



*International Civil Aviation Organization*

**AIR NAVIGATION SYSTEMS IMPLEMENTATION GROUP**

**Second Meeting (ANSIG/2)**  
*(Cairo, Egypt, 6 – 8 December 2016)*

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**Agenda Item 4.2.1: MID Region ASBU Implementation**

**STATUS OF IMPLEMENTATION OF PIA3 BLOCK 0 MODULES  
(B0-FRTO, B0-NOPS AND B0-ACAS)**

*(Presented by the Secretariat)*

**SUMMARY**

This paper presents the status of implementation of the PIA3 Block 0 Modules (B0-FRTO, B0-NOPS and B0-ACAS) in the MID Region and seeks ways and means to expedite the implementation in order to meet the agreed performance targets.

Action by the meeting is at paragraph 3.

**REFERENCES**

- MID Air Navigation Strategy (MID Doc 002)
- MID eANP Volume III

**1. INTRODUCTION**

1.1 MID Region Air Navigation Strategy was endorsed by the MIDANPIRG/15 as MID Doc 002 to be the framework identifying the regional air navigation priorities, performance indicators and targets. The Strategy includes Tables for eleven priority 1 ASBU Modules along with their associated elements, applicability, performance Indicators, supporting Metrics and performance Targets.

**2. DISCUSSION**

2.1 Performance Improvement Area 3 (*Optimum Capacity and Flexible Flights – Through Global Collaborative ATM*) includes seven (7) Modules in Block 0 from which B0-FRTO, B0-NOPS and B-ACAS have been considered priority 1 for implementation in the MID Region.

***B0-FRTO***

2.2 B0-FRTO (Free-Route Operations) as a priority 1 Module, aims to improve operations through Enhanced En-Route Trajectories that allow the use of airspace which would otherwise be segregated (i.e. special use airspace) along with flexible routing adjusted for specific traffic patterns. This will provide greater routing possibilities, reducing potential congestion on trunk routes and busy crossing points, resulting in reduced flight length and fuel burn.

2.3 For the purpose of performance monitoring and reporting, two (2) elements have been included in the MID Region Air Navigation Strategy: *Flexible Use of Airspace (FUA) and Flexible routing*. Performance Indicators/Supporting Metrics, Targets and status of their implementation are detailed in **Appendix A**.

#### ***Implementation reporting/monitoring***

2.4 MIDANPIRG ATM Sub-Group is the main Regional monitoring body for the collection of data related to the B0-FRTO implementation in the MID Region.

2.5 At the national level, ATM Focal Points are responsible for following-up the B0-FRTO implementation issues and forwarding necessary data on the implementation of B0-FRTO to the ICAO MID Regional Office, as and when required.

#### ***Data collection mechanism***

2.6 Detailed information on the monitoring of B0-FRTO is included in Volume III of the MID eANP, including necessary supporting enablers (i.e. tables, databases, etc.), in order to be used as planning tools for the measurement of the air navigation systems performance. The MID eANP Table related to the status of implementation of the different B0-FRTO elements is at **Appendix A**.

#### ***Challenges and recommendations***

2.7 The meeting may wish to note that the main step toward the successful implementation of the B0-FRTO is the identification of the segregated airspace to be released for civilian air operations in order to publish ATS routes over these airspaces in the AIP, with the aim for pre-flight planning by the airspace users.

2.8 The meeting may wish to recall that MIDANPIRG/15 meeting established the MID Civil/Military Support Team, with a view to expedite the implementation of the FUA Concept in the MID Region. Accordingly, the meeting encouraged States to request the ICAO MID Regional Office to coordinate the conduct of a Support Team visit, which includes in its work programme a Civil/Military Cooperation Workshop.

#### ***B0-NOPS***

2.9 B0-NOPS (Network Operations) as a priority 1 Module, aims to improve flow performance through planning based on a network-wide view through the implementation of Air Traffic Flow Management (ATFM)/Collaboration Decision Making (CDM).

2.10 Air Traffic Flow Management (ATFM) is used to manage the flow of traffic in a way that minimizes delay and maximizes the use of the available airspace. ATFM can regulate traffic flows involving departure slots, smooth flows and manage rates of entry into airspace along traffic axes, manage arrival time at waypoints or Flight Information Region (FIR)/sector boundaries and re-route traffic to avoid saturated areas. ATFM may also be used to address system disruptions including crisis caused by human or natural phenomena.

2.11 For the purpose of performance monitoring and reporting, one (1) basic element has been included in the MID Region Air Navigation Strategy: *ATFM Measures implemented in collaborative manner*. Performance Indicators/Supporting Metrics, Targets and status of their implementation are detailed in **Appendix B**.

#### ***Implementation reporting/monitoring***

2.12 MIDANPIRG ATM Sub-Group is the main Regional monitoring body for the collection of data related to the B0-NOPS implementation in the MID Region.

2.13 At the national level, ATM Focal Points are responsible for following-up the B0-NOPS implementation issues and forwarding necessary data on the implementation of B0-NOPS to the ICAO MID Regional Office, as and when required.

#### *Data collection mechanism*

2.14 Detailed information on the monitoring of B0-NOPS is included in Volume III of the MID eANP, including necessary supporting enablers (i.e. tables, databases, etc.), in order to be used as planning tools for the measurement of the air navigation systems performance. The MID eANP Table related to the status of implementation of the B0-NOPS element is at **Appendix B**.

#### *Challenges and recommendations*

2.15 The main challenges related to the implementation of NOPS are the components of the ATFM such as: establishment of ATFM units at Area Control Centres, effective coordination between ATFM units, sharing of information, establishment of a regional/sub-regional ATFM system/centre, etc.

2.16 The meeting may wish to note that the ICAO ATFM Seminar will be held in Dubai, UAE from 13 to 15 December 2016. The main objectives of the Seminar are to raise awareness and share experience related to ATFM. However, the third day of the Seminar is dedicated to the MID Region with a view to agree on a roadmap for the implementation of ATFM in the MID Region, including the review of B0-NOPS and planning for B1-NOPS implementation.

2.17 The meeting may wish to note that ICAO is planning to organize a Civil/Military Workshop jointly with ACAC and CANSO from 25 to 27 September 2017.

#### **B0-ACAS**

2.18 B0-ACAS (Airborne Collision Avoidance Systems) as a priority 1 Module, aims to provide short-term improvements to existing ACAS in order to reduce nuisance alerts while maintaining existing levels of safety. This will reduce trajectory deviations and increase safety in cases where there is a breakdown of separation.

2.19 For the purpose of performance monitoring and reporting, one (1) element has been included in the MID Region Air Navigation Strategy: Avionics (TCAS V7.1). Performance Indicators/Supporting Metrics, Targets and status of their implementation are detailed in **Appendix C**.

#### *Implementation reporting/monitoring*

2.20 MIDANPIRG CNS Sub-Group is the main Regional monitoring body for the collection of data related to the B0-ACAS implementation in the MID Region.

2.21 At the national level, CNS Focal Points are responsible for following-up the B0-ACAS implementation issues and forwarding necessary data on the implementation of B0-ACAS to the ICAO MID Regional Office, as and when required.

#### *Data collection mechanism*

2.22 The status of implementation of the B0-ACAS is at **Appendix C**.

#### *Challenges*

2.23 The main challenges related to the implementation of B0-ACAS is related mainly to development of necessary civil aviation regulations to mandate carriage of ACAS (TCAS v 7.1) for

aircraft with a max certificated take-off mass greater than 5.7 tons and to ensure compliance by the air operators.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) review and update the status of implementation of B0-FRTO, B0-NOPS, and B0-ACAS;
- b) identify the difficulties faced in the implementation of B0-FRTO, B0-NOPS, and B0-ACAS;
- c) recommend measures to expedite the implementation process and meet the agreed performance targets; and
- d) encourage States to attend the:
  - i. Civil/Military Workshop planned to be held from 25 to 27 September 2017; and
  - ii. ICAO ATFM Seminar (Dubai, UAE from 13 to 15 December 2016).

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APPENDIX A

<b><i>B0 – FRT0: Improved Operations through Enhanced En-Route Trajectories</i></b>					
<b>Elements</b>	<b>Applicability</b>	<b>Performance Indicators/Supporting Metrics</b>	<b>Targets</b>	<b>Status</b>	<b>Remarks</b>
Flexible use of airspace (FUA)	All States	Indicator: % of States that have implemented FUA  Supporting metric*: number of States that have implemented FUA	40% by Dec. 2017	TBD by ATM SG/3 meeting May 2017	Inputs should be provided by States
Flexible routing	All States	Indicator: % of required Routes that are not implemented due military restrictions (segregated areas)  Supporting metric 1: total number of ATS Routes in the Mid Region  Supporting metric 2*: number of required Routes that are not implemented due military restrictions (segregated areas)	60% by Dec. 2017	TBD by ATM SG/3 meeting May 2017	Inputs should be provided by States

**Table B0-FRTO**

**EXPLANATION OF THE TABLE**

Column

- 1 Name of the State
- 2 Status of implementation of Flexible Use of Airspace (FUA). The Implementation should be based on the published aeronautical information:  
 FI – Fully Implemented  
 PI – Partially Implemented  
 NI – Not Implemented
- 3 Total Number of ATS Routes in the State.
- 4 Total number of required routes (through Regional Agreement) to be implemented through segregated areas
- 5 Number of routes that are NOT implemented in the State due military restrictions (segregated areas)
- 6 Remarks

<b>Applicability State</b>	<b>FUA Implemented</b>	<b>Total number of ATS Routes</b>	<b>Total number of required routes to be implemented through segregated areas</b>	<b>Number of routes that are NOT implemented due military restrictions (segregated areas)</b>	<b>Remarks</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Bahrain	FI	78	1 (UM430)	0	Time route
Egypt					
Iran					
Iraq	PI	15	0	2	P/UP975 closed btw SIDNA & MUTAG
Jordan	PI	12	1 (UM690)	1 (G662)	
Lebanon	PI	9	1 (M1)	M1 (KAD-LATEB)	
Libya					
Kuwait					
Oman					
Qatar					
Saudi Arabia	PI	153	1 (RC083)	0	
Sudan	PI	16	4	2	
Syria	PI	19	0	0	
Unite Arab Emirates	PI	41	3	4	
Yemen					
Total					
Percentage					

APPENDIX B

<b><i>B0 – NOPS: Improved Flow Performance through Planning based on a Network-Wide view</i></b>					
<b>Elements</b>	<b>Applicability</b>	<b>Performance Indicators/Supporting Metrics</b>	<b>Targets</b>	<b>Status</b>	<b>Remarks</b>
ATFM Measures implemented in collaborative manner	All States	Indicator: % of States that have established a mechanism for the implementation of ATFM Measures based on collaborative decision  Supporting metric: number of States that have established a mechanism for the implementation of ATFM Measures based on collaborative decision	100% by Dec. 2017	TBD by ATM SG/3 meeting May 2017	Inputs should be provided by States

**B0 – NOPS**

**Monitoring and Reporting**

**EXPLANATION OF THE TABLE**

Column

- 1 Name of the State
- 2 Status of implementation of a mechanism for the implementation of ATFM Measures based on collaborative decision:  
FI – Fully Implemented  
PI – Partially Implemented  
NI – Not Implemented
- 3 Provide reference to the Document including the mechanism for the implementation of ATFM Measures
- 4 List of implemented ATFM Measures
- 5 Provide a list of ATFM Measures, which were coordinated with the neighbouring States
- 6 Remarks

<b>State</b>	<b>Mechanism for the Implementation of ATFM Measures based on Collaborative Decision</b>	<b>Reference (Document)</b>	<b>ATFM Measures Implemented</b>	<b>ATFM Measures were Coordinated with the Following States</b>	<b>Remarks</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Bahrain</b>					
<b>Egypt</b>					
<b>Iran</b>					
<b>Iraq</b>					
<b>Jordan</b>					
<b>Lebanon</b>					
<b>Libya</b>					
<b>Kuwait</b>					
<b>Oman</b>					
<b>Qatar</b>					
<b>Saudi Arabia</b>					
<b>Sudan</b>					
<b>Syria</b>					
<b>Unite Arab Emirates</b>					
<b>Yemen</b>					
Total					
Percentage					

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APPENDIX C

<b>B0 – ACAS: ACAS Improvements</b>					
<b>Elements</b>	<b>Applicability</b>	<b>Performance Indicators/Supporting Metrics</b>	<b>Targets</b>	<b>Status</b>	<b>Remarks</b>
Avionics <b>(TCAS v7.1)</b>	All States	Indicator: % of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons  Supporting metric: Number of States requiring carriage of ACAS (TCAS v 7.1) for aircraft with a max certificated take-off mass greater than 5.7 tons	80% by Dec. 2015  100% by Dec. 2016	53% (8 States)	Data collected by CNS SG Secretariat

**ACAS V7.1 Status and regulation reference**

<b>State</b>	<b>ACAS V7.1 requirement</b>	<b>Regulation Reference</b>	<b>Remarks</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Bahrain</b> N	All fixed - wing turbine - engine aircraft having maximum take - off mass in excess of 5700 KG or approved passenger seating configuration of more than 19, will be required to be equipped with ACAS II	1.5.1.5 in Bahrain AIP	Air Navigation Technical Regulations (ANTR) – will be updated to reflect Annex 10 (Volume IV)
<b>Egypt</b> Y	ACAS II mandated		Need to update regulation
<b>Iran</b> Y	4.3.5.3.1. New ACAS installations after 1 January 2014 shall monitor own aircraft's vertical rate to verify compliance with the RA sense. If non-compliance is detected, ACAS shall stop assuming compliance, and instead shall assume the observed vertical rate. 4.3.5.3.2. After 1 January 2017, all ACAS units shall comply with the requirements stated in 4.3.5.3.1.	Aeronautical Telecommunications bylaw, articles 3 and 4	According to articles 3 and 4 of Iran aeronautical telecommunications by law, ratified by board of ministers, Airborne collision avoidance systems are categorized as aeronautical telecommunications systems and should be manufactured, installed and maintained according to standards of Annex 10. -Since no difference to ICAO annex 10 is notified, ACAS V 7.1 is mandatory according to provisions of annex 10 amendment 85. -Airworthiness directives issued by FAA and EASA shall to be implemented by Iranian AOC holders.

State	ACAS V7.1 requirement	Regulation Reference	Remarks
1	2	3	4
<b>Iraq</b>			
<b>Jordan Y</b>	Mandated in June 2014		
<b>Kuwait</b>			
<b>Lebanon Y</b>	Mandated		
<b>Libya</b>			
<b>Oman</b>			
<b>Qatar Y</b>	<p>3.5.3.1 New ACAS installations after 1 January 2014 shall monitor own aircraft's vertical rate to verify compliance with the RA sense. If non-compliance is detected, ACAS shall stop assuming compliance, and instead shall assume the observed vertical rate.</p> <p>Note 1.— This overcomes the retention of an RA sense that would work only if followed. The revised vertical rate assumption is more likely to allow the logic to select the opposite sense when it is consistent with the non-complying aircraft's vertical rate.</p> <p>Note 2.— Equipment complying with RTCA/DO-185 or DO-185A standards (also known as TCAS Version 6.04A or TCAS Version 7.0) do not comply with this requirement.</p> <p>Note 3.— Compliance with this requirement can be achieved through the implementation of traffic alert and collision avoidance system (TCAS) Version 7.1 as specified in RTCA/DO-185B or EUROCAE/ED143.</p> <p>4.3.5.3.2 QCAR CNS Note: All ACAS shall be compliant with the requirement in 4.3.5.3.1.</p>	<p>QCAR – OPS 1, Subpart K, QCAR – OPS 1.668 – Airborne collision avoidance system</p> <p>QCAR Part 10 - Volume 4 Chapter 4 Airborne Collision Avoidance System</p>	<p>References: <a href="http://www.caa.gov.qa/en/safety_regulations">http://www.caa.gov.qa/en/safety_regulations</a></p>

State	ACAS V7.1 requirement	Regulation Reference	Remarks
1	2	3	4
	4.3.5.3.3 After 1 January 2017, all ACAS units shall comply with the requirements stated in 4.3.5.3.1.		
<b>Saudi Arabia</b>			
<b>Sudan Y</b>	Mandated	Amended ANNEX 10(V4)-ANNEX 6(V2)	According to adopted ANNEX TO SUDAN REGULATION (SUCAR 10 V4 Par. 4.3.5.3.1 AND SUCAR 6 V2 par 2.05.15)
<b>Syria</b>			
<b>UAE Y</b>	CAR-OPS 1.668 Airborne Collision Avoidance System (See IEM OPS 1.668) and CAAP 29 An operator shall not operate a turbine powered aeroplane: (a) Having a MCTOM (maximum certificated take-off mass) in excess of 5700 kg or a MAPSC (maximum approved passenger seating configuration) of more than 19 unless it is equipped with an airborne collision avoidance system (ACAS) II Change 7.0 . From 31 January 2015 such aeroplanes shall be equipped with ACAS II, Change 7.1. (b) Manufactured after 31 December 2012 and having a MCTOM in excess of 5700 kg or a MAPSC of more than 19 unless it is equipped with ACAS II, Change 7.1."	CAR-OPS 1.668 Airborne Collision Avoidance System (See IEM OPS 1.668) and CAAP 29 And AIP 1.5.6.6	<a href="https://www.gcaa.gov.ae/en/ePublication/Pages/CARs.aspx?CertID=CARs">https://www.gcaa.gov.ae/en/ePublication/Pages/CARs.aspx?CertID=CARs</a>
<b>Yemen Y</b>	From 31 January 2015 such aeroplanes shall be equipped with ACAS II, Change 7.1		Reference need to be provided

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