



ICAO

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North American, Central American and Caribbean Office

WORKING PAPER

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**Fourth North American, Central American and Caribbean Working Group Meeting
(NACC/WG/4)**

Ottawa, Canada, 24 to 28 March 2014

Agenda Item 3: Follow-up on the NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (NAM/CAR RPBANIP) Progress
3.5.1 Review of regional air navigation performance indicators and metrics/ICAO Dashboard

REVIEW OF AIR NAVIGATION PERFORMANCE INDICATORS AND METRICS/ICAO REGIONAL PERFORMANCE DASHBOARD

(Presented by the Secretariat)

EXECUTIVE SUMMARY	
This working paper presents the ICAO Air Navigation Regional Dashboards to be implemented for monitoring and reporting the progress of air navigation implementation in each ICAO Region.	
Action:	The suggested action is presented in Section 3
<i>Strategic Objectives:</i>	<ul style="list-style-type: none">• Safety• Air Navigation Capacity and Efficiency• Environmental Protection
<i>References:</i>	<ul style="list-style-type: none">• PIRG-RASG Global Coordination Meeting, Montreal, Canada, 19 March 2013• First NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/1), Mexico City, Mexico, 29 July to 1 August 2013• Safety and Air Navigation Directors of the CAR Region Meeting (CAR/DCA/OPSAN), Mexico City, México, 18 to 19 February 2014

1. Introduction

1.1 With the adoption of the performance-based approach to air navigation planning and implementation as established in the NAM/CAR Regional Performance Based Air Navigation Implementation Plan (NAM/CAR RPBANIP), performance and implementation monitoring has been conducted through the different regional implementation working groups and reported in the respective North American, Central American and Caribbean Directors of Civil Aviation Meetings. Additionally, NAM/CAR States and Territories have been developing their performance-based National Plans to support their air navigation infrastructure/service planning in accordance with the agreements, milestones and regional tasks established in the RPBANIP.

1.2 As part of performance-based implementation planning and establishment of a global/regional exchange of information to harmonize implementation, ICAO proposed air navigation performance measurement, and a monitoring and reporting strategy with the adoption of the Aviation System Block Upgrade (ASBU) methodology.

1.3 A set of performance indicators and metrics based on the ASBU Block 0 modules have been adopted by the NACC Air Navigation Implementation Working Group (ANI/WG), as well as the corresponding Air Navigation Report Forms (ANRF) as reflected in the RPBANIP.

2. Discussion

Data Collection

2.1 *Measurement Strategy:* In 2009, all Planning and Implementation Regional Groups (PIRGs) adopted a performance-based approach to air navigation planning and implementation. As a result of the ALLPIRG Meeting in 2013, the PIRGs have progressively identified and agreed on a set of initial regional performance indicators and supporting metrics. As experienced in the working group meetings, where air navigation implementation progress and operational benefits are described, States have recognized that a measurement strategy comprised of data compilation, processing, storage and reporting for identified regional performance metrics is fundamental to performance-based success. This performance measurement strategy will enable global correlation of status and expectations.

2.2 In order to support the on-going task of collecting, measuring and reporting data, GREPECAS considered these activities to be covered by the Programmes and Projects Review Committee (PPRC). In the case of the NAM/CAR Regions, the PPRC will be provided with data from the NAM/CAR working groups such as the ANI/WG and the Eastern Caribbean Civil Aviation Technical Group (E/CAR/CATG).

2.3 The ICAO Regional Office website, through a Geographical Information System (GIS), will provide implementation status through dynamic and interactive charts. This system will generate ad hoc reports and enable easy transferal of the dataset into the Regional Performance Dashboard and annual Global Air Navigation Report.

2.4 Additionally, a Memorandum of Understanding has been established with industry to obtain international aeronautical information related to the implementation status of air navigation infrastructure. This information will assist with development of the annual Global Air Navigation Report and data for the Regional Performance Dashboard.

2.5 The initial set of metrics for the Air Navigation Dashboard and its source of data were identified as follows:

1. Performance-based Navigation (PBN) Approach (ICAO Headquarters (HQ) data)

Percentage of international aerodrome runways (as defined in Doc 7910 – *Location Indicators/Aeronautical Information Publication (AIP)*) with Approach Procedure with Vertical Guidance (APV)

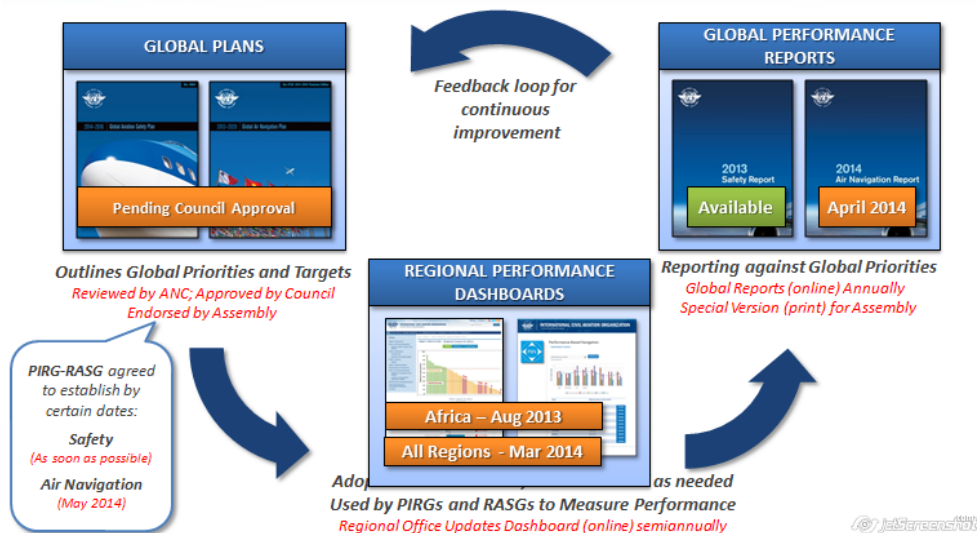
2. **Air Traffic Flow Management (ATFM) (data from Regional Offices)**
Percentage of Flight Information Region (FIRs) within which all Area Control Centre (ACCs) utilize ATFM measures
3. **Aeronautical Information Management (AIM) (data from Regional Offices)**
Implementation status of selective steps
4. **Ground-Ground Digital Coordination/Transfer (data from Regional Offices)**
Percentage of FIRs within which all applicable ACCs have implemented at least one interface to use Air Traffic Services inter-facility data communication (AIDC)/Online Data Interchange (OLDI) with neighbouring ACCs
5. **Environmental Benefit (ICAO HQ data)**
Percentage of fuel burn reduction

Regional Performance Dashboard

2.6 *Dataset and Prototype:* Transparency and sharing of information are fundamental to a safe and efficient global air transportation system. Consistent with this principle, ICAO is planning to introduce regional “Performance Dashboard” homepages for every ICAO Regional Office public website. These dashboards will illustrate regional implementation status related to the ICAO Strategic Objectives for the period 2014-2016, which were approved by the 38th Session of the ICAO Assembly in September 2013. They will show targeted performance at the regional level and will initially contain graphics and maps with planned expansion to include the ASBU Block 0 Modules. This new interactive online system has been in Beta mode for the ICAO west and east Africa regions since August 2013 and become active for the remaining ICAO regions in March 2014; updated semi-annually.

2.7 The ICAO Assembly in its 38th Session, formulated Resolution 38-2 - *ICAO global planning for safety and air navigation*, by which recognizes the importance of effective implementation of regional and national plans and initiatives based on the global frameworks, and progress in improving the global safety, capacity and efficiency of civil aviation which is best achieved through a cooperative, collaborative and coordinated approach in partnership with all stakeholders under the leadership of ICAO; and so:

- invites PIRGs to use ICAO standardized tools or adequate regional tools to monitor and, in collaboration with ICAO, analyse the implementation status of air navigation systems;
- instructs the Council to publish the results of the analysis on the regional performance dashboards and in an annual global air navigation report including, as a minimum, the key implementation priorities and accrued environmental benefits estimated using CAEP-recognized methods; and
- Urges States that are developing new generation plans for their own air navigation modernization to coordinate with ICAO and align their plans so as to ensure global compatibility and harmonization.



2.8 The live version of the dashboard is available at the following link (Prototype): <http://www.icao.int/safety/pages/regional-targets.aspx?region=Africa>

ANI/WG Monitoring and Reporting

2.9 Based on the ASBU ANRF for implementation monitoring, as agreed by States/Territories and international organizations at the ANIWG/1 Meeting, a number of metrics per Key Performance Area (KPA) have been included in the RPBANIP to serve as measurements of implementation benefit(s). States will collect the necessary data for the chosen metrics. These metrics are in line with the regional metrics and targets adopted by the NAM/CAR Regions as established in Conclusion ANI/WG/1/14 - *Adoption of a Performance Monitoring and Measuring Programme in the NAM/CAR Regions*.

2.10 This collection of data and the information gathered by ICAO headquarters will feed the ICAO Regional Performance Dashboards and the Annual Air Navigation Report.

CAR/DCA/OPSAN Meeting Results

2.11 The CAR/DCA/OPSAN Meeting was informed of the existing Air Navigation Targets as agreed in the RPBANIP as presented in the **Appendix** to this paper. The CAR/DCA/OPSAN Meeting, following the agreed targets made by the ANI/WG and the initial set of metrics agreed by the ALLPIRG Meeting in 2013, agreed on having in the Port of Spain Declaration the inclusion of 5 Air Navigation targets following the same metric definition and consistent targets to the ICAO Regional Performance Dashboards.

2.12 The CAR/DCA/OPSAN Meeting supported the need for assisting the ICAO NACC Regional Office by providing the required information/data for the performance metrics to be included in the ICAO NACC Regional Performance Dashboard. Similarly, the Directors of Safety and Air Navigation supported the implementation working groups like the ANI/WG and the NACC/WG with data collection for submission of air navigation metrics

3. Suggested Actions

3.1 That the Meeting:

- a) note the plan for the online Regional Performance Dashboard that is scheduled for debut in March 2014 and the annual Global Air Navigation Report in April 2014; and
 - b) propose and assign actions to the corresponding Task Forces and States in support of the ICAO NACC Regional Office for collecting the required information/data for the performance metrics to be included in the ICAO NACC Regional Performance Dashboard.
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APPENDIX
RPBANIP NAM/CAR AIR NAVIGATION TARGETS

Element	Targets
1. PBN implementation	<ul style="list-style-type: none"> • 80% of international aerodromes to have PBN STARs implemented by Dec.2016 • 60% of international aerodromes to have PBN SIDs implemented by Dec.2016 • 50% of PBN routes implemented by Dec. 2018
2. CDO	<ul style="list-style-type: none"> • 50% of international aerodromes to have Continuous Descent Operations (CDOs) implemented by Dec. 2016
3. CCO	<ul style="list-style-type: none"> • 60% of international aerodromes to have Continuous Climb Operations (CCOs) implemented by Dec. 2016
4. ATFM	<ul style="list-style-type: none"> • 100% of FIR ACCs to utilize ATFM measures by Dec. 2018
5. AIM Transition	<ul style="list-style-type: none"> • 85% of States QMS certified by Dec. 2016 • 10% of States to have e-TOD implemented by Dec. 2018 • 40% of States to have AIXM implemented by Dec. 2018 • 45% of States to have e-AIP implemented by Dec. 2018 • 35% of States to have digital NOTAM implemented by Dec. 2018
6. AMHS Implementation Interconnection	<ul style="list-style-type: none"> • 4 States to have Air Traffic Services Message Handling Services (AMHS) interconnected with other AMHS by December 2014
7. ATS Interfacility Data Communications (AIDC) Exchange	<ul style="list-style-type: none"> • 50% of FIR applicable ACCs to have implemented at least one interface to use AIDC/OLDI with neighbouring ACCs by December 2016
8. Implementation of ATN infrastructure	<ul style="list-style-type: none"> • 70% of ATN router structure implemented by June 2016 • 100% MEVA III IP Network implementation by August 2015
9. Airspace Planning	100% PBN airspace planning by Dec. 2018
10. Flexible Use Airspace	50% of civil-military segregated airspaces available for civil operations by Dec. 2016
11. AMAN And Time-Based Metering	10% of international aerodromes with AMAN and time-based metering by Dec. 2016
12. Departure Management (DMAN)	10% of international aerodromes with DMAN by Dec. 2016
13. Movement Area Capacity Optimization	20% of international aerodromes with airport ML1 capacity calculated by Dec. 2016
14. ADS-C Over Oceanic and Remote Areas	80% of FIRs to have ADS-C implemented by service providers by Dec. 2016
15. CPDLC	80% of oceanic/remote area FIRs to have CPDLC implemented by service providers by June 2018

Element	Targets
16. APV with Baro VNAV	80% of international aerodromes to have instrument runways with APV with Baro VNAV procedures implemented by service providers and users by Dec. 2016
17. APV with SBAS (WAAS)	20% of international aerodromes to have instrument runways provided with APV with SBAS/WAAS procedures implemented by service providers and users by Dec. 2018
18. APV with GBAS	20% of international aerodromes to have instrument runways provided with APV GBAS procedures implemented by service providers by Dec. 2018
19. LNAV	60% of international aerodromes to have instrument runways with LNAV procedures implemented by service providers and users by Dec. 2016 – as per Assembly Resolution A37-11
20. Surveillance System for Ground Surface Movement (PSR, SSR, ADS B or Multilateration)	30% of international aerodromes to have SMR/SSR Mode S/ADS-B Multilateration for ground surface movement implemented by States/airport operators by June 2018
21. On-board Surveillance Systems (transponder with ADS-B capacity)	20% of aircrafts to have on-board surveillance systems (transponder with ADS B capacity) installed by aircraft operators by June 2018
22. Vehicle Surveillance Systems	20% of vehicles at international aerodromes to have cooperative transponder systems installed by vehicle operators at selected airports by June 2018
23. Visual Aids for Navigation	70% of international aerodromes in compliance with visual aid requirements as per Annex 14 by Dec. 2015
24. Aerodrome Bird/Wildlife Organization and Control Programme	70% of international airports to have an aerodrome bird/wildlife organization and control programme implemented by Dec. 2018
25. Airport – CDM	60% of international aerodromes to have Airport-CDM implemented by Dec. 2018
26. Aerodrome Certification	48% of international aerodromes to be certified by Dec. 2016
27. Heliport Operations	30% of heliports to have operational approval by Dec. 2018
28. Implementation of ADS-B	30% of selected international aerodromes to have ADS-B implemented by Dec. 2018
29. Implementation of Multilateration	80% of selected international airports to have a multilateration system implemented by June 2018
30. Automation System (presentation)	70% of ACCs to have an automation system implemented by Dec. 2017
31. ACAS II (TCAS Version 7.1)	10% of aircrafts equipped with ACAS II (TCAS Version 7.1) by Dec. 2018
32. Short-term Conflict Alert Implementation (STCA)	80% of ATS units to have ground-based safety nets short term Conflict Alerts (STCA) implemented by Dec. 2014
33. Area Proximity Warning (APW)/ Minimum Safe Altitude Warning (MSAW)	70% of ATS units to have ground-based safety nets (APW/MSAW) implemented by Dec. 2015

Element	Targets
34. Medium-term Conflict Alert (MTCA)	80% of ATS units to have ground-based safety nets (MTCA) implemented by Dec. 2016
35. WAFS	100% of States to have WAFS Internet File Service (WIFS) implemented by Dec.2014
36. IAVW	70% of MWOs to have IAVW procedures implemented by Dec. 2014 - Volcanic Ash Advisory Centre, Washington USA
37. Tropical Cyclone Watch	100% of MWOs to have tropical cyclone watch procedures implemented by Dec. 2014 - Tropical Cyclone Advisory Centre, Miami, USA
38. Aerodrome Warnings	50% of international aerodromes/AMOs to have aerodrome warnings implemented by Dec. 2014
39. Wind Shear Warnings and Alerts	20% of international aerodromes/AMOs to have wind shear warning procedures implemented by MET provider services by Dec. 2015
40. SIGMET	90% of international aerodromes/MWOs to have SIGMET procedures implemented by MET provider services by Dec. 2014