



ICAO

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

WORKING PAPER

ANI/WG/PBN/TF/OPT — WP/02  
14/10/20

**Optimization of the CAR Region Airspace Meeting – NAM/CAR Air Navigation Implementation Working Group (ANI/WG) Performance-Based Navigation (PBN) Airspace Concept Task Force (ANI/WG/PBN/TF/OPT)**

Online , 20 – 23 October 2020

**Agenda Item 3: Implementation of Performance-Based Navigation (PBN) Routes**

**ATS ROUTES OPTIMIZATION PROPOSALS FOR THE CAR AND SAM REGIONS VERSION 2020**

(Presented by the Secretariat)

**EXECUTIVE SUMMARY**

This Working Paper presents the proposals for optimization of the Air Traffic Services (ATS) routes network for the CAR Region and SAM Regions for 2020.

<b>Action:</b>	Suggested actions are included in Section 5.
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"><li>• Air Navigation Capacity and Efficiency</li><li>• Environmental Protection</li></ul>
<i>References:</i>	<ul style="list-style-type: none"><li>• SAM ATSRO Version 5</li></ul>

**1. Introduction**

1.1 During the NAM/CAR Air Navigation Implementation Working Group (ANI/WG) Performance-Based Navigation (PBN) Implementation Task Force Meeting, held in Mexico City, Mexico, from 22 to 25 April 2019, a full process for airspace optimization in the CAR Region was developed and approved.

1.2 The aforementioned process includes the initiation, collaboration, design, agreement, publication and implementation of new ATS routes.

1.3 Airspace optimization of the CAR Region ATS Routes network is a recurrent task, which requires significant interaction between Air Navigation Service Providers (ANSP) of the CAR Region and proper integration with the SAM Region.

**2. Background**

2.1 The Performance-Based Navigation (PBN) Task Force proposed its 2020 annual meeting as the scenario to put in operation this process. However, due to the COVID-19 outbreak, the Task Force Meeting scheduled from 13 to 17 April 2020 had to be postponed, forcing the Task Force to apply alternative means of coordination and collaboration, in order to achieve the initially proposed objectives.

2.2 In response, the Task Force assumed a coordination mechanism using electronic correspondence and virtual meetings, taking as a reference previously discussed proposals between the CAR and SAM Regions. Other initiatives are aimed to enhance air operators' connectivity between the east coast of United States and Cancun, Mexico, and provide additional options with the eastern and central Caribbean, for weather avoidance and sector offload.

### **3. Analysis**

3.1 The challenge for the optimization of the ATS routes network for the CAR Region is to promote a transition to a fully performance based environment, in an effective manner, instead of merely replacing routes nomenclature, by implementing the optimal route trajectory. Many of the PBN routes proposed still connect conventional Navigation Aids (NAVAIDS).

3.2 Additionally, while the total removal of the conventional routes in the upper airspace continues to be the main driver for changes, some States still consider the importance of maintaining corridors of conventional ATS routes for the upper airspace, to serve operators that are still not equipped.

3.3 Another important aspect for this process is to put regional harmonization and collaboration as a priority. Stakeholders need to give priority to the provision of seamless services and expand the vision for changes further than the boundaries of their Flight Information Regions (FIRs) and airspace jurisdiction.

### **4. ATS routes proposals**

4.1 Twenty-five proposals were analysed for this optimization project, involving 10 States and 13 FIRs for the CAR and SAM Regions.

4.2 The summary of the proposals are included in the **Appendix** to this Working Paper. These include deletion of existing routes, amendment of existing routes and the implementation of new routes.

4.3 Publication date proposed is 22 April 2021 and effective date 17 June 2021.

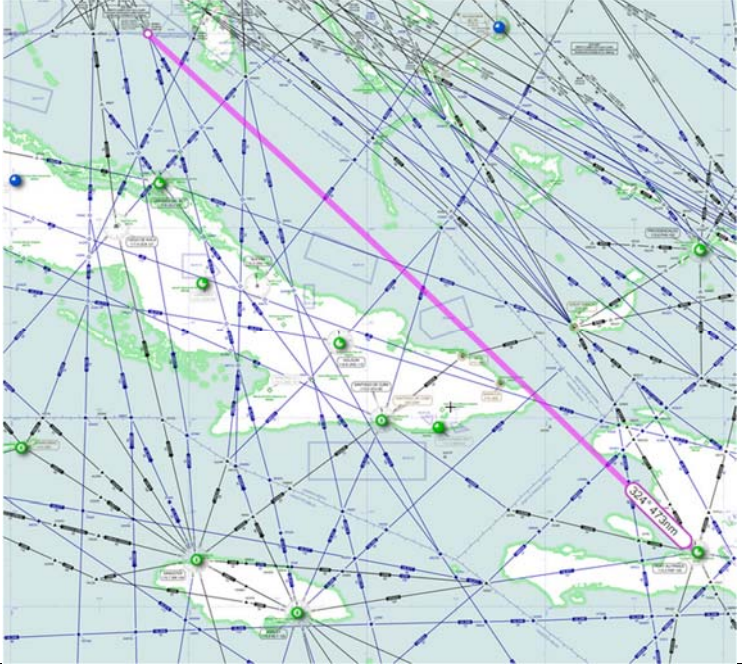
### **5. Suggested actions**

5.1 The Meeting is invited to:

- a) agree on the implementation proposals included in the Appendix;
- b) agree on a publication date 22 April 2021 and effective date 17 June 2021; and
- c) suggest any other actions deemed appropriate.

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**ATS ROUTES PROPOSALS**

Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
1	Cuba Haiti United States/Miami	<p>NEW ATS ROUTE Add new RNAV route From PAP VOR to BORDO (TCP Havana-Miami)</p> <p><b>INPUT ADD NEW ATS ROUTES TABLE</b></p> <p><b>UL218</b> BORDO 24 00 00N, 078 27 30W MODIT 19 45 52N 073 35 53W PAP VOR 18 39 18N 0725448W</p>	

Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
2	Cuba United States/Houston	<p>NEW ATS ROUTE Add new RNAV route From SHARQ (new waypoint) to a new fix located at UB879 and UL674.</p> <p><b>INPUT ADD NEW ATS ROUTES TABLE UM463</b></p> <p>SHARQ 24 00 00N 085 30 00W NEW 5LNC to be provided by Cuba [ ]</p>	

3

Cuba  
United States / Houston

AMEND ATS ROUTE  
Extend UL/L 465 from FUNKO to SHARQ  
**INPUT AMEND ATS ROUTES TABLE**

**L465**



TABOGA 084715N 0793343W  
ROKIN 114700N 0772500W  
ARNAL 150000N 0803651W  
GRAND CAYMAN [ ]  
TULEV LACET [ ]  
FUNKO [ ]  
SHARQ 24 00 00N 085 30 00W  
NAVVL 25 05 47N 085 30 00W  
MINOW 26 02 47N 085 58 58W  
TRESR 27 17 24N 088 17 48W  
PLNDR 28 16 00N 089 43 07W

**UL465**

TABOGA 084715N 0793343W  
ROKIN 114700N 0772500W  
ARNAL 150000N 0803651W  
GRAND CAYMAN [ ]  
TULEV LACET [ ]  
FUNKO [ ]  
SHARQ 24 00 00N 085 30 00W





Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
4	Cuba United States / Houston	<p>NEW ATS ROUTE Add new RNAV route from UCJ VOR/DME to SHARQ.</p> <p><b>INPUT ADD NEW ATS ROUTES TABLE</b> <b>UM451</b> UCJ/VOR 22 28 03N 078 18 43W SHARQ 24 00 00N 085 30 00W</p>	
5	Cuba United States / Miami Oceanic	<p>AMEND ATS ROUTE Change the path of UM595 (realignment) to go from ERRCA to BOPOL (delete UNV VOR).</p> <p><b>INPUT AMEND ATS ROUTES TABLE</b> <b>UM595</b> UNV/VOR 21 23 42N 077 13 51W BOPOL 21 23 26N 077 25 17W ERRCA 22 42 17N 076 08 14W</p>	

6

Curacao  
Venezuela (SAM)  
Dominican Republic

1. DELETE ATS ROUTES  
Delete UA554 from MAIQUETIA (MIQ)  
to POKAK

**INPUT DELETE ATS ROUTES TABLE**

**UA554** See Note/Voir Note/Véase Nota 2\*

LAMER

CERDA-CERDA

GRAND-TURK

SEKAR

PUERTO-PLATA

PUNTA CAUCEDO

POKAK

KABON 124445.00N 0674122.00W

MAIQUETIA 103634.10N 0665922.80W

\*To/Vers/Hasta SEKAR

2. AMEND ATS ROUTE  
Extend UL216 from MAIQUETIA (MIQ)  
to POKAK

**INPUT AMEND ATS ROUTES TABLE**

**UL216**

NELOX 29 59.76S 051 09.91W

GEBUN 263440S 0534646W

FOZ 253500S 0543013W

ARVOP 221601S 0563657W

SIDAK 193821S 0581228W

UGUPA 153734S 0602330W

ARMUK 132856S 0613330W

UBSIM 12 56.50S 061 50.62W

PORTOVELHO 08 42.84S 063 54.21W

MEDLE 03 33.07S 065 46.19W

SAO GABRIEL 00 09.04S 066 59.11W

ZORRO 01 51.80N 067 12.11W

PUERTO AYACUCHO 053658N 0673637W

ALTOS 102335N 0670231W

MAIQUETIA 10 36 34N 066 59 22W

KABON [ ]

POKAK 16°00'00"N 068°34'00"W

DCY/VOR 19° 16' 14" N 069° 44' 26.65" W

LERED 20° 23' 54.8" N 070° 27' 03.5" W



Curacao  
Venezuela (SAM)  
Trinidad and Tobago

1. DELETE ATS ROUTES  
Delete UA563 from BONAX-PJB-PJG

**INPUT AMEND ATS ROUTES TABLE**

**UA563** See Note/Voir Note/Véase Nota 1\*

CURACAØ

BONAX 120441.00N 0674949.00W

GRAND ROQUE 115640.80N 0664016.50W

TOROP 112747.00N 0661019.00W

MARGARITA 105449.40N 0635718

CARUPANO 103929.90N 0631534.10W

MEGIR 103100.00N 0615220.00W

PIARCO

2. NEW ATS ROUTE  
Add new RNAV route from BONAX-PJB-PJG

**INPUT ADD NEW ATS ROUTES TABLE**

**UL219**

BONAX [ ]

BONAIRE [ ]

CURACAØ [ ]

3. Delete ATS Route  
Delete UA552 from MEGIR to POS

**INPUT AMEND ATS ROUTES TABLE**

**UA552**

TAMPICO

NAUTLA

VERACRUZ

MINATITLAN

TUXTLA

ERBOR

LA AURORA

TONCONTIN

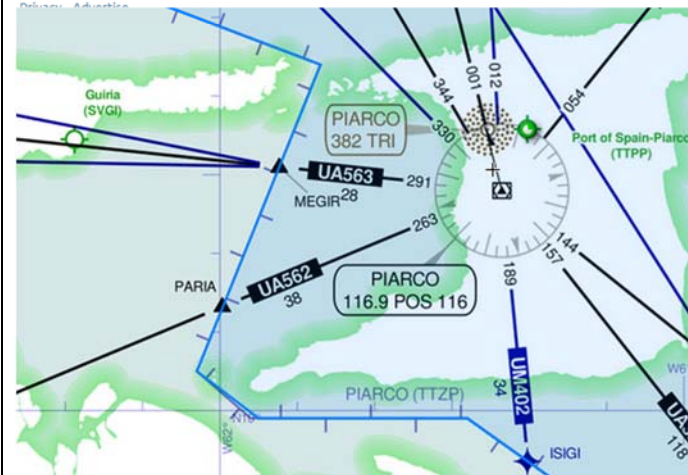
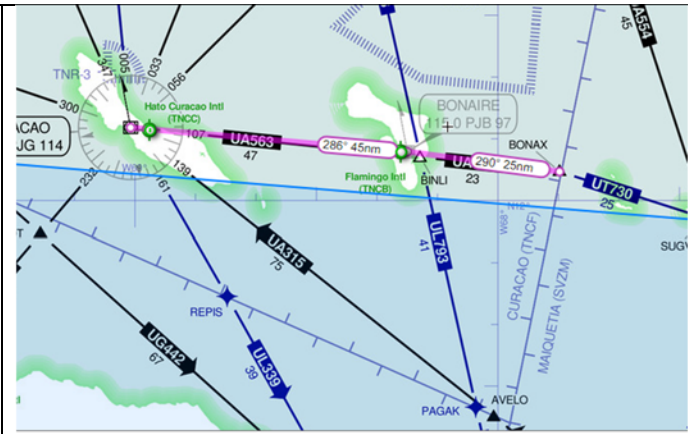
PUERTO CABEZAS

FALLA 132604N 0824000W

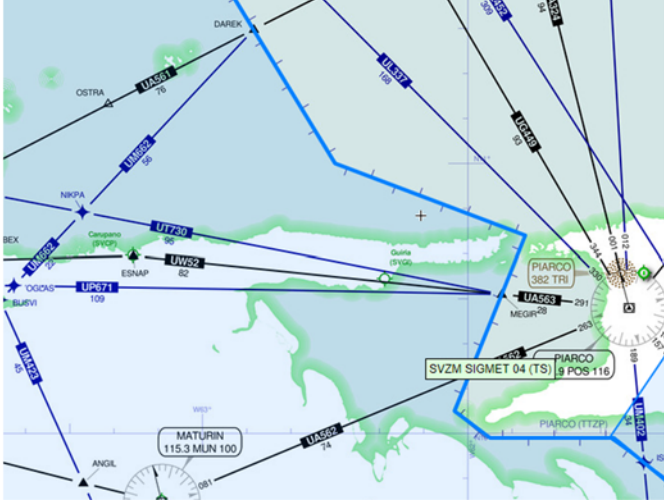
SAN ANDRES 12 34 57 N 081 42 19 W

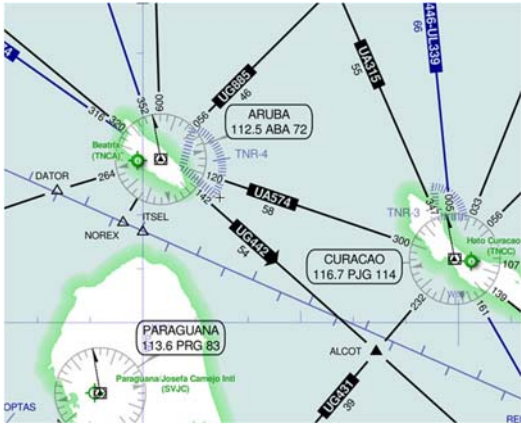
ALPON 112804N 0772459W


BARRANQUILLA 10 47 43 N 074 51 37 W







Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
		<p>ORTIZ 10 44 34 N 072 41 46 W  MARACAIBO 103452.90N 0714252.90W  PTO. CABELLO 102903.10N 0680440.10W  MAIQUETIA 103634.10N 0665922.80W  CABO CODERA 103424.80N 0660300.20W  CARUPANO 103929.90N 0631534.10W  MEGIR 103100.00N 0615220.00W  PIARCO</p> <p>4. AMEND ATS Route  Extend UP671 from MEGIR to POS  <b>INPUT ADD NEW ATS ROUTES TABLE</b></p> <p><b>UP671</b>  MEGIR [ ]  PIARCO [ ]</p>	

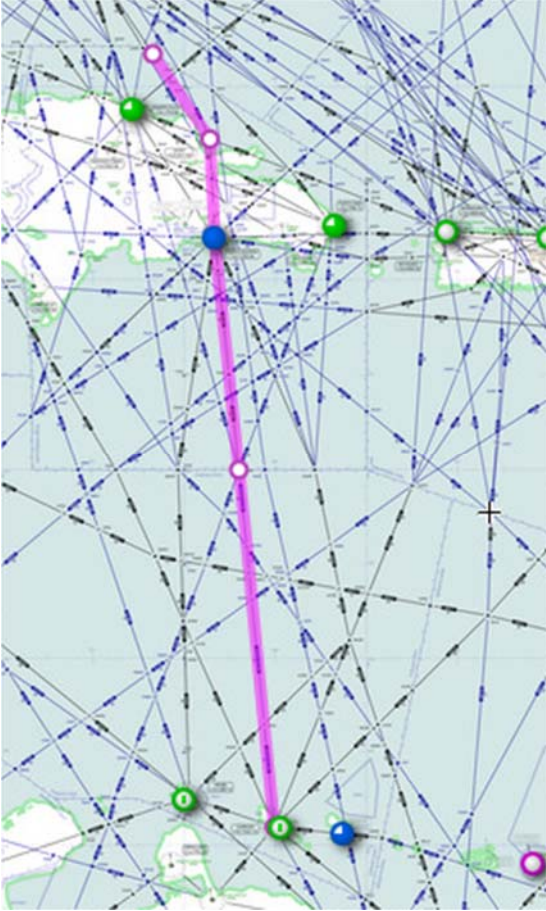
Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
8	Curacao Venezuela (SAM)	<p>1. Delete ATS Routes Delete UA574 from PJG to ABA to DATOR <b>INPUT AMEND ATS ROUTES TABLE</b> UA574 <del>See Note/Voir Note/Véase Nota 1</del> TABOGA 08 47 15 N 079 33 43 W BOGAL 093405N 0772459W CARTAGENA 10 12 30 N 075 30 22 W BARRANQUILLA 10 47 43 N 074 51 37 W GILGA 12 07 44 N 071 06 23 W DATOR 122435.00N 0701613.00W ARUBA CURAÇAO</p> <p>2. New ATS Route Add new RNAV route from PJG to ABA to DATOR Possible discussion with Venezuela with regards to UA574</p> <p><b>INPUT ADD NEW ATS ROUTES TABLE</b> <b>UL220</b> DATOR 12 24 35N 070 16 13W ARUBA [ ] CURAÇAO [ ]</p>	

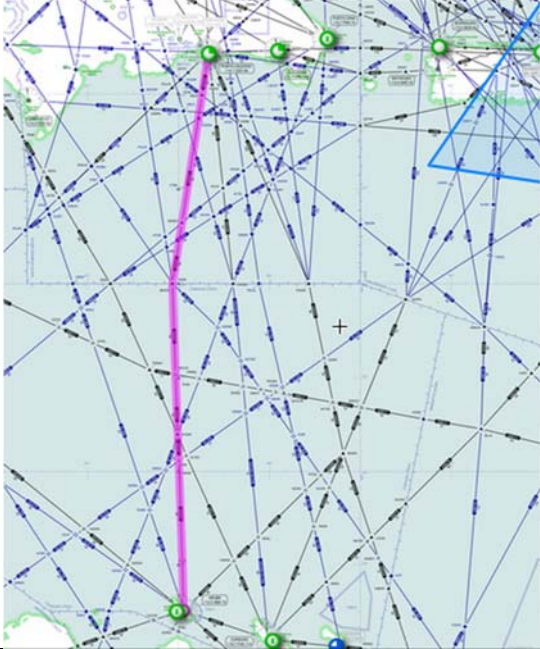
Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
9	Curacao Venezuela (SAM) United States / San Juan	<p>1. DELETE ATS ROUTES Delete route UA516 from CURAZAO (PJG) to MILOK <b>INPUT AMEND ATS ROUTES TABLE</b> <del>UA516 See Note/Voir Note/Véase Nota 2*</del> RKDIA NEYDU MNOLO ST. MAARTEN MILOK 151732.00N 0655251.00W ACORA 133927.00N 0672958.00W CURAÇAO *Between/Entre ST. MAARTEN/MILOK</p> <p>2. NEW ATS ROUTE Add new RNAV <b>UM576</b> from MILOK to ALCOT <b>INPUT ADD NEW ATS ROUTES TABLE</b> <b>UM576</b> MILOK 15 17 36N 065 52 48W ACORA 13 39 27N 067 29 58W CURAÇAO [ ]</p>	

Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
11	Curacao United States / San Juan Oceanic Venezuela (SAM)	<p>1. DELETE ATS ROUTES Delete UG431 from SCAPA to ALCOT. <b>INPUT DELETE ATS ROUTES TABLE</b></p> <p><b>UG431</b> ALCOT 115441.00N 0691537.00W CURAÇAO SCAPA DORADO ELMUC LETON</p> <p>2. NEW ATS ROUTE Add new RNAV route from SCAPA to ALCOT with the same trajectory as UG431 has now (choose from UL325, UL327?)</p> <p><b>INPUT ADD NEW ATS ROUTES TABLE</b></p> <p><b>UL325</b> ALCOT 11 54 41N 069 15 37W CURAÇAO [ ] SCAPA 15 50 02N 067 29 58W</p>	

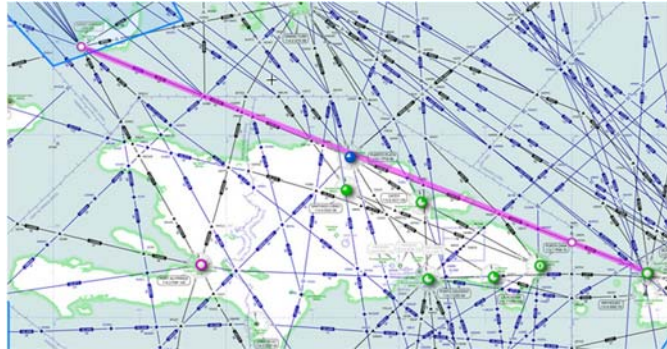
Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
12	Cuba Jamaica Curacao Venezuela (SAM)	<p>1. DELETE ATS ROUTES Delete UG442 from between CAYO LARGO (UCL) and MAIQUETIA (MIQ).</p> <p><b>INPUT DELETE ATS ROUTES TABLE</b></p> <p><b>UG442</b> CAYO L. DEL SUR KATAL MONTEGO BAY MANLEY AMBIN ARUBA ALCOT 115441.00N 0691537.00W MAIQUETIA 103634.10N 0665922.80W</p> <p>2. NEW ATS ROUTE Add new RNAV route in the upper airspace same trajectory as G442</p> <p><b>INPUT ADD NEW ATS ROUTES TABLE</b></p> <p><b>UL222</b> CAYO L. DEL SUR VOR/DME (UCL) 21 36 18N 081 31 58W KATAL 20 00 00N 079 38 18W MONTEGO BAY [ ] MANLEY [ ] AMBIN [ ] ARUBA [ ] ALCOT 11 54 41N 069 15 37W MAIQUETIA 10 36 34N 066 59 22W</p>	




Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
13	Dominican Republic Curacao United States / Miami	<p>1. DELETE ATS ROUTES Delete UG446/G446 from BESAS to KARUM</p> <p><b>INPUT AMEND ATS ROUTES TABLE</b></p> <p><b>G446</b> (OLDEY) BROOM GRAND TURK <del>BESAS</del> <del>KOBET</del> <del>CAUCEDO</del> <del>KARUM</del> <del>CURAÇAO</del> REPIS 114429.00N 0684843.00W PUERTO CABELLO (PBL) 10° 29' 03" N 068° 04' 40" W</p> <p><b>INPUT AMEND ATS ROUTES TABLE</b></p> <p><b>UG446</b> (OLDEY) BROOM GRAND TURK <del>BESAS</del> <del>KOBET</del> <del>CAUCEDO</del> <del>KARUM</del> <del>CURAÇAO</del> REPIS 114429.00N 0684843.00W PUERTO CABELLO (PBL) 10° 29' 03" N 068° 04' 40" W</p>	

Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
15	Dominican Republic Curacao	<p>1. DELETE ATS ROUTES Delete UA567 from CDO to ABA <b>INPUT DELETE ATS ROUTES TABLE</b></p> <p><del>UA567 See Note/Voir Note/Véase Nota 1*</del> ARUBA BEROX PUNTA CAUCEDO</p> <p>2. NEW ATS ROUTE Add new RNAV route in the upper airspace same trajectory as A567 (UL450?) <b>INPUT ADD NEW ATS ROUTES TABLE</b></p> <p><b>UL450</b> BEROX [ ] ARUBA [ ]</p>	


16	<p>Cuba United States / Miami Oceanic Haiti Dominican Republic United States / San Juan Oceanic</p>	<p>1. DELETE ATS ROUTES Delete <b>UA636 and A636</b> from GREAT INAGUA to BQN <b>INPUT DELETE ATS ROUTES TABLE</b></p> <p><b>A636</b> GREAT INAGUA ALBEE RETAK PUERTO PLATA KATOK BORINQUEN</p> <p><del><b>UA636</b> See Note/Voir Note/Véase Nota 2*</del> GREAT INAGUA ALBEE RETAK PUERTO PLATA KATOK BORINQUEN *Between/Entre GREAT INAGUA/RETAK and between/et entre/y entre KATOK/BORINQUEN</p> <p>2. NEW ATS ROUTE Add new RNAV from VARADERO (UVA) to JARDINES DEL REY (UCJ) to MEDKO, then, M348 from new WP to ALBBE, then UM348 from ALBBE to KATOK, then M348 from KATOK to new WP <b>INPUT ADD NEW ATS ROUTES TABLE</b></p> <p><b>M348</b> MEDKO 21 13 12N 074 26 37W new 5LNC (to be provided by the USA) 20 57 35N 073 40 39W ALBBE 20 25 00N 072 14 55W KATOK 18 49 50N 068 00 00W MEEGL 18 29 19N 067 10 15W</p> <p><b>INPUT ADD NEW ATS ROUTES TABLE</b></p> <p><b>UM348</b> VARADERO [ ]</p>
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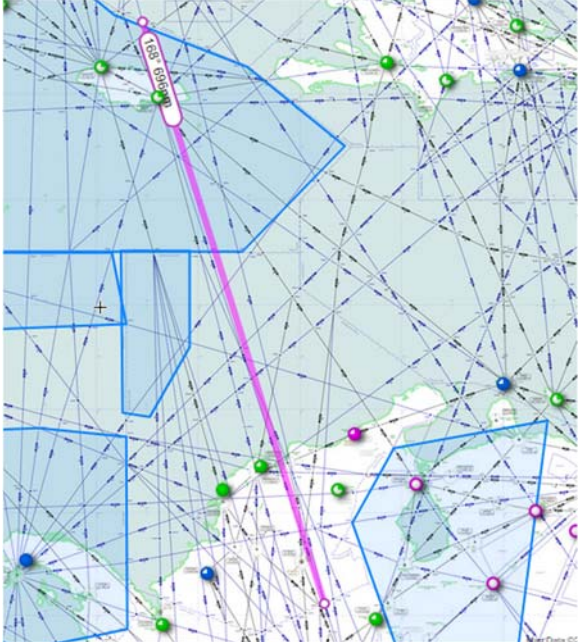

Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
		JARDINES DEL REY [ ] MEDKO 21 13 12N 074 26 37W ALBBE 20 25 00N 072 14 55W RETAK [ ] PUERTO PLATA [ ] KATOK 18 49 50N 068 00 00W	
18	United States / Miami Cuba Jamaica Colombia/Barranquilla	<p><b>1. DELETE ATS ROUTES</b>  Delete UG430 from URSUS to PUTUL to SANGSTER to KILER to CARTAGENA (CTG)</p> <p><b>INPUT DELETE ATS ROUTES TABLE</b>  <b>UG430</b>  LEGUIZAMO 00 10 43 S 074 46 32 W  GIRARDOT 04 11 30 N 074 51 57 W  CARTAGENA 10 12 30 N 075 30 22 W  KILER 15 00 00 N 076 52 49 W  MONTEGO BAY  PUTUL  AVILA  TANIA</p> <p><b>2. NEW ATS ROUTE</b>  Add new RNAV route from PUTUL dct SUSDA (new waypoint in the boundary between Kingston and Barranquilla) southbound</p> <p><b>INPUT ADD NEW ATS ROUTES TABLE</b>  [PENDING TO CONFIRM ROUTE DESIGNATOR by NACC or SAM]  PUTUL [ ]  SUSDA [ ]</p>	

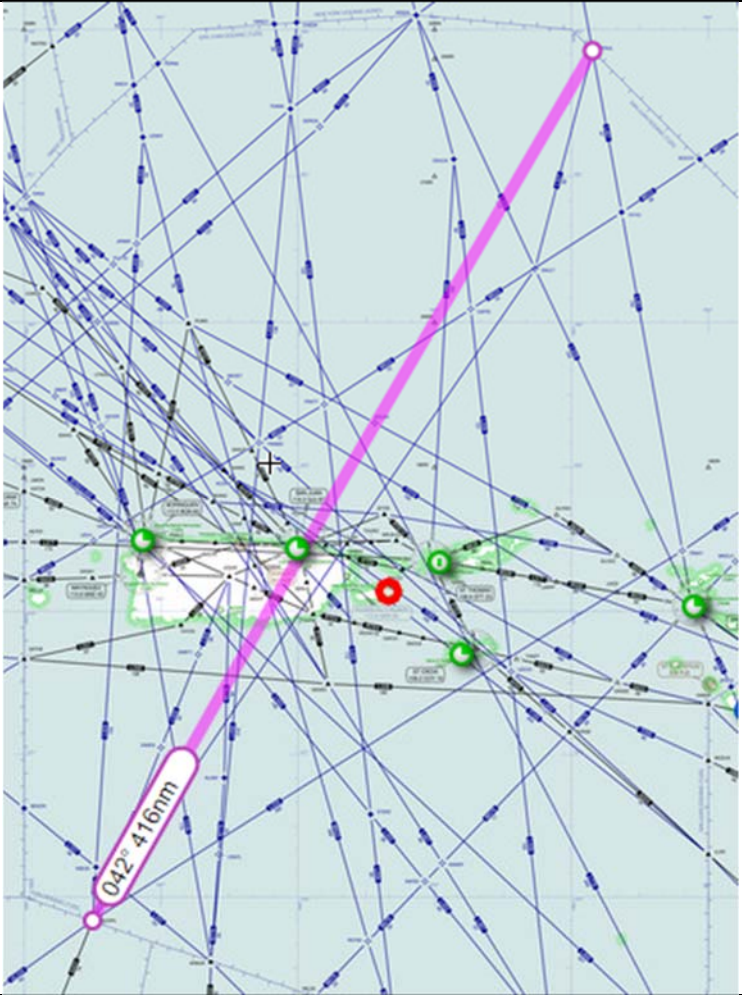
Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
19	Cuba Jamaica Colombia/Barranquilla	1. NEW ATS ROUTE Add new RNAV route from EPSIM dct KILER northbound dct AKPEK (BAQ FIR) <b>INPUT ADD NEW ATS ROUTES TABLE</b> <b>UL331</b> EPSIM 19 48 45N 078 01 10W KILER [ ] AKPEK [ ]	




Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
20	Cuba Jamaica Colombia/Barranquilla	<p>1. DELETE ATS ROUTES Delete UA301 from NEFTU to MLY to OTAMO</p> <p><b>INPUT DELETE ATS ROUTES TABLE</b></p> <p><del>UA301</del> See Note/Voir Note/Véase Nota 2* OTAMO 15 00 00 N 075 59 00 W MANLEY TOTON AVILA URSUS BIMINI ANAME *Between/Entre URSUS/BIMIN</p> <p>2. NEW ATS ROUTE Add new RNAV route from NEFTU to EMABU dct <b>SINID</b> (new waypoint in the boundary between Kingston and Barranquilla) dct BAQ (BAQ FIR) southbound only</p> <p><b>INPUT ADD NEW ATS ROUTES TABLE</b></p> <p><b>UL334</b> NEFTU 20 33 00N 077 26 49W EMABU 19 29 23N 077 28 26W SINID [ ] BARRANQUILLA [ ]</p>	

Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
21	CENAMER Jamaica Colombia/Barranquilla Brasil	<p>1. DELETE ATS ROUTES Delete UR640 from MAMBI to GRAND CAYMAN to SANGSTER to EDROD to AMAYA to VUMPI to MANAUS</p> <p><b>INPUT DELETE ATS ROUTES TABLE</b></p> <p><b>UR640</b>  <del>COZUMEL</del>  <del>DANUL</del>  MAMBI  GRAND CAYMAN  MONTEGO BAY  KINGSTON  EDROD 15 00 00 N 074 44 00 W  URIBI <del>11 15 23 N 072 09 30 W</del>  MARACAIBO <del>103452.90N 0714252.90W</del>  BARINAS <del>083700.30N 0701313.90W</del>  AMAYA <del>060948N 0680930W</del>  PUERTO AYACUCHO <del>05 37 06 N 067 36 30 W</del>  VUMPI <del>01 59.40N 063 56.90W</del>  MANAUS <del>03 02.40S 060 03.28W</del></p> <p>NEW ATS ROUTE  Add new RNAV route from MLY dct  EDROD dct ERIKO</p> <p><b>INPUT ADD NEW ATS ROUTES TABLE</b></p> <p><b>UL336</b>  MANLEY [ ]  EDROD [ ]  ERIKO [ ]</p>	

Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
22	Jamaica Colombia/Barranquilla	1. NEW ATS ROUTE Add new RNAV route from BEMOL dct <b>NEVPA</b> dct IROTI  <b>INPUT ADD NEW ATS ROUTES TABLE</b> <b>UL338</b> BEMOL [ ] NEVPA [ ] IROTI [ ]	
23	United States / San Juan	1. AMEND ATS ROUTE Realignment of L577 (adding STIIV at the intersection of Y280 & L776)  <b>INPUT AMEND ATS ROUTES TABLE</b> <b>L577</b> ANU/VOR 17° 07'33''N 061° 48'01''W ELOPO 17° 39' 00.2''N 062° 33' 15.8''W STT VOR/DME 18° 21' 20.94' N 065° 01' 28.40'' W STIIV [ ] ANTEX 18° 28' 45.30' ' N 068° 00' 00'' W	

Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
24	United States / San Juan	<p>1. NEW ATS ROUTE            Add new RNAV route (Realignment of )L327  <b>INPUT ADD NEW ATS ROUTES TABLE</b>  <b>L327</b>            SCAPA 155002.90N, 0672958.30W            OPAUL 21 51 23.75N, 0635047.68W</p>	



Proposal No.	States/FIRs involved	Details of the Proposal	Additional Comments
25	United States / San Juan Dominican Republic	<p>1. NEW ATS ROUTE            Add new RNAV route from ANADA to SATOE  <b>INPUT ADD NEW ATS ROUTES TABLE</b>  <b>L343</b>            ANADA 15 00 00N 064 08 46W            SATOE 17 40 00N 068 00 00W</p>	

— END —