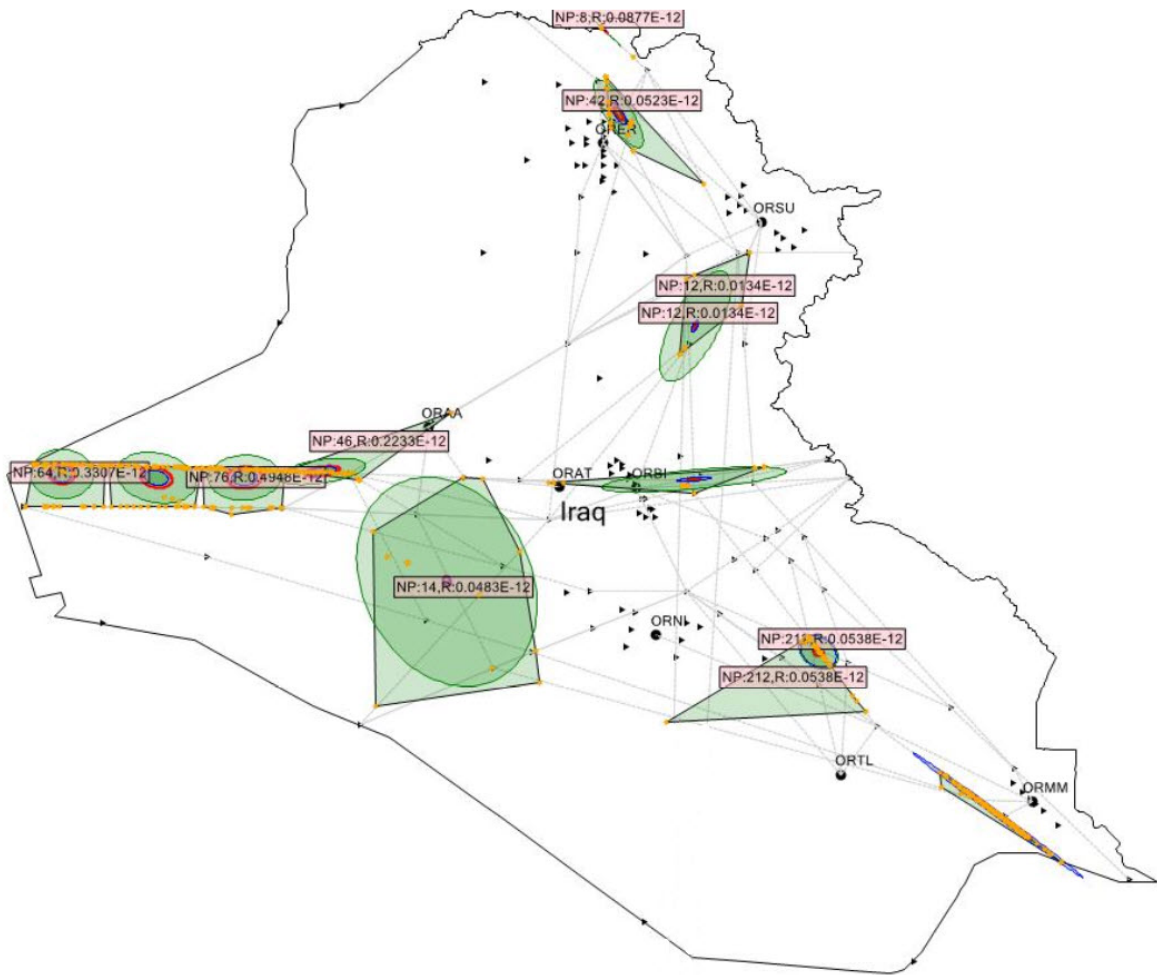
Bahrain FIR



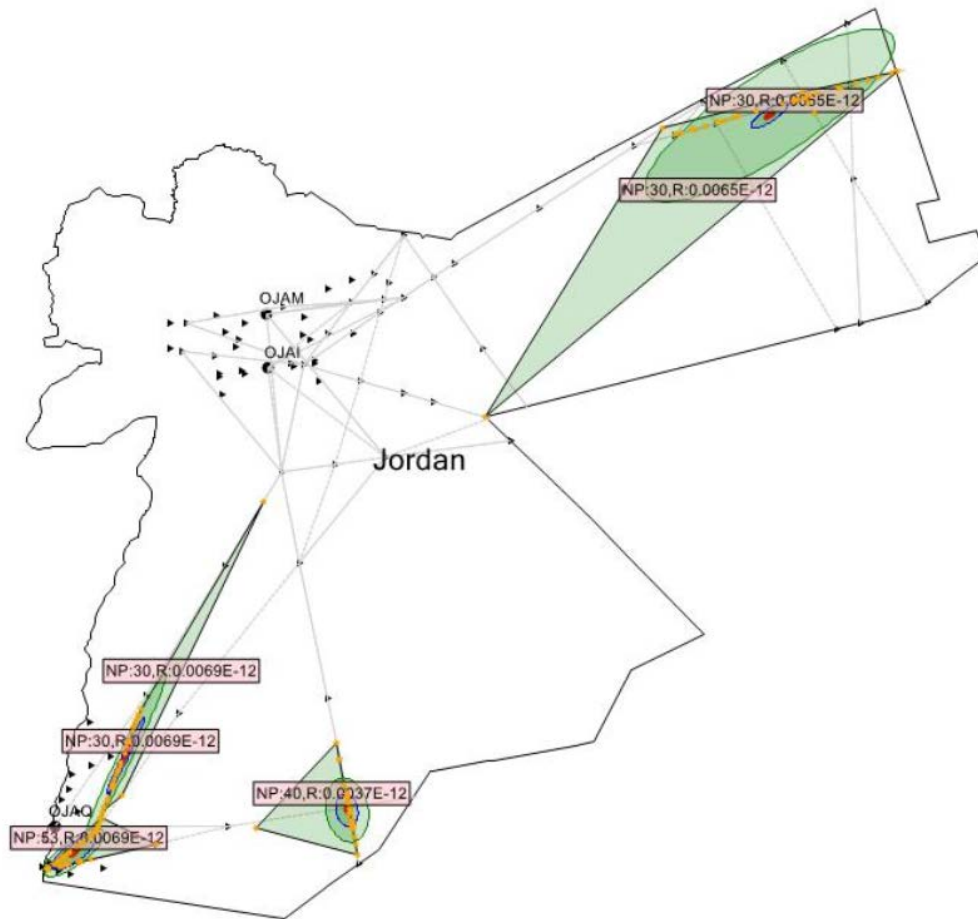
Cairo FIR



Tehran FIR



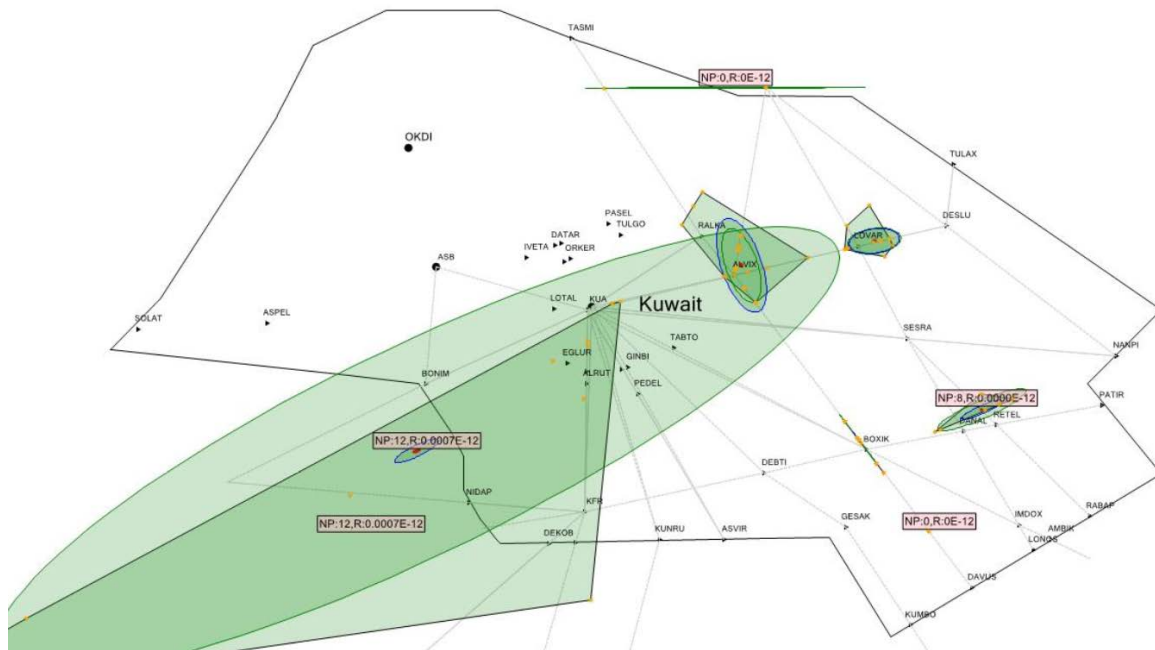
Baghdad FIR



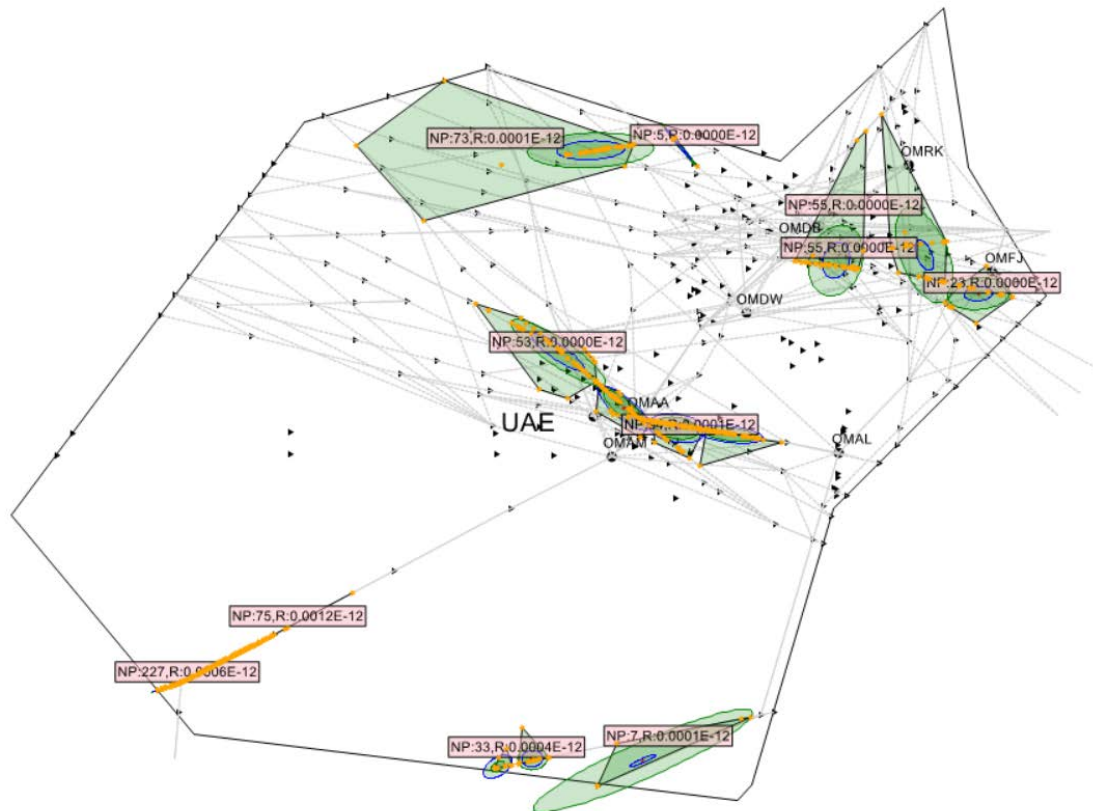
Amman FIR



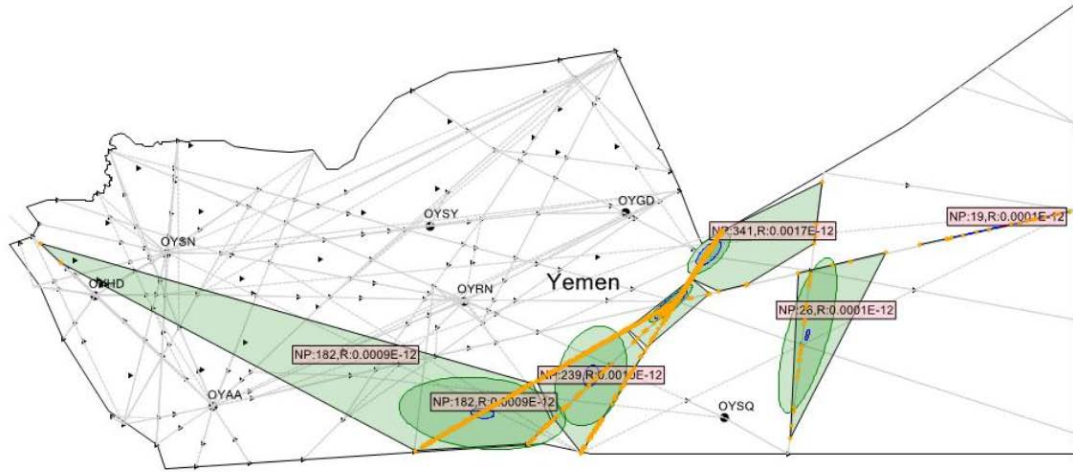
Muscat FIR



Kuwait FIR



Emirates FIR



Sana'a FIR

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МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ
ГРАЖДАНСКОЙ АВИАЦИИ
Европейское/Североатлантическое бюро

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When replying please quote

Reference : EUR/NAT 17-0341.TEC (NAE/BRM)

20 June 2017

Subject : **NAT Implementation of PBCS/PBN Based Separation Minima on 29 March 2018 -
Notice to NAT Airspace Users**

Action

required : See paragraphs 5 and 6

Dear Madam/Sir,

1. I wish to refer to ICAO State Letter reference EUR/NAT 16-0349.TEC (NAE/DAC) of 18 July 2016 (**Attachment A**) informing about the North Atlantic (NAT) Region plans to implement Performance Based Communication and Surveillance (PBCS)/Performance Based Navigation (PBN) based separation minima on 29 March 2018 and urging States of the Operator (or Registry) to take appropriate measures to develop, establish and implement necessary policies and procedures to ensure that their operators conducting flights in the NAT Region can be compliant with PBCS requirements by 29 March 2018.

2. In view of the above, I wish to provide for your perusal the Advisory Circular AC 700-041 published by Canada (**Attachment B**) and the Aeronautical Information Circular Y 062/2017 published by the United Kingdom (**Attachment C**) providing guidance to their aircraft operators concerning PBCS authorizations. These documents are made available for your usage in the process of development of your national regulatory framework and procedures for PBCS authorizations.

3. In the same vein, I wish to reiterate that ICAO Annex 6 (Operation of Aircraft) stipulates the following with regards to PBCS:

“7.1.3 For operations where communication equipment is required to meet an RCP specification for performance-based communication (PBC), an aeroplane shall, in addition to the requirements specified in 7.1.1:

- a) be provided with communication equipment which will enable it to operate in accordance with the prescribed RCP specification(s);*
- b) have information relevant to the aeroplane RCP specification capabilities listed in the flight manual or other aeroplane documentation approved by the State of Design or State of Registry; and*
- c) have information relevant to the aeroplane RCP specification capabilities included in the MEL.*

Note.— Information on the performance-based communication and surveillance (PBCS) concept and guidance material on its implementation are contained in the Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869).

.../...

Distribution: States to which the ICAO EUR/NAT Office is accredited, NAT airspace user States, NAT SPG members, NAT IMG members, NAT SOG members

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When replying please quote

Reference : EUR/NAT 16-0349.TEC (NAE/DAC)

18 July 2016

Subject : **Follow-up to NATSPG Conclusions 52/19 and 52/20**

Action

required : See paragraph 5

Dear Madam, Sir,

1. I wish to refer to the outcomes of discussions from the Fifty-Second Meeting of the North Atlantic Systems Planning Group (NAT SPG) which was held in the European and North Atlantic (EUR/NAT) Office of ICAO in Paris, France, from 27 to 30 June 2016.

2. The NAT SPG was provided with a report of the Performance-Based Communication and Surveillance Project Team (PBCS PT) established to respond to NAT SPG Conclusion 51/07. The following summary of the PBCS PT main conclusions was noted:

- a) Concerning the State letters referenced in NAT SPG Conclusion 51/07, the ICAO Council had adopted/approved in March 2016 the amendments to Annexes and Procedures for Air Navigation Services-Air Traffic Management (PANS ATM, Doc 4444), which included PBCS provisions, for November 2016 applicability.
- b) PBCS provisions would apply required communication performance (RCP) 240 and required surveillance performance (RSP) 180 to communication and surveillance capabilities supporting the application of performance-based horizontal separation minima. NAT air navigation service providers (ANSPs) have implemented or plan to implement or trial these separation minima, as follows:
 - i) The NAT PBCS Implementation Plan, endorsed by NAT SPG in 2011 and last updated in 2015, addresses the current trials and planned implementations of the following performance-based horizontal separation minima: reduced lateral separation minimum (RLatSM, 46.3 km (25 NM) lateral) and reduced longitudinal separation minimum (RLongSM, 5 minute longitudinal);
 - ii) Currently implemented in the New York Oceanic flight information region (FIR) and planned for Santa Maria Oceanic FIR are the following performance-based horizontal separation minima: 55.5 km (30 NM) and 93 km (50 NM) longitudinal separation minima; and a 55.5 km (30 NM) lateral separation minimum; and
 - iii) PANS ATM (Doc 4444) contains the procedures for application of a 42.6 km (23 NM) lateral separation minimum that would support and/or replace applications of 46.3 km (25 NM) lateral (RLatSM) and 55.5 km (30 NM) lateral separation minima.

Distribution : NAT User and Provider States - Representatives of the NAT SPG Member States: Canada, Denmark, France, Iceland, Ireland, Norway, Portugal, United Kingdom and United States - NAT IMG Members – NAT SOG Members - International Organisations concerned – EASA - EUR User and Provider States – All ICAO Regional Offices

- c) NAT ANSPs have been executing PBCS monitoring programs for several years. The PBCS monitoring programs have been very effective in measuring controller-pilot data link communications (CPDLC) and automatic dependent surveillance – contract (ADS C) performance against RCP240 and RSP180 in continued operations. The PBCS monitoring programs must also correct non-compliant performance.
- d) The NAT PBCS Implementation Plan includes tasks, yet to be completed, for the State of the Operator (or Registry) to establish the criteria for an aircraft operator to be eligible to file the appropriate RCP/RSP flight plan designators. The air traffic control (ATC) system would use the RCP/RSP flight plan designators to determine whether or not a flight would be eligible to participate in the application of the relevant separation minima.

3. The NAT SPG was informed that the PBCS PT had conducted a survey of NAT service providers and States of the Operator (or Registry) for the top NAT airspace users. The results of the survey indicated that the State regulations, procedures and processes in support of PBCS approvals for aircraft operators should be available by November 2016. In this respect, it was noted that the ICAO updated PBCS Manual (Doc 9869) includes guidance material for States for implementation of the PBCS approval processes. The NAT ANSPs are planning to implement the PBCS capability in the ground automation systems in a progressive manner to achieve a Region-wide readiness by March 2018.

4. Therefore, the NAT SPG agreed that in order to allow a transition period in accordance with NAT SPG Conclusion 51/07 for States and NAT airspace users to complete their PBCS approval processes, and to harmonize the NAT implementation with the APAC Region, the NAT Regional date for implementation of PBCS/PBN enabled reduced separation minima would be also 29 March 2018.

5. In view of the above, I wish to provide for your attention and action, as appropriate, the following NAT SPG agreed Conclusions:

NAT SPG Conclusion 52/19 – PBCS Operator Requirements in the NAT Region

That, in view of the ICAO amendments on performance-based communications and surveillance (PBCS) and reduced separations with applicability date in November 2016 and ongoing NAT implementations, the ICAO Regional Director, Europe and North Atlantic, urge States of the Operator (or Registry) to take appropriate measures to develop, establish and implement necessary policies and procedures to ensure that their operators conducting flights in the NAT Region can be compliant with PBCS requirements, by 29 March 2018.

NAT SPG Conclusion 52/20 – RCP/RSP Flight Plan Designators

That, the NAT States/ANSPs that plan to apply 42.6 km (23 NM) lateral separation minimum and/or 55.5 km (30 NM), 93 km (50 NM) and/or 5 minute longitudinal separation minima implement the capability to process and apply ICAO PBCS flight plan designators to determine aircraft eligibility for performance-based horizontal separation by 29 March 2018.

Yours sincerely,

Luis Fonseca de Almeida
ICAO Regional Director
Europe and North Atlantic

AERONAUTICAL INFORMATION CIRCULAR Y 062/2017

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Date Of Publication

8 June 2017

Subject

Operational



INTRODUCTION OF PERFORMANCE BASED COMMUNICATION AND SURVEILLANCE (PBCS) IN THE ICAO NORTH ATLANTIC REGION

1 Introduction

- 1.1 Advancements in aircraft avionics and air traffic management flight data processing systems resulted in an initiative to analyse whether the lateral separation standard in the current North Atlantic High Level Airspace (NAT HLA) could be reduced from 60 nm to 25 nm thereby increasing the number of route options available and capacity at optimum flight levels. An ongoing trial implementation of 25 nm lateral separation, referred to as Reduced Lateral Separation Minimum (RLatSM), has established tracks that are spaced by one-half degree of latitude with the inclusion of an extra track between the core tracks of the NAT Organised Track System (OTS) from Flight Level (FL) 350 to FL 390 inclusive. Phase 2 will extend the trial to the whole of the OTS and is planned to commence by the end of 2017. A similar trial has been ongoing in the Shanwick Oceanic Control Area (OCA) to reduce longitudinal separation between aircraft following the same track to 5 minutes. This initiative is referred to as Reduced Longitudinal Separation Minimum (RLongSM). **These trials will be terminated on 29 March 2018.** However, the application of both reduced lateral and longitudinal separation will still be possible after this date with the introduction of Performance Based Communication and Surveillance (PBCS). This AIC sets out the criteria for PBCS and the requirements for operators to continue using airspace where PBCS separations (i.e. reduced separations) are being applied.
- 1.2 This AIC applies to air operators holding a UK Air Operators Certificate and UK private operators, commonly referred to as 'operator', that wish to benefit from PBCS separations.

2 PERFORMANCE BASED COMMUNICATION AND SURVEILLANCE (PBCS)

- 2.1 Performance Based Communication (PBC) and Performance Based Surveillance (PBS) refers to communication and surveillance based on performance specifications applied to the provision of air traffic services. The standards and procedures for an air traffic management (ATM) operation that are predicated on communication and surveillance capabilities, such as the application of reduced separation minima, must refer to the appropriate Required Communication Performance (RCP) and Required Surveillance Performance (RSP) specification. The RCP and RSP specifications are a set of requirements for air traffic service provision and associated ground equipment, aircraft capability and operations needed to support performance based communication and surveillance. The specifications include performance requirements that are allocated to system components in terms of the communication and surveillance to be provided and associated data, delivery time, continuity, availability, integrity, safety and functionality needed for the proposed operation in the context of a particular airspace concept.
- 2.2 Performance-based operations and monitoring have been implemented in the North Atlantic (NAT) High Level Airspace (HLA) to ensure the ongoing safety and efficiency of ATM operations. The performance of FANS 1/A (and equivalent), Controller-Pilot Data Link communications (CPDLC) and Automatic Dependent Surveillance – Contract (ADS-C) are monitored in the NAT HLA against the RCP 240 and RSP 180 specifications. From 29 March 2018 flights will be required to indicate compliance with these specifications in order to qualify for reduced lateral and/or longitudinal separation minima. Initially this will apply to the OTS between FL 350 and FL 390 inclusive but will be extended to the whole of the NAT HLA in due course. It is expected that RCP and RSP compliance will be also required in other airspace in the future.

3 REQUIRED COMMUNICATION PERFORMANCE (RCP) 240 AND REQUIRED SURVEILLANCE PERFORMANCE (RSP) 180

- 3.1 The provision of PBCS in the NAT HLA applies RCP 240 and RSP 180 specifications to the application of 55.5 km (30 NM), 93 km (50 NM) and 5 minute longitudinal separation minima and application of a 42.6 km (23 NM) lateral separation minimum.
- 3.2 The Air Traffic Services (ATS) system, Communications Service/Satellite Service Provider (CSP/SSP) system, operator and the aircraft system must all comply with an RCP/RSP specification. The PBCS requirements for the design of the aircraft system concern its functionality, interoperability and performance in accordance with national airworthiness standards. There are no additional PBCS requirements concerning the production and airworthiness certificates other than those required by national regulations.
- 3.3 For UK operators there is no requirement to obtain a specific operational approval in order to qualify for RCP 240 and RSP 180. However, the conditions laid out in the following section must be met for a flight to be able to indicate its compliance with these specifications.

4 OPERATOR ELIGIBILITY

- 4.1 Only those operators that satisfy the requirements of RCP 240 and RSP 180 will be eligible for the reduced separation minima afforded by these specifications in the NAT HLA. Minimum Navigation Performance Specification (MNPS) approval (issued prior to 1 January 2015) or NAT HLA MNPS approval remains a requirement. Operators will be eligible to indicate compliance with RCP 240 and RSP 180 provided that the aircraft are:
- (a) required navigation performance (RNP) 4 capable;
 - (b) Automatic Dependent Surveillance – Contract (ADS-C) equipped; and
 - (c) controller-pilot data link communications (CPDLC) equipped.
- 4.2 The above mentioned equipment must have been manufactured in accordance with the required technical specifications and the installation approved from an airworthiness perspective (normally stated in the Aeroplane Flight Manual) in accordance with the requirements for integrity, availability and continuity set out in the Performance Based Communication and Surveillance Manual (ICAO Doc 9689). The system must also provide flight crew with alerts associated with the RCP 240 and RSP specifications and specific items related to PBCS capability must be included in the master minimum equipment list (MMEL). Any operational procedures are to be included in the operator's manuals (both flight and ground operations) using the Global Operational Data Link (GOLD) Manual (ICAO Doc 10037) and the PBCS Manual as Acceptable Means of Compliance. These procedures must include contingency/failure procedures and a process to report problems encountered by flight crews, dispatchers and maintenance personnel.
- 4.3 The required Communications/Navigation/Surveillance (CNS) systems must be operational and flight crews must report any failure or malfunction of GNSS, ADS-C or CPDLC equipment to Air Traffic Control (ATC) as soon as it becomes apparent.
- 4.4 The operator shall ensure that contracted services, such as with CSPs/SSPs are bound by contractual arrangements stipulating the RCP/RSP allocations, including any monitoring or recording requirements. The operator shall also ensure that contractual arrangements include a provision for the CSP/SSP to notify the ATS units appropriate for the route system of the aircraft operator of failure conditions impacting PBCS operations.
- 4.5 The operator shall participate in ANSP and regional PBCS monitoring programmes which are applicable to its route system and shall provide the following information to regional PBCS monitoring entities specified in the Aeronautical Information Publication (AIP):
- (a) operator name;
 - (b) operator contact details; and
 - (c) other co-ordination information.
- Any changes to the information listed above are to be notified to the appropriate PBCS monitoring entities.
- 4.6 The operator shall establish procedures to report problems encountered by flight crew or other personnel to the regional PBCS monitoring entities associated with the route of flight on which the problem occurred. The operator is also to establish procedures to disclose operational data, including that from its CSPs/SSPs, in a timely manner to the appropriate PBCS monitoring entity, when requested, for the purposes of investigating a reported problem.

5 FLIGHT PLANNING

- 5.1 The operator shall ensure that the appropriate information to denote PBCS capabilities is included in the ICAO flight plan as follows:
- (a) All FANS 1/A CPDLC equipped aircraft planning to operate in the NAT HLA shall insert the appropriate designator (J2, J3, J4, J5 and/or J7) in Item 10a of the flight plan;
 - (b) All FANS 1/A CPDLC RCP 240 capable aircraft intending to operate in the NAT HLA shall insert the designator P2 in Item 10a of the flight plan;
 - (c) All FANS 1/A ADS-C capable aircraft planning to operate in the NAT HLA shall insert the designator D1 in Item 10b of the flight plan;
 - (d) All FANS 1/A ADS-C RSP 180 capable aircraft planning to operate in the NAT HLA shall insert SUR/180 in Item 18 of the flight plan; and
 - (e) All RNP 4 capable aircraft planning to operate in the NAT HLA shall insert PBN/L1 in Item 18 of the flight plan.
- 5.2 From 29 March 2018 NAT ANSPs will apply the RCP 240 flight plan designator to determine aircraft eligibility for relevant separation minima.

6 AIRSPACE MONITORING

- 6.1 Adequate monitoring of flight operations in the NAT HLA shall be conducted to assist in the assessment of continuing compliance of aircraft with PBCS requirements. NAT air navigation service providers shall establish PBCS monitoring programmes and, in coordination with their State authorities, implement one or all of the following mechanisms for communicating the PBCS monitoring information to the NAT HLA users and States:
- (a) Ongoing PBCS monitoring results to be directly shared through individual web-portals or made available by NAT ANSPs on request from State authorities or airspace users;
 - (b) The existing NAT Data Link Monitoring Agency (DLMA)/Pacific Central reporting Agency website, hosted by airways New Zealand, to be used to house the NAT monitoring results updated by the NAT ANSPs at a common, e.g. semi-annual interval;
 - (c) PBCS non-compliance to be communicated directly by NAT ANSPs and States to the NAT airspace users and States.

6.2 The NAT Central Monitoring Agency (CMA) shall implement a mechanism for communicating the PBCS non-compliance notifications received from NAT ANSPs to NAT airspace users and State authorities through the global network of Regional Monitoring Agencies (RMAs).

6.3 Exact details of PBCS monitoring procedures are still under discussion and will be communicated in due course.

7 FURTHER INFORMATION

7.1 Further information on PBCS and data link operations can be found in the PBCS Manual (ICAO Doc 9689) and the GOLD Manual (ICAO Doc 10037) or from the following:

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Advisory Circular

Subject: Special Authorization (SA) for Required Communications Performance (RCP) 240 and Required Surveillance Performance (RSP) 180

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1.0 INTRODUCTION

- (1) This Advisory Circular (AC) is provided for information and guidance purposes. It describes an acceptable means of demonstrating compliance with regulations and standards. This AC on its own does not change, create, amend or permit deviations from regulatory requirements.

1.1 Purpose

- (1) The purpose of this AC is to inform the aviation industry that air operators and private operators may now obtain a Canadian authorization by Special Authorization (SA) for Required Communications Performance specification (RCP 240) and Required Surveillance Performance specification (RSP 180). This authorization will enable Canadian air operators and private operators to conduct operations in airspace where Performance-Based Communications and Surveillance (PBCS) separations are being applied, subject to the applicable requirements of the SA. Compliance with Part V of the *Canadian Aviation Regulations (CARs)* and the associated and applicable certification requirements for installation and operation of equipment is assumed.

1.2 Applicability

- (1) This AC applies to Canadian air operators holding an Air Operator Certificate (AOC) issued under Part VII of the CARs and to private operators holding a Private Operator Registration Document (PORD) issued under Subpart 604 of the CARs that wish to benefit from operations and separation minima that require the RCP 240 and/or RSP 180 specification. These Canadian air operators and private operators will be commonly referred to as “operator” in this AC.
- (2) This document is also applicable to all Transport Canada Civil Aviation (TCCA) inspectors with surveillance duties, and to individuals and organizations that exercise privileges granted to them under an External Ministerial Delegation of Authority. This information is also provided to the aviation industry at large for educational purposes.

1.3 Description of Changes

- (1) Added definition for Communication Service Provider and Satellite Service Provider and corrected the term “SSP” in the abbreviation section.

2.0 REFERENCES AND REQUIREMENTS

2.1 Reference Documents

- (1) It is intended that the following reference materials (latest edition) be used in conjunction with this document:
 - (a) *Aeronautics Act* (R.S., 1985, C.A-2);
 - (b) Part V of the *Canadian Aviation Regulations (CARs) — Airworthiness*;
 - (c) Part VI, Subpart IV of the CARs — *Private Operator*;
 - (d) Part VII, Subpart IV of the CARs — *Commuter Operations*;
 - (e) Part VII, Subpart V of the CARs — *Airline Operations*;
 - (f) Standard 725 of the *Commercial Air Service Standards (CASS) — Airline Operations*;
 - (g) International Civil Aviation Organization (ICAO) DOC 9689 — *Performance-based Communication and Surveillance (PBCS) Manual*;

- (h) ICAO DOC 10037 — *Global Operational Data Link (GOLD) Manual*;
- (i) Federal Aviation Administration (FAA) Advisory Circular (AC) 120-70C — *Operational Authorization Process for use of Data Link Communication Systems*;
- (j) FAA AC 20-140B — *Guidelines for Design Approval of Aircraft Data Link Communication Systems Supporting Air Traffic Services (ATS)*;
- (k) FAA AC 20-160 — *Onboard Recording of Controller Pilot Data Link Communication in Crash Survivable Memory*;
- (l) *Safety and Performance Standard for Air Traffic Data Link Services in Oceanic and Remote Airspace* (Oceanic SPR Standard, RTCA DO-306/EUROCAE ED-122);
- (m) *Safety and Performance Standard for Air Traffic Data Link Services in Continental Airspace* (Continental SPR Standard, RTCA DO-290/EUROCAE ED-120, Change 1 and Change 2);
- (n) *Interoperability Requirements for ATS Applications Using ARINC 622 Data Communications* (FANS 1/A INTEROP Standard, RTCA DO-258A/EUROCAE ED-100A);
- (o) *Interoperability Requirements Standard for Aeronautical Telecommunication Network Baseline 1* (ATN B1 INTEROP Standard, RTCA DO-280B/EUROCAE ED-110B); and
- (p) *Future Air Navigation System 1/A — Aeronautical Telecommunication Network Interoperability Standard* (FANS 1/A — ATN B1 INTEROP Standard, RTCA DO 305A/EUROCAE ED 154A).

2.2 Cancelled Documents

- (1) Not Applicable.
- (2) By default, it is understood that the publication of a new issue of a document automatically renders any earlier issues of the same document null and void.

2.3 Definitions and Abbreviations

- (1) The following definitions are used for the purposes of this document:
 - (a) **Actual Communications Performance (ACP):** The portion of communication transaction time that is monitored against the Required Communication Monitored Performance (RCMP) values provided by the Required Communications Performance (RCP) specification.
 - (b) **Actual Surveillance Performance (ASP):** The portion of surveillance data delivery time that is monitored against the RSMP values provided by the Required Surveillance Performance (RSP) specification.
 - (c) **Aeronautical Telecommunication Network Baseline 1 (ATN B1):** ATN B1 generally means that the data link system on an aircraft, the Air Traffic Services Unit (ATSU) ground system, and communication service provision comply with the standard as adapted by Eurocontrol Specification on Data Link Services (EUROCONTROL-SPEC-0116). ATN B1 consists of the following data link applications:
 - (i) Context Management (CM) for data link initiation capability (DLIC); and
 - (ii) Limited Controller Pilot Data Link Communications (CPDLC) for Air Traffic Service (ATS) Communications Management (ACM), ATS clearance (ACL), and ATC Microphone Check (AMC).

- (d) **Automatic Dependent Surveillance – Contract (ADS-C):** A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated and what data would be contained in the reports.
- (e) **Communication Service Provider (CSP):** Any public or private entity providing communication services for general air traffic. This would include services provided by a satellite service provider (SSP) through a contract or agreement.
- (f) **Future Air Navigation System (FANS 1/A):** FANS 1/A generally means that the data link system on an aircraft, the ATSU ground system, and communication service provision comply with the standard. In certain cases, specific reference is made to a particular type of FANS 1/A aircraft as follows:
- (i) FANS 1/A+ means that the aircraft completely complies with Revision A of the standard, which includes message latency monitor; and
 - (ii) FANS 1/A ADS-C means that the aircraft complies with ATC Facilities Notification (AFN) and ADS-C applications, but does not include the CPDLC application.
- (g) **Performance-Based Communications (PBC):** ATS communication services and capability based on performance requirements for air traffic service provision, aircraft and flight operations along an ATS route, on an instrument approach procedure or in a designated airspace.
- Note: Communication performance requirements are allocated to system components in an RCP specification in terms of communication transaction time, continuity, availability, integrity, safety and functionality needed for the proposed operation in the context of a particular airspace concept.*
- (h) **Performance-Based Communications and Surveillance (PBCS) Operation:** Air Traffic Management (ATM) or aircraft operation to which an RCP and/or RSP specification has been prescribed.
- (i) **Performance-Based Surveillance (PBS):** ATS surveillance services and capability based on performance requirements for air traffic service provision, aircraft and flight operations along an ATS route, on an instrument approach procedure or in a designated airspace.
- Note: Surveillance performance requirements are allocated to system components in an RSP specification in terms of surveillance data delivery time, continuity, availability, integrity, accuracy of the surveillance data, safety and functionality needed for the proposed operation in the context of a particular airspace concept.*
- (j) **Required Communication Monitored Performance (RCMP):** An RCP allocation that specifies the maximum time against which ACP is assessed.
- (k) **Required Communication Performance (RCP) specification:** A set of requirements for air traffic service provision, aircraft capability, and operations needed to support performance-based communication within a defined airspace.

Note 1: See International Civil Aviation Organization (ICAO) Doc 9869 and Appendix B of Global Operational Data Link Document (GOLD) document for RCP specifications.

Note 2: The term RCP, defined by ICAO as “a statement of performance requirements for operational communication in support of specific ATM functions”, is used to align the concept of PBC with the concept of PBN. The term RCP is now used in the context of a specification that is applicable to the prescription of airspace requirements, qualification of ATS provision, aircraft capability, and operational use, including post-implementation monitoring (e.g. RCP 240 refers to the criteria for various components of the operational system to ensure an acceptable intervention capability for the controller is maintained).

- (l) **Required Surveillance Performance (RSP) specification:** A set of requirements for air traffic service provision, aircraft capability, and operations needed to support performance-based surveillance within a defined airspace.

Note 1: See ICAO Doc 9869 and Appendix C of the GOLD document for RSP specifications.

Note 2: The term RSP is used in the context of a specification that is applicable to the prescription of airspace requirements, qualification of ATS provision, aircraft capability, and operational use, including post-implementation monitoring (e.g. RSP 180 refers to the criteria for various components of the operational system to ensure an acceptable surveillance capability for the controller is maintained).

- (m) **Required Surveillance Monitored Performance (RSMP):** An RSP allocation that specifies the maximum time against which ASP is assessed.
- (n) **Satellite Service Provider (SSP):** An entity or group of entities that provide, via satellite, aeronautical fixed services and/or aeronautical mobile services at least from the signal in space to/from aircraft, to the attachment point of the ground earth station (GES) to the ground communication services network.
- (o) **Special Authorization (SA):** The authorizations, conditions and limitations associated with the air operator certificate (AOC) and subject to the conditions in the operations manual.

- (2) The following **abbreviations** are used in this document:

- (a) **AC:** Advisory Circular;
- (b) **ACM:** ATS Communications Management;
- (c) **ACP:** Actual Communications Performance;
- (d) **ADS-B:** Automatic Dependent Surveillance – Broadcast;
- (e) **ADS-C:** Automatic Dependent Surveillance – Contract;
- (f) **AFM:** Aircraft Flight Manual;
- (g) **AFN:** ATC Facilities Notification;
- (h) **AIP:** Aeronautical Information Publication;
- (i) **AOC:** Air Operator Certificate;
- (j) **ANSP:** Air Navigation Service Provider;
- (k) **ASP:** Actual Surveillance Performance;
- (l) **ATM:** Air Traffic Management;
- (m) **ATN B1:** Aeronautical Telecommunication Network Baseline 1;
- (n) **ATS:** Air Traffic Service;
- (o) **ATSU:** Air Traffic Services Unit;
- (p) **CARs:** Canadian Aviation Regulations;
- (q) **CASS:** Commercial Air Services Standard;
- (r) **CM:** Context Management;
- (s) **CPDLC:** Controller-Pilot Data Link Communications;
- (t) **CSP:** Communications Service Provider;
- (u) **COM:** Company Operations Manual;

(v)	EUROCAE:	European Organization for Civil Aviation Equipment;
(w)	FANS 1/A:	Future Air Navigation System (1 = Boeing, A = Airbus);
(x)	GOLD:	Global Operational Data Link Document;
(y)	HLA:	High Level Airspace (NAT);
(z)	HMI:	Human-machine interface;
(aa)	ICAO:	International Civil Aviation Organization;
(bb)	MEL:	Minimum Equipment List;
(cc)	MMEL:	Master Minimum Equipment List;
(dd)	NAT:	North Atlantic;
(ee)	PORD:	Private Operator Registration Document;
(ff)	PBC:	Performance-based Communications;
(gg)	PBCS:	Performance-based Communications and Surveillance;
(hh)	PBN:	Performance-based Navigation;
(ii)	PBS:	Performance-based Surveillance;
(jj)	RCMP:	Required Communication Monitored Performance;
(kk)	RCP:	Required Communications Performance;
(ll)	RNP:	Required Navigation Performance;
(mm)	RSMP:	Required Surveillance Monitored Performance;
(nn)	RSP:	Required Surveillance Performance;
(oo)	RTCA:	Radio Technical Commission for Aeronautics;
(pp)	SA:	Special Authorization;
(qq)	SATVOICE:	Satellite Voice;
(rr)	SOP:	Standard Operating Procedures;
(ss)	SSP:	Satellite Service Provider;
(tt)	STC:	Supplemental Type Certificate;
(uu)	SVOM:	Satellite Voice Operations Manual;
(vv)	TCCA:	Transport Canada Civil Aviation.

3.0 BACKGROUND

- (1) The standards and procedures for an Air Traffic Management (ATM) operation that are predicated on communication and surveillance capabilities, such as the application of a reduced separation minimum, must refer to the appropriate Required Communications Monitored Performance (RCP)/Required Surveillance Performance (RSP) specification. The RCP/RSP specifications provide the operational performance criteria and associated allocations to the ATM subsystems for the communication and surveillance capabilities supporting the ATM operation.
- (2) Performance-based operations and monitoring have been implemented in the North Atlantic (NAT) High Level Airspace (HLA) to ensure the ongoing safety and efficiency of ATM operations. The performance of FANS 1/A (and equivalent) Controller-Pilot Data Link Communications (CPDLC) and ADS-C are monitored in the NAT HLA against the RCP 240 and RSP 180 specifications. In

the near future, flights will be required to indicate compliance with these specifications in order to qualify for certain separation minima. It is expected that RCP and RSP compliance will be required for operations in other airspaces as well.

4.0 REQUIRED COMMUNICATIONS PERFORMANCE (RCP) 240 AND REQUIRED SURVEILLANCE PERFORMANCE (RSP) 180

4.1 General

- (1) The Performance-Based Communications and Surveillance (PBCS) provision applies RCP 240 and RSP 180 specifications to the application of 55.5 km (30 NM), 93 km (50 NM) and 5 minute longitudinal separation minima; and application of a 42.6 km (23 NM) lateral separation minimum (formerly 55.5 km (30 NM) lateral).
- (2) The Air Traffic Services (ATS) system, Communications Service Provider/Satellite Service Provider (CSP/SSP) system, operator and the aircraft system must all comply with an RCP/RSP specification.
- (3) The aircraft system is approved by the State of Design and/or State of Manufacture, which typically issues design, production and airworthiness certificates to an aircraft manufacturer or equipment supplier in accordance with national regulations. However, Transport Canada allows operators to obtain the necessary certificates for equipment approval. In such cases, the guidelines in section 2.0 of Appendix A would apply to the aircraft operator.
- (4) The PBCS requirements for the design of the aircraft system concern its functionality, interoperability and performance in accordance with national airworthiness standards. There are no additional PBCS requirements concerning the production and airworthiness certificates other than those provided by national regulations. Certificates issued for design, production and airworthiness approval of the aircraft system do not constitute operational approval to use the system for PBCS operations.
- (5) The aircraft operator must obtain an operational approval in the form of a Special Authorization from Transport Canada Civil Aviation (TCCA) to be eligible for PBCS operations. The operational approval must address flight crew training and qualification, Minimum Equipment List (MEL), maintenance, user modifiable software and CSP/SSP service agreements.

4.2 Conditions for Special Authorization

- (1) Appendix A provides the specific conditions that must be met in order to qualify for RCP 240 and RSP 180 Special Authorization. The intent is to transcribe these conditions into the operator's Air Operator Certificate (AOC) or Private Operator Registration Document (PORD) by reference to Appendix A. Appendix B provides guidance which is applicable to the specific conditions in Appendix A.
- (2) Additional guidance is provided in the documents referenced in section 2.1 above.

5.0 INFORMATION MANAGEMENT

- (1) Not applicable.

6.0 DOCUMENT HISTORY

- (1) Not applicable.

7.0 CONTACT OFFICE

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Suggestions for amendment to this document are invited, and should be addressed to the above e-mail.

Original signed by

Robert Sincennes
Director, Standards
Civil Aviation
Transport Canada

**APPENDIX A - CONDITIONS REQUIRED FOR INCLUSION IN SPECIAL AUTHORIZATION FOR
REQUIRED COMMUNICATIONS PERFORMANCE (RCP) 240 AND REQUIRED SURVEILLANCE
PERFORMANCE (RSP) 180**

1.0 OPERATOR REQUIREMENTS

- (1) The operator shall ensure that procedures are established and the flight crews and other personnel are trained and qualified for Performance-based Communications and Surveillance (PBCS) operations. The flight crew procedures and training shall include normal operations and those associated with alerts provided by the aircraft system to indicate failures when the aircraft is no longer capable of meeting the Required Communications Performance (RCP)/Required Surveillance Performance (RSP) specification prescribed for the associated Air Traffic Management (ATM) operations.
- (2) The operator shall ensure that contracted services, such as with Communications Service Providers (CSPs)/Satellite Service Providers (SSPs), are bound by contractual arrangements stipulating the RCP/RSP allocations, including any monitoring or recording requirements.
- (3) The operator shall ensure that contractual arrangements include a provision for the CSP/SSP to notify the Air Traffic Service (ATS) units appropriate for the route system of the aircraft operator of failure conditions impacting PBCS operations.
- (4) The operator shall ensure that the aircraft system has been approved for the intended use in accordance with the RCP 240 and RSP 180 specifications.
- (5) The operator shall ensure that aircraft system is properly maintained, including configuring user modifiable software, such as software used to manage communication media and routing policies, to meet the RCP 240 and RSP 180 specifications.
- (6) The operator shall participate in Air Navigation Service Provider (ANSP) and regional PBCS monitoring programs, which are applicable to the aircraft operator's route system, and shall provide the following information to regional PBCS monitoring entities specified in the Aeronautical Information Publication (AIP) Canada (International Civil Aviation Organization (ICAO):
 - (a) operator name;
 - (b) operator contact details; and
 - (c) other coordination information.
- (7) The operator shall advise the appropriate PBCS monitoring entities of any changes to the information listed above.
- (8) The operator shall establish procedures to report problems identified by the flight crew or other personnel, to the regional PBCS monitoring entities identified in AIPs (or equivalent publications) associated with the route of flight on which the problem occurred.
- (9) The operator shall ensure procedures are established to disclose operational data, including data from its CSPs/SSPs, in a timely manner, to the appropriate PBCS monitoring entity, when requested for the purposes of investigating a reported problem.
- (10) When filing RCP/RSP capabilities, the operator shall ensure that the planned use of associated communication and surveillance capabilities for the flight will be in accordance with regulations, policies and procedures in control areas for the flight as published in the AIP.
- (11) The operator shall ensure that the proper information to denote PBCS capabilities is included in the ICAO flight plan as follows:
 - (a) In Item 10 of the flight plan, the aircraft operator shall insert "P2" to identify an aircraft's RCP 240 capability; and
 - (b) In Item 18 of the flight plan, the aircraft operator shall file the RSP 180 capability by inserting the indicator "SUR/RSP 180".

2.0 AIRCRAFT REQUIREMENTS

- (1) The “RCP 240 and RSP 180” Special Authorization is specific to each individual airframe.
- (2) The aircraft manufacturer or supplier must demonstrate that aircraft system meets the RCP 240 and RSP 180 allocations as per ICAO’s Performance-based Communications and Surveillance Manual (Doc 9869) and Global Operational Data Link Document (GOLD).
- (3) The aircraft manufacturer or equipment supplier shall demonstrate that the aircraft meets the RCP 240 and RSP 180 integrity criteria and associated safety requirements as per ICAO Doc 9869 (PBCS Manual) and Doc 10037 (GOLD Manual) .
- (4) The aircraft manufacturer or supplier shall demonstrate that the aircraft system meets the RCP 240 and RSP 180 availability criteria. The aircraft manufacturer or supplier shall demonstrate that the aircraft system, when operating with a representative ATS provision (i.e. simulation or real ground system), is capable of meeting the operational RCP 240 and RSP 180 time and continuity criteria.
- (5) The aircraft manufacturer or supplier shall demonstrate that the aircraft system provides the flight crew with alerts in case of aircraft system or connectivity failures that would cause the aircraft to no longer be capable of meeting the RCP 240 and RSP 180 specification.
- (6) The aircraft manufacturer or equipment supplier shall identify any specific items related to PBCS capability in the master minimum equipment list (MMEL).
- (7) The aircraft manufacturer or equipment supplier shall identify the demonstrated PBCS capability of the aircraft, any associated operating limitations, information and procedures, in the flight manual.

3.0 AERODROME/AIRSPACE REQUIREMENTS

- (1) Not applicable to the operator.

**APPENDIX B – GUIDANCE MATERIAL FOR REQUIRED COMMUNICATIONS PERFORMANCE
(RCP) 240 AND REQUIRED SURVEILLANCE PERFORMANCE (RSP) 180**

The following table contains specific guidance concerning the requirements for RCP 240 and RSP 180 special authorization. The guidance material listed below is contained in International Civil Aviation Organization (ICAO) Doc 9869 (PBCS Manual) and refers directly to the conditions provided in Appendix A of this document.

Appendix A Condition	Guidance
1.0 (1)	<p>“Other personnel” refers to aircraft maintenance, and flight operations officer/flight dispatcher personnel.</p> <p>If, as a result of system degradation, the aircraft is no longer capable of meeting the RCP/RSP specification prescribed for the associated ATM operations, Air Navigation Services Provider (ANSP) such as NAV CANADA would expect flight crews to respond in accordance with global procedures described in <i>Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444)</i> (Degraded aircraft performance).</p> <p>Whenever, as a result of failure or degradation of navigation, communications, altimetry, flight control or other systems, aircraft performance is degraded below the level required for the airspace in which it is operating, the flight crew shall advise the Air Traffic Control (ATC) unit concerned without delay. Where the failure or degradation affects the separation minimum currently being employed, the controller shall take action to establish another appropriate type of separation or separation minimum.</p>
1.0 (3)	<p>This provision ensures appropriate ATS units are notified in cases when the ANSP does not have a contractual arrangement with a particular CSP/SSP, and services are provided through internetworking among CSPs/SSPs.</p>
1.0 (4)	<p>For a FANS 1/A CPDLC and ADS-C aircraft system, RTCA DO-306/EUROCAE ED-122 is equivalent to RCP 240, RCP 400, RSP 180 and RSP 400 specifications. For an ATN B1 or FANS 1/A CPDLC aircraft system, RTCA DO-290/EUROCAE ED-120 provides performance criteria for the European Region.</p> <p>The aircraft manufacturer should state aircraft compliance with the RCP 240 and RSP 180 specifications in the Aircraft Flight Manual (AFM). This alone does not constitute operational approval to participate in PBCS operations.</p>
1.0 (10)	<p>RCP/RSP capabilities are inserted only when the descriptors J2 through J7 for CPDLC, M1 through M3 for Satellite Voice (SATVOICE), and/or D1 for ADS-C, are also inserted. While RCP/RSP capability denotes performance, the descriptors J2 through J7, M1 through M3 and D1 in item 10 denote the interoperability for the aircraft equipment.</p>

1.0 (11)	<p>Note : Refer to ICAO Doc 4444, Appendix 2, for flight plan requirements.</p> <p>Note 2: The inclusion of PBCS capability in the filed flight plan indicates that the relevant aircraft equipment comprising the aircraft system is approved and serviceable, and that the operator is eligible (e.g. flight crew training and qualification) to use the equipment for PBCS operations. If these conditions are not met then PBCS capability should not be included in the flight plan.</p> <p>Note 3: The ATS unit uses the flight plan information to determine when to apply particular ATM operations that are dependent on the capability and to configure the system (e.g. set timer threshold values) for efficient operation when required communication and/or surveillance performance varies.</p>
2.0 (2)	<p>For a FANS 1/A CPDLC and ADS-C aircraft system, RTCA DO-306/EUROCAE ED-122 is equivalent to RCP 240, RCP 400, RSP 180 and RSP 400 specifications. For an ATN B1 or FANS 1/A CPDLC aircraft system, RTCA DO-290/EUROCAE ED-120 provides performance criteria for the European Region.</p> <p>The aircraft manufacturer should state aircraft compliance with the RCP 240 and RSP 180 specifications in the AFM. This alone does not constitute operational approval to participate in PBCS operations.</p>
2.0 (3)	<p>RCP/RSP integrity is typically shown by analysis, design, system architecture, and evaluations of Human-machine interface (HMI), taking into account flight crew training and qualification programs instituted by the aircraft operator.</p>
2.0 (4)	<p>RCP/RSP availability is typically shown by evaluation of equipment failure and the number of similar components (redundancy) installed on the aircraft.</p> <p>Note 1: For voice communication, the number of radios and types of radios required may be specified by operating rules and airspace requirements (i.e. the Aeronautical Information Publication (AIP) or equivalent publication).</p> <p>Note 2: It would be impractical to exhaustively demonstrate compliance at the aircraft system level.</p>
2.0 (5)	<p>Note: Examples of alerts include failure of a particular communication means, definitive connectivity loss, or failure of the communication or surveillance functions. There is no consolidated RCP/RSP capability directly displayed to the flight crew. Appropriate procedures and flight crew training associated with the alerts ensure continued compliance with PBCS operations.</p>
3.0 (1)	<p>NAV CANADA is responsible for the PBCS monitoring program in the North Atlantic (NAT) High Level Airspace (HLA) (Gander Oceanic airspace) and any other Canadian airspace that is identified for the application of PBCS separations. NAV CANADA shall follow the guidance material in Appendix D of ICAO Doc 9869, PBCS Manual which describes post-implementation monitoring and corrective action. The Transport Canada Civil Aviation (TCCA) Office of Primary Interest (OPI) for problem reporting and resolution is still to be determined and will be published in a revised edition of this document.</p>

**APPENDIX Z — CONDITIONS FOR A FOREIGN AIR OPERATOR CERTIFICATE SPECIAL
AUTHORIZATION FOR REQUIRED COMMUNICATIONS PERFORMANCE (RCP) 240 AND
REQUIRED SURVEILLANCE PERFORMANCE (RSP) 180**

1.0 Operator Requirements

- (1) This authorization is issued pursuant to paragraph 701.08(g) (iii) of the *Canadian Aviation Regulations* (CARs). This authorization is valid if the air operator holds a valid authorization from the State of the Operator, or the State of Registry, for performance-based communications and surveillance operations, specifically Required Communications Performance (RCP) 240 and/or Required Surveillance Performance (RSP) 180.

2.0 Aircraft Requirements

- (1) This authorization is valid if the air operator holds a valid authorization from the State of the Operator, or the State of Registry, for performance-based communications and surveillance operations, specifically RCP 240 and/or RSP 180.

3.0 Airspace Requirements

- (1) This authorization applies to all airspace managed by Canadian Air Traffic Service (ATS) that is predicated on performance-based communication and surveillance capabilities requiring the RCP 240 and/or RSP 180 specifications.

LIST OF MIDRMA BOARD MEMBERS/ALTERNATES AND FOCAL PONTS

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STATE	MIDRMA BOARD MEMBER	ALTERNATE	ATC FOCAL POINT	AIRWORTHINESS/FLIGHT OPERATIONS FOCAL POINT
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STATE	MIDRMA BOARD MEMBER	ALTERNATE	ATC FOCAL POINT	AIRWORTHINESS/FLIGHT OPERATIONS FOCAL POINT
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STATE	MIDRMA BOARD MEMBER	ALTERNATE	ATC FOCAL POINT	AIRWORTHINESS/FLIGHT OPERATIONS FOCAL POINT
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STATE	MIDRMA BOARD MEMBER	ALTERNATE	ATC FOCAL POINT	AIRWORTHINESS/FLIGHT OPERATIONS FOCAL POINT
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ATTACHMENT A

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