



ICAO

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

**NAM/CAR Air Navigation Implementation
Working Group (ANI/WG)
Performance-Based Navigation (PBN)
Implementation Task Force Meeting
(ANI/WG/PBN/TF)**

Final Report

Mexico City, Mexico, 22 – 25 April 2019

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HISTORICAL

ii.1 Place and Date of the Meeting

The NAM/CAR Air Navigation Implementation Working Group (ANI/WG) Performance-Based Navigation (PBN) Implementation Task Force Meeting (ANI/WG/PBN/TF) was held in Mexico City, Mexico, from 22 to 25 April 2019.

ii.2 Opening Ceremony

Mr. Julio Siu, Deputy Regional Director of the North American, Central American and Caribbean (NACC) Office of the International Civil Aviation Organization (ICAO) provided opening remarks, emphasizing the importance of the work of the ANI/WG PBN Task Force to support harmonized regional implementation of agreed targets and air navigation goals. He welcomed the participants to the ICAO NACC Regional Office and officially opened the meeting.

ii.3 Officers of the Meeting

Mr. Riaaz Mohammed, ANI/WG PBN Task Force Rapporteur, chaired the meeting plenary. Mr. Eddian Méndez, Regional Officer Air Traffic Management and Search and Rescue of the ICAO NACC Regional Office served as Secretary of the Meeting.

ii.4 Working Languages

The working language of the Meeting was English and working papers, information paper, presentations and report of the meeting were available to participants in said language.

ii.5 Schedule and Working Arrangements

It was agreed that the working hours for the sessions of the meeting would be from 09:00 to 17:00 hours daily with adequate breaks. Ad hoc Groups were created during the Meeting to do further work on specific items of the Agenda.

ii.6 Agenda

Agenda Item 1: Provisional Agenda Approval

Agenda Item 2: Caribbean Region Performance Based Navigation (PBN) Airspace Concept

Follow up and completion of the project to develop a model structure for airspace and Terminal Areas (TMAs) to improve efficiency of air traffic flow in the upper and lower airspace of contiguous Flight Information Regions (FIRs) and TMAs, proposing a possible solution to the complex structure of the existing FIRs in the CAR Region.

Agenda Item 3: Optimization of Longitudinal Separation

Identify and support opportunities for implementation of reduced longitudinal separation minima between Caribbean FIRs.

Agenda Item 4: ATM Situation Analysis in the CAR Region

Work to develop an assessment of the current ATM situation in the Caribbean Region, focusing on ATM operational improvements and on PBN approach/departures procedures.

Agenda Item 5: Implementation of Performance-Based Navigation (PBN) Routes

Post-implementation review of 2018 agreed Regional routes, sharing experience to improve the routes agreement and implementation process. Initial discussion of proposals for 2019 routes implementation.

Agenda Item 6: PBN Task Force Related Activities

Under this Agenda Item the Task Force will discuss the work programme and programme activities for 2019.

Agenda Item 7: Other Business

ii.7 Attendance

The Meeting was attended by 13 States/Territories from the CAR Region and one International Organization, totalling 32 delegates as indicated in the list of participants.

ii.8 Draft Conclusions and Decisions

The Meeting recorded its activities as Draft Conclusions and Decisions as follows:

DRAFT

CONCLUSIONS: Activities requiring endorsement by the NAM/CAR Air Navigation Implementation Working Group (ANI/WG) or the NACC Working Group (NACC/WG).

DECISIONS: Internal activities of the NAM/CAR Air Navigation Implementation Working Group (ANI/WG) or the NACC Working Group (NACC/WG).

An executive summary of these conclusions/decisions is presented in **Appendix A** to this report.

ii.8.1 List of Draft Conclusions

Number	Title	Page
1/1	<i>FOLLOW UP ON THE SUB-PROJECT TO DEVELOP CAR REGION PBN AIRSPACE CONCEPT</i>	2-2
1/2	<i>UPDATE OF THE ICAO DATABASE OF ATS ROUTES AND SIGNIFICANT POINTS</i>	4-1
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ii.9 List of Working and Information Papers and Presentations

Refer to the Meeting web page:

<https://www.icao.int/NACC/Pages/meetings-2019-pbn.aspx>

WORKING PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
WP/01 REV3	1	Provisional Agenda and Schedule	17/04/19	Secretariat
WP/02	5	SAM ATS Routes Network Optimization Proposal Version 5 (SAM ATS/RO Version 5)	08/04/19	COCESNA
WP/03	4	Analysis of the Navigation Specification Transition along the TTZP/TJZS FIR Boundary	09/04/19	Trinidad and Tobago and United States

INFORMATION PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
IP/01	--	List of Working, Information Papers and Presentations	24/04/19	Secretariat

PRESENTATIONS

Number	Agenda Item	Title	Presented by
1	6	ANI/WG PBN Task Force work related issues	Secretariat
2	2	Follow up on the Project to develop CAR Region PBN Airspace Concept	Secretariat
3	5	Amendments to the eANP	Secretariat
4	4	International Codes and Route Designators (ICARD)	Secretariat
5	4	PBN Implementation Status in Dominican Republic	Dominican Republic
6	4	ICAO Circ 353	Secretariat

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ANI/WG/PBN/TF
List of Participants – Contact Information

iv – 2

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Agenda Item 1 Provisional Agenda Approval

1.1 The Secretariat presented WP/01 and invited the Meeting to approve the Provisional Agenda and Schedule. The Meeting approved the Agenda and Schedule as presented.

Agenda Item 2 Caribbean Region Performance Based Navigation (PBN) Airspace Concept

2.1 Under this Agenda Item the Secretariat presented P/02 to follow up on the Sub-Project to develop the CAR Region PBN Airspace Concept.

2.2 From 8 to 11 May 2018 a team of PBN Subject Matter Experts met in the ICAO NACC Regional Office, Mexico City, Mexico, to develop a model structure for airspace and Terminal Control Areas (TMAs) that allows continuous flow in the upper and lower airspace of contiguous Flight Information Regions (FIRs) and TMAs, proposing a possible solution to the complex structure of the existing FIRs in the CAR Region.

2.3 Based on the diversity of the individual CAR States/Organizations airspace and also on the limited information available to the project team, it was decided to carry out the project through the following three phases:

Phase 1 – Concept Development

In this phase, the minimum requirements for upper and lower airspaces of the CAR Region were defined. The model concept was presented as a report for the Sub-Project.

Phase 2 – Data collection and analysis

The purpose of this phase is to collect evidence regarding PBN implementation status for each upper and lower airspace and the airspace optimization capabilities for each State and International Organization of the CAR Region.

Phase 3 – Assessment and development of individual plans

After detailed information regarding the implementation and capacities of States and International Organizations has been reviewed, an objective assessment of the situation will be performed and individual plans to close the detected gaps will be developed. The assistance required and possible collaboration with other stakeholders will also be identified in this phase.

2.4 Phase 1 of the Sub-Project was completed and, in order to gather the information required to continue with the following phases, a letter was sent to States and Territories providing Air Traffic Services (ATS) in the CAR Region including a survey to assess their PBN implementation status. Only 6 States/Territories and 1 International Organization responded the survey, which caused a delay in the completion of the Sub-Project.

2.5 The participants agreed that one of the causes that could have affected the response to the survey is that communications reach the high level of the State/Territory, who does not understand the implications of it. Sometimes, when not knowing what to do with the letter, it is filed without referring it to ATS personnel, who have control over the information required to give an appropriate response.

2.6 The Task Force agreed to resend the letter with the survey to all PBN Task Force Members and Points of Contact, in order to obtain their response by the end of the meeting.

2.7 The Task Force also agreed to update the PBN Task Force Points of Contact list, to include all States, Territories and International Organizations. The updated Terms of Reference are included as **Appendix B** to the Report.

DRAFT CONCLUSION ANI/WG/PBN/TF/1/1		FOLLOW UP ON THE SUB-PROJECT TO DEVELOP CAR REGION PBN AIRSPACE CONCEPT	
What: That, in order to complete the Sub-Project to develop and implement a Performance-Based Navigation (PBN) Airspace Concept Document for the CAR Region and take advantage of the assistance possibilities that result from it: a) the ICAO NACC Regional Office resend the survey on the States/Territories PBN Implementation Status Form to the PBN Task Force Members and Points of Contact in order to obtain their official response by 31 August 2019 ; b) the ICAO NACC Regional Office, with the support of the Sub-Project Team of Subject Matter Experts, revise/adjust the timelines of the Sub-Project to complete the next phases as necessary by 31 August 2019 ; and c) the PBN Task Force update the PBN Task Force Points of Contact list, to include all CAR States, Territories and International Organizations by 31 August 2019 .		Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical	
Why: To ensure the completion of the Sub-Project to Develop and Implement a Performance-Based Navigation (PBN) Airspace Concept Document for the CAR Region			
When: 31 August 2019		Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed	
Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input checked="" type="checkbox"/> Other:		PBN Task Force and the Sub-Project Team	

Agenda Item 3 Optimization of Longitudinal Separation

3.1 Under this Agenda Item no papers were presented.

3.2 The Meeting took note of the progress made by COCESNA with the signing of the operational letters of agreement between *Centro de Control de Tránsito Aéreo* (CENAMER) with Panamá and Mérida control centres, which entered into force on 31 January 2019, implementing the reduction of the longitudinal separation from 40NM to 20NM.

3.3 The Meeting also took note of the work carried out by Curaçao and Dominican Republic, with the signing of an updated operational letter of agreement, optimizing their longitudinal separation procedures to 40NM Global Navigation Satellite System (GNSS) and Radio Detection and Ranging (RADAR) separation.

3.4 No additional changes were effected in the Region.

3.5 The PBN Task Force considered it important to remind States/Territories providing Air Traffic Services (ATS) Services to follow the guidance of ICAO Doc 4444 – *ATM — Air Traffic Management* regarding the application of GNSS longitudinal separation.

Agenda Item 4 ATM Situation Analysis in the CAR Region

4.1 Under this Agenda Item the Meeting reviewed WP/03, presented by Trinidad and Tobago and United States, which provides a brief history on the regional implementation of Navigation Specifications (Nav Specs) in the CAR Region and along the Piarco (TTZP)/San Juan (TJZS) Flight Information Regions (FIRs) boundary. The Working Paper explains why there is a discrepancy between the applications of different Nav Specs on each side of the boundary and presents evidence that the discrepancy is not a safety hazard.

4.2 With the Presentation P/04, the Secretariat described the ICAO requirements for the establishment and identification of ATS routes and significant points. The Secretariat briefed the Task Force on the current challenges faced to ensure the compliance with ICAO related Standards and Recommended Practices (SARPs) and the maintenance of the International Codes and Routes Designators (ICARD) database for routes and Five-letter name codes (5LNCs).

4.3 The situation related to the 5LNCs and ATS routes designators requires a significant amount of work and should be included in the PBN Task Force regional priorities. The leadership of the PBN Task Force is required to address the regional implementation issues. The Task Force work methodology and strategy should be aligned to solve the aforementioned issues.

4.4 In this sense, the meeting agreed on the following draft conclusion:

DRAFT CONCLUSION ANI/WG/PBN/TF/1/2		UPDATE OF THE ICAO DATABASE OF ATS ROUTES AND SIGNIFICANT POINTS	
What: That, with the purpose of collaborating with the updating of the ICAO International Codes and Route Designators (ICARD) system, supporting the initiatives to remove duplicates and the compliance with related ICAO SARPs: a) the ICAO NACC Regional Office send a request to States, Territories and ATS service providers in the CAR Region to submit a list of all their published regional ATS routes and Five-letter name codes (5LNCs) to the ICAO NACC Regional Office by 31 July 2019 , using the template that will be sent by the ICAO NACC Regional Office; and b) States, Territories and ATS Service providers in the CAR Region cooperate to address discrepancies and duplicates ATS routes and 5LNCs.		Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical	
Why: To support regional compliance with the ICAO International Codes and Route Designators (ICARD) database system			
When: 31 July 2019		Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed	
Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input checked="" type="checkbox"/> Other:		ATS providers in the CAR Region	

4.5 Under this Agenda Item, Dominican Republic presented P/05 describing its PBN Implementation Status. Dominican Republic has implemented Area Navigation (RNAV) (approach and departure) procedures in all its international airports, and has complied with the regional PBN routes implementation goals.

4.6 The table below provides in detail the level of implementation of RNAV procedures in Dominican Republic:

LEVEL OF IMPLEMENTATION OF CONVENTIONAL AND RNAV PROCEDURES IN DOMINICAN REPUBLIC						
AIRPORT	RNAV SID	RNAV STAR	RNAV APP	CONVENTIONAL SID	CONVENTIONAL STAR	CONVENTIONAL APP
MDSD RWY 17	YES RNAV 1	YES RNAV 1	YES RNAV 1	NO	NO	YES VOR / VOR/DME & ILS
MDSD RWY 35	YES RNAV 1	YES RNAV 1	YES RNAV 1	NO	NO	YES VOR & VOR/DME
MDPC RWY 08	YES RNAV 1	YES RNAV 1	YES RNAV 1	NO	NO	YES VOR & VOR/DME
MDPC RWY 09	YES RNAV 1	YES RNAV 1	YES RNAV 1	NO	NO	YES VOR & VOR/DME
MDPC RWY 26	YES RNAV 1	YES RNAV 1	YES RNAV 1	NO	NO	YES VOR
MDPC RWY 27	YES RNAV 1	YES RNAV 1	YES RNAV 1	NO	NO	YES VOR
MDLR RWY 11	YES RNAV 1	YES RNAV 1	YES RNAV 1	NO	NO	YES VOR & VOR/DME
MDLR RWY 29	YES RNAV 1	YES RNAV 1	YES RNAV 1	NO	NO	YES VOR
MDJB RWY 01**	NO	NO	YES RNAV 1	NO	NO	YES NBD VOR & VOR/DME
MDJB RWY 19**	NO	NO	YES RNAV 1	NO	NO	YES NBD VOR & VOR/DME
MDCY RWY 07**	NO	NO	YES RNAV 1	NO	NO	YES VOR & VOR/DME
MDCY RWY 25 * **	NO	NO	NO	NO	NO	YES VOR & VOR/DME
MDST RWY 11	YES RNAV 1	YES RNAV 1	YES RNAV 1	YES	NO	YES VOR VOR/DME & ILS/DME
MDST RWY 29	YES RNAV 1	YES RNAV 1	YES RNAV 1	YES	NO	YES VOR & VOR/DME
MDPP RWY 08	YES RNAV 1	YES RNAV 1	YES RNAV 1	YES	NO	YES VOR26 VOR/DME26 FOLLOWED BY CIRCLING RWY 08
MDPP RWY 26	YES RNAV 1	YES RNAV 1	YES RNAV 1	NO	NO	YES VOR & VOR/DME
MDBH RWY 12 ** ***	NO	NO	YES RNAV 1	NO	NO	NO
MDBH RWY 30 ** ***	NO	NO	YES RNAV 1	NO	NO	NO
* RNAV APP RWY 25 MDCY IN VALIDATION PROCESS / PENDING FOR FLIGHT CHECK THIS YEAR (2019) ** RNAV SID/STAR MDJB MDCY MDBH ARE UNDER DESIGN (EXPECTED FOR 2019) *** MDBH / CURRENTLY NO PLANS FOR NAVAIDS						

4.7 The Secretariat presented P/06, providing the Task Force with details regarding ICAO Circular 353 – *Transition Planning for Change to Instrument Flight Procedure Approach Chart Identification from RNAV to RNP*.

Agenda Item 5 Implementation of Performance-Based Navigation (PBN) Routes

5.1 Under this Agenda Item the Meeting reviewed WP/02, presented by COCESNA, with the proposal to analyse the interface of the CAR Region with the South American (SAM) Region's ATS Route Optimization (RO) version 5 developed by the ICAO SAM Regional Office (SAM RO V5).

5.2 According to the approved actions by the Twelfth Meeting of the Coordination Committee of the Regional Project RLA/06/901 (RCC/12) for the year 2019 in respect to the PBN implementation project in the SAM Region, it was requested that an Air Traffic Management (ATM) expert from the CAR Region take part on the ATM team to develop the SAM Route Optimization (RO) version 5.

5.3 The methodology used for this project is to gather ATM specialists from different States (3 or 4) of the SAM Region under the RLA/06/901 Project to analyse the SAM airspace and routes; each version of the routes is prepared in a two-year period; this one is the version 5 (2019-2020) to complete a ten-year period. COCESNA's participation on the version 5 project was taken as an opportunity to develop a proposal to continue the routes with an interface up to the Caribbean Region, so that the routes will not finish in the SAM Region.

5.4 The SAM ATS RO version 5 contains 51 route proposals which include:

- Elimination of 37 conventional regional routes.
- Elimination of 2 RNAV regional routes for optimization and harmonization.
- Creation of 27 new RNAV routes.
- Modification of 15 RNAV routes (realigning, extend or cut)
- 21 of the proposed routes involve reduction of nautical miles flown. In case that all of them are implemented, a 178 NM reduction will be obtained.

5.5 Of the 51 routes proposals, 32 correspond to the CAR/SAM interface, and 19 are for the SAM region.

5.6 The PBN Task Force recognized the contribution of COCESNA and the work of the ATM expert that supported this coordination effort.

5.7 The PBN Task Force recognized the opportunity of being able to coordinate with the SAM Region the implementation of the route interfaces between both regions. This initiative receives the support of States and Territories of the CAR Region.

5.8 However, participants pointed out that these proposals, which significantly affect the CAR Region, were initially received on 28 March 2019, providing little time for a proper analysis. Having known in advance the extent of the proposals, a greater participation of the States of the CAR Region in this coordination project would have been proposed.

5.9 The Meeting (States, Territories and ATS providers) analysed each one of the proposals. The results of the analysis performed by the Task Force are included in **Appendix C**, to be submitted to the ICAO SAM Regional Office for planning purposes. In this sense, the following decision is formulated:

DECISION	
ANI/WG/PBN/TF/1/3	PRESENTATION OF ATS ROUTE REVIEW BY CAR STATES
What: That, following the results of the analysis of the proposal for the SAM ATS RO version 5, the ICAO NACC Regional Office will present the summary of the comments from the CAR Region (Appendix C) in the upcoming Tenth South American Meeting on ATS Routes Network Optimization (SAM ATSRO/10) to be held from 17 to 21 June 2019 in Bogotá, Colombia, along with details from the process for proposals of optimization of the CAR region airspace, for coordination purposes.	Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical
Why: to facilitate the implementation of the route proposals interface between the CAR and SAM Regions	
When: June 2019	Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed
Who: <input type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:	

5.10 The PBN Task Force recognized the work that has been done, and does not intend to avoid the implementation, but due to the short notice of these proposals, the coordination of these routes was not adequately done. It was considered that prior to agreeing to these proposals, each affected State must complete a thorough analysis to determine whether the changes are actually desired by and will benefit the airlines, whether the changes adversely affect safety, which Instrument Flight Procedures (IFPs) need to be amended, which significant points need to be established and/or modified, which Letters of Agreement (LOAs) need to be amended and the extent of the resulting automation changes and required charting modifications. Additionally, some of the States in the CAR Region have upper airspace that overlies TMAs managed by different Air Navigation Service Providers (ANSPs). For those States, additional coordination is required. All of these activities need to be planned, budgeted for and integrated into existing plans. Therefore, a longer timeframe before agreeing to the implementation of such significant changes is required. Once agreed to, a longer timeframe prior to implementation is also desired. The PBN Task Force decided to develop a full process for agreement and implementation of airspace optimization.

5.11 Jamaica expressed its need to improve the route coordination process with its neighbouring FIRs in the SAM Region (Barranquilla and Panama). Their current situation presented significant challenges to handle the traffic and required dedicated solutions. The ICAO NACC Regional Office will present this case to the ICAO SAM Regional Office, and propose a course of actions to address the situation.

5.12 The PBN Task Force developed a full process for airspace optimization in the CAR Region, which covers the initiation, collaboration, design, agreement, publication and implementation. The airspace optimization process for the CAR Region is included as **Appendix D** to this report.

5.13 The first target date for implementation of routes, based on this process, is 25 February 2021. The PBN Task Force Meeting of 2021 will serve as the forum for post-implementation analysis of this process.

5.14 The Meeting formulated the following draft conclusion:

DRAFT CONCLUSION ANI/WG/PBN/TF/1/4		APPROVAL AND IMPLEMENTATION PROCESS FOR PROPOSALS OF OPTIMIZATION OF THE CAR REGION AIRSPACE	
What: That, taking into consideration the recurrent need to implement changes in the ATS route system of the CAR Region, in order to achieve operational improvements for both operators and ATS service providers, the PBN Task Force develop a process for approval and implementation of proposals of optimization of the CAR Region airspace. This process should take into account the required coordination timeframe for approval of the proposals and for a loose implementation, including adequate coordination with users and neighboring regions by 31 May 2019 .		Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical	
Why: To provide certainty to the coordination process of implementation of optimization initiatives in the CAR Region airspace			
When: 31 May 2019		Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed	
Who: <input type="checkbox"/> States <input type="checkbox"/> ICAO <input checked="" type="checkbox"/> Other:		PBN Task Force	

Agenda Item 6 PBN Task Force Related Activities

6.1 Under this Agenda Item the Secretariat presented P/01 to address the ANI/WG PBN Task Force work related issues.

6.2 During the Fourth NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/4), held in Miami, United States, from 21 to 24 August 2018, the PBN Task Force noted that there were elements within the work programme that might need to be amended. The Task Force also recognized the need to re-evaluate the Regional Performance Objectives (RPOs) within the NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (RPBANIP). It was agreed that amendments to the RPOs would drive the PBN Task Force work programme.

6.3 In order to comply with this requirement, the Task Force reviewed the NAM/CAR Regional Performance Objective Implementation of PBN included in the RPBANIP. The proposed updated RPO is included as **Appendix E**.

6.4 Following the review of the PBN RPO, the Task Force agreed its Work Programme for the period 2019-2023, included as **Appendix F**.

6.5 The PBN Task Force agreed to hold quarterly teleconferences to provide a follow up to its work programme.

6.6 The PBN Task Force agreed to hold an annual meeting, preferably at least two months before the ANI/WG annual meeting.

6.7 The PBN Task Force reemphasized the requirement for all Task Force Members to contribute to the work programme.

Agenda Item 7 Other Business

7.1 Under the framework of the PBN Task Force Meeting, coordination meetings took place among the participants, as follows.

Curaçao and Dominican Republic Meeting

7.1.1 The main objective of this meeting was to review the operational Letters of Agreement (LOAs) between both FIRs (Curaçao and Santo Domingo). The LOAs were reviewed, agreeing on everything related to update the current letter (from September 2010).

7.1.2 The new LOA includes updates relating to:

- Update of the organization and titles based on updates in the regulatory part and provider of air navigation services
- Inclusion of new routes that resulted from the implementation of regional agreements within PBN route harmonization meetings
- Coordination of flow control measures
- Application of radar separation based on the agreement of radar data exchange between both States (pending signature)
- Implementation of Shout Line between both Area Control Centres (ACCs)
- Update the times to respect the previously coordinated terms and the time before the Transmission Control Protocol (TCP) that the aircraft must already be maintaining the coordinated level
- Update of each State Points of Contact and telephone numbers
- Reduction and standardization of the longitudinal separation based on time in 10 minutes regardless of the level
- Inclusion of the application procedure of a reduced separation from 80 NM to 40 NM with GNSS applying the MACH number technique
- The implementation of a contingency plan for cases in which one of the States declares ATC ZERO
- Update of the border Aeronautical Maps and Charts MAP between both States with its Transmission control protocol (TCP)
- Effective date of the updated letter of agreement will be for 1 August 2019

7.1.3 The LOA was signed on 25 April 2019 in the ICAO NACC Regional Office.

Cuba and United States Meeting

7.1.4 Both parties agreed to continue bilateral teleconferences between the Air Route Traffic Control Center (ARTCC) Miami and CCTA Habana and attempt to solve the following issues:

1. In short-term: descents by ZEUSS that are causing a substantial increase of work load for Havana controllers and complaints from airlines

2. In medium term: review the route structure of the new redesign that still does not solve the issues originated by the current allocation of Warning Areas and sectors configuration
3. Submit to the approval of Cuba, the route that will connect KZHU with MUFH and, subsequently, the beginning of coordination between United States and IACC to implement the necessary LOA between both FIRs

Cuba and Jamaica Meeting

7.1.5 During this meeting, Jamaica made the following proposals:

Proposal 1

Under this proposal, two suggestions were made on the premise that UL780 will become uni-directional (northbound only) and Jamaica's intent to remedy the bottleneck situation which exist with aircraft entering Panama's airspace over ARNAL and DAGUD. They are as follows:

1. Route southbound aircraft TASNO NIBEO COLBY
Cuba was adamant that this will increase controllers workload which might create safety implications having to descend traffic landing MKJS from a heavy flow. This is evident in the low usage of UM221 (NIBEO COLBY)
2. Route southbound traffic TASNO COLBY
Cuba expressed similar concerns to 1), citing that not enough spacing will exist between flights upon departing TASNO to facilitate safe continuous descent into MKJS. Also, using this projection a waypoint east of where GONIS was located would be needed, which would not allow for lateral separation. This was proven using a Jeppesen map which differs from Sky Vector, which projected that such point would be in the vicinity of GONIS.

Proposed Solution offered: Create a local route from GAXER to COLBY which would resolve the challenges being experienced

Proposal 2

Relocate waypoints ULDAR and EMABU as per coordinates presented were accepted.

Cuba took note of the proposals made by Jamaica; their technical team will meet and make the assessment to propose a final solution.

Trinidad and Tobago and United States Meeting

7.1.6 Discussion: United States advised on the following route changes within the San Juan FIR:

- Cancel Y331 in its entirety from GEECE to FERNA.
- The Y331 will be replaced by the L776 which is a continuation of the UL776 from the Piarco FIR. The L776 will then continue from FERNA to MACOR in New York's FIR. The L776 will be a Area Navigation (RNAV) 10 route.
- Modify the Y421 by ending it at GEECE and establish RNAV 10 route L466 GEECE to MEGGL.
- Modify the Y294 by ending it at GESSO and establish RNAV 10 route L467 GESSO to ANADA.

7.1.7 There was a route proposal by the ICAO SAM Regional Office to replace the UG449 in the Piarco FIR. The route proposed to replace the UG449 will be an RNAV route from ZY VOR to ANADA. This proposal is still to be discussed and analysed with the Piarco ATS operations.

7.1.8 There was a proposal to replace the L451 in San Juan FIR from ELMUC to ELOPO. This was also discussed with V.C Bird International Airport (Antigua and Barbuda) and they informed United States that they do not use the upper airspace route anyway. Upon review, it appears that an upper airspace RNAV segment from SLUGO to ELOPO need to remain, therefore United States will discuss and decide if L451 from SLUGO to ELOPO needs to be maintained. Additional possibilities could be eliminating L451 all the way to ELOPO but then extending Y290 or Y355 to ELOPO.

7.1.9 Further Actions:

1. San Juan to inform on the date when changes to Y294, Y331 and Y421 will take effect.
2. United States will inform the V.C Bird International Airport and Piarco once a decision is made regarding the future of L451 and the segment between SLUGO and ELOPO.

Mexico and COCESNA Meeting

7.1.10 Mexico and COCESNA reviewed the proposal of one route sent in the version 5; Mexico still needs more time to analyse the proposal and will have a final response shortly after this meeting. In any case, COCESNA has agreed with Ecuador and Peru the establishment of the proposed route; if Mexico accepts, there will be a slight change in the route.

Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and COCESNA Meeting

7.1.11 The parties involved reviewed and agreed the proposed routes. Costa Rica has objection to two of the routes that were being taken into consideration.

Antigua and Barbuda and Trinidad and Tobago Meeting

7.1.12 Trinidad and Tobago met with Antigua and Barbuda regarding the following:

1. Piarco FIR Airspace Concept
2. ICAO SAM/CAR Interface Route Version 5 proposals
3. Eastern Caribbean (E/CAR) States updating PoCs for the ANI/WG PBN TF
4. 5LNC duplicates

7.1.13 Regarding item 1, Antigua and Barbuda showed Trinidad and Tobago a proposed plan for restructuring of their Terminal Control Area (TMA). Trinidad and Tobago requested that Antigua and Barbuda send the draft proposal so that the Airspace and Procedure Design Unit within the Trinidad and Tobago Civil Aviation Authority (TTCAA) could analyse it and determine the points of connectivity to the upper airspace. Additionally, both ANSPs agreed that there was a critical need for a face to face airspace design meeting among Antigua and Barbuda, Guadeloupe, San Juan, Sint Maarten and Trinidad and Tobago.

7.1.14 Regarding item 2, both ANSPs agreed on the need of further analysis and coordination to be carried out, in order to determine if the route proposals will be acceptable or if a counterproposal will be submitted.

7.1.15 Regarding item 3, it was recommended that the Civil Aviation Technical Group (CATG) Chairperson request that E/CAR States/Territories provide an update to the ICAO NACC Regional Officer ATM/SAR.

7.1.16 Regarding item 4, the ICAO NACC Regional Office requested that all States/Territories provide an excel spreadsheet that contains all of the 5LNCs within their respective airspace.

7.1.17 The PBN Task Force recognized the importance of the involvement of industry in the process for airspace optimization. The PBN Task Force encouraged its participation in the Task Force activities, as key stakeholders in this process.

7.1.18 As a result of these meetings, the Secretariat recalled that those States that want to formalize changes in the ATS route system of the CAR Region shall do so applying the process for approval and implementation of proposals of optimization of the CAR Region airspace.

APPENDIX A
EXECUTIVE LIST OF CONCLUSIONS/DECISIONS

Number	Conclusion/Decision	Responsible for action	Deadline
1/1	FOLLOW UP ON THE SUB-PROJECT TO DEVELOP CAR REGION PBN AIRSPACE CONCEPT		
	That, in order to complete the Sub-Project to develop and implement a Performance-Based Navigation (PBN) Airspace Concept Document for the CAR Region and take advantage of the assistance possibilities that result from it:		
	a) the ICAO NACC Regional Office resend the survey on the States/Territories PBN Implementation Status Form to the PBN Task Force Members and Points of Contact in order to obtain their official response by 31 August 2019 ;	States/Territories and ICAO NACC Regional Office	31 August 2019
	b) the ICAO NACC Regional Office, with the support of the Sub-Project Team of Subject Matter Experts, revise/adjust the timelines of the Sub-Project to complete the next phases as necessary by 31 August 2019 ; and	ICAO NACC Regional Office and Sub-Project Team	31 August 2019
	c) the PBN Task Force update the PBN Task Force Points of Contact list, to include all CAR States, Territories and International Organizations by 31 August 2019 .	PBN Task Force	31 August 2019
1/2	UPDATE OF THE ICAO DATABASE OF ATS ROUTES AND SIGNIFICANT POINTS		
	That, with the purpose of collaborating with the updating of the ICAO International Codes and Route Designators (ICARD) system, supporting the initiatives to remove duplicates and the compliance with related ICAO SARPs:		
	a) the ICAO NACC Regional Office send a request to States, Territories and ATS service providers in the CAR Region submit a list of all their published regional ATS routes and Five-letter name codes (5LNCs) to the ICAO NACC Regional Office by 31 July 2019 , using the template that will be sent by the ICAO NACC Regional Office; and	States/Territories, ATS providers in the CAR Region and ICAO NACC Regional Office	31 July 2019

Number	Conclusion/Decision	Responsible for action	Deadline
	b) States, Territories and ATS Service providers in the CAR Region cooperate to address discrepancies and duplicates ATS routes and 5LNCs.	States/Territories and ATS providers in the CAR Region	
1/3	PRESENTATION OF ATS ROUTE REVIEW BY CAR STATES		
	That, following the results of the analysis of the proposal for the SAM ATS RO version 5, the ICAO NACC Regional Office will present the summary of the comments from the CAR Region (Appendix C) in the upcoming Tenth South American Meeting on ATS Routes Network Optimization (SAM ATSRO/10) to be held from 17 to 21 June 2019 in Bogotá, Colombia, along with details from the process for proposals of optimization of the CAR region airspace, for coordination purposes.	ICAO NACC Regional Office	June 2019
1/4	APPROVAL AND IMPLEMENTATION PROCESS FOR PROPOSALS OF OPTIMIZATION OF THE CAR REGION AIRSPACE		
	That, taking into consideration the recurrent need to implement changes in the ATS route system of the CAR Region, in order to achieve operational improvements for both operators and ATS service providers, the PBN Task Force develop a process for approval and implementation of proposals of optimization of the CAR Region airspace. This process should take into account the required coordination timeframe for approval of the proposals and for a loose implementation, including adequate coordination with users and neighboring regions by 31 May 2019 .	PBN Task Force	31 May 2019

APPENDIX B

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

1. Background

During the First NAM/CAR ANI/WG Meeting, a PBN Implementation Task Force (TF) 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 to update and report progress to the ANI/WG based on the action plan for these tasks. During the Fourth NAM/CAR ANI/WG Meeting a decision was taken to amend the Terms of Reference with the objective of increasing the effectiveness of the PBN Task Force.

2. Responsibilities

2.1 The Task Force is responsible for:

- a) Developing and implement a Work Programme to support the PBN implementation in NAM/CAR Regions in accordance with the NAM/CAR RPBANIP and RPOs.
- b) Continued refinement, ongoing review of the NAM/CAR PBN Implementation Plan and monitoring and reporting on its application in the regions.
- c) Proposing to the ANI/WG updates to the NAM/CAR RPBANIP and RPOs, as required.
- d) Assisting States with the development of their PBN implementation plans, based on the PBN airspace concept, periodically monitoring their progress and reporting to the ANI/WG.
- e) 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 in accordance with the ICAO Strategic Objectives and Global Plan Initiatives (GPIs).
- f) Identifying deficiencies and constraints with PBN implementation, and proposing solutions that would facilitate resolution of such problems.
- g) The Task Force Rapporteur would be appointed through coordination between ICAO NACC Regional Office and Member States.

2.2 Responsibilities of the members

- a) Attend the Task Force meetings and teleconferences.
- b) Collaborate with the development and implementation of the Task Force work programme.
- c) Comply with the agreed tasks and activities as assigned.

2.3 Responsibilities of the Rapporteur

- a) Lead the development and implementation of the Task Force work programme and activities.
- b) Follow up on the compliance with the RPOs.
- c) Report to the ANI/WG the compliance with the Task Force work programme and RPOs related tasks.

2.4 Responsibilities of the Secretariat

- a) The ICAO NACC Regional Officer ATM/SAR will serve as the Secretary of the Task Force.
- b) Responsible of supporting the Task Force activities, providing guidance to the connection for the Task Force work programme and the RPBANIP.
- c) In coordination with the Rapporteur, develop and present the annual programme of activities to the members.
- d) In coordination with the Rapporteur, convene the Task Force activities, teleconferences and meetings.
- e) Maintain the Task Force documentation, work programme and membership up to date in the ANI/WG's website.

2.5 Responsibilities of the States

- a) Ensure commitment and active participation of its members, according to the role and responsibilities assigned.
- b) Provide resources (e.g. time/finances to attend meetings) to ensure that their representatives are able to contribute to the activities of the Task Force.
- c) Request accountability for the development and implementation of the PBN work programme in the NAM/CAR Region.
- d) Provide Points of Contact (POCs) for the PBN Task Force. The PBN Task Force will liaise with the POCs of each State regarding the activities of the TF and it is expected that the POCs will then coordinate internally with the relevant persons within their organization.

3. Membership

3.1 The PBN Task Force shall be comprised of a Rapporteur and up to nine (9) members, nominated by ICAO States, Territories and International Organizations members of the ANI/WG. All members of the Task Force should have completed some form of PBN training and or have experience in PBN implementation.

3.2 The membership of the PBN Task Force should include:

- i At least one (1) representative from the following:
 - a The NAM Region
 - b Central America Sub-region
 - c Central Caribbean Sub-region
 - d Eastern Caribbean Sub-region

- e IATA
- f CANSO
- ii One (1) Procedure Designer
- iii One (1) Airspace Designer

3.3 The Task Force may temporarily include other persons as required for specific tasks.

4. Working Methods

The Task Force will:

- a) Present its work programme containing activities in terms of objectives, responsibilities, deliverables and timelines.
- b) The Task Force Rapporteur and the Secretariat will coordinate an annual programme of activities to comply with the requirements of the approved work programme.
- c) Avoid duplicating work within the ANI/WG and maintain close coordination among the existing entities to optimize use of available resources and experience.
- d) Designate, as necessary, Ad hoc Groups to work on specific topics and activities and organize clearly defined tasks and activities.
- e) Coordinate tasks to maximize efficiency and reduce costs via electronic means including emails, telephone and teleconference calls, and convene meetings as necessary.
- f) Report on and coordinate the progress of assigned tasks to the ANI/WG.

5. PBN Task Force Members

#	Task Force Member Name	State/Territory/ International Organization	Role	e-mail
1	Jorge Centella Artola	Cuba		jorge.centella@iacc.avianet.cu
2	Jacques Lasten	Curaçao		J.Lasten@dc-ansp.org
3	Alexi Manuel Batista Ruiz	Dominican Republic		alexi.batista@idac.gov.do
4	Courtney Malcolm	Jamaica		courtney.malcolm@jcaa.gov.jm
5	Oscar Vargas	México		ovargasa@sct.gob.mx
6	Riaaz Mohammed	Trinidad and Tobago	Rapporteur	rmohammed@caa.gov.tt
7	Scott Leis	United States		Scott.Leis@faa.gov
8	Javier Vanegas	CANSO		Javier.Vanegas@CANSO.org
9	César Turcios	COCESNA		cesar.turcios@cocesna.org
10	Marco Vidal	IATA		vidalm@iata.org
11	Eddian Méndez	ICAO	Secretary	emendez@icao.int

6. PBN Task Force Points of Contact

Name	State/Territory/ International Organization	e-mail
	Anguilla	
Shenneth Phillips	Antigua and Barbuda	shennethp@yahoo.com
	Aruba	
	Bahamas	
Kendrick Mason	Barbados	
	Belize	
	Bermuda	
	Bonaire	
	British Virgin Islands	
Jeff Cochrane	Canada	cochraj@navcanada.ca
Erick Bodden	Cayman Islands	erick.bodden@caymanairports.com
Fernando Naranjo Elizondo	Costa Rica	fnaranjo@dgac.go.cr
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	Curaçao	
	Dominica	
	Dominican Republic	
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	Grenada	
	Guadeloupe	
Enio Pantaleón Hernández Aguilar	Guatemala	enio.hernandez@dgac.gob.gt
Eric Legagneur	Haiti	
Heriberto Sierra	Honduras	hsierra@ahac.gob.hn
Christopher Chambers	Jamaica	christopher.chambers@jcaa.gov.jm
	Martinique	
	Mexico	
	Montserrat	
Mario Altamirano	Nicaragua	aeronav@inac.gob.ni
Saiman Morales		atm@inac.gob.ni
Wilfredo Cruz-Rivera	Puerto Rico	wilfredo.cruz-rivera@faa.gov
	Saba	
	Saint Barthélemy	
	Saint Kitts and Nevis	
	Saint Lucia	

Name	State/Territory/ International Organization	e-mail
	Saint Pierre et Miquelon	
	Saint Vincent and the Grenadines	
	Sint Eustatius	
	Sint Maarten	
Robert Rooplal	Trinidad and Tobago	rrooplal@caa.gov.tt
	Turks and Caicos Islands	
	United States	
	Virgin Islands	

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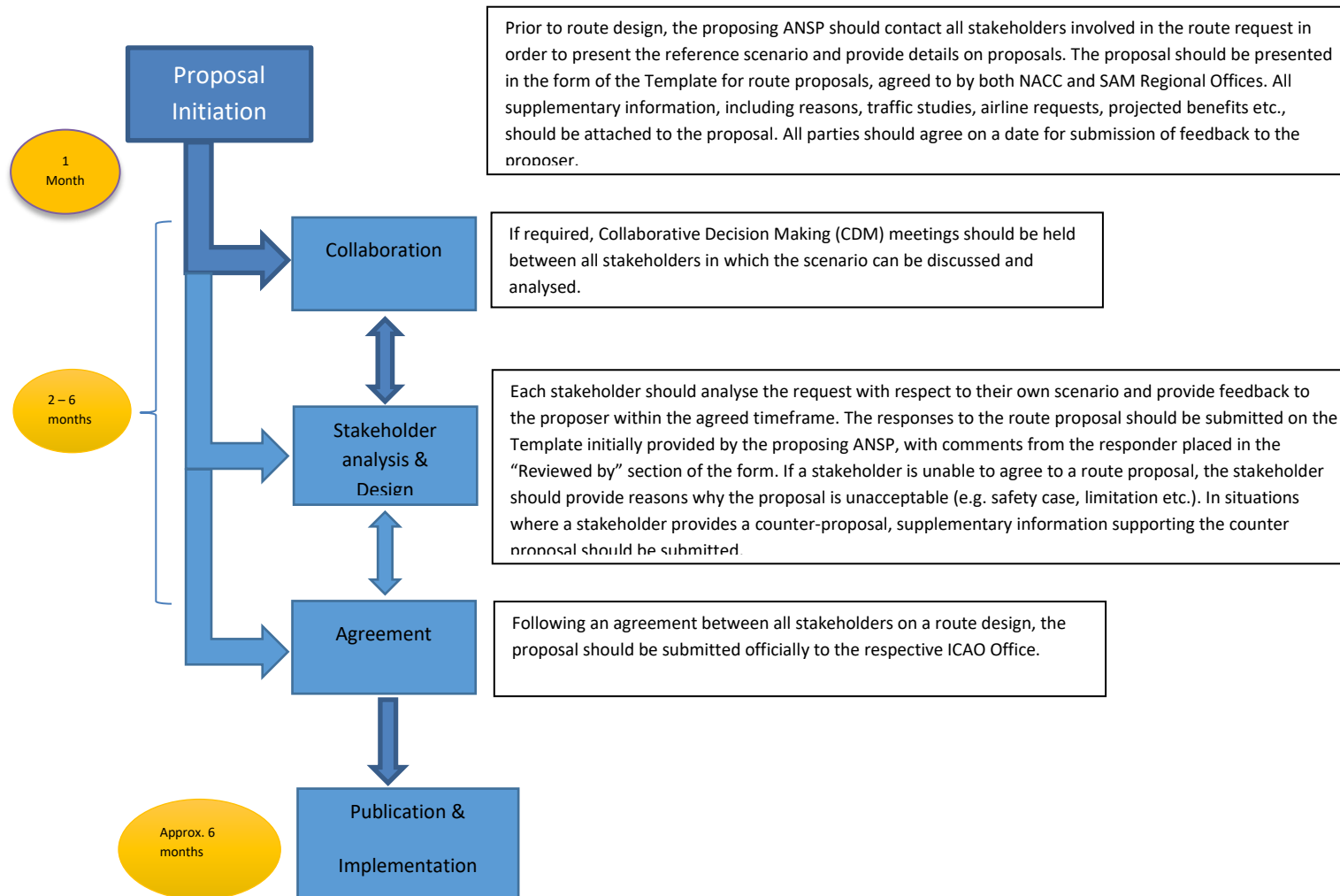
Proposal	States/FIRs Involved	Agreement	Comments
CS 5-01	Trinidad and Tobago /Antigua and Barbuda/Barbados/Martinique/Guadeloupe	More analysis and coordination required	
CS 5-02	Trinidad and Tobago /Barbados	More analysis and coordination required	
CS 5-03	Trinidad and Tobago /Barbados	More analysis and coordination required	
CS 5-04	Trinidad and Tobago /Antigua and Barbuda/Martinique/Guadeloupe	More analysis and coordination required	
CS 5-05	Trinidad and Tobago /San Juan	San Juan will also eliminate G449, from ANADA to DDP NDB, within its airspace, effective 05 DEC 2019. The current CS 5-05 proposal does not extend North beyond ANADA.	
CS 5-06	Trinidad and Tobago /Martinique/Grenada/St.Vincent/St. Lucia	More analysis and coordination required	
CS 5-07	Trinidad and Tobago	More analysis and coordination required	
CS 5-08	Trinidad and Tobago /Barbados/Grenada	More analysis and coordination required	
CS 5-09	Trinidad and Tobago /Martinique	More analysis and coordination required	
CS 5-10	Trinidad and Tobago /San Juan/ Guadeloupe	(Trinidad and Tobago) More analysis and coordination required (San Juan) this proposal will not be feasible for ZSU, because it touches a current TCP of 2 current airways	
CS 5-11	Jamaica / Curaçao /Trinidad and Tobago/Barbados/St. Vincent	More analysis and coordination required	
CS 5-12	Jamaica / Curaçao /Trinidad and Tobago	More analysis and coordination required	
CS 5-13	Curaçao / San Juan	(Curaçao, USA) Analyzed the proposal, Curaçao prefers to maintain the conventional route within their lower airspace; proposes Q3 2020 for implementation. USA (San Juan) will implement the portion of this proposal within their airspace. Additionally, San Juan and New York will replace the conventional segment of A516 between OBIKE and RKDIA with the new RNAV route. RKDIA is in New York's airspace.	
CS 5-14	Dominican Republic / Curaçao	(Curaçao) Analyzed the proposal, prefer to maintain the conventional route in the lower airspace; proposes Q3 2020 for implementation	
CS 5-15	Curaçao /Trinidad and Tobago	(For Trinidad and Tobago) the proposal is being considered but to be determined at a later time (For Curaçao) the proposal can not be agreed	(Curaçao) can not delete the route between Curaçao and BONAX
CS 5-16	Dominican Republic / Curaçao	(Curaçao) the proposal can not be agreed	(Dominican Republic) see no reason for the change since it affects previous publications resulting from the Pfa1 and Pfa2 that were recently implemented, on the other hand creates another TCP between the TNCF FIR and the MDCS different from the existing one, thus increasing the risk in the LHDs, we understand that the proposed PBN route should be superimposed on the current trajectory of UA315 and in that way could be accepted
CS 5-17	Curaçao/San Juan	(Curaçao, USA) Analyzed the proposal, Curaçao prefers to maintain the conventional route within their lower airspace; proposes Q3 2020 for implementation. USA (San Juan) will eliminate G431 from SCAPA to ELMUC and replace it with a new RNAV route from SCAPA to JOSHE effective 05 DEC 2019. The current CS 5-17 proposal does not extend North beyond SCAPA.	
CS 5-18	Cuba/Jamaica/Curaçao	(Curaçao, Jamaica) the proposal can not be agreed	
CS 5-19	Jamaica	Analyzed the request: no objection	
CS 5-20	Curaçao	(Curaçao) the proposal can not be agreed	
CS 5-21	Jamaica	Analyzed the request: no objection	This new RNAV route should be northbound only from KILER to EPSIM; related to a counterproposal to Barranquilla from GERNA to PUTUL (southbound only)
CS 5-22	Jamaica	Analyzed the request: made a counterproposal	
CS 5-23	COCESNA	Analyzed the request: no objection	
CS 5-24	Jamaica/COCESNA	(COCESNA) Analyzed the request: no objection	does not affect Kingston
CS 5-25	Honduras/Nicaragua	(COCESNA, Honduras, Nicaragua) Analyzed the request: no objection	
CS 5-26	Nicaragua	(COCESNA, Nicaragua) Analyzed the request: no objection	
CS 5-27	Costa Rica	(COCESNA, Costa Rica) Analyzed the request: no objection	
CS 5-28	COCESNA	(COCESNA) Analyzed the request: Can not be agreed (not feasible)	Interferes with descending traffic to MROC
CS 5-29	Costa Rica	(COCESNA, Costa Rica) Analyzed the request: request a minor change to be coordinated with Panamá	
CS 5-30	COCESNA	(COCESNA) Analyzed the request: cn not be agreed (not feasible)	unable to remove UA502 in CENAMER FIR
CS 5-31	COCESNA	(COCESNA, El Salvador) Analyzed the request: no objection	
CS 5-32	COCESNA	(COCESNA) Analyzed the request: no objection /Pending response from Mexico for an additional change	

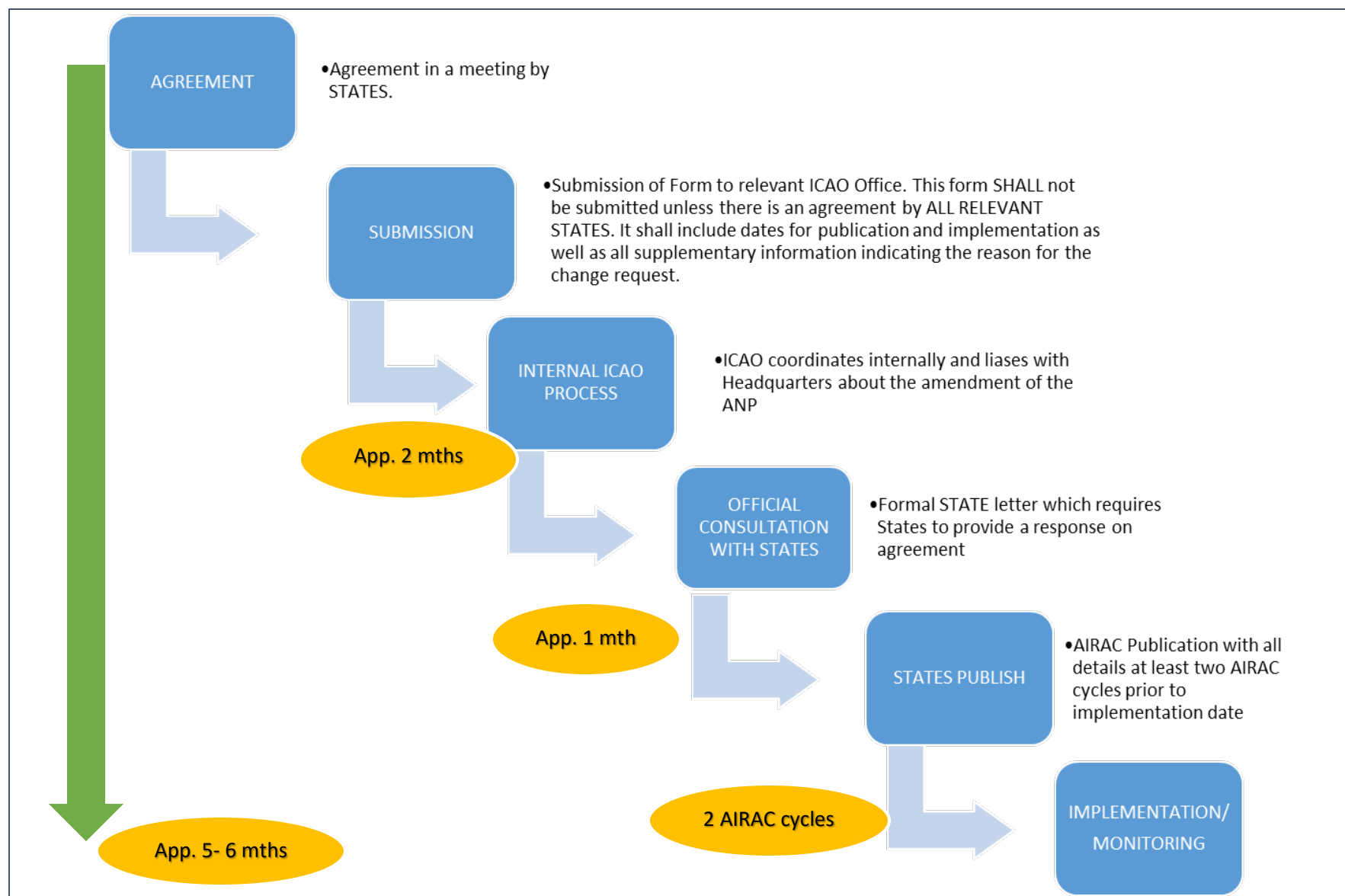
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Additional proposals			
AP 5-01	Cuba/Jamaica/Colombia	UA301 realign and implement a RNAV southbound only	
AP 5-02	Cuba/Jamaica/Colombia	Realign UL417 and northbound only	
AP 5-03	Jamaica/Panamá	(UL780) no changes to the route just to make it unidirectional northbound only	
AP 5-04	San Juan/Venezuela	Eliminate A300 (UA300) and replace it with a RNAV Route from KIKER northbound	
AP 5-05	San Juan/Venezuela	Eliminate G432 (UG432) and replace it with a RNAV Route from ARMUR northbound	

APPENDIX D

AIRSPACE OPTIMIZATION PROCESS FOR THE CAR REGION





NAM/CAR REGIONAL PERFORMANCE OBJECTIVES

1. IMPLEMENTATION OF PERFORMANCE BASED NAVIGATION (PBN)				
Benefits				
Environment	<ul style="list-style-type: none">• Reductions in fuel consumption			
Efficiency	<ul style="list-style-type: none">• Ability of aircraft to conduct flight more closely to preferred trajectories• Increase in airspace capacity• Facilitate the utilization of advanced technologies (e.g., FMS based arrivals) and ATC decision support tools (e.g., metering and sequencing)			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPONSIBLE	STATUS
AOM	a) Implement Collaborative Decision-Making (CDM) process in coordination with stakeholders	2020-2023	States, Territories, Int. Orgs	Valid
	b) Conduct assessment on PBN implementation status of each State, Territory, Int. Organization within the Region	2020-2023	ICAO NACC Office	Valid
	c) Implement PBN airspace concept in accordance with the ICAO PBN Manual	2020-2023	States, Territories, Int. Orgs	Valid
	d) Publish regulations and procedures for PBN operational approval	2020-2023	States, Territories, Int. Orgs	Valid
	e) Evaluate and implement PBN requirements for ATC automated systems, as required	2020-2023	States, Territories, Int. Org	Valid
	f) Analyze and enhance communication, navigation and surveillance infrastructure in accordance with PBN requirements	2020-2023	States, Territories, Int. Orgs	Valid
	g) Develop and implement PBN training programme for pilots, ATCOs, operators and regulators, as well as implementation of GNSS technologies	2020-2023	States, Territories, Int. Orgs	Valid
	h) Optimize the Regional airspace by implementing the appropriate PBN route structure (as outlined in the ICAO PBN Manual Doc 9613 and Doc 9992) and removing those conventional ATS routes that have been analyzed and considered redundant.	2020-2023	States, Territories, Int. Orgs	Valid
	i) Implement CDOs/CCOs for SIDs/STARS in terminal areas based on RNAV 1 or2 and RNP 1-or 2 navigation specification, as required	2020-2023	States, Territories, Int. Org	Valid
	j) Optimize and adjust TMAs structure according to the new SIDs/STARS implemented	2020-2023	States, Territories, Int. Orgs	Valid
	k) Design and implement PBN APV in accordance with Assembly Resolution A37-11	2020-2023	States, Territories, Int. Orgs	Valid
	l) Conduct PBN safety assessment based ATC simulations (fast time and/or real time), live trials, etc., as required	2020-2023	States, Territories, Int. Orgs	Valid
	m) Coordinate-Integrate-Improve ATM system to the new PBN concept	2020-2023	States, Territories, Int. Orgs	Valid
	n) Develop performance measurement programme	2020-2023	States, Territories, Int. Orgs	Valid
	o) Develop post-implementation PBN Safety Assessment Programme	2020-2023	States, Territories, Int. Orgs	Valid
	p) Monitor implementation progress	2020-2023	States, Territories, Int. Orgs	Valid
GPIs	GPI/5: Performance-Based Navigation; GPI/7: Dynamic And Flexible ATS Route Management; GPI/8: Collaborative Airspace Design And Management; GPI/10: Terminal Area Design and Management; GPI/11: RNP and RNAV SIDS and STARS; and GPI/12: FMS-Based Arrival Procedures			

APPENDIX F

ANI/WG PBN TASK FORCE WORK PROGRAMME 2019-2023 REVISION APRIL/ABRIL 2019

Task Name/ Tarea	Start/ Inicio	Finish / Final	Deliverables/ Resultados	Follow-up/ Seguimiento	Responsible/ Responsables	Observations/ Comments- Observaciones/ Comentarios
a) Assist States/Territories with the Implementation of PBN Airspace concept for oceanic, continental and terminal areas in of NAM/CAR Regions in accordance with the ICAO PBN Manual Doc 9613 and Doc 9992	APR 2019	DEC 2023	i) Update the regional PBN Upper Airspace concept with implementation activities for the period 2019-2023	ICAO Regional Office and ANI/WG PBN Task Force	PBN Taskforce, ICAO, States, Territories, International Organizations,	Reference Sub-Project to Develop and Implement a Performance-Based Navigation (PBN) Airspace Concept Document for the CAR Region. Requirements: Commitment from executive decision makers, Funding for the project, Human Resources (Airspace Designers, ATCOs, Airline Operators, ANSP Decision makers)
	APR 2019	DEC 2023	ii) Update the regional PBN Lower Airspace concept with implementation activities for the period 2019-2023	ICAO Regional Office and ANI/WG PBN Task Force	PBN Taskforce, ICAO, States, Territories, International Organizations	Reference Sub-Project to Develop and Implement a Performance-Based Navigation (PBN) Airspace Concept Document for the CAR Region. Requirements: Commitment from executive decision makers, Funding for the project, Human Resources (Airspace Designers, ATCOs, Airline Operators, ANSP Decision makers)
b) Assist States/Territories and International Organizations with PBN training	APR 2019	DEC 2023	PBN training materials and subject matter expertise	ICAO Regional Office and ANI/WG PBN Task Force	States, Territories, Int. orgs, ANSPs and NAM/CAR Civil Aviation Training Centres Group (CATCG)	PBN TF to engage with Civil Aviation Training Centers Group to promote the development of PBN training programmes for pilots and controllers

Task Name/ Tarea	Start/ Inicio	Finish / Final	Deliverables/ Resultados	Follow-up/ Seguimiento	Responsible/ Responsables	Observations/ Comments- Observaciones/ Comentarios
c) Assist States/Territories and International Organizations with the Implementation of CDOs/CCOs for SIDs/STARS in terminal areas based on RNAV 1 or 2 and RNP1 or2 navigation specification, as required	APR 2019	DEC 2023	Implementation of CDOs/CCOs in TMAs	States continue implementation of CDOs and CCOs	States, Territories, Int. Org and ANSPs in conjunction with the ANI/WG PBN Task Force	
d) Identify the discrepancies between the ATS routes structure implemented in the CAR region and the CAR/SAM AIR NAVIGATION PLAN VOLUME II (Table ATM II-CARSAM-1- CAR/SAM Regions ATS Routes) propose actions to attend the differences found	APR 2019	DEC 2023	Identified discrepancies and action plan to attend the differences	ICAO Regional Office and ANI/WG PBN Task Force	PBN Taskforce, ICAO	

Task Name/ Tarea	Start/ Inicio	Finish / Final	Deliverables/ Resultados	Follow-up/ Seguimiento	Responsible/ Responsables	Observations/ Comments- Observaciones/ Comentarios
e) Develop and implement a regional process to approve and implement routes optimization initiatives for the CAR Region.	APR 2019	JULY 2019	A clear process for regional approval and implementation of routes optimization initiatives for the CAR Region	ICAO Regional Office and ANI/WG PBN Task Force	States, Territories, Int. Org and ANSPs in conjunction with the ANI/WG PBN Task Force	Coordinate with the SAM Region Route Optimization Process
f) Assist with the standardization of the application of longitudinal separation across the NAM/CAR/SAM regions.	APR 2019	DEC 2023	Analysis of applicable separation minima for transfer traffic between FIRs	ANSPs of States, Territories, Int. Orgs to update existing Letters of Agreement (LOAs) between ATC units	ANSPs of States, Territories, Int. Orgs	PBN TF to support ANSPs in the standardization of the applicable longitudinal separation based on the analysis performed.
g) Monitor implementation progress	APR 2019	DEC 2023	Annual review of PBN implementation	On-going activity conducted by ICAO	ICAO, States, Territories, Int. Organisations	On going