



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 PIA1 AND PIA4 BLOCK 0 MODULES (B0-APTA, B0-SURF, B0-ACDM, B0-CCO AND B0-CDO)**

*(Presented by the Secretariat)*

**SUMMARY**

This paper presents the status of implementation of the PIA1 and PIA4 Block 0 Modules (B0-APTA, B0-SURF, B0-ACDM, B0-CCO and B0-CDO) 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 1 (*Airport Operations*) includes five (5) Modules in Block 0 from which B0-APTA, B0-SURF and B-ACDM have considered priority 1 for implementation in the MID Region as well as B0-CCO and B0-CDO from the Performance Improvement Area 4 (*Efficient Flight Path – Through Trajectory-based Operations*)

**B0-APTA**

2.2 B0-APTA (Airport Accessibility) as a priority 1 Module, it complements other airspace and procedures elements (continuous descent operations (CDO), PBN and airspace management) to increase efficiency, safety, access and predictability.

2.3 For the purpose of performance monitoring and reporting, three (3) elements have been included in the MID Region Air Navigation Strategy: *States' PBN Implementation Plans, LANV and LNAV/VNAV approach procedures*. Performance Indicators/Supporting Metrics, Targets and status of their implementation are detailed in **Appendix A**.

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

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

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

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

2.6 Detailed information on the monitoring of B0-APTA 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-APTA elements is at **Appendix A**.

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

2.7 The meeting may wish to note that the following challenges have been identified by the PBN SG/2 meeting (Sharm El Sheikh, Egypt, 22-25 February 2016) as the main impediments to the advancement of PBN implementation in the Region:

- shortage of PANS-OPS, Airspace Planners and OPS-approval experts;
- insufficient procedure design work in some States to attain or maintain competency;
- lack of airspace and procedure design training: initial, OJT, and/or recurrent;
- lack of capabilities to implement Quality Assurance;
- lack of regulatory expertise to oversee the process leading to procedure publication;
- low Level of Civil/Military Cooperation;
- unstable political and security situation in some States;
- implementation of eTOD Area 2;
- fleet equipage;
- Operational Improvements Assessment;
- catering for non-compliance (mixed equipage environment);
- fully integrated system (IFP, AIM, eTOD);
- airspace changes to accommodate current and projected traffic increase and further improve safety, capacity and efficiency;
- GNSS Signal Vulnerability;
- maintain Target Level of Safety (TLS); and
- stakeholders (ATCOs, Pilots, etc.) training and readiness.

2.8 The PBNS SG/2 meeting encouraged States to:

- ensure the training/recruitment of qualified experts in the fields of FPD, airspace planning, and operations approval;
- work cooperatively;
- request ICAO support for the training and implementation of PBN;

- organize at national level PBN Workshops;
- request MID Civil/Military Support Team visits;
- engage all stakeholders and in particular the Regulator in the planning and design processes;
- share experience and best practices with each other; and
- use IFSET and/or other tools for the assessment of the benefit accrued from the implementation of PBN.

2.9 The PBN SG/2 meeting emphasized that the MID Region Flight Procedure Programme (MID FPP) is the optimal solution that would support States to overcome most of the identified challenges, and will foster the PBN implementation in the MID Region. The MID FPP will be hosted in Lebanon and is planned to start operations in 2017, pending the States' signature to the Project Document with ICAO and securing the expenses of the MID FPP Manager for the first year.

### ***B0-SURF***

2.10 B0-SURF aims at enhancing safety and efficiency of surface operations through implementation of Advanced Surface Movement Guidance and Control System (A-SMGCS Level 1-2). A-SMGCS: provides surveillance and alerting of movements of both aircraft and vehicles on the aerodrome thus improving runway/aerodrome safety and capacity.

2.11 For the purpose of performance monitoring and reporting, four (4) elements have been included in the MID Region Air Navigation Strategy: *Non-cooperative Surveillance Sensors (NCSS), Cooperative Surveillance Sensor (CSS), Data Fusion (FS), and Alert*. Performance Indicators/Supporting Metrics, Targets and status of their implementation are detailed in **Appendix B**.

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

2.12 Detailed information on the monitoring of B0-SURF 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. Concerned MID eANP Tables related to the status of implementation of the different B0-SURF elements are at **Appendix B**.

### ***B0-ACDM***

2.13 B0-ACDM aims at Improved Airport Operation through Airport Collaborative Decision Making (A-CDM). It is to be highlighted that A-CDM implementation will enhance surface operations and safety by making airspace users, ATC and airport operators better aware of their respective situation and actions on a given flight.

2.14 Airport-CDM is a set of improved processes supported by the interconnection of various airport stakeholders information systems. It includes application designed to "Implement collaborative procedures that will allow the sharing of surface operations data among the different stakeholders at the airport". The following A-CDM implementation elements have been underlined: Information Sharing, Milestone Approach, Variable Taxi Time, Pre-departure Sequencing, Adverse Conditions, and Collaborating Management of Flight Updates.

2.15 For the purpose of performance monitoring and reporting, six (6) elements have been included in the MID Region Air Navigation Strategy: *Information Sharing (IS), Milestone Approach (MA), Variable Taxi Time (VTT), Pre-departure Sequencing (PDS), Adverse Conditions (AC), and Management of Flight Updates*. Performance Indicators/Supporting Metrics, Targets and status of their implementation are detailed in **Appendix B**.

***Data collection mechanism***

2.16 Detailed information on the monitoring of B0-ACDM 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. Concerned MID eANP Tables related to the status of implementation of the different B0-ACDM elements are at **Appendix B**.

***B0-CDO***

2.17 B0-CDO (Continuous Descent Operations) Module aims to use performance-based airspace and arrival procedures allowing aircraft to fly their optimum profile using continuous descent operations. This will optimize throughput, allow fuel efficient descent profiles and increase capacity in terminal areas

2.18 For the purpose of performance monitoring and reporting, two (2) elements have been included in the MID Region Air Navigation Strategy: *PBN STARs and International aerodromes/TMAs with CDO*. Performance Indicators/Supporting Metrics, Targets and status of their implementation are detailed in **Appendix A**

***Implementation reporting/monitoring***

2.19 MIDANPIRG PBN Sub-Group is the main Regional monitoring body for the collection of data related to the B0-CDO implementation in the MID Region.

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

2.21 The meeting may wish to note that the PBN SG/2 meeting agreed to the applicability areas for the implementation of the CDOs, which are reflected in the revised version of the MID Air Navigation Strategy that will be presented in WP/9.

***Data collection mechanism***

2.22 Detailed information on the monitoring of B0-CDO 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-CDO elements is at **Appendix A**.

***B0-CCO***

2.23 B0-CCO (Continuous Climb Operations) Module aims to implement continuous climb operations in conjunction with performance-based navigation (PBN) to provide opportunities to optimize throughput, improve flexibility, enable fuel-efficient climb profiles and increase capacity at congested terminal areas.

2.24 For the purpose of performance monitoring and reporting, two (2) elements have been included in the MID Region Air Navigation Strategy: *PBN SIDs and International aerodromes/TMAs with CCO*. Performance Indicators/Supporting Metrics, Targets and status of their implementation are detailed in **Appendix A**.

***Implementation reporting/monitoring***

2.25 MIDANPIRG PBN Sub-Group is the main Regional monitoring body for the collection of data related to the B0-CCO implementation in the MID Region.

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

2.27 The meeting may wish to note that the PBN SG/2 meeting agreed to the applicability areas for the implementation of the CCOs, which are reflected in the revised version of the MID Air Navigation Strategy will be presented in WP/9.

***Data collection mechanism***

2.28 Detailed information on the monitoring of B0-CCO 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-CCO elements is at **Appendix A**.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) review and update the status of implementation of B0-APTA, B0-SURF, B0-ACDM, B0-CDO and B0-CCO;
- b) identify the difficulties faced in the implementation of B0-SURF, B0-ACDM, B0-CDO and B0-CCO; and
- c) recommend measures to expedite the implementation process and meet the agreed performance targets.

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<b><i>B0 – APTA: Optimization of Approach Procedures including vertical guidance</i></b>					
<b>Elements</b>	<b>Applicability</b>	<b>Performance Indicators/Supporting Metrics</b>	<b>Targets</b>	<b>Status</b>	<b>Remarks</b>
States' PBN Implementation Plans	All States	Indicator: % of States that provided updated PBN implementation Plan  Supporting metric: Number of States that provided updated PBN implementation Plan	80 % by Dec. 2014  100% by Dec. 2015	73% (11 States)	PBN Sub-Group Secretariat
LNAV	All RWYs Ends at International Aerodromes	Indicator: % of runway ends at international aerodromes with RNAV(GNSS) Approach Procedures (LNAV)  Supporting metric: Number of runway ends at international aerodromes with RNAV (GNSS) Approach Procedures (LNAV)	All runway ends at Int'l Aerodromes, either as the primary approach or as a back-up for precision approaches by Dec. 2016	51%	Data Collection: MID eANP Table B0-DAPTA-B0-CCO and B0-CDO PBN Sub-Group Secretariat
LNAV/VNAV	All RWYs ENDS at International Aerodromes	Indicator: % of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV)  Supporting metric: Number of runways ends at international aerodromes provided with Baro-VNAV approach procedures (LNAV/VNAV)	All runway ends at Int'l Aerodromes, either as the primary approach or as a back-up for precision approaches by Dec. 2017	29%	Data Collection: MID eANP Table B0-DAPTA-B0-CCO and B0-CDO PBN Sub-Group Secretariat

**B0 – CDO: Improved Flexibility and Efficiency in Descent Profiles (CDO)**

Elements	Applicability	Performance Indicators/Supporting Metrics	Targets	Status	Remarks
PBN STARs	OBBI, HESN, HESH, HEMA, HEGN, HELX, OIIE, OISS, OIKB, OIMM, OIFM, ORER, ORNI, OJAM, OJAI, OJAQ, OKBK, OLBA, OOMS, OOSA, OTHH, OEJN, OEMA, OEDF, OERK, HSNN, HSOB, HSSS, HSPN, OMAA, OMAD, OMDB, OMDW, OMSJ	Indicator: % of International Aerodromes/TMA with PBN STAR implemented as required.  Supporting Metric: Number of International Aerodromes/TMAs with PBN STAR implemented as required.	100% by Dec. 2016 for the identified Aerodromes/TMAs  100% by Dec. 2018 for all the International Aerodromes/TMAs	65% (22 out of 34 aerodromes)  44% of total aerodromes	Data Collection: MID eANP Table B0-DAPTA-B0-CCO and B0-CDO PBN Sub-Group Secretariat
International aerodromes/TMAs with CDO	OBBI, HESH, HEMA, HEGN, OIIE, OIKB, OIFM, OJAI, OJAQ, OKBK, OLBA, OOMS, OTHH, OEJN, OEMA, OEDF, OERK, HSSS, HSPN, OMAA, OMDB, OMDW, OMSJ	Indicator: % of International Aerodromes/TMA with CDO implemented as required.  Supporting Metric: Number of International Aerodromes/TMAs with CDO implemented as required.	100% by Dec. 2018 for the identified Aerodromes/TMAs	Only at OTHH	Data Collection: MID eANP Table B0-DAPTA-B0-CCO and B0-CDO PBN Sub-Group Secretariat





## TABLE B0-APTA, CCO and CDO

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### EXPLANATION OF THE TABLE

#### Column

- 1 Name of the State / International aerodromes' Location Indicator
- 2 Runway Designator
- 3, 4, 5 Conventional Approaches (ILS / VOR or NDB)
- 6, 7, 8 APTA (Status of PBN Plan and implementation of LNAV, LNAV/VNAV), where:
  - Y – Yes, implemented
  - N – No, not implemented
- 9, 10 CCO (Status of implementation of RNAV SID, CCO), where:
  - Y – Yes, implemented
  - N – No, not implemented
- 11, 12 CDO (Status of implementation of RNAV STAR, CDO), where:
  - Y – Yes, implemented
  - N – No, not implemented
- 13 Remarks

TABLE B0-APTA, CCO and CDO

**MID REGION TMAs PROCEDURES Implementation Status as of August 2016**

Int'l Aerodrome  (Ref. MID ANP)	RWY	Conventional Approaches			APTA			CCO					CDO			Remarks	
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO	CDO		PER AERO
		xLS	CAT														
<b>BAHRAIN</b>																	1
OBBI	12L	ILS	I	VORDME		Y		Y					Y	Y			
	30R	ILS	I	VORDME		Y		Y					Y				
<b>Total</b>	<b>2</b>	<b>2</b>		<b>2</b>	<b>Y</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	
<b>%</b>		<b>100</b>		<b>100</b>	<b>Mar. 2015</b>	<b>100</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>100</b>	<b>0</b>	<b>0</b>	
<b>EGYPT</b>																	7
HEBA	14																
	32	ILS	I			Y		Y	Y	Y							
HESN	17			VORDME		Y		Y	Y	Y			Y	Y			
	35	ILS	I	VORDME		Y		Y	Y				Y				
HECA	05L	ILS	I	VORDME		Y		Y									
	05C	ILS	II	VORDME		Y		Y									
	05R	ILS	I														
	23L	ILS	I	VORDME													
	23C	ILS	II	VORDME		Y		Y									
	23R	ILS	I	VORDME		Y		Y									
HEGN	16			VORDME		Y	Y	Y	Y	Y			Y	Y			
	34	ILS	I	VORDME		Y	Y	Y	Y				Y				
HELX	2	ILS	I	VORDME		Y		Y	Y	Y			Y	Y			
	20	ILS	I	VORDME		Y		Y	Y				Y				
HEMA	15			VORDME		Y		Y	Y	Y			Y	Y			
	33			VORDME		Y		Y	Y				Y				
HESH	04L	ILS	I	VORDME		Y	Y	Y	Y	Y			Y	Y			
	04R			VORDME		Y	Y	Y	Y				Y				
	22L			VORDME		Y		Y	Y				Y				
	22R			VORDME		Y		Y	Y				Y				
<b>Total</b>	<b>20</b>	<b>12</b>		<b>17</b>	<b>Y</b>	<b>17</b>	<b>4</b>	<b>17</b>	<b>13</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>5</b>	<b>0</b>	<b>0</b>	
<b>%</b>		<b>60</b>		<b>85</b>	<b>Nov 2016</b>	<b>85</b>	<b>20</b>	<b>85</b>	<b>65</b>	<b>86</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>71</b>	<b>0</b>	<b>0</b>	



Int'l Aerodrome  (Ref. MID ANP)	RWY	Conventional Approaches		APTA			CCO					CDO			Remarks		
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO		CDO	PER AERO
		xLS	CAT														
OIE	11L	ILS	I	VORDME / NDB									Y	Y			
	11R			VORDME / NDB									Y				
	29L			VORDME									Y				
	29R	ILS	II	VORDME / NDB		Y	Y	Y					Y				
OII	11L			VORDME													
	11R			VORDME													
	29L	ILS	I	VORDME													
	29R																
OIZH	17																
	35	ILS	I	VORDME													
OIYY	13			VORDME													
	31			VORDME													
<b>Total</b>	<b>32</b>	<b>10</b>		<b>24</b>	<b>Y</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	
<b>%</b>		<b>31</b>		<b>75</b>	<b>Mar. 2016</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>11</b>	<b>0</b>	<b>0</b>	
<b>IRAQ</b>																6	
ORBI	15L	ILS	I	VORDME													
	15R					Y		Y									
	33L					Y		Y									
	33R	ILS	I	VORDME													
ORMM	14			VORDME													
	32	ILS	I	VORDME													
ORER	18	ILS	II			Y		Y					Y	Y			
	36	ILS	I			Y		Y					Y				
ORSU	13	ILS	I	VOR													
	31	ILS	I	VOR													
ORNI	10																
	28	ILS		VOR													
ORBM																NO DATA	
<b>Total</b>	<b>12</b>	<b>8</b>		<b>7</b>	<b>Y</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	
<b>%</b>		<b>67</b>		<b>58</b>		<b>33</b>	<b>0</b>	<b>33</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>33</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>0</b>	

Int'l Aerodrome  (Ref. MID ANP)	RWY	Conventional Approaches			APTA			CCO					CDO			Remarks		
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO	CDO		PER AERO	
		xLS	CAT															
<b>JORDAN</b>																	3	
OJAM	6					Y	Y	Y	Y	Y			Y	Y				
	24	ILS	I	VORDME		Y	Y	Y	Y				Y					
OJAI	08L	ILS	I	NDB DME		Y	Y	Y	Y	Y			Y	Y				
	08R			NDB		Y	Y	Y	Y				Y					
	26L	ILS	II	VOR / NDB		Y	Y	Y	Y				Y					
	26R	ILS	I	VORDME		Y	Y	Y	Y									
OJAQ	1	ILS	I	VORDME		Y	Y	Y	Y	Y			Y	Y				
	19	ILS	I			Y	N/A	Y	Y				Y				LNAV/VNAV not feasible	
<b>Total</b>	<b>8</b>	<b>6</b>		<b>6</b>		<b>Y</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>3</b>	<b>0</b>	<b>0</b>	
<b>%</b>		<b>75</b>		<b>75</b>		<b>July 2009</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>Plan needs update</b>
<b>KUWAIT</b>																		1
OKBK	15L	ILS	II			Y	Y	Y	Y	Y			Y	Y				
	15R	ILS	II	VORDME		Y	Y	Y	Y				Y					
	33L	ILS	II	VORDME		Y	Y	Y	Y				Y					
	33R	ILS	II			Y	Y	Y	Y				Y					
<b>Total</b>	<b>4</b>	<b>4</b>		<b>2</b>		<b>Y</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	
<b>%</b>		<b>100</b>		<b>50</b>		<b>Mar. 2015</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>Plan needs update</b>
<b>LEBANON</b>																		1
OLBA	3	ILS	I	VORDME		Y		Y		Y			Y	Y				
	16	ILS	I	VORDME		Y		Y					Y					
	17	ILS	I	VORDME / NDB		Y		Y					Y					
	21					Y		Y					Y					
	34	N/A		N/A														Not used for landing
	35	N/A		N/A														Not used for landing
<b>Total</b>	<b>4</b>	<b>5</b>		<b>5</b>		<b>N</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	
<b>%</b>		<b>125</b>		<b>125</b>			<b>100</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>100</b>	<b>0</b>	<b>0</b>	



Int'l Aerodrome  (Ref. MID ANP)	RWY	Conventional Approaches			APTA			CCO					CDO			Remarks	
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO	CDO		PER AERO
		xLS	CAT														
SAUDI ARABIA																4	
OEDF	16L	ILS	II	VORDME													
	16R	ILS	II	VORDME													
	34L	ILS	II	VORDME													
	34R	ILS	II	VORDME													
OEJN	16L	ILS	I	VORDME		Y		Y		Y			Y	Y			
	16C	ILS	II										Y				
	16R	ILS	II			Y		Y					Y				
	34L	ILS	II			Y		Y					Y				
	34C	ILS	II	VORDME									Y				
	34R	ILS	I	VORDME		Y		Y					Y				
OEMA	17	ILS	I	VORDME		Y		Y	Y	Y			Y	Y			
	18			VORDME		Y		Y	Y				Y				
	35	ILS	I	VORDME		Y		Y	Y				Y				
	36	ILS	I	VORDME		Y		Y	Y				Y				
OERK	15L	ILS	I	VORDME													
	15R	ILS	I														
	33L	ILS	I														
	33R	ILS	I	VORDME													
<b>Total</b>	<b>18</b>	<b>17</b>		<b>13</b>	<b>Y</b>	<b>8</b>	<b>0</b>	<b>8</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>2</b>	<b>0</b>	<b>0</b>	
<b>%</b>		<b>94</b>		<b>72</b>	<b>May 2012</b>	<b>44</b>	<b>0</b>	<b>44</b>	<b>28</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>56</b>	<b>50</b>	<b>0</b>	<b>0</b>	

Plan needs update





Int'l Aerodrome  (Ref. MID ANP)	RWY	Conventional Approaches		APTA			CCO					CDO			Remarks		
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO		CDO	PER AERO
		xLS	CAT														
<b>UNITED ARAB EMIRATES</b>																8	
OMAA	13L	ILS	II				Y	Y	Y				Y	Y		RNP AR	
	13R	ILS	I	VOR			Y	Y					Y			RNP AR	
	31L	ILS	II/III	VOR			Y	Y					Y			RNP AR	
	31R	ILS	II				Y	Y					Y			RNP AR	
OMAD	13			VORDME		Y	Y						Y	Y		RNP AR	
	31	ILS	I	VORDME		Y	Y						Y			RNP AR	
OMAL	1	ILS	I	VOR													
	19			VOR													
OMDB	12L	ILS	I/II/III	VOR		Y	Y	Y	Y	Y			Y	Y			
	12R	ILS	I/II/III	VOR		Y	Y	Y	Y				Y				
	30L	ILS	I/II/III			Y	Y	Y	Y				Y				
	30R	ILS	I/II/III	VOR		Y	Y	Y	Y				Y				
OMDW	12	ILS	II/III			Y	Y	Y	Y	Y			Y	Y			
	30	ILS	II/III			Y	Y	Y	Y				Y				
OMFJ	11								Y	Y							
	29	ILS	I	VOR		Y	Y	Y	Y								
OMRK	16			VOR		Y	Y										
	34	ILS	I	VOR		Y	Y										
OMSJ	12	ILS	I			Y	Y	Y	Y	Y			Y	Y			
	30	ILS	II			Y	Y	Y	Y				Y				
<b>Total</b>	<b>20</b>	<b>16</b>		<b>12</b>	<b>Y</b>	<b>13</b>	<b>11</b>	<b>15</b>	<b>14</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>5</b>	<b>0</b>	<b>0</b>	
<b>%</b>		<b>80</b>		<b>60</b>	<b>Dec. 2015</b>	<b>65</b>	<b>55</b>	<b>75</b>	<b>70</b>	<b>63</b>	<b>0</b>	<b>0</b>	<b>70</b>	<b>63</b>	<b>0</b>	<b>0</b>	

Int'l Aerodrome  (Ref. MID ANP)	RWY	Conventional Approaches		APTA			CCO					CDO			Remarks		
		Precision		VOR or NDB	PBN PLAN Update date	LNAV	LNAV / VNAV	PBN RWY	RNAV SID	PER AERO	CCO	PER AERO	RNAV STAR	PER AERO		CDO	PER AERO
		xLS	CAT														
YEMEN																5	
OYAA	8	ILS	I	VORDME													
	26			VORDME													
OYHD	3			VOR									Y				
	21			VOR / NDB		Y		Y					Y				
OYRN	6																
	24			VORDME													
OYSN	18	ILS	I	VORDME/NDB		Y	Y	Y	Y	Y			Y	Y			
	36			VOR		Y	Y	Y	Y				Y				
OYTZ																NO DATA	
<b>Total</b>	<b>8</b>	<b>2</b>		<b>7</b>	<b>Draft Plan</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>59</b>
<b>%</b>		<b>25</b>		<b>88</b>	<b>Jan. 2010</b>	<b>38</b>	<b>25</b>	<b>38</b>	<b>25</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>38</b>	<b>40</b>	<b>0</b>	<b>0</b>	

Results		Plans			PBN			SID		CCO		STAR		CDO		9 PBN APV + 102 ILS (111/162)	
Total	160	102		124	11	81	47	83	56	23	6	2	73	26	6		2
Percentage (%)		64		78	73	51	29	52	35	39	4	3	16	44	4	3	69% RWY Ends with Vertical guidance
59 Aerodromes		43+4 RNP AR =47 PBN RWYs with vertical guidance (29%)															

**APPENDIX B**

***B0-SURF: Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)***

**Description and purpose**

Basic A-SMGCS provides surveillance and alerting of movements of both aircraft and vehicles on the aerodrome thus improving runway/aerodrome safety. ADS-B information is used when available (ADS-B APT).

**Main performance impact:**

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
Y	Y	Y	Y	Y

***Applicability consideration:***

A-SMGCS is applicable to any aerodrome and all classes of aircraft/vehicles. Implementation is to be based on requirements stemming from individual aerodrome operational and cost-benefit assessments. ADS-B APT, when applied is an element of A-SMGCS, is designed to be applied at aerodromes with medium traffic complexity, having up to two active runways at a time and the runway width of minimum 45 m.

<b><i>B0-SURF: Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)</i></b>			
<b>Elements</b>	<b>Applicability</b>	<b>Performance Indicators/Supporting Metrics</b>	<b>Targets</b>
A-SMGCS Level 1*	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEDF, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented A-SMGCS Level 1  Supporting Metric: Number of applicable international aerodromes having implemented A-SMGCS Level 1	70% by Dec. 2017
A-SMGCS Level 2*	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented A-SMGCS Level 2  Supporting Metric: Number of applicable international aerodromes having implemented A-SMGCS Level 2	50% by Dec. 2017

\*Reference: Eurocontrol Document – “Definition of A-SMGCS Implementation Levels, Edition 1.2, 2010”.

**TABLE B0-SURF (A-SMGCS Level 1-2)**

**EXPLANATION OF THE TABLE**

Column

- 1 Name of the State
- 2 Name of City/Aerodrome and Location Indicator
- 3 Status of implementation of A-SMGCS Level 1, where:  
 Y – Yes, implemented  
 N – No, not implemented
- 4 Status of implementation of A-SMGCS Level 2, where:  
 Y – Yes, implemented  
 N – No, not implemented
- 5 Action plan — short description of the State’s Action Plan with regard to the implementation of A-SMGCS Level 1-2, especially for items with “N”.
- 6 Remarks

State	City/ Aerodrome Location Indicator	Level 1	Level 2	Action Plan	Remarks
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
BAHRAIN	Bahrain/Bahrain Intl (OBBI)	N	N	A-SMGCS Level 1-2 Project is under Execution phase. expected completion on Dec 2015	
EGYPT	Cairo/Cairo Intl (HECA)	Y	Y		
IRAN	Tehran/Mehrabad Intl (OIII)	N	N		
KUWAIT	Kuwait/Kuwait Intl (OKBK)	N	N		
OMAN	Muscat/Muscat Intl (OOMS)	N	N		
QATAR	Doha/Doha Intl (OTBD)	Y	Y		
	Doha/Hamad Intl (OTHH)	Y	Y		
SAUDI ARABIA	Dammam/King Fahad Intl (OEDF)	N	N		
	JEDDAH/King Abdulaziz Intl (OEJN)	N	N		
	RIYADH/King Khalid Intl (OERK)	N	N		
UAE	Abu Dhabi/Abu Dhabi Intl (OMAA)	Y	Y	Level 4 2017	
	Dubai/Dubai Intl (OMDB)	Y	Y	Level 4 2016	
	DUBAI/AI Maktoum Intl (OMDW)	Y	N	Level 4 2018	
<b>Total Percentage</b>		<b>46%</b>	<b>46%</b>		

***B0 – ACDM: Improved Airport Operations through Airport-CDM***

**Description and purpose**

To implement collaborative applications that will allow the sharing of surface operations data among the different stakeholders on the airport. This will improve surface traffic management reducing delays on movement and manoeuvring areas and enhance safety, efficiency and situational awareness.

**Main performance impact:**

KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	Y	Y	Y	N

***Applicability consideration:***

Local for equipped/capable fleets and already established airport surface infrastructure.

***B0 – ACDM: Improved Airport Operations through Airport-CDM***

<i>Elements</i>	<i>Applicability</i>	<i>Performance Indicators/Supporting Metrics</i>	<i>Targets</i>
A-CDM	OBBI, HECA, OIII, OKBK, OOMS, OTBD, OTHH, OEJN, OERK, OMDB, OMAA, OMDW	Indicator: % of applicable international aerodromes having implemented improved airport operations through airport-CDM  Supporting metric: Number of applicable international aerodromes having implemented improved airport operations through airport-CDM	40% by Dec. 2017

**TABLE B0-ACDM**

**EXPLANATION OF THE TABLE**

Column

- 1 Name of the State
- 2 Name of City/Aerodrome and Location Indicator
- 3 Status of implementation of Apron Management, where:  
 Y – Yes, implemented  
 N – No, not implemented
- 4 Status of implementation of ATM-Aerodrome coordination, where:  
 Y – Yes, implemented  
 N – No, not implemented
- 5 Terminal & runway capacity is declared, where:  
 Y – Yes, declared  
 N – No, not declared
- 6 Action plan — short description of the State’s Action Plan with regard to the implementation of B0-ACDM.
- 7 Remarks

<b>State</b>	<b>City/ Aerodrome Location Indicator</b>	<b>Apron Management</b>	<b>ATM-Aerodrome Coordination</b>	<b>Terminal &amp;runway capacity declared</b>	<b>Action Plan</b>	<b>Remarks</b>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
BAHRAIN	Bahrain/Bahrain Intl (OBBI)	N	N	N	2018	
EGYPT	Cairo/Cairo Intl (HECA)	N	N	N		
IRAN	Tehran/Mehrabad Intl (OIII)	N	N	N		
KUWAIT	Kuwait/Kuwait Intl (OKBK)	N	N	N		
OMAN	Muscat/Muscat Intl (OOMS)	N	N	N		
QATAR	Doha/Doha Intl (OTBD)	N	N	N		
	Doha/Hamad Intl (OTHH)	N	N	N		
SAUDI ARABIA	Jeddah/King Abdulaziz Intl (OEJN)	N	N	N		
	Riyadh/King Khalid Intl (OERK)	N	N	N		
UAE	Abu Dhabi/Abu Dhabi Intl (OMAA)	N	N	N	2017	
	Dubai/Dubai Intl (OMDB)	N	N	N	2016	
	Dubai/Al Maktoum Intl (OMDW)	N	N	N	2017	
<b>Total Percentage</b>		<b>0</b>	<b>0</b>	<b>0</b>		