



ICAO

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

DISCUSSION PAPER

ANI/WG/2 — DP/02
03/06/15

Second NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/2)
Puntarenas, Costa Rica, 1 to 4 June 2015

Agenda Item 4 Follow-up on the NAM/CAR Regional Performance Based Air Navigation Implementation Plan (NAM/CAR RPBANIP)

4.1 Progress reports of the Task Forces and the ANI/WG

PRELIMINARY PROGRESS REPORT BY PBN TASK FORCE

(Presented by ANI/WG PBN Task Force Rapporteur)

(Presented by the Rapporteur)

EXECUTIVE SUMMARY	
This discussion paper presents the updated progress report of the PBN Taskforce taking into consideration deliberations of the PBN Taskforce during ANI/WG/2	
<i>Strategic Objectives:</i>	<ul style="list-style-type: none">• Safety• Air Navigation Capacity and Efficiency• Security & Facilitation• Economic Development of Air Transport• Environmental Protection
<i>References:</i>	<ul style="list-style-type: none">• NAMCAR 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• Fourth North American, Central American and Caribbean Working Group Meeting (NACC/WG/4), Ottawa, Canada, 24 to 28 March 2014, Final Report• Report on PBN Survey NAMCAR Region (2014)• Conclusion C/CAR/DCA/14/7 - <i>PBN Airspace Redesign Project for the CAR Region</i>

1. Introduction

1.1 During the ANI/WG/02 Meeting the PBN taskforce met as a Working Group Committee and discussed the following working papers/information papers:

WP/06, WP/26, WP/27, WP/28, IP/22, IP/20, IP/23

1.2 The PBN Taskforce notes the updates provided by Cuba, Haiti and United States and the proposal by IATA for reduced longitudinal separation across the FIR boundaries within the CAR Region.

1.3 The work currently being conducted by the United States in optimizing the offshore and Caribbean airspace is excellent and the TF is willing to collaborate with the FAA to ensure harmonization of the initiatives.

1.4 The CDM between IATA and Haiti is commendable and is certainly an example for other States to follow.

1.5 Cuba presented an issue whereby PBN route width requirement does not allow Cuba to implement an efficient north/south de-conflicted traffic flow south of 2400North due to the restriction in airspace capacity that currently exists between the 2 warning areas WA-465C and WA-174C. The taskforce is willing to assist in its technical capacity however there are also elements that are outside of the scope of the TORs of the taskforce as there is still a high level decision by the United States DOD pending on the adjustment of these areas.

1.6 The PBN Airspace plans of Costa Rica, COCESNA and Trinidad and Tobago are also noted and are good examples for States which have not already developed a plan to use as reference material.

1.7 With regard to the paper presented by IATA, proposing the use of more efficient longitudinal separations across FIR boundaries within the CAR Region, the TF acknowledges that ICAO Document 4444 allows for the use of more efficient separation standards. The discussions during the meeting recognized that while this initiative is of very high priority, this is not a direct task of the PBN Taskforce, but rather a matter that could be dealt with through bilateral agreements between adjacent FIRs under the auspices of the ATM Section of the ICAO NACC Office.

1.8 The TF deliberated on a number of actions aimed at improving the implementation of PBN in the CAR Region and proposed the draft conclusions outlined in section (4.) below. The TF will also present an updated work programme to the ICAO NACC Office, by June 30 2015, which will include the necessary tasks to improve the effectiveness of regional PBN implementation.

1.9 The TF deliberated on a number of actions aimed at improving the implementation of PBN in the CAR Region and proposed the draft conclusions outlined in section (4) below. The TF will also present an updated work programme to the ICAO NACC Office, by June 30 2015, which will include the necessary tasks to improve the effectiveness of regional PBN implementation.

1.10 The tasks in the work programme were developed in order to:

- Identify deficiencies and constraints with Regional PBN implementation, and to propose solutions that would facilitate resolution of such problems
- Provide a template for States to follow in developing their PBN airspace concept, taking into account the four phases as described in DOC 9992- PLAN, DESIGN, VALIDATE, IMPLEMENT. Assist with coordination of PBN routes within the CAR region as well as with adjacent regions to ensure Global harmonization
- Improve the effectiveness of the PBN Taskforce

1.11 The Fourteenth Directors of Civil Aviation of the Central Caribbean Meeting (C/CAR/DCA/14, Kingston, Jamaica, 14 to 15 May 2015) approved the Conclusion 14/7, attached in the **Appendix A** to this Working Paper urging the C/CAR States to develop a PBN Airspace Redesign Project.

2. PBN TF Progress and results

2.1 A survey form was distributed to States/Territories/Organizations within NAM/CAR Region via State Letter EMX0129 – (28 February 2014). Though response to the survey was limited, a report was generated indicating the general issues with PBN implementation within the Region (**Appendix B**).

2.2 Following the NACC/WG/4 Meeting in 2014, based on the objective of PBN training outlined in the work programme and under the RLA/09/801 project, two PBN implementation workshops were held at the ICAO NACC Office.

- The ICAO NAM/CAR/SAM Performance-Based Navigation (PBN) Approach Procedure Design Workshop - Special Implementation Project (SIP) 17 – 28 November 2014 provided training in Instrument Approach Procedure design and included technical training in developing RNAV approaches, Arrival and departure procedures, Baro VNAV Approaches and coding.
- The Workshop on Regional Implementation on Performance-Based Navigation (PBN) Airspace Redesign for the CAR Region, 04 – 08 May 2015, provided a platform for discussion between adjacent States/Territories and Organizations on airspace harmonization.

2.3 Both workshops were extremely well attended and were very informative to the participants. However, an initial analysis of the current airspace structure results in lack of harmonization which does not facilitate coordination and provision of Air Traffic Control (ATC) service, as well as limited use by operators. The diagnosis of some implementation projects of the States and Territories includes:

- The lack of information on reliable statistics on air operations growth in the States
- A lack of coordination of PBN implementation activities with the users
- Lack of update of training programmes for pilots and controllers
- The design of some Terminal Control Areas (TMAs) is not appropriate in view of the new aircraft navigation capabilities, such as:
- Published flight tracks are lengthy, exceeding TMAs boundaries, infringing non controlled airspace;
- Some waypoints have been established in uncontrolled G class airspace, causing confusions to the pilots
- IFR and VFR tracks are not segregated to cover ATC operational needs
- Some published tracks have resulted in ATS hot spots provoking TCAS report releases
- Not all automated ATS equipment have been updated for appropriate processing of flight plans in accordance with procedures with ICAO Doc 4444
- Not all States have issued suitable regulation for PBN operational certification and approval
- Some ATC units present ATS capacity limitations due to lack of qualified personnel
- Not all States have developed PBN national training plans

2.4 Based on the PBN TF analysis it is necessary that States develop a PBN Airspace Redesign Project to be implemented in the short term upon a PBN airspace comprehensive concept approach as a high priority matter for the CAR Region considering gate-to-gate operations for medium and long terms. The Project should meet safety objectives, ATS capacity and environment impact mitigation, including airspace organization details as well as regulatory and infrastructure requirements and annually assess benefits to environment obtained by route reduction and CO₂ reduction.

2.5 The Project for the redesign of airspace should consider air traffic increase for 2015-2017, through four phases as described in Doc 9992 - *Manual on the Use of Performance-based Navigation (PBN) in Airspace Design*:

- Planning
- Design
- Validation
- Implementation

2.6 In order to achieve successful PBN implementation, States should designate and foster the participation of their regulators, controllers, airspace planners, pilots/operators, military authority, general aviation representatives, etc. PBN projects should focus on RNAV routes implementation, RNP approach procedures, SIDs and STARs with CCO and CDO criteria, RNAV 10 or RNP 4 for Oceanic airspace as required.

2.7 The ICAO NACC Regional Office conducted a PBN GO TEAM mission to Port of Spain, Trinidad and Tobago, from 15 to 19 September 2014, led by Mr. Victor Hernández, Regional Officer, Air Traffic Management and Search and Rescue (ATM/SAR), with the assistance of two (2) additional Subject Matter Experts (SMEs), Mr Roberto Sosa from Central American Corporation for Air Navigation Services (COCESNA) and Mr Julio Cesar Martinez, (Mexico City). Following the mission, Trinidad and Tobago were required to develop and submit to the ICAO NACC Office, a PBN Airspace Redesign Concept for the Piarco FIR (Eastern Caribbean Region) by 31 March 2015. The deadline was met and the concept was presented to the PBN Taskforce during the PBN Workshop, 04 – 08 May 2015. Trinidad and Tobago advised that States/Territories/Organizations which had not already developed an airspace concept aligned with the PBN Concept for the Region were free to use the document as a template for their own plans.

2.8 During the various teleconferences and as indicated in the report of the PBN Survey, it has been determined that the PBN Implementation Status of the region could be broadly categorized into:

- Advanced
- Intermediate
- Beginner

2.9 While there are two (2) States that are in the advanced stage of PBN implementation, most of the other States/Territories/Organizations are at various stages within the intermediate band. However, there are some that are encountering problems in developing their implementation plans and simply do not have the required resources (financial/human) allocated to PBN implementation.

2.10 There is general consensus in the taskforce that while many States/Territories/Organizations are working on airspace configuration, routing and approach issues within their area of responsibility, there is generally a lack of collaboration with neighbours. This results in disjointed plans that are not harmonized. In some cases, some ANSPs reported having coordination issues with the States in the SAM Region as well.

2.11 One of the other areas identified as an issue was lack of expertise and training in PBN related matters. During the taskforce teleconferences, members were asked to contribute any material they are authorized to share so that others would be able to learn from it. The task force member from Canada shared operational material from NAV CANADA's plan which was very informative. The member from the United States is working on the possibility of sharing training information. CANSO also advised that a PBN "Best Practices" document was available for all to utilize.

2.12 IATA gave a presentation to the taskforce highlighting the inefficient longitudinal separation across the NAM/CAR/SAM region. While some FIRs were using as low as 5NM in their own airspace, based on existing procedures and LOA's, in most cases, ten (10) minutes (80NM) were required for transfer from one FIR to the next.

2.13 Both IATA and CANSO also expressed the view that many PBN procedures that have been implemented in the region are not being used by operators. Whether this is due to poor operational benefits or lack of end - user equipage needs to be determined. Nevertheless, this points to lack of proper stakeholder collaboration prior to the design of the procedure.

2.14 In January 2015, based on general consensus and collaboration with the ICAO NACC Office, the PBN Taskforce updated its work programme (**Appendix C**).

3. PBN Taskforce Recommendations

3.1 The PBN Taskforce recommends the following actions to improve the PBN implementation within the Region:

- a) States/Territories/Organizations need to update the POCs for the NAMCAR ANIWG PBN Taskforce and ensure that the members are provided with the resources to engage in and contribute to group activities;
- b) A revised survey to be conducted ASAP to determine current status of PBN implementation throughout the Region. The Survey attached in the **Appendix D** to this Working Paper should collect information on:
 - ✓ PBN Planning status – (Has a plan been developed? Is it based on a valid operational concept? Is it being followed? Is there a project lead?)
 - ✓ Effectiveness of current PBN procedures – (Are the procedures that have been implemented being utilized by operators? If so why not? Have they reduced ATCO/Pilot workload?)
 - ✓ Roadblocks to implementation – (Decision-makers buy-in, Financial Constraints, Human Resources, Equipage etc.)
 - ✓ Areas where specialized training is required
 - ✓ States/Territories/Organizations willing to provide assistance to other States – (Provision of documentation, training plans, lending of SMEs etc.)
- c) States in need of assistance should make an official request to the ICAO NACC Office specifying the areas that they need support in;
- d) Where required, ICAO NACC Office engage in dialogue with the executive decision maker of the relevant States/Territories/Organizations to ensure the importance of PBN implementation is understood and more critically, highlight the fact that the provision of financial and human resources are required to meet this objective;
- e) Increased collaboration between States/Territories/Organizations in the region regarding airspace and routing designs to ensure harmonization;
- f) Under the RLA 09-801 Regional project, the formation of an ad hoc team of specialists consisting of Subject Matter Experts in PBN Implementation Planning, Airspace Design, Instrument Flight Procedure Design, PBN training to visit and assist those States/Territories/Organizations that need assistance with formulating their PBN Plans;

- g) With regard to the upper airspace route harmonization across the NAM/CAR/SAM Region, the taskforce recognizes that the FIRs in the CAR Region are basically in the middle of the routing system between North and South America. It is difficult for the States/Organizations/Territories in the middle to begin the design of a route without the collaboration of the FIRs to the north and south. There needs to be a Regional Project aimed at NAM/CAR/SAM Upper Airspace Harmonization. Based on the magnitude of the Region it is recommended that the project be split into three groups representing the basic flows of traffic between North and South America:
- ✓ North America – Central America – South America
 - ✓ North America – Central Caribbean – South America
 - ✓ North America – Eastern Caribbean – South America

The FIRs involved in a particular flow can liaise with each other and in collaboration with IATA, work together to restructure the routes to be more efficient. The ICAO NACC Office and ICAO SAM Office should provide the necessary support to this activity.

4. Draft Conclusions

DRAFT CONCLUSION

ANI/WG/2/XX

IMPROVEMENT OF THE EFFECTIVENESS OF THE PBN TASKFORCE

In order to improve the effectiveness of the PBN Taskforce, CAR States:

- a) update the POCs for the PBN Taskforce by June 30 2015; and
- b) recognize that the members of the Task Force that have nominated need to be provided with the appropriate resources in order for them to participate in TELCONS/WEBMEETINGS, attend meetings/training events and contribute to group activities.

DRAFT CONCLUSION

ANI/WG/2/XX

ANALYSIS OF CURRENT PBN IMPLEMENTATION STATUS IN THE CAR REGION AND MEASUREMENT OF ITS EFFECTIVENESS

In order to determine the current state of PBN implementation in the CAR Region, determine the roadblocks to implementation and identify ineffective initiatives utilized on past PBN projects;

ICAO NACC Office:

- a) promulgate a State Letter introducing the PBN Survey Form in attached Appendix D by June 15 2015 with a deadline for submission of responses by July 31 2015; and
- b) ensure that responses submitted by States are forwarded to the PBN Taskforce

CAR States:

- a) ensure that the survey forms are completed and submitted to the ICAO NACC Office by July 31 2015; and
- b) clearly indicate the areas of PBN implementation in which they require assistance

The PBN Task Force:

- a) collect the information from the responses and provide a comprehensive report to the ICAO NACC Office by August 31 2015.

DRAFT CONCLUSION

ANI/WG/2/XX

CREATION OF AN AD HOC TEAM OF PBN SPECIALISTS TO HELP STATES THAT REQUEST ASSISTANCE

Recognizing that the CAR Region is comprised of many States, Territories and Organizations at varying levels of PBN implementation and in order to provide assistance for those States which are experiencing difficulty in the implementation of PBN;

The ICAO NACC Office:

- a) under the CAR RLA 09/801 project, continue the process of providing a technical support team of appropriate SMEs to visit identified States in order to provide the required technical assistance

CAR States:

- a) request from the NACC Office the assistance in specific areas of PBN implementation;
- b) ensure that appropriate personnel are available to work with the Assistance Team on the issues identified in (b) above and build on the initial groundwork laid down by the SMEs;
- c) report to the ICAO Office the implementation progress of the initiatives set out by the Assistance Team; and
- d) nominate, to the ICAO NACC Office, suitably qualified PBN experts from within the Region to be a part of the Regional team of SMEs

DRAFT CONCLUSION

ANI/WG/2/XX

CREATION OF AD HOC GROUPS WITHIN THE PBN TASKFORCE BASED ON THE ESTABLISHED SUB-REGIONS WITHIN THE CAR REGION

Based on the magnitude of the CAR PBN Airspace Harmonization Project and in order to facilitate a more manageable work program and to improve the coordination between relevant ANSPs,

ICAO NACC Office:

- a) approve the recommendation of the taskforce to create three (3) ad hoc groups under the PBN Taskforce that will carry out activities based on the requirements of the respective sub-regions within the CAR

CAR States should:

- a) nominate experienced project Coordinators from each Sub Region to coordinate PBN implementation activities; and
- b) report implementation activities to the PBN Taskforce through the Sub-Regional Coordinators

The PBN Taskforce will:

- a) coordinate with the Sub-Regional Coordinators from each group and report back to the ICAO NACC Office the progress of the entire Region; and
- b) liaise with ICAO NACC Office to ensure the collaboration between ANSPs/FIRs are facilitated

DRAFT CONCLUSION

ANI/WG/2/XX

REPORTING OF FUEL SAVING INITIATIVES

In order to quantify the effectiveness of proposed PBN initiatives within the CAR Region:

ICAO NACC Office:

- a) supply States with a standardized reporting form provided by the PBN taskforce that is capable of reflecting predicted fuel savings resulting from proposed PBN initiatives; and
- b) provide the PBN Taskforce with the information on proposed fuel savings submitted by States

CAR States:

- a) submit information relating to predicted fuel savings based on proposed PBN implementation in the agreed to standardized format

PBN Task Force

- a) collaborate with IATA re validation of information received from States

5 Suggested Actions

5.1 The Meeting is invited to:

- a) take note of the deliberations of the PBN Task Force during the ANI/WG/2;
- b) accept the draft conclusions of the PBN Taskforce; and
- c) propose any other action or task as deemed necessary

APPENDIX A

**CONCLUSION
C/CAR/DCA/14/7**

PBN AIRSPACE REDESIGN PROJECT FOR THE CAR REGION

That, C/CAR States, in coordination with the ICAO NACC Regional Office, develop a PBN Airspace Redesign Project to be implemented from 2015-2017 in accordance with ICAO provisions, including:

- a) designation of PoC for PBN implementation;
- b) C/CAR States complete a PBN implementation survey included in Appendix D to this report by 30 July 2015;
- c) operational improvements implementation to the RNAV route network in the upper and lower airspace;
- d) Continuous Descent Operations (CDO) and Continuous Climb Operations (CCO) implementation in the SIDs and STARs of the terminal control area (TMA), accordingly;
- e) RNP approach procedures implementation in all instrument flight runways by 31 December 2016, in compliance with ICAO Assembly Resolution A37- 11;
- f) notify the ICAO NACC Regional Office by 30 October 2015 progress accomplished and new identified needs in accordance with above-mentioned items a), b) and c) for the implementation of a harmonized PBN airspace; and
- g) present to the C/CAR/DCA/15 meeting a report of the progress achieved on the PBN Airspace Redesign Project implementation.

REPORT ON PBN SURVEY NAMCAR REGION (2014)

NAMCAR ANIWG PBN TASKFORCE

JANUARY 2015

Executive Summary

A PBN implementation status survey (*EMX0129 – 28 FEB 2014*) was prepared by the NAM/CAR Air Navigation Implementation Working Group (ANI/WG) PBN Implementation Airspace Concept Task Force. The survey corresponds to a PBN Task Force deliverable. Its main purpose was 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 (*EMX0129*) was distributed to the following twenty (20) **States/Territories** and nine (9) **Organisations**:

ANTIGUA AND BARBUDA, ARUBA, BAHAMAS, BARBADOS, BELIZE, CANADA, CAYMAN ISLANDS, CURACAO, FRENCH ANTILLES, GRENADA, HAITI, JAMAICA, NETHERLANDS FOR BONAIRE, SAINT EUSTATIUS AND SABA ISLANDS, SAINT KITTS AND NEVIS, SAINT LUCIA, SAINT VINCENT AND THE GRENADINES, SAINT MAARTEN, TRINIDAD AND TOBAGO, UNITED KINGDOM FOR ANGUILLA; BRITISH VIRGIN ISLANDS; MONTSERRAT, UNITED STATES

ACI/LAC AIRPORTS COUNCIL INTERNATIONAL/LATIN AMERICA-CARIBBEAN
ALTA LATIN AMERICA AND CARIBBEAN AIR TRANSPORT ASSOCIATION
CANSO CIVIL AIR NAVIGATION SERVICES ORGANISATION
CASSOS CARIBBEAN AVIATION SAFETY AND SECURITY OVERSIGHT SYSTEM
COCESNA CENTRAL AMERICAN CORPORATION FOR AIR NAVIGATION SERVICES

ECCAA EASTERN CARIBBEAN CIVIL AVIATION AUTHORITY
IATA INTERNATIONAL AIR TRANSPORT ASSOCIATION
IFALPA INTERNATIONAL FEDERATION OF AIR LINE PILOTS ASSOCIATIONS
IFATCA INTERNATIONAL FEDERATION OF AIR TRAFFIC CONTROLLERS'
ASSOCIATIONS

Survey Responses

The taskforce received responses from the following seven (7) states and one Organization:

CANADA, COSTA RICA, CUBA, HONDURAS, SAINT LUCIA, TRINIDAD AND TOBAGO, UNITED STATES AND COCESNA

General Review of Responses

While the responses received by the taskforce were limited in number, an analysis of the survey information received revealed that the implementation status in the region could be classified into three categories:

- States/Territories/Organizations that are advanced in their PBN implementation – PBN implementation plans were created and are being followed or modified based on dynamic situations. Resources such as equipment, subject matter experts, specialized PBN training for technical and operational staff are available in-house. Based on operational requirements PBN approach procedures have been implemented at major international airports and are utilized by airline operators. GNSS based procedures are used as a replacement and backup for conventional NAVAIDS and Electronic Terrain and Obstacle Data (e-TOD) are also in use. CCOs and CDOs have been implemented in many aerodromes and there are plans to continue PBN implementation throughout airspace/aerodromes as long as safety and efficiency improvements are required.
- States/Territories/Organizations that are in an intermediate stage of PBN Implementation – PBN implementation plans have been developed and in some instances are being followed. However there are implementation roadblocks such as unavailability of updated equipment, lack of subject matter experts (e.g. Instrument Flight Procedure Designers, Airspace Planners), high cost and unavailability of specialized training, lack of staff, poor CDM with relevant stakeholders etc.
- States/Territories/Organizations that are still formulating their PBN implementation plan – While most States have some type of RNAV approach procedures implemented, based on ICAO resolution A37-11, some do not yet have a complete implementation plan or airspace concept. Some of the issues include lack of understanding by decision makers, financial constraints, lack of staffing, lack of subject matter expertise, lack of specialized training, unavailability of up to date equipment, lack of CDM.

There were also generalized statements regarding the lack of available and accurate data on Aircraft equipage and certification. While some information is available from IATA, not all operators are IATA members and there are many instances where data is unavailable or inaccurate. Some States have tried using FPL data but recognize that this by itself is not enough.

Recommendations

The PBN Taskforce recommends the following actions to improve the PBN implementation within the Region:

- States/Territories/Organizations need to update the POCs for the NAMCAR ANIWG PBN Taskforce and ensure that the members are provided with the resources to engage in group activities.
- A revised survey to be conducted ASAP to determine current status of PBN implementation throughout the Region. The Survey should be designed to collect information on:
 - PBN Planning status – (Has a plan been developed? Is it based on a valid operational concept? Is it being followed? Is there a project lead?)
 - Effectiveness of current PBN procedures – (Are the procedures that have been implemented being utilized by operators? If so why not? Have they reduced ATCO/Pilot workload?)
 - Roadblocks to implementation – (Decision-makers buy-in, Financial Constraints, Human Resources, Equipage etc.)
 - Areas where specialized training is required
 - States/Territories/Organizations willing to provide assistance to other States – (Provision of documentation, training plans, lending of SMEs etc.)
- States in need of assistance should make an official request to the ICAO NACC Office specifying the areas that they need support in.
- Where required, ICAO NACC Office engage in dialogue with the executive decision maker of the relevant States/Territories/Organizations to ensure the importance of PBN implementation is understood and more critically, highlight the fact that the provision of financial and human resources are required to meet this objective.
- Increased collaboration between States/Territories/Organizations in the region regarding airspace and routing designs to ensure harmonization.
- Under the RLA 09-801 Regional project, the formation of an ad hoc team of specialists consisting of Subject Matter Experts in PBN Implementation Planning, Airspace Design, Instrument Flight Procedure Design, PBN training to assist those States/Territories/Organizations that need assistance with formulating their PBN Plans.

NAMCAR ANIWG PBN TASKFORCE WORK PROGRAMME (UPDATED JAN 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	30/Jul/13	28/Oct/13	100%	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	1 November 2013	15 December 2013	100%	NAM/CAR PBN TASKFORCE/ ICAO NACC	COMPLETED February 20 th 2014 Survey Form promulgated by NACC Regional Office
4. Report Regional PBN Implementation status to ICAO NACC Office with recommendations on solving implementation issues	NACC Regional Office and the TASKFORCE will work with ICAO and the States involved to develop plan of action to solve the problems	31 January 2014	June 30 th 2014	100%	NAM/CAR PBN TASKFORCE Rapporteur	COMPLETED JAN 31 2015
5. Conduct a study on PBN requirements for ATC Automated Systems	Report identifying the information required to be displayed to ATCOs on their situational displays	1/Jan/14	June 30 2015		NAM/CAR PBN TASKFORCE	VALID Revised Date JUNE 30 2015

Task Name/Area	Deliverables	START DATE (DD/MM/YY)	END DATE (DD/MM/YY)	PERCENTAGE COMPLETED (%)	RESPONSIBLE	REMARKS
6. 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 SAM, NAT, AFI etc.)	1 January 2014	31 August 2015		NAM/CAR PBN TASKFORCE/ICAO NACC	Valid AUG 31 2015
7. Assist States in developing training programme/ for Pilots, ATCOs, operators and regulators	Standardized Model for States to utilize in designing the PBN training programs	30 Jun 2014	December 2015		NAM/CAR PBN TASKFORCE/ICAO NACC	VALID
8. Assist States in developing PBN airspace re-design Project, based on ICAO Doc 9992	Assisting States in the implementation of PBN airspace concept : a) Revision of regional Route network, b) TMA redesign. c) PBN approach procedures	June 2014	June 30 2015	50 %	NAM/CAR PBN TASKFORCE	Valid June 30 2015 Workshops have been conducted to assist States with this Examples of some States Airspace Concept Documents have been shared with TF members
9. Coordination of progress within TF Members	4 phased project regarding Plan, Design, Validation and Implementation	31/Jan/14	28/Feb/14	100%	TF Rapporteur	Completed

Task Name/Area	Deliverables	START DATE (DD/MM/YY)	END DATE (DD/MM/YY)	PERCENTAGE COMPLETED (%)	RESPONSIBLE	REMARKS
10. Develop a performance measurement programme	Inputs to ANI/WG Rapporteur for presentation to NACC/WG/04 Meeting Standardized method for performance metrics	June 2014	December 2015		NAM/CAR PBN TASKFORCE	VALID
11. ANI/WG PBN Task Force Meeting	Follow-up activities	04/May/15	8/May/15	100%	All Members	Completed

APPENDIX D
PROPOSED PBN SURVEY FORM

State/Organization: _____
Date: _____

Question	Answer		Remarks
	Yes	No	
Does your State/Organization have a PBN programme/project in progress? (specify)	<input type="checkbox"/>	<input type="checkbox"/>	
What percentage of international aerodromes have implemented PBN approach procedures in your State/Organization?	<input type="checkbox"/>	<input type="checkbox"/>	
What is percentage of use by the air operators of the PBN approach procedures implemented in your State/Organization?	<input type="checkbox"/>	<input type="checkbox"/>	
Did your State/Organization implemented continuous descent operations/ continuous climb operations (CDO/CCO)? Please comment as appropriate	<input type="checkbox"/>	<input type="checkbox"/>	
Did your State/Organization implement a PBN measurement programme regarding environments benefits?	<input type="checkbox"/>	<input type="checkbox"/>	
Are the aircraft PBN capabilities clearly displayed in the ATC situational awareness workstation?	<input type="checkbox"/>	<input type="checkbox"/>	
Does your State/Organization plan PBN implementation to re-structure/revise the airspace of your jurisdiction? (en-route, terminal, approach), please comment as appropriate	<input type="checkbox"/>	<input type="checkbox"/>	
Does your State/Organization encourages collaborative decision making (CDM) with stakeholders regarding PBN implementation matters?	<input type="checkbox"/>	<input type="checkbox"/>	
Is your State/Organization using or planning to use a Ground Based Augmentation System (GBAS), or a Satellite Based Augmentation System (SBAS), or a Wide Area Augmentation System (WAAS), etc.?	<input type="checkbox"/>	<input type="checkbox"/>	
List the PBN training programmes implemented for pilots, controllers and/or other officers in your State/Organization.	<input type="checkbox"/>	<input type="checkbox"/>	
Does your State/Organization require assistance in a particular area/field of PBN expertise?	<input type="checkbox"/>	<input type="checkbox"/>	

Estado/Organización: _____

Fecha: _____

Question	Answer		Remarks
	Yes	No	
¿Su Estado/Organización tiene un programa/proyecto PBN en progreso? (especifique)	<input type="checkbox"/>	<input type="checkbox"/>	
¿Qué porcentaje de aeropuertos internacionales tienen implementados procedimientos de aproximación PBN en su Estado/Organización?	<input type="checkbox"/>	<input type="checkbox"/>	
¿Qué porcentaje de uso por los operadores tienen los procedimientos de aproximación PBN implementados en su Estado/Organización?	<input type="checkbox"/>	<input type="checkbox"/>	
¿Su Estado/Organización ha implementado operaciones de descenso continuo / operaciones de ascenso continuo (CDO/CCO)? Por favor comente según sea apropiado	<input type="checkbox"/>	<input type="checkbox"/>	
¿Su Estado/Organización ha implementado un programa de medidas PBN relacionado a los beneficios de medio ambiente? Por favor comente según sea apropiado	<input type="checkbox"/>	<input type="checkbox"/>	
¿Las capacidades de navegación de las aeronaves se muestran claramente en las unidades de conciencia situacional ATC? (radar, ADS-B, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	
¿Su Estado/Organización esta planeando una implementación PBN para re-estructurar/revisar el espacio aéreo de su jurisdicción? (en-ruta, terminal, aproximación), Por favor comente según sea apropiado	<input type="checkbox"/>	<input type="checkbox"/>	
¿Su Estado/Organización fomenta la toma de decisiones en colaboración (CDM) con las partes interesadas en relación a los asuntos PBN?	<input type="checkbox"/>	<input type="checkbox"/>	
¿Su Estado/Organización está usando o planea usar (fecha) un sistema de aumentación basado en tierra (GBAS), o un sistema de aumentación basado en satélite (SBAS), o un sistema de aumentación de aérea amplia (WAAS), etc.?	<input type="checkbox"/>	<input type="checkbox"/>	
Enliste los programas de entrenamiento PBN para pilotos, controladores y/u otros especialista en su Estado/Organización.	<input type="checkbox"/>	<input type="checkbox"/>	
¿Su Estado/Organización requiere una asistencia en un área/ campo experiencia en particular?	<input type="checkbox"/>	<input type="checkbox"/>	