

PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

ICAO/IATA/CANSO PERFORMANCE-BASED NAVIGATION (PBN) HARMONIZATION, MODERNIZATION AND IMPLEMENTATION MEETING FOR THE CARIBBEAN (CAR) REGION

28TH MARCH -1ST APRIL 2016

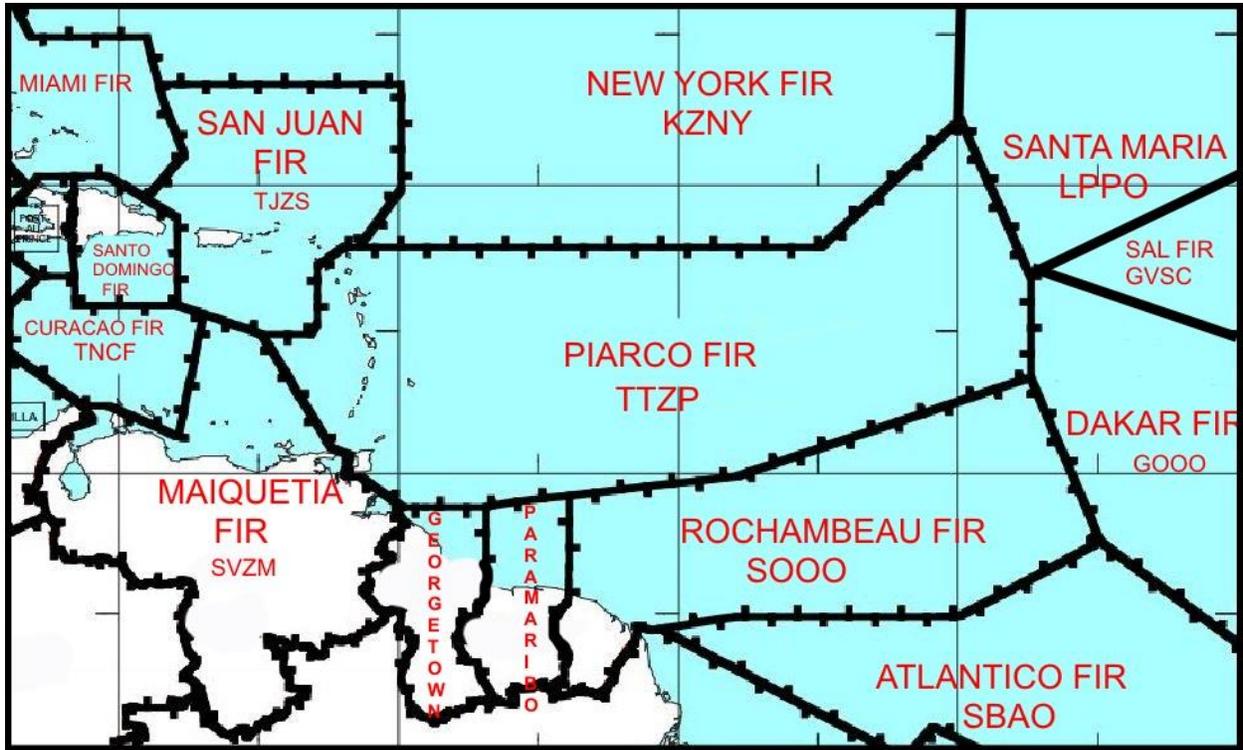
PIARCO FIR (TTZP) PBN ROUTE PROPOSALS



* The TTZP FIR illustrated on Google Maps

PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

PIARCO FIR AND ADJACENT FIRS

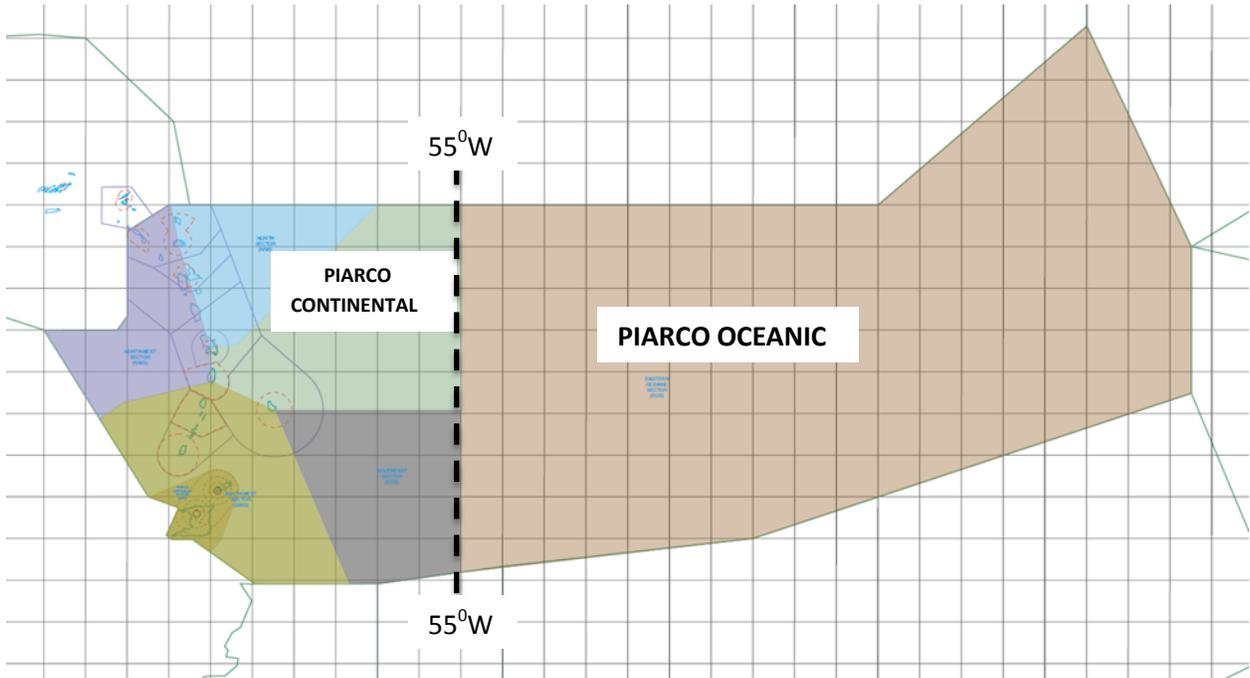


Source: ICAO DOCUMENT 8733 AIR NAVIGATION PLAN

PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

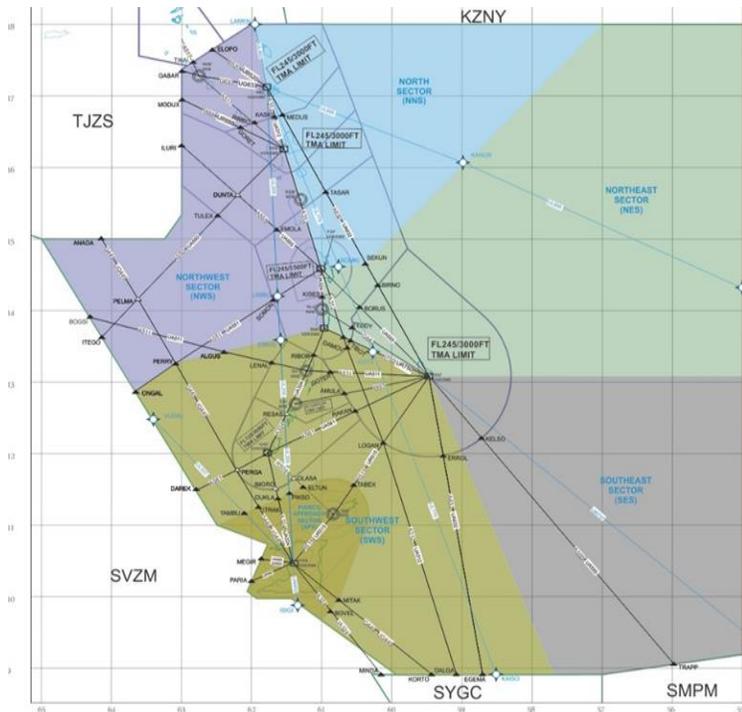
PRESENT PIARCO FIR

This is all of the 750,000 sq. miles of airspace where Piarco provides Air Navigation Services **including** the Terminal Airspaces (TMAs)



PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

PRESENT PIARCO FIR CONTINENTAL SECTOR



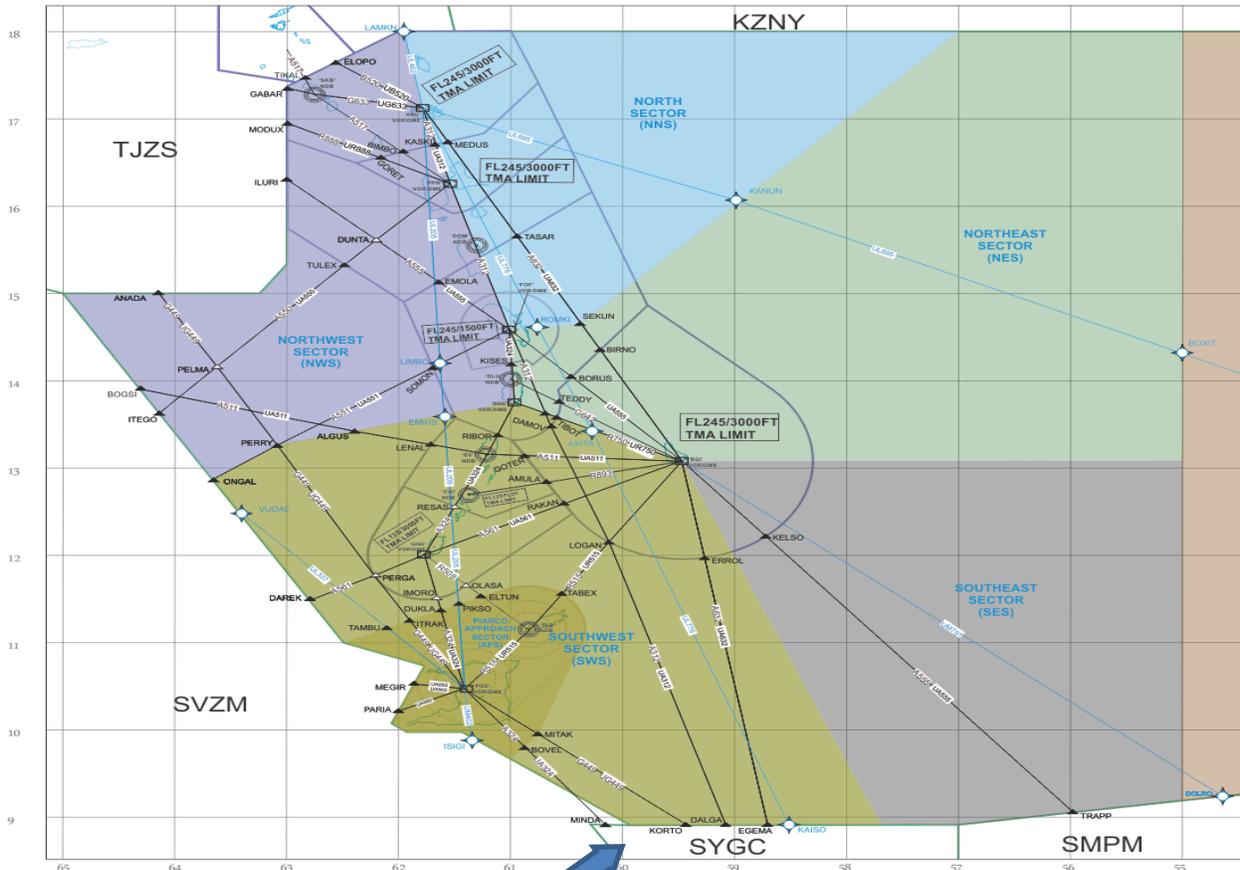
Current Route Structure

Congested, inefficient, high controller workload

- ATS ROUTES ARE NAVAID CENTRIC
- CONGESTION AT THE PIARCO/SYGC FIR BOUNDARY AND AT VORs
- INEFFICIENT ATS ROUTING SYSTEM
- ENROUTE AND ARRIVAL/DEPARTURE PATHS ARE COINCIDENT
- NO SIDs AND STARs IN TBPB, TAPA, TGPY, TVSV, TLPL, TTPP & TTCP

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PRESENT PIARCO FIR CONTINENTAL SECTOR

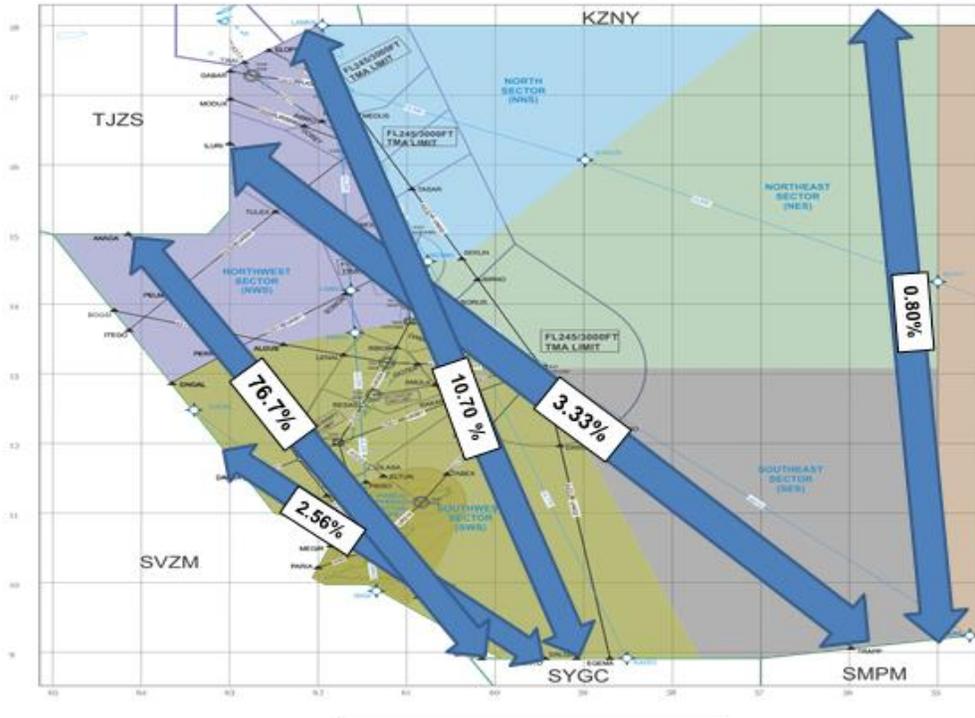


MAJOR CONGESTION POINT

- APPROXIMATELY 90% OF THE TOTAL AIR TRAFFIC OF THE PIARCO FIR IS IN THE CONTINENTAL SEGMENT, MAKING IT THE MOST CONGESTED SECTOR IN THE PIARCO FIR AND IT IS EXPECTED THAT CONGESTION WILL INCREASE.
- NEW ROUTES ARE NEEDED IN ORDER TO EASE THIS HEAVY CONGESTION AND TO COPE WITH FUTURE TRAFFIC

PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

ROUTES WITH MAIN OVERFLIGHT TRAFFIC FLOWS BY PERCENTAGES



OVERFLIGHTS ROUTING 27TH DEC 2014 to 10TH JAN 2015 (TOTAL 702)

ANADA UG449 POS MINDA	ANADA UG449 POS KORTO	VUDAL POS KORTO UG449	VUDAL POS MINDA TIM UG443	ISIGI POS ANADA	LAMKN ANU UL776 KAISO	LAMKN ANU UA312 DALGA	ELOPO ANU UA312	ELOPO ANU UL776 KAISO	ILURI UA555 BGI DOLRO	ILURI UA555 BGI TRAPP	18N054W DCT 09N054W	18N054W DOLRO	18N57W 10N54W	18N59W TRAPP	18N052W DCT 10N048W	TIKAL ANU UL776 KAISO	DALGA FOF UA555 ILURI
329	179	21	4	8	22	18	8	27	25	2	5	4	2	2	1	1	1
46.8%	25.4%	3.0%	0.05%	1.13%	3.13%	2.56%	1.13%	3.84%	3.56%	0.03%	0.71%	0.06%	0.03%	0.03%	0.014%	0.014%	0.014%

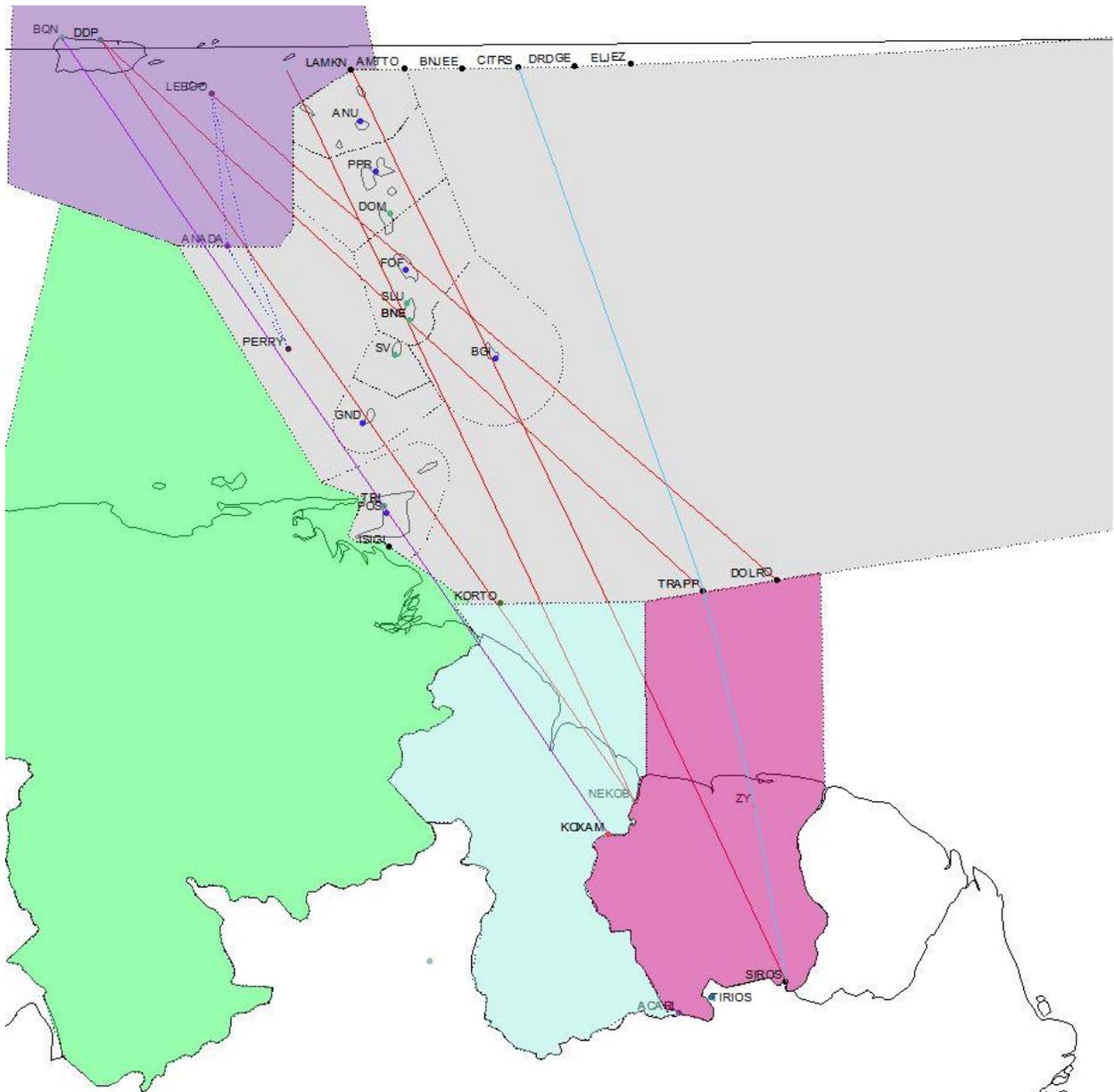
OVERFLIGHTS ROUTING 20TH APRIL 2015 to 4TH MAY 2015 (TOTAL 717)

ANADA UG449 POS MINDA	ANADA UG449 POS KORTO	VUDAL POS KORTO UG449	VUDAL POS MINDA TIM UG443	ISIGI POS ANADA	LAMKN ANU UL776 KAISO	LAMKN ANU UA312 DALGA	ELOPO ANU UA312	ELOPO ANU UL776 KAISO	ILURI UA555 BGI DOLRO	ILURI UA555 BGI TRAPP	18N054W DCT 09N054W	18N054W DOLRO	18N57W 10N54W	18N59W TRAPP	18N052W DCT 10N048W	TIKAL ANU UL776 KAISO	DALGA FOF UA555 ILURI
393	191	12	3	3	35	15	8	19	22	0	0	0	0	3	0	0	1
54.8%	26.6%	1.67%	0.41%	0.41%	4.88%	2.09%	1.11%	2.64%	3.06%	0	0	0	0	0.41%	0	0	0.13%

- Based on data collected for air traffic overflying the TTZP continental airspace, eighty three (83%) are RNAV 5 equipped.
- Based on data collected for air traffic overflying the TTZP continental airspace, operating on the UG449 traffic flow, more than ninety five (95%) are RNAV 5 equipped.

PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

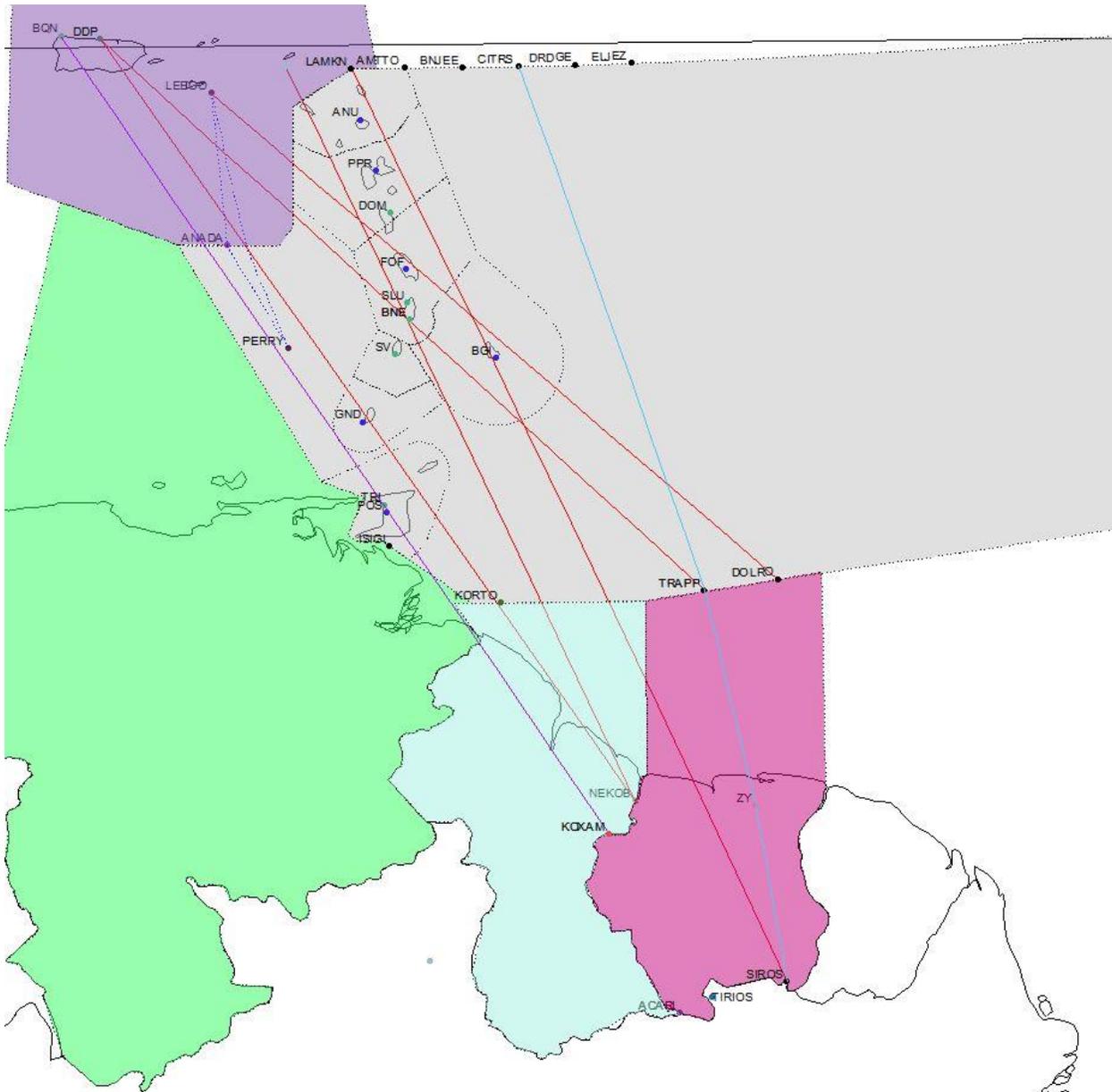
PROPOSED REDESIGN PIARCO CONTINENTAL AIRSPACE



- Creation of **RNAV5** routes within the Piarco Continental Airspace to increase airspace capacity, enhanced availability of preferred flight levels, effective utilization of altitudes in enroute airspace by reducing the lateral (30NM) and longitudinal separation between aircraft (40NM GNSS)
- This will assist in air traffic congestion at the TTZP (Piarco) FIR / SYGC (Georgetown) FIR boundary.

PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

PROPOSED REDESIGN PIARCO CONTINENTAL AIRSPACE



The following RNAV 5 routes are proposed to be implemented for traffic from TJZS FIR into TTZP FIR into SYGC FIR:

- BQN DCT KOKAM
- DDP DCT NEKOB
- DDP DCT TRAPP

PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

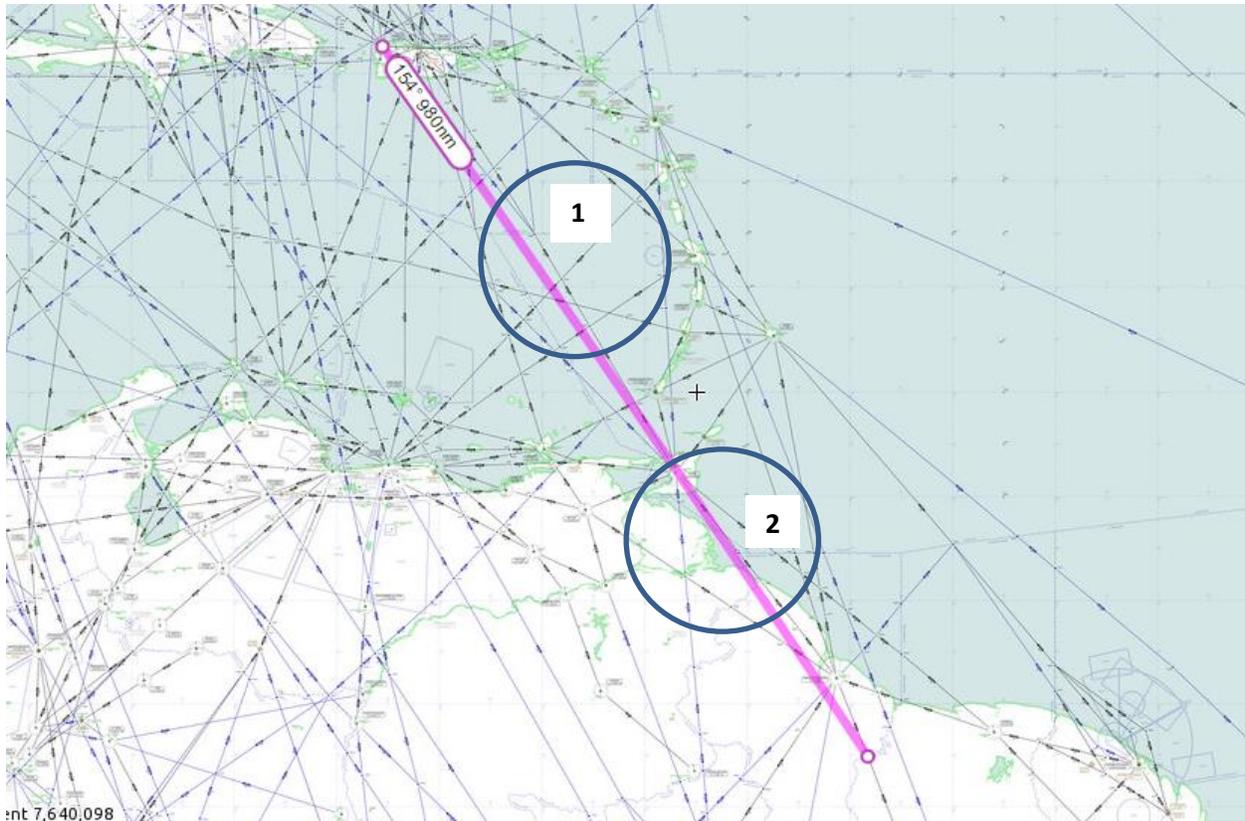
PROPOSED REDESIGN PIARCO CONTINENTAL AIRSPACE

- PJM DCT NEKOB
- LEEOO DCT DOLRO
- LAMKN DCT SIROS
- CITRS (18N59W) TRAPP (DCT ZY DCT SIROS)

These RNAV 5 ROUTES has at 40 NM lateral separations between the routes that proceed to NEKOB and KOXAM. This can benefit airlines in obtaining optimum levels. However for this to be achieved, SYGC and SMPM need to implement RNAV 5 routes in its airspace.

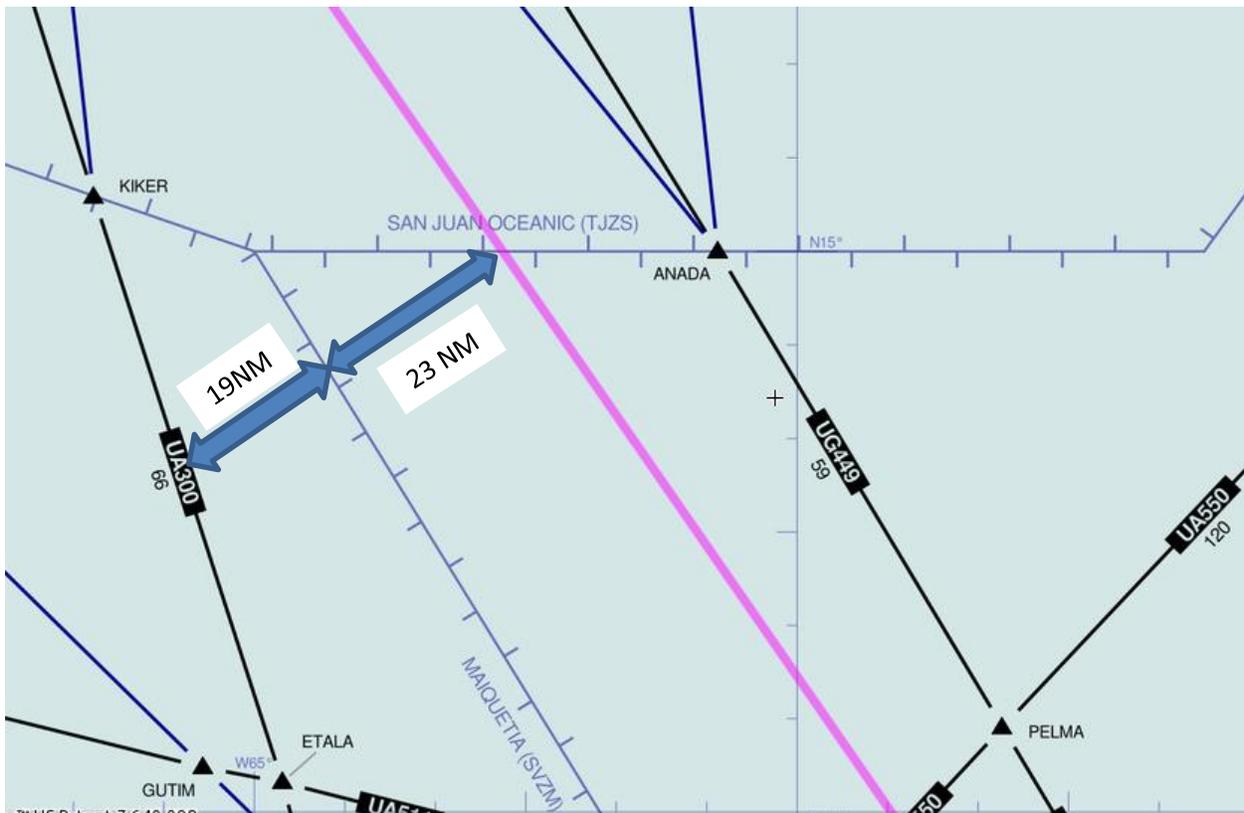
PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

Collaborative decision making (CDM) is needed with SVZM FIR (Maiquetia) to address the following concerns as shown below in Situation 1 & Situation 2:



PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

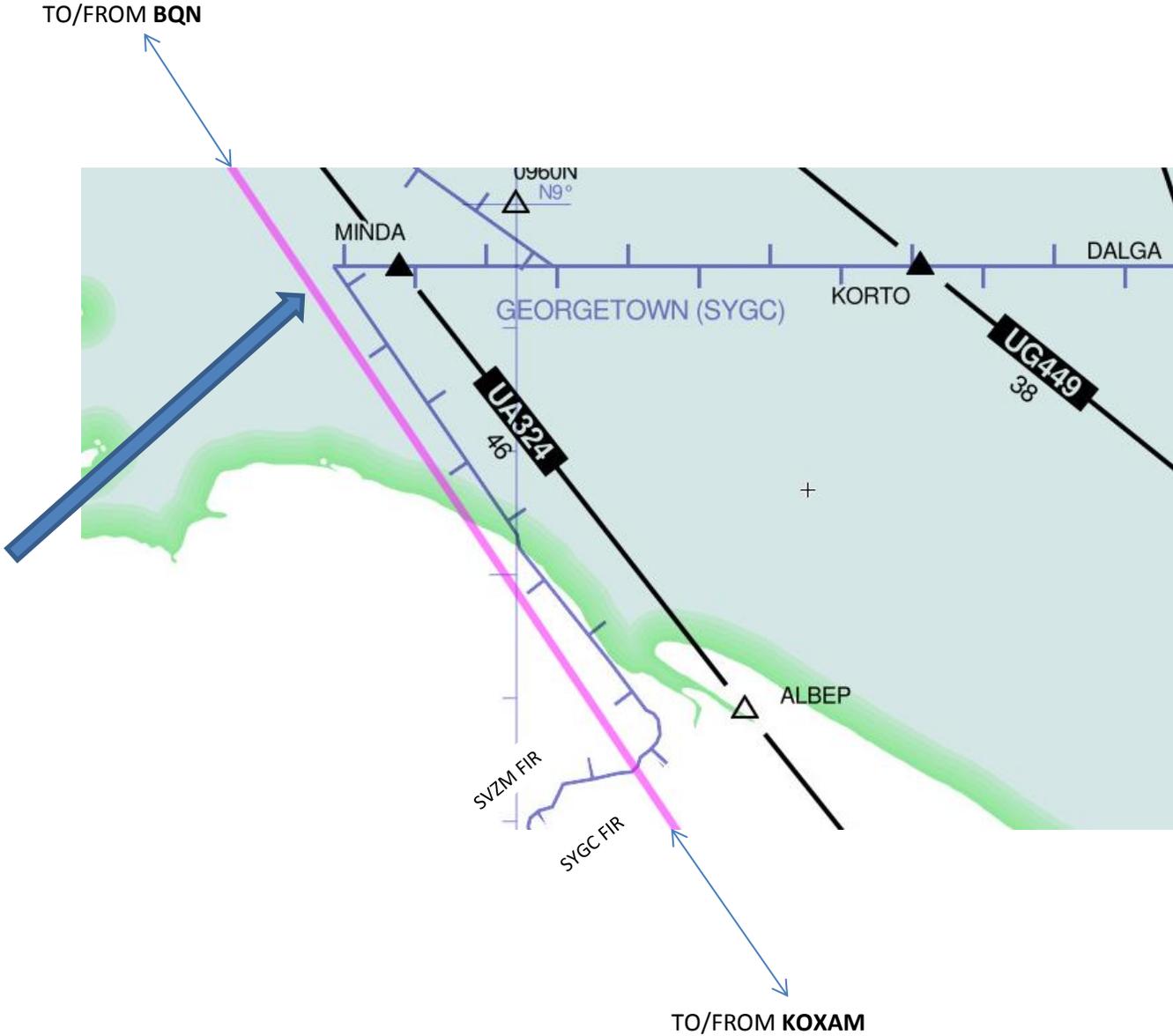
1. The route BQN dct KOXAM will be west of the conventional route UG449. It is 23NM from the TTZP/SVZM FIR. The BQN dct KOXAM route is 42NM from the conventional route UA300.



* The TTZP route structure drawn using Sky vector Aeronautical Charts.

PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

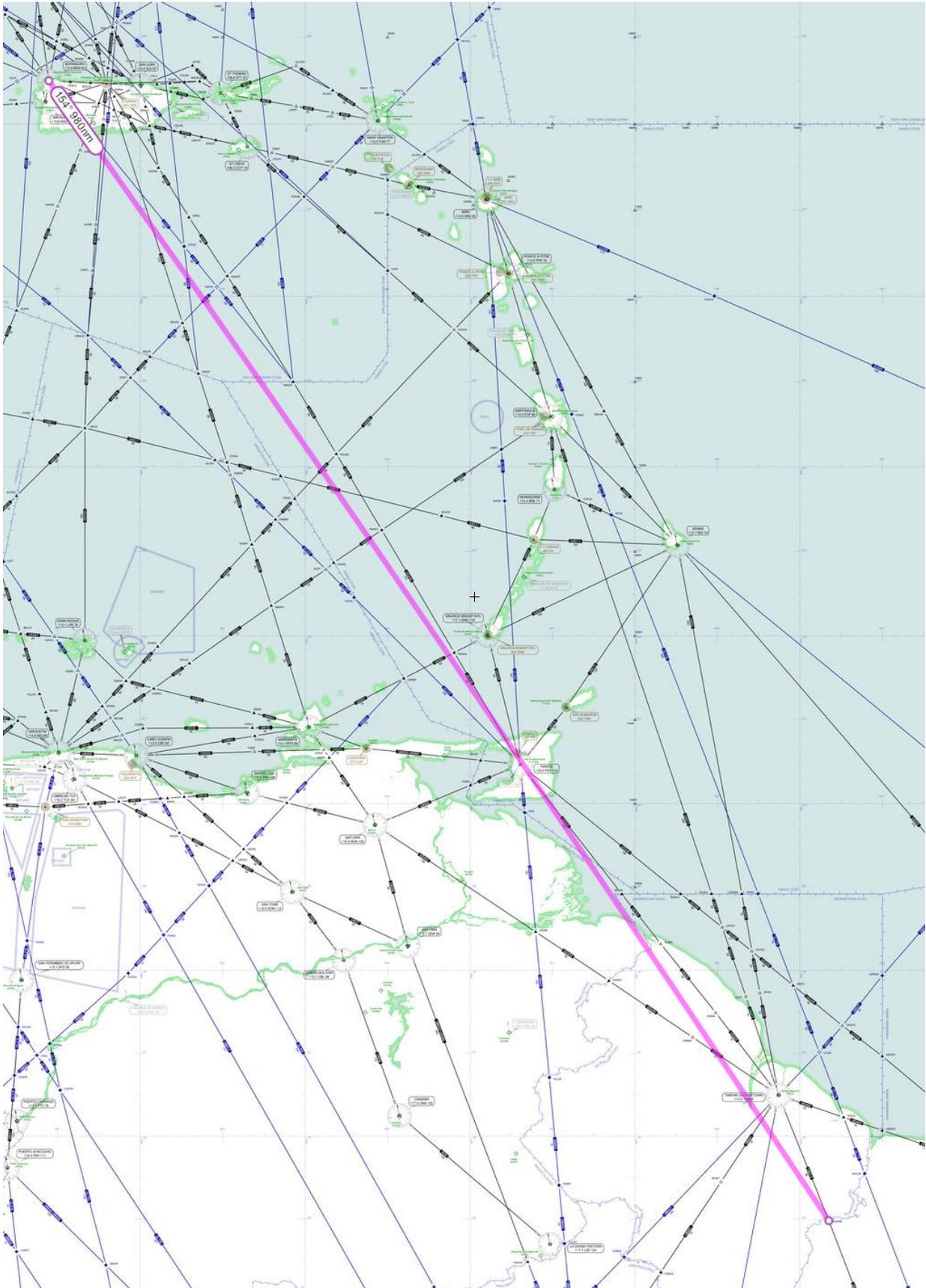
2. The route BQN dct KOXAM will be west of the conventional route UA324. It is **7.5NM** west of position MINDA.



DISTANCE BETWEEN NEW ROUTE AND UA324 IS **7.5NM**

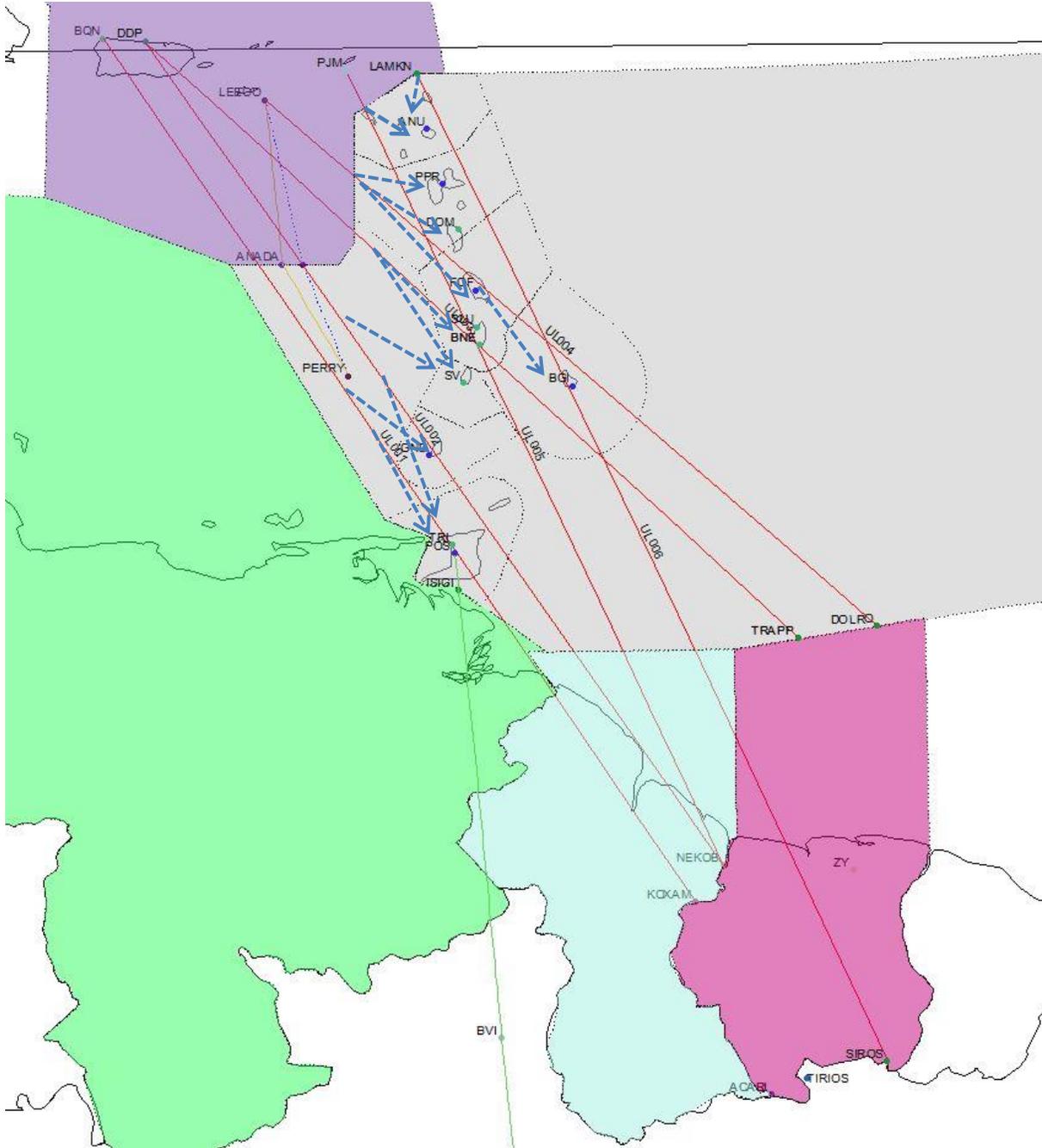
* The TTZP route structure drawn using Sky vector Aeronautical Charts.

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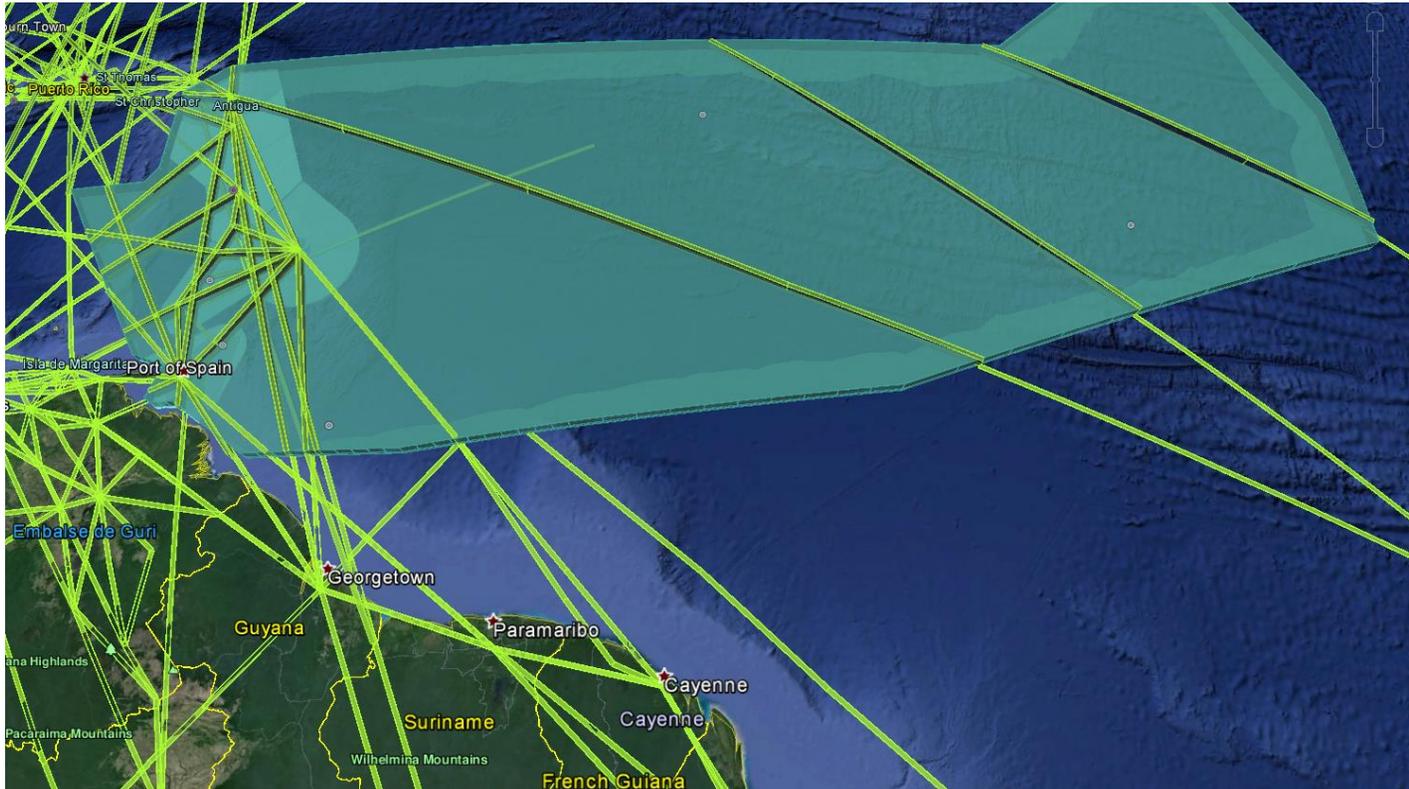
REDESIGN PIARCO CONTINENTAL AIRSPACE



- Arrival and departure routes to be implemented
- Implement continuous climb operations (CCOs) and continuous descent operations (CDOs) as far as practicable to reduce carbon dioxide gas (CO₂) emissions.

PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

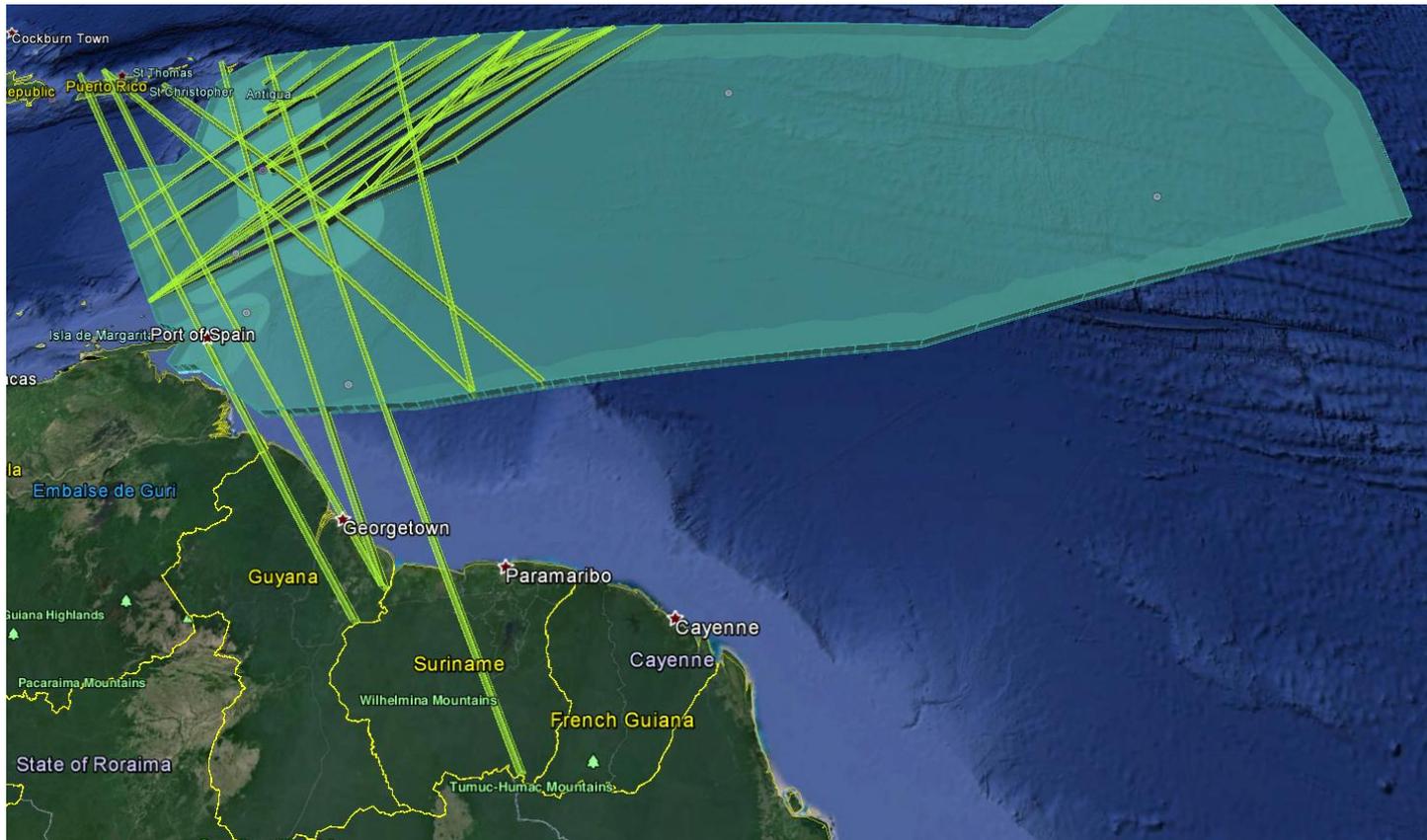
PRESENT PIARCO FIR



* The TTZP route structure drawn using IDS Airspace Designer Software.

PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

PROPOSED PIARCO FIR



* The TTZP route structure drawn using IDS Airspace Designer Software

PIARCO FIR (TTZP) PBN ROUTE PROPOSALS

ASSESSMENT OF THE REDUCED TRACK MILES AND CO₂

With the introduction of RNAV 5 PBN routes it is expected that flights will obtain an overall shorter flight time due to a more direct route system to destination.

CONVENTIONAL ROUTE	MILES NM	PBN ROUTE	MILES NM	REDUCED TRACK MILES PER FLIGHT	CO ₂ SAVINGS IN LBS
BQN L452 ANADA UG449 POS UA324 MINDA TIM UA312 KOXAM	984.1	BQN DCT KOXAM	980.0	4.1	208.5
DDP ANADA UG449 POS UA324 MINDA TIM UA312 KOXAM	959.2	DDP DCT KOXAM	955.9	3.3	175.8
DDP ANADA UG449 POS UA324 MINDA TIM DCT NEKOB	945.7	DDP DCT NEKOB	941.6	4.1	208.5
LEEEO ANADA PERRY	276.6	LEEEO DCT PERRY *	271.2	5.4	287.8