PBN & ATFM INTEGRATION IN TRINIDAD AND TOBAGO

Hand in Hand

Workshop on Air Traffic Flow Management (ATFM) Implementation for the CAR/SAM Regions, Panama City, Panama, 25 to 29 May 2015

OBJECTIVES

- Describe the Piarco FIR and Terminal Airspace
- Briefly discuss the traffic flows within the Piarco continental airspace
- Briefly discuss the Piarco PBN redesign concept
- Discuss the connection between PBN and ATFM within the Piarco airspace

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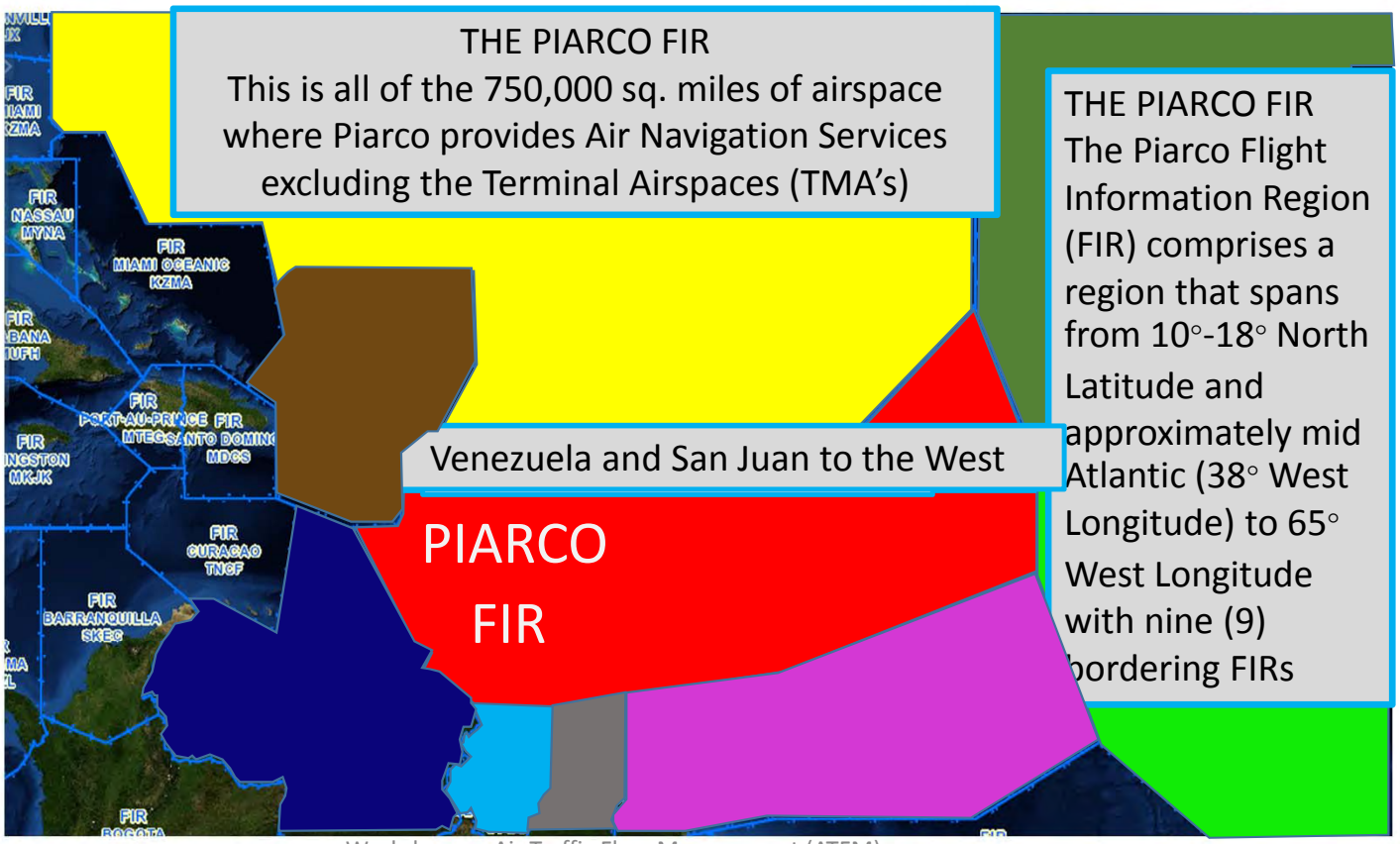
THE PIARCO FLIGHT INFORMATION REGION (FIR)



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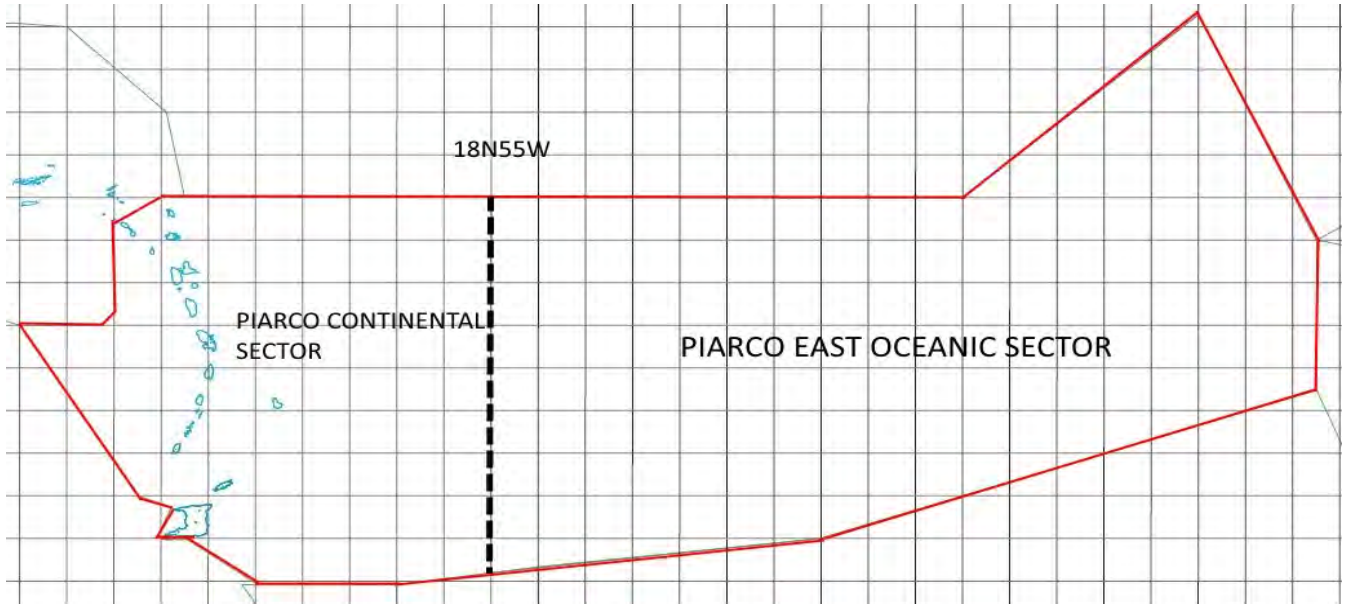
PRESENT PIARCO FIR

This is all of the 750,000 sq. miles of airspace where Piarco provides Air Navigation Services excluding the Terminal Airspaces (TMA's)



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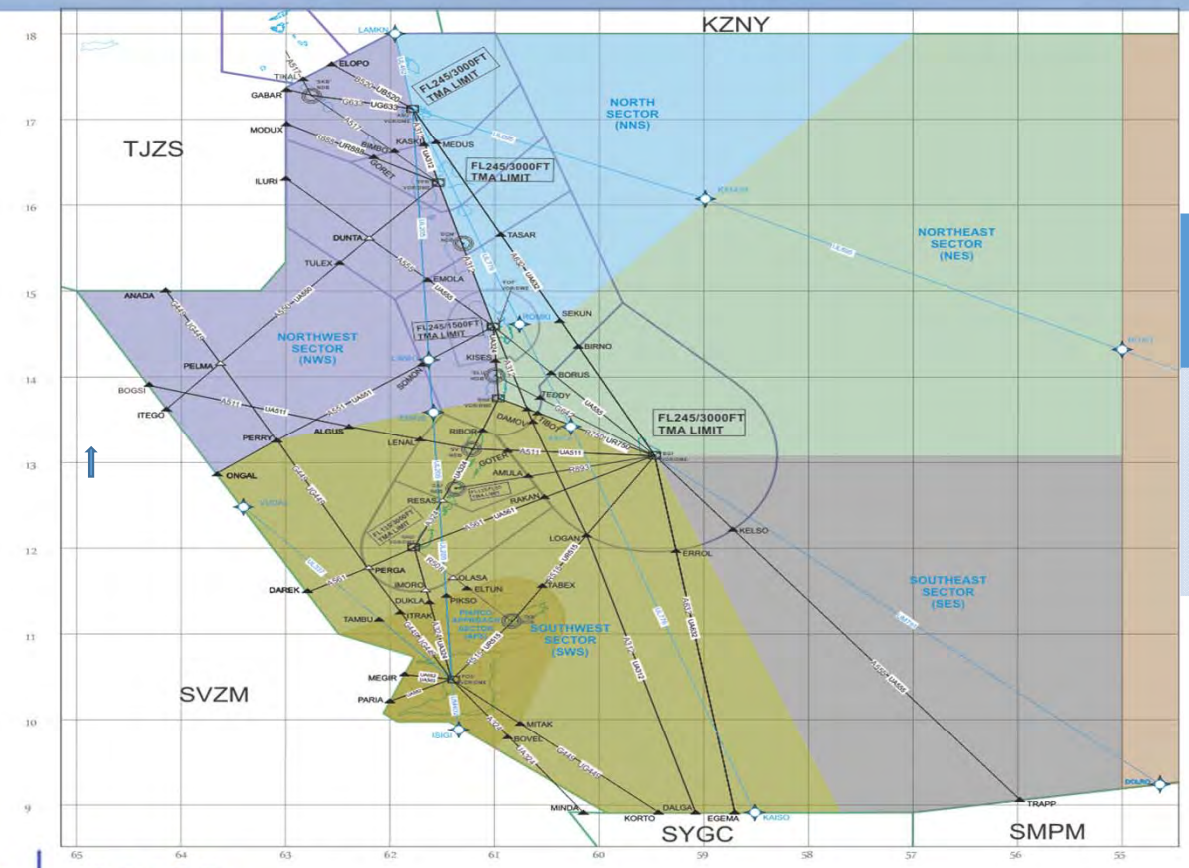

Continental Airspace Route Structure and Traffic Flows

- ESTABLISHED ATS ROUTES
- OPERATING SECTORS
- TMAS' VERTICAL LIMITS
- ADJACENT ACCS'
- Avg. 400 flights daily

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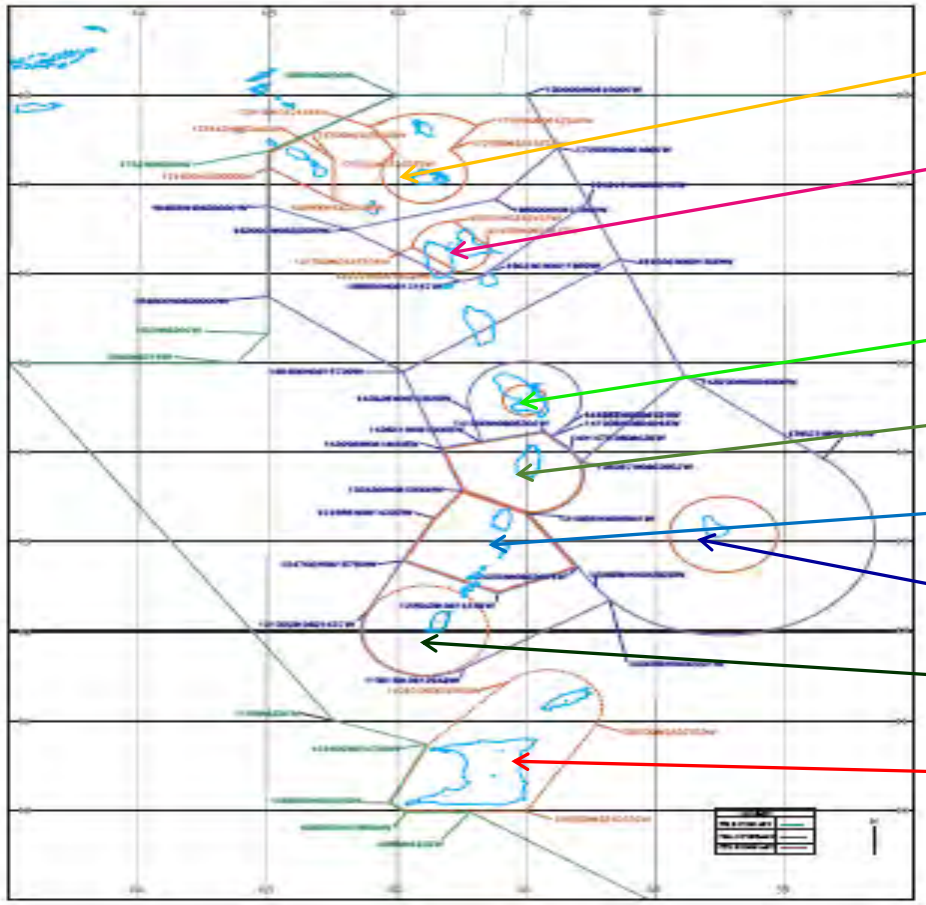
TMA's within THE PIARCO FIR



ANTIGUA

GUADELOUPE

MARTINIQUE

ST. LUCIA

ST. VINCENT AND THE GRENADINES

BARBADOS

GRENADA

TRINIDAD AND TOBAGO

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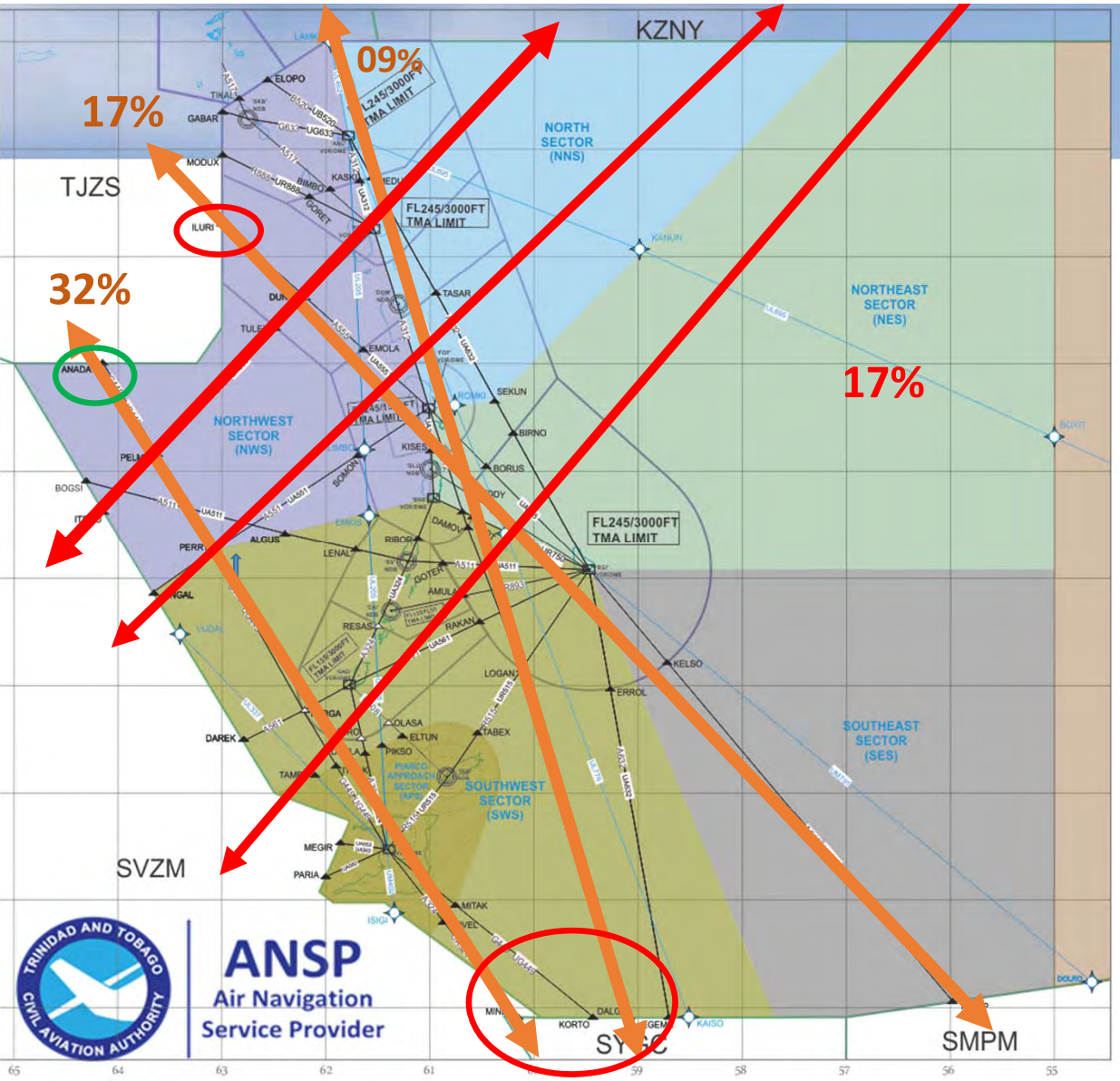

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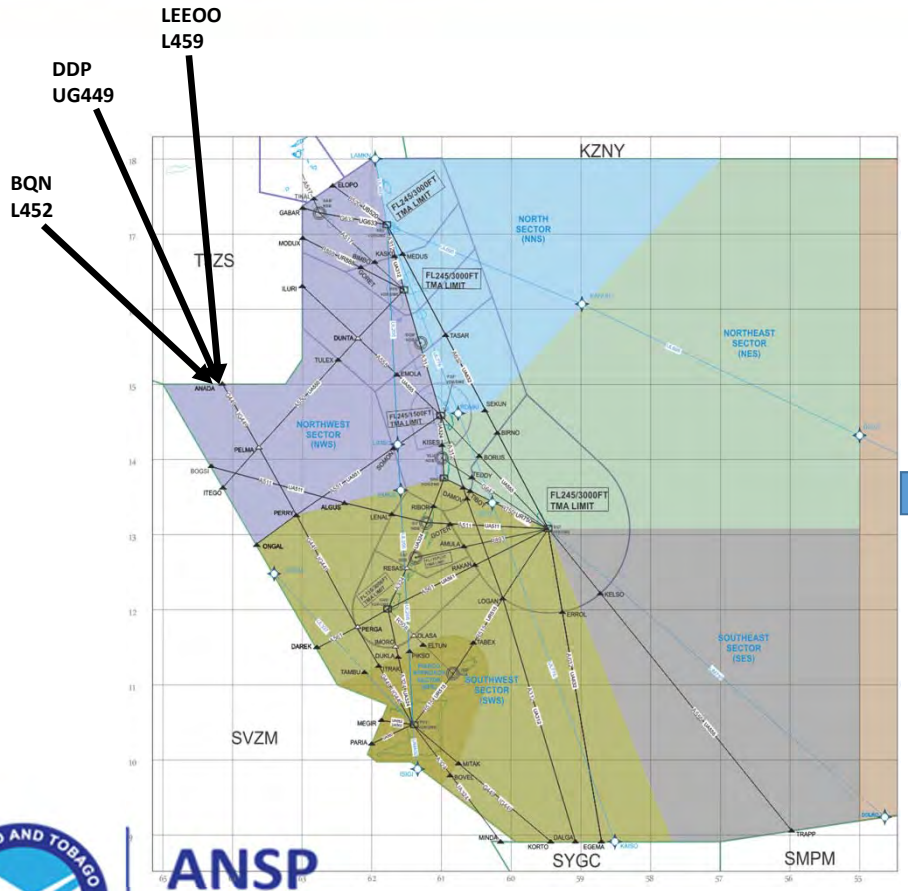
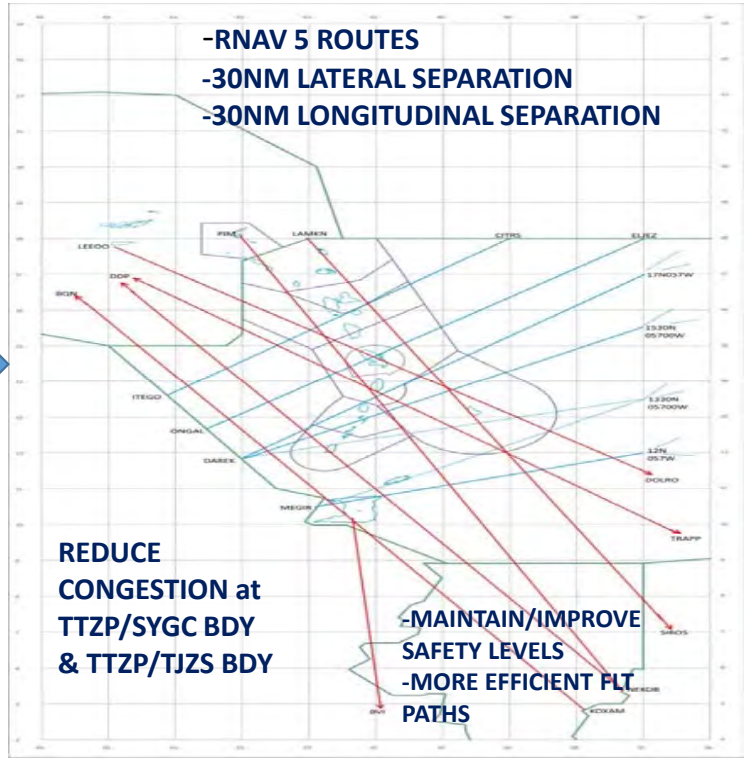
Piarco Continental Airspace Redesign





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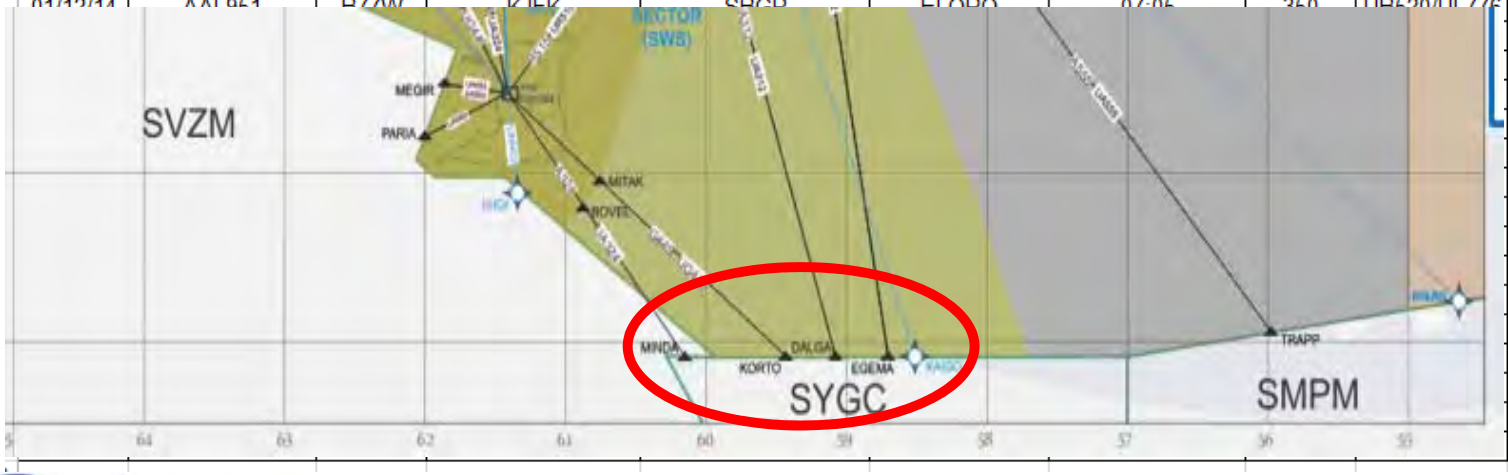
Traffic Congestion at Piarco Georgetown FIR Boundary

A	B	C	D	E	F	G	H	I	J	K	L
DATE	AIRCRAFT CALLSIGN	AIRCRAFT TYPE	ORIGIN AERODROME	DESTINATION AERODROME	ENTRY FIX INTO RVSM AIRSPACE	TIME AT ENTRY FIX	FL AT ENTRY FIX	AIRWAY AT ENTRY FIX	EXIT FIX FROM RVSM AIRSPACE	TIME AT EXIT FIX	FL AT EXIT FIX
01/12/14	TAM8079	B763	KJFK	SBGL	ANADA	03:53	330	UG449/UA324	**MINDA**	04:47	350
01/12/14	BWA525	B738	TTPP	SYCJ	BOVEL	04:44	290	UA324	**MINDA**	04:53	330
01/12/14	FJM152	B763	MKJP	SYCJ	ANADA	04:05	390	UG449/UA324	**MINDA**	04:58	390
01/12/14	DAL221	B763	KATL	SBBR	ANADA	04:04	350	UG449	**KORTO**	05:01	350
01/12/14	AAL951	B77W	KJFK	SBGR	FLORO	07:05	350	UB620/UL776	**KAISO**	08:14	350
									KORTO	08:16	290
									KORTO	08:18	310
									KORTO	08:32	350
									MINDA	08:33	370
									KORTO	06:35	330
									KORTO	06:35	350
									MINDA	06:42	310
									KAISO	08:27	310
									KORTO	08:25	330
									MINDA	08:29	370
									MINDA	08:37	330
									KORTO	08:30	350



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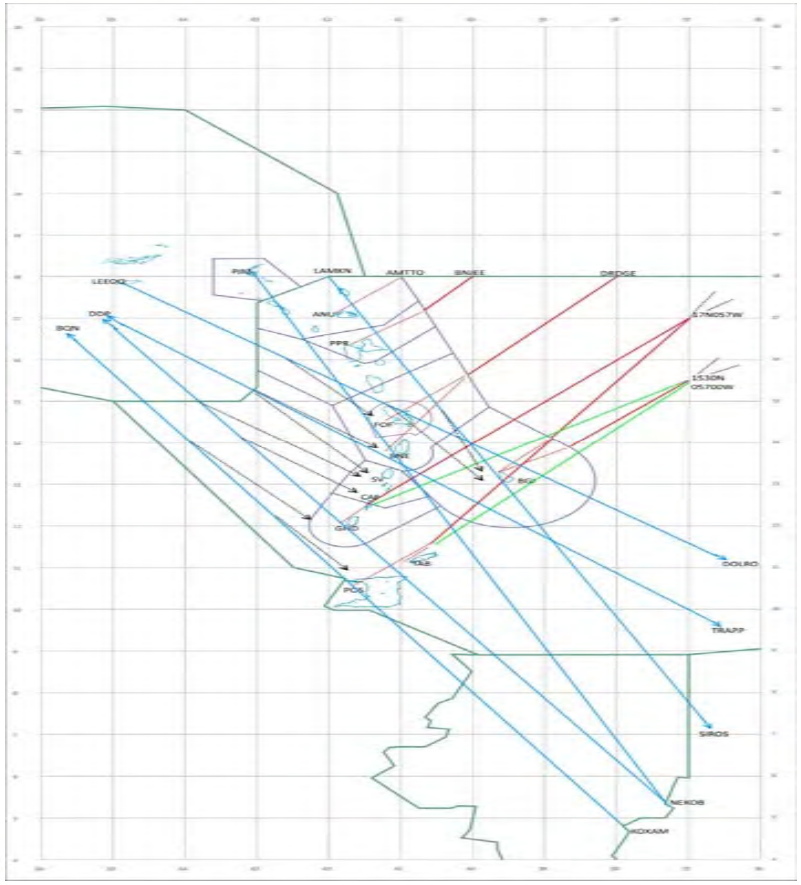
Piarco Continental Airspace Redesign



Arrival and Departure Routes that Feed to into the TMA's SIDS and STARS

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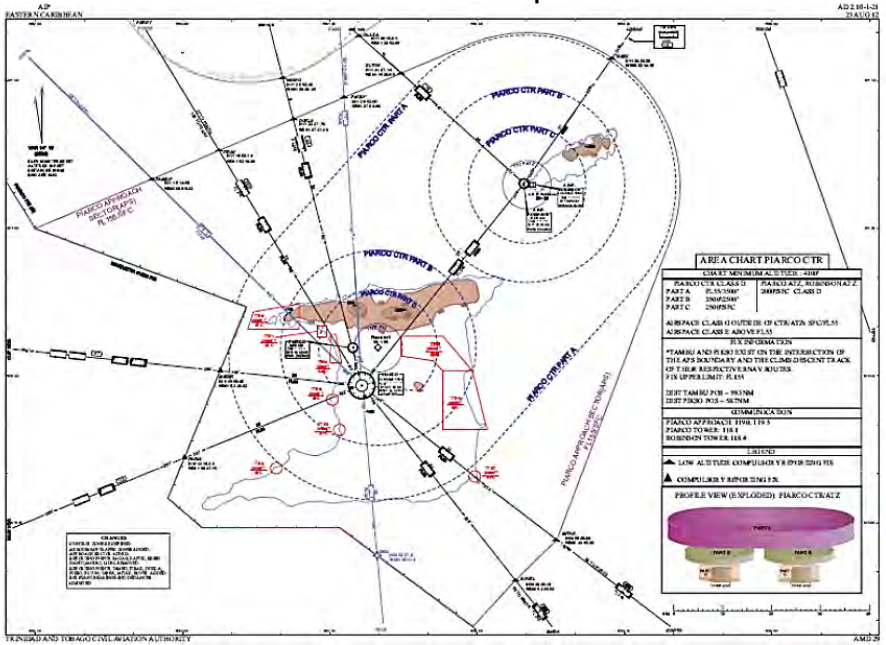
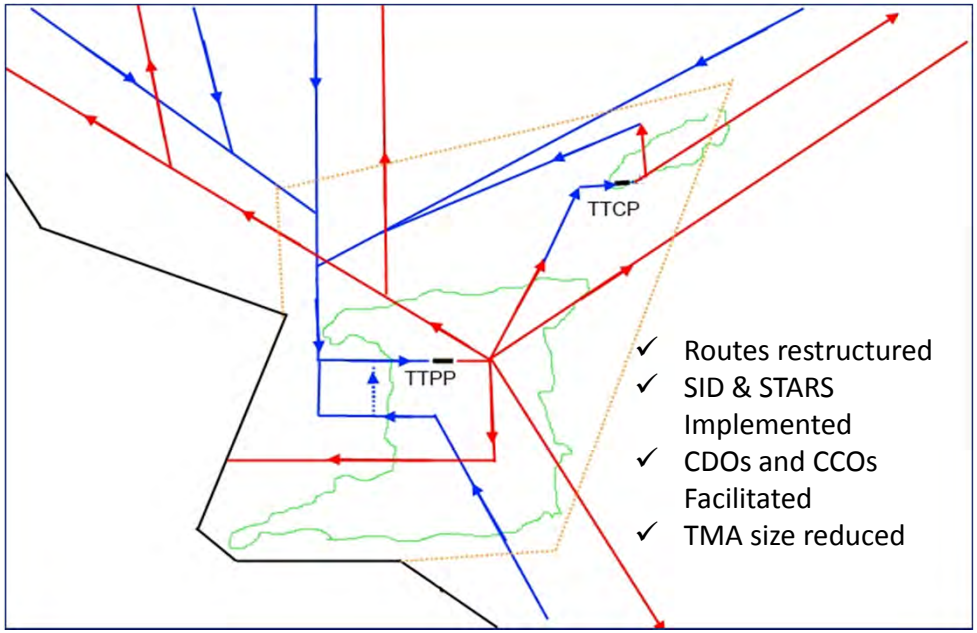
Piarco Terminal Airspace Concept Re-design

Current Terminal Airspace



Conceptual Re-design



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PBN BENEFITS

- ✓Enables an aircraft to fly the most efficient lateral/vertical flight path
- ✓Improves safety through on-board monitoring and performance alerting
- ✓Increases capacity
- ✓Facilitates predictable and repeatable path trajectories
- ✓Promotes environmental sustainability

HOWEVER!

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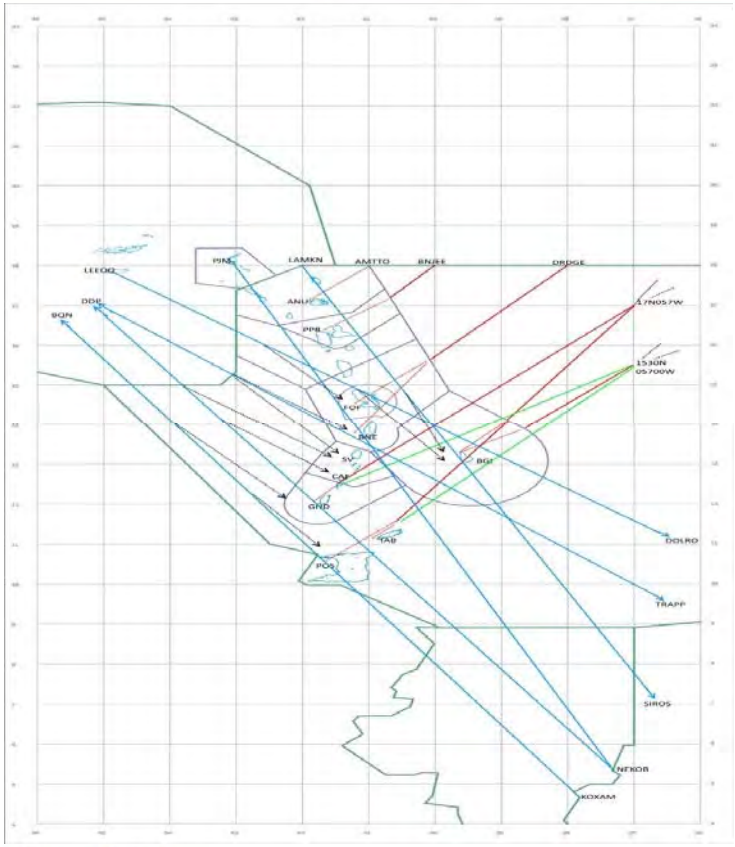
Strategic ATFM Plan within the Piarco FIR



Despite the gains in efficiency and capacity through PBN, a strategic traffic Plan is required to balance Demand with Capacity during:

- Seasonal Traffic Peaks
- Major Events
- Adverse weather (Tropical storms, etc.)
- CNS outages
- Staffing issues

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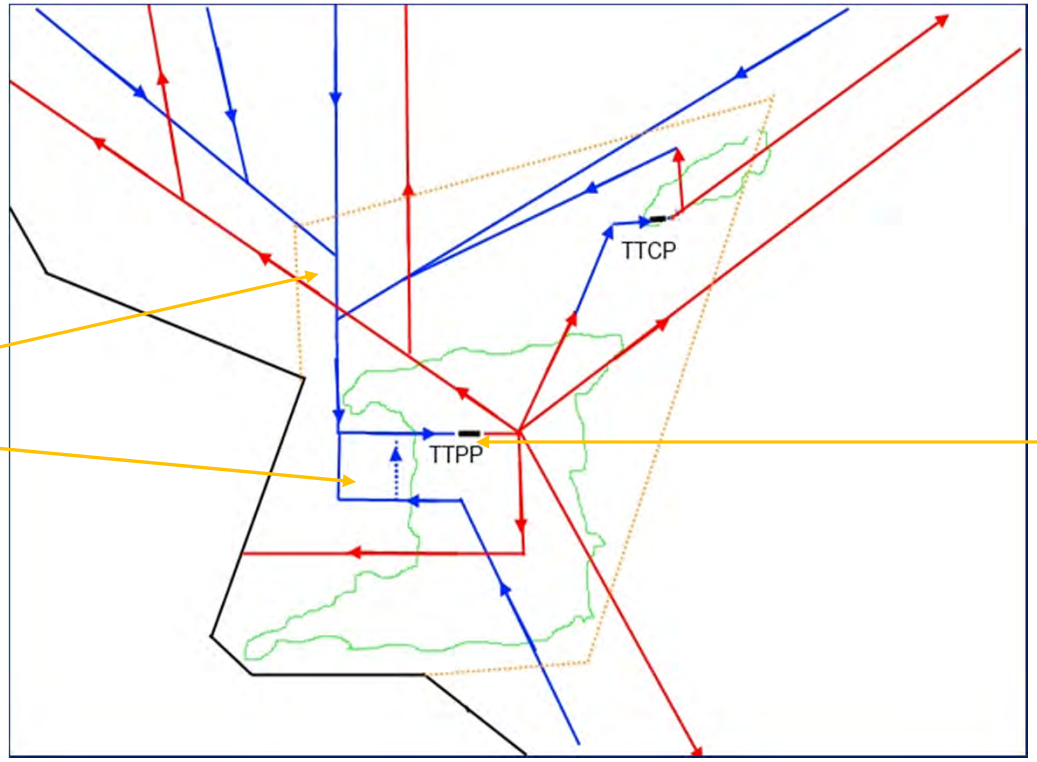
Without some type of strategic traffic plan

ACFT arrive at arrival fixes at same time and have to hold or be vectored



ACFT start up at the same time and still have to wait for departure

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TTCAA ATFM OBJECTIVES

- Development of Formal ATFM Procedures
- Development of formalized ATFM agreements with adjacent FIR's and TMAs
- Development of more efficient Letters of Agreements with adjacent states with respect to crossing FIR boundaries, such as:
  - Radar Hand-offs with San-Juan
  - Transfer of Flights from New York Oceanic to Piarco and vice-versa with reduced lateral separation (30NM)
  - Reduced Longitudinal and Lateral Separation for transfer of flights between Georgetown and Piarco FIR
- Procurement of ATFM tools to enhance demand-capacity monitoring, and to better sequence arrivals (AMAN) and departures (DMAN)

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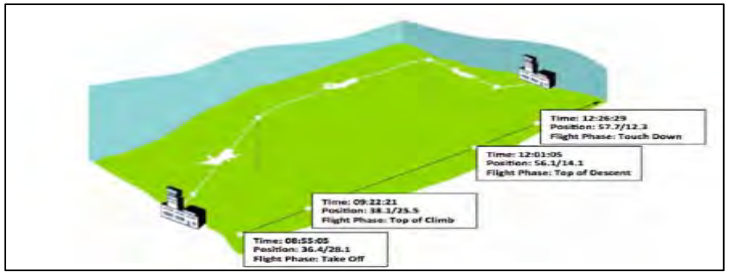
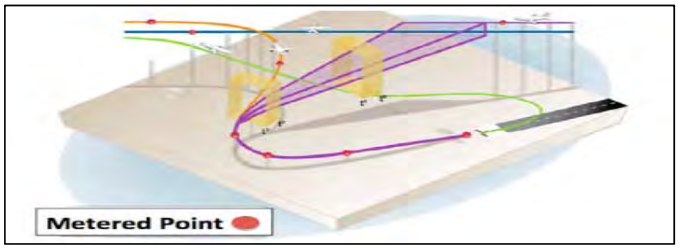
Integration of ATFM and PBN

- Move from “distance – based” ATC system to “Time - based” through CDM DATA collected from:
  - o ANSP
  - o ACFT Operator Flight Planning System
  - o FMS



- ATFM Tools that analyses data and predicts trajectories
  - ACFT can be given specific time to arrive at fixes (RTA) (AMAN), so that more aircraft can utilise RNAV approaches.
  - Planning the departure sequence will allow more departures to execute the RNAV departure procedures (DMAN)



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PBN & ATFM

PBN provides greater efficiency and effective capacity by utilizing less airspace and enabling higher traffic throughput in constrained airspace

PBN & ATFM

ATFM balances overall capacity and demand, integrates and synchronizes all phases of flight

Hand in Hand

Airspace Capacity gains through PBN are **maximised** by ATFM

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Thank You For Your Attention
Gracias Por Su Atencion

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