



SAM/IG/1
WP/24
16/04/08

**International Civil Aviation Organization
South American Regional Office**

**FIRST WORKSHOP/MEETING OF THE SAM IMPLEMENTATION GROUP
(SAM/IG/1)
REGIONAL PROJECT RLA/06/901**

Lima, Peru, 21 to 25 April 2008

Agenda Item 1: Optimization of the ATS routes structure in Terminal and en-route airspace and implementation of performance based navigation (PBN) in the SAM Region.

FOLLOW-UP OF RNAV ROUTES IMPLEMENTATION IN THE CAR/SAM REGIONS

(Presented by IATA)

SUMMARY

This working paper informs of the operational efficiencies and cost savings to the airspace users of the implementation of new and proposed RNAV routes.

1. Introduction

1.1 IATA is working with various States, the ICAO Regional Offices and FAA to implement additional RNAV routes throughout the region. This network of RNAV routes is expected to result in significant operational efficiency, environmental and cost savings to airspace users and States.

1.2 **Appendix A** to this working paper provides detailed information about the potential savings associated with new routes under development, as well as new proposed routes.

2. **Action Requested**

2.1 IATA requests that added emphasis be placed on developing more efficient direct RNAV routes between major city pairs in the CAR/SAM Regions. Along with these routes the need exists for RNAV SID and STAR development to accommodate these routes.

2.2 The meeting is asked to take note of this information and to contact IATA for any questions or additional information required. The meeting is also asked to support the implementation of these routes and the development of future RNAV routes in the region.

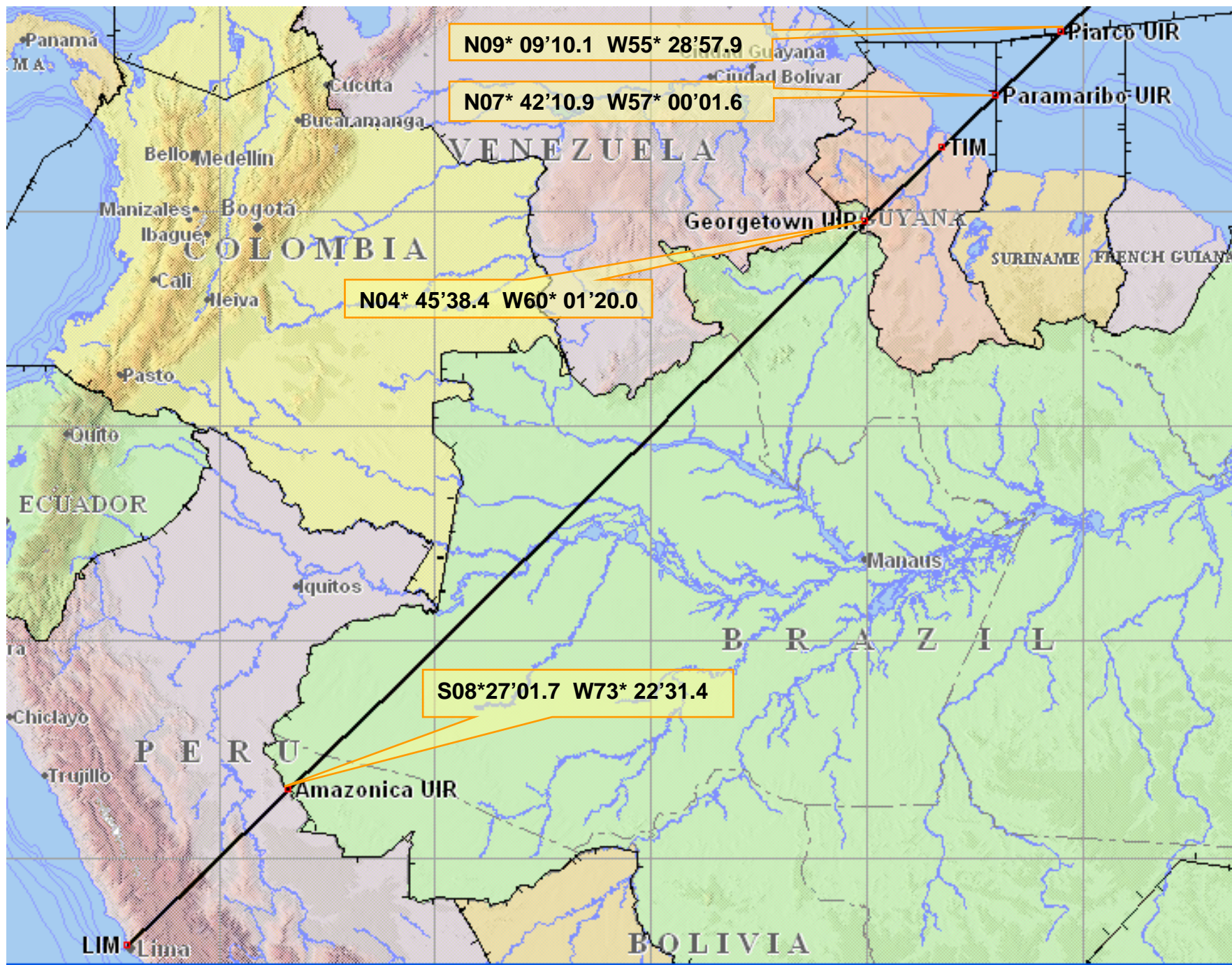
2.3 The meeting is requested to establish a coordination methodology for RNAV route development and implementation process. The objective is to ensure the proposed routes are analyzed by all participants on a regular basis and implemented in the shortest possible time frame. The process may include regular teleconferences, regional and/or specific route meetings.

Modelo

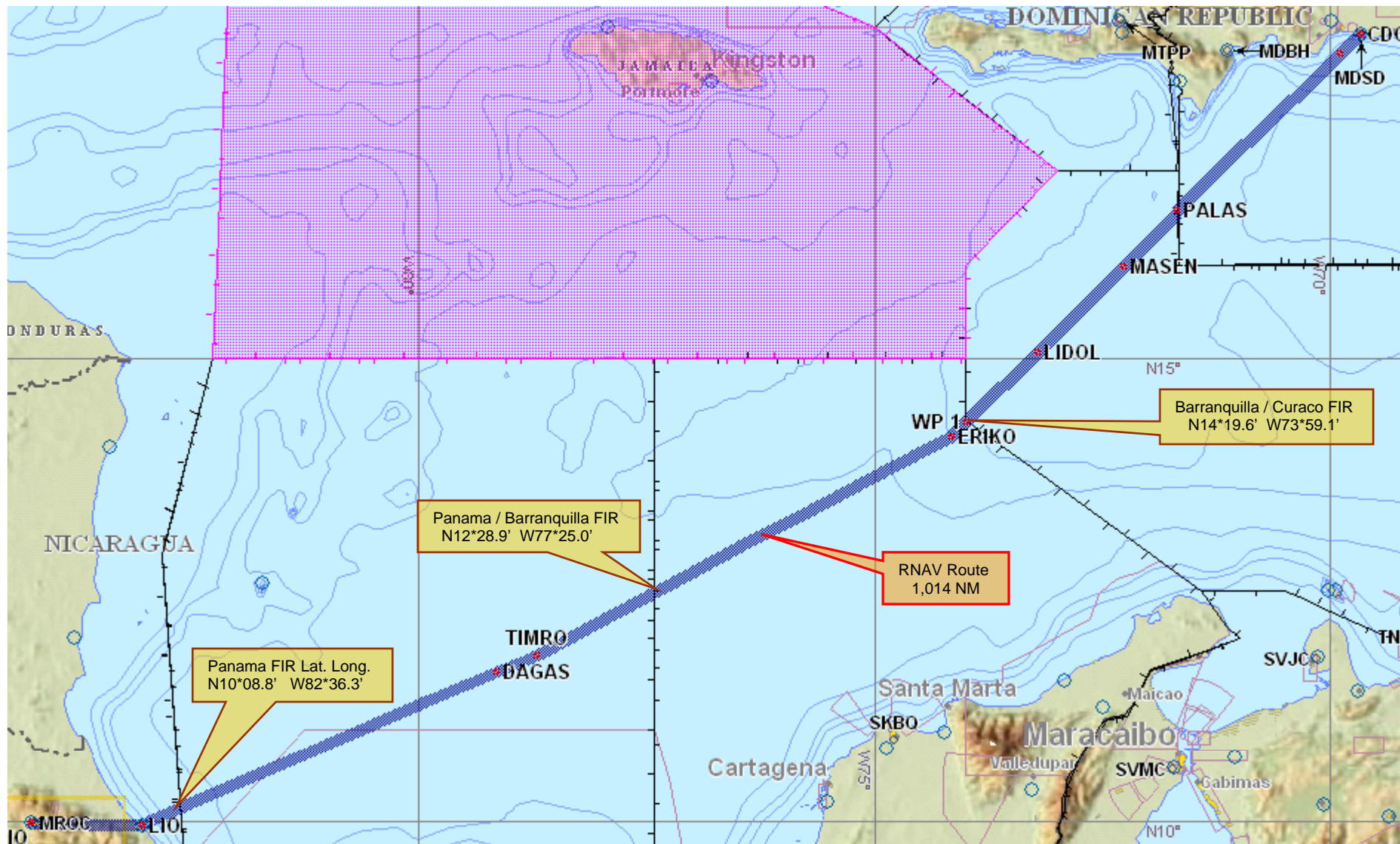
ESPACIO AÉREO SUPERIOR / UPPER AIRSPACE		
Lima to Madrid		
Designador Designator (aquí los puntos significativos)	Latitud Latitude (en grados-minutos y segundos)	Longitud Longitude (en grados-minutos y segundos)
Lima VOR	S12 00 30.08	W77 07'22.4
Lima / Amazonica UIR	S08 27'01.7	W73 22'31.4
Amazonica / Georgetown UIR	N04 45'38.4	W60 01'20.0
Georgetown / Paramaribo UIR	N07 42'10.9	W57 00'01.6
Paramaribo / Piarco UIR	N09 09'10.1	W55 28'57.9

LAN, LIM – MAD

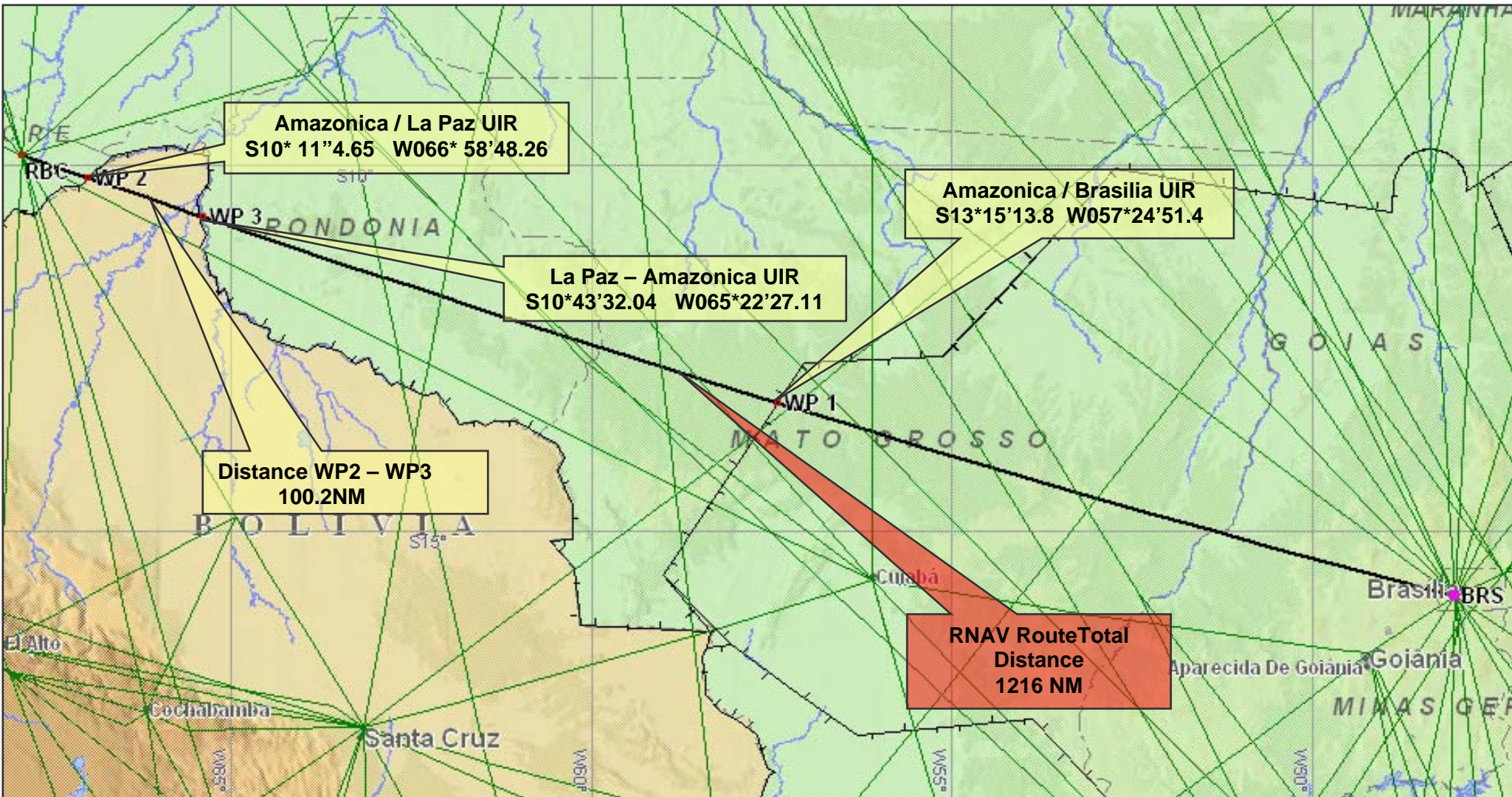
Nueva Ruta: LIM/Vor directo TIM/Vor



RNAV Route Request Santo Domingo to San Jose

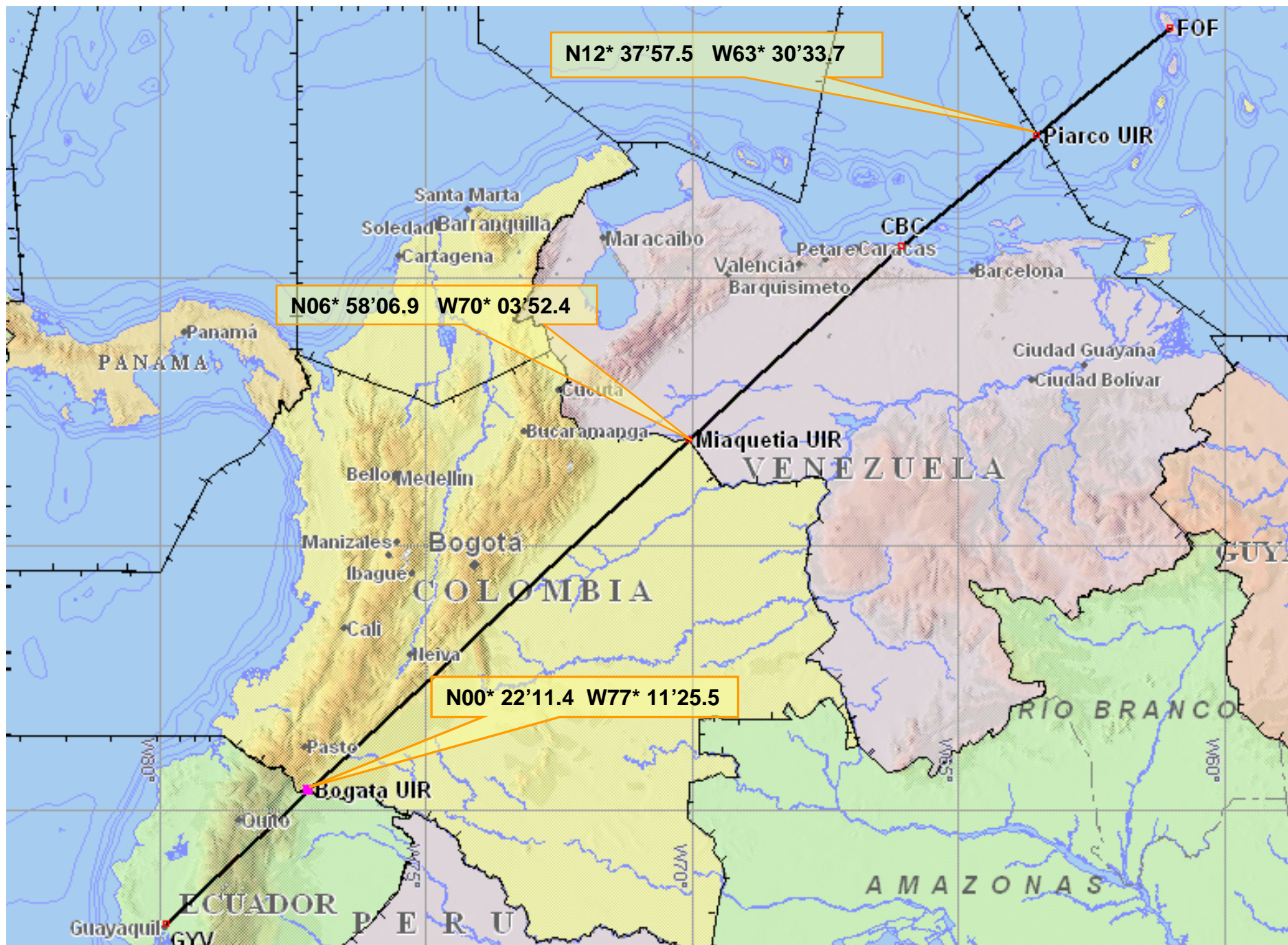


IATA – Brazil - Bolivia RBC RNAV BRS



LAN, GYE – MAD

Nueva Ruta: GYV/Vor directo CBC/Vor directo FOF/Vor

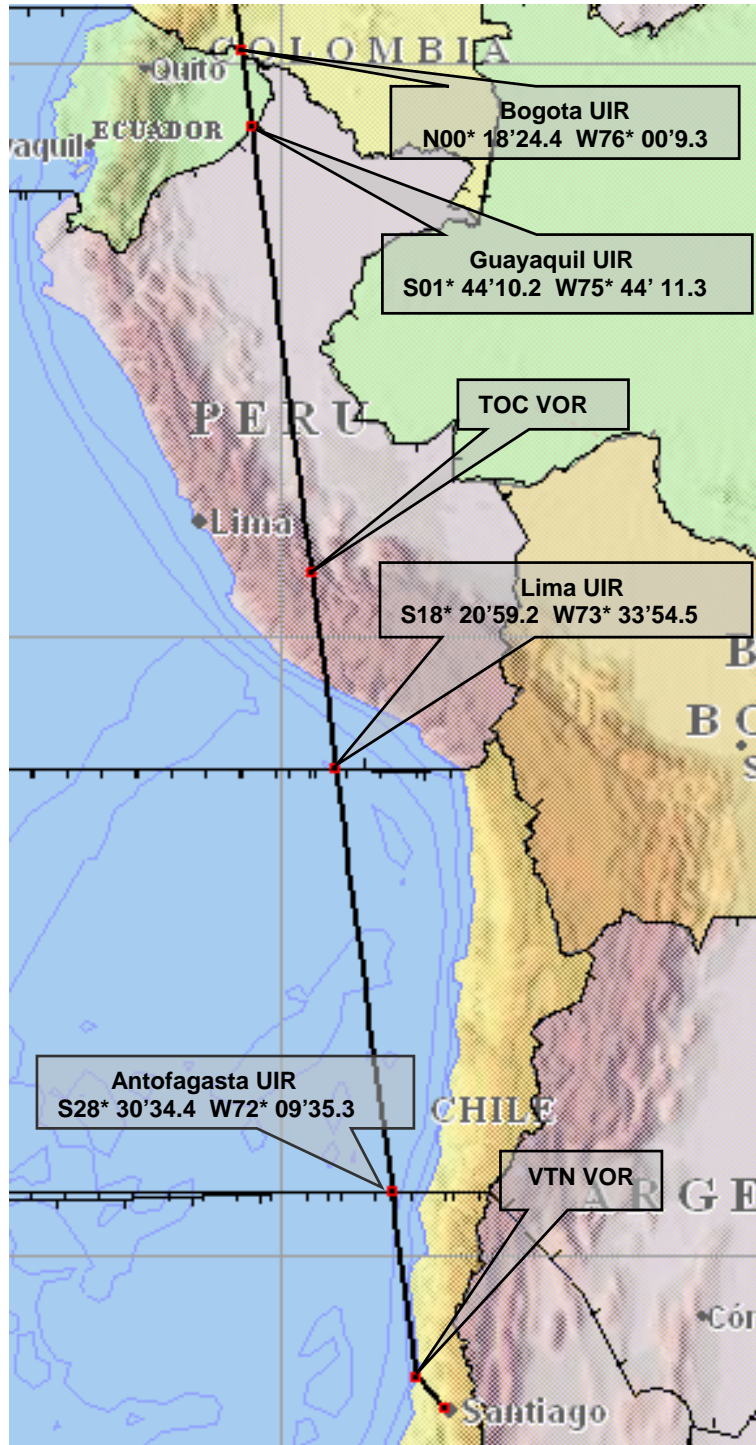
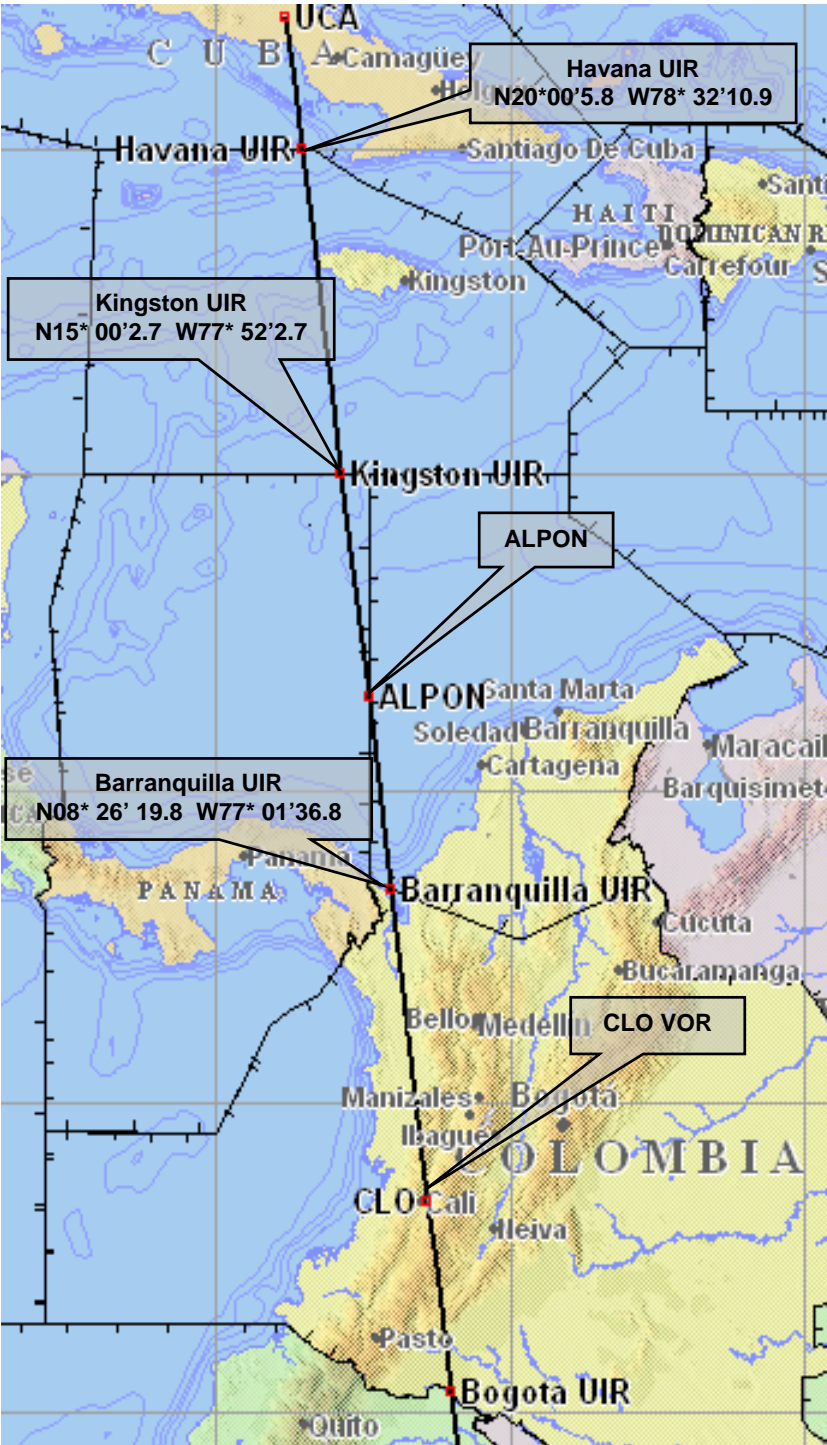


Modelo

ESPACIO AÉREO SUPERIOR / UPPER AIRSPACE Guayaquil – Madrid		
Designador Designator (aquí los puntos significativos)	Latitud Latitude (en grados-minutos y segundos)	Longitud Longitude (en grados-minutos y segundos)
Guayaquil VOR	S02° 07'42.0	W79° 52'01.0
Guayaquil / Bogota UIR	N00° 22' 11.4	W77° 11'25.5
Bogota / Miaquetia UIR	N06° 58' 06.9	W70° 03'52.4
Miaquetia / Piarco UIR	N12° 37'57.5	W63° 30'33.7
Fort De France VOR	N14° 35'26.7	W61° 01'22.7

LAN, SCL – MIA

Nueva Ruta: VTN/Vor directo TOC/Vor directo CLO/Vor directo UCA/Vor



Modelo

ESPACIO AÉREO SUPERIOR / UPPER AIRSPACE Lima to Madrid		
Designador Designator (aquí los puntos significativos)	Latitud Latitude (en grados-minutos y segundos)	Longitud Longitude (en grados-minutos y segundos)
Santiago VOR SCL	S33° 25'11.0	W70° 47'04.0
Ventanas VTN VOR	S32° 44'19.0	W71° 29'46.0
Santiago / Antofagasta UIR	S28° 30'34.4	W72° 09'35.3
Antofagasta / Lima UIR	S18° 20'59.2	W73° 33'54.5
Tocto TOC VOR	S13° 21'22.0	W74° 11'29.0
Lima / Guayaquil UIR	S01° 44'10.2	W75° 44'11.3
Guayaquil / Bogota UIR	N00° 18'24.4	W76° 00'9.3
Cali CLO VOR	N03° 24'07.0	W76° 24'20.0
Bogota / Barranquilla UIR	N08° 26'19.8	W77° 01'36.8
ALPON Intersection	N11° 29'06.0	W77° 25'00.0
Panama / Kingston UIR	N15° 00'2.7	W77° 52'2.7
Kingston / Havana UIR	N20° 00'5.8	W78° 32'10.9
Ciego De Avilla UCA VOR	N22° 00'54.2	W78° 48'56.9

Santo Domingo to San Jose

RNAV Route

FLIGHT NUMBER	FROM	TO	WEEKLY FREQ.	ARCFT TYPE	ETD UTC +5	Savings Summary					
						Distance Saved	Minutes Saved	Reduced CO2 Emissions lb.	Annual Fuel Lbs. Saved	Fuel Savings @ \$2.00/Gal. (USD / YR)	*Total Operational Savings (USD / YR)
TBD TACA	SDQ	SJO	MT*T*S*	A-320	9:08	90	12.0	753,804	229,818	\$68,603	\$274,410
UPS	SDQ	SJO	*****S*	B-757	VAR	90	12.0	294,899	89,908	\$26,838	\$107,353
								0	0	\$0	
TOTAL SAVINGS - ANNUALLY								1,048,703	319,727	\$95,441	\$381,763

*Operational savings include fuel savings. Savings based on flying shortest charted route available.

Consumption data source: Transport Canada 2005

San Jose to Santo Domingo

RNAV Route

FLIGHT NUMBER	FROM	TO	WEEKLY FREQ.	ARCFT TYPE	ETD UTC +4	Savings Summary					
						Distance Saved	Minutes Saved	Reduced CO2 Emissions lb.	Annual Fuel Lbs. Saved	Fuel Savings @ \$2.00/Gal. (USD / YR)	*Total Operational Savings (USD / YR)
TBD TACA	SDQ	SJO	M*W*F*S	A-320	18:10	90	12.0	753,804	229,818	\$68,603	\$274,410
								0	0	\$0	
TOTAL SAVINGS - ANNUALLY								753,804	229,818	\$68,603	\$274,410

*Operational savings include fuel savings. Savings based on flying shortest charted route available.

Consumption data source: Transport Canada 2005

Brasilia to Rio Bronco

Savings Summary

FLIGHT NUMBER	FROM	TO	WEEKLY FREQ.	AIRCRAFT TYPE	SAVINGS SUMMARY					
					Distance Saved	Minutes Saved	Reduced CO2 Tons	Annual Fuel Lbs. Saved	Fuel Savings @ \$2.00/Gal. (USD / YR)	* Total Operational Savings (USD / YR)
JJ3879	BRS	RBC	MTWTFSS	A-320	40	5	1,485	1,123,613	\$335,407	\$1,341,628
G3 1853	BRS	RBC	MTWTFSS	B737-800	40	5	1,485	1,123,613	\$335,407	\$1,341,628
TOTAL SAVINGS - ANNUALLY							2,970	2,247,227	\$670,814	\$2,683,256

* Note: Total operational savings include fuel savings. CO2 calculated @ 3.14 Lb. Per Lb. Jet fuel. Round trip savings.

Guayaquil to Madrid LAN Route Request ATM 13

Savings Summary

FLIGHT NUMBER	FROM	TO	WEEKLY FREQ.	AIRCRAFT TYPE	SAVINGS SUMMARY					
					Distance Saved	Minutes Saved	Reduced CO2 Tons	Annual Fuel Lbs. Saved	Fuel Savings @ \$2.00/Gal. (USD / YR)	* Total Operational Savings (USD / YR)
LA 1730	GYE	MAD	MTWTF*S	B767-300	26	4	346	242,758	\$72,465.00	\$289,860
IB 6634	GYE	MAD	MTWTFSS	A340-300	26	4	561	393,354	\$117,419.00	\$469,676
A7 924	GYE	MAD	**W****	A340-300	26	4	80	56,194	\$16,774.25	\$67,097
TOTAL SAVINGS - ANNUALLY							988	692,305	\$206,658	\$826,633

* Note: Total operational savings include fuel savings. CO2 calculated @ 3.14 Lb. Per Lb. Jet fuel.

Lima to Madrid LAN Route Request ATM 13

Savings Summary

FLIGHT NUMBER	FROM	TO	WEEKLY FREQ.	AIRCRAFT TYPE	SAVINGS SUMMARY					
					Distance Saved	Minutes Saved	Reduced CO2 Tons	Annual Fuel Lbs. Saved	Fuel Savings @ \$2.00/Gal. (USD / YR)	* Total Operational Savings (USD / YR)
IB 6652	LIM	MAD	MTWTFSS	A340-300	60	8	1,123	786,708	\$234,838.25	\$939,353
A7 924	LIM	MAD	MT**FSS	A330-200	60	8	962	674,322	\$201,290.00	\$805,160
LP 706	LIM	MAD	*T*T**S	B767-300	60	8	346	242,758	\$72,465.00	\$289,860
TOTAL SAVINGS - ANNUALLY							2,432	1,703,787	\$508,593	\$2,034,373

* Note: Total operational savings include fuel savings. CO2 calculated @ 3.14 Lb. Per Lb. Jet fuel.

Santiago to Miami LAN Route Request ATM 13

Savings Summary

FLIGHT NUMBER	FROM	TO	WEEKLY FREQ.	AIRCRAFT TYPE	SAVINGS SUMMARY					
					Distance Saved	Minutes Saved	Reduced CO2 Tons	Annual Fuel Lbs. Saved	Fuel Savings @ \$2.00/Gal. (USD / YR)	* Total Operational Savings (USD / YR)
AA912	SCL	MIA	MTWTFSS	B767-300	45	6	606	424,827	\$126,814.00	\$507,256
LA500	SCL	MIA	MTWTFSS	B767-300	45	6	606	424,827	\$126,814.00	\$507,256
LA 502	SCL	MIA	***TFS*	B767-300	45	6	346	242,758	\$72,465.00	\$289,860
TOTAL SAVINGS - ANNUALLY							1,559	1,092,412	\$326,093	\$1,304,372
COMBINED TOTAL SAVINGS - ANNUALLY							4,979	3,488,504	\$1,041,345	\$4,165,378

* Note: Total operational savings include fuel savings. CO2 calculated @ 3.14 Lb. Per Lb. Jet fuel.