



*International Civil Aviation Organization*

**MIDANPIRG Communication Navigation and Surveillance  
Sub-Group (CNS SG)**

**Fourth Meeting**  
*(Cairo, Egypt, 25 – 27 September 2011)*

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**Agenda Item 7: CNS Performance Objective for MID Region**

**REVIEW AND UPDATE MID REGION  
PERFORMANCE OBJECTIVES RELEVANT TO CNS**

*(Presented by the Secretariat)*

**SUMMARY**

This paper presents briefly the outcome of the MIDANPIRG/12 meeting related to performance monitoring of the air navigation systems in the MID Region. The paper presents also revised CNS Performance Framework Forms (PFFs) for review and update, as necessary.

Action by the meeting is at paragraph 3.

**REFERENCES**

- ANC Report as presented by the ANC Working Group for Strategic Review and Planning (WG/SRP) in AN-WP/8537
- MIDANPIRG/12 Report

**1. INTRODUCTION**

1.1 The Performance-Based Approach (PBA) adheres to strong focus on results through adoption of performance objectives and targets; collaborative decision making driven by the results; and reliance on facts and data for decision making. The assessment of achievements is periodically checked through a performance review, which in turn requires adequate performance measurement and data collection capabilities. In this regard, one of the key aspects of the performance based approach to air navigation planning is the development of performance objectives with related measurable indicators and metrics.

1.2 ICAO in 2008 completed the development of relevant guidance material so as to facilitate the realization of a performance-based Global air navigation system. As a follow-up, MIDANPIRG/12 meeting held in Amman, Jordan 17-21 October 2010, while adopting a regional performance framework invited States to implement a national performance framework for air navigation systems on the basis of ICAO guidance material and aligned with the regional performance objectives, the regional air navigation plan and the Global ATM Operational Concept.

## 2. DISCUSSION

2.1 The meeting may wish to recall that data collection, processing, storage and reporting are fundamental to the performance-based approach and forms part of performance monitoring and management.

2.2 The meeting may wish to recall 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.

2.3 The meeting may wish to note that MIDANPIRG/12 (Amman, Jordan, 17-21 October 2010) developed the following Conclusions related performance monitoring of the air navigation systems in the MID Region:

*CONCLUSION 12/47: 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: Number of States reporting necessary data to the MIDRMA on regular basis and in a timely manner;*

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

*MID Metric 6: Percentage of air navigation deficiencies priority “U” eliminated;*

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

*MID Metric 8: Percentage of en-route 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.*

*CONCLUSION 12/48: DATA COLLECTION FOR MID REGION PERFORMANCE METRICS*

*That, States be invited to:*

- 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.*

2.4 The meeting may wish to noted that ICAO MID Regional Office sent a State letter AN 7/26.1-11/121 dated 24 May 201, requesting MID States to take all necessary measures to implement the provisions of the above MIDANPIRG/12 Conclusions and provide ICAO MID Regional Office, **on regular basis**, with relevant data necessary for performance monitoring of the air navigation systems to support the regional Metrics adopted by MIDANPIRG and to allow the MIDANPIRG subsidiary bodies to monitor the Metrics related to their work programmes and develop associated performance targets. No replies were received from MID State, except an acknowledgment was received.

2.5 In accordance with MIDANPIRG/11 Conclusion 11/70 – “*Regional Performance Framework*”, and taking into consideration the outcome of the different MIDANPIRG subsidiary bodies, the MIDANPIRG/12 meeting reviewed the Regional PFFs related to AGA, AIM, ATM and CNS, as updated by the CNS/ATM/IC SG/5 meeting. It was recognized that the revised Regional PFFs, 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.

2.6 The CNS PFFs as approved by MIDANPIRG/12 are at **Appendix A** to this working paper. The following KPIs/Metrics were endorsed for CNS performance monitoring in the MID Region:

- 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
- number of States participate in the development of the ATN plan
- number of States follow the implementation ATN Plan
- number of States Implemented data links
- number of States Implemented GNSS

- number of report on trails and demo on GNSS
- number of States Participate in the development of MID Surveillance Road map
- number of States sharing Radar;
- number of deficiency Priority “U” related to the CNS field

2.7 The meeting may wish to refer to the resolution on continuing ICAO policies and practices related to operational improvements and environmental protection adopted at the 37th session of the assembly, currently ICAO is engaged in the measurement at global level, of the environment benefits as a result of improvement to the air navigation system. Assisted by IATA, CANSO EUROCONTROL and other international organizations, ICAO developed the ICAO Fuel Savings Estimated Tool (IFSET) and guidance material to help States, in globally endorsed method their fuel savings resulting from national or regional improvement.

2.8 The meeting is informed that an ATM Measurement Task Force (ATM/M TF) will be established and it will be reporting to the CNS/ATM/IC Sub-Group, which is mandated, inter-alia, to monitor the MID Region Performance Metrics and analyze the environmental benefits resulting from the improvements to the air navigation systems. As a first step, it is proposed that the ATM/M TF should be focusing on the following three target projects/operational improvements:

- improved Airport Accessibility;
- improved operations through enhanced En-Route trajectories; and
- improved flexibility and efficiency in Descent Profiles (PBN/CDO).

### 3 ACTION BY THE MEETING

3.1 The meeting is invited to

- a) note the information contained in this working paper;
- b) review and update the Regional CNS PFFs at **Appendix A**;
- c) review and monitor the CNS KPIs/Metrics and propose updates, and agree on targets for improvement; and
- d) urge States to develop/update their National PFFs in order to ensure their alignment with and support to the regional performance objectives.

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APPENDIX A

CNS PERFORMANCE OBJECTIVES

<b>REGIONAL PERFORMANCE OBJECTIVES RADIO SPECTRUM MANAGEMENT AND PROCESSES TO PROTECT THE AERONAUTICAL SPECTRUM</b>	
<b>Benefits</b>	
<b>Environment</b>	<ul style="list-style-type: none"> <li>• Supports ATM for the optimized use of technologies to reduce effect on environment</li> </ul>
<b>Efficiency</b>	<ul style="list-style-type: none"> <li>• proper administration the allocated aviation spectrum</li> <li>• resolve air Space communications</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>• availability of spectrum for safety systems and communication</li> </ul>
<b>KPI</b>	<ul style="list-style-type: none"> <li>• satisfactory results of the WRC-12</li> <li>• current Aviation Frequency spectrum is protected to extent possible</li> <li>• availability Frequency Spectrum for Future Aeronautical utilization</li> <li>• status of deletion of footnotes affecting aviation spectrum</li> </ul>
<b>Proposed Metrics:</b>	<ul style="list-style-type: none"> <li>• number of aviation experts participate in WRC-12</li> <li>• number of States deleted their State name from the foot notes affecting aviation spectrum</li> <li>• number of States coordinated with TRA to support the ICAO position</li> </ul>

<i>Strategy</i> <i>Short term (2010-2012)</i> <i>Medium term (2013 - 2016)</i>				
<b>ATM OC COMPONENTS</b>	<b>TASKS</b>	<b>TIMEFRAME START-END</b>	<b>RESPONSIBILITY</b>	<b>STATUS</b>
AOM, AUO, ATMSDM	<ul style="list-style-type: none"> <li>• implement frequency spectrum management tool</li> </ul>	2008-2011	ICAO States	valid
	<ul style="list-style-type: none"> <li>• harmonize Regional coordination for the protection of the aviation spectrum at WRC-12, and beyond</li> </ul>	2008-2012	ICAO, CNS SG States	valid
	<ul style="list-style-type: none"> <li>• promote the awareness of Participation of Civil Aviation Experts in State's delegation to ITU WRC Meetings</li> </ul>	2007-2012	ICAO CNS SG	valid
	<ul style="list-style-type: none"> <li>• Civil Aviation Spectrum experts attend WRC-12 and be part of their National delegation and inform ICAO MID Office</li> </ul>	Feb 2012	States	valid
	<ul style="list-style-type: none"> <li>• disseminate ICAO policy statements of requirements for aeronautical radio frequency spectrum for WRC-12</li> </ul>	2009-2011	ICAO	valid
	<ul style="list-style-type: none"> <li>• deletion of MID States name from footnote affecting Aviation spectrum and inform ICAO Mid Regional Office</li> </ul>	2007- 2012	States	valid

<i>Strategy</i> <i>Short term (2010-2012)</i> <i>Medium term (2013 - 2016)</i>				
<b>ATM OC COMPONENTS</b>	<b>TASKS</b>	<b>TIMEFRAME START-END</b>	<b>RESPONSIBILITY</b>	<b>STATUS</b>
	<ul style="list-style-type: none"> <li>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</li> </ul>	2007- 2012	States	valid
	<ul style="list-style-type: none"> <li>ICAO attend WRC-12 to provide necessary support to the delegation for the support of the aviation spectrum</li> </ul>	Feb 2012	ICAO	valid
	<ul style="list-style-type: none"> <li>organize workshop for the Regional support to ICAO position</li> </ul>	Sep 2010	ICAO	complete
	<ul style="list-style-type: none"> <li>attend Regional Workshop along with the National TRA</li> </ul>	Sep 2010	States	complete
	<ul style="list-style-type: none"> <li>increase awareness and Ensure frequency Spectrum availability for future aviation needs</li> </ul>	Ongoing	ICAO/States	valid
<b>Linkage to GPIs</b>	GPI-23: Aeronautical radio spectrum			

<b>REGIONAL PERFORMANCE OBJECTIVE IMPROVEMENT OF COMMUNICATION INFRASTRUCTURE RELATED TO ATN IMPLEMENTATION</b>	
<b>Benefits</b>	
<b>Environment</b>	<ul style="list-style-type: none"> <li>Air Ground ATN communication improve air space usage thus benefiting the environment</li> </ul>
<b>Efficiency</b>	<ul style="list-style-type: none"> <li>improvement in operational efficiency</li> <li>better coordination using more reliable networks</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>improved safety by having related information on time</li> </ul>
<b>KPI</b>	<ul style="list-style-type: none"> <li>status of the development of the Regional Plan</li> <li>status of the development of the test procedures for the</li> </ul>
<b>Proposed Metrics:</b>	<ul style="list-style-type: none"> <li>number of States participate in the development of the plan</li> <li>number of States follow the implementation Plan</li> </ul>

<i>Strategy</i> <i>Short term (2010-2012)</i> <i>Medium term (2013-2016)</i>				
<b>ATM OC COMPONENTS</b>	<b>TASKS</b>	<b>TIMEFRAME START-END</b>	<b>RESPONSIBILITY</b>	<b>STATUS</b>
AO, TS, CM, AUO	<ul style="list-style-type: none"> <li>develop Regional ATN Planning document</li> </ul>	2008-2012	ATN/IPS WG	valid
	<ul style="list-style-type: none"> <li>review of ATN implementation issues and develop coordinated solutions</li> </ul>	2009-2012	ATN/IPS WG and CNS SG	valid
	<ul style="list-style-type: none"> <li>develop conformance procedures and check list for AMHS</li> </ul>	2009-2011	ATN/IPS WG and CNS SG	Completed
	<ul style="list-style-type: none"> <li>develop information Security policy and Guidance</li> </ul>	2009-2011	ATN/IPS WG and CNS SG	valid
	<ul style="list-style-type: none"> <li>coordinate and monitor implementation to be harmonized and interoperable globally</li> </ul>	On going	ATN/ IPS WG and CNS SG	valid
	<ul style="list-style-type: none"> <li>implement agreed G-G ATN application and report to ICAO MID Regional Office</li> </ul>	On going	States	valid
	<ul style="list-style-type: none"> <li>monitor and report deficiencies to support the agreed MID METRICS</li> </ul>	2011-2012	ATN/IPS WG and CNS SG	Valid
	<ul style="list-style-type: none"> <li>support other MIDANPIRG Subsidiary bodies for CNS infrastructure requirement</li> </ul>	2008-2016	ATN/IPS WG and CNS SG	Valid

<b>REGIONAL PERFORMANCE OBJECTIVES  IMPLEMENTING ADVANCED TECHNOLOGIES TO SUPPORT DATA LINK SERVICES</b>				
<b>Benefits</b>				
<b>Efficiency</b>	<ul style="list-style-type: none"> <li>• improvement in operational efficiency</li> <li>• better coordination</li> <li>• efficient use of frequency spectrum</li> </ul>			
<b>Safety</b>	<ul style="list-style-type: none"> <li>• improved safety</li> </ul>			
<b>KPI</b>	<ul style="list-style-type: none"> <li>• status of infrastructure survey</li> <li>• status of data links implementation</li> </ul>			
<b>Proposed Metric</b>	<ul style="list-style-type: none"> <li>• number of States reply to infrastructure survey</li> <li>• number of States Implemented data links</li> </ul>			
<i>Strategy</i> <i>Short term (2010-2012)</i> <i>Medium term ( 2013-2016)</i>				
<b>ATM OC COMPONENTS</b>	<b>TASKS</b>	<b>TIMEFRAME START-END</b>	<b>RESPONSIBILITY</b>	<b>STATUS</b>
AO, TS, CM, AUO DCB, ATMSDM	<ul style="list-style-type: none"> <li>• identify requirement and harmonize implementation plan to ensure interoperability between States and Regions</li> </ul>	2010-2011	CNS/ATM/IC SG CNS SG	valid
	<ul style="list-style-type: none"> <li>• technical audit of available supporting infrastructure</li> </ul>	2010-2011	CNSATM/IC SG	valid
	<ul style="list-style-type: none"> <li>• implement available technologies that bring immediate benefits (D-ATIS, CPDLC, ADS-C, ADS-B) and inform ICAO MID Regional Office</li> </ul>	2011-2012	States , user	valid
	<ul style="list-style-type: none"> <li>• monitor and report deficiencies to support agreed MID Metrics</li> </ul>	2010-2011	All MIDANPIRG Subsidiary bodies	valid
<b>Linkage to GPIs</b>	GPI-22: Communications Infrastructure GPI-17: Data Link Application			



<b>REGIONAL PERFORMANCE OBJECTIVES IMPLEMENTATION OF GNSS IN THE MID REGION</b>				
<b>Benefits</b>				
<b>Environment</b>	<ul style="list-style-type: none"> <li>• supports the implementation of PBN which in turn bring benefits to environment</li> </ul>			
<b>Efficiency</b>	<ul style="list-style-type: none"> <li>• optimal use of advanced technologies</li> <li>• optimization of infrastructure</li> <li>• operational efficiency</li> </ul>			
<b>Safety</b>	<ul style="list-style-type: none"> <li>• reduced navigational errors</li> <li>• additional navigational capabilities brings more safety</li> </ul>			
<b>KPI</b>	<ul style="list-style-type: none"> <li>• alignment of GNSS Implementation strategy with PBN</li> <li>• status of Implementation of GNSS</li> </ul>			
<b>Proposed Metrics:</b>	<ul style="list-style-type: none"> <li>• number of States Implemented GNSS</li> <li>• number of report on trails and demo on GNSS</li> </ul>			
<i>Strategy Short term (2010-2012) Medium term (2013-2016)</i>				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AO, TS, CM, AUO AOM,	<ul style="list-style-type: none"> <li>• carry out GNSS trials, demonstrations and test beds; inform ICAO MID Regional Office</li> </ul>	2008-2012	States, ICAO	valid
	<ul style="list-style-type: none"> <li>• determine the most appropriate augmentation system for the MID Region</li> </ul>	2009-2012	PBN/GNSS TF CNS/ATM/IC CNS SG	valid
	<ul style="list-style-type: none"> <li>• define required infrastructure according to regional PBN implementation plan</li> </ul>	2010-2011	PBN/GNSS TF CNS/ATM/IC CNS SG	valid
	<ul style="list-style-type: none"> <li>• implement required infrastructure and/or procedures and inform ICAO MID Regional Office</li> </ul>	2009-2011	States	valid
	<ul style="list-style-type: none"> <li>• monitor implementation progress</li> </ul>	2009-2011	PBN/GNSS TF	valid
	<ul style="list-style-type: none"> <li>• monitor and report deficiencies to support agreed MID METRICS</li> </ul>	2010-2011	All MIDANPIRG Subsidiary bodies	valid
<b>Linkage to GPIs</b>	GPI-21: Navigation Systems GPI-9: Situational Awareness			

<b>REGIONAL PERFORMANCE OBJECTIVES  IMPROVE SURVEILLANCE INFRASTRUCTURE/ EXCHANGE OF SURVEILLANCE DATA</b>	
<b>Benefits</b>	
<b>Environment</b>	<ul style="list-style-type: none"> <li>Sharing surveillance data will benefit the user for optimum flight routes bringing reductions in fuel consumption and CO<sub>2</sub> emission</li> </ul>
<b>Efficiency</b>	<ul style="list-style-type: none"> <li>optimal use of advanced technologies</li> <li>optimization of infrastructure</li> <li>operational Efficiency</li> <li>ability of aircraft to conduct flight more closely to preferred trajectories</li> <li>increase in airspace capacity</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>reduced separation</li> <li>reduce controller work load</li> </ul>
<b>KPI</b>	<ul style="list-style-type: none"> <li>status of the surveillance roadmap</li> <li>status of surveillance data sharing</li> </ul>
<b>Proposed Metrics:</b>	<ul style="list-style-type: none"> <li>number of States Participate in the development of MID Surveillance Road map</li> <li>number of States sharing Radar</li> </ul>

<i>Strategy</i> <i>Short term (2010-2012)</i> <i>Medium term (2013 - 2016)</i>				
<b>ATM OC COMPONENTS</b>	<b>TASKS</b>	<b>TIMEFRAME START-END</b>	<b>RESPONSIBILITY</b>	<b>STATUS</b>
AOM, AUO, ATMSDM	<ul style="list-style-type: none"> <li>prepare Plan for introduction of new surveillance systems</li> </ul>	2011-2012	States, ICAO PBN/GNSS TF CNS/ATM/IC CNS SG	valid
	<ul style="list-style-type: none"> <li>determine the most appropriate surveillance for each States supporting the PBN regional Plan</li> </ul>	2009-2011	States CNS/ATM/IC	valid
	<ul style="list-style-type: none"> <li>organize workshop for developing MID surveillance roadmap</li> </ul>	2009-2011	ICAO	valid
	<ul style="list-style-type: none"> <li>MID States participate actively in the workshop to reach its objective</li> </ul>	2011	States	valid
	<ul style="list-style-type: none"> <li>follow up on the Regional Surveillance systems in MID Regional ANP and FASID</li> </ul>	2008-2011	CNS SG	valid
	<ul style="list-style-type: none"> <li>monitor and report deficiencies In order to support agreed MID Metrics</li> </ul>	2010-2011	ATN/IPS WG and CNS SG	valid

<i>Strategy</i> <i>Short term (2010-2012)</i> <i>Medium term (2013 - 2016)</i>				
<b>ATM OC COMPONENTS</b>	<b>TASKS</b>	<b>TIMEFRAME START-END</b>	<b>RESPONSIBILITY</b>	<b>STATUS</b>
	<ul style="list-style-type: none"> <li>No objection letter between states concerned for sharing Surveillance data</li> </ul>	2010-2012	States	valid
	<ul style="list-style-type: none"> <li>identify format of RDPS Data</li> </ul>	2010-2012	States / CNS SG and CNS/ATM/IC	Valid
	<ul style="list-style-type: none"> <li>follow up on the Regional Surveillance systems in MID Regional ANP and FASID</li> </ul>	2008-2011	CNS SG	valid
	<ul style="list-style-type: none"> <li>monitor and report deficiencies In order to support agreed MID Metrics</li> </ul>	2010-2011	ATN/IPS WG and CNS SG	valid
<b>Linkage to GPIs</b>	GPI-9: Situational Awareness			