International Civil Aviation Organization
North American, Central American and Caribbean Office

WORKING PAPER

**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**
3.3   ANI/WG and other regional group progress reports

ANI/WG PBN IMPLEMENTATION TASK FORCE PROGRESS REPORT

(Presented by ANI/WG PBN Task Force Rapporteur)

EXECUTIVE SUMMARY
This working paper presents the progress achieved by the PBN Task Force since its creation in the ANI/WG/1 Meeting. Following the work programme of the Task Force and its deliverables, the note includes the results for these deliverables and recommendation for improving the Task Force function and coordination.

Action:	The suggested action is presented in Section 3
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency
References:	• NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (RPBANIP) • First NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/1), Mexico City, Mexico, 29 July to 1 August 2013 • PBN TF teleconferences

1.   Introduction

1.1   During the ANI/WG/1 Meeting and based on the ANI/WG ToRs and Work Programme, the Meeting considered the existence of the various existing Ad hoc Groups that were working in support of the implementation working groups, such as the ADS-B Ad hoc Group, the AMHS Implementation Group, etc., and considered necessary to group them under the ANI/WG structure, including any other specific implementation task group, with the aim of providing continuity. In this regard, seven topics that shall be developed through Task Forces under the ANI/WG were identified.

1.2   An initial Terms of Reference (ToRs), preliminary membership and Rapporteurs for each Task Force were agreed in the ANI/WG/01 Meeting. In this regard Decision ANI/WG/1/3 *Terms of Reference, Work Programme and Membership of the ANI/WG Task Forces* were formulated.

2.   PBN TF Progress and results

Review of ToRs and final work programme

2.1   During the first PBN Taskforce teleconference (Sep 13ᵗʰ 2013), a revision to the initial Terms of Reference (**Appendix A**) was agreed upon and there were several discussions relating to the content of the work programme.

2.2   During the next two teleconferences, the members deliberated on and finalised the work programme. The tasks were developed in order to:

- Identify deficiencies and constraints with PBN implementation, and to propose solutions that would facilitate resolution of such problems
- Develop and review material needed to meet the ICAO initiative on the introduction of Approach Procedure with Vertical Guidance (APV) approaches including Barometric Vertical Navigation (Baro-VNAV) and Required Navigation Performance-Authorization Required (RNP-AR) as part of the PBN initiative
- Assist with coordination of PBN routes with adjacent regions to ensure Global harmonization

2.3   The Work programme (**Appendix B**) was amended on February 14ᵗʰ 2014 to reflect tasks already completed and, due to a minor delay in developing the PBN Survey Form (**Appendix C**), to adjust timelines of some of the affected tasks.

Activities carried out

2.4   During the teleconferences, the taskforce (TF) has had several discussions on the issues relating to PBN implementation within the NACC Region. It was a common consensus that although many States/Territories/International Organizations (S/T/O's) were on their way to meeting the mandates of ICAO Assembly Resolution A37 – 11, with regard to PBN approaches with APV, there are still some States which are having difficulties. It was also voiced that some of the PBN approaches that have been implemented are not being used by Operators. The TF proposes collaborate with States, Territories and International Organizations such as IATA and CANSO in order to find a solution to this issue.

2.5   In order to determine an accurate status of PBN implementation within the Region as well as determine roadblocks, the TF developed a survey form (Appendix C) which has been promulgated by the NACC Regional Office. The responses from (S/T/O's) will be analysed and a report will be provided to the NACC RO showing common implementation issues, with recommendations for solutions.

2.6   Lack of PBN training has been identified by many TF members as a major impediment to progress. The high cost of training courses as well as travel and accommodation makes it difficult for some (S/T/O's) to ensure that their personnel are adequately trained. The TF agreed that the ICAO website provided an excellent resource for basic PBN training. However, technically intensive areas such as Procedure Design and Validation, Terminal Airspace Design, Route restructuring, Conducting Safety Assessments etc., require a more detailed training program. The task force will work with ICAO to explore the possibilities of adding more advanced PBN training to the web resource.

2.7   The TF recognises the issue with regard to harmonization of routes across the various Regions. PBN implementation is Global and requires coordination with adjoining Regional Offices. The TF will work through the NACC RO to ensure that the CDM process is applied to route restructuring and will also provide assistance with regard to updating of LOA's. A list of proposed routes will be tabulated and provided to the ICAO NACC RO.

2.8   PBN is a gate to gate concept and is not restricted only to the implementation of PBN approaches or high level Area navigation/Required Navigation Performance (RNAV/RNP) routes. The integration of approach and en-route takes place in the Terminal airspace. Terminal Airspace Design is a high priority within the NACC Region and an ICAO/CANSO Regional Workshop on Airspace Concept Redesign and Operational Approval of Performance - Based Navigation (PBN) was held in Mexico City from 25 to 29 November 2013. General reports were that while the workshop was informative, participants were expecting more hands – on training. The TF will support ICAO to review and complement the necessary information/activities for the next PBN related event for more hands-on exercises and implementation discussion and activities.

2.9   Collaborative Decision Making (CDM) is an area which many (S/T/O's) have not engaged in regarding PBN planning. This is a critical step in the planning and design process of airspace, routes and approaches, and the TF is working to assist (S/T/O's) to incorporate this important part of the process into their implementation plan.

Deliverables and results

2.10   Drawing reference to the amended work programme, (Appendix B), tasks (1), (2), (3) and (15) have been completed. There was a delay in completing task (3), which affected the timelines of tasks (4) and (5) respectively. Work continues in the other tasks.

2.11   The PBN taskforce suggests that:

- A recommendation is made to the Directors of Civil Aviation to ensure that a high level of emphasis is placed on PBN training and associated disciplines, such as Airspace Design, Procedure Design, Operational Approvals, Safety/Risk Assessments, Performance Metering etc. and that States, Territories and International Organizations should take advantage of the many programs being offered by ICAO.
- States, Territories and International Organizations recognize the need to engage in CDM in all phases of PBN implementation.
- The ICAO NACC Regional Office in collaboration with the PBN TF, explore the possibility of including more advanced PBN training courses to the on-line training programs.

2.12   One of the issues recognized by the rapporteur is the lack of participation/contribution by some of the members of the TF. At the working group meeting, it is suggested that the nomination list be amended/updated by (S/T/O's) to ensure that the membership list is valid and that persons recognise the responsibilities associated with being a TF member.

3. **Suggested Actions**

3.1 The Meeting is invited to:

- a) Review and approve the PBN TF´s ToR and work programme; completing those members that have not designated their persons (Haiti and Mexico)
- b) Evaluate the progress of the PBN TF;
- c) Approve the recommendations and improvements suggested by the TF; and
- d) Propose any other action or task as deem necessary

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TASK FORCE ON IMPLEMENTATION OF PERFORMANCE-BASED NAVIGATION (PBN) AIRSPACE CONCEPT

1. *Background*

1.1   During the first ANI/WG meeting, a PBN Implementation Task Force was formed in order to streamline related air navigation implementation activities. This Task Force shall carry out specific studies to support Performance-Based Navigation (PBN) implementation in the NAM/CAR Regions in accordance with the NAM/CAR RPBANIP, as well as update and report progress to the ANI/WG based on the action plan for these tasks.

2. *Responsibilities*

The Task Force is responsible for:

a)   Work Programme Management

b)   Continued refinement and ongoing review of the NAMCAR PBN Implementation Plan and monitoring and reporting on its application in the Regions

c)   Assisting States with optimizing the Air Traffic Services (ATS) route structure within the NAM/CAR Regions based on PBN Airspace Concept implementation

d)   Carrying out specific studies, developing guidance material and organizing workshops and seminars to assist States with Area Navigation/Required Navigation Performance (RNAV/RNP) implementation in the en-route, terminal, and approach flight phases, taking into account the PBN concept according to the ICAO Strategic Objectives and Global Plan Initiatives (GPIs)

e)   Assisting States with preparation and review of their PBN Implementation Plan to ensure regional harmonization and possible inclusion in ICAO regional documentation

f)   Identifying deficiencies and constraints with PBN implementation, and propose solutions that would facilitate resolution of such problems

g)   Developing and reviewing material needed to meet the ICAO initiative on the introduction of Approach Procedure with Vertical Guidance (APV) approaches including Barometric Vertical Navigation (Baro-VNAV) and Required Navigation Performance-Authorization Required (RNP-AR) as part of the PBN initiative

h)   Addressing other regional PBN implementation issues, including those related to safety management

i)   Reviewing activities of PBN Task Forces from other regions, including their PBN implementation action plans, to ensure harmonization and avoid duplication of work

APPENDIX A

3. Working Methods

The Task Force will:

a) Present its work programme containing activities in terms of objectives, responsibilities, deliverables and timelines
b) Avoid duplicating work within the ANI/WG and maintain close coordination among the existing entities to optimize use of available resources and experience
c) Designate, as necessary, ad hoc groups to work on specific topics and activities and organize clearly defined tasks and activities
d) Coordinate tasks to maximize efficiency and reduce costs via electronic means including emails, telephone and teleconference calls, and convene meetings as necessary
e) Report on and coordinate the progress of assigned tasks to the ANI/WG

4. **Work Programme** - will be included

5. **Membership**:

Task Force Member-	State/T/IO	email
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APPENDIX/APÉNDICE B

NACC ANI/WG PBN Taskforce Work Programme 2013-2015

Task Name/Area	Deliverables	START DATE (DD/MM/YY)	END DATE (DD/MM/YY)	PERCENTAGE COMPLETED (%)	RESPONSIBLE	REMARKS
IMPLEMENTATION OF PERFORMANCE BASED NAVIGATION (PBN)						
1. Establish a Regional PBN Task Force to assist with implementation	NACC PBN TASKFORCE to aid with facilitating PBN implementation as identified in NAMCAR RPBANIP	July 2013	28/Oct/13	100%	ICAO ICAO NACC/States Territories/International Organizations	COMPLETED
2. Conduct a review of NAM/CAR RPBANIP RPO (1) and make suggestions/recommendations to ICAO (if required)	TASKFORCE ensures that PBN initiatives within the RPBANIP are current/valid and cater to the needs of the operations within the region	July 2013	15/Dec/2013	100%	NAM/CAR PBN TASKFORCE	COMPLETED
3. Develop and promulgate a survey form to all States within the region to establish updated PBN implementation status and also to identify roadblocks	Current status of PBN implementation within the region is known. Roadblocks are identified, reported to ICAO NACC Regional Office and the TASKFORCE will work with ICAO and the States involved to develop plan of action to solve the problems	1/Nov/2013	15/Dec/2013 Target date exceeded	100%	NAM/CAR PBN TASKFORCE/ ICAO NACC	COMPLETED February 28th 2014 Survey Form promulgated by NACC Regional Office
4. Report Regional PBN Implementation status to ICAO NACC Office with recommendations on solving implementation issues		1/Apr/ 2014	30/Jun/ 2014	Not started	NAM/CAR PBN TASKFORCE Rapporteur	VALID
5. Develop plan of action to assist those States which have not already developed a PBN implementation plan	All States within the NAMCAR region will have up-to-date plans in a	1/April/ 2014	30/Dec/14	Not started	NAM/CAR PBN TASKFORCE/ ICAO NACC	VALID

NACC ANI/WG PBN Taskforce Work Programme 2013-2015

Task Name/Area	Deliverables	START DATE (DD/MM/YY)	END DATE (DD/MM/YY)	PERCENTAGE COMPLETED (%)	RESPONSIBLE	REMARKS
	Standardized format which are aligned with the NAMCAR RPBANIP					
6. Assist states with establishing CDM with stakeholders	Ensure harmonization of procedures and reduce implementation obstacles	1/Jan/14	30/Dec/14	20%	NAM/CAR PBN TASKFORCE	ON-GOING
7. Based on implementation of FPL 2012, conduct a study on whether automated systems in use within the region provide ATCOs with PBN status of flights	Report identifying if the information displayed to ATCOs on their situational displays is sufficient	1/Jan/14	30/Dec/14	30%	NAM/CAR PBN TASKFORCE	ON-GOING
8. Request from States/Territories an **updated** list of PBN Capabilities of aircraft operating in their region/airspace (in collaboration with IATA)	Valid database with up-to-date information on PBN capabilities of **all** aircraft within the region	1/Jun/14	30/Jun/14	Not started	NAM/CAR PBN TASKFORCE/ ICAO NACC	VALID
9. Work with States/Territories to utilize Safety Assessment methods recommended by ICAO in implementing PBN procedures	A safety assessment model/template for all States within the region to utilize	15/Jan/14	31/DEC/14	10%	NAM/CAR PBN TASKFORCE	ON-GOING
10. Assist States within region with modifying LOAs	Templates for States to follow in developing LOA's Assistance from the TASKFORCE, through ICAO, in collaborating with other regions (E.g	1 January 2014	30 Dec/2014	15%	NAM/CAR PBN TASKFORCE/ICAO NACC	ON-GOING

APPENDIX/APÉNDICE B

NACC ANI/WG PBN Taskforce Work Programme 2013-2015

Task Name/Area	Deliverables	START DATE (DD/MM/YY)	END DATE (DD/MM/YY)	PERCENTAGE COMPLETED (%)	RESPONSIBLE	REMARKS
SAM, NAT, AFI etc.)						
11. Develop PBN proposal for amendment to the applicable regional documentation	Model/Template for States to utilize in developing their PBN proposal for amendment	1 June 2014	30/Dec /2014	Not Started	NAM/CAR PBN TASKFORCE	VALID
12. Assist States in developing training programme/briefings for Pilots, ATCOs, operators and regulators	Standardized Model for States to utilize in designing the PBN training programs	30 Jun 2014	December 2015	Not Started	NAM/CAR PBN TASKFORCE/ICAO NACC	VALID
13. Work with States,/Territories to utilize the ICAO recommended performance measurement programmes	Up to date information available on performance status of implemented procedures	June 2014	December 2015	Not Started	NAM/CAR PBN TASKFORCE	VALID
14. Develop a template to assist States in developing TMA airspace re-design plan	Template assisting States in re-designing TMA	June 2014	December 2014	Not Started	NAM/CAR PBN TASKFORCE	VALID
15. Coordination of progress within TF Members	Inputs to ANI/WG Rapporteur for presentation to NACC/WG/04 Meeting	31/Jan/14	28/Feb/14	100%	TF Rapporteur	Completed
16. ANI/WG PBN Task Force Meeting	Follow-up activities	03/Oct/14	03/Octl/14		All Members	VALID

28 February 2014

International Civil Aviation Organization

Organisation de l'aviation civile internationale

Organización de Aviación Civil Internacional

Международная организация гражданской авиации

منظمة الطيران المدني الدولي

国际民用航空组织

To: States, Territories and International Organizations

Subject: **Performance-Based Navigation (PBN) Implementation Status Survey**

Action
Required: **Complete and submit survey by 20 March 2014**

Sir/Madam:

Please find enclosed a PBN implementation status survey prepared by the NAM/CAR Air Navigation Implementation Working Group (ANI/WG) PBN Implementation Airspace Concept Task Force. The Task Force was formed in order to streamline air navigation implementation related activities, carry out specific studies to support PBN implementation in the NAM/CAR Regions in accordance with the NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (NAM/CAR RPBANIP), and based on the action plan for these tasks, update and report progress to the ANI/WG.

The survey corresponds to a PBN Task Force deliverable. Its main purpose is to collect information on PBN planning and implementation status from all States and Air Navigation Service Providers in order to update the regional PBN strategy and propose recommendations for improving PBN implementation in the NAM/CAR Regions.

The survey results will be discussed at the upcoming Fourth North American, Central American and Caribbean Working Group Meeting (NACC/WG/4) to be held in Ottawa, Canada, from 24 to 28 March 2014. Therefore, the completed survey must be submitted to this office by **20 March 2014**.

If you need further details, please contact Mr. Riaaz Mohammed, PBN TF Rapporteur (rmohammed@caa.gov.tt); Mr. Victor Hernandez, Regional Officer ATM/SAR (vhernandez@icao.int); and/or his assistant, Ms. Ana Valencia (avalencia@icao.int).

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Accept, Sir/Madam, the assurances of my highest consideration.

Loretta Martin
Regional Director
North American, Central American and
Caribbean (NACC) Regional Office

Enclosure:
As indicated

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ATTACHMENT
ICAO NACC PBN TASK FORCE SURVEY FORM

State/Organization: _____

Date: _____

Item	Question	Answer Yes	Answer No	Comments *Details of your answer*
1A	Does your State/Organization have a Performance-Based Navigation (PBN) Implementation Plan or Roadmap?	☐	☐	
1B	Is this plan being followed? If not, what are the roadblocks/limitations to implementation?	☐	☐	
1C	Are there areas of PBN implementation in which your State/Organization require assistance?	☐	☐	
2A	What is the percentage of aerodromes in your State/Organization that have PBN approach procedures?	☐	☐	
2B	Do operators utilize the PBN approaches? If not, why?	☐	☐	
3	Has your State/Organization engaged in Collaborative Decision Making (CDM) with relevant stakeholders in regard to PBN implementation?	☐	☐	
4	Are your controller work positions automated and, if so, do they clearly display PBN equipment capability to the air traffic controller (ATCO)?	☐	☐	
5	Do you have Standard Instrument Departure (SIDs) and Standard Instrument Arrival (STARs) at your international aerodromes? (Indicate if they are conventional or PBN).	☐	☐	
6	Have you implemented any Continuous Climb Operations (CCOs)/ Continuous Descent Operations (CDOs)?	☐	☐	
7	List PBN training received by the professionals responsible for PBN implementation in your State/Organization.	☐	☐	
8	Do you use Global Navigation Satellite System (GNSS) as replacement/back-up for conventional NAVAIDS?	☐	☐	
9	Do you have plans to restructure your airspace(s)?	☐	☐	
10	Identify what augmentation system are you using or planning (Ground-Based Augmentation System (GBAS) Satellite-Based Augmentation System (SBAS), Wide Area Augmentation System (WAAS), etc.) (include date).	☐	☐	
11	Has your State/ Organization implemented Electronic Terrain and Obstacle Data (e-TOD)? Identify what areas and at how many international airports.	☐	☐	

— END —