INTERNATIONAL CIVIL AVIATION ORGANIZATION

**REPORT OF THE FIFTH MEETING OF THE
MIDANPIRG COMMUNICATION, NAVIGATION,
SURVEILLANCE/AIR TRAFFIC MANAGEMENT/
IMPLEMENTATION COORDINATION SUB-GROUP**

(CNS/ATM/IC SG/5)

(Cairo, Egypt, 15 – 17 June 2010)

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 Fifth Meeting of the MIDANPIRG CNS/ATM/IC SG was held at the ICAO MID Regional Office in Cairo, Egypt from 15 to 17 June 2010.

2. OPENING

2.1   Mr. Jehad Faqir, Deputy ICAO Regional Director Cairo welcomed the delegates to this meeting, also welcomed the ICAO HQ delegates attending to support the meeting. He drew the attention of the meeting that one of the major subjects that is tasked to this meeting will be the review and update of all MID Region Performance Objective forms which were developed by MIDANPIRG subsidiary bodies for presentation to MIDANPIRG/12. He draw the attention of the meeting , to focus on the MID Metrics agreed by the second meeting of MIDANPIRG Steering Group (MSG/2), and propose ways for the collection of data related to these Metrics according to Performance Framework Forms which were developed and standardized by ICAO head quarters for both the Region and States.

2.2   Mr. Faqir highlighted the importance of this meeting as it will receive updates and endorse the draft conclusions and decisions from other subsidiary meetings, in this regard the meeting will review the Regional PBN implementation plan and strategy as updated by the PBN/GNSS TF/2 meeting. Furthermore the meeting will decide on MID FANS Implementation Team, endorse the outcome of the SSR code allocation study group, finally will review and update the GNSS, ADS-B and INFPL Implementation Strategies.

2.3   Mr. Faqir also mentioned that the meeting will receive latest information on the e-ANP development and Continuous Decent Operations, where the experts from ICAO HQ will provide an update on these important developments. Mr. Faqir concluded by wishing the meeting productive deliberations and outcome.

2.4   Mr. Waleed Madani, Manager Operation Planning ATM, General Authority of Civil Aviation, Saudi Arabia, the Chairperson also welcomed all the participants to the meeting and expressed his special thanks on behalf of State to ICAO HQ delegation for attending and supporting the meeting.

3. ATTENDANCE

3.1   The meeting was attended by a total of 30 participants, which included delegates from eight (8) States. The list of participants is at Attachment A.

4. OFFICERS AND SECRETARIAT

4.1   Mr. Waleed Madani, Manager Operation Planning ATM, General Authority of Civil Aviation, Saudi Arabia, Chaired the meeting, Mr. Raza Gulam, Regional Officer/CNS was the Secretary of the meeting. Mr. Jehad Faqir, Deputy Regional Director, Mrs. Nawal A. Hady, Regional Officer (AGA), Mr. Mohamed Smaoui, Regional Officer (ANS/AIM), Mr. Saud Al Adhoobi, Regional Officer, (ATM) from the ICAO Middle East Office, Mr. Sudarshan and Douglas Marek from ICAO HQ supported the meeting.

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5. **LANGUAGE**

5.1   The 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 the outcome of MIDANPIRG/11 Meeting and MSG/2

2.1   Review of action taken by the ANC on the Report of MIDANPIRG/11

2.2   Review status of MIDANPIRG/11 and MSG/2 Conclusions and Decisions relevant to CNS/ATM planning and implementation

Agenda Item 3:   MID Region Performance Objectives and Metrics

Agenda Item 4:   Regional Air Navigation Planning and Implementation Issues

Agenda Item 5:   Review of the outcome of the ATM/SAR/AIS SG/11 and CNS SG/3

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 which, in accordance with the Group's terms of reference, merit directly the attention of States on which further action will be initiated by ICAO in accordance with established procedures; and

b)   **Decisions** deal with matters of concern only to the MIDANPIRG and its contributory bodies

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8.   LIST OF CONCLUSIONS AND DECISIONS

DRAFT CONCLUSION 5/1:   ORGANIZATION OF NATIONAL PERFORMANCE FRAMEWORK WORKSHOP

DRAFT CONCLUSION 5/2:   PERFORMANCE FRAMEWORK

DRAFT CONCLUSION 5/3:   TERMS OF REFERENCE OF THE INFPL STUDY GROUP

DRAFT CONCLUSION 5/4:   INFPL FORMAT IMPLEMENTATION ISSUES

DRAFT CONCLUSION 5/5:   ICAO NEW FPL PROGRESS REPORT

DRAFT CONCLUSION 5/6:   ICAO NEW FLIGHT PLAN FORMAT IMPLEMENTATION

DRAFT CONCLUSION 5/7:   FDPS SSRCA REQUIRED FUNCTIONALITY

DRAFT CONCLUSION 5/8:   MID STRATEGY ON SSR CODE ALLOCATION

DRAFT CONCLUSION 5/9:   EXCHANGE OF SURVEILLANCE DATA

DRAFT CONCLUSION 5/10:   STRATEGY FOR THE IMPLEMENTATION OF GNSS IN THE MID REGION

DRAFT DECISION 5/11:   REVIEW OF THE MID AIR NAVIGATION PLAN (ANP)

DRAFT DECISION 5/12:   DISSOLVE MID-FIT

DRAFT CONCLUSION 5/13:   MID REGION PBN IMPLEMENTATION STRATEGY AND PLAN

DRAFT DECISION 5/14:   PBN IMPLEMENTATION TASK LIST

DRAFT CONCLUSION 5/15:   PBN IMPLEMENTATION PROGRESS REPORT

DRAFT CONCLUSION 5/16:   IMPLEMENTATION OF CONTINUOUS DESCENT OPERATIONS

DRAFT CONCLUSION 5/17:   SUPPORT THE ESTABLISHMENT OF THE GCC VIRTUAL UIR

DRAFT DECISION 5/18:   REVISED TOR OF THE CNS/ATM/IC SUB-GROUP

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Report on Agenda Item 1

PART II: REPORT ON AGENDA ITEMS

REPORT ON AGENDA ITEM 1:   ADOPTION OF THE PROVISIONAL AGENDA

1.1   The meeting adopted the Provisional Agenda as indicated in paragraph 6 of the History of the Meeting.

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REPORT ON AGENDA ITEM 2: Follow-up on the outcome of MIDANPIRG/11 and MSG/2 Meetings

2.1   The meeting recalled that MIDANPIRG/11 re-iterated on the need for each MIDANPIRG subsidiary body to review the MIDANPIRG Conclusions/Decisions related to its Terms of Reference (TOR) and decide whether to maintain, remove or replace these Conclusions/Decisions with more up-to-date ones. Furthermore the meeting noted that Conclusions/Decisions which are of general nature and whose status of implementation would be "Ongoing" for many years are more suitable for inclusion in the Air Navigation Plan, Handbooks, Manuals, Guidelines, etc, as appropriate.

2.2   The meeting further noted that with a view to improve the efficiency of the process of follow-up of MIDANPIRG Conclusions and Decisions, MIDANPIRG/11 agreed to the following Conclusion:

CONCLUSION 11/1:   FOLLOW UP ON MIDANPIRG CONCLUSIONS AND DECISIONS

That:

a) *States send their updates related to the MIDANPIRG follow up action plan to the ICAO MID Regional Office on regular basis (at least once every six months);*

b) *the MIDANPIRG subsidiary bodies review the appropriate actions/tasks of the MIDANPIRG follow up action plan and undertake necessary updates based on the feedback from States; and*

c) *ICAO MID Regional Office post the MIDANPIRG follow up action plan on the ICAO MID website and ensure that it is maintained up-to-date.*

2.3   In reference to the above the meeting was informed that only few States provide regular updates. However ICAO MID Regional Office posted the latest updated version on the follow-up action plan in ICAO Website, in this regard the meeting urged all States to provide regular updates.

2.4   With regard to MIDANPIRG/11 Conclusion 11/61: IFPS PROJECT SUPPORT, the meeting was informed that ICAO sent State letter calling the focal points to support the project and conducted seminar in which EUROCONTROL provided the requested information and support, it was also agreed that Bahrain will present a WP to MIDANPIRG/12.

2.5   Based on the above the meeting reviewed and updated the status of MIDANPIRG/11 Conclusions and Decisions relevant to the CNS/ATM/IC Sub-Group TOR and the follow-up actions taken by ANC, States, the secretariat and MIDANPIRG subsidiary bodies as at **Appendix 2A** to the Report on Agenda Item 2.

2.6   Furthermore the meeting noted that in accordance with the ICAO Business Plan and the requirements for performance monitoring, the MIDANPIRG Conclusions/Decisions and associated follow-up action plan should be formulated with clear tasks, specific deliverables and defined target dates. Accordingly, MSG/2 meeting agreed that each Draft Conclusion and Decision formulated by MIDANPIRG and its subsidiary bodies should respond clearly to the following four Questions (Why, What, Who and When "4-Ws"). The meeting agreed that all Conclusions and Decisions will comply with 4-Ws requirement.

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2.7　　　　　The meeting agreed to review the Conclusions and Decisions which are still current under the relevant Agenda Item.

FOLLOW-UP ACTION PLAN ON MIDANPIRG/11 CONCLUSIONS AND DECISIONS

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONC. 11/1: **FOLLOW UP ON MIDANPIRG CONCLUSIONS AND DECISIONS** That, a) States send their updates related to the MIDANPIRG follow up action plan to the ICAO MID Regional Office on regular basis (at least once every six months); b) the MIDANPIRG subsidiary bodies review the appropriate actions/tasks of the MIDANPIRG follow up action plan and undertake necessary updates based on the feedback from States; and c) ICAO MID Regional Office post the MIDANPIRG follow up action plan on the ICAO MID website and ensure that it is maintained up-to-date.	Implement Conclusion	ICAO States Subsidiary Bodies ICAO	State Letter Updated Action Plan Updated Action Plan Updated follow up Action Plan posted on web	Every six months Every six months Every six months	Ongoing (To be closed)
DEC. 11/2: **REVISED MIDANPIRG ORGANIZATIONAL STRUCTURE** That, with a view to increase MIDANPIRG efficiency, MIDANPIRG Organizational Structure be updated as at **Appendix 4B** to the Report on Agenda Item 4.	Update the Procedural Hand Book and conduct the meetings of MIDANPIRG subsidiary bodies in accordance with the revised Structure	ICAO	Updated Procedural Handbook	Feb. 2009	Closed

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS

CONC. 11/3: **INCREASING THE EFFICIENCY OF MIDANPIRG**
 	
That, with a view to increase the efficiency of MIDANPIRG:
 	
a) States appoint an ICAO Focal Point Person(s) (ICAO-FPP) using the form at **Appendix 4E** to the Report on Agenda Item 4; who would:
   i. ensure the internal distribution of all ICAO MID Office correspondences related to MIDANPIRG activities and the follow-up within civil aviation administration;
 	
   ii. follow up the ICAO MID Office postings of tentative schedule of meetings, MIDANPIRG follow up action plan, State Letters, working/information papers, reports of meetings, etc, on both the ICAO MID website and the MID Forum; and
 	
   iii. ensure that required action and replies are communicated to ICAO MID Regional Office by the specified target dates.
 	
b) ICAO MID Regional Office copy all correspondences related to MIDANPIRG activities to the designated ICAO-FPP as appropriate.
	Implement the Conclusion	ICAO
		States
			State Letter (Reminder)
			
			List of ICAO FPP
				Apr. 2009
				
				Jun. 2009
					State ltr. 4 Sept.08
					1st Reminder 20 Jan.09
					2nd Reminder 22 Sept.09
					Input received from 11 States
					
					(To be closed)

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS

CONC. 11/4: **IMPROVING THE EFFICIENCY OF THE ICAO MID FORUM**
 	
That,
 	
a) Bahrain in coordination with ICAO:
 	
   i) explore ways and means for improving the efficiency of the ICAO MID Forum; and
 	
   ii) investigate the possibility of using the ICAO MID Forum for the posting of AIS publications by States
 	
b) States are urged to make use and take full benefit of the ICAO MID Forum
	Implement the Conclusion	ICAO
		Bahrain
			Draft Feasibility Study
			
			Improved MID Forum with new Functionalities
				Dec. 2009
				
				Jun. 2010
					Ongoing
					
					(To be closed)

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONC. 11/13: MID BASIC ANP AND FASID (DOC 9708) That, a) further to the approval of the Proposal for amendment of the MID Basic ANP 08/05-AOP, the ICAO MID Regional Office, on behalf of MIDANPIRG, initiate all necessary Amendment Proposals to the MID Basic ANP and FASID, prior to MIDANPIRG/12, in order to update the AIS, AOP, ATM, CNS and MET tables; and b) ICAO is to allocate sufficient resources and give high priority for the publication of Doc 9708 in English and Arabic languages, incorporating all approved Amendments.	Process Amendments Proposals to the MID Basic ANP and FASID Finalize and publish the approved version of Doc 9708	ICAO	Amendment Proposal issued Amendment Proposal approved and incorporated in the final version of Doc 9708 Final Version of Doc 9708 published	 Mar. 2010 TBD	Closed Ongoing Ongoing
DEC. 11/23: ESTABLISHMENT OF THE BAGHDAD FIR RVSM IMPLEMENTATION WORKING GROUP (BFRI WG) That, the Baghdad FIR RVSM Implementation Working Group is established with Terms of Reference as at **Appendix 5.2G** to the Report on Agenda Item 5.2	Conduct the BFRI WG meetings	ICAO	Reports of the BFRI WG meetings	Aug. 2009	Actioned (To be closed)

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
DEC. 11/24: **MID REGION SSR CODE ALLOCATION STUDY GROUP (SSRCA SG)** That, the MID Region SSR Code Allocation Study Group revised Terms of Reference are adopted as at **Appendix 5.2H** to the Report on Agenda Item 5.2.	Convene Study Group Meetings and discussions through correspondence	ICAO, SSCASG	Revised MID SSR Code Allocation system	May 2009	Actioned (To be closed)
CONC. 11/25: **MEASURES TO ADDRESS NON-SYSTEM SSR CODE ASSIGNMENT PROBLEMS** That, in order to address those SSR code assignment problems that are not typically the Code Allocation Plan (CAP) system problems: a) MID States are urged to undertake necessary coordination with adjacent States/FIRs to address identified SSR code assignment problems or potential problems with such adjacent FIRs; and b) in cases where identified code assignment conflicts are beyond the ability of States' bilateral or multilateral initiatives to address, the ICAO MID Regional Office be notified as soon as practical, in order to take necessary action.	Implement Conclusion	States	Optimally managed SSR Code assignments	Ongoing	Ongoing
CONC. 11/26: **ADOPTION OF THE ORIGINATING REGION CODE ASSIGNMENT METHOD (ORCAM) IN THE MID REGION** That, in order to improve the MID SSR Code Allocation System: a) the MID Region adopts the Originating Region Code Assignment Method (ORCAM). The MID Region will consider three ORCAM Participating Areas (PA); the number of PAs to be finalised based on studies of Regional traffic patterns and volume data, and coordination with adjacent ICAO Regions;	Follow-up Collection of Data	ICAO, States	Adoption of the MID ORCAM Compilation of Data Study Group Report Electronic Communication Follow-up	May 2009 Feb. 2009 Mar. 2009	Replaced and superseded by Draft Conc. 5/8 of CNS/ATM/IC SG/5

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
b) the ICAO MID Regional Office take necessary action to obtain data from States and other ICAO Regions for the Study Group to complete its work; and c) in order to facilitate an effective analysis of the traffic statistics required for decision on PAs, MID FIRs provide traffic data in accordance with the format provided by the MID Regional Office.			State Input	Feb. 2009	
CONC. 11/27: SSR CODES SHARING IN THE MID REGION That, in order to increase the availability of SSR codes in the MID SSR code allocation system: a) the MID Region adopt the approach of "code sharing" between FIRs that are geographically adequately disparate and where directional assignment of SSR codes makes "code sharing" practical; b) the "code sharing" be implemented after an amendment of the MID ANP FASID to this effect has been approved, appropriate safety assessments have been carried out, and the concerned FIRs signed the relevant Letters of Agreement (LOA), except where a Regional arrangement obviates such action; and c) the CNS Sub-Group be requested to consider the feasibility of FDPS upgrades in the MID Region to further support SSR code sharing approach.	Follow-up on aspects of the Draft Conclusion	States, ICAO	MIDANPIRG/11 Report FASID Amendment CNS SG Reports	Feb. 2009 May 2009 Nov. 2009	Replaced and superseded by Draft Conc. 5/8 of CNS/ATM/IC SG/5

Conclusions and Decisions	Follow-up	To be initiated by	Deliverable	Target date	Remarks
Conc. 11/28: Reduction of SSR Code Occupancy Time That, in order to increase the availability of SSR codes allocated to each MID FIR: a) the SSR code occupancy time be changed from three hours to a maximum of two hours where practicable; b) the time to be applied by each FIR continue to be predicated by safety and be based on the requirement of the FIR as dictated by such factors as the size of the FIR; and c) the Secretariat take appropriate measures to process the amendment of the MID ANP FASID Part V Attachment B.	Follow-up on aspects of the Draft Conclusion	States, ICAO	Adoption of code occupancy time principles FASID Amendment	Mar. 2009 May 2009	Replaced and superseded by Draft Conc 5/8 of CNS/ATM/IC SG/5
Conc. 11/60: Implementation Of The New ICAO Model Flight Plan Form That, MID States: a) in order to comply with Amendment No. 1 to the 15th Edition of the PANS-ATM (Doc 4444), establish a Study Group to develop the technical audit guidance material and prepare a Regional Strategy for the transition; - the Study Group to follow the ICAO guidance for the implementation of Flight plan and Implementation check list in **Appendices 5.5B** and **5.5C** to the Report on Agenda Item 5.5; and b) implement the new ICAO model Flight Plan form by applicability date.	State Letter Study Group Established Follow-up with States	ICAO States Study group	State Letter Members of the Group Report of CNS and CNS/ATM/IC SG New FPL Implemented	Mar. 2009 Jun. 2009 Jan. 2010 Nov. 2012	Replaced and superseded by Draft Dec. 5/3 and Conc. 5/5 of CNS/ATM/IC SG/5

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONC. 11/61: IFPS PROJECT SUPPORT That, a) MID State that have not yet designated focal points to do so and send their contact details to ICAO MID Regional Office prior to 30 June 2009; b) the IFPS focal points participate in the finalization of the feasibility study led by Bahrain for the implementation of an IFPS in the MID Region; and c) ICAO MID Regional Office request additional support from EUROCONTROL with view to benefit from their experience and expertise in the establishment of an IFPS, including development of a regulatory framework	Designate focal points Follow up the progress on the finalization of the Study Coordination with EUROCONTROL	States ICAO Bahrain CNS SG CNS/ATM/IC SG	State Letter Updated list of focal points Report of CNS and CNS/ATM/IC SG Regulatory framework definition Final Study finalized	Mar. 2009 May 2009 Jan. 2010 TBD TBD	Actioned Eurocontrol provided information during the ATFM Seminar Bahrain will submit WP at MIDANPIRG/12 (To be closed)
DEC. 11/62: ESTABLISHMENT OF MID-FANS IMPLEMENTATION TEAM (FIT) That, MID-FIT is established with TOR as in **Appendix 5.5E** to the report on Agenda Item 5.5.	Notify States Conduct of MID-FIT	ICAO States and Organizations	State Letter MID-FIT members Report of CNS and CNS/ATM/IC SG	Mar. 2009 Jun. 2009 Jan. 2010	Replaced and superseded by Draft Dec. 5/12 of CNS/ATM/IC SG/5

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONC. 11/63: **INTRODUCTION OF FANS 1/A CAPABILITIES IN THE MID REGION ESTABLISHMENT OF MID-FANS IMPLEMENTATION TEAM** That, MID States, in coordination with users, are encouraged to consider implementing FANS 1/A (ADS-C/CPDLC) as appropriate to the desired operational outcome.	Follow-up on implementations activities	States Users Data link service providers	FANS 1/A implementation Feed Back from States and users CNS/ATM/IC SG Report	Jan 2010	Closed
DEC. 11/64: **MID-FIT IMMEDIATE TASKS** That, MID-FIT, reschedule the tasks that are essential for the implementation of FANS1/A in the MID Region, in coordination with AFIG.	Task rescheduled	MID-FIT CNS/ATM/IC SG	Task identified and rescheduled	Jan. 2010	Replaced and superseded by Draft Dec. 5/12 of CNS/ATM/IC SG/5
CONC. 11/65: **PROTECTION OF GNSS SIGNAL** That, MID States with their names listed in the footnotes 5.362B and 5.362C are urged to take necessary measures to delete their names from these footnote as soon as possible in order to protect the GNSS signal.	State Letter State CAA Follow up with regulators	ICAO State	State Letter CNS SG Report Deletion of State Name from FN	Nov. 2009 On going	Closed

Conclusions and Decisions	Follow-up	To be initiated by	Deliverable	Target date	Remarks
DEC. 11/66: **Dissolution of the RVSM/PBN and GNSS Task Forces and Establishment of the PBN/GNSS Task Force** That, taking into consideration the status of implementation of RVSM and PBN in the MID Region and the close inter-relationship between the PBN goals and GNSS implementation, and with in order to enhance the efficiency of MIDANPIRG, the RVSM/PBN and the GNSS Task Forces are dissolved and the PBN/GNSS Task Force is established with TOR as at **Appendix 5.5F** to the Report on Agenda Item 5.5.	Implement the PBN/GNSS TF Work Programme	ICAO States	PBN/GNSS TF Reports	Oct. 2009	Closed
CONC. 11/67: **Strategy for the Implementation of GNSS in the MID Region** That, the Revised Strategy for implementation of GNSS in the MID Region is adopted as at **Appendix 5.5G** to the Report on Agenda Item 5.5.	Implement Strategy	PBN/GNSS TF State	PBN/GNSS 2 Report	Oct. 2009	Replaced and superseded by Draft Conc. 5/10 of CNS/ATM/IC SG/5
CONC. 11/68: **GNSS Studies in MID Region** That, a) ICAO MID Regional Office Communicate with GSA/ESA for the provision of support and detailed studies on EGNOS Extension to the MID Region; b) MID States that are in position to support the cost benefit analysis to provide their experience through PBN/GNSS TF to MID Region; and c) MID States share experience gained during the GNSS implementation.	Follow-up State Letter Support to CB Sharing Exp.	ICAO MID States Lead by Saudi Arabia MID States	State Letter PBN/GNSS TF Report Experience from States and CBA Report WP/IP	Mar. 2009 Oct. 2009 Ongoing	Actioned (To be closed)

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONC. 11/69: MID REGION STRATEGY FOR THE IMPLEMENTATION OF ADS-B That the MID Region Strategy for the implementation of ADS-B to be amended as at **Appendix 5.5H** to the Report on Agenda Item 5.5.	Implement Strategy	States, Users	CNS/ATM/IC SG Report	Jan 2010	Ongoing
CONC. 11/70: REGIONAL PERFORMANCE FRAMEWORK That, a) a regional performance framework be adopted on the basis of and alignment with the Global Air Navigation Plan, the Global ATM Operational Concept, and ICAO guidance material and planning tools. The performance framework should include the identification of regional performance objectives and completion of regional performance framework forms; and b) ALLPIRG/5 Conclusion 5/2: Implementation of Global Plan Initiatives (GPIs, be incorporated into the terms of reference of the MIDANPIRG subsidiary bodies	Follow up on Conclusion Update Regional performance objectives	ICAO CNS/ATM IC SG MIDANPIRG	Adoption of Performance Framework approach and Regional Performance Objectives Updated Regional performance objectives	Feb. 2009 Ongoing	Replaced and superseded by Draft Conc. 5/1 and 5/2 of CNS/ATM/IC SG/5 and MSG/2 Draft Conc. 2/2 and 2/3

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONC. 11/71: NATIONAL PERFORMANCE FRAMEWORK That, MID States be invited to adopt a national performance framework on the basis of ICAO guidance material and ensure their alignment with the regional performance objectives, the Regional Air Navigation Plan and the Global ATM Operational Concept. The performance framework should include identification of national performance objectives and completion of national performance framework forms.	Follow up on Conclusion Update National performance objectives	ICAO, MIDANPIRG, States	Adoption of National performance framework approach Development of State Performance Objectives Updated Regional performance objectives	Feb. 2009 Nov. 2009 Ongoing	Replaced and superseded by Draft Conc. 5/1 and 5/2 of CNS/ATM/IC SG/5 and MSG/2 Draft Conc. 2/2 and 2/3
CONC. 11/72: PBN IMPLEMENTATION SUPPORT That, in order to address challenges in PBN implementation, stakeholders in the PBN implementation Air Navigation Service Providers (ANSP's), aircraft operators, user communities, etc.) be encouraged to provide support including resources to the States and ICAO PBN programme.	Communication of Conclusion to stakeholders and follow-up	ICAO, Stakeholders	State Letter Stakeholder Inputs	Feb. 2009 Ongoing	(To be closed)
CONC. 11/73: MID REGION PBN IMPLEMENTATION STRATEGY AND PLAN That, in order to provide direction to the Stakeholders in their strategic planning during the transition to full implementation of PBN: a) the Middle East Regional Strategy for Implementation of PBN is adopted as at **Appendix 5.5Q** to the Report on Agenda Item 5.5. b) The PBN Regional Implementation Plan is adopted as at **Appendix 5.5R** to the Report on Agenda Item 5.5.	Implementation of PBN Strategy and Plan	ICAO, States	Adoption by MIDANPIRG/11 State Letter PBN Implementation	Feb. 2009 Mar. 2009 Ongoing	Replaced and superseded by Draft Conc. 5/13 of CNS/ATM/IC SG/5

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
CONC. 11/74: PBN STATE IMPLEMENTATION PLAN That, in order to give effect to Assembly Resolution A36-23: Performance based navigation global goals, MID States are urged to complete development of their individual State Implementation plans based on the regional PBN implementation plan by 30 September 2009 so that it may be reviewed by the ATM/SAR/AIS SG as part of the Regional agreement process.	Implement the Conclusion	States	State Implementation Plans PBN Implementation	Nov. 2009 Ongoing	Replaced and superseded by Draft Conc. 5/15 of CNS/ATM/IC SG/5

REPORT ON AGENDA ITEM 3:   MID REGION PERFORMANCE OBJECTIVES AND METRICS

Regional and National Performance Framework

3.1   The meeting received a presentation on the Performance Framework for Efficiency and Safety of Air Navigation Systems, and recalled that this presentation is a consolidation of a normally five days workshop which are organized by ICAO HQ in support of the development of the National performance frameworks for States.

3.2   The presentation contained the Background information, Performance Framework Monitoring and Measurement, Rollout, Challenges and Way forward for the implementation of performance based Air navigation systems. Furthermore the presentation highlighted that the Performance Framework Process is the same for safety and efficiency where for safety the Reference is made to Global Aviation Safety Plan (GASP) and Linkage is shown to Global Safety Initiatives (GSIs) also Projects are drawn from Global Aviation Safety Road Map (GASR).

3.3   The meeting noted that MIDANPIRG/11 meeting (Cairo, 9-13 February 2009), was informed that in order to facilitate the realization of a performance based Global Air Navigation system, ICAO has made significant progress in the development of relevant guidance material, which includes the "Global Air Traffic Management Operational Concept (Doc 9854)", the "Air Traffic Management System Requirements (Doc 9882)" the "Manual on Global Performance of the Air Navigation System (Doc 9883)"; and the "Global Air Navigation Plan (Doc 9750)".

3.4   The meeting noted that according to MIDANPIRG pivotal role in facilitating and monitoring the implementation of Regional Air Navigation Systems, has to follow the Global Air Navigation Plan (Doc 9750) and the transition approach, detailed in Global Performance Manual (Doc 9883), which provide a broad overview of the tasks that need to be undertaken by the PIRGs.

3.5   The meeting noted the outcome of the above process would result in an output and management form that has been designated as "Performance Framework Form (PFF)". The PFF has been standardized for application to both the Regional and the National planning framework.

3.6   Based on the above and in alignment with the Regional Performance Objectives, the Regional Air Navigation Plan and the Global ATM Operational Concept, the performance framework should include identification of national performance objectives taking into consideration user expectations and completion of national performance framework forms for all air navigation areas. Accordingly, MIDANPIRG/11 approved the initial performance objectives PFF related to the fields of AGA, AIS/AIM, ATM, and CNS and adopted the following Conclusions, *CONCLUSION 11/70: REGIONAL PERFORMANCE FRAMEWORK* and *CONCLUSION 11/71: NATIONAL PERFORMANCE FRAMEWORK.*

3.7   The meeting noted that in order to provide requisite training in the development of air navigation performance framework ICAO MID Regional Office with support from ICAO HQ organized workshops on the development of National Performance Framework to achieve a global ATM system. The outcome of this workshop enabled the participating States to develop a national air navigation performance framework. The workshop was aimed at professionals responsible for planning and implementation of AGA, AIS/AIM, ATM, CNS, and MET fields of air navigation systems the recommendations of which are at **Appendix 3A** to the Report on Agenda Item 3.

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3.8　　　　The meeting noted that the PFF template has been standardized for application to both the Regional and the National planning framework. The PFF and explanatory notes provided in **Appendix 3B** to the Report on Agenda Item 3, serve as a guide for completing the PFF.

3.9　　　　The meeting noted that only one States developed the National performance framework forms related to the PBN, furthermore while reviewing the recommendations of the workshops the meeting agreed to the following Draft Conclusions:

DRAFT CONCLUSION 5/1:　　ORGANIZATION OF NATIONAL PERFORMANCE FRAMEWORK WORKSHOP

That, MID States be encouraged to organize at national level, workshops on the Development of National performance framework with ICAO assistance.

DRAFT CONCLUSION 5/2:　　PERFORMANCE FRAMEWORK

That prior to 31 March 2011:

a)　MID States be urged to develop/update their National PFFs in order to ensure their alignment with the regional performance objective and to support the agreed MID Metrics; and

b)　users be urged to provide their needs and expectations of the Air Navigation Systems for inclusion in the regional and National PFF.

MID Region Performance Metrics and Performance Framework Forms (PFFs)

3.10　　　　The meeting was apprised of the outcome of the MSG/2 meeting (Amman, Jordan, 9-11 March 2010) related to performance of the air navigation systems in the MID Region. In this regard, it was recalled that performance monitoring and measurement of ATM systems calls for metrics in Key Performance Areas (KPAs) that envelopes access and equity, capacity, cost-effectiveness, efficiency, environment, flexibility, predictability, safety and security, which are subset of 11 KPAs listed in ICAO Document 9854. It was noted that on the basis of the Global ATM Operational Concept and the Manual on Performance of the Global Air Navigation System, a sample set of metrics, which is not exhaustive, has been derived and listed in **Appendix 3C** to the Report on Agenda Item 3. It was highlighted that each Region, on the basis of its experience, could determine the appropriate metrics applicable to its situation.

3.11　　　　The meeting recalled that data collection, processing, storage and reporting are fundamental to the performance-based approach and forms part of performance monitoring and management. Establishing a data reporting chain usually involves participation from many ATM community members. Their willingness to participate requires the establishment of a performance data reporting culture, a capability to successfully manage disclosure and confidentiality aspects, and deciding on a case-by-case basis which approach works best: mandatory or voluntary reporting. In the end, data is condensed into a few indicators which represent the high level knowledge about the performance of the system.

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3.12   The meeting recalled the following definitions:

a) *Performance Objective:* objectives defined to satisfy ATM community expectations;

b) *Performance Indicator:* Current/past performance, expected future performance as well as actual progress in achieving performance objectives is quantitatively expressed by means of performance indicators (also called Key Performance Indicators, or KPIs);

c) *Performance target*: Performance targets are closely associated with performance indicators: they represent the values of performance indicators that need to be reached or exceeded to fully achieve performance objective; and

d) *Metrics:* determine which data needs to be collected to calculate values of performance indicators. Metrics are challenging and expensive to collect; therefore it is important to keep them "SMART" (Specific, Measurable, Achievable, Realistic & Time-bound) and easy to measure.

3.13   Based on the above, the meeting recalled that, considering the need to have a clearly defined common approach to performance monitoring and measurement, the MSG/2 meeting agreed to the following Draft Conclusions:

DRAFT CONCLUSION 2/2 — MID REGION PERFORMANCE METRICS

That:

a) *the following MID Region Metrics be adopted for performance monitoring of the air navigation systems:*

MID Metric 1: *Number of accidents per 1,000 000 departures;*

MID Metric 2: *Percentage of certified international aerodromes;*

MID Metric 3: *Number of Runway incursions and excursions per year;*

MID Metric 4: *Percentage of States reporting necessary data to the MID RMA on regular basis and in a timely manner;*

MID Metric 5: *The overall vertical-collision risk in MID RVSM airspace;*

MID Metric 6: *Percentage of air navigation deficiencies priority "A" eliminated;*

MID Metric 7: *Percentage of instrument Runway ends with an RNAV approach procedure; and*

MID Metric 8: *Percentage of en-route and terminal PBN routes implemented in accordance with the regional PBN plan.*

b) the MIDANPIRG subsidiary bodies monitor the Metrics related to their work programmes; develop associated performance targets and provide feed-back to MIDANPIRG.

DRAFT CONCLUSION 2/3 —   *DATA COLLECTION FOR MID REGION PERFORMANCE METRICS*

That, States:

a) incorporate the agreed MID Region Performance Metrics into their National performance monitoring process;

b) collect and process relevant data necessary for performance monitoring of the air navigation systems to support the regional Metrics adopted by MIDANPIRG; and

c) submit this data to the ICAO MID Regional Office on a regular basis.

3.14   In connection with the above, the meeting supported the above Draft Conclusions developed by the MSG/2 meeting; however, the meeting was of view that the Metrics 4, 6, 7 and 8 need some fine tuning which might be considered by MIDANPIRG as follows:

MID Metric 4:   ~~*Percentage*~~ *Number of States reporting necessary data to the MID RMA on regular basis and in a timely manner;*

MID Metric 6:   *Percentage of air navigation deficiencies priority "~~A~~ U" eliminated;*

MID Metric 7:   *Percentage of instrument Runway ends with ~~an~~ RNP/RNAV approach procedure; and*

MID Metric 8:   *Percentage of en-route ~~and terminal~~ PBN routes implemented in accordance with the regional PBN plan.*

3.15   The meeting noted that, further to the endorsement of the above MSG/2 Draft Conclusions by MIDANPIRG/12, the ICAO MID Regional Office will issue a State Letter requesting States to take necessary follow-up action to support the regional Metrics adopted by MIDANPIRG.

3.16   In accordance with MIDANPIRG/11 Conclusion 11/70 – "*Regional Performance Framework*", and taking into consideration the outcome of the different MIDANPIRG subsidiary bodies, the meeting reviewed and updated the Regional PFFs related to AGA, AIM, ATM and CNS as at **Appendices 3D, 3E, 3F and 3G,** to the Report on Agenda Item 3, respectively. The meeting recalled that MIDANPIRG/11 agreed that the first set of Regional PFFs contained initial performance objectives that should be refined and improved by the MIDANPIRG subsidiary bodies. In this regard, it was recognized that the revised Regional PFFs, as updated by the meeting, are much more mature than the previous version. However, it was underlined that the Regional PFFs could be further improved, giving that users provide their needs and expectations and States develop/update their National PFFs and report relevant data necessary for performance monitoring of the air navigation systems, as required.

**SUMMARY OF DISCUSSIONS FOR ICAO PERFORMANCE FRAMEWORK WORKSHOP
(CAIRO, 27 OCTOBER 2008)**

- The workshop commenced by setting the stage through the presentation and operational requirement that were defined by the regional PBN/GNSS Task Force and taking the PBN as a point of start, then it was continued on brain storming basis focusing on the infrastructure

- The participants got clear idea that ICAO planning objective is to achieve a performance based global air traffic management (ATM) system through the implementation of air navigation systems and procedures in a progressive, cost-effective and cooperative manner.

- The participants noted that Regional and National performance objectives should be developed using a performance based approach that best reflects the necessary activities needed to support regional/national ATM systems.

- The participants noted that during the life cycle, performance objectives may change depending on the ATM system's evolution; therefore, throughout the implementation process, these should be coordinated with and be available to all interested parties.

- The participants were guided on the appropriate use of the Performance framework form noting that it will be one of ICAO management tools which is applicable to both regional and national planning.

- The participants were divided into two groups were the groups had to tackle one of the MID regional performance outcome and then match it to States plan.

- The workshop participants thanked Saudi Arabia who had made their States infrastructure plan available for the workshop.

- At the closing each group presented the performance framework forms that were prepared showing clearly the performance objectives the benefits, which ATM Operation concept it support, along with the supporting GPI's, and mainly describing each task with clearly defined dates and responsible authority weather being in the States or for the region and the status of each task.

- The workshop gained great benefit from the presence of the end users representative Organizations (IATA and IFALPA), who had enriched the discussion from the user prospective.

- IATA expressed their interest to host another workshop gathering the States, ANSP's, and the end users Airlines companies to further define the performance outcome for the MID Region.

- Egypt ANSP (NANSC) also expressed their interest to host a similar workshop which will train their staff on performance based planning.

- The participants expressed their gratitude to ICAO for organizing such an important workshop and expressed the need for another workshop that should be for longer period as one day is very short period to catch all the material and do the exercises

RECOMMENDATIONS OF THE WORKSHOP ON THE DEVELOPMENT OF NATIONAL PERFORMANCE FRAMEWORK TO ACHIEVE A GLOBAL ATM SYSTEM

(CAIRO, 1-5 NOVEMBER 2009)

as a result of discussions, the workshop developed the following recommendations, which are to be addressed by ICAO and States, as appropriate:

1) **States** provide the required data to the Regional Office related to regional metrics for efficiency;

2) **States** implement a performance based approach adopted by the Region, in developing the air navigation system on the basis of ICAO guidance material and ensure their alignment with the regional performance objectives. The performance framework should include identification of national performance objectives and completion of national performance framework forms;

3) **ICAO** continues enhancing the ongoing intra and interregional coordination for planning, implementation and harmonization of a Global ATM system;

4) **ICAO** assists States in the development of performance based air navigation planning and its implementation; and

5) **States** are encouraged to organize at national level, similar workshops on the Development of National performance framework.

APPROACH TO HANDS-ON EXERCISE

FORMAT

1.   Characteristics of the industry

Enumerate the current and projected growth of Air Traffic in your state and also identify, if any, the efficiency challenges in your State.

2.   **The air navigation service provider**

Describe briefly the organization providing the air navigation services in your State including its institutional format, capital structure, principal shareholders and the management.

3.   Major stakeholders/partners

Identify the major stakeholders/partners such as the air navigation service providers, the airspace users (the commercial airlines using the airspace, business aviation, general aviation, military, etc.) and the potential funding sources.

4.   Problem definition

The current conventional air navigation systems might have several limitations, which would depend on the State or the region concerned. List such limitations in your State.

5.   Performance based National Air Navigation Plan

Define the geographical scope of the National Air Navigation Plan and determine the major traffic flows. Explain briefly the vision of your State for achieving a seamless Global ATM system. Specifically, establish national performance objectives for the air navigation infrastructure, list current air navigation systems and through gap analysis define near and medium term operational improvements.

6.   Performance framework forms (PFFs)

Using the standard approach, develop PFFs for different national performance objectives by determining relevant projects/tasks and ensuring the linkage to Key Performance Areas (KPAs) and Global Plan initiatives (GPIs).

7.   Risk Management

What are the risks identified for this National Air Navigation Plan and if any, briefly describe the risk mitigation plans/techniques.

REGIONAL PERFORMANCE FRAMEWORK FORM

(Sample)

IMPLEMENTATION OF WGS-84 AND eTOD

Benefits	
Environment	• Supporting benefits described in performance objectives for PBN
Efficiency	• benefits described in performance objectives for PBN • efficient use of airspace
Safety	• improve situational awareness • support determination of emergency contingency procedures • improve safety in general
KPI	• status of implementation of WGS-84 in the MID Region • status of implementation of eTOD in the MID Region (for Areas 1 & 4)
Proposed Metrics:	• number of States having implemented WGS 84 • number of States having organised eTOD awareness campaigns and training programmes • number of States having implemented eTOD for Areas 1 & 4

Strategy **Short term (2010-2012)** *Medium term (2011 - 2016)*				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
ATM AUO	**WGS-84**			
	• establish WGS-84 implementation goals in coordination with the national PBN implementation plan	2009-2010	States	valid
	• monitor the implementation of WGS-84 until complete implementation of the system by all States and take remedial action, as appropriate	ongoing	ICAO & AIS/MAP TF	valid
linkage to GPIs	GPI-5: Performance-based navigation GPI-11: RNP and RNAV SIDs and STARs GPI-9: Situational awareness GPI-18: Aeronautical Information GPI-20: WGS-84 GPI-21: Navigation systems			

PERFORMANCE FRAMEWORK FORM - EXPLANATORY NOTES

1.   **Performance framework form:** This form is an output and management form which is applicable to both regional and national planning and includes references to the Global Plan. Other formats may be appropriate but should contain as a minimum the elements described below

2.   **Performance objective:** Regional /national performance objectives should be developed using a performance based approach that best reflects the necessary activities needed to support regional/national ATM systems. During their life cycle, performance objectives may change depending on the ATM system's evolution; therefore, throughout the implementation process, these should be coordinated with and be available to all interested parties within the ATM Community. The establishment of collaborative decision making processes ensures that all stakeholders are involved in and concur with the requirements, tasks and timelines.

3.   **Regional performance objective:** Regional performance objectives are the improvements required to the air navigation system in support of the global performance objectives, and are related to the operating environments and priorities applicable at the regional level.

4**.**   **National performance objective:** National performance objectives are the improvements required to the air navigation system in support of the regional performance objectives, and are related to the operating environments and priorities applicable at the State level.

5**.**   **Benefits:** The regional/national performance objectives should meet the expectations of the ATM community as described in the operational concept and should lead to benefits for stakeholders and be achieved through operational and technical activities aligned with each performance objective.

6.   **KPI** : Current/past performance, expected future performance as well as actual progress in achieving performance objectives is quantitatively expressed by means of performance indicators (also called Key Performance Indicators, or KPIs); Indicators are not often directly *measured*. They are *calculated* from supporting metrics

7.   **Proposed Metrics:** determine which data needs to be collected to calculate values of performance indicators. Metrics are challenging and expensive to collect; therefore it is important to keep them "SMART" (Specific, Measurable, Achievable, Realistic & Time-bound) and easy to measure.

8.   **Strategy:** ATM evolution requires a clearly defined progressive strategy including tasks and activities which best represent the national and regional planning processes in accordance with the global planning framework. The goal is to achieve a harmonized implementation process evolving toward a seamless global ATM system. For this reason, it is necessary to develop short (1 to 5 years) and medium term (6 to 10 years) work programmes, focusing on improvements to the system indicating a clear work commitment for the parties involved.

9.   **ATM operational concept components;** Each strategy or set of tasks should be linked with associated components of the ATM operational concept. The designators for ATM components are as follows:

- AOM – Airspace organization and management
- DCB – Demand and capacity management
- AO – Aerodrome operations
- TS – Traffic synchronization
- CM – Conflict management
- AUO – Airspace user operations

- ATM SDM – ATM service delivery management

10.   **Tasks:** The regional/ national work programmes, using this PFF templates, should define tasks in order to achieve the said performance objective and at the same time maintain a direct relation with ATM system components. The following principles should be considered when developing work programme:

- The work should be organized using project management techniques and performance-based objectives in alignment with the strategic objectives of ICAO.

- All tasks involved in meeting the performance objectives should be developed using strategies, concepts, action plans and roadmaps which can be shared among parties with the fundamental objective of achieving seamlessness through interoperability and harmonization.

- The planning of tasks should include optimizing human resources as well as encouraging dynamic use of electronic communication between parties such as the Internet, videoconferences, teleconferences, e-mail, telephone and facsimile. Additionally, resources should be efficiently used, avoiding any duplication or unnecessary work.

- The work process and methods should ensure that performance objectives can be measured against timelines and the national and regional progress achieved can be easily reported to PIRGs and ICAO Headquarters respectively.

11.   **Timeframe:** Indicates start and end time period of that particular task(s).

12.   **Responsibility:** Indicates the organization/entity/person accountable for the execution or management of the related tasks.

13**.**   **Status:** The status is mainly focused on monitoring the progress of the implementation of that task(s) as it progresses toward the completion date.

14**.**   **Linkage to global plan initiatives(GPIs)***:* The 23 GPIs, as described in the Global Plan, provide a global strategic framework for planning for air navigation systems and are designed to contribute to achieving the regional/national performance objectives. Each performance objective should be mapped to the corresponding GPIs. The goal is to ensure that the evolutionary work process at the State and regional levels will be integrated into the global planning framework.

Table 1. Global plan initiatives and their relationships to the major groupings

GPI		En-route	Terminal Area	Aerodrome	Supporting Infrastructure	Related Operational Concept Components
GPI-1	Flexible use of airspace	X	X			AOM, AUO
GPI-2	Reduced vertical separation minima	X				AOM, CM
GPI-3	Harmonization of level systems	X				AOM, CM, AUO
GPI-4	Alignment of upper airspace classifications	X				AOM, CM, AUO
GPI-5	RNAV and RNP (Performance-based navigation)	X	X	X		AOM, AO, TS, CM, AUO
GPI-6	Air traffic flow management	X	X	X		AOM, AO, DCB, TS, CM, AUO
GPI-7	Dynamic and flexible ATS route management	X	X			AOM, AUO
GPI-8	Collaborative airspace design and management	X	X			AOM, AUO
GPI-9	Situational awareness	X	X	X	X	AO, TS, CM, AUO
GPI-10	Terminal area design and management		X			AOM, AO, TS, CM, AUO
GPI-11	RNP and RNAV SIDs and STARs		X			AOM, AO, TS, CM, AUO
GPI-12	Functional integration of ground systems with airborne systems		X		X	AOM, AO, TS, CM, AUO
GPI-13	Aerodrome design and management			X		AO, CM, AUO
GPI-14	Runway operations			X		AO, TS, CM, AUO
GPI-15	Match IMC and VMC operating capacity		X	X	X	AO, CM, AUO
GPI-16	Decision support systems and alerting systems	X	X	X	X	DCB, TS, CM, AUO
GPI-17	Data link applications	X	X	X	X	DCB, AO, TS, CM, AUO, ATMSDM
GPI-18	Aeronautical information	X	X	X	X	AOM, DCB, AO, TS, CM, AUO, ATMSDM
GPI-19	Meteorological systems	X	X	X	X	AOM, DCB, AO, AUO
GPI-20	WGS-84	X	X	X	X	AO, CM, AUO
GPI-21	Navigation systems	X	X	X	X	AO, TS, CM, AUO
GPI-22	Communication infrastructure	X	X	X	X	AO, TS, CM, AUO
GPI-23	Aeronautical radio spectrum	X	X	X	X	AO, TS, CM, AUO, ATMSDM

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**A SAMPLE LIST OF METRICS
FOR PERFORMANCE MONITORING OF AIR NAVIGATION SYSTEMS**

Key Performance Area	Corresponding metrics
1. Access and equity	Civil flights using fixed airspace; Unusable airspace due to navigation restriction; Number of access denials; Number of airports with published approaches.
2. Capacity	Average daily airport capacity for a group of 35 airports measured as a 5 year moving average; Hourly number of IFR movements (departure + arrivals) during IMC; Total number of operations per day; Number of aircraft in a specified volume of airspace; Airspace throughput/TMA-number of aircraft per 100nmi3; Traffic density i.e. number of aircraft per 100 nmi3; Enroute utilization i.e. number of aircraft per 100nmi3; Airside Capacity i.e. number of operations per hour; Airborne delay i.e. minutes per flight; Arrival/departure delay i.e. minutes per flight.
3. Cost effectiveness	Total operating cost plus cost of capital divided by IFR flights; Average cost per flight at a system wide annual level;. Investment cost; Cost per retrofit; Out of service cost; Operating and Maintenance cost.
4. Efficiency	Estimated fuel savings (year 2000 as baseline); Percent of flights departing on-time; Percentage of instrument runway ends with an approach procedure with vertical guidance (APV), (BARO-VNAV and/or augmented GNSS) either as the primary approach or as a back-up for precision approaches; PBN Routes implemented and published in enroute; Number of certified aircrafts and pilots for PBN operations for enroute and TMA; Percent of flights with normal flight duration; Traffic movements i.e. # of movements; Unused capacity i.e. # of movements; Number of ATC automated systems that are interconnected; Number of terminal areas with SID/STAR implemented.

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Key Performance Area	Corresponding metrics
5. Environment	Amount of emissions which are attributable to inefficiencies in ATM service provision; Pounds of fuel burn per operation; Local noise foot print; Number of noise complaints.
6. Flexibility	Proportion of rejected changes for which an alternative was offered and taken; Enroute flight distance Percentage of flights off-on ATC preferred routes; Number of backups available for emergency; Flexibility in sequencing; Number of restrictions.
7. Predictability	Variability in delay for arrival time./departure time/enroute and Taxi time i.e. Minutes /flight; Number of aircraft held i.e. # Aircraft /hr; Number of cancellations/diversions/misconnections i.e. #of flights ;
8. Safety	Number of runway incursions per year; Number of operational errors per year; Number of accidents per 100,000 departures; Number of fatalities per 100,000 departures; Number of LHD reports.

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**MID REGIONAL PERFORMANCE OBJECTIVES
AERODROMES PERFORMANCE OBJECTIVES**

IMPLEMENTATION OF CERTIFICATION OF AERODROMES
Benefits

Environment	• enhanced Land-use management around aerodromes • reduction in aircraft noise and emission impact
Efficiency	• enhance safety, access, efficiency and capacity of aerodrome operations in the States • uniform implementation of ICAO SARPS in the MID States • efficient use of aerodrome resources • reduction in delays • maximize aerodrome capacity in all weather conditions
Safety	• safely manoeuvre in all weather conditions • reduced wild life/bird strikes hazards • reduced incident/accident factors • reduced number of deficiencies • increased runway usability factors • improved safety of aerodromes operations • decreased number of accidents & serious incidents occurred during aircraft movements to/from aerodromes
KPI	• status of implementation of certification of aerodromes • status of implementation of SSP & SMS for aerodrome • status of planning for aerodrome emergencies and testing their effectiveness • status of readiness to accommodate NLs operations at aerodromes
Proposed Metrics:	• number of certified aerodromes used for international operations • number of resolved Air Navigation deficiencies identified in the area of aerodrome operations • number of accidents & serious incidents per 100000 aircraft movements to/from aerodromes • number of adequate aerodromes for NLAs operations • number of peoples in and around aerodromes affected by aircraft operations

Strategy *Short term (2010-2012)* *Medium term (2013 - 2016)*				
ATM OC COMPONENTS	**TASKS (As part of Certification of Aerodrome process and implementation of Safety Management for aerodrome operations)**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AO, CM, DCB, ATM SDM	**Certification of aerodromes**			
	• establish collaborative bodies with ATM, aircraft operators and aerodrome operators for developing national plans to increase aerodrome capacity aimed at meeting actual air traffic and/or forecast demand	2010 - 2012	States & AOP SG	valid

Strategy Short term (2010-2012) Medium term (2013 - 2016)				
ATM OC COMPONENTS	**TASKS (As part of Certification of Aerodrome process and implementation of Safety Management for aerodrome operations)**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• implement aerodrome ground infrastructure commensurate with operational expectations including operations of new larger aircrafts at existing aerodromes	2010 - 2015	States & AOP SG	valid
	• implement collaborative aerodrome operational procedures with ATM, ground services providers and associated operations support services	2010 - 2013	States & AOP SG	valid
	• monitor and ensure promulgation of national standards for aerodromes including certification of aerodromes requirement in accordance with established criteria and certification process	2010-2011	ICAO, States & AOP SG	valid
	• ensure that national requirements for aerodrome includes enforcement provisions for unresolved non-compliances in a timely manner	2010-2013	ICAO, States & AOP SG	valid
	• monitor and ensure clear separation of authority between the aerodrome operation service providers (aerodrome Operators) and the State regulatory agency	2010-2011	ICAO ., States & AOP SG	valid
	• monitor and ensure establishment of an organizational structure of a separate entity within CAA with clearly defined duties and responsibilities relevant to airport certification and continuous surveillance activities, appropriate to the size and scope of aerodromes in the State and ensure having sufficient qualified human resources to carry out its functions and mandate	2008-2013	ICAO, States & AOP SG	valid
	• monitor and ensure that the certification process explicitly include coordination with elements of air traffic service (ATS) for the local airspace of an aerodrome	2010-2012	ICAO, States & AOP SG	valid
	• monitor and ensure that aerodrome certification process include procedures for dealing with a non-compliance with the established requirements, including aeronautical studies and risk assessment mechanism and notification procedure	2010-2012	ICAO, States & AOP SG	valid

	Strategy Short term (2010-2012) Medium term (2013 - 2016)			
ATM OC COMPONENTS	**TASKS (As part of Certification of Aerodrome process and implementation of Safety Management for aerodrome operations)**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• develop, review, approve and verify the content of an Aerodrome Manual for each aerodrome used for international operations	2009-2012	States	valid
	• issue/grant certification of aerodromes as required	2009-2012	States	valid
	• establish an aerodrome surveillance and safety oversight programme and develop associated implementation plans, monitor and insure that aerodromes continuo meeting certification obligations and application of enforcement provisions for non compliance in a timely manner	2009-2016	States and AOP SG	valid
	• ensure promulgation of information on status of certification of aerodromes in the State AIP	2010-2016	ICAO, States and AOP SG	valid
	• monitor and follow-up alleviating of identified aerodrome deficiencies and ensure application of enforcement provisions for unresolved non-compliances in a timely manner	2010-2016	ICAO, States and AOP SG	valid
AO, CM, AUO	**Safety Management of Aerodromes**			
	• monitor and ensure promulgation of national harmonized requirement for aerodrome safety management	2010-2016	ICAO, States and AOP SG	valid
	• establish and implement an aerodrome safety programme and define acceptable level of safety and ensure it includes a requirement for certified aerodrome operators to implement a Safety Management System (SMS) acceptable to the State	2011-2016	ICAO, States and AOP SG	valid
	• Monitor, develop and implement an SMS with agreed performance objectives for aerodrome operations and ensure it clearly define lines of safety accountability throughout a certified aerodrome including a direct accountability for safety on the part of senior management	2011-2016	ICAO, States and AOP SG	valid

ATM OC COMPONENTS	TASKS (As part of Certification of Aerodrome process and implementation of Safety Management for aerodrome operations)	TIMEFRAME START-END	RESPONSIBILITY	STATUS
Strategy Short term (2010-2012) Medium term (2013 - 2016)				
	• implement remedial action necessary to maintain agreed safety performance and ensure the continuous monitoring and regular assessment of the safety performance that aims at a continuous improvement of the overall performance of the safety management system. Review and assess effectiveness of mitigation measures in regular bases	2011-2016	States and AOP SG	valid
	• Implement, where warranted, precise surface movement guidance and control system integrated with the runway incursion prevention programme to improve safety, increase capacity and efficiency of runway operations	2009-2012	States & AOP SG	valid
	• Develop, Implement and make available to ATM at aerodromes a positioning system for all vehicles and aircrafts operating on the movement area on a cost-benefit basis.	2013 - 2016	States & AOP SG	valid
AO, CM	**Aerodrome Emergency Planning**			
	• Establish collaborative bodies with ATS, aircraft operators, aerodrome operators, aerodrome security agency and other agencies that might be involved in different aerodrome emergencies to develop emergency plans for each aerodrome	2010 - 2012	States & AOP SG	valid
	• Coordinate and conduct different exercises as required to assess, review and ensure proper coordination between different agencies involved in an emergency and the effectiveness of the aerodrome emergency plan observing Human Factors principles aimed at ensuring optimum response by all existing agencies participating in emergency operations	2010 - 2012	States & AOP SG	valid
	• Arrange and test where warranted, precise measures for aircraft emergencies in difficult environment in and around aerodromes	2009-2012	States & AOP SG	valid
Linkage to GPIs	GPI/13: Aerodrome design and management , GPI/14: Runway operations , GPI/21: Navigation Systems			

IMPLEMENTATION OF RUNWAY SAFETY PROGRAMME

Benefits	
Environment	• Contribution to efficient environmental control
Efficiency	• efficient use of Runways • increased runway usability factors • reduced incident/accident factors • reduced number of deficiencies • minimize the effects of weather on capacity
Safety	• improve situational awareness • enhance precise surface guidance to and from a runway • improve safety of runway operations • improve safety of aerodrome operations in general
KPI	• status of implementation of Runway Safety programmes in the MID Region
Proposed Metrics:	• number of Runway incursions per year • number of Runway excursions per year • number of aircraft accidents& serious incidents per 100,000 movements

Strategy *Short term (2010-2012)* *Medium term (2013 - 2016)*				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AO, CM, , DCB, ATM SDM	**Runway Incursion Prevention**			
	• establish collaborative bodies with ATM, aircraft operators and aerodrome operators for implementing plans and measures aimed at prevention of runway incursion	2010 - 2015	States & AOP SG	valid
	• establish Runway Incursion Prevention programme, identify its goals as part of the national Runway Safety programme and monitor implementation plan	2009-2010	States & AOP SG	valid
	• implement, where warranted, precise surface movement guidance to and from a runway to improve capacity, safety and efficiency	2009-2012	States & AOP SG	valid
	• develop, Implement and make available to ATM at aerodromes a positioning system for all vehicles and aircrafts operating on the movement area on a cost-benefit basis	2013 - 2016	States & AOP SG	valid
	• implement procedures and technologies to enhance the performance of runway operations and optimize runway capacity	2013 - 2016	States & AOP SG	valid

ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AO, CM, , AUO, ATM SDM	• **Runway Excursion Prevention**			
	• establish collaborative bodies with ATM, aircraft operators and aerodrome operators for measures and implementing plans aimed at prevention of runway excursions	2010 - 2015	States & AOP SG	valid
	• harmonize, coordinate and support the Runway Excursion Prevention measures and implementation activities on a regional basis	2010 - 2016	ICAO, States & AOP SG	valid
	• develop and implement an integrated maintenance programme at aerodromes that includes pavement and visual aids	2009-2016	States & AOP SG	valid
	• establish collaborative bodies with AIM and ATM to ensure meeting quality requirements for runway declared distances	2010 - 2012	ICAO, States & AOP SG	valid
	• monitor and implement Runway End Safety Area (RESA) requirements at aerodromes	2010 - 2012	ICAO, States & AOP SG	valid
	• monitor and ensure meeting Runway strip characteristics and frangibility requirements	2010 - 2016	ICAO, States & AOP SG	valid
	• monitor, develop measures and ensure inspection of the movement area including control of Foreign Object Damage (FOD)	2009-2016	States & AOP SG	valid
AO	**Runway Pavement Maintenance**			
	• promote the awareness about the requirements for the provision of Pavement Maintenance in the movement area	ongoing	ICAO & AOP SG	valid
	• develop and implement a runway maintenance programme	2009-2012	States & AOP SG	valid
	• harmonize, coordinate and support the Runway pavement maintenance guidance for implementation activities on a regional basis	2009-2011	ICAO & AOP SG	valid
	• defined maintenance performance level objectives in order to maintain good friction characteristics and low rolling resistance on runways	2010-2011	States & AOP SG	valid

Strategy *Short term (2010-2012)* *Medium term (2013 - 2016)*				

ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
	Strategy *Short term (2010-2012)* *Medium term (2013 - 2016)*			
	• identify minimum friction level below which information that a runway may be slippery when wet should be made available, and develop coordination between AIM, ATM and aerodrome operators to monitor effective implementation in a timely manner	2009-2012	States & AOP SG	valid
	• monitor the removal of runway contaminants in particular; rubber deposits and accumulated sand	2010-2016	States & AOP SG	valid
	• monitor implementation of the requirements for measurement and reporting of the friction characteristics and carrying out appropriate corrective maintenance in accordance with defined maintenance performance level objectives and pavement maintenance programme	2010-2016	ICAO, States & AOP SG	valid
Linkage to GPIs	GPI/6 Air traffic flow management , GPI/9 Situational awareness , GPI/13 Aerodrome design and management , GPI/14 Runway operations , GPI/15 Match IMC and VMC operating capacity GPI/18 Aeronautical information			

MID REGIONAL PERFORMANCE OBJECTIVES
AIM PERFORMANCE OBJECTIVES

IMPLEMENTATION OF WGS-84 AND eTOD
Benefits

Environment	• Supporting benefits described in performance objectives for PBN
Efficiency	• benefits described in performance objectives for PBN • efficient use of airspace
Safety	• improve situational awareness • support determination of emergency contingency procedures • improve safety in general
KPI	• status of implementation of WGS-84 in the MID Region • status of implementation of eTOD in the MID Region (for Areas 1 & 4)
Proposed Metrics:	• number of States having implemented WGS 84 • number of States having organised eTOD awareness campaigns and training programmes • number of States having implemented eTOD for Areas 1 & 4

Strategy *Short term (2010-2012)* *Medium term (2013 - 2016)*				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
ATM AUO	**WGS-84**			
	• establish WGS-84 implementation goals in coordination with the national PBN implementation plan	2009-2010	States	valid
	• monitor the implementation of WGS-84 until complete implementation of the system by all States and take remedial action, as appropriate	ongoing	ICAO & AIS/MAP TF	valid
ATM CM, ATM SDM	**eTOD**			
	• promote the awareness about the requirements for the provision of electronic Terrain and Obstacle Data (eTOD)	ongoing	ICAO & AIS/MAP TF & States	valid
	• harmonize, coordinate and support the eTOD implementation activities on a regional basis	ongoing	ICAO & AIS/MAP TF	valid

	Strategy Short term (2010-2012) Medium term (2013 - 2016)			
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• provide Terrain and Obstacle data for area 1	2008-2010	States	valid
	• provide Terrain and Obstacle data for area 4	2008-2010	States	valid
	• assessment of Annex 15 requirements related to the provision of eTOD for area 2 and area 3	2010-2012	States	valid
	• development of an action plan for the provision of eTOD for area 2 and area 3	2013	States	valid
	• provide necessary Terrain and Obstacle data for area 2	2015	States	valid
	• provide necessary Terrain and Obstacle data for area 3	2015	States	valid
Linkage to GPIs	GPI-5: Performance-based navigation , GPI-11: RNP and RNAV SIDs and STARs , GPI-9: Situational awareness , GPI-18: Aeronautical Information , GPI-20: WGS-84 , GPI-21: Navigation systems			

AIM PERFORMANCE OBJECTIVES

REGIONAL PERFORMANCE OBJECTIVES TRANSITION FROM AIS TO AIM				
Benefits				
Environment	• reductions in fuel consumption			
Efficiency	• improved planning and management of flights • efficient use of airspace			
Safety	• improved safety			
KPI	• Status of implementation of the AIRAC system in the MID Region • Status of implementation of QMS in the MID Region • Status of implementation of AIS Automation in the MID Region			
Proposed Metrics:	• Number of deficiency Priority "U" related to the AIS/MAP field • Number of States having implemented QMS • Number of States having developed eAIP • Number of States having developed a National Plan for the transition from AIS to AIM			

Strategy *Short term (2010-2012)* *Medium term (2013 - 2016)*				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AUO, ATM SDM	• improve the compliance with the AIRAC system	Ongoing	States & AIS/MAP TF	valid
	• use of the internet, including the ICAO MID Forum, for the advance posting of the aeronautical information considered of importance to users	2009-2011	States & ICAO	valid
	• signature of Service Level Agreements between AIS and data originators	2009-2011	States	valid
	• foster the implementation of QMS based on the MID Region Methodology for the implementation of QMS and the Eurocontrol CHAIN deliverables	2009-2011	ICAO & AIS/MAP TF & States	valid
	• monitor the implementation of QMS until complete implementation of the requirements by all MID States	2008-2013	ICAO & AIS/MAP TF	valid
	• review and update the deficiencies in the AIS/MAP field and provide necessary guidance for their elimination	Ongoing	ICAO & AIS/MAP TF	valid
	• foster the development of eAIPs by MID States	2009-2013	States & AIS/MAP TF	valid

Strategy Short term (2010-2012) Medium term (2013 - 2016)				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AUO, ATM SDM	• monitor the implementation of AIS automation in the MID Region in order to ensure availability, sharing and management of electronic aeronautical information;	2008-2013	ICAO & AIS/MAP TF	valid
	• foster the development of national/regional AIS databases.	2010-2015	ICAO & AIS/MAP TF & States	valid
Linkage to GPIs	GPI-5: Performance-based navigation , GPI-11: RNP and RNAV SIDs and STARs , GPI/18: Aeronautical Information			

MID REGIONAL PERFORMANCE OBJECTIVES
ATM PERFORMANCE OBJECTIVES

OPTIMIZATION OF THE ATS ROUTE STRUCTURE EN-ROUTE AIRSPACE

Benefits	
Environment	• reduction in fuel consumption • reduction in CO_2 emission
Efficiency	• ability of aircraft to conduct flight more closely to preferred trajectories • increase in airspace capacity
Safety	• improved safety of ATS routes
KPI	• status of implementation of RNAV 1 in the MID Region • status of implementation of the ATS Routes listed in the MID ATS Route Catalogue • status of implementation of RNAV 5 area in the level band FL160-FL460, in the MID Region • status of Duplicated 5LNCs in the MID Region • status of deficiencies related to non-implementation of ATS Routes • status of implementation of 20NM longitudinal separation
Performance Metrics:	• number of RNAV 1 Routes implemented, in accordance with the MID Basic ANP • number of implemented ATS Routes from the MID ATS Route Catalogue • number of States having implemented RNAV 5 area in the level band FL160-FL460 • number of duplicate 5LNC eliminated • number of eliminated deficiency related to non-implementation of ATS Routes • number of concerned States implementing 20NM longitudinal separation

Strategy *Short term (2010-2012)* *Medium term (2013-2016)*				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AOM	*En-route airspace*			
	• develop Airspace Concept based on the MID PBN implementation plan, in order to design and implement a trunk route network, connecting major city pairs in the upper airspace and for transit to/from aerodromes, on the basis of PBN and, in particular, RNAV 5, taking into account interregional harmonization	ongoing	ATM/SAR/AIS SG (ARN TF)	valid
	• develop State PBN implementation plans related to ATS Route development	2008-2012	States	valid
	• monitor user requirements for the establishment of ATS routes in the MID Region		ATM/SAR/AIS SG ARN TF	Ongoing valid

ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
	• provide status of PBN implementation	2010-2011	States	valid
	• monitor the implementation of pending ATS Routes and update the MID Basic ANP and the MID ATS Route catalogue	Ongoing	ATM/SAR/AIS SG ARN TF	valid
	• follow–up with States on the implementation of pending ATS Routes and update the list of air navigation deficiencies, accordingly	Ongoing	ATM/SAR/AIS SG ARN TF	valid
	• monitor the implementation of RNAV 5 area in the level band FL160 - FL460 (inclusive)	2008-2012	ATM/SAR/AIS SG ARN TF	valid
	• monitor the implementation of RNAV 1 routes in the MID Region	Ongoing	ATM/SAR/AIS SG ARN TF	valid
	• implementation of 20NM longitudinal separation between States	2010-2011	Bahrain; Iraq; Jordan; Kuwait; Saudi Arabia; Syria and UAE	
	• monitor the process of allocation of 5LNCs	Ongoing	ICAO	valid
	• elimination/Reduction of the use of duplicate 5LNCs	2010-2011	ICAO States	valid
linkage to GPIs	GPI/5: performance-based navigation, GPI/7: dynamic and flexible ATS route management, GPI/8: collaborative airspace design and management, GPI/20: WGS-84			

Strategy
Short term (2010-2012)
Medium term (2013-2016)

<table>
<tr><td colspan="2" align="center">**OPTIMIZATION OF THE TERMINAL AIRSPACE**</td></tr>
<tr><td colspan="2" align="center">**Benefits**</td></tr>
<tr><td>**Environment**</td><td>• reductions in fuel consumption and CO_2 emission</td></tr>
<tr><td>**Efficiency**</td><td>• ability of aircraft to conduct flight more closely to preferred trajectories
• increase in airspace capacity
• facilitate utilization of advanced technologies (e.g., FMS based arrivals) and ATC decision support tools (e.g., metering and sequencing), thereby increasing efficiency</td></tr>
<tr><td>**Safety**</td><td>• enhance safety in terminal airspace</td></tr>
<tr><td>**KPI**</td><td>• status of implementation of PBN routes in terminal airspace
• status of implementation of SID and STARS</td></tr>
<tr><td>**Proposed Metrics:**</td><td>• number of States implemented PBN routes in terminal airspace
• total Number of PBN routes in MID region terminal airspace
• number States implemented SID and STARS</td></tr>
</table>

	Strategy *Short term (2010-2012)* *Medium term (2013-2016)*			
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AOM, AO	*In terminal airspace*			
	• develop Airspace Concept based on the MID PBN implementation plan, in order to design and implement optimized standard instrument departures (SIDs), standard instrument arrivals (STARs), instrument flight procedures, holding, approach and associated procedures (particular RNAV 1 and Basic RNP1) in accordance with Regional Plan	Ongoing	States	valid
	• develop State PBN implementation plans related to terminal Airspace	Ongoing	(ATM/SAR/AIS SG), States	valid
	• formulate safety plan (assessment and monitoring)	2009-2012	States	valid
	• publish national regulations for aircraft and operators approval using PBN manual as guidance and considering available foreign approval material	2008-2010	States	valid
	• training	2008-2012	States	valid
	• system performance measuring (measurement and monitoring plan	2009-2012	States, ATM/SAR/AIS SG	valid
	• implement SIDs and STARs	2009-2012	States	valid

Strategy Short term (2010-2012) Medium term (2013-2016)				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• monitor implementation progress in accordance with MID PBN implementation roadmap and States implementation plan	2009-2012	States, ATM/SAR/AIS SG	valid
Linkage to GPIs	GPI/5: performance-based navigation, GPI/7: dynamic and flexible ATS route management, GPI/8: collaborative airspace design and management, GPI/10: terminal area design and management, GPI/11: RNP and RNAV SIDs and STARs and GPI/12: Functional integration of ground systems with airborne systems.			

IMPLEMENTATION OF RNAV AND RNP APPROACHES				
Benefits				
Environment **Efficiency** **Safety**	• reduce CO2 emission • reductions in fuel consumption and emissions; • improvements in capacity and efficiency at aerodromes • improvements in safety at aerodromes			
KPI	• status of implementation of RNAV/ RNP Approaches in the MID Region • status of implementation of PBN approaches			
Proposed Metrics:	• number of States having implemented PBN approaches • number of RNAV/RNP APP in each States			
Strategy *Short term (2010-2012)* *Medium term (2013-2016)*				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AOM, AO	*At airports*			
	• develop Airspace Concept based on the MID PBN Implementation Plan, in order to design and implement RNP APCH APV in most possible airports; RNP AR APCH at airports where there are obvious operational needs	2009-2012	States	valid
	• develop State PBN implementation plans regarding Guided RNP Approaches	Ongoing	MIDANPIRG/12 (ATM/SAR/AIS SG) States	valid
	• formulate safety plan (assessment and monitoring)	2009-2012	States	valid
	• publish national regulations for aircraft and operators approval using PBN manual as guidance and considering available foreign approval material	2008-2012	States	valid
	• system performance measuring (measurement and monitoring plan	2009-2012	States, ATM/SAR/AIS SG	valid
	• implement APV procedures	2009-2012	States	valid
	• monitor implementation progress in accordance with MID PBN implementation roadmap and States implementation plan	2009-2012	States, ATM/SAR/AIS SG	valid
Linkage to GPIs	GPI/5: performance-based navigation, GPI/7: dynamic and flexible ATS route management, GPI/8: collaborative airspace design and management, GPI/10: terminal area design and management, GPI/11: RNP and RNAV SIDs and STARs and GPI/12: FMS-based arrival procedures			

<table>
<tr><td colspan="5" align="center">**ENHANCE CIVIL/MILTARY COORDINATION AND CO-OPERATION**</td></tr>
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colspan				

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<tbody>
<tr><td colspan="2" align="center">**ENHANCE CIVIL/MILTARY COORDINATION AND CO-OPERATION**</td></tr>
<tr><td colspan="2" align="center">**Benefits**</td></tr>
<tr><td>**Environment**</td><td>• reductions in fuel consumption and CO_2 emission</td></tr>
<tr><td>**Efficiency**</td><td>• allow a more efficient ATS route structure; and
• increase airspace capacity</td></tr>
<tr><td>**Safety**</td><td>• ensure safe and efficient action in the event of unlawful interference</td></tr>
<tr><td>**KPI**</td><td>• number of ATS routes not implemented due to Military restrictions
• number of Conditional Routes (CDR) implemented in accordance with user requirements
• number of reported incident related to uncoordinated flights operating over high seas</td></tr>
<tr><td>**Proposed Metrics:**</td><td>• reduction of the number of ATS routes not implemented due to Military restrictions
• increase the number of CDRs implemented in accordance with user requirements
• reduction of the number of incident related to uncoordinated flights operating over high seas</td></tr>
</tbody>
</table>

ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
Strategy *Short term (2010-2012)* *Medium term (2013-2016)*				
AOM, AUO	• establish civil/military coordination bodies at national level	2008-2011	States	
	• arrange for permanent liaison and close cooperation between civil ATS units and appropriate air defence units	2008-2011	States	
	• implement collaborative civil/military airspace planning at national level	2008-2012	States	
	• develop a regional strategy and an Action Plan for implementation of flexible use of airspace in a phased approach beginning with more dynamic sharing of restricted airspace while working towards full integration of civil and military aviation activities	2009-2013	ATM/SAR/AIS SG ARN TF	
	• implement FUA	2009- 2016	States	
	• monitor FUA implementation progress	Ongoing	ATM/SAR/AIS SG	
Linkage to GPIs	GPI/1: flexible use of airspace, GPI/7: Dynamic and flexible ATS route management, GPI/8: Collaborative airspace design and management			

RVSM OPERATIONS IN THE MID REGION

Benefits

Environment	• reductions in fuel consumption and emissions;
Efficiency	• increase airspace capacity
Safety	• meet the agreed Target Level of Safety (TLS)
KPI	• Status of States listed in the MANDD for non-reporting necessary data to the MIDRMA on regular basis and in a timely manner • Overall Target Level of Safety (TLS): 5×10^{-9} fatal accident per flight hour
Proposed Metrics:	• number of States reporting necessary data to the MIDRMA on regular basis and in a timely manner • number of Overall vertical-collision risk in MID RVSM airspace

Strategy *Short term (2010-2012)* *Medium term (2013 - 2016)*				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AUO, ATM SDM				
	• develop an Action Plan for the implementation of RVSM within Baghdad FIR	2009-2010	BFRI WG	valid
	• develop necessary planning material related to RVSM implementation in Baghdad FIR	2009-2011	BFRI WG MIDRMA ICAO	valid
	• ensure that Iraq met all RVSM implementation requirements	2010-2011	BFRI WG MIDRMA ICAO	valid
	• implement RVSM within Baghdad FIR	2011	Iraq ICAO MIDRMA	valid
	• monitor RVSM operations in the MID Region	Ongoing	MIDRMA Board ATM/SAR/AIS SG ICAO	valid
	• develop MID RVSM Safety Monitoring Reports (SMR) with a view to demonstrate that safety objectives continue to be met	Ongoing	MIDRMA	valid
	• assess MID RVSM SMRs and take action as required	Ongoing	ATM/SAR/AIS SG MIDRMA Board MIDANPIRG	valid
linkage to GPIs	GPI-2: Reduced Vertical Separation Minima			

	IMPLEMENTATION OF THE NEW ICAO FPL FORM

Benefits

Environment	• reductions in fuel consumption and CO_2 emission utilizing proper flight planning and aircraft capabilities are known in advance to ANSP
Efficiency	• ability of air navigation service providers to make maximum use of aircraft capabilities • ability of aircraft to conduct flights more closely to their preferred trajectories • facilitate utilization of advanced technologies thereby increasing efficiency • optimized demand and capacity balancing through the efficient exchange of information
Safety	• enhance safety by use of modern capabilities onboard aircraft
KPI	• status of implementation of ICAO new FPL provisions • status of updates in the FITS
Proposed Metrics:	• number of States meeting the deadline for implementation of the ICAO new FPL provisions • number of States providing the focal points and initiated impact studies

Strategy
Short term (2010-2012)
Medium term (2013 - 2016)

ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
SDM	• Planning and implementation of transition elements	2009-2012	INFPL SG	valid
	• States to assign focal points and form and internal nucleus team	2009 - 2010	States	valid
	• ensure that enabling regulatory (regulations procedures, AIP etc..) provisions are developed	2009- 2012	States	valid
	• ensure that the automation and software requirements of local systems are fully adaptable to the changes envisaged in the new FPL form	2009 - 2012	States	valid
	• ensure that issues related to the ability of all system to pass information correctly and to correctly identify the order in which messages are received, to ensure that misinterpretation of data does not occur	2009- 2012	States	valid
	• analyze each individual data item within the various fields of the new flight plan form, comparing the current values and the new values to verify any problems with regard to applicability of service provided by the facility itself or downstream units	2009 – 2011	INFPL SG States	valid

	Strategy Short term (2010-2012) Medium term (2013 - 2016)			
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• ensure that there are no individual State peculiarities or deviations from the flight plan provisions	2009- 2012	States	valid
	• ensure that the accepting ATS Reporting Office accepts and disseminates all aircraft capabilities and flight intent to all the downstream ACCs as prescribed by the PANS-ATM provisions	2009 – 2012	INFPL SG States	valid
	• plan the transition arrangements to ensure that the changes from the current to the new ICAO FPL form occur in a timely and seamless manner and with no loss of service	2009-2012	States INFPL SG	valid
	• in order to reduce the change of double indications it is important that any State having published a specific requirement(s) which are now addressed by the amendment should withdraw those requirements in sufficient time to ensure that aircraft operators and flight plan service providers, after 15 November 2012, use only the new flight plan indications.	2009- 2012	States	valid
	• internal testing	2009 – June 2012	States	valid
	• external testing	1 April to 30 June 2012	States	valid
	• airspace users testing	1 July to 14 November 2012	States and users	valid
	• ensure the training of relevant stakeholders (air traffic controllers, etc)	2009 - 2012	States	valid
	• develop and make available, guidance material for users, including but not limited to ANSP personnel	2009 - 2010	INFPL SG	valid
	• establish a central depository (FITS) in order to track the implementation status	Ongoing	ICAO	Completed

ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
	Strategy *Short term (2010-2012)* *Medium term (2013 - 2016)*			
	• inform the ICAO regional offices on an ongoing basis	Ongoing- Dec 2012	States	Valid
linkage to GPIs	GPI/18 Aeronautical Information, GPI/5 RNAV and RNP (Performance-based navigation), GPI/11 RNP and RNAV SIDs and STARs, GPI/12 Functional integration of ground systems with airborne systems			

CNS PERFORMANCE OBJECTIVES

REGIONAL PERFORMANCE OBJECTIVES RADIO SPECTRUM MANAGEMENT AND PROCESSES TO PROTECT THE AERONAUTICAL SPECTRUM	
Benefits	
Environment	• Support ATM for the optimized use of technologies to reduce effect on environment
Efficiency	• proper administration the allocated aviation spectrum • resolve air Space communications
Safety	• availability of spectrum for safety systems and communication
KPI	• satisfactory results of the WRC-12 • current Aviation Frequency spectrum is protected to extent possible • availability Frequency Spectrum for Future Aeronautical utilization • status of deletion of footnotes affecting aviation spectrum
Proposed Metrics:	• number of aviation experts participate in WRC-12 • number of States deleted their State name from the foot notes affecting aviation spectrum • number of States coordinated with TRA to support the ICAO position

Strategy *Short term (2010-2012)* *Medium term (2013 - 2016)*				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AOM, AUO, ATMSDM	• implement frequency spectrum management tool	2008-2010	ICAO States	valid
	• harmonize Regional coordination for the protection of the aviation spectrum at WRC-12, and beyond	2008-2012	ICAO, CNS SG States	valid
	• promote the awareness of Participation of Civil Aviation Experts in State's delegation to ITU WRC Meetings	2007-2012	ICAO CNS SG	valid
	• Civil Aviation Spectrum experts attend WRC-12 and be part of their National delegation and inform ICAO MID Office	Feb 2012	States	valid
	• disseminate ICAO policy statements of requirements for aeronautical radio frequency spectrum for WRC-12	2009-2011	ICAO	valid
	• deletion of MID States name from footnote affecting Aviation spectrum and inform ICAO Mid Regional Office	2007- 2012	States	valid

	Strategy Short term (2010-2012) Medium term (2013 - 2016)			
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
	• coordinating National TRA for the support of the ICAO position and inclusion in State position to the extent possible and inform ICAO MID regional office	2007- 2012	States	valid
	• ICAO attend WRC-12 to provide necessary support to the delegation for the support of the aviation spectrum	Feb 2012	ICAO	valid
	• organize workshop for the Regional support to ICAO position	Sep 2010	ICAO	valid
	• attend Regional Workshop along with the National TRA	Sep 2010	States	valid
	• increase awareness and Ensure frequency Spectrum availability for future aviation needs		ICAO/States	valid
Linkage to GPIs	GPI-23: Aeronautical radio spectrum			

REGIONAL PERFORMANCE OBJECTIVE IMPROVEMENT OF COMMUNICATION INFRASTRUCTURE RELATED TO ATN IMPLEMENTATION	
Benefits	
Environment	• Air Ground ATN communication improve, ATM for better routes resulting in reduction of aircraft noise and emission impact
Efficiency	• improvement in operational efficiency • better coordination using more reliable networks
Safety	• improved safety by having related information on time
KPI	• status of the development of the Regional Plan • status of the development of the test procedures for the G-G Network
Proposed Metrics:	• number of States participating in the development of the plan • number of States following the implementation Plan

Strategy *Short term (2008-2012)* *Medium term (2013-2016)*				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AO, TS, CM, AUO	• develop Regional ATN Planning document	2008-2011	ATN/IPS WG	valid
	• review of ATN implementation issues and develop coordinated solutions	2009-2011	ATN/IPS WG and CNS SG	valid
	• develop conformance procedures and check list for AMHS	2009-2011	ATN/IPS WG and CNS SG	Completed
	• develop information Security policy and Guidance	2009-2011	ATN/IPS WG and CNS SG	valid
	• coordinate and monitor implementation to be harmonized and interoperable globally	On going	ATN/ IPS WG and CNS SG	valid
	• implement agreed G-G ATN application and report to ICAO MID Regional Office	On going	States	valid
	• monitor and report deficiencies to support the agreed MID METRICS	2011-2012	ATN/IPS WG and CNS SG	Valid
	• support other MIDANPIRG Subsidiary bodies for CNS infrastructure requirement	2008-2016	ATN/IPS WG and CNS SG	Valid

REGIONAL PERFORMANCE OBJECTIVES **IMPLEMENTING ADVANCED TECHNOLOGIES TO SUPPORT DATA LINK SERVICES**

Benefits	
Environment **Efficiency** **Safety**	• reduction in environmental impact by implementing data link to reduce separation resulting in less fuel consumption and reduces CO_2 emissions • improvement in operational efficiency • better coordination • efficient use of frequency spectrum • improved safety
KPI	• status of infrastructure survey • status of data links implementation
Proposed Metric	• number of States reply to infrastructure survey • number of States Implemented data links

Strategy *Short term (2010-2012)* *Medium term (2013-2016)*				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AO, TS, CM, AUO DCB, ATMSDM	• identify requirement and harmonize implementation plan to ensure interoperability between States and Regions	2010-2011	CNS/ATM/IC SG CNS SG	valid
	• technical audit of available supporting infrastructure	2010-2011	CNS SG CNSATM/IC SG	valid
	• implement available technologies that bring immediate benefits (D-ATIS, CPDLC, ADS-C, ADS-B) and inform ICAO MID Regional Office	2011-2012	States , user	valid
	• monitor and report deficiencies to support agreed MID Metrics	2010-2011	All MIDANPIRG Subsidiary bodies	valid
Linkage to GPIs	GPI-22: Communications Infrastructure , GPI-17: Data Link Application			

REGIONAL PERFORMANCE OBJECTIVES IMPLEMENTATION OF GNSS IN THE MID REGION

Benefits	
Environment	• reduction in environmental impact by implementing PBN
Efficiency	• optimal use of advanced technologies • optimization of infrastructure • operational efficiency
Safety	• reduced navigational errors
KPI	• alignment of GNSS Implementation strategy with PBN • status of Implementation of GNSS
Proposed Metrics:	• number of States Implemented GNSS • number of report on trails and demo on GNSS

Strategy *Short term (2010-2012)* *Medium term (2013-2016)*				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AO, TS, CM, AUO AOM,	• carry out GNSS trials, demonstrations and test beds; inform ICAO MID Regional Office	2008-2011	States, ICAO	valid
	• determine the most appropriate augmentation system for the MID Region	2009-2011	PBN/GNSS TF CNS/ATM/IC CNS SG	valid
	• define required infrastructure according to regional PBN implementation plan	2010-2011	PBN/GNSS TF CNS/ATM/IC CNS SG	valid
	• implement required infrastructure and/or procedures and inform ICAO MID Regional Office	2009-2011	States	valid
	• monitor implementation progress	2009-2011	PBN/GNSS TF	valid
	• monitor and report deficiencies to support agreed MID METRICS	2010-2011	All MIDANPIRG Subsidiary bodies	valid
Linkage to GPIs	GPI-21: Navigation Systems , GPI-9: Situational Awareness			

REGIONAL PERFORMANCE OBJECTIVES **IMPROVE SURVEILLANCE INFRASTRUCTURE/ EXCHANGE OF SURVEILLANCE DATA**		
Benefits		
Environment	• reductions in fuel consumption and CO_2 emission	
Efficiency	• optimal use of advanced technologies • optimization of infrastructure • operational Efficiency • ability of aircraft to conduct flight more closely to preferred trajectories • increase in airspace capacity	
Safety	• reduced separation • reduce controller work load	
KPI	• status of the surveillance roadmap • status of surveillance data sharing	
Proposed Metrics:	• number of States Participate in the development of MID Surveillance Road map • number of States sharing Radar	

Strategy ***Short term (2010-2012)*** ***Medium term (2013 - 2016)***				
ATM OC COMPONENTS	**TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS**
AOM, AUO, ATMSDM	• prepare Plan for introduction of new surveillance systems	2011-2012	States, ICAO PBN/GNSS TF CNS/ATM/IC CNS SG	valid
	• determine the most appropriate surveillance for each States supporting the PBN regional Plan	2009-2011	States CNS/ATM/IC	valid
	• organize workshop for developing MID surveillance roadmap	2009-2011	ICAO	valid
	• MID States participate actively in the workshop to reach its objective	2011	States	valid
	• follow up on the Regional Surveillance systems in MID Regional ANP and FASID	2008-2011	CNS SG	valid
	• monitor and report deficiencies In order to support agreed MID Metrics	2010-2011	ATN/IPS WG and CNS SG	valid

ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
Strategy *Short term (2010-2012)* *Medium term (2013 - 2016)*				
	• No objection letter between states concerned for sharing Surveillance data	2010-2012	States	valid
	• identify format of RDPS Data	2010-2012	States / CNS SG and CNS/ATM/IC	Valid
	• follow up on the Regional Surveillance systems in MID Regional ANP and FASID	2008-2011	CNS SG	valid
	• monitor and report deficiencies In order to support agreed MID Metrics	2010-2011	ATN/IPS WG and CNS SG	valid
Linkage to GPIs	GPI-9: Situational Awareness , GPI/17 Data link applications,			

REPORT ON AGENDA ITEM 4: **REGIONAL AIR NAVIGATION PLANNING AND IMPLEMENTATION ISSUES**

ICAO New FPL Format Implementation

4.1   The meeting noted that ICAO MID Regional Office sent State Letter AN 7/33 – 09/254, dated 4 August 2009 requesting all MID States to provide focal points of contact and an initial assessment of the expected impact that the use of the revised flight plan format could have on the procedure and systems in their State(s).

4.2   Considering the importance of a homogeneous and harmonized implementation, the Air Navigation Commission (ANC) requested the Air Navigation Bureau (ANB) to develop a system that could monitor the implementation of the amendment and also help States with the implementation. In this respect, the ANB developed a web tool called Flight Plan Implementation Tracking System (FITS), which is dedicated to monitor the implementation around the world and to serve as a forum to clarify issues related to the implementation, besides helping States or Organizations for implementation.

4.3   The FITS website provides information regarding the implementation status of the new flight plan provisions in each State along with guidance and harmonized solutions to any difficulties encountered in the implementation process. It can be accessed at http://www2.icao.int/en/FITS/Pages/home.aspx.

4.4   The ATM/SAR/AIS SG/11 meeting held in Bahrain, 10 - 12 November 2009, while discussing implementation of the ICAO New FPL format recognized the need for States to secure necessary budget for the implementation of the new FPL Model Project, and urged States to develop the technical requirements related to the upgrade of their ATC systems to comply with the new FPL Format and to initiate necessary negotiation with the ATC systems manufacturing vendors as soon as possible.

4.5   The first meeting of the ICAO New Flight Plan Format Study Group (INFPL SG/1) was held in Cairo, 15 - 17 February 2010), developed Terms of Reference for the Study Group to support and assist MID States for the implementation of the INFPL in the MID Region.

4.6   The meeting noted that the INFLP discussed the progress achieved and issues faced by the other ICAO regions, where many specific regional issues where rose in these Regions. Accordingly INFPL SG/1 meeting encouraged MID States to present and post any specific issues in the FITS.

4.7   Based on the above the meeting noted that INFPL SG/1 reviewed and updated the focal point of contact as at **Appendix 4A** to the Report on Agenda Item 4, in this regard the meeting urged States that did not yet provided focal points to do so as soon as possible.

4.8   The meeting was updated on the table developed by the INFPL SG reflecting the Status of implementation of the INFPL in MID States which gives details on the appointment of focal points, the budget allocation, milestone and the implementation date, as shown below :

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STATUS OF IMPLEMENTATION OF INFPL IN THE MID REGION

	Focal point	**Manf. cont / Budget**	**Milestone**	**Implementation date of new**	**Remarks**
Bahrain	√	√ / √	4		
Egypt	√		3		
Iran	√		3		
Iraq					
Israel					
Jordan		√ / √	3		
Kuwait	√		2		
Lebanon					
Libya					
Oman	√				
Qatar	√	√/√	5		
Saudi Arabia	√	√/√	4		
Sudan					
Syria	√				
UAE	√	√/√	5		
Yemen					

Mile Stone:
1- Empty
2- Analysis of the draft amendment
3- Evaluation of current system
4- Introduction of capability to parse new information
5- Check of AIDC / OLDI compatibility
6- Coordination with neighboring ANSP and airspace users
7- Implementation of new system

4.9   The meeting was informed that the Milestone for all MID States reflected in the FITS will be revised to reflect the above status, therefore it was requested that MID States provide their updates to the Regional Office. In this regard the meeting was provided with simple live presentation on the FITs tool.

4.10   Based on the above the meeting endorsed INFPL SG/1 meetings Draft Conclusions and Decision as follows:

DRAFT DECISION 5/3:   TERMS OF REFERENCE OF THE INFPL STUDY GROUP

That, the Terms of Reference and Work Programme of the ICAO New FPL format Study Group (INFPL SG) be as at Appendix 2A to the Report on Agenda Item 2.

DRAFT CONCLUSION 5/4:   INFPL FORMAT IMPLEMENTATION ISSUES

That, MID States be urged to complete the impact studies and file the issues arising from them to the MID Regional Office.

DRAFT CONCLUSION 5/5:   ICAO NEW FPL PROGRESS REPORT

That, MID States be urged to send progress report on the preparation for the implementation of INFPL to the ICAO MID Regional Office every (3) three months or at least whenever major progress is achieved.

DRAFT CONCLUSION 5/6:   ICAO NEW FLIGHT PLAN FORMAT IMPLEMENTATION

That, MID States be urged to:

a) *secure necessary budget for the implementation of the ICAO New FPL Format;*

b) *initiate necessary negotiation with their ATC systems manufacturers/ vendors for the implementation of necessary hardware/software changes, as soon as possible;*

c) *develop National PFF related to the ICAO new FPL format project with clearly established milestones with timelines; and*

d) *take all necessary measures to comply with the applicability date of 15 November 2012.*

4.11   The meeting noted that ICAO MID Regional Office will organize a workshop from 4-6 July 2010, in order to assist States in the preparation for the timely implementation of the ICAO new Flight Plan Format, which will be followed by INFPL SG/2 meeting. Accordingly, the meeting urged all MID States to actively participate in the workshop and INFPL SG/2 meeting.

MID SSR Code Allocation

4.12   The meeting noted the outcome of the SSRCA SG/2 and SSRCAS SG/3 meetings where it was agreed in principle that three Participating Areas (PAs) for the MID Region, however more data regarding, inter alia, MID Region traffic patterns and volume, Flight Data Processing Systems' (FDPS) capabilities, and requirements in adjacent ICAO Regions, was necessary in order for the Study Group to reach a decision on the number of the PAs and codes allocated to each PA.

4.13   Furthermore the SSRCA SG/3 meeting reviewed MIDANPIRG/11 meeting Conclusion 11/25: *MEASURES TO ADDRESS NON-SYSTEM SSR CODE ASSIGNMENT PROBLEMS* and Conclusion *11/26: ADOPTION OF THE ORIGINATING REGION CODE ASSIGNMENT METHOD (ORCAM) IN THE MID REGION.*

4.14   The SSR CA Study Group noted that a State letter SL AN 6/17-10/109 dated 28 March 2010 referring to MIDANPIRG/11 conclusions concerning the Secondary Surveillance Radar (SSR) Code Allocation mainly Conclusions 11/27 and 11/28 SSR code sharing and reduction of SSR Code occupancy time in the MID Region that requires States to provide FDPS capabilities.

4.15   The SSRCA SG/3 meeting noted that only ten (10) States replied to the FPDS questionnaire as at **Appendix 4B** to the Report on Agenda Item 4. The initial analysis of the recorded responses demonstrated a large variety of ATS capabilities.

4.16   The SSRCA SG/3 noted from the replies received that it was evident that FDPS's do not require upgrades to satisfactorily perform the functions according to the PA requirement. However, the use of directional assignment will require the upgrade of FDPS.

4.17   The meeting noted that SSRCA SG/3 recalled that most FDPS's would require an upgrade due to the implementation of ICAO New flight plan. Accordingly the SSRCA SG/3 meeting urged MID States to upgrade FDPS's to include SSRCA required functionality in conjunction with the INFPL upgrade and developed the following Draft Conclusion which was endorsed by the meeting:

> *DRAFT CONCLUSION 5/7:   FDPS SSRCA REQUIRED FUNCTIONALITY*
>
> *That, MID States be urged to upgrade their FDPSs to include the SSRCA required functionality in conjunction with ICAO new Flight Plan (INFPL) upgrade.*

4.18   The meeting was informed on the Gulf area being an area with considerable military activity, carrier-based aircraft on high seas of a variety of warships with air defense systems. Code change may in stressed situations be construed by air defense units as an indication of hostile intents and increase the risk of military action against civil aircraft.

4.19   The SSRCCA SG/3 meeting urged MID States to identify and address inefficiencies in the current ORCAM structure before adopting an alternate structure in order to overcome the SSR code shortage. The SSRCA SG meeting agreed to circulate the SSR Assignment Log for assessing SSR code shortage problems in order to provide a better documented case study to be carried out by States.

4.20   The SSRCA SG/3 meeting discussed a proposal containing immediate short term measures to address code shortage issues as follows:

> a)   transfer 1200 series Domestic SSR code from the Emirates and Bahrain FIR's to Jeddah FIR; and
>
> b)   in coordination with EUROCONTROL consider exchanging the Tel Aviv FIR Transit SSR code series 5100 or 6400 with the SSR "D" 20 or SSR "D" 36 series of Tehran FIR *that are geographically adequately separated.* The released "T" series from Tel Aviv FIR be returned to the ICAO MID Office for re-allocation.

4.21   The meeting agreed that in coordination with EUROCONTROL exchange the Tel Aviv FIR Transit SSR code series 5100 or 6400 with the Domestic 6500 series currently used by Muscat FIR.

4.22   The meeting noted that ATM/SAR/AIS SG/11 meeting agreed that the SSRCA SG shall develop a MID strategy for the allocation of SSR Codes showing clearly the short term and long term solutions.

4.23   Based on the above, the SSRCA SG/3 meeting developed a MID Region strategy for the allocation of SSR codes in the MID Region and agreed to the following Draft Conclusion, which is proposed to replace and supersede MIDANPIRG/11 Conclusions 11/26, 11/27 and 11/28:

> *DRAFT CONCLUSION 5/8:   MID STRATEGY ON SSR CODE ALLOCATION*
>
> *That, in order to improve the MID SSR Code Allocation System; the MID Strategy on SSR Code Allocation is as at **Appendix 4C** to the report on Agenda Item 4.*

IC Code Allocation issues and Surveillance in the MID Region

4.24   The meeting was informed on the All Purpose STructured Eurocontrol suRveillance Information eXchange (ASTERIX) started as EUROCONTROL development, ASTERIX is now applied worldwide, in this regard the meeting was informed that the State letter AN 16/7.1- 128 dated 12 April 2006, was sent to MID States informing them of these developments and the assignments for the MID Region States.

4.25   The meeting recalled that SSR Mode S interrogator Identifier Codes are used to reduce garble and to improve performance in the overlapping coverage of SSRs. ICAO SARPs provided for 4 bit Interrogator Identifier (II) code permits 16 code combinations to be available for operational use. The code 0 (zero) is reserved and is not generically available for II code assignment. Furthermore, Annex 10, Volume IV was amended to provide SARPs for additional 63 Surveillance Identifier (SI) codes, in addition to II codes, to meet the requirement of SSR interrogators in the areas of high density installations.

4.26   The meeting noted that each Mode S sensor or cluster of Mode S sensors requires a unique Interrogator Identifier (II) code and/or a Surveillance Identifier (SI) code, collectively referred to as Interrogator Codes (IC). Since there are only 15 II and 63 SI codes that can be operationally assigned (special use of II Code zero and SI Code zero is not used), IC assignment needs to be carefully organized to ensure that identical codes are not used in overlapping Mode S coverage areas.

4.27   The meeting was apprised on the ICAO provision on the assignment of interrogator identifier (II) and (SI) codes, where necessary in areas of overlapping coverage, across international boundaries of flight information regions, shall be the subject of Regional Air Navigation Agreements.

4.28   The meeting was updated on the methods for the assignment of the IC codes in APAC and Europe in this regard the meeting noted that since ICAO MID Region is an interface with AFI, Europe and ASIA/PAC Regions coordination for the allocations is necessary within the MID Region and with other Regions specially with European region since it is very populated with the MODE S Radars and some MID States have already conflict issues with Europe and coordination process were carried out with European Region through EUROCONTROL. Since European Region has created Mode S IC Co-ordination Group (MICoG) and Civil/Military SSR Environment Liaison Group (CIMSEL) also developed a software application (MICA) for this purpose.

4.29   The meeting noted that CNS SG/3 held in Cairo 10-12 May 2010 agreed that ICAO MID Region continue using the same process through EUROCONTROL using the MICA application and the MID Office to act as focal point, as this has already been proven to be successful for MID Region allocations. Accordingly the meeting supported the CNS SG/3 approach.

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4.30   The meeting supported CNS SG/3 views in urging MID States to strictly adhere to the 24-bit aircraft addresses allocated to their States as listed in Annex 10, Volume III, Part I, Chapter 9, Table 9-1.(Allocation of aircraft addresses to States), also urged MID States to allocate the 24 bit address to all aircraft registered in their State with the principle that; at any one time, no address shall be assigned to more than one aircraft and to send to the assigned allocation to ICAO MID Office and MID RMA for inclusion in their databases.

4.31   The meeting was apprised on the benefits of exchanging surveillance data as it will enable greater efficiencies for airlines operating across boundaries by providing increased capacity, reduced workload, and enhance safety capabilities for ANSPs. Furthermore, PANS ATM DOC 4444 para 8.1.5 indicates *States should, to the extent possible, facilitate the sharing of information derived from ATS surveillance systems in order to extend and improve surveillance coverage in adjacent control areas.*

4.32   The meeting noted that gaps in surveillance coverage for individual ANSPs exists at the present time, allowing for aircraft to fade from their surveillance coverage. However, if a fulsome program of surveillance data information sharing was undertaken by all ANSPs in the ICAO MID Region, surveillance coverage gaps would be reduced significantly.

4.33   The meeting noted that Bahrain already exchanges ATS surveillance data with Kuwait, furthermore Egypt and Saudi Arabia are also in the process of Sharing ATS surveillance data. Accordingly, the meeting developed a revised Regional PFF for the ATS surveillance data exchange and agreed to the following Draft Conclusion:

> ### DRAFT CONCLUSION 5/9:   EXCHANGE OF SURVEILLANCE DATA
>
> *That, MID States be encouraged, to share ATS surveillance data in order to improve surveillance coverage in the MID Region.*

4.34   The meeting supported the CNS SG/3 draft conclusion 3/9 calling ICAO MID Regional office to organize workshop to develop roadmap for the MID ATS surveillance which is becoming an important first step event for harmonization of the MID ATS surveillance requirements, which is in line with the Regional performance Objective "improve Situational Awareness".

Implementation of ADS-B in the MID Region

4.35   The meeting was apprised on 11th Air Navigation Conference concerning the introduction of ADS-B services mainly recommendation 7/1 *STRATEGY FOR THE NEAR-TERM INTRODUCTION OF ADS-B* and MIDANPIRG/9, outcome encouraging MID States to implement ADS-B taking into account studies carried out in the other ICAO Regions.

4.36   The meeting noted that the Global Plan recognizes that implementation of enhanced surveillance techniques (ADS-C or ADS-B) will allow reductions in separation minima and an enhancement of safety, increase in capacity, improved flight efficiency, all on a cost-effective basis. These benefits may be achieved by bringing surveillance to areas where there is no primary or secondary radar, when cost-benefit models warrant it. In airspaces where radar is used, enhanced surveillance can bring further reductions in aircraft separation minima and improve, in high traffic density areas, the quality of surveillance information both on the ground and in the air, thereby increasing safety levels.

4.37   The meeting noted that MIDANPIRG/10 encouraged States in collaboration with the airspace users to develop and implement an ADS-B trials programme also noted that MIDANPIRG/11 under conclusion 11/69 agreed on a Regional Strategy for the implementation of ADS-B. Furthermore the meeting noted that UAE is already implemented ADS-B, and Saudi Arabia has an ADS-B project, where 20 ADS-B ground stations will be installed throughout Jeddah FIR.

4.38   Based on the above the meeting agreed to develop a harmonized plan for the ADS-B implementation for the MID Region based on the strategy adopted by MIDANPIRG/11which will be an activity during the proposed MID surveillance workshop. The meeting reiterated MIDANPIRG/11 conclusion 11/69 and considered that the MID Region Strategy for the Implementation of ADS-B as at **Appendix 4D** to the report on Agenda item as being valid.

Strategy for the implementation of GNSS in MID Region

4.39   The meeting noted that frequency Interference-free operation of GNSS is essential for the GNSS operation, in this regards the meeting recalled MIDANPIRG/11 conclusion 11/65.

4.40   The meeting supported PBN/GNSS TF/2 views that good coordination with the radio regulators and civil aviation experts is essential and that the Civil Aviations experts are required to educate the regulator and operators on the importance of civil aviation frequency spectrum requirements.

4.41   The meeting noted that PBN/GNSS TF/2 developed a revised strategy for the Implementation of GNSS in the MID Region and agreed to the following draft conclusion which was endorsed by the meeting:

> *DRAFT CONCLUSION 5/10:   STRATEGY FOR THE IMPLEMENTATION OF GNSS IN THE MID REGION*
>
> *That, Strategy for implementation of GNSS in the MID Region be updated as at **Appendix 4E** to the Report on Agenda Item 4.*

4.42   The meeting noted that PBN/GNSS TF/ 2 while reviewing MIDANPIRG/11 Conclusion 11/68 **GNSS Studies in MID Region,** was informed that ESA and GSA already completed their study, moreover Saudi Arabia informed the meeting that they would carry out further follow-up on the GNSS study and provide feedback to ICAO MID Regional Office.

4.43   The meeting was informed on the approval of Ground Based Augmentation System (GBAS) by FAA which marks the successful completion of a partnership between the FAA and Air Services Australia to build and certify a GBAS which is expected to become an asset to airports around the world clearing the way for increased safety and efficiency at airports by providing precise navigation service based on the global positioning system (GPS). Furthermore, the meeting noted Australia's decision on the discontinuation of the Ground-based Regional Augmentation System (GRAS) project.

4.44   The meeting was also informed that the Secretary of the Navigation Systems Panel (NSP) is coordinating a revision of the GNSS Manual (Doc 9849) in order to ensure that the revised Manual meets the goal of supporting GNSS implementation at the national level.

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4.45   The meeting noted that NSP requires information from ICAO and States on current hurdles to the implementation of GNSS. Accordingly, the meeting suggested that ICAO MID Regional Office to send a State Letter for gathering the needed information on hurdles faced by the States.

MID Basic ANP and FASID (Doc 9708)

4.46   The meeting recalled that, MIDANPIRG/11, through Conclusion 11/13, agreed that the ICAO MID Regional Office, on behalf of MIDANPIRG, initiate all necessary Amendment Proposals to the MID Basic ANP and FASID, prior to MIDANPIRG/12, in order to update the AIS, AOP, ATM, CNS and MET Parts of the MID Basic ANP and FASID. In this regard, the meeting noted that as a follow up action to the MIDANPIRG/11 Conclusion 11/13, all MIDANPIRG subsidiary bodies reviewed and updated the MID ANP provisions related to their Terms of Reference (TOR) and Work Programme. Accordingly, a number of proposal for amendments to the MID ANP, Volume I, Basic ANP (AOP, ATS, MET and SAR) and Volume II, FASID (GEN, AIS, and MET) have been circulated to States and will be approved soon. It was mentioned also that additional proposals for amendment to the MID FASID are in the pipeline (CNS and ATM (SSR codes)).

4.47   The meeting received with appreciation a presentation on Electronic Air Navigation Plan (eANP), highlighting the need to evolve the current ANPs to the electronic versions endorsing the following performance objectives for the new ANP format:

- Accurate: data must be accurate to a high degree(90% plus);
- Relevant: data must be linked to metric and performance objectives;
- Harmonized: data must be linked to GANP and must be collected and tracked in the same format between all Regions; and
- Transparent: data must be accessible to all States.

4.48   The meeting noted that ICAO HQ, in coordination with all Regional Offices, is planning to evolve the current ANPs to the electronic versions by taking the following steps:

- **Step 1 : Assessment and design**
  ✓ for each Table in the ANP:
    • update the Table format;
    • map the Table to GANP, performance objective and metric; and
    • optimize the workflow
  ✓ perform a GAP analysis to determine any missing Tables/Charts.

- **Step 2 : Migrate**
  ✓ for each Table/Chart in the ANP:
    • implement the Table on the electronic environment;
    • automate the workflows;
    • connect to the metrics and performance objectives;
    • populate with existing data; and
    • replace paper version with link to online version.

- **Step 3 : Production**
  ✓ for each Table/Chart in the ANP:
    • develop simple training for users; and
    • assign log-in and access rights.

4.49   In the same vein, the meeting recalled that in many occasions, the usefulness and effectiveness of the Air Navigation Plans were questioned, in particular, when it comes to duplication of some Annexes provisions in the Basic ANP or reproduction of the data published in the Aeronautical Information Publications in the FASID Tables. In this regard, it was highlighted that the ANPs should set forth in detail the facilities, services and procedures required for international air navigation within a specified area. Such plans contain recommendations that States can follow in programming the provision of their air navigation facilities and services, with the assurance that facilities and services furnished in accordance with the plan will form with those of other States an integrated system adequate for the foreseeable future. The meeting further noted that the ANP, does not list all facilities in the region but only those required for international civil aviation operations; the aeronautical information publications, NOTAM and other State documents should be consulted for information on additional facilities and for operational information in general.

4.50   The meeting recognized that the current format and content of the regional ANPs as well as the amendment process do not meet the need of States and users and are inconsistent with the new requirements set-forth by the ATM Operational Concept, the Global ANP and the Performance Based Approach. Accordingly, it was agreed that a significant revision of the current regional ANPs philosophy, format and content is therefore required in order to meet the intended objectives and increase their effectiveness.

4.51   Based on the above, the meeting agreed to the following Draft Decision:

> **DRAFT DECISION 5/11:   REVIEW OF THE MID AIR NAVIGATION PLAN (ANP)**
>
> That, in support to ICAO efforts to improve regional ANPs, the MIDANPIRG subsidiary bodies:
>
> a) carry out a complete review of the MID Basic ANP and FASID parts related to their Terms of Reference (TOR) and Work Programme;
>
> b) develop revised draft structure and content of the Basic ANP in order to reconcile it with the ATM Operational Concept, the Global Plan provisions and the performance based approach;
>
> c) identify the need for and development of those FASID Tables necessary to support the implementation of a performance-based global air navigation systems; and
>
> d) report progress to MIDANPIRG/13.

Update on MID FANS Implementation Team

4.52   The meeting noted that MIDANPIRG/11 recalling MIDANPIRG/10 Conclusion 10/16 *FANS 1/A ACTIVITIES IN THE MID REGION*, MID States, in coordination with users, are encouraged to implement FANS 1/A (ADS-C/CPDLC) supported by safety case.

4.53   The meeting noted that MIDANPIRG/11 agreed to conclusion 11/63: *Introduction of FAN 1/A capabilities in the MID Region* also agreed for the establishment of MID FANS Implementation Team (MID-FIT) under decision 11/62, and under decision 11/64 assigned the task to be performed in coordination with AFIG, due to the facts that some MID States already have the FANS1/A capabilities and are involved in the FANS activities.

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4.54   The meeting noted that ICAO MID Regional Office communicated with BOB-CRA Boeing, who confirmed their readiness to support MID Region provided that firm commitment is received from MID States, since previous experience had shown that a lot of efforts were done however no tangible achievements were reached. Accordingly ICAO MID Regional Office sent State Letter AN 7/24-09/252 dated 02 August 2009 requesting commitment from States and clearly mentioning that MID FIT meeting will be convened only when sufficient number of members from States and organizations are nominated to the MID-FIT team, since the reply to State letter was low MID Regional Office did not convene the MID FIT meeting.

4.55   Furthermore the CNS SG/3 meeting held in Egypt Cairo, 10-12 May 2010, agreed that State advise their final position and support to the MID-FIT before the CNS/ATM/IC SG/5 meeting, as this meeting will be analyzing the FITS activities and achievements in implementation of FANS. In this regard and with reference to the low response CNS SG/3 proposed that instead of the FANS Implementation Team, Data link Implementation Group to be established where Bahrain, Egypt and Saudi Arabia will form the nucleus working group for the MID Data link group and other States willing could join.

4.56   The meeting was updated on the Global Operational Data Link Document (GOLD). The purpose of the GOLD is to facilitate global harmonization of existing data link operations and resolve regional and/or State differences impacting seamless operations. It also will include required communication performance (RCP) and surveillance specifications, based on RTCA DO-306/EUROCAE ED-122, and guidelines on post-implementation monitoring and corrective action to address a number of issues with satellite data communication services.

4.57   The meeting noted that GOLD will effectively replace the Guidance Material for ATS Data Link Services in North Atlantic Airspace (NAT Data Link GM) and the FANS-1/A Operations Manual (FOM) for the Asia-Pacific, South American and African-Indian Ocean Regions.

4.58   Based on the above the meeting agreed to dissolve the MID-FIT and the GOLD will be used in MID Region as guidance material for States and airspace users in conjunction with the provisions contained in ICAO Annex 10, Volume II and PANS–ATM (Doc 4444), accordingly the meeting agreed to the following draft decision replacing the superseding 11/62 and 11/64:

DRAFT DECISION 5/12:   DISSOLVE MID-FIT

That, MID FIT is dissolved and the matters related to data link activities are considered and followed by the CNS/ATM/IC SG.

Introduction of 20NM Longitudinal Separation

4.59   The meeting noted that Bahrain and UAE are desperately looking to reduce the longitudinal separation minimum from 30NM to 20NM with all concerned FIRs which will bring the benefits to both ANS providers and aircraft operators in the form of route capacity enhancement, workload reductions for air traffic controllers, greater efficiency resulting in the provision of more optimum cruise levels for aircraft, and savings to aircraft operators in fuel burn costs and will reduce the carbon footprint and environmental impacts.

4.60   The meeting noted that the current agreements between MID Region States dictate that the minimum longitudinal spacing between aircraft at the same level is either 30NM via Saudi Arabia, Jordan, Syria and Lebanon, or is 40NM via Kuwait and Iraq with no official agreement, while Bahrain, Oman and U.A.E use 10NM minimum at the interfaces, except for traffic routing via COPPI Bahrain requires 5 minutes separation.

4.61   The meeting supported the need to implement reduced longitudinal separation in a harmonized manner. Accordingly, the meeting noted with appreciation the agreement between Bahrain, Jordan, Saudi Arabia and Syria for the implementation of 20 NM longitudinal separation on a constant or increasing orientation starting on AIRAC 29 July 2010 on trial basis, provided that MID Regional Office send a State Letter for the confirmation on the agreement.

4.62   It was also agreed that the implementation of 20 NM longitudinal separation between Kuwait and Iraq will follow after the implementation of RVSM within Baghdad FIR planned for 10 March 2011. The meeting also agreed that the requirements for reduced longitudinal separation (20 NM) be included in the Regional PFFs.

Outcomes of the Next Generation of Aviation Professionals symposium (NGAP)

4.63   The meeting was presented with the ICAO next generation of aviation professionals (NGAP) initiatives which were launched to ensure that enough qualified and competent aviation professionals are available to operate, manage and maintain the future international air transport system. In May 2009, the NGAP Task Force was created and was instrumental in supporting the preparatory work for the NGAP Symposium conducted at ICAO from 1 to 4 March 2010. The NGAP Task Force held its second meeting on 5 March 2010 after the symposium and established a work programme that will address the enhancement of training for flight crew, air traffic management and aircraft maintenance personnel to meet the demands of new procedures and increasingly complex technologies.

4.64   The meeting noted that a number of deliverables has been planned which include: voluntary ICAO endorsement of aviation training institutions by the end of 2010; developing competencies for flight crew in the left seat, check airmen and instructors for large aeroplanes (greater than 5 700 kg) powered by turbine engines by December 2011; and developing competencies for air traffic controllers and air traffic safety electronics personnel (ATSEP) by December 2011.

4.65   Based on the above the meeting agreed to take into account these global developments in defining regional strategy for training of aviation professionals.

Regional and National PBN Implementation Plans

4.66   The meeting recalled that ICAO 36th General Assembly Resolution A36-23: *Performance based navigation global goals*, urges Planning and Implementation Regional Groups (PIRGs) and States, *inter alia*, to complete a States PBN implementation plan by 2009 to achieve specific implementation goals starting with 2010.

4.67   The meeting recalled that RNAV and RNP were implemented in the MID Region before the current PBN Concept in which there are no provisions for RNP 5. Therefore, and in order to align with the harmonized PBN terminology, the term RNP 5 needs to be replaced by RNAV 5, and States to take action to update their AIPs.

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4.68   The meeting noted that the RNAV 5 cannot be used for oceanic/remote airspace and that in principle RNAV 10 should be used for that particular airspace. It was recognized also, that presently some of the airspace in the MID Region that had previously been classified as remote continental/oceanic, now have the required surveillance capability to support RNAV 5. Nevertheless, there remains other airspace in the MID Region that still can be classified as oceanic and therefore, RNAV 10 would be appropriate as the navigation specification, at least for the short term (2008-2012).

4.69   The meeting was apprised on MIDANPIRG/11 Conclusion 11/73: *MID REGION PBN IMPLEMENTATION STRATEGY AND PLAN* which adopted the MID regional PBN Strategy and Implementation plan, and noted that the PBN/GNSS TF/2 meeting had reviewed the Regional plan, discussed various implementation issues and the recent developments in the PBN, developed a revised version 2 of the MID REGION PBN IMPLEMENTATION STRATEGY AND PLAN. Accordingly the meeting endorsed PBN/GNSS TF2 Draft Conclusion which will replace and supersede MIDANPIRG Conclusion 11/73:

> *DRAFT CONCLUSION 5/13:   MID REGION PBN IMPLEMENTATION STRATEGY AND PLAN*
>
> *That, the revised MID Region PBN Implementation Strategy and Plan be updated as at **Appendix 4F** to the report on Agenda Item 4.*

4.70   The meeting noted was apprised on the development of the Task list by the PBN/GNSS TF/2 meeting , accordingly the meeting reviewed the task list and developed a revised version of task list for the PBN/GNSS TF and agreed to endorse the following draft decision:

> *DRAFT DECISION 5/14:   PBN IMPLEMENTATION TASK LIST*
>
> *That, the PBN Implementation Task List be updated with new task assignment as at **Appendix 4G** to the Report on Agenda Item 4.*

4.71   The meeting noted that several PBN implementation challenges needs, to be met in order to progressively implement PBN and get the desired benefits in this regard the meeting recalled MIDANPIRG/11 Conclusion 11/72: PBN IMPLEMENTATION SUPPORT and reiterated that, in order to address challenges in PBN implementation, stakeholders in the PBN implementation (Air Navigation Service Providers (ANSP's), aircraft operators, user communities, etc.) be encouraged to continue providing support to States and ICAO PBN programme.

4.72   The meeting was updated on the Global PBN TF activities and mainly the formation of the GO-Team that would assist in developing knowledge and expertise is various States in the Regions. Accordingly the meeting encouraged MID States willing to take advantage of the services offered by the GO-Team to communicate with the ICAO MID Regional Office in order to coordinate with ICAO HQ, and facilitate the visit of the GO-Team.

4.73   The meeting noted that in order to support PBN implementation activities in the MID Region an Air Space planning seminar will be organized by ICAO in collaboration with FAA and EUROCONTROL between 25-28 October 2010 were invitation letter will be sent to all MID States, in due time.

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4.74   The objective of this workshop is to provide an insight and basic understanding of the development of a PBN Airspace Concept. It will address the methodology to be used in developing such concepts, apply this methodology through group work by providing unique hands on experience in the actual development of an Airspace Concept based on generic scenarios.

4.75   The workshop will be limited to 30 participants, who will actively engage in workshop exercise and present the results; participants will work in multi disciplinary teams. The workshop will take three full days and the participants are expected to have a basic understanding of RNAV and Navigation applications in general and good command of English.

4.76   The meeting noted that in order to assist States to develop their National PBN Implementation plan a common template with the List of content of the National PBN implementation plan was also developed and made available on the ICAO PBN web site: http://www2.icao.int/en/pbn/Pages/Documentation.aspx which was also endorsed by MIDANPIRG/11 in February 2009.

4.77   The meeting was apprised on the importance of development of the National State PBN implementation plan, in accordance with ICAO Assembly resolution A36-23, in this regard the meeting noted that during PBN/GNSS TF/2 the delegates of the participating States were asked to develop their own State PBN Implementation plans with the support of the ICAO secretariat to gain knowledge.

4.78   The meeting noted that Egypt developed RNAV approach procedures for Cairo and Sharm El Shaikh, the meeting further noted that Bahrain, Oman and UAE, implemented RNAV1 routes.

4.79   The meeting noted that the following States :Bahrain, Egypt, Jordan, Kuwait, Qatar and Yemen had officially submitted their State PBN Implementation Plans some of which are still in draft version, accordingly the meeting developed the State PBN Implementation plan Status table as at **Appendix 4H** to the Report on Agenda Item 4.

4.80   The meeting reviewed and updated list of PBN Implementation focal points, as at **Appendix 4I** to the Report on Agenda Item 4 and urged the States that didn't appoint focal points to do so urgently.

4.81   The meeting noted that MID States were requested to provide on spreadsheet template information on the status of PBN implementation, in this regard the meeting noted the replies received by ICAO MID Regional Office as in **Appendix 4J** to the Report on Agenda Item 4.

4.82   The meeting noted that PBN/GNSS TF/2 developed a progress report template as at **Appendix 4K** to the Report on Agenda Item 4 and urged all MID States to keep the ICAO MID Regional office updated using the spreadsheet and the progress report. Accordingly, the meeting endorsed the following Draft Conclusion:

> *DRAFT CONCLUSION 5/15:   PBN IMPLEMENTATION PROGRESS REPORT*
>
> *That, for future reporting on the status of PBN implementation, MID States be urged to:*
>
> *a)   use the excel sheet as at **Appendix 4J** to the Report on Agenda Item 4 and PBN Implementation Progress Report Template as at **Appendix 4K** to the Report on Agenda Item 4; and*

b) *submit progress reports to ICAO MID Regional Office every six months or whenever major progress is achieved.*

Continuous Descent Operations

4.83   The meeting noted that ICAO Continuous Descent Operations (CDO) manual Doc 9931 that provides guidance on the development and implementation is now available on ICAONET. The Manual contains guidance material on the airspace design, instrument flight procedures, ATC facilitation and flight techniques necessary to enable Continuous Descent (CD) profiles. It therefore provides background and implementation guidance for:

- Airspace and procedure designers
- Air traffic managers and controllers
- Service providers (Airports and Air Navigation Service Providers (ANSP)
- Pilots

Key objectives of the manual are to improve the:

- Overall management of traffic and airspace in order to enable uninterrupted continuous descents, without disrupting departures
- Understanding of continuous descent procedures and profiles
- Harmonization and standardization of associated terminology

4.84   The meeting noted that Continuous Descent is one of several tools available to aircraft operators and ANSPs to increase safety, flight predictability, and airspace capacity, while reducing noise, ATC/Pilot communications, fuel burn and the emission of greenhouse gases. Over the years, different route models have been developed to facilitate CDs and several attempts have been made to strike a balance between the ideal of environmentally friendly procedures and the requirements of a specific airport or airspace.

4.85   The meeting also noted that future developments in this field are expected to allow different means of realizing the performance potential of CD without compromising the optimal Airport Arrival Rate (AAR). The core CD definition and the concept at the heart of the manual will also apply to these increasingly sophisticated methods of facilitating CD operations.

4.86   Continuous Descent Operations are enabled by airspace design, procedure design and ATC facilitation, in which an arriving aircraft descends continuously, to the greatest possible extent, by employing minimum engine thrust, ideally in a low drag configuration, prior to the Final Approach Fix (FAF)/Final Approach Point (FAP). An optimum CD starts from the Top of Descent and uses descent profiles that reduce ATC/Pilot communication, segments of level flight, noise, fuel burn and emissions, while increasing predictability to ATC/Pilots and flight stability.

4.87   Maintenance of safety during all phases of flight is paramount - nothing in the guidance shall take precedence over the requirement for a safe operation and control of aircraft at all times. For the avoidance of doubt, all recommendations are to be read as "subject to the requirements of safety".

4.88   Before any CD trials or operations commence, the proposed implementation should be the subject of a local safety assessment.

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4.89   The meeting was in line with the views that Terminology and procedural standardization are important for flight safety; hence standardization and harmonization are important. From the pilots' and air traffic controllers' perspective, flight procedures and pilot communications should be unambiguous. For the procedure designer, it is important to understand the flight characteristics, limitations and capabilities of aircraft expected to perform CDs, as well as the characteristics of the airspace and routes where it will be used. For airport operators and environmental entities, it is important to understand, the extent and limitations of environmental benefits, aircraft performance, and airspace limitations when proposing to introduce CD operations. Considering the high cost of fuel and growing concerns about the environment and climate change, collaborating to facilitate CDs is an operational imperative where all stakeholders benefit.

4.90   To standardize and harmonize the development and implementation of CD operations, the airspace and instrument flight procedure design and ATC techniques should all be employed in a cohesive manner. This will then facilitate the ability of flight crews to use in-flight techniques to reduce the overall environmental footprint and increase the efficiency of commercial aviation. The implementation guidance in the Manual is intended to support collaboration among the different stakeholders involved in implementing these Continuous Descents.

4.91   Based on the above and in light of the completion of the ICAO CDO manual which will standardize and harmonize the development and implementation of CD operations, the meeting encouraged MID States to consult the CDO Manual during their STAR implementations and endorsed PBN/GNSS TF/2 draft Conclusion:

DRAFT CONCLUSION 5/16:   IMPLEMENTATION OF CONTINUOUS DESCENT OPERATIONS

That, recognizing the efficiency and environmental benefits of Continuous Descent Operations, and the need to harmonize these operations in the interest of safety, MID States be encouraged to include implementation of Continuous Descent Operations (CDO) as part of their PBN implementation plans and to implement CDO in accordance with the ICAO CDO Manual.

VIRTUAL UIR for the GCC States

4.92   The meeting noted that GCC Air Navigation Committee introduced the Virtual Upper Information Region (UIR) Project. In this regard, it was noted that during its Third Meeting held in Muscat Oman, 20 - 22 December 2009 and after discussions on the draft project document, all GCC States, with exception of UAE, fully agreed to join the project and launched "MUSCAT AGREEMENT".

4.93   The meeting noted that the project aims for a gradual shift towards the creation of an integrated system to manage air traffic in the area of GCC States. It was highlighted that this project builds on the concept of using and sharing modern technology in the field of CNS/ATM without affecting the sovereignty of States over its international borders and airspace, taking into account defense and security needs of each country of the Council.

4.94   The meeting noted that the GCC Virtual UIR would initially start at a FL350 where each ACC ccontinues to provide its own ATS with a different call sign. In this regard, it was noted that all territories of GCC at FL350 and above becomes one Airspace called the GCC Virtual UIR and the boundaries of the territories of present-sectoral "SECTORS"within this same region will continue to be run by each Center,. i.e.: Oman becomes GCC East, Bahrain GCC Central, Saudi GCC West and Kuwait GCC North.

4.95　　　　Furthermore, the meeting noted that all Control Centres in the GCC States will be connected through a digital network for quick exchange of information to get a comprehensive coverage of all the GCC States.

4.96　　　　The meeting was informed that each States is responsible for providing and maintaining the air navigation systems available in its Control Centre, including responsibility for the financial costs of communication lines.

4.97　　　　Based on the above, the meeting supported the initiative and agreed that it's in line with the ICAO Global ATM Operational Concept. Accordingly, the meeting encourage concerned States to take necessary measures to finalize the project plan/documents and present an update on the progress achieved to the next meeting of the CNS/ATM/IC SG.

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

DRAFT CONCLUSION 5/17:　　　　*SUPPORT THE ESTABLISHMENT OF THE GCC VIRTUAL UIR*

That, concerned MID States be encouraged to support the establishment of the GCC Virtual UIR.

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NEW FLIGHT PLAN IMPLEMENTATION STUDY GROUP FOCAL POINT

STATE	NAME	TITLE	ADDRESS	EMAIL	FAX	TEL	MOBILE
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Iran	Behzad Soheil	Expert in Charge of Radar Information and Flight Data	Tehran Area Control Center (Shahid Shahcheraghi) Central Bldg of Iran Airports Company, Mehrabad Int'l Airport, Tehran, I.R. of Iran P.O.Box 13445-1558, Postal Code 1387835283	Behzad.soheil@yahoo.com Behzad.soheil@gmail.com	+982144544114	+982144544115	+989125544193
Iraq							
Israel							
Jordan							
Kuwait	Dawood A. Al Jarah	Head of AFTN Section	Navigational Equipment Department, Directorate General of Civil Aviation, Kuwait International Airport, P.O.Box 17 – Safat, 13001 – Safat – Kuwait	kudata3@hotmail.com	+96524732530	+96524721279	+96599088511

STATE	NAME	TITLE	ADDRESS	EMAIL	FAX	TEL	MOBILE
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Oman	Jaffer Abdulla Amir Moosani	Assistant Chief AIS	Directorate General of Meteorology and Air Navigation (DGMAN) P.O.Box 1311 Code 111 Sultanate of Oman	aisaip@yahoo.com	+968 2451 9850	+968 2451 9350	+968 9931 6040
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Sudan							
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Yemen							

MID FDPS ANALYSIS

	Bahrain	**Egypt**	**Iran**	**Iraq**	**Kuwait**	**Oman**	**Qatar**	**Saudi Arabia**	**Syria**	**UAE**
ATS SYSTEM	**Thales**	**EUROCAT 2000**		**Raytheon Autotrac II**		**Raytheon Autotrac II**		**Thales EUROCAT X**		
Type of code DIF T/D	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Directional Assignment	YES	YES	YES	NO	NO	YES	YES	YES	NO	NO
Multiple Assignment	NO	NO	YES	NO	NO	NO	YES	YES	NO	YES
Time ref assignment	YES	NO	NO	NO	NO	YES	NO	YES	NO	NO
Other method	NO	YES	Six categories off line defined.	YES *Oldest code different code pools*	NO	NO	YES Manual orders and messages reception	YES Manual assignment by Controller	NO	NO
Time of assignment spec	Off line defined time	SSR code is assigned at pre-activation time for departure flights. Pre-activation time is off-line defined parameter in the range of	From DEP aerodrome	0 to 60 minutes set for 30 min	Assigned manually regardless	On start - up	Upon manual activation or system parameter before ETD	At creation of FPL	Immediately upon issuing DEP Clearance	Start - up

	Bahrain	**Egypt**	**Iran**	**Iraq**	**Kuwait**	**Oman**	**Qatar**	**Saudi Arabia**	**Syria**	**UAE**
		15 to 120 minutes								
DLA/DEP	The system retains the code, or the operator can remove the code, releasing it for future use (after the recycle time has expired)	SSR code is frozen and stored in the table for a period of time. After that period the code is released and could be used on other flights. The flight will be assigned another code when pre-activated again. If pre-activated within the frozen period, the SSR code is retained	It will not use again for the next two hours	Will remain assigned to the delayed flight	The code stays assigned to a particular A/C for 3 hours	Retains the same code	Manually deactivated	Controller has to finish or Cancel the FPL.	After one hour the code will be inactivated	Code not issued for DLA Manual removal for return to gate
Transparency	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES
Code retention	NO	NO	YES	YES	NO	YES	YES	YES	YES	YES
Protection	NO	NO	YES	NO	NO	YES	YES	YES	NO	NO

	Bahrain	**Egypt**	**Iran**	**Iraq**	**Kuwait**	**Oman**	**Qatar**	**Saudi Arabia**	**Syria**	**UAE**
Saturation	An error message is presented to the operator when all codes are used.	Codes shall always be assigned from the appropriate code category. De-assignment shall be performed either at cancellation or when a new code is assigned	Print out	*One code is reserved as a basic code.*	Not Applicable		The system provides indication when parametric percentage of slots (or combination of slots) is not available for assignment	Various capacity thresholds are defined in system		Not Applicable
Recording	Run log which includes received radar tracks (including SSR)	None	Print out	*billing data is automatically collected, has the SSR code listed*	None		Logs and Data Reduction Tools	*Java aided DAF Environment;*	In the Data base of the FDPS, and in the RDP system	FDP logs and RDP recordings are kept
Automation	ABI, ACT, and LAM YES rest NO	ABI, ACT, LAM, PAC AND MAC YES rest NO	ABI, ACT, LAM,AND PAC YES rest NO	ABI, ACT, LAM,AND PAC,MAC YES rest NO	Not Applicable		ABI, ACT, LAM, PAC, MAC, INF, REV and COD YES	ABI, ACT, LAM,AND PAC,COD YES rest NO	NO	ABI, ACT, PAC and LAM YES rest NO

MID STRATEGY FOR SSR CODE ALLOCATION ISSUES

1)   Short Term

a)   the MID Region fully implements the Originating Region Code Assignment Method (ORCAM);

b)   the SSR code occupancy time be changed from three hours to a maximum of two hours where practicable;

c)   States ensure adherence to ORCAM procedures and, where necessary, centralize code assignment;

d)   transmission of EST and ABI be deferred until necessary – and no more than 30 minutes prior to ETO for the applicable COP;

e)   "Super-domestic" code allocation be introduced through bilateral measures (LOAs) where necessary to make use of Domestic codes to supplement Transit codes;

f)   codes be assigned in a manner ensuring earliest availability, hereunder direction-of-flight dependent assignment, rather than using cycling in numerical order; and

g)   changes to code allotment in adjacent regions be carefully reviewed by the MID Region for possible operational impact.

h)   the MID Region adopt the approach of "code sharing" between FIRs that are geographically adequately disparate and where directional assignment of SSR codes makes "code sharing" practical;

2)   Medium Term

a)   the MID Region consider multiple ORCAM Participating Areas (PA); the number of PAs to be optimized based on studies of Regional traffic patterns and volume data, as well as coordination with adjacent ICAO Regions;

b)   the ICAO MID Regional Office take action to obtain necessary data and documentation from States and other ICAO Regions for the Study Group to reach firm conclusions; and

c)   in order to facilitate an effective analysis of the traffic statistics required for decision on PAs, MID FIRs provide traffic data in accordance with the format provided by the MID Regional Office.

3)   Long Term

a)   States implement Mode S surveillance systems making use of the 24-bit address code capability of aircraft transponders;

b)   States consider implementation of ADS-B surveillance systems with 24-bit address code capability; and

c)   the MID FASID be updated with a view to implement use of 24-bit address codes in ATC systems to the widest extent possible.

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**MID REGION STRATEGY FOR THE IMPLEMENTATION OF AUTOMATIC
DEPENDENT SURVEILLANCE-BROADCAST (ADS-B)**

Considering:

a)   the ICAO strategic objectives;
b)   the ICAO Business Plan;
c)   the Global Air Traffic Management Operational Concept;
d)   the revised Global Air Navigation Plan and associated GPIs;
e)   the outcome of the 11th Air Navigation Conference; and

Recognizing that:

i)   the implementation of data-link surveillance technologies is an evolutionary process, but
which has significant potential for safety and cost-effectiveness; and
ii)   implementation of ADS-B is in support of various Global Plan Initiatives;

The MID Region strategy for the implementation of ADS-B is detailed below:

A)   the MID Region ADS-B implementation plan should:

1)   be evolutionary and consistent with the Global Air Navigation Plan taking into
consideration associated MID Region priorities;

2)   when cost/benefit models warrant it, prioritize implementation in areas where
there is no radar coverage surveillance, followed by areas where implementation
would otherwise bring capacity and operational efficiencies;

3)   ensure that implementation of ADS-B is harmonized, compatible and
interoperable with respect to operational procedures, supporting data link and
ATM applications;

4)   identify sub-regional areas where the implementation of ADS-B would result in a
positive cost/benefit in the near term, while taking into account overall Regional
developments and implementation of ADS-B in adjacent homogeneous ATM
areas;

5)   be implemented following successful trial programmes with regards to safety and
operational feasibility, taking into account studies and implementation
experiences from other ICAO Regions; and

6)   be implemented in close collaboration with users.

7)   The proportions of equipped aircrafts are also critical for the ADS-B deployment,
for which it is required to periodically provide, at least, the following
information: number of equipped aircrafts operating in the concern airspace,
number and name of the airlines that have equipped aircrafts for ADS-B, type of
equipped aircrafts, categorization of the accuracy/integrity data available in the
aircrafts.

8) The ADS-B deployment should be associated at early stages in coordination with the States/Regional/International Organizations responsible for the control of adjacent areas, and the correspondent ICAO Regional Office, establishing a plan in the potential areas of ADS-B data sharing, aimed at a coordinated, harmonious and interoperable implementation.

9) Each State/Regional/International Organization should investigate and report their own Administration's policy in respect to the ADS-B data sharing with their neighbours and from cooperative goals.

10) The ADS-B data sharing plan should be based selecting centres by pairs and analyzing the benefits and formulating proposals for the ADS-B use for each pair of centre/city with the purpose to improve the surveillance capacity.

11) Likewise, it is necessary to consider implementing surveillance solutions for surface movement control by the implementation of ADS-B.

12) The implementation would be in conformity with the SARPs, ICAO guidelines and the MIDANPIRG conclusions.

B) The implementation would require aircraft equipped with avionics compliant with either:

i) Version OES as specified in Annex 10, volume IV, Chapter 3, paragraph 3.1.2.8.6 (up to and including amendment 83 to annex 10) and chapter 2 of draft technical Provisions for Mode S services and extended Squitter (ICAO Doc 9871) to be used till atleast 2020, or

ii) Version 1 ES as specified in chapter 3 draft Technical Provisions for Node S Services and Extended Squitter (ICAO Doc 9871) Equivalent to DO260A.

C) Implementation should be monitored to ensure collaborative development and alignment with the MID Region projects and relevant elements of the GPIs.

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REVISED STRATEGY FOR THE IMPLEMENTATION OF GNSS
IN THE MID REGION

The following is the Strategy for the implementation of GNSS aligned with PBN in the MID Region:

Considering that:

a)   Safety is the highest priority.

b)   Elements of Global Air Navigation Plan on GNSS and requirements for the GNSS implementation will be incorporated into the CNS part of FASID.

c)   GNSS Standards and Recommended Practices (SARPs), PANS and guidance material for GNSS implementation are available.

d)   Human, environmental and economic factors will affect the implementation.

e)   The availability of avionics, their capabilities and the level of user equipage.

f)   The development of GNSS systems including satellite constellations, augmentation systems and improvement in system performance.

g)   The airworthiness and operational approvals allowing the current GNSS applied for en-route and non-precision approach phases of flight without the need for augmentation services external to the aircraft.

h)   The effects of ionosphere on GNSS and availability of mitigation techniques;

i)   The PBN concept and the availability of PBN guidance material

j)   The monitoring of the GNSS signal according to ICAO Document 9849 (GNSS Manual).

k)   States pay fair cost for GNSS to service providers (according to ICAO provisional policy guidance on GNSS cost allocation

The general strategy for the implementation of GNSS in the MID Region is detailed below:

1)   Introduction of GNSS Navigation Capability should be consistent with the Global Air Navigation Plan.

2)   Implementation of GNSS and Augmentations should be in full compliance with ICAO Standards and Recommended Practices and PANS.

3)   Assessment of the extent to which the GNSS system accessible in the Region can meet the navigational requirements of ATM service providers and aircraft operators in the Region.

4)   Introduce the use of GNSS with appropriate augmentation systems, as required, for en-route navigation and Implementation of approach procedures with vertical guidance A 36-23 (APV), for all instrument runway ends, either as the primary approach or as a back-up for precision approaches by 2016 with intermediate milestones as follows: 30 per cent by 2010, 70 per cent by 2014.

5)   States, in their planning and introduction of GNSS services, take full advantage of future benefits accrued from using independent core satellite constellations, other GNSS elements and their combinations, and avoid limitations on the use of specific system elements.

6) Facilitate the use of GNSS; as enabler for PBN for en-route, terminal, approach and departure navigation. States should coordinate to ensure that harmonized separation standards and procedures are developed and introduced concurrently in adjacent flight information regions along major traffic flows to allow for a seamless transition to GNSS based navigation.

7) States should to the extent possible work co-operatively on a multinational basis under ICAO MID Office Guidance to implement GNSS in order to facilitate seamless and inter-operable systems and undertake coordinated R&D programmes on GNSS implementation and operation.

8) States consider segregating traffic according to navigation capability and granting preferred routes to aircraft that are appropriately equipped for PBN to realize the benefits of such equipage taking due consideration of the need of State aircraft.

9) ICAO and States should undertake education and training programs to provide necessary knowledge in AIM concept, PBN, GNSS theory and operational application.

10) States establish multidisciplinary GNSS implementation teams, using section 5.2.2 and Appendix C of ICAO Document 9849, GNSS Manual.

11) States, in their planning for implementation of GNSS services, provide effective spectrum management and protection of GNSS frequencies to reduce the possibility of unintentional interference.

12) During transition to GNSS, sufficient ground infrastructure for current navigation systems must remain available. Before existing ground infrastructure is considered for removal, users should be given reasonable transition time to allow them to equip accordingly.

13) States should approach removal of existing ground infrastructure with caution to ensure that safety is not compromised, such as by performance of safety assessment, consultation with users through regional air navigation planning and plan for Complete decommissioning of NDBs by 2015.

14) Implement GNSS with augmentation as required for APV where operationally required in accordance with the MID Regional and National PBN Implementation plans.

15) States continue their efforts to implement GNSS applications for en-route, APV and TMA operations. Attention should be accorded to meeting all GNSS implementation requirements, including establishment of GNSS legislation, regulatory framework, and approval procedure.

Notes:

GNSS (and ABAS using RAIM in particular) is available on a worldwide basis, not much needs to be done in terms of infrastructure assessment. Nonetheless, the responsibility for providing services based on GNSS within the airspace of a particular State remains within that State.

A decision on whether or not to develop a status monitoring and NOTAM system for ABAS operations should be made by taking into account the nature of PBN approvals. In many cases ABAS operations are predicated on having a full complement of traditional NAVAIDs available for back-up when ABAS cannot support service.

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MID PERFORMANCE-BASED NAVIGATION IMPLEMENTATION
REGIONAL PLAN

1. EXECUTIVE SUMMARY

1.1   This Middle East PBN Implementation Regional Plan has been produced in line with Resolution A 36/23 adopted by ICAO Assembly in its 36th Session held in September 2007. The Regional Plan addresses the strategic objectives of PBN implementation based on clearly established operational requirements, avoiding equipage of multiple on-board or ground based equipment, avoidance of multiple airworthiness and operational approvals and explains in detail contents relating to potential navigation applications.

1.2   The Plan envisages pre- and post-implementation safety assessments and continued availability of conventional air navigation procedures during transition. The Plan discusses issues related to implementation which include traffic forecasts, aircraft fleet readiness, adequacy of ground-based CNS infrastructure etc. Implementation targets for various categories of airspace for the short term (2008 – 2012) and for the medium term (2013 – 2016) have been projected in tabular forms to facilitate easy reference. For the long term (2016 and beyond) it has been envisaged that GNSS will be the primary navigation infrastructure. It is also envisaged that precision approach capability using GNSS and its augmentation system will become available in the long term.

2. EXPLANATION OF TERMS

2.1   The drafting and explanation of this document is based on the understanding of some particular terms and expressions that are described below:

2.1.1   **Middle East PBN Implementation Plan -** A document offering appropriate guidance for air navigation service providers, airspace operators and users, regulating agencies, and international organizations, on the evolution of navigation, as one of the key systems supporting air traffic management, and which describes the RNAV and RNP navigation applications that should be implemented in the short, medium and long term in the MID Region.

2.1.2   **Performance Based Navigation -** Performance based navigation specifies RNAV and RNP system performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in an airspace.

2.1.3   **Performance requirements -** Performance requirements are defined in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept. Performance requirements are identified in navigation specifications which also identify which navigation sensors and equipment may be used to meet the performance requirement.

3. ACRONYMS

3.1   The acronyms used in this document along with their expansions are given in the following List:

AACO	Arab Air Carrier Association
ABAS	Aircraft-Based Augmentation System
ACAC	Arab Civil aviation Commission
AIS	Aeronautical Information System
APAC	Asia and Pacific Regions

APCH	Approach
APV	Approach Procedures with Vertical Guidance
ATC	Air Traffic Control
Baro VNAV	Barometric Vertical Navigation
CNS/ATM	Communication Navigation Surveillance/Air Traffic Management
CPDLC	Controller Pilot Data Link Communications
DME	Distance Measuring Equipment
FASID	Facilities and Services Implementation Document
FIR	Flight Information Region
FMS	Flight Management System
GBAS	Ground-Based Augmentation System
GNSS	Global Navigation Satellite System
GRAS	Ground-based Regional Augmentation System
IATA	International Air Transport Association
IFALPA	International Federation of Air Line Pilots' Associations
INS	Inertial Navigation System
IRU	Inertial Reference Unit
MIDANPIRG	Middle East Air Navigation Planning and Implementation Regional Group
MID RMA	Middle East Regional Monitoring Agency
PANS	Procedures for Air Navigation Services
PBN	Performance Based Navigation
PIRG	Planning and Implementation Regional Group
RCP	Required Communication Performance
RNAV	Area Navigation
RNP	Required Navigation Performance
SARP	Standards and Recommended Practices
SBAS	Satellite-Based Augmentation System
SID	Standard Instrument Departure
STAR	Standard Instrument Arrival
TMA	Terminal Control Area
VOR	VHF Omni-directional Radio-range
WGS	World Geodetic System

4. INTRODUCTION

Need for the roadmap

4.1   The Performance Based Navigation (PBN) concept specifies aircraft RNAV system performance requirements in terms of accuracy, integrity, availability, continuity and functionality needed for the proposed operations in the context of a particular airspace concept, when supported by the appropriate navigation infrastructure. In this context, the PBN concept represents a shift from sensor-based to performance –based navigation.

4.2   The implementation of RVSM on 27 NOV 2003 in the MID Region brought significant airspace and operational benefits to the Region. However, the realization of new benefits from RVSM have reached a point of diminishing returns. The main tool for optimizing the airspace structure is the implementation of performance based navigation (PBN), which will foster the necessary conditions for the utilization of RNAV and RNP capabilities by a significant portion of airspace users in the MID region.

4.3   In view of the need for detailed navigation planning, it was deemed advisable to prepare a PBN Roadmap to provide proper guidance to air navigation service providers, airspace operators and user, regulating agencies, and international organization, on the evolution of performance base navigation, as one of the key systems supporting air traffic management, which describes the RNAV and RNP navigation applications that should be implemented in the short and medium term in the MID Region.

4.4   Furthermore, the MID PBN Roadmap will be the basic material for the development of a boarder MID air navigation strategy, which will serve as guidance for regional projects for the implementation of air navigation infrastructure, such as SBAS, GBAS, etc., as well as for the development of national implementation plans.

4.5   The PBN Manual (Doc 9613) provides guidance on RNAV/RNP navigation specifications and encompasses two types of approvals: airworthiness, exclusively relating to the approval of aircraft, and operational, dealing with the operational aspects of the operator. RNAV/RNP approval will be granted to operators that comply with these two types of approval.

4.6   After the implementation of PBN as part of the airspace concept, the total system needs to be monitored to ensure that safety of the system is maintained. A system safety assessment shall be conducted during and after implementation and evidence collected to ensure that the safety of the system is assured.

Benefits of Performance-Based Navigation

a)   Reduces need to maintain sensor- specific routes and procedures, and their associated costs.

b)   Avoids need for development of sensor- specific operations with each new evolution of navigation systems; the present requirement of developing procedures with each new introduction is often very costly.

c)   Allows more efficient use of airspace (route placement, fuel efficiency, noise abatement).

d)   In true harmony with the way in which RNAV systems are used.

e)   Facilitates the operational approval process for operators by providing a limited set of navigation specification intended for global use.

f)   Improved airport and airspace arrival paths in all weather conditions, and the possibility of meeting critical obstacle clearance and environmental requirements through the application of optimized RNAV or RNP paths.

g)   Reduced delays in high-density airspaces and airports through the implementation of additional parallel routes and additional arrival and departure points in terminal areas.

h)   For the pilots, the main advantage of using this system is that the navigation function is performed by highly accurate and sophisticated onboard equipment and thus allowing reduction in cock-pit workload, with increase in safety.

i)   For Air Traffic Controllers, the main advantage of aircraft using a RNAV system is that ATS routes can be straightened as it is not necessary for the routes to pass over locations marked by conventional NAVAIDS.

j) RNAV based arrival and departure routes can complement and even replace radar vectoring, thereby reducing approach and departure controllers' workload.

k) Increase of predictability of the flight path.

Goals and Objectives of PBN Implementation

4.7   The MIDANPIRG/11 meeting required that PBN be implemented in a strategic manner in the MID Region and accordingly established the PBN/GNSS Task Force which, *inter alia*, was required to follow up developments related to PBN and develop an implementation strategy. The 36th Session of ICAO Assembly adopted Resolution A36-23: *Performance based navigation global goals*, which, amongst others, highlighted global and regional harmonization in the implementation of PBN. Accordingly, the MID PBN Implementation Regional Plan has the following strategic objectives:

(a) To ensure that implementation of the navigation element of the MID CNS/ATM system is based on clearly established operational requirement.

(b) To avoid unnecessarily imposing the mandate for multiple equipment on board or multiple systems on ground.

(c) To avoid the need for multiple airworthiness and operational approvals for intra and inter-regional operations.

(d) To avoid an eclipsing of ATM operational requirements by commercial interests, generating unnecessary costs States, international organization, and airspace users.

(e) To explain in detail the contents of the MID air navigation plan and of the MID CNS/ATM plan, describing potential navigation application.

4.8   Furthermore, the MID PBN Roadmap will provide a high-level strategy for the evolution of the navigation applications to be implemented in the MID region in the short term (2008-2012), medium term (2013-2016). This strategy is based on the coverage of area navigation (RNAV) and required navigation performance (RNP), which will be applied to aircraft operations involving instrument approaches, standard departure (SID) routes, standard arrival (STAR) routes, and ATS routes in oceanic and continental areas.

4.9   The MID PBN Implementation Regional Plan is developed by the MID States together with the international and Regional organizations concerned (AACO, ACAC, IATA, IFALPA, IFATCA), and is intended to assist the main stakeholders of the aviation community to plan a gradual transition to the RNAV and RNP concepts. The main stakeholders of the aviation community   that benefit from this roadmap are:

- Airspace operators and users
- Air navigation service providers
- Regulating agencies
- International and Regional organizations

4.10   The Plan is intended to assist the main stakeholders of the aviation community to plan the future transition and their investment strategies. For example, airlines and operators can use this Regional Plan to plan future equipage and additional navigation capability investment; air navigation service providers can plan a gradual transition for the evolving ground infrastructure, Regulating agencies will be able to anticipate and plan for the criteria that will be needed in the future.

Planning principles

4.11   The implementation of PBN in the MID Region shall be based on the following principles:

      (a) develop strategic objectives and airspace concepts as described in the PBN manual (Doc 9613) to justify the implementation of the RNAV and/or RNP concepts in each particular airspace;

      (b) States conduct pre- and post–implementation safety assessments to ensure the application and maintenance of the established target level of safety;

      (c) development of airspace concept, applying airspace modelling tools as well as real-time and accelerated simulations, which identify the navigation applications that are compatible with the aforementioned concept; and

      (d) continued application of conventional air navigation procedures during the transition period, to guarantee the operation by users that are not RNAV- and/or RNP–equipped.

4.12   Planning documentation. The implementation of PBN in the MID Region will be incorporated into the Regional Supplementary Procedures (Doc 7030) as approved by the ICAO Council. The States' PBN implementation plan will include a concise and detailed schedule of implementation for all phases of flight which will be endorsed through Regional agreement processes and considered by the Council as requirements for incorporation in the Air Navigation Plan (ANP).

5.   PBN OPERATIONAL REQUIREMENTS AND IMPLEMENTATION STRATEGY

5.1   Introduction of PBN should be consistent with the Global Air Navigation Plan. Moreover, PBN Implementation shall be in full compliance with ICAO SARPs and PANS and be supported by ICAO Global Plan Initiatives.

5.2   In November 2006 the ICAO Council accepted the second amendment to the Global Air Navigation Plan for the CNS/ATM System, which has been renamed the Global Air Navigation Plan (Doc 9750), referred to as the Global Plan. A key part of the Global Plan framework are Global Plan Initiatives (GPIs), which are options for air navigation system improvements that when implemented, result in direct performance enhancements. The GPIs include implementation of performance based navigation (PBN) and navigation system. The introduction of PBN must be supported by an appropriate navigation infrastructure consisting of an appropriate combination of Global Navigation Satellite System (GNSS), self-contained navigation system (inertial navigation system) and conventional ground-based navigation aids.

5.3   It is envisaged that for the short term and medium term implementation of PBN, the establishment of a backup system in case of GNSS failure or the development of contingency procedures will be necessary.

En-route

5.4   Considering the traffic characteristic and CNS/ATM capability of the Region, the en-route operation can be classified as Oceanic, Remote continental, Continental, and local/domestic. In principle, each classification of the en-route operations should adopt, but not be limited to single RNAV or RNP navigation specification. This implementation strategy will be applied by the States and international organizations themselves, as coordinated at Regional level to ensure harmonization.

5.5   In areas where operational benefits can be achieved and appropriate CNS/ATM capability exists or can be provided for a more accurate navigation specification, States are encouraged to introduce the more accurate navigation specification on the basis of coordination with stakeholders and affected neighboring States.

Terminal

5.6   Terminal operations have their own characteristics, taking into account the applicable separation minima between aircraft and between aircraft and obstacles. It also involves the diversity of aircraft, including low-performance aircraft flying in the lower airspace and conducting arrival and departure procedures on the same path or close to the paths of high-performance aircraft.

5.7   In this context, the States should develop their own national plans for the implementation of PBN in TMAs, based on the MID PBN Regional Plan, seeking the harmonization of the application of PBN and avoiding the need for multiple operational approvals for intra- and inter-regional operations, and the applicable aircraft separation criteria.

Approaches

5.8   During early implementation of PBN, IFR Approaches based on PBN should be designed to accommodate mixed-equipage (PBN and non-PBN) environment. ATC workload should be taken into account while developing approach procedures. One possible way to accomplish this is to co-locate the Initial Approach Waypoint for both PBN and conventional approaches. States should phase-out non-precision approach procedures at a certain point when deemed operational suitable and taking in consideration GNSS integrity requirements, also plans for Continuous Decent Operations (CDO) to be planned according to ICAO manual.

Implementation Strategy

5.9   In order to address the operational requirements, the following PBN Implementation & Harmonisation Strategy for the ICAO MID Region is formulated as follows:

   a)   Implementation of any RNAV or RNP application shall be in compliance with ICAO PBN Manual (Doc 9613).

   b)   Implementation of RNAV5/RNAV1 depending on operation requirements for continental en-route and local/domestic en-route applications at least until 2016.

        Note: All current RNP-5 applications shall be redefined as RNAV-5 or RNAV-1 depending on operational needs.

   c)   Implementation of RNAV1/Basic-RNP-1 depending on operation requirements for terminal applications at least until 2016.

   d)   Implementation of RNAV-10 for oceanic/remote continental until at least 2016.

e) Replacement of RNAV 5/RNAV-1 specification by RNP specifications (e.g. advanced-RNP-1) for the use in the en-route and terminal airspace to commence by 2016.

f) The target date for the completion of implementation for the Approach procedures with vertical guidance (APV) (RNP APPCH) for all instrument runway ends is 2016: The development of new conventional non-precision approach procedures should be discouraged. Existing conventional non-precision approach procedures should be phased not later than 2016, pending readiness of stand-alone GNSS.

g) The use of NDB for approach operations shall be terminated not later than 2012.

6.   CURRENT STATUS AND FORECAST

MID Traffic Forecast

6.1   The GEN part of FASID (Part II) provides the information and data of the following traffic forecasts and trends:

- air traffic demand for air navigation systems planning
- Passenger traffic
- Aircraft movements
- Major city-pairs traffic

6.2   The forecast data as well as the figures contained in the FASID document are the results of the regular meetings of, MIDANPIRG Traffic Forecasting Sub-group, which had in last meeting in April 2007. Notably however, in the past two years, air traffic growth trend for the MID Region has signalled a significantly higher aircraft fleet and traffic growth than was previously forecast.

6.3   World scheduled traffic measured in terms of Passenger-kilometers Performed (PKPs) is forecast to increase at a "most likely" average annual rate at 4.6 per cent for the period 2005-2025.   International traffic is expected to increase at 5.3 per cent per annum.

6.4   The airlines of the Middle East regions are expected to experience the highest growth in passenger traffic at 5.8 per cent per annum through to the year 2025 compared to the world average of 4.6%.

6.5   World scheduled freight traffic measured in terms of tonne-kilometres performed is forecast to increase at a "most likely" average annual rate of 6.6 per cent for the period 2005-2025. International freight traffic is expected to increase at an average annual growth rate of 6.9 per cent.

6.6   Air freight traffic of the airlines of Middle East region is expected to remain higher than the world average at 7.8 per annum.

6.7   The following major route groups to, from and within the Middle East Region have been identified:
- Between Middle East - Europe
- Between Middle East - Africa
- Between Middle East - Asia/Pacific
- Between Middle East - North America
- Intra Middle East

6.8   Movement forecasts for the major route groups for the 2007-2025 periods are depicted in **Table 1**.

TABLE 1

AIRCRAFT MOVEMENTS FORECAST TO THE YEAR 2025

	Actual	**Forecast**	**Average**	**Annual (per cent)**	**Growths**
	2007	**2025**		**2007-2025**	
AFR-MEA	84933	291159		7.1	
ASIA-MEA	165364	514979		6.5	
EUR-MEA	158346	350380		4.5	
INTRA MEA	205769	1170709		10.1	
NAM-MEA	11075	18703		3.0	
TOTAL	625487	2345929		7.6	

6.9   The total aircraft movements to/from and within the Middle East region are estimated to increase from some 625000 in 2007 to around 2346000 in 2025 at an average annual growth rate of 7.6 per cent. The resulting movements' shares for the year 2025 are depicted in **Figure 1**.

FIGURE 1

SHARES OF SELECTED ROUTE GROUPS IN AIRCRAFT MOVEMENTS
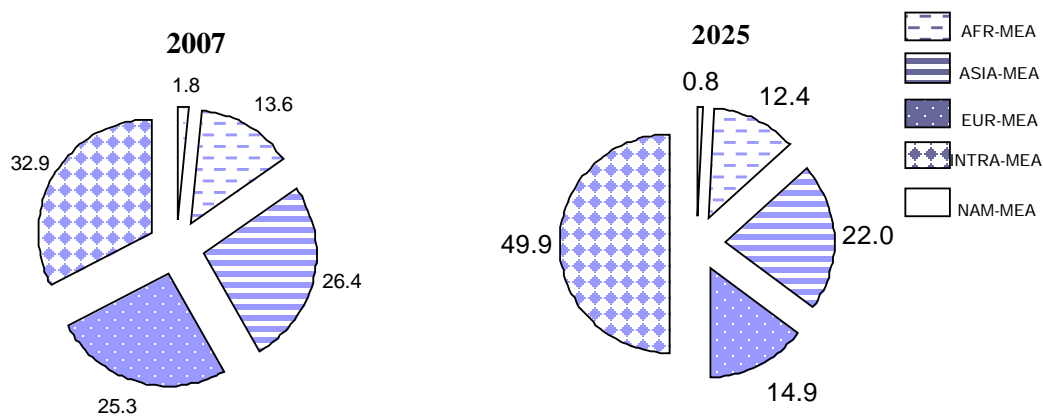
Aircraft Fleet Readiness

6.10   IATA had circulated survey and will be compiling the results in report which could be referred to for details

CNS Infrastructure

Navigation infrastructure

Global Navigation Satellite System (GNSS)

6.11   Global Navigation Satellite System (GNSS) is a satellite-based navigation system utilizing satellite signals, such as Global Positioning System (GPS), for providing accurate and reliable position, navigation, and time services to airspace users. In 1996, the International Civil Aviation Organization (ICAO) endorsed the development and use of GNSS as a primary source of future navigation for civil aviation. ICAO noted the increased flight safety, route flexibility and operational efficiencies that could be realized from the move to space-based navigation.

6.12   GNSS supports both RNAV and RNP operations. Through the use of appropriate GNSS augmentations, GNSS navigation provides sufficient accuracy, integrity, availability and continuity to support en-route, terminal area, and approach operations. Approval of RNP operations with appropriate certified avionics provides on-board performance monitoring and alerting capability enhancing the integrity of aircraft navigation.

6.13   GNSS augmentations include Aircraft-Based Augmentation System (ABAS), Satellite-Based Augmentation System (SBAS) and Ground-Based Augmentation System (GBAS).

Other PBN Infrastructure

6.14   Other navigation infrastructure that supports PBN applications includes INS, VOR/DME, DME/DME, and DME/DME/IRU. These navigation infrastructures may satisfy the requirements of RNAV navigation specifications, but not those of RNP.

6.15   INS may be used to support PBN en-route operations with RNAV-10 and RNAV-5 navigation specifications.

6.16   VOR/DME may be used to support PBN en-route and STAR operations based on RNAV-5 navigation specification.

6.17   Uses of DME/DME and DME/DME/IRU may support PBN en-route and terminal area operations based on RNAV-5, and RNAV-1 navigation specifications. Validation of DME/DME coverage area and appropriate DME/DME geometry should be conducted to identify possible DME/DME gaps, including identification of critical DMEs, and to ensure proper DME/DME service coverage.

Note.- The conventional Navaid infrastructure should be maintained to support non-equipped aircraft during a transition period until at least 2016.

Surveillance Infrastructure

6.18   For RNAV operations, States should ensure that sufficient surveillance coverage is provided to assure the safety of the operations. Because of the on-board performance monitoring and alerting requirements for RNP operations, surveillance coverage may not be required. Details on the surveillance requirements for PBN implementation can be found in the ICAO PBN Manual and ICAO PANS-ATM (Doc 4444), and information on the current surveillance infrastructure in the MID can be found in ICAO FASID table.

Communication Infrastructure

6.19   Implementation of RNAV and RNP routes includes communication requirements. Details on the communication requirements for PBN implementation can be found in ICAO PANS-ATM (Doc 4444), ICAO RCP Manual (Doc 9869), and ICAO Annex 10. Information on the current communication infrastructure in the MID can also be found in ICAO FASID table.

7.   IMPLEMENTATION ROADMAP OF PBN

ATM Operational Requirements

7.1   The Global ATM Operational Concept: Doc 9854 makes it necessary to adopt an airspace concept able to provide an operational scenario that includes route networks, minimum separation standards, assessment of obstacle clearance, and a CNS infrastructure that satisfies specific strategic objectives, including safety, access, capacity, efficiency, and environment.

7.2   In this regard, the following programmes will be developed:

 a)   Traffic and cost benefit analyses
 b)   Necessary updates on automation
 c)   Operational simulations in different scenarios
 d)   ATC personnel training
 e)   Flight plan processing
 f)   Flight procedure design training to include PBN concepts and ARINC-424 coding standard
 g)   Enhanced electronic data and processes to ensure appropriate level of AIS data accuracy, integrity and timeliness
 h)   WGS-84 implementation in accordance with ICAO Annex 15
 i)   Uniform classification of adjacent and regional airspaces, where practicable
 j)   RNAV/RNP applications for SIDs and STARs
 k)   Coordinated RNAV/RNP routes implementation
 l)   RNP approach with vertical guidance

7.3   The above programmes should conform to the performance objectives and regional action plan supporting the regional implementation plan (roadmap).

Short Term (2008-2012)

En-route

7.4   During the planning phase of any implementation of PBN routes, States should gather inputs from all aviation stakeholders to obtain operational needs and requirements. These needs and requirements should then be used to derive airspace concepts and to select appropriate PBN navigation specification.

7.5   In this phase, the current application of RNAV-10 is expected to continue for Oceanic and Remote continental routes.

7.6   For Continental routes, the applications of RNAV-5 and RNAV-1 navigation specifications are expected. Before the PBN concept was established , the MID Region adopted the Regional implementation of RNP-5. Under the PBN concept it is now required that RNP 5 will change into RNAV-5. Based on operational requirements, States may choose to implement RNAV-1 routes to enhance efficiency of airspace usages and support closer route spacing, noting that appropriate communication and surveillance coverage is provided. Details of these requirements are provided in the PBN manual (Doc 9613) and PANS-ATM (Doc 4444).

7.7   **Operational approval**. Operators are required to have operational approval for RNAV-5. Depending on operational requirement RNAV-1 for terminal operations and RNAV-10 for Oceanic/Remote Continental operations.

7.8   Application of RNAV-5 or RNAV-1 for continental en-route will be mandated by the end of 2012.

Terminal

7.9   In selected TMAs, the application of RNAV-1 in a surveillance environment can be supported through the use of GNSS or ground navigation infrastructure, such as DME/DME and DME/DME/IRU. In this phase, mixed operations (equipped and non-equipped) will be permitted.

7.10   In a non- surveillance environment and/or in an environment without adequate ground navigation infrastructure, the SID/STAR application of Basic-RNP-1 is expected in selected TMAs with exclusive application of GNSS.

7.11   **Operational approval**. Operators are required to have operational approval for RNAV-1. In addition, operators are required to have Basic RNP-1 approval when operating in procedural control TMAs.

> *Note: In order to avoid unnecessary approvals, operators equipped with GNSS should apply for combined RNAV-1 and Basic RNP-1.*

Approach

7.12   The application of RNP APCH procedures is expected to be implemented in the maximum possible number of airports, primarily international airports. To facilitate transitional period, conventional approach procedures and conventional navigation aids should be maintained for non-equipped aircraft.

7.13   States should promote the use of APV operations (Baro-VNAV or SBAS) to enhance safety of RNP approaches and accessibility of runways.

7.14   The application of RNP AR APCH procedures should be limited to selected airports, where obvious operational benefits can be obtained due to the existence of significant obstacles.

7.15   **Operational approval requirements**. Operators shall plan to have operational approval for RNP APCH with VNAV operations (Baro-VNAV). Depending on operational need, aircraft shall also meet the RNP AR APCH specification.

SUMMARY TABLE AND IMPLEMENTATION TARGETS

SHORT TERM (2008-2012)	
Airspace	*Navigation Specification*
En-route – Oceanic	RNAV-10
En-route - Remote continental	RNAV-10
En-route – Continental	RNAV-5, RNAV-1
En-route - Local / Domestic	RNAV-5, RNAV-1
TMA – Arrival	RNAV-1 in surveillance environment and with adequate navigation infrastructure. Basic RNP-1 in non-surveillance environment
TMA – Departure	RNAV-1 in surveillance environment and with adequate navigation infrastructure. Basic RNP-1 in non-surveillance environment
Approach	RNP APCH with Baro-VNAV in most possible airports; RNP AR APCH in airport where there are obvious operational benefits.

Implementation Targets

▪ RNP APCH (with Baro-VNAV) in 30% of instrument runways by 2010 and 50% by 2012 and priority should be given to airports with most significant operational benefits

▪ RNAV-1 SIDs/STARs for 30% of international airports by 2010 and 50% by 2012 and priority should be given to airports with RNP Approach

▪ RNP-5 and B-RNAV which is implemented in MID Region to be redefined as per ICAO PBN terminology by 2009 (MIDANPIRG/11), full implementation of PBN by 2012 for continental en-route.

Medium Term (2013-2016)

En-route

7.16   Noting the current development of route spacing standards for RNAV-1, in this phase, it is expected that the implementations of all existing RNAV/RNP routes are consistent with PBN standards. However, in order to ensure implementation harmonization, States are urged to implement their RNAV/RNP routes based on a Regional agreements and consistent PBN navigation specifications and separation standards.

7.17   With regard to oceanic remote operations, it is expected that with the additional surveillance capability, the requirement for RNAV-10 will disappear, and be replaced by navigation specifications for continental en-route applications.

7.18   **Operational approval**. Operators are required to have operational approval for RNAV-5 and RNAV-1.

Terminal

7.19   RNAV-1 or Basic RNP-1 will be fully implemented in all TMAs by the end of this term.
7.20   **Operational approval**. Operators are required to have operational approval for RNAV-1/Basic RNP-1 approval.

> *Note:* *In order to avoid unnecessary approvals, operators equipped with GNSS should apply for combined RNAV-1 and Basic RNP-1*

> ***Approach***

7.21   In this phase, full implementation of RNP APCH with Baro-VNAV or APV SBAS for all instrument runways is expected. These applications may also serve as a back-up to precision approaches.

7.22   The extended application of RNP AR Approaches should continue for airports where there are operational benefits.

7.23   The introduction of application of landing capability using GNSS is expected to guarantee a smooth transition toward high-performance approach and landing capability.

7.24   **Operational approval requirements**. Operators are required to have operational approval for RNP APCH with VNAV operations (Baro-VNAV). Depending on operations, aircraft shall also meet RNP AR specification.

7.25   Application of RNAV-1 or Basic RNP-1 for all terminal areas and APV/Baro-VNAV or APV/SBAS for all instrument runway ends, either as the primary approach or as a back-up for precision approaches will be mandated by 2016.

> *Note: CDO plans to be incorporated by PBN/GNSS TF/3.*

SUMMARY TABLE AND IMPLEMENTATION TARGETS

MEDIUM TERM (2013-2016)	
Airspace	*Navigation Specification (preferred/acceptable)*
En-route – Oceanic	Nil
En-route - Remote continental	Nil
En-route – Continental	RNAV-1, RNAV-5
En-route - Local / Domestic	RNAV-1 , RNAV-5
TMA – (Arrival, Departure)	RNAV-1 or RNP-1 application
Approach	RNP APCH (with Baro-VNAV) and APV Expansion of RNP AR APCH where there are operational benefits Introduction of landing capability using GNSS and its augmentations
Implementation Targets ▪ RNP APCH with Baro-VNAV or APV in 100% of instrument runways by 2016 ▪ RNAV-1 or RNP-1 SID/STAR for 100% of international airports by 2016 ▪ RNAV-1 or Basic RNP-1 SID/STAR at busy domestic airports where there are operational benefits ▪ Implementation additional RNAV/RNP routes	

Long Term (2016 and Beyond)

7.26   In this phase, GNSS is expected to be a primary navigation infrastructure for PBN implementation. States should work co-operatively on a multinational basis to implement GNSS in order to facilitate seamless and inter-operable systems and undertake coordinated Research and Development (R&D) programs on GNSS implementation and operation.

7.27   Moreover, during this phase, States are encouraged to consider segregating traffic according to navigation capability and granting preferred routes to aircraft with better navigation performance.

7.28   Noting the current development of Advanced RNP-1 navigation specification, it is expected that this navigation specification will play an important role in the long term implementation of PBN for enroute and terminal operations.

7.29   With the expectation that precision approach capability using GNSS and its augmentation systems will become available, States are encouraged to explore the use of such capability where there are operational and financial benefits.

7.30   During this term the use of Advanced RNP-1 for terminal and en-route will be mandated by a date to be determined.

Note: the CDO will be implemented after gaining experience.

8.   TRANSITIONAL STRATEGIES

8.1   During the transitional phases of PBN implementation, sufficient ground infrastructure for conventional navigation systems must remain available. Before existing ground infrastructure is considered for removal, users should be consulted and given reasonable transition time to allow them to equip appropriately to attain equivalent PBN-based navigation performance. States should approach removal of existing ground infrastructure with caution to ensure that safety is not compromised, such as by performance of safety assessment, consultation with users through regional air navigation planning process and national consultative forums. Moreover, noting that navigation systems located in a particular State/FIR may be supporting air navigation in airspaces in other States/FIRs States are required to cooperate and coordinate bilaterally, multilaterally and within the framework of Regional agreements, in the phasing out of conventional ground based navigation systems and maintaining the serviceability of required navigation aids for area navigation (e.g. DME).

8.2   States should ensure that harmonized separation standards and procedures are developed and introduced concurrently in all flight information regions to allow for a seamless transition towards PBN.

8.3   States should cooperate on a multinational basis to implement PBN in order to facilitate seamless and inter-operable systems and undertake coordinated R&D programs on PBN implementation and operation.

8.4   States are encouraged to consider segregating traffic according to navigation capability and granting preferred routes to aircraft with better navigation performance, taking due consideration of the need of State/Military aircraft.

8.5   States should encourage operators and other airspace users to equip with PBN avionics. This can be achieved through early introductions of RNP approaches, preferably those with vertical guidance.

8.6   ICAO MID Region Regional Office should provide leadership supporting

implementation and transition towards PBN.

9.   SAFETY ASSESSMENT AND MONITORS

Methodology

Need for Safety Assessment

9.1   To ensure that the introduction of PBN en-route applications within the MID Region is undertaken in a safe manner and in accordance with relevant ICAO provisions, implementation shall only take place following conduct of a safety assessment that has demonstrated that an acceptable level of safety will be met. This assessment may also need to demonstrate levels of risk associated with specific PBN en-route implementation. Additionally, ongoing periodic safety reviews shall be undertaken where required in order to establish that operations continue to meet the target levels of safety.

Roles and Responsibilities

9.2   To demonstrate that the system is safe, it will be necessary that the implementing agency – a State or group of States - ensures that a safety assessment and, where required, ongoing monitoring of the PBN en-route implementation are undertaken. The implementing agency may have the capability to undertake such activities or may seek assistance from the Middle East Regional Monitoring Agency (MID RMA). The latter course of action is preferred as the MID RMA would be in a position to establish the necessary monitoring and data collection activity in an effective manner. Furthermore, the MIDANPIRG/10 meeting in April 2007 adopted the revised terms of reference of the MID RMA, whose scope includes safety monitoring of RNP/RNAV.

9.3   In undertaking a safety assessment to enable en-route implementation of PBN, a State, implementing agency or the MID RMA shall:

(a) Establish and maintain a database of PBN approvals;

(b) Monitor aircraft horizontal-plane navigation performance and the occurrence of large navigation errors and report results appropriately to the MID RMA;

(c) Conduct safety and readiness assessments and report results appropriately to the MID RMA;

(d) Monitor operator compliance with State approval requirements after PBN implementation; and

(e) Initiate necessary remedial actions if PBN requirements are not met.

9.4   The duties and responsibilities of the MID RMA as well as the agreed principles for its establishment are available from the ICAO MID Regional Office.

10.   PERIODIC REVIEW OF IMPLEMENTATION ACTIVITIES

Procedures to Modify the Regional Plan

10.1   Whenever a need is identified for a change to this document, the Request for Change (RFC) Form (to be developed) should be completed and submitted to the ICAO MID Regional Office. The Regional Office will collate RFCs for consideration by the PBN/GNSS Task Force (ATM/SAR/AIS Sub-group of MIDANPIRG).

10.2   When an amendment has been agreed by a meeting of the PBN/GNSS Task Force, a new version of the PBN Regional Plan will be prepared, with the changes marked by an "|" in the margin, and an endnote indicating the relevant RFC, to enable a reader to note the origin of the change. If the change is in a table cell, the outside edges of the table will be highlighted. Final approval for publication of an amendment to the PBN Regional Plan will be the responsibility of MIDANPIRG.

Appendix A – Practical Examples of tangible benefits (living document)

(To be Developed)

Appendix B – Reference documentation for developing operational and airworthiness approval regulations/procedures

(To be Developed)

CNS/ATM/IC SG/5
Appendix 4G to the Report on Agenda Item 4

No.	Associated GPI	Tasks PBN/GNSS/2	Objective	Deliverables	Target Date	To be delivered by	Supporting Parties	Status
1	GPI-5, GPI- 7, GPI-10, GPI-11, GPI-12, GPI-20, GPI-21	Draft Current Status & Forecast: Aircraft fleet readiness status Section of PBN Regional Plan	To facilitate update of the of the Regional Plan	Draft document	PBN/GNSS/3	IATA	States, States	Ongoing
2	GPI-5, GPI- 7, GPI-10, GPI-11, GPI-12, GPI-20, GPI-21	Draft Appendix A – Practical Example of tangible benefits Section of PBN Regional Plan	To facilitate the update of the Regional Plan	Draft document	PBN/GNSS/3	MID Office	–	Ongoing
3	GPI-5, GPI- 7, GPI-10, GPI-11, GPI-12, GPI-20, GPI-21	Study and assess the Region RNAV and RNP requirements using PBN methodology	To facilitate the update of the Regional Plan	Draft document	PBN/GNSS/3	ARN TF	–	Reassigned
4	GPI-5, GPI- 7, GPI-10, GPI-11, GPI-12, GPI-20, GPI-21	Initially focus assistance on States that may require support on development of State PBN implementation plans	To facilitate timely harmonized implementation	Draft provided	PBN/GNSS/3	PBN/GNSS Task Force GO team	States	Done during TF/2 Ongoing
5	GPI-5, GPI- 7, GPI-10, GPI-11, GPI-12, GPI-20, GPI-21	Identify priority runways for Approach Procedures with Vertical Guidance (APV) to be implemented based on the ICAO RNP APCH navigation specification (APV/Baro-VNAV)	To facilitate implementation efficiency and early operational benefits	Draft document	PBN/GNSS/3	States	IATA	Ongoing
6	GPI-5, GPI- 7, GPI-10, GPI-11, GPI-12, GPI-20, GPI-21	Develop an amendment proposal to the MID Regional Supplementary Procedures concerning the implementation of PBN in the Region	To facilitate harmonized implementation	Doc 7030 amendment proposal	Mar 2010	ARN TF and MID Regional Office	–	Ongoing

No.	Associated GPI	Tasks PBN/GNSS/2	Objective	Deliverables	Target Date	To be delivered by	Supporting Parties	Status
7	GPI-5, GPI- 7, GPI-10, GPI-11, GPI-12, GPI-20, GPI-21	Follow up on the developments in ICAO affecting the Global Plan and PBN in particular, in order to update the Regional plans accordingly	To facilitate planning updates and global harmonization	Information and action items for PBN/GNSS Task Force	Ongoing	MID Regional Office PBN/GNSS TF	-	Ongoing
8	GPI-5, GPI- 7, GPI-10, GPI-11, GPI-12, GPI-20, GPI-21	Coordinate with other ICAO Regions as necessary to address implementation interface issues	To facilitate harmonized implementation	Information and action items for PBN/ GNSS Task Force	Ongoing	MID Regional Office PBN/GNSS TF	States	Ongoing
9	GPI-5, GPI- 7, GPI-10, GPI-11, GPI-12, GPI-20, GPI-21	Undertake other functions relevant to implementation of PBN as assigned by the ATM/SAR/AIS SG , CNS/ATM/IC SG or MIDANPIRG	To facilitate implementation of PBN	As per assignments	Ongoing	PBN/ GNSS Task Force	-	Ongoing
10	GPI-5, GPI- 7, GPI-10, GPI-11, GPI-12, GPI-20, GPI-21	Report to the CNS/ATM/IC SG and keep ATM/SAR/AIS SG and CNS SG closely briefed	To facilitate efficiency and effectiveness	Task Force reports	Ongoing	PBN/GNSS Task Force	–	Ongoing
11	GPI-5, GPI- 7, GPI-10, GPI-11, GPI-12, GPI-20, GPI-21	Identify guidance material and training needs/gap	To determine required complementary guidance material	Draft document	PBN/GNSS/3	PBN/GNSS Task Force	–	Ongoing
12	GPI-5, GPI- 7, GPI-10, GPI-11, GPI-12, GPI-20, GPI-21	Review of Operational Approval Guidance from other Regions for use in the MID Region	To support States' development of harmonized approvals	Draft document	PBN/GNSS/3	IATA		ongoing

No.	Associated GPI	Tasks PBN/GNSS/2	Objective	Deliverables	Target Date	To be delivered by	Supporting Parties	Status
13	GPI-5, GPI- 7, GPI-10, GPI-11, GPI-12, GPI-20, GPI-21	Assess possibilities of future PBN Seminar	To assist States in their planning and implementation	Working Papers, Information Papers	On-going	PBN/GNSS TF	States IATA	On going
14	GPI-5	Keep track on the States PBN implementation status	Updated Status of implementation	Status of implementation report	On-going	CNS/ATM/IC SG/5	States/ IATA	On going
15	GPI-5	Prepare progress report on the PBN implementation plan	Updated Status of implementation	Status of implementation report	On going	PBN/GNSS TF/3	States /IATA	On going

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STATUS OF MID REGION PBN IMPLEMETATION PLAN

Status of MID Region PBN Implementation plans			
State	**Plan Submission**	**Plan Status**	**Remark**
Bahrain	Submitted		
Egypt	Submitted	Draft	need user input
Iran	Not submitted		Only PBN approach and Terminal implementation status received
Iraq	Not submitted		
Israel	Not submitted		
Jordan	Submitted		
Kuwait	Submitted		
Lebanon	Not submitted		Only PBN approach and Terminal implementation status received
Oman	Not submitted		
Qatar	Submitted		
Saudi Arabia	Not submitted		
Syria	Submitted	Draft	
UAE	Not submitted		
Yemen	Submitted	Draft	

CNS/ATM/IC SG/5
Appendix 4I to the Report on Agenda Item 4

PBN IMPLEMENTATION FOCAL POINT

STATE	NAME	TITLE	ADDRESS	EMAIL	FAX	TEL	MOBILE
Bahrain	Fareed Abdullah Al Alawi	Head, air Traffic Operations	Civil Aviation Affairs P.O.Box 586	falalawi@caa.gov.bh	+973 17321992	+973 17321158	+97339651596
Bahrain	Saleem Mohamed Hassan	Chief Air Traffic Management	Civil Aviation Affairs P.O.Box 586	saleemmh@caa.gov.bh	+973 17329966	+973 17321117	+97339608860
Egypt	Mohsen Lotfy Mohamed	Director of Research and Development	National Air Navigation Services Company Cairo Navigation Center Cairo International Airport	Mohsen.elagaty@nansceg.org Mohsen.elagaty@yahoo.com	+222680627 +22871056	+222 650743 +222 657849	010 1623922
Iran	Habib Davoudi Dana	Chief of Procedure Design Office	ATM Department Mehrabad International Airport Tehran 13445	h.davoudi@yahoo.com	+982144649269	+982 166025013	
Iran	Mohammad Khodakarami	D.G. of Aeronautical Affairs (in CAO)	Mehrabad International Airport P.O.Box 13445 – 1798	mkhd4444@yahoo.com	+98214464 9269	+982 16603 6241	
Iraq							
Israel							
Jordan	Samih Shahin	Director Studies and Planning/ANS	P.O.Box 7547	dplanans@carc.gov.jo	+962 6 4891653	+962 6 4891708	
Kuwait	Adel Mohammed Al Yagout	Superintendent of Air Navigation Department	Directorate General of Civil Aviation Kuwait International Airport P.O. Box 17 Safat 13001	Q8dgca_danoff@hotmail.com	+965 4346221	+965 4346220	+965 9571755
Lebanon	Walid Alhassanieh	Chief ACC	Air Navigation Department Beirut Rafic Hariri Int'l Airport	hassaniehw @beirutairport.gov.lb	+9611629023 +9611629106	+961 1629026	+961 3509902

STATE	NAME	TITLE	ADDRESS	EMAIL	FAX	TEL	MOBILE
Oman	Sabri Said Saud Al-Busaidy	DMS Manager	Directorate General of Meteorology & Air Navigation (DGMAN) Muscat International Airport P.O. Box 1 CPO Seeb	sabri@dgcam.gov.om	+96824518990 +24519 939	+968 24519501	+968 99359415
Qatar	Ahmed Al-Eshaq	Director Air Navigation	Civil Aviation Authority P.O.Box 3000 Doha – QATAR	ahmed@caa.gov.qa	(974) 465 6554	(974) 462 2300	(974) 555 0440
Saudi Arabia	Ali H. Hakami	Navigational Aids Systems Planner	General Authority of Civil Aviation P.O.Box 21444 Jeddah 21444	yaro123@yahoo.com	+966 2 671 7717 Ext 1594	+966 2 671 7717 Ext 1593	+966 59 840 2598
Syria	Al Layth Al Hammoud	Chief of Air Navigation					
UAE	Hassan Karam	Director Air Navigation Services	General Civil Aviation Authority P.O.Box 666 Abu Dhabi – UAE	hkaram@szc.gcaa.ae	+97124054545	97124054501	+971508187492
Yemen	Ahmed Mohamed Al Kobati	Director Air Navigation Operations	Air Navigation Sector CAMA Airport Road P.O.Box 3473 Sana'a – REPUBLIC OF YEMEN	cama570@yahoo.com	+9671344047	+9671345402	+967 777241375

NO	ICAO REGION	ICAO DESIG	AIRPORT NAME[5]	COUNTRY	INTL (Y/N)[1]	RUNWAY	INST RWY Y/N	RESTRICTIONS	APPROACH TYPE[2, 7]	APPR EFF DATE[6]	RNAV/RNP SID[3]	SID EFF DATE[6]	RNAV/RNP STAR[4]	STAR EFF DATE[6]	COMMENTS[7]
1	MID												RNAV-1		
2							Y						RNAV		

ABOVE IS ONLY AN EXAMPLE.   IT IS NOT MEANT TO SHOW THE ACTUAL RUNWAY CONFIGURATION OR PBN IMPLEMENTATION AT THAT AIRPORT

Notes:

1. If the aerodrome is used for international operations, including as an alternate, enter 'Y', if not, enter 'N'

2. If RNP APCH only, enter RNP APCH. If RNP APCH with Baro-VNAV only, enter RNP APCH-VNAV. If both enter BOTH. If RNP AR APCH, enter RNP AR APCH. If there is an RNP AR to the same runway that also has an RNP APCH and/or   RNP APCH-VNAV then enter the RNP AR on a separate line for that runway. If this block is filled out "RNP APCH", then provide some explanation in the comment block, e.g. either, "planning to upgrade to RNP APCH-VNAV by [date] or APV not feasible for [reason].

3. If RNAV or RNP SID exists for this runway, note navigation specification, RNAV 1, RNAV 2, or Basic-RNP 1. If not based on a PBN navigation specification, enter RNAV.

4. If RNAV or RNP STAR exists for this aerodrome note navigation specification, RNAV-1, RNAV 2, or Basic-RNP 1. If not based on a PBN navigation specification, enter RNAV.

5. Should list all instrument aerodromes and runway ends in the State, as well as non-instrument runway ends that are used by aircraft in excess of 5700 kg MTOW. Leave blank blocks J-O as appropriate, if PBN or RNAV approaches, SIDs or STARs are not implemented or planned to be implemented yet for that runway as part of the State PBN Implementation Plan.

6. Enter actual effective date or proposed future effective date as 3-letter month-2-digit year: Oct-07

7. Provide any relevant comments

ISLAMIC REPUBLIC OF **IRAN** PBN APPROACH and TERMINAL IMPLEMENTATION STATUSLNAV

NO	ICAO REGION	ICAO DESIG	AIRPORT NAMES	COUNTRY	INTL (Y/N)	RUNWAY	INST RWY Y/N	RESTRICTIONS	APPROACH LNAV/VNAV	APP R EFF DATE	RNAV/RNP SID`	SID EFF DATE	RNAV /RNP STAR	STAR EFF DATE	MMENTS
1	MID	OIIE	IMAM KHOMAINI	ISLAMIC REPUBLIC OF IRAN	Y	29 11	Y Y		LNAV	OCT-09	RNAV-1	OCT-09	RNAV	OCT-09	
2	MID	OIII	MEHRABAD	ISLAMIC REPUBLIC OF IRAN	Y	29L 29R 11L 11R	Y Y Y Y		LNAV	OCT-10	RNAV-1	OCT- 10	RNAV	OCT-10	
3	MID	OIMM	MASHHAD (SHAHID HASHEMI NEJAD)	ISLAMIC REPUBLIC OF IRAN	Y	31L 31R 13L 13R	Y Y Y Y		LNAV	OCT-10	RNAV-1	OCT- 10	RNAV	OCT-10	
4	MID	OISS	SHIRAZ (SHAHID DASTGHAIB)	ISLAMIC REPUBLIC OF IRAN	Y	29L 29R 11L 11R	Y Y Y Y		LNAV	OCT-10	RNAV-1	OCT- 10	RNAV	OCT-10	
5	MID	OIFM	ESFAHAN (SHAHID BEHESHTI)	ISLAMIC REPUBLIC OF IRAN	Y	26L 26R 08L 08R	Y Y Y Y		LNAV	OCT-10	RNAV-1	OCT- 10	RNAV	OCT-10	

LEBANON PBN APPROACH &TERMINAL IMPLMENTATION STATUS

NO	ICAO REGION	ICAO DESIG	AIRPORT NAME[5]	COUNTRY	INTL (Y/N)[1]	RUNWAY	INST RWY Y/N	RESTRICTIONS IF ANY	APPROACH TYPE[2,7]	APPR EFF DATE[6]	RNAV/ RNP SID[3]	SID EFF DATE[6]	RNAV/RNP STAR[4]	STAR EFF DATE[6]	COMMENTS[7]
1	MID	OLBA	BEIRUT INTL AIRPORT	LEBANON	Y	16	Y	LANDING ONLY	RNAV(GNSS)	11APR08	NIL	NIL	RNAV	11APR08	
2	MID	OLBA	BEIRUT INTL AIRPORT	LEBANON	Y	34	Y	TAKEOFF ONLY	NIL	NIL	NIL	NIL	NIL	NIL	
3	MID	OLBA	BEIRUT INTL AIRPORT	LEBANON	Y	03	Y	NIL.	RNAV(GNSS)	11APR08	NIL	NIL	RNAV	11APR08	
4	MID	OLBA	BEIRUT INTL AIRPORT	LEBANON	Y	21	Y	NOT USED FOR LANDING DURING NIGHT	RNAV(GNSS)	11APR08	NIL	NIL	RNAV	11APR08	
5	MID	OLBA	BEIRUT INTL AIRPORT	LEBANON	Y	17	Y	SECODARY RWY	RNAV(GNSS)	11APR08	NIL	NIL	RNAV	11APR08	
5	MID	OLBA	BEIRUT INTL AIRPORT	LEBANON	Y	35	Y	NOT USED FOR LANDING	NIL	NIL	NIL	NIL	NIL	NIL	
7															
17															
18															
19															
20															
21															

1. If the aerodrome is used for international operations, including as an alternate, enter 'Y', if not, enter 'N' **2.** If RNP APCH only, enter RNP APCH. If RNP APCH with Baro-VNAV only, enter RNP APCH-VNAV. If both enter BOTH. If RNP AR, enter RNP AR AP

Appendix 1

Jordan PBN implementation time schedule

Navigation Specification	Airspace Application	Short Term				Medium Term				Long Term	
		2009	2010	2011	2012	2013	2014	2015	2016	2017….	2025
RNAV10	NA	Will not be used									
RNP4	NA	Will not be used									
RNAV2	NA	Will not be used									
RNP5 into RNAV5	Enroute	▓	▓	▓	▓	▓	▓	▓	▓		
RNAV1	Enrout		▓	▓	▓	▓	▓	▓	▓		
RNAV1	TMA Dep. and Arr. Sur		▓	▓	▓	▓	▓	▓	▓		
Basic RNP1	TMA Dep. and Arr. Non sur		▓	▓	▓	▓	▓	▓	▓		
RNP APCH	Approach		▓	▓	▓	▓	▓	▓	▓		
RNP AR APCH	Approach KHIA			▓	▓	▓	▓	▓	▓	▓	▓
RNAV1	SIDs / STARs		▓	▓	▓	▓	▓	▓	▓	▓	▓
Basic RNP1	Enrout					▓	▓	▓	▓	▓	▓
advanced-RNP-1	en-route									▓	▓
advanced-RNP-1	terminal airspace							▓	▓	▓	▓
Use of NDB	Approach operations	▓	▓	▓	▓	Stop using the NDB for approach operations					
Conventional NPA procedures		▓	▓	▓	▓	▓	▓	▓	▓	Stop the conventional NPA procedures	

CNS/ATM/IC SG/5
Appendix 4K to the Report on Agenda Item 4

PBN IMPLEMENTATION PROGRESS REPORT

State: (Name of State)   Date: (DD/MM/YY)

Designation of PBN Focal Point

Reference: MID State Letter Ref AN 6/28 – 149 dated 21 April 2008 and follow up letter
Ref AN6/28 – 293 dated 10 August " in order to facilitate necessary follow-up and
coordination, to provide a PBN Implementation Focal Point by 21 August 2008 "

Status: (Nominated/ To be Nominated)
Focal Point: (Name, Designation, Mailing Address, Email, Phone, Fax)

State PBN Implementation Plan

Reference: MIDANPIRG Conclusion 11/74 – PBN State implementation Plan
        "That, That, in order to give effect to Assembly Resolution A36-23: Performance based navigation global goals, MID States are urged to complete development of their individual State Implementation plans based on the regional PBN implementation plan by 30 September 2009 so that it may be reviewed by the ATM/SAR/AIS SG as part of the Regional agreement process.

Status: (Adopted / To be adopted) by (name of a national body) and (Reviewed / To be reviewed) by ICAO
PBN/GNSS TF
Note(s): (States may include information on publication date and location for State PBN Implementation Plan and other relevant information.)

Approach Operations

Reference: ICAO Assembly Resolution A36-23
        "States and planning and implementation regional groups (PIRGs) complete a PBN implementation plan by 2009 to achieve: implementation of approach procedures with vertical guidance (APV) (Baro-VNAV and/or augmented GNSS) for all instrument runway ends, either as the primary approach or as back up for precision approaches by 2016 with intermediate milestones as follows: 30 percent by 2010, 70 percent by 2014."
Status:

Implementation Targets (# of RWY Ends)			Completed (# of RWY Ends)		On Progress (# of RWY Ends)	
Y2010	Y2014	Y2016	LNAV	LNAV/VNAV	LNAV	LNAV/VNAV

Note(s): (States may include information on recent publications of new PBN approach procedures.)

Arrival and Departure Operations

Reference: 1) ICAO Assembly Resolution A36-23
        "States and planning and implementation regional groups (PIRGs) complete a PBN implementation plan by 2009 to achieve: implementation of RNAV and RNP operations (where required) for en route and terminal areas according to established timelines and intermediate milestones."
        2) MID PBN Regional Implementation Plan and Strategy
        "Short-term Implementation Targets: ☐   *RNP APCH (with Baro-VNAV) in 30% of instrument runways by 2010 and 50% by 2012 and priority should be given to airports with most significant operational benefits RNAV-1 SIDs/STARs for 30% of international airports by 2010 and 50% by 2012 and priority should be given to airports with RNP Approach RNP-5 and B-RNAV which is implemented in MID Region to be redefined as per ICAO PBN terminology by 2009 (MIDANPIRG/11), full implementation of PBN by 2012 for continental en-route.."*
        ▪ *"Medium-term Implementation Targets: RNP APCH with Baro-VNAV or APV in 100% of instrument runways by 2016. RNAV-1 or RNP-1 SID/STAR for 100% of international airports by 2016 and RNAV-1 or Basic RNP-1 SID/STAR at busy domestic airports where there are operational benefits*

Implementation Targets (# of Int'l Airports)			Completed (# of Int'l Airports)		On Progress (# of Int'l Airports)	
Y2010	Y2014	Y2016	Arrival	Departure	Arrival	Departure

Note(s): (States may include information on recent publications with new PBN arrival/departure procedures.)

REPORT ON AGENDA ITEM 5:   REVIEW OF THE OUTCOME OF THE ATM/SAR/AIS SG/11 AND THE CNS SG/3

Outcome of the ATM/SAR/AIS SG/11meeting

5.1   The meeting was apprised of the outcome of the Eleventh Meeting of the MIDANPIRG ATM/SAR/AIS Sub-Group (ATM/SAR/AIS SG/11), held in Bahrain from 10 to 12 November 2010.

5.2   The meeting noted that the ATM/SAR/AIS SG/11 meeting addressed, amongst others, the following issues:

        (a)   Improvement of the MID ATS Route Network

        (b)   RVSM operations and Monitoring activities in the MID Region

        (c)   SSR Code Allocation Plan (CAP) for the MID Region

        (d)   ATS Safety Management

        (e)   New ICAO FPL Format

        (f)   Air Traffic Flow Management

        (g)   Contingency Plans

        (h)   Search and Rescue (SAR) and Civil/Military Coordination

        (i)   English Language Proficiency

        (j)   AIS/MAP issues

        (k)   Air Navigation deficiencies in the ATM/SAR and AIS/MAP fields; and

        (l)   MID Region ATM and AIM Performance Objectives

5.3   The meeting took note of the Follow-up Action Plan related to the 17 Draft Conclusions and 9 Draft Decisions developed by the ATM/SAR/AIS SG/11 meeting. In particular, with regard to Air Traffic Flow Management (ATFM), the meeting noted that during the ATM/SAR/AIS SG/11meeting, UAE and IATA were of the view that all possible solutions should be explored/ exhausted before deciding to implement ATFM in the MID Region. In particular, it was highlighted that improvements in the field of Communication, Navigation and Surveillance as well as the reduction of the spacing requirement, the implementation of Flexible Use of Airspace (FUA) would increase the capacity of airspace in the MID Region. It was recalled that, in accordance with MIDANPIRG/11 Conclusion 11/61, MIDANPIRG requested that the feasibility study related to IFPS be finalised before any commitment to go ahead with the project. This requires the contribution of all States. However, it was noted with concern that Bahrain has not yet received any input from States, in order to finalise the study. It was further noted that the feasibility study should identify the Short Term, Medium Term and Long Term lines of action, based on the needs and requirements of MID States. Accordingly, the ATM/SAR/AIS SG/11 meeting urged States to contribute to the finalisation of the IFPS feasibility study, in coordination with Bahrain and agreed to refer the subject to the CNS/ATM/IC SG/5 meeting for further review.

5.4   Based on the above and noting that no progress has been achieved in the finalisation of the feasibility study, the meeting agreed that Bahrain present a Working Paper to MIDANPIRG/12 on the subject, for appropriate action.

CNS/ATM/IC SG/5
Report on Agenda Item 5

Outcome of the CNS SG/3 meeting

5.5   The meeting was apprised of the outcome of the Third Meeting of the MIDANPIRG Communication Navigation and Surveillance Sub-Group (CNS SG/3) held at the ICAO MID Regional Office in Cairo, Egypt from 10 to 12 May 2010.

5.6   The meeting noted that the CNS SG/3 meeting addressed, amongst others, the following issues:

(a)   Aviation frequency spectrum and ICAO Position for WRC-12

(b)   Review/update of AFTN CIDIN Directory, ATS messaging Management Centre (AMC) and Establishment of MID AMC

(c)   Review of the CNS part of MID ANP and FASID (Doc 9708)

(d)   Allocation of the IC for Mode S Radars and surveillance issues

(e)   Use of public internet and Establishment MID IP network

(f)   Amendment to Annex 10 and Developments at ACP, NSP and ASP

(g)   ICAO New FPL Format

(h)   Air Navigation deficiencies in the CNS fields

(i)   MID Region CNS Performance Objectives; and

(j)   Data link application and MID-FIT

5.7   The meeting took note of the Follow-up Action Plan related to the 7 Draft Conclusions and 3 Draft Decisions developed by the CNS SG/3 meeting.

5.8   The meeting noted that Egypt concluded a workshop with the supplier of the AMHS equipment and will be completing the testing in the near future.

5.9   The meeting noted that AMHS between Jordan, Oman ,Qatar and UAE are operational and congratulated the MID Region States for the first high speed link which are being monitored by the CNS SG and other Regions.

CNS/ATM/IC SG/5
Report on Agenda Item 6

REPORT ON AGENDA ITEM 6:   FUTURE WORK PROGRAMME

6.1   The meeting noted that as the aviation industry has evolved into a less regulated and more corporatized environment with greater accountabilities, the advantages of implementing a performance-based air navigation system are becoming increasingly apparent. Accordingly the CNS/ATM/IC SG should focus on desired/required results through adoption of performance objectives.

6.2   The meeting noted that to maintain conformity and alignment of the TOR format used in MIDANPIRG Procedural Handbook with the ICAO Council and Air Navigation Commission (ANC) format, the MSG/2 meeting held in Amman, Jordan, 9 - 11 March 2010, agreed that the format of the Terms of Reference (TOR) of the different MIDANPIRG Sub-Groups should be harmonized with the format of the PIRGs TOR approved by the ICAO Council.

6.3   Based on the above and taking into consideration the new developments in the CNS and ATM fields now evolving to seamless Global Air Navigation Systems. The meeting reviewed and updated the Terms of reference and work programme of the Sub-Group as at **Appendix 6A** to the Report on Agenda Item 6 and agreed to the following Draft Decision:

> *DRAFT DECISION 5/18:   REVISED TOR OF THE CNS/ATM/IC SUB-GROUP*
>
> *That, the Terms of Reference and Work Programme of the CNS/ATM/IC Sub-Group be updated as at **Appendix 6A** to the Report on Agenda Item 6.*

6.4   Furthermore and in accordance with the MIDANPIRG Procedural Handbook the meeting agreed on the dates of the CNS/ATM/IC SG/6 to be in the first quarter of 2012 and venue will be Cairo unless a State is willing to host the meeting, and the dates will be confirmed according to the workload of the ICAO MID Regional Office.

6.5   The meeting recalled that MSG/2 meeting agreed that each Draft Conclusion and Decision formulated by MIDANPIRG and its subsidiary bodies should respond clearly to the following four Questions (Why, What, Who and When "4-Ws"). Accordingly all Draft Conclusions and Decisions developed by the meeting are compliant with the 4-Ws requirement, which are in the follow-up action plan as at **Appendix 6B** to the Report on Agenda Item 6.

COMMUNICATIONS, NAVIGATION, SURVEILLANCE/ AIR TRAFFIC MANAGEMENT/IMPLEMENTATION COORDINATION SUB-GROUP

(CNS/ATM/IC SG)

REVISED TERMS OF REFERENCE AND WORK PROGRAMME

1.   TERMS OF REFERENCE

1.1   In accordance with the MID Region strategy for the implementation of performance objectives supported by the Global Plan Initiatives (GPIs) and, taking into consideration that the evolution from a systems-based approach to a performance-based approach should be evolutionary and consistent with the Global plan, the CNS/ATM/Implementation Coordination Sub-Group should:

- Ensure that the planning and implementation of air navigation systems in the region, is coherent and compatible with systems in adjacent regions, and that it is carried out within the framework of the ATM Operational Concept (Doc 9854), the Global Air Navigation Plan (Doc 9750) and the associated Global Plan Initiatives (GPIs).

- Develop and continuously update, the MID Region performance objectives in the light of new developments, taking into consideration the region priorities and MID States national plans.

- Monitor the MID Region Performance metrics and associated performance targets

- Identify deficiencies and constraints that would impede implementation of the Mid regional performance objectives, and propose solutions that would facilitate the rectification of such deficiencies.

- Monitor PBN implementation in the MID Region

- monitor and harmonize GNSS activities in the MID Region

- Monitor the progress of updated studies, projects, trials and demonstrations carried out by MID States, and information available from other Regions.

- Provide a forum for active exchange of information between States related to latest developments in the Air Navigation Systems.

1.2   In order to meet the Terms of Reference, the CNS/ATM/IC Sub Group shall:

a)   develop and continuously update the Regional Performance Framework Forms which reflects the MID Region Performance Objectives;

b)   agree on the necessary data to be for monitoring the agreed MID performance Metrics;

c)   utilize or draw on business cases for the implementation of a global ATM system in the development of the MID Regional plan, as appropriate;

d) provide assistance to MID States in the implementation of performance Objective , especially those related to the implementation of ATM and supporting CNS systems, that take into account the initiatives across regions, to align work programmes and to develop regional performance plans that facilitate achieving a Global ATM system and assist in development of National performance based Plans;

e) suggest ways and means for rectifying the problems as they arise related to the implementation of performance Objectives;

f) ensure that the link between planned activities, organizational cost and performance assessment is well established;

g) identify the MID Region PBN implementation goals and recommend actions to expedite a harmonized PBN implementation in the MID Region, in accordance with the MID Region PBN implementation Strategy and Plan;

h) Identify and co-ordinate GNSS implementation Strategy and priorities in the MID Region;

i) monitor studies, demonstrations, trials and test beds carried out by MID States, related to procedures and technologies such as PBN, GNSS, ADS, CPDLC; in coordination with users identify sub-regional areas, where there is a positive cost/benefit for implementation of ADS-B and other technologies; and support the cost-effective implementation of packages of ground and airborne ADS-B applications;

j) review and identify intra and inter regional co-ordination issues and where appropriate recommend actions to address those issues; and

k) Identify the environmental effect and use the guidance provided by the Committee on Aviation Environmental Protection (CAEP) in the analysis of environmental benefits of implementing Air Navigation Systems.

COMPOSITION

The Sub-Group will compose of:

a) MIDANPIRG Provider States;

b) ACAC, IACA, IATA, IFALPA, IFATCA and SITA as observers; and

c) Other representatives from industry and user Organizations could participate as observers whenever required.

CNS/ATM/IC SG/5
Appendix 6B to the Report on Agenda Item 6

FOLLOW-UP ACTION PLAN ON CNS SG/3 CONCLUSIONS AND DECISIONS

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
DRAFT CONC. 5/1: ORGANIZATION OF NATIONAL PERFORMANCE FRAMEWORK WORKSHOP That, MID States be encouraged to organize at national level, workshops on the Development of National performance framework with ICAO assistance.	States convene at national level workshop on the development of National PFF.	ICAO States	State Letter Workshop outcome	Dec 2010 Dec 2011	
DRAFT CONC. 5/2: PERFORMANCE FRAMEWORK That, prior to 31 March 2011: a) MID States be urged to develop/update their National PFFs in order to ensure their alignment with the regional performance objective and to support the agreed MID Metrics; and b) users be urged to provide their needs and expectations of the Air Navigation Systems for inclusion in the regional and National PFF..	Development of National PFF Provision of Data for MID Metric User provide needs, and inputs to regional performance objectives	ICAO States Users/IATA MIDANPIRG Subsidiary bodies	State Letter States National PFF Updates to Regional PFF	Dec 2010 Sep 2011 Sep 2011	
DRAFT DEC. 5/3: TERMS OF REFERENCE OF THE INFPL STUDY GROUP That, the Terms of Reference and Work Programme of the ICAO New FPL format Study Group (INFPL SG) be as at Appendix 2A to the Report on Agenda Item 2.	Implement the SG Work Programme	INFPL SG CNS/ATM/IC SG	INFPL SG/2 Report	July 2010	

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
DRAFT CONC. 5/4: INFPL FORMAT IMPLEMENTATION ISSUES That, MID States be urged to complete the impact studies and file the issues arising from them to the MID Regional Office.	States to provide issues that need clarification /resolution	States ICAO	State Letter Updated MID issues in FITS	Dec 2010	
DRAFT CONC. 5/5: ICAO NEW FPL PROGRESS REPORT That, MID States be urged to send progress report on the preparation for the implementation of INFPL to the ICAO MID Regional Office every (3) three months or at least whenever major progress is achieved.	Implement conclusion and provide progress reports	ICAO State	State Letter States Progress report	Dec 2010 Every 3 month	On going
DRAFT CONC. 5/6: ICAO NEW FLIGHT PLAN format IMPLEMENTATION That MID States be urged to: a) secure necessary budget for the implementation of the ICAO New FPL Format ; b) initiate necessary negotiation with their ATC systems manufacturers/ vendors for the implementation of necessary hardware/software changes, as soon as possible; c) develop National PFF related to the ICAO new FPL format project with clearly established milestones with timelines; and d) take all necessary measures to comply with the applicability date of 15 November 2012.	Implement the Conclusion	ICAO States	State Letter Feedback from States	Dec 2010	
DRAFT CONC. 5/7: FDPS SSRCA REQUIRED FUNCTIONALITY That, MID States be urged to upgrade their FDPSs to include the SSRCA required functionality in conjunction with ICAO new Flight Plan (INFPL) upgrade.	States Upgrade FDPS's	States	Directional function	NOV 2012	

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
DRAFT CONC. 5/8: MID STRATEGY SSR CODE ALLOCATION That, in order to improve the MID SSR Code Allocation System; the MID Strategy on SSR Code Allocation is as at **Appendix 4C** to the report on Agenda Item 4.	Implement the Conclusion	States	Implementation of Short term Strategy	September 2011	
DRAFT CONC. 5/9: EXCHANGE OF SURVEILLANCE DATA That, , MID States be encouraged, to share ATS surveillance data in order to improve surveillance coverage in the MID Region	Implement the Conclusion	States	Share ATS surveillance data	September 2011	
DRAFT CONC. 5/10: STRATEGY FOR THE IMPLEMENTATION OF GNSS IN THE MID REGION That, Strategy for implementation of GNSS in the MID Region be updated as at **Appendix 4E** to the Report on Agenda Item 4.	Implement strategy	PBN/GNSS TF	adoption by MIDANPIRG/12 PBN/GNSS TF/3 Report	Dec. 2010	

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
DRAFT DEC. 5/11: REVIEW OF THE MID AIR NAVIGATION PLAN (ANP) That, in support to ICAO efforts to improve regional ANPs, the MIDANPIRG subsidiary bodies: a) carry out a complete review of the MID Basic ANP and FASID parts related to their Terms of Reference (TOR) and Work Programme; b) develop revised draft structure and content of the Basic ANP in order to reconcile it with the ATM Operational Concept, the Global Plan provisions and the performance based approach; c) identify the need for and development of those FASID Tables necessary to support the implementation of a performance-based global air navigation systems; and d) report progress to MIDANPIRG/13.	Carry out a complete review of the MID ANP and FASID	ICAO States Users	Develop new structure, format and content of the MID Basic ANP and FASID	September 2011	
DRAFT DEC. 5/12: DISSOLVE MID-FIT That, MID FIT is dissolved and the matters related to data link activities are considered and followed by the CNS/ATM/IC SG.	Present to MIDANPIRG/12	MIDANPIRG/12 Approval	WP to MIDANPIRG/12	October 2010	
DRAFT CONC. 5/13: MID REGION PBN IMPLEMENTATION STRATEGY AND PLAN That, the revised MID Region PBN Implementation Strategy and Plan be updated as at **Appendix 4E** to the report on Agenda Item 4	Implement Strategy and plan	PBN/GNSS TF States ICAO	Updated Regional Plan	Nov 2010	
DRAFT DEC. 5/14: PBN IMPLEMENTATION TASK LIST That, the PBN Implementation Task List be updated with new task assignment as at **Appendix 4F** to the Report on Agenda Item 4.	Follow up and update of Task List	PBN/GNSS TF States ICAO	PBN/GNNS TF/ 3 Report Updated Task List	Oct. 2010	

CONCLUSIONS AND DECISIONS	FOLLOW-UP	TO BE INITIATED BY	DELIVERABLE	TARGET DATE	REMARKS
DRAFT CONC. 5/15: PBN IMPLEMENTATION PROGRESS REPORT That, for future reporting on the status of PBN implementation, MID States be urged to: a) use the excel sheet as at **Appendix 4I** to the Report on Agenda Item 4 and PBN Implementation Progress Report Template as at **Appendix 4J** to the Report on Agenda Item 4; and b) submit progress reports to ICAO MID Regional Office every six months or whenever major progress is achieved.	Implement Conclusion	States	Updated progress reports	Nov 2010	
DRAFT CONC. 5/16 IMPLEMENTATION OF CONTINUOUS DESCENT OPERATIONS That, recognizing the efficiency and environmental benefits of Continuous Descent Operations, and the need to harmonize these operations in the interest of safety, MID States be encouraged to include implementation of Continuous Descent Operations (CDO) as part of their PBN implementation plans and to implement CDO in accordance with the ICAO CDO Manual.	Implement the Conclusion	ICAO HQ States	CDO Manual PBN Plans CDO procedures published	May 2010 Nov 2010 2014	Manual Completed
DRAFT CONC. 5/17: SUPPORT THE ESTABLISHMENT OF THE GCC VIRTUAL UIR That, concerned MID States be encouraged to support the establishment of the GCC Virtual UIR.	GCC States provide update	ICAO Concerned States	State Letter Project plan	Jan 2011 Feb 2012	
DRAFT DEC. 5/18: REVISED TERMS OF REFERENCE OF THE CNS/ATM/IC SG That, the Terms of Reference and Work Programme of the CNS/ATM/IC Sub-Group be updated as at Appendix 6A to the Report on Agenda Item 6.	Implement work programme	CNS/ATM/IC SG	CNS/ATM/IC SG/6 report	Feb 2012	

CNS/ATM/IC SG/5
Report on Agenda Item 7

REPORT ON AGENDA ITEM 7:   ANY OTHER BUSINESS

7.1   Nothing has been discussed under this Agenda Item.

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