

## **ANEXO 23**

# **ANÁLISIS DE ESTADO ESTABLE**

## **Flujos de Potencia**

**Caso 1 MHT7**

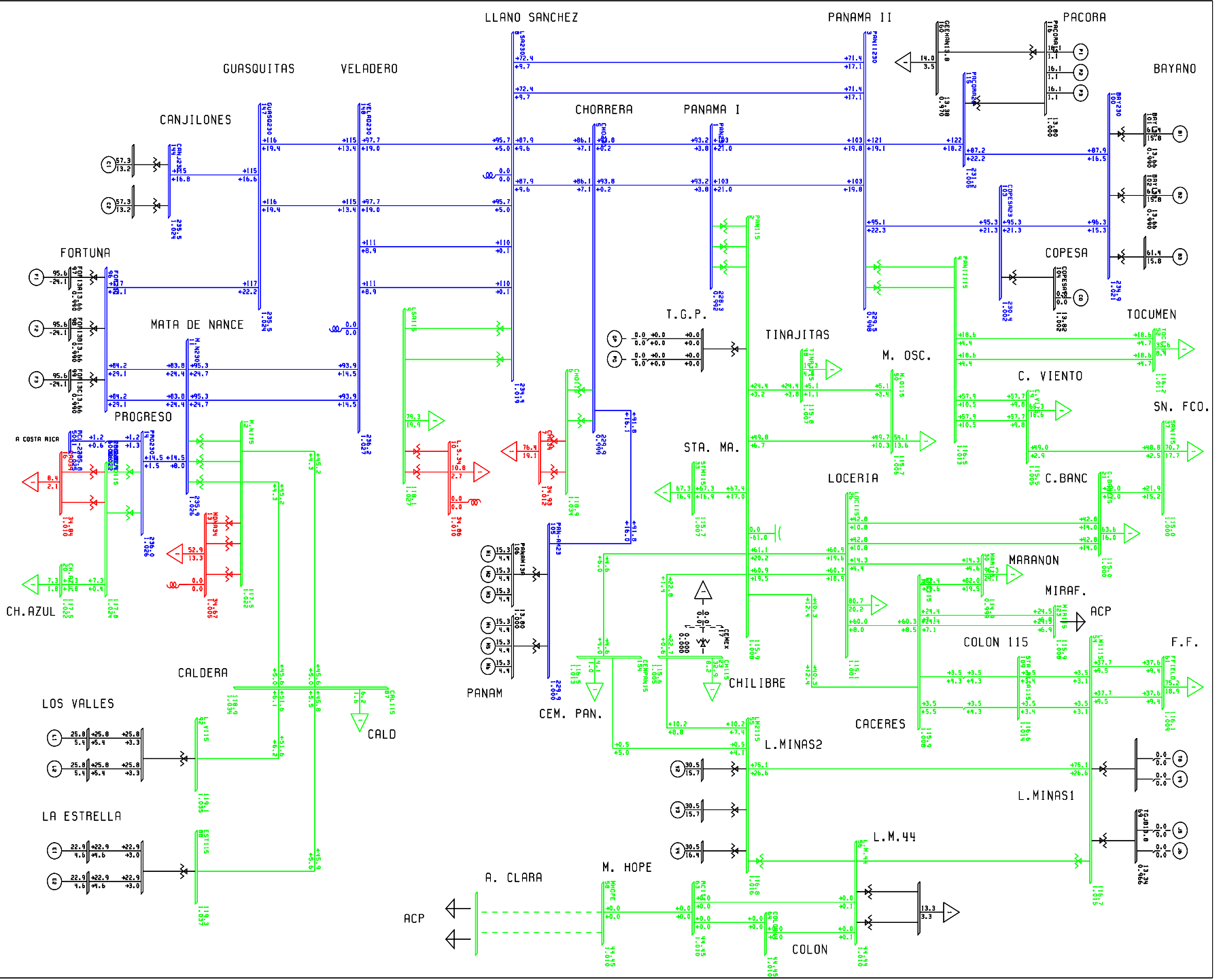
**Caso 2 MHTCB7**

**Caso 3 MHTGBC7**

**Caso 4 MHTGDC7**

**Caso 5 MHTTLA7**

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2007 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MODERADO DE DEMANDA. DEM MAX INVIERNO  
 BUSES WITH VOLTAGE GREATER THAN 1.0000:

WED, MAR 21 2007 10:45

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0191	234.40	11		M.N230		230.00	6	1.0258	235.93
14		PRO230		230.00	6	1.0261	236.01	96		FOR230		230.00	6	1.0223	235.13
100		BAY230		230.00	6	1.0214	234.93	103		COPESA23		230.00	6	1.0017	230.38
115		PACORA23		230.00	6	1.0053	231.21	144		CANJ230		230.00	6	1.0238	235.47
147		GUASQ230		230.00	6	1.0239	235.49	148		VELAD230		230.00	6	1.0268	236.16
190		CHANG230		230.00	6	1.0350	238.06	6000		FRONTER		230.00	6	1.0262	236.02

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9925	228.27	3		PANII230		230.00	6	0.9978	229.49
5		CHO230		230.00	6	0.9995	229.88	105		PAN-AM23		230.00	6	0.9996	229.91

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MODERADO DE DEMANDA. DEM MAX INVIERNO

WED, MAR 21 2007 10:45

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0082	115.95	4		PANIII115		115.00	6	1.0129	116.49
6		CHO115		115.00	6	1.0336	118.86	9		LSA115		115.00	6	1.0270	118.10
12		M.N115		115.00	6	1.0218	117.51	15		PRO115		115.00	6	1.0243	117.80
18		CAC115		115.00	6	1.0077	115.88	19		C.V115		115.00	6	1.0045	115.52
20		CH.AZUL		115.00	6	1.0216	117.49	21		C.BAN115		115.00	6	1.0003	115.03
23		CH115		115.00	6	1.0051	115.58	26		LOC115		115.00	6	1.0011	115.12
33		STM115		115.00	6	1.0065	115.75	48		TINAJ115		115.00	6	1.0066	115.76
50		M.O115		115.00	6	1.0059	115.68	52		TOC115		115.00	6	1.0106	116.22
54		LM115		115.00	6	1.0148	116.70	55		LM2115		115.00	6	1.0158	116.82
61		FFIELD		115.00	9	1.0094	116.08	87		CAL115		115.00	6	1.0342	118.93
88		EST115		115.00	6	1.0371	119.27	92		L.V115		115.00	6	1.0353	119.06
109		STA RITA115		115.00	6	1.0142	116.64	110		PTMD115A		115.00	6	1.0117	116.34
111		PTMD115B		115.00	6	1.0117	116.34	123		MIR115		115.00	7	1.0075	115.86
154		CEMPAN15		115.00	6	1.0134	116.54	191		CHANG115		115.00	6	1.0350	119.03

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
30		MAR115		115.00	6	0.9994	114.94	37		SAN115		115.00	6	0.9996	114.95

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAR 21 2007 10:44  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MODERADO DE DEMANDA. DEM MAX INVIERNO

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.5	15.7	30.0	0.0	1.0000	34.3	0.8891	47.0			1	6		
67		BLM13C		13.800	V3	30.5	15.7	30.0	0.0	1.0000	34.3	0.8891	47.0			1	6		
68		BLM13D		13.800	V4	30.5	16.4	30.0	0.0	1.0000	34.7	0.8807	47.0			1	6		
90		EST-13L		13.800	E1	22.9	4.6	12.0	-5.0	1.0000	23.4	0.9803	27.0			1	6		
91		EST-13T		13.800	E2	22.9	4.6	12.0	-5.0	1.0000	23.4	0.9803	27.0			1	6		
94		LV-13.8L		13.800	L1	25.8	5.4	12.0	-5.0	1.0000	26.4	0.9790	27.0			1	6		
95		LV-13.8T		13.800	L2	25.8	5.4	12.0	-5.0	1.0000	26.4	0.9790	27.0			1	6		
97		FOR13A		13.800	F1	95.6	-24.1	50.0	-50.0	0.9900	99.6	0.9696	111.0			1	6		
98		FOR13B		13.800	F2	95.6	-24.1	50.0	-50.0	0.9900	99.6	0.9696	111.0			1	6		
99		FOR13C		13.800	F3	95.6	-24.1	50.0	-50.0	0.9900	99.6	0.9696	111.0			1	6		
101		BAY13A		13.800	B1	61.4	15.8	50.0	-25.0	0.9900	64.1	0.9683	96.0			1	6	SYST	
102		BAY13B		13.800	B2	61.4	15.8	50.0	-25.0	0.9900	64.1	0.9683	96.0			1	6		
106		PANAM13A		13.800	M1	15.3	4.4	9.0	0.0	1.0000	15.9	0.9607	20.7			1	6		
106		PANAM13A		13.800	M2	15.3	4.4	9.0	0.0	1.0000	15.9	0.9607	20.7			1	6		
106		PANAM13A		13.800	M3	15.3	4.4	9.0	0.0	1.0000	15.9	0.9607	20.7			1	6		
107		PANAM13B		13.800	M4	15.3	4.4	9.0	0.0	1.0000	15.9	0.9607	20.7			1	6		
107		PANAM13B		13.800	M5	15.3	4.4	9.0	0.0	1.0000	15.9	0.9607	20.7			1	6		
107		PANAM13B		13.800	M6	15.3	4.4	9.0	0.0	1.0000	15.9	0.9607	20.7			1	6		
108		BAY13C		13.800	B3	61.4	15.8	50.0	-25.0	0.9900	64.1	0.9683	100.0			1	6		
116		PACORA13		13.800	P1	16.1	1.1	8.8	0.0	1.0000	16.1	0.9977	21.7			1	6		
116		PACORA13		13.800	P2	16.1	1.1	8.8	0.0	1.0000	16.1	0.9977	21.7			1	6		
116		PACORA13		13.800	P3	16.1	1.1	8.8	0.0	1.0000	16.1	0.9977	21.7			1	6		
142		CANJ13A		13.800	C1	57.3	13.2	29.0	-29.0	0.9900	59.4	0.9746	69.0			1	6		
143		CANJ13B		13.800	C2	57.3	13.2	29.0	-29.0	0.9900	59.4	0.9746	69.0			1	6		
SUBSYSTEM TOTALS						914.9	99.3	576.4	-303.0				1201.1						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAR 21 2007 10:44  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MODERADO DE DEMANDA. DEM MAX INVIERNO

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.3	0.0	5.0	0.0	1.0475	7.9	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.3	0.0	5.0	0.0	1.0475	7.9	1.0000	13.5			2	7		
128		MIR13C		12.000	G3	15.5	8.8	11.0	0.0	1.0000	17.8	0.8697	29.4			2	7		
134		MAD6A		6.9000	G1	10.1	0.4	6.0	-6.0	0.9900	10.2	0.9993	13.0			2	7		
135		MAD6B		6.9000	G2	10.1	0.4	6.0	-6.0	0.9900	10.2	0.9993	13.0			2	7		
136		MAD6C		6.9000	G3	10.1	0.4	6.0	-6.0	0.9900	10.2	0.9993	13.0			2	7		
140		GAT6A		6.9000	G1	2.0	-0.1	2.0	-2.0	0.9900	2.0	0.9976	4.1			2	7		
140		GAT6A		6.9000	G2	2.0	-0.1	2.0	-2.0	0.9900	2.0	0.9976	4.1			2	7		
140		GAT6A		6.9000	G3	2.0	-0.1	2.0	-2.0	0.9900	2.0	0.9976	4.1			2	7		
141		GAT6B		6.9000	G4	4.0	-0.9	3.0	-3.0	0.9900	4.2	0.9782	5.6			2	7		
141		GAT6B		6.9000	G5	4.0	-0.9	3.0	-3.0	0.9900	4.2	0.9782	6.2			2	7		
141		GAT6B		6.9000	G6	4.0	-0.9	3.0	-3.0	0.9900	4.2	0.9782	6.2			2	7		
SUBSYSTEM TOTALS						80.3	7.0	54.0	-33.0				125.9						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MODERADO DE DEMANDA. DEM MAX INVIERNO

WED, MAR 21 2007 10:45

AREA TOTALS  
 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.5	224.5	-98.9	0.0	143.2	-97.2	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	248.9	569.4	-236.9	0.0	477.3	36.7	356.9	
6	914.9	849.4	0.0	0.0	0.0	39.6	25.9	25.0
PANAMA	99.3	212.9	-61.0	0.0	426.3	46.2	327.5	
7	80.3	29.5	0.0	0.0	0.0	48.9	1.9	50.0
ACANAL	7.0	7.4	0.0	0.0	0.0	-14.2	13.7	
9	0.0	88.5	0.0	0.0	0.0	-88.7	0.2	-75.0
COLON	0.0	22.2	0.0	0.0	1.1	-22.5	1.4	
TOTALS	6143.8	6019.0	0.0	0.0	0.0	0.0	124.8	0.0
	573.9	1858.8	-909.3	0.0	1983.5	0.0	1608.0	



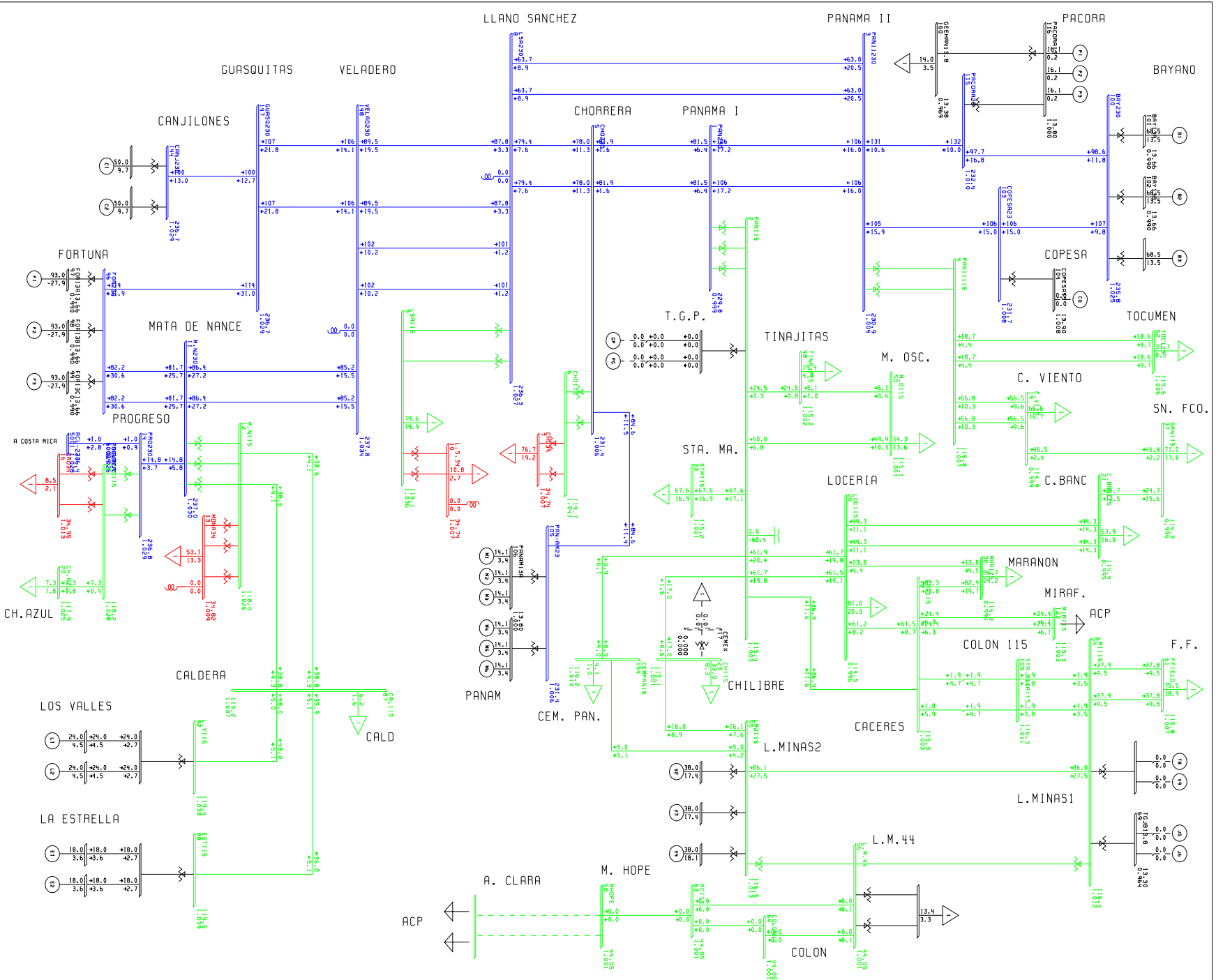


**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2007 ESCENARIO MODERADO DEMANDA MAXIMA VERANO**

PLAN DE EXPANSION DEL SIN CON C.R. JUNIO 2007  
 B O 2007 ESC MODERNO DE DEMANDA: DEM MAX VERRANO  
 T.H.U, APR 12 2007 15:20

KV:414 .435 .4115

BRIS - VOLTAGE (KV/PUI)  
 BRNCH - MM/MMAR  
 EQUIPMENT - MM/MMAR



LLANO SANCHEZ PANAMA II PACORA BAYANO  
 GUASQUITAS VELADERO CHORRERA PANAMA I T.G.P. TINAJITAS M. OSC. C. VIENTO SN. FCO.  
 FORTUNA MATA DE NANCE PROGRESO CH. AZUL CALDERA LOS VALLES LA ESTRELLA  
 CANJILONES GUASQUITAS  
 PANAMA PANAMA I PANAMA II  
 CEM. PAN. CHILIBRE L. MINAS2 CACERES L. MINAS1 L.M.44 COLON  
 A. CLARA M. HOPE  
 CALD CALDERA LOS VALLES LA ESTRELLA  
 CH. AZUL PROGRESO MATA DE NANCE FORTUNA CANJILONES GUASQUITAS  
 PACORA BAYANO C. VIENTO SN. FCO. C. BANC MARANON MIRAF. ACP COLON 115 F.F. CACERES L. MINAS2 L. MINAS1 L.M.44 COLON

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MODERADO DE DEMANDA. DEM MAX VERANO  
 BUSES WITH VOLTAGE GREATER THAN 1.0000:

THU, APR 12 2007 14:37

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0041	230.94
8		LSA230		230.00	6	1.0275	236.32
14		PRO230		230.00	6	1.0294	236.77
100		BAY230		230.00	6	1.0253	235.83
105		PAN-AM23		230.00	6	1.0062	231.43
144		CANJ230		230.00	6	1.0291	236.70
148		VELAD230		230.00	6	1.0340	237.82
6000		FRONTER		230.00	6	1.0293	236.74

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
5		CHO230		230.00	6	1.0062	231.42
11		M.N230		230.00	6	1.0303	236.96
96		FOR230		230.00	6	1.0262	236.04
103		COPESA23		230.00	6	1.0076	231.74
115		PACORA23		230.00	6	1.0105	232.41
147		GUASQ230		230.00	6	1.0291	236.70
190		CHANG230		230.00	6	1.0374	238.61

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9992	229.82

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MODERADO DE DEMANDA. DEM MAX VERANO  
 BUSES WITH VOLTAGE GREATER THAN 1.0000:

THU, APR 12 2007 14:37

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0032	115.37
6		CHO115		115.00	6	1.0406	119.67
12		M.N115		115.00	6	1.0261	118.01
18		CAC115		115.00	6	1.0027	115.31
23		CH115		115.00	6	1.0010	115.12
48		TINAJ115		115.00	6	1.0015	115.18
52		TOC115		115.00	6	1.0049	115.56
55		LM2115		115.00	6	1.0133	116.53
87		CAL115		115.00	6	1.0368	119.24
92		L.V115		115.00	6	1.0379	119.36
110		PTMD115A		115.00	6	1.0080	115.92
123		MIR115		115.00	7	1.0028	115.32
191		CHANG115		115.00	6	1.0374	119.31

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0072	115.83
9		LSA115		115.00	6	1.0356	119.10
15		PRO115		115.00	6	1.0277	118.18
20		CH.AZUL		115.00	6	1.0249	117.87
33		STM115		115.00	6	1.0015	115.17
50		M.O115		115.00	6	1.0008	115.09
54		LM115		115.00	6	1.0122	116.40
61		FFIELD		115.00	9	1.0068	115.78
88		EST115		115.00	6	1.0393	119.52
109		STA RITA115		115.00	6	1.0113	116.30
111		PTMD115B		115.00	6	1.0080	115.92
154		CEMPAN15		115.00	6	1.0102	116.17

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
19		C.V115		115.00	6	0.9989	114.88
26		LOC115		115.00	6	0.9959	114.53
37		SAN115		115.00	6	0.9943	114.35

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9951	114.43
30		MAR115		115.00	6	0.9943	114.34



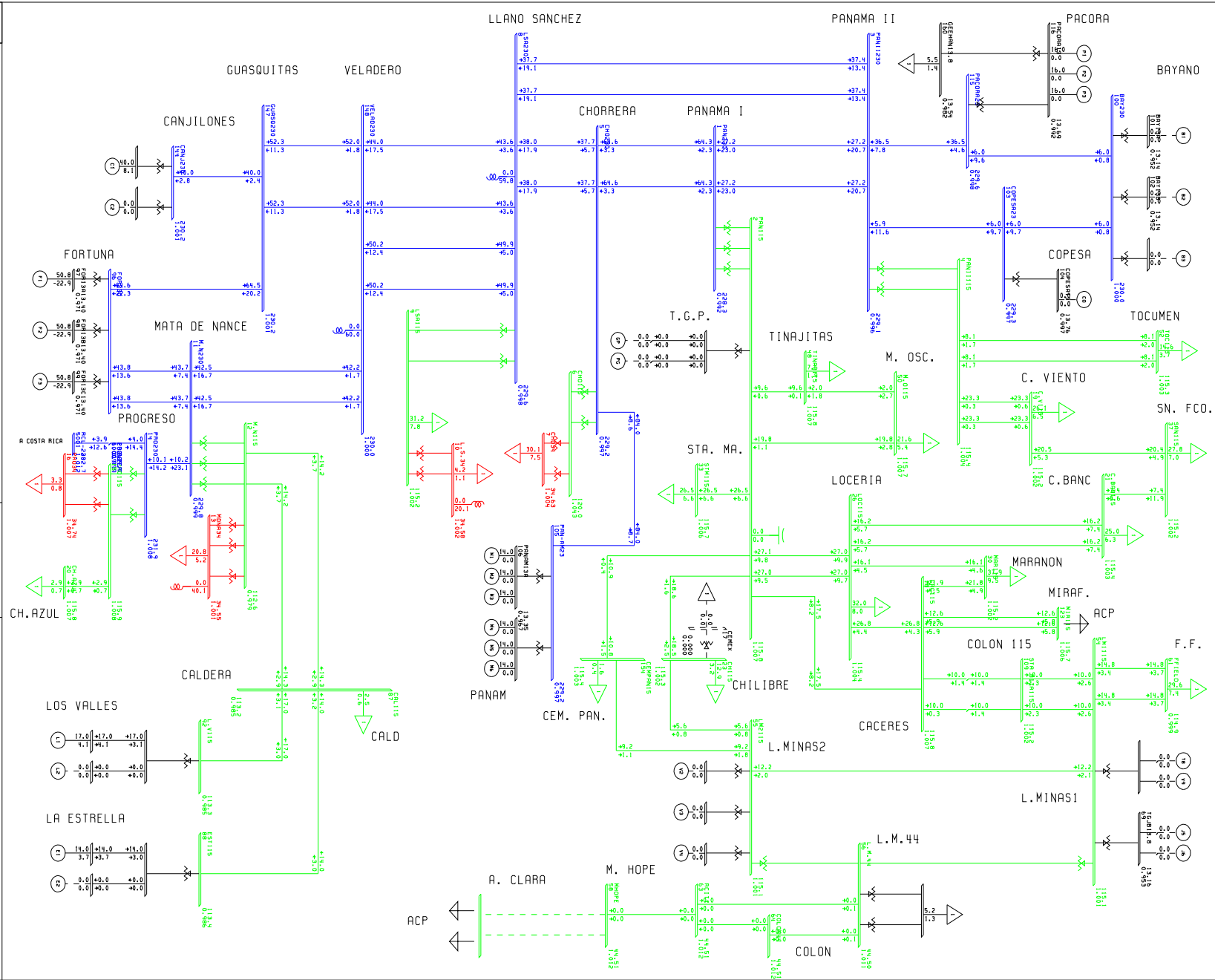
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MODERADO DE DEMANDA. DEM MAX VERANO

THU, APR 12 2007 14:38  
 AREA TOTALS  
 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.4	224.5	-98.9	0.0	143.3	-97.3	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	244.4	569.4	-237.1	0.0	477.8	33.0	356.8	
6	915.3	852.6	0.0	0.0	0.0	40.1	22.6	25.0
PANAMA	65.9	213.7	-60.4	0.0	430.9	48.5	295.1	
7	80.3	29.6	0.0	0.0	0.0	48.8	1.9	50.0
ACANAL	8.5	7.4	0.0	0.0	0.0	-12.6	13.7	
9	0.0	88.9	0.0	0.0	0.0	-89.1	0.2	-75.0
COLON	0.0	22.3	0.0	0.0	1.1	-22.6	1.4	
TOTALS	6144.2	6022.6	0.0	0.0	0.0	0.0	121.6	0.0
	537.5	1859.7	-908.9	0.0	1988.7	0.0	1575.4	



**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2007 ESCENARIO MODERADO DEMANDA MINIMA VERANO**







PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MOD. DEM. DEM MIN VERANO SIN BAYANO

TUE, MAY 08 2007 14:57

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
90		EST-13L		13.800	E1	14.0	3.7	12.0	-5.0	0.9500	15.2	0.9665	27.0			1	6	
94		LV-13.8L		13.800	L1	17.0	4.1	12.0	-5.0	0.9500	18.4	0.9721	27.0			1	6	
97		FOR13A		13.800	F1	50.8	-22.9	50.0	-50.0	0.9710	57.4	0.9118	111.0			1	6	SYST
98		FOR13B		13.800	F2	50.8	-22.9	50.0	-50.0	0.9710	57.4	0.9118	111.0			1	6	
99		FOR13C		13.800	F3	50.8	-22.9	50.0	-50.0	0.9710	57.4	0.9118	111.0			1	6	
106		PANAM13A		13.800	M1	14.0	0.0	9.0	0.0	0.9672	14.5	1.0000	20.7			1	6	
106		PANAM13A		13.800	M2	14.0	0.0	9.0	0.0	0.9672	14.5	1.0000	20.7			1	6	
106		PANAM13A		13.800	M3	14.0	0.0	9.0	0.0	0.9672	14.5	1.0000	20.7			1	6	
107		PANAM13B		13.800	M4	14.0	0.0	9.0	0.0	0.9672	14.5	1.0000	20.7			1	6	
107		PANAM13B		13.800	M5	14.0	0.0	9.0	0.0	0.9672	14.5	1.0000	20.7			1	6	
107		PANAM13B		13.800	M6	14.0	0.0	9.0	0.0	0.9672	14.5	1.0000	20.7			1	6	
116		PACORA13		13.800	P1	16.0	0.0	8.8	0.0	0.9921	16.1	1.0000	21.7			1	6	
116		PACORA13		13.800	P2	16.0	0.0	8.8	0.0	0.9921	16.1	1.0000	21.7			1	6	
116		PACORA13		13.800	P3	16.0	0.0	8.8	0.0	0.9921	16.1	1.0000	21.7			1	6	
142		CANJ13A		13.800	C1	40.0	8.1	29.0	-29.0	0.9700	42.1	0.9803	69.0			1	6	
SUBSYSTEM TOTALS						355.5	-52.8	283.5	-189.0				645.1					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MOD. DEM. DEM MIN VERANO SIN BAYANO

TUE, MAY 08 2007 14:57

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
135		MAD6B		6.9000	G2	10.0	0.8	6.0	-6.0	0.9900	10.1	0.9965	13.0			2	7	
136		MAD6C		6.9000	G3	10.0	0.8	6.0	-6.0	0.9900	10.1	0.9965	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	-0.2	2.0	-2.0	0.9900	2.0	0.9944	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	-0.2	2.0	-2.0	0.9900	2.0	0.9944	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	-0.2	2.0	-2.0	0.9900	2.0	0.9944	4.1			2	7	
141		GAT6B		6.9000	G4	4.0	-0.9	3.0	-3.0	0.9900	4.1	0.9741	5.6			2	7	
141		GAT6B		6.9000	G5	4.0	-0.9	3.0	-3.0	0.9900	4.1	0.9741	6.2			2	7	
141		GAT6B		6.9000	G6	4.0	-0.9	3.0	-3.0	0.9900	4.1	0.9741	6.2			2	7	
SUBSYSTEM TOTALS						38.0	-1.7	27.0	-27.0				56.4					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MODERADO DE DEMANDA. DEM MAX VERANO

THU, APR 12 2007 14:38  
 AREA TOTALS  
 IN MW/MVAR

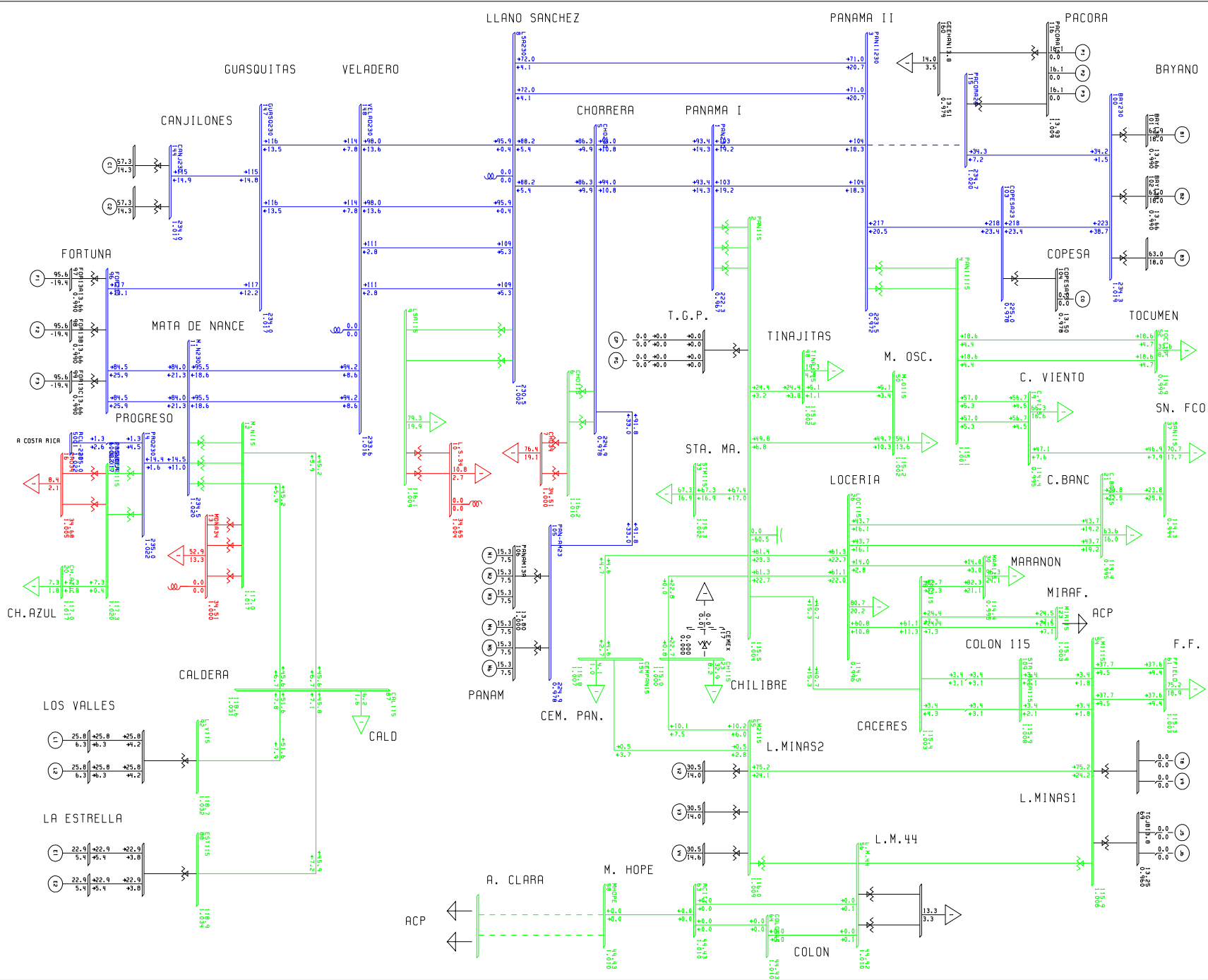
X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.8 55.7	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.9	0.0 -5.3	21.4 261.6	0.0
4	NICA		538.2 32.4	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.3	0.0 -97.3	11.1 147.4	0.0
5	C.RICA		1344.3 244.4	1324.8 569.4	0.0 -237.1	0.0 0.0	0.0 477.8	0.2 33.0	19.3 356.8	0.0
6	PANAMA		915.3 65.9	852.6 213.7	0.0 -60.4	0.0 0.0	0.0 430.9	40.1 48.5	22.6 295.1	25.0
7	ACANAL		80.3 8.5	29.6 7.4	0.0 0.0	0.0 0.0	0.0 0.0	48.8 -12.6	1.9 13.7	50.0
9	COLON		0.0 0.0	88.9 22.3	0.0 0.0	0.0 0.0	0.0 1.1	-89.1 -22.6	0.2 1.4	-75.0
TOTALS			6144.2 537.5	6022.6 1859.7	0.0 -908.9	0.0 0.0	0.0 1988.7	0.0 0.0	121.6 1575.4	0.0



**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2007 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Contingencia 1: Contingencia Pacora -Panamá II**



PLAN DE EXPANSION DEL SIN CON C.B. JUNIO 2007  
 R 0 2007 ESC MOD DEM MEX INV CONT1 PROCRH-PMA II  
 MED. MAY 16 2007 18:58  
 BUS - VOLTRGE (KV/FU)  
 BRANCH - MW/MYGR  
 EQUIPMENT - MW/MYGR  
 KV:414 .535 .4115







PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MOD DEM MAX INV CONTI PACORA-PMIII

WED, MAY 16 2007 18:34

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.5	14.0	30.0	0.0	0.9900	33.9	0.9092	47.0			1	6		
67		BLM13C		13.800	V3	30.5	14.0	30.0	0.0	0.9900	33.9	0.9092	47.0			1	6		
68		BLM13D		13.800	V4	30.5	14.6	30.0	0.0	0.9900	34.2	0.9022	47.0			1	6		
90		EST-13L		13.800	E1	22.9	5.4	12.0	-5.0	1.0000	23.6	0.9730	27.0			1	6		
91		EST-13T		13.800	E2	22.9	5.4	12.0	-5.0	1.0000	23.6	0.9730	27.0			1	6		
94		LV-13.8L		13.800	L1	25.8	6.3	12.0	-5.0	1.0000	26.6	0.9719	27.0			1	6		
95		LV-13.8T		13.800	L2	25.8	6.3	12.0	-5.0	1.0000	26.6	0.9719	27.0			1	6		
97		FOR13A		13.800	F1	95.6	-19.4	50.0	-50.0	0.9900	98.5	0.9799	111.0			1	6		
98		FOR13B		13.800	F2	95.6	-19.4	50.0	-50.0	0.9900	98.5	0.9799	111.0			1	6		
99		FOR13C		13.800	F3	95.6	-19.4	50.0	-50.0	0.9900	98.5	0.9799	111.0			1	6		
101		BAY13A		13.800	B1	62.9	18.0	50.0	-25.0	0.9900	66.1	0.9614	96.0			1	6	SYST	
102		BAY13B		13.800	B2	63.0	18.0	50.0	-25.0	0.9900	66.1	0.9614	96.0			1	6		
106		PANAM13A		13.800	M1	15.3	7.5	9.0	0.0	1.0000	17.0	0.8977	20.7			1	6		
106		PANAM13A		13.800	M2	15.3	7.5	9.0	0.0	1.0000	17.0	0.8977	20.7			1	6		
106		PANAM13A		13.800	M3	15.3	7.5	9.0	0.0	1.0000	17.0	0.8977	20.7			1	6		
107		PANAM13B		13.800	M4	15.3	7.5	9.0	0.0	1.0000	17.0	0.8977	20.7			1	6		
107		PANAM13B		13.800	M5	15.3	7.5	9.0	0.0	1.0000	17.0	0.8977	20.7			1	6		
107		PANAM13B		13.800	M6	15.3	7.5	9.0	0.0	1.0000	17.0	0.8977	20.7			1	6		
108		BAY13C		13.800	B3	63.0	18.0	50.0	-25.0	0.9900	66.1	0.9614	100.0			1	6		
116		PACORA13		13.800	P1	16.1	0.0	8.8	0.0	1.0094	15.9	1.0000	21.7			1	6		
116		PACORA13		13.800	P2	16.1	0.0	8.8	0.0	1.0094	15.9	1.0000	21.7			1	6		
116		PACORA13		13.800	P3	16.1	0.0	8.8	0.0	1.0094	15.9	1.0000	21.7			1	6		
142		CANJ13A		13.800	C1	57.3	14.3	29.0	-29.0	0.9900	59.7	0.9703	69.0			1	6		
143		CANJ13B		13.800	C2	57.3	14.3	29.0	-29.0	0.9900	59.7	0.9703	69.0			1	6		
SUBSYSTEM TOTALS						919.5	135.3	576.4	-303.0				1201.1						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MOD DEM MAX INV CONTI PACORA-PMIII

WED, MAY 16 2007 18:34

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.3	0.0	5.0	0.0	1.0421	7.9	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.3	0.0	5.0	0.0	1.0421	7.9	1.0000	13.5			2	7		
128		MIR13C		12.000	G3	15.5	7.0	11.0	0.0	0.9900	17.2	0.9108	29.4			2	7		
134		MAD6A		6.9000	G1	10.1	0.7	6.0	-6.0	0.9900	10.2	0.9978	13.0			2	7		
135		MAD6B		6.9000	G2	10.1	0.7	6.0	-6.0	0.9900	10.2	0.9978	13.0			2	7		
136		MAD6C		6.9000	G3	10.1	0.7	6.0	-6.0	0.9900	10.2	0.9978	13.0			2	7		
140		GAT6A		6.9000	G1	2.0	-0.1	2.0	-2.0	0.9900	2.0	0.9995	4.1			2	7		
140		GAT6A		6.9000	G2	2.0	-0.1	2.0	-2.0	0.9900	2.0	0.9995	4.1			2	7		
140		GAT6A		6.9000	G3	2.0	-0.1	2.0	-2.0	0.9900	2.0	0.9995	4.1			2	7		
141		GAT6B		6.9000	G4	4.0	-0.8	3.0	-3.0	0.9900	4.1	0.9820	5.6			2	7		
141		GAT6B		6.9000	G5	4.0	-0.8	3.0	-3.0	0.9900	4.1	0.9820	6.2			2	7		
141		GAT6B		6.9000	G6	4.0	-0.8	3.0	-3.0	0.9900	4.1	0.9820	6.2			2	7		
SUBSYSTEM TOTALS						80.3	6.5	54.0	-33.0				125.9						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MOD DEM MAX INV CONTI PACORA-PMAII

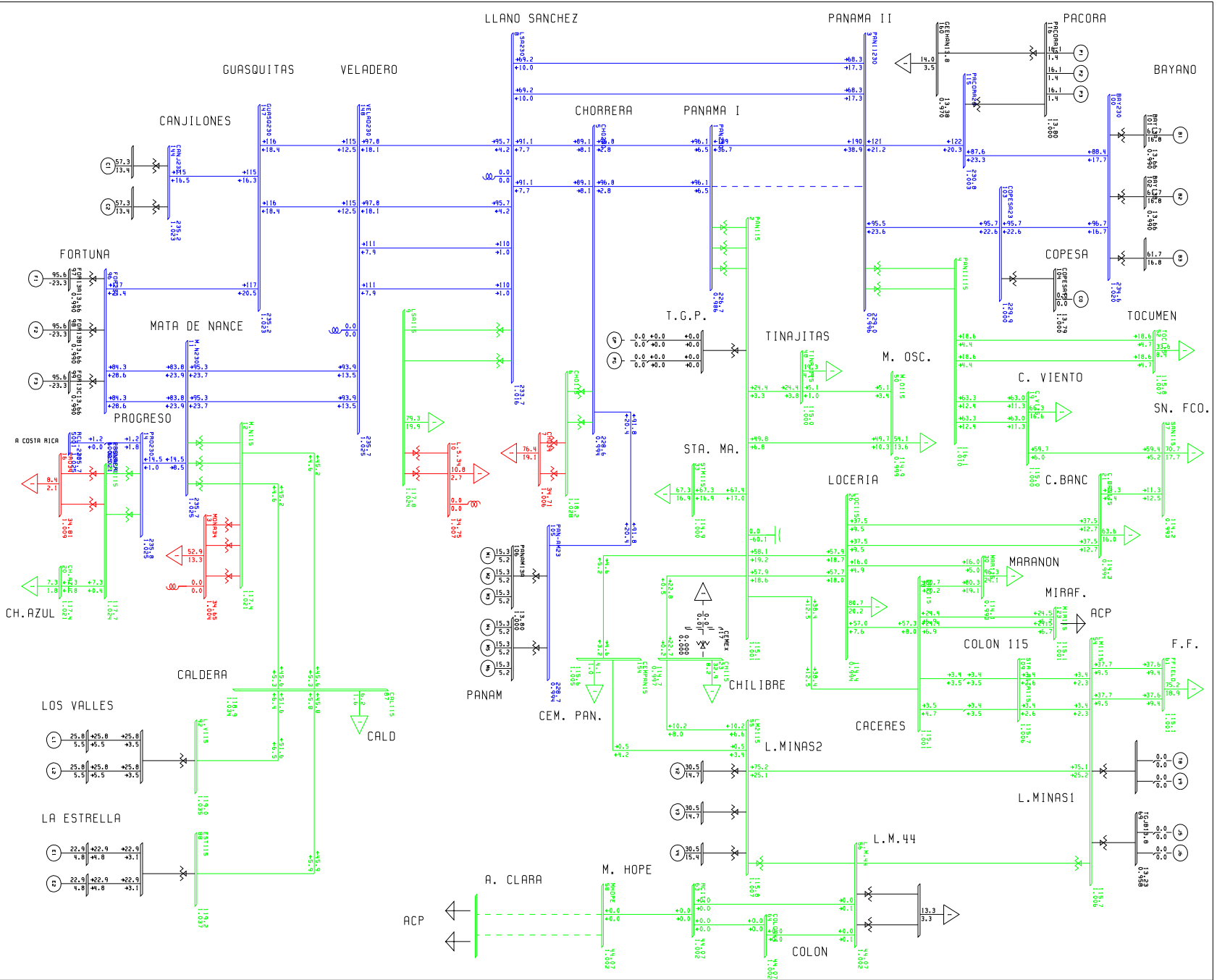
WED, MAY 16 2007 18:34  
 AREA TOTALS  
 IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.8 55.7	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.3	21.4 261.6	0.0
4	NICA		538.2 32.7	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.2	0.0 -97.1	11.1 147.4	0.0
5	C.RICA		1344.3 254.9	1324.8 569.4	0.0 -236.6	0.0 0.0	0.0 476.6	0.2 41.6	19.3 357.2	0.0
6	PANAMA		919.5 135.3	849.4 212.9	0.0 -60.5	0.0 0.0	0.0 412.1	39.6 41.5	30.5 353.5	25.0
7	ACANAL		80.3 6.5	29.5 7.4	0.0 0.0	0.0 0.0	0.0 0.0	48.9 -14.6	1.9 13.7	50.0
9	COLON		0.0 0.0	88.5 22.2	0.0 0.0	0.0 0.0	0.0 1.1	-88.7 -22.5	0.2 1.4	-75.0
TOTALS			6148.4 615.7	6019.0 1858.8	0.0 -908.5	0.0 0.0	0.0 1968.6	0.0 0.0	129.4 1634.2	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2007 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Contingencia 2: Panamá - Panamá II**



## Contingencia 2: Panamá - Panamá II

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 19:11  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2007 ESC MOD DEM MAX INV CONT2 PMA-PMII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8	LSA230	230.00	6	1.0163	233.75	11	M.N230	230.00	6	1.0248	235.69				
14	PRO230	230.00	6	1.0254	235.83	96	FOR230	230.00	6	1.0215	234.93				
100	BAY230	230.00	6	1.0201	234.63	115	PACORA23	230.00	6	1.0034	230.79				
144	CANJ230	230.00	6	1.0227	235.22	147	GUASQ230	230.00	6	1.0228	235.23				
148	VELAD230	230.00	6	1.0249	235.73	190	CHANG230	230.00	6	1.0345	237.94				
6000	FRONTER	230.00	6	1.0255	235.85										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9857	226.72	3	PANII230	230.00	6	0.9955	228.97				
5	CHO230	230.00	6	0.9940	228.62	103	COPESA23	230.00	6	0.9996	229.90				
105	PAN-AM23	230.00	6	0.9941	228.65										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 19:11  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2007 ESC MOD DEM MAX INV CONT2 PMA-PMII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0012	115.14	4	PANII115	115.00	6	1.0096	116.10				
6	CHO115	115.00	6	1.0276	118.18	9	LSA115	115.00	6	1.0240	117.76				
12	M.N115	115.00	6	1.0210	117.42	15	PRO115	115.00	6	1.0236	117.71				
18	CAC115	115.00	6	1.0007	115.08	19	C.V115	115.00	6	1.0001	115.01				
20	CH.AZUL	115.00	6	1.0208	117.40	52	TOC115	115.00	6	1.0073	115.84				
54	LM1115	115.00	6	1.0064	115.73	55	LM2115	115.00	6	1.0074	115.85				
61	FFIELD	115.00	9	1.0009	115.11	87	CAL115	115.00	6	1.0336	118.87				
88	EST115	115.00	6	1.0366	119.21	92	L.V115	115.00	6	1.0348	119.00				
109	STA RITA115	115.00	6	1.0060	115.69	110	PTMD115A	115.00	6	1.0040	115.46				
111	PTMD115B	115.00	6	1.0040	115.46	123	MIR115	115.00	7	1.0006	115.07				
154	CEMPAN15	115.00	6	1.0054	115.62	191	CHANG115	115.00	6	1.0345	118.97				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21	C.BAN115	115.00	6	0.9937	114.27	23	CH115	115.00	6	0.9974	114.70				
26	LOC115	115.00	6	0.9944	114.35	30	MAR115	115.00	6	0.9926	114.14				
33	STM115	115.00	6	0.9995	114.94	37	SAN115	115.00	6	0.9931	114.21				
48	TINAJ115	115.00	6	0.9996	114.95	50	M.O115	115.00	6	0.9989	114.87				



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MOD DEM MAX INV CONT2 PMA-PMIII  
 AREA 6 [PANAMA ] MACHINE SUMMARY:

WED, MAY 16 2007 19:11

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X	T	R	A	N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	30.5	14.7	30.0	0.0	0.9900	34.2	0.9010	47.0							1	6	
67		BLM13C		13.800	V3	30.5	14.7	30.0	0.0	0.9900	34.2	0.9010	47.0							1	6	
68		BLM13D		13.800	V4	30.5	15.4	30.0	0.0	0.9900	34.5	0.8934	47.0							1	6	
90		EST-13L		13.800	E1	22.9	4.8	12.0	-5.0	1.0000	23.4	0.9792	27.0							1	6	
91		EST-13T		13.800	E2	22.9	4.8	12.0	-5.0	1.0000	23.4	0.9792	27.0							1	6	
94		LV-13.8L		13.800	L1	25.8	5.5	12.0	-5.0	1.0000	26.4	0.9779	27.0							1	6	
95		LV-13.8T		13.800	L2	25.8	5.5	12.0	-5.0	1.0000	26.4	0.9779	27.0							1	6	
97		FOR13A		13.800	F1	95.6	-23.3	50.0	-50.0	0.9900	99.4	0.9715	111.0							1	6	
98		FOR13B		13.800	F2	95.6	-23.3	50.0	-50.0	0.9900	99.4	0.9715	111.0							1	6	
99		FOR13C		13.800	F3	95.6	-23.3	50.0	-50.0	0.9900	99.4	0.9715	111.0							1	6	
101		BAY13A		13.800	B1	61.7	16.8	50.0	-25.0	0.9900	64.6	0.9648	96.0							1	6	SYST
102		BAY13B		13.800	B2	61.7	16.8	50.0	-25.0	0.9900	64.6	0.9648	96.0							1	6	
106		PANAM13A		13.800	M1	15.3	5.2	9.0	0.0	1.0000	16.2	0.9468	20.7							1	6	
106		PANAM13A		13.800	M2	15.3	5.2	9.0	0.0	1.0000	16.2	0.9468	20.7							1	6	
106		PANAM13A		13.800	M3	15.3	5.2	9.0	0.0	1.0000	16.2	0.9468	20.7							1	6	
107		PANAM13B		13.800	M4	15.3	5.2	9.0	0.0	1.0000	16.2	0.9468	20.7							1	6	
107		PANAM13B		13.800	M5	15.3	5.2	9.0	0.0	1.0000	16.2	0.9468	20.7							1	6	
107		PANAM13B		13.800	M6	15.3	5.2	9.0	0.0	1.0000	16.2	0.9468	20.7							1	6	
108		BAY13C		13.800	B3	61.7	16.8	50.0	-25.0	0.9900	64.6	0.9648	100.0							1	6	
116		PACORA13		13.800	P1	16.1	1.4	8.8	0.0	1.0000	16.2	0.9961	21.7							1	6	
116		PACORA13		13.800	P2	16.1	1.4	8.8	0.0	1.0000	16.2	0.9961	21.7							1	6	
116		PACORA13		13.800	P3	16.1	1.4	8.8	0.0	1.0000	16.2	0.9961	21.7							1	6	
142		CANJ13A		13.800	C1	57.3	13.4	29.0	-29.0	0.9900	59.5	0.9739	69.0							1	6	
143		CANJ13B		13.800	C2	57.3	13.4	29.0	-29.0	0.9900	59.5	0.9739	69.0							1	6	
SUBSYSTEM TOTALS						915.7	108.0	576.4	-303.0				1201.1									

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MOD DEM MAX INV CONT2 PMA-PMIII  
 AREA 7 [ACANAL ] MACHINE SUMMARY:

WED, MAY 16 2007 19:11

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X	T	R	A	N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.3	0.0	5.0	0.0	1.0407	7.9	1.0000	13.5							2	7	
127		MIR13B		12.000	G2	8.3	0.0	5.0	0.0	1.0407	7.9	1.0000	13.5							2	7	
128		MIR13C		12.000	G3	15.5	7.5	11.0	0.0	0.9900	17.4	0.9009	29.4							2	7	
134		MAD6A		6.9000	G1	10.1	0.8	6.0	-6.0	0.9900	10.2	0.9972	13.0							2	7	
135		MAD6B		6.9000	G2	10.1	0.8	6.0	-6.0	0.9900	10.2	0.9972	13.0							2	7	
136		MAD6C		6.9000	G3	10.1	0.8	6.0	-6.0	0.9900	10.2	0.9972	13.0							2	7	
140		GAT6A		6.9000	G1	2.0	0.0	2.0	-2.0	0.9900	2.0	0.9998	4.1							2	7	
140		GAT6A		6.9000	G2	2.0	0.0	2.0	-2.0	0.9900	2.0	0.9998	4.1							2	7	
140		GAT6A		6.9000	G3	2.0	0.0	2.0	-2.0	0.9900	2.0	0.9998	4.1							2	7	
141		GAT6B		6.9000	G4	4.0	-0.8	3.0	-3.0	0.9900	4.1	0.9830	5.6							2	7	
141		GAT6B		6.9000	G5	4.0	-0.8	3.0	-3.0	0.9900	4.1	0.9830	6.2							2	7	
141		GAT6B		6.9000	G6	4.0	-0.8	3.0	-3.0	0.9900	4.1	0.9830	6.2							2	7	
SUBSYSTEM TOTALS						80.3	7.3	54.0	-33.0				125.9									





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MOD DEM MAX INV CONT2 PMA-PMAII

WED, MAY 16 2007 19:12  
 AREA TOTALS  
 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.6	224.5	-98.9	0.0	143.2	-97.2	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	249.9	569.4	-236.8	0.0	477.2	37.5	357.0	
6	915.7	849.4	0.0	0.0	0.0	39.6	26.7	25.0
PANAMA	108.0	212.9	-60.1	0.0	421.5	45.0	331.8	
7	80.3	29.5	0.0	0.0	0.0	48.9	1.9	50.0
ACANAL	7.3	7.4	0.0	0.0	0.0	-13.8	13.7	
9	0.0	88.5	0.0	0.0	0.0	-88.7	0.2	-75.0
COLON	0.0	22.2	0.0	0.0	1.1	-22.5	1.4	
TOTALS	6144.6	6019.0	0.0	0.0	0.0	0.0	125.6	0.0
	584.0	1858.8	-908.4	0.0	1978.6	0.0	1612.3	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

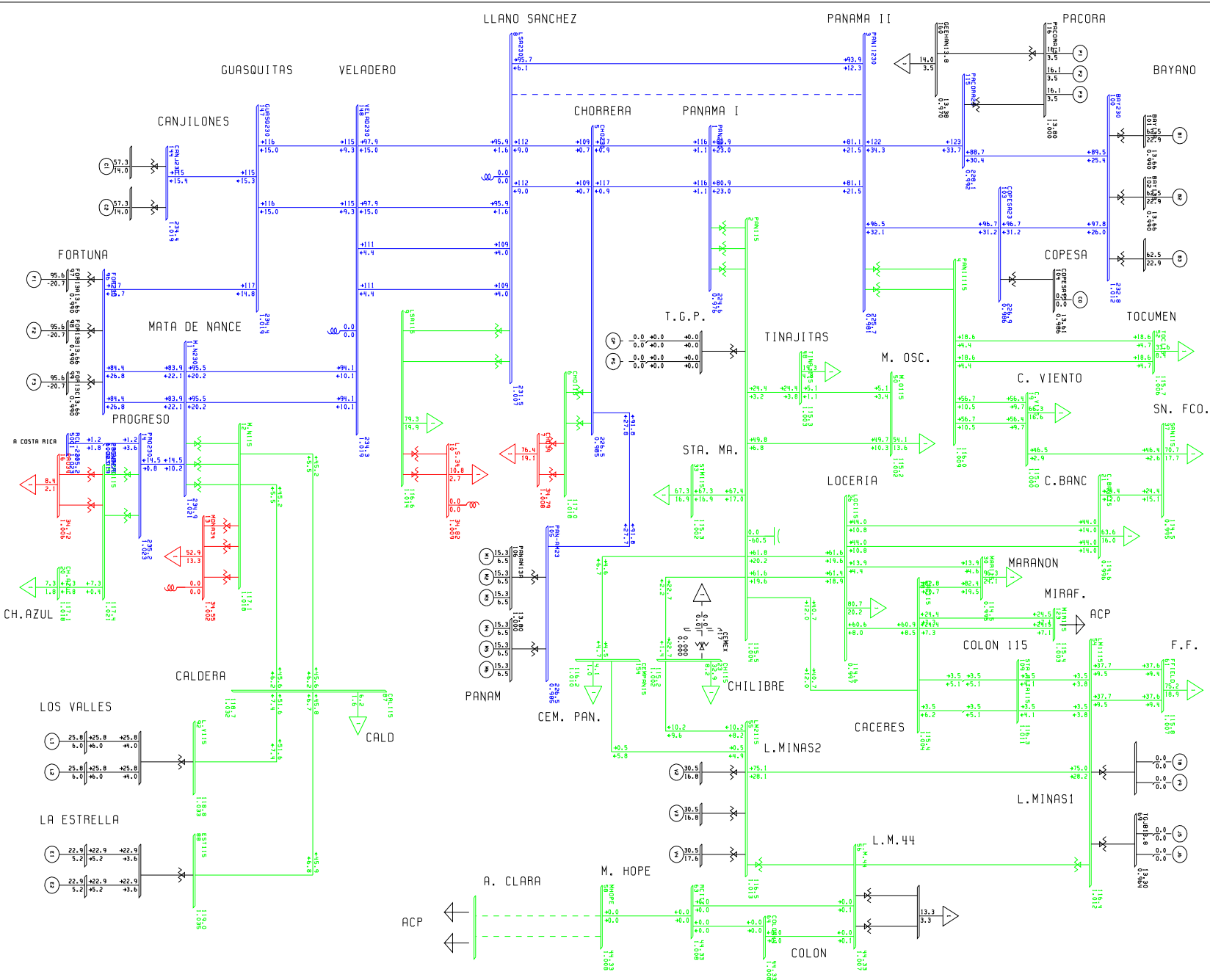
**AÑO 2007 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Contingencia 3: Llano Sánchez – Panamá II**

PLAN DE EXPANSION DEL SIN CON C.R. JUNIO 2007  
 F 0 2007 ESC MOD DEM PRX INV CONT3 LLSCHZ-PANAMA II  
 17/01/2007 10:30

KV=114 • 335 • 4115

BUS - VOLTAGE (KV)/PUI  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



## Contingencia 3: Llano Sánchez – Panamá II

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2007 ESC MOD DEM MAX INV CONT3 LLSCHZ-PANAMAI I

THU, MAY 17 2007 13:58

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0067	231.53	11		M.N230		230.00	6	1.0212	234.88
14		PRO230		230.00	6	1.0227	235.23	96		FOR230		230.00	6	1.0185	234.26
100		BAY230		230.00	6	1.0120	232.76	144		CANJ230		230.00	6	1.0189	234.35
147		GUASQ230		230.00	6	1.0190	234.36	148		VELAD230		230.00	6	1.0186	234.29
190		CHANG230		230.00	6	1.0327	237.52	6000		FRONTER		230.00	6	1.0230	235.29

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9764	224.58	3		PANII230		230.00	6	0.9815	225.74
5		CHO230		230.00	6	0.9846	226.45	103		COFESA23		230.00	6	0.9864	226.87
105		PAN-AM23		230.00	6	0.9847	226.49	115		PACORA23		230.00	6	0.9918	228.11

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2007 ESC MOD DEM MAX INV CONT3 LLSCHZ-PANAMAI I

THU, MAY 17 2007 13:59

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0042	115.48	4		PANII115		115.00	6	1.0085	115.98
6		CHO115		115.00	6	1.0175	117.01	9		LSA115		115.00	6	1.0139	116.60
12		M.N115		115.00	6	1.0183	117.11	15		PRO115		115.00	6	1.0209	117.41
18		CAC115		115.00	6	1.0036	115.42	19		C.V115		115.00	6	1.0002	115.02
20		CH.AZUL		115.00	6	1.0182	117.09	23		CH115		115.00	6	1.0016	115.18
33		STM115		115.00	6	1.0025	115.28	48		TINAJ115		115.00	6	1.0025	115.29
50		M.O115		115.00	6	1.0018	115.21	52		TOC115		115.00	6	1.0062	115.71
54		LM1115		115.00	6	1.0122	116.40	55		LM2115		115.00	6	1.0132	116.52
61		FFIELD		115.00	9	1.0068	115.78	87		CAL115		115.00	6	1.0318	118.66
88		EST115		115.00	6	1.0350	119.03	92		L.V115		115.00	6	1.0331	118.81
109		STA RITA115		115.00	6	1.0114	116.32	110		PTMD115A		115.00	6	1.0083	115.96
111		PTMD115B		115.00	6	1.0083	115.96	123		MIR115		115.00	7	1.0034	115.39
154		CEMPAN15		115.00	6	1.0104	116.19	191		CHANG115		115.00	6	1.0327	118.76

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9961	114.56	26		LOC115		115.00	6	0.9969	114.65
30		MAR115		115.00	6	0.9953	114.46	37		SAN115		115.00	6	0.9954	114.47



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MOD DEM MAX INV CONT3 LLSCHZ-PANAMAI

THU, MAY 17 2007 13:59  
 AREA TOTALS  
 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.6	224.5	-98.9	0.0	143.2	-97.1	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	253.4	569.4	-236.7	0.0	476.8	40.3	357.1	
6	918.0	849.4	0.0	0.0	0.0	39.6	29.0	25.0
PANAMA	158.3	212.9	-60.5	0.0	383.3	43.0	346.3	
7	80.3	29.5	0.0	0.0	0.0	48.9	1.9	50.0
ACANAL	6.4	7.4	0.0	0.0	0.0	-14.7	13.7	
9	0.0	88.5	0.0	0.0	0.0	-88.7	0.2	-75.0
COLON	0.0	22.2	0.0	0.0	1.1	-22.5	1.4	
TOTALS	6146.9	6019.0	0.0	0.0	0.0	0.0	127.9	0.0
	637.0	1858.8	-908.6	0.0	1940.0	0.0	1626.9	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

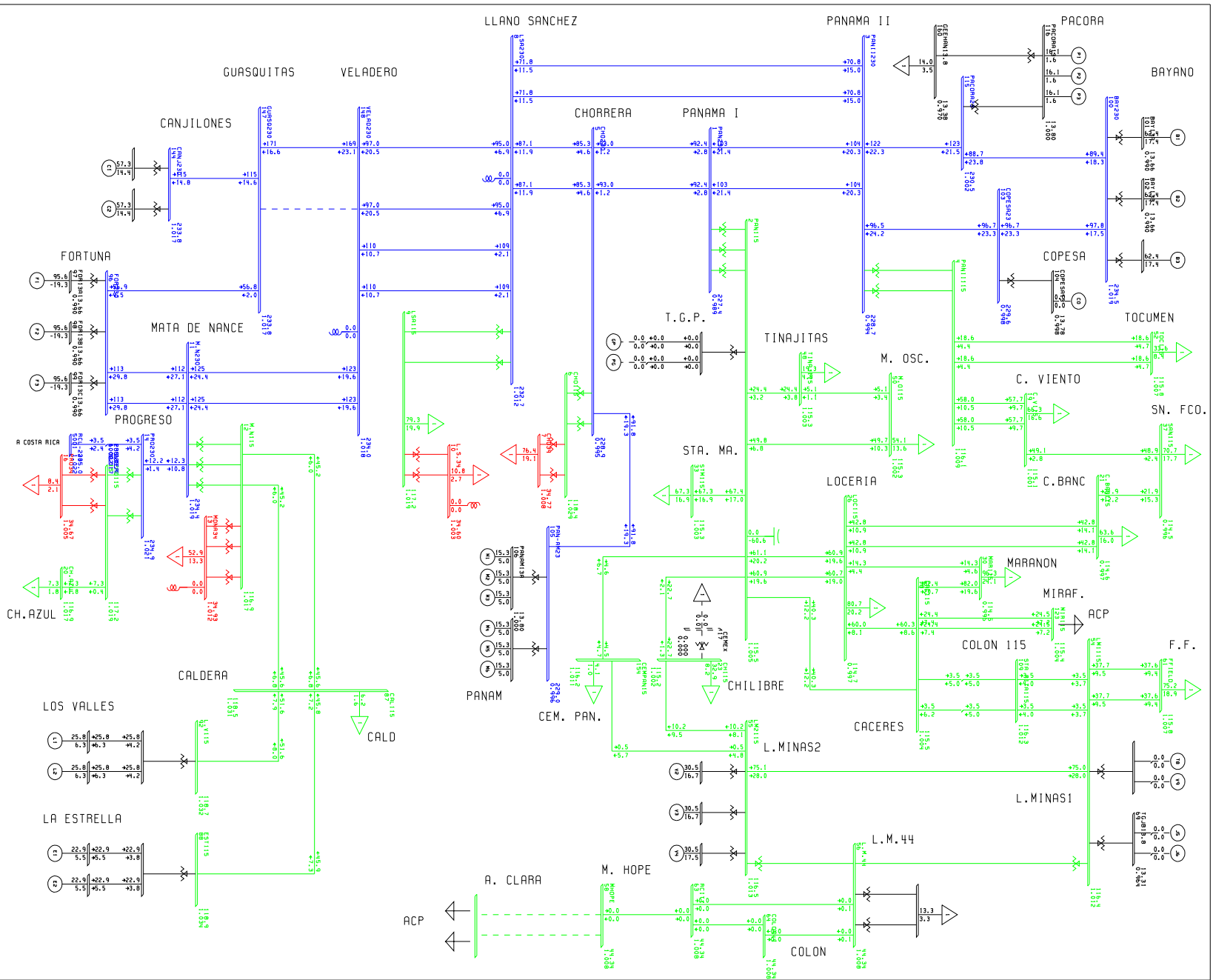
**AÑO 2007 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Contingencia 4: Guasquitas - Veladero**

J/V/ PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 R 0 2007 ESC MOD DEM MPA INV CONT4 GUASQUITAS-VELADERO  
 TITULO: PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 HO. MPA INV CONT4 GUASQUITAS-VELADERO

kw: 214 . 335 . 5115

BUS - VOLTAGE (KV/PU)  
 BRANCH - MM/KVAR  
 EQUIPMENT - MM/KVAR





## Contingencia 4: Guasquitas - Veladero

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 17 2007 14:11  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MOD DEM MAX INV CONT4 GUASQUITAS-VELADERO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0119	232.74	11		M.N230		230.00	6	1.0192	234.42
14		PRO230		230.00	6	1.0213	234.89	96		FOR230		230.00	6	1.0170	233.91
100		BAY230		230.00	6	1.0194	234.46	115		PACORA23		230.00	6	1.0023	230.53
144		CANJ230		230.00	6	1.0166	233.81	147		GUASQ230		230.00	6	1.0166	233.82
148		VELAD230		230.00	6	1.0176	234.04	190		CHANG230		230.00	6	1.0317	237.29
6000		FRONTER		230.00	6	1.0216	234.97								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9888	227.42	3		PANII230		230.00	6	0.9942	228.66
5		CHO230		230.00	6	0.9954	228.95	103		COPESA23		230.00	6	0.9983	229.61
105		PAN-AM23		230.00	6	0.9955	228.97								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 17 2007 14:13  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MOD DEM MAX INV CONT4 GUASQUITAS-VELADERO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0046	115.53	4		PANII115		115.00	6	1.0092	116.06
6		CHO115		115.00	6	1.0292	118.35	9		LSA115		115.00	6	1.0194	117.23
12		M.N115		115.00	6	1.0169	116.94	15		PRO115		115.00	6	1.0195	117.24
18		CAC115		115.00	6	1.0041	115.47	19		C.V115		115.00	6	1.0008	115.09
20		CH.AZUL		115.00	6	1.0167	116.92	23		CH115		115.00	6	1.0020	115.23
33		STM115		115.00	6	1.0029	115.33	48		TINAJ115		115.00	6	1.0030	115.34
50		M.O115		115.00	6	1.0022	115.26	52		TOC115		115.00	6	1.0069	115.80
54		LM115		115.00	6	1.0124	116.43	55		LM2115		115.00	6	1.0135	116.55
61		FFIELD		115.00	9	1.0070	115.81	87		CAL115		115.00	6	1.0309	118.55
88		EST115		115.00	6	1.0342	118.93	92		L.V115		115.00	6	1.0321	118.70
109		STA RITA115		115.00	6	1.0117	116.35	110		PTMD115A		115.00	6	1.0087	116.00
111		PTMD115B		115.00	6	1.0087	116.00	123		MIR115		115.00	7	1.0038	115.43
154		CEMPAN15		115.00	6	1.0107	116.23	191		CHANG115		115.00	6	1.0317	118.65

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9966	114.61	26		LOC115		115.00	6	0.9974	114.70
30		MAR115		115.00	6	0.9958	114.51	37		SAN115		115.00	6	0.9959	114.53



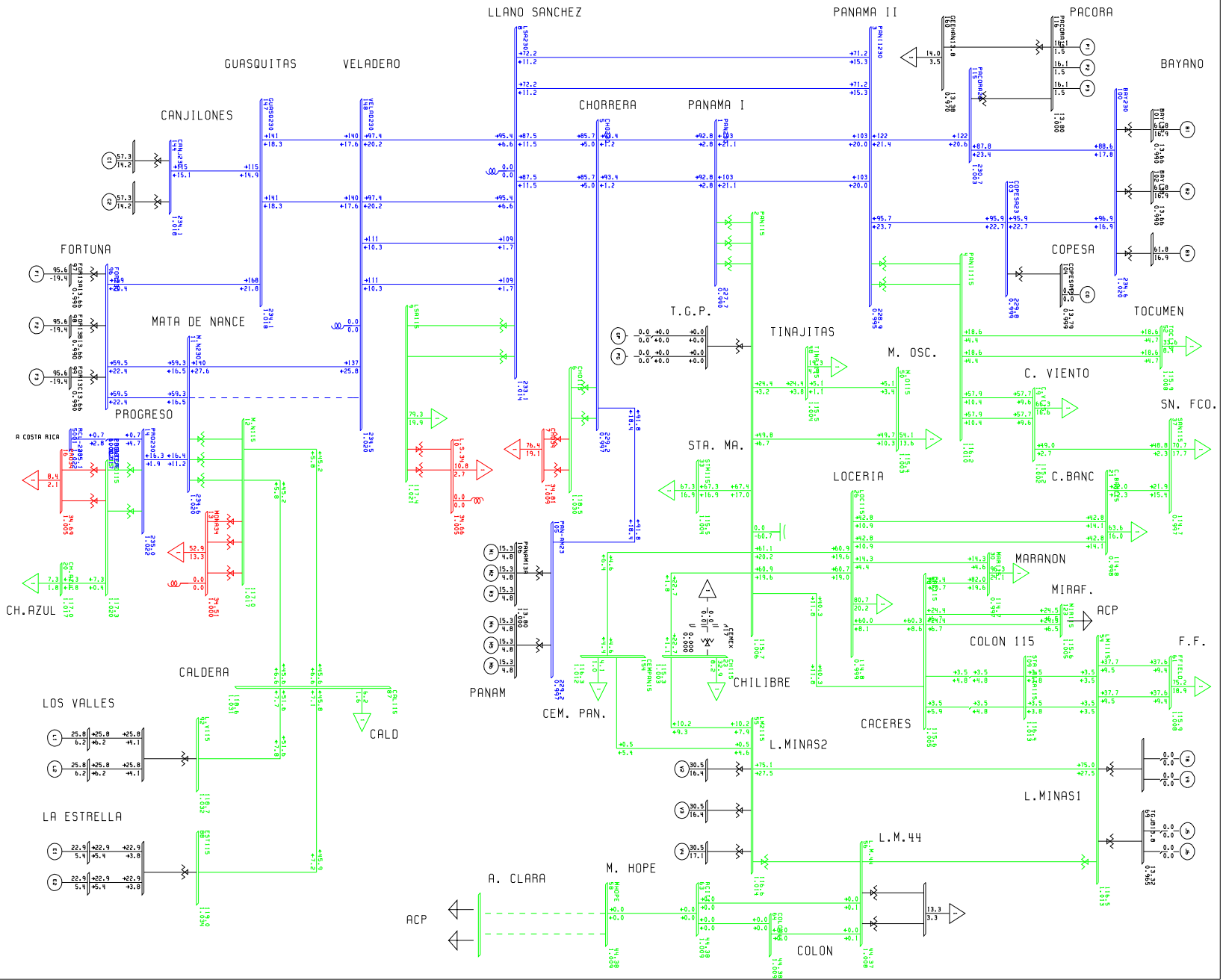
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      THU, MAY 17 2007 14:13  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007      AREA TOTALS  
 AÑO 2007 ESC MOD DEM MAX INV CONT4 GUASQUITAS-VELADERO      IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.7	224.5	-98.9	0.0	143.2	-97.1	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	255.4	569.4	-236.6	0.0	476.6	41.8	357.3	
6	917.8	849.4	0.0	0.0	0.0	39.6	28.8	25.0
PANAMA	132.5	212.9	-60.6	0.0	405.6	41.6	344.2	
7	80.3	29.5	0.0	0.0	0.0	48.9	1.9	50.0
ACANAL	6.3	7.4	0.0	0.0	0.0	-14.8	13.7	
9	0.0	88.5	0.0	0.0	0.0	-88.7	0.2	-75.0
COLON	0.0	22.2	0.0	0.0	1.1	-22.5	1.4	
TOTALS	6146.8	6019.0	0.0	0.0	0.0	0.0	127.8	0.0
	613.2	1858.8	-908.6	0.0	1962.0	0.0	1625.1	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2007 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Contingencia 5: Mata de Nance - Veladero**



## Contingencia 5: Mata de Nance - Veladero

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MOD DEM MAX INV CONT5 MDNANCE-VELADERO

THU, MAY 17 2007 14:24

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0136	233.13	11		M.N230		230.00	6	1.0198	234.56
14		PRO230		230.00	6	1.0217	234.99	96		FOR230		230.00	6	1.0172	233.95
100		BAY230		230.00	6	1.0200	234.60	115		PACORA23		230.00	6	1.0032	230.73
144		CANJ230		230.00	6	1.0177	234.06	147		GUASQ230		230.00	6	1.0177	234.07
148		VELAD230		230.00	6	1.0197	234.53	190		CHANG230		230.00	6	1.0319	237.35
6000		FRONTER		230.00	6	1.0220	235.07								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9899	227.68	3		PANII230		230.00	6	0.9953	228.91
5		CHO230		230.00	6	0.9966	229.21	103		COFESA23		230.00	6	0.9993	229.84
105		PAN-AM23		230.00	6	0.9967	229.24								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2007 ESC MOD DEM MAX INV CONT5 MDNANCE-VELADERO

THU, MAY 17 2007 14:24

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0059	115.67	4		PANIII115		115.00	6	1.0104	116.20
6		CHO115		115.00	6	1.0304	118.49	9		LSA115		115.00	6	1.0212	117.44
12		M.N115		115.00	6	1.0173	116.99	15		PRO115		115.00	6	1.0199	117.29
18		CAC115		115.00	6	1.0053	115.61	19		C.V115		115.00	6	1.0020	115.23
20		CH.AZUL		115.00	6	1.0172	116.97	23		CH115		115.00	6	1.0030	115.35
33		STM115		115.00	6	1.0041	115.47	48		TINAJ115		115.00	6	1.0042	115.48
50		M.O115		115.00	6	1.0035	115.40	52		TOC115		115.00	6	1.0081	115.93
54		LM1115		115.00	6	1.0132	116.52	55		LM2115		115.00	6	1.0143	116.64
61		FFIELD		115.00	9	1.0078	115.90	87		CAL115		115.00	6	1.0311	118.58
88		EST115		115.00	6	1.0344	118.96	92		L.V115		115.00	6	1.0324	118.73
109		STA RITA115		115.00	6	1.0126	116.45	110		PTMD115A		115.00	6	1.0097	116.11
111		PTMD115B		115.00	6	1.0097	116.11	123		MIR115		115.00	7	1.0053	115.60
154		CEMPAN15		115.00	6	1.0116	116.34	191		CHANG115		115.00	6	1.0319	118.67

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9978	114.75	26		LOC115		115.00	6	0.9987	114.85
30		MAR115		115.00	6	0.9970	114.66	37		SAN115		115.00	6	0.9971	114.67



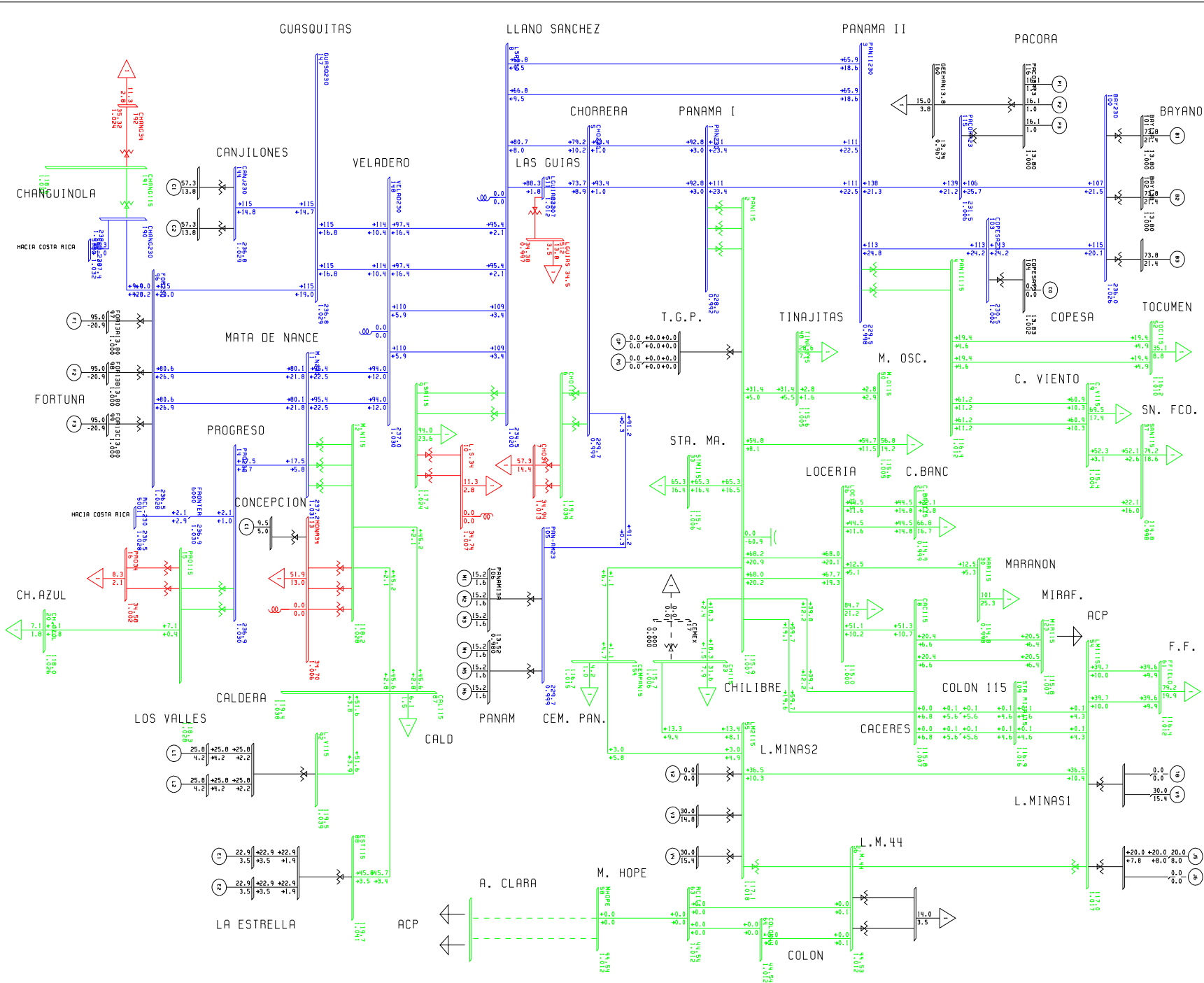
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      THU, MAY 17 2007 17:04  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007      AREA TOTALS  
 AÑO 2007 ESC MOD DEM MAX INV CONT5 MDNANCE-VELADERO      IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.7	224.5	-98.9	0.0	143.2	-97.1	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	254.7	569.4	-236.6	0.0	476.6	41.5	357.0	
6	916.1	849.4	0.0	0.0	0.0	39.6	27.1	25.0
PANAMA	127.5	212.9	-60.7	0.0	405.2	40.5	340.1	
7	80.3	29.5	0.0	0.0	0.0	48.9	1.9	50.0
ACANAL	7.7	7.4	0.0	0.0	0.0	-13.4	13.7	
9	0.0	88.5	0.0	0.0	0.0	-88.7	0.2	-75.0
COLON	0.0	22.2	0.0	0.0	1.1	-22.5	1.4	
TOTALS	6145.0	6019.0	0.0	0.0	0.0	0.0	126.0	0.0
	608.8	1858.8	-908.8	0.0	1961.8	0.0	1620.6	



**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL  
2007**

**AÑO 2008 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**



PSIN CON C.A.R JUNIO DEL 2007  
 R 0 2008 ESC.MOD DEM.MRX INV.  
 L.R.I., MAR 30 2007 18:37

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BUS - VOLTAGE (KV/PU)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR

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KV=114, \*35, <115

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PSIN CON C.A JUNIO DEL 2007  
AÑO 2008 ESC.MOD DEM MAX INV.

FRI, MAR 30 2007 18:00

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0196	234.51
14		PRO230		230.00	6	1.0302	236.94
100		BAY230		230.00	6	1.0260	235.98
115		PACORA23		230.00	6	1.0064	231.47
147		GUASQ230		230.00	6	1.0294	236.77
190		CHANG230		230.00	6	1.0352	238.10
6000		FRONTER		230.00	6	1.0299	236.89

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0312	237.18
96		FOR230		230.00	6	1.0283	236.52
103		COPESA23		230.00	6	1.0024	230.54
144		CANJ230		230.00	6	1.0294	236.77
148		VELAD230		230.00	6	1.0303	236.97
511		LGUIAS230		230.00	6	1.0116	232.66

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9920	228.17
5		CHO230		230.00	6	0.9987	229.71

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	0.9979	229.51
105		PAN-AM23		230.00	6	0.9988	229.72

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PSIN CON C.A JUNIO DEL 2007  
AÑO 2008 ESC.MOD DEM MAX INV.

FRI, MAR 30 2007 18:02

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0075	115.86
6		CHO115		115.00	6	1.0386	119.44
12		M.N115		115.00	6	1.0281	118.24
18		CAC115		115.00	6	1.0069	115.80
20		CH.AZUL		115.00	6	1.0258	117.97
33		STM115		115.00	6	1.0058	115.67
50		M.O115		115.00	6	1.0048	115.55
54		LM115		115.00	6	1.0175	117.01
61		FFIELD		115.00	9	1.0118	116.35
88		EST115		115.00	6	1.0409	119.71
109		STA RITA115		115.00	6	1.0165	116.89
111		PTMD115B		115.00	6	1.0127	116.46
154		CEMPAN15		115.00	6	1.0147	116.69

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANIII115		115.00	6	1.0125	116.44
9		LSA115		115.00	6	1.0239	117.75
15		PRO115		115.00	6	1.0284	118.27
19		C.V115		115.00	6	1.0036	115.41
23		CH115		115.00	6	1.0058	115.67
48		TINAJ115		115.00	6	1.0052	115.60
52		TOC115		115.00	6	1.0101	116.16
55		LM2115		115.00	6	1.0179	117.06
87		CAL115		115.00	6	1.0384	119.42
92		L.V115		115.00	6	1.0394	119.53
110		PTMD115A		115.00	6	1.0127	116.46
123		MIR115		115.00	7	1.0065	115.75
191		CHANG115		115.00	6	1.0310	118.56

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9990	114.88
30		MAR115		115.00	6	0.9982	114.79

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
26		LOC115		115.00	6	0.9998	114.98
37		SAN115		115.00	6	0.9983	114.80



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PSIN CON C.A JUNIO DEL 2007  
 AÑO 2008 ESC.MOD DEM MAX INV.

FRI, MAR 30 2007 18:02

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
67		BLM13C		13.800	V3	30.0	14.8	17.0	0.0	1.0000	33.4	0.8972	47.0			1	6		
68		BLM13D		13.800	V4	30.0	15.4	30.0	0.0	1.0000	33.7	0.8892	47.0			1	6		
70		TGJB13A		13.800	J5	20.0	8.0	20.0	0.0	0.9855	21.9	0.9280	39.4			1	6		
73		BLMCCB		13.800	V9	30.0	15.4	40.0	0.0	1.0000	33.7	0.8890	71.0			1	6		
90		EST-13L		13.800	E1	22.9	3.5	12.0	-5.0	1.0000	23.2	0.9885	27.0			1	6		
91		EST-13T		13.800	E2	22.9	3.5	12.0	-5.0	1.0000	23.2	0.9885	27.0			1	6		
94		LV-13.8L		13.800	L1	25.8	4.2	12.0	-5.0	1.0000	26.1	0.9872	27.0			1	6		
95		LV-13.8T		13.800	L2	25.8	4.2	12.0	-5.0	1.0000	26.1	0.9872	27.0			1	6		
97		FOR13A		13.800	F1	95.0	-20.9	50.0	-50.0	1.0000	97.3	0.9766	111.0			1	6		
98		FOR13B		13.800	F2	95.0	-20.9	50.0	-50.0	1.0000	97.3	0.9766	111.0			1	6		
99		FOR13C		13.800	F3	95.0	-20.9	50.0	-50.0	1.0000	97.3	0.9766	111.0			1	6		
101		BAY13A		13.800	B1	73.8	21.4	50.0	-25.0	1.0000	76.8	0.9603	96.0			1	6	SYST	
102		BAY13B		13.800	B2	73.8	21.4	50.0	-25.0	1.0000	76.8	0.9603	96.0			1	6		
106		PANAM13A		13.800	M1	15.2	1.6	9.0	0.0	0.9800	15.6	0.9943	20.7			1	6		
106		PANAM13A		13.800	M2	15.2	1.6	9.0	0.0	0.9800	15.6	0.9943	20.7			1	6		
106		PANAM13A		13.800	M3	15.2	1.6	9.0	0.0	0.9800	15.6	0.9943	20.7			1	6		
107		PANAM13B		13.800	M4	15.2	1.6	9.0	0.0	0.9800	15.6	0.9943	20.7			1	6		
107		PANAM13B		13.800	M5	15.2	1.6	9.0	0.0	0.9800	15.6	0.9943	20.7			1	6		
107		PANAM13B		13.800	M6	15.2	1.6	9.0	0.0	0.9800	15.6	0.9943	20.7			1	6		
108		BAY13C		13.800	B3	73.8	21.4	50.0	-25.0	1.0000	76.8	0.9603	100.0			1	6		
116		PACORA13		13.800	P1	16.1	1.0	8.8	0.0	1.0000	16.1	0.9979	21.7			1	6		
116		PACORA13		13.800	P2	16.1	1.0	8.8	0.0	1.0000	16.1	0.9979	21.7			1	6		
116		PACORA13		13.800	P3	16.1	1.0	8.8	0.0	1.0000	16.1	0.9979	21.7			1	6		
142		CANJ13A		13.800	C1	57.3	13.8	29.0	-29.0	1.0000	58.9	0.9723	69.0			1	6		
143		CANJ13B		13.800	C2	57.3	13.8	29.0	-29.0	1.0000	58.9	0.9723	69.0			1	6		
301		CONC13.8		13.800	C1	9.5	5.0	5.0	-5.0	0.9611	11.2	0.8849	13.5			1	6		
SUBSYSTEM TOTALS						977.3	116.0	598.5	-308.0				1278.1						

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0469	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0469	8.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.7	4.6	8.0	0.0	1.0000	10.7	0.9022	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9946	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9946	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9946	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9843	5.6			2	7		
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9843	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9843	6.2			2	7		
SUBSYSTEM TOTALS						73.3	5.7	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PSIN CON C.A JUNIO DEL 2007  
 AÑO 2008 ESC.MOD DEM MAX INV.

FRI, MAR 30 2007 19:01  
 AREA TOTALS  
 IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
			29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	SALVADOR		911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
			100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	HONDURAS		1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
			55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	NICA		538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
			32.4	224.5	-98.9	0.0	143.3	-97.3	147.4	
5	C.RICA		1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
			245.1	569.4	-237.1	0.0	470.2	26.5	356.5	
6	PANAMA		977.3	899.1	0.0	0.0	0.0	52.3	25.9	25.0
			116.0	225.3	-60.9	0.0	435.4	56.8	330.2	
7	ACANAL		73.3	31.0	0.0	0.0	0.0	40.8	1.5	50.0
			5.7	7.8	0.0	0.0	0.0	-13.2	11.1	
9	COLON		0.0	93.2	0.0	0.0	0.0	-93.5	0.2	-75.0
			0.0	23.4	0.0	0.0	1.1	-23.8	1.5	
TOTALS			6199.3	6074.9	0.0	0.0	0.0	0.0	124.4	0.0
			585.5	1872.8	-909.5	0.0	1985.6	0.0	1607.8	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2008 ESCENARIO MODERADO DEMANDA MAXIMA VERANO**





BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0039	230.90	5		CHO230		230.00	6	1.0042	230.97
8		LSA230		230.00	6	1.0260	235.98	11		M.N230		230.00	6	1.0346	237.95
14		PRO230		230.00	6	1.0326	237.50	96		FOR230		230.00	6	1.0312	237.19
100		BAY230		230.00	6	1.0294	236.76	103		COPESA23		230.00	6	1.0080	231.85
105		PAN-AM23		230.00	6	1.0042	230.98	115		PACORA23		230.00	6	1.0114	232.63
144		CANJ230		230.00	6	1.0334	237.68	147		GUASQ230		230.00	6	1.0334	237.67
148		VELAD230		230.00	6	1.0356	238.19	190		CHANG230		230.00	6	1.0370	238.51
511		LGUIAS230		230.00	6	1.0178	234.10	6000		FRONTER		230.00	6	1.0322	237.42

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9978	229.50								

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0118	116.36	4		PANII115		115.00	6	1.0090	116.04
6		CHO115		115.00	6	1.0444	120.10	9		LSA115		115.00	6	1.0306	118.52
12		M.N115		115.00	6	1.0314	118.61	15		PRO115		115.00	6	1.0309	118.55
18		CAC115		115.00	6	1.0112	116.29	19		C.V115		115.00	6	1.0023	115.26
20		CH.AZUL		115.00	6	1.0283	118.25	21		C.BAN115		115.00	6	1.0023	115.27
23		CH115		115.00	6	1.0111	116.28	26		LOC115		115.00	6	1.0034	115.39
30		MAR115		115.00	6	1.0021	115.24	33		STM115		115.00	6	1.0101	116.16
37		SAN115		115.00	6	1.0012	115.14	48		TINAJ115		115.00	6	1.0095	116.10
50		M.O115		115.00	6	1.0091	116.05	52		TOC115		115.00	6	1.0066	115.76
54		LM1115		115.00	6	1.0239	117.75	55		LM2115		115.00	6	1.0247	117.84
61		FFIELD		115.00	9	1.0182	117.10	87		CAL115		115.00	6	1.0404	119.65
88		EST115		115.00	6	1.0426	119.90	92		L.V115		115.00	6	1.0413	119.75
109		STA RITA115		115.00	6	1.0226	117.60	110		PTMD115A		115.00	6	1.0183	117.11
111		PTMD115B		115.00	6	1.0183	117.11	123		MIR115		115.00	7	1.0106	116.22
154		CEMPAN15		115.00	6	1.0207	117.38	191		CHANG115		115.00	6	1.0327	118.77

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2008 ESC MODERADO DE DEMANDA DEM MAX VERANO  
 AREA 6 [PANAMA ] MACHINE SUMMARY:

THU, APR 12 2007 16:20

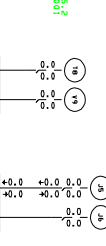
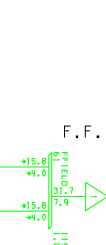
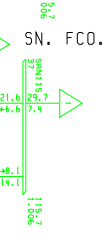
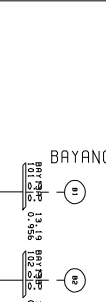
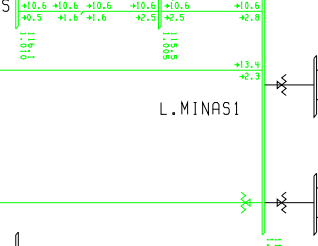
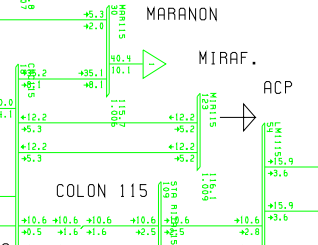
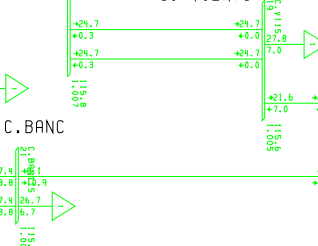
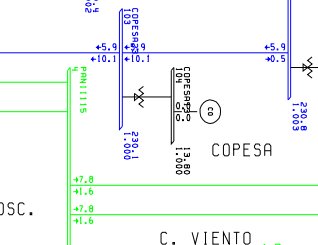
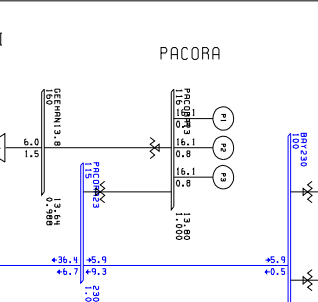
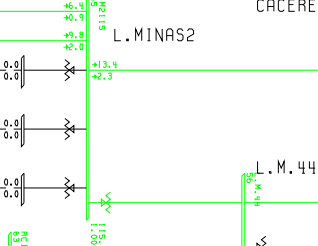
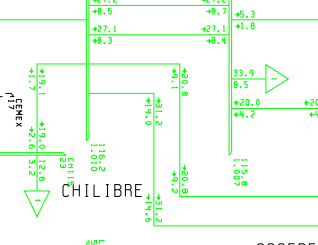
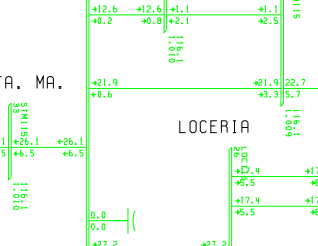
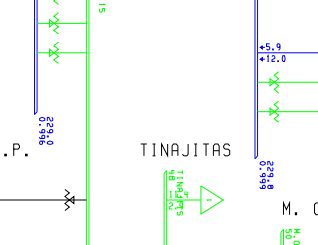
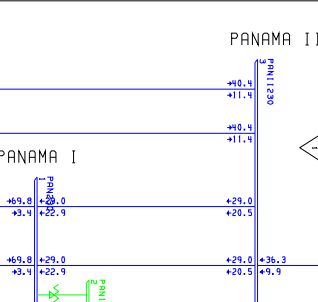
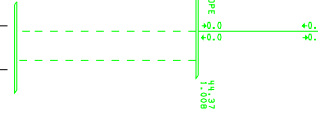
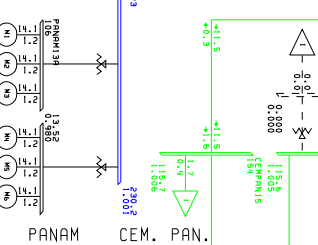
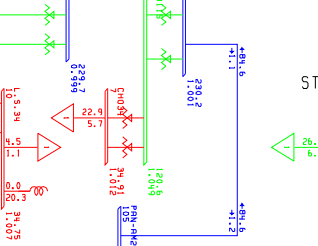
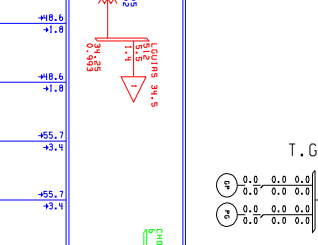
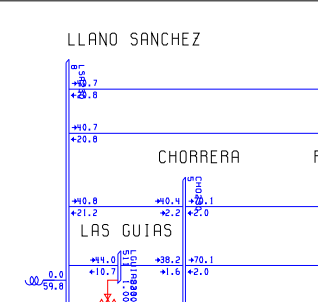
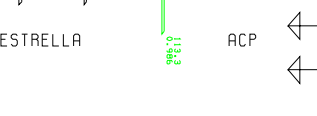
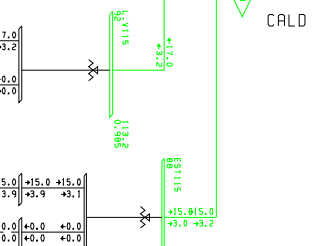
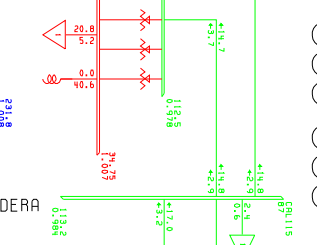
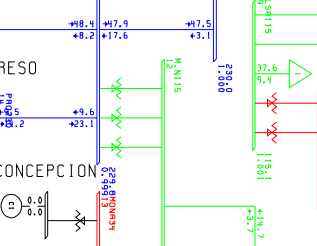
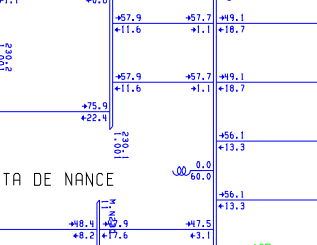
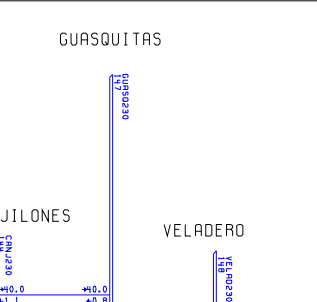
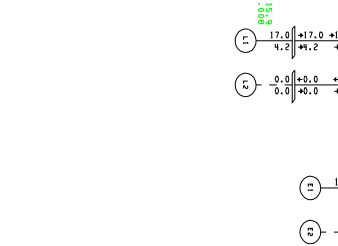
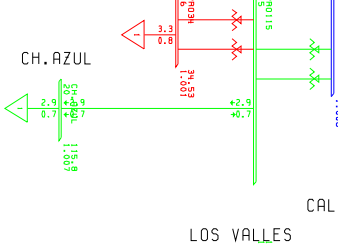
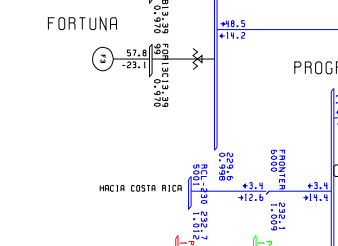
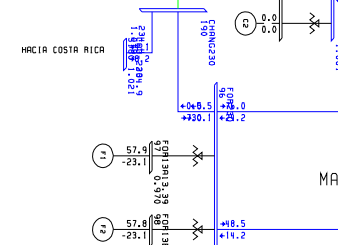
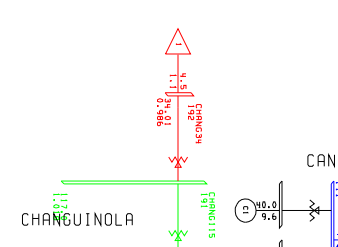
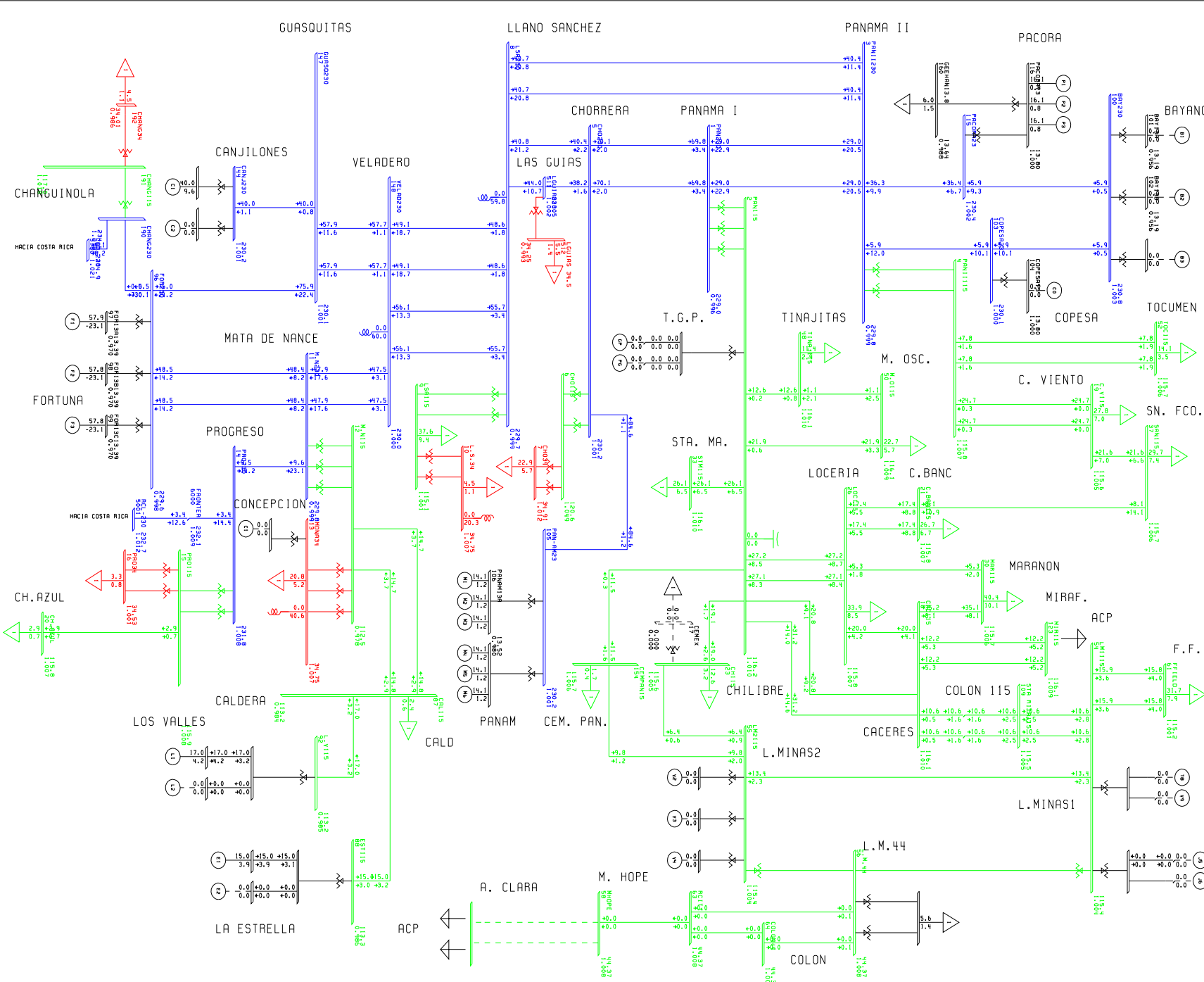
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	38.0	12.5	17.0	0.0	1.0000	40.0	0.9501	47.0			1	6		
67		BLM13C		13.800	V3	38.0	12.5	17.0	0.0	1.0000	40.0	0.9501	47.0			1	6		
68		BLM13D		13.800	V4	38.0	13.0	30.0	0.0	1.0000	40.1	0.9465	47.0			1	6		
70		TGJB13A		13.800	J5	15.0	5.0	20.0	0.0	0.9855	16.0	0.9485	39.4			1	6		
73		BLMCCB		13.800	V9	25.0	12.3	40.0	0.0	1.0000	27.9	0.8976	71.0			1	6		
90		EST-13L		13.800	E1	20.1	2.8	12.0	-5.0	1.0000	20.3	0.9904	27.0			1	6		
91		EST-13T		13.800	E2	20.1	2.8	12.0	-5.0	1.0000	20.3	0.9904	27.0			1	6		
94		LV-13.8L		13.800	L1	23.8	3.5	12.0	-5.0	1.0000	24.1	0.9896	27.0			1	6		
95		LV-13.8T		13.800	L2	23.8	3.5	12.0	-5.0	1.0000	24.1	0.9896	27.0			1	6		
97		FOR13A		13.800	F1	95.0	-23.6	50.0	-50.0	1.0000	97.9	0.9705	111.0			1	6		
98		FOR13B		13.800	F2	95.0	-23.6	50.0	-50.0	1.0000	97.9	0.9705	111.0			1	6		
99		FOR13C		13.800	F3	95.0	-23.6	50.0	-50.0	1.0000	97.9	0.9705	111.0			1	6		
101		BAY13A		13.800	B1	70.3	18.6	50.0	-25.0	1.0000	72.7	0.9668	96.0			1	6	SYST	
102		BAY13B		13.800	B2	67.9	18.4	50.0	-25.0	1.0000	70.3	0.9653	96.0			1	6		
106		PANAM13A		13.800	M1	14.0	0.7	9.0	0.0	0.9800	14.3	0.9986	20.7			1	6		
106		PANAM13A		13.800	M2	14.0	0.7	9.0	0.0	0.9800	14.3	0.9986	20.7			1	6		
106		PANAM13A		13.800	M3	14.0	0.7	9.0	0.0	0.9800	14.3	0.9986	20.7			1	6		
107		PANAM13B		13.800	M4	14.0	0.7	9.0	0.0	0.9800	14.3	0.9986	20.7			1	6		
107		PANAM13B		13.800	M5	14.0	0.7	9.0	0.0	0.9800	14.3	0.9986	20.7			1	6		
107		PANAM13B		13.800	M6	14.0	0.7	9.0	0.0	0.9800	14.3	0.9986	20.7			1	6		
108		BAY13C		13.800	B3	67.9	18.4	50.0	-25.0	1.0000	70.3	0.9653	100.0			1	6		
116		PACORA13		13.800	P1	16.1	0.1	8.8	0.0	1.0000	16.1	1.0000	21.7			1	6		
116		PACORA13		13.800	P2	16.1	0.1	8.8	0.0	1.0000	16.1	1.0000	21.7			1	6		
116		PACORA13		13.800	P3	16.1	0.1	8.8	0.0	1.0000	16.1	1.0000	21.7			1	6		
142		CANJ13A		13.800	C1	51.1	10.9	29.0	-29.0	1.0000	52.3	0.9780	69.0			1	6		
143		CANJ13B		13.800	C2	51.1	10.9	29.0	-29.0	1.0000	52.3	0.9780	69.0			1	6		
301		CONC13.8		13.800	C1	9.5	5.0	5.0	-5.0	0.9641	11.1	0.8849	13.5			1	6		
SUBSYSTEM TOTALS						976.9	84.0	615.5	-308.0				1325.1						

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0490	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0490	8.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.7	3.7	8.0	0.0	1.0000	10.4	0.9341	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9957	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9958	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9958	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9828	5.6			2	7		
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9828	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9828	6.2			2	7		
SUBSYSTEM TOTALS						73.3	4.2	51.0	-33.0				124.2						

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.8 55.6	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.9	0.0 -5.3	21.4 261.6	0.0
4	NICA		538.2 32.4	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.3	0.0 -97.4	11.1 147.4	0.0
5	C.RICA		1344.3 241.8	1324.8 569.4	0.0 -237.2	0.0 0.0	0.0 470.5	0.2 23.7	19.3 356.4	0.0
6	PANAMA		976.9 84.0	901.2 225.9	0.0 -61.4	0.0 0.0	0.0 439.7	52.6 61.2	23.1 298.1	25.0
7	ACANAL		73.3 4.2	31.0 7.8	0.0 0.0	0.0 0.0	0.0 0.0	40.8 -14.7	1.5 11.1	50.0
9	COLON		0.0 0.0	93.5 23.4	0.0 0.0	0.0 0.0	0.0 1.1	-93.7 -23.8	0.2 1.5	-75.0
TOTALS			6198.9 548.6	6077.2 1873.4	0.0 -910.1	0.0 0.0	0.0 1990.2	0.0 0.0	121.7 1575.6	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2008 ESCENARIO MODERADO DEMANDA MINIMA VERANO**



BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
5		CHO230		230.00	6	1.0007	230.15	14		PRO230		230.00	6	1.0079	231.82
100		BAY230		230.00	6	1.0034	230.79	103		COPESA23		230.00	6	1.0003	230.07
105		PAN-AM23		230.00	6	1.0007	230.16	115		PACORA23		230.00	6	1.0019	230.43
144		CANJ230		230.00	6	1.0007	230.16	147		GUASQ230		230.00	6	1.0006	230.15
190		CHANG230		230.00	6	1.0193	234.44	511		LGUIAS230		230.00	6	1.0023	230.52
6000		FRONTER		230.00	6	1.0091	232.10								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9957	229.00	3		PANII230		230.00	6	0.9992	229.81
8		LSA230		230.00	6	0.9986	229.68	11		M.N230		230.00	6	0.9989	229.76
96		FOR230		230.00	6	0.9983	229.61	148		VELAD230		230.00	6	0.9998	229.96

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0102	116.18	4		PANII115		115.00	6	1.0073	115.83
6		CHO115		115.00	6	1.0491	120.65	9		LSA115		115.00	6	1.0005	115.06
15		PRO115		115.00	6	1.0078	115.89	18		CAC115		115.00	6	1.0099	116.14
19		C.V115		115.00	6	1.0054	115.62	20		CH.AZUL		115.00	6	1.0071	115.82
21		C.BAN115		115.00	6	1.0067	115.77	23		CH115		115.00	6	1.0054	115.62
26		LOC115		115.00	6	1.0071	115.82	30		MAR115		115.00	6	1.0065	115.74
33		STM115		115.00	6	1.0096	116.10	37		SAN115		115.00	6	1.0062	115.71
48		TINAJ115		115.00	6	1.0096	116.11	50		M.O115		115.00	6	1.0095	116.09
52		TOC115		115.00	6	1.0063	115.73	54		LM1115		115.00	6	1.0036	115.41
55		LM2115		115.00	6	1.0037	115.43	61		FFIELD		115.00	9	1.0013	115.15
109		STA RITA115		115.00	6	1.0046	115.53	110		PTMD115A		115.00	6	1.0070	115.81
111		PTMD115B		115.00	6	1.0070	115.81	123		MIR115		115.00	7	1.0092	116.06
154		CEMPAN15		115.00	6	1.0058	115.67	191		CHANG115		115.00	6	1.0177	117.03

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
12		M.N115		115.00	6	0.9783	112.51	87		CAL115		115.00	6	0.9843	113.19
88		EST115		115.00	6	0.9856	113.34	92		L.V115		115.00	6	0.9848	113.25

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PSIN CON C.A JUNIO DEL 2007  
 AÑO 2008 ESC.MOD DEM MIN.VER

TUE, MAY 15 2007 9:43

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
90	EST-13L	13.800 E1	15.0	3.9	12.0	-5.0	0.9500	16.3	0.9684	27.0			1	6	
94	LV-13.8L	13.800 L1	17.0	4.2	12.0	-5.0	0.9500	18.4	0.9707	27.0			1	6	
97	FOR13A	13.800 F1	57.9	-23.1	50.0	-50.0	0.9700	64.2	0.9290	111.0			1	6	SYST
98	FOR13B	13.800 F2	57.8	-23.1	50.0	-50.0	0.9700	64.2	0.9289	111.0			1	6	
99	FOR13C	13.800 F3	57.8	-23.1	50.0	-50.0	0.9700	64.2	0.9289	111.0			1	6	
106	PANAM13A	13.800 M1	14.1	1.2	9.0	0.0	0.9800	14.4	0.9961	20.7			1	6	
106	PANAM13A	13.800 M2	14.1	1.2	9.0	0.0	0.9800	14.4	0.9961	20.7			1	6	
106	PANAM13A	13.800 M3	14.1	1.2	9.0	0.0	0.9800	14.4	0.9961	20.7			1	6	
107	PANAM13B	13.800 M4	14.1	1.2	9.0	0.0	0.9800	14.4	0.9961	20.7			1	6	
107	PANAM13B	13.800 M5	14.1	1.2	9.0	0.0	0.9800	14.4	0.9961	20.7			1	6	
107	PANAM13B	13.800 M6	14.1	1.2	9.0	0.0	0.9800	14.4	0.9961	20.7			1	6	
116	PACORA13	13.800 P1	16.1	0.8	8.8	0.0	1.0000	16.1	0.9987	21.7			1	6	
116	PACORA13	13.800 P2	16.1	0.8	8.8	0.0	1.0000	16.1	0.9987	21.7			1	6	
116	PACORA13	13.800 P3	16.1	0.8	8.8	0.0	1.0000	16.1	0.9987	21.7			1	6	
142	CANJ13A	13.800 C1	40.0	9.6	29.0	-29.0	0.9800	42.0	0.9721	69.0			1	6	
SUBSYSTEM TOTALS			378.5	-41.6	283.5	-189.0				645.1					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PSIN CON C.A JUNIO DEL 2007  
 AÑO 2008 ESC.MOD DEM MIN.VER

TUE, MAY 15 2007 9:43

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
135	MAD6B	6.9000 G2	10.0	1.2	6.0	-6.0	1.0000	10.1	0.9927	13.0			2	7	
136	MAD6C	6.9000 G3	10.0	1.2	6.0	-6.0	1.0000	10.1	0.9926	13.0			2	7	
140	GAT6A	6.9000 G1	2.0	-0.1	2.0	-2.0	1.0000	2.0	0.9980	4.1			2	7	
140	GAT6A	6.9000 G2	2.0	-0.1	2.0	-2.0	1.0000	2.0	0.9980	4.1			2	7	
140	GAT6A	6.9000 G3	2.0	-0.1	2.0	-2.0	1.0000	2.0	0.9980	4.1			2	7	
141	GAT6B	6.9000 G4	4.0	-0.9	3.0	-3.0	1.0000	4.1	0.9777	5.6			2	7	
141	GAT6B	6.9000 G5	4.0	-0.9	3.0	-3.0	1.0000	4.1	0.9777	6.2			2	7	
141	GAT6B	6.9000 G6	4.0	-0.9	3.0	-3.0	1.0000	4.1	0.9777	6.2			2	7	
SUBSYSTEM TOTALS			38.0	-0.5	27.0	-27.0				56.4					



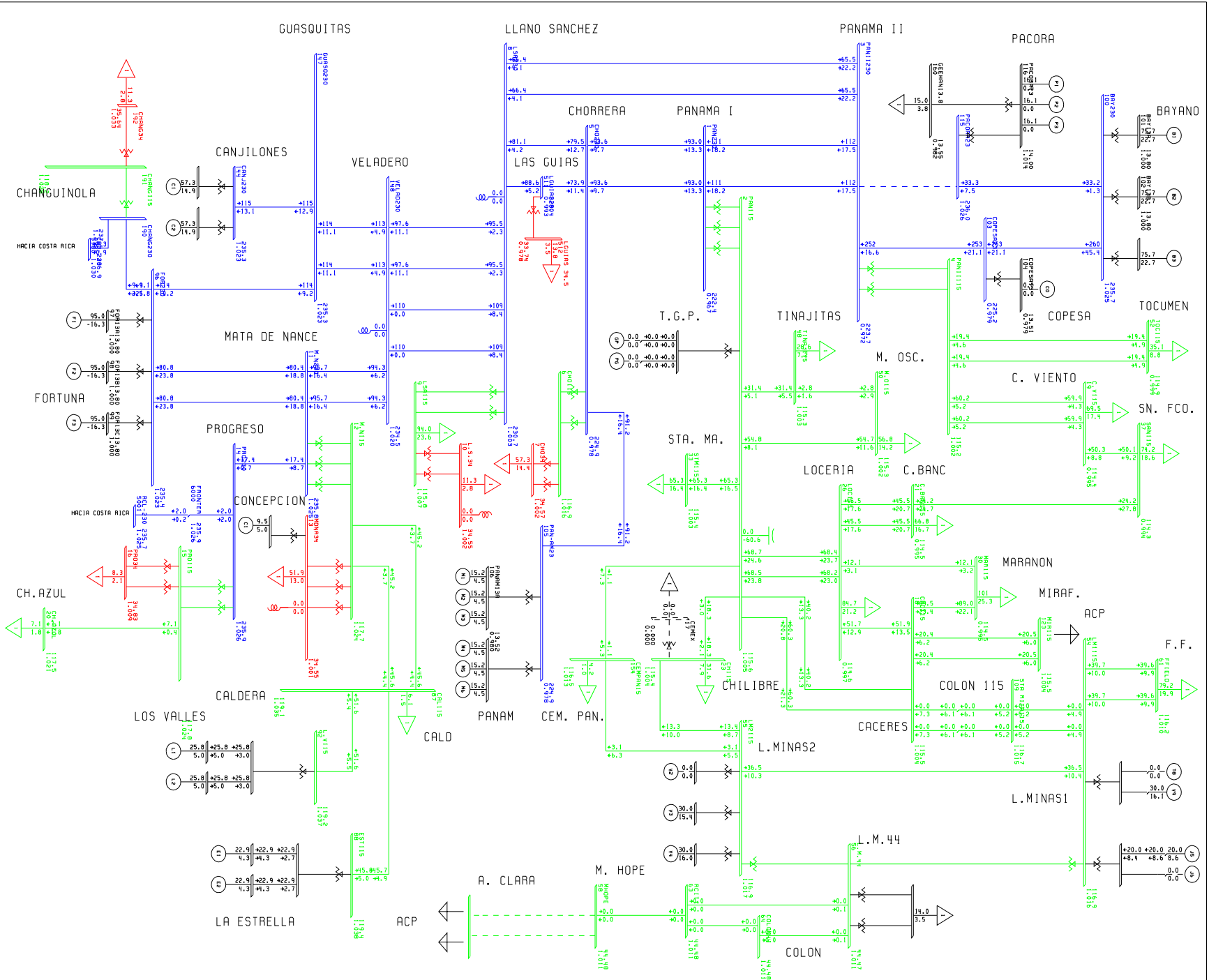


X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.6 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.2 17.8	35.3 341.5	0.0
2	SALVADOR		912.0 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.2 38.4	9.8 158.1	0.0
3	HONDURAS		1006.9 55.8	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.2	21.4 261.6	0.0
4	NICA		538.2 33.1	527.1 224.5	0.0 -98.8	0.0 0.0	0.0 143.2	0.0 -96.8	11.1 147.4	0.0
5	C.RICA		1344.3 274.1	1324.8 569.4	0.0 -236.6	0.0 0.0	0.0 467.2	0.3 51.0	19.2 357.5	0.0
6	PANAMA		378.5 -41.6	359.6 90.1	0.0 180.7	0.0 0.0	0.0 420.9	12.2 13.8	6.6 94.7	25.0
7	ACANAL		38.0 -0.5	12.4 3.1	0.0 0.0	0.0 0.0	0.0 0.0	24.4 -10.5	1.2 6.9	50.0
9	COLON		0.0 0.0	37.3 9.3	0.0 0.0	0.0 0.0	0.0 1.1	-37.3 -8.5	0.0 0.2	-75.0
TOTALS			5565.5 451.5	5460.9 1718.9	0.0 -667.3	0.0 0.0	0.0 1967.9	0.0 0.0	104.6 1367.9	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2008 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Contingencia 1: Pacora- Panamá II**



## Contingencia 1: Pacora- Panamá II

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PSIN CON C.A JUNIO DEL 2007  
AÑO 2008 ESC.MOD DEM MAX INV CONT1 PACORA-PANAMA II

THU, MAY 17 2007 15:18

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0032	230.73	11		M.N230		230.00	6	1.0252	235.80
14		PRO230		230.00	6	1.0257	235.91	96		FOR230		230.00	6	1.0233	235.36
100		BAY230		230.00	6	1.0246	235.66	115		PACORA23		230.00	6	1.0262	236.03
144		CANJ230		230.00	6	1.0230	235.29	147		GUASQ230		230.00	6	1.0230	235.29
148		VELAD230		230.00	6	1.0196	234.50	190		CHANG230		230.00	6	1.0322	237.40
6000		FRONTER		230.00	6	1.0258	235.93								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9671	222.44	3		PANII230		230.00	6	0.9724	223.66
5		CHO230		230.00	6	0.9778	224.89	103		COPESA23		230.00	6	0.9793	225.24
105		PAN-AM23		230.00	6	0.9779	224.91	511		LGUIAS230		230.00	6	0.9931	228.41

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PSIN CON C.A JUNIO DEL 2007  
AÑO 2008 ESC.MOD DEM MAX INV CONT1 PACORA-PANAMA II

THU, MAY 17 2007 15:19

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0051	115.58	4		PANII115		115.00	6	1.0016	115.18
6		CHO115		115.00	6	1.0162	116.86	9		LSA115		115.00	6	1.0066	115.75
12		M.N115		115.00	6	1.0236	117.72	15		PRO115		115.00	6	1.0240	117.76
18		CAC115		115.00	6	1.0045	115.52	20		CH.AZUL		115.00	6	1.0213	117.45
23		CH115		115.00	6	1.0038	115.44	33		STM115		115.00	6	1.0034	115.39
48		TINAJ115		115.00	6	1.0028	115.32	50		M.O115		115.00	6	1.0024	115.28
54		LM1115		115.00	6	1.0161	116.85	55		LM2115		115.00	6	1.0165	116.90
61		FFIELD		115.00	9	1.0104	116.20	87		CAL115		115.00	6	1.0354	119.07
88		EST115		115.00	6	1.0382	119.40	92		L.V115		115.00	6	1.0365	119.20
109		STA RITA115		115.00	6	1.0150	116.72	110		PTMD115A		115.00	6	1.0108	116.24
111		PTMD115B		115.00	6	1.0108	116.24	123		MIR115		115.00	7	1.0043	115.49
154		CEMPAN15		115.00	6	1.0130	116.50	191		CHANG115		115.00	6	1.0279	118.21

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
19		C.V115		115.00	6	0.9950	114.42	21		C.BAN115		115.00	6	0.9955	114.48
26		LOC115		115.00	6	0.9966	114.61	30		MAR115		115.00	6	0.9953	114.46
37		SAN115		115.00	6	0.9943	114.34	52		TOC115		115.00	6	0.9992	114.90

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PSIN CON C.A JUNIO DEL 2007  
 AÑO 2008 ESC.MOD DEM MAX INV CONT1 PACORA-PANAMA II  
 AREA 6 [PANAMA ] MACHINE SUMMARY:

THU, MAY 17 2007 15:18

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
67		BLM13C		13.800	V3	30.0	15.4	17.0	0.0	1.0000	33.7	0.8902	47.0			1	6		
68		BLM13D		13.800	V4	30.0	16.0	30.0	0.0	1.0000	34.0	0.8818	47.0			1	6		
70		TGJB13A		13.800	J5	20.0	8.6	20.0	0.0	0.9855	22.1	0.9182	39.4			1	6		
73		BLMCCB		13.800	V9	30.0	16.1	40.0	0.0	1.0000	34.0	0.8817	71.0			1	6		
90		EST-13L		13.800	E1	22.9	4.3	12.0	-5.0	1.0000	23.3	0.9829	27.0			1	6		
91		EST-13T		13.800	E2	22.9	4.3	12.0	-5.0	1.0000	23.3	0.9829	27.0			1	6		
94		LV-13.8L		13.800	L1	25.8	5.0	12.0	-5.0	1.0000	26.3	0.9815	27.0			1	6		
95		LV-13.8T		13.800	L2	25.8	5.0	12.0	-5.0	1.0000	26.3	0.9815	27.0			1	6		
97		FOR13A		13.800	F1	95.0	-16.3	50.0	-50.0	1.0000	96.4	0.9855	111.0			1	6		
98		FOR13B		13.800	F2	95.0	-16.3	50.0	-50.0	1.0000	96.4	0.9855	111.0			1	6		
99		FOR13C		13.800	F3	95.0	-16.3	50.0	-50.0	1.0000	96.4	0.9855	111.0			1	6		
101		BAY13A		13.800	B1	75.7	22.7	50.0	-25.0	1.0000	79.0	0.9579	96.0			1	6	SYST	
102		BAY13B		13.800	B2	75.7	22.7	50.0	-25.0	1.0000	79.0	0.9579	96.0			1	6		
106		PANAM13A		13.800	M1	15.2	4.5	9.0	0.0	0.9800	16.2	0.9582	20.7			1	6		
106		PANAM13A		13.800	M2	15.2	4.5	9.0	0.0	0.9800	16.2	0.9582	20.7			1	6		
106		PANAM13A		13.800	M3	15.2	4.5	9.0	0.0	0.9800	16.2	0.9582	20.7			1	6		
107		PANAM13B		13.800	M4	15.2	4.5	9.0	0.0	0.9800	16.2	0.9582	20.7			1	6		
107		PANAM13B		13.800	M5	15.2	4.5	9.0	0.0	0.9800	16.2	0.9582	20.7			1	6		
107		PANAM13B		13.800	M6	15.2	4.5	9.0	0.0	0.9800	16.2	0.9582	20.7			1	6		
108		BAY13C		13.800	B3	75.7	22.7	50.0	-25.0	1.0000	79.0	0.9579	100.0			1	6		
116		PACORA13		13.800	P1	16.1	0.0	8.8	0.0	1.0144	15.9	1.0000	21.7			1	6		
116		PACORA13		13.800	P2	16.1	0.0	8.8	0.0	1.0144	15.9	1.0000	21.7			1	6		
116		PACORA13		13.800	P3	16.1	0.0	8.8	0.0	1.0144	15.9	1.0000	21.7			1	6		
142		CANJ13A		13.800	C1	57.3	14.9	29.0	-29.0	1.0000	59.2	0.9680	69.0			1	6		
143		CANJ13B		13.800	C2	57.3	14.9	29.0	-29.0	1.0000	59.2	0.9680	69.0			1	6		
301		CONC13.8		13.800	C1	9.5	5.0	5.0	-5.0	0.9568	11.2	0.8849	13.5			1	6		
SUBSYSTEM TOTALS						983.2	155.7	598.5	-308.0				1278.1						

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0457	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0457	8.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.7	5.2	8.0	0.0	1.0000	11.0	0.8827	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9938	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9939	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9939	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9850	6.2			2	7		
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9850	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9850	6.2			2	7		
SUBSYSTEM TOTALS						73.3	6.5	51.0	-33.0				124.2						

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
			29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	SALVADOR		911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
			100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	HONDURAS		1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
			55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	NICA		538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
			32.6	224.5	-98.9	0.0	143.2	-97.2	147.4	
5	C.RICA		1344.3	1324.8	0.0	0.0	0.0	0.3	19.2	0.0
			251.0	569.4	-236.8	0.0	469.6	31.3	356.7	
6	PANAMA		983.2	899.1	0.0	0.0	0.0	52.3	31.7	25.0
			155.7	225.3	-60.6	0.0	421.7	51.0	361.7	
7	ACANAL		73.3	31.0	0.0	0.0	0.0	40.8	1.5	50.0
			6.5	7.8	0.0	0.0	0.0	-12.3	11.1	
9	COLON		0.0	93.2	0.0	0.0	0.0	-93.5	0.2	-75.0
			0.0	23.4	0.0	0.0	1.1	-23.8	1.5	
TOTALS			6205.1	6074.9	0.0	0.0	0.0	0.0	130.3	0.0
			632.1	1872.8	-908.9	0.0	1971.2	0.0	1639.4	

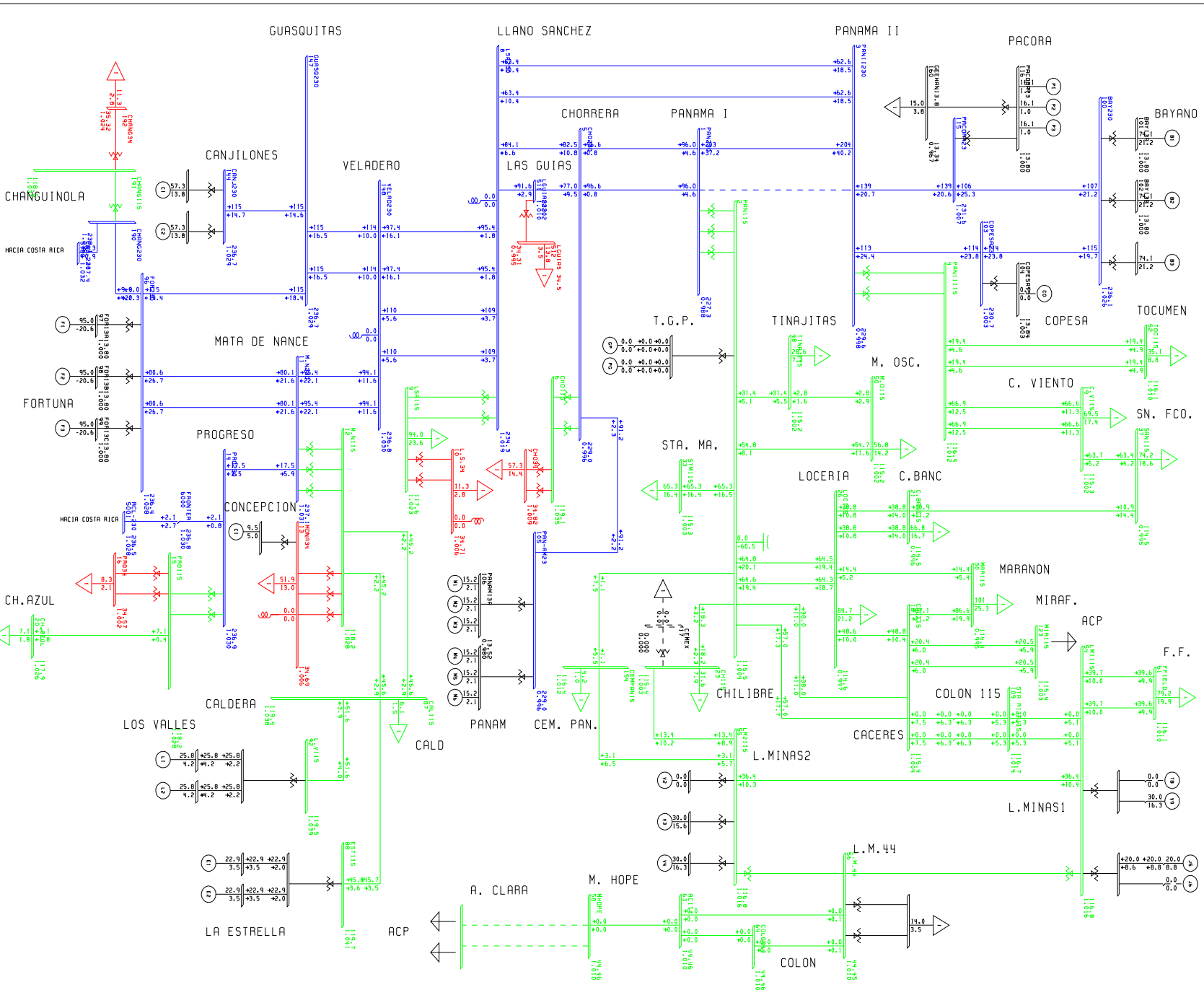
**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2008 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Contingencia 2: Panamá- Panamá II**

PLAN DE EXPANSION DEL SIN CON C.R. JUNIO 2007  
 R.O 2008 ESC/MOD DE/ MAX INV CON/IZ PRR-PM11  
 THU, MAR 17 2007 17:39

KV: <math>119 <math>. <math>35 <math>. <math>1115 <math>  
 BUS - VOL TAGE (KV/P.U)  
 BRANCH MAJOR  
 EQUIPMENT - MM/KVAR





## Contingencia 2: Panamá- Panamá II

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2008 ESC MOD DEM MAX INV CONT2 PMA-PMAII

THU, MAY 17 2007 17:17

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0186	234.28	11		M.N230		230.00	6	1.0309	237.10
14		PRO230		230.00	6	1.0299	236.87	96		FOR230		230.00	6	1.0280	236.45
100		BAY230		230.00	6	1.0263	236.06	103		COPESA23		230.00	6	1.0028	230.65
115		PACORA23		230.00	6	1.0068	231.57	144		CANJ230		230.00	6	1.0290	236.68
147		GUASQ230		230.00	6	1.0290	236.68	148		VELAD230		230.00	6	1.0296	236.82
190		CHANG230		230.00	6	1.0350	238.06	511		LGUIAS230		230.00	6	1.0096	232.20
6000		FRONTER		230.00	6	1.0297	236.83								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9881	227.26	3		PANII230		230.00	6	0.9984	229.63
5		CHO230		230.00	6	0.9956	229.00	105		PAN-AM23		230.00	6	0.9957	229.01

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2008 ESC MOD DEM MAX INV CONT2 PMA-PMAII

THU, MAY 17 2007 17:17

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0042	115.48	4		PANIII115		115.00	6	1.0122	116.41
6		CHO115		115.00	6	1.0353	119.06	9		LSA115		115.00	6	1.0228	117.63
12		M.N115		115.00	6	1.0279	118.21	15		PRO115		115.00	6	1.0282	118.24
18		CAC115		115.00	6	1.0037	115.42	19		C.V115		115.00	6	1.0024	115.28
20		CH.AZUL		115.00	6	1.0255	117.94	23		CH115		115.00	6	1.0031	115.35
33		STM115		115.00	6	1.0025	115.29	48		TINAJ115		115.00	6	1.0019	115.22
50		M.O115		115.00	6	1.0015	115.18	52		TOC115		115.00	6	1.0098	116.13
54		LM1115		115.00	6	1.0156	116.79	55		LM2115		115.00	6	1.0161	116.85
61		FFIELD		115.00	9	1.0099	116.14	87		CAL115		115.00	6	1.0382	119.40
88		EST115		115.00	6	1.0408	119.69	92		L.V115		115.00	6	1.0393	119.51
109		STA RITA115		115.00	6	1.0145	116.66	110		PTMD115A		115.00	6	1.0101	116.16
111		PTMD115B		115.00	6	1.0101	116.16	123		MIR115		115.00	7	1.0035	115.40
154		CEMPAN15		115.00	6	1.0124	116.43	191		CHANG115		115.00	6	1.0308	118.54

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9961	114.55	26		LOC115		115.00	6	0.9968	114.64
30		MAR115		115.00	6	0.9950	114.43	37		SAN115		115.00	6	0.9955	114.48

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2008 ESC MOD DEM MAX INV CONT2 PMA-PMIII  
 AREA 6 [PANAMA ] MACHINE SUMMARY:

THU, MAY 17 2007 17:17

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
67		BLM13C		13.800	V3	30.0	15.6	17.0	0.0	1.0000	33.8	0.8877	47.0			1	6		
68		BLM13D		13.800	V4	30.0	16.3	30.0	0.0	1.0000	34.1	0.8791	47.0			1	6		
70		TGJB13A		13.800	J5	20.0	8.8	20.0	0.0	0.9855	22.2	0.9146	39.4			1	6		
73		BLMCCB		13.800	V9	30.0	16.3	40.0	0.0	1.0000	34.1	0.8790	71.0			1	6		
90		EST-13L		13.800	E1	22.9	3.5	12.0	-5.0	1.0000	23.2	0.9882	27.0			1	6		
91		EST-13T		13.800	E2	22.9	3.5	12.0	-5.0	1.0000	23.2	0.9882	27.0			1	6		
94		LV-13.8L		13.800	L1	25.8	4.2	12.0	-5.0	1.0000	26.1	0.9868	27.0			1	6		
95		LV-13.8T		13.800	L2	25.8	4.2	12.0	-5.0	1.0000	26.1	0.9868	27.0			1	6		
97		FOR13A		13.800	F1	95.0	-20.6	50.0	-50.0	1.0000	97.2	0.9772	111.0			1	6		
98		FOR13B		13.800	F2	95.0	-20.6	50.0	-50.0	1.0000	97.2	0.9772	111.0			1	6		
99		FOR13C		13.800	F3	95.0	-20.6	50.0	-50.0	1.0000	97.2	0.9772	111.0			1	6		
101		BAY13A		13.800	B1	74.1	21.2	50.0	-25.0	1.0000	77.0	0.9613	96.0			1	6	SYST	
102		BAY13B		13.800	B2	74.1	21.2	50.0	-25.0	1.0000	77.0	0.9613	96.0			1	6		
106		PANAM13A		13.800	M1	15.2	2.1	9.0	0.0	0.9800	15.7	0.9909	20.7			1	6		
106		PANAM13A		13.800	M2	15.2	2.1	9.0	0.0	0.9800	15.7	0.9909	20.7			1	6		
106		PANAM13A		13.800	M3	15.2	2.1	9.0	0.0	0.9800	15.7	0.9909	20.7			1	6		
107		PANAM13B		13.800	M4	15.2	2.1	9.0	0.0	0.9800	15.7	0.9909	20.7			1	6		
107		PANAM13B		13.800	M5	15.2	2.1	9.0	0.0	0.9800	15.7	0.9909	20.7			1	6		
107		PANAM13B		13.800	M6	15.2	2.1	9.0	0.0	0.9800	15.7	0.9909	20.7			1	6		
108		BAY13C		13.800	B3	74.1	21.2	50.0	-25.0	1.0000	77.0	0.9613	100.0			1	6		
116		PACORA13		13.800	P1	16.1	1.0	8.8	0.0	1.0000	16.1	0.9982	21.7			1	6		
116		PACORA13		13.800	P2	16.1	1.0	8.8	0.0	1.0000	16.1	0.9982	21.7			1	6		
116		PACORA13		13.800	P3	16.1	1.0	8.8	0.0	1.0000	16.1	0.9982	21.7			1	6		
142		CANJ13A		13.800	C1	57.3	13.8	29.0	-29.0	1.0000	58.9	0.9720	69.0			1	6		
143		CANJ13B		13.800	C2	57.3	13.8	29.0	-29.0	1.0000	58.9	0.9720	69.0			1	6		
301		CONC13.8		13.800	C1	9.5	5.0	5.0	-5.0	0.9609	11.2	0.8849	13.5			1	6		
SUBSYSTEM TOTALS						978.2	122.2	598.5	-308.0				1278.1						

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 AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0453	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0453	8.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.7	5.3	8.0	0.0	1.0000	11.0	0.8759	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9936	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9937	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9937	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9853	5.6			2	7		
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9853	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9853	6.2			2	7		
SUBSYSTEM TOTALS						73.3	6.8	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PSIN CON C.A JUNIO DEL 2007  
 AÑO 2008 ESC.MOD DEM MAX INV CONT1 PACORA-PANAMA II

THU, MAY 17 2007 15:19  
 AREA TOTALS  
 IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.8 55.7	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.3	21.4 261.6	0.0
4	NICA		538.2 32.6	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.2	0.0 -97.2	11.1 147.4	0.0
5	C.RICA		1344.3 251.0	1324.8 569.4	0.0 -236.8	0.0 0.0	0.0 469.6	0.3 31.3	19.2 356.7	0.0
6	PANAMA		983.2 155.7	899.1 225.3	0.0 -60.6	0.0 0.0	0.0 421.7	52.3 51.0	31.7 361.7	25.0
7	ACANAL		73.3 6.5	31.0 7.8	0.0 0.0	0.0 0.0	0.0 0.0	40.8 -12.3	1.5 11.1	50.0
9	COLON		0.0 0.0	93.2 23.4	0.0 0.0	0.0 0.0	0.0 1.1	-93.5 -23.8	0.2 1.5	-75.0
TOTALS			6205.1	6074.9	0.0	0.0	0.0	0.0	130.3	0.0
			<b>632.1</b>	<b>1872.8</b>	<b>-908.9</b>	<b>0.0</b>	<b>1971.2</b>	<b>0.0</b>	<b>1639.4</b>	



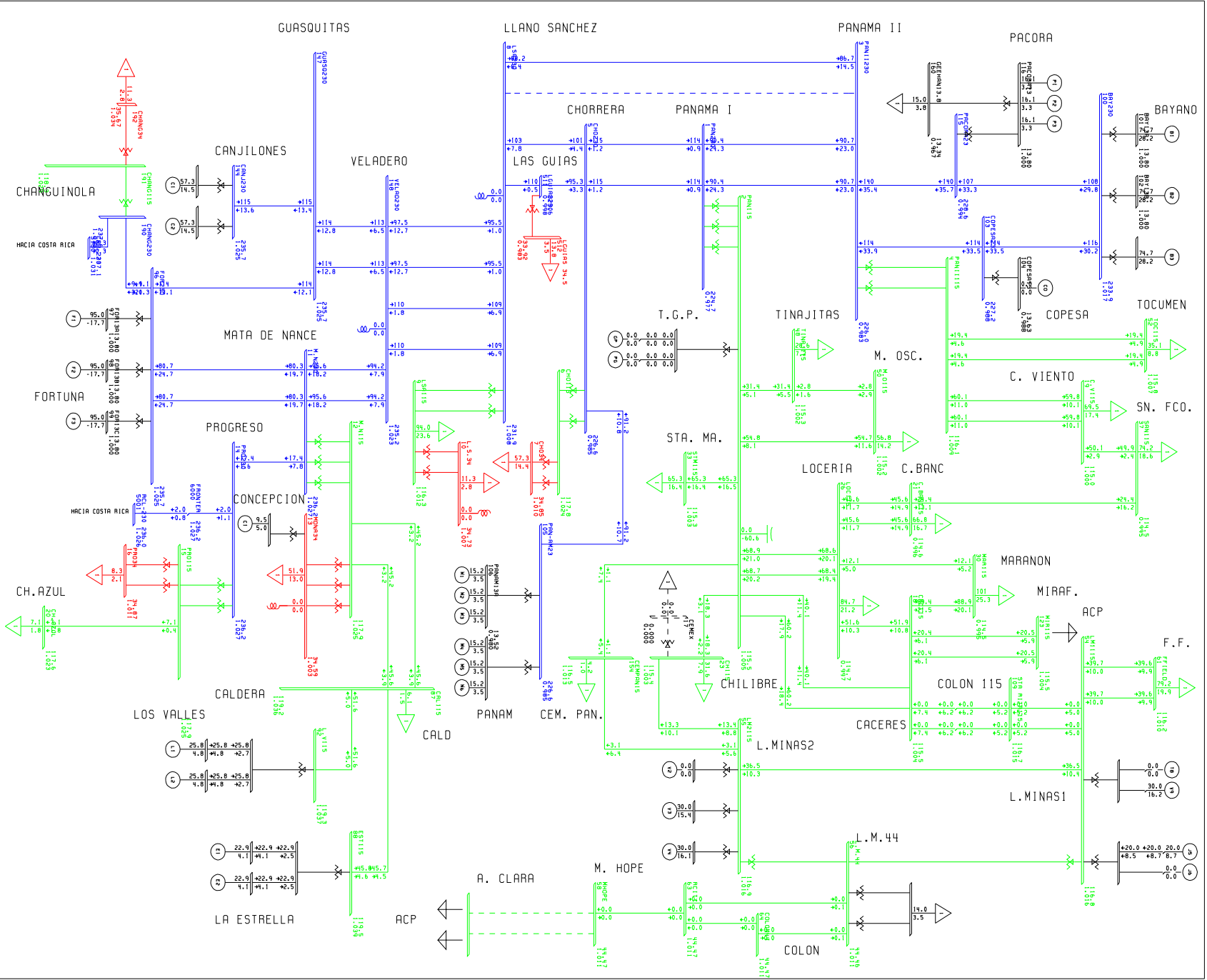
**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2008 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Contingencia 3: Llano Sánchez - Panamá II**

PLAN DE EXPANSION DEL SIN CON C.R. JUNIO 2007  
 R.O. 2008 ESCALADO DE MAX INV CONT'S LESCHEZ-PMA11  
 THU, MAR 17, 2007 17:44

KV: 114, \*35, \*115  
 BUS - VOLTAJE (KV/PJ)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



### Contingencia 3: Llano Sánchez - Panamá II

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2008 ESC MOD DEM MAX INV CONT3 LLSCHZ-PMIAI

THU, MAY 17 2007 17:40

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0081	231.85	11		M.N230		230.00	6	1.0270	236.21
14		PRO230		230.00	6	1.0270	236.22	96		FOR230		230.00	6	1.0248	235.71
100		BAY230		230.00	6	1.0172	233.95	144		CANJ230		230.00	6	1.0249	235.73
147		GUASQ230		230.00	6	1.0249	235.73	148		VELAD230		230.00	6	1.0228	235.24
190		CHANG230		230.00	6	1.0331	237.61	6000		FRONTER		230.00	6	1.0270	236.21

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9771	224.74	3		PANII230		230.00	6	0.9826	225.99
5		CHO230		230.00	6	0.9850	226.55	103		COPESA23		230.00	6	0.9880	227.25
105		PAN-AM23		230.00	6	0.9851	226.57	115		PACORA23		230.00	6	0.9938	228.56
511		LGUIAS230		230.00	6	0.9982	229.58								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2008 ESC MOD DEM MAX INV CONT3 LLSCHZ-PMIAI

THU, MAY 17 2007 17:40

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0047	115.54	4		PANII115		115.00	6	1.0092	116.06
6		CHO115		115.00	6	1.0239	117.75	9		LSA115		115.00	6	1.0117	116.35
12		M.N115		115.00	6	1.0250	117.87	15		PRO115		115.00	6	1.0253	117.91
18		CAC115		115.00	6	1.0041	115.48	19		C.V115		115.00	6	1.0004	115.05
20		CH.AZUL		115.00	6	1.0226	117.60	23		CH115		115.00	6	1.0035	115.40
33		STM115		115.00	6	1.0030	115.34	48		TINAJ115		115.00	6	1.0024	115.28
50		M.O115		115.00	6	1.0020	115.23	52		TOC115		115.00	6	1.0068	115.78
54		LM1115		115.00	6	1.0159	116.82	55		LM2115		115.00	6	1.0163	116.88
61		FFIELD		115.00	9	1.0102	116.17	87		CAL115		115.00	6	1.0363	119.17
88		EST115		115.00	6	1.0390	119.49	92		L.V115		115.00	6	1.0374	119.30
109		STA RITA115		115.00	6	1.0147	116.70	110		PTMD115A		115.00	6	1.0105	116.21
111		PTMD115B		115.00	6	1.0105	116.21	123		MIR115		115.00	7	1.0039	115.45
154		CEMPAN15		115.00	6	1.0127	116.46	191		CHANG115		115.00	6	1.0288	118.31

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9961	114.55	26		LOC115		115.00	6	0.9970	114.65
30		MAR115		115.00	6	0.9953	114.46	37		SAN115		115.00	6	0.9954	114.47

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2008 ESC MOD DEM MAX INV CONT3 LLSCHEZ-PMIII  
 AREA 6 [PANAMA ] MACHINE SUMMARY:

THU, MAY 17 2007 17:40

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
67		BLM13C		13.800	V3	30.0	15.4	17.0	0.0	1.0000	33.7	0.8891	47.0			1	6		
68		BLM13D		13.800	V4	30.0	16.1	30.0	0.0	1.0000	34.1	0.8806	47.0			1	6		
70		TGJB13A		13.800	J5	20.0	8.7	20.0	0.0	0.9855	22.1	0.9166	39.4			1	6		
73		BLMCCB		13.800	V9	30.0	16.2	40.0	0.0	1.0000	34.1	0.8805	71.0			1	6		
90		EST-13L		13.800	E1	22.9	4.1	12.0	-5.0	1.0000	23.3	0.9847	27.0			1	6		
91		EST-13T		13.800	E2	22.9	4.1	12.0	-5.0	1.0000	23.3	0.9847	27.0			1	6		
94		LV-13.8L		13.800	L1	25.8	4.8	12.0	-5.0	1.0000	26.2	0.9833	27.0			1	6		
95		LV-13.8T		13.800	L2	25.8	4.8	12.0	-5.0	1.0000	26.2	0.9833	27.0			1	6		
97		FOR13A		13.800	F1	95.0	-17.7	50.0	-50.0	1.0000	96.6	0.9831	111.0			1	6		
98		FOR13B		13.800	F2	95.0	-17.7	50.0	-50.0	1.0000	96.6	0.9831	111.0			1	6		
99		FOR13C		13.800	F3	95.0	-17.7	50.0	-50.0	1.0000	96.6	0.9831	111.0			1	6		
101		BAY13A		13.800	B1	74.7	28.2	50.0	-25.0	1.0000	79.8	0.9357	96.0			1	6	SYST	
102		BAY13B		13.800	B2	74.7	28.2	50.0	-25.0	1.0000	79.8	0.9357	96.0			1	6		
106		PANAM13A		13.800	M1	15.2	3.5	9.0	0.0	0.9800	15.9	0.9740	20.7			1	6		
106		PANAM13A		13.800	M2	15.2	3.5	9.0	0.0	0.9800	15.9	0.9740	20.7			1	6		
106		PANAM13A		13.800	M3	15.2	3.5	9.0	0.0	0.9800	15.9	0.9740	20.7			1	6		
107		PANAM13B		13.800	M4	15.2	3.5	9.0	0.0	0.9800	15.9	0.9740	20.7			1	6		
107		PANAM13B		13.800	M5	15.2	3.5	9.0	0.0	0.9800	15.9	0.9740	20.7			1	6		
107		PANAM13B		13.800	M6	15.2	3.5	9.0	0.0	0.9800	15.9	0.9740	20.7			1	6		
108		BAY13C		13.800	B3	74.7	28.2	50.0	-25.0	1.0000	79.8	0.9357	100.0			1	6		
116		PACORA13		13.800	P1	16.1	3.3	8.8	0.0	1.0000	16.4	0.9794	21.7			1	6		
116		PACORA13		13.800	P2	16.1	3.3	8.8	0.0	1.0000	16.4	0.9794	21.7			1	6		
116		PACORA13		13.800	P3	16.1	3.3	8.8	0.0	1.0000	16.4	0.9794	21.7			1	6		
142		CANJ13A		13.800	C1	57.3	14.5	29.0	-29.0	1.0000	59.1	0.9693	69.0			1	6		
143		CANJ13B		13.800	C2	57.3	14.5	29.0	-29.0	1.0000	59.1	0.9693	69.0			1	6		
301		CONC13.8		13.800	C1	9.5	5.0	5.0	-5.0	0.9581	11.2	0.8849	13.5			1	6		
SUBSYSTEM TOTALS						980.1	170.8	598.5	-308.0				1278.1						

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 AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0455	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0455	8.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.7	5.2	8.0	0.0	1.0000	11.0	0.8797	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9937	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9938	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9938	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	5.6			2	7		
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2			2	7		
SUBSYSTEM TOTALS						73.3	6.6	51.0	-33.0				124.2						



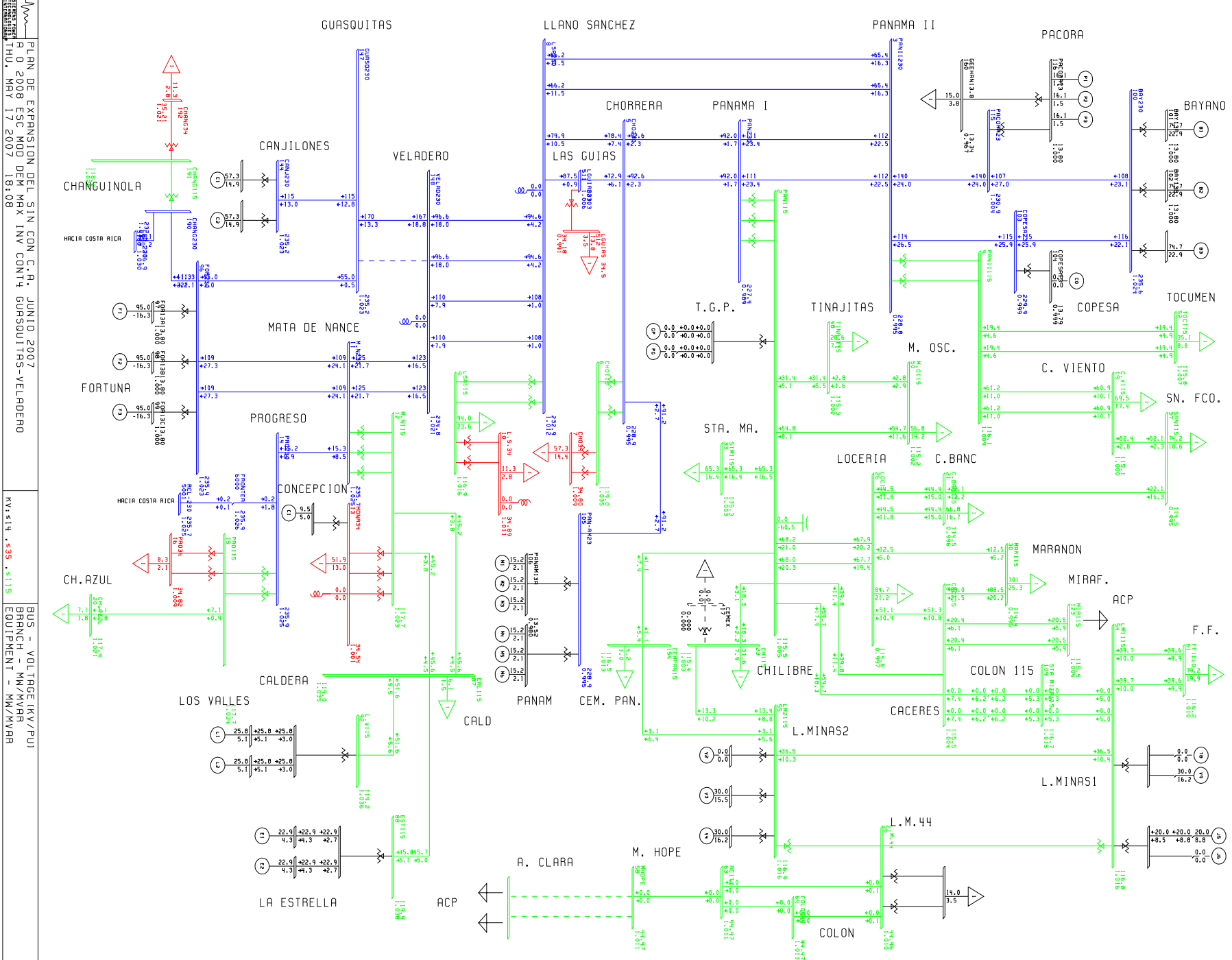
X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.8 55.7	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.9	0.0 -5.3	21.4 261.6	0.0
4	NICA		538.2 32.5	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.2	0.0 -97.2	11.1 147.4	0.0
5	C.RICA		1344.3 249.3	1324.8 569.4	0.0 -236.9	0.0 0.0	0.0 469.7	0.3 29.9	19.2 356.7	0.0
6	PANAMA		980.1 170.8	899.1 225.3	0.0 -60.6	0.0 0.0	0.0 392.9	52.3 52.4	28.6 346.6	25.0
7	ACANAL		73.3 6.6	31.0 7.8	0.0 0.0	0.0 0.0	0.0 0.0	40.8 -12.2	1.5 11.1	50.0
9	COLON		0.0 0.0	93.2 23.4	0.0 0.0	0.0 0.0	0.0 1.1	-93.5 -23.8	0.2 1.5	-75.0
TOTALS			6202.0 645.5	6074.9 1872.8	0.0 -908.9	0.0 0.0	0.0 1942.6	0.0 0.0	127.2 1624.3	0.0



**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2008 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Contingencia 4: Guasquitas - Veladero**



PLAN DE EXPANSION DEL SIN CON C.R. JUNIO 2007  
 R 0 2008 ESC MOD DEM MAX  
 THU, MAY 17 2007 18:08

BUS - VOLTAGE (KV/PU)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR  
 KV: 114, 435, 115

## Contingencia 4: Guasquitas - Veladero

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 17 2007 18:00  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2008 ESC MOD DEM MAX INV CONT4 GUASQUITAS-VELADERO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0125	232.87	11		M.N230		230.00	6	1.0249	235.72
14		PRO230		230.00	6	1.0254	235.85	96		FOR230		230.00	6	1.0233	235.37
100		BAY230		230.00	6	1.0242	235.57	115		PACORA23		230.00	6	1.0038	230.87
144		CANJ230		230.00	6	1.0227	235.23	147		GUASQ230		230.00	6	1.0227	235.23
148		VELAD230		230.00	6	1.0210	234.82	190		CHANG230		230.00	6	1.0321	237.38
511		LGUIAS230		230.00	6	1.0058	231.35	6000		FRONTER		230.00	6	1.0255	235.87

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9888	227.43	3		PANII230		230.00	6	0.9947	228.78
5		CHO230		230.00	6	0.9951	228.86	103		COPESA23		230.00	6	0.9994	229.86
105		PAN-AM23		230.00	6	0.9951	228.87								

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 17 2007 18:00  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2008 ESC MOD DEM MAX INV CONT4 GUASQUITAS-VELADERO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0045	115.52	4		PANII115		115.00	6	1.0093	116.07
6		CHO115		115.00	6	1.0346	118.98	9		LSA115		115.00	6	1.0164	116.88
12		M.N115		115.00	6	1.0233	117.68	15		PRO115		115.00	6	1.0237	117.73
18		CAC115		115.00	6	1.0040	115.46	19		C.V115		115.00	6	1.0004	115.05
20		CH.AZUL		115.00	6	1.0210	117.42	23		CH115		115.00	6	1.0034	115.39
33		STM115		115.00	6	1.0028	115.33	48		TINAJ115		115.00	6	1.0022	115.26
50		M.O115		115.00	6	1.0019	115.21	52		TOC115		115.00	6	1.0069	115.79
54		LM1115		115.00	6	1.0158	116.82	55		LM2115		115.00	6	1.0162	116.87
61		FFIELD		115.00	9	1.0101	116.16	87		CAL115		115.00	6	1.0352	119.05
88		EST115		115.00	6	1.0381	119.38	92		L.V115		115.00	6	1.0363	119.18
109		STA RITA115		115.00	6	1.0147	116.68	110		PTMD115A		115.00	6	1.0104	116.19
111		PTMD115B		115.00	6	1.0104	116.19	123		MIR115		115.00	7	1.0038	115.43
154		CEMPAN15		115.00	6	1.0126	116.45	191		CHANG115		115.00	6	1.0278	118.20

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9960	114.54	26		LOC115		115.00	6	0.9968	114.64
30		MAR115		115.00	6	0.9952	114.45	37		SAN115		115.00	6	0.9953	114.45

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
67		BLM13C		13.800	V3	30.0	15.5	17.0	0.0	1.0000	33.8	0.8886	47.0			1	6		
68		BLM13D		13.800	V4	30.0	16.2	30.0	0.0	1.0000	34.1	0.8801	47.0			1	6		
70		TGJB13A		13.800	J5	20.0	8.8	20.0	0.0	0.9855	22.2	0.9160	39.4			1	6		
73		BLMCCB		13.800	V9	30.0	16.2	40.0	0.0	1.0000	34.1	0.8800	71.0			1	6		
90		EST-13L		13.800	E1	22.9	4.3	12.0	-5.0	1.0000	23.3	0.9825	27.0			1	6		
91		EST-13T		13.800	E2	22.9	4.3	12.0	-5.0	1.0000	23.3	0.9825	27.0			1	6		
94		LV-13.8L		13.800	L1	25.8	5.1	12.0	-5.0	1.0000	26.3	0.9812	27.0			1	6		
95		LV-13.8T		13.800	L2	25.8	5.1	12.0	-5.0	1.0000	26.3	0.9812	27.0			1	6		
97		FOR13A		13.800	F1	95.0	-16.3	50.0	-50.0	1.0000	96.4	0.9855	111.0			1	6		
98		FOR13B		13.800	F2	95.0	-16.3	50.0	-50.0	1.0000	96.4	0.9855	111.0			1	6		
99		FOR13C		13.800	F3	95.0	-16.3	50.0	-50.0	1.0000	96.4	0.9855	111.0			1	6		
101		BAY13A		13.800	B1	74.7	22.9	50.0	-25.0	1.0000	78.2	0.9562	96.0			1	6	SYST	
102		BAY13B		13.800	B2	74.7	22.9	50.0	-25.0	1.0000	78.2	0.9562	96.0			1	6		
106		PANAM13A		13.800	M1	15.2	2.1	9.0	0.0	0.9800	15.7	0.9902	20.7			1	6		
106		PANAM13A		13.800	M2	15.2	2.1	9.0	0.0	0.9800	15.7	0.9902	20.7			1	6		
106		PANAM13A		13.800	M3	15.2	2.1	9.0	0.0	0.9800	15.7	0.9902	20.7			1	6		
107		PANAM13B		13.800	M4	15.2	2.1	9.0	0.0	0.9800	15.7	0.9902	20.7			1	6		
107		PANAM13B		13.800	M5	15.2	2.1	9.0	0.0	0.9800	15.7	0.9902	20.7			1	6		
107		PANAM13B		13.800	M6	15.2	2.1	9.0	0.0	0.9800	15.7	0.9902	20.7			1	6		
108		BAY13C		13.800	B3	74.7	22.9	50.0	-25.0	1.0000	78.2	0.9562	100.0			1	6		
116		PACORA13		13.800	P1	16.1	1.5	8.8	0.0	1.0000	16.2	0.9956	21.7			1	6		
116		PACORA13		13.800	P2	16.1	1.5	8.8	0.0	1.0000	16.2	0.9956	21.7			1	6		
116		PACORA13		13.800	P3	16.1	1.5	8.8	0.0	1.0000	16.2	0.9956	21.7			1	6		
142		CANJ13A		13.800	C1	57.3	14.9	29.0	-29.0	1.0000	59.2	0.9678	69.0			1	6		
143		CANJ13B		13.800	C2	57.3	14.9	29.0	-29.0	1.0000	59.2	0.9678	69.0			1	6		
301		CONC13.8		13.800	C1	9.5	5.0	5.0	-5.0	0.9566	11.2	0.8849	13.5			1	6		
SUBSYSTEM TOTALS						980.2	147.3	598.5	-308.0				1278.1						

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 AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0454	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0455	8.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.7	5.3	8.0	0.0	1.0000	11.0	0.8785	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9937	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9938	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9938	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	5.6			2	7		
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2			2	7		
SUBSYSTEM TOTALS						73.3	6.7	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      THU, MAY 17 2007 18:00  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007      AREA TOTALS  
 AÑO 2008 ESC MOD DEM MAX INV CONT4 GUASQUITAS-VELADERO      IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.8 55.7	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.3	21.4 261.6	0.0
4	NICA		538.2 32.6	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.2	0.0 -97.2	11.1 147.4	0.0
5	C.RICA		1344.3 251.4	1324.8 569.4	0.0 -236.8	0.0 0.0	0.0 469.5	0.2 31.5	19.3 356.8	0.0
6	PANAMA		980.2 147.3	899.1 225.3	0.0 -60.5	0.0 0.0	0.0 414.7	52.4 50.7	28.8 346.5	25.0
7	ACANAL		73.3 6.7	31.0 7.8	0.0 0.0	0.0 0.0	0.0 0.0	40.8 -12.2	1.5 11.1	50.0
9	COLON		0.0 0.0	93.2 23.4	0.0 0.0	0.0 0.0	0.0 1.1	-93.5 -23.8	0.2 1.5	-75.0
TOTALS			6202.2 624.2	6074.9 1872.8	0.0 -908.8	0.0 0.0	0.0 1964.1	0.0 0.0	127.3 1624.4	0.0





**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2008 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Contingencia 5: Mata de Nance - Veladero**



## Contingencia 5: Mata de Nance – Veladero

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2008 ESC MOD DEM MAX INV CONT5 MDNANCE-VELADERO

THU, MAY 17 2007 18:11

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0138	233.18	11		M.N230		230.00	6	1.0256	235.88
14		PRO230		230.00	6	1.0259	235.97	96		FOR230		230.00	6	1.0233	235.35
100		BAY230		230.00	6	1.0245	235.64	115		PACORA23		230.00	6	1.0043	230.98
144		CANJ230		230.00	6	1.0232	235.35	147		GUASQ230		230.00	6	1.0232	235.34
148		VELAD230		230.00	6	1.0228	235.24	190		CHANG230		230.00	6	1.0322	237.40
511		LGUIAS230		230.00	6	1.0069	231.59	6000		FRONTER		230.00	6	1.0260	235.98

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9894	227.57	3		PANII230		230.00	6	0.9953	228.91
5		CHO230		230.00	6	0.9957	229.02	103		COPESA23		230.00	6	0.9999	229.99
105		PAN-AM23		230.00	6	0.9958	229.03								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2008 ESC MOD DEM MAX INV CONT5 MDNANCE-VELADERO

THU, MAY 17 2007 18:12

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0051	115.58	4		PANIII115		115.00	6	1.0099	116.14
6		CHO115		115.00	6	1.0354	119.07	9		LSA115		115.00	6	1.0178	117.05
12		M.N115		115.00	6	1.0239	117.74	15		PRO115		115.00	6	1.0242	117.78
18		CAC115		115.00	6	1.0045	115.52	19		C.V115		115.00	6	1.0010	115.12
20		CH.AZUL		115.00	6	1.0215	117.48	23		CH115		115.00	6	1.0038	115.44
33		STM115		115.00	6	1.0034	115.39	48		TINAJ115		115.00	6	1.0028	115.32
50		M.O115		115.00	6	1.0024	115.28	52		TOC115		115.00	6	1.0075	115.86
54		LM1115		115.00	6	1.0161	116.85	55		LM2115		115.00	6	1.0166	116.90
61		FFIELD		115.00	9	1.0104	116.20	87		CAL115		115.00	6	1.0356	119.09
88		EST115		115.00	6	1.0384	119.41	92		L.V115		115.00	6	1.0367	119.22
109		STA RITA115		115.00	6	1.0150	116.72	110		PTMD115A		115.00	6	1.0108	116.24
111		PTMD115B		115.00	6	1.0108	116.24	123		MIR115		115.00	7	1.0043	115.49
154		CEMPAN15		115.00	6	1.0130	116.50	191		CHANG115		115.00	6	1.0279	118.21

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9966	114.60	26		LOC115		115.00	6	0.9974	114.70
30		MAR115		115.00	6	0.9958	114.51	37		SAN115		115.00	6	0.9958	114.52

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2008 ESC MOD DEM MAX INV CONT5 MDNANCE-VELADERO  
 AREA 6 [PANAMA ] MACHINE SUMMARY:

THU, MAY 17 2007 18:12

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
67		BLM13C		13.800	V3	30.0	15.4	17.0	0.0	1.0000	33.7	0.8902	47.0			1	6		
68		BLM13D		13.800	V4	30.0	16.0	30.0	0.0	1.0000	34.0	0.8818	47.0			1	6		
70		TGJB13A		13.800	J5	20.0	8.6	20.0	0.0	0.9855	22.1	0.9183	39.4			1	6		
73		BLMCCB		13.800	V9	30.0	16.1	40.0	0.0	1.0000	34.0	0.8817	71.0			1	6		
90		EST-13L		13.800	E1	22.9	4.2	12.0	-5.0	1.0000	23.3	0.9832	27.0			1	6		
91		EST-13T		13.800	E2	22.9	4.2	12.0	-5.0	1.0000	23.3	0.9832	27.0			1	6		
94		LV-13.8L		13.800	L1	25.8	5.0	12.0	-5.0	1.0000	26.3	0.9819	27.0			1	6		
95		LV-13.8T		13.800	L2	25.8	5.0	12.0	-5.0	1.0000	26.3	0.9819	27.0			1	6		
97		FOR13A		13.800	F1	95.0	-16.3	50.0	-50.0	1.0000	96.4	0.9856	111.0			1	6		
98		FOR13B		13.800	F2	95.0	-16.3	50.0	-50.0	1.0000	96.4	0.9856	111.0			1	6		
99		FOR13C		13.800	F3	95.0	-16.3	50.0	-50.0	1.0000	96.4	0.9856	111.0			1	6		
101		BAY13A		13.800	B1	74.2	22.6	50.0	-25.0	1.0000	77.5	0.9566	96.0			1	6	SYST	
102		BAY13B		13.800	B2	74.2	22.6	50.0	-25.0	1.0000	77.5	0.9566	96.0			1	6		
106		PANAM13A		13.800	M1	15.2	2.0	9.0	0.0	0.9800	15.7	0.9910	20.7			1	6		
106		PANAM13A		13.800	M2	15.2	2.0	9.0	0.0	0.9800	15.7	0.9910	20.7			1	6		
106		PANAM13A		13.800	M3	15.2	2.0	9.0	0.0	0.9800	15.7	0.9910	20.7			1	6		
107		PANAM13B		13.800	M4	15.2	2.0	9.0	0.0	0.9800	15.7	0.9910	20.7			1	6		
107		PANAM13B		13.800	M5	15.2	2.0	9.0	0.0	0.9800	15.7	0.9910	20.7			1	6		
107		PANAM13B		13.800	M6	15.2	2.0	9.0	0.0	0.9800	15.7	0.9910	20.7			1	6		
108		BAY13C		13.800	B3	74.2	22.6	50.0	-25.0	1.0000	77.5	0.9566	100.0			1	6		
116		PACORA13		13.800	P1	16.1	1.4	8.8	0.0	1.0000	16.2	0.9961	21.7			1	6		
116		PACORA13		13.800	P2	16.1	1.4	8.8	0.0	1.0000	16.2	0.9961	21.7			1	6		
116		PACORA13		13.800	P3	16.1	1.4	8.8	0.0	1.0000	16.2	0.9961	21.7			1	6		
142		CANJ13A		13.800	C1	57.3	14.8	29.0	-29.0	1.0000	59.2	0.9682	69.0			1	6		
143		CANJ13B		13.800	C2	57.3	14.8	29.0	-29.0	1.0000	59.2	0.9682	69.0			1	6		
301		CONC13.8		13.800	C1	9.5	5.0	5.0	-5.0	0.9570	11.2	0.8849	13.5			1	6		
SUBSYSTEM TOTALS						978.5	144.6	598.5	-308.0				1278.1						

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 AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0457	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0457	8.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.7	5.1	8.0	0.0	1.0000	11.0	0.8830	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9939	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9939	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9939	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9850	5.6			2	7		
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9850	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9850	6.2			2	7		
SUBSYSTEM TOTALS						73.3	6.5	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      THU, MAY 17 2007 18:12  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007      AREA TOTALS  
 AÑO 2008 ESC MOD DEM MAX INV CONT5 MDNANCE-VELADERO      IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1			1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
	GUATEMAL		29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2			911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
	SALVADOR		100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3			1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
	HONDURAS		55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4			538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
	NICA		32.6	224.5	-98.9	0.0	143.2	-97.2	147.4	
5			1344.3	1324.8	0.0	0.0	0.0	0.3	19.2	0.0
	C.RICA		250.8	569.4	-236.8	0.0	469.6	31.2	356.6	
6			978.5	899.1	0.0	0.0	0.0	52.3	27.1	25.0
	PANAMA		144.6	225.3	-60.6	0.0	414.0	51.1	342.7	
7			73.3	31.0	0.0	0.0	0.0	40.8	1.5	50.0
	ACANAL		6.5	7.8	0.0	0.0	0.0	-12.3	11.1	
9			0.0	93.2	0.0	0.0	0.0	-93.5	0.2	-75.0
	COLON		0.0	23.4	0.0	0.0	1.1	-23.8	1.5	
TOTALS			6200.5	6074.9	0.0	0.0	0.0	0.0	125.6	0.0
			620.7	1872.8	-908.9	0.0	1963.6	0.0	1620.4	

**Flujos de Potencia**  
**Caso 1 MHT7**  
**Caso 2 MHTCB7**  
**Caso 4 MHTGDC7**

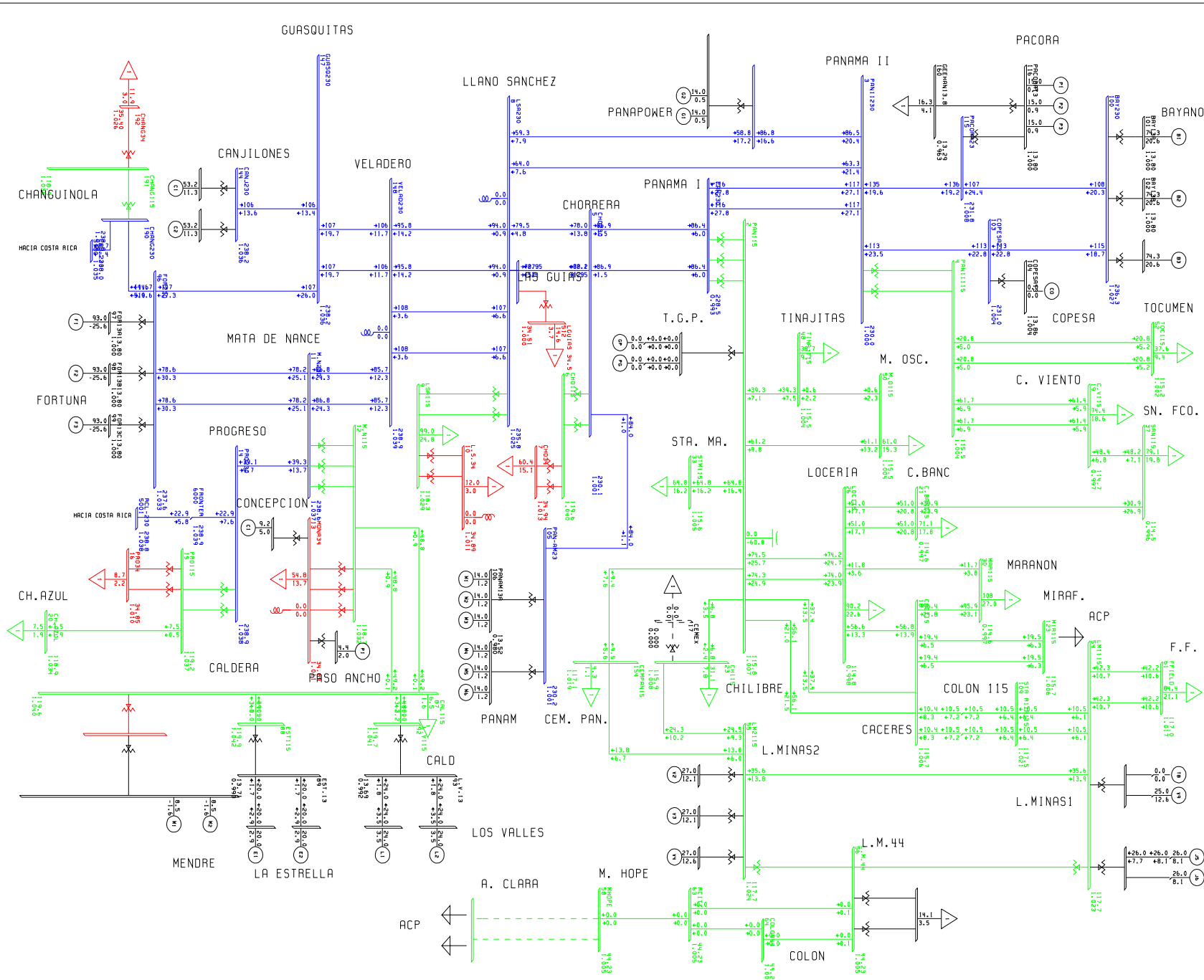
**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL  
2007**

**AÑO 2009 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 A O 2009 ESC MODERADO DE DEMANDA. DEM MAX DE INVIERNO  
 TUE, MAY 15 2007 10:28

KV:14 - \*35 - \*115

BUS - VOLTGE (KV/PUI)  
 BRNCH - MN/WVAR  
 EQUIPMENT - MN/WVAR







PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MODERADO DE DEMANDA. DEM MAX DE INVIERNO

TUE, MAY 15 2007 9:58

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	27.0	12.1	17.0	0.0	1.0000	29.6	0.9127	47.0			1	6	
67	BLM13C	13.800	V3	27.0	12.1	17.0	0.0	1.0000	29.6	0.9127	47.0			1	6	
68	BLM13D	13.800	V4	27.0	12.6	30.0	0.0	1.0000	29.8	0.9057	47.0			1	6	
70	TGJB13A	13.800	J5	26.0	8.1	20.0	0.0	1.0000	27.2	0.9547	39.4			1	6	
71	TGJB13B	13.800	J6	26.0	8.1	20.0	0.0	1.0000	27.2	0.9547	39.4			1	6	
73	BLMCCB	13.800	V9	25.0	12.6	40.0	0.0	1.0000	28.0	0.8932	71.0			1	6	
90	EST-13L	13.800	E1	20.0	2.9	12.0	-5.0	1.0000	20.2	0.9899	27.0			1	6	
91	EST-13T	13.800	E2	20.0	2.9	12.0	-5.0	1.0000	20.2	0.9899	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	3.5	12.0	-5.0	1.0000	24.3	0.9893	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	3.5	12.0	-5.0	1.0000	24.3	0.9893	27.0			1	6	
97	FOR13A	13.800	F1	93.0	-25.6	50.0	-50.0	1.0000	96.5	0.9641	111.0			1	6	
98	FOR13B	13.800	F2	93.0	-25.6	50.0	-50.0	1.0000	96.5	0.9641	111.0			1	6	
99	FOR13C	13.800	F3	93.0	-25.6	50.0	-50.0	1.0000	96.5	0.9641	111.0			1	6	
101	BAY13A	13.800	B1	74.3	20.6	50.0	-25.0	1.0000	77.1	0.9637	96.0			1	6	SYST
102	BAY13B	13.800	B2	74.3	20.6	50.0	-25.0	1.0000	77.1	0.9637	96.0			1	6	
106	PANAM13A	13.800	M1	14.0	1.2	9.0	0.0	0.9800	14.3	0.9961	20.7			1	6	
106	PANAM13A	13.800	M2	14.0	1.2	9.0	0.0	0.9800	14.3	0.9961	20.7			1	6	
106	PANAM13A	13.800	M3	14.0	1.2	9.0	0.0	0.9800	14.3	0.9961	20.7			1	6	
107	PANAM13B	13.800	M4	14.0	1.2	9.0	0.0	0.9800	14.3	0.9961	20.7			1	6	
107	PANAM13B	13.800	M5	14.0	1.2	9.0	0.0	0.9800	14.3	0.9961	20.7			1	6	
107	PANAM13B	13.800	M6	14.0	1.2	9.0	0.0	0.9800	14.3	0.9961	20.7			1	6	
108	BAY13C	13.800	B3	74.3	20.6	50.0	-25.0	1.0000	77.1	0.9637	100.0			1	6	
116	PACORA13	13.800	P1	15.0	0.9	8.8	0.0	1.0000	15.0	0.9983	21.7			1	6	
116	PACORA13	13.800	P2	15.0	0.9	8.8	0.0	1.0000	15.0	0.9983	21.7			1	6	
116	PACORA13	13.800	P3	15.0	0.9	8.8	0.0	1.0000	15.0	0.9983	21.7			1	6	
142	CANJ13A	13.800	C1	53.2	11.3	29.0	-29.0	1.0000	54.4	0.9783	69.0			1	6	
143	CANJ13B	13.800	C2	53.2	11.3	29.0	-29.0	1.0000	54.4	0.9783	69.0			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9662	10.8	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9643	5.0	0.9110	6.2			1	6	
317	MENDRE13.8	13.800	M1	8.5	-1.6	4.0	-4.0	1.0000	8.6	0.9834	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	-1.6	4.0	-4.0	1.0000	8.6	0.9834	35.3			1	6	
516	PANAPOW13A	13.800	G1	14.0	0.5	12.5	0.5	1.0093	13.9	0.9993	20.9			1	6	
516	PANAPOW13A	13.800	G2	14.0	0.5	12.5	0.5	1.0093	13.9	0.9993	20.9			1	6	
SUBSYSTEM TOTALS				1042.0	100.9	670.5	-316.9				1483.2					

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MODERADO DE DEMANDA. DEM MAX DE INVIERNO

TUE, MAY 15 2007 9:58

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0464	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0464	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	4.8	8.0	0.0	1.0000	10.8	0.8941	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9942	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9943	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9943	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9850	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9850	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9850	6.2			2	7	
SUBSYSTEM TOTALS						73.3	6.1	51.0	-33.0				124.2					

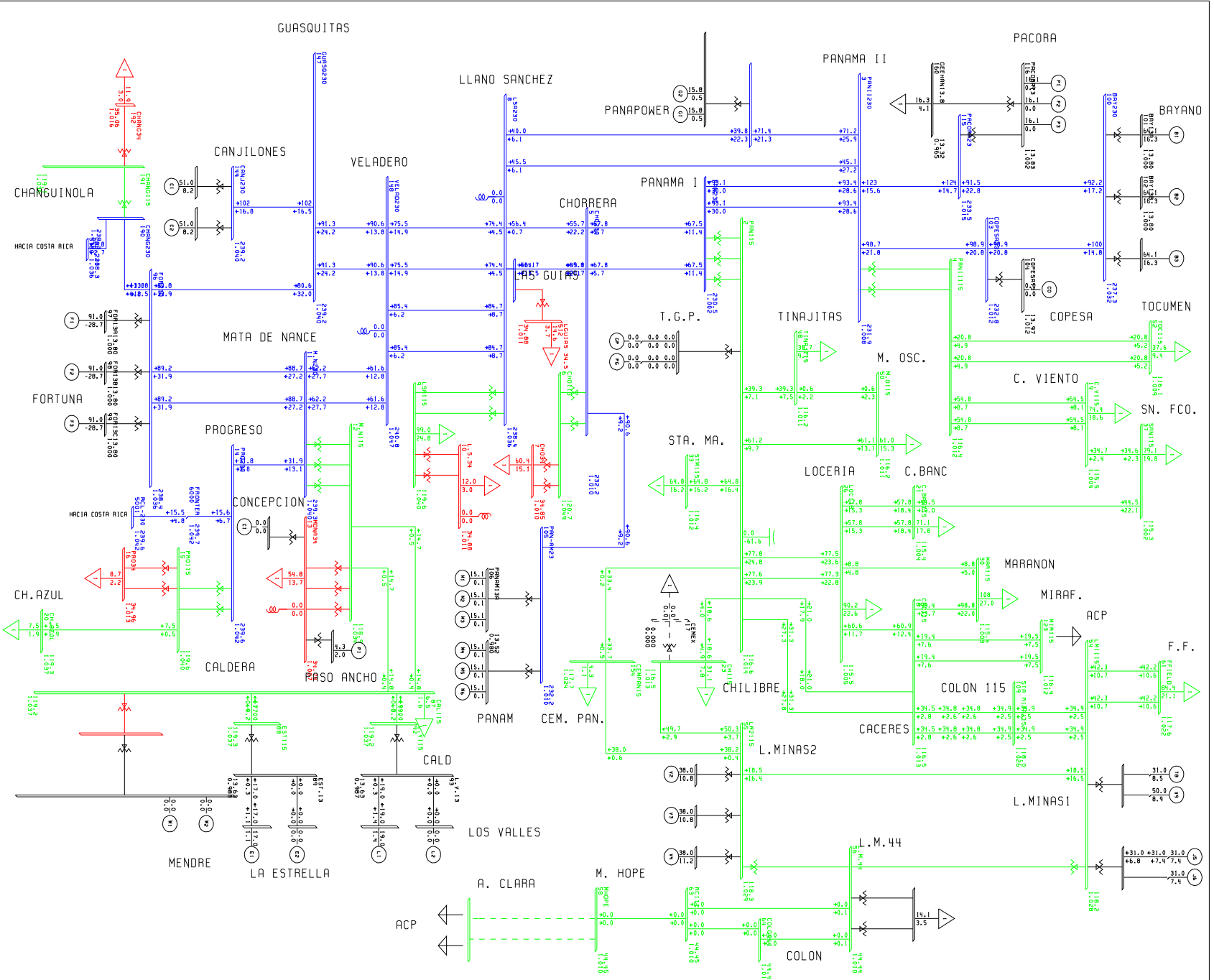
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 9:59  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007 AREA TOTALS  
 AÑO 2009 ESC MODERADO DE DEMANDA. DEM MAX DE INVIERNO IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.1	224.5	-98.9	0.0	143.3	-97.6	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.1	19.4	0.0
C.RICA	232.0	569.4	-237.5	0.0	471.7	15.2	356.7	
6	1042.0	957.0	0.0	0.0	0.0	59.8	25.3	25.0
PANAMA	100.9	239.8	-60.8	0.0	472.9	69.7	325.1	
7	73.3	33.0	0.0	0.0	0.0	38.8	1.5	50.0
ACANAL	6.1	8.3	0.0	0.0	0.0	-13.0	10.8	
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6264.0	6140.0	0.0	0.0	0.0	0.0	124.0	0.0
	557.2	1889.1	-909.9	0.0	2024.6	0.0	1602.6	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2009 ESCENARIO MODERADO DEMANDA MAXIMA VERANO**

PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 A O 2009 ESC. MODERNO DE DEMANDA, DEM. MAX DE VERANO  
 TUE, MAY 15 2007 10:28

BUS - VOLTAJE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0021	230.48	3		PANII230		230.00	6	1.0082	231.88
5		CHO230		230.00	6	1.0096	232.22	8		LSA230		230.00	6	1.0364	238.38
11		M.N230		230.00	6	1.0404	239.30	14		PRO230		230.00	6	1.0418	239.62
96		FOR230		230.00	6	1.0364	238.37	100		BAY230		230.00	6	1.0318	237.31
103		COPESA23		230.00	6	1.0121	232.77	105		PAN-AM23		230.00	6	1.0096	232.22
115		PACORA23		230.00	6	1.0151	233.47	144		CANJ230		230.00	6	1.0399	239.18
147		GUASQ230		230.00	6	1.0400	239.20	148		VELAD230		230.00	6	1.0468	240.77
190		CHANG230		230.00	6	1.0402	239.26	511		LGUIAS230		230.00	6	1.0266	236.11
515		PANPOWER230		230.00	6	1.0180	234.15	6000		FRONTER		230.00	6	1.0421	239.68

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
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\* NONE \*

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0135	116.56	4		PANIII115		115.00	6	1.0119	116.37
6		CHO115		115.00	6	1.0493	120.67	9		LSA115		115.00	6	1.0403	119.63
12		M.N115		115.00	6	1.0339	118.90	15		PRO115		115.00	6	1.0400	119.60
18		CAC115		115.00	6	1.0129	116.49	19		C.V115		115.00	6	1.0044	115.51
20		CH.AZUL		115.00	6	1.0372	119.28	21		C.BAN115		115.00	6	1.0036	115.41
23		CH115		115.00	6	1.0134	116.55	26		LOC115		115.00	6	1.0047	115.54
30		MAR115		115.00	6	1.0033	115.38	33		STM115		115.00	6	1.0119	116.37
37		SAN115		115.00	6	1.0025	115.29	48		TINAJ115		115.00	6	1.0106	116.22
50		M.O115		115.00	6	1.0105	116.21	52		TOC115		115.00	6	1.0094	116.08
54		LM1115		115.00	6	1.0282	118.25	55		LM2115		115.00	6	1.0286	118.29
61		FFIELD		115.00	9	1.0222	117.56	87		CAL115		115.00	6	1.0365	119.20
88		EST115		115.00	6	1.0373	119.29	92		L.V115		115.00	6	1.0368	119.23
109		STA RITA115		115.00	6	1.0262	118.02	110		PTMD115A		115.00	6	1.0215	117.48
111		PTMD115B		115.00	6	1.0215	117.48	123		MIR115		115.00	7	1.0121	116.39
154		CEMPAN15		115.00	6	1.0236	117.71	191		CHANG115		115.00	6	1.0358	119.11

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
------	-----	------	-----	-------	------	-------	-------	------	-----	------	-----	-------	------	-------	-------

\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MODERADO DE DEMANDA, DEM MAX DE VERANO

TUE, MAY 15 2007 10:21

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.0	10.8	17.0	0.0	1.0000	39.5	0.9618	47.0			1	6	
67	BLM13C	13.800	V3	38.0	10.8	17.0	0.0	1.0000	39.5	0.9618	47.0			1	6	
68	BLM13D	13.800	V4	38.0	11.2	30.0	0.0	1.0000	39.6	0.9591	47.0			1	6	
70	TGJB13A	13.800	J5	31.0	7.4	20.0	0.0	1.0000	31.9	0.9729	39.4			1	6	
71	TGJB13B	13.800	J6	31.0	7.4	20.0	0.0	1.0000	31.9	0.9729	39.4			1	6	
72	BLMCCA	13.800	T8	31.0	8.5	20.0	0.0	1.0000	32.2	0.9642	50.0			1	6	
73	BLMCCB	13.800	V9	50.0	8.9	40.0	0.0	1.0000	50.8	0.9844	71.0			1	6	
90	EST-13L	13.800	E1	17.0	1.1	12.0	-5.0	0.9900	17.2	0.9978	27.0			1	6	
94	LV-13.8L	13.800	L1	19.0	1.4	12.0	-5.0	0.9900	19.2	0.9973	27.0			1	6	
97	FOR13A	13.800	F1	91.0	-28.7	50.0	-50.0	1.0000	95.4	0.9537	111.0			1	6	
98	FOR13B	13.800	F2	91.0	-28.7	50.0	-50.0	1.0000	95.4	0.9537	111.0			1	6	
99	FOR13C	13.800	F3	91.0	-28.7	50.0	-50.0	1.0000	95.4	0.9537	111.0			1	6	
101	BAY13A	13.800	B1	64.1	16.3	50.0	-25.0	1.0000	66.1	0.9693	96.0			1	6	SYST
102	BAY13B	13.800	B2	64.1	16.3	50.0	-25.0	1.0000	66.1	0.9693	96.0			1	6	
106	PANAM13A	13.800	M1	15.1	0.1	9.0	0.0	0.9800	15.4	1.0000	20.7			1	6	
106	PANAM13A	13.800	M2	15.1	0.1	9.0	0.0	0.9800	15.4	1.0000	20.7			1	6	
106	PANAM13A	13.800	M3	15.1	0.1	9.0	0.0	0.9800	15.4	1.0000	20.7			1	6	
107	PANAM13B	13.800	M4	15.1	0.1	9.0	0.0	0.9800	15.4	1.0000	20.7			1	6	
107	PANAM13B	13.800	M5	15.1	0.1	9.0	0.0	0.9800	15.4	1.0000	20.7			1	6	
107	PANAM13B	13.800	M6	15.1	0.1	9.0	0.0	0.9800	15.4	1.0000	20.7			1	6	
108	BAY13C	13.800	B3	64.1	16.3	50.0	-25.0	1.0000	66.1	0.9693	100.0			1	6	
116	PACORA13	13.800	P1	16.1	0.0	8.8	0.0	1.0019	16.1	1.0000	21.7			1	6	
116	PACORA13	13.800	P2	16.1	0.0	8.8	0.0	1.0019	16.1	1.0000	21.7			1	6	
116	PACORA13	13.800	P3	16.1	0.0	8.8	0.0	1.0019	16.1	1.0000	21.7			1	6	
142	CANJ13A	13.800	C1	51.0	8.2	29.0	-29.0	0.9900	52.2	0.9872	69.0			1	6	
143	CANJ13B	13.800	C2	51.0	8.2	29.0	-29.0	0.9900	52.2	0.9872	69.0			1	6	
302	PASOANCH13.8	13.800	P1	4.3	2.0	2.0	-2.0	0.9603	4.9	0.9067	6.2			1	6	
516	PANAPOW13A	13.800	G1	15.8	0.5	12.5	0.5	1.0181	15.5	0.9994	20.9			1	6	
516	PANAPOW13A	13.800	G2	15.8	0.5	12.5	0.5	1.0181	15.5	0.9994	20.9			1	6	
SUBSYSTEM TOTALS				1035.0	50.5	653.5	-293.9				1395.0					

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MODERADO DE DEMANDA, DEM MAX DE VERANO

TUE, MAY 15 2007 10:21

AREA 7 [ACANAL ] MACHINE SUMMARY:

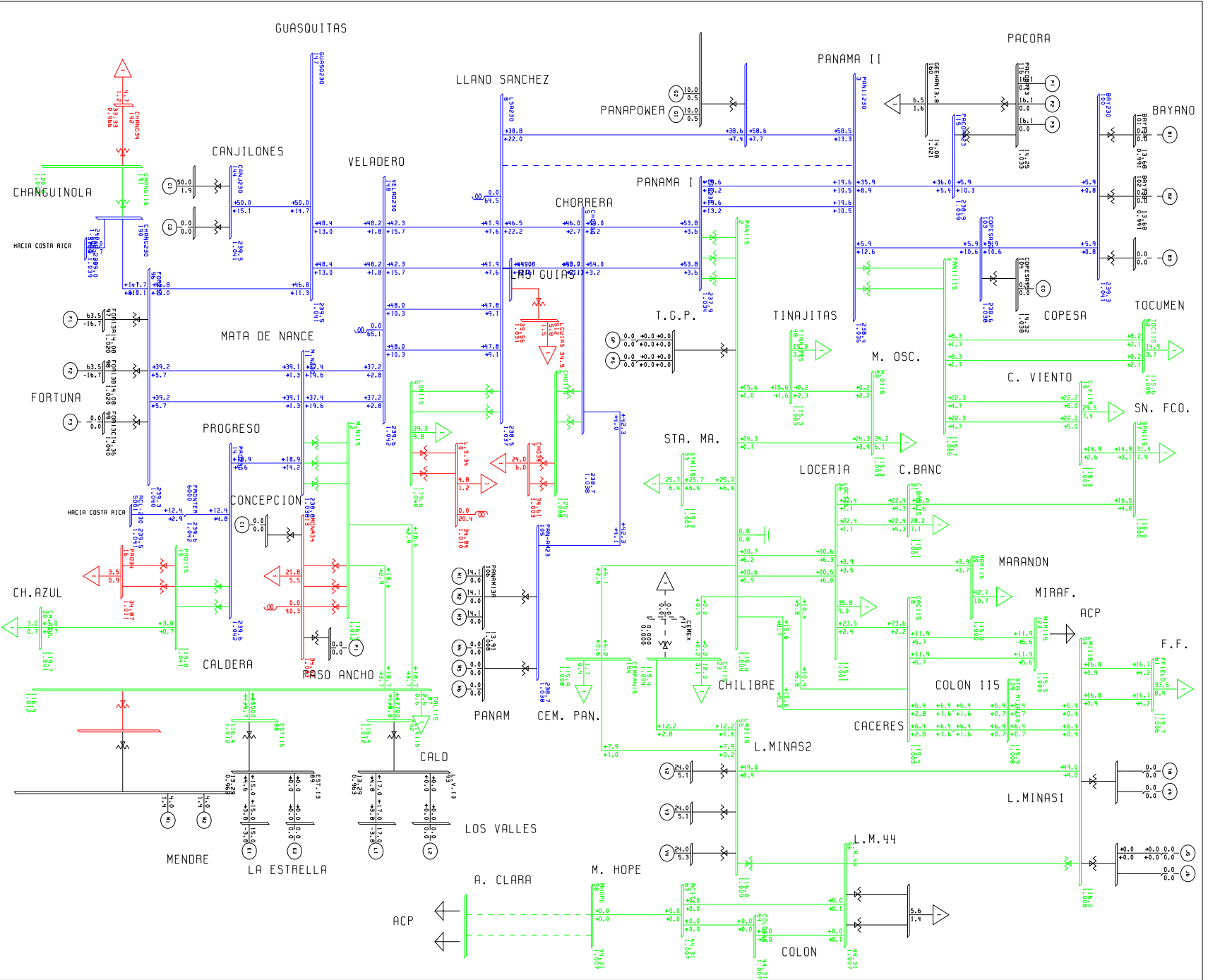
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0496	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0497	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	3.4	8.0	0.0	1.0000	10.3	0.9425	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9960	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9960	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9960	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9828	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9828	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9828	6.2			2	7	
SUBSYSTEM TOTALS						73.3	3.9	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MODERADO DE DEMANDA, DEM MAX DE VERANO

TUE, MAY 15 2007 10:21  
 AREA TOTALS  
 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.7	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.3	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.0	224.5	-98.9	0.0	143.3	-97.7	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.1	19.4	0.0
C.RICA	227.7	569.4	-236.9	0.0	472.2	10.6	356.8	
6	1035.0	957.0	0.0	0.0	0.0	59.8	18.2	25.0
PANAMA	50.5	239.8	-61.6	0.0	479.8	76.6	275.4	
7	73.3	33.0	0.0	0.0	0.0	38.8	1.5	50.0
ACANAL	3.9	8.3	0.0	0.0	0.0	-15.2	10.8	
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6256.9	6140.0	0.0	0.0	0.0	0.0	116.9	0.0
	500.1	1889.1	-910.0	0.0	2032.0	0.0	1553.1	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2009 ESCENARIO MODERADO DEMANDA MINIMA VERANO**





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MODERADO DE DEMANDA. DEM MIN DE VERANO

WED, MAY 09 2007 17:03

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	24.0	5.1	17.0	0.0	0.9710	25.3	0.9782	47.0			1	6		
67		BLM13C		13.800	V3	24.0	5.1	17.0	0.0	0.9710	25.3	0.9782	47.0			1	6		
68		BLM13D		13.800	V4	24.0	5.3	30.0	0.0	0.9710	25.3	0.9766	47.0			1	6		
90		EST-13L		13.800	E1	15.0	-3.8	12.0	-5.0	0.9500	16.3	0.9688	27.0			1	6		
94		LV-13.8L		13.800	L1	17.0	-3.8	12.0	-5.0	0.9500	18.3	0.9761	27.0			1	6		
97		FOR13A		13.800	F1	63.5	-16.7	50.0	-50.0	1.0200	64.3	0.9672	111.0			1	6	SYST	
98		FOR13B		13.800	F2	63.5	-16.7	50.0	-50.0	1.0200	64.3	0.9672	111.0			1	6		
106		PANAM13A		13.800	M1	14.1	0.0	9.0	0.0	1.0081	14.0	1.0000	20.7			1	6		
106		PANAM13A		13.800	M2	14.1	0.0	9.0	0.0	1.0081	14.0	1.0000	20.7			1	6		
106		PANAM13A		13.800	M3	14.1	0.0	9.0	0.0	1.0081	14.0	1.0000	20.7			1	6		
116		PACORA13		13.800	P1	16.1	0.0	8.8	0.0	1.0326	15.6	1.0000	21.7			1	6		
116		PACORA13		13.800	P2	16.1	0.0	8.8	0.0	1.0326	15.6	1.0000	21.7			1	6		
116		PACORA13		13.800	P3	16.1	0.0	8.8	0.0	1.0326	15.6	1.0000	21.7			1	6		
142		CANJ13A		13.800	C1	50.0	1.9	29.0	-29.0	0.9500	52.7	0.9993	69.0			1	6		
317		MENDRE13.8		13.800	M1	4.0	1.4	4.0	-4.0	1.0000	4.2	0.9458	35.3			1	6		
317		MENDRE13.8		13.800	M2	4.0	1.4	4.0	-4.0	1.0000	4.2	0.9458	35.3			1	6		
516		PANAPOW13A		13.800	G1	10.0	0.5	12.5	0.5	1.0429	9.6	0.9986	20.9			1	6		
516		PANAPOW13A		13.800	G2	10.0	0.5	12.5	0.5	1.0429	9.6	0.9986	20.9			1	6		
SUBSYSTEM TOTALS						399.5	-19.8	303.5	-145.9				725.5						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MODERADO DE DEMANDA. DEM MIN DE VERANO

WED, MAY 09 2007 17:03

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
135		MAD6B		6.9000	G2	10.0	1.0	6.0	-6.0	0.9900	10.2	0.9946	13.0			2	7		
136		MAD6C		6.9000	G3	10.0	1.0	6.0	-6.0	0.9900	10.2	0.9946	13.0			2	7		
140		GAT6A		6.9000	G1	2.0	-0.2	2.0	-2.0	0.9900	2.0	0.9968	4.1			2	7		
140		GAT6A		6.9000	G2	2.0	-0.2	2.0	-2.0	0.9900	2.0	0.9968	4.1			2	7		
140		GAT6A		6.9000	G3	2.0	-0.2	2.0	-2.0	0.9900	2.0	0.9968	4.1			2	7		
141		GAT6B		6.9000	G4	4.0	-0.9	3.0	-3.0	0.9900	4.1	0.9769	5.6			2	7		
141		GAT6B		6.9000	G5	4.0	-0.9	3.0	-3.0	0.9900	4.1	0.9769	6.2			2	7		
141		GAT6B		6.9000	G6	4.0	-0.9	3.0	-3.0	0.9900	4.1	0.9769	6.2			2	7		
SUBSYSTEM TOTALS						38.0	-1.0	27.0	-27.0				56.4						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MODERADO DE DEMANDA. DEM MIN DE VERANO

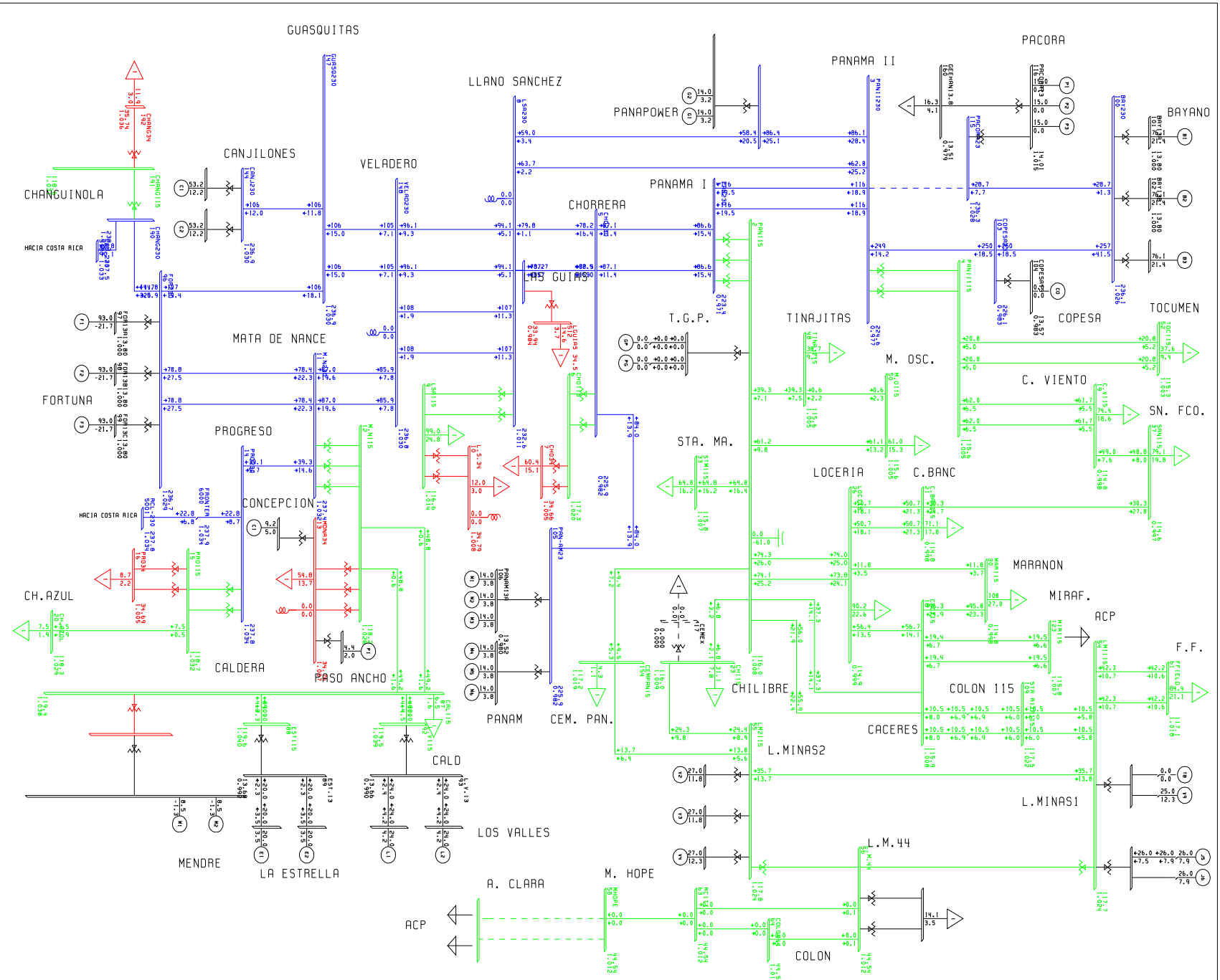
WED, MAY 09 2007 17:03  
 AREA TOTALS  
 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.7	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.3	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.0	224.5	-98.9	0.0	143.3	-97.6	147.3	
5	1344.6	1324.8	0.0	0.0	0.0	0.4	19.4	0.0
C.RICA	226.9	569.4	-236.1	0.0	472.2	8.4	357.4	
6	399.5	379.8	0.0	0.0	0.0	15.0	4.8	25.0
PANAMA	-19.8	95.2	190.3	0.0	446.2	58.7	82.2	
7	38.0	13.1	0.0	0.0	0.0	23.7	1.2	50.0
ACANAL	-1.0	3.3	0.0	0.0	0.0	-11.3	7.0	
9	0.0	39.1	0.0	0.0	0.0	-39.1	0.0	-75.0
COLON	0.0	9.8	0.0	0.0	1.1	-9.0	0.3	
TOTALS	5586.5	5483.6	0.0	0.0	0.0	0.0	102.9	0.0
	424.1	1724.6	-657.3	0.0	1998.4	0.0	1355.3	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA DE INVIERNO**

**Contingencia 1: Contingencia Pacora – Panamá**







PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MOD DEM MAX INV CONT1 PACORA-PANAMA II  
 AREA 6 [PANAMA ] MACHINE SUMMARY:

THU, MAY 17 2007 18:31

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	27.0	11.8	17.0	0.0	1.0000	29.5	0.9163	47.0			1	6		
67		BLM13C		13.800	V3	27.0	11.8	17.0	0.0	1.0000	29.5	0.9163	47.0			1	6		
68		BLM13D		13.800	V4	27.0	12.3	30.0	0.0	1.0000	29.7	0.9096	47.0			1	6		
70		TGJB13A		13.800	J5	26.0	7.9	20.0	0.0	1.0000	27.2	0.9565	39.4			1	6		
71		TGJB13B		13.800	J6	26.0	7.9	20.0	0.0	1.0000	27.2	0.9565	39.4			1	6		
73		BLMCCB		13.800	V9	25.0	12.3	40.0	0.0	1.0000	27.9	0.8976	71.0			1	6		
90		EST-13L		13.800	E1	20.0	3.5	12.0	-5.0	1.0000	20.3	0.9852	27.0			1	6		
91		EST-13T		13.800	E2	20.0	3.5	12.0	-5.0	1.0000	20.3	0.9852	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	4.2	12.0	-5.0	1.0000	24.4	0.9851	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	4.2	12.0	-5.0	1.0000	24.4	0.9851	27.0			1	6		
97		FOR13A		13.800	F1	93.0	-21.7	50.0	-50.0	1.0000	95.5	0.9738	111.0			1	6		
98		FOR13B		13.800	F2	93.0	-21.7	50.0	-50.0	1.0000	95.5	0.9738	111.0			1	6		
99		FOR13C		13.800	F3	93.0	-21.7	50.0	-50.0	1.0000	95.5	0.9738	111.0			1	6		
101		BAY13A		13.800	B1	76.1	21.4	50.0	-25.0	1.0000	79.1	0.9627	96.0			1	6	SYST	
102		BAY13B		13.800	B2	76.1	21.4	50.0	-25.0	1.0000	79.1	0.9627	96.0			1	6		
106		PANAM13A		13.800	M1	14.0	3.8	9.0	0.0	0.9800	14.8	0.9646	20.7			1	6		
106		PANAM13A		13.800	M2	14.0	3.8	9.0	0.0	0.9800	14.8	0.9646	20.7			1	6		
106		PANAM13A		13.800	M3	14.0	3.8	9.0	0.0	0.9800	14.8	0.9646	20.7			1	6		
107		PANAM13B		13.800	M4	14.0	3.8	9.0	0.0	0.9800	14.8	0.9646	20.7			1	6		
107		PANAM13B		13.800	M5	14.0	3.8	9.0	0.0	0.9800	14.8	0.9646	20.7			1	6		
107		PANAM13B		13.800	M6	14.0	3.8	9.0	0.0	0.9800	14.8	0.9646	20.7			1	6		
108		BAY13C		13.800	B3	76.1	21.4	50.0	-25.0	1.0000	79.1	0.9627	100.0			1	6		
116		PACORA13		13.800	P1	15.0	0.0	8.8	0.0	1.0151	14.8	1.0000	21.7			1	6		
116		PACORA13		13.800	P2	15.0	0.0	8.8	0.0	1.0151	14.8	1.0000	21.7			1	6		
116		PACORA13		13.800	P3	15.0	0.0	8.8	0.0	1.0151	14.8	1.0000	21.7			1	6		
142		CANJ13A		13.800	C1	53.2	12.2	29.0	-29.0	1.0000	54.6	0.9748	69.0			1	6		
143		CANJ13B		13.800	C2	53.2	12.2	29.0	-29.0	1.0000	54.6	0.9748	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9626	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9607	5.0	0.9110	6.2			1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.3	4.0	-4.0	1.0000	8.6	0.9885	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-1.3	4.0	-4.0	1.0000	8.6	0.9885	35.3			1	6		
516		PANAPOW13A		13.800	G1	14.0	3.2	12.5	0.5	1.0000	14.4	0.9755	20.9			1	6		
516		PANAPOW13A		13.800	G2	14.0	3.2	12.5	0.5	1.0000	14.4	0.9755	20.9			1	6		
SUBSYSTEM TOTALS						1047.4	136.5	670.5	-316.9				1483.2						

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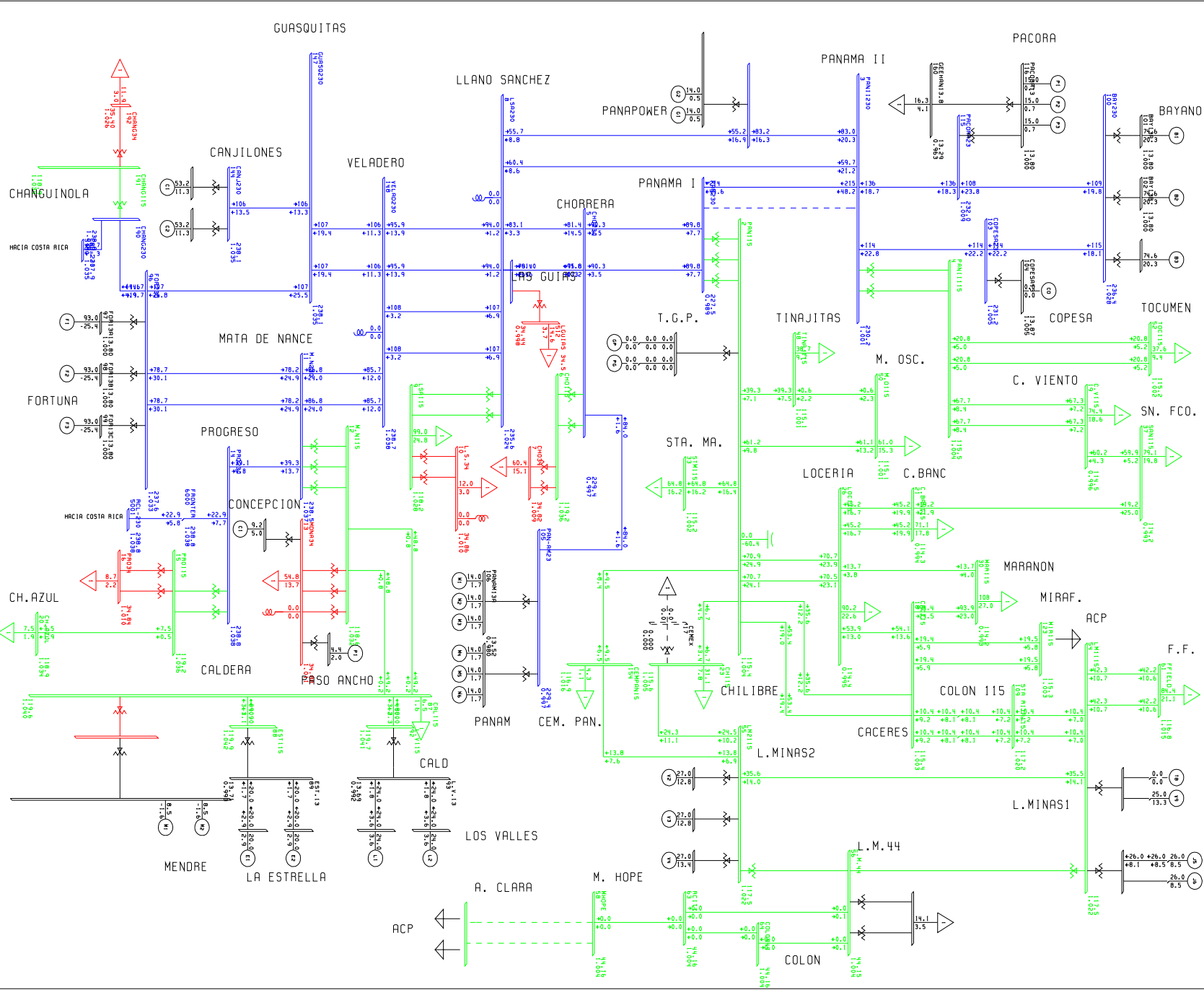
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      THU, MAY 17 2007 18:31  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MOD DEM MAX    INV CONT1 PACORA-PANAMA II

AREA 7 [ACANAL ] MACHINE SUMMARY:												X T R A N		GENTAP	ZONE	AREA	SWING
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE				
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0471	8.2	1.0000	13.5			2	7
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0471	8.2	1.0000	13.5			2	7
130		MIR13F		13.800	G5	9.7	4.6	8.0	0.0	1.0000	10.7	0.9047	27.7			2	7
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9946	13.0			2	7
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0			2	7
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9946	13.0			2	7
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1			2	7
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1			2	7
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1			2	7
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9846	5.6			2	7
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9846	6.2			2	7
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9846	6.2			2	7
SUBSYSTEM TOTALS						73.3	5.7	51.0	-33.0				124.2				

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.3	9.8 158.1	0.0
3	HONDURAS		1006.8 55.6	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.9	0.0 -5.3	21.4 261.6	0.0
4	NICA		538.2 32.3	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.3	0.0 -97.4	11.1 147.3	0.0
5	C.RICA		1344.3 238.8	1324.8 569.4	0.0 -237.2	0.0 0.0	0.0 471.0	0.1 20.8	19.4 356.8	0.0
6	PANAMA		1047.4 136.5	957.0 239.8	0.0 -61.0	0.0 0.0	0.0 460.3	59.7 64.4	30.7 353.5	25.0
7	ACANAL		73.3 5.7	33.0 8.3	0.0 0.0	0.0 0.0	0.0 0.0	38.8 -13.4	1.5 10.8	50.0
9	COLON		0.0 0.0	98.5 24.7	0.0 0.0	0.0 0.0	0.0 1.1	-98.7 -25.2	0.2 1.6	-75.0
TOTALS			6269.4 599.3	6140.0 1889.1	0.0 -909.7	0.0 0.0	0.0 2011.3	0.0 0.0	129.4 1631.2	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA DE INVIERNO**

**Contingencia 2: Contingencia Panamá – Panamá II**







AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66	BLM13B	13.800	V2	27.0	12.8	17.0	0.0	1.0000	29.9	0.9033	47.0			1	6		
67	BLM13C	13.800	V3	27.0	12.8	17.0	0.0	1.0000	29.9	0.9033	47.0			1	6		
68	BLM13D	13.800	V4	27.0	13.4	30.0	0.0	1.0000	30.1	0.8957	47.0			1	6		
70	TGJB13A	13.800	J5	26.0	8.5	20.0	0.0	1.0000	27.4	0.9501	39.4			1	6		
71	TGJB13B	13.800	J6	26.0	8.5	20.0	0.0	1.0000	27.4	0.9501	39.4			1	6		
73	BLMCCB	13.800	V9	25.0	13.3	40.0	0.0	1.0000	28.3	0.8823	71.0			1	6		
90	EST-13L	13.800	E1	20.0	2.9	12.0	-5.0	1.0000	20.2	0.9896	27.0			1	6		
91	EST-13T	13.800	E2	20.0	2.9	12.0	-5.0	1.0000	20.2	0.9896	27.0			1	6		
94	LV-13.8L	13.800	L1	24.0	3.6	12.0	-5.0	1.0000	24.3	0.9891	27.0			1	6		
95	LV-13.8T	13.800	L2	24.0	3.6	12.0	-5.0	1.0000	24.3	0.9891	27.0			1	6		
97	FOR13A	13.800	F1	93.0	-25.4	50.0	-50.0	1.0000	96.4	0.9648	111.0			1	6		
98	FOR13B	13.800	F2	93.0	-25.4	50.0	-50.0	1.0000	96.4	0.9648	111.0			1	6		
99	FOR13C	13.800	F3	93.0	-25.4	50.0	-50.0	1.0000	96.4	0.9648	111.0			1	6		
101	BAY13A	13.800	B1	74.6	20.3	50.0	-25.0	1.0000	77.3	0.9650	96.0			1	6	SYST	
102	BAY13B	13.800	B2	74.6	20.3	50.0	-25.0	1.0000	77.3	0.9650	96.0			1	6		
106	PANAM13A	13.800	M1	14.0	1.7	9.0	0.0	0.9800	14.4	0.9928	20.7			1	6		
106	PANAM13A	13.800	M2	14.0	1.7	9.0	0.0	0.9800	14.4	0.9928	20.7			1	6		
106	PANAM13A	13.800	M3	14.0	1.7	9.0	0.0	0.9800	14.4	0.9928	20.7			1	6		
107	PANAM13B	13.800	M4	14.0	1.7	9.0	0.0	0.9800	14.4	0.9928	20.7			1	6		
107	PANAM13B	13.800	M5	14.0	1.7	9.0	0.0	0.9800	14.4	0.9928	20.7			1	6		
107	PANAM13B	13.800	M6	14.0	1.7	9.0	0.0	0.9800	14.4	0.9928	20.7			1	6		
108	BAY13C	13.800	B3	74.6	20.3	50.0	-25.0	1.0000	77.3	0.9650	100.0			1	6		
116	PACORA13	13.800	P1	15.0	0.7	8.8	0.0	1.0000	15.0	0.9988	21.7			1	6		
116	PACORA13	13.800	P2	15.0	0.7	8.8	0.0	1.0000	15.0	0.9988	21.7			1	6		
116	PACORA13	13.800	P3	15.0	0.7	8.8	0.0	1.0000	15.0	0.9988	21.7			1	6		
142	CANJ13A	13.800	C1	53.2	11.3	29.0	-29.0	1.0000	54.4	0.9781	69.0			1	6		
143	CANJ13B	13.800	C2	53.2	11.3	29.0	-29.0	1.0000	54.4	0.9781	69.0			1	6		
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9660	10.8	0.8784	13.5			1	6		
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9641	5.0	0.9110	6.2			1	6		
317	MENDRE13.8	13.800	M1	8.5	-1.6	4.0	-4.0	1.0000	8.6	0.9838	35.3			1	6		
317	MENDRE13.8	13.800	M2	8.5	-1.6	4.0	-4.0	1.0000	8.6	0.9838	35.3			1	6		
516	PANAPOW13A	13.800	G1	14.0	0.5	12.5	0.5	1.0099	13.9	0.9993	20.9			1	6		
516	PANAPOW13A	13.800	G2	14.0	0.5	12.5	0.5	1.0099	13.9	0.9993	20.9			1	6		
SUBSYSTEM TOTALS				1042.9	107.2	670.5	-316.9				1483.2						

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MOD DEM MAX INV CONT2 PANAMA-PANAMAI

THU, MAY 17 2007 19:20

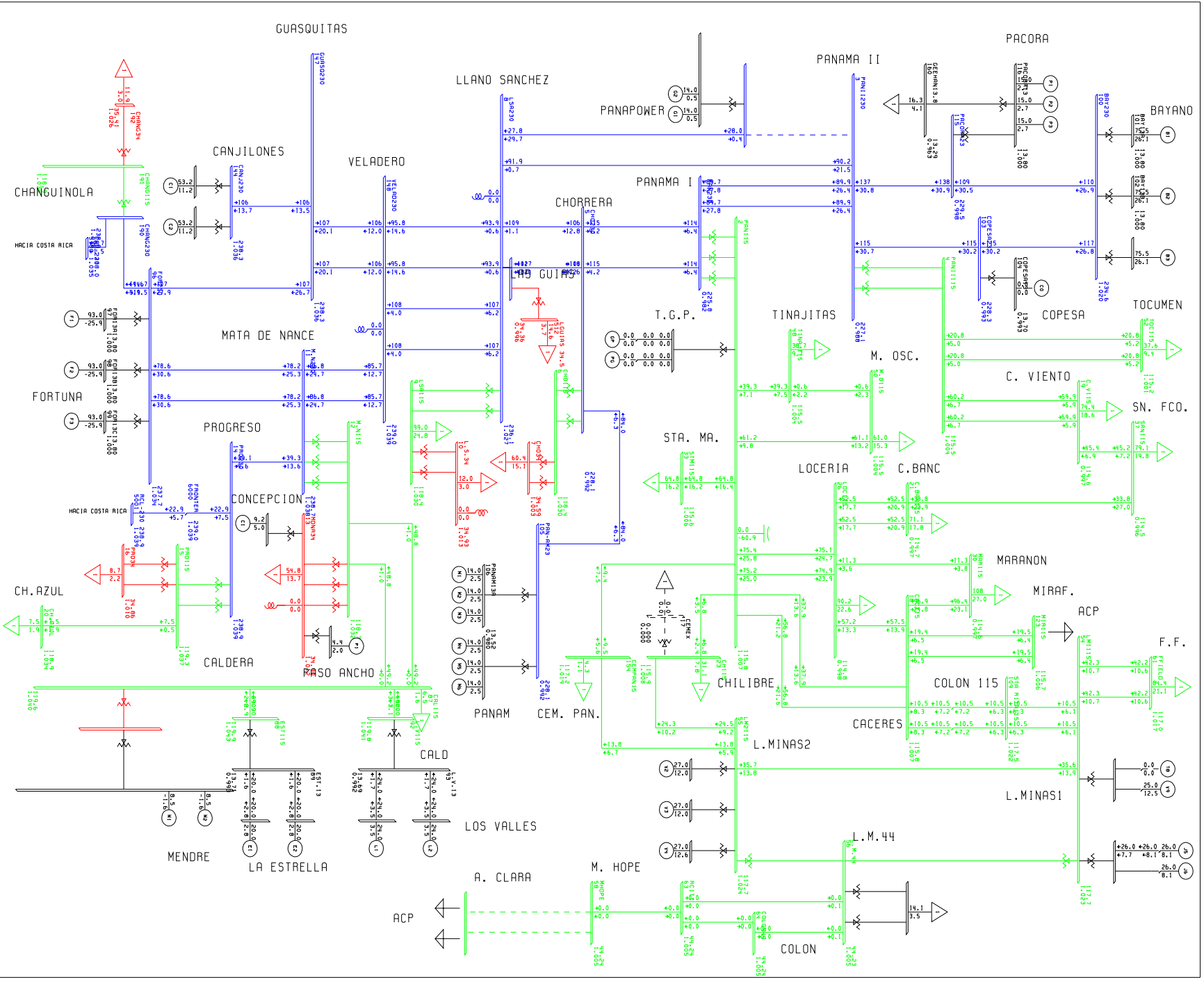
AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0447	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0447	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	5.6	8.0	0.0	1.0000	11.2	0.8665	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9932	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9932	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9932	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9991	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9991	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9991	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9861	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9861	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9861	6.2			2	7	
SUBSYSTEM TOTALS						73.3	7.3	51.0	-33.0				124.2					

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.3	9.8 158.1	0.0
3	HONDURAS		1006.8 55.6	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.9	0.0 -5.4	21.4 261.6	0.0
4	NICA		538.2 32.1	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.3	0.0 -97.6	11.1 147.3	0.0
5	C.RICA		1344.3 232.5	1324.8 569.4	0.0 -237.5	0.0 0.0	0.0 471.6	0.1 15.6	19.4 356.7	0.0
6	PANAMA		1042.9 107.2	957.0 239.8	0.0 -60.4	0.0 0.0	0.0 469.6	59.8 68.2	26.2 329.2	25.0
7	ACANAL		73.3 7.3	33.0 8.3	0.0 0.0	0.0 0.0	0.0 0.0	38.9 -11.8	1.5 10.8	50.0
9	COLON		0.0 0.0	98.5 24.7	0.0 0.0	0.0 0.0	0.0 1.1	-98.8 -25.2	0.2 1.6	-75.0
TOTALS			6264.9 565.1	6140.0 1889.1	0.0 -909.4	0.0 0.0	0.0 2021.3	0.0 0.0	124.9 1606.7	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA DE INVIERNO**

**Contingencia 3: Contingencia Panapower – Panamá II**



GUASQUITAS

LLANO SANCHEZ

PANAMA II

PACORA

BAYANO

CHANGUINOLA

CANJILONES

VELADERO

CHORRERA

PANAMA I

TINAJITAS

COPESA

TOCUMEN

HACIA COSTA RICA

MATA DE NANCE

PROGRESO

GUIA

T.G.P.

M. OSC.

C. VIENTO

SN. FCO.

FORTUNA

CONCEPCION

ASO ANCHO

STA. MA.

LOCERIA

C. BANC

MARANON

MIRAF.

CH. AZUL

CALDERA

PANAM

CEM. PAN.

CHILIBRE

COLON 115

ACP

F.F.

MENDRE

LA ESTRELLA

CALD

LOS VALLES

L. MINAS2

L. MINAS1

L.M.44

COLON

HACIA COSTA RICA

ACP

A. CLARA

M. HOPE

COLON



AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	27.0	12.0	17.0	0.0	1.0000	29.6	0.9132	47.0			1	6	
67	BLM13C	13.800	V3	27.0	12.0	17.0	0.0	1.0000	29.6	0.9132	47.0			1	6	
68	BLM13D	13.800	V4	27.0	12.6	30.0	0.0	1.0000	29.8	0.9063	47.0			1	6	
70	TGJB13A	13.800	J5	26.0	8.1	20.0	0.0	1.0000	27.2	0.9550	39.4			1	6	
71	TGJB13B	13.800	J6	26.0	8.1	20.0	0.0	1.0000	27.2	0.9550	39.4			1	6	
73	BLMCCB	13.800	V9	25.0	12.5	40.0	0.0	1.0000	28.0	0.8939	71.0			1	6	
90	EST-13L	13.800	E1	20.0	2.8	12.0	-5.0	1.0000	20.2	0.9903	27.0			1	6	
91	EST-13T	13.800	E2	20.0	2.8	12.0	-5.0	1.0000	20.2	0.9903	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	3.5	12.0	-5.0	1.0000	24.3	0.9897	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	3.5	12.0	-5.0	1.0000	24.3	0.9897	27.0			1	6	
97	FOR13A	13.800	F1	93.0	-25.9	50.0	-50.0	1.0000	96.5	0.9633	111.0			1	6	
98	FOR13B	13.800	F2	93.0	-25.9	50.0	-50.0	1.0000	96.5	0.9633	111.0			1	6	
99	FOR13C	13.800	F3	93.0	-25.9	50.0	-50.0	1.0000	96.5	0.9633	111.0			1	6	
101	BAY13A	13.800	B1	75.5	26.1	50.0	-25.0	1.0000	79.9	0.9453	96.0			1	6	SYST
102	BAY13B	13.800	B2	75.5	26.1	50.0	-25.0	1.0000	79.9	0.9453	96.0			1	6	
106	PANAM13A	13.800	M1	14.0	2.5	9.0	0.0	0.9800	14.5	0.9844	20.7			1	6	
106	PANAM13A	13.800	M2	14.0	2.5	9.0	0.0	0.9800	14.5	0.9844	20.7			1	6	
106	PANAM13A	13.800	M3	14.0	2.5	9.0	0.0	0.9800	14.5	0.9844	20.7			1	6	
107	PANAM13B	13.800	M4	14.0	2.5	9.0	0.0	0.9800	14.5	0.9844	20.7			1	6	
107	PANAM13B	13.800	M5	14.0	2.5	9.0	0.0	0.9800	14.5	0.9844	20.7			1	6	
107	PANAM13B	13.800	M6	14.0	2.5	9.0	0.0	0.9800	14.5	0.9844	20.7			1	6	
108	BAY13C	13.800	B3	75.5	26.1	50.0	-25.0	1.0000	79.9	0.9453	100.0			1	6	
116	PACORA13	13.800	P1	15.0	2.7	8.8	0.0	1.0000	15.2	0.9840	21.7			1	6	
116	PACORA13	13.800	P2	15.0	2.7	8.8	0.0	1.0000	15.2	0.9840	21.7			1	6	
116	PACORA13	13.800	P3	15.0	2.7	8.8	0.0	1.0000	15.2	0.9840	21.7			1	6	
142	CANJ13A	13.800	C1	53.2	11.2	29.0	-29.0	1.0000	54.4	0.9785	69.0			1	6	
143	CANJ13B	13.800	C2	53.2	11.2	29.0	-29.0	1.0000	54.4	0.9785	69.0			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9665	10.8	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9646	5.0	0.9110	6.2			1	6	
317	MENDRE13.8	13.800	M1	8.5	-1.6	4.0	-4.0	1.0000	8.6	0.9830	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	-1.6	4.0	-4.0	1.0000	8.6	0.9830	35.3			1	6	
516	PANAPOW13A	13.800	G1	14.0	0.5	12.5	0.5	1.0530	13.3	0.9993	20.9			1	6	
516	PANAPOW13A	13.800	G2	14.0	0.5	12.5	0.5	1.0530	13.3	0.9993	20.9			1	6	
SUBSYSTEM TOTALS				1045.6	128.8	670.5	-316.9				1483.2					

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MOD DEM MAX INV CONT1 PACORA-PANAMA II

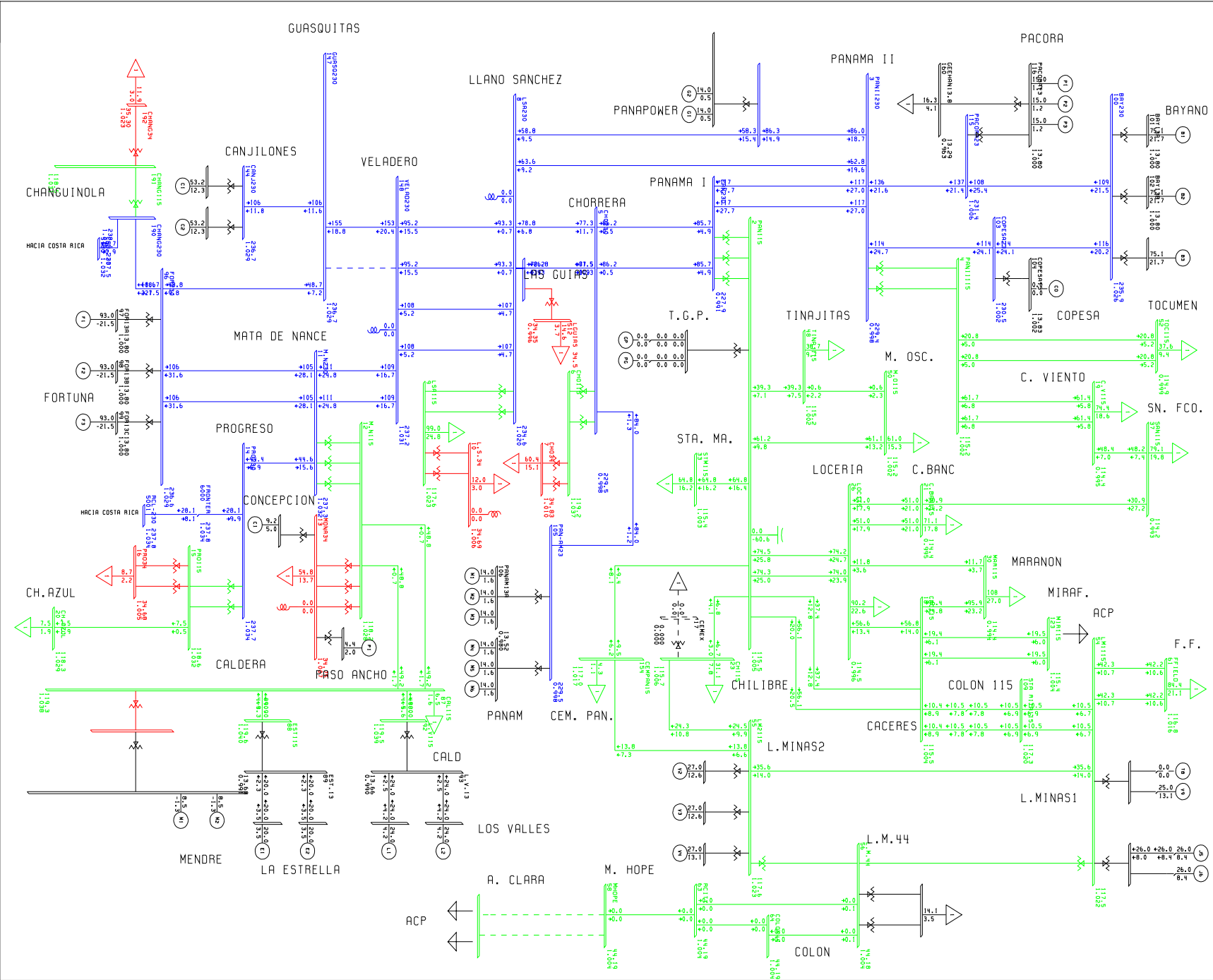
THU, MAY 17 2007 18:31  
 AREA TOTALS  
 IN MW/MVAR

X-- AREA	--X GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT			
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0			
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4				
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0			
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1				
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0			
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6				
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0			
NICA	32.3	224.5	-98.9	0.0	143.3	-97.4	147.3				
5	1344.3	1324.8	0.0	0.0	0.0	0.1	19.4	0.0			
C.RICA	238.8	569.4	-237.2	0.0	471.0	20.8	356.8				
6	1047.4	957.0	0.0	0.0	0.0	59.7	30.7	25.0			
PANAMA	136.5	239.8	-61.0	0.0	460.3	64.4	353.5				
7	73.3	33.0	0.0	0.0	0.0	38.8	1.5	50.0			
ACANAL	5.7	8.3	0.0	0.0	0.0	-13.4	10.8				
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0			
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6				
TOTALS	6269.4	6140.0	0.0	0.0	0.0	0.0	129.4	0.0			
					<b>599.3</b>	<b>1889.1</b>	<b>-909.7</b>	<b>0.0</b>	<b>2011.3</b>	<b>0.0</b>	<b>1631.2</b>

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA DE INVIERNO**

**Contingencia 4: Contingencia Guasquitas - Veladero**



## Contingencia 4: Contingencia Guasquitas - Veladero

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 17 2007 19:32  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2009 ESC MOD DEM MAX INV CONT 4 GUASQUITAS-VELADERO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0199	234.57	11		M.N230		230.00	6	1.0319	237.33
14		PRO230		230.00	6	1.0336	237.72	96		FOR230		230.00	6	1.0287	236.61
100		BAY230		230.00	6	1.0258	235.94	103		COFESA23		230.00	6	1.0020	230.47
115		PACORA23		230.00	6	1.0060	231.39	144		CANJ230		230.00	6	1.0293	236.73
147		GUASQ230		230.00	6	1.0292	236.73	148		VELAD230		230.00	6	1.0313	237.21
190		CHANG230		230.00	6	1.0352	238.10	511		LGUIAS230		230.00	6	1.0113	232.60
515		PANPOWER230		230.00	6	1.0058	231.33	6000		FRONTER		230.00	6	1.0339	237.80

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9910	227.92	3		PANII230		230.00	6	0.9975	229.43
5		CHO230		230.00	6	0.9978	229.49	105		PAN-AM23		230.00	6	0.9978	229.50

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 17 2007 19:33  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2009 ESC MOD DEM MAX INV CONT 4 GUASQUITAS-VELADERO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0048	115.55	4		PANIII115		115.00	6	1.0019	115.22
6		CHO115		115.00	6	1.0367	119.22	9		LSA115		115.00	6	1.0228	117.62
12		M.N115		115.00	6	1.0280	118.22	15		PRO115		115.00	6	1.0317	118.64
18		CAC115		115.00	6	1.0042	115.49	20		CH.AZUL		115.00	6	1.0289	118.32
23		CH115		115.00	6	1.0063	115.72	33		STM115		115.00	6	1.0031	115.36
48		TINAJ115		115.00	6	1.0018	115.21	50		M.O115		115.00	6	1.0017	115.20
54		LM115		115.00	6	1.0221	117.54	55		LM2115		115.00	6	1.0226	117.60
61		FFIELD		115.00	9	1.0161	116.85	87		CAL115		115.00	6	1.0377	119.34
88		EST115		115.00	6	1.0402	119.62	92		L.V115		115.00	6	1.0387	119.45
109		STA RITA115		115.00	6	1.0202	117.32	110		PTMD115A		115.00	6	1.0139	116.59
111		PTMD115B		115.00	6	1.0139	116.59	123		MIR115		115.00	7	1.0039	115.45
154		CEMPAN15		115.00	6	1.0172	116.97	191		CHANG115		115.00	6	1.0307	118.53

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
19		C.V115		115.00	6	0.9946	114.38	21		C.BAN115		115.00	6	0.9946	114.38
26		LOC115		115.00	6	0.9958	114.51	30		MAR115		115.00	6	0.9944	114.36
37		SAN115		115.00	6	0.9934	114.24	52		TOC115		115.00	6	0.9993	114.92

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 17 2007 19:32  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MOD DEM MAX INV CONT 4 GUASQUITAS-VELADERO

AREA 6 [PANAMA ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	27.0	12.6	17.0	0.0	1.0000	29.8	0.9066	47.0			1	6	
67		BLM13C		13.800	V3	27.0	12.6	17.0	0.0	1.0000	29.8	0.9066	47.0			1	6	
68		BLM13D		13.800	V4	27.0	13.1	30.0	0.0	1.0000	30.0	0.8992	47.0			1	6	
70		TGJB13A		13.800	J5	26.0	8.4	20.0	0.0	1.0000	27.3	0.9517	39.4			1	6	
71		TGJB13B		13.800	J6	26.0	8.4	20.0	0.0	1.0000	27.3	0.9517	39.4			1	6	
73		BLMCCB		13.800	V9	25.0	13.1	40.0	0.0	1.0000	28.2	0.8861	71.0			1	6	
90		EST-13L		13.800	E1	20.0	3.5	12.0	-5.0	1.0000	20.3	0.9849	27.0			1	6	
91		EST-13T		13.800	E2	20.0	3.5	12.0	-5.0	1.0000	20.3	0.9849	27.0			1	6	
94		LV-13.8L		13.800	L1	24.0	4.2	12.0	-5.0	1.0000	24.4	0.9848	27.0			1	6	
95		LV-13.8T		13.800	L2	24.0	4.2	12.0	-5.0	1.0000	24.4	0.9848	27.0			1	6	
97		FOR13A		13.800	F1	93.0	-21.5	50.0	-50.0	1.0000	95.5	0.9743	111.0			1	6	
98		FOR13B		13.800	F2	93.0	-21.5	50.0	-50.0	1.0000	95.5	0.9743	111.0			1	6	
99		FOR13C		13.800	F3	93.0	-21.5	50.0	-50.0	1.0000	95.5	0.9743	111.0			1	6	
101		BAY13A		13.800	B1	75.1	21.7	50.0	-25.0	1.0000	78.2	0.9607	96.0			1	6	SYST
102		BAY13B		13.800	B2	75.1	21.7	50.0	-25.0	1.0000	78.2	0.9607	96.0			1	6	
106		PANAM13A		13.800	M1	14.0	1.6	9.0	0.0	0.9800	14.4	0.9933	20.7			1	6	
106		PANAM13A		13.800	M2	14.0	1.6	9.0	0.0	0.9800	14.4	0.9933	20.7			1	6	
106		PANAM13A		13.800	M3	14.0	1.6	9.0	0.0	0.9800	14.4	0.9933	20.7			1	6	
107		PANAM13B		13.800	M4	14.0	1.6	9.0	0.0	0.9800	14.4	0.9933	20.7			1	6	
107		PANAM13B		13.800	M5	14.0	1.6	9.0	0.0	0.9800	14.4	0.9933	20.7			1	6	
107		PANAM13B		13.800	M6	14.0	1.6	9.0	0.0	0.9800	14.4	0.9933	20.7			1	6	
108		BAY13C		13.800	B3	75.1	21.7	50.0	-25.0	1.0000	78.2	0.9607	100.0			1	6	
116		PACORA13		13.800	P1	15.0	1.2	8.8	0.0	1.0000	15.1	0.9966	21.7			1	6	
116		PACORA13		13.800	P2	15.0	1.2	8.8	0.0	1.0000	15.1	0.9966	21.7			1	6	
116		PACORA13		13.800	P3	15.0	1.2	8.8	0.0	1.0000	15.1	0.9966	21.7			1	6	
142		CANJ13A		13.800	C1	53.2	12.3	29.0	-29.0	1.0000	54.6	0.9743	69.0			1	6	
143		CANJ13B		13.800	C2	53.2	12.3	29.0	-29.0	1.0000	54.6	0.9743	69.0			1	6	
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9624	10.9	0.8784	13.5			1	6	
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9605	5.0	0.9110	6.2			1	6	
317		MENDRE13.8		13.800	M1	8.5	-1.3	4.0	-4.0	1.0000	8.6	0.9888	35.3			1	6	
317		MENDRE13.8		13.800	M2	8.5	-1.3	4.0	-4.0	1.0000	8.6	0.9888	35.3			1	6	
516		PANAPOW13A		13.800	G1	14.0	0.5	12.5	0.5	1.0063	13.9	0.9993	20.9			1	6	
516		PANAPOW13A		13.800	G2	14.0	0.5	12.5	0.5	1.0063	13.9	0.9993	20.9			1	6	
SUBSYSTEM TOTALS						1044.4	127.9	670.5	-316.9				1483.2					

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      THU, MAY 17 2007 19:32  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MOD DEM MAX INV CONT 4 GUASQUITAS-VELADERO

AREA 7 [ACANAL            ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0453	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0453	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	5.3	8.0	0.0	1.0000	11.0	0.8762	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9935	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9936	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9936	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9857	6.2			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9857	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9857	6.2			2	7	
SUBSYSTEM TOTALS						73.3	6.9	51.0	-33.0				124.2					

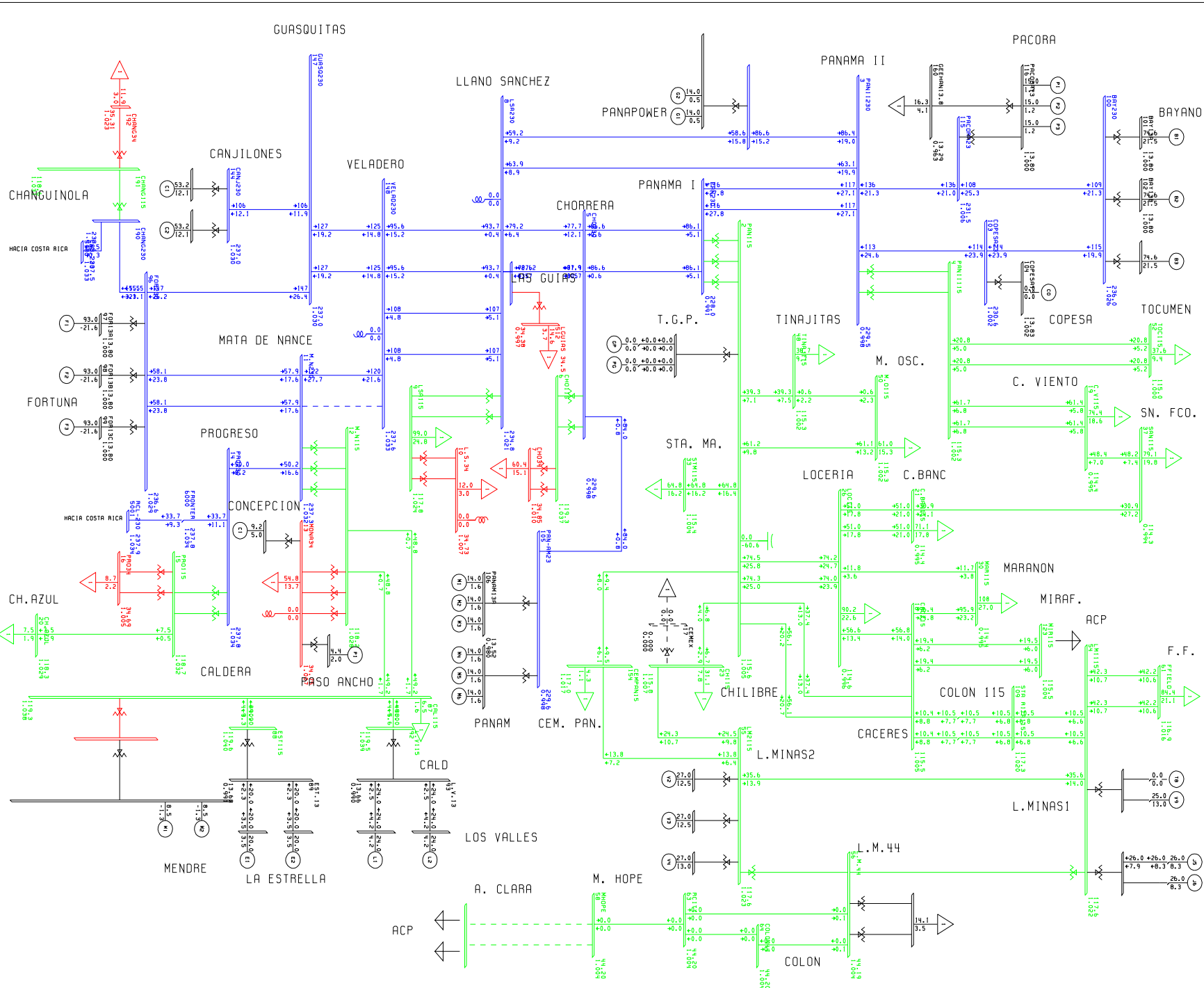
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      THU, MAY 17 2007 19:33  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007      AREA TOTALS  
 AÑO 2009 ESC MOD DEM MAX INV CONT 4 GUASQUITAS-VELADERO      IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.3	224.5	-98.9	0.0	143.3	-97.4	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.1	19.4	0.0
C.RICA	239.3	569.4	-237.2	0.0	470.9	20.9	357.1	
6	1044.4	957.0	0.0	0.0	0.0	59.8	27.6	25.0
PANAMA	127.9	239.8	-60.6	0.0	452.4	63.1	338.0	
7	73.3	33.0	0.0	0.0	0.0	38.8	1.5	50.0
ACANAL	6.9	8.3	0.0	0.0	0.0	-12.2	10.8	
9	0.0	98.5	0.0	0.0	0.0	-98.8	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6266.3	6140.0	0.0	0.0	0.0	0.0	126.4	0.0
	592.5	1889.1	-909.3	0.0	2003.3	0.0	1616.0	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA DE INVIERNO**

**Contingencia 5: Mata de Nance - Veladero**





PLAN DE EXPANSION DEL SIN CON C.R. JUNIO 2007  
 R 0 2009 ESC MOD DEI MAX INV CONTS MORANE-VELADERO  
 FRI, MAY 18 2007 8:25

BUS - VOLTAGE (KV)/PU  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

KVA: 514 . \*535 . \*5115

## Contingencia 5: Mata de Nance - Veladero

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2009 ESC MOD DEM MAX INV CONT5 MDNANCE-VELADERO

THU, MAY 17 2007 19:42

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0210	234.83	11		M.N230		230.00	6	1.0319	237.34
14		PRO230		230.00	6	1.0337	237.75	96		FOR230		230.00	6	1.0288	236.63
100		BAY230		230.00	6	1.0261	236.00	103		COFESA23		230.00	6	1.0025	230.57
115		PACORA23		230.00	6	1.0064	231.48	144		CANJ230		230.00	6	1.0304	237.00
147		GUASQ230		230.00	6	1.0304	237.00	148		VELAD230		230.00	6	1.0329	237.56
190		CHANG230		230.00	6	1.0354	238.14	511		LGUIAS230		230.00	6	1.0122	232.80
515		PANPOWER230		230.00	6	1.0064	231.47	6000		FRONTER		230.00	6	1.0341	237.84

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9914	228.03	3		PANII230		230.00	6	0.9980	229.54
5		CHO230		230.00	6	0.9984	229.62	105		PAN-AM23		230.00	6	0.9984	229.63

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2009 ESC MOD DEM MAX INV CONT5 MDNANCE-VELADERO

THU, MAY 17 2007 19:42

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0052	115.60	4		PANIII115		115.00	6	1.0024	115.28
6		CHO115		115.00	6	1.0373	119.29	9		LSA115		115.00	6	1.0240	117.76
12		M.N115		115.00	6	1.0280	118.22	15		PRO115		115.00	6	1.0318	118.66
18		CAC115		115.00	6	1.0047	115.54	20		CH.AZUL		115.00	6	1.0290	118.34
23		CH115		115.00	6	1.0066	115.76	33		STM115		115.00	6	1.0036	115.41
48		TINAJ115		115.00	6	1.0022	115.26	50		M.O115		115.00	6	1.0022	115.25
54		LM1115		115.00	6	1.0223	117.57	55		LM2115		115.00	6	1.0228	117.62
61		FFIELD		115.00	9	1.0163	116.87	87		CAL115		115.00	6	1.0378	119.34
88		EST115		115.00	6	1.0402	119.62	92		L.V115		115.00	6	1.0387	119.46
109		STA RITA115		115.00	6	1.0204	117.35	110		PTMD115A		115.00	6	1.0142	116.63
111		PTMD115B		115.00	6	1.0142	116.63	123		MIR115		115.00	7	1.0043	115.50
154		CEMPAN15		115.00	6	1.0174	117.01	191		CHANG115		115.00	6	1.0309	118.55

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
19		C.V115		115.00	6	0.9951	114.43	21		C.BAN115		115.00	6	0.9951	114.43
26		LOC115		115.00	6	0.9962	114.57	30		MAR115		115.00	6	0.9949	114.41
37		SAN115		115.00	6	0.9938	114.29	52		TOC115		115.00	6	0.9998	114.98

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	27.0	12.5	17.0	0.0	1.0000	29.7	0.9078	47.0			1	6	
67	BLM13C	13.800	V3	27.0	12.5	17.0	0.0	1.0000	29.7	0.9078	47.0			1	6	
68	BLM13D	13.800	V4	27.0	13.0	30.0	0.0	1.0000	30.0	0.9005	47.0			1	6	
70	TGJB13A	13.800	J5	26.0	8.3	20.0	0.0	1.0000	27.3	0.9523	39.4			1	6	
71	TGJB13B	13.800	J6	26.0	8.3	20.0	0.0	1.0000	27.3	0.9523	39.4			1	6	
73	BLMCCB	13.800	V9	25.0	13.0	40.0	0.0	1.0000	28.2	0.8876	71.0			1	6	
90	EST-13L	13.800	E1	20.0	3.5	12.0	-5.0	1.0000	20.3	0.9850	27.0			1	6	
91	EST-13T	13.800	E2	20.0	3.5	12.0	-5.0	1.0000	20.3	0.9850	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	4.2	12.0	-5.0	1.0000	24.4	0.9849	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	4.2	12.0	-5.0	1.0000	24.4	0.9849	27.0			1	6	
97	FOR13A	13.800	F1	93.0	-21.6	50.0	-50.0	1.0000	95.5	0.9742	111.0			1	6	
98	FOR13B	13.800	F2	93.0	-21.6	50.0	-50.0	1.0000	95.5	0.9742	111.0			1	6	
99	FOR13C	13.800	F3	93.0	-21.6	50.0	-50.0	1.0000	95.5	0.9742	111.0			1	6	
101	BAY13A	13.800	B1	74.6	21.5	50.0	-25.0	1.0000	77.7	0.9610	96.0			1	6	SYST
102	BAY13B	13.800	B2	74.6	21.5	50.0	-25.0	1.0000	77.7	0.9610	96.0			1	6	
106	PANAM13A	13.800	M1	14.0	1.6	9.0	0.0	0.9800	14.4	0.9939	20.7			1	6	
106	PANAM13A	13.800	M2	14.0	1.6	9.0	0.0	0.9800	14.4	0.9939	20.7			1	6	
106	PANAM13A	13.800	M3	14.0	1.6	9.0	0.0	0.9800	14.4	0.9939	20.7			1	6	
107	PANAM13B	13.800	M4	14.0	1.6	9.0	0.0	0.9800	14.4	0.9939	20.7			1	6	
107	PANAM13B	13.800	M5	14.0	1.6	9.0	0.0	0.9800	14.4	0.9939	20.7			1	6	
107	PANAM13B	13.800	M6	14.0	1.6	9.0	0.0	0.9800	14.4	0.9939	20.7			1	6	
108	BAY13C	13.800	B3	74.6	21.5	50.0	-25.0	1.0000	77.7	0.9610	100.0			1	6	
116	PACORA13	13.800	P1	15.0	1.2	8.8	0.0	1.0000	15.0	0.9970	21.7			1	6	
116	PACORA13	13.800	P2	15.0	1.2	8.8	0.0	1.0000	15.0	0.9970	21.7			1	6	
116	PACORA13	13.800	P3	15.0	1.2	8.8	0.0	1.0000	15.0	0.9970	21.7			1	6	
142	CANJ13A	13.800	C1	53.2	12.1	29.0	-29.0	1.0000	54.6	0.9751	69.0			1	6	
143	CANJ13B	13.800	C2	53.2	12.1	29.0	-29.0	1.0000	54.6	0.9751	69.0			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9624	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9606	5.0	0.9110	6.2			1	6	
317	MENDRE13.8	13.800	M1	8.5	-1.3	4.0	-4.0	1.0000	8.6	0.9887	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	-1.3	4.0	-4.0	1.0000	8.6	0.9887	35.3			1	6	
516	PANAPOW13A	13.800	G1	14.0	0.5	12.5	0.5	1.0069	13.9	0.9993	20.9			1	6	
516	PANAPOW13A	13.800	G2	14.0	0.5	12.5	0.5	1.0069	13.9	0.9993	20.9			1	6	
SUBSYSTEM TOTALS				1042.9	125.3	670.5	-316.9				1483.2					

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      THU, MAY 17 2007 19:42  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MOD DEM MAX INV CONT5 MDNANCE-VELADERO

AREA 7 [ACANAL            ] MACHINE SUMMARY:

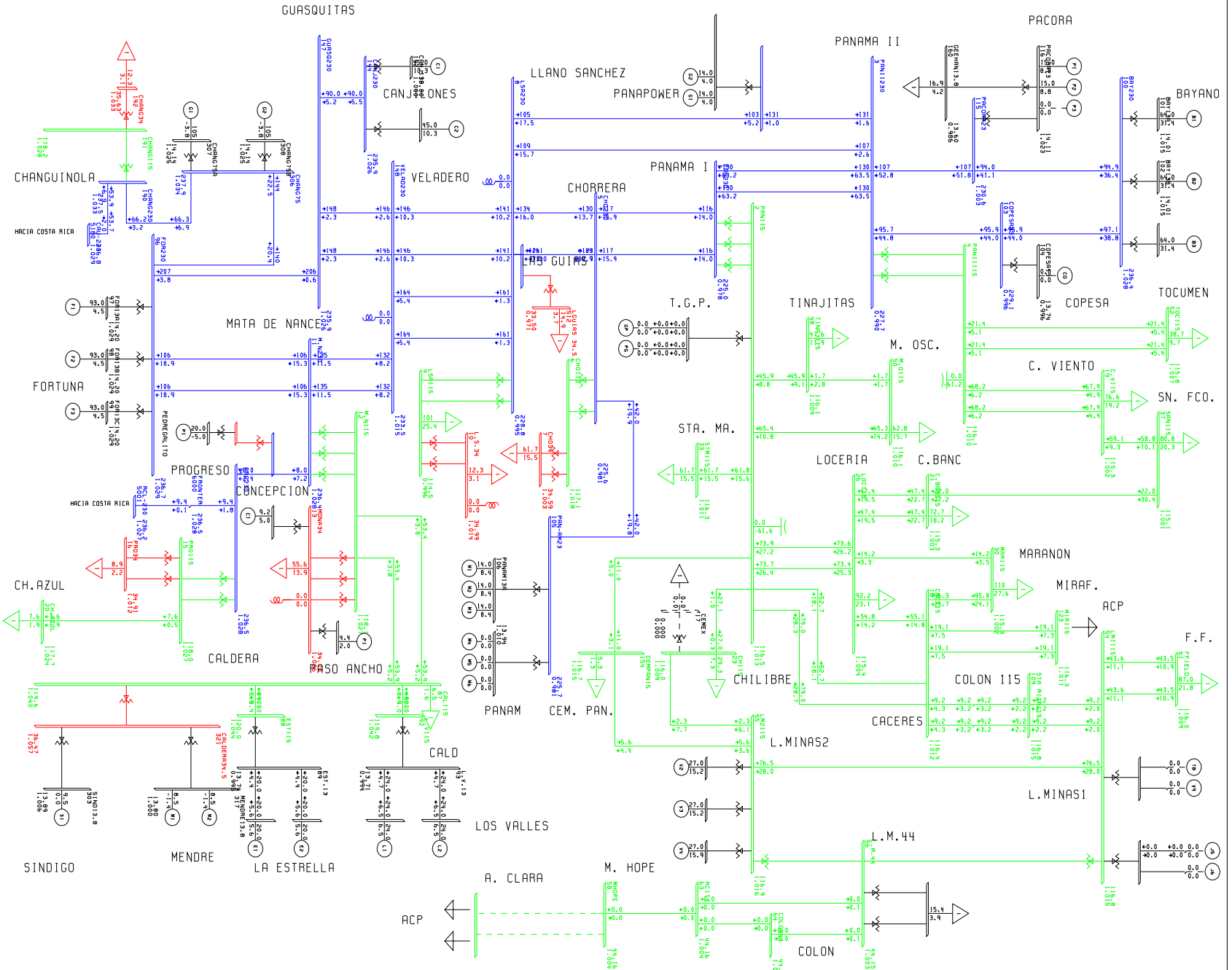
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0455	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0455	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	5.2	8.0	0.0	1.0000	11.0	0.8799	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9937	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9937	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9937	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9856	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9856	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9856	6.2			2	7	
SUBSYSTEM TOTALS						73.3	6.7	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      THU, MAY 17 2007 19:43  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007      AREA TOTALS  
 AÑO 2009 ESC MOD DEM MAX INV CONT5 MDNANCE-VELADERO      IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.3	9.8 158.1	0.0
3	HONDURAS		1006.8 55.6	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.9	0.0 -5.3	21.4 261.6	0.0
4	NICA		538.2 32.3	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.3	0.0 -97.4	11.1 147.3	0.0
5	C.RICA		1344.3 238.8	1324.8 569.4	0.0 -237.2	0.0 0.0	0.0 471.0	0.1 20.7	19.4 356.9	0.0
6	PANAMA		1042.9 125.3	957.0 239.8	0.0 -60.6	0.0 0.0	0.0 451.7	59.7 63.5	26.2 334.3	25.0
7	ACANAL		73.3 6.7	33.0 8.3	0.0 0.0	0.0 0.0	0.0 0.0	38.8 -12.4	1.5 10.8	50.0
9	COLON		0.0 0.0	98.5 24.7	0.0 0.0	0.0 0.0	0.0 1.1	-98.8 -25.2	0.2 1.6	-75.0
TOTALS			6264.9 589.2	6140.0 1889.1	0.0 -909.3	0.0 0.0	0.0 2002.7	0.0 0.0	124.9 1612.1	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL  
2007**

**AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**



GUASQUITAS

PACORA

PANAMA II

BAYANO

LLANO SANCHEZ

PANAPOWER

PANAMA I

CHORRERA

T.C.P.

TINAJITAS

C. VIENTO

SN. FCO.

STA. MA.

LOCERIA

MARANON

MIRAF.

F.F.

COLON 115

CACERES

L. MINAS1

L. MINAS2

L.M.44

COLON

LOS VALLES

A. CLARA

M. HOPE

PANAM

CALD

ACP

CHANGUINOLA

HACIA COSTA RICA

FORTUNA

PROGRESO

CONCEPCION

CH. AZUL

CALDERA

SINDIGO

MENDRE

LA ESTRELLA





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 07 2007 18:07  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66	BLM13B	13.800	V2	27.0	15.2	17.0	0.0	1.0000	31.0	0.8712	47.0			1	6		
67	BLM13C	13.800	V3	27.0	15.2	17.0	0.0	1.0000	31.0	0.8712	47.0			1	6		
68	BLM13D	13.800	V4	27.0	15.9	17.0	0.0	1.0000	31.3	0.8613	47.0			1	6		
90	EST-13L	13.800	E1	20.0	5.6	12.0	-5.0	1.0100	20.6	0.9629	27.0			1	6		
91	EST-13T	13.800	E2	20.0	5.6	12.0	-5.0	1.0100	20.6	0.9629	27.0			1	6		
94	LV-13.8L	13.800	L1	24.0	6.5	12.0	-5.0	1.0100	24.6	0.9655	27.0			1	6		
95	LV-13.8T	13.800	L2	24.0	6.5	12.0	-5.0	1.0100	24.6	0.9655	27.0			1	6		
97	FOR13A	13.800	F1	93.0	4.5	50.0	-50.0	1.0290	90.5	0.9988	111.0			1	6		
98	FOR13B	13.800	F2	93.0	4.5	50.0	-50.0	1.0290	90.5	0.9988	111.0			1	6		
99	FOR13C	13.800	F3	93.0	4.5	50.0	-50.0	1.0290	90.5	0.9988	111.0			1	6		
101	BAY13A	13.800	B1	64.0	31.4	50.0	-25.0	1.0150	70.2	0.8978	96.0			1	6	SYST	
102	BAY13B	13.800	B2	64.0	31.4	50.0	-25.0	1.0150	70.3	0.8980	96.0			1	6		
106	PANAM13A	13.800	M1	14.0	8.4	9.0	0.0	1.0100	16.2	0.8570	20.7			1	6		
106	PANAM13A	13.800	M2	14.0	8.4	9.0	0.0	1.0100	16.2	0.8570	20.7			1	6		
106	PANAM13A	13.800	M3	14.0	8.4	9.0	0.0	1.0100	16.2	0.8570	20.7			1	6		
108	BAY13C	13.800	B3	64.0	31.4	50.0	-25.0	1.0150	70.3	0.8980	100.0			1	6		
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0228	17.0	0.8618	21.7			1	6		
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0228	17.0	0.8618	21.7			1	6		
142	CANJ13A	13.800	C1	45.0	10.3	29.0	-29.0	1.0000	46.2	0.9750	69.0			1	6		
143	CANJ13B	13.800	C2	45.0	10.3	29.0	-29.0	1.0000	46.2	0.9750	69.0			1	6		
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9610	10.9	0.8784	13.5			1	6		
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9591	5.1	0.9110	6.2			1	6		
303	SIND13.8	13.800	S1	9.5	0.0	5.0	0.0	1.0065	9.4	1.0000	13.5			1	6		
307	CHANG75A	13.800	G1	105.0	-3.8	22.0	-22.0	1.0250	102.5	0.9993	118.6			1	6		
308	CHANG75B	13.800	G2	105.0	-3.8	50.0	-22.0	1.0250	102.5	0.9993	118.6			1	6		
317	MENDRE13.8	13.800	M1	8.5	-1.4	4.0	-4.0	1.0000	8.6	0.9862	35.3			1	6		
317	MENDRE13.8	13.800	M2	8.5	-1.4	4.0	-4.0	1.0000	8.6	0.9862	35.3			1	6		
340	PEDGALITO138	13.800	P1	20.0	-5.0	12.0	-5.0	1.0476	19.7	0.9701	27.0			1	6		
516	PANAPOW13A	13.800	G1	14.0	4.0	12.5	0.5	1.0100	14.4	0.9612	20.9			1	6		
516	PANAPOW13A	13.800	G2	14.0	4.0	12.5	0.5	1.0100	14.4	0.9612	20.9			1	6		
SUBSYSTEM TOTALS				1100.2	241.1	630.7	-365.9				1527.3						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 07 2007 18:07  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0492	8.2	1.0000	13.5			2	7	
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0492	8.2	1.0000	13.5			2	7	
130	MIR13F	13.800	G5	9.7	3.6	8.0	0.0	1.0000	10.3	0.9362	27.7			2	7	
134	MAD6A	6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9957	13.0			2	7	
135	MAD6B	6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9957	13.0			2	7	

136	MAD6C	6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9958	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9833	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9833	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9833	6.2	2	7
SUBSYSTEM TOTALS				73.3	4.2	51.0	-33.0				124.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 07 2007 18:07  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO IN MW/MVAR

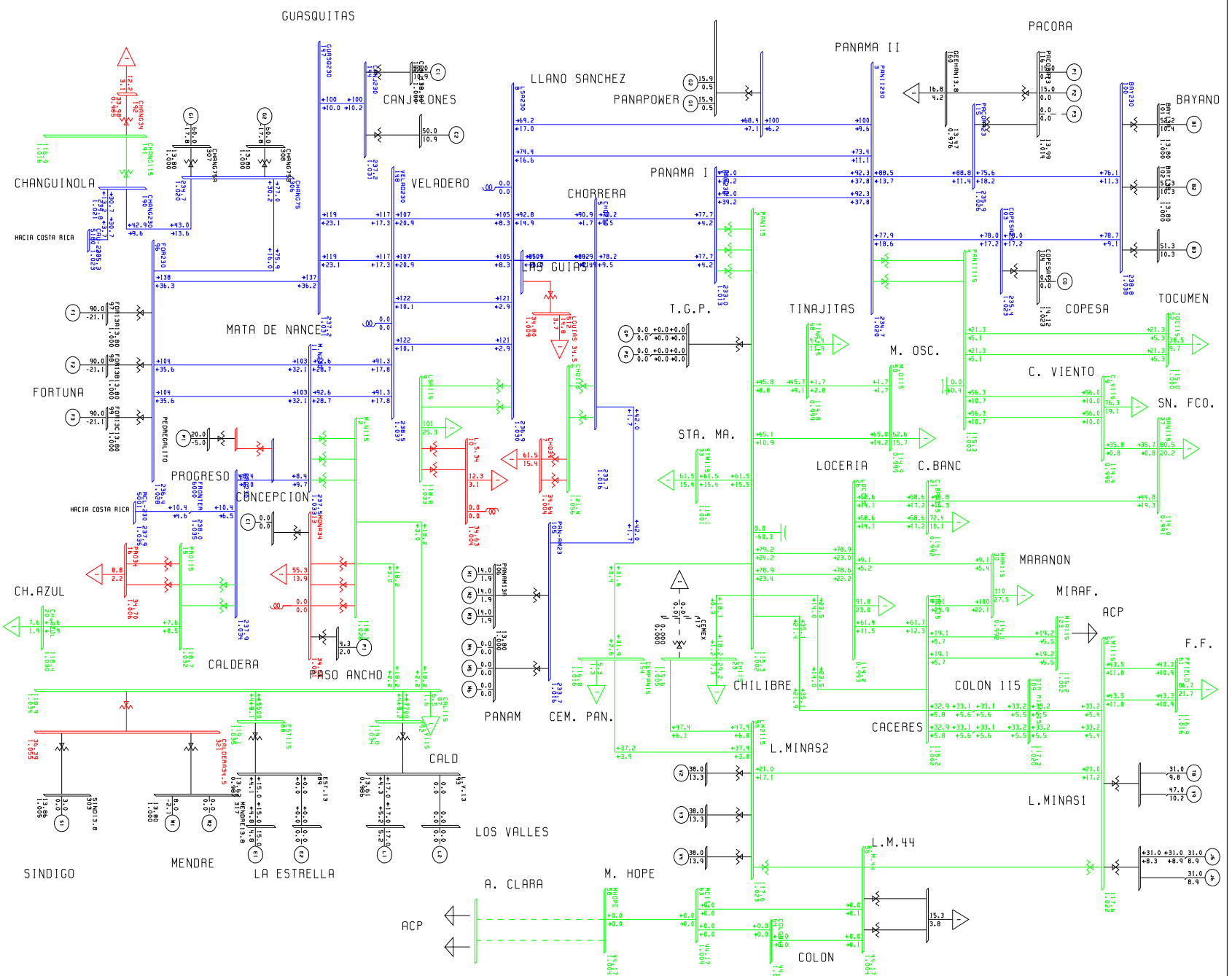
X-- AREA	--X GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.6	224.5	-98.9	0.0	143.2	-97.2	147.4	
5	1345.6	1324.8	0.0	0.0	0.0	0.0	20.8	0.0
C.RICA	252.2	569.4	-237.5	0.0	469.6	24.1	365.8	
6	1100.2	981.2	0.0	0.0	0.0	64.6	54.4	25.0
PANAMA	241.1	245.9	-122.8	0.0	467.4	63.4	522.0	
7	73.3	33.7	0.0	0.0	0.0	38.1	1.5	50.0
ACANAL	4.2	8.4	0.0	0.0	0.0	-15.0	10.7	
9	0.0	102.4	0.0	0.0	0.0	-102.7	0.3	-75.0
COLON	0.0	25.7	0.0	0.0	1.1	-26.4	1.8	
TOTALS	6323.4	6168.8	0.0	0.0	0.0	0.0	154.5	0.0
	716.4	1896.3	-971.8	0.0	2017.0	0.0	1808.8	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA VERANO**

**Caso 1 MHT7**

**Caso 2 MHTCB7**

**Caso 4 MHTGDC7**





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, APR 25 2007 15:40  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA VERANO

AREA 6 [PANAMA ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	38.0	13.3	17.0	0.0	1.0000	40.3	0.9436	47.0			1	6	
67		BLM13C		13.800	V3	38.0	13.3	17.0	0.0	1.0000	40.3	0.9436	47.0			1	6	
68		BLM13D		13.800	V4	38.0	13.9	17.0	0.0	1.0000	40.5	0.9394	47.0			1	6	
70		TGJB13A		13.800	J5	31.0	8.9	20.0	0.0	1.0000	32.2	0.9613	39.4			1	6	
71		TGJB13B		13.800	J6	31.0	8.9	20.0	0.0	1.0000	32.2	0.9613	39.4			1	6	
72		BLMCCA		13.800	T8	31.0	9.8	20.0	0.0	1.0000	32.5	0.9532	50.0			1	6	
73		BLMCCB		13.800	V9	47.0	10.2	40.0	0.0	1.0000	48.1	0.9774	71.0			1	6	
90		EST-13L		13.800	E1	15.0	4.8	12.0	-5.0	1.0000	15.8	0.9517	27.0			1	6	
94		LV-13.8L		13.800	L1	17.0	5.2	12.0	-5.0	1.0000	17.8	0.9560	27.0			1	6	
97		FOR13A		13.800	F1	90.0	-21.1	50.0	-50.0	1.0000	92.4	0.9735	111.0			1	6	
98		FOR13B		13.800	F2	90.0	-21.1	50.0	-50.0	1.0000	92.4	0.9735	111.0			1	6	
99		FOR13C		13.800	F3	90.0	-21.1	50.0	-50.0	1.0000	92.4	0.9735	111.0			1	6	
101		BAY13A		13.800	B1	52.2	10.4	50.0	-25.0	1.0000	53.2	0.9808	96.0			1	6	SYST
102		BAY13B		13.800	B2	51.3	10.3	50.0	-25.0	1.0000	52.3	0.9804	96.0			1	6	
106		PANAM13A		13.800	M1	14.0	1.9	9.0	0.0	1.0000	14.1	0.9905	20.7			1	6	
106		PANAM13A		13.800	M2	14.0	1.9	9.0	0.0	1.0000	14.1	0.9905	20.7			1	6	
106		PANAM13A		13.800	M3	14.0	1.9	9.0	0.0	1.0000	14.1	0.9905	20.7			1	6	
108		BAY13C		13.800	B3	51.3	10.3	50.0	-25.0	1.0000	52.3	0.9804	100.0			1	6	
116		PACORA13		13.800	P1	15.0	0.0	8.8	0.0	1.0136	14.8	1.0000	21.7			1	6	
116		PACORA13		13.800	P2	15.0	0.0	8.8	0.0	1.0136	14.8	1.0000	21.7			1	6	
142		CANJ13A		13.800	C1	50.0	10.9	29.0	-29.0	1.0000	51.2	0.9771	69.0			1	6	
143		CANJ13B		13.800	C2	50.0	10.9	29.0	-29.0	1.0000	51.2	0.9771	69.0			1	6	
302		PASOANCH13.8		13.800	P1	4.3	2.0	2.0	-2.0	0.9547	5.0	0.9067	6.2			1	6	
303		SIND13.8		13.800	S1	3.0	0.0	5.0	0.0	1.0046	3.0	1.0000	13.5			1	6	
307		CHANG75A		13.800	G1	60.0	-17.8	22.0	-22.0	1.0000	62.6	0.9586	118.6			1	6	
308		CHANG75B		13.800	G2	60.0	-17.8	50.0	-22.0	1.0000	62.6	0.9586	118.6			1	6	
317		MENDRE13.8		13.800	M1	8.0	-2.1	4.0	-4.0	1.0000	8.3	0.9661	35.3			1	6	
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0532	19.6	0.9701	27.0			1	6	
516		PANAPOW13A		13.800	G1	15.9	0.5	12.5	0.5	1.0263	15.5	0.9995	20.9			1	6	
516		PANAPOW13A		13.800	G2	15.9	0.5	12.5	0.5	1.0263	15.5	0.9995	20.9			1	6	
SUBSYSTEM TOTALS						1069.9	43.8	697.7	-346.9				1624.4					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, APR 25 2007 15:40  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA VERANO

AREA 7 [ACANAL ] MACHINE SUMMARY:													X	T	R	A	N	GENTAP	ZONE	AREA	SWING
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE								
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0440	8.2	1.0000	13.5				2	7			
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0440	8.2	1.0000	13.5				2	7			
130		MIR13F		13.800	G5	9.7	5.9	8.0	0.0	1.0000	11.3	0.8539	27.7				2	7			
134		MAD6A		6.9000	G1	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9927	13.0				2	7			
135		MAD6B		6.9000	G2	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9927	13.0				2	7			
136		MAD6C		6.9000	G3	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9927	13.0				2	7			
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9988	4.1				2	7			
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9988	4.1				2	7			
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9988	4.1				2	7			
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9867	5.6				2	7			
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9867	6.2				2	7			
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9867	6.2				2	7			
SUBSYSTEM TOTALS						73.3	7.8	51.0	-33.0				124.2								



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, APR 25 2007 15:47  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA VERANO IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.9 55.7	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.9	0.0 -5.3	21.4 261.6	0.0
4	NICA		538.2 32.5	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.3	0.0 -97.3	11.1 147.4	0.0
5	C.RICA		1345.6 251.4	1324.8 569.4	0.0 -235.9	0.0 0.0	0.0 470.2	0.7 26.5	20.1 361.7	0.0
6	PANAMA		1069.9 43.8	977.0 244.9	0.0 -120.6	0.0 0.0	0.0 485.1	63.3 57.4	29.6 347.3	25.0
7	ACANAL		73.3 7.8	33.5 8.4	0.0 0.0	0.0 0.0	0.0 0.0	38.3 -11.3	1.5 10.7	50.0
9	COLON		0.0 0.0	102.0 25.6	0.0 0.0	0.0 0.0	0.0 1.1	-102.2 -26.3	0.3 1.8	-75.0
TOTALS			6293.1 521.7	6164.1 1895.1	0.0 -968.0	0.0 0.0	0.0 2035.3	0.0 0.0	129.0 1629.9	0.0

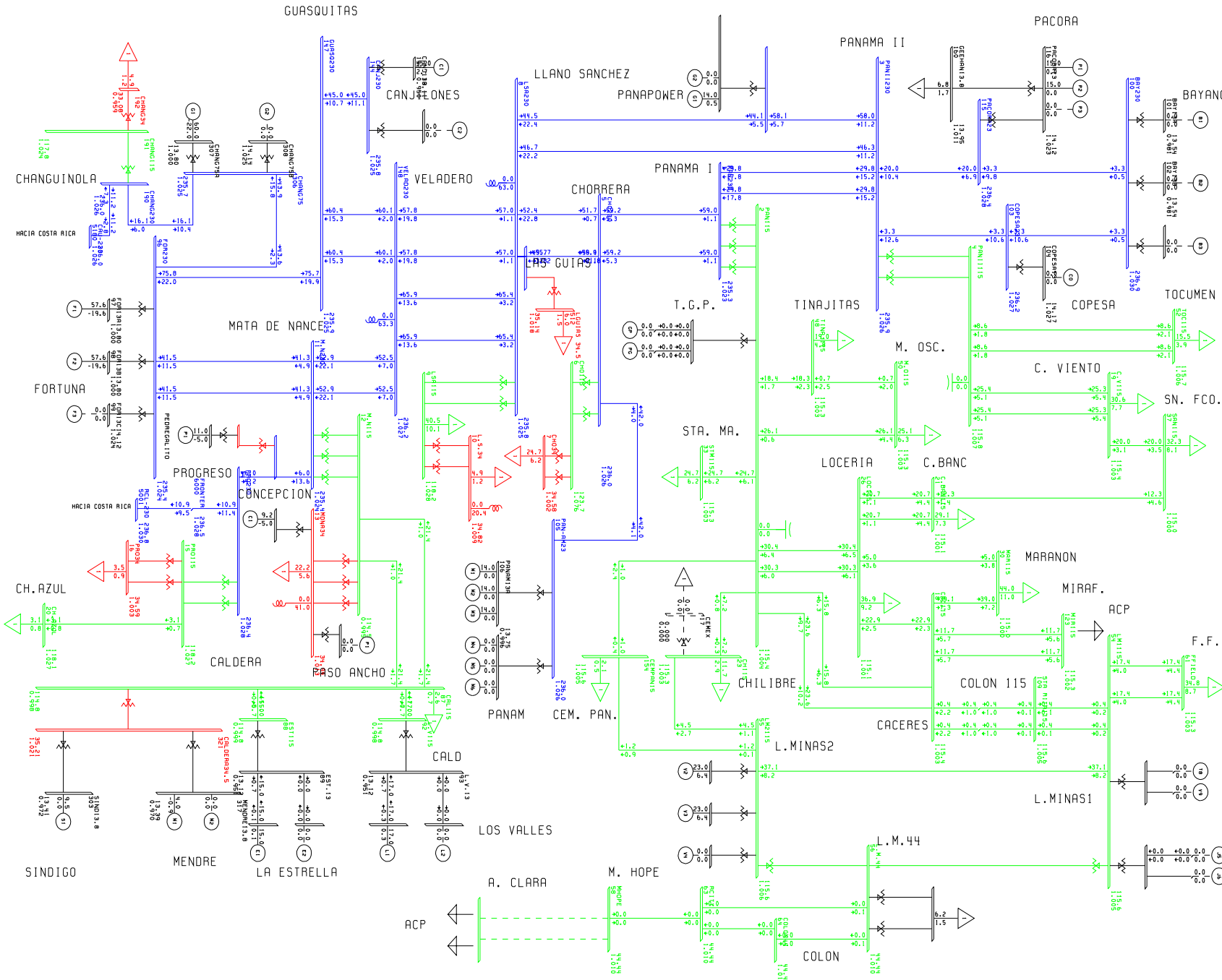
**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2010 ESCENARIO MODERADO DEMANDA MINIMA VERANO**

**Caso 1 MHT7**

**Caso 2 MHTCB7**

**Caso 4 MHTGDC7**



PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 R O 2010 ESCENARIO MODERNO MINIMA VERANO  
 FRI, MAY 11 2007 17:02

KV\*14 \*35 \*115

BUS - VOLTAGE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 10 2007 9:34  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MINIMA VERANO

AREA 6 [PANAMA] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	23.0	6.4	17.0	0.0	0.9710	24.6	0.9633	47.0			1	6		
67		BLM13C		13.800	V3	23.0	6.4	17.0	0.0	0.9710	24.6	0.9633	47.0			1	6		
90		EST-13L		13.800	E1	15.0	0.1	12.0	-5.0	0.9500	15.8	1.0000	27.0			1	6		
94		LV-13.8L		13.800	L1	17.0	0.3	12.0	-5.0	0.9500	17.9	0.9999	27.0			1	6		
97		FOR13A		13.800	F1	57.6	-19.6	50.0	-50.0	1.0000	60.8	0.9468	111.0			1	6	SYST	
98		FOR13B		13.800	F2	57.6	-19.6	50.0	-50.0	1.0000	60.8	0.9467	111.0			1	6		
106		PANAM13A		13.800	M1	14.0	0.0	9.0	0.0	0.9965	14.0	1.0000	20.7			1	6		
106		PANAM13A		13.800	M2	14.0	0.0	9.0	0.0	0.9965	14.0	1.0000	20.7			1	6		
106		PANAM13A		13.800	M3	14.0	0.0	9.0	0.0	0.9965	14.0	1.0000	20.7			1	6		
116		PACORA13		13.800	P1	15.0	0.0	8.8	0.0	1.0234	14.7	1.0000	21.7			1	6		
116		PACORA13		13.800	P2	15.0	0.0	8.8	0.0	1.0234	14.7	1.0000	21.7			1	6		
142		CANJ13A		13.800	C1	45.0	2.7	29.0	-29.0	0.9500	47.5	0.9982	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	-5.0	5.0	-5.0	0.9615	10.9	0.8784	13.5			1	6		
303		SIND13.8		13.800	S1	9.5	0.0	5.0	0.0	0.9717	9.8	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	60.0	-22.0	22.0	-22.0	1.0002	63.9	0.9389	118.6			1	6		
317		MENDRE13.8		13.800	M1	4.0	-0.9	4.0	-4.0	0.9700	4.2	0.9769	35.3			1	6		
340		PEDGALITO138		13.800	P1	11.0	-5.0	12.0	-5.0	1.0474	11.5	0.9104	27.0			1	6		
516		PANAPOW13A		13.800	G1	14.0	0.5	12.5	0.5	1.0311	13.6	0.9993	20.9			1	6		
SUBSYSTEM TOTALS						417.8	-55.7	292.2	-174.5				773.3						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 10 2007 9:34  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MINIMA VERANO

AREA 7 [ACANAL] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
135		MAD6B		6.9000	G2	10.0	1.1	6.0	-6.0	0.9900	10.2	0.9945	13.0			2	7		
136		MAD6C		6.9000	G3	10.0	1.1	6.0	-6.0	0.9900	10.2	0.9945	13.0			2	7		
140		GAT6A		6.9000	G1	2.0	-0.2	2.0	-2.0	0.9900	2.0	0.9970	4.1			2	7		
140		GAT6A		6.9000	G2	2.0	-0.2	2.0	-2.0	0.9900	2.0	0.9970	4.1			2	7		
140		GAT6A		6.9000	G3	2.0	-0.2	2.0	-2.0	0.9900	2.0	0.9970	4.1			2	7		
141		GAT6B		6.9000	G4	4.0	-0.9	3.0	-3.0	0.9900	4.1	0.9771	5.6			2	7		
141		GAT6B		6.9000	G5	4.0	-0.9	3.0	-3.0	0.9900	4.1	0.9771	6.2			2	7		
141		GAT6B		6.9000	G6	4.0	-0.9	3.0	-3.0	0.9900	4.1	0.9771	6.2			2	7		
SUBSYSTEM TOTALS						38.0	-1.0	27.0	-27.0				56.4						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 10 2007 9:34  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MINIMA VERANO IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	0.0
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	0.0
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	0.0
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.5	224.5	-98.9	0.0	143.2	-97.2	147.4	0.0
5	1344.6	1324.8	0.0	0.0	0.0	0.3	19.5	0.0
C.RICA	251.0	569.4	-236.6	0.0	469.9	30.0	358.1	0.0
6	417.8	392.5	0.0	0.0	0.0	17.4	8.0	25.0
PANAMA	-55.7	98.4	187.7	0.0	482.3	37.1	103.4	0.0
7	38.0	13.5	0.0	0.0	0.0	23.3	1.2	50.0
ACANAL	-1.0	3.4	0.0	0.0	0.0	-11.3	7.0	0.0
9	0.0	41.0	0.0	0.0	0.0	-41.0	0.0	-75.0
COLON	0.0	10.3	0.0	0.0	1.1	-9.5	0.3	0.0
TOTALS	5604.7	5498.5	0.0	0.0	0.0	0.0	106.2	0.0
	413.1	1728.3	-660.4	0.0	2032.2	0.0	1377.3	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

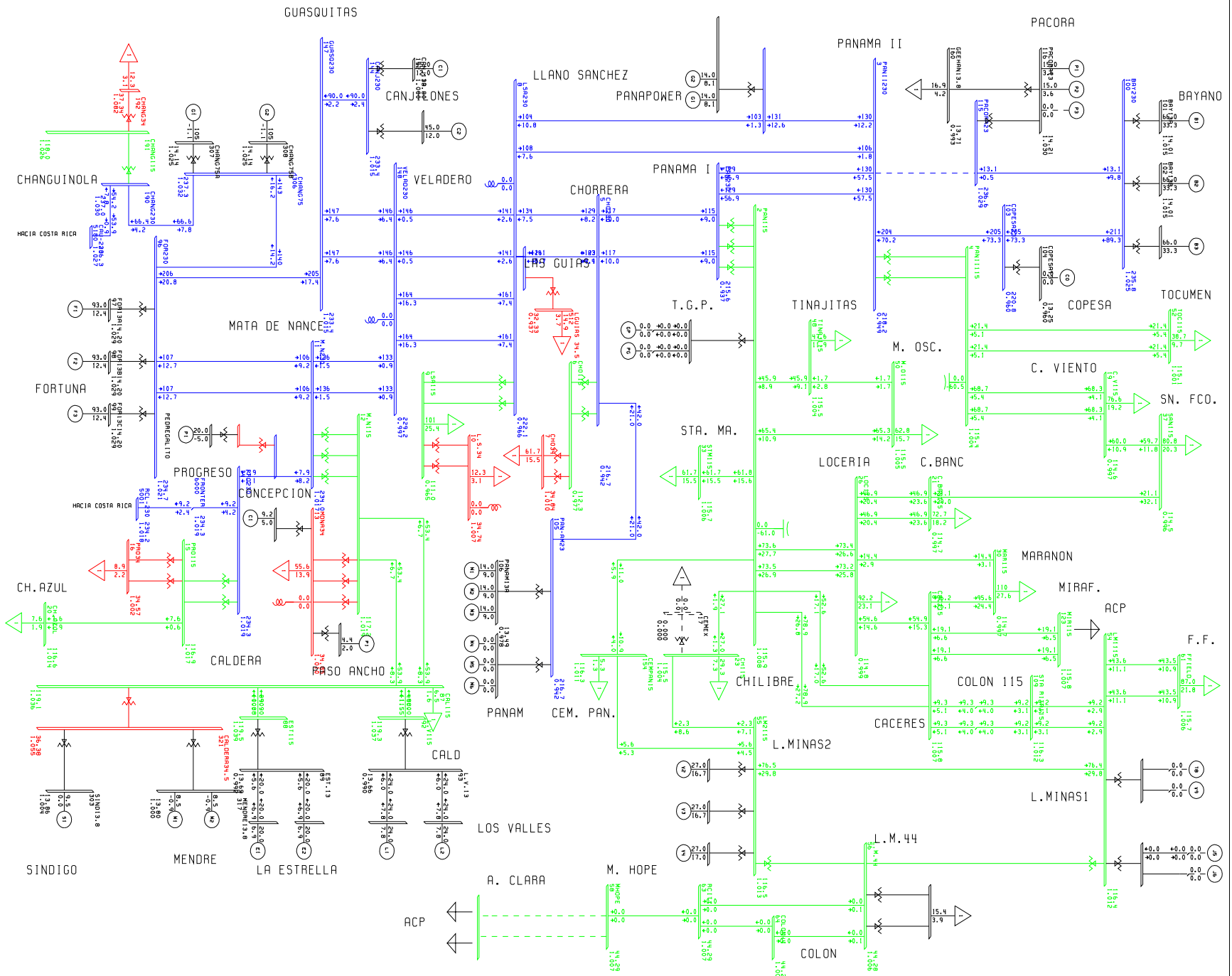
**AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Contingencia 1: Pacora – Panamá II**

**Caso 1 MHT7**

**Caso 2 MHTCB7**

**Caso 4 MHTGDC7**



PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 R 0 2010 ESC MODE DEMR MEX INV CONT1 PACORA-PANAMA II  
 MAY 18 2007  
 KV: ±114 , ±35 , ±115  
 BUS - VOLTAGE (KV/PU)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR



## Contingencia 1: Pacora – Panamá II

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 9:44  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESC MODE DEMA MAX INV CONT1 PACORA-PANAMA II

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0233	235.35	14	PRO	230		230.00	6	1.0237	235.45
96	FOR	230		230.00	6	1.0246	235.66	100	BAY	230		230.00	6	1.0328	237.55
115	PACORA	23		230.00	6	1.0386	238.87	144	CANJ	230		230.00	6	1.0191	234.39
147	GUASQ	230		230.00	6	1.0190	234.36	148	VELAD	230		230.00	6	1.0025	230.57
190	CHANG	230		230.00	6	1.0315	237.23	306	CHANG	75		230.00	6	1.0329	237.57
310	CONCEPCION	23230		230.00	6	1.0237	235.45	6000	FRONTER			230.00	6	1.0236	235.43

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN	230		230.00	6	0.9440	217.11	3	PANI	I230		230.00	6	0.9553	219.71
5	CHO	230		230.00	6	0.9487	218.21	8	LSA	230		230.00	6	0.9723	223.62
103	COFESA	23		230.00	6	0.9666	222.33	105	PAN-AM	23		230.00	6	0.9488	218.23
511	LGUIAS	230		230.00	6	0.9600	220.79	515	PANPOWER	230		230.00	6	0.9634	221.59

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 9:45  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESC MODE DEMA MAX INV CONT1 PACORA-PANAMA II

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN	I115		115.00	6	1.0150	116.72	4	PAN	II115		115.00	6	1.0110	116.27
12	M.	N115		115.00	6	1.0314	118.61	15	PRO	115		115.00	6	1.0218	117.50
18	CAC	115		115.00	6	1.0142	116.63	19	C.V	115		115.00	6	1.0038	115.43
20	CH.	AZUL		115.00	6	1.0188	117.17	21	C.	BAN115		115.00	6	1.0045	115.52
23	CH	115		115.00	6	1.0113	116.30	26	LOC	115		115.00	6	1.0057	115.66
30	MAR	115		115.00	6	1.0043	115.50	33	STM	115		115.00	6	1.0134	116.54
37	SAN	115		115.00	6	1.0031	115.36	48	TINAJ	115		115.00	6	1.0115	116.32
50	M.	O115		115.00	6	1.0117	116.35	52	TOC	115		115.00	6	1.0084	115.96
54	LM	115		115.00	6	1.0185	117.13	55	LM	2115		115.00	6	1.0195	117.25
61	FFIELD			115.00	9	1.0122	116.41	87	CAL	115		115.00	6	1.0539	121.20
88	EST	115		115.00	6	1.0595	121.84	92	L.V	115		115.00	6	1.0559	121.42
109	STA	RITA115		115.00	6	1.0183	117.10	110	PTMD	115A		115.00	6	1.0166	116.91
111	PTMD	115B		115.00	6	1.0166	116.91	123	MIR	115		115.00	7	1.0133	116.53
154	CEMPAN	15		115.00	6	1.0178	117.04	191	CHANG	115		115.00	6	1.0268	118.09

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6	CHO	115		115.00	6	0.9838	113.14	9	LSA	115		115.00	6	0.9718	111.75

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 9:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESC MODE DEMA MAX INV CONT1 PACORA-PANAMA II

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X	T	R	A	N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	27.0	16.2	17.0	0.0	1.0050	31.3	0.8575	47.0							1	6		
67		BLM13C		13.800	V3	27.0	16.2	17.0	0.0	1.0050	31.3	0.8575	47.0							1	6		
68		BLM13D		13.800	V4	27.0	16.5	17.0	0.0	1.0040	31.5	0.8537	47.0							1	6		
90		EST-13L		13.800	E1	20.0	12.0	12.0	-5.0	1.0447	22.3	0.8575	27.0							1	6		
91		EST-13T		13.800	E2	20.0	12.0	12.0	-5.0	1.0447	22.3	0.8575	27.0							1	6		
94		LV-13.8L		13.800	L1	24.0	12.0	12.0	-5.0	1.0405	25.8	0.8944	27.0							1	6		
95		LV-13.8T		13.800	L2	24.0	12.0	12.0	-5.0	1.0405	25.8	0.8944	27.0							1	6		
97		FOR13A		13.800	F1	93.0	8.6	50.0	-50.0	1.0290	90.8	0.9957	111.0							1	6		
98		FOR13B		13.800	F2	93.0	8.6	50.0	-50.0	1.0290	90.8	0.9957	111.0							1	6		
99		FOR13C		13.800	F3	93.0	8.6	50.0	-50.0	1.0290	90.8	0.9957	111.0							1	6		
101		BAY13A		13.800	B1	65.7	31.7	50.0	-25.0	1.0200	71.5	0.9003	96.0							1	6	SYST	
102		BAY13B		13.800	B2	65.8	31.8	50.0	-25.0	1.0200	71.6	0.9006	96.0							1	6		
106		PANAM13A		13.800	M1	14.0	8.5	9.0	0.0	0.9800	16.7	0.8560	20.7							1	6		
106		PANAM13A		13.800	M2	14.0	8.5	9.0	0.0	0.9800	16.7	0.8560	20.7							1	6		
106		PANAM13A		13.800	M3	14.0	8.5	9.0	0.0	0.9800	16.7	0.8560	20.7							1	6		
108		BAY13C		13.800	B3	65.8	31.8	50.0	-25.0	1.0200	71.6	0.9006	100.0							1	6		
116		PACORA13		13.800	P1	15.0	6.5	8.8	0.0	1.0500	15.6	0.9185	21.7							1	6		
116		PACORA13		13.800	P2	15.0	6.5	8.8	0.0	1.0500	15.6	0.9185	21.7							1	6		
142		CANJ13A		13.800	C1	45.0	11.3	29.0	-29.0	1.0000	46.4	0.9698	69.0							1	6		
143		CANJ13B		13.800	C2	45.0	11.3	29.0	-29.0	1.0000	46.4	0.9698	69.0							1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9654	10.8	0.8784	13.5							1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9635	5.0	0.9110	6.2							1	6		
303		SIND13.8		13.800	S1	9.5	0.0	5.0	0.0	1.0130	9.4	1.0000	13.5							1	6		
307		CHANG75A		13.800	G1	105.0	-2.4	22.0	-22.0	1.0250	102.5	0.9997	118.6							1	6		
308		CHANG75B		13.800	G2	105.0	-2.4	50.0	-22.0	1.0250	102.5	0.9997	118.6							1	6		
317		MENDRE13.8		13.800	M1	8.5	-3.0	4.0	-4.0	1.0000	9.0	0.9440	35.3							1	6		
317		MENDRE13.8		13.800	M2	8.5	-3.0	4.0	-4.0	1.0000	9.0	0.9440	35.3							1	6		
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0425	19.8	0.9701	27.0							1	6		
516		PANAPOW13A		13.800	G1	14.0	6.6	12.5	0.5	0.9900	15.7	0.9034	20.9							1	6		
516		PANAPOW13A		13.800	G2	14.0	6.6	12.5	0.5	0.9900	15.7	0.9034	20.9							1	6		
SUBSYSTEM TOTALS						1105.4	283.6	630.7	-365.9				1527.3										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 9:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESC MODE DEMA MAX INV CONT1 PACORA-PANAMA II

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X	T	R	A	N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0502	8.2	1.0000	13.5							2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0502	8.2	1.0000	13.5							2	7	
130		MIR13F		13.800	G5	9.7	3.2	8.0	0.0	1.0000	10.2	0.9495	27.7							2	7	
134		MAD6A		6.9000	G1	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9962	13.0							2	7	
135		MAD6B		6.9000	G2	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9962	13.0							2	7	

136	MAD6C	6.9000	G3	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9963	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9826	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9826	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9826	6.2	2	7
SUBSYSTEM TOTALS				73.3	3.5	51.0	-33.0				124.2		



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 9:46  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2010 ESC MODE DEMAX INV CONT1 PACORA-PANAMA II IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.9 55.7	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.2	21.4 261.6	0.0
4	NICA		538.2 32.8	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.2	0.0 -97.0	11.1 147.4	0.0
5	C.RICA		1345.6 258.7	1324.8 569.4	0.0 -237.2	0.0 0.0	0.0 468.8	0.0 29.3	20.8 366.1	0.0
6	PANAMA		1105.4 283.6	981.2 245.9	0.0 -123.1	0.0 0.0	0.0 451.0	64.6 58.8	59.7 553.0	25.0
7	ACANAL		73.3 3.5	33.7 8.4	0.0 0.0	0.0 0.0	0.0 0.0	38.1 -15.7	1.5 10.8	50.0
9	COLON		0.0 0.0	102.4 25.7	0.0 0.0	0.0 0.0	0.0 1.1	-102.7 -26.4	0.3 1.8	-75.0
TOTALS			6328.6 764.8	6168.8 1896.3	0.0 -971.8	0.0 0.0	0.0 1999.7	0.0 0.0	159.8 1840.0	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

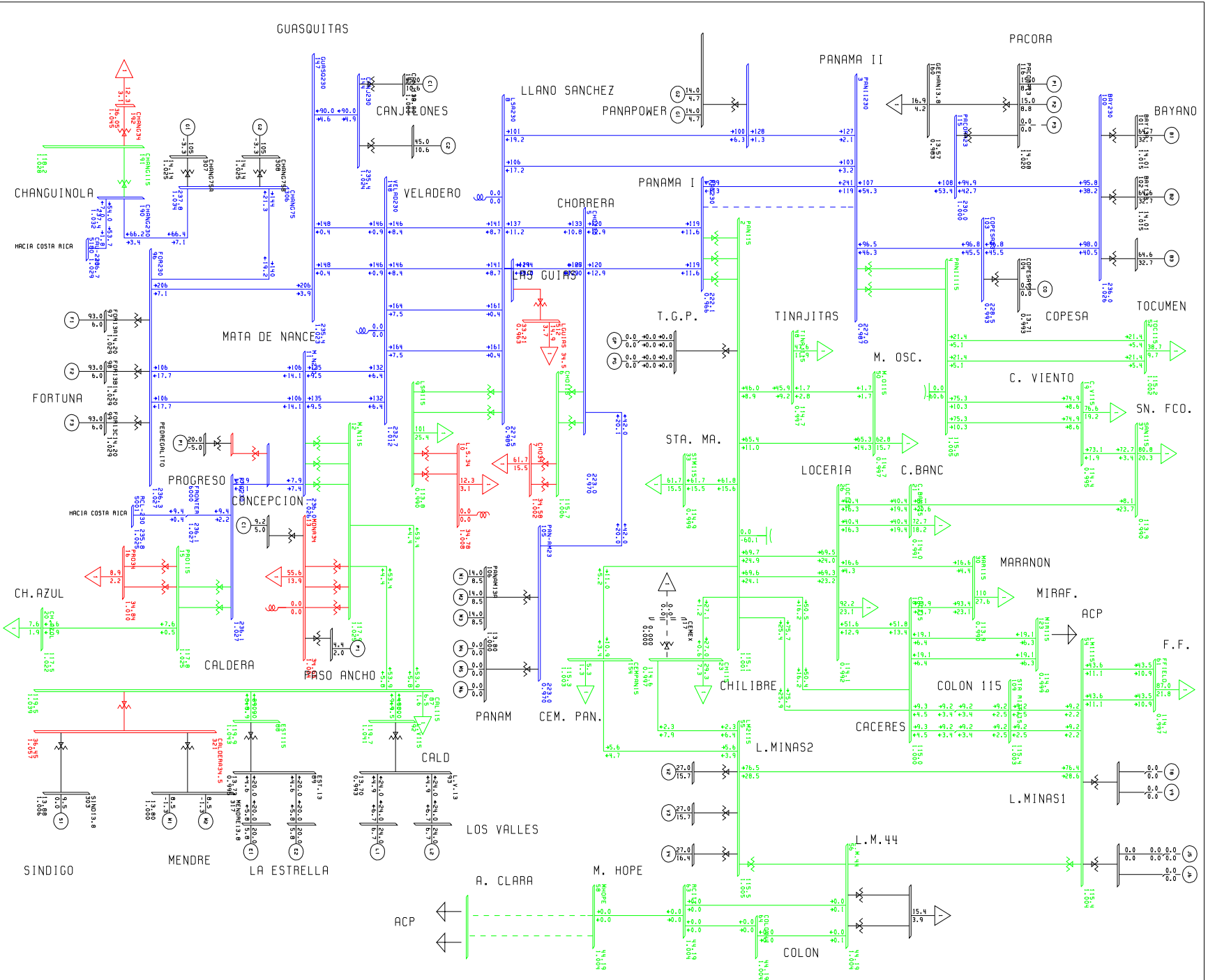
**AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Contingencia 2: Panamá – Panamá II**

**Caso 1 MHT7**

**Caso 2 MHTCB7**

**Caso 4 MHTGDC7**



GUASQUITAS

PACORA

PANAMA II

BAYANO

LLANO SANCHEZ

PANAPOPER

PANAMA I

CHORRERA

CANJONES

VELADERO

TOCUMEN

C. VIENTO

SN. FCO.

STA. MA.

LOCERIA

C. BANC

MARANON

MIRAF.

ACP

F.F.

COLON 115

CACERES

L. MINAS2

L. MINAS1

L.M.44

COLON

LOS VALLES

CALD

CALO

LA ESTRELLA

MENDRE

SINDIGO

CH. AZUL

PROGRESO

CONCEPCION

CALDERA

RASO ANCHO

MATA DE NANCE

FORTUNA

CHANGUINOLA

HACIA COSTA RICA

HACIA COSTA RICA

ACP

A. CLARA

M. HOPE

T.G.P.

TINAJITAS

M. OSC.

C. VIENTO

SN. FCO.

STA. MA.

LOCERIA

C. BANC

MARANON

MIRAF.

ACP

F.F.

COLON 115

CACERES

L. MINAS2

L. MINAS1

L.M.44

COLON

LOS VALLES

CALD

CALO

LA ESTRELLA

MENDRE

SINDIGO

CH. AZUL

PROGRESO

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FORTUNA

CHANGUINOLA

HACIA COSTA RICA

HACIA COSTA RICA

ACP

A. CLARA

M. HOPE

T.G.P.

TINAJITAS

M. OSC.

C. VIENTO

SN. FCO.

STA. MA.

LOCERIA

C. BANC

MARANON

MIRAF.

ACP

F.F.

COLON 115

CACERES

L. MINAS2

L. MINAS1

L.M.44

COLON





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 13:56  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESC MODE DEMA MAX INV CONT2 PANAMA-PANAMA II

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X	T	R	A	N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	27.0	15.7	17.0	0.0	0.9900	31.5	0.8650	47.0							1	6		
67		BLM13C		13.800	V3	27.0	15.7	17.0	0.0	0.9900	31.5	0.8650	47.0							1	6		
68		BLM13D		13.800	V4	27.0	16.4	17.0	0.0	0.9900	31.9	0.8548	47.0							1	6		
90		EST-13L		13.800	E1	20.0	5.8	12.0	-5.0	1.0100	20.6	0.9599	27.0							1	6		
91		EST-13T		13.800	E2	20.0	5.8	12.0	-5.0	1.0100	20.6	0.9599	27.0							1	6		
94		LV-13.8L		13.800	L1	24.0	6.7	12.0	-5.0	1.0100	24.7	0.9629	27.0							1	6		
95		LV-13.8T		13.800	L2	24.0	6.7	12.0	-5.0	1.0100	24.7	0.9629	27.0							1	6		
97		FOR13A		13.800	F1	93.0	6.0	50.0	-50.0	1.0290	90.6	0.9979	111.0							1	6		
98		FOR13B		13.800	F2	93.0	6.0	50.0	-50.0	1.0290	90.6	0.9979	111.0							1	6		
99		FOR13C		13.800	F3	93.0	6.0	50.0	-50.0	1.0290	90.6	0.9979	111.0							1	6		
101		BAY13A		13.800	B1	64.6	32.7	50.0	-25.0	1.0150	71.4	0.8920	96.0							1	6	SYST	
102		BAY13B		13.800	B2	64.6	32.7	50.0	-25.0	1.0150	71.4	0.8920	96.0							1	6		
106		PANAM13A		13.800	M1	14.0	8.5	9.0	0.0	1.0000	16.4	0.8539	20.7							1	6		
106		PANAM13A		13.800	M2	14.0	8.5	9.0	0.0	1.0000	16.4	0.8539	20.7							1	6		
106		PANAM13A		13.800	M3	14.0	8.5	9.0	0.0	1.0000	16.4	0.8539	20.7							1	6		
108		BAY13C		13.800	B3	64.6	32.7	50.0	-25.0	1.0150	71.4	0.8920	100.0							1	6		
116		PACORA13		13.800	P1	15.0	8.8	8.8	0.0	1.0202	17.1	0.8618	21.7							1	6		
116		PACORA13		13.800	P2	15.0	8.8	8.8	0.0	1.0202	17.1	0.8618	21.7							1	6		
142		CANJ13A		13.800	C1	45.0	10.6	29.0	-29.0	1.0000	46.2	0.9733	69.0							1	6		
143		CANJ13B		13.800	C2	45.0	10.6	29.0	-29.0	1.0000	46.2	0.9733	69.0							1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9596	10.9	0.8784	13.5							1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9577	5.1	0.9110	6.2							1	6		
303		SIND13.8		13.800	S1	9.5	0.0	5.0	0.0	1.0060	9.4	1.0000	13.5							1	6		
307		CHANG75A		13.800	G1	105.0	-3.3	22.0	-22.0	1.0250	102.5	0.9995	118.6							1	6		
308		CHANG75B		13.800	G2	105.0	-3.3	50.0	-22.0	1.0250	102.5	0.9995	118.6							1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.3	4.0	-4.0	1.0000	8.6	0.9881	35.3							1	6		
317		MENDRE13.8		13.800	M2	8.5	-1.3	4.0	-4.0	1.0000	8.6	0.9881	35.3							1	6		
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0455	19.7	0.9701	27.0							1	6		
516		PANAPOW13A		13.800	G1	14.0	4.7	12.5	0.5	1.0100	14.6	0.9480	20.9							1	6		
516		PANAPOW13A		13.800	G2	14.0	4.7	12.5	0.5	1.0100	14.6	0.9480	20.9							1	6		
SUBSYSTEM TOTALS						1101.9	255.7	630.7	-365.9				1527.3										

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 13:56  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESC MODE DEMA MAX INV CONT2 PANAMA-PANAMA II

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0394	8.3	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0394	8.3	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	3.2	8.0	0.0	0.9900	10.3	0.9482	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.4	6.0	-6.0	1.0000	9.8	0.9893	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.4	6.0	-6.0	1.0000	9.8	0.9894	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.4	6.0	-6.0	1.0000	9.8	0.9894	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9964	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9964	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9964	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9894	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9894	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9894	6.2			2	7	
SUBSYSTEM TOTALS						73.3	6.3	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 13:57  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2010 ESC MODE DEMA MAX INV CONT2 PANAMA-PANAMA II IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.9 55.7	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.3	21.4 261.6	0.0
4	NICA		538.2 32.7	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.2	0.0 -97.1	11.1 147.4	0.0
5	C.RICA		1345.6 254.5	1324.8 569.4	0.0 -237.4	0.0 0.0	0.0 469.3	0.0 26.0	20.8 365.9	0.0
6	PANAMA		1101.9 255.7	981.2 245.9	0.0 -120.6	0.0 0.0	0.0 460.7	64.6 59.5	56.2 531.6	25.0
7	ACANAL		73.3 6.3	33.7 8.4	0.0 0.0	0.0 0.0	0.0 0.0	38.1 -12.9	1.5 10.7	50.0
9	COLON		0.0 0.0	102.4 25.7	0.0 0.0	0.0 0.0	0.0 1.1	-102.7 -26.5	0.3 1.8	-75.0
TOTALS			6325.2 735.5	6168.8 1896.3	0.0 -969.5	0.0 0.0	0.0 2009.9	0.0 0.0	156.3 1818.6	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

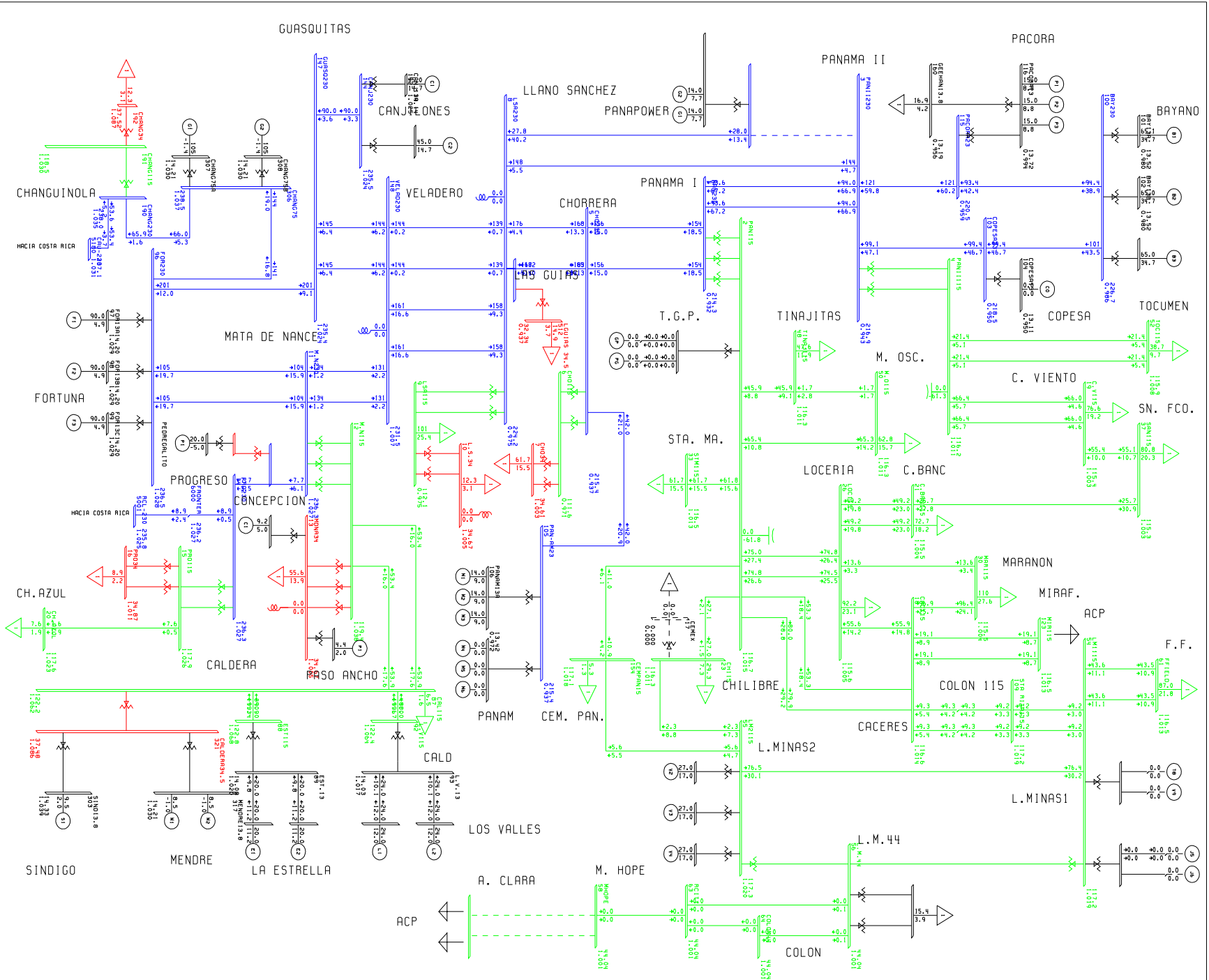
**AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Contingencia 3: Panapower – Panamá II**

**Caso 1 MHT7**

**Caso 2 MHTCB7**

**Caso 4 MHTGDC7**



PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 R 0 2010 ESC MODE DEMR MEX INV CONT3 PANPOWER-PANAMA II  
 MAY 18 2007 16:34  
 KV: 214, 435, 115  
 BUS - VOLTAGE (KV/PU)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR

### Contingencia 3: Panapower – Panamá II

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 16:27  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2010 ESC MODE DEMA MAX INV CONT3 PANAPOWEPANAMA II

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0275	236.32	14	PRO230	230.00	6	1.0274	236.31				
96	FOR230	230.00	6	1.0282	236.49	144	CANJ230	230.00	6	1.0238	235.47				
147	GUASQ230	230.00	6	1.0235	235.41	148	VELAD230	230.00	6	1.0065	231.50				
190	CHANG230	230.00	6	1.0350	238.04	306	CHANG75	230.00	6	1.0368	238.47				
310	CONCEPCION230	230.00	6	1.0276	236.36	515	PANPOWER230	230.00	6	1.0205	234.72				
6000	FRONTER	230.00	6	1.0272	236.25										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9316	214.27	3	PANII230	230.00	6	0.9432	216.94				
5	CHO230	230.00	6	0.9366	215.42	8	LSA230	230.00	6	0.9750	224.24				
100	BAY230	230.00	6	0.9855	226.67	103	COFESA23	230.00	6	0.9499	218.48				
105	PAN-AM23	230.00	6	0.9367	215.44	115	PACORA23	230.00	6	0.9585	220.46				
511	LGUIAS230	230.00	6	0.9536	219.34										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 16:27  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2010 ESC MODE DEMA MAX INV CONT3 PANAPOWEPANAMA II

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0147	116.69	4	PANIII115	115.00	6	1.0107	116.23				
12	M.N115	115.00	6	1.0379	119.35	15	PRO115	115.00	6	1.0255	117.93				
18	CAC115	115.00	6	1.0139	116.60	19	C.V115	115.00	6	1.0035	115.40				
20	CH.AZUL	115.00	6	1.0226	117.60	21	C.BAN115	115.00	6	1.0042	115.48				
23	CH115	115.00	6	1.0114	116.31	26	LOC115	115.00	6	1.0054	115.62				
30	MAR115	115.00	6	1.0040	115.46	33	STM115	115.00	6	1.0131	116.51				
37	SAN115	115.00	6	1.0029	115.33	48	TINAJ115	115.00	6	1.0112	116.29				
50	M.O115	115.00	6	1.0115	116.32	52	TOC115	115.00	6	1.0080	115.92				
54	LM1115	115.00	6	1.0191	117.20	55	LM2115	115.00	6	1.0201	117.32				
61	FFIELD	115.00	9	1.0129	116.48	87	CAL115	115.00	6	1.0624	122.18				
88	EST115	115.00	6	1.0677	122.78	92	L.V115	115.00	6	1.0644	122.40				
109	STA RITA115	115.00	6	1.0188	117.16	110	PTMD115A	115.00	6	1.0168	116.93				
111	PTMD115B	115.00	6	1.0168	116.93	123	MIR115	115.00	7	1.0126	116.45				
154	CEMPAN15	115.00	6	1.0181	117.08	191	CHANG115	115.00	6	1.0304	118.49				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6	CHO115	115.00	6	0.9708	111.64	9	LSA115	115.00	6	0.9746	112.08				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 16:28  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESC MODE DEMA MAX INV CONT3 PANAPOW- PANAMA II

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X	T	R	A	N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	27.0	17.0	17.0	0.0	1.0073	31.7	0.8462	47.0								1	6	
67		BLM13C		13.800	V3	27.0	17.0	17.0	0.0	1.0073	31.7	0.8462	47.0								1	6	
68		BLM13D		13.800	V4	27.0	17.0	17.0	0.0	1.0057	31.7	0.8462	47.0								1	6	
90		EST-13L		13.800	E1	20.0	11.2	12.0	-5.0	1.0500	21.8	0.8718	27.0								1	6	
91		EST-13T		13.800	E2	20.0	11.2	12.0	-5.0	1.0500	21.8	0.8718	27.0								1	6	
94		LV-13.8L		13.800	L1	24.0	12.0	12.0	-5.0	1.0484	25.6	0.8944	27.0								1	6	
95		LV-13.8T		13.800	L2	24.0	12.0	12.0	-5.0	1.0484	25.6	0.8944	27.0								1	6	
97		FOR13A		13.800	F1	90.0	4.9	50.0	-50.0	1.0290	87.6	0.9985	111.0								1	6	
98		FOR13B		13.800	F2	90.0	4.9	50.0	-50.0	1.0290	87.6	0.9985	111.0								1	6	
99		FOR13C		13.800	F3	90.0	4.9	50.0	-50.0	1.0290	87.6	0.9985	111.0								1	6	
101		BAY13A		13.800	B1	65.1	34.7	50.0	-25.0	0.9800	75.3	0.8825	96.0								1	6	
102		BAY13B		13.800	B2	65.0	34.7	50.0	-25.0	0.9800	75.2	0.8822	96.0								1	6	
106		PANAM13A		13.800	M1	14.0	9.0	9.0	0.0	0.9723	17.1	0.8412	20.7								1	6	
106		PANAM13A		13.800	M2	14.0	9.0	9.0	0.0	0.9723	17.1	0.8412	20.7								1	6	
106		PANAM13A		13.800	M3	14.0	9.0	9.0	0.0	0.9723	17.1	0.8412	20.7								1	6	
108		BAY13C		13.800	B3	65.0	34.7	50.0	-25.0	0.9800	75.2	0.8822	100.0								1	6	
116		PACORA13		13.800	P1	15.0	8.8	8.8	0.0	0.9942	17.5	0.8618	21.7								1	6	
116		PACORA13		13.800	P2	15.0	8.8	8.8	0.0	0.9942	17.5	0.8618	21.7								1	6	
116		PACORA13		13.800	P3	15.0	8.8	8.8	0.0	0.9942	17.5	0.8618	21.7								1	6	
142		CANJ13A		13.800	C1	45.0	14.7	29.0	-29.0	1.0250	46.2	0.9506	69.0								1	6	
143		CANJ13B		13.800	C2	45.0	14.7	29.0	-29.0	1.0250	46.2	0.9506	69.0								1	6	
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9602	10.9	0.8784	13.5								1	6	
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9583	5.1	0.9110	6.2								1	6	
303		SIND13.8		13.800	S1	9.5	2.0	5.0	2.0	1.0386	9.3	0.9786	13.5								1	6	
307		CHANG75A		13.800	G1	105.0	-1.4	22.0	-22.0	1.0300	102.0	0.9999	118.6								1	6	
308		CHANG75B		13.800	G2	105.0	-1.4	50.0	-22.0	1.0300	102.0	0.9999	118.6								1	6	
317		MENDRE13.8		13.800	M1	8.5	-1.0	4.0	-4.0	1.0300	8.3	0.9933	35.3								1	6	
317		MENDRE13.8		13.800	M2	8.5	-1.0	4.0	-4.0	1.0300	8.3	0.9933	35.3								1	6	
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0468	19.7	0.9701	27.0								1	6	
516		PANAPOW13A		13.800	G1	14.0	7.7	12.5	0.5	1.0500	15.2	0.8762	20.9								1	6	
516		PANAPOW13A		13.800	G2	14.0	7.7	12.5	0.5	1.0500	15.2	0.8762	20.9								1	6	
SUBSYSTEM TOTALS						1109.2	313.9	639.5	-363.9				1549.0										

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      FRI, MAY 18 2007 16:28  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESC MODE DEMA MAX INV CONT3 PANAPOWEP-PANAMA II

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0464	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0464	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	0.2	8.0	0.0	0.9900	9.8	0.9997	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9942	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9942	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9942	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2			2	7	
SUBSYSTEM TOTALS						73.3	1.5	51.0	-33.0				124.2					



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 16:28  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2010 ESC MODE DEMA MAX INV CONT3 PANAPOWER-PANAMA II IN MW/MVAR

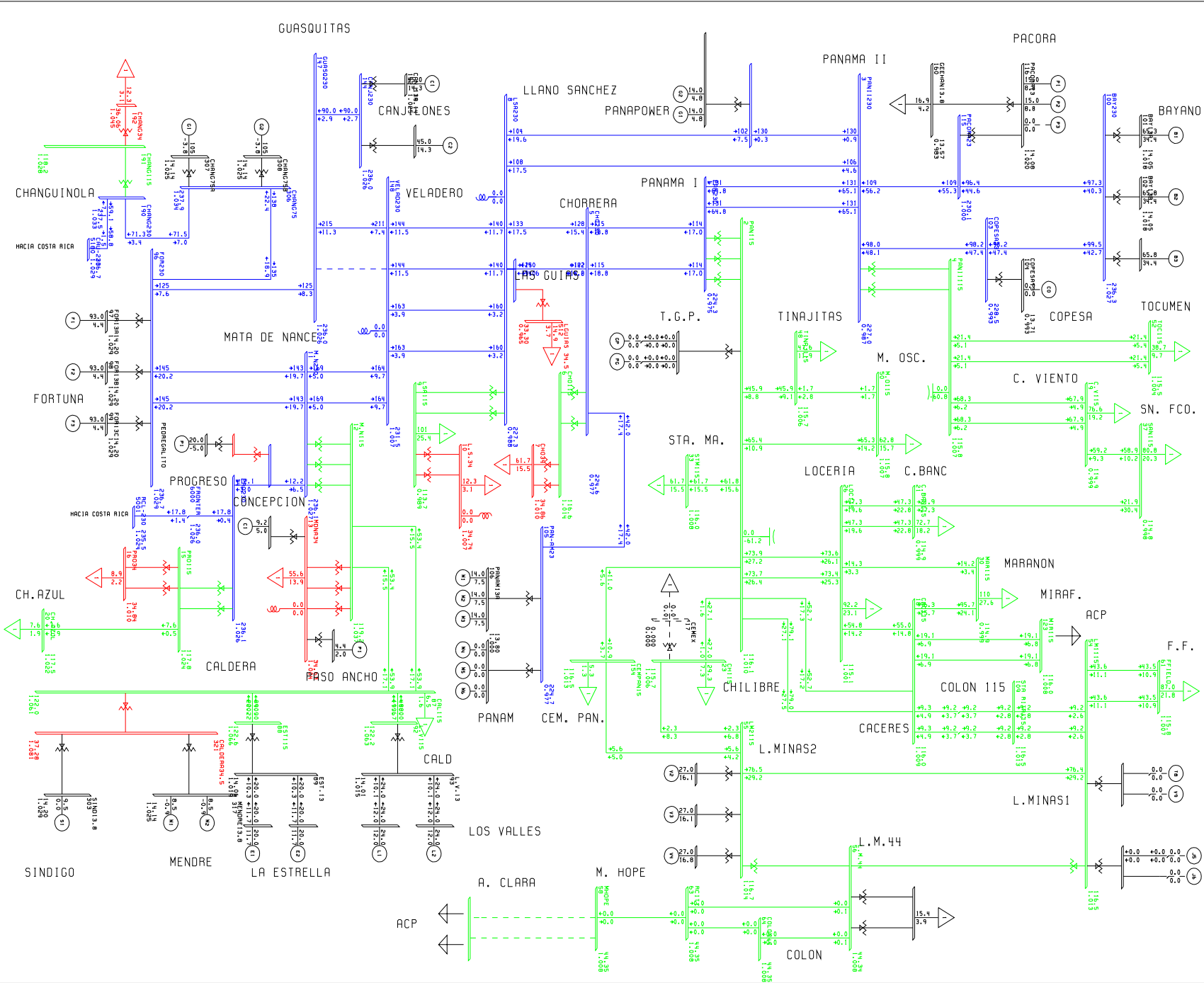
X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT	
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0	
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4		
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0	
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1		
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0	
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6		
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0	
NICA	32.6	224.5	-98.9	0.0	143.2	-97.1	147.4		
5	1345.6	1324.8	0.0	0.0	0.0	0.0	20.8	0.0	
C.RICA	252.5	569.4	-237.7	0.0	469.4	24.5	365.7		
6	1109.2	981.2	0.0	0.0	0.0	64.6	63.5	25.0	
PANAMA	313.9	245.9	-123.1	0.0	448.9	65.8	574.2		
7	73.3	33.7	0.0	0.0	0.0	38.1	1.5	50.0	
ACANAL	1.5	8.4	0.0	0.0	0.0	-17.8	10.9		
9	0.0	102.4	0.0	0.0	0.0	-102.7	0.3	-75.0	
COLON	0.0	25.7	0.0	0.0	1.1	-26.4	1.8		
TOTALS	6332.5	6168.8	0.0	0.0	0.0	0.0	163.6	0.0	
				786.9	1896.3	-972.2	0.0	1998.3	0.0 1861.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**  
**Contingencia 4: Guasquitas - Veladero**

**Caso 1 MHT7**

**Caso 2 MHTCB7**

**Caso 4 MHTGDC7**



PLAN DE EXPANSION DEL SIN CON CENTROPERICA JUNIO DEL 2007  
 R 0 2010 ESC MODE DEMR MAX INV CONT4 GUASQUITAS-VELADERO  
 FRI, MAY 18 2007 16:36  
 BUS - VOL TAGE (KV/PV)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR  
 KV:114, \*35, \*115



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 16:38  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESC MODE DEMA MAX INV CONT4 GUASQUITAS-VELADERO

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	27.0	16.1	17.0	0.0	1.0000	31.4	0.8592	47.0			1	6	
67	BLM13C	13.800	V3	27.0	16.1	17.0	0.0	1.0000	31.4	0.8592	47.0			1	6	
68	BLM13D	13.800	V4	27.0	16.8	17.0	0.0	1.0000	31.8	0.8487	47.0			1	6	
90	EST-13L	13.800	E1	20.0	11.7	12.0	-5.0	1.0500	22.1	0.8630	27.0			1	6	
91	EST-13T	13.800	E2	20.0	11.7	12.0	-5.0	1.0500	22.1	0.8630	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	12.0	12.0	-5.0	1.0468	25.6	0.8944	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	12.0	12.0	-5.0	1.0468	25.6	0.8944	27.0			1	6	
97	FOR13A	13.800	F1	93.0	4.4	50.0	-50.0	1.0290	90.5	0.9989	111.0			1	6	
98	FOR13B	13.800	F2	93.0	4.4	50.0	-50.0	1.0290	90.5	0.9989	111.0			1	6	
99	FOR13C	13.800	F3	93.0	4.4	50.0	-50.0	1.0290	90.5	0.9989	111.0			1	6	
101	BAY13A	13.800	B1	65.3	34.4	50.0	-25.0	1.0181	72.5	0.8847	96.0			1	6	SYST
102	BAY13B	13.800	B2	65.8	34.4	50.0	-25.0	1.0181	72.9	0.8859	96.0			1	6	
106	PANAM13A	13.800	M1	14.0	7.5	9.0	0.0	1.0000	15.9	0.8807	20.7			1	6	
106	PANAM13A	13.800	M2	14.0	7.5	9.0	0.0	1.0000	15.9	0.8807	20.7			1	6	
106	PANAM13A	13.800	M3	14.0	7.5	9.0	0.0	1.0000	15.9	0.8807	20.7			1	6	
108	BAY13C	13.800	B3	65.8	34.4	50.0	-25.0	1.0181	72.9	0.8859	100.0			1	6	
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0205	17.1	0.8618	21.7			1	6	
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0205	17.1	0.8618	21.7			1	6	
142	CANJ13A	13.800	C1	45.0	14.3	29.0	-29.0	1.0250	46.1	0.9531	69.0			1	6	
143	CANJ13B	13.800	C2	45.0	14.3	29.0	-29.0	1.0250	46.1	0.9531	69.0			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9590	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9571	5.1	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	9.5	0.0	5.0	0.0	1.0290	9.2	1.0000	13.5			1	6	
307	CHANG75A	13.800	G1	105.0	-3.8	22.0	-22.0	1.0250	102.5	0.9994	118.6			1	6	
308	CHANG75B	13.800	G2	105.0	-3.8	50.0	-22.0	1.0250	102.5	0.9994	118.6			1	6	
317	MENDRE13.8	13.800	M1	8.5	-0.9	4.0	-4.0	1.0250	8.3	0.9947	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	-0.9	4.0	-4.0	1.0250	8.3	0.9947	35.3			1	6	
340	PEDGALITO138	13.800	P1	20.0	-5.0	12.0	-5.0	1.0457	19.7	0.9701	27.0			1	6	
516	PANAPOW13A	13.800	G1	14.0	4.8	12.5	0.5	1.0100	14.7	0.9460	20.9			1	6	
516	PANAPOW13A	13.800	G2	14.0	4.8	12.5	0.5	1.0100	14.7	0.9460	20.9			1	6	
SUBSYSTEM TOTALS				1104.9	283.9	630.7	-365.9				1527.3					

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 16:38  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESC MODE DEMA MAX INV CONT4 GUASQUITAS-VELADERO

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0476	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0477	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	4.3	8.0	0.0	1.0000	10.6	0.9136	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9949	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9950	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9950	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9844	6.2			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9844	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9844	6.2			2	7	
SUBSYSTEM TOTALS						73.3	5.3	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 16:39  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2010 ESC MODE DEMAX INV CONT4 GUASQUITAS-VELADERO IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.7	224.5	-98.9	0.0	143.2	-97.1	147.4	
5	1345.6	1324.8	0.0	0.0	0.0	-0.2	21.0	0.0
C.RICA	256.7	569.4	-237.3	0.0	469.1	26.4	367.3	
6	1104.9	981.2	0.0	0.0	0.0	64.8	59.0	25.0
PANAMA	283.9	245.9	-122.0	0.0	447.7	60.0	547.8	
7	73.3	33.7	0.0	0.0	0.0	38.1	1.5	50.0
ACANAL	5.3	8.4	0.0	0.0	0.0	-13.9	10.7	
9	0.0	102.4	0.0	0.0	0.0	-102.7	0.3	-75.0
COLON	0.0	25.7	0.0	0.0	1.1	-26.4	1.8	
TOTALS	6328.1	6168.8	0.0	0.0	0.0	0.0	159.3	0.0
	764.9	1896.3	-970.8	0.0	1996.7	0.0	1836.1	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

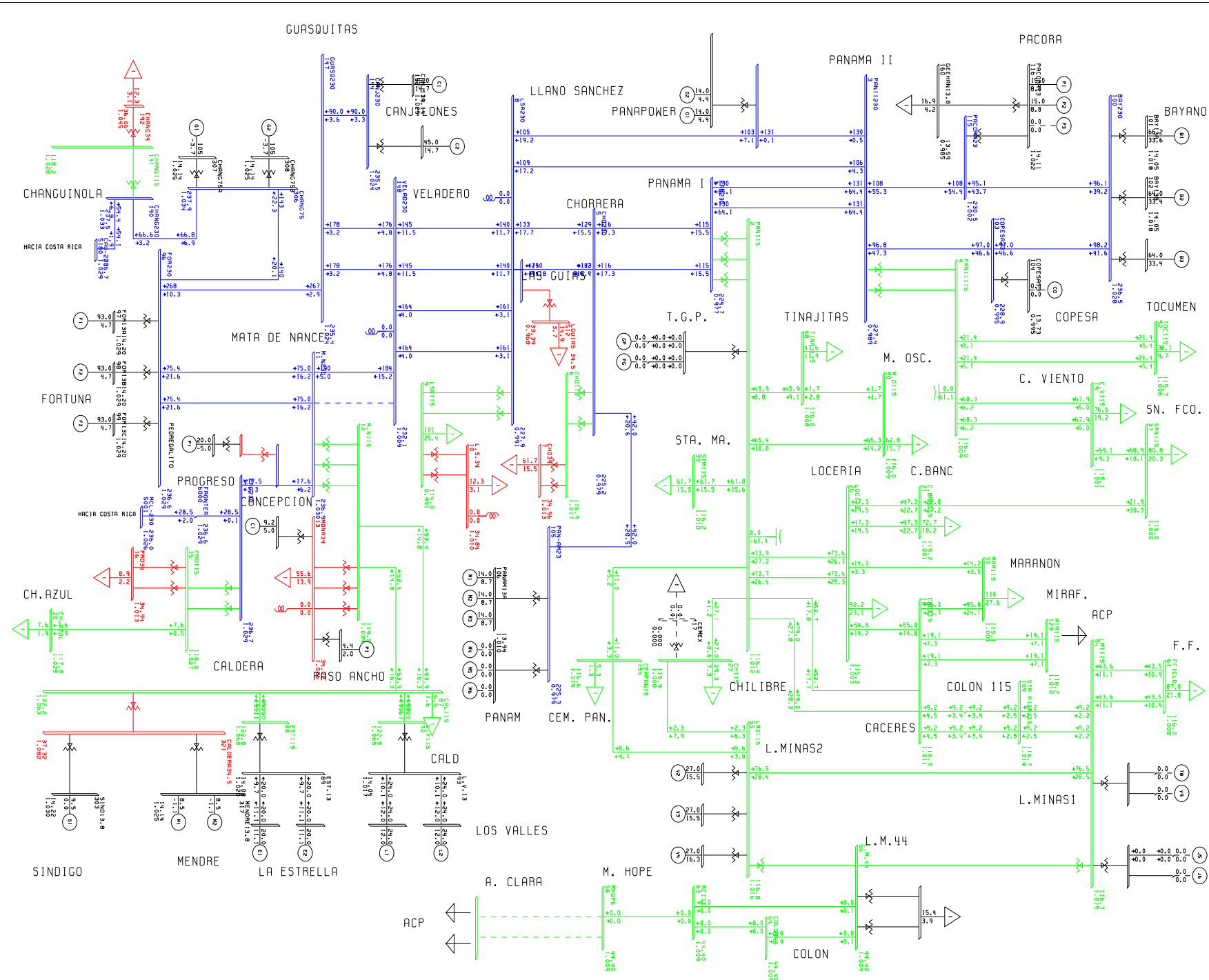
**Contingencia 5: Mata de Nance - Veladero**

**Caso 1 MHT7**

**Caso 2 MHTCB7**

**Caso 4 MHTGDC7**







PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 16:17  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESC MODE DEMA MAX INV CONT5 MDNANCE-VELADERO

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	27.0	15.5	17.0	0.0	1.0000	31.2	0.8667	47.0			1	6	
67	BLM13C	13.800	V3	27.0	15.5	17.0	0.0	1.0000	31.2	0.8667	47.0			1	6	
68	BLM13D	13.800	V4	27.0	16.3	17.0	0.0	1.0000	31.5	0.8567	47.0			1	6	
90	EST-13L	13.800	E1	20.0	11.1	12.0	-5.0	1.0500	21.8	0.8739	27.0			1	6	
91	EST-13T	13.800	E2	20.0	11.1	12.0	-5.0	1.0500	21.8	0.8739	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	12.0	12.0	-5.0	1.0488	25.6	0.8944	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	12.0	12.0	-5.0	1.0488	25.6	0.8944	27.0			1	6	
97	FOR13A	13.800	F1	93.0	4.7	50.0	-50.0	1.0290	90.5	0.9987	111.0			1	6	
98	FOR13B	13.800	F2	93.0	4.7	50.0	-50.0	1.0290	90.5	0.9987	111.0			1	6	
99	FOR13C	13.800	F3	93.0	4.7	50.0	-50.0	1.0290	90.5	0.9987	111.0			1	6	
101	BAY13A	13.800	B1	66.2	33.6	50.0	-25.0	1.0181	72.9	0.8917	96.0			1	6	SYST
102	BAY13B	13.800	B2	64.0	33.4	50.0	-25.0	1.0181	71.0	0.8865	96.0			1	6	
106	PANAM13A	13.800	M1	14.0	8.7	9.0	0.0	1.0100	16.3	0.8500	20.7			1	6	
106	PANAM13A	13.800	M2	14.0	8.7	9.0	0.0	1.0100	16.3	0.8500	20.7			1	6	
106	PANAM13A	13.800	M3	14.0	8.7	9.0	0.0	1.0100	16.3	0.8500	20.7			1	6	
108	BAY13C	13.800	B3	64.0	33.4	50.0	-25.0	1.0181	71.0	0.8865	100.0			1	6	
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0222	17.0	0.8618	21.7			1	6	
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0222	17.0	0.8618	21.7			1	6	
142	CANJ13A	13.800	C1	45.0	14.7	29.0	-29.0	1.0250	46.2	0.9507	69.0			1	6	
143	CANJ13B	13.800	C2	45.0	14.7	29.0	-29.0	1.0250	46.2	0.9507	69.0			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9617	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9598	5.1	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	9.5	0.0	5.0	0.0	1.0301	9.2	1.0000	13.5			1	6	
307	CHANG75A	13.800	G1	105.0	-3.7	22.0	-22.0	1.0250	102.5	0.9994	118.6			1	6	
308	CHANG75B	13.800	G2	105.0	-3.7	50.0	-22.0	1.0250	102.5	0.9994	118.6			1	6	
317	MENDRE13.8	13.800	M1	8.5	-1.1	4.0	-4.0	1.0250	8.4	0.9913	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	-1.1	4.0	-4.0	1.0250	8.4	0.9913	35.3			1	6	
340	PEDGALITO138	13.800	P1	20.0	-5.0	12.0	-5.0	1.0493	19.6	0.9701	27.0			1	6	
516	PANAPOW13A	13.800	G1	14.0	4.4	12.5	0.5	1.0100	14.5	0.9547	20.9			1	6	
516	PANAPOW13A	13.800	G2	14.0	4.4	12.5	0.5	1.0100	14.5	0.9547	20.9			1	6	
SUBSYSTEM TOTALS				1102.4	282.3	630.7	-365.9				1527.3					

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      FRI, MAY 18 2007 16:17  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESC MODE DEMA MAX INV CONT5 MDNANCE-VELADERO

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0486	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0486	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	3.9	8.0	0.0	1.0000	10.4	0.9280	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9954	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9837	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9837	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9837	6.2			2	7	
SUBSYSTEM TOTALS						73.3	4.6	51.0	-33.0				124.2					

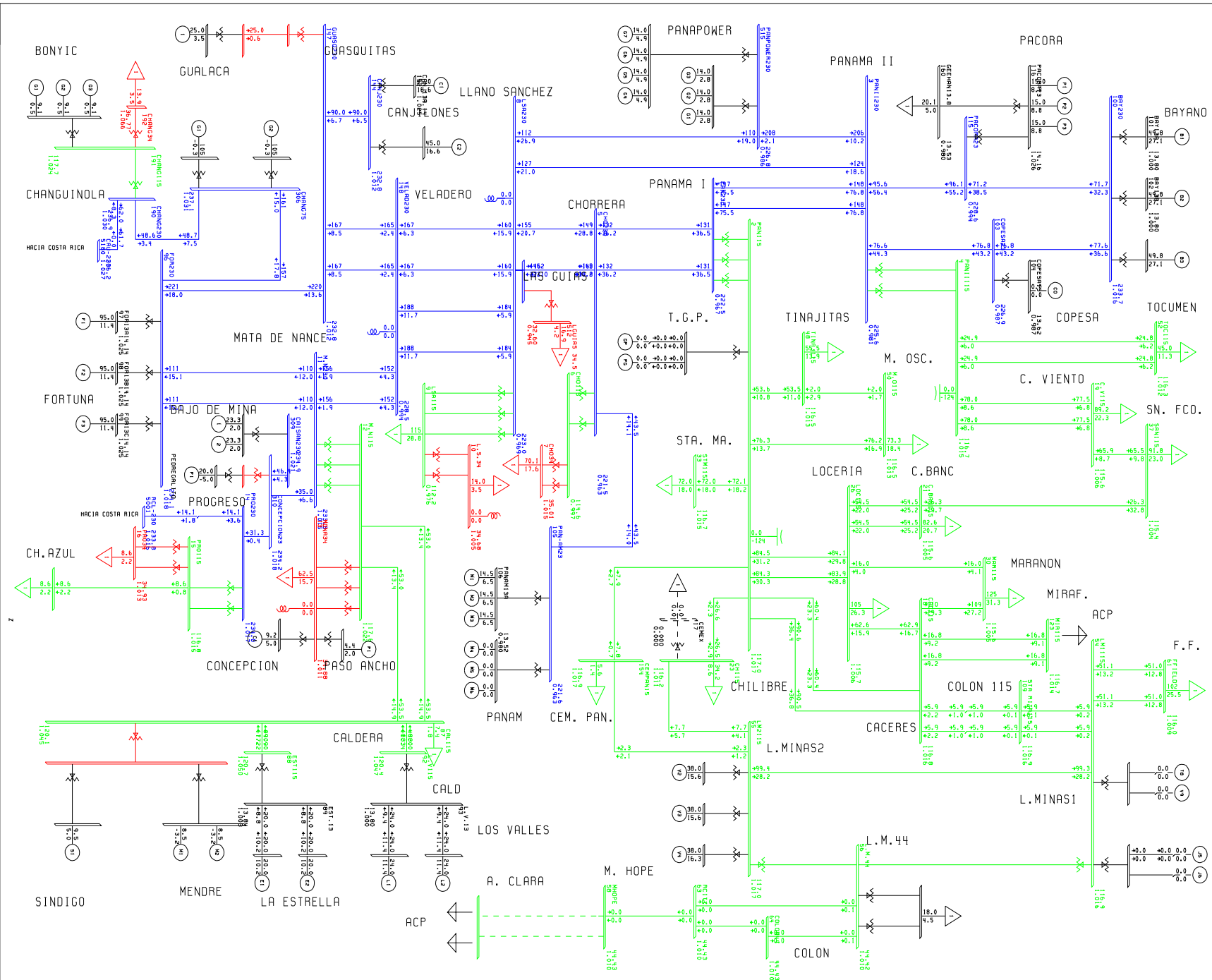
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, MAY 18 2007 17:10  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2010 ESC MODE DEMA MAX INV CONT5 MDNANCE-VELADERO IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
			29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	SALVADOR		911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
			100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	HONDURAS		1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
			55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	NICA		538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
			32.6	224.5	-98.9	0.0	143.2	-97.1	147.4	
5	C.RICA		1345.6	1324.8	0.0	0.0	0.0	-0.1	20.8	0.0
			253.5	569.4	-237.5	0.0	469.4	25.1	366.0	
6	PANAMA		1102.4	981.2	0.0	0.0	0.0	64.6	56.6	25.0
			282.3	245.9	-122.5	0.0	448.2	62.1	545.0	
7	ACANAL		73.3	33.7	0.0	0.0	0.0	38.1	1.5	50.0
			4.6	8.4	0.0	0.0	0.0	-14.6	10.7	
9	COLON		0.0	102.4	0.0	0.0	0.0	-102.7	0.3	-75.0
			0.0	25.7	0.0	0.0	1.1	-26.4	1.8	
TOTALS			6325.6	6168.8	0.0	0.0	0.0	0.0	156.8	0.0
			759.4	1896.3	-971.4	0.0	1997.5	0.0	1832.0	

**Casos 1 y 2  
MHT7 Y MHTCB7**

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL  
2007**

**AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SUN, MAY 13 2007 15:33  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0153	233.52	14	PRO230	230.00	6	1.0173	233.98				
96	FOR230	230.00	6	1.0179	234.11	100	BAY230	230.00	6	1.0159	233.65				
144	CANJ230	230.00	6	1.0124	232.84	147	GUASQ230	230.00	6	1.0120	232.77				
190	CHANG230	230.00	6	1.0301	236.91	306	CHANG75	230.00	6	1.0308	237.09				
309	CAISAN230	230.00	6	1.0212	234.88	310	CONCEPCION230	230.00	6	1.0181	234.16				
6000	FRONTER	230.00	6	1.0173	233.99										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9672	222.45	3	PANII230	230.00	6	0.9810	225.63				
5	CHO230	230.00	6	0.9632	221.54	8	LSA230	230.00	6	0.9693	222.95				
103	COPESA23	230.00	6	0.9867	226.93	105	PAN-AM23	230.00	6	0.9633	221.56				
115	PACORA23	230.00	6	0.9941	228.64	148	VELAD230	230.00	6	0.9936	228.53				
511	LGUIAS230	230.00	6	0.9626	221.41	515	PANPOWER230	230.00	6	0.9863	226.85				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SUN, MAY 13 2007 15:33  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0170	116.95	4	PANII115	115.00	6	1.0146	116.68				
12	M.N115	115.00	6	1.0223	117.56	15	PRO115	115.00	6	1.0152	116.75				
18	CAC115	115.00	6	1.0160	116.84	19	C.V115	115.00	6	1.0056	115.64				
20	CH.AZUL	115.00	6	1.0118	116.36	21	C.BAN115	115.00	6	1.0051	115.59				
23	CH115	115.00	6	1.0106	116.22	26	LOC115	115.00	6	1.0065	115.74				
30	MAR115	115.00	6	1.0048	115.56	33	STM115	115.00	6	1.0152	116.74				
37	SAN115	115.00	6	1.0037	115.43	48	TINAJ115	115.00	6	1.0128	116.47				
50	M.O115	115.00	6	1.0131	116.51	52	TOC115	115.00	6	1.0115	116.33				
54	LM1115	115.00	6	1.0161	116.86	55	LM2115	115.00	6	1.0174	117.00				
61	FFIELD	115.00	9	1.0088	116.01	87	CAL115	115.00	6	1.0447	120.14				
88	EST115	115.00	6	1.0497	120.71	92	L.V115	115.00	6	1.0466	120.36				
109	STA RITA115	115.00	6	1.0164	116.89	110	PTMD115A	115.00	6	1.0165	116.90				
111	PTMD115B	115.00	6	1.0165	116.90	123	MIR115	115.00	7	1.0144	116.66				
154	CEMPAN15	115.00	6	1.0168	116.93	191	CHANG115	115.00	6	1.0238	117.74				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6	CHO115	115.00	6	0.9967	114.62	9	LSA115	115.00	6	0.9757	112.20				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SUN, MAY 13 2007 15:33  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B		13.800	V2	38.0	15.6	17.0	0.0	1.0000	41.1	0.9250	47.0			1	6	
67	BLM13C		13.800	V3	38.0	15.6	17.0	0.0	1.0000	41.1	0.9250	47.0			1	6	
68	BLM13D		13.800	V4	38.0	16.3	17.0	0.0	1.0000	41.3	0.9194	47.0			1	6	
90	EST-13L		13.800	E1	20.0	10.2	12.0	-5.0	1.0300	21.8	0.8914	27.0			1	6	
91	EST-13T		13.800	E2	20.0	10.2	12.0	-5.0	1.0300	21.8	0.8914	27.0			1	6	
94	LV-13.8L		13.800	L1	24.0	11.4	12.0	-5.0	1.0300	25.8	0.9038	27.0			1	6	
95	LV-13.8T		13.800	L2	24.0	11.4	12.0	-5.0	1.0300	25.8	0.9038	27.0			1	6	
97	FOR13A		13.800	F1	95.0	11.4	50.0	-50.0	1.0250	93.3	0.9929	111.0			1	6	
98	FOR13B		13.800	F2	95.0	11.4	50.0	-50.0	1.0250	93.3	0.9929	111.0			1	6	
99	FOR13C		13.800	F3	95.0	11.4	50.0	-50.0	1.0250	93.3	0.9929	111.0			1	6	
101	BAY13A		13.800	B1	49.8	27.1	50.0	-25.0	1.0000	56.7	0.8785	96.0			1	6	SYST
102	BAY13B		13.800	B2	49.8	27.1	50.0	-25.0	1.0000	56.7	0.8785	96.0			1	6	
106	PANAM13A		13.800	M1	14.5	6.5	9.0	0.0	0.9800	16.2	0.9126	20.7			1	6	
106	PANAM13A		13.800	M2	14.5	6.5	9.0	0.0	0.9800	16.2	0.9126	20.7			1	6	
106	PANAM13A		13.800	M3	14.5	6.5	9.0	0.0	0.9800	16.2	0.9126	20.7			1	6	
108	BAY13C		13.800	B3	49.8	27.1	50.0	-25.0	1.0000	56.7	0.8785	100.0			1	6	
116	PACORA13		13.800	P1	15.0	8.8	8.8	0.0	1.0261	17.0	0.8618	21.7			1	6	
116	PACORA13		13.800	P2	15.0	8.8	8.8	0.0	1.0261	17.0	0.8618	21.7			1	6	
116	PACORA13		13.800	P3	15.0	8.8	8.8	0.0	1.0261	17.0	0.8618	21.7			1	6	
142	CANJ13A		13.800	C1	45.0	16.6	29.0	-29.0	1.0250	46.8	0.9382	69.0			1	6	
143	CANJ13B		13.800	C2	45.0	16.6	29.0	-29.0	1.0250	46.8	0.9382	69.0			1	6	
151	GUALAC13		13.800	1	25.0	3.5	10.0	-10.0	1.0250	24.6	0.9905	26.7			1	6	
193	GEBOYIC		13.800	G1	9.1	0.5	4.0	-4.0	1.0250	8.9	0.9985	35.3			1	6	
193	GEBOYIC		13.800	G2	9.1	0.5	4.0	-4.0	1.0250	8.9	0.9985	35.3			1	6	
193	GEBOYIC		13.800	G3	9.1	0.5	4.0	-4.0	1.0250	8.9	0.9985	35.3			1	6	
204	BJOMIN13		13.800	1	23.3	2.0	13.0	-13.0	1.0250	22.8	0.9962	28.9			1	6	
204	BJOMIN13		13.800	2	23.3	2.0	13.0	-13.0	1.0250	22.8	0.9962	28.9			1	6	
301	CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9659	10.8	0.8784	13.5			1	6	
302	PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9640	5.0	0.9110	6.2			1	6	
303	SIND13.8		13.800	S1	9.5	5.0	5.0	0.0	1.0242	10.5	0.8849	13.5			1	6	
307	CHANG75A		13.800	G1	105.0	-0.3	22.0	-22.0	1.0250	102.4	1.0000	118.6			1	6	
308	CHANG75B		13.800	G2	105.0	-0.3	50.0	-22.0	1.0250	102.4	1.0000	118.6			1	6	
317	MENDRE13.8		13.800	M1	8.5	-3.2	4.0	-4.0	1.0000	9.1	0.9372	35.3			1	6	
317	MENDRE13.8		13.800	M2	8.5	-3.2	4.0	-4.0	1.0000	9.1	0.9372	35.3			1	6	
340	PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0365	19.9	0.9701	27.0			1	6	
516	PANAPOW13A		13.800	G1	14.0	2.8	12.5	0.5	1.0000	14.3	0.9807	20.9			1	6	
516	PANAPOW13A		13.800	G2	14.0	2.8	12.5	0.5	1.0000	14.3	0.9807	20.9			1	6	
516	PANAPOW13A		13.800	G3	14.0	2.8	12.5	0.5	1.0000	14.3	0.9807	20.9			1	6	
517	PANAPOW13B		13.800	G4	14.0	4.9	12.5	0.5	1.0200	14.5	0.9441	20.9			1	6	
517	PANAPOW13B		13.800	G5	14.0	4.9	12.5	0.5	1.0200	14.5	0.9441	20.9			1	6	
517	PANAPOW13B		13.800	G6	14.0	4.9	12.5	0.5	1.0200	14.5	0.9441	20.9			1	6	
517	PANAPOW13B		13.800	G7	14.0	4.9	12.5	0.5	1.0200	14.5	0.9441	20.9			1	6	
SUBSYSTEM TOTALS					1281.7	322.1	750.1	-411.3				1843.9					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SUN, MAY 13 2007 15:33  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0468	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0468	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	0.0	8.0	0.0	0.9900	9.8	1.0000	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9943	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9944	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9943	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9859	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9859	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9859	6.2			2	7	
SUBSYSTEM TOTALS						73.3	1.4	51.0	-33.0				124.2					

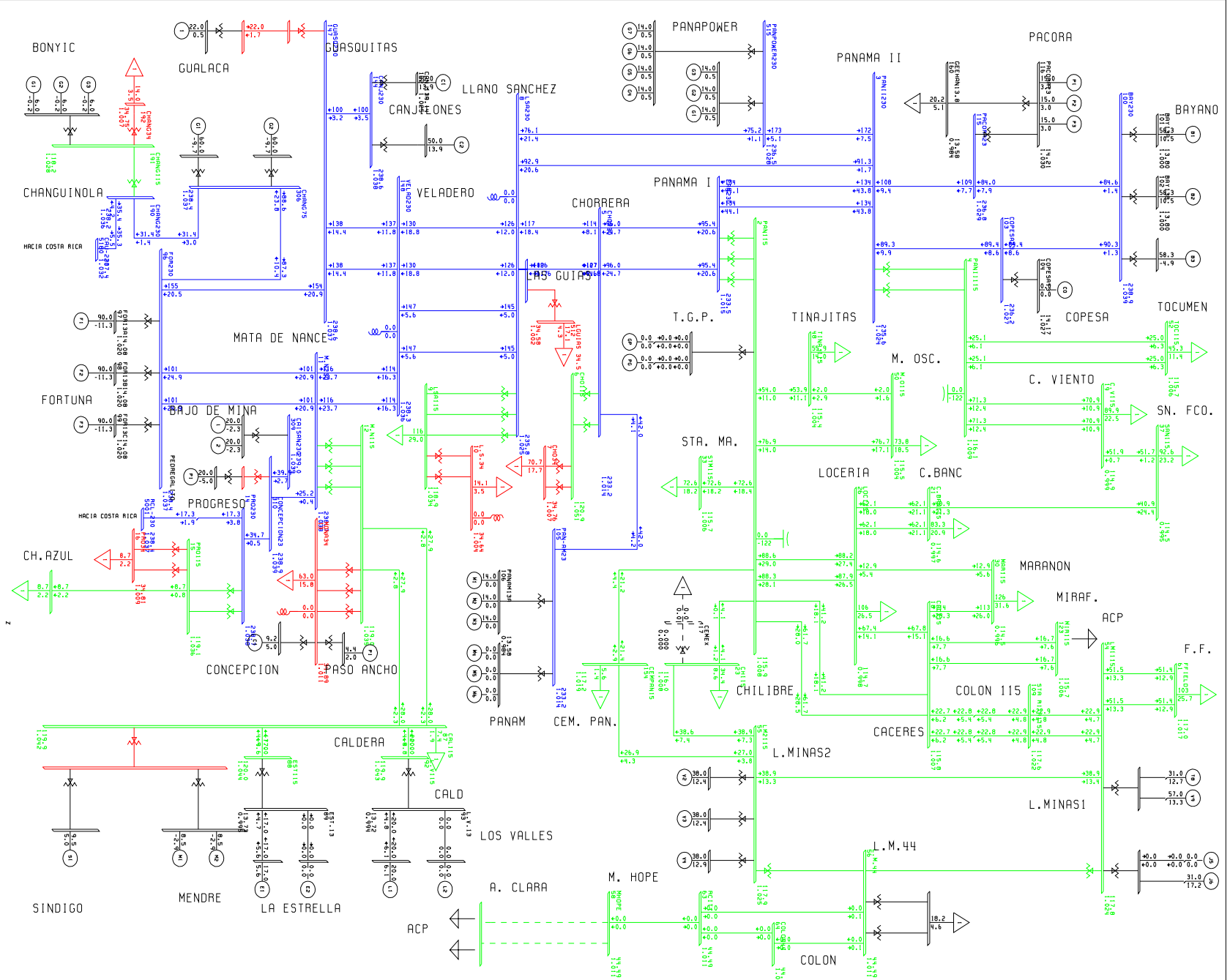
X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.9 55.8	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.2	21.4 261.6	0.0
4	NICA		538.2 33.0	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.2	0.0 -96.8	11.1 147.4	0.0
5	C.RICA		1345.6 266.7	1324.8 569.4	0.0 -237.4	0.0 0.0	0.0 467.9	-0.3 34.5	21.1 368.2	0.0
6	PANAMA		1281.7 322.1	1122.3 281.3	0.0 -247.6	0.0 0.0	0.0 449.8	87.1 61.3	72.3 677.0	25.0
7	ACANAL		73.3 1.4	38.3 9.6	0.0 0.0	0.0 0.0	0.0 0.0	33.6 -18.5	1.5 10.3	50.0
9	COLON		0.0 0.0	120.0 30.1	0.0 0.0	0.0 0.0	0.0 1.1	-120.3 -31.5	0.4 2.5	-75.0
TOTALS			6504.9 809.6	6332.1 1937.3	0.0 -1096.4	0.0 0.0	0.0 1997.6	0.0 0.0	172.8 1966.5	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO**

**Casos 1 y 2**

**MHT7 Y MHTC7**



PLN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 0 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO  
 MON. MAI 14 2007 17:19

KV<sup>4</sup>14 +356 +1115  
 BUS - VOLTAGE (KV/PU)  
 BRNCH - MM/MVRA  
 EQUIPMENT - MV/MVRA

z







127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0425	8.3	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	1.9	8.0	0.0	0.9900	10.0	0.9808	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9914	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9915	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9915	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9972	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9972	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9972	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9886	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9886	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9886	6.2	2	7
SUBSYSTEM TOTALS				73.3	4.4	51.0	-33.0				124.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      SUN, MAY 13 2007 12:13  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007      AREA TOTALS  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO      IN MW/MVAR

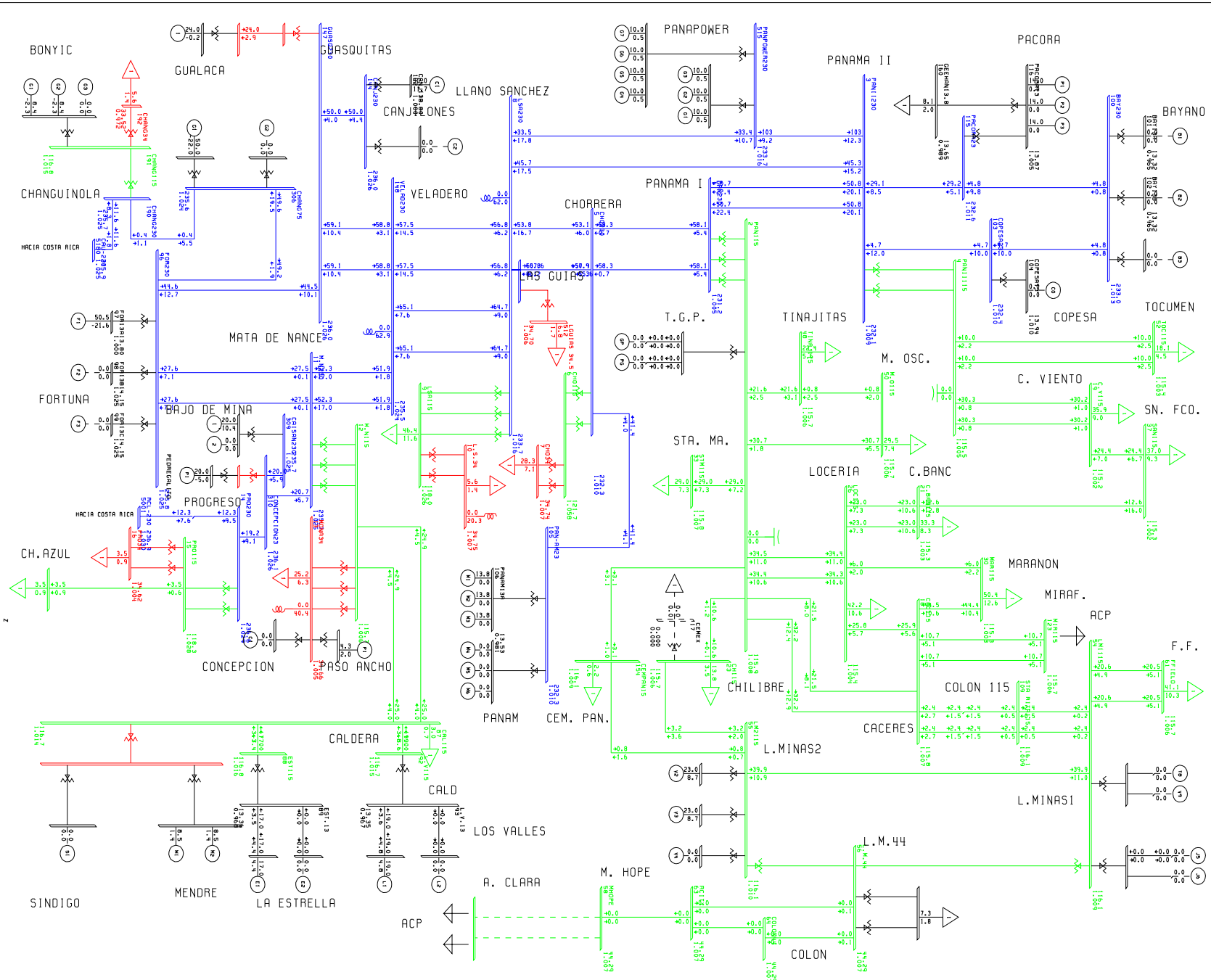
X-- AREA	--X GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.2	224.5	-98.9	0.0	143.3	-97.4	147.3	
5	1345.6	1324.8	0.0	0.0	0.0	0.6	20.2	0.0
C.RICA	238.3	569.4	-237.4	0.0	471.1	15.8	361.7	
6	1260.0	1131.1	0.0	0.0	0.0	87.4	41.5	25.0
PANAMA	92.6	283.5	-244.2	0.0	482.5	77.9	457.9	
7	73.3	38.6	0.0	0.0	0.0	33.3	1.5	50.0
ACANAL	4.4	9.7	0.0	0.0	0.0	-15.4	10.2	
9	0.0	120.9	0.0	0.0	0.0	-121.3	0.4	-75.0
COLON	0.0	30.3	0.0	0.0	1.1	-31.7	2.5	
TOTALS	6483.2	6342.1	0.0	0.0	0.0	0.0	141.1	0.0
	553.7	1939.8	-1093.1	0.0	2033.6	0.0	1740.6	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO**

**Casos 1 y 2**

**MHT7 Y MHTC7**



7

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SUN, MAY 13 2007 14:38  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0053	231.21	3		PANII230		230.00	6	1.0092	232.13
5		CHO230		230.00	6	1.0100	232.31	8		LSA230		230.00	6	1.0163	233.74
11		M.N230		230.00	6	1.0247	235.67	14		PRO230		230.00	6	1.0286	236.57
96		FOR230		230.00	6	1.0252	235.81	100		BAY230		230.00	6	1.0133	233.05
103		COPESA23		230.00	6	1.0104	232.38	105		PAN-AM23		230.00	6	1.0100	232.31
115		PACORA23		230.00	6	1.0114	232.63	144		CANJ230		230.00	6	1.0263	236.04
147		GUASQ230		230.00	6	1.0262	236.04	148		VELAD230		230.00	6	1.0241	235.54
190		CHANG230		230.00	6	1.0248	235.70	306		CHANG75		230.00	6	1.0241	235.55
309		CAISAN230		230.00	6	1.0249	235.72	310		CONCEPCION23		230.00	6	1.0265	236.09
511		LGUIAS230		230.00	6	1.0161	233.70	515		PANPOWER230		230.00	6	1.0161	233.71
6000		FRONTER		230.00	6	1.0291	236.70								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SUN, MAY 13 2007 14:38  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0076	115.87	4		PANII115		115.00	6	1.0045	115.52
6		CHO115		115.00	6	1.0579	121.65	9		LSA115		115.00	6	1.0257	117.96
12		M.N115		115.00	6	1.0059	115.67	15		PRO115		115.00	6	1.0283	118.26
18		CAC115		115.00	6	1.0072	115.83	19		C.V115		115.00	6	1.0018	115.21
20		CH.AZUL		115.00	6	1.0275	118.16	21		C.BAN115		115.00	6	1.0030	115.35
23		CH115		115.00	6	1.0062	115.71	26		LOC115		115.00	6	1.0036	115.41
30		MAR115		115.00	6	1.0028	115.33	33		STM115		115.00	6	1.0068	115.78
37		SAN115		115.00	6	1.0024	115.27	48		TINAJ115		115.00	6	1.0062	115.71
50		M.O115		115.00	6	1.0063	115.72	52		TOC115		115.00	6	1.0033	115.38
54		LM1115		115.00	6	1.0093	116.07	55		LM2115		115.00	6	1.0098	116.13
61		FFIELD		115.00	9	1.0064	115.74	87		CAL115		115.00	6	1.0144	116.65
88		EST115		115.00	6	1.0158	116.82	92		L.V115		115.00	6	1.0149	116.72
109		STA RITA115		115.00	6	1.0093	116.07	110		PTMD115A		115.00	6	1.0088	116.01
111		PTMD115B		115.00	6	1.0088	116.01	123		MIR115		115.00	7	1.0064	115.74
154		CEMPAN15		115.00	6	1.0093	116.07	191		CHANG115		115.00	6	1.0154	116.77

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E                    SUN, MAY 13 2007 14:38  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO

AREA 6 [PANAMA] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	23.0	8.7	17.0	0.0	0.9800	25.1	0.9357	47.0			1	6		
67		BLM13C		13.800	V3	23.0	8.7	17.0	0.0	0.9800	25.1	0.9357	47.0			1	6		
90		EST-13L		13.800	E1	17.0	4.4	12.0	-5.0	0.9800	17.9	0.9676	27.0			1	6		
94		LV-13.8L		13.800	L1	19.0	4.8	12.0	-5.0	0.9800	20.0	0.9693	27.0			1	6		
97		FOR13A		13.800	F1	50.5	-21.6	50.0	-50.0	1.0000	54.9	0.9196	111.0			1	6	SYST	
106		PANAM13A		13.800	M1	13.8	0.0	9.0	0.0	0.9806	14.1	1.0000	20.7			1	6		
106		PANAM13A		13.800	M2	13.8	0.0	9.0	0.0	0.9806	14.1	1.0000	20.7			1	6		
106		PANAM13A		13.800	M3	13.8	0.0	9.0	0.0	0.9806	14.1	1.0000	20.7			1	6		
116		PACORA13		13.800	P1	14.0	0.0	8.8	0.0	1.0048	13.9	1.0000	21.7			1	6		
116		PACORA13		13.800	P2	14.0	0.0	8.8	0.0	1.0048	13.9	1.0000	21.7			1	6		
116		PACORA13		13.800	P3	14.0	0.0	8.8	0.0	1.0048	13.9	1.0000	21.7			1	6		
142		CANJ13A		13.800	C1	50.0	11.7	29.0	-29.0	1.0000	51.4	0.9737	69.0			1	6		
151		GUALAC13		13.800	1	24.0	-0.2	10.0	-10.0	1.0000	24.0	1.0000	26.7			1	6		
193		GEBOYIC		13.800	G1	8.4	-2.3	4.0	-4.0	1.0000	8.7	0.9655	35.3			1	6		
193		GEBOYIC		13.800	G2	8.4	-2.3	4.0	-4.0	1.0000	8.7	0.9655	35.3			1	6		
204		BJOMIN13		13.800	1	20.0	-10.4	13.0	-13.0	1.0000	22.5	0.8879	28.9			1	6		
302		PASOANCH13.8		13.800	P1	4.3	2.0	2.0	-2.0	0.9580	5.0	0.9067	6.2			1	6		
307		CHANG75A		13.800	G1	50.0	-22.0	22.0	-22.0	1.0000	54.6	0.9155	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	1.4	4.0	-4.0	1.0000	8.6	0.9871	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	1.4	4.0	-4.0	1.0000	8.6	0.9871	35.3			1	6		
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0456	19.7	0.9701	27.0			1	6		
516		PANAPOW13A		13.800	G1	10.0	0.5	12.5	0.5	1.0175	9.8	0.9986	20.9			1	6		
516		PANAPOW13A		13.800	G2	10.0	0.5	12.5	0.5	1.0175	9.8	0.9986	20.9			1	6		
516		PANAPOW13A		13.800	G3	10.0	0.5	12.5	0.5	1.0175	9.8	0.9986	20.9			1	6		
517		PANAPOW13B		13.800	G4	10.0	0.5	12.5	0.5	1.0171	9.8	0.9986	20.9			1	6		
517		PANAPOW13B		13.800	G5	10.0	0.5	12.5	0.5	1.0171	9.8	0.9986	20.9			1	6		
517		PANAPOW13B		13.800	G6	10.0	0.5	12.5	0.5	1.0171	9.8	0.9986	20.9			1	6		
517		PANAPOW13B		13.800	G7	10.0	0.5	12.5	0.5	1.0171	9.8	0.9986	20.9			1	6		
SUBSYSTEM TOTALS						488.0	-16.9	353.1	-153.3				950.0						

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AREA 7 [ACANAL] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
135		MAD6B		6.9000	G2	10.0	1.4	6.0	-6.0	1.0000	10.1	0.9901	13.0			2	7		
136		MAD6C		6.9000	G3	10.0	1.4	6.0	-6.0	1.0000	10.1	0.9901	13.0			2	7		
140		GAT6A		6.9000	G1	2.0	-0.1	2.0	-2.0	1.0000	2.0	0.9994	4.1			2	7		
140		GAT6A		6.9000	G2	2.0	-0.1	2.0	-2.0	1.0000	2.0	0.9994	4.1			2	7		
140		GAT6A		6.9000	G3	2.0	-0.1	2.0	-2.0	1.0000	2.0	0.9994	4.1			2	7		
141		GAT6B		6.9000	G4	4.0	-0.8	3.0	-3.0	1.0000	4.1	0.9805	5.6			2	7		
141		GAT6B		6.9000	G5	4.0	-0.8	3.0	-3.0	1.0000	4.1	0.9805	6.2			2	7		
141		GAT6B		6.9000	G6	4.0	-0.8	3.0	-3.0	1.0000	4.1	0.9805	6.2			2	7		
SUBSYSTEM TOTALS						38.0	0.2	27.0	-27.0				56.4						

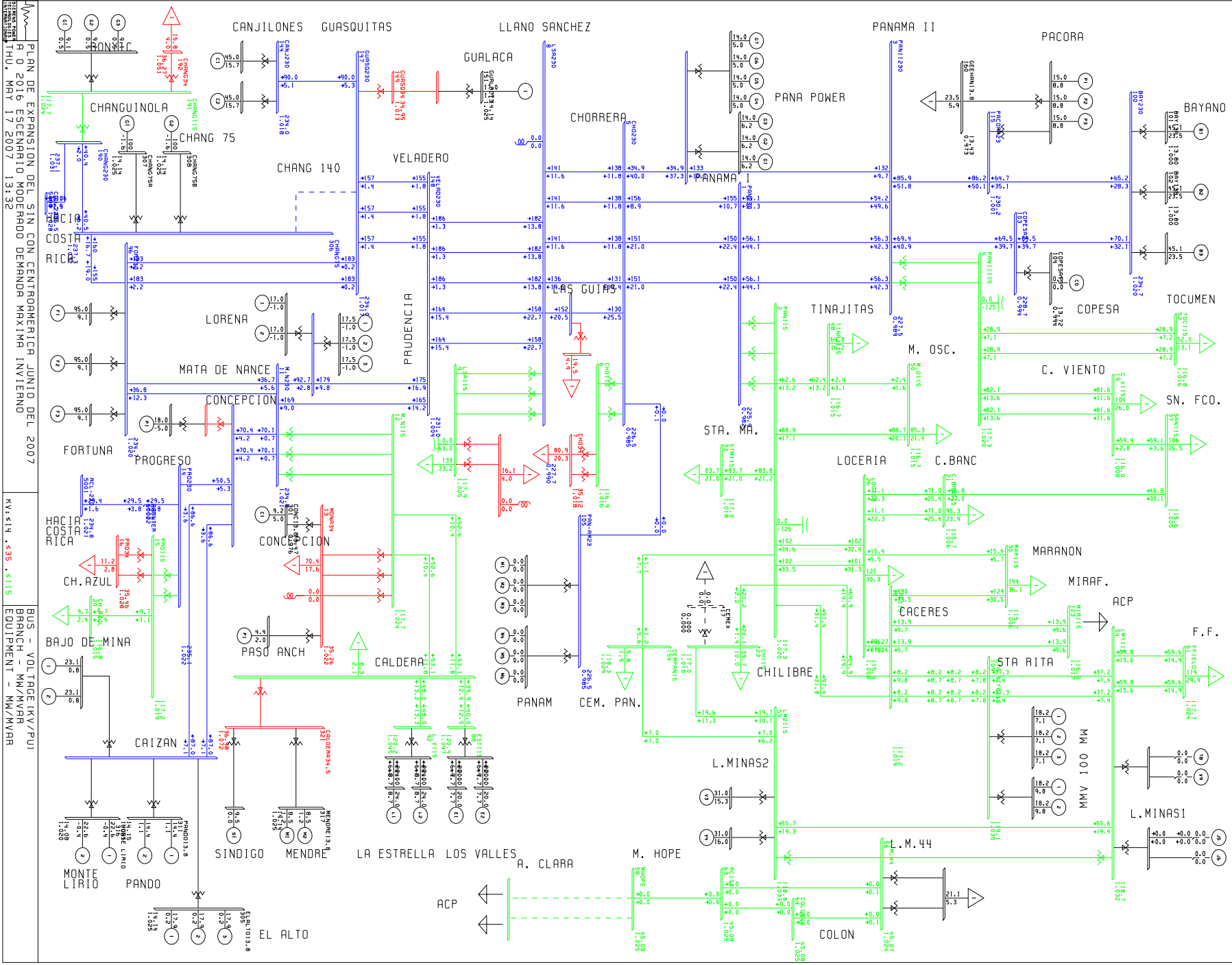
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SUN, MAY 13 2007 14:38  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.5	224.5	-98.9	0.0	143.2	-97.2	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	0.0	19.5	0.0
C.RICA	250.5	569.4	-237.4	0.0	469.9	30.8	357.6	
6	488.0	452.4	0.0	0.0	0.0	27.0	8.6	25.0
PANAMA	-16.9	113.4	185.6	0.0	473.0	37.2	119.9	
7	38.0	15.4	0.0	0.0	0.0	21.4	1.1	50.0
ACANAL	0.2	3.9	0.0	0.0	0.0	-10.3	6.6	
9	0.0	48.4	0.0	0.0	0.0	-48.4	0.1	-75.0
COLON	0.0	12.1	0.0	0.0	1.1	-11.4	0.4	
TOTALS	5674.6	5567.8	0.0	0.0	0.0	0.0	106.8	0.0
	452.5	1745.7	-663.3	0.0	2022.9	0.0	1393.0	

## PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007

### AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO

#### Caso 1 MHT7



PLAN DE EXPANSION DEL SIN CON CENTROMERICA JUNIO DEL 2007  
 R 0 2016 ESCENARIO MODERNO DEMANDA MAXIMA INVIERNO  
 THU, MAY 17 2007 13:32

KV=119.435V <115  
 BUS - VOLTAGE (KV/PU)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:00  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0209	234.81	14	PRO230	230.00	6	1.0220	235.07
96	FOR230	230.00	6	1.0203	234.67	100	BAY230	230.00	6	1.0203	234.67
115	PACORA23	230.00	6	1.0008	230.19	144	CANJ230	230.00	6	1.0176	234.04
147	GUASQ230	230.00	6	1.0173	233.97	148	VELAD230	230.00	6	1.0042	230.96
190	CHANG230	230.00	6	1.0309	237.10	306	CHANG75	230.00	6	1.0316	237.27
309	CAISAN230	230.00	6	1.0267	236.13	310	CONCEPCION23	230.00	6	1.0235	235.41
341	NVAEST230	230.00	6	1.0190	234.38	6000	FRONTIER	230.00	6	1.0220	235.06

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9820	225.86	3	PANII230	230.00	6	0.9890	227.47
5	CHO230	230.00	6	0.9847	226.48	8	LSA230	230.00	6	0.9899	227.69
103	COFESA23	230.00	6	0.9942	228.66	105	PAN-AM23	230.00	6	0.9847	226.48
511	LGUIAS230	230.00	6	0.9843	226.40	515	PANPOWER230	230.00	6	0.9905	227.81

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:00  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0197	117.27	4	PANIII115	115.00	6	1.0197	117.26
6	CHO115	115.00	6	1.0162	116.86	9	LSA115	115.00	6	1.0249	117.86
12	M.N115	115.00	6	1.0237	117.73	15	PRO115	115.00	6	1.0193	117.21
18	CAC115	115.00	6	1.0188	117.17	19	C.V115	115.00	6	1.0085	115.97
20	CH.AZUL	115.00	6	1.0153	116.76	21	C.BAN115	115.00	6	1.0063	115.73
23	CH115	115.00	6	1.0176	117.03	26	LOC115	115.00	6	1.0078	115.90
30	MAR115	115.00	6	1.0059	115.68	33	STM115	115.00	6	1.0176	117.02
37	SAN115	115.00	6	1.0049	115.56	48	TINAJ115	115.00	6	1.0148	116.70
50	M.O115	115.00	6	1.0151	116.74	52	TOC115	115.00	6	1.0161	116.85
54	LM1115	115.00	6	1.0323	118.72	55	LM2115	115.00	6	1.0330	118.80
61	FFIELD	115.00	9	1.0238	117.74	87	CAL115	115.00	6	1.0433	119.97
88	EST115	115.00	6	1.0473	120.44	92	L.V115	115.00	6	1.0448	120.16
109	STA RITA115	115.00	6	1.0354	119.08	110	PTMD115A	115.00	6	1.0288	118.31
111	PTMD115B	115.00	6	1.0288	118.31	123	MIR115	115.00	7	1.0168	116.93
154	CEMPAN15	115.00	6	1.0287	118.30	191	CHANG115	115.00	6	1.0238	117.74

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)

\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 15:59  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	31.0	15.3	17.0	0.0	1.0150	34.1	0.8970	47.0			1		6

67	BLM13C	13.800	V3	31.0	15.3	17.0	0.0	1.0150	34.1	0.8970	47.0	1	6
68	BLM13D	13.800	V4	31.0	16.0	17.0	0.0	1.0150	34.4	0.8890	47.0	1	6
90	EST-13L	13.800	E1	20.0	7.7	12.0	-5.0	1.0200	21.0	0.9336	27.0	1	6
91	EST-13T	13.800	E2	20.0	7.7	12.0	-5.0	1.0200	21.0	0.9336	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	8.7	12.0	-5.0	1.0200	25.0	0.9403	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	8.7	12.0	-5.0	1.0200	25.0	0.9403	27.0	1	6
97	FOR13A	13.800	F1	95.0	9.1	50.0	-50.0	1.0250	93.1	0.9954	111.0	1	6
98	FOR13B	13.800	F2	95.0	9.1	50.0	-50.0	1.0250	93.1	0.9954	111.0	1	6
99	FOR13C	13.800	F3	95.0	9.1	50.0	-50.0	1.0250	93.1	0.9954	111.0	1	6
101	BAY13A	13.800	B1	45.1	23.5	50.0	-25.0	1.0000	50.8	0.8872	96.0	1	6
102	BAY13B	13.800	B2	45.1	23.5	50.0	-25.0	1.0000	50.8	0.8872	96.0	1	6
108	BAY13C	13.800	B3	45.1	23.5	50.0	-25.0	1.0000	50.8	0.8872	100.0	1	6
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0293	16.9	0.8618	21.7	1	6
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0293	16.9	0.8618	21.7	1	6
116	PACORA13	13.800	P3	15.0	8.8	8.8	0.0	1.0293	16.9	0.8618	21.7	1	6
142	CANJ13A	13.800	C1	45.0	15.7	29.0	-29.0	1.0250	46.5	0.9440	69.0	1	6
143	CANJ13B	13.800	C2	45.0	15.7	29.0	-29.0	1.0250	46.5	0.9440	69.0	1	6
151	GUALAC13	13.800	1	17.0	1.5	10.0	-10.0	1.0250	16.7	0.9961	26.7	1	6
193	GEBONYIC	13.800	G1	9.1	0.5	4.0	-4.0	1.0250	8.9	0.9985	35.3	1	6
193	GEBONYIC	13.800	G2	9.1	0.5	4.0	-4.0	1.0250	8.9	0.9985	35.3	1	6
193	GEBONYIC	13.800	G3	9.1	0.5	4.0	-4.0	1.0250	8.9	0.9985	35.3	1	6
204	BJOMIN13	13.800	1	23.1	0.8	13.0	-13.0	1.0250	22.6	0.9994	28.9	1	6
204	BJOMIN13	13.800	2	23.1	0.8	13.0	-13.0	1.0250	22.6	0.9994	28.9	1	6
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9764	10.7	0.8784	13.5	1	6
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9746	5.0	0.9110	6.2	1	6
303	SIND13.8	13.800	S1	9.5	0.0	5.0	0.0	1.0206	9.3	1.0000	13.5	1	6
305	ELALTO13.8	13.800	1	17.9	0.2	12.0	-5.0	1.0250	17.5	0.9999	20.6	1	6
305	ELALTO13.8	13.800	2	17.9	0.2	12.0	-5.0	1.0250	17.5	0.9999	20.6	1	6
305	ELALTO13.8	13.800	3	17.9	0.2	12.0	-5.0	1.0250	17.5	0.9999	20.6	1	6
307	CHANG75A	13.800	G1	100.0	-1.6	22.0	-22.0	1.0250	97.6	0.9999	118.6	1	6
308	CHANG75B	13.800	G2	100.0	-1.6	50.0	-22.0	1.0250	97.6	0.9999	118.6	1	6
311	PANDO13.8	13.800	1	14.4	1.1	10.0	-5.0	1.0250	14.1	0.9972	19.9	1	6
311	PANDO13.8	13.800	2	14.4	1.1	10.0	-5.0	1.0250	14.1	0.9972	19.9	1	6
312	MMVA	13.800	1	18.2	7.1	11.2	0.0	1.0500	18.6	0.9310	23.0	1	6
312	MMVA	13.800	2	18.2	7.1	11.2	0.0	1.0500	18.6	0.9310	23.0	1	6
312	MMVA	13.800	3	18.2	7.1	11.2	0.0	1.0500	18.6	0.9310	23.0	1	6
313	MMVB	13.800	1	18.2	9.8	11.2	0.0	1.0500	19.7	0.8805	23.0	1	6
313	MMVB	13.800	2	18.2	9.8	11.2	0.0	1.0500	19.7	0.8805	23.0	1	6
316	MONTE LIRIO	13.800	1	22.6	-0.4	12.0	-5.0	1.0200	22.1	0.9999	27.0	1	6
316	MONTE LIRIO	13.800	2	22.6	-0.4	12.0	-5.0	1.0200	22.1	0.9999	27.0	1	6
317	MENDRE13.8	13.800	M1	8.5	1.2	4.0	-4.0	1.0250	8.4	0.9907	35.3	1	6
317	MENDRE13.8	13.800	M2	8.5	1.2	4.0	-4.0	1.0250	8.4	0.9907	35.3	1	6
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0431	17.9	0.9635	27.0	1	6
342	LORENA13.8	13.800	1	17.0	-1.0	12.0	-5.0	1.0100	16.9	0.9982	27.0	1	6
342	LORENA13.8	13.800	2	17.0	-1.0	12.0	-5.0	1.0100	16.9	0.9982	27.0	1	6
343	PRUDENCIA138	13.800	1	17.5	-1.0	9.8	-9.8	1.0100	17.4	0.9985	21.4	1	6
343	PRUDENCIA138	13.800	2	17.5	-1.0	9.8	-9.8	1.0100	17.4	0.9985	21.4	1	6
343	PRUDENCIA138	13.800	3	17.5	-1.0	9.8	-9.8	1.0100	17.4	0.9985	21.4	1	6
516	PANAPOW13A	13.800	G1	14.0	6.2	12.5	0.5	1.0250	14.9	0.9146	20.9	1	6
516	PANAPOW13A	13.800	G2	14.0	6.2	12.5	0.5	1.0250	14.9	0.9146	20.9	1	6
516	PANAPOW13A	13.800	G3	14.0	6.2	12.5	0.5	1.0250	14.9	0.9146	20.9	1	6
517	PANAPOW13B	13.800	G4	14.0	5.0	12.5	0.5	1.0250	14.5	0.9417	20.9	1	6
517	PANAPOW13B	13.800	G5	14.0	5.0	12.5	0.5	1.0250	14.5	0.9417	20.9	1	6
517	PANAPOW13B	13.800	G6	14.0	5.0	12.5	0.5	1.0250	14.5	0.9417	20.9	1	6
517	PANAPOW13B	13.800	G7	14.0	5.0	12.5	0.5	1.0250	14.5	0.9417	20.9	1	6
SUBSYSTEM TOTALS				1488.3	317.5	912.7	-485.6				2170.3		

SYST



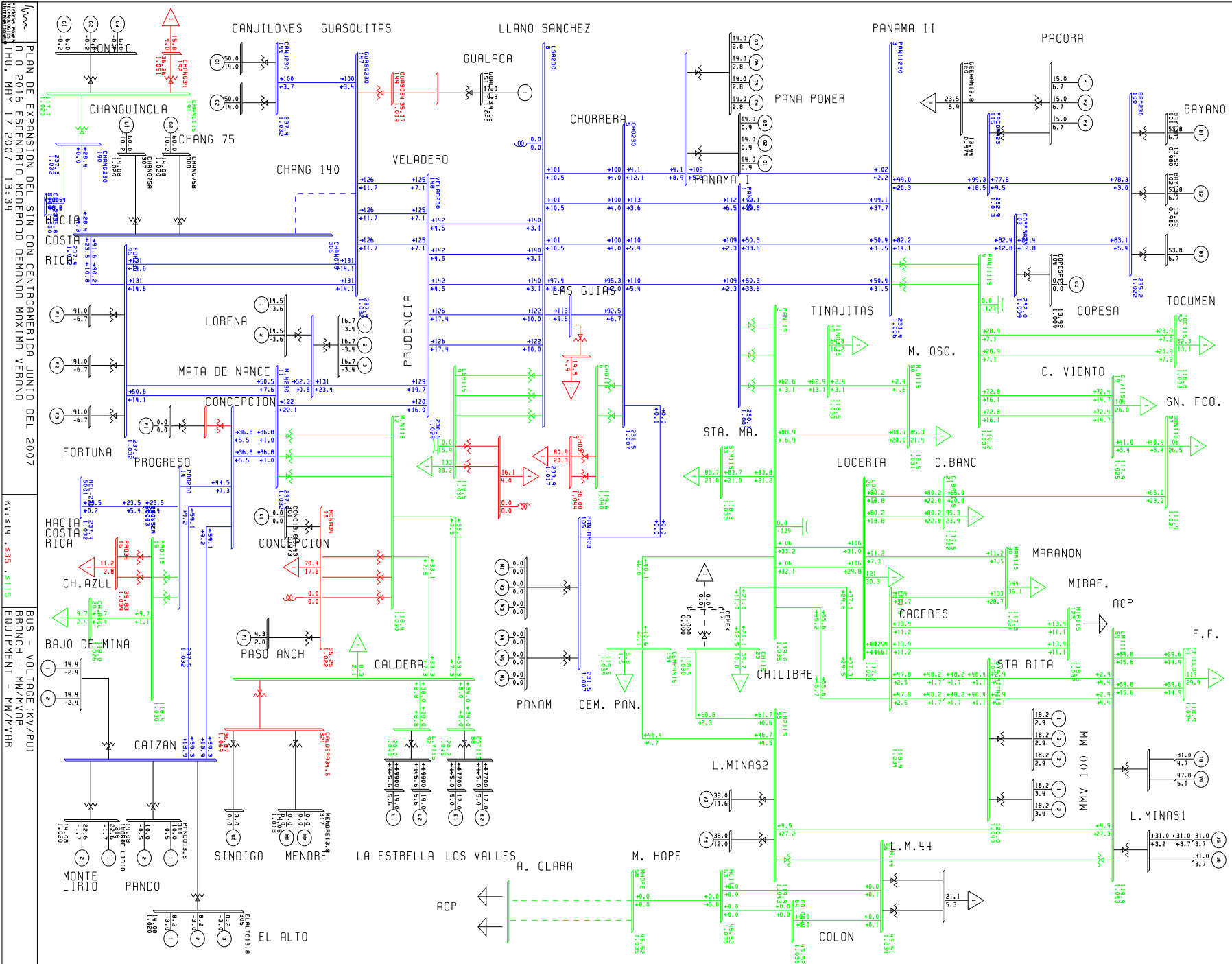
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:00  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.8	290.6	-188.3	0.0	302.8	-5.2	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.8	224.5	-98.9	0.0	143.2	-97.0	147.4	
5	1345.8	1324.8	0.0	0.0	0.0	0.3	20.8	0.0
C.RICA	259.7	569.4	-237.7	0.0	476.2	38.5	365.6	
6	1488.3	1296.9	0.0	0.0	0.0	112.7	78.7	25.0
PANAMA	317.5	325.0	-312.6	0.0	537.4	64.2	778.2	
7	73.3	44.1	0.0	0.0	0.0	27.8	1.4	50.0
ACANAL	1.4	11.1	0.0	0.0	0.0	-19.4	9.7	
9	0.0	140.2	0.0	0.0	0.0	-140.7	0.5	-75.0
COLON	0.0	35.1	0.0	0.0	1.1	-37.3	3.3	
TOTALS	6711.8	6532.9	0.0	0.0	0.0	0.0	178.9	0.0
	797.7	1987.6	-1161.7	0.0	2093.5	0.0	2065.3	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO**

**Caso 1 MHT7**



BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0006	230.15	3		PANII230		230.00	6	1.0060	231.39
5		CHO230		230.00	6	1.0067	231.54	8		LSA230		230.00	6	1.0170	233.92
11		M.N230		230.00	6	1.0323	237.42	14		PRO230		230.00	6	1.0324	237.45
96		FOR230		230.00	6	1.0319	237.34	100		BAY230		230.00	6	1.0225	235.17
103		COPESA23		230.00	6	1.0089	232.04	105		PAN-AM23		230.00	6	1.0067	231.54
115		PACORA23		230.00	6	1.0128	232.95	144		CANJ230		230.00	6	1.0322	237.40
147		GUASQ230		230.00	6	1.0320	237.36	148		VELAD230		230.00	6	1.0287	236.61
190		CHANG230		230.00	6	1.0316	237.26	306		CHANG75		230.00	6	1.0322	237.41
309		CAISAN230		230.00	6	1.0328	237.54	310		CONCEPCION230		230.00	6	1.0331	237.62
341		NVAEST230		230.00	6	1.0313	237.21	511		LGUIAS230		230.00	6	1.0117	232.70
515		PANPOWER230		230.00	6	1.0084	231.92	6000		FRONTER		230.00	6	1.0326	237.50

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0351	119.04	4		PANII115		115.00	6	1.0366	119.21
6		CHO115		115.00	6	1.0402	119.62	9		LSA115		115.00	6	1.0303	118.49
12		M.N115		115.00	6	1.0295	118.40	15		PRO115		115.00	6	1.0297	118.41
18		CAC115		115.00	6	1.0341	118.93	19		C.V115		115.00	6	1.0253	117.91
20		CH.AZUL		115.00	6	1.0258	117.97	21		C.BAN115		115.00	6	1.0221	117.54
23		CH115		115.00	6	1.0300	118.45	26		LOC115		115.00	6	1.0235	117.70
30		MAR115		115.00	6	1.0215	117.47	33		STM115		115.00	6	1.0330	118.79
37		SAN115		115.00	6	1.0208	117.40	48		TINAJ115		115.00	6	1.0302	118.47
50		M.O115		115.00	6	1.0306	118.52	52		TOC115		115.00	6	1.0331	118.81
54		LM1115		115.00	6	1.0425	119.89	55		LM2115		115.00	6	1.0427	119.91
61		FFIELD		115.00	9	1.0341	118.92	87		CAL115		115.00	6	1.0422	119.85
88		EST115		115.00	6	1.0451	120.19	92		L.V115		115.00	6	1.0433	119.98
109		STA RITA115		115.00	6	1.0433	119.98	110		PTMD115A		115.00	6	1.0405	119.66
111		PTMD115B		115.00	6	1.0405	119.66	123		MIR115		115.00	7	1.0316	118.63
154		CEMPAN15		115.00	6	1.0394	119.53	191		CHANG115		115.00	6	1.0234	117.69

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:12  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO

AREA 6 [PANAMA ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	38.0	11.6	17.0	0.0	1.0150	39.1	0.9564	47.0			1	6	
67		BLM13C		13.800	V3	38.0	11.6	17.0	0.0	1.0150	39.1	0.9564	47.0			1	6	
68		BLM13D		13.800	V4	38.0	12.0	17.0	0.0	1.0150	39.3	0.9533	47.0			1	6	
70		TGJB13A		13.800	J5	31.0	3.7	20.0	0.0	1.0000	31.2	0.9929	39.4			1	6	
71		TGJB13B		13.800	J6	31.0	3.7	20.0	0.0	1.0000	31.2	0.9929	39.4			1	6	
72		BLMCCA		13.800	T8	31.0	4.7	20.0	0.0	1.0000	31.4	0.9887	50.0			1	6	
73		BLMCCB		13.800	V9	47.8	5.1	40.0	0.0	1.0000	48.1	0.9944	71.0			1	6	
90		EST-13L		13.800	E1	17.0	5.0	12.0	-5.0	1.0100	17.5	0.9595	27.0			1	6	
91		EST-13T		13.800	E2	17.0	5.0	12.0	-5.0	1.0100	17.5	0.9595	27.0			1	6	
94		LV-13.8L		13.800	L1	19.0	5.6	12.0	-5.0	1.0100	19.6	0.9587	27.0			1	6	
95		LV-13.8T		13.800	L2	19.0	5.6	12.0	-5.0	1.0100	19.6	0.9587	27.0			1	6	
97		FOR13A		13.800	F1	91.0	-6.7	50.0	-50.0	1.0200	89.5	0.9973	111.0			1	6	
98		FOR13B		13.800	F2	91.0	-6.7	50.0	-50.0	1.0200	89.5	0.9973	111.0			1	6	
99		FOR13C		13.800	F3	91.0	-6.7	50.0	-50.0	1.0200	89.5	0.9973	111.0			1	6	
101		BAY13A		13.800	B1	53.8	6.7	50.0	-25.0	0.9800	55.3	0.9923	96.0			1	6	SYST
102		BAY13B		13.800	B2	53.8	6.7	50.0	-25.0	0.9800	55.3	0.9923	96.0			1	6	
108		BAY13C		13.800	B3	53.8	6.7	50.0	-25.0	0.9800	55.3	0.9923	100.0			1	6	
116		PACORA13		13.800	P1	15.0	6.7	8.8	0.0	1.0300	16.0	0.9125	21.7			1	6	
116		PACORA13		13.800	P2	15.0	6.7	8.8	0.0	1.0300	16.0	0.9125	21.7			1	6	
116		PACORA13		13.800	P3	15.0	6.7	8.8	0.0	1.0300	16.0	0.9125	21.7			1	6	
142		CANJ13A		13.800	C1	50.0	14.0	29.0	-29.0	1.0200	50.9	0.9631	69.0			1	6	
143		CANJ13B		13.800	C2	50.0	14.0	29.0	-29.0	1.0200	50.9	0.9631	69.0			1	6	
151		GUALAC13		13.800	1	17.0	-0.3	10.0	-10.0	1.0200	16.7	0.9998	26.7			1	6	
193		GEBONYIC		13.800	G1	6.0	-0.2	4.0	-4.0	1.0200	5.9	0.9994	35.3			1	6	
193		GEBONYIC		13.800	G2	6.0	-0.2	4.0	-4.0	1.0200	5.9	0.9994	35.3			1	6	
193		GEBONYIC		13.800	G3	6.0	-0.2	4.0	-4.0	1.0200	5.9	0.9994	35.3			1	6	
204		BJOMIN13		13.800	1	14.4	-2.4	13.0	-13.0	1.0200	14.3	0.9866	28.9			1	6	
204		BJOMIN13		13.800	2	14.4	-2.4	13.0	-13.0	1.0200	14.3	0.9866	28.9			1	6	
302		PASOANCH13.8		13.800	P1	4.3	2.0	2.0	-2.0	0.9743	4.9	0.9067	6.2			1	6	
303		SIND13.8		13.800	S1	3.0	0.0	5.0	0.0	1.0179	2.9	1.0000	13.5			1	6	
305		ELALTO13.8		13.800	1	8.2	-3.0	12.0	-5.0	1.0200	8.6	0.9397	20.6			1	6	
305		ELALTO13.8		13.800	2	8.2	-3.0	12.0	-5.0	1.0200	8.6	0.9397	20.6			1	6	
305		ELALTO13.8		13.800	3	8.2	-3.0	12.0	-5.0	1.0200	8.6	0.9397	20.6			1	6	
307		CHANG75A		13.800	G1	60.0	-10.2	22.0	-22.0	1.0200	59.7	0.9858	118.6			1	6	
308		CHANG75B		13.800	G2	60.0	-10.2	50.0	-22.0	1.0200	59.7	0.9858	118.6			1	6	
311		PANDO13.8		13.800	1	10.0	-0.5	10.0	-5.0	1.0200	9.8	0.9988	19.9			1	6	
311		PANDO13.8		13.800	2	10.0	-0.5	10.0	-5.0	1.0200	9.8	0.9988	19.9			1	6	
312		MMVA		13.800	1	18.2	2.9	11.2	0.0	1.0300	17.9	0.9875	23.0			1	6	
312		MMVA		13.800	2	18.2	2.9	11.2	0.0	1.0300	17.9	0.9875	23.0			1	6	
312		MMVA		13.800	3	18.2	2.9	11.2	0.0	1.0300	17.9	0.9875	23.0			1	6	
313		MMVB		13.800	1	18.2	3.4	11.2	0.0	1.0300	18.0	0.9826	23.0			1	6	
313		MMVB		13.800	2	18.2	3.4	11.2	0.0	1.0300	18.0	0.9826	23.0			1	6	
316		MONTE LIRIO		13.800	1	22.6	-1.7	12.0	-5.0	1.0200	22.2	0.9971	27.0			1	6	
316		MONTE LIRIO		13.800	2	22.6	-1.7	12.0	-5.0	1.0200	22.2	0.9971	27.0			1	6	
342		LORENA13.8		13.800	1	14.5	-3.6	12.0	-5.0	1.0100	14.8	0.9699	27.0			1	6	
342		LORENA13.8		13.800	2	14.5	-3.6	12.0	-5.0	1.0100	14.8	0.9699	27.0			1	6	
343		PRUDENCIA13813		13.800	1	16.7	-3.4	9.8	-9.8	1.0100	16.9	0.9800	21.4			1	6	
343		PRUDENCIA13813		13.800	2	16.7	-3.4	9.8	-9.8	1.0100	16.9	0.9800	21.4			1	6	
343		PRUDENCIA13813		13.800	3	16.7	-3.4	9.8	-9.8	1.0100	16.9	0.9800	21.4			1	6	
516		PANAPOW13A		13.800	G1	14.0	0.9	12.5	0.5	1.0100	13.9	0.9981	20.9			1	6	
516		PANAPOW13A		13.800	G2	14.0	0.9	12.5	0.5	1.0100	13.9	0.9981	20.9			1	6	



516	PANAPOW13A	13.800	G3	14.0	0.9	12.5	0.5	1.0100	13.9	0.9981	20.9	1	6
517	PANAPOW13B	13.800	G4	14.0	2.8	12.5	0.5	1.0250	13.9	0.9803	20.9	1	6
517	PANAPOW13B	13.800	G5	14.0	2.8	12.5	0.5	1.0250	13.9	0.9803	20.9	1	6
517	PANAPOW13B	13.800	G6	14.0	2.8	12.5	0.5	1.0250	13.9	0.9803	20.9	1	6
517	PANAPOW13B	13.800	G7	14.0	2.8	12.5	0.5	1.0250	13.9	0.9803	20.9	1	6
SUBSYSTEM TOTALS				1455.2	96.4	987.7	-467.6				2259.0		

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 14 2007 16:12  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0593	8.1	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0593	8.1	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	0.0	8.0	0.0	1.0016	9.7	1.0000	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	0.4	6.0	-6.0	1.0000	9.7	0.9992	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	0.4	6.0	-6.0	1.0000	9.7	0.9992	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	0.4	6.0	-6.0	1.0000	9.7	0.9992	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9784	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9784	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9784	6.2			2	7	
SUBSYSTEM TOTALS						73.3	-1.5	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:12  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.9 55.6	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.9	0.0 -5.3	21.4 261.6	0.0
4	NICA		538.2 32.4	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.3	0.0 -97.3	11.1 147.3	0.0
5	C.RICA		1345.8 243.8	1324.8 569.4	0.0 -238.5	0.0 0.0	0.0 478.1	1.0 30.6	20.1 360.5	0.0
6	PANAMA		1455.2 96.4	1296.9 325.0	0.0 -273.4	0.0 0.0	0.0 558.2	111.9 75.6	46.3 527.4	25.0
7	ACANAL		73.3 -1.5	44.1 11.1	0.0 0.0	0.0 0.0	0.0 0.0	27.7 -22.5	1.4 9.9	50.0
9	COLON		0.0 0.0	140.2 35.1	0.0 0.0	0.0 0.0	0.0 1.1	-140.7 -37.2	0.5 3.2	-75.0
TOTALS			6678.7 557.2	6532.9 1987.6	0.0 -1123.5	0.0 0.0	0.0 2116.3	0.0 0.0	145.8 1809.4	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO**

**Caso 1 MHT7**



BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0030	230.68	3		PANII230		230.00	6	1.0057	231.31
5		CHO230		230.00	6	1.0121	232.78	8		LSA230		230.00	6	1.0200	234.61
11		M.N230		230.00	6	1.0287	236.60	14		PRO230		230.00	6	1.0309	237.10
96		FOR230		230.00	6	1.0289	236.65	100		BAY230		230.00	6	1.0097	232.22
103		COPESA23		230.00	6	1.0068	231.56	105		PAN-AM23		230.00	6	1.0121	232.79
115		PACORA23		230.00	6	1.0078	231.79	144		CANJ230		230.00	6	1.0299	236.88
147		GUASQ230		230.00	6	1.0299	236.88	148		VELAD230		230.00	6	1.0280	236.44
190		CHANG230		230.00	6	1.0268	236.17	306		CHANG75		230.00	6	1.0265	236.10
309		CAISAN230		230.00	6	1.0275	236.33	310		CONCEPCION230		230.00	6	1.0292	236.72
341		NVAEST230		230.00	6	1.0284	236.53	511		LGUIAS230		230.00	6	1.0190	234.36
515		PANPOWER230		230.00	6	1.0106	232.44	6000		FRONTER		230.00	6	1.0313	237.21

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0358	119.12	4		PANIII115		115.00	6	1.0195	117.24
6		CHO115		115.00	6	1.0593	121.81	9		LSA115		115.00	6	1.0300	118.45
12		M.N115		115.00	6	1.0150	116.73	15		PRO115		115.00	6	1.0304	118.50
18		CAC115		115.00	6	1.0352	119.05	19		C.V115		115.00	6	1.0199	117.29
20		CH.AZUL		115.00	6	1.0293	118.37	21		C.BAN115		115.00	6	1.0290	118.34
23		CH115		115.00	6	1.0297	118.41	26		LOC115		115.00	6	1.0300	118.45
30		MAR115		115.00	6	1.0298	118.42	33		STM115		115.00	6	1.0350	119.03
37		SAN115		115.00	6	1.0276	118.17	48		TINAJ115		115.00	6	1.0342	118.94
50		M.O115		115.00	6	1.0344	118.95	52		TOC115		115.00	6	1.0181	117.08
54		LM1115		115.00	6	1.0273	118.14	55		LM2115		115.00	6	1.0273	118.14
61		FFIELD		115.00	9	1.0240	117.76	87		CAL115		115.00	6	1.0251	117.89
88		EST115		115.00	6	1.0271	118.12	92		L.V115		115.00	6	1.0258	117.97
109		STA RITA115		115.00	6	1.0290	118.33	110		PTMD115A		115.00	6	1.0322	118.70
111		PTMD115B		115.00	6	1.0322	118.70	123		MIR115		115.00	7	1.0335	118.85
154		CEMPAN15		115.00	6	1.0299	118.44	191		CHANG115		115.00	6	1.0166	116.91

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 9:25  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO 100 MMV  
 AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
90	EST-13L	13.800	E1	17.0	7.5	12.0	-5.0	1.0000	18.6	0.9154	27.0					1	6		
94	LV-13.8L	13.800	L1	19.0	8.0	12.0	-5.0	1.0000	20.6	0.9221	27.0					1	6		
97	FOR13A	13.800	F1	60.9	-24.3	50.0	-50.0	1.0000	65.6	0.9289	111.0					1	6	SYST	
106	PANAM13A	13.800	M3	14.0	1.3	9.0	0.0	0.9900	14.2	0.9955	20.7					1	6		
107	PANAM13B	13.800	M4	14.0	3.2	9.0	0.0	1.0000	14.4	0.9750	20.7					1	6		
107	PANAM13B	13.800	M5	14.0	3.2	9.0	0.0	1.0000	14.4	0.9750	20.7					1	6		
116	PACORA13	13.800	P1	14.5	0.0	8.8	0.0	1.0002	14.5	1.0000	21.7					1	6		
116	PACORA13	13.800	P2	14.5	0.0	8.8	0.0	1.0002	14.5	1.0000	21.7					1	6		
116	PACORA13	13.800	P3	14.5	0.0	8.8	0.0	1.0002	14.5	1.0000	21.7					1	6		
142	CANJ13A	13.800	C1	50.0	11.1	29.0	-29.0	1.0000	51.2	0.9762	69.0					1	6		
151	GUALAC13	13.800	1	15.0	-2.1	10.0	-10.0	1.0000	15.1	0.9903	26.7					1	6		
193	GEBOYIC	13.800	G1	9.1	-2.4	4.0	-4.0	1.0000	9.4	0.9665	35.3					1	6		
193	GEBOYIC	13.800	G2	9.1	-2.4	4.0	-4.0	1.0000	9.4	0.9665	35.3					1	6		
204	BJOMIN13	13.800	1	23.1	-11.4	13.0	-13.0	1.0000	25.8	0.8978	28.9					1	6		
301	CONC13.8	13.800	C1	9.0	5.0	5.0	-5.0	0.9385	11.0	0.8742	13.5					1	6		
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9366	5.2	0.9110	6.2					1	6		
303	SIND13.8	13.800	S1	7.9	0.0	5.0	0.0	1.0000	7.9	1.0000	13.5					1	6		
305	ELALTO13.8	13.800	1	14.7	-5.0	12.0	-5.0	1.0205	15.2	0.9467	20.6					1	6		
307	CHANG75A	13.800	G1	60.0	-22.0	22.0	-22.0	1.0018	63.8	0.9389	118.6					1	6		
311	PANDO13.8	13.800	1	14.0	-3.9	10.0	-5.0	1.0000	14.5	0.9629	19.9					1	6		
312	MMVA	13.800	1	18.2	0.6	11.2	0.0	1.0000	18.2	0.9995	23.0					1	6		
312	MMVA	13.800	2	18.2	0.6	11.2	0.0	1.0000	18.2	0.9995	23.0					1	6		
312	MMVA	13.800	3	18.2	0.6	11.2	0.0	1.0000	18.2	0.9995	23.0					1	6		
316	MONTE LIRIO	13.800	1	22.6	-5.0	12.0	-5.0	1.0149	22.8	0.9763	27.0					1	6		
317	MENDRE13.8	13.800	M1	8.5	0.0	4.0	-4.0	1.0000	8.5	1.0000	35.3					1	6		
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0492	17.8	0.9635	27.0					1	6		
342	LORENA13.8	13.800	1	17.0	-5.0	12.0	-5.0	1.0147	17.5	0.9594	27.0					1	6		
343	PRUDENCIAL38	13.800	1	17.5	-9.8	9.8	-9.8	1.0110	19.8	0.8734	21.4					1	6		
516	PANAPOW13A	13.800	G1	14.0	0.5	12.5	0.5	1.0111	13.9	0.9993	20.9					1	6		
516	PANAPOW13A	13.800	G2	14.0	0.5	12.5	0.5	1.0111	13.9	0.9993	20.9					1	6		
SUBSYSTEM TOTALS						564.9	-54.2	352.0	-186.7			928.0							

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
135	MAD6B	6.9000	G2	10.0	0.0	6.0	-6.0	1.0000	10.0	1.0000	13.0					2	7		
136	MAD6C	6.9000	G3	10.0	0.0	6.0	-6.0	1.0000	10.0	1.0000	13.0					2	7		
140	GAT6A	6.9000	G1	2.0	-0.4	2.0	-2.0	1.0000	2.0	0.9821	4.1					2	7		
140	GAT6A	6.9000	G2	2.0	-0.4	2.0	-2.0	1.0000	2.0	0.9821	4.1					2	7		
140	GAT6A	6.9000	G3	2.0	-0.4	2.0	-2.0	1.0000	2.0	0.9821	4.1					2	7		
141	GAT6B	6.9000	G4	4.0	-1.1	3.0	-3.0	1.0000	4.2	0.9629	6.2					2	7		
141	GAT6B	6.9000	G5	4.0	-1.1	3.0	-3.0	1.0000	4.2	0.9629	6.2					2	7		
141	GAT6B	6.9000	G6	4.0	-1.1	3.0	-3.0	1.0000	4.2	0.9629	6.2					2	7		
SUBSYSTEM TOTALS						38.0	-4.5	27.0	-27.0			56.4							

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 9:26  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO 100 MMV IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.4	224.5	-98.9	0.0	143.3	-97.3	147.4	
5	1345.8	1324.8	0.0	0.0	0.0	1.5	19.6	0.0
C.RICA	246.1	569.4	-238.5	0.0	478.0	35.3	357.8	
6	564.9	517.4	0.0	0.0	0.0	35.3	12.2	25.0
PANAMA	-54.2	129.7	182.0	0.0	558.6	40.2	152.5	
7	38.0	17.6	0.0	0.0	0.0	19.2	1.2	50.0
ACANAL	-4.5	4.4	0.0	0.0	0.0	-15.7	6.7	
9	0.0	55.9	0.0	0.0	0.0	-56.0	0.1	-75.0
COLON	0.0	14.0	0.0	0.0	1.1	-13.4	0.5	
TOTALS	5753.1	5642.6	0.0	0.0	0.0	0.0	110.5	0.0
	405.9	1764.4	-668.0	0.0	2116.5	0.0	1426.0	



**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

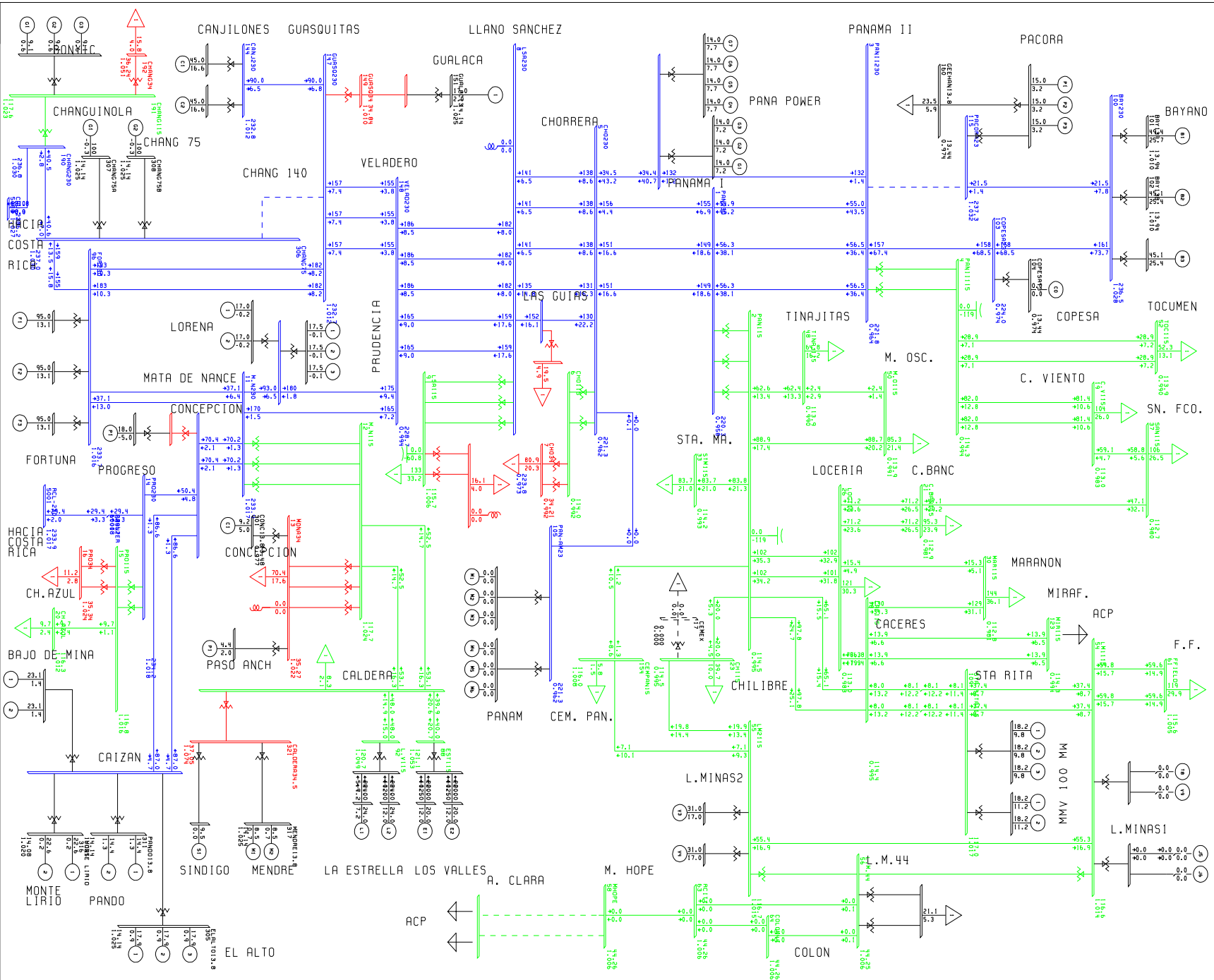
**CONTINGENCIA 1: PACORA-PANAMA II**

**Caso 1 MHT7**

PLAN DE EXPANSION DEL SIN CON CENTROMERICA JUNIO DEL 2007  
 R.O 2016 ESC MOD DEM MEX INV CONTI PACORA-PANAMA II  
 MON, MAY 21 2007 8:48

KV: 514 , +35 , -5115

BUS - VOLTAGE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



## CONTINGENCIA 1: PACORA-PANAMA II

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 8:42  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT1 PACORA-PANAMA II

### BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0169	233.89	14		PRO230		230.00	6	1.0185	234.25
96		FOR230		230.00	6	1.0161	233.70	100		BAY230		230.00	6	1.0285	236.55
115		PACORA23		230.00	6	1.0317	237.29	144		CANJ230		230.00	6	1.0121	232.79
147		GUASQ230		230.00	6	1.0118	232.72	190		CHANG230		230.00	6	1.0297	236.84
306		CHANG75		230.00	6	1.0303	236.98	309		CAISAN230		230.00	6	1.0240	235.51
310		CONCEPCION23		230.00	6	1.0201	234.62	341		NVAEST230		230.00	6	1.0147	233.37
6000		FRONTER		230.00	6	1.0184	234.22								

### BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9579	220.31	3		PANII230		230.00	6	0.9643	221.79
5		CHO230		230.00	6	0.9621	221.28	8		LSA230		230.00	6	0.9729	223.77
103		COPESA23		230.00	6	0.9740	224.02	105		PAN-AM23		230.00	6	0.9621	221.28
148		VELAD230		230.00	6	0.9942	228.66	511		LGUIAS230		230.00	6	0.9646	221.86
515		PANPOWER230		230.00	6	0.9686	222.78								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 8:42  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT1 PACORA-PANAMA II

### BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	1.0064	115.74	12		M.N115		115.00	6	1.0239	117.75
15		PRO115		115.00	6	1.0157	116.80	20		CH.AZUL		115.00	6	1.0117	116.35
54		LM1115		115.00	6	1.0138	116.59	55		LM2115		115.00	6	1.0145	116.67
61		FFIELD		115.00	9	1.0051	115.59	87		CAL115		115.00	6	1.0475	120.46
88		EST115		115.00	6	1.0531	121.10	92		L.V115		115.00	6	1.0491	120.65
109		STA RITA115		115.00	6	1.0173	116.99	110		PTMD115A		115.00	6	1.0079	115.91
111		PTMD115B		115.00	6	1.0079	115.91	154		CEMPAN15		115.00	6	1.0084	115.97
191		CHANG115		115.00	6	1.0230	117.65								

### BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9953	114.46	4		PANII115		115.00	6	0.9939	114.30
6		CHO115		115.00	6	0.9915	114.03	18		CAC115		115.00	6	0.9945	114.37
19		C.V115		115.00	6	0.9827	113.02	21		C.BAN115		115.00	6	0.9814	112.86
23		CH115		115.00	6	0.9955	114.48	26		LOC115		115.00	6	0.9829	113.04
30		MAR115		115.00	6	0.9811	112.83	33		STM115		115.00	6	0.9931	114.21
37		SAN115		115.00	6	0.9798	112.68	48		TINAJ115		115.00	6	0.9902	113.87
50		M.O115		115.00	6	0.9906	113.92	52		TOC115		115.00	6	0.9902	113.87
123		MIR115		115.00	7	0.9935	114.25								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 8:41  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT1 PACORA-PANAMA II

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	31.0	17.0	17.0	0.0	1.0015	35.3	0.8768	47.0			1	6	
67		BLM13C		13.800	V3	31.0	17.0	17.0	0.0	1.0015	35.3	0.8768	47.0			1	6	
68		BLM13D		13.800	V4	31.0	17.0	17.0	0.0	1.0000	35.4	0.8768	47.0			1	6	
90		EST-13L		13.800	E1	20.0	12.0	12.0	-5.0	1.0388	22.5	0.8575	27.0			1	6	
91		EST-13T		13.800	E2	20.0	12.0	12.0	-5.0	1.0388	22.5	0.8575	27.0			1	6	
94		LV-13.8L		13.800	L1	24.0	7.2	12.0	-5.0	1.0200	24.6	0.9582	27.0			1	6	
95		LV-13.8T		13.800	L2	24.0	12.0	12.0	-5.0	1.0336	26.0	0.8944	27.0			1	6	
97		FOR13A		13.800	F1	95.0	13.1	50.0	-50.0	1.0250	93.6	0.9906	111.0			1	6	
98		FOR13B		13.800	F2	95.0	13.1	50.0	-50.0	1.0250	93.6	0.9906	111.0			1	6	
99		FOR13C		13.800	F3	95.0	13.1	50.0	-50.0	1.0250	93.6	0.9906	111.0			1	6	
101		BAY13A		13.800	B1	49.4	25.7	50.0	-25.0	1.0100	55.2	0.8873	96.0			1	6	SYST
102		BAY13B		13.800	B2	45.1	25.4	50.0	-25.0	1.0100	51.3	0.8710	96.0			1	6	
108		BAY13C		13.800	B3	45.1	25.4	50.0	-25.0	1.0100	51.3	0.8710	100.0			1	6	
116		PACORA13		13.800	P1	15.0	3.2	8.8	0.0	1.0300	14.9	0.9778	21.7			1	6	
116		PACORA13		13.800	P2	15.0	3.2	8.8	0.0	1.0300	14.9	0.9778	21.7			1	6	
116		PACORA13		13.800	P3	15.0	3.2	8.8	0.0	1.0300	14.9	0.9778	21.7			1	6	
142		CANJ13A		13.800	C1	45.0	16.6	29.0	-29.0	1.0250	46.8	0.9380	69.0			1	6	
143		CANJ13B		13.800	C2	45.0	16.6	29.0	-29.0	1.0250	46.8	0.9380	69.0			1	6	
151		GUALAC13		13.800	1	17.0	2.0	10.0	-10.0	1.0250	16.7	0.9931	26.7			1	6	
193		GEBONYIC		13.800	G1	9.1	0.6	4.0	-4.0	1.0250	8.9	0.9979	35.3			1	6	
193		GEBONYIC		13.800	G2	9.1	0.6	4.0	-4.0	1.0250	8.9	0.9979	35.3			1	6	
193		GEBONYIC		13.800	G3	9.1	0.6	4.0	-4.0	1.0250	8.9	0.9979	35.3			1	6	
204		BJOMIN13		13.800	1	23.1	1.4	13.0	-13.0	1.0250	22.6	0.9982	28.9			1	6	
204		BJOMIN13		13.800	2	23.1	1.4	13.0	-13.0	1.0250	22.6	0.9982	28.9			1	6	
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9766	10.7	0.8784	13.5			1	6	
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9748	5.0	0.9110	6.2			1	6	
303		SIND13.8		13.800	S1	9.5	0.0	5.0	0.0	1.0226	9.3	1.0000	13.5			1	6	
305		ELALTO13.8		13.800	1	17.9	0.9	12.0	-5.0	1.0250	17.5	0.9988	20.6			1	6	
305		ELALTO13.8		13.800	2	17.9	0.9	12.0	-5.0	1.0250	17.5	0.9988	20.6			1	6	
305		ELALTO13.8		13.800	3	17.9	0.9	12.0	-5.0	1.0250	17.5	0.9988	20.6			1	6	
307		CHANG75A		13.800	G1	100.0	-0.3	22.0	-22.0	1.0250	97.6	1.0000	118.6			1	6	
308		CHANG75B		13.800	G2	100.0	-0.3	50.0	-22.0	1.0250	97.6	1.0000	118.6			1	6	
311		PANDO13.8		13.800	1	14.4	1.3	10.0	-5.0	1.0250	14.1	0.9959	19.9			1	6	
311		PANDO13.8		13.800	2	14.4	1.3	10.0	-5.0	1.0250	14.1	0.9959	19.9			1	6	
312		MMVA		13.800	1	18.2	9.8	11.2	0.0	1.0500	19.7	0.8795	23.0			1	6	
312		MMVA		13.800	2	18.2	9.8	11.2	0.0	1.0500	19.7	0.8795	23.0			1	6	
312		MMVA		13.800	3	18.2	9.8	11.2	0.0	1.0500	19.7	0.8795	23.0			1	6	
313		MMVB		13.800	1	18.2	11.2	11.2	0.0	1.0390	20.6	0.8506	23.0			1	6	
313		MMVB		13.800	2	18.2	11.2	11.2	0.0	1.0390	20.6	0.8506	23.0			1	6	
316		MONTE LIRIO		13.800	1	22.6	0.2	12.0	-5.0	1.0200	22.1	0.9999	27.0			1	6	
316		MONTE LIRIO		13.800	2	22.6	0.2	12.0	-5.0	1.0200	22.1	0.9999	27.0			1	6	
317		MENDRE13.8		13.800	M1	8.5	0.7	4.0	-4.0	1.0250	8.3	0.9969	35.3			1	6	
317		MENDRE13.8		13.800	M2	8.5	0.7	4.0	-4.0	1.0250	8.3	0.9969	35.3			1	6	
340		PEDGALITO138		13.800	P1	18.0	-5.0	12.0	-5.0	1.0394	18.0	0.9635	27.0			1	6	
342		LORENA13.8		13.800	1	17.0	-0.2	12.0	-5.0	1.0100	16.8	0.9999	27.0			1	6	
342		LORENA13.8		13.800	2	17.0	-0.2	12.0	-5.0	1.0100	16.8	0.9999	27.0			1	6	
343		PRUDENCIA138		13.800	1	17.5	-0.1	9.8	-9.8	1.0100	17.3	1.0000	21.4			1	6	
343		PRUDENCIA138		13.800	2	17.5	-0.1	9.8	-9.8	1.0100	17.3	1.0000	21.4			1	6	
343		PRUDENCIA138		13.800	3	17.5	-0.1	9.8	-9.8	1.0100	17.3	1.0000	21.4			1	6	
516		PANAPOW13A		13.800	G1	14.0	7.2	12.5	0.5	1.0100	15.6	0.8886	20.9			1	6	
516		PANAPOW13A		13.800	G2	14.0	7.2	12.5	0.5	1.0100	15.6	0.8886	20.9			1	6	
516		PANAPOW13A		13.800	G3	14.0	7.2	12.5	0.5	1.0100	15.6	0.8886	20.9			1	6	
517		PANAPOW13B		13.800	G4	14.0	7.7	12.5	0.5	1.0250	15.6	0.8770	20.9			1	6	
517		PANAPOW13B		13.800	G5	14.0	7.7	12.5	0.5	1.0250	15.6	0.8770	20.9			1	6	
517		PANAPOW13B		13.800	G6	14.0	7.7	12.5	0.5	1.0250	15.6	0.8770	20.9			1	6	
517		PANAPOW13B		13.800	G7	14.0	7.7	12.5	0.5	1.0250	15.6	0.8770	20.9			1	6	



X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.9 55.8	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.2	21.4 261.6	0.0
4	NICA		538.2 32.9	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.2	0.0 -96.9	11.1 147.4	0.0
5	C.RICA		1345.8 264.8	1324.8 569.4	0.0 -237.5	0.0 0.0	0.0 475.5	0.3 42.4	20.8 365.9	0.0
6	PANAMA		1492.6 371.7	1296.9 325.0	0.0 -298.2	0.0 0.0	0.0 520.3	112.7 54.1	83.0 811.1	25.0
7	ACANAL		73.3 7.4	44.1 11.1	0.0 0.0	0.0 0.0	0.0 0.0	27.8 -13.2	1.4 9.6	50.0
9	COLON		0.0 0.0	140.2 35.1	0.0 0.0	0.0 0.0	0.0 1.1	-140.7 -37.5	0.5 3.4	-75.0
TOTALS			6716.1 863.2	6532.9 1987.6	0.0 -1147.1	0.0 0.0	0.0 2075.7	0.0 0.0	183.2 2098.4	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

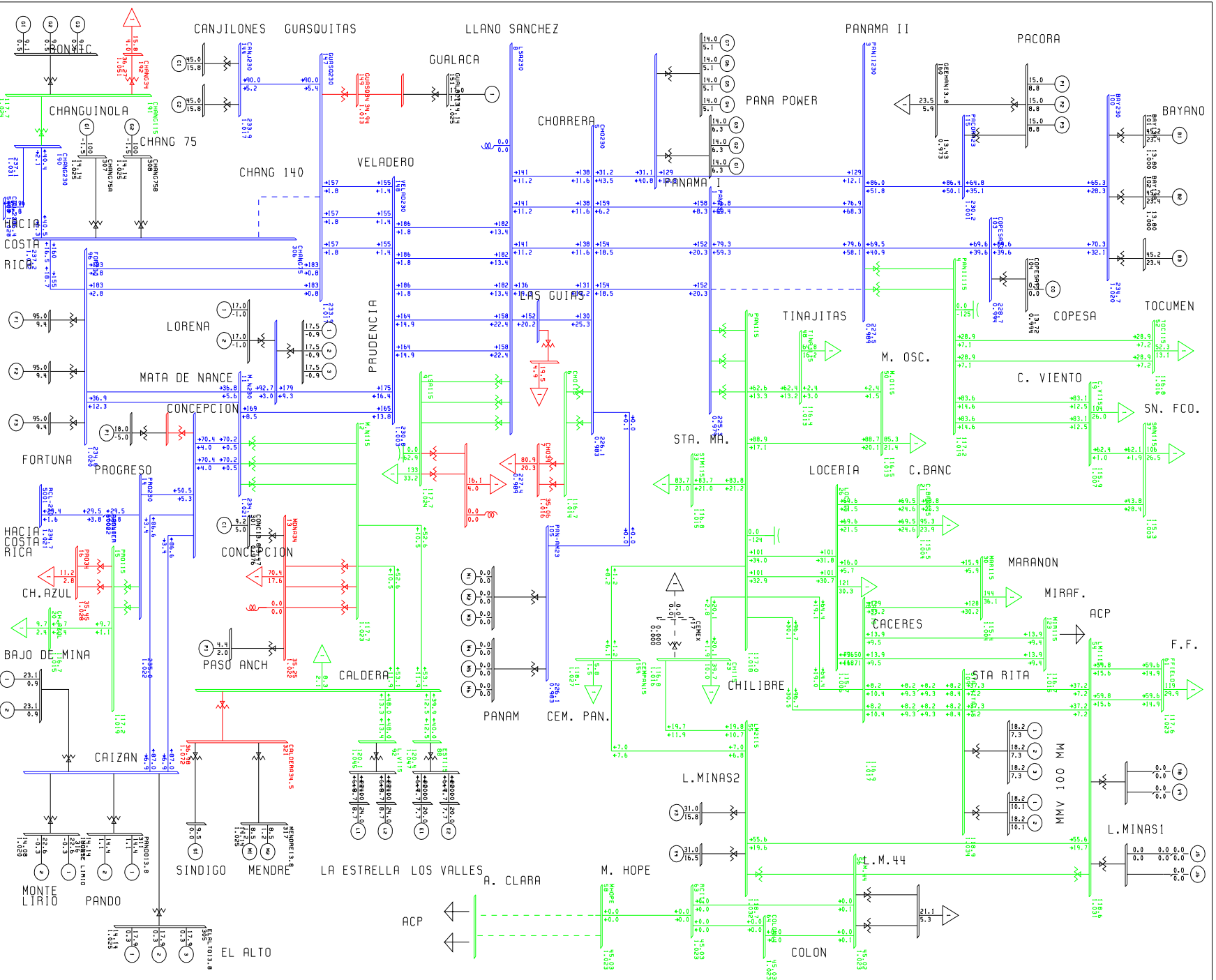
**CONTINGENCIA 2: PANAMA-PANAMA II**

**Caso 1 MHT7**

PLAN DE EXPANSION DEL SIN CON CENTROMERIA JUNIO DEL 2007  
 BRANCH - MM/BRAN  
 EQUIPMENT - MM/MMAR

RV/414 .435 .4115

BRIS - VOLTAGE (KV/PV)  
 BRANCH - MM/BRAN  
 EQUIPMENT - MM/MMAR



PLAN DE EXPANSION DEL SIN CON CENTROMERIA JUNIO DEL 2007  
 BRANCH - MM/BRAN  
 EQUIPMENT - MM/MMAR



## CONTINGENCIA 2: PANAMA-PANAMA II

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 9:54  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT2 PANAMA-PANAMA II

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0206	234.73	14		PRO230		230.00	6	1.0217	235.00
96		FOR230		230.00	6	1.0200	234.59	100		BAY230		230.00	6	1.0203	234.68
115		PACORA23		230.00	6	1.0008	230.20	144		CANJ230		230.00	6	1.0171	233.94
147		GUASQ230		230.00	6	1.0168	233.87	148		VELAD230		230.00	6	1.0034	230.79
190		CHANG230		230.00	6	1.0308	237.08	306		CHANG75		230.00	6	1.0315	237.25
309		CAISAN230		230.00	6	1.0264	236.08	310		CONCEPCION23		230.00	6	1.0232	235.34
341		NVAEST230		230.00	6	1.0187	234.29	6000		FRONTER		230.00	6	1.0217	234.99

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9794	225.27	3		PANII230		230.00	6	0.9890	227.48
5		CHO230		230.00	6	0.9831	226.11	8		LSA230		230.00	6	0.9887	227.41
103		COPESA23		230.00	6	0.9942	228.66	105		PAN-AM23		230.00	6	0.9831	226.11
511		LGUIAS230		230.00	6	0.9829	226.08	515		PANPOWER230		230.00	6	0.9895	227.59

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 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 9:54  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT2 PANAMA-PANAMA II

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0175	117.01	4		PANII115		115.00	6	1.0191	117.20
6		CHO115		115.00	6	1.0145	116.66	9		LSA115		115.00	6	1.0236	117.71
12		M.N115		115.00	6	1.0235	117.70	15		PRO115		115.00	6	1.0190	117.18
18		CAC115		115.00	6	1.0166	116.91	19		C.V115		115.00	6	1.0074	115.85
20		CH.AZUL		115.00	6	1.0150	116.73	21		C.BAN115		115.00	6	1.0043	115.50
23		CH115		115.00	6	1.0158	116.82	26		LOC115		115.00	6	1.0057	115.66
30		MAR115		115.00	6	1.0038	115.43	33		STM115		115.00	6	1.0154	116.77
37		SAN115		115.00	6	1.0029	115.34	48		TINAJ115		115.00	6	1.0125	116.44
50		M.O115		115.00	6	1.0129	116.49	52		TOC115		115.00	6	1.0155	116.78
54		LM1115		115.00	6	1.0312	118.58	55		LM2115		115.00	6	1.0319	118.67
61		FFIELD		115.00	9	1.0226	117.60	87		CAL115		115.00	6	1.0431	119.96
88		EST115		115.00	6	1.0471	120.42	92		L.V115		115.00	6	1.0447	120.14
109		STA RITA115		115.00	6	1.0343	118.94	110		PTMD115A		115.00	6	1.0272	118.12
111		PTMD115B		115.00	6	1.0272	118.12	123		MIR115		115.00	7	1.0147	116.69
154		CEMPAN15		115.00	6	1.0272	118.13	191		CHANG115		115.00	6	1.0238	117.73

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 9:53  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT2 PANAMA-PANAMA II

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	31.0	15.8	17.0	0.0	1.0150	34.3	0.8911	47.0			1	6	
67	BLM13C	13.800	V3	31.0	15.8	17.0	0.0	1.0150	34.3	0.8911	47.0			1	6	
68	BLM13D	13.800	V4	31.0	16.5	17.0	0.0	1.0150	34.6	0.8828	47.0			1	6	
90	EST-13L	13.800	E1	20.0	7.7	12.0	-5.0	1.0200	21.0	0.9329	27.0			1	6	
91	EST-13T	13.800	E2	20.0	7.7	12.0	-5.0	1.0200	21.0	0.9329	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	8.7	12.0	-5.0	1.0200	25.0	0.9397	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	8.7	12.0	-5.0	1.0200	25.0	0.9397	27.0			1	6	
97	FOR13A	13.800	F1	95.0	9.4	50.0	-50.0	1.0250	93.1	0.9951	111.0			1	6	
98	FOR13B	13.800	F2	95.0	9.4	50.0	-50.0	1.0250	93.1	0.9951	111.0			1	6	
99	FOR13C	13.800	F3	95.0	9.4	50.0	-50.0	1.0250	93.1	0.9951	111.0			1	6	
101	BAY13A	13.800	B1	45.2	23.4	50.0	-25.0	1.0000	50.9	0.8877	96.0			1	6	SYST
102	BAY13B	13.800	B2	45.2	23.4	50.0	-25.0	1.0000	50.9	0.8877	96.0			1	6	
108	BAY13C	13.800	B3	45.2	23.4	50.0	-25.0	1.0000	50.9	0.8877	100.0			1	6	
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0294	16.9	0.8618	21.7			1	6	
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0294	16.9	0.8618	21.7			1	6	
116	PACORA13	13.800	P3	15.0	8.8	8.8	0.0	1.0294	16.9	0.8618	21.7			1	6	
142	CANJ13A	13.800	C1	45.0	15.8	29.0	-29.0	1.0250	46.5	0.9435	69.0			1	6	
143	CANJ13B	13.800	C2	45.0	15.8	29.0	-29.0	1.0250	46.5	0.9435	69.0			1	6	
151	GUALAC13	13.800	1	17.0	1.5	10.0	-10.0	1.0250	16.7	0.9959	26.7			1	6	
193	GEBONYIC	13.800	G1	9.1	0.5	4.0	-4.0	1.0250	8.9	0.9985	35.3			1	6	
193	GEBONYIC	13.800	G2	9.1	0.5	4.0	-4.0	1.0250	8.9	0.9985	35.3			1	6	
193	GEBONYIC	13.800	G3	9.1	0.5	4.0	-4.0	1.0250	8.9	0.9985	35.3			1	6	
204	BJOMIN13	13.800	1	23.1	0.9	13.0	-13.0	1.0250	22.6	0.9993	28.9			1	6	
204	BJOMIN13	13.800	2	23.1	0.9	13.0	-13.0	1.0250	22.6	0.9993	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9761	10.7	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9743	5.0	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	9.5	0.0	5.0	0.0	1.0205	9.3	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	17.9	0.3	12.0	-5.0	1.0250	17.5	0.9999	20.6			1	6	
305	ELALTO13.8	13.800	2	17.9	0.3	12.0	-5.0	1.0250	17.5	0.9999	20.6			1	6	
305	ELALTO13.8	13.800	3	17.9	0.3	12.0	-5.0	1.0250	17.5	0.9999	20.6			1	6	
307	CHANG75A	13.800	G1	100.0	-1.5	22.0	-22.0	1.0250	97.6	0.9999	118.6			1	6	
308	CHANG75B	13.800	G2	100.0	-1.5	50.0	-22.0	1.0250	97.6	0.9999	118.6			1	6	
311	PANDO13.8	13.800	1	14.4	1.1	10.0	-5.0	1.0250	14.1	0.9971	19.9			1	6	
311	PANDO13.8	13.800	2	14.4	1.1	10.0	-5.0	1.0250	14.1	0.9971	19.9			1	6	
312	MMVA	13.800	1	18.2	7.3	11.2	0.0	1.0500	18.7	0.9279	23.0			1	6	
312	MMVA	13.800	2	18.2	7.3	11.2	0.0	1.0500	18.7	0.9279	23.0			1	6	
312	MMVA	13.800	3	18.2	7.3	11.2	0.0	1.0500	18.7	0.9279	23.0			1	6	
313	MMVB	13.800	1	18.2	10.1	11.2	0.0	1.0500	19.8	0.8751	23.0			1	6	
313	MMVB	13.800	2	18.2	10.1	11.2	0.0	1.0500	19.8	0.8751	23.0			1	6	
316	MONTE LIRIO	13.800	1	22.6	-0.3	12.0	-5.0	1.0200	22.1	0.9999	27.0			1	6	
316	MONTE LIRIO	13.800	2	22.6	-0.3	12.0	-5.0	1.0200	22.1	0.9999	27.0			1	6	
317	MENDRE13.8	13.800	M1	8.5	1.2	4.0	-4.0	1.0250	8.4	0.9904	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	1.2	4.0	-4.0	1.0250	8.4	0.9904	35.3			1	6	
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0428	17.9	0.9635	27.0			1	6	
342	LORENA13.8	13.800	1	17.0	-1.0	12.0	-5.0	1.0100	16.9	0.9984	27.0			1	6	
342	LORENA13.8	13.800	2	17.0	-1.0	12.0	-5.0	1.0100	16.9	0.9984	27.0			1	6	
343	PRUDENCIA138	13.800	1	17.5	-0.9	9.8	-9.8	1.0100	17.3	0.9987	21.4			1	6	
343	PRUDENCIA138	13.800	2	17.5	-0.9	9.8	-9.8	1.0100	17.3	0.9987	21.4			1	6	
343	PRUDENCIA138	13.800	3	17.5	-0.9	9.8	-9.8	1.0100	17.3	0.9987	21.4			1	6	
516	PANAPOW13A	13.800	G1	14.0	6.3	12.5	0.5	1.0250	15.0	0.9110	20.9			1	6	
516	PANAPOW13A	13.800	G2	14.0	6.3	12.5	0.5	1.0250	15.0	0.9110	20.9			1	6	
516	PANAPOW13A	13.800	G3	14.0	6.3	12.5	0.5	1.0250	15.0	0.9110	20.9			1	6	
517	PANAPOW13B	13.800	G4	14.0	5.1	12.5	0.5	1.0250	14.5	0.9393	20.9			1	6	
517	PANAPOW13B	13.800	G5	14.0	5.1	12.5	0.5	1.0250	14.5	0.9393	20.9			1	6	
517	PANAPOW13B	13.800	G6	14.0	5.1	12.5	0.5	1.0250	14.5	0.9393	20.9			1	6	



X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.9 55.8	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.2	21.4 261.6	0.0
4	NICA		538.2 32.8	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.2	0.0 -97.0	11.1 147.4	0.0
5	C.RICA		1345.8 260.1	1324.8 569.4	0.0 -237.7	0.0 0.0	0.0 476.1	0.3 38.8	20.8 365.7	0.0
6	PANAMA		1488.6 323.3	1296.9 325.0	0.0 -311.7	0.0 0.0	0.0 533.9	112.7 63.4	79.0 780.5	25.0
7	ACANAL		73.3 1.8	44.1 11.1	0.0 0.0	0.0 0.0	0.0 0.0	27.8 -19.0	1.4 9.7	50.0
9	COLON		0.0 0.0	140.2 35.1	0.0 0.0	0.0 0.0	0.0 1.1	-140.7 -37.3	0.5 3.3	-75.0
TOTALS			6712.1 804.3	6532.9 1987.6	0.0 -1160.9	0.0 0.0	0.0 2090.0	0.0 0.0	179.2 2067.6	0.0

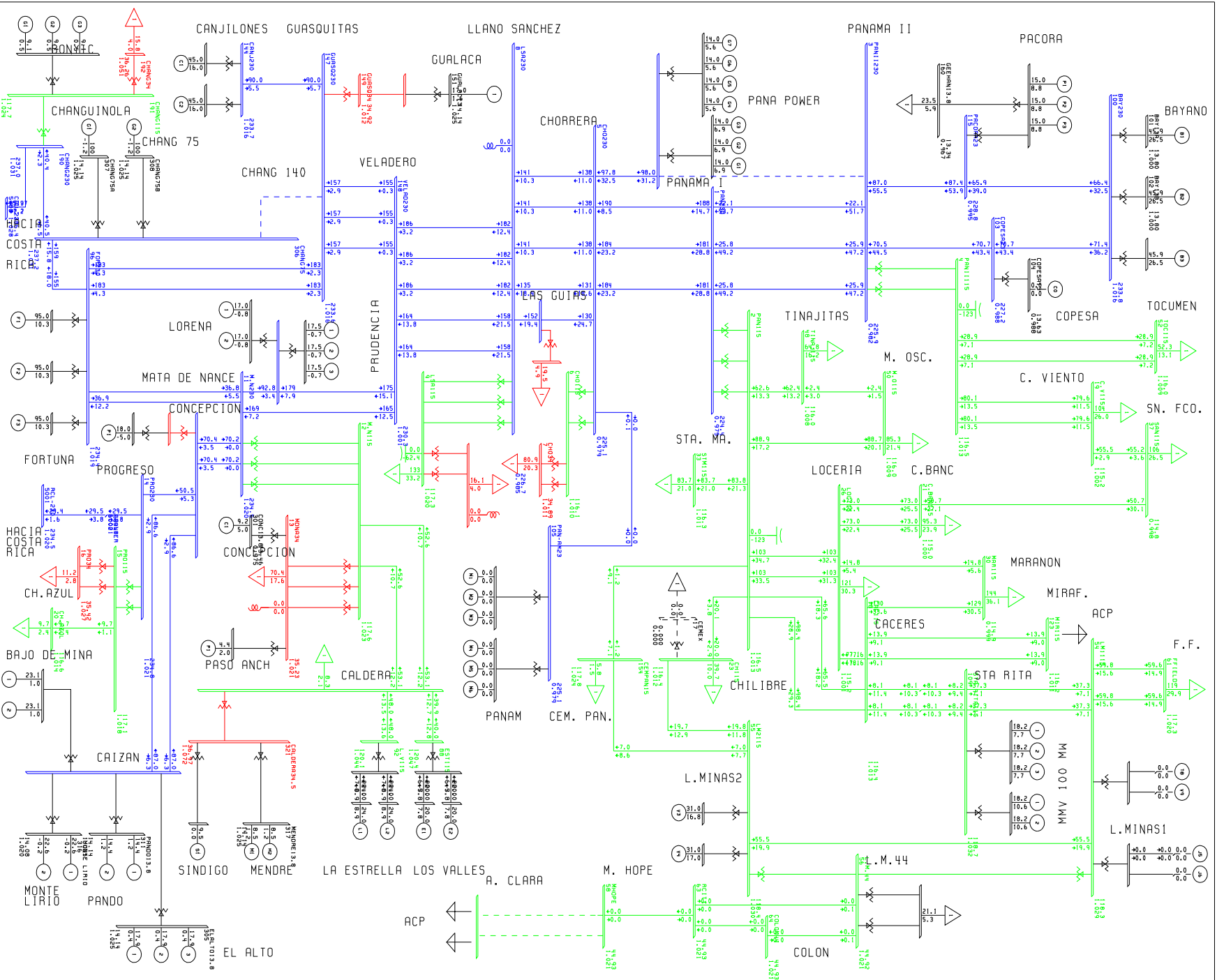
**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**CONTINGENCIA 3: PANAPOWER-PANAMA II**

**Caso 1 MHT7**

PLAN DE EXPANSION DEL SIN CON CENTROAMERICANA JUNTO DEL 2007  
 R 0 2016 ESC MOD DEM MXX INV CONT3 PANPOWER-PANAMA II  
 MAY 21 2007 10:16  
 KV=114 .435 .1115  
 BUS - VOLTAGE (KV/PUI)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR



### CONTINGENCIA 3: PANAPOWER-PANAMA II

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 10:08  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT3 PANAPOWER-PANAMA II

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0196	234.51	14		PRO230		230.00	6	1.0209	234.81
96		FOR230		230.00	6	1.0190	234.38	100		BAY230		230.00	6	1.0163	233.76
144		CANJ230		230.00	6	1.0160	233.68	147		GUASQ230		230.00	6	1.0157	233.61
148		VELAD230		230.00	6	1.0014	230.33	190		CHANG230		230.00	6	1.0305	237.02
306		CHANG75		230.00	6	1.0312	237.18	309		CAISAN230		230.00	6	1.0258	235.93
310		CONCEPCION23		230.00	6	1.0224	235.15	341		NVAEST230		230.00	6	1.0177	234.06
6000		FRONTER		230.00	6	1.0209	234.80								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9754	224.35	3		PANII230		230.00	6	0.9823	225.93
5		CHO230		230.00	6	0.9789	225.14	8		LSA230		230.00	6	0.9855	226.66
103		COPESA23		230.00	6	0.9879	227.22	105		PAN-AM23		230.00	6	0.9789	225.14
115		PACORA23		230.00	6	0.9949	228.83	511		LGUIAS230		230.00	6	0.9792	225.22
515		PANPOWER230		230.00	6	0.9859	226.77								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 10:09  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT3 PANAPOWER-PANAMA II

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0134	116.54	4		PANIII115		115.00	6	1.0127	116.46
6		CHO115		115.00	6	1.0098	116.13	9		LSA115		115.00	6	1.0200	117.30
12		M.N115		115.00	6	1.0228	117.62	15		PRO115		115.00	6	1.0181	117.09
18		CAC115		115.00	6	1.0126	116.44	19		C.V115		115.00	6	1.0016	115.19
20		CH.AZUL		115.00	6	1.0142	116.64	23		CH115		115.00	6	1.0125	116.43
26		LOC115		115.00	6	1.0013	115.15	33		STM115		115.00	6	1.0113	116.30
48		TINAJ115		115.00	6	1.0084	115.97	50		M.O115		115.00	6	1.0088	116.01
52		TOC115		115.00	6	1.0091	116.05	54		LM115		115.00	6	1.0289	118.32
55		LM2115		115.00	6	1.0296	118.40	61		FFIELD		115.00	9	1.0203	117.34
87		CAL115		115.00	6	1.0427	119.91	88		EST115		115.00	6	1.0467	120.38
92		L.V115		115.00	6	1.0443	120.09	109		STA RITA115		115.00	6	1.0320	118.67
110		PTMD115A		115.00	6	1.0241	117.77	111		PTMD115B		115.00	6	1.0241	117.77
123		MIR115		115.00	7	1.0107	116.23	154		CEMPAN15		115.00	6	1.0244	117.81
191		CHANG115		115.00	6	1.0236	117.71								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9999	114.98	30		MAR115		115.00	6	0.9995	114.94
37		SAN115		115.00	6	0.9984	114.81								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 10:08  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT3 PANAPOWER-PANAMA II

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	31.0	16.8	17.0	0.0	1.0150	34.7	0.8795	47.0				1	6
67	BLM13C	13.800	V3	31.0	16.8	17.0	0.0	1.0150	34.7	0.8795	47.0				1	6
68	BLM13D	13.800	V4	31.0	17.0	17.0	0.0	1.0139	34.9	0.8768	47.0				1	6
90	EST-13L	13.800	E1	20.0	7.8	12.0	-5.0	1.0200	21.1	0.9311	27.0				1	6
91	EST-13T	13.800	E2	20.0	7.8	12.0	-5.0	1.0200	21.1	0.9311	27.0				1	6
94	LV-13.8L	13.800	L1	24.0	8.9	12.0	-5.0	1.0200	25.1	0.9381	27.0				1	6
95	LV-13.8T	13.800	L2	24.0	8.9	12.0	-5.0	1.0200	25.1	0.9381	27.0				1	6
97	FOR13A	13.800	F1	95.0	10.3	50.0	-50.0	1.0250	93.2	0.9942	111.0				1	6
98	FOR13B	13.800	F2	95.0	10.3	50.0	-50.0	1.0250	93.2	0.9942	111.0				1	6
99	FOR13C	13.800	F3	95.0	10.3	50.0	-50.0	1.0250	93.2	0.9942	111.0				1	6
101	BAY13A	13.800	B1	45.9	26.5	50.0	-25.0	1.0000	53.0	0.8662	96.0				1	6
102	BAY13B	13.800	B2	45.9	26.5	50.0	-25.0	1.0000	53.0	0.8663	96.0				1	6
108	BAY13C	13.800	B3	45.9	26.5	50.0	-25.0	1.0000	53.0	0.8663	100.0				1	6
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0235	17.0	0.8618	21.7				1	6
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0235	17.0	0.8618	21.7				1	6
116	PACORA13	13.800	P3	15.0	8.8	8.8	0.0	1.0235	17.0	0.8618	21.7				1	6
142	CANJ13A	13.800	C1	45.0	16.0	29.0	-29.0	1.0250	46.6	0.9423	69.0				1	6
143	CANJ13B	13.800	C2	45.0	16.0	29.0	-29.0	1.0250	46.6	0.9423	69.0				1	6
151	GUALAC13	13.800	1	17.0	1.6	10.0	-10.0	1.0250	16.7	0.9953	26.7				1	6
193	GEBONYIC	13.800	G1	9.1	0.5	4.0	-4.0	1.0250	8.9	0.9983	35.3				1	6
193	GEBONYIC	13.800	G2	9.1	0.5	4.0	-4.0	1.0250	8.9	0.9983	35.3				1	6
193	GEBONYIC	13.800	G3	9.1	0.5	4.0	-4.0	1.0250	8.9	0.9983	35.3				1	6
204	BJOMIN13	13.800	1	23.1	1.0	13.0	-13.0	1.0250	22.6	0.9991	28.9				1	6
204	BJOMIN13	13.800	2	23.1	1.0	13.0	-13.0	1.0250	22.6	0.9991	28.9				1	6
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9755	10.7	0.8784	13.5				1	6
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9736	5.0	0.9110	6.2				1	6
303	SIND13.8	13.800	S1	9.5	0.0	5.0	0.0	1.0203	9.3	1.0000	13.5				1	6
305	ELALTO13.8	13.800	1	17.9	0.4	12.0	-5.0	1.0250	17.5	0.9997	20.6				1	6
305	ELALTO13.8	13.800	2	17.9	0.4	12.0	-5.0	1.0250	17.5	0.9997	20.6				1	6
305	ELALTO13.8	13.800	3	17.9	0.4	12.0	-5.0	1.0250	17.5	0.9997	20.6				1	6
307	CHANG75A	13.800	G1	100.0	-1.2	22.0	-22.0	1.0250	97.6	0.9999	118.6				1	6
308	CHANG75B	13.800	G2	100.0	-1.2	22.0	-22.0	1.0250	97.6	0.9999	118.6				1	6
311	PANDOL13.8	13.800	1	14.4	1.2	10.0	-5.0	1.0250	14.1	0.9968	19.9				1	6
311	PANDOL13.8	13.800	2	14.4	1.2	10.0	-5.0	1.0250	14.1	0.9968	19.9				1	6
312	MMVA	13.800	1	18.2	7.7	11.2	0.0	1.0500	18.8	0.9217	23.0				1	6
312	MMVA	13.800	2	18.2	7.7	11.2	0.0	1.0500	18.8	0.9217	23.0				1	6
312	MMVA	13.800	3	18.2	7.7	11.2	0.0	1.0500	18.8	0.9217	23.0				1	6
313	MMVB	13.800	1	18.2	10.6	11.2	0.0	1.0500	20.0	0.8645	23.0				1	6
313	MMVB	13.800	2	18.2	10.6	11.2	0.0	1.0500	20.0	0.8645	23.0				1	6
316	MONTE LIRIO	13.800	1	22.6	-0.2	12.0	-5.0	1.0200	22.1	1.0000	27.0				1	6
316	MONTE LIRIO	13.800	2	22.6	-0.2	12.0	-5.0	1.0200	22.1	1.0000	27.0				1	6
317	MENDRE13.8	13.800	M1	8.5	1.2	4.0	-4.0	1.0250	8.4	0.9896	35.3				1	6
317	MENDRE13.8	13.800	M2	8.5	1.2	4.0	-4.0	1.0250	8.4	0.9896	35.3				1	6
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0419	17.9	0.9635	27.0				1	6
342	LORENA13.8	13.800	1	17.0	-0.8	12.0	-5.0	1.0100	16.8	0.9990	27.0				1	6
342	LORENA13.8	13.800	2	17.0	-0.8	12.0	-5.0	1.0100	16.8	0.9990	27.0				1	6
343	PRUDENCIA138	13.800	1	17.5	-0.7	9.8	-9.8	1.0100	17.3	0.9992	21.4				1	6
343	PRUDENCIA138	13.800	2	17.5	-0.7	9.8	-9.8	1.0100	17.3	0.9992	21.4				1	6
343	PRUDENCIA138	13.800	3	17.5	-0.7	9.8	-9.8	1.0100	17.3	0.9992	21.4				1	6
516	PANAPOW13A	13.800	G1	14.0	6.9	12.5	0.5	1.0250	15.2	0.8964	20.9				1	6
516	PANAPOW13A	13.800	G2	14.0	6.9	12.5	0.5	1.0250	15.2	0.8964	20.9				1	6
516	PANAPOW13A	13.800	G3	14.0	6.9	12.5	0.5	1.0250	15.2	0.8964	20.9				1	6
517	PANAPOW13B	13.800	G4	14.0	5.6	12.5	0.5	1.0250	14.7	0.9296	20.9				1	6
517	PANAPOW13B	13.800	G5	14.0	5.6	12.5	0.5	1.0250	14.7	0.9296	20.9				1	6

SYST





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 10:09  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESC MOD DEM MAX INV CONT3 PANAPOWEP-PANAMA II IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.9 55.8	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.2	21.4 261.6	0.0
4	NICA		538.2 32.8	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.2	0.0 -97.0	11.1 147.4	0.0
5	C.RICA		1345.8 261.2	1324.8 569.4	0.0 -237.6	0.0 0.0	0.0 476.0	0.3 39.7	20.8 365.7	0.0
6	PANAMA		1490.7 346.9	1296.9 325.0	0.0 -308.7	0.0 0.0	0.0 527.4	112.7 61.8	81.1 796.2	25.0
7	ACANAL		73.3 2.6	44.1 11.1	0.0 0.0	0.0 0.0	0.0 0.0	27.8 -18.2	1.4 9.7	50.0
9	COLON		0.0 0.0	140.2 35.1	0.0 0.0	0.0 0.0	0.0 1.1	-140.7 -37.4	0.5 3.3	-75.0
TOTALS			6714.2 829.8	6532.9 1987.6	0.0 -1157.8	0.0 0.0	0.0 2083.3	0.0 0.0	181.4 2083.4	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**CONTINGENCIA 4: GUASQUITAS-VELADERO**

**Caso 1 MHT7**



## CONTINGENCIA 4: GUASQUITAS-VELADERO

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 10:24  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT4 GUASQUITAS-VELADEROI

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0149	233.43	14	PRO230	230.00	6	1.0165	233.80				
96	FOR230	230.00	6	1.0160	233.69	100	BAY230	230.00	6	1.0164	233.78				
144	CANJ230	230.00	6	1.0125	232.87	147	GUASQ230	230.00	6	1.0122	232.80				
190	CHANG230	230.00	6	1.0296	236.80	306	CHANG75	230.00	6	1.0303	236.97				
309	CAISAN230	230.00	6	1.0226	235.19	310	CONCEPCION230	230.00	6	1.0183	234.21				
341	NVAEST230	230.00	6	1.0124	232.86	6000	FRONTER	230.00	6	1.0164	233.76				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9752	224.29	3	PANII230	230.00	6	0.9824	225.95				
5	CHO230	230.00	6	0.9770	224.70	8	LSA230	230.00	6	0.9787	225.11				
103	COPESA23	230.00	6	0.9879	227.23	105	PAN-AM23	230.00	6	0.9770	224.70				
115	PACORA23	230.00	6	0.9950	228.84	148	VELAD230	230.00	6	0.9916	228.06				
511	LGUIAS230	230.00	6	0.9744	224.12	515	PANPOWER230	230.00	6	0.9838	226.27				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 10:25  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT4 GUASQUITAS-VELADEROI

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0132	116.51	4	PANII115	115.00	6	1.0128	116.47				
6	CHO115	115.00	6	1.0078	115.90	9	LSA115	115.00	6	1.0127	116.46				
12	M.N115	115.00	6	1.0193	117.22	15	PRO115	115.00	6	1.0137	116.57				
18	CAC115	115.00	6	1.0123	116.42	19	C.V115	115.00	6	1.0016	115.18				
20	CH.AZUL	115.00	6	1.0098	116.12	23	CH115	115.00	6	1.0122	116.41				
26	LOC115	115.00	6	1.0011	115.13	33	STM115	115.00	6	1.0110	116.27				
48	TNAJ115	115.00	6	1.0081	115.94	50	M.O115	115.00	6	1.0085	115.98				
52	TOC115	115.00	6	1.0091	116.05	54	LM115	115.00	6	1.0287	118.30				
55	LM2115	115.00	6	1.0295	118.39	61	FFIELD	115.00	9	1.0202	117.32				
87	CAL115	115.00	6	1.0405	119.66	88	EST115	115.00	6	1.0448	120.15				
92	L.V115	115.00	6	1.0422	119.85	109	STA RITA115	115.00	6	1.0318	118.66				
110	PTMD115A	115.00	6	1.0239	117.74	111	PTMD115B	115.00	6	1.0239	117.74				
123	MIR115	115.00	7	1.0105	116.20	154	CEMPAN15	115.00	6	1.0242	117.79				
191	CHANG115	115.00	6	1.0229	117.63										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21	C.BAN115	115.00	6	0.9996	114.96	30	MAR115	115.00	6	0.9993	114.91				
37	SAN115	115.00	6	0.9982	114.79										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 10:24  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007

AÑO 2016 ESC MOD DEM MAX INV CONT4 GUASQUITAS-VELADEROI

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	31.0	16.8	17.0	0.0	1.0150	34.8	0.8787	47.0				1	6
67		BLM13C		13.800	V3	31.0	16.8	17.0	0.0	1.0150	34.8	0.8787	47.0				1	6
68		BLM13D		13.800	V4	31.0	17.0	17.0	0.0	1.0138	34.9	0.8768	47.0				1	6
90		EST-13L		13.800	E1	20.0	8.4	12.0	-5.0	1.0200	21.3	0.9219	27.0				1	6
91		EST-13T		13.800	E2	20.0	8.4	12.0	-5.0	1.0200	21.3	0.9219	27.0				1	6
94		LV-13.8L		13.800	L1	24.0	9.5	12.0	-5.0	1.0200	25.3	0.9301	27.0				1	6
95		LV-13.8T		13.800	L2	24.0	9.5	12.0	-5.0	1.0200	25.3	0.9301	27.0				1	6
97		FOR13A		13.800	F1	95.0	13.1	50.0	-50.0	1.0250	93.6	0.9906	111.0				1	6
98		FOR13B		13.800	F2	95.0	13.1	50.0	-50.0	1.0250	93.6	0.9906	111.0				1	6
99		FOR13C		13.800	F3	95.0	13.1	50.0	-50.0	1.0250	93.6	0.9906	111.0				1	6
101		BAY13A		13.800	B1	46.9	26.5	50.0	-25.0	1.0000	53.8	0.8708	96.0				1	6
102		BAY13B		13.800	B2	46.9	26.5	50.0	-25.0	1.0000	53.8	0.8708	96.0				1	6
108		BAY13C		13.800	B3	46.9	26.5	50.0	-25.0	1.0000	53.8	0.8708	100.0				1	6
116		PACORA13		13.800	P1	15.0	8.8	8.8	0.0	1.0235	17.0	0.8618	21.7				1	6
116		PACORA13		13.800	P2	15.0	8.8	8.8	0.0	1.0235	17.0	0.8618	21.7				1	6
116		PACORA13		13.800	P3	15.0	8.8	8.8	0.0	1.0235	17.0	0.8618	21.7				1	6
142		CANJ13A		13.800	C1	45.0	16.6	29.0	-29.0	1.0250	46.8	0.9384	69.0				1	6
143		CANJ13B		13.800	C2	45.0	16.6	29.0	-29.0	1.0250	46.8	0.9384	69.0				1	6
151		GUALAC13		13.800	1	17.0	2.0	10.0	-10.0	1.0250	16.7	0.9933	26.7				1	6
193		GEBOYIC		13.800	G1	9.1	0.6	4.0	-4.0	1.0250	8.9	0.9978	35.3				1	6
193		GEBOYIC		13.800	G2	9.1	0.6	4.0	-4.0	1.0250	8.9	0.9978	35.3				1	6
193		GEBOYIC		13.800	G3	9.1	0.6	4.0	-4.0	1.0250	8.9	0.9978	35.3				1	6
204		BJOMIN13		13.800	1	23.1	1.7	13.0	-13.0	1.0250	22.6	0.9973	28.9				1	6
204		BJOMIN13		13.800	2	23.1	1.7	13.0	-13.0	1.0250	22.6	0.9973	28.9				1	6
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9721	10.8	0.8784	13.5				1	6
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9703	5.0	0.9110	6.2				1	6
303		SIND13.8		13.800	S1	9.5	0.0	5.0	0.0	1.0193	9.3	1.0000	13.5				1	6
305		ELALTO13.8		13.800	1	17.9	1.2	12.0	-5.0	1.0250	17.5	0.9976	20.6				1	6
305		ELALTO13.8		13.800	2	17.9	1.2	12.0	-5.0	1.0250	17.5	0.9976	20.6				1	6
305		ELALTO13.8		13.800	3	17.9	1.2	12.0	-5.0	1.0250	17.5	0.9976	20.6				1	6
307		CHANG75A		13.800	G1	100.0	-0.3	22.0	-22.0	1.0250	97.6	1.0000	118.6				1	6
308		CHANG75B		13.800	G2	100.0	-0.3	50.0	-22.0	1.0250	97.6	1.0000	118.6				1	6
311		PANDO13.8		13.800	1	14.4	1.4	10.0	-5.0	1.0250	14.2	0.9952	19.9				1	6
311		PANDO13.8		13.800	2	14.4	1.4	10.0	-5.0	1.0250	14.2	0.9952	19.9				1	6
312		MMVA		13.800	1	18.2	7.7	11.2	0.0	1.0500	18.8	0.9213	23.0				1	6
312		MMVA		13.800	2	18.2	7.7	11.2	0.0	1.0500	18.8	0.9213	23.0				1	6
312		MMVA		13.800	3	18.2	7.7	11.2	0.0	1.0500	18.8	0.9213	23.0				1	6
313		MMVB		13.800	1	18.2	10.6	11.2	0.0	1.0500	20.1	0.8639	23.0				1	6
313		MMVB		13.800	2	18.2	10.6	11.2	0.0	1.0500	20.1	0.8639	23.0				1	6
316		MONTE LIRIO		13.800	1	22.6	0.6	12.0	-5.0	1.0200	22.1	0.9997	27.0				1	6
316		MONTE LIRIO		13.800	2	22.6	0.6	12.0	-5.0	1.0200	22.1	0.9997	27.0				1	6
317		MENDRE13.8		13.800	M1	8.5	1.5	4.0	-4.0	1.0250	8.4	0.9850	35.3				1	6
317		MENDRE13.8		13.800	M2	8.5	1.5	4.0	-4.0	1.0250	8.4	0.9850	35.3				1	6
340		PEDGALITO138		13.800	P1	18.0	-5.0	12.0	-5.0	1.0375	18.0	0.9635	27.0				1	6
342		LORENA13.8		13.800	1	17.0	0.3	12.0	-5.0	1.0100	16.8	0.9999	27.0				1	6
342		LORENA13.8		13.800	2	17.0	0.3	12.0	-5.0	1.0100	16.8	0.9999	27.0				1	6
343		PRUDENCIA138		13.800	1	17.5	0.3	9.8	-9.8	1.0100	17.3	0.9998	21.4				1	6
343		PRUDENCIA138		13.800	2	17.5	0.3	9.8	-9.8	1.0100	17.3	0.9998	21.4				1	6
343		PRUDENCIA138		13.800	3	17.5	0.3	9.8	-9.8	1.0100	17.3	0.9998	21.4				1	6
516		PANAPOW13A		13.800	G1	14.0	7.3	12.5	0.5	1.0250	15.4	0.8875	20.9				1	6
516		PANAPOW13A		13.800	G2	14.0	7.3	12.5	0.5	1.0250	15.4	0.8875	20.9				1	6
516		PANAPOW13A		13.800	G3	14.0	7.3	12.5	0.5	1.0250	15.4	0.8875	20.9				1	6
517		PANAPOW13B		13.800	G4	14.0	5.8	12.5	0.5	1.0250	14.8	0.9235	20.9				1	6

SYST

517 PANAPOW13B	13.800	G5	14.0	5.8	12.5	0.5	1.0250	14.8	0.9235	20.9	1	6
517 PANAPOW13B	13.800	G6	14.0	5.8	12.5	0.5	1.0250	14.8	0.9235	20.9	1	6
517 PANAPOW13B	13.800	G7	14.0	5.8	12.5	0.5	1.0250	14.8	0.9235	20.9	1	6
SUBSYSTEM TOTALS			1493.6	374.9	912.7		-485.6			2170.3		

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 10:24  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT4 GUASQUITAS-VELADEROI

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0427	8.3	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0427	8.3	1.0000	13.5				2	7
130		MIR13F		13.800	G5	9.7	0.0	8.0	0.0	0.9860	9.8	1.0000	27.7				2	7
134		MAD6A		6.9000	G1	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9913	13.0				2	7
135		MAD6B		6.9000	G2	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9914	13.0				2	7
136		MAD6C		6.9000	G3	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9914	13.0				2	7
140		GAT6A		6.9000	G1	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9963	4.1				2	7
140		GAT6A		6.9000	G2	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9963	4.1				2	7
140		GAT6A		6.9000	G3	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9963	4.1				2	7
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9895	5.6				2	7
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9895	6.2				2	7
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9895	6.2				2	7
SUBSYSTEM TOTALS						73.3	2.6	51.0		-33.0			124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 10:25  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESC MOD DEM MAX INV CONT4 GUASQUITAS-VELADEROI IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
			29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	SALVADOR		911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
			100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	HONDURAS		1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
			55.8	290.6	-188.3	0.0	302.8	-5.2	261.6	
4	NICA		538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
			33.0	224.5	-98.9	0.0	143.2	-96.8	147.4	
5	C.RICA		1345.8	1324.8	0.0	0.0	0.0	0.1	21.0	0.0
			267.9	569.4	-237.3	0.0	475.1	43.7	367.3	
6	PANAMA		1493.6	1296.9	0.0	0.0	0.0	112.9	83.8	25.0
			374.9	325.0	-307.8	0.0	513.1	57.5	813.3	
7	ACANAL		73.3	44.1	0.0	0.0	0.0	27.8	1.4	50.0
			2.6	11.1	0.0	0.0	0.0	-18.1	9.7	
9	COLON		0.0	140.2	0.0	0.0	0.0	-140.7	0.5	-75.0
			0.0	35.1	0.0	0.0	1.1	-37.4	3.3	
TOTALS			6717.1	6532.9	0.0	0.0	0.0	0.0	184.3	0.0
			864.9	1987.6	-1156.5	0.0	2068.2	0.0	2102.1	



**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**CONTINGENCIA 5: MATA DE NANCE-VELADERO**

**Caso 1 MHT7**



## CONTINGENCIA 5: MATA DE NANCE-VELADERO

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 10:34  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT5 MATA DE NANCE-VELADERO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0162	233.72	14		PRO230		230.00	6	1.0168	233.86
96		FOR230		230.00	6	1.0132	233.02	100		BAY230		230.00	6	1.0160	233.67
144		CANJ230		230.00	6	1.0083	231.90	147		GUASQ230		230.00	6	1.0079	231.82
190		CHANG230		230.00	6	1.0289	236.66	306		CHANG75		230.00	6	1.0294	236.77
309		CAISAN230		230.00	6	1.0232	235.34	310		CONCEPCION230		230.00	6	1.0191	234.40
341		NVAEST230		230.00	6	1.0129	232.98	6000		FRONTER		230.00	6	1.0165	233.78

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9744	224.12	3		PANII230		230.00	6	0.9817	225.78
5		CHO230		230.00	6	0.9761	224.51	8		LSA230		230.00	6	0.9776	224.86
103		COPESA23		230.00	6	0.9873	227.07	105		PAN-AM23		230.00	6	0.9761	224.51
115		PACORA23		230.00	6	0.9943	228.69	148		VELAD230		230.00	6	0.9905	227.82
511		LGUIAS230		230.00	6	0.9734	223.89	515		PANPOWER230		230.00	6	0.9831	226.11

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 10:34  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT5 MATA DE NANCE-VELADERO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0124	116.43	4		PANII115		115.00	6	1.0120	116.38
6		CHO115		115.00	6	1.0069	115.79	9		LSA115		115.00	6	1.0115	116.33
12		M.N115		115.00	6	1.0202	117.33	15		PRO115		115.00	6	1.0140	116.61
18		CAC115		115.00	6	1.0116	116.33	19		C.V115		115.00	6	1.0008	115.09
20		CH.AZUL		115.00	6	1.0100	116.15	23		CH115		115.00	6	1.0116	116.34
26		LOC115		115.00	6	1.0004	115.04	33		STM115		115.00	6	1.0103	116.18
48		TINAJ115		115.00	6	1.0074	115.85	50		M.O115		115.00	6	1.0078	115.90
52		TOC115		115.00	6	1.0084	115.96	54		LM1115		115.00	6	1.0283	118.25
55		LM2115		115.00	6	1.0290	118.34	61		FFIELD		115.00	9	1.0197	117.27
87		CAL115		115.00	6	1.0411	119.72	88		EST115		115.00	6	1.0453	120.21
92		L.V115		115.00	6	1.0427	119.92	109		STA RITA115		115.00	6	1.0314	118.61
110		PTMD115A		115.00	6	1.0233	117.68	111		PTMD115B		115.00	6	1.0233	117.68
123		MIR115		115.00	7	1.0098	116.12	154		CEMPAN15		115.00	6	1.0237	117.72
191		CHANG115		115.00	6	1.0225	117.58								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9989	114.87	30		MAR115		115.00	6	0.9985	114.83
37		SAN115		115.00	6	0.9974	114.70								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 10:34

PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT5 MATA DE NANCE-VELADERO

AREA 6 [PANAMA ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	31.0	17.0	17.0	0.0	1.0149	34.8	0.8768	47.0			1	6	
67		BLM13C		13.800	V3	31.0	17.0	17.0	0.0	1.0149	34.8	0.8768	47.0			1	6	
68		BLM13D		13.800	V4	31.0	17.0	17.0	0.0	1.0133	34.9	0.8768	47.0			1	6	
90		EST-13L		13.800	E1	20.0	8.3	12.0	-5.0	1.0200	21.2	0.9244	27.0			1	6	
91		EST-13T		13.800	E2	20.0	8.3	12.0	-5.0	1.0200	21.2	0.9244	27.0			1	6	
94		LV-13.8L		13.800	L1	24.0	9.3	12.0	-5.0	1.0200	25.2	0.9323	27.0			1	6	
95		LV-13.8T		13.800	L2	24.0	9.3	12.0	-5.0	1.0200	25.2	0.9323	27.0			1	6	
97		FOR13A		13.800	F1	95.0	15.8	50.0	-50.0	1.0250	94.0	0.9864	111.0			1	6	
98		FOR13B		13.800	F2	95.0	15.8	50.0	-50.0	1.0250	94.0	0.9864	111.0			1	6	
99		FOR13C		13.800	F3	95.0	15.8	50.0	-50.0	1.0250	94.0	0.9864	111.0			1	6	
101		BAY13A		13.800	B1	46.6	26.8	50.0	-25.0	1.0000	53.7	0.8669	96.0			1	6	SYST
102		BAY13B		13.800	B2	46.6	26.8	50.0	-25.0	1.0000	53.8	0.8669	96.0			1	6	
108		BAY13C		13.800	B3	46.6	26.8	50.0	-25.0	1.0000	53.8	0.8669	100.0			1	6	
116		PACORA13		13.800	P1	15.0	8.8	8.8	0.0	1.0229	17.0	0.8618	21.7			1	6	
116		PACORA13		13.800	P2	15.0	8.8	8.8	0.0	1.0229	17.0	0.8618	21.7			1	6	
116		PACORA13		13.800	P3	15.0	8.8	8.8	0.0	1.0229	17.0	0.8618	21.7			1	6	
142		CANJ13A		13.800	C1	45.0	17.3	29.0	-29.0	1.0250	47.0	0.9336	69.0			1	6	
143		CANJ13B		13.800	C2	45.0	17.3	29.0	-29.0	1.0250	47.0	0.9336	69.0			1	6	
151		GUALAC13		13.800	1	17.0	2.4	10.0	-10.0	1.0250	16.8	0.9905	26.7			1	6	
193		GEBOYIC		13.800	G1	9.1	0.6	4.0	-4.0	1.0250	8.9	0.9975	35.3			1	6	
193		GEBOYIC		13.800	G2	9.1	0.6	4.0	-4.0	1.0250	8.9	0.9975	35.3			1	6	
193		GEBOYIC		13.800	G3	9.1	0.6	4.0	-4.0	1.0250	8.9	0.9975	35.3			1	6	
204		BJOMIN13		13.800	1	23.1	1.6	13.0	-13.0	1.0250	22.6	0.9977	28.9			1	6	
204		BJOMIN13		13.800	2	23.1	1.6	13.0	-13.0	1.0250	22.6	0.9977	28.9			1	6	
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9730	10.8	0.8784	13.5			1	6	
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9712	5.0	0.9110	6.2			1	6	
303		SIND13.8		13.800	S1	9.5	0.0	5.0	0.0	1.0196	9.3	1.0000	13.5			1	6	
305		ELALTO13.8		13.800	1	17.9	1.1	12.0	-5.0	1.0250	17.5	0.9982	20.6			1	6	
305		ELALTO13.8		13.800	2	17.9	1.1	12.0	-5.0	1.0250	17.5	0.9982	20.6			1	6	
305		ELALTO13.8		13.800	3	17.9	1.1	12.0	-5.0	1.0250	17.5	0.9982	20.6			1	6	
307		CHANG75A		13.800	G1	100.0	0.6	22.0	-22.0	1.0250	97.6	1.0000	118.6			1	6	
308		CHANG75B		13.800	G2	100.0	0.6	50.0	-22.0	1.0250	97.6	1.0000	118.6			1	6	
311		PANDO13.8		13.800	1	14.4	1.4	10.0	-5.0	1.0250	14.2	0.9955	19.9			1	6	
311		PANDO13.8		13.800	2	14.4	1.4	10.0	-5.0	1.0250	14.2	0.9955	19.9			1	6	
312		MMVA		13.800	1	18.2	7.7	11.2	0.0	1.0500	18.8	0.9201	23.0			1	6	
312		MMVA		13.800	2	18.2	7.7	11.2	0.0	1.0500	18.8	0.9201	23.0			1	6	
312		MMVA		13.800	3	18.2	7.7	11.2	0.0	1.0500	18.8	0.9201	23.0			1	6	
313		MMVB		13.800	1	18.2	10.7	11.2	0.0	1.0500	20.1	0.8618	23.0			1	6	
313		MMVB		13.800	2	18.2	10.7	11.2	0.0	1.0500	20.1	0.8618	23.0			1	6	
316		MONTE LIRIO		13.800	1	22.6	0.4	12.0	-5.0	1.0200	22.1	0.9998	27.0			1	6	
316		MONTE LIRIO		13.800	2	22.6	0.4	12.0	-5.0	1.0200	22.1	0.9998	27.0			1	6	
317		MENDRE13.8		13.800	M1	8.5	1.4	4.0	-4.0	1.0250	8.4	0.9863	35.3			1	6	
317		MENDRE13.8		13.800	M2	8.5	1.4	4.0	-4.0	1.0250	8.4	0.9863	35.3			1	6	
340		PEDGALITO138		13.800	P1	18.0	-5.0	12.0	-5.0	1.0384	18.0	0.9635	27.0			1	6	
342		LORENA13.8		13.800	1	17.0	0.2	12.0	-5.0	1.0100	16.8	1.0000	27.0			1	6	
342		LORENA13.8		13.800	2	17.0	0.2	12.0	-5.0	1.0100	16.8	1.0000	27.0			1	6	
343		PRUDENCIA138		13.800	1	17.5	0.2	9.8	-9.8	1.0100	17.3	0.9999	21.4			1	6	
343		PRUDENCIA138		13.800	2	17.5	0.2	9.8	-9.8	1.0100	17.3	0.9999	21.4			1	6	
343		PRUDENCIA138		13.800	3	17.5	0.2	9.8	-9.8	1.0100	17.3	0.9999	21.4			1	6	
516		PANAPOW13A		13.800	G1	14.0	7.4	12.5	0.5	1.0250	15.4	0.8844	20.9			1	6	
516		PANAPOW13A		13.800	G2	14.0	7.4	12.5	0.5	1.0250	15.4	0.8844	20.9			1	6	
516		PANAPOW13A		13.800	G3	14.0	7.4	12.5	0.5	1.0250	15.4	0.8844	20.9			1	6	

517	PANAPOW13B	13.800	G4	14.0	5.9	12.5	0.5	1.0250	14.8	0.9214	20.9	1	6
517	PANAPOW13B	13.800	G5	14.0	5.9	12.5	0.5	1.0250	14.8	0.9214	20.9	1	6
517	PANAPOW13B	13.800	G6	14.0	5.9	12.5	0.5	1.0250	14.8	0.9214	20.9	1	6
517	PANAPOW13B	13.800	G7	14.0	5.9	12.5	0.5	1.0250	14.8	0.9214	20.9	1	6
SUBSYSTEM TOTALS				1492.8	386.7	912.7	-485.6				2170.3		

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 21 2007 10:34  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV CONT5 MATA DE NANCE-VELADERO

AREA 7 [ACANAL		] MACHINE SUMMARY:														
BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0421	8.3	1.0000	13.5			2	7	
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0421	8.3	1.0000	13.5			2	7	
130	MIR13F	13.800	G5	9.7	0.0	8.0	0.0	0.9855	9.8	1.0000	27.7			2	7	
134	MAD6A	6.9000	G1	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9909	13.0			2	7	
135	MAD6B	6.9000	G2	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9910	13.0			2	7	
136	MAD6C	6.9000	G3	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9910	13.0			2	7	
140	GAT6A	6.9000	G1	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9959	4.1			2	7	
140	GAT6A	6.9000	G2	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9959	4.1			2	7	
140	GAT6A	6.9000	G3	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9959	4.1			2	7	
141	GAT6B	6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9898	6.2			2	7	
141	GAT6B	6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9898	6.2			2	7	
141	GAT6B	6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9898	6.2			2	7	
SUBSYSTEM TOTALS				73.3	2.8	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 10:34  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESC MOD DEM MAX INV CONT5 MATA DE NANCE-VELADERO IN MW/MVAR

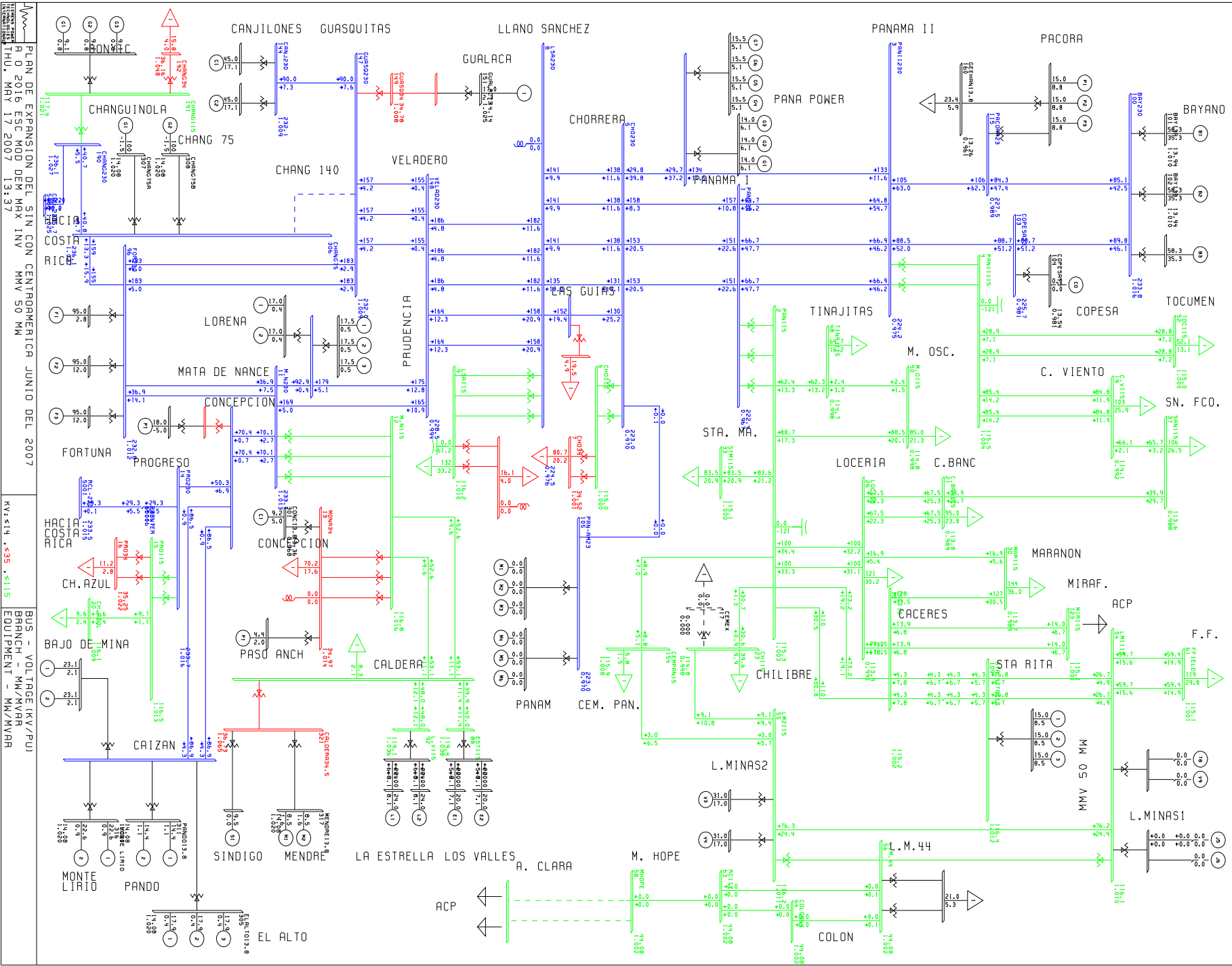
X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.9 55.8	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.2	21.4 261.6	0.0
4	NICA		538.2 33.0	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.2	0.0 -96.8	11.1 147.4	0.0
5	C.RICA		1345.8 268.2	1324.8 569.4	0.0 -237.3	0.0 0.0	0.0 475.1	0.2 44.6	20.9 366.6	0.0
6	PANAMA		1492.8 386.7	1296.9 325.0	0.0 -307.3	0.0 0.0	0.0 510.8	112.7 56.5	83.1 823.2	25.0
7	ACANAL		73.3 2.8	44.1 11.1	0.0 0.0	0.0 0.0	0.0 0.0	27.8 -18.0	1.4 9.7	50.0
9	COLON		0.0 0.0	140.2 35.1	0.0 0.0	0.0 0.0	0.0 1.1	-140.7 -37.4	0.5 3.3	-75.0
TOTALS			6716.3 877.0	6532.9 1987.6	0.0 -1156.0	0.0 0.0	0.0 2065.8	0.0 0.0	183.4 2111.3	0.0

## **Caso 2 MHTC7**

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL  
2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**Caso 2 MHTC7**



PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 R 0 2016 ESC MOD DEM MAX INV  
 THU, MAY 17 2007 13:37

KYL:K14 .K35 .K115

BUS - VOLTAGE (KV)/PU  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 17:15  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	31.0	17.0	17.0	0.0	0.9981	35.4	0.8768	47.0			1	6	
67	BLM13C	13.800	V3	31.0	17.0	17.0	0.0	0.9981	35.4	0.8768	47.0			1	6	
68	BLM13D	13.800	V4	31.0	17.0	17.0	0.0	0.9965	35.5	0.8768	47.0			1	6	
90	EST-13L	13.800	E1	20.0	7.1	12.0	-5.0	1.0100	21.0	0.9417	27.0			1	6	
91	EST-13T	13.800	E2	20.0	7.1	12.0	-5.0	1.0100	21.0	0.9417	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	8.1	12.0	-5.0	1.0100	25.1	0.9472	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	8.1	12.0	-5.0	1.0100	25.1	0.9472	27.0			1	6	
97	FOR13A	13.800	F1	95.0	2.8	50.0	-50.0	1.0100	94.1	0.9996	111.0			1	6	
98	FOR13B	13.800	F2	95.0	12.0	50.0	-50.0	1.0200	93.9	0.9921	111.0			1	6	
99	FOR13C	13.800	F3	95.0	12.0	50.0	-50.0	1.0200	93.9	0.9921	111.0			1	6	
101	BAY13A	13.800	B1	58.3	35.3	50.0	-25.0	1.0100	67.5	0.8552	96.0			1	6	SYST
102	BAY13B	13.800	B2	58.3	35.3	50.0	-25.0	1.0100	67.5	0.8552	96.0			1	6	
108	BAY13C	13.800	B3	58.3	35.3	50.0	-25.0	1.0100	67.5	0.8552	100.0			1	6	
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0180	17.1	0.8618	21.7			1	6	
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0180	17.1	0.8618	21.7			1	6	
116	PACORA13	13.800	P3	15.0	8.8	8.8	0.0	1.0180	17.1	0.8618	21.7			1	6	
142	CANJ13A	13.800	C1	45.0	17.1	29.0	-29.0	1.0250	47.0	0.9345	69.0			1	6	
143	CANJ13B	13.800	C2	45.0	17.1	29.0	-29.0	1.0250	47.0	0.9345	69.0			1	6	
151	GUALAC13	13.800	1	17.0	2.3	10.0	-10.0	1.0250	16.7	0.9910	26.7			1	6	
193	GEBONYIC	13.800	G1	9.1	0.8	4.0	-4.0	1.0250	8.9	0.9958	35.3			1	6	
193	GEBONYIC	13.800	G2	9.1	0.8	4.0	-4.0	1.0250	8.9	0.9958	35.3			1	6	
193	GEBONYIC	13.800	G3	9.1	0.8	4.0	-4.0	1.0250	8.9	0.9958	35.3			1	6	
204	BJOMIN13	13.800	1	23.1	2.1	13.0	-13.0	1.0250	22.6	0.9960	28.9			1	6	
204	BJOMIN13	13.800	2	23.1	2.1	13.0	-13.0	1.0250	22.6	0.9960	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9684	10.8	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9666	5.0	0.9104	6.2			1	6	
303	SIND13.8	13.800	S1	9.5	0.0	5.0	0.0	1.0138	9.4	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	17.9	0.4	12.0	-5.0	1.0200	17.6	0.9997	20.6			1	6	
305	ELALTO13.8	13.800	2	17.9	0.4	12.0	-5.0	1.0200	17.6	0.9997	20.6			1	6	
305	ELALTO13.8	13.800	3	17.9	0.4	12.0	-5.0	1.0200	17.6	0.9997	20.6			1	6	
307	CHANG75A	13.800	G1	100.0	-1.5	22.0	-22.0	1.0200	98.0	0.9999	118.6			1	6	
308	CHANG75B	13.800	G2	100.0	-1.5	50.0	-22.0	1.0200	98.0	0.9999	118.6			1	6	
311	PANDO13.8	13.800	1	14.4	1.1	10.0	-5.0	1.0200	14.2	0.9969	19.9			1	6	
311	PANDO13.8	13.800	2	14.4	1.1	10.0	-5.0	1.0200	14.2	0.9969	19.9			1	6	
312	MMVA	13.800	1	15.0	8.5	8.8	0.0	1.0300	16.8	0.8691	21.7			1	6	
312	MMVA	13.800	2	15.0	8.5	8.8	0.0	1.0300	16.8	0.8691	21.7			1	6	
312	MMVA	13.800	3	15.0	8.5	8.8	0.0	1.0300	16.8	0.8691	21.7			1	6	
316	MONTE LIRIO	13.800	1	22.6	0.9	12.0	-5.0	1.0200	22.2	0.9992	27.0			1	6	
316	MONTE LIRIO	13.800	2	22.6	0.9	12.0	-5.0	1.0200	22.2	0.9992	27.0			1	6	
317	MENDRE13.8	13.800	M1	8.5	1.6	4.0	-4.0	1.0200	8.5	0.9830	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	1.6	4.0	-4.0	1.0200	8.5	0.9830	35.3			1	6	
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0360	18.0	0.9635	27.0			1	6	
342	LORENA13.8	13.800	1	17.0	0.4	12.0	-5.0	1.0100	16.8	0.9997	27.0			1	6	
342	LORENA13.8	13.800	2	17.0	0.4	12.0	-5.0	1.0100	16.8	0.9997	27.0			1	6	
343	PRUDENCIA138	13.800	1	17.5	0.5	9.8	-9.8	1.0100	17.3	0.9997	21.4			1	6	
343	PRUDENCIA138	13.800	2	17.5	0.5	9.8	-9.8	1.0100	17.3	0.9997	21.4			1	6	
343	PRUDENCIA138	13.800	3	17.5	0.5	9.8	-9.8	1.0100	17.3	0.9997	21.4			1	6	
516	PANAPOW13A	13.800	G1	14.0	6.1	12.5	0.5	1.0100	15.1	0.9166	20.9			1	6	
516	PANAPOW13A	13.800	G2	14.0	6.1	12.5	0.5	1.0100	15.1	0.9166	20.9			1	6	
516	PANAPOW13A	13.800	G3	14.0	6.1	12.5	0.5	1.0100	15.1	0.9166	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	5.1	12.5	0.5	1.0100	16.2	0.9492	20.9			1	6	

517 PANAPOW13B	13.800	G5	15.5	5.1	12.5	0.5	1.0100	16.2	0.9492	20.9	1	6
517 PANAPOW13B	13.800	G6	15.5	5.1	12.5	0.5	1.0100	16.2	0.9492	20.9	1	6
517 PANAPOW13B	13.800	G7	15.5	5.1	12.5	0.5	1.0100	16.2	0.9492	20.9	1	6
SUBSYSTEM TOTALS			1487.7	358.4	882.9	-485.6						

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 14 2007 17:15  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV      MMV 50 MW

AREA 7 [ACANAL      ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0389	8.3	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0389	8.3	1.0000	13.5				2	7
130		MIR13F		13.800	G5	9.7	3.5	8.0	0.0	0.9900	10.4	0.9412	27.7				2	7
134		MAD6A		6.9000	G1	9.7	1.5	6.0	-6.0	1.0000	9.8	0.9884	13.0				2	7
135		MAD6B		6.9000	G2	9.7	1.5	6.0	-6.0	1.0000	9.8	0.9885	13.0				2	7
136		MAD6C		6.9000	G3	9.7	1.5	6.0	-6.0	1.0000	9.8	0.9885	13.0				2	7
140		GAT6A		6.9000	G1	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9934	4.1				2	7
140		GAT6A		6.9000	G2	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9934	4.1				2	7
140		GAT6A		6.9000	G3	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9934	4.1				2	7
141		GAT6B		6.9000	G4	3.9	-0.5	3.0	-3.0	1.0000	3.9	0.9915	5.6				2	7
141		GAT6B		6.9000	G5	3.9	-0.5	3.0	-3.0	1.0000	3.9	0.9915	6.2				2	7
141		GAT6B		6.9000	G6	3.9	-0.5	3.0	-3.0	1.0000	3.9	0.9915	6.2				2	7
SUBSYSTEM TOTALS						73.3	7.1	51.0	-33.0				124.2					

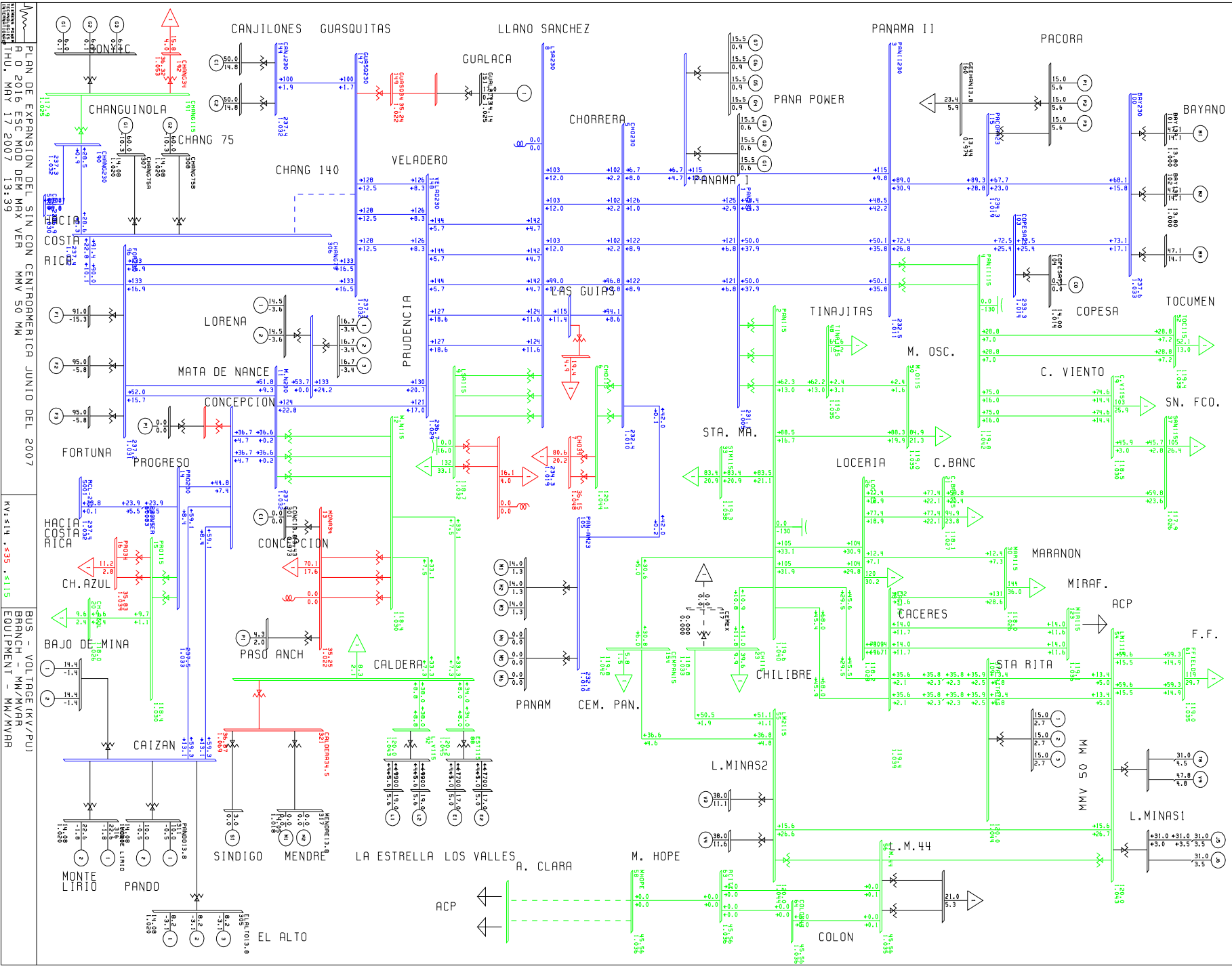
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 17:15  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.8	290.6	-188.3	0.0	302.8	-5.2	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	33.0	224.5	-98.9	0.0	143.2	-96.8	147.4	
5	1345.8	1324.8	0.0	0.0	0.0	0.3	20.8	0.0
C.RICA	269.0	569.4	-237.3	0.0	475.1	45.9	366.2	
6	1487.7	1293.8	0.0	0.0	0.0	112.2	81.8	25.0
PANAMA	358.4	324.2	-302.8	0.0	525.0	50.8	811.2	
7	73.3	44.0	0.0	0.0	0.0	27.9	1.4	50.0
ACANAL	7.1	11.0	0.0	0.0	0.0	-13.5	9.5	
9	0.0	139.9	0.0	0.0	0.0	-140.4	0.5	-75.0
COLON	0.0	35.1	0.0	0.0	1.1	-37.4	3.4	
TOTALS	6711.2	6529.2	0.0	0.0	0.0	0.0	182.0	0.0
	853.9	1986.6	-1151.5	0.0	2080.0	0.0	2098.8	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO**

**Caso 2 MHTC7**



PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 R 0 2016 ESC MOD DEM MAX VER  
 THU, MAY 17 2007 13:39

KV: 114 . \*35 . \*115

BUS - VOLTAGE (KV)/PU  
 BRANCH - MM/VVAR  
 EQUIPMENT - MM/VVAR

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0048	231.09	3		PANII230		230.00	6	1.0107	232.45
5		CHO230		230.00	6	1.0102	232.36	8		LSA230		230.00	6	1.0187	234.31
11		M.N230		230.00	6	1.0322	237.41	14		PRO230		230.00	6	1.0325	237.48
96		FOR230		230.00	6	1.0314	237.22	100		BAY230		230.00	6	1.0331	237.60
103		COPESA23		230.00	6	1.0145	233.33	105		PAN-AM23		230.00	6	1.0103	232.36
115		PACORA23		230.00	6	1.0188	234.32	144		CANJ230		230.00	6	1.0320	237.35
147		GUASQ230		230.00	6	1.0318	237.31	148		VELAD230		230.00	6	1.0292	236.71
190		CHANG230		230.00	6	1.0318	237.32	306		CHANG75		230.00	6	1.0323	237.44
309		CAISAN230		230.00	6	1.0332	237.63	310		CONCEPCION230		230.00	6	1.0332	237.65
341		NVAEST230		230.00	6	1.0313	237.20	511		LGUIAS230		230.00	6	1.0142	233.26
515		PANPOWER230		230.00	6	1.0112	232.56	6000		FRONTER		230.00	6	1.0327	237.53

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0396	119.56	4		PANII115		115.00	6	1.0416	119.78
6		CHO115		115.00	6	1.0441	120.07	9		LSA115		115.00	6	1.0322	118.70
12		M.N115		115.00	6	1.0295	118.39	15		PRO115		115.00	6	1.0298	118.43
18		CAC115		115.00	6	1.0386	119.44	19		C.V115		115.00	6	1.0302	118.48
20		CH.AZUL		115.00	6	1.0260	117.99	21		C.BAN115		115.00	6	1.0268	118.08
23		CH115		115.00	6	1.0335	118.85	26		LOC115		115.00	6	1.0281	118.24
30		MAR115		115.00	6	1.0262	118.01	33		STM115		115.00	6	1.0376	119.32
37		SAN115		115.00	6	1.0256	117.94	48		TINAJ115		115.00	6	1.0348	119.00
50		M.O115		115.00	6	1.0352	119.05	52		TOC115		115.00	6	1.0381	119.38
54		LM115		115.00	6	1.0434	119.99	55		LM2115		115.00	6	1.0438	120.03
61		FFIELD		115.00	9	1.0350	119.02	87		CAL115		115.00	6	1.0422	119.85
88		EST115		115.00	6	1.0451	120.19	92		L.V115		115.00	6	1.0433	119.98
109		STA RITA115		115.00	6	1.0439	120.05	110		PTMD115A		115.00	6	1.0427	119.91
111		PTMD115B		115.00	6	1.0427	119.91	123		MIR115		115.00	7	1.0360	119.14
154		CEMPAN15		115.00	6	1.0417	119.80	191		CHANG115		115.00	6	1.0252	117.89

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.0	11.1	17.0	0.0	1.0150	39.0	0.9596	47.0			1	6	
67	BLM13C	13.800	V3	38.0	11.1	17.0	0.0	1.0150	39.0	0.9596	47.0			1	6	
68	BLM13D	13.800	V4	38.0	11.6	17.0	0.0	1.0150	39.1	0.9567	47.0			1	6	
70	TGJB13A	13.800	J5	31.0	3.5	20.0	0.0	1.0000	31.2	0.9937	39.4			1	6	
71	TGJB13B	13.800	J6	31.0	3.5	20.0	0.0	1.0000	31.2	0.9937	39.4			1	6	
72	BLMCCA	13.800	T8	31.0	4.5	20.0	0.0	1.0000	31.3	0.9897	50.0			1	6	
73	BLMCCB	13.800	V9	47.8	4.8	40.0	0.0	1.0000	48.0	0.9949	71.0			1	6	
90	EST-13L	13.800	E1	17.0	5.0	12.0	-5.0	1.0100	17.5	0.9595	27.0			1	6	
91	EST-13T	13.800	E2	17.0	5.0	12.0	-5.0	1.0100	17.5	0.9595	27.0			1	6	
94	LV-13.8L	13.800	L1	19.0	5.6	12.0	-5.0	1.0100	19.6	0.9587	27.0			1	6	
95	LV-13.8T	13.800	L2	19.0	5.6	12.0	-5.0	1.0100	19.6	0.9587	27.0			1	6	
97	FOR13A	13.800	F1	91.0	-15.3	50.0	-50.0	1.0100	91.4	0.9862	111.0			1	6	
98	FOR13B	13.800	F2	95.0	-5.8	50.0	-50.0	1.0200	93.3	0.9981	111.0			1	6	
99	FOR13C	13.800	F3	95.0	-5.8	50.0	-50.0	1.0200	93.3	0.9981	111.0			1	6	
101	BAY13A	13.800	B1	47.1	14.1	50.0	-25.0	1.0000	49.1	0.9581	96.0			1	6	SYST
102	BAY13B	13.800	B2	47.1	14.1	50.0	-25.0	1.0000	49.1	0.9581	96.0			1	6	
106	PANAM13A	13.800	M1	14.0	1.3	9.0	0.0	0.9900	14.2	0.9956	20.7			1	6	
106	PANAM13A	13.800	M2	14.0	1.3	9.0	0.0	0.9900	14.2	0.9956	20.7			1	6	
106	PANAM13A	13.800	M3	14.0	1.3	9.0	0.0	0.9900	14.2	0.9956	20.7			1	6	
108	BAY13C	13.800	B3	47.1	14.1	50.0	-25.0	1.0000	49.1	0.9581	100.0			1	6	
116	PACORA13	13.800	P1	15.0	5.6	8.8	0.0	1.0300	15.5	0.9369	21.7			1	6	
116	PACORA13	13.800	P2	15.0	5.6	8.8	0.0	1.0300	15.5	0.9369	21.7			1	6	
116	PACORA13	13.800	P3	15.0	5.6	8.8	0.0	1.0300	15.5	0.9369	21.7			1	6	
142	CANJ13A	13.800	C1	50.0	14.8	29.0	-29.0	1.0250	50.9	0.9587	69.0			1	6	
143	CANJ13B	13.800	C2	50.0	14.8	29.0	-29.0	1.0250	50.9	0.9587	69.0			1	6	
151	GUALAC13	13.800	1	17.0	0.2	10.0	-10.0	1.0250	16.6	1.0000	26.7			1	6	
193	GEBOYIC	13.800	G1	6.0	0.1	4.0	-4.0	1.0250	5.9	0.9997	35.3			1	6	
193	GEBOYIC	13.800	G2	6.0	0.1	4.0	-4.0	1.0250	5.9	0.9997	35.3			1	6	
193	GEBOYIC	13.800	G3	6.0	0.1	4.0	-4.0	1.0250	5.9	0.9997	35.3			1	6	
204	BJOMIN13	13.800	1	14.4	-1.4	13.0	-13.0	1.0250	14.1	0.9955	28.9			1	6	
204	BJOMIN13	13.800	2	14.4	-1.4	13.0	-13.0	1.0250	14.1	0.9955	28.9			1	6	
302	PASOANCH13.8	13.800	P1	4.3	2.0	2.0	-2.0	0.9744	4.9	0.9067	6.2			1	6	
303	SIND13.8	13.800	S1	3.0	0.0	5.0	0.0	1.0179	2.9	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	8.2	-3.1	12.0	-5.0	1.0200	8.6	0.9363	20.6			1	6	
305	ELALTO13.8	13.800	2	8.2	-3.1	12.0	-5.0	1.0200	8.6	0.9363	20.6			1	6	
305	ELALTO13.8	13.800	3	8.2	-3.1	12.0	-5.0	1.0200	8.6	0.9363	20.6			1	6	
307	CHANG75A	13.800	G1	60.0	-10.3	22.0	-22.0	1.0200	59.7	0.9855	118.6			1	6	
308	CHANG75B	13.800	G2	60.0	-10.3	50.0	-22.0	1.0200	59.7	0.9855	118.6			1	6	
311	PANDO13.8	13.800	1	10.0	-0.5	10.0	-5.0	1.0200	9.8	0.9987	19.9			1	6	
311	PANDO13.8	13.800	2	10.0	-0.5	10.0	-5.0	1.0200	9.8	0.9987	19.9			1	6	
312	MMVA	13.800	1	15.0	2.7	8.8	0.0	1.0300	14.8	0.9837	21.7			1	6	
312	MMVA	13.800	2	15.0	2.7	8.8	0.0	1.0300	14.8	0.9837	21.7			1	6	
312	MMVA	13.800	3	15.0	2.7	8.8	0.0	1.0300	14.8	0.9837	21.7			1	6	
316	MONTE LIRIO	13.800	1	22.6	-1.8	12.0	-5.0	1.0200	22.2	0.9968	27.0			1	6	
316	MONTE LIRIO	13.800	2	22.6	-1.8	12.0	-5.0	1.0200	22.2	0.9968	27.0			1	6	
342	LORENA13.8	13.800	1	14.5	-3.6	12.0	-5.0	1.0100	14.8	0.9700	27.0			1	6	
342	LORENA13.8	13.800	2	14.5	-3.6	12.0	-5.0	1.0100	14.8	0.9700	27.0			1	6	
343	PRUDENCIA13813.800	13.800	1	16.7	-3.4	9.8	-9.8	1.0100	16.9	0.9800	21.4			1	6	
343	PRUDENCIA13813.800	13.800	2	16.7	-3.4	9.8	-9.8	1.0100	16.9	0.9800	21.4			1	6	
343	PRUDENCIA13813.800	13.800	3	16.7	-3.4	9.8	-9.8	1.0100	16.9	0.9800	21.4			1	6	
516	PANAPOW13A	13.800	G1	15.5	0.6	12.5	0.5	1.0100	15.4	0.9993	20.9			1	6	



516	PANAPOW13A	13.800	G2	15.5	0.6	12.5	0.5	1.0100	15.4	0.9993	20.9	1	6
516	PANAPOW13A	13.800	G3	15.5	0.6	12.5	0.5	1.0100	15.4	0.9993	20.9	1	6
517	PANAPOW13B	13.800	G4	15.5	0.9	12.5	0.5	1.0100	15.4	0.9985	20.9	1	6
517	PANAPOW13B	13.800	G5	15.5	0.9	12.5	0.5	1.0100	15.4	0.9985	20.9	1	6
517	PANAPOW13B	13.800	G6	15.5	0.9	12.5	0.5	1.0100	15.4	0.9985	20.9	1	6
517	PANAPOW13B	13.800	G7	15.5	0.9	12.5	0.5	1.0100	15.4	0.9985	20.9	1	6
SUBSYSTEM TOTALS				1449.5	98.4	984.9	-467.6				2271.4		

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 14 2007 15:31  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX VER      MMV 50 MW

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0627	8.1	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0627	8.1	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	0.0	8.0	0.0	1.0049	9.6	1.0000	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	0.2	6.0	-6.0	1.0000	9.7	0.9998	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	0.2	6.0	-6.0	1.0000	9.7	0.9998	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	0.2	6.0	-6.0	1.0000	9.7	0.9998	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9977	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9977	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9977	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9756	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9756	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9756	6.2			2	7	
SUBSYSTEM TOTALS						73.3	-2.4	51.0	-33.0				124.2					

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.4	224.5	-98.9	0.0	143.3	-97.4	147.3	
5	1345.8	1324.8	0.0	0.0	0.0	1.0	20.1	0.0
C.RICA	243.5	569.4	-238.5	0.0	478.2	30.3	360.5	
6	1449.5	1291.9	0.0	0.0	0.0	111.2	46.4	25.0
PANAMA	98.4	323.8	-275.9	0.0	560.2	76.7	534.1	
7	73.3	44.0	0.0	0.0	0.0	27.9	1.5	50.0
ACANAL	-2.4	11.0	0.0	0.0	0.0	-23.4	9.9	
9	0.0	139.7	0.0	0.0	0.0	-140.1	0.5	-75.0
COLON	0.0	35.0	0.0	0.0	1.1	-37.1	3.2	
TOTALS	6672.9	6527.0	0.0	0.0	0.0	0.0	145.9	0.0
	558.0	1986.1	-1125.9	0.0	2118.4	0.0	1816.1	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO**

**Caso 2 MHTC7**



BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0092	232.12	3		PANII230		230.00	6	1.0119	232.74
5		CHO230		230.00	6	1.0177	234.07	8		LSA230		230.00	6	1.0243	235.59
11		M.N230		230.00	6	1.0307	237.07	14		PRO230		230.00	6	1.0326	237.50
96		FOR230		230.00	6	1.0309	237.12	100		BAY230		230.00	6	1.0159	233.66
103		COPESA23		230.00	6	1.0130	233.00	105		PAN-AM23		230.00	6	1.0177	234.08
115		PACORA23		230.00	6	1.0140	233.23	144		CANJ230		230.00	6	1.0322	237.40
147		GUASQ230		230.00	6	1.0321	237.39	148		VELAD230		230.00	6	1.0310	237.14
190		CHANG230		230.00	6	1.0279	236.42	306		CHANG75		230.00	6	1.0278	236.39
309		CAISAN230		230.00	6	1.0292	236.72	310		CONCEPCION230		230.00	6	1.0311	237.15
341		NVAEST230		230.00	6	1.0305	237.03	511		LGUIAS230		230.00	6	1.0238	235.48
515		PANPOWER230		230.00	6	1.0165	233.79	6000		FRONTER		230.00	6	1.0330	237.60

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
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\* NONE \*

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0433	119.98	4		PANII115		115.00	6	1.0262	118.01
6		CHO115		115.00	6	1.0652	122.50	9		LSA115		115.00	6	1.0344	118.95
12		M.N115		115.00	6	1.0166	116.91	15		PRO115		115.00	6	1.0321	118.70
18		CAC115		115.00	6	1.0428	119.92	19		C.V115		115.00	6	1.0268	118.09
20		CH.AZUL		115.00	6	1.0311	118.57	21		C.BAN115		115.00	6	1.0365	119.19
23		CH115		115.00	6	1.0385	119.43	26		LOC115		115.00	6	1.0375	119.31
30		MAR115		115.00	6	1.0373	119.29	33		STM115		115.00	6	1.0425	119.89
37		SAN115		115.00	6	1.0350	119.02	48		TINAJ115		115.00	6	1.0417	119.80
50		M.O115		115.00	6	1.0419	119.82	52		TOC115		115.00	6	1.0248	117.85
54		LM1115		115.00	6	1.0379	119.36	55		LM2115		115.00	6	1.0380	119.37
61		FFIELD		115.00	9	1.0347	118.99	87		CAL115		115.00	6	1.0263	118.02
88		EST115		115.00	6	1.0282	118.24	92		L.V115		115.00	6	1.0270	118.10
109		STA RITA115		115.00	6	1.0400	119.60	110		PTMD115A		115.00	6	1.0416	119.78
111		PTMD115B		115.00	6	1.0416	119.78	123		MIR115		115.00	7	1.0407	119.69
154		CEMPAN15		115.00	6	1.0397	119.56	191		CHANG115		115.00	6	1.0174	117.00

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
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\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 9:08  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO 50 MMV

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
90	EST-13L	13.800	E1	17.0	7.1	12.0	-5.0	1.0000	18.4	0.9219	27.0					1	6	
94	LV-13.8L	13.800	L1	19.0	7.6	12.0	-5.0	1.0000	20.5	0.9280	27.0					1	6	
97	FOR13A	13.800	F1	59.5	-26.2	50.0	-50.0	1.0000	65.0	0.9150	111.0					1	6	SYST
106	PANAM13A	13.800	M3	14.0	0.0	9.0	0.0	0.9924	14.1	1.0000	20.7					1	6	
107	PANAM13B	13.800	M4	14.0	2.0	9.0	0.0	1.0000	14.1	0.9900	20.7					1	6	
107	PANAM13B	13.800	M5	14.0	2.0	9.0	0.0	1.0000	14.1	0.9900	20.7					1	6	
116	PACORA13	13.800	P1	14.5	0.0	8.8	0.0	1.0066	14.4	1.0000	21.7					1	6	
116	PACORA13	13.800	P2	14.5	0.0	8.8	0.0	1.0066	14.4	1.0000	21.7					1	6	
116	PACORA13	13.800	P3	14.5	0.0	8.8	0.0	1.0066	14.4	1.0000	21.7					1	6	
142	CANJ13A	13.800	C1	50.0	10.7	29.0	-29.0	1.0000	51.1	0.9777	69.0					1	6	
151	GUALAC13	13.800	1	15.0	-2.3	10.0	-10.0	1.0000	15.2	0.9883	26.7					1	6	
193	GEBOYIC	13.800	G1	9.1	-2.5	4.0	-4.0	1.0000	9.4	0.9631	35.3					1	6	
193	GEBOYIC	13.800	G2	9.1	-2.5	4.0	-4.0	1.0000	9.4	0.9631	35.3					1	6	
204	BJOMIN13	13.800	1	23.1	-12.1	13.0	-13.0	1.0000	26.1	0.8863	28.9					1	6	
301	CONC13.8	13.800	C1	9.0	5.0	5.0	-5.0	0.9400	11.0	0.8742	13.5					1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9381	5.2	0.9110	6.2					1	6	
303	SIND13.8	13.800	S1	7.9	0.0	5.0	0.0	1.0005	7.9	1.0000	13.5					1	6	
305	ELALTO13.8	13.800	1	14.7	-5.0	12.0	-5.0	1.0222	15.2	0.9467	20.6					1	6	
307	CHANG75A	13.800	G1	60.0	-22.0	22.0	-22.0	1.0031	63.7	0.9389	118.6					1	6	
311	PANDO13.8	13.800	1	14.0	-4.2	10.0	-5.0	1.0000	14.6	0.9578	19.9					1	6	
312	MMVA	13.800	1	14.0	2.9	8.8	0.0	1.0300	13.9	0.9786	21.7					1	6	
312	MMVA	13.800	2	14.0	2.9	8.8	0.0	1.0300	13.9	0.9786	21.7					1	6	
312	MMVA	13.800	3	14.0	2.9	8.8	0.0	1.0300	13.9	0.9786	21.7					1	6	
316	MONTE LIRIO	13.800	1	22.6	-5.0	12.0	-5.0	1.0166	22.7	0.9763	27.0					1	6	
317	MENDRE13.8	13.800	M1	8.5	-0.2	4.0	-4.0	1.0000	8.5	0.9996	35.3					1	6	
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0512	17.8	0.9635	27.0					1	6	
342	LORENA13.8	13.800	1	17.0	-5.0	12.0	-5.0	1.0169	17.4	0.9594	27.0					1	6	
343	PRUDENCIA138	13.800	1	17.5	-9.8	9.8	-9.8	1.0132	19.8	0.8734	21.4					1	6	
516	PANAPOW13A	13.800	G1	14.0	0.5	12.5	0.5	1.0160	13.8	0.9993	20.9					1	6	
516	PANAPOW13A	13.800	G2	14.0	0.5	12.5	0.5	1.0160	13.8	0.9993	20.9					1	6	
516	PANAPOW13A	13.800	G3	14.0	0.5	12.5	0.5	1.0160	13.8	0.9993	20.9					1	6	
SUBSYSTEM TOTALS				564.9	-55.0	357.3	-186.2				945.1							

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 9:08  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO 50 MMV

AREA 7 [ACANAL ] MACHINE SUMMARY:											X T R A N			GENTAP ZONE AREA SWING			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE				
135		MAD6B		6.9000	G2	10.0	-0.4	6.0	-6.0	1.0000	10.0	0.9992	13.0			2	7
136		MAD6C		6.9000	G3	10.0	-0.4	6.0	-6.0	1.0000	10.0	0.9992	13.0			2	7
140		GAT6A		6.9000	G1	2.0	-0.5	2.0	-2.0	1.0000	2.1	0.9732	4.1			2	7
140		GAT6A		6.9000	G2	2.0	-0.5	2.0	-2.0	1.0000	2.1	0.9732	4.1			2	7
140		GAT6A		6.9000	G3	2.0	-0.5	2.0	-2.0	1.0000	2.1	0.9732	4.1			2	7
141		GAT6B		6.9000	G4	4.0	-1.2	3.0	-3.0	1.0000	4.2	0.9571	5.6			2	7
141		GAT6B		6.9000	G5	4.0	-1.2	3.0	-3.0	1.0000	4.2	0.9571	6.2			2	7
141		GAT6B		6.9000	G6	4.0	-1.2	3.0	-3.0	1.0000	4.2	0.9571	6.2			2	7
SUBSYSTEM TOTALS						38.0	-5.9	27.0	-27.0				56.4				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 9:08  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO 50 MMV IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.3	224.5	-98.9	0.0	143.3	-97.4	147.3	
5	1345.8	1324.8	0.0	0.0	0.0	1.4	19.6	0.0
C.RICA	243.5	569.4	-238.6	0.0	478.3	33.3	357.7	
6	564.9	517.4	0.0	0.0	0.0	35.3	12.1	25.0
PANAMA	-55.0	129.7	183.2	0.0	563.0	43.7	151.4	
7	38.0	17.6	0.0	0.0	0.0	19.2	1.2	50.0
ACANAL	-5.9	4.4	0.0	0.0	0.0	-17.1	6.8	
9	0.0	55.9	0.0	0.0	0.0	-56.0	0.1	-75.0
COLON	0.0	14.0	0.0	0.0	1.1	-13.4	0.5	
TOTALS	5753.1	5642.6	0.0	0.0	0.0	0.0	110.5	0.0
	401.1	1764.4	-666.9	0.0	2121.3	0.0	1424.9	

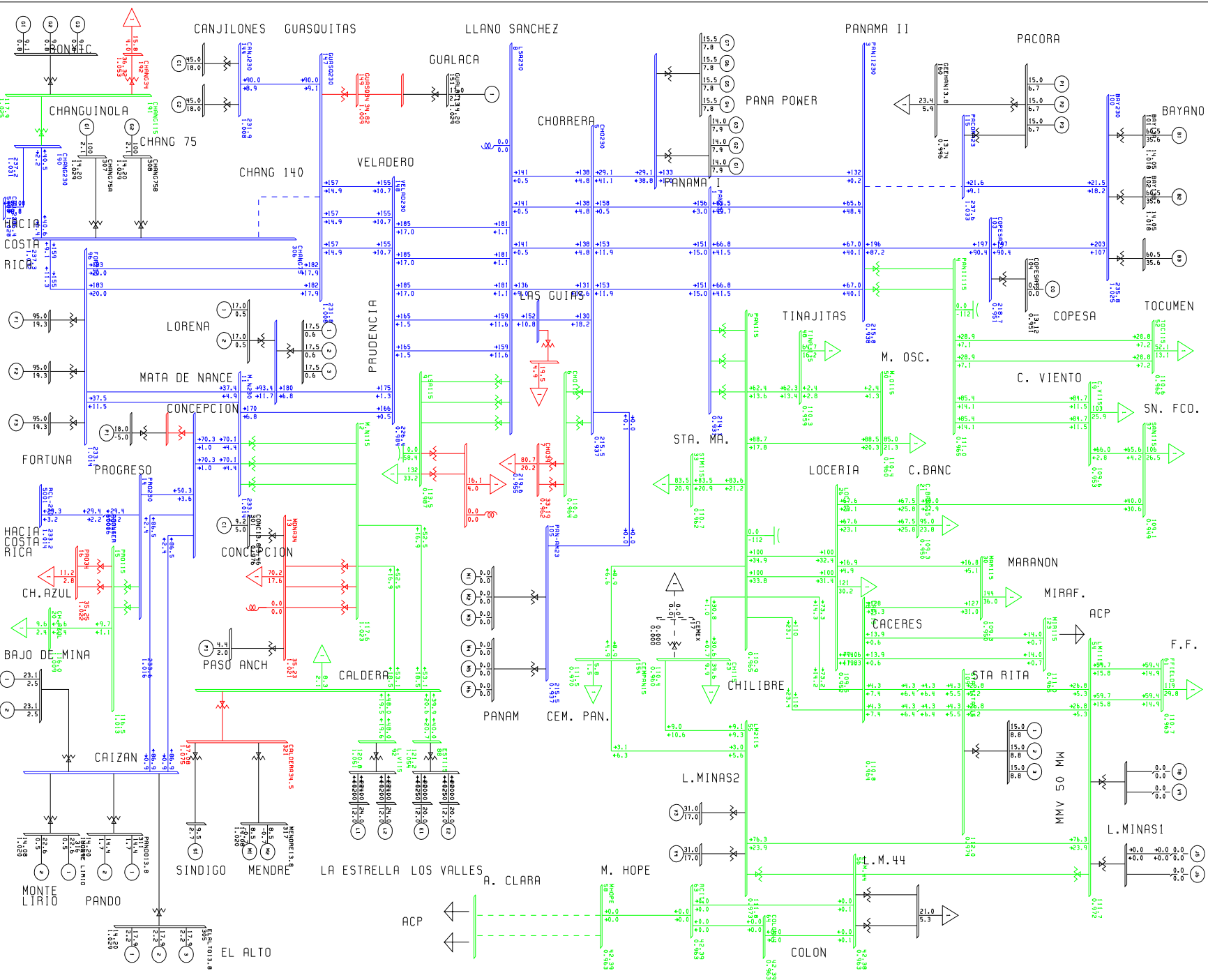


**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**CONTINGENCIA 1: PACORA-PANAMA II**

**Caso 2 MHTC7**



PLAN DE EXPANSION DEL SIN CON CENTROMERIA JUNIO DEL 2007  
 BR 0 2016 ESC MOD DEM MAX INV MVV 50 MM CONTI PACORA-PMATI  
 CANTON, MAY 21 2007 13.35  
 COSTA RICA  
 KV/414 .435 .4115  
 BUS - VOLTAGE (KV/PUI)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 13:27  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT1 PACORA-PMI1

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	31.0	17.0	17.0	0.0	0.9628	36.7	0.8768	47.0			1	6	
67	BLM13C	13.800	V3	31.0	17.0	17.0	0.0	0.9628	36.7	0.8768	47.0			1	6	
68	BLM13D	13.800	V4	31.0	17.0	17.0	0.0	0.9612	36.8	0.8768	47.0			1	6	
90	EST-13L	13.800	E1	20.0	12.0	12.0	-5.0	1.0398	22.4	0.8575	27.0			1	6	
91	EST-13T	13.800	E2	20.0	12.0	12.0	-5.0	1.0398	22.4	0.8575	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	12.0	12.0	-5.0	1.0356	25.9	0.8944	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	12.0	12.0	-5.0	1.0356	25.9	0.8944	27.0			1	6	
97	FOR13A	13.800	F1	95.0	19.3	50.0	-50.0	1.0290	94.2	0.9801	111.0			1	6	
98	FOR13B	13.800	F2	95.0	19.3	50.0	-50.0	1.0290	94.2	0.9801	111.0			1	6	
99	FOR13C	13.800	F3	95.0	19.3	50.0	-50.0	1.0290	94.2	0.9801	111.0			1	6	
101	BAY13A	13.800	B1	60.5	35.6	50.0	-25.0	1.0181	68.9	0.8621	96.0			1	6	SYST
102	BAY13B	13.800	B2	60.5	35.6	50.0	-25.0	1.0181	68.9	0.8621	96.0			1	6	
108	BAY13C	13.800	B3	60.5	35.6	50.0	-25.0	1.0181	68.9	0.8621	100.0			1	6	
116	PACORA13	13.800	P1	15.0	6.7	8.8	0.0	1.0500	15.6	0.9133	21.7			1	6	
116	PACORA13	13.800	P2	15.0	6.7	8.8	0.0	1.0500	15.6	0.9133	21.7			1	6	
116	PACORA13	13.800	P3	15.0	6.7	8.8	0.0	1.0500	15.6	0.9133	21.7			1	6	
142	CANJ13A	13.800	C1	45.0	18.0	29.0	-29.0	1.0290	47.1	0.9286	69.0			1	6	
143	CANJ13B	13.800	C2	45.0	18.0	29.0	-29.0	1.0290	47.1	0.9286	69.0			1	6	
151	GUALAC13	13.800	1	17.0	2.7	10.0	-10.0	1.0290	16.7	0.9872	26.7			1	6	
193	GEBONYIC	13.800	G1	9.1	0.8	4.0	-4.0	1.0290	8.9	0.9963	35.3			1	6	
193	GEBONYIC	13.800	G2	9.1	0.8	4.0	-4.0	1.0290	8.9	0.9963	35.3			1	6	
193	GEBONYIC	13.800	G3	9.1	0.8	4.0	-4.0	1.0290	8.9	0.9963	35.3			1	6	
204	BJOMIN13	13.800	1	23.1	2.5	13.0	-13.0	1.0290	22.6	0.9940	28.9			1	6	
204	BJOMIN13	13.800	2	23.1	2.5	13.0	-13.0	1.0290	22.6	0.9940	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9757	10.7	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9739	5.0	0.9104	6.2			1	6	
303	SIND13.8	13.800	S1	9.5	2.7	5.0	0.0	1.0290	9.6	0.9619	13.5			1	6	
305	ELALTO13.8	13.800	1	17.9	2.2	12.0	-5.0	1.0290	17.5	0.9928	20.6			1	6	
305	ELALTO13.8	13.800	2	17.9	2.2	12.0	-5.0	1.0290	17.5	0.9928	20.6			1	6	
305	ELALTO13.8	13.800	3	17.9	2.2	12.0	-5.0	1.0290	17.5	0.9928	20.6			1	6	
307	CHANG75A	13.800	G1	100.0	2.1	22.0	-22.0	1.0290	97.2	0.9998	118.6			1	6	
308	CHANG75B	13.800	G2	100.0	2.1	50.0	-22.0	1.0290	97.2	0.9998	118.6			1	6	
311	PANDO13.8	13.800	1	14.4	1.7	10.0	-5.0	1.0290	14.1	0.9929	19.9			1	6	
311	PANDO13.8	13.800	2	14.4	1.7	10.0	-5.0	1.0290	14.1	0.9929	19.9			1	6	
312	MMVA	13.800	1	15.0	8.8	8.8	0.0	0.9957	17.5	0.8618	21.7			1	6	
312	MMVA	13.800	2	15.0	8.8	8.8	0.0	0.9957	17.5	0.8618	21.7			1	6	
312	MMVA	13.800	3	15.0	8.8	8.8	0.0	0.9957	17.5	0.8618	21.7			1	6	
316	MONTE LIRIO	13.800	1	22.6	0.5	12.0	-5.0	1.0200	22.1	0.9998	27.0			1	6	
316	MONTE LIRIO	13.800	2	22.6	0.5	12.0	-5.0	1.0200	22.1	0.9998	27.0			1	6	
317	MENDRE13.8	13.800	M1	8.5	-0.7	4.0	-4.0	1.0200	8.4	0.9963	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	-0.7	4.0	-4.0	1.0200	8.4	0.9963	35.3			1	6	
340	PEDGALITO13813.800	13.800	P1	18.0	-5.0	12.0	-5.0	1.0369	18.0	0.9635	27.0			1	6	
342	LORENA13.8	13.800	1	17.0	0.5	12.0	-5.0	1.0100	16.8	0.9995	27.0			1	6	
342	LORENA13.8	13.800	2	17.0	0.5	12.0	-5.0	1.0100	16.8	0.9995	27.0			1	6	
343	PRUDENCIA13813.800	13.800	1	17.5	0.6	9.8	-9.8	1.0100	17.3	0.9994	21.4			1	6	
343	PRUDENCIA13813.800	13.800	2	17.5	0.6	9.8	-9.8	1.0100	17.3	0.9994	21.4			1	6	
343	PRUDENCIA13813.800	13.800	3	17.5	0.6	9.8	-9.8	1.0100	17.3	0.9994	21.4			1	6	
516	PANAPOW13A	13.800	G1	14.0	7.9	12.5	0.5	0.9900	16.3	0.8696	20.9			1	6	
516	PANAPOW13A	13.800	G2	14.0	7.9	12.5	0.5	0.9900	16.3	0.8696	20.9			1	6	
516	PANAPOW13A	13.800	G3	14.0	7.9	12.5	0.5	0.9900	16.3	0.8696	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	7.8	12.5	0.5	1.0000	17.3	0.8937	20.9			1	6	

517 PANAPOW13B	13.800	G5	15.5	7.8	12.5	0.5	1.0000	17.3	0.8937	20.9	1	6
517 PANAPOW13B	13.800	G6	15.5	7.8	12.5	0.5	1.0000	17.3	0.8937	20.9	1	6
517 PANAPOW13B	13.800	G7	15.5	7.8	12.5	0.5	1.0000	17.3	0.8937	20.9	1	6
SUBSYSTEM TOTALS			1494.2	432.3	882.9	-485.6				2120.6		

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 21 2007 13:27  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV    MMV 50 MW CONT1 PACORA-PMII

AREA 7 [ACANAL            ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	3.0	5.0	3.0	1.0370	8.8	0.9443	13.5			2	7	
127		MIR13B		12.000	G2	8.6	3.0	5.0	3.0	1.0369	8.8	0.9443	13.5			2	7	
130		MIR13F		13.800	G5	9.7	5.5	8.0	0.0	0.9800	11.3	0.8705	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	2.9	6.0	2.0	1.0100	10.0	0.9572	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	2.9	6.0	2.0	1.0100	10.0	0.9579	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	2.9	6.0	2.0	1.0100	10.0	0.9578	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.5	2.0	0.0	1.0100	2.0	0.9619	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.5	2.0	0.0	1.0100	2.0	0.9619	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.5	2.0	0.0	1.0100	2.0	0.9619	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	0.0	3.0	0.0	1.0131	3.8	1.0000	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	0.0	3.0	0.0	1.0131	3.8	1.0000	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	0.0	3.0	0.0	1.0131	3.8	1.0000	6.2			2	7	
SUBSYSTEM TOTALS						73.3	21.8	51.0	12.0				124.2					



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 13:27  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT1 PACORA-PMAII IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.9 55.8	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.2	21.4 261.6	0.0
4	NICA		538.2 33.0	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.2	0.0 -96.8	11.1 147.4	0.0
5	C.RICA		1345.8 267.2	1324.8 569.4	0.0 -237.3	0.0 0.0	0.0 475.1	0.3 44.2	20.8 366.0	0.0
6	PANAMA		1494.2 432.3	1293.8 324.2	0.0 -281.9	0.0 0.0	0.0 505.4	112.3 38.1	88.2 857.2	25.0
7	ACANAL		73.3 21.8	44.0 11.0	0.0 0.0	0.0 0.0	0.0 0.0	27.9 1.2	1.4 9.6	50.0
9	COLON		0.0 0.0	139.9 35.1	0.0 0.0	0.0 0.0	0.0 1.0	-140.4 -37.8	0.5 3.7	-75.0
TOTALS			6717.7 940.7	6529.2 1986.6	0.0 -1130.6	0.0 0.0	0.0 2060.3	0.0 0.0	188.5 2145.1	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**CONTINGENCIA 2: PANAMA-PANAMA II**

**Caso 2 MHTC7**







AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	31.0	17.0	17.0	0.0	0.9946	35.5	0.8768	47.0			1	6	
67	BLM13C	13.800	V3	31.0	17.0	17.0	0.0	0.9946	35.5	0.8768	47.0			1	6	
68	BLM13D	13.800	V4	31.0	17.0	17.0	0.0	0.9930	35.6	0.8768	47.0			1	6	
90	EST-13L	13.800	E1	20.0	7.2	12.0	-5.0	1.0100	21.1	0.9405	27.0			1	6	
91	EST-13T	13.800	E2	20.0	7.2	12.0	-5.0	1.0100	21.1	0.9405	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	8.2	12.0	-5.0	1.0100	25.1	0.9461	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	8.2	12.0	-5.0	1.0100	25.1	0.9461	27.0			1	6	
97	FOR13A	13.800	F1	95.0	3.4	50.0	-50.0	1.0100	94.1	0.9994	111.0			1	6	
98	FOR13B	13.800	F2	95.0	12.6	50.0	-50.0	1.0200	94.0	0.9913	111.0			1	6	
99	FOR13C	13.800	F3	95.0	12.6	50.0	-50.0	1.0200	94.0	0.9913	111.0			1	6	
101	BAY13A	13.800	B1	58.6	35.7	50.0	-25.0	1.0100	67.9	0.8539	96.0			1	6	SYST
102	BAY13B	13.800	B2	58.6	35.7	50.0	-25.0	1.0100	67.9	0.8539	96.0			1	6	
108	BAY13C	13.800	B3	58.6	35.7	50.0	-25.0	1.0100	67.9	0.8539	100.0			1	6	
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0174	17.1	0.8618	21.7			1	6	
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0174	17.1	0.8618	21.7			1	6	
116	PACORA13	13.800	P3	15.0	8.8	8.8	0.0	1.0174	17.1	0.8618	21.7			1	6	
142	CANJ13A	13.800	C1	45.0	17.3	29.0	-29.0	1.0250	47.0	0.9336	69.0			1	6	
143	CANJ13B	13.800	C2	45.0	17.3	29.0	-29.0	1.0250	47.0	0.9336	69.0			1	6	
151	GUALAC13	13.800	1	17.0	2.4	10.0	-10.0	1.0250	16.7	0.9905	26.7			1	6	
193	GEBONYIC	13.800	G1	9.1	0.8	4.0	-4.0	1.0250	8.9	0.9957	35.3			1	6	
193	GEBONYIC	13.800	G2	9.1	0.8	4.0	-4.0	1.0250	8.9	0.9957	35.3			1	6	
193	GEBONYIC	13.800	G3	9.1	0.8	4.0	-4.0	1.0250	8.9	0.9957	35.3			1	6	
204	BJOMIN13	13.800	1	23.1	2.2	13.0	-13.0	1.0250	22.6	0.9956	28.9			1	6	
204	BJOMIN13	13.800	2	23.1	2.2	13.0	-13.0	1.0250	22.6	0.9956	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9680	10.8	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9661	5.0	0.9104	6.2			1	6	
303	SIND13.8	13.800	S1	9.5	0.0	5.0	0.0	1.0137	9.4	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	17.9	0.5	12.0	-5.0	1.0200	17.6	0.9996	20.6			1	6	
305	ELALTO13.8	13.800	2	17.9	0.5	12.0	-5.0	1.0200	17.6	0.9996	20.6			1	6	
305	ELALTO13.8	13.800	3	17.9	0.5	12.0	-5.0	1.0200	17.6	0.9996	20.6			1	6	
307	CHANG75A	13.800	G1	100.0	-1.3	22.0	-22.0	1.0200	98.0	0.9999	118.6			1	6	
308	CHANG75B	13.800	G2	100.0	-1.3	50.0	-22.0	1.0200	98.0	0.9999	118.6			1	6	
311	PANDO13.8	13.800	1	14.4	1.2	10.0	-5.0	1.0200	14.2	0.9967	19.9			1	6	
311	PANDO13.8	13.800	2	14.4	1.2	10.0	-5.0	1.0200	14.2	0.9967	19.9			1	6	
312	MMVA	13.800	1	15.0	8.8	8.8	0.0	1.0280	16.9	0.8618	21.7			1	6	
312	MMVA	13.800	2	15.0	8.8	8.8	0.0	1.0280	16.9	0.8618	21.7			1	6	
312	MMVA	13.800	3	15.0	8.8	8.8	0.0	1.0280	16.9	0.8618	21.7			1	6	
316	MONTE LIRIO	13.800	1	22.6	1.0	12.0	-5.0	1.0200	22.2	0.9990	27.0			1	6	
316	MONTE LIRIO	13.800	2	22.6	1.0	12.0	-5.0	1.0200	22.2	0.9990	27.0			1	6	
317	MENDRE13.8	13.800	M1	8.5	1.6	4.0	-4.0	1.0200	8.5	0.9823	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	1.6	4.0	-4.0	1.0200	8.5	0.9823	35.3			1	6	
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0354	18.0	0.9635	27.0			1	6	
342	LORENA13.8	13.800	1	17.0	0.5	12.0	-5.0	1.0100	16.8	0.9995	27.0			1	6	
342	LORENA13.8	13.800	2	17.0	0.5	12.0	-5.0	1.0100	16.8	0.9995	27.0			1	6	
343	PRUDENCIA138	13.800	1	17.5	0.6	9.8	-9.8	1.0100	17.3	0.9994	21.4			1	6	
343	PRUDENCIA138	13.800	2	17.5	0.6	9.8	-9.8	1.0100	17.3	0.9994	21.4			1	6	
343	PRUDENCIA138	13.800	3	17.5	0.6	9.8	-9.8	1.0100	17.3	0.9994	21.4			1	6	
516	PANAPOW13A	13.800	G1	14.0	6.4	12.5	0.5	1.0100	15.2	0.9091	20.9			1	6	
516	PANAPOW13A	13.800	G2	14.0	6.4	12.5	0.5	1.0100	15.2	0.9091	20.9			1	6	
516	PANAPOW13A	13.800	G3	14.0	6.4	12.5	0.5	1.0100	15.2	0.9091	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	5.4	12.5	0.5	1.0100	16.2	0.9448	20.9			1	6	

517 PANAPOW13B	13.800	G5	15.5	5.4	12.5	0.5	1.0100	16.2	0.9448	20.9	1	6
517 PANAPOW13B	13.800	G6	15.5	5.4	12.5	0.5	1.0100	16.2	0.9448	20.9	1	6
517 PANAPOW13B	13.800	G7	15.5	5.4	12.5	0.5	1.0100	16.2	0.9448	20.9	1	6
SUBSYSTEM TOTALS			1488.4	366.5	882.9	-485.6				2120.6		

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 21 2007 13:48  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV    MMV 50 MW CONT2 PANAMA-PMIII

AREA 7 [ACANAL            ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0369	8.3	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0369	8.3	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	4.3	8.0	0.0	0.9900	10.7	0.9124	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.6	6.0	-6.0	1.0000	9.8	0.9866	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.6	6.0	-6.0	1.0000	9.8	0.9868	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.6	6.0	-6.0	1.0000	9.8	0.9868	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.3	2.0	-2.0	1.0000	2.0	0.9915	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.3	2.0	-2.0	1.0000	2.0	0.9915	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.3	2.0	-2.0	1.0000	2.0	0.9915	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.5	3.0	-3.0	1.0000	3.9	0.9924	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.5	3.0	-3.0	1.0000	3.9	0.9924	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.5	3.0	-3.0	1.0000	3.9	0.9924	6.2			2	7	
SUBSYSTEM TOTALS						73.3	8.4	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 13:48  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT2 PANAMA-PMALL IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.9 55.8	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.2	21.4 261.6	0.0
4	NICA		538.2 33.0	527.1 224.5	0.0 -98.8	0.0 0.0	0.0 143.2	0.0 -96.8	11.1 147.4	0.0
5	C.RICA		1345.8 269.8	1324.8 569.4	0.0 -237.3	0.0 0.0	0.0 475.0	0.3 46.4	20.8 366.2	0.0
6	PANAMA		1488.4 366.5	1293.8 324.2	0.0 -301.1	0.0 0.0	0.0 520.8	112.2 48.9	82.4 815.3	25.0
7	ACANAL		73.3 8.4	44.0 11.0	0.0 0.0	0.0 0.0	0.0 0.0	27.9 -12.1	1.4 9.5	50.0
9	COLON		0.0 0.0	139.9 35.1	0.0 0.0	0.0 0.0	0.0 1.1	-140.4 -37.5	0.5 3.5	-75.0
TOTALS			6711.9 864.2	6529.2 1986.6	0.0 -1149.8	0.0 0.0	0.0 2075.7	0.0 0.0	182.7 2103.0	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**CONTINGENCIA 3: PANAPOWER-PANAMA II**

**Caso 2 MHTC7**



# CONTINGENCIA 3: PANAPOWER-PANAMA II

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 13:57  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT3 PANAPOWER-PMAI

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0113	232.61	14	PRO230	230.00	6	1.0141	233.24				
96	FOR230	230.00	6	1.0102	232.34	100	BAY230	230.00	6	1.0104	232.39				
144	CANJ230	230.00	6	1.0066	231.51	147	GUASQ230	230.00	6	1.0062	231.43				
190	CHANG230	230.00	6	1.0260	235.97	306	CHANG75	230.00	6	1.0260	235.97				
309	CAISAN230	230.00	6	1.0196	234.50	310	CONCEPCION230	230.00	6	1.0152	233.49				
341	NVAEST230	230.00	6	1.0095	232.19	6000	FRONTER	230.00	6	1.0142	233.27				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9565	219.99	3	PANII230	230.00	6	0.9644	221.82				
5	CHO230	230.00	6	0.9604	220.89	8	LSA230	230.00	6	0.9691	222.89				
103	COPESA23	230.00	6	0.9718	223.50	105	PAN-AM23	230.00	6	0.9604	220.89				
115	PACORA23	230.00	6	0.9803	225.47	148	VELAD230	230.00	6	0.9892	227.51				
511	LGUIAS230	230.00	6	0.9616	221.17	515	PANPOWER230	230.00	6	0.9679	222.62				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 13:57  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT3 PANAPOWER-PMAI

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	1.0023	115.26	12	M.N115	115.00	6	1.0140	116.61				
15	PRO115	115.00	6	1.0113	116.30	20	CH.AZUL	115.00	6	1.0073	115.85				
55	LM2115	115.00	6	1.0002	115.03	87	CAL115	115.00	6	1.0336	118.86				
88	EST115	115.00	6	1.0375	119.32	92	L.V115	115.00	6	1.0351	119.04				
109	STA RITA115	115.00	6	1.0015	115.17	191	CHANG115	115.00	6	1.0204	117.34				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	0.9919	114.06	4	PANIII115	115.00	6	0.9931	114.21				
6	CHO115	115.00	6	0.9898	113.82	18	CAC115	115.00	6	0.9910	113.96				
19	C.V115	115.00	6	0.9812	112.84	21	C.BAN115	115.00	6	0.9782	112.50				
23	CH115	115.00	6	0.9874	113.55	26	LOC115	115.00	6	0.9797	112.67				
30	MAR115	115.00	6	0.9777	112.44	33	STM115	115.00	6	0.9897	113.81				
37	SAN115	115.00	6	0.9768	112.33	48	TINAJ115	115.00	6	0.9867	113.47				
50	M.O115	115.00	6	0.9871	113.52	52	TOC115	115.00	6	0.9894	113.78				
54	LM1115	115.00	6	0.9992	114.91	61	FFIELD	115.00	9	0.9904	113.90				
110	PTMD115A	115.00	6	0.9971	114.67	111	PTMD115B	115.00	6	0.9971	114.67				
123	MIR115	115.00	7	0.9905	113.91	154	CEMPAN15	115.00	6	0.9972	114.68				



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 13:56  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT3 PANAPOW-PMAI

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	31.0	17.0	17.0	0.0	0.9883	35.8	0.8768	47.0			1	6	
67	BLM13C	13.800	V3	31.0	17.0	17.0	0.0	0.9883	35.8	0.8768	47.0			1	6	
68	BLM13D	13.800	V4	31.0	17.0	17.0	0.0	0.9867	35.8	0.8768	47.0			1	6	
90	EST-13L	13.800	E1	20.0	7.4	12.0	-5.0	1.0100	21.1	0.9378	27.0			1	6	
91	EST-13T	13.800	E2	20.0	7.4	12.0	-5.0	1.0100	21.1	0.9378	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	8.4	12.0	-5.0	1.0100	25.2	0.9439	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	8.4	12.0	-5.0	1.0100	25.2	0.9439	27.0			1	6	
97	FOR13A	13.800	F1	95.0	4.7	50.0	-50.0	1.0100	94.2	0.9988	111.0			1	6	
98	FOR13B	13.800	F2	95.0	13.9	50.0	-50.0	1.0200	94.1	0.9894	111.0			1	6	
99	FOR13C	13.800	F3	95.0	13.9	50.0	-50.0	1.0200	94.1	0.9894	111.0			1	6	
101	BAY13A	13.800	B1	59.3	40.0	50.0	-25.0	1.0100	70.9	0.8289	96.0			1	6	SYST
102	BAY13B	13.800	B2	59.3	40.0	50.0	-25.0	1.0100	70.9	0.8290	96.0			1	6	
108	BAY13C	13.800	B3	59.3	40.0	50.0	-25.0	1.0100	70.9	0.8290	100.0			1	6	
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0090	17.3	0.8618	21.7			1	6	
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0090	17.3	0.8618	21.7			1	6	
116	PACORA13	13.800	P3	15.0	8.8	8.8	0.0	1.0090	17.3	0.8618	21.7			1	6	
142	CANJ13A	13.800	C1	45.0	17.6	29.0	-29.0	1.0250	47.1	0.9316	69.0			1	6	
143	CANJ13B	13.800	C2	45.0	17.6	29.0	-29.0	1.0250	47.1	0.9316	69.0			1	6	
151	GUALAC13	13.800	1	17.0	2.5	10.0	-10.0	1.0250	16.8	0.9891	26.7			1	6	
193	GEBONYIC	13.800	G1	9.1	0.9	4.0	-4.0	1.0250	8.9	0.9954	35.3			1	6	
193	GEBONYIC	13.800	G2	9.1	0.9	4.0	-4.0	1.0250	8.9	0.9954	35.3			1	6	
193	GEBONYIC	13.800	G3	9.1	0.9	4.0	-4.0	1.0250	8.9	0.9954	35.3			1	6	
204	BJOMIN13	13.800	1	23.1	2.4	13.0	-13.0	1.0250	22.7	0.9947	28.9			1	6	
204	BJOMIN13	13.800	2	23.1	2.4	13.0	-13.0	1.0250	22.7	0.9947	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9669	10.8	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9651	5.0	0.9104	6.2			1	6	
303	SIND13.8	13.800	S1	9.5	0.0	5.0	0.0	1.0134	9.4	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	17.9	0.7	12.0	-5.0	1.0200	17.6	0.9991	20.6			1	6	
305	ELALTO13.8	13.800	2	17.9	0.7	12.0	-5.0	1.0200	17.6	0.9991	20.6			1	6	
305	ELALTO13.8	13.800	3	17.9	0.7	12.0	-5.0	1.0200	17.6	0.9991	20.6			1	6	
307	CHANG75A	13.800	G1	100.0	-0.9	22.0	-22.0	1.0200	98.0	1.0000	118.6			1	6	
308	CHANG75B	13.800	G2	100.0	-0.9	50.0	-22.0	1.0200	98.0	1.0000	118.6			1	6	
311	PANDO13.8	13.800	1	14.4	1.3	10.0	-5.0	1.0200	14.2	0.9962	19.9			1	6	
311	PANDO13.8	13.800	2	14.4	1.3	10.0	-5.0	1.0200	14.2	0.9962	19.9			1	6	
312	MMVA	13.800	1	15.0	8.8	8.8	0.0	1.0216	17.0	0.8618	21.7			1	6	
312	MMVA	13.800	2	15.0	8.8	8.8	0.0	1.0216	17.0	0.8618	21.7			1	6	
312	MMVA	13.800	3	15.0	8.8	8.8	0.0	1.0216	17.0	0.8618	21.7			1	6	
316	MONTE LIRIO	13.800	1	22.6	1.2	12.0	-5.0	1.0200	22.2	0.9985	27.0			1	6	
316	MONTE LIRIO	13.800	2	22.6	1.2	12.0	-5.0	1.0200	22.2	0.9985	27.0			1	6	
317	MENDRE13.8	13.800	M1	8.5	1.7	4.0	-4.0	1.0200	8.5	0.9806	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	1.7	4.0	-4.0	1.0200	8.5	0.9806	35.3			1	6	
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0341	18.1	0.9635	27.0			1	6	
342	LORENA13.8	13.800	1	17.0	0.8	12.0	-5.0	1.0100	16.9	0.9988	27.0			1	6	
342	LORENA13.8	13.800	2	17.0	0.8	12.0	-5.0	1.0100	16.9	0.9988	27.0			1	6	
343	PRUDENCIA138	13.800	1	17.5	0.9	9.8	-9.8	1.0100	17.3	0.9987	21.4			1	6	
343	PRUDENCIA138	13.800	2	17.5	0.9	9.8	-9.8	1.0100	17.3	0.9987	21.4			1	6	
343	PRUDENCIA138	13.800	3	17.5	0.9	9.8	-9.8	1.0100	17.3	0.9987	21.4			1	6	
516	PANAPOW13A	13.800	G1	14.0	7.3	12.5	0.5	1.0100	15.6	0.8858	20.9			1	6	
516	PANAPOW13A	13.800	G2	14.0	7.3	12.5	0.5	1.0100	15.6	0.8858	20.9			1	6	
516	PANAPOW13A	13.800	G3	14.0	7.3	12.5	0.5	1.0100	15.6	0.8858	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	6.1	12.5	0.5	1.0100	16.5	0.9312	20.9			1	6	

517 PANAPOW13B	13.800	G5	15.5	6.1	12.5	0.5	1.0100	16.5	0.9312	20.9	1	6
517 PANAPOW13B	13.800	G6	15.5	6.1	12.5	0.5	1.0100	16.5	0.9312	20.9	1	6
517 PANAPOW13B	13.800	G7	15.5	6.1	12.5	0.5	1.0100	16.5	0.9312	20.9	1	6
SUBSYSTEM TOTALS			1490.8	394.7	882.9	-485.6				2120.6		

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 13:56  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT3 PANAPOW-PMIAI

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0335	8.3	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0335	8.3	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	5.8	8.0	0.0	0.9900	11.4	0.8583	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.8	6.0	-6.0	1.0000	9.8	0.9835	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.8	6.0	-6.0	1.0000	9.8	0.9837	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.8	6.0	-6.0	1.0000	9.8	0.9837	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.3	2.0	-2.0	1.0000	2.0	0.9879	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.3	2.0	-2.0	1.0000	2.0	0.9879	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.3	2.0	-2.0	1.0000	2.0	0.9879	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.4	3.0	-3.0	1.0000	3.9	0.9939	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.4	3.0	-3.0	1.0000	3.9	0.9939	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.4	3.0	-3.0	1.0000	3.9	0.9939	6.2			2	7	
SUBSYSTEM TOTALS						73.3	10.7	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 13:57  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT3 PANAPOWEP-PMIA IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.4 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.4	9.8 158.1	0.0
3	HONDURAS		1006.9 55.8	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.8	0.0 -5.2	21.4 261.6	0.0
4	NICA		538.2 33.1	527.1 224.5	0.0 -98.8	0.0 0.0	0.0 143.2	0.0 -96.8	11.1 147.4	0.0
5	C.RICA		1345.8 271.5	1324.8 569.4	0.0 -237.2	0.0 0.0	0.0 474.8	0.3 47.7	20.8 366.3	0.0
6	PANAMA		1490.8 394.7	1293.8 324.2	0.0 -296.7	0.0 0.0	0.0 512.9	112.2 45.3	84.8 834.8	25.0
7	ACANAL		73.3 10.7	44.0 11.0	0.0 0.0	0.0 0.0	0.0 0.0	27.9 -9.8	1.4 9.5	50.0
9	COLON		0.0 0.0	139.9 35.1	0.0 0.0	0.0 0.0	0.0 1.0	-140.4 -37.5	0.5 3.5	-75.0
TOTALS			6714.2 896.4	6529.2 1986.6	0.0 -1145.3	0.0 0.0	0.0 2067.6	0.0 0.0	185.0 2122.6	0.0

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

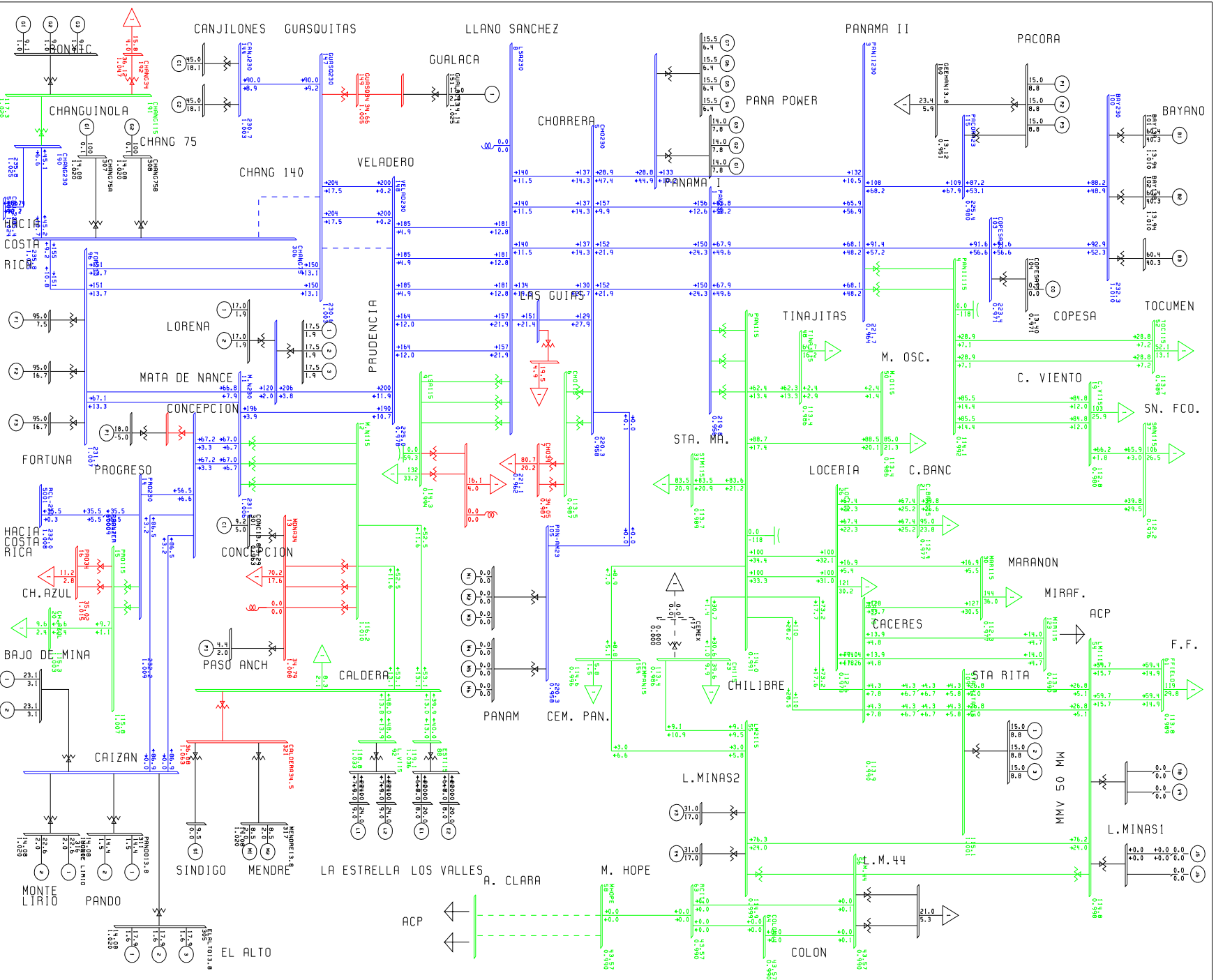
**CONTINGENCIA 4: GUASQUITAS-VELADERO**

**Caso 2 MHTC7**

PLAN DE EXPANSION DEL SIN CON CENTROMERICA JUNIO DEL 2007  
 9 0 2016 ESC MOD DEM MAX INV MMV 50 MM CONT4 GURSUITRAS-VEL  
 11/2007  
 11/2007  
 11/2007

KV/514 .435 .4115

BUS - VOLTAGE (KV/PV)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR



# CONTINGENCIA 4: GUASQUITAS-VELADERO

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 14:05  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT4 GUASQUITAS-VEL

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0064	231.47	14	PRO	230		230.00	6	1.0094	232.17
96	FOR	230		230.00	6	1.0072	231.65	100	BAY	230		230.00	6	1.0101	232.32
144	CANJ	230		230.00	6	1.0031	230.72	147	GUASQ	230		230.00	6	1.0028	230.64
190	CHANG	230		230.00	6	1.0250	235.75	306	CHANG	75		230.00	6	1.0250	235.75
309	CAISAN	230		230.00	6	1.0162	233.73	310	CONCEPCION	230		230.00	6	1.0108	232.49
341	NVAEST	230		230.00	6	1.0040	230.93	6000	FRONTER			230.00	6	1.0094	232.17

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN	230		230.00	6	0.9556	219.79	3	PANII	230		230.00	6	0.9639	221.70
5	CHO	230		230.00	6	0.9579	220.32	8	LSA	230		230.00	6	0.9615	221.15
103	COFESA	230		230.00	6	0.9712	223.38	105	PAN-AM	230		230.00	6	0.9579	220.32
115	PACORA	230		230.00	6	0.9798	225.35	148	VELAD	230		230.00	6	0.9785	225.05
511	LGUIAS	230		230.00	6	0.9561	219.90	515	PANPOWER	230		230.00	6	0.9652	222.01

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 14:05  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT4 GUASQUITAS-VEL

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
12	M.	N115		115.00	6	1.0104	116.19	15	PRO	115		115.00	6	1.0066	115.76
20	CH.	AZUL		115.00	6	1.0026	115.30	87	CAL	115		115.00	6	1.0313	118.60
88	EST	115		115.00	6	1.0355	119.08	92	L.V	115		115.00	6	1.0330	118.79
109	STA RITA	115		115.00	6	1.0005	115.06	191	CHANG	115		115.00	6	1.0197	117.26

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN	115		115.00	6	0.9909	113.96	4	PANII	115		115.00	6	0.9925	114.13
6	CHO	115		115.00	6	0.9870	113.51	9	LSA	115		115.00	6	0.9941	114.32
18	CAC	115		115.00	6	0.9900	113.85	19	C.V	115		115.00	6	0.9804	112.75
21	C.BAN	115		115.00	6	0.9773	112.39	23	CH	115		115.00	6	0.9865	113.44
26	LOC	115		115.00	6	0.9788	112.56	30	MAR	115		115.00	6	0.9768	112.33
33	STM	115		115.00	6	0.9887	113.71	37	SAN	115		115.00	6	0.9759	112.23
48	TINAJ	115		115.00	6	0.9858	113.37	50	M.O	115		115.00	6	0.9862	113.41
52	TOC	115		115.00	6	0.9888	113.71	54	LM	115		115.00	6	0.9983	114.80
55	LM	2115		115.00	6	0.9993	114.92	61	FFIELD			115.00	9	0.9895	113.79
110	PTMD	115A		115.00	6	0.9962	114.56	111	PTMD	115B		115.00	6	0.9962	114.56
123	MIR	115		115.00	7	0.9897	113.81	154	CEMPAN	115		115.00	6	0.9963	114.57

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 14:04  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT4 GUASQUITAS-VEL

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	31.0	17.0	17.0	0.0	0.9874	35.8	0.8768	47.0			1	6	
67	BLM13C	13.800	V3	31.0	17.0	17.0	0.0	0.9874	35.8	0.8768	47.0			1	6	
68	BLM13D	13.800	V4	31.0	17.0	17.0	0.0	0.9858	35.9	0.8768	47.0			1	6	
90	EST-13L	13.800	E1	20.0	8.0	12.0	-5.0	1.0100	21.3	0.9285	27.0			1	6	
91	EST-13T	13.800	E2	20.0	8.0	12.0	-5.0	1.0100	21.3	0.9285	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	9.0	12.0	-5.0	1.0100	25.4	0.9358	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	9.0	12.0	-5.0	1.0100	25.4	0.9358	27.0			1	6	
97	FOR13A	13.800	F1	95.0	7.5	50.0	-50.0	1.0100	94.4	0.9969	111.0			1	6	
98	FOR13B	13.800	F2	95.0	16.7	50.0	-50.0	1.0200	94.6	0.9848	111.0			1	6	
99	FOR13C	13.800	F3	95.0	16.7	50.0	-50.0	1.0200	94.6	0.9848	111.0			1	6	
101	BAY13A	13.800	B1	60.4	40.3	50.0	-25.0	1.0100	71.9	0.8314	96.0			1	6	SYST
102	BAY13B	13.800	B2	60.4	40.3	50.0	-25.0	1.0100	71.9	0.8314	96.0			1	6	
108	BAY13C	13.800	B3	60.4	40.3	50.0	-25.0	1.0100	71.9	0.8314	100.0			1	6	
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0086	17.3	0.8618	21.7			1	6	
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0086	17.3	0.8618	21.7			1	6	
116	PACORA13	13.800	P3	15.0	8.8	8.8	0.0	1.0086	17.3	0.8618	21.7			1	6	
142	CANJ13A	13.800	C1	45.0	18.1	29.0	-29.0	1.0250	47.3	0.9275	69.0			1	6	
143	CANJ13B	13.800	C2	45.0	18.1	29.0	-29.0	1.0250	47.3	0.9275	69.0			1	6	
151	GUALAC13	13.800	1	17.0	2.8	10.0	-10.0	1.0250	16.8	0.9863	26.7			1	6	
193	GEBONYIC	13.800	G1	9.1	1.0	4.0	-4.0	1.0250	8.9	0.9946	35.3			1	6	
193	GEBONYIC	13.800	G2	9.1	1.0	4.0	-4.0	1.0250	8.9	0.9946	35.3			1	6	
193	GEBONYIC	13.800	G3	9.1	1.0	4.0	-4.0	1.0250	8.9	0.9946	35.3			1	6	
204	BJOMIN13	13.800	1	23.1	3.1	13.0	-13.0	1.0250	22.7	0.9909	28.9			1	6	
204	BJOMIN13	13.800	2	23.1	3.1	13.0	-13.0	1.0250	22.7	0.9909	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9634	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9615	5.0	0.9104	6.2			1	6	
303	SIND13.8	13.800	S1	9.5	0.0	5.0	0.0	1.0123	9.4	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	17.9	1.6	12.0	-5.0	1.0200	17.6	0.9962	20.6			1	6	
305	ELALTO13.8	13.800	2	17.9	1.6	12.0	-5.0	1.0200	17.6	0.9962	20.6			1	6	
305	ELALTO13.8	13.800	3	17.9	1.6	12.0	-5.0	1.0200	17.6	0.9962	20.6			1	6	
307	CHANG75A	13.800	G1	100.0	0.1	22.0	-22.0	1.0200	98.0	1.0000	118.6			1	6	
308	CHANG75B	13.800	G2	100.0	0.1	50.0	-22.0	1.0200	98.0	1.0000	118.6			1	6	
311	PANDO13.8	13.800	1	14.4	1.5	10.0	-5.0	1.0200	14.2	0.9943	19.9			1	6	
311	PANDO13.8	13.800	2	14.4	1.5	10.0	-5.0	1.0200	14.2	0.9943	19.9			1	6	
312	MMVA	13.800	1	15.0	8.8	8.8	0.0	1.0207	17.1	0.8618	21.7			1	6	
312	MMVA	13.800	2	15.0	8.8	8.8	0.0	1.0207	17.1	0.8618	21.7			1	6	
312	MMVA	13.800	3	15.0	8.8	8.8	0.0	1.0207	17.1	0.8618	21.7			1	6	
316	MONTE LIRIO	13.800	1	22.6	2.0	12.0	-5.0	1.0200	22.2	0.9962	27.0			1	6	
316	MONTE LIRIO	13.800	2	22.6	2.0	12.0	-5.0	1.0200	22.2	0.9962	27.0			1	6	
317	MENDRE13.8	13.800	M1	8.5	2.0	4.0	-4.0	1.0200	8.6	0.9744	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	2.0	4.0	-4.0	1.0200	8.6	0.9744	35.3			1	6	
340	PEDGALITO13813.800	13.800	P1	18.0	-5.0	12.0	-5.0	1.0294	18.1	0.9635	27.0			1	6	
342	LORENA13.8	13.800	1	17.0	1.9	12.0	-5.0	1.0100	16.9	0.9938	27.0			1	6	
342	LORENA13.8	13.800	2	17.0	1.9	12.0	-5.0	1.0100	16.9	0.9938	27.0			1	6	
343	PRUDENCIA13813.800	13.800	1	17.5	1.9	9.8	-9.8	1.0100	17.4	0.9939	21.4			1	6	
343	PRUDENCIA13813.800	13.800	2	17.5	1.9	9.8	-9.8	1.0100	17.4	0.9939	21.4			1	6	
343	PRUDENCIA13813.800	13.800	3	17.5	1.9	9.8	-9.8	1.0100	17.4	0.9939	21.4			1	6	
516	PANAPOW13A	13.800	G1	14.0	7.8	12.5	0.5	1.0100	15.8	0.8746	20.9			1	6	
516	PANAPOW13A	13.800	G2	14.0	7.8	12.5	0.5	1.0100	15.8	0.8746	20.9			1	6	
516	PANAPOW13A	13.800	G3	14.0	7.8	12.5	0.5	1.0100	15.8	0.8746	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	6.4	12.5	0.5	1.0100	16.6	0.9246	20.9			1	6	

517 PANAPOW13B	13.800	G5	15.5	6.4	12.5	0.5	1.0100	16.6	0.9246	20.9	1	6
517 PANAPOW13B	13.800	G6	15.5	6.4	12.5	0.5	1.0100	16.6	0.9246	20.9	1	6
517 PANAPOW13B	13.800	G7	15.5	6.4	12.5	0.5	1.0100	16.6	0.9246	20.9	1	6
SUBSYSTEM TOTALS			1493.8	424.5	882.9	-485.6				2120.6		

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 21 2007 14:04  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV    MMV 50 MW CONT4 GUASQUITAS-VEL

AREA 7 [ACANAL            ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0330	8.3	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0331	8.3	1.0000	13.5				2	7
130		MIR13F		13.800	G5	9.7	6.0	8.0	0.0	0.9900	11.5	0.8505	27.7				2	7
134		MAD6A		6.9000	G1	9.7	1.8	6.0	-6.0	1.0000	9.8	0.9830	13.0				2	7
135		MAD6B		6.9000	G2	9.7	1.8	6.0	-6.0	1.0000	9.8	0.9833	13.0				2	7
136		MAD6C		6.9000	G3	9.7	1.8	6.0	-6.0	1.0000	9.8	0.9832	13.0				2	7
140		GAT6A		6.9000	G1	1.9	0.3	2.0	-2.0	1.0000	2.0	0.9874	4.1				2	7
140		GAT6A		6.9000	G2	1.9	0.3	2.0	-2.0	1.0000	2.0	0.9874	4.1				2	7
140		GAT6A		6.9000	G3	1.9	0.3	2.0	-2.0	1.0000	2.0	0.9874	4.1				2	7
141		GAT6B		6.9000	G4	3.9	-0.4	3.0	-3.0	1.0000	3.9	0.9941	5.6				2	7
141		GAT6B		6.9000	G5	3.9	-0.4	3.0	-3.0	1.0000	3.9	0.9941	6.2				2	7
141		GAT6B		6.9000	G6	3.9	-0.4	3.0	-3.0	1.0000	3.9	0.9941	6.2				2	7
SUBSYSTEM TOTALS						73.3	11.0	51.0	-33.0				124.2					



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 14:05  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT4 GUASQUITAS-VEL IN MW/MVAR

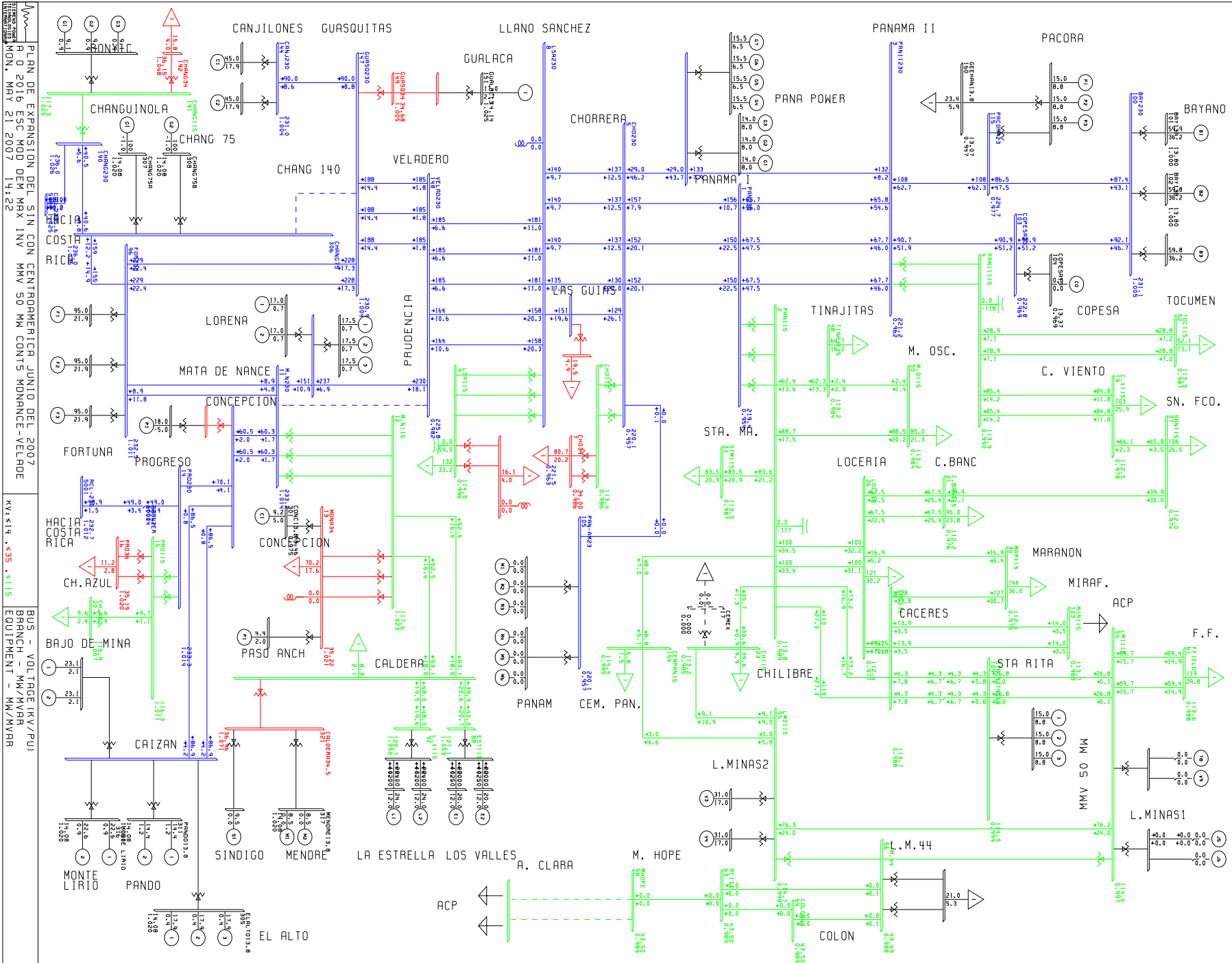
X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.9	290.6	-188.3	0.0	302.8	-5.1	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	33.3	224.5	-98.8	0.0	143.2	-96.6	147.4	
5	1345.8	1324.8	0.0	0.0	0.0	0.1	21.0	0.0
C.RICA	278.5	569.4	-236.8	0.0	473.9	51.9	368.0	
6	1493.8	1293.8	0.0	0.0	0.0	112.4	87.6	25.0
PANAMA	424.5	324.2	-295.3	0.0	498.2	40.6	853.2	
7	73.3	44.0	0.0	0.0	0.0	27.9	1.4	50.0
ACANAL	11.0	11.0	0.0	0.0	0.0	-9.5	9.5	
9	0.0	139.9	0.0	0.0	0.0	-140.4	0.5	-75.0
COLON	0.0	35.1	0.0	0.0	1.0	-37.5	3.5	
TOTALS	6717.3	6529.2	0.0	0.0	0.0	0.0	188.1	0.0
	933.8	1986.6	-1143.6	0.0	2052.0	0.0	2142.8	

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**

**AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

**CONTINGENCIA 5: MATA DE NACNE-VELADERO**

**Caso 2 MHTC7**



PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 R 0 2016 ESC MOD DEM MAX INV MMV 50 MM CNTS MONANCE-VELADE  
 MON, MAY 21 2007 14:22

KV:214 , \*35 , \*115

BUS - VOLTAGE (KV/PU)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 14:18  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT5 MDNANCE-VELADE

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	31.0	17.0	17.0	0.0	0.9859	35.9	0.8768	47.0			1	6	
67	BLM13C	13.800	V3	31.0	17.0	17.0	0.0	0.9859	35.9	0.8768	47.0			1	6	
68	BLM13D	13.800	V4	31.0	17.0	17.0	0.0	0.9843	35.9	0.8768	47.0			1	6	
90	EST-13L	13.800	E1	20.0	12.0	12.0	-5.0	1.0390	22.4	0.8575	27.0			1	6	
91	EST-13T	13.800	E2	20.0	12.0	12.0	-5.0	1.0390	22.4	0.8575	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	12.0	12.0	-5.0	1.0348	25.9	0.8944	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	12.0	12.0	-5.0	1.0348	25.9	0.8944	27.0			1	6	
97	FOR13A	13.800	F1	95.0	21.9	50.0	-50.0	1.0290	94.7	0.9745	111.0			1	6	
98	FOR13B	13.800	F2	95.0	21.9	50.0	-50.0	1.0290	94.7	0.9745	111.0			1	6	
99	FOR13C	13.800	F3	95.0	21.9	50.0	-50.0	1.0290	94.7	0.9745	111.0			1	6	
101	BAY13A	13.800	B1	59.9	36.2	50.0	-25.0	1.0000	70.0	0.8559	96.0			1	6	SYST
102	BAY13B	13.800	B2	59.8	36.2	50.0	-25.0	1.0000	69.9	0.8558	96.0			1	6	
108	BAY13C	13.800	B3	59.8	36.2	50.0	-25.0	1.0000	69.9	0.8558	100.0			1	6	
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0056	17.3	0.8618	21.7			1	6	
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0056	17.3	0.8618	21.7			1	6	
116	PACORA13	13.800	P3	15.0	8.8	8.8	0.0	1.0056	17.3	0.8618	21.7			1	6	
142	CANJ13A	13.800	C1	45.0	17.9	29.0	-29.0	1.0250	47.3	0.9291	69.0			1	6	
143	CANJ13B	13.800	C2	45.0	17.9	29.0	-29.0	1.0250	47.3	0.9291	69.0			1	6	
151	GUALAC13	13.800	1	17.0	2.7	10.0	-10.0	1.0250	16.8	0.9874	26.7			1	6	
193	GEBONYIC	13.800	G1	9.1	0.9	4.0	-4.0	1.0250	8.9	0.9954	35.3			1	6	
193	GEBONYIC	13.800	G2	9.1	0.9	4.0	-4.0	1.0250	8.9	0.9954	35.3			1	6	
193	GEBONYIC	13.800	G3	9.1	0.9	4.0	-4.0	1.0250	8.9	0.9954	35.3			1	6	
204	BJOMIN13	13.800	1	23.1	2.1	13.0	-13.0	1.0250	22.6	0.9959	28.9			1	6	
204	BJOMIN13	13.800	2	23.1	2.1	13.0	-13.0	1.0250	22.6	0.9959	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9754	10.7	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9736	5.0	0.9104	6.2			1	6	
303	SIND13.8	13.800	S1	9.5	0.0	5.0	0.0	1.0202	9.3	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	17.9	0.4	12.0	-5.0	1.0200	17.6	0.9997	20.6			1	6	
305	ELALTO13.8	13.800	2	17.9	0.4	12.0	-5.0	1.0200	17.6	0.9997	20.6			1	6	
305	ELALTO13.8	13.800	3	17.9	0.4	12.0	-5.0	1.0200	17.6	0.9997	20.6			1	6	
307	CHANG75A	13.800	G1	100.0	-1.0	22.0	-22.0	1.0200	98.0	1.0000	118.6			1	6	
308	CHANG75B	13.800	G2	100.0	-1.0	50.0	-22.0	1.0200	98.0	1.0000	118.6			1	6	
311	PANDO13.8	13.800	1	14.4	1.2	10.0	-5.0	1.0200	14.2	0.9968	19.9			1	6	
311	PANDO13.8	13.800	2	14.4	1.2	10.0	-5.0	1.0200	14.2	0.9968	19.9			1	6	
312	MMVA	13.800	1	15.0	8.8	8.8	0.0	1.0191	17.1	0.8618	21.7			1	6	
312	MMVA	13.800	2	15.0	8.8	8.8	0.0	1.0191	17.1	0.8618	21.7			1	6	
312	MMVA	13.800	3	15.0	8.8	8.8	0.0	1.0191	17.1	0.8618	21.7			1	6	
316	MONTE LIRIO	13.800	1	22.6	0.9	12.0	-5.0	1.0200	22.2	0.9991	27.0			1	6	
316	MONTE LIRIO	13.800	2	22.6	0.9	12.0	-5.0	1.0200	22.2	0.9991	27.0			1	6	
317	MENDRE13.8	13.800	M1	8.5	0.0	4.0	-4.0	1.0200	8.3	1.0000	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	0.0	4.0	-4.0	1.0200	8.3	1.0000	35.3			1	6	
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0359	18.0	0.9635	27.0			1	6	
342	LORENA13.8	13.800	1	17.0	0.7	12.0	-5.0	1.0100	16.8	0.9992	27.0			1	6	
342	LORENA13.8	13.800	2	17.0	0.7	12.0	-5.0	1.0100	16.8	0.9992	27.0			1	6	
343	PRUDENCIA138	13.800	1	17.5	0.7	9.8	-9.8	1.0100	17.3	0.9991	21.4			1	6	
343	PRUDENCIA138	13.800	2	17.5	0.7	9.8	-9.8	1.0100	17.3	0.9991	21.4			1	6	
343	PRUDENCIA138	13.800	3	17.5	0.7	9.8	-9.8	1.0100	17.3	0.9991	21.4			1	6	
516	PANAPOW13A	13.800	G1	14.0	8.0	12.5	0.5	1.0100	15.9	0.8693	20.9			1	6	
516	PANAPOW13A	13.800	G2	14.0	8.0	12.5	0.5	1.0100	15.9	0.8693	20.9			1	6	
516	PANAPOW13A	13.800	G3	14.0	8.0	12.5	0.5	1.0100	15.9	0.8693	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	6.5	12.5	0.5	1.0100	16.7	0.9213	20.9			1	6	

517 PANAPOW13B	13.800	G5	15.5	6.5	12.5	0.5	1.0100	16.7	0.9213	20.9	1	6
517 PANAPOW13B	13.800	G6	15.5	6.5	12.5	0.5	1.0100	16.7	0.9213	20.9	1	6
517 PANAPOW13B	13.800	G7	15.5	6.5	12.5	0.5	1.0100	16.7	0.9213	20.9	1	6
SUBSYSTEM TOTALS			1492.3	430.8	882.9	-485.6				2120.6		

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 21 2007 14:18  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESC MOD DEM MAX INV    MMV 50 MW CONT5 MDNANCE-VELADE

AREA 7 [ACANAL            ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	2.0	5.0	2.0	1.0444	8.5	0.9741	13.5			2	7	
127		MIR13B		12.000	G2	8.6	2.0	5.0	2.0	1.0443	8.5	0.9741	13.5			2	7	
130		MIR13F		13.800	G5	9.7	5.0	8.0	0.0	0.9900	11.0	0.8898	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.7	6.0	-6.0	1.0000	9.8	0.9853	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.7	6.0	-6.0	1.0000	9.8	0.9855	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.7	6.0	-6.0	1.0000	9.8	0.9855	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.3	2.0	-2.0	1.0000	2.0	0.9900	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.3	2.0	-2.0	1.0000	2.0	0.9900	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.3	2.0	-2.0	1.0000	2.0	0.9900	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.5	3.0	-3.0	1.0000	3.9	0.9931	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.5	3.0	-3.0	1.0000	3.9	0.9931	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.5	3.0	-3.0	1.0000	3.9	0.9931	6.2			2	7	
SUBSYSTEM TOTALS						73.3	13.4	51.0	-29.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 21 2007 14:19  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESC MOD DEM MAX INV MMV 50 MW CONT5 MDNANCE-VELADE IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.8	290.6	-188.3	0.0	302.8	-5.2	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	33.1	224.5	-98.8	0.0	143.2	-96.7	147.4	
5	1345.8	1324.8	0.0	0.0	0.0	0.2	20.9	0.0
C.RICA	273.6	569.4	-237.1	0.0	474.5	48.8	366.9	
6	1492.3	1293.8	0.0	0.0	0.0	112.3	86.2	25.0
PANAMA	430.8	324.2	-294.6	0.0	498.3	41.4	858.0	
7	73.3	44.0	0.0	0.0	0.0	27.9	1.4	50.0
ACANAL	13.4	11.0	0.0	0.0	0.0	-7.1	9.4	
9	0.0	139.9	0.0	0.0	0.0	-140.4	0.5	-75.0
COLON	0.0	35.1	0.0	0.0	1.0	-37.5	3.5	
TOTALS	6715.8	6529.2	0.0	0.0	0.0	0.0	186.6	0.0
	937.4	1986.6	-1143.1	0.0	2052.6	0.0	2146.4	

**MHTGBC7**  
**Flujos de Potencia**





**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2009 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**



AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B		13.800	V2	26.4	11.5	17.0	0.0	1.0000	28.8	0.9162	47.0			1	6	
67	BLM13C		13.800	V3	24.3	11.4	17.0	0.0	1.0000	26.9	0.9050	47.0			1	6	
68	BLM13D		13.800	V4	23.4	11.9	30.0	0.0	1.0000	26.3	0.8913	47.0			1	6	
70	TGJB13A		13.800	J5	31.7	8.4	20.0	0.0	1.0000	32.8	0.9668	39.4			1	6	
71	TGJB13B		13.800	J6	31.7	8.4	20.0	0.0	1.0000	32.8	0.9668	39.4			1	6	
73	BLMCCB		13.800	V9	55.3	14.6	40.0	0.0	1.0000	57.2	0.9667	71.0			1	6	
90	EST-13L		13.800	E1	20.0	2.7	12.0	-5.0	1.0000	20.2	0.9909	27.0			1	6	
91	EST-13T		13.800	E2	20.0	2.7	12.0	-5.0	1.0000	20.2	0.9909	27.0			1	6	
94	LV-13.8L		13.800	L1	24.0	3.4	12.0	-5.0	1.0000	24.2	0.9902	27.0			1	6	
95	LV-13.8T		13.800	L2	24.0	3.4	12.0	-5.0	1.0000	24.2	0.9902	27.0			1	6	
97	FOR13A		13.800	F1	91.3	-26.7	50.0	-50.0	1.0000	95.1	0.9599	111.0			1	6	
98	FOR13B		13.800	F2	91.3	-26.7	50.0	-50.0	1.0000	95.1	0.9599	111.0			1	6	
99	FOR13C		13.800	F3	91.3	-26.7	50.0	-50.0	1.0000	95.1	0.9599	111.0			1	6	
101	BAY13A		13.800	B1	69.2	19.4	50.0	-25.0	1.0000	71.8	0.9630	96.0			1	6	SYST
102	BAY13B		13.800	B2	69.4	19.4	50.0	-25.0	1.0000	72.1	0.9631	96.0			1	6	
106	PANAM13A		13.800	M1	13.7	0.9	9.0	0.0	0.9800	14.0	0.9977	20.7			1	6	
106	PANAM13A		13.800	M2	13.7	0.9	9.0	0.0	0.9800	14.0	0.9977	20.7			1	6	
106	PANAM13A		13.800	M3	13.7	0.9	9.0	0.0	0.9800	14.0	0.9977	20.7			1	6	
107	PANAM13B		13.800	M4	13.7	0.9	9.0	0.0	0.9800	14.0	0.9977	20.7			1	6	
107	PANAM13B		13.800	M5	13.7	0.9	9.0	0.0	0.9800	14.0	0.9977	20.7			1	6	
107	PANAM13B		13.800	M6	13.7	0.9	9.0	0.0	0.9800	14.0	0.9977	20.7			1	6	
108	BAY13C		13.800	B3	69.4	19.4	50.0	-25.0	1.0000	72.1	0.9631	100.0			1	6	
116	PACORA13		13.800	P1	14.1	0.5	8.8	0.0	1.0000	14.1	0.9993	21.7			1	6	
116	PACORA13		13.800	P2	14.1	0.5	8.8	0.0	1.0000	14.1	0.9993	21.7			1	6	
116	PACORA13		13.800	P3	14.1	0.5	8.8	0.0	1.0000	14.1	0.9993	21.7			1	6	
142	CANJ13A		13.800	C1	51.3	10.4	29.0	-29.0	1.0000	52.3	0.9800	69.0			1	6	
143	CANJ13B		13.800	C2	51.3	10.4	29.0	-29.0	1.0000	52.3	0.9800	69.0			1	6	
301	CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9670	10.8	0.8784	13.5			1	6	
302	PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9651	5.0	0.9110	6.2			1	6	
317	MENDRE13.8		13.800	M1	8.5	-1.6	4.0	-4.0	1.0000	8.7	0.9821	35.3			1	6	
317	MENDRE13.8		13.800	M2	8.5	-1.6	4.0	-4.0	1.0000	8.7	0.9821	35.3			1	6	
516	PANAPOW13A		13.800	G1	10.2	0.5	12.5	0.5	1.0122	10.1	0.9987	20.9			1	6	
516	PANAPOW13A		13.800	G2	10.2	0.5	12.5	0.5	1.0122	10.1	0.9987	20.9			1	6	
SUBSYSTEM TOTALS					1040.8	89.4	670.5	-316.9				1483.2					

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X-- NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126	MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0472	8.2	1.0000	13.5			2	7	
127	MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0472	8.2	1.0000	13.5			2	7	
130	MIR13F		13.800	G5	9.7	4.5	8.0	0.0	1.0000	10.7	0.9063	27.7			2	7	
134	MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0			2	7	

135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9845	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9845	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9845	6.2	2	7
SUBSYSTEM TOTALS				73.3	5.6	51.0	-33.0				124.2		

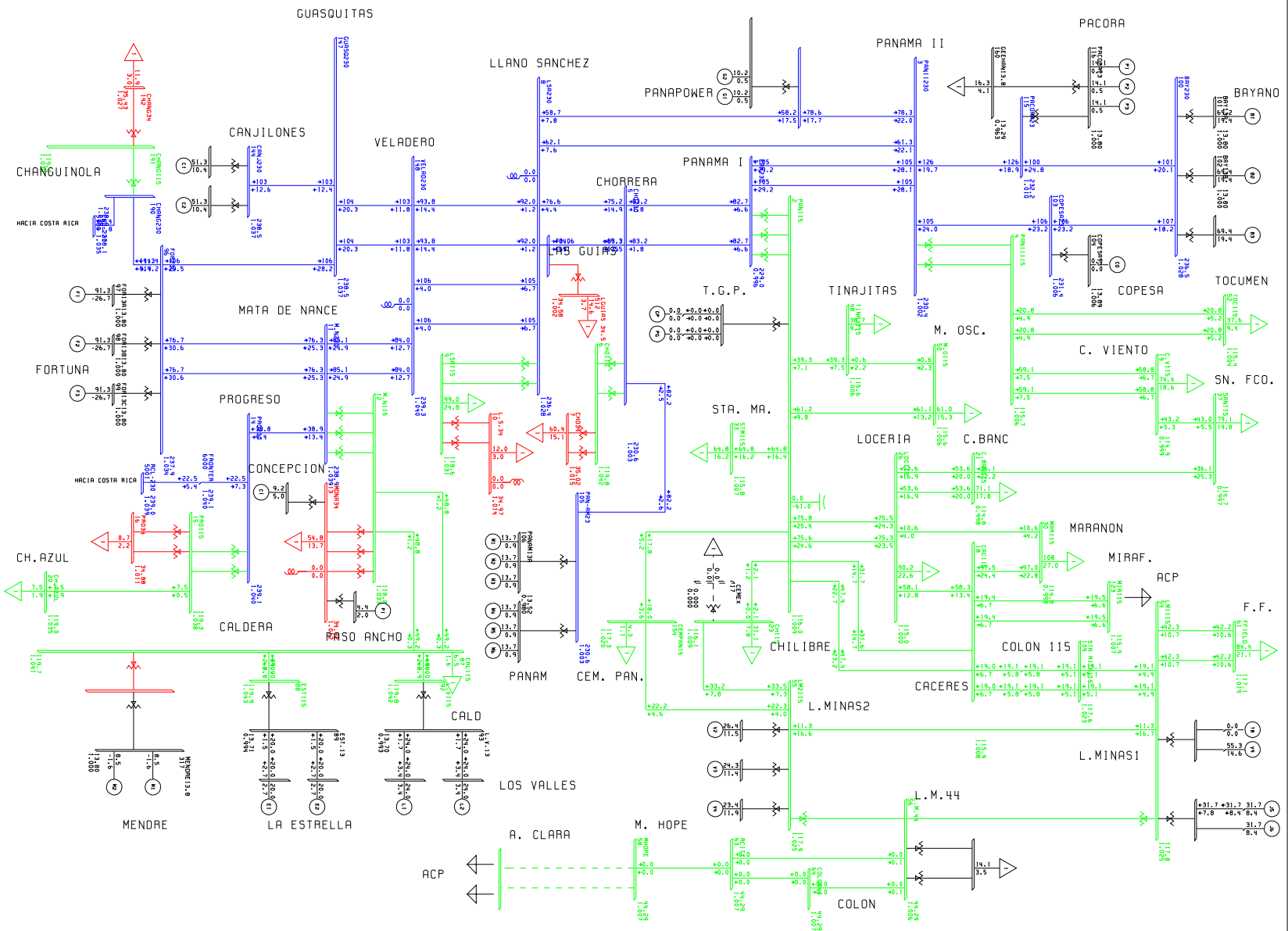


PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, APR 18 2007 15:12  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007 AREA TOTALS  
 AÑO 2009 ESC MOD DE DEM. DEM MAX DE INVIERNO. MHTGBC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.7	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.1	224.5	-98.9	0.0	143.3	-97.6	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.1	19.4	0.0
C.RICA	230.6	569.4	-237.6	0.0	471.8	14.0	356.6	
6	1040.8	957.0	0.0	0.0	0.0	59.8	24.1	25.0
PANAMA	89.4	239.8	-61.0	0.0	474.5	71.5	313.5	
7	73.3	33.0	0.0	0.0	0.0	38.8	1.5	50.0
ACANAL	5.6	8.3	0.0	0.0	0.0	-13.5	10.8	
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6262.8	6140.0	0.0	0.0	0.0	0.0	122.8	0.0
	543.6	1889.1	-910.1	0.0	2026.4	0.0	1591.0	







**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2009 ESCENARIO MODERADO DE DEMANDA MÁXIMA VERANO**



AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	33.5	11.2	17.0	0.0	1.0000	35.3	0.9482	47.0			1	6		
67		BLM13C		13.800	V3	33.5	11.2	17.0	0.0	1.0000	35.3	0.9482	47.0			1	6		
68		BLM13D		13.800	V4	33.5	11.7	30.0	0.0	1.0000	35.5	0.9443	47.0			1	6		
70		TGJB13A		13.800	J5	32.2	8.0	20.0	0.0	1.0000	33.2	0.9708	39.4			1	6		
71		TGJB13B		13.800	J6	32.2	8.0	20.0	0.0	1.0000	33.2	0.9708	39.4			1	6		
72		BLMCCA		13.800	T8	30.0	9.6	20.0	0.0	1.0000	31.5	0.9528	50.0			1	6		
73		BLMCCB		13.800	V9	59.3	10.3	40.0	0.0	1.0000	60.2	0.9853	71.0			1	6		
90		EST-13L		13.800	E1	19.2	2.5	12.0	-5.0	1.0000	19.4	0.9919	27.0			1	6		
91		EST-13T		13.800	E2	19.2	2.5	12.0	-5.0	1.0000	19.4	0.9919	27.0			1	6		
94		LV-13.8L		13.800	L1	21.3	3.0	12.0	-5.0	1.0000	21.5	0.9905	27.0			1	6		
95		LV-13.8T		13.800	L2	21.3	3.0	12.0	-5.0	1.0000	21.5	0.9905	27.0			1	6		
97		FOR13A		13.800	F1	92.4	-27.6	50.0	-50.0	1.0000	96.4	0.9582	111.0			1	6		
98		FOR13B		13.800	F2	92.4	-27.6	50.0	-50.0	1.0000	96.4	0.9582	111.0			1	6		
99		FOR13C		13.800	F3	92.4	-27.6	50.0	-50.0	1.0000	96.4	0.9582	111.0			1	6		
101		BAY13A		13.800	B1	45.8	17.1	50.0	-25.0	1.0000	48.9	0.9366	96.0			1	6	SYST	
102		BAY13B		13.800	B2	45.1	17.1	50.0	-25.0	1.0000	48.2	0.9351	96.0			1	6		
106		PANAM13A		13.800	M1	14.7	0.6	9.0	0.0	0.9800	15.0	0.9991	20.7			1	6		
106		PANAM13A		13.800	M2	14.7	0.6	9.0	0.0	0.9800	15.0	0.9991	20.7			1	6		
106		PANAM13A		13.800	M3	14.7	0.6	9.0	0.0	0.9800	15.0	0.9991	20.7			1	6		
107		PANAM13B		13.800	M4	14.7	0.6	9.0	0.0	0.9800	15.0	0.9991	20.7			1	6		
107		PANAM13B		13.800	M5	14.7	0.6	9.0	0.0	0.9800	15.0	0.9991	20.7			1	6		
107		PANAM13B		13.800	M6	14.7	0.6	9.0	0.0	0.9800	15.0	0.9991	20.7			1	6		
108		BAY13C		13.800	B3	45.1	17.1	50.0	-25.0	1.0000	48.2	0.9351	100.0			1	6		
116		PACORA13		13.800	P1	16.1	0.2	8.8	0.0	1.0000	16.1	0.9999	21.7			1	6		
116		PACORA13		13.800	P2	16.1	0.2	8.8	0.0	1.0000	16.1	0.9999	21.7			1	6		
116		PACORA13		13.800	P3	16.1	0.2	8.8	0.0	1.0000	16.1	0.9999	21.7			1	6		
142		CANJ13A		13.800	C1	50.1	9.8	29.0	-29.0	1.0000	51.0	0.9815	69.0			1	6		
143		CANJ13B		13.800	C2	50.1	9.8	29.0	-29.0	1.0000	51.0	0.9815	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9686	10.8	0.8786	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9667	5.0	0.9110	6.2			1	6		
317		MENDRE13.8		13.800	M1	7.2	-1.8	4.0	-4.0	1.0000	7.4	0.9698	35.3			1	6		
317		MENDRE13.8		13.800	M2	7.2	-1.8	4.0	-4.0	1.0000	7.4	0.9698	35.3			1	6		
516		PANAPOW13A		13.800	G1	13.1	0.5	12.5	0.5	1.0145	12.9	0.9992	20.9			1	6		
516		PANAPOW13A		13.800	G2	13.1	0.5	12.5	0.5	1.0145	12.9	0.9992	20.9			1	6		
SUBSYSTEM TOTALS						1039.3	77.6	690.5	-316.9				1533.2						

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0481	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0481	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	4.1	8.0	0.0	1.0000	10.5	0.9208	27.7			2	7	

134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9952	13.0	2	7
135	MAD6B	6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9952	13.0	2	7
136	MAD6C	6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9952	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9839	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9839	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9839	6.2	2	7
SUBSYSTEM TOTALS				73.3	4.9	51.0	-33.0				124.2		



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESC MOD DE DEM. DEM MAX DE VERANO. MHTGBC7

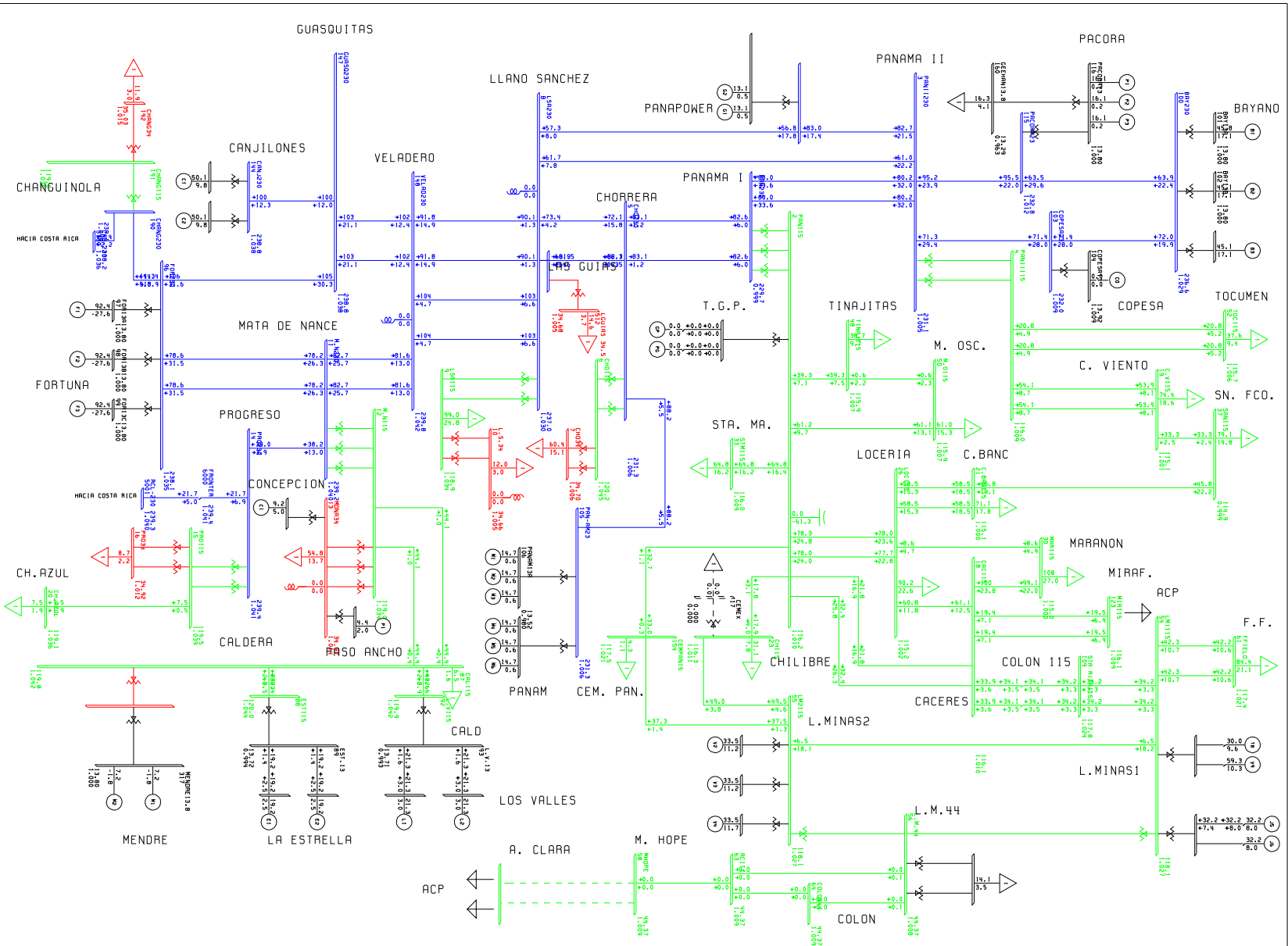
WED, APR 18 2007 15:21

AREA TOTALS  
 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.7	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.0	224.5	-98.9	0.0	143.3	-97.6	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.1	19.4	0.0
C.RICA	229.2	569.4	-237.4	0.0	472.0	12.5	356.7	
6	1039.3	957.0	0.0	0.0	0.0	59.8	22.6	25.0
PANAMA	77.6	239.8	-61.3	0.0	476.4	73.6	301.8	
7	73.3	33.0	0.0	0.0	0.0	38.8	1.5	50.0
ACANAL	4.9	8.3	0.0	0.0	0.0	-14.2	10.8	
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6261.2	6140.0	0.0	0.0	0.0	0.0	121.3	0.0
	529.9	1889.1	-910.1	0.0	2028.5	0.0	1579.4	

PLAN DE EXPANSION DEL SIN CON C.R. JUNIO 2007  
 0 2009 ESCENARIO MODERADO DEMANDA MAXIMA VERRANO. MHTGBC7

KV:5-11. +335 -4115  
 BUS - VOLTAJE (KV/FUI)  
 BRINCH - FM/MVAR  
 EQUIPMENTS - FM/MVAR





**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2009 ESCENARIO MODERADO DE DEMANDA MÍNIMA VERANO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 10 2007 11:08  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MODERADO DEMANDA MINIMA VERANO. MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0127	232.93	3		PANII230		230.00	6	1.0153	233.53
5		CHO230		230.00	6	1.0153	233.52	8		LSA230		230.00	6	1.0120	232.76
11		M.N230		230.00	6	1.0072	231.65	14		PRO230		230.00	6	1.0166	233.82
96		FOR230		230.00	6	1.0051	231.18	100		BAY230		230.00	6	1.0193	234.43
103		COPESA23		230.00	6	1.0164	233.78	105		PAN-AM23		230.00	6	1.0153	233.52
115		PACORA23		230.00	6	1.0173	233.99	144		CANJ230		230.00	6	1.0091	232.09
147		GUASQ230		230.00	6	1.0090	232.07	148		VELAD230		230.00	6	1.0124	232.85
190		CHANG230		230.00	6	1.0235	235.41	511		LGUIAS230		230.00	6	1.0160	233.68
515		PANPOWER230		230.00	6	1.0194	234.46	6000		FRONTER		230.00	6	1.0179	234.12

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 10 2007 11:08  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MODERADO DEMANDA MINIMA VERANO. MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0056	115.65	4		PANII115		115.00	6	1.0088	116.02
6		CHO115		115.00	6	1.0643	122.40	9		LSA115		115.00	6	1.0140	116.61
15		PRO115		115.00	6	1.0164	116.89	18		CAC115		115.00	6	1.0054	115.62
19		C.V115		115.00	6	1.0050	115.58	20		CH.AZUL		115.00	6	1.0157	116.81
21		C.BAN115		115.00	6	1.0026	115.30	23		CH115		115.00	6	1.0042	115.49
26		LOC115		115.00	6	1.0029	115.33	30		MAR115		115.00	6	1.0020	115.23
33		STM115		115.00	6	1.0050	115.57	37		SAN115		115.00	6	1.0024	115.28
48		TINAJ115		115.00	6	1.0047	115.54	50		M.O115		115.00	6	1.0047	115.54
52		TOC115		115.00	6	1.0078	115.90	54		LM115		115.00	6	1.0071	115.82
55		LM2115		115.00	6	1.0071	115.82	61		FFIELD		115.00	9	1.0048	115.55
109		STA RITA115		115.00	6	1.0072	115.83	110		PTMD115A		115.00	6	1.0067	115.77
111		PTMD115B		115.00	6	1.0067	115.77	123		MIR115		115.00	7	1.0059	115.67
154		CEMPAN15		115.00	6	1.0069	115.79	191		CHANG115		115.00	6	1.0218	117.51

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
12		M.N115		115.00	6	0.9851	113.28	87		CAL115		115.00	6	0.9898	113.82
88		EST115		115.00	6	0.9908	113.94	92		L.V115		115.00	6	0.9902	113.87

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 10 2007 11:07  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MODERADO DEMANDA MINIMA VERANO. MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
70		TGJB13A		13.800	J5	30.0	14.3	20.0	0.0	0.9880	33.6	0.9027	39.4			1	6		
90		EST-13L		13.800	E1	17.0	2.5	12.0	-5.0	0.9500	18.1	0.9898	27.0			1	6		
94		LV-13.8L		13.800	L1	19.0	2.8	12.0	-5.0	0.9500	20.2	0.9896	27.0			1	6		
97		FOR13A		13.800	F1	69.3	-28.3	50.0	-50.0	0.9700	77.1	0.9259	111.0			1	6	SYST	
98		FOR13B		13.800	F2	69.9	-28.2	50.0	-50.0	0.9700	77.7	0.9273	111.0			1	6		
99		FOR13C		13.800	F3	69.9	-28.2	50.0	-50.0	0.9700	77.7	0.9273	111.0			1	6		
106		PANAM13A		13.800	M1	14.0	0.0	9.0	0.0	0.9884	14.2	1.0000	20.7			1	6		
106		PANAM13A		13.800	M2	14.0	0.0	9.0	0.0	0.9884	14.2	1.0000	20.7			1	6		
116		PACORA13		13.800	P1	12.0	0.0	8.8	0.0	1.0133	11.8	1.0000	21.7			1	6		
116		PACORA13		13.800	P2	12.0	0.0	8.8	0.0	1.0133	11.8	1.0000	21.7			1	6		
142		CANJ13A		13.800	C1	33.5	6.7	29.0	-29.0	0.9800	34.9	0.9804	69.0			1	6		
516		PANAPOW13A		13.800	G1	13.2	0.5	12.5	0.5	1.0201	12.9	0.9992	20.9			1	6		
SUBSYSTEM TOTALS						373.8	-58.0	271.2	-188.5				601.1						

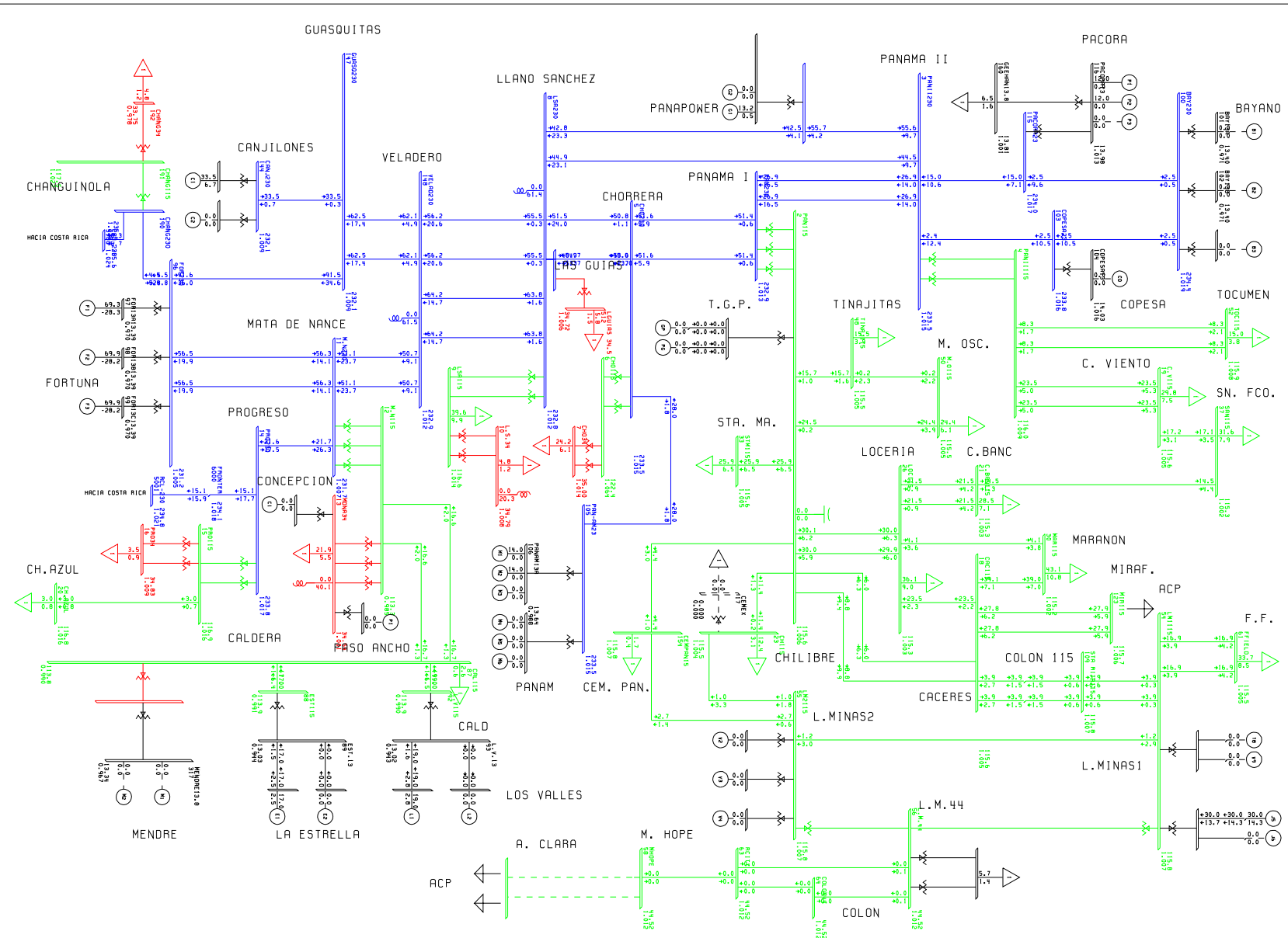
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 10 2007 11:07  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MODERADO DEMANDA MINIMA VERANO. MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0491	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0491	8.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.7	3.7	8.0	0.0	1.0000	10.3	0.9354	27.7			2	7		
134		MAD6A		6.9000	G1	8.7	0.9	6.0	-6.0	1.0000	8.7	0.9949	13.0			2	7		
135		MAD6B		6.9000	G2	8.7	0.9	6.0	-6.0	1.0000	8.7	0.9950	13.0			2	7		
136		MAD6C		6.9000	G3	8.7	0.9	6.0	-6.0	1.0000	8.7	0.9950	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9785	5.6			2	7		
141		GAT6B		6.9000	G5	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9785	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9785	6.2			2	7		
SUBSYSTEM TOTALS						70.3	3.6	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      THU, MAY 10 2007 11:08  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007      AREA TOTALS  
 AÑO 2009 ESCENARIO MODERADO DEMANDA MINIMA VERANO. MHTGBC7      IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.6	1312.2	0.0	0.0	0.0	0.2	35.3	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.8	341.5	
2	912.0	902.0	0.0	0.0	0.0	0.2	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.8	290.6	-188.3	0.0	302.8	-5.2	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.8	224.5	-98.9	0.0	143.2	-97.0	147.4	
5	1344.2	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	261.8	569.4	-236.5	0.0	468.6	40.2	357.3	
6	373.8	382.8	0.0	0.0	0.0	-16.7	7.8	25.0
PANAMA	-58.0	95.9	183.4	0.0	462.2	27.3	97.6	
7	70.3	13.2	0.0	0.0	0.0	55.6	1.5	50.0
ACANAL	3.6	3.3	0.0	0.0	0.0	-12.4	12.7	
9	0.0	39.4	0.0	0.0	0.0	-39.4	0.0	-75.0
COLON	0.0	9.9	0.0	0.0	1.1	-9.1	0.3	
TOTALS	5593.1	5486.9	0.0	0.0	0.0	0.0	106.2	0.0
	426.6	1725.4	-664.6	0.0	2010.7	0.0	137	



**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2009 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Pacora-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 14 2007 16:09  
PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0161	233.71	11		M.N230		230.00	6	1.0343	237.89
14		PRO230		230.00	6	1.0357	238.22	96		FOR230		230.00	6	1.0308	237.08
100		BAY230		230.00	6	1.0292	236.71	115		PACORA23		230.00	6	1.0303	236.96

144 CANJ230	230.00	6	1.0325	237.47	147 GUASQ230	230.00	6	1.0324	237.46
148 VELAD230	230.00	6	1.0332	237.63	190 CHANG230	230.00	6	1.0367	238.43
511 LGUIAS230	230.00	6	1.0050	231.15	6000 FRONTER	230.00	6	1.0360	238.29

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9781	224.96	3	PANII230	230.00	6	0.9827	226.02
5	CHO230	230.00	6	0.9880	227.24	103	COPESA23	230.00	6	0.9890	227.47
105	PAN-AM23	230.00	6	0.9881	227.25	515	PANPOWER230	230.00	6	0.9936	228.52

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:09  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0045	115.52	4	PANII115	115.00	6	1.0086	115.99
6	CHO115	115.00	6	1.0262	118.02	9	LSA115	115.00	6	1.0188	117.17
12	M.N115	115.00	6	1.0298	118.42	15	PRO115	115.00	6	1.0339	118.90
18	CAC115	115.00	6	1.0040	115.47	20	CH.AZUL	115.00	6	1.0311	118.57
23	CH115	115.00	6	1.0061	115.71	33	STM115	115.00	6	1.0029	115.33
48	TINAJ115	115.00	6	1.0016	115.18	50	M.O115	115.00	6	1.0015	115.17
52	TOC115	115.00	6	1.0060	115.69	54	LM115	115.00	6	1.0226	117.60
55	LM2115	115.00	6	1.0229	117.63	61	FFIELD	115.00	9	1.0166	116.91
87	CAL115	115.00	6	1.0388	119.47	88	EST115	115.00	6	1.0412	119.74
92	L.V115	115.00	6	1.0398	119.58	109	STA RITA115	115.00	6	1.0205	117.36
110	PTMD115A	115.00	6	1.0142	116.63	111	PTMD115B	115.00	6	1.0142	116.63
123	MIR115	115.00	7	1.0037	115.43	154	CEMPAN15	115.00	6	1.0172	116.98
191	CHANG115	115.00	6	1.0322	118.70						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
19	C.V115	115.00	6	0.9994	114.93	21	C.BAN115	115.00	6	0.9953	114.46
26	LOC115	115.00	6	0.9962	114.56	30	MAR115	115.00	6	0.9946	114.38
37	SAN115	115.00	6	0.9945	114.36						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:09  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	26.4	12.4	17.0	0.0	1.0000	29.2	0.9052	47.0			1	6		
67		BLM13C		13.800	V3	24.3	12.3	17.0	0.0	1.0000	27.2	0.8926	47.0			1	6		
68		BLM13D		13.800	V4	23.4	12.8	30.0	0.0	1.0000	26.7	0.8774	47.0			1	6		
70		TGJB13A		13.800	J5	31.7	8.9	20.0	0.0	1.0000	32.9	0.9629	39.4			1	6		
71		TGJB13B		13.800	J6	31.7	8.9	20.0	0.0	1.0000	32.9	0.9629	39.4			1	6		
73		BLMCCB		13.800	V9	55.3	15.5	40.0	0.0	1.0000	57.4	0.9627	71.0			1	6		
90		EST-13L		13.800	E1	20.0	3.2	12.0	-5.0	1.0000	20.3	0.9873	27.0			1	6		
91		EST-13T		13.800	E2	20.0	3.2	12.0	-5.0	1.0000	20.3	0.9873	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	3.9	12.0	-5.0	1.0000	24.3	0.9869	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	3.9	12.0	-5.0	1.0000	24.3	0.9869	27.0			1	6		
97		FOR13A		13.800	F1	91.3	-23.5	50.0	-50.0	1.0000	94.3	0.9684	111.0			1	6		
98		FOR13B		13.800	F2	91.3	-23.5	50.0	-50.0	1.0000	94.3	0.9684	111.0			1	6		
99		FOR13C		13.800	F3	91.3	-23.5	50.0	-50.0	1.0000	94.3	0.9684	111.0			1	6		
101		BAY13A		13.800	B1	73.7	19.1	50.0	-25.0	1.0000	76.1	0.9681	96.0			1	6	SYST	
102		BAY13B		13.800	B2	69.4	18.7	50.0	-25.0	1.0000	71.9	0.9657	96.0			1	6		
106		PANAM13A		13.800	M1	13.7	3.0	9.0	0.0	0.9800	14.3	0.9774	20.7			1	6		
106		PANAM13A		13.800	M2	13.7	3.0	9.0	0.0	0.9800	14.3	0.9774	20.7			1	6		
106		PANAM13A		13.800	M3	13.7	3.0	9.0	0.0	0.9800	14.3	0.9774	20.7			1	6		
107		PANAM13B		13.800	M4	13.7	3.0	9.0	0.0	0.9800	14.3	0.9774	20.7			1	6		
107		PANAM13B		13.800	M5	13.7	3.0	9.0	0.0	0.9800	14.3	0.9774	20.7			1	6		
107		PANAM13B		13.800	M6	13.7	3.0	9.0	0.0	0.9800	14.3	0.9774	20.7			1	6		
108		BAY13C		13.800	B3	69.4	18.7	50.0	-25.0	1.0000	71.9	0.9657	100.0			1	6		
116		PACORA13		13.800	P1	14.1	0.0	8.8	0.0	1.0181	13.8	1.0000	21.7			1	6		
116		PACORA13		13.800	P2	14.1	0.0	8.8	0.0	1.0181	13.8	1.0000	21.7			1	6		
116		PACORA13		13.800	P3	14.1	0.0	8.8	0.0	1.0181	13.8	1.0000	21.7			1	6		
142		CANJ13A		13.800	C1	51.3	11.1	29.0	-29.0	1.0000	52.5	0.9773	69.0			1	6		
143		CANJ13B		13.800	C2	51.3	11.1	29.0	-29.0	1.0000	52.5	0.9773	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9641	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9622	5.0	0.9110	6.2			1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.4	4.0	-4.0	1.0000	8.6	0.9865	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-1.4	4.0	-4.0	1.0000	8.6	0.9865	35.3			1	6		
516		PANAPOW13A		13.800	G1	10.2	1.7	12.5	0.5	1.0000	10.3	0.9857	20.9			1	6		
516		PANAPOW13A		13.800	G2	10.2	1.7	12.5	0.5	1.0000	10.3	0.9857	20.9			1	6		
SUBSYSTEM TOTALS						1045.3	118.6	670.5	-316.9				1483.2						

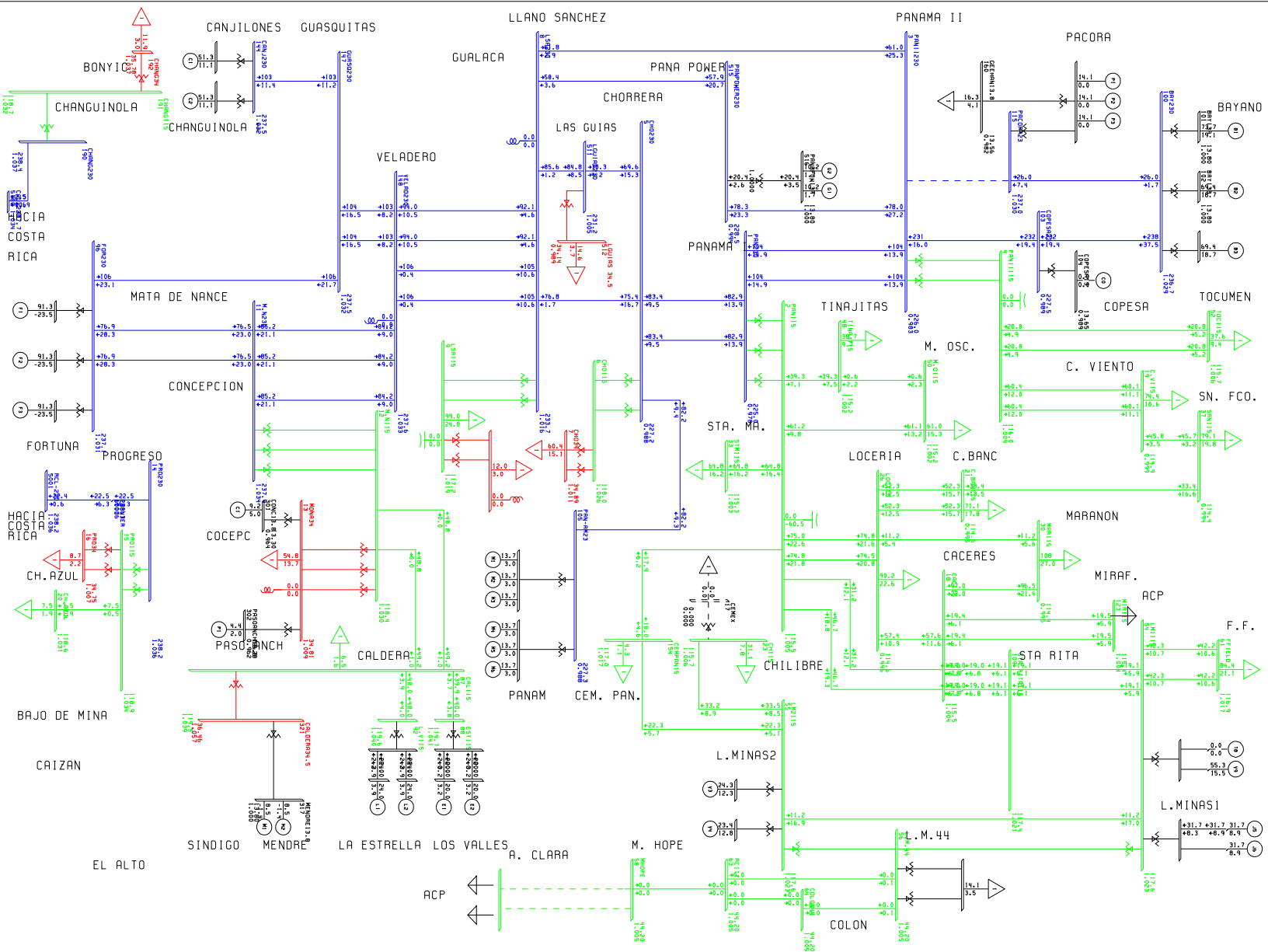
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:09  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING



126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0452	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0452	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	5.4	8.0	0.0	1.0000	11.1	0.8747	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9935	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9936	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9935	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9858	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9858	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9858	6.2	2	7
SUBSYSTEM TOTALS				73.3	6.9	51.0	-33.0				124.2		

PLAN DE EXPANSION DEL SIN CON C.R. JUNIO 2007  
 R 0 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIENTO. MHTGBC7  
 KW:414 - 435 - 4115  
 BUS - VOL TAGE(KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2009 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Panamá I-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 14 2007 16:17  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 Año 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0029	230.66	8		LSA230		230.00	6	1.0268	236.16
11		M.N230		230.00	6	1.0382	238.79	14		PRO230		230.00	6	1.0392	239.02
96		FOR230		230.00	6	1.0340	237.81	100		BAY230		230.00	6	1.0288	236.62

103	COPESA23	230.00	6	1.0071	231.62	115	PACORA23	230.00	6	1.0104	232.40
144	CANJ230	230.00	6	1.0365	238.40	147	GUASQ230	230.00	6	1.0365	238.40
148	VELAD230	230.00	6	1.0399	239.17	190	CHANG230	230.00	6	1.0387	238.90
511	LGUIAS230	230.00	6	1.0161	233.70	515	PANPOWER230	230.00	6	1.0116	232.67
6000	FRONTER	230.00	6	1.0395	239.07						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9916	228.07	5	CHO230	230.00	6	0.9996	229.91
105	PAN-AM23	230.00	6	0.9996	229.92						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:17  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0053	115.61	4	PANII115	115.00	6	1.0062	115.71
6	CHO115	115.00	6	1.0386	119.44	9	LSA115	115.00	6	1.0301	118.46
12	M.N115	115.00	6	1.0326	118.75	15	PRO115	115.00	6	1.0374	119.30
18	CAC115	115.00	6	1.0048	115.55	20	CH.AZUL	115.00	6	1.0346	118.98
23	CH115	115.00	6	1.0068	115.78	33	STM115	115.00	6	1.0037	115.42
48	TINAJ115	115.00	6	1.0024	115.27	50	M.O115	115.00	6	1.0023	115.26
52	TOC115	115.00	6	1.0036	115.41	54	LM1115	115.00	6	1.0230	117.65
55	LM2115	115.00	6	1.0233	117.68	61	FFIELD	115.00	9	1.0170	116.96
87	CAL115	115.00	6	1.0406	119.67	88	EST115	115.00	6	1.0428	119.92
92	L.V115	115.00	6	1.0415	119.77	109	STA RITA115	115.00	6	1.0210	117.41
110	PTMD115A	115.00	6	1.0148	116.70	111	PTMD115B	115.00	6	1.0148	116.70
123	MIR115	115.00	7	1.0045	115.51	154	CEMPAN15	115.00	6	1.0177	117.04
191	CHANG115	115.00	6	1.0342	118.93						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
19	C.V115	115.00	6	0.9978	114.75	21	C.BAN115	115.00	6	0.9957	114.50
26	LOC115	115.00	6	0.9967	114.62	30	MAR115	115.00	6	0.9952	114.45
37	SAN115	115.00	6	0.9946	114.38						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:17  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	26.4	12.2	17.0	0.0	1.0000	29.1	0.9074	47.0			1	6		
67		BLM13C		13.800	V3	24.3	12.1	17.0	0.0	1.0000	27.1	0.8951	47.0			1	6		
68		BLM13D		13.800	V4	23.4	12.6	30.0	0.0	1.0000	26.6	0.8802	47.0			1	6		
70		TGJB13A		13.800	J5	31.7	8.8	20.0	0.0	1.0000	32.9	0.9636	39.4			1	6		
71		TGJB13B		13.800	J6	31.7	8.8	20.0	0.0	1.0000	32.9	0.9636	39.4			1	6		
73		BLMCCB		13.800	V9	55.3	15.4	40.0	0.0	1.0000	57.4	0.9635	71.0			1	6		
90		EST-13L		13.800	E1	20.0	2.8	12.0	-5.0	1.0000	20.2	0.9906	27.0			1	6		
91		EST-13T		13.800	E2	20.0	2.8	12.0	-5.0	1.0000	20.2	0.9906	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	3.4	12.0	-5.0	1.0000	24.2	0.9900	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	3.4	12.0	-5.0	1.0000	24.2	0.9900	27.0			1	6		
97		FOR13A		13.800	F1	91.3	-26.4	50.0	-50.0	1.0000	95.1	0.9605	111.0			1	6		
98		FOR13B		13.800	F2	91.3	-26.4	50.0	-50.0	1.0000	95.1	0.9605	111.0			1	6		
99		FOR13C		13.800	F3	91.3	-26.4	50.0	-50.0	1.0000	95.1	0.9605	111.0			1	6		
101		BAY13A		13.800	B1	69.9	19.0	50.0	-25.0	1.0000	72.4	0.9649	96.0			1	6	SYST	
102		BAY13B		13.800	B2	69.4	19.0	50.0	-25.0	1.0000	71.9	0.9646	96.0			1	6		
106		PANAM13A		13.800	M1	13.7	1.4	9.0	0.0	0.9800	14.0	0.9952	20.7			1	6		
106		PANAM13A		13.800	M2	13.7	1.4	9.0	0.0	0.9800	14.0	0.9952	20.7			1	6		
106		PANAM13A		13.800	M3	13.7	1.4	9.0	0.0	0.9800	14.0	0.9952	20.7			1	6		
107		PANAM13B		13.800	M4	13.7	1.4	9.0	0.0	0.9800	14.0	0.9952	20.7			1	6		
107		PANAM13B		13.800	M5	13.7	1.4	9.0	0.0	0.9800	14.0	0.9952	20.7			1	6		
107		PANAM13B		13.800	M6	13.7	1.4	9.0	0.0	0.9800	14.0	0.9952	20.7			1	6		
108		BAY13C		13.800	B3	69.4	19.0	50.0	-25.0	1.0000	71.9	0.9646	100.0			1	6		
116		PACORA13		13.800	P1	14.1	0.4	8.8	0.0	1.0000	14.1	0.9996	21.7			1	6		
116		PACORA13		13.800	P2	14.1	0.4	8.8	0.0	1.0000	14.1	0.9996	21.7			1	6		
116		PACORA13		13.800	P3	14.1	0.4	8.8	0.0	1.0000	14.1	0.9996	21.7			1	6		
142		CANJ13A		13.800	C1	51.3	10.5	29.0	-29.0	1.0000	52.4	0.9798	69.0			1	6		
143		CANJ13B		13.800	C2	51.3	10.5	29.0	-29.0	1.0000	52.4	0.9798	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9668	10.8	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9649	5.0	0.9110	6.2			1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.6	4.0	-4.0	1.0000	8.7	0.9825	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-1.6	4.0	-4.0	1.0000	8.7	0.9825	35.3			1	6		
516		PANAPOW13A		13.800	G1	10.2	0.5	12.5	0.5	1.0129	10.1	0.9987	20.9			1	6		
516		PANAPOW13A		13.800	G2	10.2	0.5	12.5	0.5	1.0129	10.1	0.9987	20.9			1	6		
SUBSYSTEM TOTALS						1041.5	94.9	670.5	-316.9				1483.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:17  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0456	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0456	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	5.2	8.0	0.0	1.0000	11.0	0.8810	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9937	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9938	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9938	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9855	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9855	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9855	6.2	2	7
SUBSYSTEM TOTALS				73.3	6.7	51.0	-33.0				124.2		



**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2009 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Pana Power-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 14 2007 16:23  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 Año 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0315	237.25	11		M.N230		230.00	6	1.0399	239.18
14		PRO230		230.00	6	1.0408	239.38	96		FOR230		230.00	6	1.0354	238.14
100		BAY230		230.00	6	1.0230	235.28	115		PACORA23		230.00	6	1.0021	230.49



144	CANJ230	230.00	6	1.0383	238.81	147	GUASQ230	230.00	6	1.0383	238.81
148	VELAD230	230.00	6	1.0428	239.85	190	CHANG230	230.00	6	1.0396	239.10
511	LGUIAS230	230.00	6	1.0171	233.94	515	PANPOWER230	230.00	6	1.0576	243.26
6000	FRONTER	230.00	6	1.0410	239.42						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9881	227.26	3	PANII230	230.00	6	0.9928	228.35
5	CHO230	230.00	6	0.9973	229.37	103	COPESA23	230.00	6	0.9977	229.46
105	PAN-AM23	230.00	6	0.9973	229.38						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:23  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0029	115.33	4	PANII115	115.00	6	1.0067	115.77
6	CHO115	115.00	6	1.0361	119.15	9	LSA115	115.00	6	1.0351	119.03
12	M.N115	115.00	6	1.0339	118.89	15	PRO115	115.00	6	1.0389	119.48
18	CAC115	115.00	6	1.0024	115.28	20	CH.AZUL	115.00	6	1.0362	119.16
23	CH115	115.00	6	1.0048	115.55	33	STM115	115.00	6	1.0012	115.14
52	TOC115	115.00	6	1.0041	115.47	54	LM115	115.00	6	1.0218	117.51
55	LM2115	115.00	6	1.0221	117.54	61	FFIELD	115.00	9	1.0158	116.81
87	CAL115	115.00	6	1.0414	119.76	88	EST115	115.00	6	1.0435	120.00
92	L.V115	115.00	6	1.0423	119.86	109	STA RITA115	115.00	6	1.0196	117.25
110	PTMD115A	115.00	6	1.0129	116.49	111	PTMD115B	115.00	6	1.0129	116.49
123	MIR115	115.00	7	1.0022	115.25	154	CEMPAN15	115.00	6	1.0162	116.86
191	CHANG115	115.00	6	1.0351	119.04						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
19	C.V115	115.00	6	0.9976	114.72	21	C.BAN115	115.00	6	0.9936	114.26
26	LOC115	115.00	6	0.9945	114.37	30	MAR115	115.00	6	0.9929	114.18
37	SAN115	115.00	6	0.9927	114.16	48	TINAJ115	115.00	6	0.9999	114.99
50	M.O115	115.00	6	0.9998	114.98						

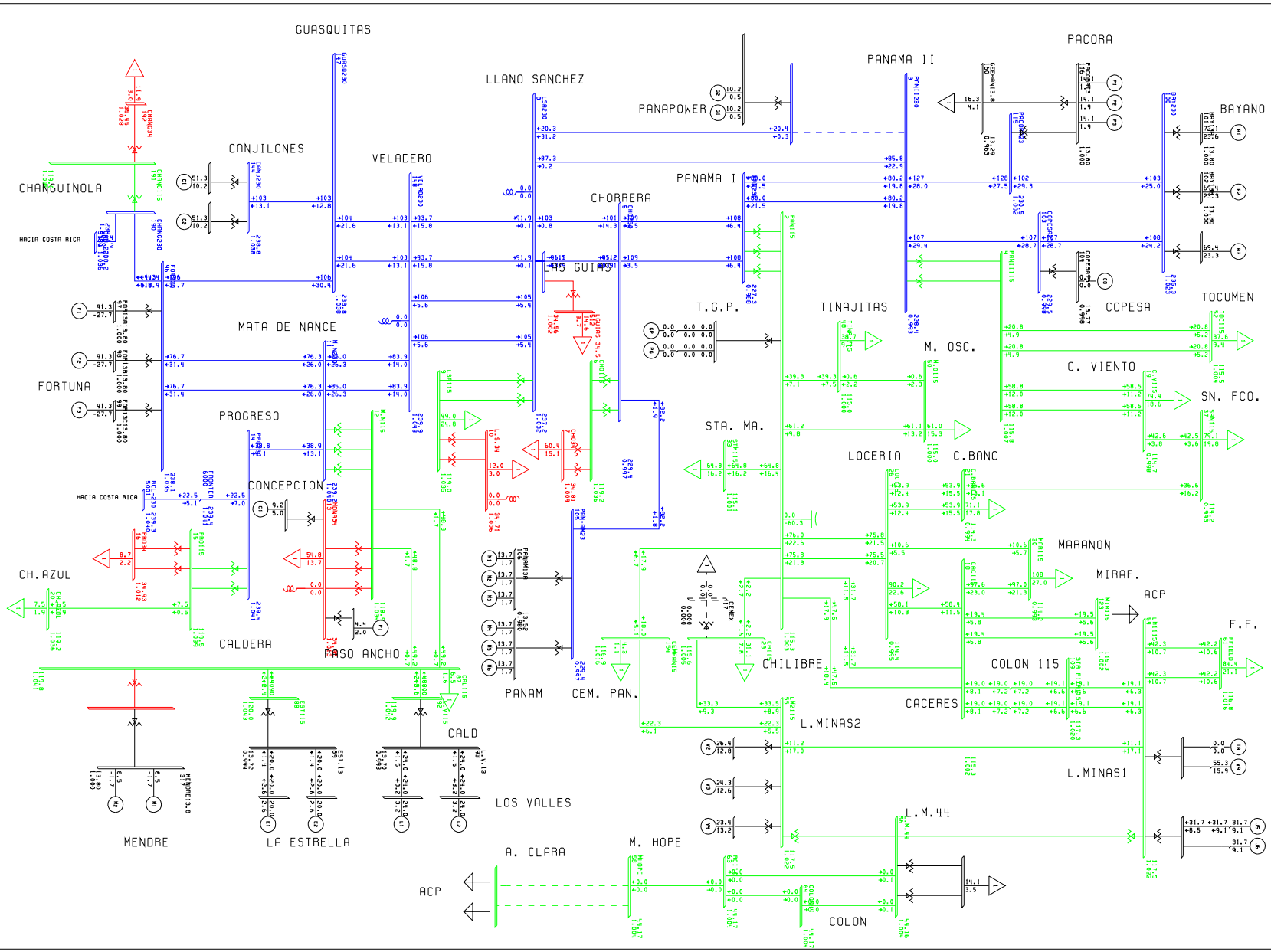
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:23  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	26.4	12.8	17.0	0.0	1.0000	29.3	0.9005	47.0			1	6		
67		BLM13C		13.800	V3	24.3	12.6	17.0	0.0	1.0000	27.4	0.8873	47.0			1	6		
68		BLM13D		13.800	V4	23.4	13.2	30.0	0.0	1.0000	26.9	0.8714	47.0			1	6		
70		TGJB13A		13.800	J5	31.7	9.1	20.0	0.0	1.0000	33.0	0.9612	39.4			1	6		
71		TGJB13B		13.800	J6	31.7	9.1	20.0	0.0	1.0000	33.0	0.9612	39.4			1	6		
73		BLMCCB		13.800	V9	55.3	15.9	40.0	0.0	1.0000	57.5	0.9610	71.0			1	6		
90		EST-13L		13.800	E1	20.0	2.6	12.0	-5.0	1.0000	20.2	0.9919	27.0			1	6		
91		EST-13T		13.800	E2	20.0	2.6	12.0	-5.0	1.0000	20.2	0.9919	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	3.2	12.0	-5.0	1.0000	24.2	0.9912	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	3.2	12.0	-5.0	1.0000	24.2	0.9912	27.0			1	6		
97		FOR13A		13.800	F1	91.3	-27.7	50.0	-50.0	1.0000	95.4	0.9568	111.0			1	6		
98		FOR13B		13.800	F2	91.3	-27.7	50.0	-50.0	1.0000	95.4	0.9568	111.0			1	6		
99		FOR13C		13.800	F3	91.3	-27.7	50.0	-50.0	1.0000	95.4	0.9568	111.0			1	6		
101		BAY13A		13.800	B1	72.1	23.6	50.0	-25.0	1.0000	75.9	0.9505	96.0			1	6	SYST	
102		BAY13B		13.800	B2	69.4	23.3	50.0	-25.0	1.0000	73.2	0.9479	96.0			1	6		
106		PANAM13A		13.800	M1	13.7	1.7	9.0	0.0	0.9800	14.1	0.9926	20.7			1	6		
106		PANAM13A		13.800	M2	13.7	1.7	9.0	0.0	0.9800	14.1	0.9926	20.7			1	6		
106		PANAM13A		13.800	M3	13.7	1.7	9.0	0.0	0.9800	14.1	0.9926	20.7			1	6		
107		PANAM13B		13.800	M4	13.7	1.7	9.0	0.0	0.9800	14.1	0.9926	20.7			1	6		
107		PANAM13B		13.800	M5	13.7	1.7	9.0	0.0	0.9800	14.1	0.9926	20.7			1	6		
107		PANAM13B		13.800	M6	13.7	1.7	9.0	0.0	0.9800	14.1	0.9926	20.7			1	6		
108		BAY13C		13.800	B3	69.4	23.3	50.0	-25.0	1.0000	73.2	0.9479	100.0			1	6		
116		PACORA13		13.800	P1	14.1	1.9	8.8	0.0	1.0000	14.2	0.9911	21.7			1	6		
116		PACORA13		13.800	P2	14.1	1.9	8.8	0.0	1.0000	14.2	0.9911	21.7			1	6		
116		PACORA13		13.800	P3	14.1	1.9	8.8	0.0	1.0000	14.2	0.9911	21.7			1	6		
142		CANJ13A		13.800	C1	51.3	10.2	29.0	-29.0	1.0000	52.3	0.9809	69.0			1	6		
143		CANJ13B		13.800	C2	51.3	10.2	29.0	-29.0	1.0000	52.3	0.9809	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9680	10.8	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9661	5.0	0.9110	6.2			1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.7	4.0	-4.0	1.0000	8.7	0.9805	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-1.7	4.0	-4.0	1.0000	8.7	0.9805	35.3			1	6		
516		PANAPOW13A		13.800	G1	10.2	0.5	12.5	0.5	1.0590	9.6	0.9987	20.9			1	6		
516		PANAPOW13A		13.800	G2	10.2	0.5	12.5	0.5	1.0590	9.6	0.9987	20.9			1	6		
SUBSYSTEM TOTALS						1043.7	111.9	670.5	-316.9				1483.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:23  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0444	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0444	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	5.7	8.0	0.0	1.0000	11.2	0.8609	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9929	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9930	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9930	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9990	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9990	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9990	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9863	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9863	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9863	6.2	2	7
SUBSYSTEM TOTALS				73.3	7.5	51.0	-33.0				124.2		



PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 R.O. 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTC07  
 NON, MAY 14 2007. 16:25  
 BUS - VOL TIGE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR  
 KV: 414 . 435 . 4115

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2009 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Guasquitas-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 14 2007 16:31  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 Año 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0223	235.14	11		M.N230		230.00	6	1.0332	237.63
14		PRO230		230.00	6	1.0347	237.99	96		FOR230		230.00	6	1.0298	236.85
100		BAY230		230.00	6	1.0269	236.19	103		COPESA23		230.00	6	1.0040	230.93



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:31  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

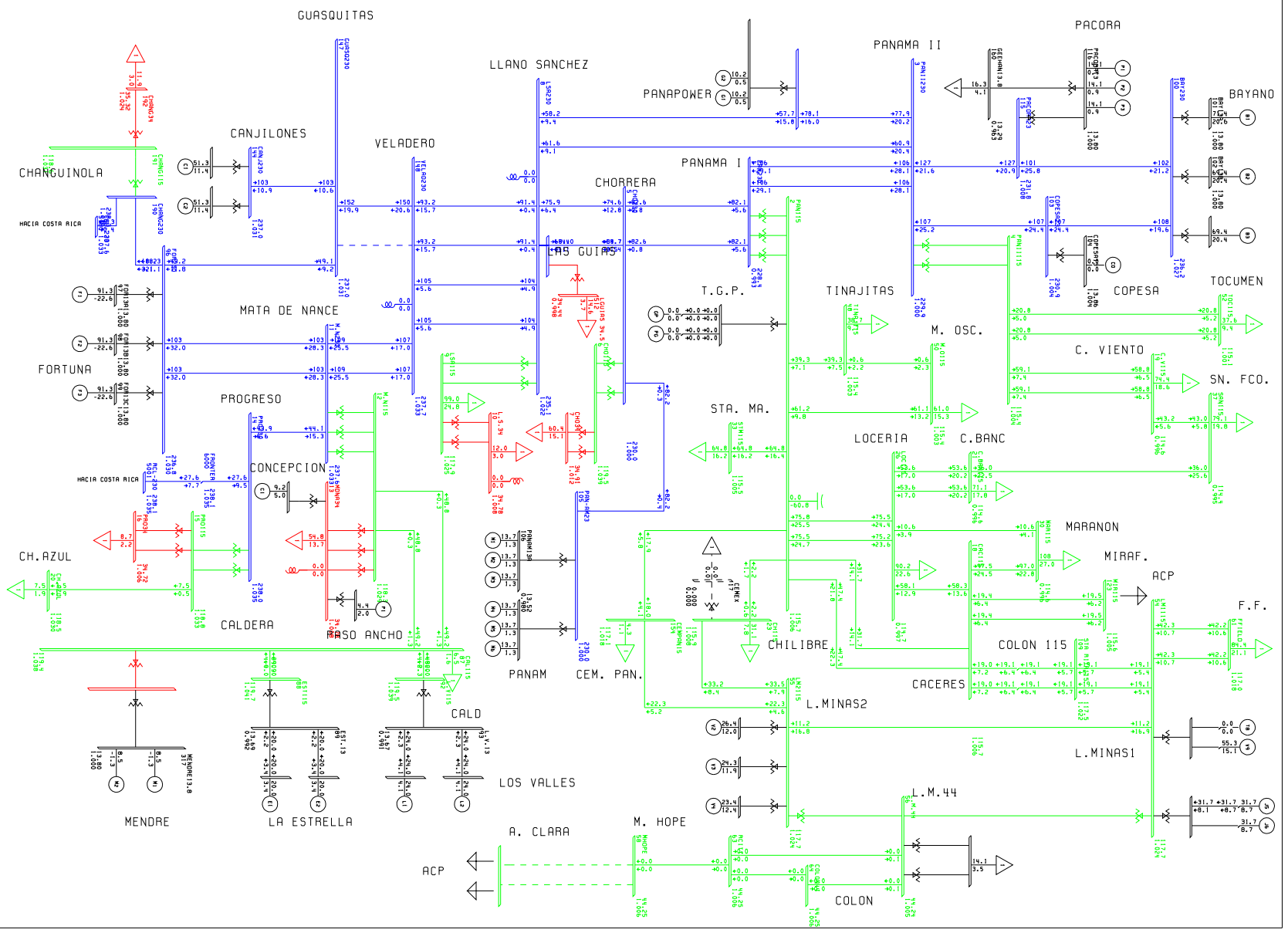
AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	26.4	12.0	17.0	0.0	1.0000	29.0	0.9104	47.0			1	6		
67		BLM13C		13.800	V3	24.3	11.9	17.0	0.0	1.0000	27.0	0.8985	47.0			1	6		
68		BLM13D		13.800	V4	23.4	12.4	30.0	0.0	1.0000	26.5	0.8840	47.0			1	6		
70		TGJB13A		13.800	J5	31.7	8.7	20.0	0.0	1.0000	32.9	0.9647	39.4			1	6		
71		TGJB13B		13.800	J6	31.7	8.7	20.0	0.0	1.0000	32.9	0.9647	39.4			1	6		
73		BLMCCB		13.800	V9	55.3	15.1	40.0	0.0	1.0000	57.3	0.9646	71.0			1	6		
90		EST-13L		13.800	E1	20.0	3.4	12.0	-5.0	1.0000	20.3	0.9862	27.0			1	6		
91		EST-13T		13.800	E2	20.0	3.4	12.0	-5.0	1.0000	20.3	0.9862	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	4.1	12.0	-5.0	1.0000	24.3	0.9859	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	4.1	12.0	-5.0	1.0000	24.3	0.9859	27.0			1	6		
97		FOR13A		13.800	F1	91.3	-22.6	50.0	-50.0	1.0000	94.1	0.9707	111.0			1	6		
98		FOR13B		13.800	F2	91.3	-22.6	50.0	-50.0	1.0000	94.1	0.9707	111.0			1	6		
99		FOR13C		13.800	F3	91.3	-22.6	50.0	-50.0	1.0000	94.1	0.9707	111.0			1	6		
101		BAY13A		13.800	B1	71.4	20.6	50.0	-25.0	1.0000	74.3	0.9610	96.0			1	6	SYST	
102		BAY13B		13.800	B2	69.4	20.4	50.0	-25.0	1.0000	72.3	0.9595	96.0			1	6		
106		PANAM13A		13.800	M1	13.7	1.3	9.0	0.0	0.9800	14.0	0.9955	20.7			1	6		
106		PANAM13A		13.800	M2	13.7	1.3	9.0	0.0	0.9800	14.0	0.9955	20.7			1	6		
106		PANAM13A		13.800	M3	13.7	1.3	9.0	0.0	0.9800	14.0	0.9955	20.7			1	6		
107		PANAM13B		13.800	M4	13.7	1.3	9.0	0.0	0.9800	14.0	0.9955	20.7			1	6		
107		PANAM13B		13.800	M5	13.7	1.3	9.0	0.0	0.9800	14.0	0.9955	20.7			1	6		
107		PANAM13B		13.800	M6	13.7	1.3	9.0	0.0	0.9800	14.0	0.9955	20.7			1	6		
108		BAY13C		13.800	B3	69.4	20.4	50.0	-25.0	1.0000	72.3	0.9595	100.0			1	6		
116		PACORA13		13.800	P1	14.1	0.9	8.8	0.0	1.0000	14.1	0.9981	21.7			1	6		
116		PACORA13		13.800	P2	14.1	0.9	8.8	0.0	1.0000	14.1	0.9981	21.7			1	6		
116		PACORA13		13.800	P3	14.1	0.9	8.8	0.0	1.0000	14.1	0.9981	21.7			1	6		
142		CANJ13A		13.800	C1	51.3	11.4	29.0	-29.0	1.0000	52.6	0.9761	69.0			1	6		
143		CANJ13B		13.800	C2	51.3	11.4	29.0	-29.0	1.0000	52.6	0.9761	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9633	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9614	5.0	0.9110	6.2			1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.3	4.0	-4.0	1.0000	8.6	0.9876	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-1.3	4.0	-4.0	1.0000	8.6	0.9876	35.3			1	6		
516		PANAPOW13A		13.800	G1	10.2	0.5	12.5	0.5	1.0093	10.1	0.9987	20.9			1	6		
516		PANAPOW13A		13.800	G2	10.2	0.5	12.5	0.5	1.0093	10.1	0.9987	20.9			1	6		
SUBSYSTEM TOTALS						1043.0	115.6	670.5	-316.9				1483.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:31  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0461	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0461	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	5.0	8.0	0.0	1.0000	10.9	0.8897	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9940	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9941	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9941	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2	2	7
SUBSYSTEM TOTALS				73.3	6.3	51.0	-33.0				124.2		





PLAN DE EXPANSION DEL SIN. CON. C. R. JUNIO 2007  
 R. O. 2009. ESCENARIO MOD. DEMANDA MAXIMA DE INVIERNO. MHT08C7  
 MON. MAY 14 2007. 16:33

KV:514 .535 .5115  
 BUS - VOLTAGE (KV/PU)  
 BRNCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2009 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Mata de Nance-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 14 2007 16:38  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 Año 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0001	230.02	5		CHO230		230.00	6	1.0005	230.12
8		LSA230		230.00	6	1.0234	235.39	11		M.N230		230.00	6	1.0331	237.61
14		PRO230		230.00	6	1.0348	238.00	96		FOR230		230.00	6	1.0298	236.86



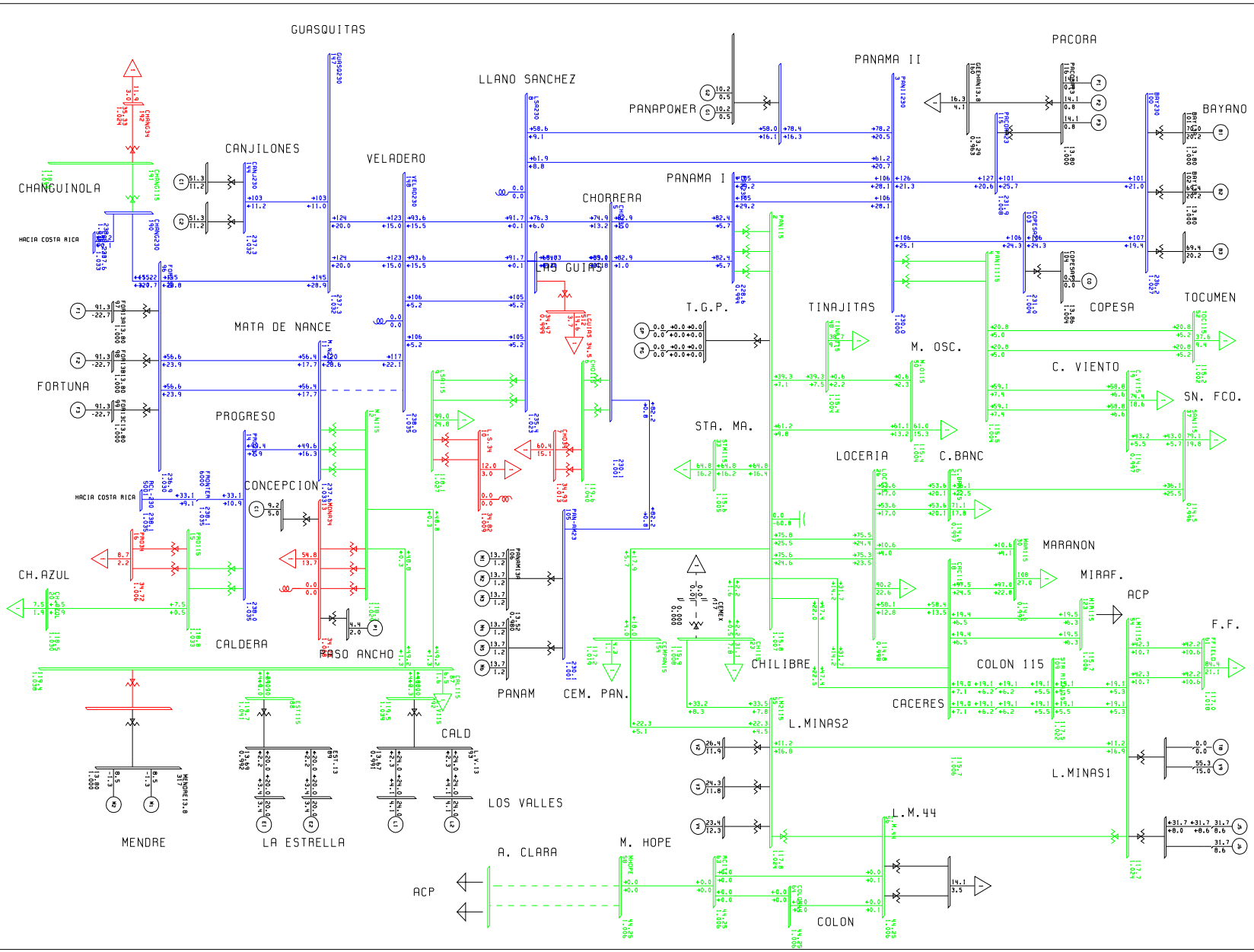
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:37  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	26.4	11.9	17.0	0.0	1.0000	29.0	0.9116	47.0			1	6		
67		BLM13C		13.800	V3	24.3	11.8	17.0	0.0	1.0000	27.0	0.8998	47.0			1	6		
68		BLM13D		13.800	V4	23.4	12.3	30.0	0.0	1.0000	26.4	0.8855	47.0			1	6		
70		TGJB13A		13.800	J5	31.7	8.6	20.0	0.0	1.0000	32.8	0.9651	39.4			1	6		
71		TGJB13B		13.800	J6	31.7	8.6	20.0	0.0	1.0000	32.8	0.9651	39.4			1	6		
73		BLMCCB		13.800	V9	55.3	15.0	40.0	0.0	1.0000	57.3	0.9650	71.0			1	6		
90		EST-13L		13.800	E1	20.0	3.4	12.0	-5.0	1.0000	20.3	0.9861	27.0			1	6		
91		EST-13T		13.800	E2	20.0	3.4	12.0	-5.0	1.0000	20.3	0.9861	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	4.1	12.0	-5.0	1.0000	24.3	0.9859	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	4.1	12.0	-5.0	1.0000	24.3	0.9859	27.0			1	6		
97		FOR13A		13.800	F1	91.3	-22.7	50.0	-50.0	1.0000	94.1	0.9705	111.0			1	6		
98		FOR13B		13.800	F2	91.3	-22.7	50.0	-50.0	1.0000	94.1	0.9705	111.0			1	6		
99		FOR13C		13.800	F3	91.3	-22.7	50.0	-50.0	1.0000	94.1	0.9705	111.0			1	6		
101		BAY13A		13.800	B1	70.0	20.2	50.0	-25.0	1.0000	72.9	0.9607	96.0			1	6	SYST	
102		BAY13B		13.800	B2	69.4	20.2	50.0	-25.0	1.0000	72.3	0.9603	96.0			1	6		
106		PANAM13A		13.800	M1	13.7	1.2	9.0	0.0	0.9800	14.0	0.9960	20.7			1	6		
106		PANAM13A		13.800	M2	13.7	1.2	9.0	0.0	0.9800	14.0	0.9960	20.7			1	6		
106		PANAM13A		13.800	M3	13.7	1.2	9.0	0.0	0.9800	14.0	0.9960	20.7			1	6		
107		PANAM13B		13.800	M4	13.7	1.2	9.0	0.0	0.9800	14.0	0.9960	20.7			1	6		
107		PANAM13B		13.800	M5	13.7	1.2	9.0	0.0	0.9800	14.0	0.9960	20.7			1	6		
107		PANAM13B		13.800	M6	13.7	1.2	9.0	0.0	0.9800	14.0	0.9960	20.7			1	6		
108		BAY13C		13.800	B3	69.4	20.2	50.0	-25.0	1.0000	72.3	0.9603	100.0			1	6		
116		PACORA13		13.800	P1	14.1	0.8	8.8	0.0	1.0000	14.1	0.9984	21.7			1	6		
116		PACORA13		13.800	P2	14.1	0.8	8.8	0.0	1.0000	14.1	0.9984	21.7			1	6		
116		PACORA13		13.800	P3	14.1	0.8	8.8	0.0	1.0000	14.1	0.9984	21.7			1	6		
142		CANJ13A		13.800	C1	51.3	11.2	29.0	-29.0	1.0000	52.5	0.9769	69.0			1	6		
143		CANJ13B		13.800	C2	51.3	11.2	29.0	-29.0	1.0000	52.5	0.9769	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9632	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9614	5.0	0.9110	6.2			1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.3	4.0	-4.0	1.0000	8.6	0.9877	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-1.3	4.0	-4.0	1.0000	8.6	0.9877	35.3			1	6		
516		PANAPOW13A		13.800	G1	10.2	0.5	12.5	0.5	1.0099	10.1	0.9987	20.9			1	6		
516		PANAPOW13A		13.800	G2	10.2	0.5	12.5	0.5	1.0099	10.1	0.9987	20.9			1	6		
SUBSYSTEM TOTALS						1041.6	113.2	670.5	-316.9				1483.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:37  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0463	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0464	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	4.9	8.0	0.0	1.0000	10.8	0.8931	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9942	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9942	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9942	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9851	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9851	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9851	6.2	2	7
SUBSYSTEM TOTALS				73.3	6.2	51.0	-33.0				124.2		



**PLAN DE EXPANSIÓN DEL SIN**  
**AÑO 2009 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**  
**Contingencia Santa Rita-Cáceres**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      MON, MAY 14 2007 16:50  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 Año 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0002	230.05	5		CHO230		230.00	6	1.0011	230.26
8		LSA230		230.00	6	1.0265	236.09	11		M.N230		230.00	6	1.0381	238.76
14		PRO230		230.00	6	1.0391	239.00	96		FOR230		230.00	6	1.0339	237.79





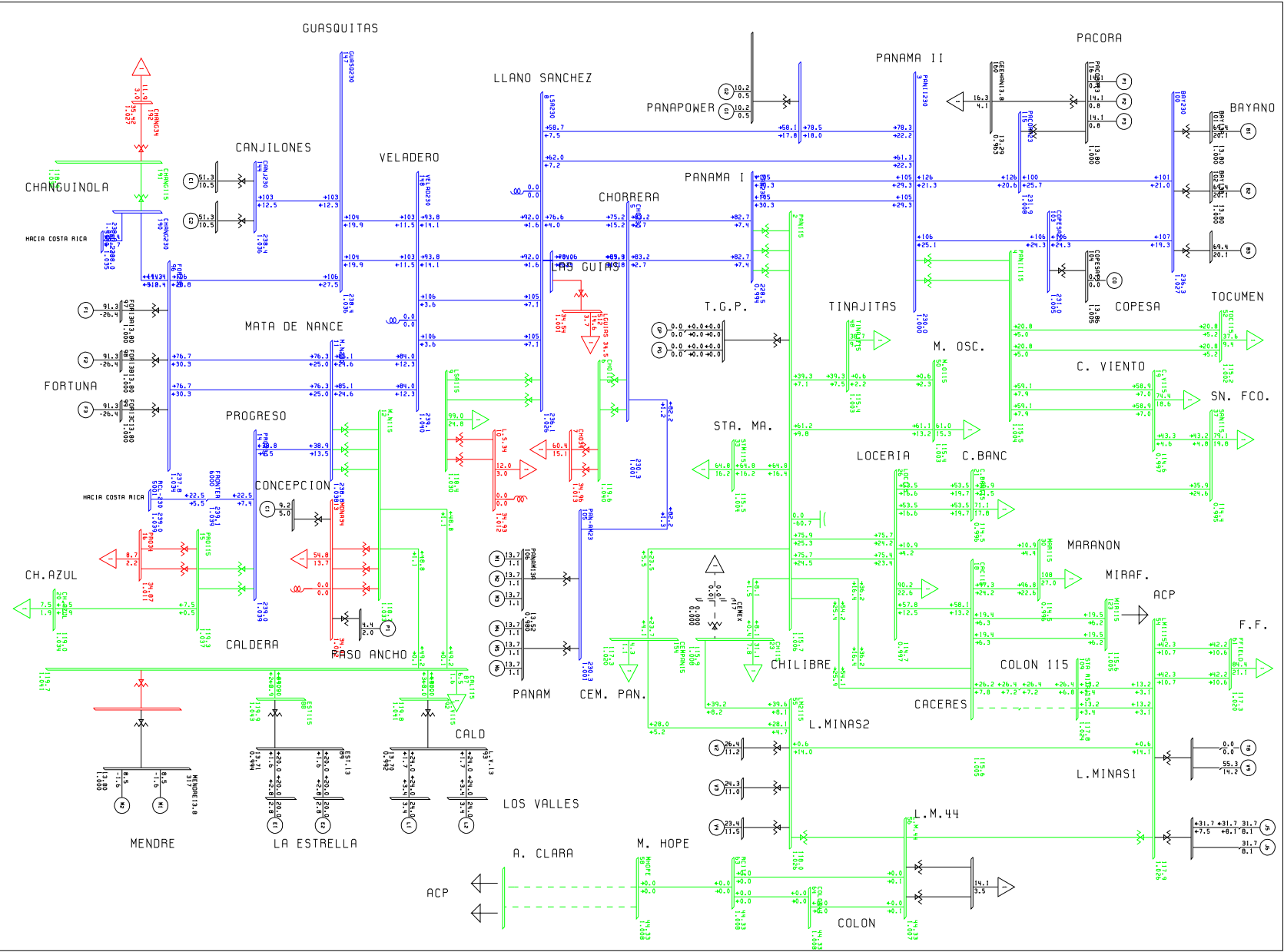
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:49  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	26.4	11.2	17.0	0.0	1.0000	28.7	0.9210	47.0			1	6		
67		BLM13C		13.800	V3	24.3	11.0	17.0	0.0	1.0000	26.7	0.9104	47.0			1	6		
68		BLM13D		13.800	V4	23.4	11.5	30.0	0.0	1.0000	26.1	0.8974	47.0			1	6		
70		TGJB13A		13.800	J5	31.7	8.1	20.0	0.0	1.0000	32.7	0.9687	39.4			1	6		
71		TGJB13B		13.800	J6	31.7	8.1	20.0	0.0	1.0000	32.7	0.9687	39.4			1	6		
73		BLMCCB		13.800	V9	55.3	14.2	40.0	0.0	1.0000	57.1	0.9686	71.0			1	6		
90		EST-13L		13.800	E1	20.0	2.8	12.0	-5.0	1.0000	20.2	0.9905	27.0			1	6		
91		EST-13T		13.800	E2	20.0	2.8	12.0	-5.0	1.0000	20.2	0.9905	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	3.4	12.0	-5.0	1.0000	24.2	0.9899	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	3.4	12.0	-5.0	1.0000	24.2	0.9899	27.0			1	6		
97		FOR13A		13.800	F1	91.3	-26.4	50.0	-50.0	1.0000	95.0	0.9608	111.0			1	6		
98		FOR13B		13.800	F2	91.3	-26.4	50.0	-50.0	1.0000	95.0	0.9608	111.0			1	6		
99		FOR13C		13.800	F3	91.3	-26.4	50.0	-50.0	1.0000	95.0	0.9608	111.0			1	6		
101		BAY13A		13.800	B1	69.4	20.1	50.0	-25.0	1.0000	72.3	0.9604	96.0			1	6	SYST	
102		BAY13B		13.800	B2	69.4	20.1	50.0	-25.0	1.0000	72.3	0.9604	96.0			1	6		
106		PANAM13A		13.800	M1	13.7	1.1	9.0	0.0	0.9800	14.0	0.9965	20.7			1	6		
106		PANAM13A		13.800	M2	13.7	1.1	9.0	0.0	0.9800	14.0	0.9965	20.7			1	6		
106		PANAM13A		13.800	M3	13.7	1.1	9.0	0.0	0.9800	14.0	0.9965	20.7			1	6		
107		PANAM13B		13.800	M4	13.7	1.1	9.0	0.0	0.9800	14.0	0.9965	20.7			1	6		
107		PANAM13B		13.800	M5	13.7	1.1	9.0	0.0	0.9800	14.0	0.9965	20.7			1	6		
107		PANAM13B		13.800	M6	13.7	1.1	9.0	0.0	0.9800	14.0	0.9965	20.7			1	6		
108		BAY13C		13.800	B3	69.4	20.1	50.0	-25.0	1.0000	72.3	0.9604	100.0			1	6		
116		PACORA13		13.800	P1	14.1	0.8	8.8	0.0	1.0000	14.1	0.9984	21.7			1	6		
116		PACORA13		13.800	P2	14.1	0.8	8.8	0.0	1.0000	14.1	0.9984	21.7			1	6		
116		PACORA13		13.800	P3	14.1	0.8	8.8	0.0	1.0000	14.1	0.9984	21.7			1	6		
142		CANJ13A		13.800	C1	51.3	10.5	29.0	-29.0	1.0000	52.4	0.9798	69.0			1	6		
143		CANJ13B		13.800	C2	51.3	10.5	29.0	-29.0	1.0000	52.4	0.9798	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9667	10.8	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9649	5.0	0.9110	6.2			1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.6	4.0	-4.0	1.0000	8.7	0.9826	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-1.6	4.0	-4.0	1.0000	8.7	0.9826	35.3			1	6		
516		PANAPOW13A		13.800	G1	10.2	0.5	12.5	0.5	1.0105	10.1	0.9987	20.9			1	6		
516		PANAPOW13A		13.800	G2	10.2	0.5	12.5	0.5	1.0105	10.1	0.9987	20.9			1	6		
SUBSYSTEM TOTALS						1041.0	92.9	670.5	-316.9				1483.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 16:49  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MAXIMA DE INVIERNO. MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0459	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0459	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	5.1	8.0	0.0	1.0000	10.9	0.8862	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9939	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9940	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9940	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9853	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9853	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9853	6.2	2	7
SUBSYSTEM TOTALS				73.3	6.5	51.0	-33.0				124.2		



PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2010 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
**Estudios Básicos**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 07 2007 14:20  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0264	236.07	14	PRO230	230.00	6	1.0270	236.22				
96	FOR230	230.00	6	1.0277	236.36	100	BAY230	230.00	6	1.0241	235.54				
144	CANJ230	230.00	6	1.0241	235.55	147	GUASQ230	230.00	6	1.0240	235.52				
148	VELAD230	230.00	6	1.0132	233.03	190	CHANG230	230.00	6	1.0300	236.89				
306	CHANG75	230.00	6	1.0312	237.17	310	CONCEPCION23230.00	6	1.0269	236.19					
6000	FRONTER	230.00	6	1.0270	236.21										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9760	224.47	3	PANII230	230.00	6	0.9871	227.04				
5	CHO230	230.00	6	0.9788	225.13	8	LSA230	230.00	6	0.9924	228.26				
103	COPESA23	230.00	6	0.9930	228.40	105	PAN-AM23	230.00	6	0.9789	225.15				
115	PACORA23	230.00	6	0.9996	229.91	511	LGUIAS230	230.00	6	0.9847	226.49				
515	PANPOWER230	230.00	6	0.9911	227.95										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 07 2007 14:21  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0109	116.26	4	PANII115	115.00	6	1.0073	115.83				
6	CHO115	115.00	6	1.0160	116.84	12	M.N115	115.00	6	1.0251	117.89				
15	PRO115	115.00	6	1.0251	117.89	18	CAC115	115.00	6	1.0102	116.17				
20	CH.AZUL	115.00	6	1.0223	117.56	21	C.BAN115	115.00	6	1.0005	115.05				
23	CH115	115.00	6	1.0076	115.87	26	LOC115	115.00	6	1.0017	115.19				
30	MAR115	115.00	6	1.0003	115.04	33	STM115	115.00	6	1.0094	116.08				
48	TINAJ115	115.00	6	1.0074	115.85	50	M.O115	115.00	6	1.0077	115.89				
52	TOC115	115.00	6	1.0046	115.53	54	LM115	115.00	6	1.0155	116.78				
55	LM2115	115.00	6	1.0162	116.86	61	FFIELD	115.00	9	1.0093	116.06				
87	CAL115	115.00	6	1.0483	120.55	88	EST115	115.00	6	1.0539	121.20				
92	L.V115	115.00	6	1.0503	120.78	109	STA RITA115	115.00	6	1.0152	116.74				
110	PTMD115A	115.00	6	1.0131	116.51	111	PTMD115B	115.00	6	1.0131	116.51				
123	MIR115	115.00	7	1.0095	116.09	154	CEMPAN15	115.00	6	1.0142	116.63				
191	CHANG115	115.00	6	1.0253	117.91										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	0.9933	114.23	19	C.V115	115.00	6	0.9999	114.99				
37	SAN115	115.00	6	0.9992	114.90										

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	17.0	17.0	0.0	1.0032	34.4	0.8700	47.0			1	6		
67		BLM13C		13.800	V3	30.0	17.0	17.0	0.0	1.0032	34.4	0.8700	47.0			1	6		
70		TGJB13A		13.800	J5	27.0	16.1	20.0	0.0	1.0000	31.5	0.8585	39.4			1	6		
90		EST-13L		13.800	E1	20.0	12.0	12.0	-5.0	1.0395	22.4	0.8575	27.0			1	6		
91		EST-13T		13.800	E2	20.0	12.0	12.0	-5.0	1.0395	22.4	0.8575	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	12.0	12.0	-5.0	1.0353	25.9	0.8944	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	12.0	12.0	-5.0	1.0353	25.9	0.8944	27.0			1	6		
97		FOR13A		13.800	F1	93.0	5.8	50.0	-50.0	1.0290	90.6	0.9981	111.0			1	6		
98		FOR13B		13.800	F2	93.0	5.8	50.0	-50.0	1.0290	90.6	0.9981	111.0			1	6		
99		FOR13C		13.800	F3	93.0	5.8	50.0	-50.0	1.0290	90.6	0.9981	111.0			1	6		
101		BAY13A		13.800	B1	66.4	30.3	50.0	-25.0	1.0100	72.2	0.9098	96.0			1	6	SYST	
102		BAY13B		13.800	B2	66.5	30.3	50.0	-25.0	1.0100	72.4	0.9100	96.0			1	6		
106		PANAM13A		13.800	M1	14.2	8.8	9.0	0.0	1.0100	16.5	0.8510	20.7			1	6		
106		PANAM13A		13.800	M2	14.2	8.8	9.0	0.0	1.0100	16.5	0.8510	20.7			1	6		
106		PANAM13A		13.800	M3	14.2	8.8	9.0	0.0	1.0100	16.5	0.8510	20.7			1	6		
108		BAY13C		13.800	B3	66.5	30.3	50.0	-25.0	1.0100	72.4	0.9100	100.0			1	6		
116		PACORA13		13.800	P1	15.0	8.8	8.8	0.0	1.0198	17.1	0.8618	21.7			1	6		
116		PACORA13		13.800	P2	15.0	8.8	8.8	0.0	1.0198	17.1	0.8618	21.7			1	6		
142		CANJ13A		13.800	C1	45.0	10.5	29.0	-29.0	1.0000	46.2	0.9738	69.0			1	6		
143		CANJ13B		13.800	C2	45.0	10.5	29.0	-29.0	1.0000	46.2	0.9738	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9607	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9589	5.1	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.5	0.0	5.0	0.0	1.0103	9.4	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	105.0	-5.5	22.0	-22.0	1.0200	103.1	0.9986	118.6			1	6		
308		CHANG75B		13.800	G2	105.0	-5.5	50.0	-22.0	1.0200	103.1	0.9986	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-2.3	4.0	-4.0	1.0000	8.8	0.9644	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-2.3	4.0	-4.0	1.0000	8.8	0.9644	35.3			1	6		
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0460	19.7	0.9701	27.0			1	6		
516		PANAPOW13A		13.800	G1	9.5	4.3	12.5	0.5	1.0000	10.4	0.9105	20.9			1	6		
SUBSYSTEM TOTALS						1095.6	261.9	621.1	-366.4				1498.9						

AREA 7 [ACANAL ] MACHINE SUMMARY:

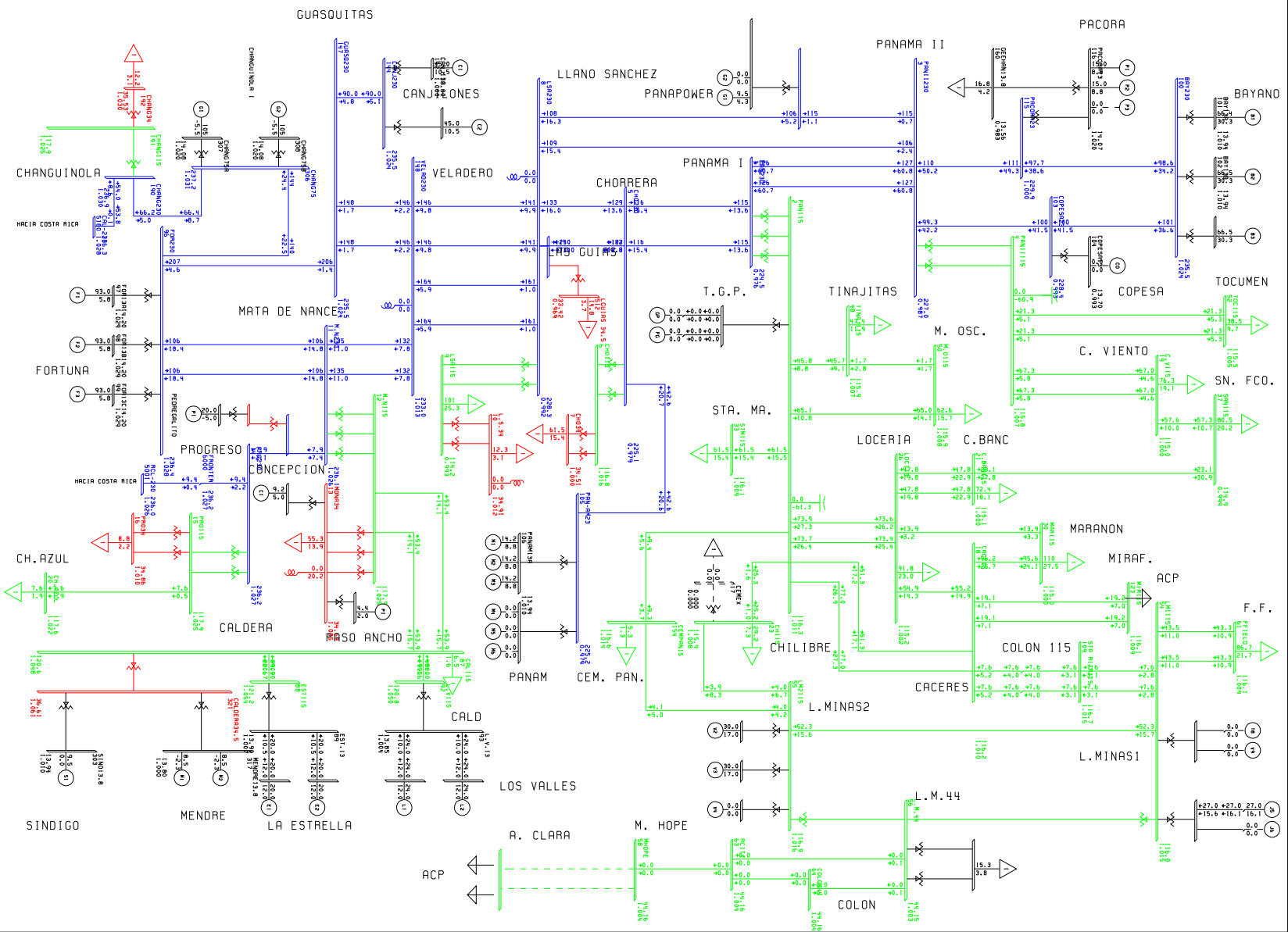
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0482	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0482	8.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.7	4.1	8.0	0.0	1.0000	10.5	0.9221	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9952	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9953	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9953	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9839	6.2			2	7		
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9839	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9839	6.2			2	7		
SUBSYSTEM TOTALS						73.3	4.9	51.0	-33.0				124.2						



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 07 2007 14:16  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.7	224.5	-98.9	0.0	143.2	-97.1	147.4	
5	1345.6	1324.8	0.0	0.0	0.0	0.0	20.8	0.0
C.RICA	255.6	569.4	-237.4	0.0	469.3	26.9	366.0	
6	1095.6	977.0	0.0	0.0	0.0	64.0	54.5	25.0
PANAMA	261.9	244.9	-102.0	0.0	465.5	59.8	524.7	
7	73.3	33.5	0.0	0.0	0.0	38.3	1.5	50.0
ACANAL	4.9	8.4	0.0	0.0	0.0	-14.3	10.8	
9	0.0	102.0	0.0	0.0	0.0	-102.2	0.3	-75.0
COLON	0.0	25.6	0.0	0.0	1.1	-26.3	1.8	
TOTALS	6318.8	6164.1	0.0	0.0	0.0	0.0	154.7	0.0
	741.3	1895.1	-950.8	0.0	2014.7	0.0	1811.7	





PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 P O 2010 ESCENARIO MODERNO DEMANDA MAXIMA INVIERNO AHITOBCT  
 T11. MAY 11 2007 17:28  
 BUS - VOLTAGE (KV/PU)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR  
 KW: 514 - 436 - 4115

PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2010 ESCENARIO MODERADO DE DEMANDA MÁXIMA VERANO  
**Estudios Básicos**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 07 2007 13:44  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0071	231.64	5		CHO230		230.00	6	1.0006	230.13
8		LSA230		230.00	6	1.0129	232.97	11		M.N230		230.00	6	1.0316	237.28
14		PRO230		230.00	6	1.0325	237.49	96		FOR230		230.00	6	1.0332	237.63
100		BAY230		230.00	6	1.0358	238.23	103		COPESA23		230.00	6	1.0118	232.72
105		PAN-AM23		230.00	6	1.0006	230.15	115		PACORA23		230.00	6	1.0169	233.89
144		CANJ230		230.00	6	1.0320	237.37	147		GUASQ230		230.00	6	1.0320	237.35
148		VELAD230		230.00	6	1.0269	236.20	190		CHANG230		230.00	6	1.0320	237.37
306		CHANG75		230.00	6	1.0332	237.63	310		CONCEPCION23		230.00	6	1.0323	237.43
511		LGUIAS230		230.00	6	1.0067	231.55	515		PANPOWER230		230.00	6	1.0110	232.52
6000		FRONTER		230.00	6	1.0326	237.50								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9981	229.57								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 07 2007 13:44  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0112	116.28	4		PANII115		115.00	6	1.0134	116.54
6		CHO115		115.00	6	1.0394	119.53	9		LSA115		115.00	6	1.0150	116.72
12		M.N115		115.00	6	1.0171	116.97	15		PRO115		115.00	6	1.0307	118.52
18		CAC115		115.00	6	1.0105	116.21	19		C.V115		115.00	6	1.0045	115.52
20		CH.AZUL		115.00	6	1.0278	118.20	21		C.BAN115		115.00	6	1.0015	115.17
23		CH115		115.00	6	1.0106	116.22	26		LOC115		115.00	6	1.0025	115.29
30		MAR115		115.00	6	1.0009	115.10	33		STM115		115.00	6	1.0096	116.10
37		SAN115		115.00	6	1.0005	115.06	48		TINAJ115		115.00	6	1.0076	115.88
50		M.O115		115.00	6	1.0079	115.91	52		TOC115		115.00	6	1.0107	116.23
54		LM1115		115.00	6	1.0227	117.61	55		LM2115		115.00	6	1.0231	117.65
61		FFIELD		115.00	9	1.0165	116.90	87		CAL115		115.00	6	1.0278	118.20
88		EST115		115.00	6	1.0303	118.48	92		L.V115		115.00	6	1.0288	118.32
109		STA RITA115		115.00	6	1.0215	117.47	110		PTMD115A		115.00	6	1.0173	116.99
111		PTMD115B		115.00	6	1.0173	116.99	123		MIR115		115.00	7	1.0098	116.13
154		CEMPAN15		115.00	6	1.0192	117.21	191		CHANG115		115.00	6	1.0274	118.15

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 07 2007 13:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66	BLM13B	13.800	V2	30.0	14.9	17.0	0.0	1.0050	33.3	0.8959	47.0			1	6		
67	BLM13C	13.800	V3	30.0	14.9	17.0	0.0	1.0050	33.3	0.8959	47.0			1	6		
70	TGJB13A	13.800	J5	30.0	13.1	20.0	0.0	1.0000	32.7	0.9164	39.4			1	6		
72	BLMCCA	13.800	T8	30.0	8.4	20.0	0.0	1.0000	31.2	0.9628	50.0			1	6		
73	BLMCCB	13.800	V9	25.0	8.4	40.0	0.0	1.0000	26.4	0.9485	71.0			1	6		
90	EST-13L	13.800	E1	20.0	3.3	12.0	-5.0	0.9900	20.5	0.9864	27.0			1	6		
91	EST-13T	13.800	E2	20.0	3.3	12.0	-5.0	0.9900	20.5	0.9864	27.0			1	6		
94	LV-13.8L	13.800	L1	24.0	4.0	12.0	-5.0	0.9900	24.6	0.9861	27.0			1	6		
95	LV-13.8T	13.800	L2	24.0	4.0	12.0	-5.0	0.9900	24.6	0.9861	27.0			1	6		
97	FOR13A	13.800	F1	87.0	0.0	50.0	-50.0	1.0290	84.5	1.0000	111.0			1	6		
98	FOR13B	13.800	F2	87.0	0.0	50.0	-50.0	1.0290	84.5	1.0000	111.0			1	6		
99	FOR13C	13.800	F3	87.0	0.0	50.0	-50.0	1.0290	84.5	1.0000	111.0			1	6		
101	BAY13A	13.800	B1	61.2	21.0	50.0	-25.0	1.0100	64.0	0.9458	96.0			1	6	SYST	
102	BAY13B	13.800	B2	61.2	21.0	50.0	-25.0	1.0100	64.0	0.9458	96.0			1	6		
106	PANAM13A	13.800	M1	14.5	5.7	9.0	0.0	1.0100	15.4	0.9312	20.7			1	6		
106	PANAM13A	13.800	M2	14.5	5.7	9.0	0.0	1.0100	15.4	0.9312	20.7			1	6		
106	PANAM13A	13.800	M3	14.5	5.7	9.0	0.0	1.0100	15.4	0.9312	20.7			1	6		
108	BAY13C	13.800	B3	61.2	21.0	50.0	-25.0	1.0100	64.0	0.9458	100.0			1	6		
116	PACORA13	13.800	P1	15.0	6.9	8.8	0.0	1.0300	16.0	0.9086	21.7			1	6		
116	PACORA13	13.800	P2	15.0	6.9	8.8	0.0	1.0300	16.0	0.9086	21.7			1	6		
142	CANJ13A	13.800	C1	45.0	9.2	29.0	-29.0	1.0000	45.9	0.9796	69.0			1	6		
143	CANJ13B	13.800	C2	45.0	9.2	29.0	-29.0	1.0000	45.9	0.9796	69.0			1	6		
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9648	10.8	0.8784	13.5			1	6		
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9629	5.0	0.9110	6.2			1	6		
303	SIND13.8	13.800	S1	9.5	0.0	5.0	0.0	1.0004	9.5	1.0000	13.5			1	6		
307	CHANG75A	13.800	G1	87.0	-9.2	22.0	-22.0	1.0200	85.8	0.9945	118.6			1	6		
308	CHANG75B	13.800	G2	87.0	-9.2	50.0	-22.0	1.0200	85.8	0.9945	118.6			1	6		
317	MENDRE13.8	13.800	M1	8.5	0.0	4.0	-4.0	1.0000	8.5	1.0000	35.3			1	6		
317	MENDRE13.8	13.800	M2	8.5	0.0	4.0	-4.0	1.0000	8.5	1.0000	35.3			1	6		
340	PEDGALITO138	13.800	P1	20.0	-5.0	12.0	-5.0	1.0518	19.6	0.9701	27.0			1	6		
516	PANAPOW13A	13.800	G1	9.5	0.5	12.5	0.5	1.0119	9.4	0.9985	20.9			1	6		
SUBSYSTEM TOTALS				1084.6	170.9	681.1	-366.4				1619.8						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 07 2007 13:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

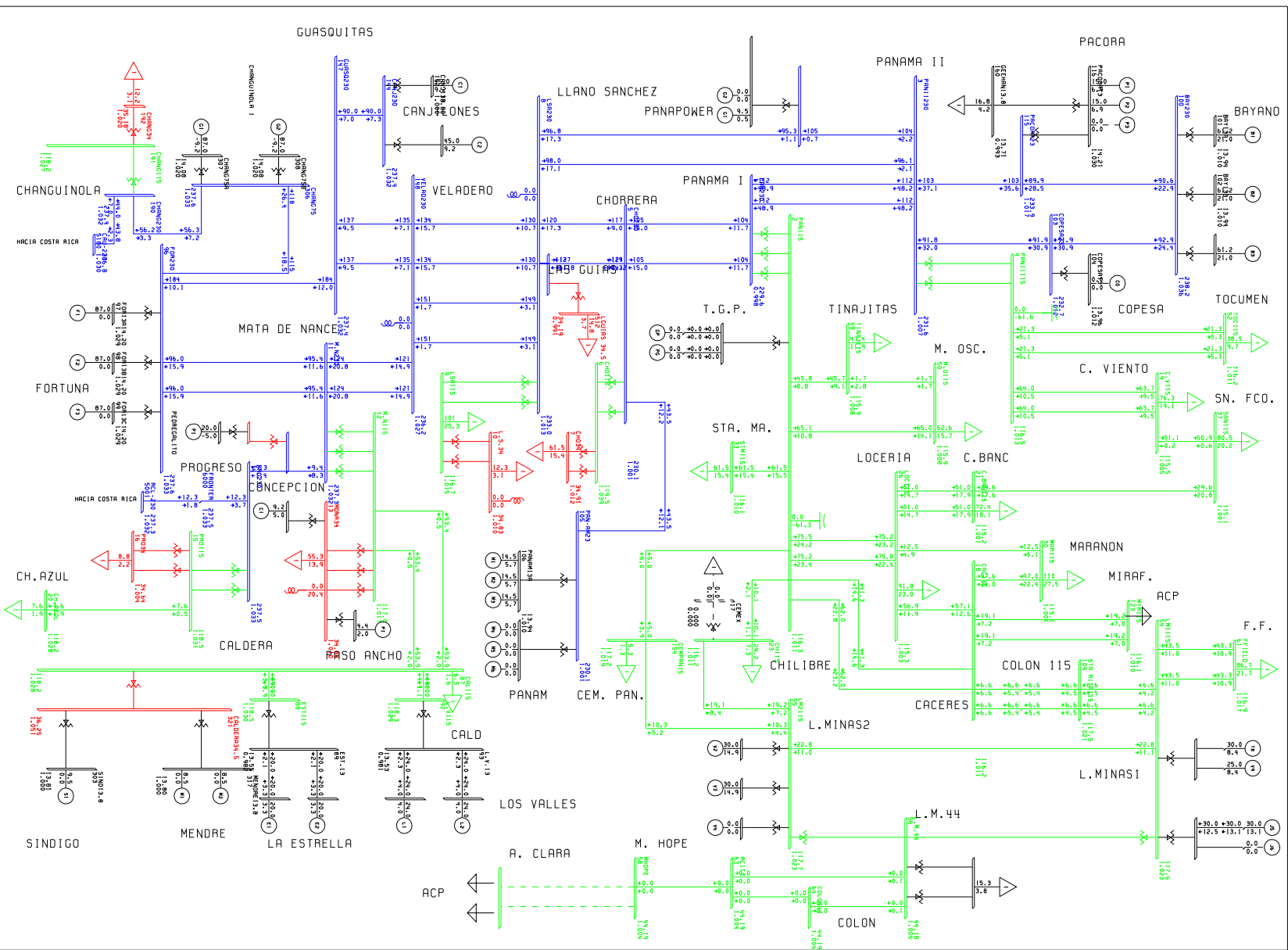
BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
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126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0484	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0484	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	4.0	8.0	0.0	1.0000	10.5	0.9246	27.7	2	7
134	MAD6A	6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9953	13.0	2	7
135	MAD6B	6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9954	13.0	2	7
136	MAD6C	6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9954	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9838	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9838	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9838	6.2	2	7
SUBSYSTEM TOTALS				73.3	4.8	51.0	-33.0				124.2		



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 07 2007 14:18  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGBC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.4	224.5	-98.9	0.0	143.3	-97.3	147.4	
5	1345.6	1324.8	0.0	0.0	0.0	0.3	20.5	0.0
C.RICA	246.7	569.4	-237.5	0.0	470.3	21.5	363.5	
6	1084.6	977.0	0.0	0.0	0.0	63.6	44.0	25.0
PANAMA	170.9	244.9	-102.6	0.0	477.8	65.5	440.9	
7	73.3	33.5	0.0	0.0	0.0	38.3	1.5	50.0
ACANAL	4.8	8.4	0.0	0.0	0.0	-14.4	10.8	
9	0.0	102.0	0.0	0.0	0.0	-102.2	0.3	-75.0
COLON	0.0	25.6	0.0	0.0	1.1	-26.2	1.8	
TOTALS	6307.9	6164.1	0.0	0.0	0.0	0.0	143.7	0.0
	641.0	1895.1	-951.5	0.0	2028.0	0.0	1725.4	



PLAN DE EXPANSION DEL SIN CON CENTROENERGIA JUNIO DEL 2007  
 G O 2010 ESCENARIO MODERADO DEMANDA MAXIMA VERANO HMT06C7  
 FRI. MI. 11.2007. 17:29

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BUS - VOLTAJE (KV/FU)  
 BRINCO - MM/MVRA  
 EQUIPMENT - MM/MVRA



PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2010 ESCENARIO MODERADO DE DEMANDA MÍNIMA VERANO  
**Estudios Básicos**



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 10 2007 13:49  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0348	238.00	3		PANII230		230.00	6	1.0373	238.59
5		CHO230		230.00	6	1.0370	238.50	8		LSA230		230.00	6	1.0320	237.36
11		M.N230		230.00	6	1.0258	235.94	14		PRO230		230.00	6	1.0297	236.84
96		FOR230		230.00	6	1.0230	235.29	100		BAY230		230.00	6	1.0414	239.51
103		COPESA23		230.00	6	1.0385	238.85	105		PAN-AM23		230.00	6	1.0370	238.50
115		PACORA23		230.00	6	1.0394	239.07	144		CANJ230		230.00	6	1.0269	236.18
147		GUASQ230		230.00	6	1.0268	236.18	148		VELAD230		230.00	6	1.0308	237.09
190		CHANG230		230.00	6	1.0326	237.49	306		CHANG75		230.00	6	1.0324	237.46
310		CONCEPCION230		230.00	6	1.0279	236.42	511		LGUIAS230		230.00	6	1.0368	238.45
515		PANPOWER230		230.00	6	1.0411	239.45	6000		FRONTER		230.00	6	1.0305	237.01

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 10 2007 13:49  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0042	115.49	4		PANII115		115.00	6	1.0071	115.82
6		CHO115		115.00	6	1.0871	125.02	9		LSA115		115.00	6	1.0350	119.02
12		M.N115		115.00	6	1.0032	115.37	15		PRO115		115.00	6	1.0296	118.40
18		CAC115		115.00	6	1.0041	115.47	19		C.V115		115.00	6	1.0033	115.38
20		CH.AZUL		115.00	6	1.0289	118.32	21		C.BAN115		115.00	6	1.0011	115.13
23		CH115		115.00	6	1.0038	115.44	26		LOC115		115.00	6	1.0014	115.16
30		MAR115		115.00	6	1.0005	115.06	33		STM115		115.00	6	1.0036	115.41
37		SAN115		115.00	6	1.0009	115.10	48		TINAJ115		115.00	6	1.0031	115.36
50		M.O115		115.00	6	1.0032	115.37	52		TOC115		115.00	6	1.0061	115.70
54		LM1115		115.00	6	1.0077	115.89	55		LM2115		115.00	6	1.0077	115.88
61		FFIELD		115.00	9	1.0053	115.61	87		CAL115		115.00	6	1.0047	115.54
88		EST115		115.00	6	1.0043	115.49	92		L.V115		115.00	6	1.0046	115.52
109		STA RITA115		115.00	6	1.0076	115.87	110		PTMD115A		115.00	6	1.0063	115.72
111		PTMD115B		115.00	6	1.0063	115.72	123		MIR115		115.00	7	1.0045	115.52
154		CEMPAN15		115.00	6	1.0068	115.78	191		CHANG115		115.00	6	1.0309	118.55

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 10 2007 13:49  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
70		TGJB13A		13.800	J5	28.0	19.7	20.0	0.0	1.0000	34.2	0.8185	39.4			1	6		
90		EST-13L		13.800	E1	18.0	-4.4	12.0	-5.0	0.9400	19.7	0.9712	27.0			1	6		
94		LV-13.8L		13.800	L1	20.0	-4.4	12.0	-5.0	0.9400	21.8	0.9770	27.0			1	6		
97		FOR13A		13.800	F1	56.7	-36.6	50.0	-50.0	0.9800	68.9	0.8406	111.0			1	6	SYST	
98		FOR13B		13.800	F2	55.0	-36.7	50.0	-50.0	0.9800	67.4	0.8321	111.0			1	6		
106		PANAM13A		13.800	M1	14.0	0.0	9.0	0.0	1.0097	13.9	1.0000	20.7			1	6		
106		PANAM13A		13.800	M2	14.0	0.0	9.0	0.0	1.0097	13.9	1.0000	20.7			1	6		
116		PACORA13		13.800	P1	13.0	0.0	8.8	0.0	1.0353	12.6	1.0000	21.7			1	6		
116		PACORA13		13.800	P2	13.0	0.0	8.8	0.0	1.0353	12.6	1.0000	21.7			1	6		
142		CANJ13A		13.800	C1	33.0	3.8	29.0	-29.0	0.9800	33.9	0.9933	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9576	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9557	5.1	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	5.0	3.0	5.0	0.0	1.0000	5.8	0.8593	13.5			1	6		
307		CHANG75A		13.800	G1	70.0	-9.8	22.0	-22.0	1.0200	69.3	0.9903	118.6			1	6		
317		MENDRE13.8		13.800	M1	6.0	3.0	4.0	-4.0	1.0000	6.7	0.8952	35.3			1	6		
340		PEDGALITO138		13.800	P1	12.0	-5.0	12.0	-5.0	1.0495	12.4	0.9231	27.0			1	6		
516		PANAPOW13A		13.800	G1	9.5	0.5	12.5	0.5	1.0420	9.1	0.9985	20.9			1	6		
SUBSYSTEM TOTALS						380.8	-59.8	271.2	-176.5				704.3						

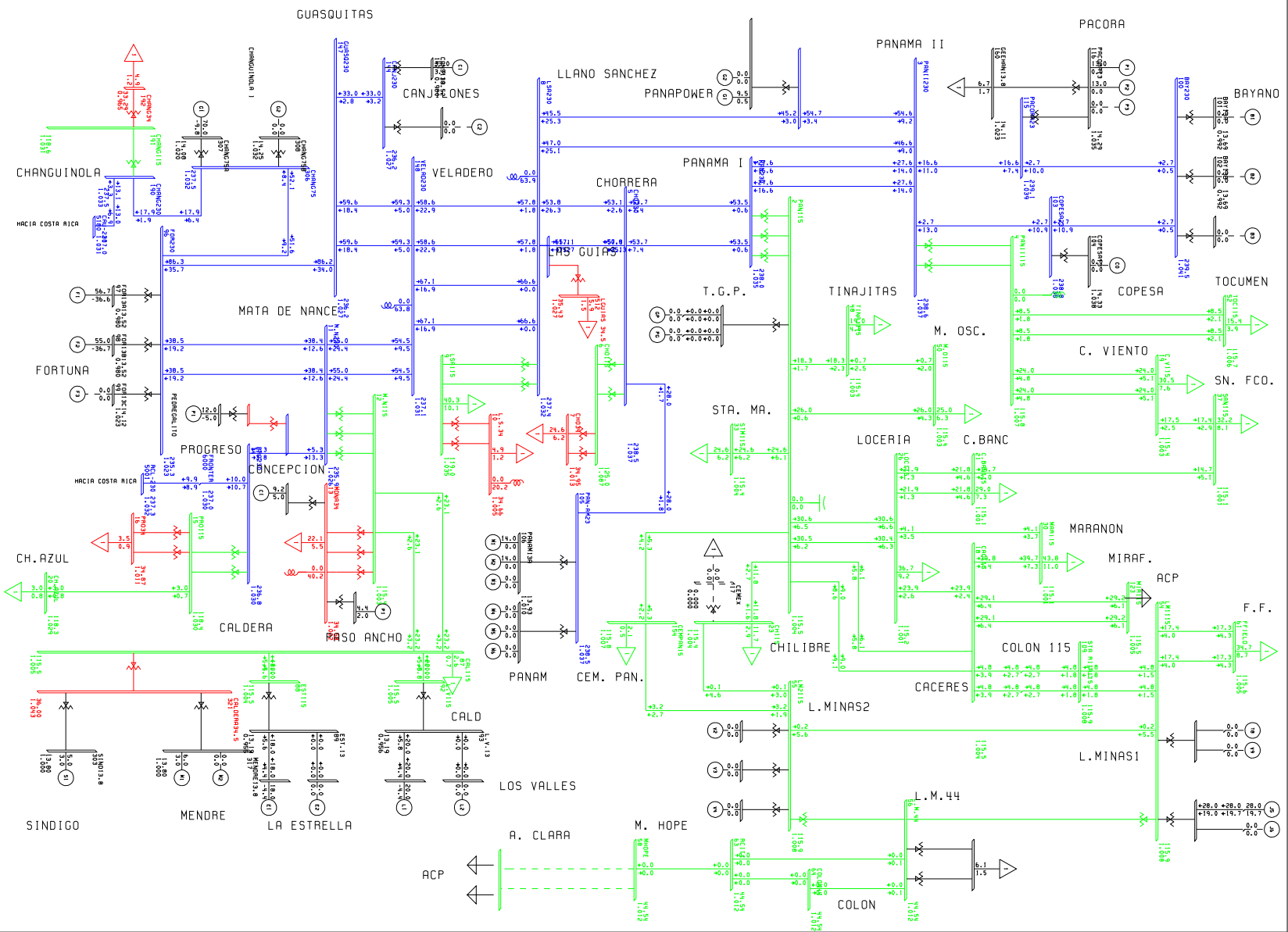
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 10 2007 13:49  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0475	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0475	8.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.7	4.4	8.0	0.0	1.0000	10.6	0.9109	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9954	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9954	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9996	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9996	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9996	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.8	3.0	-3.0	1.0000	3.9	0.9799	6.2			2	7		
141		GAT6B		6.9000	G5	3.9	-0.8	3.0	-3.0	1.0000	3.9	0.9799	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.8	3.0	-3.0	1.0000	3.9	0.9799	6.2			2	7		
SUBSYSTEM TOTALS						73.3	4.6	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, MAY 10 2007 13:49  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.6	224.5	-98.7	0.0	143.2	-97.4	147.4	
5	1345.3	1324.8	0.0	0.0	0.0	1.0	19.6	0.0
C.RICA	245.6	569.4	-236.1	0.0	470.4	23.8	358.8	
6	380.8	390.8	0.0	0.0	0.0	-18.3	8.3	25.0
PANAMA	-59.8	97.9	188.0	0.0	487.7	44.9	97.0	
7	73.3	13.4	0.0	0.0	0.0	58.2	1.7	50.0
ACANAL	4.6	3.4	0.0	0.0	0.0	-12.9	14.2	
9	0.0	40.8	0.0	0.0	0.0	-40.8	0.0	-75.0
COLON	0.0	10.2	0.0	0.0	1.1	-9.4	0.3	
TOTALS	5603.8	5496.6	0.0	0.0	0.0	0.0	107.2	0.0
	409.2	1727.8	-659.4	0.0	2038.0	0.0	1378.7	



PLAN DE EXPANSION DEL SIN CON CENTROPONERICA JUNIO DEL 2007  
 F O 2010 ESTERNO MODERNO DEHOND NININHA VERRANO MHIGBC7  
 F11. MAY 11 2007 17:31

KV: 514 - 435 - 4115  
 BUS - VOLTAGE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2010 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Pacora-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 8:57  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0234	235.39	14	PRO	230		230.00	6	1.0243	235.60
96	FOR	230		230.00	6	1.0255	235.87	100	BAY	230		230.00	6	1.0294	236.76
115	PACORA	23		230.00	6	1.0320	237.35	144	CANJ	230		230.00	6	1.0214	234.93

147 GUASQ230	230.00	6	1.0213	234.90	148 VELAD230	230.00	6	1.0080	231.84
190 CHANG230	230.00	6	1.0295	236.78	306 CHANG75	230.00	6	1.0306	237.03
310 CONCEPCION230.00		6	1.0241	235.53	6000 FRONTER	230.00	6	1.0244	235.61

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9566	220.01	3		PANII230		230.00	6	0.9661	222.21
5		CHO230		230.00	6	0.9617	221.19	8		LSA230		230.00	6	0.9821	225.89
103		COPESA23		230.00	6	0.9756	224.39	105		PAN-AM23		230.00	6	0.9618	221.21
511		LGUIAS230		230.00	6	0.9718	223.51	515		PANPOWER230		230.00	6	0.9707	223.27

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 8:57  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0159	116.83	4		PANII115		115.00	6	1.0104	116.19
12		M.N115		115.00	6	1.0216	117.48	15		PRO115		115.00	6	1.0224	117.58
18		CAC115		115.00	6	1.0152	116.75	19		C.V115		115.00	6	1.0037	115.42
20		CH.AZUL		115.00	6	1.0195	117.24	21		C.BAN115		115.00	6	1.0053	115.61
23		CH115		115.00	6	1.0145	116.67	26		LOC115		115.00	6	1.0065	115.75
30		MAR115		115.00	6	1.0053	115.61	33		STM115		115.00	6	1.0143	116.65
37		SAN115		115.00	6	1.0039	115.45	48		TINAJ115		115.00	6	1.0124	116.43
50		M.O115		115.00	6	1.0127	116.46	52		TOC115		115.00	6	1.0077	115.89
54		LM115		115.00	6	1.0256	117.94	55		LM2115		115.00	6	1.0258	117.97
61		FFIELD		115.00	9	1.0194	117.23	87		CAL115		115.00	6	1.0436	120.01
88		EST115		115.00	6	1.0486	120.59	92		L.V115		115.00	6	1.0455	120.23
109		STA RITA115		115.00	6	1.0245	117.82	110		PTMD115A		115.00	6	1.0211	117.43
111		PTMD115B		115.00	6	1.0211	117.43	123		MIR115		115.00	7	1.0142	116.63
154		CEMPAN15		115.00	6	1.0225	117.59	191		CHANG115		115.00	6	1.0249	117.86

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6		CHO115		115.00	6	0.9978	114.74	9		LSA115		115.00	6	0.9824	112.97



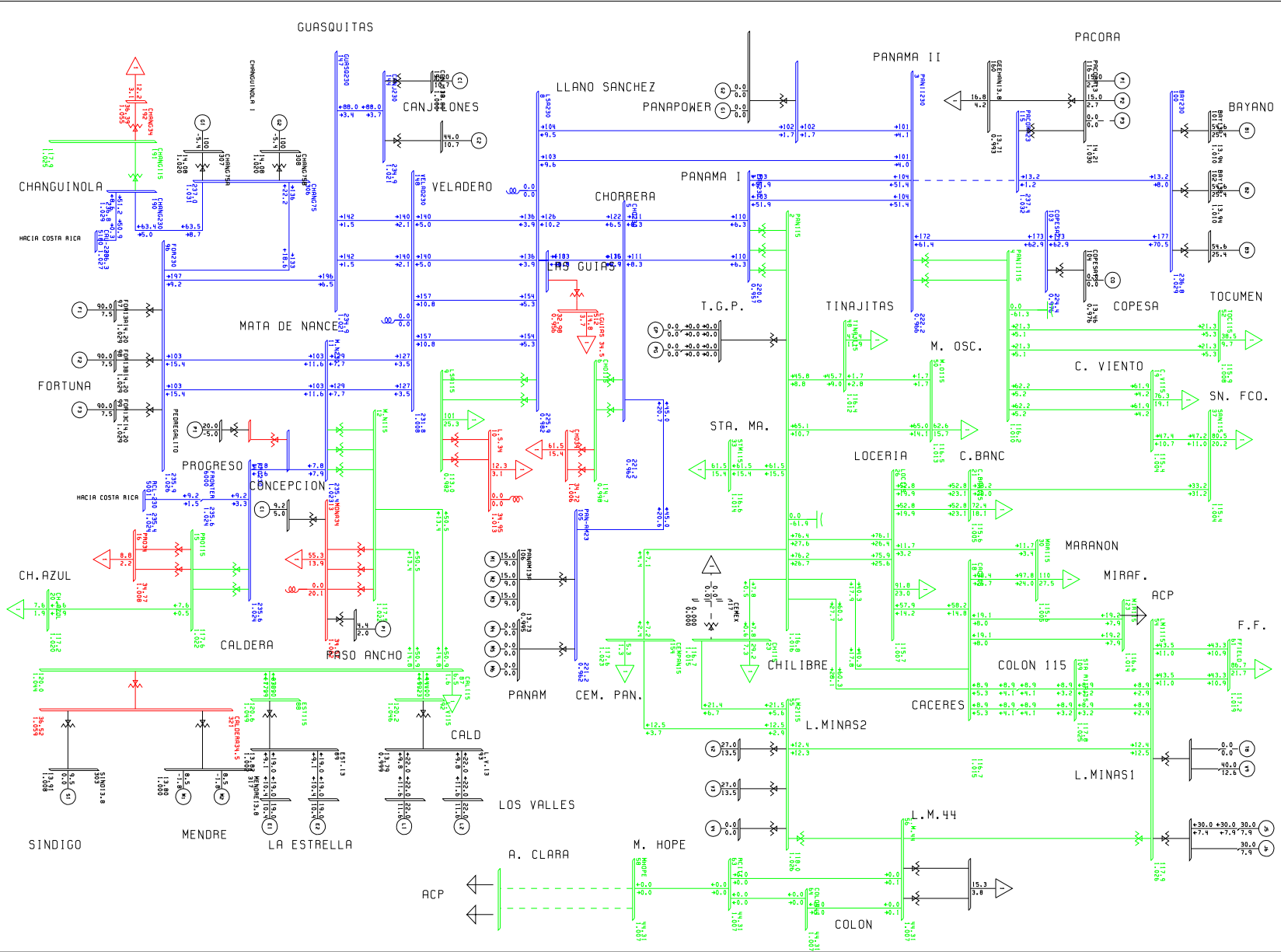
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 8:57  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	27.0	13.5	17.0	0.0	1.0050	30.0	0.8946	47.0			1	6		
67		BLM13C		13.800	V3	27.0	13.5	17.0	0.0	1.0050	30.0	0.8946	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	7.9	20.0	0.0	1.0000	31.0	0.9668	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	7.9	20.0	0.0	1.0000	31.0	0.9668	39.4			1	6		
73		BLMCCB		13.800	V9	40.0	12.6	40.0	0.0	1.0000	41.9	0.9538	71.0			1	6		
90		EST-13L		13.800	E1	19.0	10.4	12.0	-5.0	1.0300	21.0	0.8767	27.0			1	6		
91		EST-13T		13.800	E2	19.0	10.4	12.0	-5.0	1.0300	21.0	0.8767	27.0			1	6		
94		LV-13.8L		13.800	L1	22.0	11.6	12.0	-5.0	1.0300	24.1	0.8854	27.0			1	6		
95		LV-13.8T		13.800	L2	22.0	11.6	12.0	-5.0	1.0300	24.1	0.8854	27.0			1	6		
97		FOR13A		13.800	F1	90.0	7.5	50.0	-50.0	1.0290	87.8	0.9966	111.0			1	6		
98		FOR13B		13.800	F2	90.0	7.5	50.0	-50.0	1.0290	87.8	0.9966	111.0			1	6		
99		FOR13C		13.800	F3	90.0	7.5	50.0	-50.0	1.0290	87.8	0.9966	111.0			1	6		
101		BAY13A		13.800	B1	54.6	25.4	50.0	-25.0	1.0100	59.6	0.9070	96.0			1	6	SYST	
102		BAY13B		13.800	B2	54.6	25.4	50.0	-25.0	1.0100	59.6	0.9069	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	0.9950	17.6	0.8575	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	0.9950	17.6	0.8575	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	0.9950	17.6	0.8575	20.7			1	6		
108		BAY13C		13.800	B3	54.6	25.4	50.0	-25.0	1.0100	59.6	0.9069	100.0			1	6		
116		PACORA13		13.800	P1	15.0	2.7	8.8	0.0	1.0300	14.8	0.9842	21.7			1	6		
116		PACORA13		13.800	P2	15.0	2.7	8.8	0.0	1.0300	14.8	0.9842	21.7			1	6		
142		CANJ13A		13.800	C1	44.0	10.7	29.0	-29.0	1.0000	45.3	0.9719	69.0			1	6		
143		CANJ13B		13.800	C2	44.0	10.7	29.0	-29.0	1.0000	45.3	0.9719	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9574	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9555	5.1	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.5	0.0	5.0	0.0	1.0080	9.4	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	100.0	-5.4	22.0	-22.0	1.0200	98.2	0.9985	118.6			1	6		
308		CHANG75B		13.800	G2	100.0	-5.4	50.0	-22.0	1.0200	98.2	0.9985	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.8	4.0	-4.0	1.0000	8.7	0.9785	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-1.8	4.0	-4.0	1.0000	8.7	0.9785	35.3			1	6		
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0429	19.8	0.9701	27.0			1	6		
SUBSYSTEM TOTALS						1092.9	239.2	668.6	-367.0				1588.4						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 8:57  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0507	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0507	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	3.0	8.0	0.0	1.0000	10.1	0.9559	27.7	2	7
134	MAD6A	6.9000	G1	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9965	13.0	2	7
135	MAD6B	6.9000	G2	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9965	13.0	2	7
136	MAD6C	6.9000	G3	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9965	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9822	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9822	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9822	6.2	2	7
SUBSYSTEM TOTALS				73.3	3.2	51.0	-33.0				124.2		



PLAN DE EXPANSION DEL SIN CON CENTROGERICR JUNIO DEL 2007  
 G 0 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTORC7  
 TUE., MAY 15 2007 9:18

BRNCH - VOLTAGE (KV/PV)  
 EQUIPMENT - MW/MVAR

BRNCH - VOLTAGE (KV/PV)  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN**  
**AÑO 2010 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**  
**Contingencia Panamá I-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      TUE, MAY 15 2007    9:40  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0210	234.83	14	PRO	230		230.00	6	1.0222	235.12
96	FOR	230		230.00	6	1.0239	235.49	100	BAY	230		230.00	6	1.0204	234.69
144	CANJ	230		230.00	6	1.0199	234.58	147	GUASQ	230		230.00	6	1.0198	234.55

148 VELAD230	230.00	6	1.0071	231.64	190 CHANG230	230.00	6	1.0288	236.63
306 CHANG75	230.00	6	1.0299	236.89	310 CONCEPCION23230.00	230.00	6	1.0218	235.01
6000 FRONTER	230.00	6	1.0224	235.16					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9585	220.46	3	PANII230	230.00	6	0.9811	225.65
5	CHO230	230.00	6	0.9632	221.53	8	LSA230	230.00	6	0.9842	226.36
103	COPESA23	230.00	6	0.9874	227.10	105	PAN-AM23	230.00	6	0.9633	221.56
115	PACORA23	230.00	6	0.9943	228.68	511	LGUIAS230	230.00	6	0.9732	223.83
515	PANPOWER230	230.00	6	0.9857	226.70						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 9:40  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0039	115.45	4	PANII115	115.00	6	1.0010	115.11
12	M.N115	115.00	6	1.0146	116.68	15	PRO115	115.00	6	1.0203	117.33
18	CAC115	115.00	6	1.0031	115.36	20	CH.AZUL	115.00	6	1.0174	117.00
33	STM115	115.00	6	1.0023	115.27	48	TINAJ115	115.00	6	1.0004	115.04
50	M.O115	115.00	6	1.0006	115.07	54	LM1115	115.00	6	1.0043	115.50
55	LM2115	115.00	6	1.0047	115.54	87	CAL115	115.00	6	1.0327	118.77
88	EST115	115.00	6	1.0368	119.23	92	L.V115	115.00	6	1.0343	118.94
109	STA RITA115	115.00	6	1.0045	115.51	110	PTMD115A	115.00	6	1.0041	115.47
111	PTMD115B	115.00	6	1.0041	115.47	123	MIR115	115.00	7	1.0029	115.33
154	CEMPAN15	115.00	6	1.0040	115.46	191	CHANG115	115.00	6	1.0242	117.79

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6	CHO115	115.00	6	0.9994	114.93	9	LSA115	115.00	6	0.9845	113.22
19	C.V115	115.00	6	0.9933	114.23	21	C.BAN115	115.00	6	0.9934	114.25
23	CH115	115.00	6	0.9986	114.84	26	LOC115	115.00	6	0.9947	114.39
30	MAR115	115.00	6	0.9932	114.22	37	SAN115	115.00	6	0.9921	114.09
52	TOC115	115.00	6	0.9983	114.81	61	FFIELD	115.00	9	0.9980	114.77

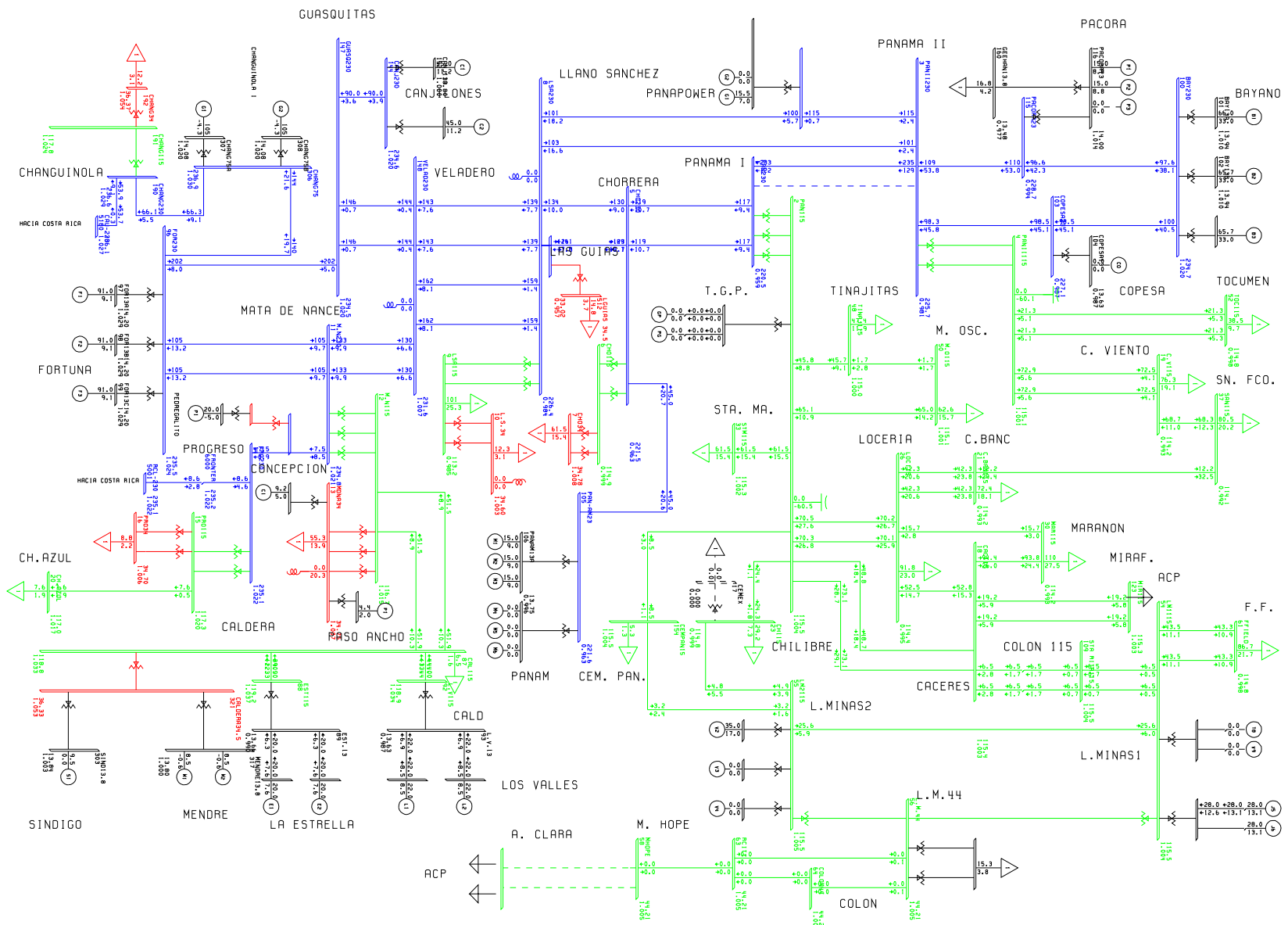
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 9:40  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	35.0	17.0	17.0	0.0	0.9917	39.2	0.8995	47.0			1	6		
70		TGJB13A		13.800	J5	28.0	13.1	20.0	0.0	1.0000	30.9	0.9054	39.4			1	6		
71		TGJB13B		13.800	J6	28.0	13.1	20.0	0.0	1.0000	30.9	0.9054	39.4			1	6		
90		EST-13L		13.800	E1	20.0	7.6	12.0	-5.0	1.0100	21.2	0.9345	27.0			1	6		
91		EST-13T		13.800	E2	20.0	7.6	12.0	-5.0	1.0100	21.2	0.9345	27.0			1	6		
94		LV-13.8L		13.800	L1	22.0	8.5	12.0	-5.0	1.0100	23.3	0.9329	27.0			1	6		
95		LV-13.8T		13.800	L2	22.0	8.5	12.0	-5.0	1.0100	23.3	0.9329	27.0			1	6		
97		FOR13A		13.800	F1	91.0	9.1	50.0	-50.0	1.0290	88.9	0.9950	111.0			1	6		
98		FOR13B		13.800	F2	91.0	9.1	50.0	-50.0	1.0290	88.9	0.9950	111.0			1	6		
99		FOR13C		13.800	F3	91.0	9.1	50.0	-50.0	1.0290	88.9	0.9950	111.0			1	6		
101		BAY13A		13.800	B1	66.0	33.0	50.0	-25.0	1.0100	73.0	0.8943	96.0			1	6	SYST	
102		BAY13B		13.800	B2	65.7	33.0	50.0	-25.0	1.0100	72.8	0.8937	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	0.9964	17.6	0.8575	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	0.9964	17.6	0.8575	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	0.9964	17.6	0.8575	20.7			1	6		
108		BAY13C		13.800	B3	65.7	33.0	50.0	-25.0	1.0100	72.8	0.8937	100.0			1	6		
116		PACORA13		13.800	P1	15.0	8.8	8.8	0.0	1.0145	17.2	0.8618	21.7			1	6		
116		PACORA13		13.800	P2	15.0	8.8	8.8	0.0	1.0145	17.2	0.8618	21.7			1	6		
142		CANJ13A		13.800	C1	45.0	11.2	29.0	-29.0	1.0000	46.4	0.9704	69.0			1	6		
143		CANJ13B		13.800	C2	45.0	11.2	29.0	-29.0	1.0000	46.4	0.9704	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9624	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9605	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.5	0.0	5.0	0.0	1.0028	9.5	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	105.0	-4.3	22.0	-22.0	1.0200	103.0	0.9992	118.6			1	6		
308		CHANG75B		13.800	G2	105.0	-4.3	50.0	-22.0	1.0200	103.0	0.9992	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-0.6	4.0	-4.0	1.0000	8.5	0.9979	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-0.6	4.0	-4.0	1.0000	8.5	0.9979	35.3			1	6		
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0405	19.8	0.9701	27.0			1	6		
516		PANAPOW13A		13.800	G1	15.5	7.0	12.5	0.5	1.0000	17.0	0.9106	20.9			1	6		
SUBSYSTEM TOTALS						1096.0	268.2	624.1	-366.4				1491.3						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 9:40  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0447	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0447	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	5.6	8.0	0.0	1.0000	11.2	0.8664	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9931	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9932	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9932	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9990	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9990	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9990	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9862	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9862	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9862	6.2	2	7
SUBSYSTEM TOTALS				73.4	7.3	51.0	-33.0				124.2		



PLAN DE EXPANSION DEL SIN CON CENTROPERTEGA JUNIO DEL 2007  
 A 0 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHT08C7  
 TUE. MAY 15 2007 9:42

BUS - VOLTAGE (KV/VU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

KV: 514 .535 .5115



**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2010 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Pana Power-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:22  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0241	235.54	14	PRO	230		230.00	6	1.0252	235.79
96	FOR	230		230.00	6	1.0265	236.11	100	BAY	230		230.00	6	1.0159	233.67
144	CANJ	230		230.00	6	1.0232	235.33	147	GUASQ	230		230.00	6	1.0231	235.30

148	VELAD230	230.00	6	1.0118	232.71	190	CHANG230	230.00	6	1.0299	236.87
306	CHANG75	230.00	6	1.0310	237.12	310	CONCEPCION23	230.00	6	1.0248	235.71
515	PANPOWER230	230.00	6	1.0135	233.11	6000	FRONTER	230.00	6	1.0253	235.82

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9634	221.58	3		PANII230		230.00	6	0.9737	223.94
5		CHO230		230.00	6	0.9662	222.23	8		LSA230		230.00	6	0.9896	227.61
103		COPESA23		230.00	6	0.9804	225.49	105		PAN-AM23		230.00	6	0.9663	222.26
115		PACORA23		230.00	6	0.9877	227.17	511		LGUIAS230		230.00	6	0.9759	224.45

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:22  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0118	116.36	4		PANII115		115.00	6	1.0151	116.74
6		CHO115		115.00	6	1.0026	115.30	12		M.N115		115.00	6	1.0169	116.94
15		PRO115		115.00	6	1.0232	117.67	18		CAC115		115.00	6	1.0111	116.28
19		C.V115		115.00	6	1.0060	115.69	20		CH.AZUL		115.00	6	1.0204	117.34
21		C.BAN115		115.00	6	1.0023	115.26	23		CH115		115.00	6	1.0092	116.06
26		LOC115		115.00	6	1.0033	115.38	30		MAR115		115.00	6	1.0016	115.18
33		STM115		115.00	6	1.0102	116.18	37		SAN115		115.00	6	1.0014	115.16
48		TINAJ115		115.00	6	1.0083	115.95	50		M.O115		115.00	6	1.0086	115.99
52		TOC115		115.00	6	1.0125	116.44	54		LM115		115.00	6	1.0182	117.10
55		LM2115		115.00	6	1.0188	117.16	61		FFIELD		115.00	9	1.0120	116.38
87		CAL115		115.00	6	1.0341	118.93	88		EST115		115.00	6	1.0380	119.37
92		L.V115		115.00	6	1.0356	119.10	109		STA RITA115		115.00	6	1.0176	117.03
110		PTMD115A		115.00	6	1.0152	116.75	111		PTMD115B		115.00	6	1.0152	116.75
123		MIR115		115.00	7	1.0104	116.19	154		CEMPAN15		115.00	6	1.0163	116.88
191		CHANG115		115.00	6	1.0253	117.91								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	0.9903	113.88								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:22  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	16.7	17.0	0.0	1.0050	34.2	0.8734	47.0			1	6		
67		BLM13C		13.800	V3	30.0	16.7	17.0	0.0	1.0050	34.2	0.8734	47.0			1	6		
70		TGJB13A		13.800	J5	27.0	9.5	20.0	0.0	1.0000	28.6	0.9435	39.4			1	6		
71		TGJB13B		13.800	J6	27.0	9.5	20.0	0.0	1.0000	28.6	0.9435	39.4			1	6		
90		EST-13L		13.800	E1	20.0	7.2	12.0	-5.0	1.0100	21.1	0.9401	27.0			1	6		
91		EST-13T		13.800	E2	20.0	7.2	12.0	-5.0	1.0100	21.1	0.9401	27.0			1	6		
94		LV-13.8L		13.800	L1	22.0	8.1	12.0	-5.0	1.0100	23.2	0.9385	27.0			1	6		
95		LV-13.8T		13.800	L2	22.0	8.1	12.0	-5.0	1.0100	23.2	0.9385	27.0			1	6		
97		FOR13A		13.800	F1	91.0	6.6	50.0	-50.0	1.0290	88.7	0.9974	111.0			1	6		
98		FOR13B		13.800	F2	91.0	6.6	50.0	-50.0	1.0290	88.7	0.9974	111.0			1	6		
99		FOR13C		13.800	F3	91.0	6.6	50.0	-50.0	1.0290	88.7	0.9974	111.0			1	6		
101		BAY13A		13.800	B1	66.8	36.5	50.0	-25.0	1.0100	75.4	0.8779	96.0			1	6	SYST	
102		BAY13B		13.800	B2	66.5	36.4	50.0	-25.0	1.0100	75.1	0.8771	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	0.9992	17.5	0.8575	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	0.9992	17.5	0.8575	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	0.9992	17.5	0.8575	20.7			1	6		
108		BAY13C		13.800	B3	66.5	36.4	50.0	-25.0	1.0100	75.1	0.8771	100.0			1	6		
116		PACORA13		13.800	P1	15.0	8.8	8.8	0.0	1.0080	17.3	0.8618	21.7			1	6		
116		PACORA13		13.800	P2	15.0	8.8	8.8	0.0	1.0080	17.3	0.8618	21.7			1	6		
142		CANJ13A		13.800	C1	44.0	10.4	29.0	-29.0	1.0000	45.2	0.9733	69.0			1	6		
143		CANJ13B		13.800	C2	44.0	10.4	29.0	-29.0	1.0000	45.2	0.9733	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9645	10.8	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9627	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.5	0.0	5.0	0.0	1.0035	9.5	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	97.0	-6.1	22.0	-22.0	1.0200	95.3	0.9980	118.6			1	6		
308		CHANG75B		13.800	G2	97.0	-6.1	50.0	-22.0	1.0200	95.3	0.9980	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-0.7	4.0	-4.0	1.0000	8.5	0.9965	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-0.7	4.0	-4.0	1.0000	8.5	0.9965	35.3			1	6		
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0438	19.8	0.9701	27.0			1	6		
516		PANAPOW13A		13.800	G1	9.1	0.5	12.5	0.5	1.0145	9.0	0.9983	20.9			1	6		
SUBSYSTEM TOTALS						1097.1	266.6	641.1	-366.4				1538.3						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:22  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0487	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0487	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	3.9	8.0	0.0	1.0000	10.4	0.9289	27.7	2	7
134	MAD6A	6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0	2	7
135	MAD6B	6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0	2	7
136	MAD6C	6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9836	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9836	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9836	6.2	2	7
SUBSYSTEM TOTALS				73.3	4.6	51.0	-33.0				124.2		



**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2010 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Guasquitas-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:35  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0172	233.96	14	PRO	230		230.00	6	1.0182	234.18
96	FOR	230		230.00	6	1.0222	235.11	100	BAY	230		230.00	6	1.0202	234.64
144	CANJ	230		230.00	6	1.0183	234.20	147	GUASQ	230		230.00	6	1.0181	234.17



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:35  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	28.0	17.0	17.0	0.0	0.9997	32.8	0.8548	47.0			1	6		
67		BLM13C		13.800	V3	28.0	17.0	17.0	0.0	0.9997	32.8	0.8548	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	18.1	20.0	0.0	1.0000	35.0	0.8560	39.4			1	6		
90		EST-13L		13.800	E1	20.0	12.0	12.0	-5.0	1.0325	22.6	0.8575	27.0			1	6		
91		EST-13T		13.800	E2	20.0	12.0	12.0	-5.0	1.0325	22.6	0.8575	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	12.0	12.0	-5.0	1.0283	26.1	0.8944	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	12.0	12.0	-5.0	1.0283	26.1	0.8944	27.0			1	6		
97		FOR13A		13.800	F1	91.0	10.7	50.0	-50.0	1.0290	89.0	0.9932	111.0			1	6		
98		FOR13B		13.800	F2	91.0	10.7	50.0	-50.0	1.0290	89.0	0.9932	111.0			1	6		
99		FOR13C		13.800	F3	91.0	10.7	50.0	-50.0	1.0290	89.0	0.9932	111.0			1	6		
101		BAY13A		13.800	B1	68.5	33.4	50.0	-25.0	1.0100	75.5	0.8988	96.0			1	6	SYST	
102		BAY13B		13.800	B2	68.6	33.4	50.0	-25.0	1.0100	75.6	0.8990	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	1.0041	17.4	0.8575	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	1.0041	17.4	0.8575	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	1.0041	17.4	0.8575	20.7			1	6		
108		BAY13C		13.800	B3	68.6	33.4	50.0	-25.0	1.0100	75.6	0.8990	100.0			1	6		
116		PACORA13		13.800	P1	15.0	8.8	8.8	0.0	1.0140	17.2	0.8618	21.7			1	6		
116		PACORA13		13.800	P2	15.0	8.8	8.8	0.0	1.0140	17.2	0.8618	21.7			1	6		
142		CANJ13A		13.800	C1	45.0	11.5	29.0	-29.0	1.0000	46.4	0.9691	69.0			1	6		
143		CANJ13B		13.800	C2	45.0	11.5	29.0	-29.0	1.0000	46.4	0.9691	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9643	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9624	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.2	0.0	5.0	0.0	1.0067	9.1	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	105.0	-3.7	22.0	-22.0	1.0200	103.0	0.9994	118.6			1	6		
308		CHANG75B		13.800	G2	105.0	-3.7	50.0	-22.0	1.0200	103.0	0.9994	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.5	4.0	-4.0	1.0000	8.6	0.9854	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-1.5	4.0	-4.0	1.0000	8.6	0.9854	35.3			1	6		
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0363	19.9	0.9701	27.0			1	6		
516		PANAPOW13A		13.800	G1	12.3	7.5	12.5	0.5	1.0000	14.4	0.8535	20.9			1	6		
SUBSYSTEM TOTALS						1099.9	299.3	621.1	-366.4				1498.9						

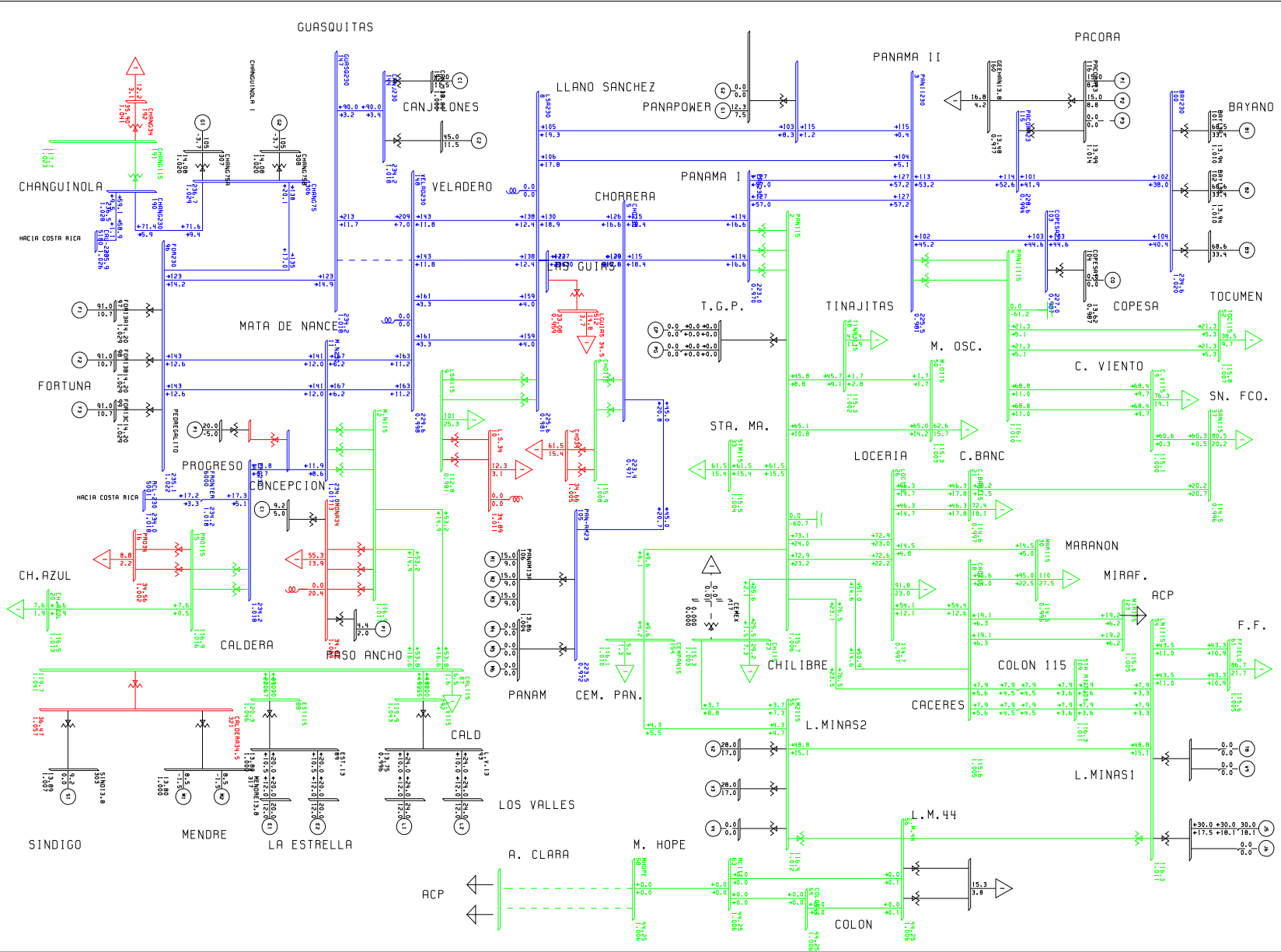
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:35  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	--------	-----------	--------	------	------	-------



126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0458	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0458	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	5.1	8.0	0.0	1.0000	10.9	0.8843	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9938	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9939	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9939	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9855	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9855	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9855	6.2	2	7
SUBSYSTEM TOTALS				73.3	6.5	51.0	-33.0				124.2		



PLAN DE EXPANSION DEL SIN CON CENTROGERICA JUNIO DEL 2007  
 G 0 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTORBC7  
 TUE., MAY 15 2007 10:37

KV: 514 - 535 - 5115  
 BUS - VOLTAGE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2010 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Mata de Nance-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:44  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0213	234.90	14	PRO	230		230.00	6	1.0216	234.97
96	FOR	230		230.00	6	1.0222	235.11	100	BAY	230		230.00	6	1.0216	234.97
144	CANJ	230		230.00	6	1.0165	233.78	147	GUASQ	230		230.00	6	1.0163	233.75

148 VELAD230	230.00	6	1.0023	230.52	190 CHANG230	230.00	6	1.0283	236.51
306 CHANG75	230.00	6	1.0294	236.76	310 CONCEPCION23230.00	230.00	6	1.0216	234.98
6000 FRONTIER	230.00	6	1.0215	234.95					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9724	223.64	3	PANII230	230.00	6	0.9830	226.09
5	CHO230	230.00	6	0.9744	224.10	8	LSA230	230.00	6	0.9843	226.38
103	COPESA23	230.00	6	0.9892	227.51	105	PAN-AM23	230.00	6	0.9745	224.12
115	PACORA23	230.00	6	0.9960	229.07	511	LGUIAS230	230.00	6	0.9781	224.97
515	PANPOWER230	230.00	6	0.9869	226.98						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:44  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0087	116.00	4	PANII115	115.00	6	1.0125	116.44
6	CHO115	115.00	6	1.0113	116.30	12	M.N115	115.00	6	1.0203	117.33
15	PRO115	115.00	6	1.0197	117.26	18	CAC115	115.00	6	1.0080	115.92
19	C.V115	115.00	6	1.0031	115.36	20	CH.AZUL	115.00	6	1.0168	116.93
23	CH115	115.00	6	1.0055	115.63	26	LOC115	115.00	6	1.0001	115.02
33	STM115	115.00	6	1.0071	115.81	48	TINAJ115	115.00	6	1.0051	115.59
50	M.O115	115.00	6	1.0054	115.62	52	TOC115	115.00	6	1.0099	116.13
54	LM115	115.00	6	1.0138	116.58	55	LM2115	115.00	6	1.0144	116.66
61	FFIELD	115.00	9	1.0075	115.87	87	CAL115	115.00	6	1.0439	120.05
88	EST115	115.00	6	1.0496	120.70	92	L.V115	115.00	6	1.0459	120.28
109	STA RITA115	115.00	6	1.0134	116.54	110	PTMD115A	115.00	6	1.0112	116.29
111	PTMD115B	115.00	6	1.0112	116.29	123	MIR115	115.00	7	1.0074	115.85
154	CEMPAN15	115.00	6	1.0123	116.41	191	CHANG115	115.00	6	1.0237	117.72

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	0.9846	113.23	21	C.BAN115	115.00	6	0.9991	114.90
30	MAR115	115.00	6	0.9984	114.82	37	SAN115	115.00	6	0.9983	114.80

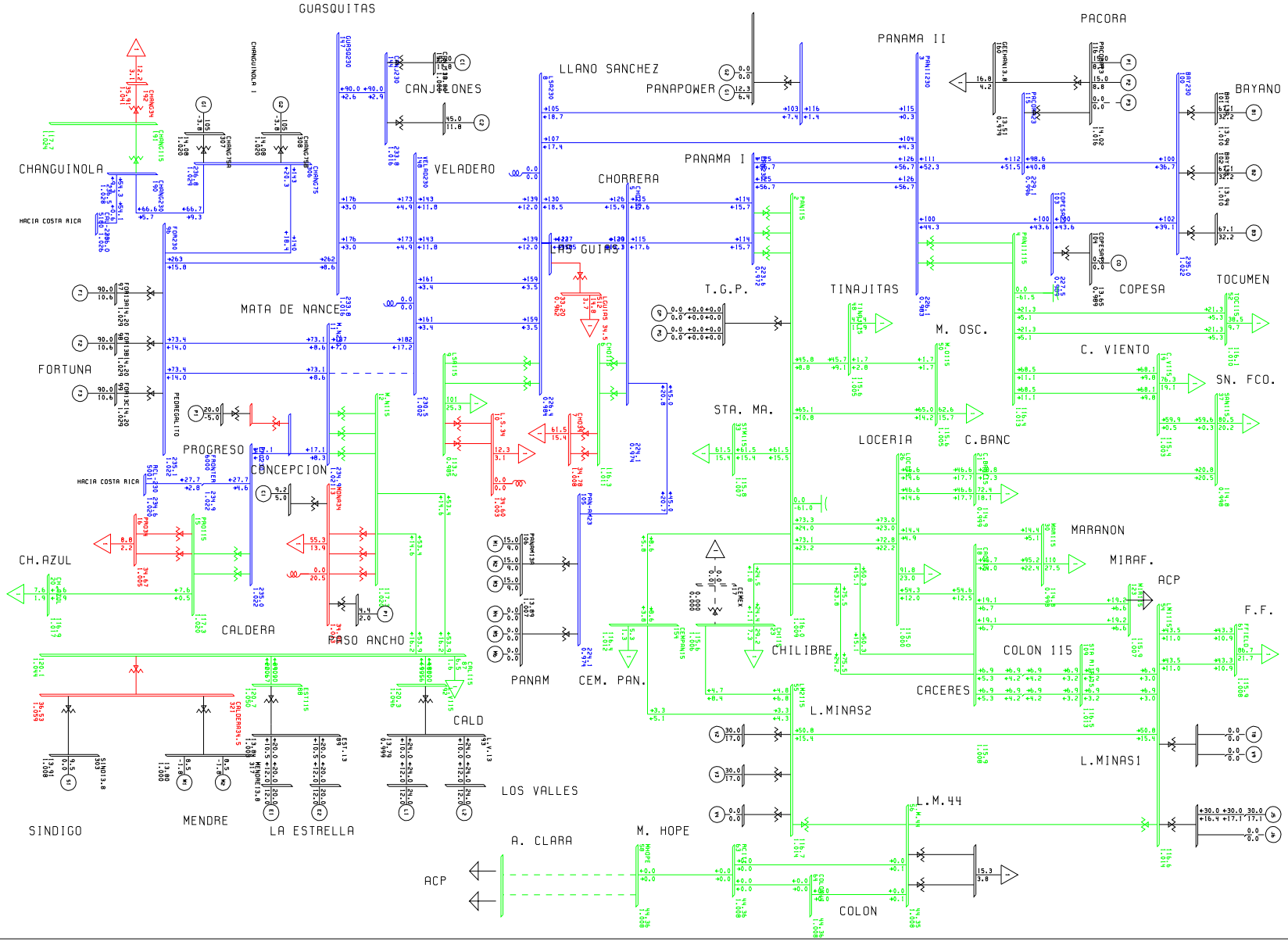
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	17.0	17.0	0.0	1.0016	34.4	0.8700	47.0			1	6		
67		BLM13C		13.800	V3	30.0	17.0	17.0	0.0	1.0016	34.4	0.8700	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	17.1	20.0	0.0	1.0000	34.5	0.8689	39.4			1	6		
90		EST-13L		13.800	E1	20.0	12.0	12.0	-5.0	1.0356	22.5	0.8575	27.0			1	6		
91		EST-13T		13.800	E2	20.0	12.0	12.0	-5.0	1.0356	22.5	0.8575	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	12.0	12.0	-5.0	1.0313	26.0	0.8944	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	12.0	12.0	-5.0	1.0313	26.0	0.8944	27.0			1	6		
97		FOR13A		13.800	F1	90.0	10.6	50.0	-50.0	1.0290	88.1	0.9932	111.0			1	6		
98		FOR13B		13.800	F2	90.0	10.6	50.0	-50.0	1.0290	88.1	0.9932	111.0			1	6		
99		FOR13C		13.800	F3	90.0	10.6	50.0	-50.0	1.0290	88.1	0.9932	111.0			1	6		
101		BAY13A		13.800	B1	67.1	32.2	50.0	-25.0	1.0100	73.7	0.9016	96.0			1	6	SYST	
102		BAY13B		13.800	B2	67.1	32.2	50.0	-25.0	1.0100	73.7	0.9016	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	1.0068	17.4	0.8575	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	1.0068	17.4	0.8575	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	1.0068	17.4	0.8575	20.7			1	6		
108		BAY13C		13.800	B3	67.1	32.2	50.0	-25.0	1.0100	73.7	0.9016	100.0			1	6		
116		PACORA13		13.800	P1	15.0	8.8	8.8	0.0	1.0162	17.1	0.8618	21.7			1	6		
116		PACORA13		13.800	P2	15.0	8.8	8.8	0.0	1.0162	17.1	0.8618	21.7			1	6		
142		CANJ13A		13.800	C1	45.0	11.8	29.0	-29.0	1.0000	46.5	0.9675	69.0			1	6		
143		CANJ13B		13.800	C2	45.0	11.8	29.0	-29.0	1.0000	46.5	0.9675	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9678	10.8	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9659	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.5	0.0	5.0	0.0	1.0082	9.4	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	105.0	-3.8	22.0	-22.0	1.0200	103.0	0.9994	118.6			1	6		
308		CHANG75B		13.800	G2	105.0	-3.8	50.0	-22.0	1.0200	103.0	0.9994	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.8	4.0	-4.0	1.0000	8.7	0.9775	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-1.8	4.0	-4.0	1.0000	8.7	0.9775	35.3			1	6		
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0403	19.8	0.9701	27.0			1	6		
516		PANAPOW13A		13.800	G1	12.3	6.4	12.5	0.5	1.0000	13.8	0.8882	20.9			1	6		
SUBSYSTEM TOTALS						1096.8	292.8	621.1	-366.4				1498.9						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0471	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0471	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	4.5	8.0	0.0	1.0000	10.7	0.9052	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9946	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9946	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9997	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9997	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9997	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9847	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9847	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9847	6.2	2	7
SUBSYSTEM TOTALS				73.3	5.7	51.0	-33.0				124.2		



PLAN DE EXPANSION DEL SIN CON CENTROGERICER JUNIO DEL 2007  
 G 0 2010 ESCENARIO MODERADO DEMANDA MX119H INVIERNO HT10BC7  
 TUE., MAY 15 2007 10:46  
 BUS - VOLTAGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR  
 KVA: 514 - 535 - 5115

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2010 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Santa Rita-Cáceres**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:58  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0246	235.65	14	PRO	230		230.00	6	1.0255	235.87
96	FOR	230		230.00	6	1.0267	236.14	100	BAY	230		230.00	6	1.0172	233.96
144	CANJ	230		230.00	6	1.0233	235.35	147	GUASQ	230		230.00	6	1.0231	235.32



148 VELAD230	230.00	6	1.0120	232.76	190 CHANG230	230.00	6	1.0298	236.86
306 CHANG75	230.00	6	1.0310	237.12	310 CONCEPCION23	230.00	6	1.0252	235.80
6000 FRONTIER	230.00	6	1.0256	235.89					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9724	223.64	3	PANII230	230.00	6	0.9827	226.01
5	CHO230	230.00	6	0.9759	224.45	8	LSA230	230.00	6	0.9908	227.89
103	COPESA23	230.00	6	0.9882	227.28	105	PAN-AM23	230.00	6	0.9760	224.48
115	PACORA23	230.00	6	0.9945	228.73	511	LGUIAS230	230.00	6	0.9827	226.02
515	PANPOWER230	230.00	6	0.9877	227.18						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:58  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0083	115.96	4	PANII115	115.00	6	1.0121	116.40
6	CHO115	115.00	6	1.0129	116.49	12	M.N115	115.00	6	1.0190	117.18
15	PRO115	115.00	6	1.0236	117.72	18	CAC115	115.00	6	1.0076	115.88
19	C.V115	115.00	6	1.0028	115.32	20	CH.AZUL	115.00	6	1.0207	117.38
23	CH115	115.00	6	1.0055	115.63	33	STM115	115.00	6	1.0068	115.78
48	TINAJ115	115.00	6	1.0048	115.55	50	M.O115	115.00	6	1.0051	115.58
52	TOC115	115.00	6	1.0095	116.09	54	LM1115	115.00	6	1.0142	116.63
55	LM2115	115.00	6	1.0148	116.71	61	FFIELD	115.00	9	1.0079	115.91
87	CAL115	115.00	6	1.0382	119.40	88	EST115	115.00	6	1.0417	119.80
92	L.V115	115.00	6	1.0402	119.63	109	STA RITA115	115.00	6	1.0139	116.60
110	PTMD115A	115.00	6	1.0112	116.29	123	MIR115	115.00	7	1.0071	115.81
154	CEMPAN15	115.00	6	1.0125	116.44	191	CHANG115	115.00	6	1.0252	117.90

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	0.9916	114.03	21	C.BAN115	115.00	6	0.9988	114.86
26	LOC115	115.00	6	0.9998	114.98	30	MAR115	115.00	6	0.9981	114.78
37	SAN115	115.00	6	0.9979	114.76						

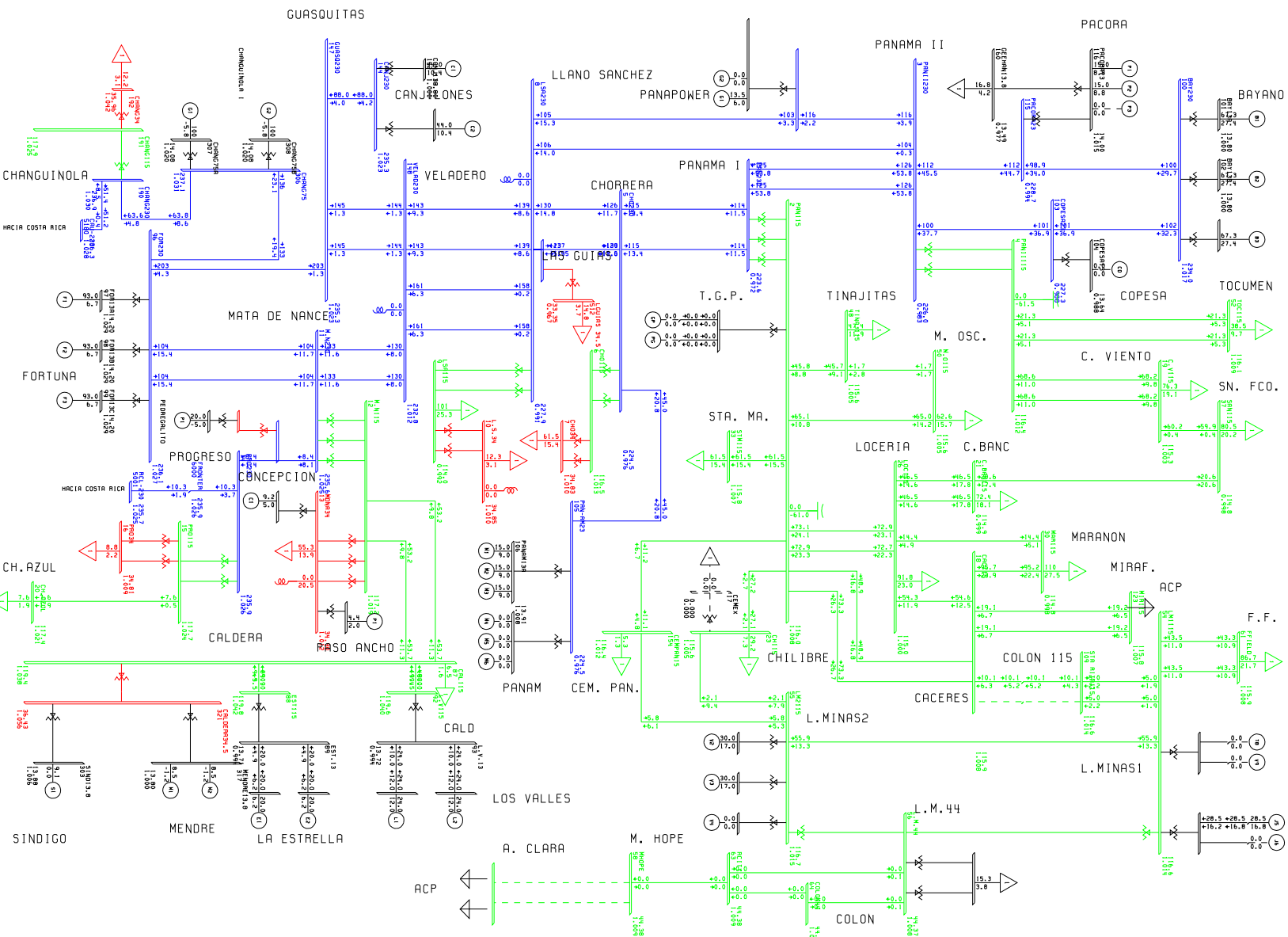
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:57  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	17.0	17.0	0.0	1.0020	34.4	0.8700	47.0			1	6		
67		BLM13C		13.800	V3	30.0	17.0	17.0	0.0	1.0020	34.4	0.8700	47.0			1	6		
70		TGJB13A		13.800	J5	28.5	16.8	20.0	0.0	1.0000	33.1	0.8612	39.4			1	6		
90		EST-13L		13.800	E1	20.0	6.2	12.0	-5.0	1.0100	20.7	0.9555	27.0			1	6		
91		EST-13T		13.800	E2	20.0	6.2	12.0	-5.0	1.0100	20.7	0.9555	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	12.0	12.0	-5.0	1.0260	26.2	0.8944	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	12.0	12.0	-5.0	1.0260	26.2	0.8944	27.0			1	6		
97		FOR13A		13.800	F1	93.0	6.7	50.0	-50.0	1.0290	90.6	0.9974	111.0			1	6		
98		FOR13B		13.800	F2	93.0	6.7	50.0	-50.0	1.0290	90.6	0.9974	111.0			1	6		
99		FOR13C		13.800	F3	93.0	6.7	50.0	-50.0	1.0290	90.6	0.9974	111.0			1	6		
101		BAY13A		13.800	B1	67.3	27.4	50.0	-25.0	1.0000	72.6	0.9261	96.0			1	6	SYST	
102		BAY13B		13.800	B2	67.3	27.4	50.0	-25.0	1.0000	72.7	0.9261	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	1.0083	17.3	0.8575	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	1.0083	17.3	0.8575	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	1.0083	17.3	0.8575	20.7			1	6		
108		BAY13C		13.800	B3	67.3	27.4	50.0	-25.0	1.0000	72.7	0.9261	100.0			1	6		
116		PACORA13		13.800	P1	15.0	8.8	8.8	0.0	1.0147	17.2	0.8618	21.7			1	6		
116		PACORA13		13.800	P2	15.0	8.8	8.8	0.0	1.0147	17.2	0.8618	21.7			1	6		
142		CANJ13A		13.800	C1	44.0	10.4	29.0	-29.0	1.0000	45.2	0.9734	69.0			1	6		
143		CANJ13B		13.800	C2	44.0	10.4	29.0	-29.0	1.0000	45.2	0.9734	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9665	10.8	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9647	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.1	0.0	5.0	0.0	1.0055	9.1	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	100.0	-5.8	22.0	-22.0	1.0200	98.2	0.9983	118.6			1	6		
308		CHANG75B		13.800	G2	100.0	-5.8	50.0	-22.0	1.0200	98.2	0.9983	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.2	4.0	-4.0	1.0000	8.6	0.9903	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-1.2	4.0	-4.0	1.0000	8.6	0.9903	35.3			1	6		
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0442	19.7	0.9701	27.0			1	6		
516		PANAPOW13A		13.800	G1	13.5	6.0	12.5	0.5	1.0000	14.8	0.9139	20.9			1	6		
SUBSYSTEM TOTALS						1093.6	248.7	621.1	-366.4				1498.9						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 10:57  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0469	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0469	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	4.6	8.0	0.0	1.0000	10.7	0.9024	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9945	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9946	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9945	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9996	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9996	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9996	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9848	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9848	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9848	6.2	2	7
SUBSYSTEM TOTALS				73.3	5.8	51.0	-33.0				124.2		



PLAN DE EXPANSION DEL SIN CON CENTROPOWER JUNIO DEL 2007  
 B O 2010 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTCBC7  
 U.F. MAY 15 2007 11:00  
 KV:514 • 335 • 1115  
 BUS - VOL TAGE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
**Estudios Básicos**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 10:52  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0176	234.05	14	PRO230	230.00	6	1.0180	234.15				
96	FOR230	230.00	6	1.0205	234.72	100	BAY230	230.00	6	1.0112	232.57				
144	CANJ230	230.00	6	1.0153	233.51	147	GUASQ230	230.00	6	1.0151	233.48				
190	CHANG230	230.00	6	1.0270	236.22	306	CHANG75	230.00	6	1.0281	236.46				
309	CAISAN230	230.00	6	1.0185	234.27	310	CONCEPCION230	230.00	6	1.0183	234.21				
6000	FRONTER	230.00	6	1.0183	234.22										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9529	219.16	3	PANII230	230.00	6	0.9645	221.83				
5	CHO230	230.00	6	0.9594	220.66	8	LSA230	230.00	6	0.9730	223.79				
103	COPESA23	230.00	6	0.9718	223.51	105	PAN-AM23	230.00	6	0.9596	220.71				
115	PACORA23	230.00	6	0.9806	225.53	148	VELAD230	230.00	6	0.9994	229.85				
511	LGUIAS230	230.00	6	0.9648	221.90	515	PANPOWER230	230.00	6	0.9674	222.51				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 10:52  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0108	116.24	4	PANII115	115.00	6	1.0137	116.58				
12	M.N115	115.00	6	1.0221	117.54	15	PRO115	115.00	6	1.0156	116.80				
18	CAC115	115.00	6	1.0101	116.16	19	C.V115	115.00	6	1.0031	115.36				
20	CH.AZUL	115.00	6	1.0122	116.40	23	CH115	115.00	6	1.0098	116.13				
26	LOC115	115.00	6	1.0007	115.08	33	STM115	115.00	6	1.0090	116.03				
48	TINAJ115	115.00	6	1.0065	115.75	50	M.O115	115.00	6	1.0069	115.79				
52	TOC115	115.00	6	1.0106	116.22	54	LM115	115.00	6	1.0238	117.74				
55	LM2115	115.00	6	1.0243	117.80	61	FFIELD	115.00	9	1.0164	116.89				
87	CAL115	115.00	6	1.0403	119.64	88	EST115	115.00	6	1.0446	120.13				
92	L.V115	115.00	6	1.0420	119.82	109	STA RITA115	115.00	6	1.0224	117.58				
110	PTMD115A	115.00	6	1.0175	117.02	111	PTMD115B	115.00	6	1.0175	117.02				
123	MIR115	115.00	7	1.0092	116.05	154	CEMPAN15	115.00	6	1.0199	117.29				
191	CHANG115	115.00	6	1.0143	116.64										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6	CHO115	115.00	6	0.9923	114.11	9	LSA115	115.00	6	0.9793	112.62				
21	C.BAN115	115.00	6	0.9995	114.94	30	MAR115	115.00	6	0.9989	114.87				
37	SAN115	115.00	6	0.9984	114.81										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 10:52  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	24.0	14.0	17.0	0.0	1.0050	27.6	0.8645	47.0				1	6
67	BLM13C	13.800	V3	24.0	14.0	17.0	0.0	1.0050	27.6	0.8645	47.0				1	6
68	BLM13D	13.800	V4	25.0	14.7	17.0	0.0	1.0050	28.8	0.8625	47.0				1	6
70	TGJB13A	13.800	J5	30.0	8.4	20.0	0.0	1.0000	31.2	0.9630	39.4				1	6
71	TGJB13B	13.800	J6	30.0	8.4	20.0	0.0	1.0000	31.2	0.9630	39.4				1	6
73	BLMCCB	13.800	V9	25.0	12.3	40.0	0.0	1.0000	27.9	0.8969	71.0				1	6
90	EST-13L	13.800	E1	19.0	8.4	12.0	-5.0	1.0200	20.4	0.9145	27.0				1	6
91	EST-13T	13.800	E2	19.0	8.4	12.0	-5.0	1.0200	20.4	0.9145	27.0				1	6
94	LV-13.8L	13.800	L1	21.0	9.3	12.0	-5.0	1.0200	22.5	0.9140	27.0				1	6
95	LV-13.8T	13.800	L2	21.0	9.3	12.0	-5.0	1.0200	22.5	0.9140	27.0				1	6
97	FOR13A	13.800	F1	87.0	10.0	50.0	-50.0	1.0270	85.3	0.9934	111.0				1	6
98	FOR13B	13.800	F2	87.0	10.0	50.0	-50.0	1.0270	85.3	0.9934	111.0				1	6
99	FOR13C	13.800	F3	87.0	10.0	50.0	-50.0	1.0270	85.3	0.9934	111.0				1	6
101	BAY13A	13.800	B1	79.4	41.3	50.0	-25.0	1.0100	88.6	0.8874	96.0				1	6
102	BAY13B	13.800	B2	79.9	41.3	50.0	-25.0	1.0100	89.1	0.8883	96.0				1	6
106	PANAM13A	13.800	M1	15.0	9.0	9.0	0.0	0.9930	17.6	0.8575	20.7				1	6
106	PANAM13A	13.800	M2	15.0	9.0	9.0	0.0	0.9930	17.6	0.8575	20.7				1	6
106	PANAM13A	13.800	M3	15.0	9.0	9.0	0.0	0.9930	17.6	0.8575	20.7				1	6
107	PANAM13B	13.800	M4	15.0	9.0	9.0	0.0	0.9930	17.6	0.8575	20.7				1	6
107	PANAM13B	13.800	M5	15.0	9.0	9.0	0.0	0.9930	17.6	0.8575	20.7				1	6
107	PANAM13B	13.800	M6	15.0	9.0	9.0	0.0	0.9930	17.6	0.8575	20.7				1	6
108	BAY13C	13.800	B3	79.9	41.3	50.0	-25.0	1.0100	89.1	0.8883	100.0				1	6
116	PACORA13	13.800	P1	14.6	8.8	8.8	0.0	1.0127	16.8	0.8557	21.7				1	6
116	PACORA13	13.800	P2	14.6	8.8	8.8	0.0	1.0127	16.8	0.8557	21.7				1	6
116	PACORA13	13.800	P3	14.6	8.8	8.8	0.0	1.0127	16.8	0.8557	21.7				1	6
142	CANJ13A	13.800	C1	43.5	11.5	29.0	-29.0	1.0000	45.0	0.9667	69.0				1	6
143	CANJ13B	13.800	C2	43.5	11.5	29.0	-29.0	1.0000	45.0	0.9667	69.0				1	6
151	GUALAC13	13.800	1	16.0	-0.6	10.0	-10.0	1.0000	16.0	0.9992	26.7				1	6
193	GEBONYIC	13.800	G1	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9883	35.3				1	6
193	GEBONYIC	13.800	G2	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9883	35.3				1	6
193	GEBONYIC	13.800	G3	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9883	35.3				1	6
204	BJOMIN13	13.800	1	18.5	-6.2	13.0	-13.0	1.0000	19.5	0.9486	28.9				1	6
204	BJOMIN13	13.800	2	18.5	-6.2	13.0	-13.0	1.0000	19.5	0.9486	28.9				1	6
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9655	10.8	0.8784	13.5				1	6
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9636	5.0	0.9110	6.2				1	6
303	SIND13.8	13.800	S1	9.0	0.0	5.0	0.0	1.0072	8.9	1.0000	13.5				1	6
305	ELALTO13.8	13.800	1	12.2	0.7	12.0	-5.0	1.0200	12.0	0.9986	20.6				1	6
305	ELALTO13.8	13.800	2	12.5	0.7	12.0	-5.0	1.0200	12.3	0.9986	20.6				1	6
305	ELALTO13.8	13.800	3	12.5	0.7	12.0	-5.0	1.0200	12.3	0.9986	20.6				1	6
307	CHANG75A	13.800	G1	79.0	-4.8	22.0	-22.0	1.0200	77.6	0.9981	118.6				1	6
308	CHANG75B	13.800	G2	79.0	-4.8	50.0	-22.0	1.0200	77.6	0.9981	118.6				1	6
317	MENDRE13.8	13.800	M1	8.5	-3.4	4.0	-4.0	1.0000	9.2	0.9282	35.3				1	6
340	PEDGALITO138	13.800	P1	20.0	-5.0	12.0	-5.0	1.0367	19.9	0.9701	27.0				1	6
SUBSYSTEM TOTALS				1282.5	339.0	801.5	-426.0				1936.0					

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 10:52  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

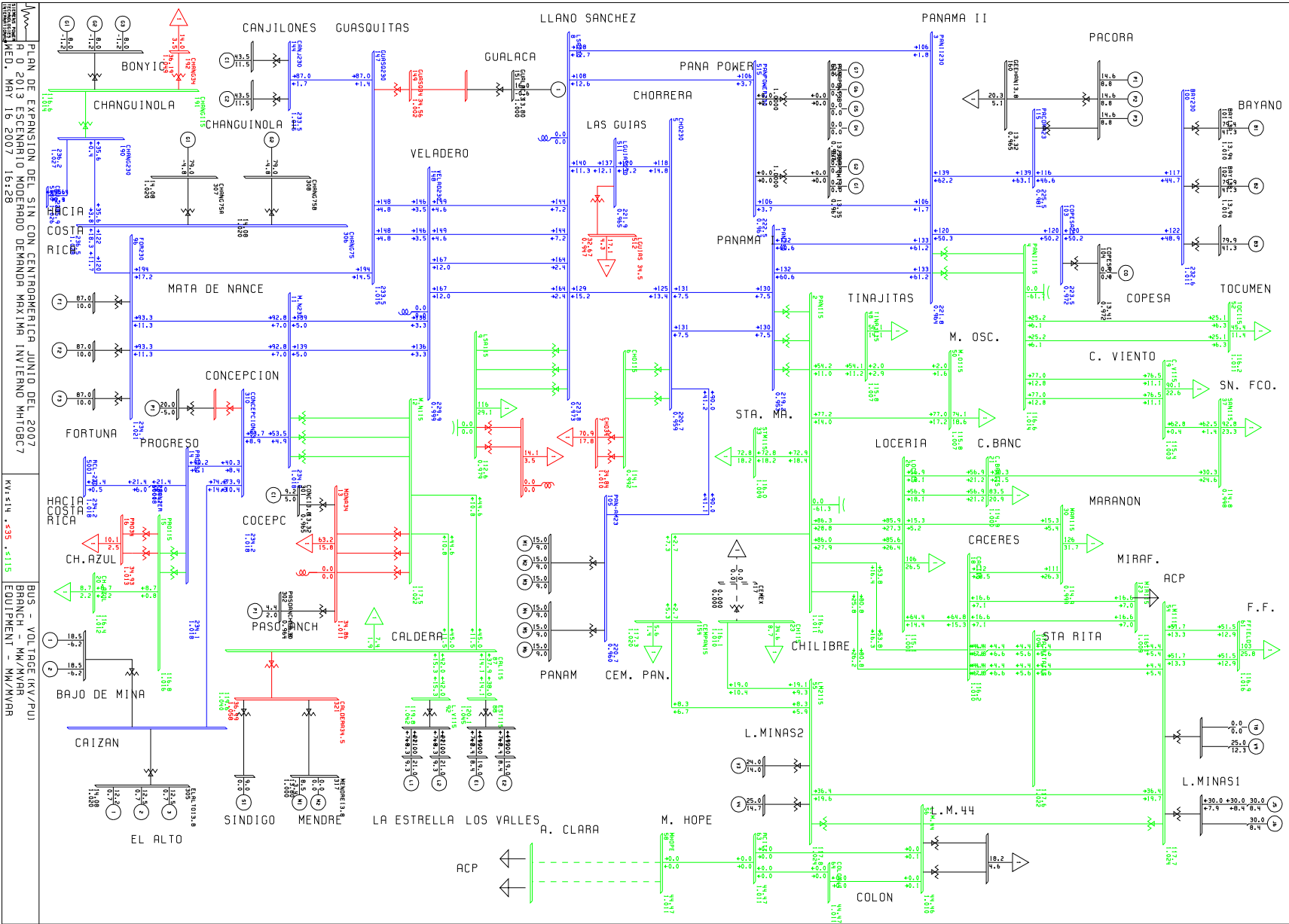
AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0474	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0475	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	4.4	8.0	0.0	1.0000	10.6	0.9108	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9946	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9856	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9856	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9856	6.2			2	7	
SUBSYSTEM TOTALS						73.3	5.6	51.0	-33.0				124.2					



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 10:52  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.8	290.6	-188.3	0.0	302.8	-5.2	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.9	224.5	-98.9	0.0	143.2	-96.9	147.4	
5	1345.6	1324.8	0.0	0.0	0.0	0.3	20.5	0.0
C.RICA	264.9	569.4	-237.1	0.0	468.2	36.7	364.1	
6	1282.5	1136.0	0.0	0.0	0.0	88.2	58.3	25.0
PANAMA	339.0	284.7	-123.0	0.0	449.2	55.2	571.2	
7	73.3	38.7	0.0	0.0	0.0	33.1	1.5	50.0
ACANAL	5.6	9.7	0.0	0.0	0.0	-14.2	10.1	
9	0.0	121.3	0.0	0.0	0.0	-121.6	0.4	-75.0
COLON	0.0	30.4	0.0	0.0	1.1	-31.8	2.5	
TOTALS	6505.7	6347.6	0.0	0.0	0.0	0.0	158.1	0.0
	828.7	1941.1	-971.5	0.0	1997.3	0.0	1856.4	



PLAN DE EXPANSION DEL SIN CON CENTROGRFICA JUNIO DEL 2007  
 0 2013 ESCENARIO MODERNO KRYLINA INVIERNO MHTORC7  
 MED. MAY 16 2007 16:28

KV: 114 - 455 - 5115  
 BUS - VOLTAGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MAXIMA VERANO  
**Estudios Básicos**



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:00  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGBC7

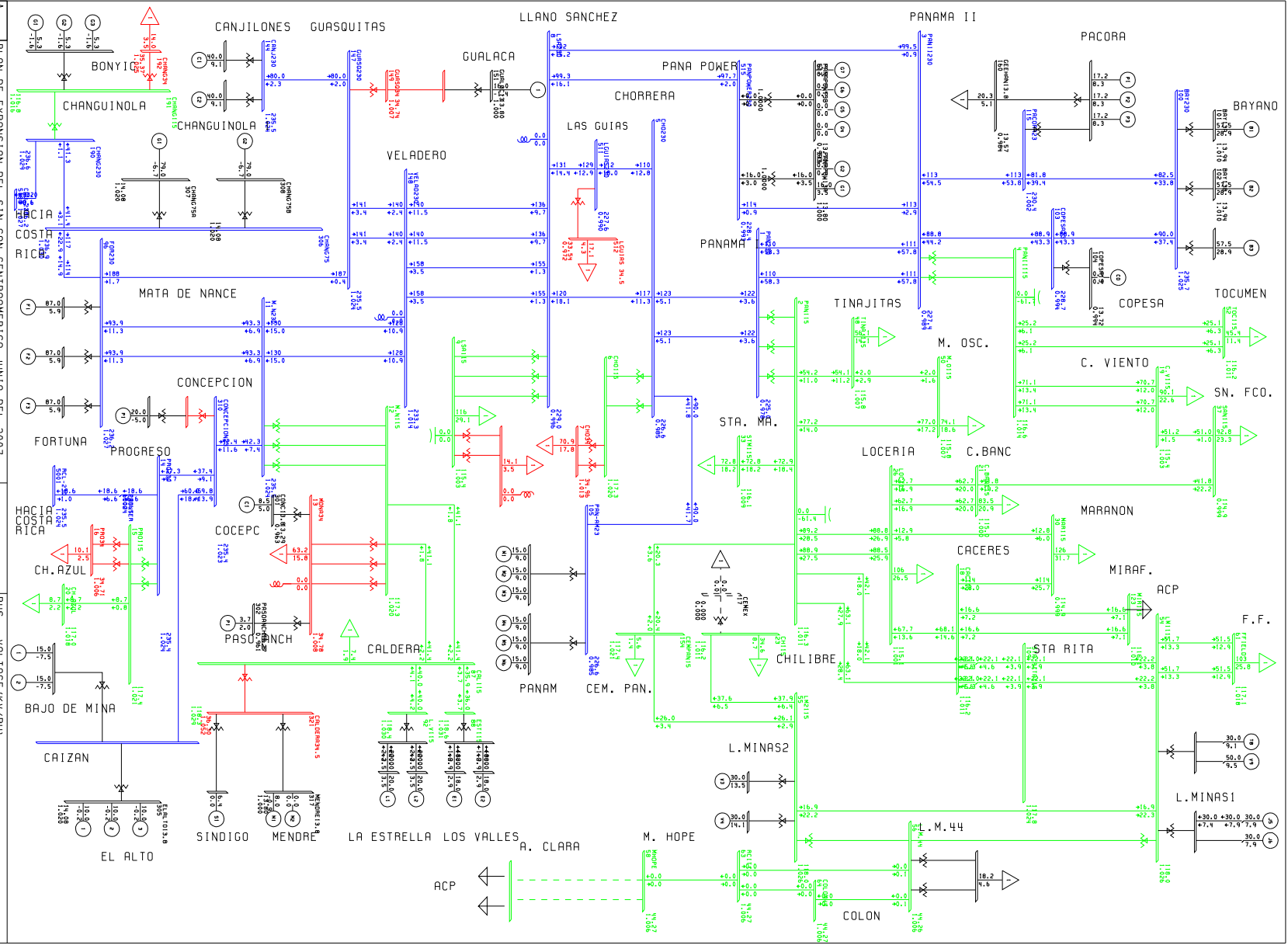
AREA 6 [PANAMA ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	30.0	13.5	17.0	0.0	1.0050	32.8	0.9115	47.0			1	6	
67		BLM13C		13.800	V3	30.0	13.5	17.0	0.0	1.0050	32.8	0.9115	47.0			1	6	
68		BLM13D		13.800	V4	30.0	14.1	17.0	0.0	1.0050	33.0	0.9046	47.0			1	6	
70		TGJB13A		13.800	J5	30.0	7.9	20.0	0.0	1.0000	31.0	0.9672	39.4			1	6	
71		TGJB13B		13.800	J6	30.0	7.9	20.0	0.0	1.0000	31.0	0.9672	39.4			1	6	
72		BLMCCA		13.800	T8	30.0	9.1	20.0	0.0	1.0000	31.3	0.9572	50.0			1	6	
73		BLMCCB		13.800	V9	50.0	9.5	40.0	0.0	1.0000	50.9	0.9824	71.0			1	6	
90		EST-13L		13.800	E1	18.0	2.9	12.0	-5.0	0.9900	18.4	0.9869	27.0			1	6	
91		EST-13T		13.800	E2	18.0	2.9	12.0	-5.0	0.9900	18.4	0.9869	27.0			1	6	
94		LV-13.8L		13.800	L1	20.0	3.5	12.0	-5.0	0.9900	20.5	0.9854	27.0			1	6	
95		LV-13.8T		13.800	L2	20.0	3.5	12.0	-5.0	0.9900	20.5	0.9854	27.0			1	6	
97		FOR13A		13.800	F1	87.0	5.9	50.0	-50.0	1.0290	84.7	0.9977	111.0			1	6	
98		FOR13B		13.800	F2	87.0	5.9	50.0	-50.0	1.0290	84.7	0.9977	111.0			1	6	
99		FOR13C		13.800	F3	87.0	5.9	50.0	-50.0	1.0290	84.7	0.9977	111.0			1	6	
101		BAY13A		13.800	B1	57.5	28.9	50.0	-25.0	1.0100	63.7	0.8935	96.0			1	6	SYST
102		BAY13B		13.800	B2	57.5	28.9	50.0	-25.0	1.0100	63.7	0.8933	96.0			1	6	
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	1.0170	17.2	0.8575	20.7			1	6	
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	1.0170	17.2	0.8575	20.7			1	6	
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	1.0170	17.2	0.8575	20.7			1	6	
107		PANAM13B		13.800	M4	15.0	9.0	9.0	0.0	1.0170	17.2	0.8575	20.7			1	6	
107		PANAM13B		13.800	M5	15.0	9.0	9.0	0.0	1.0170	17.2	0.8575	20.7			1	6	
107		PANAM13B		13.800	M6	15.0	9.0	9.0	0.0	1.0170	17.2	0.8575	20.7			1	6	
108		BAY13C		13.800	B3	57.5	28.9	50.0	-25.0	1.0100	63.7	0.8933	100.0			1	6	
116		PACORA13		13.800	P1	17.2	8.3	8.8	0.0	1.0300	18.5	0.9014	21.7			1	6	
116		PACORA13		13.800	P2	17.2	8.3	8.8	0.0	1.0300	18.5	0.9014	21.7			1	6	
116		PACORA13		13.800	P3	17.2	8.3	8.8	0.0	1.0300	18.5	0.9014	21.7			1	6	
142		CANJ13A		13.800	C1	40.0	9.1	29.0	-29.0	1.0000	41.0	0.9749	69.0			1	6	
143		CANJ13B		13.800	C2	40.0	9.1	29.0	-29.0	1.0000	41.0	0.9749	69.0			1	6	
151		GUALAC13		13.800	1	16.0	-1.4	10.0	-10.0	1.0000	16.1	0.9960	26.7			1	6	
193		GEBONYIC		13.800	G1	5.3	-1.6	4.0	-4.0	1.0000	5.5	0.9588	35.3			1	6	
193		GEBONYIC		13.800	G2	5.3	-1.6	4.0	-4.0	1.0000	5.5	0.9588	35.3			1	6	
193		GEBONYIC		13.800	G3	5.3	-1.6	4.0	-4.0	1.0000	5.5	0.9588	35.3			1	6	
204		BJOMIN13		13.800	1	15.0	-7.5	13.0	-13.0	1.0000	16.8	0.8948	28.9			1	6	
204		BJOMIN13		13.800	2	15.0	-7.5	13.0	-13.0	1.0000	16.8	0.8948	28.9			1	6	
301		CONC13.8		13.800	C1	8.5	5.0	5.0	-5.0	0.9632	10.2	0.8619	13.5			1	6	
302		PASOANCH13.8		13.800	P1	3.7	2.0	2.0	-2.0	0.9614	4.4	0.8797	6.2			1	6	
303		SIND13.8		13.800	S1	6.4	0.0	5.0	0.0	1.0020	6.4	1.0000	13.5			1	6	
305		ELALTO13.8		13.800	1	10.0	-0.2	12.0	-5.0	1.0200	9.8	0.9997	20.6			1	6	
305		ELALTO13.8		13.800	2	10.0	-0.2	12.0	-5.0	1.0200	9.8	0.9997	20.6			1	6	
305		ELALTO13.8		13.800	3	10.0	-0.2	12.0	-5.0	1.0200	9.8	0.9997	20.6			1	6	
307		CHANG75A		13.800	G1	79.0	-6.7	22.0	-22.0	1.0200	77.7	0.9964	118.6			1	6	
308		CHANG75B		13.800	G2	79.0	-6.7	50.0	-22.0	1.0200	77.7	0.9964	118.6			1	6	
317		MENDRE13.8		13.800	M1	8.0	-0.9	4.0	-4.0	1.0000	8.1	0.9933	35.3			1	6	
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0423	19.8	0.9701	27.0			1	6	
516		PANAPOW13A		13.800	G1	16.0	3.5	12.5	0.5	1.0000	16.4	0.9767	20.9			1	6	
SUBSYSTEM TOTALS						1273.6	259.2	834.0	-425.4				2006.9					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:00  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGBC7



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:01  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGBC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.7	224.5	-98.9	0.0	143.2	-97.1	147.4	
5	1345.6	1324.8	0.0	0.0	0.0	0.4	20.4	0.0
C.RICA	257.0	569.4	-237.5	0.0	469.1	30.8	363.4	
6	1273.6	1136.0	0.0	0.0	0.0	88.1	49.4	25.0
PANAMA	259.2	284.7	-123.0	0.0	462.9	61.5	498.9	
7	73.3	38.7	0.0	0.0	0.0	33.1	1.5	50.0
ACANAL	5.4	9.7	0.0	0.0	0.0	-14.4	10.1	
9	0.0	121.3	0.0	0.0	0.0	-121.6	0.4	-75.0
COLON	0.0	30.4	0.0	0.0	1.1	-31.8	2.5	
TOTALS	6496.8	6347.6	0.0	0.0	0.0	0.0	149.2	0.0
	740.6	1941.1	-972.0	0.0	2011.9	0.0	1783.4	



PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 A 0 2013 ESCENARIO MODERADO DEMANDA MAYIMA VERANO MHTGBC7  
 MED. MAY 16 2007 16:29  
 BUS - VOLTAJE (KV/RU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR  
 KV: 138, 115, 69, 34.5, 15



PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÍNIMA EN VERANO

## **Estudios Básicos**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:14  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	1.0241	235.54	3	PANII230	230.00	6	1.0268	236.17				
5	CHO230	230.00	6	1.0266	236.12	8	LSA230	230.00	6	1.0248	235.71				
11	M.N230	230.00	6	1.0210	234.84	14	PRO230	230.00	6	1.0277	236.38				
96	FOR230	230.00	6	1.0197	234.53	100	BAY230	230.00	6	1.0311	237.15				
103	COPESA23	230.00	6	1.0280	236.43	105	PAN-AM23	230.00	6	1.0266	236.12				
115	PACORA23	230.00	6	1.0294	236.76	144	CANJ230	230.00	6	1.0233	235.36				
147	GUASQ230	230.00	6	1.0233	235.35	148	VELAD230	230.00	6	1.0276	236.34				
190	CHANG230	230.00	6	1.0310	237.14	306	CHANG75	230.00	6	1.0308	237.08				
309	CAISAN230	230.00	6	1.0257	235.92	310	CONCEPCION23	230.00	6	1.0252	235.79				
511	LGUIAS230	230.00	6	1.0280	236.44	515	PANPOWER230	230.00	6	1.0311	237.16				
6000	FRONTER	230.00	6	1.0285	236.56										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:14  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0052	115.60	4	PANII115	115.00	6	1.0079	115.90				
6	CHO115	115.00	6	1.0754	123.67	9	LSA115	115.00	6	1.0347	118.99				
15	PRO115	115.00	6	1.0274	118.15	18	CAC115	115.00	6	1.0051	115.58				
19	C.V115	115.00	6	1.0036	115.41	20	CH.AZUL	115.00	6	1.0265	118.05				
21	C.BAN115	115.00	6	1.0015	115.17	23	CH115	115.00	6	1.0071	115.82				
26	LOC115	115.00	6	1.0018	115.21	30	MAR115	115.00	6	1.0009	115.10				
33	STM115	115.00	6	1.0045	115.52	37	SAN115	115.00	6	1.0011	115.13				
48	TINAJ115	115.00	6	1.0038	115.44	50	M.O115	115.00	6	1.0040	115.46				
52	TOC115	115.00	6	1.0066	115.76	54	LM1115	115.00	6	1.0150	116.72				
55	LM2115	115.00	6	1.0152	116.74	61	FFIELD	115.00	9	1.0121	116.39				
109	STA RITA115	115.00	6	1.0140	116.61	110	PTMD115A	115.00	6	1.0106	116.21				
111	PTMD115B	115.00	6	1.0106	116.21	123	MIR115	115.00	7	1.0054	115.62				
154	CEMPAN15	115.00	6	1.0124	116.43	191	CHANG115	115.00	6	1.0290	118.34				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
12	M.N115	115.00	6	0.9974	114.70	87	CAL115	115.00	6	0.9992	114.91				
88	EST115	115.00	6	0.9997	114.97	92	L.V115	115.00	6	0.9994	114.93				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:13  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	31.0	17.0	17.0	0.0	1.0021	35.3	0.8768	47.0			1	6		
70		TGJB13A		13.800	J5	31.0	16.6	20.0	0.0	1.0000	35.2	0.8813	39.4			1	6		
90		EST-13L		13.800	E1	16.0	-0.2	12.0	-5.0	0.9500	16.8	0.9999	27.0			1	6		
94		LV-13.8L		13.800	L1	16.0	-0.1	12.0	-5.0	0.9500	16.8	1.0000	27.0			1	6		
97		FOR13A		13.800	F1	65.6	-33.0	50.0	-50.0	0.9800	74.9	0.8935	111.0			1	6	SYST	
98		FOR13B		13.800	F2	65.0	-33.0	50.0	-50.0	0.9800	74.4	0.8916	111.0			1	6		
106		PANAM13A		13.800	M1	14.2	0.0	9.0	0.0	0.9994	14.2	1.0000	20.7			1	6		
106		PANAM13A		13.800	M2	14.2	0.0	9.0	0.0	0.9994	14.2	1.0000	20.7			1	6		
116		PACORA13		13.800	P1	16.4	1.7	8.8	0.0	1.0300	16.0	0.9947	21.7			1	6		
116		PACORA13		13.800	P2	16.4	1.7	8.8	0.0	1.0300	16.0	0.9947	21.7			1	6		
142		CANJ13A		13.800	C1	33.0	4.4	29.0	-29.0	0.9800	34.0	0.9913	69.0			1	6		
151		GUALAC13		13.800	1	15.2	-1.5	10.0	-10.0	1.0000	15.3	0.9953	26.7			1	6		
302		PASOANCH13.8		13.800	P1	3.7	2.0	2.0	-2.0	0.9558	4.4	0.8797	6.2			1	6		
305		ELALTO13.8		13.800	1	10.0	-2.0	12.0	-5.0	1.0200	10.0	0.9813	20.6			1	6		
305		ELALTO13.8		13.800	2	10.0	-2.0	12.0	-5.0	1.0200	10.0	0.9813	20.6			1	6		
307		CHANG75A		13.800	G1	65.0	-8.5	22.0	-22.0	1.0200	64.3	0.9916	118.6			1	6		
340		PEDGALITO138		13.800	P1	17.0	-5.0	12.0	-5.0	1.0452	17.0	0.9594	27.0			1	6		
516		PANAPOW13A		13.800	G1	16.0	0.5	12.5	0.5	1.0317	15.5	0.9995	20.9			1	6		
SUBSYSTEM TOTALS						455.7	-41.3	308.2	-187.5				756.8						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:13  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0478	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0478	8.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.7	4.3	8.0	0.0	1.0000	10.6	0.9155	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9956	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.8	3.0	-3.0	1.0000	3.9	0.9801	5.6			2	7		
141		GAT6B		6.9000	G5	3.9	-0.8	3.0	-3.0	1.0000	3.9	0.9801	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.8	3.0	-3.0	1.0000	3.9	0.9801	6.2			2	7		
SUBSYSTEM TOTALS						73.3	4.5	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:14  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.5	224.5	-98.9	0.0	143.2	-97.2	147.4	
5	1345.1	1324.8	0.0	0.0	0.0	0.8	19.5	0.0
C.RICA	248.5	569.4	-236.0	0.0	470.0	26.5	358.7	
6	455.7	454.4	0.0	0.0	0.0	-8.3	9.6	25.0
PANAMA	-41.3	113.9	165.6	0.0	478.8	44.4	113.7	
7	73.3	15.5	0.0	0.0	0.0	56.1	1.7	50.0
ACANAL	4.5	3.9	0.0	0.0	0.0	-13.1	13.7	
9	0.0	48.5	0.0	0.0	0.0	-48.6	0.1	-75.0
COLON	0.0	12.2	0.0	0.0	1.1	-11.5	0.4	
TOTALS	5678.5	5570.0	0.0	0.0	0.0	0.0	108.5	0.0
	430.5	1746.2	-681.8	0.0	2028.9	0.0	1394.9	



**PLAN DE EXPANSIÓN DEL SIN**  
**AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**  
**Contingencia Pacora-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      TUE, MAY 15 2007 11:42  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0220	235.06	14	PRO	230		230.00	6	1.0219	235.03
96	FOR	230		230.00	6	1.0245	235.64	100	BAY	230		230.00	6	1.0338	237.78
115	PACORA	23		230.00	6	1.0362	238.32	144	CANJ	230		230.00	6	1.0211	234.86

147	GUASQ230	230.00	6	1.0210	234.83	148	VELAD230	230.00	6	1.0106	232.45
190	CHANG230	230.00	6	1.0281	236.47	306	CHANG75	230.00	6	1.0293	236.74
309	CAISAN230	230.00	6	1.0210	234.84	310	CONCEPCION230.00	230.00	6	1.0219	235.04
6000	FRONTER	230.00	6	1.0222	235.11						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9835	226.20	3	PANII230	230.00	6	0.9917	228.08				
5	CHO230	230.00	6	0.9881	227.27	8	LSA230	230.00	6	0.9928	228.35				
103	COPESA23	230.00	6	0.9971	229.34	105	PAN-AM23	230.00	6	0.9883	227.31				
511	LGUIAS230	230.00	6	0.9887	227.41	515	PANPOWER230	230.00	6	0.9936	228.53				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 11:42  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0119	116.37	4	PANII115	115.00	6	1.0105	116.20				
6	CHO115	115.00	6	1.0231	117.65	9	LSA115	115.00	6	1.0001	115.01				
12	M.N115	115.00	6	1.0204	117.34	15	PRO115	115.00	6	1.0195	117.24				
18	CAC115	115.00	6	1.0112	116.28	19	C.V115	115.00	6	1.0011	115.12				
20	CH.AZUL	115.00	6	1.0161	116.85	21	C.BAN115	115.00	6	1.0001	115.01				
23	CH115	115.00	6	1.0109	116.25	26	LOC115	115.00	6	1.0014	115.16				
33	STM115	115.00	6	1.0101	116.16	48	TINAJ115	115.00	6	1.0077	115.88				
50	M.O115	115.00	6	1.0080	115.92	52	TOC115	115.00	6	1.0073	115.84				
54	LM1115	115.00	6	1.0247	117.84	55	LM2115	115.00	6	1.0253	117.91				
61	FFIELD	115.00	9	1.0173	116.99	87	CAL115	115.00	6	1.0327	118.77				
88	EST115	115.00	6	1.0357	119.10	92	L.V115	115.00	6	1.0339	118.90				
109	STA RITA115	115.00	6	1.0233	117.68	110	PTMD115A	115.00	6	1.0186	117.14				
111	PTMD115B	115.00	6	1.0186	117.14	123	MIR115	115.00	7	1.0102	116.17				
154	CEMPAN15	115.00	6	1.0209	117.41	191	CHANG115	115.00	6	1.0150	116.73				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
30	MAR115	115.00	6	0.9998	114.97	37	SAN115	115.00	6	0.9987	114.85				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 11:42  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

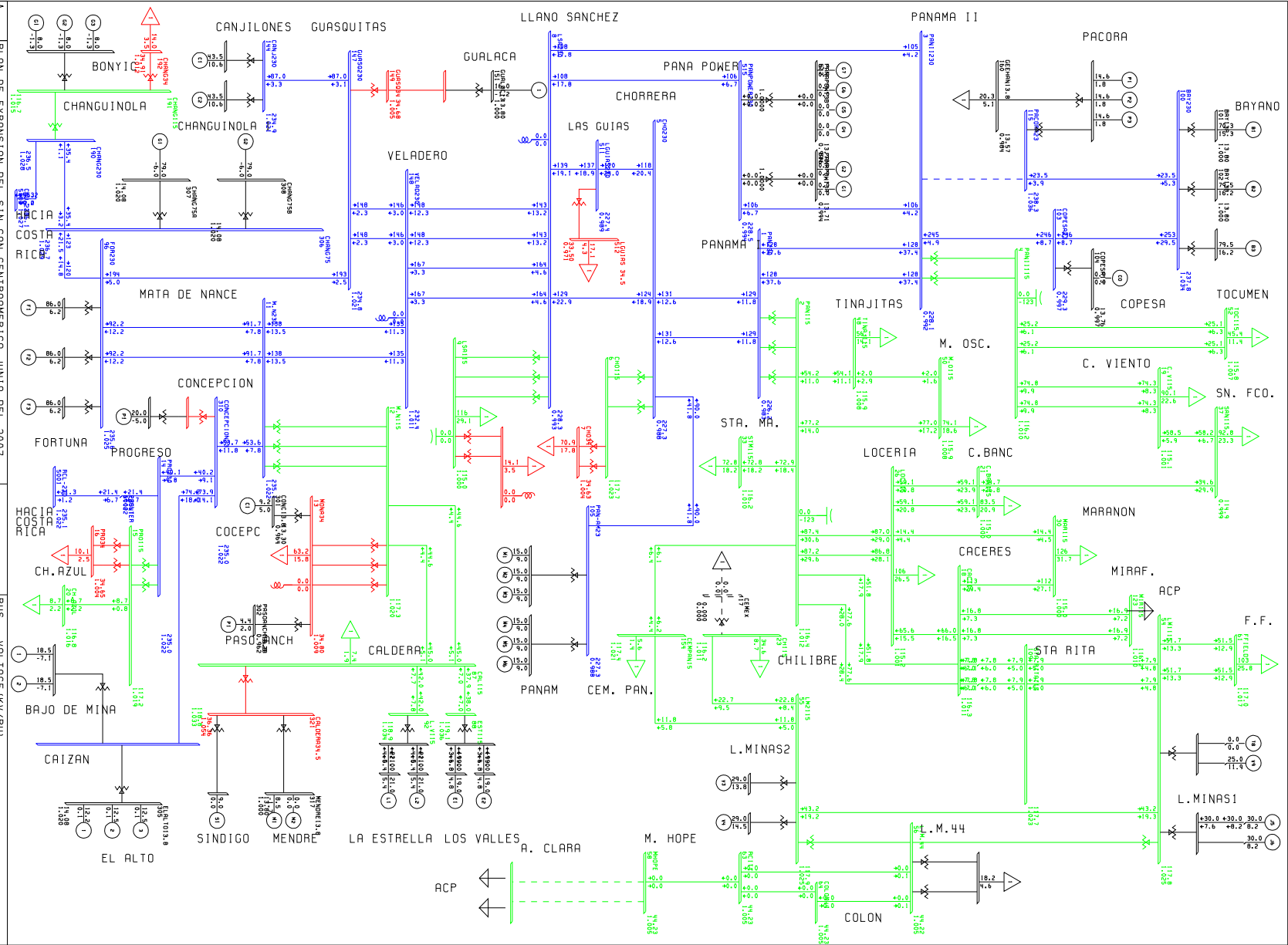
AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	29.0	13.8	17.0	0.0	1.0050	32.0	0.9026	47.0			1	6		
67		BLM13C		13.800	V3	29.0	13.8	17.0	0.0	1.0050	32.0	0.9026	47.0			1	6		
68		BLM13D		13.800	V4	29.0	14.5	17.0	0.0	1.0050	32.2	0.8950	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	8.2	20.0	0.0	1.0000	31.1	0.9650	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	8.2	20.0	0.0	1.0000	31.1	0.9650	39.4			1	6		
73		BLMCCB		13.800	V9	25.0	11.9	40.0	0.0	1.0000	27.7	0.9026	71.0			1	6		
90		EST-13L		13.800	E1	19.0	4.8	12.0	-5.0	1.0000	19.6	0.9700	27.0			1	6		
91		EST-13T		13.800	E2	19.0	4.8	12.0	-5.0	1.0000	19.6	0.9700	27.0			1	6		
94		LV-13.8L		13.800	L1	21.0	5.4	12.0	-5.0	1.0000	21.7	0.9683	27.0			1	6		
95		LV-13.8T		13.800	L2	21.0	5.4	12.0	-5.0	1.0000	21.7	0.9683	27.0			1	6		
97		FOR13A		13.800	F1	86.0	6.2	50.0	-50.0	1.0270	84.0	0.9974	111.0			1	6		
98		FOR13B		13.800	F2	86.0	6.2	50.0	-50.0	1.0270	84.0	0.9974	111.0			1	6		
99		FOR13C		13.800	F3	86.0	6.2	50.0	-50.0	1.0270	84.0	0.9974	111.0			1	6		
101		BAY13A		13.800	B1	70.3	15.3	50.0	-25.0	1.0000	71.9	0.9772	96.0			1	6	SYST	
102		BAY13B		13.800	B2	79.5	16.2	50.0	-25.0	1.0000	81.1	0.9799	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	1.0198	17.2	0.8575	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	1.0198	17.2	0.8575	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	1.0198	17.2	0.8575	20.7			1	6		
107		PANAM13B		13.800	M4	15.0	9.0	9.0	0.0	1.0198	17.2	0.8575	20.7			1	6		
107		PANAM13B		13.800	M5	15.0	9.0	9.0	0.0	1.0198	17.2	0.8575	20.7			1	6		
107		PANAM13B		13.800	M6	15.0	9.0	9.0	0.0	1.0198	17.2	0.8575	20.7			1	6		
108		BAY13C		13.800	B3	79.5	16.2	50.0	-25.0	1.0000	81.1	0.9799	100.0			1	6		
116		PACORA13		13.800	P1	14.6	1.8	8.8	0.0	1.0300	14.3	0.9928	21.7			1	6		
116		PACORA13		13.800	P2	14.6	1.8	8.8	0.0	1.0300	14.3	0.9928	21.7			1	6		
116		PACORA13		13.800	P3	14.6	1.8	8.8	0.0	1.0300	14.3	0.9928	21.7			1	6		
142		CANJ13A		13.800	C1	43.5	10.6	29.0	-29.0	1.0000	44.8	0.9718	69.0			1	6		
143		CANJ13B		13.800	C2	43.5	10.6	29.0	-29.0	1.0000	44.8	0.9718	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-1.2	10.0	-10.0	1.0000	16.0	0.9973	26.7			1	6		
193		GEBONYIC		13.800	G1	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9868	35.3			1	6		
193		GEBONYIC		13.800	G2	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9868	35.3			1	6		
193		GEBONYIC		13.800	G3	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9868	35.3			1	6		
204		BJOMIN13		13.800	1	18.5	-7.1	13.0	-13.0	1.0000	19.8	0.9342	28.9			1	6		
204		BJOMIN13		13.800	2	18.5	-7.1	13.0	-13.0	1.0000	19.8	0.9342	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9638	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9620	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	5.0	0.0	1.0035	9.0	1.0000	13.5			1	6		
305		ELALTO13.8		13.800	1	12.2	0.1	12.0	-5.0	1.0200	12.0	1.0000	20.6			1	6		
305		ELALTO13.8		13.800	2	12.5	0.1	12.0	-5.0	1.0200	12.3	1.0000	20.6			1	6		
305		ELALTO13.8		13.800	3	12.5	0.1	12.0	-5.0	1.0200	12.3	1.0000	20.6			1	6		
307		CHANG75A		13.800	G1	79.0	-6.0	22.0	-22.0	1.0200	77.7	0.9971	118.6			1	6		
308		CHANG75B		13.800	G2	79.0	-6.0	50.0	-22.0	1.0200	77.7	0.9971	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.7	4.0	-4.0	1.0000	8.7	0.9810	35.3			1	6		
340		PEDGALITO13813		13.800	P1	20.0	-5.0	12.0	-5.0	1.0406	19.8	0.9701	27.0			1	6		
SUBSYSTEM TOTALS						1283.4	206.4	801.5	-426.0				1936.0						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 11:42  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:



BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0480	8.2	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0480	8.2	1.0000	13.5				2	7
130		MIR13F		13.800	G5	10.2	4.2	8.0	0.0	1.0000	11.0	0.9256	27.7				2	7
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9949	13.0				2	7
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9950	13.0				2	7
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9950	13.0				2	7
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1				2	7
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1				2	7
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1				2	7
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	5.6				2	7
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2				2	7
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2				2	7
SUBSYSTEM TOTALS						73.9	5.3	51.0	-33.0				124.2					



PLAN DE EXPANSION DEL SIN CON CENTROGRFICA JUNIO DEL 2007  
 6 0 2013 ESCENARIO MODERNO KRYLINA INVERNO MH10BC7  
 MED. MAY 16 2007 16:31

KRY:114 - 535 - 5115

BUS - VOLTAJE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Panamá I-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 11:52  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0002	230.05	3		PANII230		230.00	6	1.0186	234.29
5		CHO230		230.00	6	1.0029	230.66	8		LSA230		230.00	6	1.0077	231.77

11	M.N230	230.00	6	1.0284	236.54	14	PRO230	230.00	6	1.0266	236.12
96	FOR230	230.00	6	1.0294	236.76	100	BAY230	230.00	6	1.0431	239.92
103	COPESA23	230.00	6	1.0226	235.19	105	PAN-AM23	230.00	6	1.0030	230.69
115	PACORA23	230.00	6	1.0266	236.12	144	CANJ230	230.00	6	1.0271	236.23
147	GUASQ230	230.00	6	1.0270	236.21	148	VELAD230	230.00	6	1.0204	234.69
190	CHANG230	230.00	6	1.0294	236.77	306	CHANG75	230.00	6	1.0308	237.08
309	CAISAN230	230.00	6	1.0244	235.62	310	CONCEPCION23	230.00	6	1.0269	236.18
511	LGUIAS230	230.00	6	1.0036	230.83	515	PANPOWER230	230.00	6	1.0189	234.34
6000	FRONTER	230.00	6	1.0269	236.18						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 11:52  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0161	116.85	4	PANII115	115.00	6	1.0146	116.68				
6	CHO115	115.00	6	1.0389	119.47	9	LSA115	115.00	6	1.0157	116.80				
12	M.N115	115.00	6	1.0301	118.46	15	PRO115	115.00	6	1.0243	117.79				
18	CAC115	115.00	6	1.0153	116.76	19	C.V115	115.00	6	1.0052	115.59				
20	CH.AZUL	115.00	6	1.0209	117.40	21	C.BAN115	115.00	6	1.0043	115.49				
23	CH115	115.00	6	1.0141	116.62	26	LOC115	115.00	6	1.0056	115.65				
30	MAR115	115.00	6	1.0040	115.46	33	STM115	115.00	6	1.0143	116.64				
37	SAN115	115.00	6	1.0029	115.33	48	TINAJ115	115.00	6	1.0119	116.37				
50	M.O115	115.00	6	1.0122	116.40	52	TOC115	115.00	6	1.0115	116.32				
54	LM1115	115.00	6	1.0264	118.04	55	LM2115	115.00	6	1.0270	118.10				
61	FFIELD	115.00	9	1.0191	117.19	87	CAL115	115.00	6	1.0455	120.23				
88	EST115	115.00	6	1.0493	120.66	92	L.V115	115.00	6	1.0469	120.40				
109	STA RITA115	115.00	6	1.0254	117.92	110	PTMD115A	115.00	6	1.0215	117.47				
111	PTMD115B	115.00	6	1.0215	117.47	123	MIR115	115.00	7	1.0141	116.62				
154	CEMPAN15	115.00	6	1.0234	117.69	191	CHANG115	115.00	6	1.0159	116.83				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

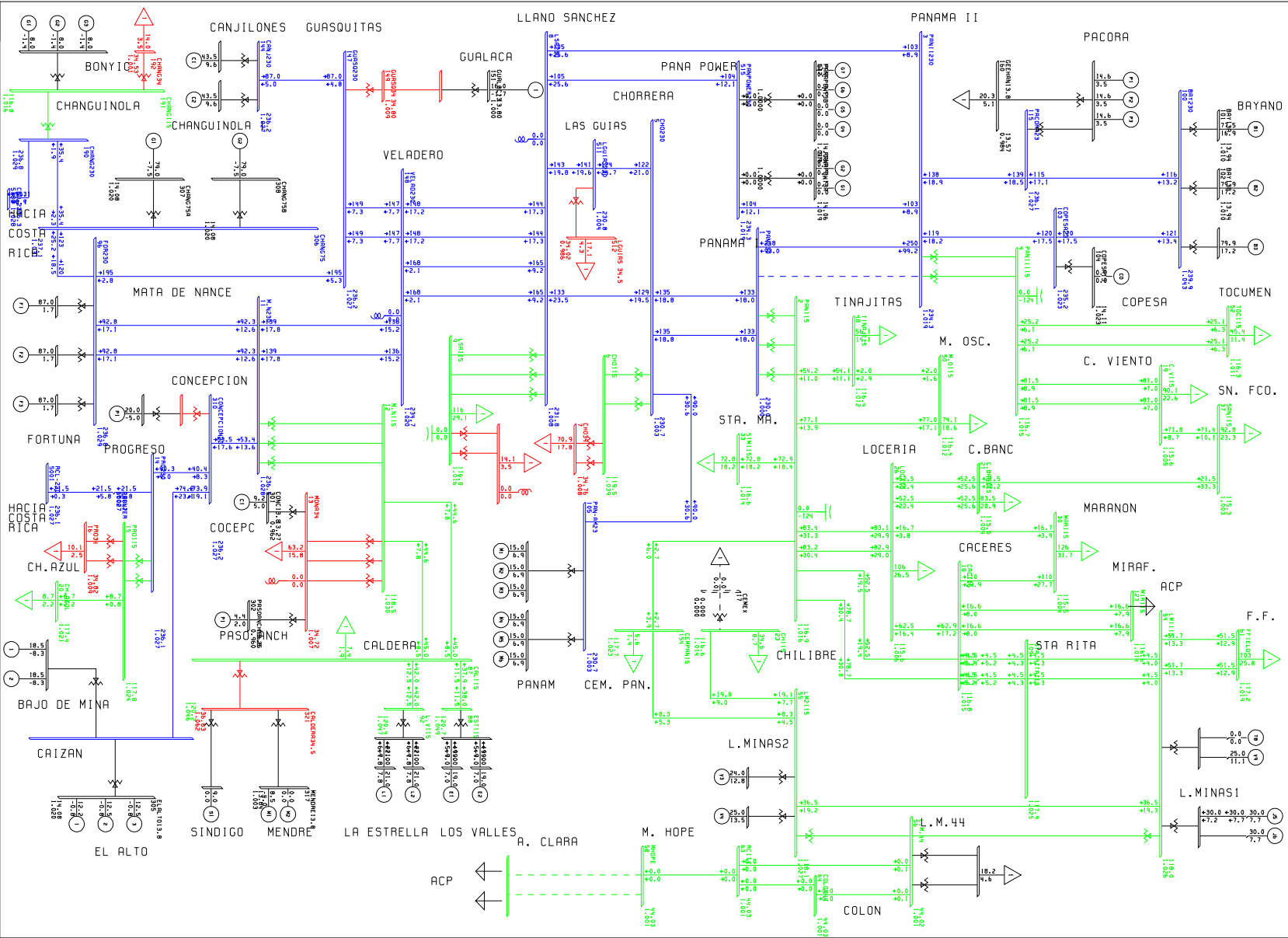
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 11:53  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	24.0	12.8	17.0	0.0	1.0050	27.1	0.8822	47.0			1	6		
67		BLM13C		13.800	V3	24.0	12.8	17.0	0.0	1.0050	27.1	0.8822	47.0			1	6		
68		BLM13D		13.800	V4	25.0	13.5	17.0	0.0	1.0050	28.3	0.8805	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	7.7	20.0	0.0	1.0000	31.0	0.9685	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	7.7	20.0	0.0	1.0000	31.0	0.9685	39.4			1	6		
73		BLMCCB		13.800	V9	25.0	11.1	40.0	0.0	1.0000	27.4	0.9134	71.0			1	6		
90		EST-13L		13.800	E1	19.0	7.0	12.0	-5.0	1.0200	19.9	0.9379	27.0			1	6		
91		EST-13T		13.800	E2	19.0	7.0	12.0	-5.0	1.0200	19.9	0.9379	27.0			1	6		
94		LV-13.8L		13.800	L1	21.0	7.8	12.0	-5.0	1.0200	22.0	0.9368	27.0			1	6		
95		LV-13.8T		13.800	L2	21.0	7.8	12.0	-5.0	1.0200	22.0	0.9368	27.0			1	6		
97		FOR13A		13.800	F1	87.0	1.7	50.0	-50.0	1.0270	84.7	0.9998	111.0			1	6		
98		FOR13B		13.800	F2	87.0	1.7	50.0	-50.0	1.0270	84.7	0.9998	111.0			1	6		
99		FOR13C		13.800	F3	87.0	1.7	50.0	-50.0	1.0270	84.7	0.9998	111.0			1	6		
101		BAY13A		13.800	B1	77.5	16.9	50.0	-25.0	1.0100	78.5	0.9770	96.0			1	6	SYST	
102		BAY13B		13.800	B2	79.9	17.2	50.0	-25.0	1.0100	80.9	0.9777	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	6.9	9.0	0.0	1.0200	16.2	0.9084	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	6.9	9.0	0.0	1.0200	16.2	0.9084	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	6.9	9.0	0.0	1.0200	16.2	0.9084	20.7			1	6		
107		PANAM13B		13.800	M4	15.0	6.9	9.0	0.0	1.0200	16.2	0.9084	20.7			1	6		
107		PANAM13B		13.800	M5	15.0	6.9	9.0	0.0	1.0200	16.2	0.9084	20.7			1	6		
107		PANAM13B		13.800	M6	15.0	6.9	9.0	0.0	1.0200	16.2	0.9084	20.7			1	6		
108		BAY13C		13.800	B3	79.9	17.2	50.0	-25.0	1.0100	80.9	0.9777	100.0			1	6		
116		PACORA13		13.800	P1	14.6	3.5	8.8	0.0	1.0300	14.6	0.9718	21.7			1	6		
116		PACORA13		13.800	P2	14.6	3.5	8.8	0.0	1.0300	14.6	0.9718	21.7			1	6		
116		PACORA13		13.800	P3	14.6	3.5	8.8	0.0	1.0300	14.6	0.9718	21.7			1	6		
142		CANJ13A		13.800	C1	43.5	9.6	29.0	-29.0	1.0000	44.5	0.9765	69.0			1	6		
143		CANJ13B		13.800	C2	43.5	9.6	29.0	-29.0	1.0000	44.5	0.9765	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-1.7	10.0	-10.0	1.0000	16.1	0.9943	26.7			1	6		
193		GEBONYIC		13.800	G1	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9848	35.3			1	6		
193		GEBONYIC		13.800	G2	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9848	35.3			1	6		
193		GEBONYIC		13.800	G3	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9848	35.3			1	6		
204		BJOMIN13		13.800	1	18.5	-8.3	13.0	-13.0	1.0000	20.3	0.9126	28.9			1	6		
204		BJOMIN13		13.800	2	18.5	-8.3	13.0	-13.0	1.0000	20.3	0.9126	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9617	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9598	5.1	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	5.0	0.0	1.0110	8.9	1.0000	13.5			1	6		
305		ELALTO13.8		13.800	1	12.2	-0.8	12.0	-5.0	1.0200	12.0	0.9981	20.6			1	6		
305		ELALTO13.8		13.800	2	12.5	-0.8	12.0	-5.0	1.0200	12.3	0.9981	20.6			1	6		
305		ELALTO13.8		13.800	3	12.5	-0.8	12.0	-5.0	1.0200	12.3	0.9981	20.6			1	6		
307		CHANG75A		13.800	G1	79.0	-7.5	22.0	-22.0	1.0200	77.8	0.9955	118.6			1	6		
308		CHANG75B		13.800	G2	79.0	-7.5	50.0	-22.0	1.0200	77.8	0.9955	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0026	9.4	0.9048	35.3			1	6		
340		PEDGALITO13813		13.800	P1	20.0	-5.0	12.0	-5.0	1.0460	19.7	0.9701	27.0			1	6		
SUBSYSTEM TOTALS						1280.5	181.1	801.5	-426.0				1936.0						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 11:53  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0501	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0501	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	3.3	8.0	0.0	1.0000	10.2	0.9479	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9960	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9961	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9961	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9838	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9838	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9838	6.2			2	7	
SUBSYSTEM TOTALS						73.3	3.8	51.0	-33.0				124.2					



PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 A 0 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7  
 KV: 414 .435 .41115  
 BUS - VOLTAJE (KV)/FUI  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Pana Power-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 13:37  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0072	231.66	8		LSA230		230.00	6	1.0032	230.74
11		M.N230		230.00	6	1.0270	236.22	14		PRO230		230.00	6	1.0255	235.87
96		FOR230		230.00	6	1.0283	236.50	100		BAY230		230.00	6	1.0365	238.40



103	COPESA23	230.00	6	1.0119	232.73	115	PACORA23	230.00	6	1.0171	233.94
144	CANJ230	230.00	6	1.0256	235.88	147	GUASQ230	230.00	6	1.0255	235.85
148	VELAD230	230.00	6	1.0177	234.06	190	CHANG230	230.00	6	1.0291	236.70
306	CHANG75	230.00	6	1.0304	237.00	309	CAISAN230	230.00	6	1.0237	235.44
310	CONCEPCION230	230.00	6	1.0258	235.93	515	PANPOWER230	230.00	6	1.0255	235.86
6000	FRONTER	230.00	6	1.0258	235.93						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9974	229.40	5	CHO230	230.00	6	0.9979	229.53
105	PAN-AM23	230.00	6	0.9981	229.57	511	LGUIAS230	230.00	6	0.9969	229.29

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 13:38  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0141	116.62	4	PANII115	115.00	6	1.0139	116.60
6	CHO115	115.00	6	1.0337	118.87	9	LSA115	115.00	6	1.0110	116.26
12	M.N115	115.00	6	1.0291	118.34	15	PRO115	115.00	6	1.0231	117.66
18	CAC115	115.00	6	1.0133	116.53	19	C.V115	115.00	6	1.0042	115.49
20	CH.AZUL	115.00	6	1.0197	117.27	21	C.BAN115	115.00	6	1.0024	115.28
23	CH115	115.00	6	1.0124	116.43	26	LOC115	115.00	6	1.0037	115.42
30	MAR115	115.00	6	1.0020	115.23	33	STM115	115.00	6	1.0122	116.40
37	SAN115	115.00	6	1.0011	115.13	48	TINAJ115	115.00	6	1.0098	116.13
50	M.O115	115.00	6	1.0101	116.17	52	TOC115	115.00	6	1.0108	116.24
54	LM1115	115.00	6	1.0254	117.92	55	LM2115	115.00	6	1.0260	117.99
61	FFIELD	115.00	9	1.0180	117.07	87	CAL115	115.00	6	1.0448	120.15
88	EST115	115.00	6	1.0486	120.59	92	L.V115	115.00	6	1.0463	120.32
109	STA RITA115	115.00	6	1.0242	117.78	110	PTMD115A	115.00	6	1.0200	117.30
111	PTMD115B	115.00	6	1.0200	117.30	123	MIR115	115.00	7	1.0122	116.40
154	CEMPAN15	115.00	6	1.0220	117.53	191	CHANG115	115.00	6	1.0157	116.81

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
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\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 13:37  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	24.0	13.3	17.0	0.0	1.0050	27.3	0.8754	47.0			1	6	
67	BLM13C	13.800	V3	24.0	13.3	17.0	0.0	1.0050	27.3	0.8754	47.0			1	6	
68	BLM13D	13.800	V4	25.0	13.9	17.0	0.0	1.0050	28.5	0.8736	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	8.0	20.0	0.0	1.0000	31.0	0.9664	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	8.0	20.0	0.0	1.0000	31.0	0.9664	39.4			1	6	
73	BLMCCB	13.800	V9	25.0	11.6	40.0	0.0	1.0000	27.6	0.9071	71.0			1	6	
90	EST-13L	13.800	E1	19.0	7.2	12.0	-5.0	1.0200	19.9	0.9349	27.0			1	6	
91	EST-13T	13.800	E2	19.0	7.2	12.0	-5.0	1.0200	19.9	0.9349	27.0			1	6	
94	LV-13.8L	13.800	L1	21.0	8.0	12.0	-5.0	1.0200	22.0	0.9338	27.0			1	6	
95	LV-13.8T	13.800	L2	21.0	8.0	12.0	-5.0	1.0200	22.0	0.9338	27.0			1	6	
97	FOR13A	13.800	F1	87.0	2.8	50.0	-50.0	1.0270	84.8	0.9995	111.0			1	6	
98	FOR13B	13.800	F2	87.0	2.8	50.0	-50.0	1.0270	84.8	0.9995	111.0			1	6	
99	FOR13C	13.800	F3	87.0	2.8	50.0	-50.0	1.0270	84.8	0.9995	111.0			1	6	
101	BAY13A	13.800	B1	81.6	22.3	50.0	-25.0	1.0100	83.8	0.9645	96.0			1	6	SYST
102	BAY13B	13.800	B2	80.8	22.3	50.0	-25.0	1.0100	83.0	0.9641	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	7.6	9.0	0.0	1.0200	16.5	0.8917	20.7			1	6	
106	PANAM13A	13.800	M2	15.0	7.6	9.0	0.0	1.0200	16.5	0.8917	20.7			1	6	
106	PANAM13A	13.800	M3	15.0	7.6	9.0	0.0	1.0200	16.5	0.8917	20.7			1	6	
107	PANAM13B	13.800	M4	15.0	7.6	9.0	0.0	1.0200	16.5	0.8917	20.7			1	6	
107	PANAM13B	13.800	M5	15.0	7.6	9.0	0.0	1.0200	16.5	0.8917	20.7			1	6	
107	PANAM13B	13.800	M6	15.0	7.6	9.0	0.0	1.0200	16.5	0.8917	20.7			1	6	
108	BAY13C	13.800	B3	79.9	22.2	50.0	-25.0	1.0100	82.1	0.9636	100.0			1	6	
116	PACORA13	13.800	P1	14.6	5.3	8.8	0.0	1.0300	15.1	0.9400	21.7			1	6	
116	PACORA13	13.800	P2	14.6	5.3	8.8	0.0	1.0300	15.1	0.9400	21.7			1	6	
116	PACORA13	13.800	P3	14.6	5.3	8.8	0.0	1.0300	15.1	0.9400	21.7			1	6	
142	CANJ13A	13.800	C1	43.5	9.8	29.0	-29.0	1.0000	44.6	0.9754	69.0			1	6	
143	CANJ13B	13.800	C2	43.5	9.8	29.0	-29.0	1.0000	44.6	0.9754	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-1.6	10.0	-10.0	1.0000	16.1	0.9952	26.7			1	6	
193	GEBONYIC	13.800	G1	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9852	35.3			1	6	
193	GEBONYIC	13.800	G2	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9852	35.3			1	6	
193	GEBONYIC	13.800	G3	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9852	35.3			1	6	
204	BJOMIN13	13.800	1	18.5	-8.0	13.0	-13.0	1.0000	20.2	0.9176	28.9			1	6	
204	BJOMIN13	13.800	2	18.5	-8.0	13.0	-13.0	1.0000	20.2	0.9176	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9607	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9588	5.1	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	9.0	0.0	5.0	0.0	1.0103	8.9	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	12.2	-0.6	12.0	-5.0	1.0200	12.0	0.9989	20.6			1	6	
305	ELALTO13.8	13.800	2	12.5	-0.6	12.0	-5.0	1.0200	12.3	0.9989	20.6			1	6	
305	ELALTO13.8	13.800	3	12.5	-0.6	12.0	-5.0	1.0200	12.3	0.9989	20.6			1	6	
307	CHANG75A	13.800	G1	79.0	-7.2	22.0	-22.0	1.0200	77.8	0.9959	118.6			1	6	
308	CHANG75B	13.800	G2	79.0	-7.2	22.0	-22.0	1.0200	77.8	0.9959	118.6			1	6	
317	MENDRE13.8	13.800	M1	8.5	-4.0	4.0	-4.0	1.0019	9.4	0.9048	35.3			1	6	
340	PEDGALITO13813	13.800	P1	20.0	-5.0	12.0	-5.0	1.0448	19.7	0.9701	27.0			1	6	
SUBSYSTEM TOTALS				1285.5	215.0	801.5	-426.0				1936.0					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 13:37  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0490	8.2	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0491	8.2	1.0000	13.5				2	7
130		MIR13F		13.800	G5	9.7	3.7	8.0	0.0	1.0000	10.4	0.9343	27.7				2	7
134		MAD6A		6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0				2	7
135		MAD6B		6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9956	13.0				2	7
136		MAD6C		6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9956	13.0				2	7
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1				2	7
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1				2	7
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1				2	7
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9845	5.6				2	7
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9845	6.2				2	7
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9845	6.2				2	7
SUBSYSTEM TOTALS						73.3	4.5	51.0	-33.0				124.2					



**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Guasquitas-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 13:45  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0051	231.18	3		PANII230		230.00	6	1.0147	233.37
5		CHO230		230.00	6	1.0053	231.21	8		LSA230		230.00	6	1.0011	230.26
11		M.N230		230.00	6	1.0223	235.13	14		PRO230		230.00	6	1.0214	234.93

96 FOR230	230.00	6	1.0257	235.91	100 BAY230	230.00	6	1.0408	239.39
103 COPESA23	230.00	6	1.0188	234.33	105 PAN-AM23	230.00	6	1.0054	231.24
115 PACORA23	230.00	6	1.0233	235.36	144 CANJ230	230.00	6	1.0226	235.21
147 GUASQ230	230.00	6	1.0225	235.18	148 VELAD230	230.00	6	1.0100	232.30
190 CHANG230	230.00	6	1.0283	236.50	306 CHANG75	230.00	6	1.0296	236.81
309 CAISAN230	230.00	6	1.0210	234.83	310 CONCEPCION23	230.00	6	1.0219	235.03
511 LGUIAS230	230.00	6	1.0009	230.22	515 PANPOWER230	230.00	6	1.0142	233.28
6000 FRONTER	230.00	6	1.0216	234.98					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
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\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 13:45  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0102	116.17	4		PANII115		115.00	6	1.0098	116.13
6		CHO115		115.00	6	1.0415	119.77	9		LSA115		115.00	6	1.0088	116.01
12		M.N115		115.00	6	1.0255	117.94	15		PRO115		115.00	6	1.0190	117.19
18		CAC115		115.00	6	1.0094	116.08	19		C.V115		115.00	6	1.0001	115.01
20		CH.AZUL		115.00	6	1.0156	116.80	23		CH115		115.00	6	1.0093	116.07
33		STM115		115.00	6	1.0083	115.96	48		TINAJ115		115.00	6	1.0059	115.68
50		M.O115		115.00	6	1.0062	115.72	52		TOC115		115.00	6	1.0067	115.77
54		LM1115		115.00	6	1.0235	117.70	55		LM2115		115.00	6	1.0240	117.76
61		FFIELD		115.00	9	1.0161	116.85	87		CAL115		115.00	6	1.0425	119.88
88		EST115		115.00	6	1.0465	120.35	92		L.V115		115.00	6	1.0440	120.06
109		STA RITA115		115.00	6	1.0220	117.53	110		PTMD115A		115.00	6	1.0170	116.96
111		PTMD115B		115.00	6	1.0170	116.96	123		MIR115		115.00	7	1.0085	115.98
154		CEMPAN15		115.00	6	1.0195	117.24	191		CHANG115		115.00	6	1.0151	116.74

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9984	114.82	26		LOC115		115.00	6	0.9997	114.97
30		MAR115		115.00	6	0.9981	114.78	37		SAN115		115.00	6	0.9971	114.67

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 13:45  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	24.0	14.1	17.0	0.0	1.0050	27.7	0.8623	47.0			1	6		
67		BLM13C		13.800	V3	24.0	14.1	17.0	0.0	1.0050	27.7	0.8623	47.0			1	6		
68		BLM13D		13.800	V4	25.0	14.8	17.0	0.0	1.0050	28.9	0.8603	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	8.5	20.0	0.0	1.0000	31.2	0.9623	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	8.5	20.0	0.0	1.0000	31.2	0.9623	39.4			1	6		
73		BLMCCB		13.800	V9	25.0	12.5	40.0	0.0	1.0000	27.9	0.8948	71.0			1	6		
90		EST-13L		13.800	E1	19.0	7.8	12.0	-5.0	1.0200	20.1	0.9245	27.0			1	6		
91		EST-13T		13.800	E2	19.0	7.8	12.0	-5.0	1.0200	20.1	0.9245	27.0			1	6		
94		LV-13.8L		13.800	L1	21.0	8.7	12.0	-5.0	1.0200	22.3	0.9237	27.0			1	6		
95		LV-13.8T		13.800	L2	21.0	8.7	12.0	-5.0	1.0200	22.3	0.9237	27.0			1	6		
97		FOR13A		13.800	F1	87.0	5.2	50.0	-50.0	1.0270	84.9	0.9982	111.0			1	6		
98		FOR13B		13.800	F2	87.0	5.2	50.0	-50.0	1.0270	84.9	0.9982	111.0			1	6		
99		FOR13C		13.800	F3	87.0	5.2	50.0	-50.0	1.0270	84.9	0.9982	111.0			1	6		
101		BAY13A		13.800	B1	80.3	18.9	50.0	-25.0	1.0100	81.7	0.9733	96.0			1	6	SYST	
102		BAY13B		13.800	B2	80.3	18.9	50.0	-25.0	1.0100	81.7	0.9733	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	6.6	9.0	0.0	1.0200	16.0	0.9163	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	6.6	9.0	0.0	1.0200	16.0	0.9163	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	6.6	9.0	0.0	1.0200	16.0	0.9163	20.7			1	6		
107		PANAM13B		13.800	M4	15.0	6.6	9.0	0.0	1.0200	16.0	0.9163	20.7			1	6		
107		PANAM13B		13.800	M5	15.0	6.6	9.0	0.0	1.0200	16.0	0.9163	20.7			1	6		
107		PANAM13B		13.800	M6	15.0	6.6	9.0	0.0	1.0200	16.0	0.9163	20.7			1	6		
108		BAY13C		13.800	B3	80.3	18.9	50.0	-25.0	1.0100	81.7	0.9733	100.0			1	6		
116		PACORA13		13.800	P1	14.6	4.2	8.8	0.0	1.0300	14.7	0.9618	21.7			1	6		
116		PACORA13		13.800	P2	14.6	4.2	8.8	0.0	1.0300	14.7	0.9618	21.7			1	6		
116		PACORA13		13.800	P3	14.6	4.2	8.8	0.0	1.0300	14.7	0.9618	21.7			1	6		
142		CANJ13A		13.800	C1	43.5	10.3	29.0	-29.0	1.0000	44.7	0.9730	69.0			1	6		
143		CANJ13B		13.800	C2	43.5	10.3	29.0	-29.0	1.0000	44.7	0.9730	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-1.3	10.0	-10.0	1.0000	16.1	0.9966	26.7			1	6		
193		GEBONYIC		13.800	G1	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9866	35.3			1	6		
193		GEBONYIC		13.800	G2	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9866	35.3			1	6		
193		GEBONYIC		13.800	G3	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9866	35.3			1	6		
204		BJOMIN13		13.800	1	18.5	-7.1	13.0	-13.0	1.0000	19.8	0.9344	28.9			1	6		
204		BJOMIN13		13.800	2	18.5	-7.1	13.0	-13.0	1.0000	19.8	0.9344	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9688	10.8	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9670	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	5.0	0.0	1.0082	8.9	1.0000	13.5			1	6		
305		ELALTO13.8		13.800	1	12.2	0.1	12.0	-5.0	1.0200	12.0	1.0000	20.6			1	6		
305		ELALTO13.8		13.800	2	12.5	0.1	12.0	-5.0	1.0200	12.3	1.0000	20.6			1	6		
305		ELALTO13.8		13.800	3	12.5	0.1	12.0	-5.0	1.0200	12.3	1.0000	20.6			1	6		
307		CHANG75A		13.800	G1	79.0	-6.4	22.0	-22.0	1.0200	77.7	0.9968	118.6			1	6		
308		CHANG75B		13.800	G2	79.0	-6.4	50.0	-22.0	1.0200	77.7	0.9968	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-3.9	4.0	-4.0	1.0000	9.4	0.9090	35.3			1	6		
340		PEDGALITO13813		13.800	P1	20.0	-5.0	12.0	-5.0	1.0406	19.8	0.9701	27.0			1	6		
SUBSYSTEM TOTALS						1284.2	216.4	801.5	-426.0				1936.0						

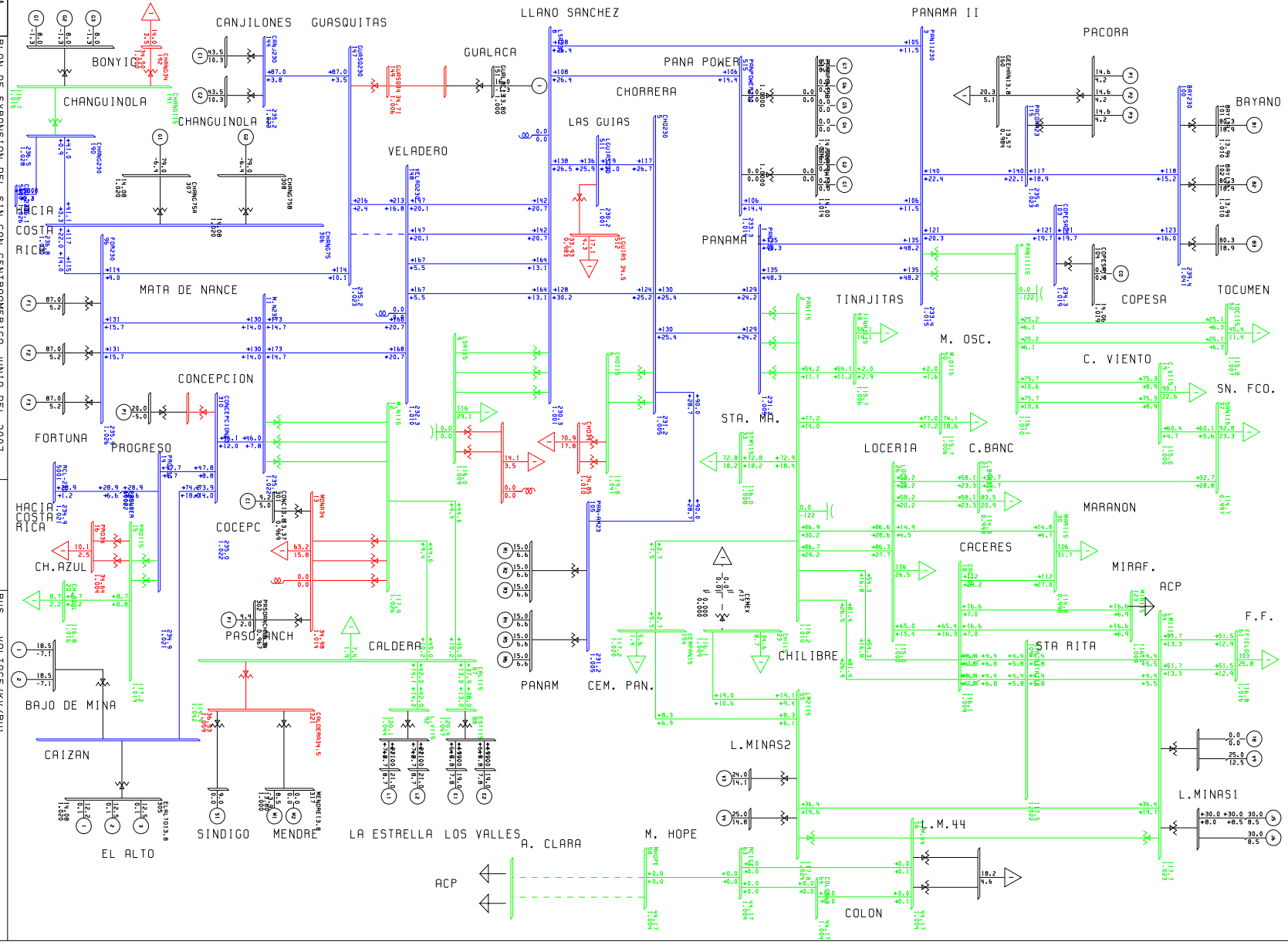
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 13:45  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0471	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0471	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	4.5	8.0	0.0	1.0000	10.7	0.9057	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9944	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9945	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9945	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9858	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9858	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9858	6.2			2	7	
SUBSYSTEM TOTALS						73.3	5.8	51.0	-33.0				124.2					



PLAN DE EXPANSION DEL SIN CON CENTROAERIO JUNIO DEL 2007  
 P. 0 2013 ESCENARIO MODERNO DEMANDA MAXIMA INVIERNO HHT08C7  
 MAY 16 2007 15:31  
 BUS - VOLTAJE (KV/FU)  
 BRNCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



**PLAN DE EXPANSIÓN DEL SIN**  
**AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**  
**Contingencia Mata de Nance-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 13:54  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0192	234.42	14	PRO	230		230.00	6	1.0182	234.19
96	FOR	230		230.00	6	1.0203	234.68	100	BAY	230		230.00	6	1.0262	236.03
115	PACORA	23		230.00	6	1.0025	230.57	144	CANJ	230		230.00	6	1.0143	233.29



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 13:53  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66	BLM13B	13.800	V2	24.0	13.1	17.0	0.0	1.0050	27.2	0.8782	47.0			1	6		
67	BLM13C	13.800	V3	24.0	13.1	17.0	0.0	1.0050	27.2	0.8782	47.0			1	6		
68	BLM13D	13.800	V4	25.0	13.7	17.0	0.0	1.0050	28.4	0.8764	47.0			1	6		
70	TGJB13A	13.800	J5	30.0	7.9	20.0	0.0	1.0000	31.0	0.9673	39.4			1	6		
71	TGJB13B	13.800	J6	30.0	7.9	20.0	0.0	1.0000	31.0	0.9673	39.4			1	6		
73	BLMCCB	13.800	V9	25.0	11.4	40.0	0.0	1.0000	27.5	0.9097	71.0			1	6		
90	EST-13L	13.800	E1	19.0	8.2	12.0	-5.0	1.0200	20.3	0.9180	27.0			1	6		
91	EST-13T	13.800	E2	19.0	8.2	12.0	-5.0	1.0200	20.3	0.9180	27.0			1	6		
94	LV-13.8L	13.800	L1	21.0	9.1	12.0	-5.0	1.0200	22.4	0.9174	27.0			1	6		
95	LV-13.8T	13.800	L2	21.0	9.1	12.0	-5.0	1.0200	22.4	0.9174	27.0			1	6		
97	FOR13A	13.800	F1	87.0	10.2	50.0	-50.0	1.0270	85.3	0.9932	111.0			1	6		
98	FOR13B	13.800	F2	87.0	10.2	50.0	-50.0	1.0270	85.3	0.9932	111.0			1	6		
99	FOR13C	13.800	F3	87.0	10.2	50.0	-50.0	1.0270	85.3	0.9932	111.0			1	6		
101	BAY13A	13.800	B1	78.3	29.8	50.0	-25.0	1.0100	82.9	0.9346	96.0			1	6	SYST	
102	BAY13B	13.800	B2	80.9	30.1	50.0	-25.0	1.0100	85.5	0.9374	96.0			1	6		
106	PANAM13A	13.800	M1	15.0	9.0	9.0	0.0	1.0143	17.2	0.8575	20.7			1	6		
106	PANAM13A	13.800	M2	15.0	9.0	9.0	0.0	1.0143	17.2	0.8575	20.7			1	6		
106	PANAM13A	13.800	M3	15.0	9.0	9.0	0.0	1.0143	17.2	0.8575	20.7			1	6		
107	PANAM13B	13.800	M4	15.0	9.0	9.0	0.0	1.0143	17.2	0.8575	20.7			1	6		
107	PANAM13B	13.800	M5	15.0	9.0	9.0	0.0	1.0143	17.2	0.8575	20.7			1	6		
107	PANAM13B	13.800	M6	15.0	9.0	9.0	0.0	1.0143	17.2	0.8575	20.7			1	6		
108	BAY13C	13.800	B3	80.9	30.1	50.0	-25.0	1.0100	85.5	0.9374	100.0			1	6		
116	PACORA13	13.800	P1	14.6	8.0	8.8	0.0	1.0300	16.2	0.8765	21.7			1	6		
116	PACORA13	13.800	P2	14.6	8.0	8.8	0.0	1.0300	16.2	0.8765	21.7			1	6		
116	PACORA13	13.800	P3	14.6	8.0	8.8	0.0	1.0300	16.2	0.8765	21.7			1	6		
142	CANJ13A	13.800	C1	43.5	11.7	29.0	-29.0	1.0000	45.0	0.9659	69.0			1	6		
143	CANJ13B	13.800	C2	43.5	11.7	29.0	-29.0	1.0000	45.0	0.9659	69.0			1	6		
151	GUALAC13	13.800	1	16.0	-0.6	10.0	-10.0	1.0000	16.0	0.9994	26.7			1	6		
193	GEBONYIC	13.800	G1	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9885	35.3			1	6		
193	GEBONYIC	13.800	G2	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9885	35.3			1	6		
193	GEBONYIC	13.800	G3	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9885	35.3			1	6		
204	BJOMIN13	13.800	1	18.5	-6.4	13.0	-13.0	1.0000	19.6	0.9455	28.9			1	6		
204	BJOMIN13	13.800	2	18.5	-6.4	13.0	-13.0	1.0000	19.6	0.9455	28.9			1	6		
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9666	10.8	0.8784	13.5			1	6		
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9648	5.0	0.9110	6.2			1	6		
303	SIND13.8	13.800	S1	9.0	0.0	5.0	0.0	1.0076	8.9	1.0000	13.5			1	6		
305	ELALTO13.8	13.800	1	12.2	0.5	12.0	-5.0	1.0200	12.0	0.9991	20.6			1	6		
305	ELALTO13.8	13.800	2	12.5	0.5	12.0	-5.0	1.0200	12.3	0.9991	20.6			1	6		
305	ELALTO13.8	13.800	3	12.5	0.5	12.0	-5.0	1.0200	12.3	0.9991	20.6			1	6		
307	CHANG75A	13.800	G1	79.0	-4.8	22.0	-22.0	1.0200	77.6	0.9982	118.6			1	6		
308	CHANG75B	13.800	G2	79.0	-4.8	50.0	-22.0	1.0200	77.6	0.9982	118.6			1	6		
317	MENDRE13.8	13.800	M1	8.5	-3.6	4.0	-4.0	1.0000	9.2	0.9217	35.3			1	6		
340	PEDGALITO13813	13.800	P1	20.0	-5.0	12.0	-5.0	1.0376	19.9	0.9701	27.0			1	6		
SUBSYSTEM TOTALS				1283.3	297.0	801.5	-426.0				1936.0						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 13:53  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0495	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0495	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	3.5	8.0	0.0	1.0000	10.3	0.9400	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9957	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9958	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9958	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9842	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9842	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9842	6.2			2	7	
SUBSYSTEM TOTALS						73.3	4.2	51.0	-33.0				124.2					



**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Santa Rita-Cáceres**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:02  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0208	234.77	14	PRO	230		230.00	6	1.0205	234.72
96	FOR	230		230.00	6	1.0231	235.31	100	BAY	230		230.00	6	1.0199	234.58
144	CANJ	230		230.00	6	1.0187	234.31	147	GUASQ	230		230.00	6	1.0186	234.27

148	VELAD230	230.00	6	1.0055	231.27	190	CHANG230	230.00	6	1.0277	236.38
306	CHANG75	230.00	6	1.0289	236.64	309	CAISAN230	230.00	6	1.0203	234.66
310	CONCEPCION23	230.00	6	1.0208	234.78	6000	FRONTER	230.00	6	1.0208	234.79

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9673	222.47	3	PANII230	230.00	6	0.9790	225.17
5	CHO230	230.00	6	0.9731	223.81	8	LSA230	230.00	6	0.9831	226.12
103	COPESA23	230.00	6	0.9854	226.64	105	PAN-AM23	230.00	6	0.9733	223.85
115	PACORA23	230.00	6	0.9935	228.49	511	LGUIAS230	230.00	6	0.9766	224.62
515	PANPOWER230	230.00	6	0.9813	225.70						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:02  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0132	116.52	4	PANII115	115.00	6	1.0102	116.17
6	CHO115	115.00	6	1.0070	115.80	12	M.N115	115.00	6	1.0244	117.81
15	PRO115	115.00	6	1.0182	117.09	18	CAC115	115.00	6	1.0123	116.42
19	C.V115	115.00	6	1.0012	115.14	20	CH.AZUL	115.00	6	1.0147	116.69
21	C.BAN115	115.00	6	1.0011	115.13	23	CH115	115.00	6	1.0123	116.42
26	LOC115	115.00	6	1.0025	115.29	30	MAR115	115.00	6	1.0009	115.11
33	STM115	115.00	6	1.0113	116.30	48	TINAJ115	115.00	6	1.0089	116.03
50	M.O115	115.00	6	1.0093	116.07	52	TOC115	115.00	6	1.0070	115.81
54	LM115	115.00	6	1.0264	118.04	55	LM2115	115.00	6	1.0269	118.10
61	FFIELD	115.00	9	1.0191	117.19	87	CAL115	115.00	6	1.0418	119.80
88	EST115	115.00	6	1.0459	120.28	92	L.V115	115.00	6	1.0433	119.98
109	STA RITA115	115.00	6	1.0257	117.95	110	PTMD115A	115.00	6	1.0204	117.35
123	MIR115	115.00	7	1.0113	116.30	154	CEMPAN15	115.00	6	1.0225	117.58
191	CHANG115	115.00	6	1.0148	116.70						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	0.9899	113.84	37	SAN115	115.00	6	0.9997	114.96



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:02  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

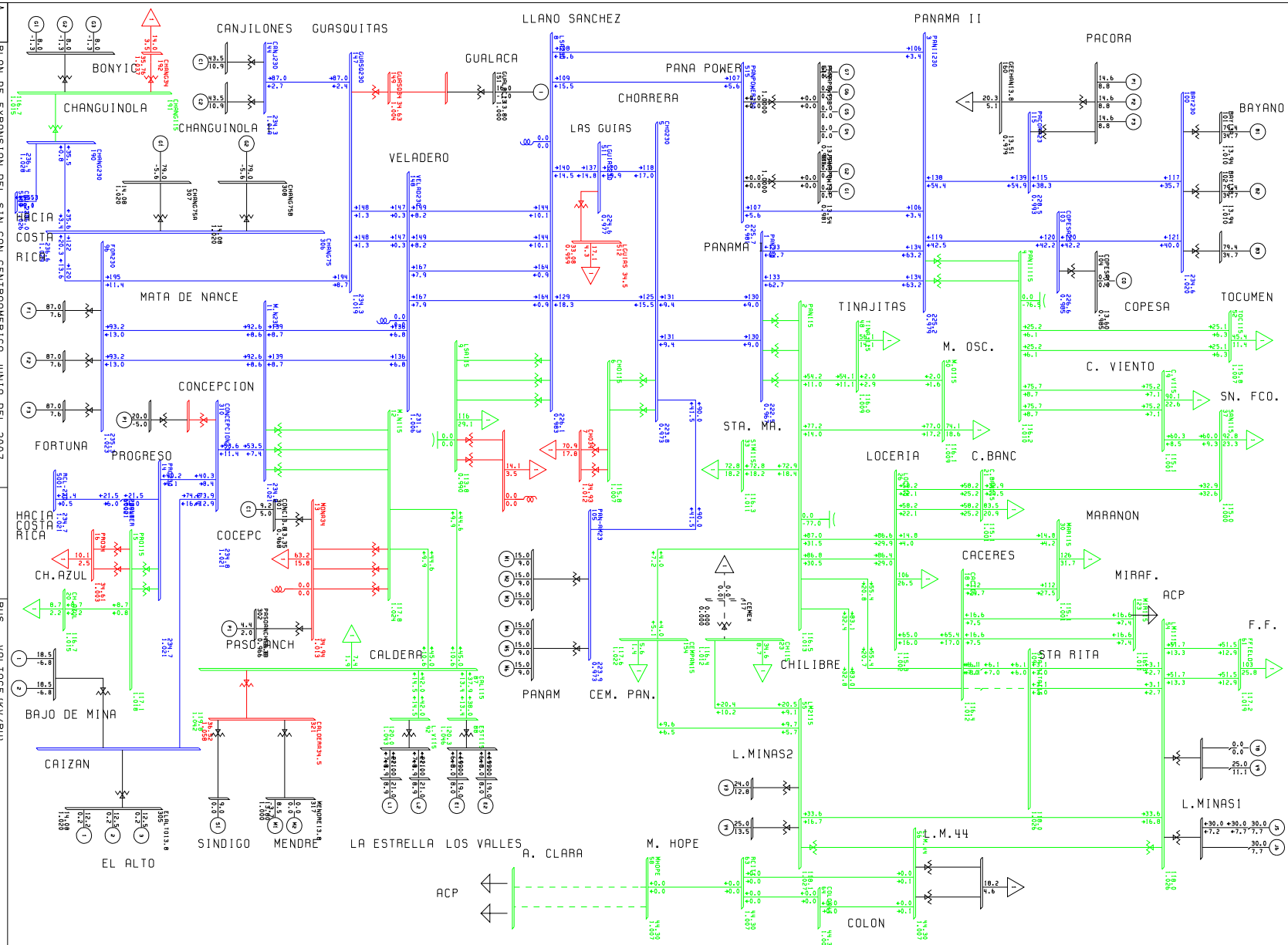
AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	24.0	12.8	17.0	0.0	1.0050	27.1	0.8818	47.0			1	6		
67		BLM13C		13.800	V3	24.0	12.8	17.0	0.0	1.0050	27.1	0.8818	47.0			1	6		
68		BLM13D		13.800	V4	25.0	13.5	17.0	0.0	1.0050	28.3	0.8801	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	7.7	20.0	0.0	1.0000	31.0	0.9685	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	7.7	20.0	0.0	1.0000	31.0	0.9685	39.4			1	6		
73		BLMCCB		13.800	V9	25.0	11.1	40.0	0.0	1.0000	27.4	0.9133	71.0			1	6		
90		EST-13L		13.800	E1	19.0	8.0	12.0	-5.0	1.0200	20.2	0.9212	27.0			1	6		
91		EST-13T		13.800	E2	19.0	8.0	12.0	-5.0	1.0200	20.2	0.9212	27.0			1	6		
94		LV-13.8L		13.800	L1	21.0	8.9	12.0	-5.0	1.0200	22.4	0.9205	27.0			1	6		
95		LV-13.8T		13.800	L2	21.0	8.9	12.0	-5.0	1.0200	22.4	0.9205	27.0			1	6		
97		FOR13A		13.800	F1	87.0	7.6	50.0	-50.0	1.0270	85.0	0.9962	111.0			1	6		
98		FOR13B		13.800	F2	87.0	7.6	50.0	-50.0	1.0270	85.0	0.9962	111.0			1	6		
99		FOR13C		13.800	F3	87.0	7.6	50.0	-50.0	1.0270	85.0	0.9962	111.0			1	6		
101		BAY13A		13.800	B1	79.4	34.7	50.0	-25.0	1.0100	85.8	0.9166	96.0			1	6	SYST	
102		BAY13B		13.800	B2	79.4	34.7	50.0	-25.0	1.0100	85.8	0.9166	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	1.0057	17.4	0.8575	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	1.0057	17.4	0.8575	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	1.0057	17.4	0.8575	20.7			1	6		
107		PANAM13B		13.800	M4	15.0	9.0	9.0	0.0	1.0057	17.4	0.8575	20.7			1	6		
107		PANAM13B		13.800	M5	15.0	9.0	9.0	0.0	1.0057	17.4	0.8575	20.7			1	6		
107		PANAM13B		13.800	M6	15.0	9.0	9.0	0.0	1.0057	17.4	0.8575	20.7			1	6		
108		BAY13C		13.800	B3	79.4	34.7	50.0	-25.0	1.0100	85.8	0.9166	100.0			1	6		
116		PACORA13		13.800	P1	14.6	8.8	8.8	0.0	1.0254	16.6	0.8557	21.7			1	6		
116		PACORA13		13.800	P2	14.6	8.8	8.8	0.0	1.0254	16.6	0.8557	21.7			1	6		
116		PACORA13		13.800	P3	14.6	8.8	8.8	0.0	1.0254	16.6	0.8557	21.7			1	6		
142		CANJ13A		13.800	C1	43.5	10.9	29.0	-29.0	1.0000	44.9	0.9698	69.0			1	6		
143		CANJ13B		13.800	C2	43.5	10.9	29.0	-29.0	1.0000	44.9	0.9698	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-1.0	10.0	-10.0	1.0000	16.0	0.9982	26.7			1	6		
193		GEBONYIC		13.800	G1	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9873	35.3			1	6		
193		GEBONYIC		13.800	G2	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9873	35.3			1	6		
193		GEBONYIC		13.800	G3	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9873	35.3			1	6		
204		BJOMIN13		13.800	1	18.5	-6.8	13.0	-13.0	1.0000	19.7	0.9388	28.9			1	6		
204		BJOMIN13		13.800	2	18.5	-6.8	13.0	-13.0	1.0000	19.7	0.9388	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9677	10.8	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9659	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	5.0	0.0	1.0079	8.9	1.0000	13.5			1	6		
305		ELALTO13.8		13.800	1	12.2	0.2	12.0	-5.0	1.0200	12.0	0.9998	20.6			1	6		
305		ELALTO13.8		13.800	2	12.5	0.2	12.0	-5.0	1.0200	12.3	0.9998	20.6			1	6		
305		ELALTO13.8		13.800	3	12.5	0.2	12.0	-5.0	1.0200	12.3	0.9998	20.6			1	6		
307		CHANG75A		13.800	G1	79.0	-5.6	22.0	-22.0	1.0200	77.6	0.9975	118.6			1	6		
308		CHANG75B		13.800	G2	79.0	-5.6	50.0	-22.0	1.0200	77.6	0.9975	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-3.7	4.0	-4.0	1.0000	9.3	0.9155	35.3			1	6		
340		PEDGALITO13813		13.800	P1	20.0	-5.0	12.0	-5.0	1.0394	19.8	0.9701	27.0			1	6		
SUBSYSTEM TOTALS						1281.4	298.2	801.5	-426.0				1936.0						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:02  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0486	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0486	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	3.9	8.0	0.0	1.0000	10.4	0.9276	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9953	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9953	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9953	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9996	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9996	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9996	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9848	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9848	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9848	6.2			2	7	
SUBSYSTEM TOTALS						73.3	4.8	51.0	-33.0				124.2					

PLAN DE EXPANSION DEL SIN CON CENTROERTEG JUNIO DEL 2007  
 R O 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7  
 MAY 16 2007 16:37  
 BUS - VOL TAGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR  
 KV:514 -335 -5115



PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
**Estudios Básicos**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:20  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0241	235.55	14	PRO230	230.00	6	1.0236	235.43				
96	FOR230	230.00	6	1.0278	236.39	100	BAY230	230.00	6	1.0127	232.93				
144	CANJ230	230.00	6	1.0243	235.59	147	GUASQ230	230.00	6	1.0242	235.57				
148	VELAD230	230.00	6	1.0125	232.88	190	CHANG230	230.00	6	1.0299	236.88				
306	CHANG75	230.00	6	1.0315	237.25	309	CAISAN230	230.00	6	1.0219	235.03				
310	CONCEPCION23	230.00	6	1.0236	235.42	6000	FRONTER	230.00	6	1.0241	235.54				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9508	218.67	3	PANII230	230.00	6	0.9638	221.67				
5	CHO230	230.00	6	0.9614	221.13	8	LSA230	230.00	6	0.9860	226.79				
103	COPESA23	230.00	6	0.9714	223.43	105	PAN-AM23	230.00	6	0.9616	221.17				
115	PACORA23	230.00	6	0.9804	225.48	511	LGUIAS230	230.00	6	0.9745	224.14				
515	PANPOWER230	230.00	6	0.9706	223.24										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:20  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0120	116.38	4	PANII115	115.00	6	1.0114	116.32				
12	M.N115	115.00	6	1.0188	117.16	15	PRO115	115.00	6	1.0208	117.40				
18	CAC115	115.00	6	1.0111	116.27	19	C.V115	115.00	6	1.0004	115.05				
20	CH.AZUL	115.00	6	1.0169	116.95	23	CH115	115.00	6	1.0084	115.96				
33	STM115	115.00	6	1.0098	116.13	48	TINAJ115	115.00	6	1.0070	115.80				
50	M.O115	115.00	6	1.0074	115.85	52	TOC115	115.00	6	1.0078	115.90				
54	LM1115	115.00	6	1.0254	117.92	55	LM2115	115.00	6	1.0253	117.91				
61	FFIELD	115.00	9	1.0168	116.94	87	CAL115	115.00	6	1.0283	118.26				
88	EST115	115.00	6	1.0306	118.52	92	L.V115	115.00	6	1.0292	118.36				
109	STA RITA115	115.00	6	1.0245	117.82	110	PTMD115A	115.00	6	1.0196	117.25				
111	PTMD115B	115.00	6	1.0196	117.25	123	MIR115	115.00	7	1.0099	116.13				
154	CEMPAN15	115.00	6	1.0197	117.27	191	CHANG115	115.00	6	1.0165	116.90				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6	CHO115	115.00	6	0.9910	113.97	9	LSA115	115.00	6	0.9900	113.85				
21	C.BAN115	115.00	6	0.9984	114.82	26	LOC115	115.00	6	0.9998	114.98				
30	MAR115	115.00	6	0.9980	114.77	37	SAN115	115.00	6	0.9970	114.65				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:19  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	37.0	14.4	17.0	0.0	1.0050	39.5	0.9316	47.0			1	6	
67	BLM13C	13.800	V3	37.0	14.4	17.0	0.0	1.0050	39.5	0.9316	47.0			1	6	
68	BLM13D	13.800	V4	37.0	15.0	17.0	0.0	1.0050	39.7	0.9265	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	8.0	20.0	0.0	1.0000	31.0	0.9664	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	8.0	20.0	0.0	1.0000	31.0	0.9664	39.4			1	6	
72	BLMCCA	13.800	T8	30.0	9.2	20.0	0.0	1.0000	31.4	0.9563	50.0			1	6	
73	BLMCCB	13.800	V9	50.0	9.6	40.0	0.0	1.0000	50.9	0.9821	71.0			1	6	
90	EST-13L	13.800	E1	19.0	3.2	12.0	-5.0	0.9900	19.5	0.9865	27.0			1	6	
91	EST-13T	13.800	E2	19.0	3.2	12.0	-5.0	0.9900	19.5	0.9865	27.0			1	6	
94	LV-13.8L	13.800	L1	20.0	3.6	12.0	-5.0	0.9900	20.5	0.9839	27.0			1	6	
95	LV-13.8T	13.800	L2	20.0	3.6	12.0	-5.0	0.9900	20.5	0.9839	27.0			1	6	
97	FOR13A	13.800	F1	87.0	5.1	50.0	-50.0	1.0290	84.7	0.9983	111.0			1	6	
98	FOR13B	13.800	F2	87.0	5.1	50.0	-50.0	1.0290	84.7	0.9983	111.0			1	6	
99	FOR13C	13.800	F3	87.0	5.1	50.0	-50.0	1.0290	84.7	0.9983	111.0			1	6	
101	BAY13A	13.800	B1	79.1	44.2	50.0	-25.0	1.0150	89.3	0.8730	96.0			1	6	SYST
102	BAY13B	13.800	B2	79.0	44.2	50.0	-25.0	1.0150	89.2	0.8728	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	9.0	9.0	0.0	0.9948	17.6	0.8575	20.7			1	6	
106	PANAM13A	13.800	M2	15.0	9.0	9.0	0.0	0.9948	17.6	0.8575	20.7			1	6	
106	PANAM13A	13.800	M3	15.0	9.0	9.0	0.0	0.9948	17.6	0.8575	20.7			1	6	
107	PANAM13B	13.800	M4	15.0	9.0	9.0	0.0	0.9948	17.6	0.8575	20.7			1	6	
107	PANAM13B	13.800	M5	15.0	9.0	9.0	0.0	0.9948	17.6	0.8575	20.7			1	6	
107	PANAM13B	13.800	M6	15.0	9.0	9.0	0.0	0.9948	17.6	0.8575	20.7			1	6	
108	BAY13C	13.800	B3	79.0	44.2	50.0	-25.0	1.0150	89.2	0.8728	100.0			1	6	
116	PACORA13	13.800	P1	17.5	8.8	8.8	0.0	1.0085	19.4	0.8928	21.7			1	6	
116	PACORA13	13.800	P2	17.5	8.8	8.8	0.0	1.0085	19.4	0.8928	21.7			1	6	
116	PACORA13	13.800	P3	17.5	8.8	8.8	0.0	1.0085	19.4	0.8928	21.7			1	6	
142	CANJ13A	13.800	C1	46.0	10.8	29.0	-29.0	1.0000	47.2	0.9737	69.0			1	6	
143	CANJ13B	13.800	C2	46.0	10.8	29.0	-29.0	1.0000	47.2	0.9737	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-1.5	10.0	-10.0	1.0000	16.1	0.9958	26.7			1	6	
193	GEBONYIC	13.800	G1	5.0	-2.6	4.0	-4.0	1.0000	5.6	0.8890	35.3			1	6	
193	GEBONYIC	13.800	G2	5.0	-2.6	4.0	-4.0	1.0000	5.6	0.8890	35.3			1	6	
204	BJOMIN13	13.800	1	14.5	-7.6	13.0	-13.0	1.0000	16.3	0.8869	28.9			1	6	
204	BJOMIN13	13.800	2	14.5	-7.6	13.0	-13.0	1.0000	16.3	0.8869	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9599	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9580	5.1	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0015	8.5	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	11.0	-0.2	12.0	-5.0	1.0200	10.8	0.9998	20.6			1	6	
305	ELALTO13.8	13.800	2	11.0	-0.2	12.0	-5.0	1.0200	10.8	0.9998	20.6			1	6	
305	ELALTO13.8	13.800	3	11.0	-0.2	12.0	-5.0	1.0200	10.8	0.9998	20.6			1	6	
307	CHANG75A	13.800	G1	81.6	-8.0	22.0	-22.0	1.0200	80.4	0.9952	118.6			1	6	
317	MENDRE13.8	13.800	M1	8.5	-0.7	4.0	-4.0	1.0000	8.5	0.9967	35.3			1	6	
322	TGGN100A	13.800	1	85.0	0.0	62.0	0.0	1.0210	83.3	1.0000	118.0			1	6	
323	TGGN100B	13.800	1	85.0	0.0	62.0	0.0	1.0210	83.3	1.0000	118.0			1	6	
340	PEDGALITO138	13.800	P1	19.0	-5.0	12.0	-5.0	1.0428	18.8	0.9671	27.0			1	6	
SUBSYSTEM TOTALS				1450.8	312.9	891.5	-400.0				2068.1					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:19  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0471	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0471	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.4	4.5	8.0	0.0	1.0000	11.3	0.9164	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9943	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9943	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9943	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9988	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9988	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9988	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9867	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9867	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9867	6.2			2	7	
SUBSYSTEM TOTALS						74.3	6.0	51.0	-33.0				124.2					





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:21  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.6	224.5	-98.9	0.0	143.2	-97.1	147.4	
5	1344.6	1324.8	0.0	0.0	0.0	0.1	19.7	0.0
C.RICA	253.3	569.4	-237.5	0.0	469.4	31.8	359.0	
6	1450.8	1293.9	0.0	0.0	0.0	111.4	45.5	25.0
PANAMA	312.9	324.3	-122.8	0.0	455.8	66.4	500.9	
7	74.3	43.9	0.0	0.0	0.0	28.9	1.4	50.0
ACANAL	6.0	11.0	0.0	0.0	0.0	-14.7	9.7	
9	0.0	139.9	0.0	0.0	0.0	-140.4	0.5	-75.0
COLON	0.0	35.1	0.0	0.0	1.1	-37.3	3.3	
TOTALS	6673.9	6529.3	0.0	0.0	0.0	0.0	144.6	0.0
	791.1	1986.7	-971.8	0.0	2005.1	0.0	1781.4	



PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MAXIMA VERANO  
**Estudios Básicos**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:26  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8	LSA230	230.00	6	1.0042	230.96	11	M.N230	230.00	6	1.0305	237.02				
14	PRO230	230.00	6	1.0286	236.57	96	FOR230	230.00	6	1.0332	237.65				
100	BAY230	230.00	6	1.0246	235.65	144	CANJ230	230.00	6	1.0317	237.28				
147	GUASQ230	230.00	6	1.0316	237.26	148	VELAD230	230.00	6	1.0247	235.67				
190	CHANG230	230.00	6	1.0320	237.36	306	CHANG75	230.00	6	1.0339	237.79				
309	CATSAN230	230.00	6	1.0250	235.76	310	CONCEPCION23	230.00	6	1.0285	236.56				
6000	FRONTER	230.00	6	1.0291	236.68										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9722	223.61	3	PANII230	230.00	6	0.9844	226.41				
5	CHO230	230.00	6	0.9826	226.01	103	COPESA23	230.00	6	0.9908	227.89				
105	PAN-AM23	230.00	6	0.9828	226.05	115	PACORA23	230.00	6	0.9987	229.70				
511	LGUIAS230	230.00	6	0.9944	228.71	515	PANPOWER230	230.00	6	0.9936	228.53				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:26  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0089	116.03	4	PANII115	115.00	6	1.0081	115.93				
6	CHO115	115.00	6	1.0139	116.60	9	LSA115	115.00	6	1.0091	116.05				
12	M.N115	115.00	6	1.0242	117.78	15	PRO115	115.00	6	1.0258	117.97				
18	CAC115	115.00	6	1.0081	115.93	20	CH.AZUL	115.00	6	1.0220	117.53				
23	CH115	115.00	6	1.0055	115.64	33	STM115	115.00	6	1.0068	115.78				
48	TINAJ115	115.00	6	1.0039	115.45	50	M.O115	115.00	6	1.0043	115.50				
52	TOC115	115.00	6	1.0045	115.51	54	LM115	115.00	6	1.0235	117.71				
55	LM2115	115.00	6	1.0234	117.69	61	FFIELD	115.00	9	1.0150	116.72				
87	CAL115	115.00	6	1.0314	118.62	88	EST115	115.00	6	1.0333	118.83				
92	L.V115	115.00	6	1.0322	118.71	109	STA RITA115	115.00	6	1.0223	117.57				
110	PTMD115A	115.00	6	1.0170	116.96	111	PTMD115B	115.00	6	1.0170	116.96				
123	MIR115	115.00	7	1.0081	115.93	154	CEMPAN15	115.00	6	1.0173	116.99				
191	CHANG115	115.00	6	1.0179	117.06										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
19	C.V115	115.00	6	0.9972	114.67	21	C.BAN115	115.00	6	0.9953	114.46				
26	LOC115	115.00	6	0.9968	114.63	30	MAR115	115.00	6	0.9949	114.42				
37	SAN115	115.00	6	0.9939	114.30										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:26  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGBC7

AREA 6 [PANAMA] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	38.0	15.3	17.0	0.0	1.0050	40.8	0.9273	47.0			1	6	
67		BLM13C		13.800	V3	38.0	15.3	17.0	0.0	1.0050	40.8	0.9273	47.0			1	6	
68		BLM13D		13.800	V4	38.0	16.0	17.0	0.0	1.0050	41.0	0.9219	47.0			1	6	
70		TGJB13A		13.800	J5	30.0	8.5	20.0	0.0	1.0000	31.2	0.9625	39.4			1	6	
71		TGJB13B		13.800	J6	30.0	8.5	20.0	0.0	1.0000	31.2	0.9625	39.4			1	6	
72		BLMCCA		13.800	T8	30.0	9.7	20.0	0.0	1.0000	31.5	0.9519	50.0			1	6	
73		BLMCCB		13.800	V9	50.0	10.1	40.0	0.0	1.0000	51.0	0.9803	71.0			1	6	
90		EST-13L		13.800	E1	16.0	2.2	12.0	-5.0	0.9900	16.3	0.9905	27.0			1	6	
91		EST-13T		13.800	E2	16.0	2.2	12.0	-5.0	0.9900	16.3	0.9905	27.0			1	6	
94		LV-13.8L		13.800	L1	20.0	2.8	12.0	-5.0	0.9900	20.4	0.9906	27.0			1	6	
95		LV-13.8T		13.800	L2	20.0	2.8	12.0	-5.0	0.9900	20.4	0.9906	27.0			1	6	
97		FOR13A		13.800	F1	89.1	0.1	50.0	-50.0	1.0290	86.6	1.0000	111.0			1	6	
98		FOR13B		13.800	F2	89.1	0.1	50.0	-50.0	1.0290	86.6	1.0000	111.0			1	6	
99		FOR13C		13.800	F3	89.1	0.1	50.0	-50.0	1.0290	86.6	1.0000	111.0			1	6	
101		BAY13A		13.800	B1	60.0	33.5	50.0	-25.0	1.0150	67.7	0.8734	96.0			1	6	SYST
102		BAY13B		13.800	B2	58.5	33.4	50.0	-25.0	1.0150	66.3	0.8685	96.0			1	6	
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	1.0147	17.2	0.8575	20.7			1	6	
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	1.0147	17.2	0.8575	20.7			1	6	
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	1.0147	17.2	0.8575	20.7			1	6	
107		PANAM13B		13.800	M4	15.0	9.0	9.0	0.0	1.0147	17.2	0.8575	20.7			1	6	
107		PANAM13B		13.800	M5	15.0	9.0	9.0	0.0	1.0147	17.2	0.8575	20.7			1	6	
107		PANAM13B		13.800	M6	15.0	9.0	9.0	0.0	1.0147	17.2	0.8575	20.7			1	6	
108		BAY13C		13.800	B3	58.5	33.4	50.0	-25.0	1.0150	66.3	0.8685	100.0			1	6	
116		PACORA13		13.800	P1	17.7	8.8	8.8	0.0	1.0266	19.3	0.8948	21.7			1	6	
116		PACORA13		13.800	P2	17.7	8.8	8.8	0.0	1.0266	19.3	0.8948	21.7			1	6	
116		PACORA13		13.800	P3	17.7	8.8	8.8	0.0	1.0266	19.3	0.8948	21.7			1	6	
142		CANJ13A		13.800	C1	40.0	7.9	29.0	-29.0	1.0000	40.8	0.9810	69.0			1	6	
143		CANJ13B		13.800	C2	40.0	7.9	29.0	-29.0	1.0000	40.8	0.9810	69.0			1	6	
151		GUALAC13		13.800	1	15.7	-2.2	10.0	-10.0	1.0000	15.8	0.9906	26.7			1	6	
193		GEBONYIC		13.800	G1	5.0	-2.5	4.0	-4.0	1.0000	5.6	0.8956	35.3			1	6	
193		GEBONYIC		13.800	G2	6.2	-3.1	4.0	-4.0	1.0000	6.9	0.8956	35.3			1	6	
204		BJOMIN13		13.800	1	15.0	-8.7	13.0	-13.0	1.0000	17.3	0.8660	28.9			1	6	
204		BJOMIN13		13.800	2	15.0	-8.7	13.0	-13.0	1.0000	17.3	0.8660	28.9			1	6	
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9651	10.8	0.8784	13.5			1	6	
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9633	5.0	0.9110	6.2			1	6	
303		SIND13.8		13.800	S1	3.0	0.0	5.0	0.0	1.0034	3.0	1.0000	13.5			1	6	
305		ELALTO13.8		13.800	1	11.5	-1.7	12.0	-5.0	1.0200	11.4	0.9897	20.6			1	6	
305		ELALTO13.8		13.800	2	11.5	-1.7	12.0	-5.0	1.0200	11.4	0.9897	20.6			1	6	
307		CHANG75A		13.800	G1	88.7	-9.8	22.0	-22.0	1.0200	87.5	0.9940	118.6			1	6	
317		MENDRE13.8		13.800	M1	8.5	-1.6	4.0	-4.0	1.0000	8.6	0.9837	35.3			1	6	
322		TGGN100A		13.800	1	93.0	0.0	62.0	0.0	1.0181	91.3	1.0000	118.0			1	6	
323		TGGN100B		13.800	1	93.0	0.0	62.0	0.0	1.0181	91.3	1.0000	118.0			1	6	
340		PEDGALITO138		13.800	P1	10.0	-5.0	12.0	-5.0	1.0506	10.6	0.8944	27.0			1	6	
516		PANAPOW13A		13.800	G1	15.9	2.0	12.5	0.5	1.0000	16.0	0.9918	20.9			1	6	
516		PANAPOW13A		13.800	G2	15.9	2.0	12.5	0.5	1.0000	16.0	0.9918	20.9			1	6	
517		PANAPOW13B		13.800	G4	15.9	3.3	12.5	0.5	1.0000	16.2	0.9792	20.9			1	6	
SUBSYSTEM TOTALS						1430.6	259.9	917.0	-393.4				2110.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:26  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGBC7



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:26  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGBC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.5	224.5	-98.9	0.0	143.2	-97.3	147.4	
5	1344.6	1324.8	0.0	0.0	0.0	0.0	19.8	0.0
C.RICA	247.1	569.4	-237.4	0.0	470.1	25.7	359.4	
6	1430.6	1293.9	0.0	0.0	0.0	95.8	40.9	25.0
PANAMA	259.9	324.3	-122.1	0.0	467.1	69.9	454.9	
7	90.2	43.9	0.0	0.0	0.0	44.6	1.7	50.0
ACANAL	11.3	11.0	0.0	0.0	0.0	-12.0	12.3	
9	0.0	139.9	0.0	0.0	0.0	-140.4	0.5	-75.0
COLON	0.0	35.1	0.0	0.0	1.1	-37.3	3.4	
TOTALS	6669.7	6529.3	0.0	0.0	0.0	0.0	140.4	0.0
	737.0	1986.7	-970.9	0.0	2017.2	0.0	1738.4	





PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÍNIMA EN VERANO

## **Estudios Básicos**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:31  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0210	234.82	3		PANII230		230.00	6	1.0237	235.44
5		CHO230		230.00	6	1.0248	235.70	8		LSA230		230.00	6	1.0192	234.41
11		M.N230		230.00	6	1.0160	233.67	14		PRO230		230.00	6	1.0236	235.42
96		FOR230		230.00	6	1.0156	233.58	100		BAY230		230.00	6	1.0286	236.57
103		COPESA23		230.00	6	1.0249	235.73	105		PAN-AM23		230.00	6	1.0248	235.71
115		PACORA23		230.00	6	1.0273	236.28	144		CANJ230		230.00	6	1.0184	234.23
147		GUASQ230		230.00	6	1.0184	234.22	148		VELAD230		230.00	6	1.0203	234.67
190		CHANG230		230.00	6	1.0292	236.73	306		CHANG75		230.00	6	1.0289	236.64
309		CAISAN230		230.00	6	1.0218	235.02	310		CONCEPCION23		230.00	6	1.0207	234.77
511		LGUIAS230		230.00	6	1.0239	235.49	515		PANPOWER230		230.00	6	1.0276	236.34
6000		FRONTER		230.00	6	1.0245	235.64								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:31  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0009	115.10	4		PANII115		115.00	6	1.0037	115.43
6		CHO115		115.00	6	1.0726	123.35	9		LSA115		115.00	6	1.0277	118.19
15		PRO115		115.00	6	1.0231	117.66	18		CAC115		115.00	6	1.0007	115.08
20		CH.AZUL		115.00	6	1.0220	117.53	23		CH115		115.00	6	1.0028	115.32
52		TOC115		115.00	6	1.0023	115.26	54		LM115		115.00	6	1.0120	116.38
55		LM2115		115.00	6	1.0121	116.39	61		FFIELD		115.00	9	1.0087	116.00
109		STA RITA115		115.00	6	1.0115	116.32	110		PTMD115A		115.00	6	1.0075	115.86
111		PTMD115B		115.00	6	1.0075	115.86	123		MIR115		115.00	7	1.0022	115.25
154		CEMPAN15		115.00	6	1.0089	116.03	191		CHANG115		115.00	6	1.0270	118.10

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
12		M.N115		115.00	6	0.9915	114.02	19		C.V115		115.00	6	0.9988	114.86
21		C.BAN115		115.00	6	0.9964	114.59	26		LOC115		115.00	6	0.9968	114.63
30		MAR115		115.00	6	0.9958	114.52	33		STM115		115.00	6	1.0000	115.00
37		SAN115		115.00	6	0.9960	114.54	48		TINAJ115		115.00	6	0.9991	114.90
50		M.O115		115.00	6	0.9993	114.92	87		CAL115		115.00	6	0.9946	114.38
88		EST115		115.00	6	0.9954	114.47	92		L.V115		115.00	6	0.9949	114.42

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:30  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	33.0	17.0	17.0	0.0	0.9989	37.2	0.8890	47.0			1	6		
70		TGJB13A		13.800	J5	32.0	18.0	20.0	0.0	1.0000	36.7	0.8716	39.4			1	6		
90		EST-13L		13.800	E1	16.0	1.1	12.0	-5.0	0.9500	16.9	0.9978	27.0			1	6		
94		LV-13.8L		13.800	L1	18.0	1.3	12.0	-5.0	0.9500	19.0	0.9974	27.0			1	6		
97		FOR13A		13.800	F1	69.7	-29.0	50.0	-50.0	0.9800	77.1	0.9233	111.0			1	6	SYST	
98		FOR13B		13.800	F2	67.8	-29.2	50.0	-50.0	0.9800	75.3	0.9187	111.0			1	6		
106		PANAM13A		13.800	M1	15.0	5.3	9.0	0.0	1.0300	15.4	0.9438	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	5.3	9.0	0.0	1.0300	15.4	0.9438	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	5.3	9.0	0.0	1.0300	15.4	0.9438	20.7			1	6		
116		PACORA13		13.800	P1	15.0	6.1	8.8	0.0	1.0430	15.5	0.9266	21.7			1	6		
116		PACORA13		13.800	P2	15.0	6.1	8.8	0.0	1.0430	15.5	0.9266	21.7			1	6		
142		CANJ13A		13.800	C1	35.0	5.6	29.0	-29.0	0.9800	36.2	0.9874	69.0			1	6		
151		GUALAC13		13.800	1	15.7	-1.0	10.0	-10.0	1.0000	15.7	0.9981	26.7			1	6		
305		ELALTO13.8		13.800	1	12.0	-1.2	12.0	-5.0	1.0200	11.8	0.9946	20.6			1	6		
307		CHANG75A		13.800	G1	65.0	-6.6	22.0	-22.0	1.0200	64.1	0.9948	118.6			1	6		
323		TGGN100B		13.800	1	45.0	0.0	62.0	0.0	1.0105	44.5	1.0000	118.0			1	6		
340		PEDGALITO138		13.800	P1	13.0	-5.0	12.0	-5.0	1.0416	13.4	0.9333	27.0			1	6		
516		PANAPOW13A		13.800	G1	15.0	0.5	12.5	0.5	1.0282	14.6	0.9994	20.9			1	6		
SUBSYSTEM TOTALS						512.2	-0.6	365.2	-180.5				868.6						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:30  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0499	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0500	8.2	1.0000	13.5			2	7		
128		MIR13C		12.000	G3	15.9	8.0	11.0	0.0	1.0000	17.8	0.8940	29.4			2	7		
130		MIR13F		13.800	G5	10.4	3.3	8.0	0.0	1.0000	10.9	0.9527	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9965	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9966	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9966	13.0			2	7		
140		GAT6A		6.9000	G1	2.0	-0.1	2.0	-2.0	1.0000	2.0	0.9994	4.1			2	7		
140		GAT6A		6.9000	G2	2.0	-0.1	2.0	-2.0	1.0000	2.0	0.9994	4.1			2	7		
140		GAT6A		6.9000	G3	2.0	-0.1	2.0	-2.0	1.0000	2.0	0.9994	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9788	5.6			2	7		
141		GAT6B		6.9000	G5	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9788	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9788	6.2			2	7		
SUBSYSTEM TOTALS						90.2	11.1	62.0	-33.0				153.6						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:31  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGBC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.6	224.5	-98.9	0.0	143.2	-97.2	147.4	
5	1344.4	1324.8	0.0	0.0	0.0	0.1	19.5	0.0
C.RICA	252.8	569.4	-236.5	0.0	469.5	31.1	358.3	
6	512.2	517.5	0.0	0.0	0.0	-14.6	9.3	25.0
PANAMA	-0.6	129.7	185.6	0.0	474.5	39.5	119.1	
7	90.2	17.6	0.0	0.0	0.0	70.6	2.0	50.0
ACANAL	11.1	4.4	0.0	0.0	0.0	-10.9	17.6	
9	0.0	56.0	0.0	0.0	0.0	-56.0	0.1	-75.0
COLON	0.0	14.0	0.0	0.0	1.1	-13.5	0.5	
TOTALS	5751.0	5642.6	0.0	0.0	0.0	0.0	108.4	0.0
	482.2	1764.4	-662.3	0.0	2023.9	0.0	1403.9	



**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Pacora-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:24  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0260	235.97	14	PRO	230		230.00	6	1.0251	235.76
96	FOR	230		230.00	6	1.0293	236.74	100	BAY	230		230.00	6	1.0353	238.12
115	PACORA	23		230.00	6	1.0401	239.23	144	CANJ	230		230.00	6	1.0263	236.05

147	GUASQ230	230.00	6	1.0262	236.03	148	VELAD230	230.00	6	1.0161	233.70
190	CHANG230	230.00	6	1.0305	237.01	306	CHANG75	230.00	6	1.0321	237.39
309	CAISAN230	230.00	6	1.0229	235.26	310	CONCEPCION230	230.00	6	1.0250	235.76
6000	FRONTER	230.00	6	1.0255	235.87						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9606	220.93	3	PANII230	230.00	6	0.9713	223.40
5	CHO230	230.00	6	0.9705	223.21	8	LSA230	230.00	6	0.9920	228.15
103	COPESA23	230.00	6	0.9799	225.38	105	PAN-AM23	230.00	6	0.9707	223.26
511	LGUIAS230	230.00	6	0.9818	225.82	515	PANPOWER230	230.00	6	0.9779	224.91

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:24  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0141	116.62	4	PANII115	115.00	6	1.0083	115.96
6	CHO115	115.00	6	1.0008	115.09	12	M.N115	115.00	6	1.0201	117.31
15	PRO115	115.00	6	1.0223	117.56	18	CAC115	115.00	6	1.0132	116.51
20	CH.AZUL	115.00	6	1.0184	117.12	23	CH115	115.00	6	1.0101	116.16
26	LOC115	115.00	6	1.0015	115.17	33	STM115	115.00	6	1.0120	116.38
48	TINAJ115	115.00	6	1.0091	116.05	50	M.O115	115.00	6	1.0095	116.09
52	TOC115	115.00	6	1.0047	115.54	54	LM1115	115.00	6	1.0265	118.04
55	LM2115	115.00	6	1.0264	118.03	61	FFIELD	115.00	9	1.0179	117.06
87	CAL115	115.00	6	1.0292	118.35	88	EST115	115.00	6	1.0314	118.61
92	L.V115	115.00	6	1.0300	118.45	109	STA RITA115	115.00	6	1.0257	117.95
110	PTMD115A	115.00	6	1.0212	117.44	111	PTMD115B	115.00	6	1.0212	117.44
123	MIR115	115.00	7	1.0118	116.36	154	CEMPAN15	115.00	6	1.0211	117.42
191	CHANG115	115.00	6	1.0169	116.94						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	0.9962	114.57	19	C.V115	115.00	6	0.9987	114.86
21	C.BAN115	115.00	6	0.9999	114.99	30	MAR115	115.00	6	0.9999	114.99
37	SAN115	115.00	6	0.9982	114.79						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:24  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	37.0	14.0	17.0	0.0	1.0050	39.4	0.9355	47.0			1	6	
67		BLM13C		13.800	V3	37.0	14.0	17.0	0.0	1.0050	39.4	0.9355	47.0			1	6	
68		BLM13D		13.800	V4	37.0	14.5	17.0	0.0	1.0050	39.6	0.9307	47.0			1	6	
70		TGJB13A		13.800	J5	30.0	7.7	20.0	0.0	1.0000	31.0	0.9685	39.4			1	6	
71		TGJB13B		13.800	J6	30.0	7.7	20.0	0.0	1.0000	31.0	0.9685	39.4			1	6	
72		BLMCCA		13.800	T8	30.0	8.9	20.0	0.0	1.0000	31.3	0.9587	50.0			1	6	
73		BLMCCB		13.800	V9	50.0	9.3	40.0	0.0	1.0000	50.9	0.9830	71.0			1	6	
90		EST-13L		13.800	E1	19.0	2.9	12.0	-5.0	0.9900	19.4	0.9882	27.0			1	6	
91		EST-13T		13.800	E2	19.0	2.9	12.0	-5.0	0.9900	19.4	0.9882	27.0			1	6	
94		LV-13.8L		13.800	L1	20.0	3.4	12.0	-5.0	0.9900	20.5	0.9859	27.0			1	6	
95		LV-13.8T		13.800	L2	20.0	3.4	12.0	-5.0	0.9900	20.5	0.9859	27.0			1	6	
97		FOR13A		13.800	F1	87.0	3.6	50.0	-50.0	1.0290	84.6	0.9991	111.0			1	6	
98		FOR13B		13.800	F2	87.0	3.6	50.0	-50.0	1.0290	84.6	0.9991	111.0			1	6	
99		FOR13C		13.800	F3	87.0	3.6	50.0	-50.0	1.0290	84.6	0.9991	111.0			1	6	
101		BAY13A		13.800	B1	80.5	27.2	50.0	-25.0	1.0150	83.7	0.9474	96.0			1	6	SYST
102		BAY13B		13.800	B2	80.5	27.2	50.0	-25.0	1.0150	83.7	0.9474	96.0			1	6	
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	1.0033	17.4	0.8575	20.7			1	6	
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	1.0033	17.4	0.8575	20.7			1	6	
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	1.0033	17.4	0.8575	20.7			1	6	
107		PANAM13B		13.800	M4	15.0	9.0	9.0	0.0	1.0033	17.4	0.8575	20.7			1	6	
107		PANAM13B		13.800	M5	15.0	9.0	9.0	0.0	1.0033	17.4	0.8575	20.7			1	6	
107		PANAM13B		13.800	M6	15.0	9.0	9.0	0.0	1.0033	17.4	0.8575	20.7			1	6	
108		BAY13C		13.800	B3	80.5	27.2	50.0	-25.0	1.0150	83.7	0.9474	100.0			1	6	
116		PACORA13		13.800	P1	17.5	4.1	8.8	0.0	1.0430	17.2	0.9733	21.7			1	6	
116		PACORA13		13.800	P2	17.5	4.1	8.8	0.0	1.0430	17.2	0.9733	21.7			1	6	
116		PACORA13		13.800	P3	17.5	4.1	8.8	0.0	1.0430	17.2	0.9733	21.7			1	6	
142		CANJ13A		13.800	C1	46.0	10.4	29.0	-29.0	1.0000	47.2	0.9752	69.0			1	6	
143		CANJ13B		13.800	C2	46.0	10.4	29.0	-29.0	1.0000	47.2	0.9752	69.0			1	6	
151		GUALAC13		13.800	1	16.0	-1.7	10.0	-10.0	1.0000	16.1	0.9947	26.7			1	6	
193		GEBONYIC		13.800	G1	5.0	-2.6	4.0	-4.0	1.0000	5.7	0.8847	35.3			1	6	
193		GEBONYIC		13.800	G2	5.0	-2.6	4.0	-4.0	1.0000	5.7	0.8847	35.3			1	6	
204		BJOMIN13		13.800	1	14.5	-7.9	13.0	-13.0	1.0000	16.5	0.8779	28.9			1	6	
204		BJOMIN13		13.800	2	14.5	-7.9	13.0	-13.0	1.0000	16.5	0.8779	28.9			1	6	
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9612	10.9	0.8784	13.5			1	6	
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9593	5.1	0.9110	6.2			1	6	
303		SIND13.8		13.800	S1	8.5	0.0	5.0	0.0	1.0019	8.5	1.0000	13.5			1	6	
305		ELALTO13.8		13.800	1	11.0	-0.5	12.0	-5.0	1.0200	10.8	0.9991	20.6			1	6	
305		ELALTO13.8		13.800	2	11.0	-0.5	12.0	-5.0	1.0200	10.8	0.9991	20.6			1	6	
305		ELALTO13.8		13.800	3	11.0	-0.5	12.0	-5.0	1.0200	10.8	0.9991	20.6			1	6	
307		CHANG75A		13.800	G1	81.6	-8.6	22.0	-22.0	1.0200	80.4	0.9945	118.6			1	6	
317		MENDRE13.8		13.800	M1	8.5	-0.9	4.0	-4.0	1.0000	8.5	0.9946	35.3			1	6	
322		TGGN100A		13.800	1	85.0	0.0	62.0	0.0	1.0222	83.2	1.0000	118.0			1	6	
323		TGGN100B		13.800	1	85.0	0.0	62.0	0.0	1.0222	83.2	1.0000	118.0			1	6	
340		PEDGALITO138		13.800	P1	19.0	-5.0	12.0	-5.0	1.0444	18.8	0.9671	27.0			1	6	
SUBSYSTEM TOTALS						1455.1	236.9	891.5	-400.0				2068.1					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:24  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7



AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0482	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0482	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.4	4.1	8.0	0.0	1.0000	11.2	0.9306	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9949	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9949	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9949	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9991	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9991	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9991	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9860	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9860	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9860	6.2			2	7	
SUBSYSTEM TOTALS						74.3	5.3	51.0	-33.0				124.2					



**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Panamá I-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:33  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0063	231.45	11		M.N230		230.00	6	1.0305	237.02
14		PRO230		230.00	6	1.0287	236.59	96		FOR230		230.00	6	1.0331	237.61

100 BAY230	230.00	6	1.0337	237.75	103 COPESA23	230.00	6	1.0040	230.92
115 PACORA23	230.00	6	1.0112	232.57	144 CANJ230	230.00	6	1.0313	237.19
147 GUASQ230	230.00	6	1.0312	237.18	148 VELAD230	230.00	6	1.0248	235.71
190 CHANG230	230.00	6	1.0318	237.32	306 CHANG75	230.00	6	1.0337	237.74
309 CAISAN230	230.00	6	1.0254	235.83	310 CONCEPCION23	230.00	6	1.0286	236.59
515 PANPOWER230	230.00	6	1.0031	230.71	6000 FRONTER	230.00	6	1.0291	236.70

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9753	224.31	3		PANII230		230.00	6	0.9984	229.64
5		CHO230		230.00	6	0.9852	226.61	105		PAN-AM23		230.00	6	0.9854	226.65
511		LGUIAS230		230.00	6	0.9965	229.19								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:33  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0145	116.67	4		PANII115		115.00	6	1.0086	115.98
6		CHO115		115.00	6	1.0167	116.92	9		LSA115		115.00	6	1.0114	116.31
12		M.N115		115.00	6	1.0234	117.69	15		PRO115		115.00	6	1.0259	117.98
18		CAC115		115.00	6	1.0136	116.56	20		CH.AZUL		115.00	6	1.0220	117.53
21		C.BAN115		115.00	6	1.0003	115.03	23		CH115		115.00	6	1.0104	116.19
26		LOC115		115.00	6	1.0019	115.22	30		MAR115		115.00	6	1.0003	115.04
33		STM115		115.00	6	1.0124	116.43	48		TINAJ115		115.00	6	1.0095	116.10
50		M.O115		115.00	6	1.0099	116.14	52		TOC115		115.00	6	1.0049	115.57
54		LM1115		115.00	6	1.0267	118.07	55		LM2115		115.00	6	1.0266	118.06
61		FFIELD		115.00	9	1.0181	117.08	87		CAL115		115.00	6	1.0312	118.59
88		EST115		115.00	6	1.0333	118.82	92		L.V115		115.00	6	1.0320	118.68
109		STA RITA115		115.00	6	1.0259	117.98	110		PTMD115A		115.00	6	1.0215	117.47
111		PTMD115B		115.00	6	1.0215	117.47	123		MIR115		115.00	7	1.0122	116.41
154		CEMPAN15		115.00	6	1.0213	117.45	191		CHANG115		115.00	6	1.0178	117.05

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
19		C.V115		115.00	6	0.9990	114.88	37		SAN115		115.00	6	0.9986	114.83

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:32  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

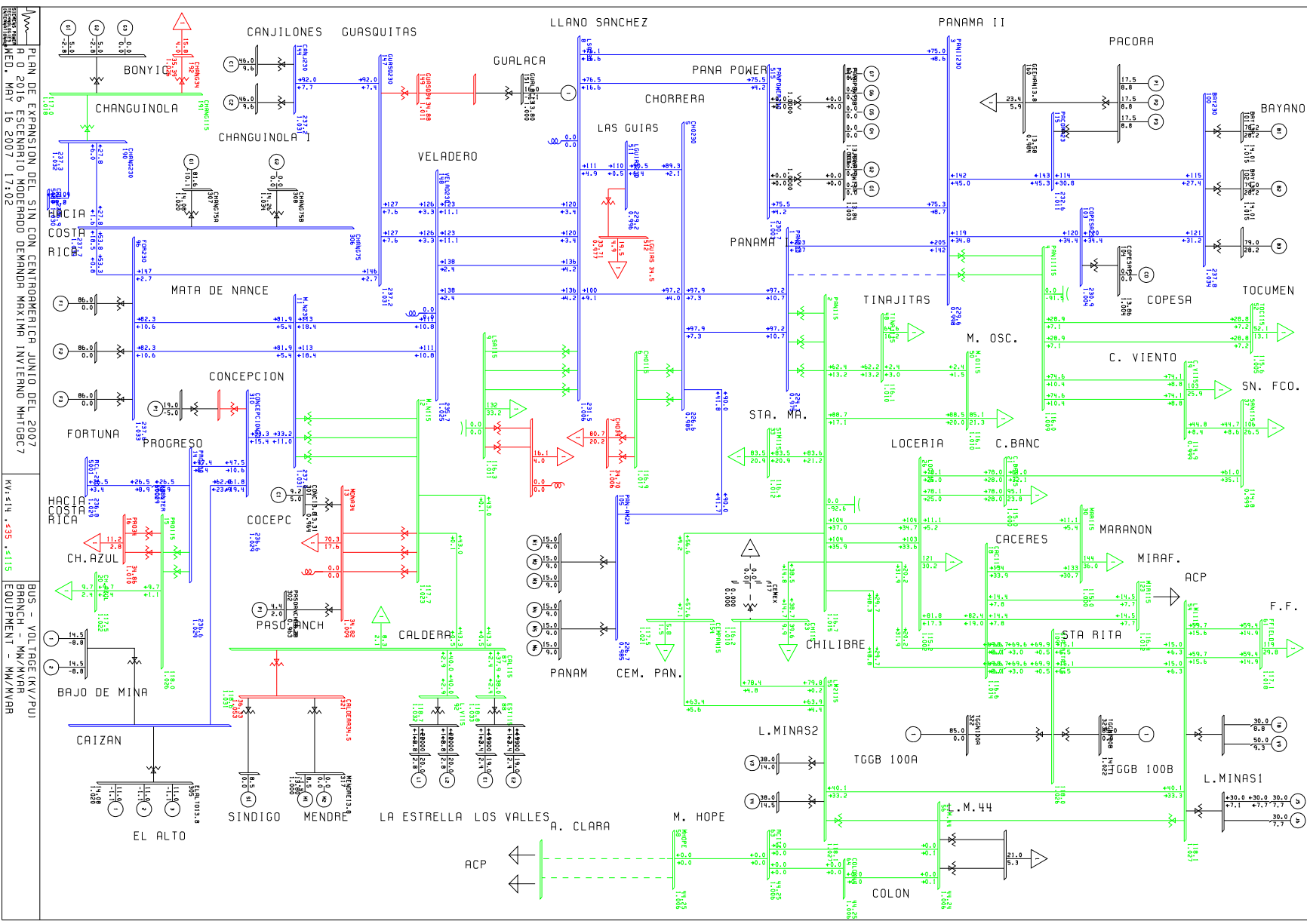
AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.0	14.0	17.0	0.0	1.0050	40.3	0.9386	47.0			1	6	
67	BLM13C	13.800	V3	38.0	14.0	17.0	0.0	1.0050	40.3	0.9386	47.0			1	6	
68	BLM13D	13.800	V4	38.0	14.5	17.0	0.0	1.0050	40.5	0.9341	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	7.7	20.0	0.0	1.0000	31.0	0.9690	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	7.7	20.0	0.0	1.0000	31.0	0.9690	39.4			1	6	
72	BLMCCA	13.800	T8	30.0	8.8	20.0	0.0	1.0000	31.3	0.9592	50.0			1	6	
73	BLMCCB	13.800	V9	50.0	9.3	40.0	0.0	1.0000	50.9	0.9832	71.0			1	6	
90	EST-13L	13.800	E1	19.0	2.4	12.0	-5.0	0.9900	19.3	0.9921	27.0			1	6	
91	EST-13T	13.800	E2	19.0	2.4	12.0	-5.0	0.9900	19.3	0.9921	27.0			1	6	
94	LV-13.8L	13.800	L1	20.0	2.8	12.0	-5.0	0.9900	20.4	0.9902	27.0			1	6	
95	LV-13.8T	13.800	L2	20.0	2.8	12.0	-5.0	0.9900	20.4	0.9902	27.0			1	6	
97	FOR13A	13.800	F1	86.0	0.0	50.0	-50.0	1.0290	83.6	1.0000	111.0			1	6	
98	FOR13B	13.800	F2	86.0	0.0	50.0	-50.0	1.0290	83.6	1.0000	111.0			1	6	
99	FOR13C	13.800	F3	86.0	0.0	50.0	-50.0	1.0290	83.6	1.0000	111.0			1	6	
101	BAY13A	13.800	B1	78.2	28.2	50.0	-25.0	1.0150	81.9	0.9409	96.0			1	6	SYST
102	BAY13B	13.800	B2	79.0	28.2	50.0	-25.0	1.0150	82.6	0.9417	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	9.0	9.0	0.0	1.0171	17.2	0.8575	20.7			1	6	
106	PANAM13A	13.800	M2	15.0	9.0	9.0	0.0	1.0171	17.2	0.8575	20.7			1	6	
106	PANAM13A	13.800	M3	15.0	9.0	9.0	0.0	1.0171	17.2	0.8575	20.7			1	6	
107	PANAM13B	13.800	M4	15.0	9.0	9.0	0.0	1.0171	17.2	0.8575	20.7			1	6	
107	PANAM13B	13.800	M5	15.0	9.0	9.0	0.0	1.0171	17.2	0.8575	20.7			1	6	
107	PANAM13B	13.800	M6	15.0	9.0	9.0	0.0	1.0171	17.2	0.8575	20.7			1	6	
108	BAY13C	13.800	B3	79.0	28.2	50.0	-25.0	1.0150	82.6	0.9417	100.0			1	6	
116	PACORA13	13.800	P1	17.5	8.8	8.8	0.0	1.0391	18.9	0.8928	21.7			1	6	
116	PACORA13	13.800	P2	17.5	8.8	8.8	0.0	1.0391	18.9	0.8928	21.7			1	6	
116	PACORA13	13.800	P3	17.5	8.8	8.8	0.0	1.0391	18.9	0.8928	21.7			1	6	
142	CANJ13A	13.800	C1	46.0	9.6	29.0	-29.0	1.0000	47.0	0.9787	69.0			1	6	
143	CANJ13B	13.800	C2	46.0	9.6	29.0	-29.0	1.0000	47.0	0.9787	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-2.1	10.0	-10.0	1.0000	16.1	0.9915	26.7			1	6	
193	GEBONYIC	13.800	G1	5.0	-2.8	4.0	-4.0	1.0000	5.7	0.8736	35.3			1	6	
193	GEBONYIC	13.800	G2	5.0	-2.8	4.0	-4.0	1.0000	5.7	0.8736	35.3			1	6	
204	BJOMIN13	13.800	1	14.5	-8.8	13.0	-13.0	1.0000	17.0	0.8550	28.9			1	6	
204	BJOMIN13	13.800	2	14.5	-8.8	13.0	-13.0	1.0000	17.0	0.8550	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9644	10.8	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9625	5.0	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0029	8.5	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	11.0	-1.1	12.0	-5.0	1.0200	10.8	0.9954	20.6			1	6	
305	ELALTO13.8	13.800	2	11.0	-1.1	12.0	-5.0	1.0200	10.8	0.9954	20.6			1	6	
305	ELALTO13.8	13.800	3	11.0	-1.1	12.0	-5.0	1.0200	10.8	0.9954	20.6			1	6	
307	CHANG75A	13.800	G1	81.6	-10.1	22.0	-22.0	1.0200	80.6	0.9924	118.6			1	6	
317	MENDRE13.8	13.800	M1	8.5	-1.4	4.0	-4.0	1.0000	8.6	0.9875	35.3			1	6	
322	TGGN100A	13.800	1	85.0	0.0	62.0	0.0	1.0224	83.1	1.0000	118.0			1	6	
323	TGGN100B	13.800	1	85.0	0.0	62.0	0.0	1.0224	83.1	1.0000	118.0			1	6	
340	PEDGALITO138	13.800	P1	19.0	-5.0	12.0	-5.0	1.0483	18.7	0.9671	27.0			1	6	
SUBSYSTEM TOTALS				1449.9	232.8	891.5	-400.0				2068.1					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:32  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0484	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0484	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.4	4.0	8.0	0.0	1.0000	11.1	0.9334	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9950	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9950	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9950	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9992	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9992	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9992	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9859	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9859	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9859	6.2			2	7	
SUBSYSTEM TOTALS						74.3	5.2	51.0	-33.0				124.2					



PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 a 0 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7  
 MED. MAY 16 2007 17:02  
 KV:414 .435 .4115  
 BUS - VOL TAGE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - KM/MVAR

**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Pana Power-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:41  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0076	231.75	11		M.N230		230.00	6	1.0309	237.11
14		PRO230		230.00	6	1.0290	236.66	96		FOR230		230.00	6	1.0334	237.68
100		BAY230		230.00	6	1.0259	235.96	144		CANJ230		230.00	6	1.0317	237.29



147	GUASQ230	230.00	6	1.0317	237.28	148	VELAD230	230.00	6	1.0256	235.89
190	CHANG230	230.00	6	1.0320	237.35	306	CHANG75	230.00	6	1.0338	237.77
309	CAISAN230	230.00	6	1.0256	235.88	310	CONCEPCION23	230.00	6	1.0290	236.66
515	PANPOWER230	230.00	6	1.0300	236.89	6000	FRONTER	230.00	6	1.0294	236.77

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9743	224.10	3		PANII230		230.00	6	0.9855	226.66
5		CHO230		230.00	6	0.9836	226.24	103		COPESA23		230.00	6	0.9918	228.12
105		PAN-AM23		230.00	6	0.9838	226.28	115		PACORA23		230.00	6	0.9997	229.92
511		LGUIAS230		230.00	6	0.9955	228.97								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:41  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0151	116.73	4		PANII115		115.00	6	1.0165	116.90
6		CHO115		115.00	6	1.0150	116.72	9		LSA115		115.00	6	1.0127	116.46
12		M.N115		115.00	6	1.0237	117.73	15		PRO115		115.00	6	1.0262	118.02
18		CAC115		115.00	6	1.0142	116.63	19		C.V115		115.00	6	1.0050	115.58
20		CH.AZUL		115.00	6	1.0224	117.57	21		C.BAN115		115.00	6	1.0018	115.21
23		CH115		115.00	6	1.0108	116.24	26		LOC115		115.00	6	1.0032	115.36
30		MAR115		115.00	6	1.0012	115.14	33		STM115		115.00	6	1.0129	116.49
37		SAN115		115.00	6	1.0005	115.06	48		TINAJ115		115.00	6	1.0101	116.16
50		M.O115		115.00	6	1.0105	116.20	52		TOC115		115.00	6	1.0129	116.49
54		LM1115		115.00	6	1.0269	118.10	55		LM2115		115.00	6	1.0269	118.09
61		FFIELD		115.00	9	1.0184	117.12	87		CAL115		115.00	6	1.0314	118.61
88		EST115		115.00	6	1.0334	118.84	92		L.V115		115.00	6	1.0322	118.70
109		STA RITA115		115.00	6	1.0262	118.01	110		PTMD115A		115.00	6	1.0219	117.52
111		PTMD115B		115.00	6	1.0219	117.52	123		MIR115		115.00	7	1.0128	116.47
154		CEMPAN15		115.00	6	1.0217	117.49	191		CHANG115		115.00	6	1.0179	117.06

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
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\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:40  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	38.0	13.8	17.0	0.0	1.0050	40.2	0.9396	47.0			1	6		
67		BLM13C		13.800	V3	38.0	13.8	17.0	0.0	1.0050	40.2	0.9396	47.0			1	6		
68		BLM13D		13.800	V4	38.0	14.4	17.0	0.0	1.0050	40.4	0.9351	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	7.6	20.0	0.0	1.0000	30.9	0.9695	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	7.6	20.0	0.0	1.0000	30.9	0.9695	39.4			1	6		
72		BLMCCA		13.800	T8	30.0	8.8	20.0	0.0	1.0000	31.3	0.9598	50.0			1	6		
73		BLMCCB		13.800	V9	50.0	9.2	40.0	0.0	1.0000	50.8	0.9835	71.0			1	6		
90		EST-13L		13.800	E1	19.0	2.4	12.0	-5.0	0.9900	19.3	0.9924	27.0			1	6		
91		EST-13T		13.800	E2	19.0	2.4	12.0	-5.0	0.9900	19.3	0.9924	27.0			1	6		
94		LV-13.8L		13.800	L1	20.0	2.8	12.0	-5.0	0.9900	20.4	0.9905	27.0			1	6		
95		LV-13.8T		13.800	L2	20.0	2.8	12.0	-5.0	0.9900	20.4	0.9905	27.0			1	6		
97		FOR13A		13.800	F1	86.0	-0.3	50.0	-50.0	1.0290	83.6	1.0000	111.0			1	6		
98		FOR13B		13.800	F2	86.0	-0.3	50.0	-50.0	1.0290	83.6	1.0000	111.0			1	6		
99		FOR13C		13.800	F3	86.0	-0.3	50.0	-50.0	1.0290	83.6	1.0000	111.0			1	6		
101		BAY13A		13.800	B1	79.5	34.2	50.0	-25.0	1.0150	85.3	0.9185	96.0			1	6	SYST	
102		BAY13B		13.800	B2	79.5	34.2	50.0	-25.0	1.0150	85.3	0.9185	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	1.0156	17.2	0.8575	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	1.0156	17.2	0.8575	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	1.0156	17.2	0.8575	20.7			1	6		
107		PANAM13B		13.800	M4	15.0	9.0	9.0	0.0	1.0156	17.2	0.8575	20.7			1	6		
107		PANAM13B		13.800	M5	15.0	9.0	9.0	0.0	1.0156	17.2	0.8575	20.7			1	6		
107		PANAM13B		13.800	M6	15.0	9.0	9.0	0.0	1.0156	17.2	0.8575	20.7			1	6		
108		BAY13C		13.800	B3	79.5	34.2	50.0	-25.0	1.0150	85.3	0.9185	100.0			1	6		
116		PACORA13		13.800	P1	17.5	8.8	8.8	0.0	1.0276	19.1	0.8928	21.7			1	6		
116		PACORA13		13.800	P2	17.5	8.8	8.8	0.0	1.0276	19.1	0.8928	21.7			1	6		
116		PACORA13		13.800	P3	17.5	8.8	8.8	0.0	1.0276	19.1	0.8928	21.7			1	6		
142		CANJ13A		13.800	C1	46.0	9.6	29.0	-29.0	1.0000	47.0	0.9791	69.0			1	6		
143		CANJ13B		13.800	C2	46.0	9.6	29.0	-29.0	1.0000	47.0	0.9791	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-2.1	10.0	-10.0	1.0000	16.1	0.9912	26.7			1	6		
193		GEBONYIC		13.800	G1	5.0	-2.8	4.0	-4.0	1.0000	5.7	0.8726	35.3			1	6		
193		GEBONYIC		13.800	G2	5.0	-2.8	4.0	-4.0	1.0000	5.7	0.8726	35.3			1	6		
204		BJOMIN13		13.800	1	14.5	-8.9	13.0	-13.0	1.0000	17.0	0.8529	28.9			1	6		
204		BJOMIN13		13.800	2	14.5	-8.9	13.0	-13.0	1.0000	17.0	0.8529	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9647	10.8	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9628	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	8.5	0.0	5.0	0.0	1.0030	8.5	1.0000	13.5			1	6		
305		ELALTO13.8		13.800	1	11.0	-1.1	12.0	-5.0	1.0200	10.8	0.9949	20.6			1	6		
305		ELALTO13.8		13.800	2	11.0	-1.1	12.0	-5.0	1.0200	10.8	0.9949	20.6			1	6		
305		ELALTO13.8		13.800	3	11.0	-1.1	12.0	-5.0	1.0200	10.8	0.9949	20.6			1	6		
307		CHANG75A		13.800	G1	81.6	-10.3	22.0	-22.0	1.0200	80.6	0.9922	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-1.4	4.0	-4.0	1.0000	8.6	0.9867	35.3			1	6		
322		TGGN100A		13.800	1	85.0	0.0	62.0	0.0	1.0227	83.1	1.0000	118.0			1	6		
323		TGGN100B		13.800	1	85.0	0.0	62.0	0.0	1.0227	83.1	1.0000	118.0			1	6		
340		PEDGALITO138		13.800	P1	19.0	-5.0	12.0	-5.0	1.0486	18.7	0.9671	27.0			1	6		
SUBSYSTEM TOTALS						1452.2	248.4	891.5	-400.0				2068.1						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:40  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
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126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0487	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0487	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	10.4	3.9	8.0	0.0	1.0000	11.1	0.9371	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9951	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9952	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9952	13.0	2	7
140	GAT6A	6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9993	4.1	2	7
140	GAT6A	6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9993	4.1	2	7
140	GAT6A	6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9993	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9857	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9857	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9857	6.2	2	7
SUBSYSTEM TOTALS				74.3	5.0	51.0	-33.0				124.2		



**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Guasquitas-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:57  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0019	230.43	11		M.N230		230.00	6	1.0258	235.93
14		PRO230		230.00	6	1.0246	235.67	96		FOR230		230.00	6	1.0301	236.93
100		BAY230		230.00	6	1.0315	237.24	103		COPESA23		230.00	6	1.0005	230.11

115 PACORA23	230.00	6	1.0078	231.80	144 CANJ230	230.00	6	1.0277	236.37
147 GUASQ230	230.00	6	1.0276	236.35	148 VELAD230	230.00	6	1.0167	233.83
190 CHANG230	230.00	6	1.0306	237.04	306 CHANG75	230.00	6	1.0324	237.44
309 CAISAN230	230.00	6	1.0227	235.22	310 CONCEPCION23230.00	230.00	6	1.0248	235.69
6000 FRONTER	230.00	6	1.0251	235.77					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9833	226.16	3	PANII230	230.00	6	0.9947	228.78
5	CHO230	230.00	6	0.9907	227.86	105	PAN-AM23	230.00	6	0.9909	227.91
511	LGUIAS230	230.00	6	0.9963	229.14	515	PANPOWER230	230.00	6	0.9991	229.79

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:57  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0122	116.40	4	PANII115	115.00	6	1.0138	116.59
6	CHO115	115.00	6	1.0227	117.61	9	LSA115	115.00	6	1.0067	115.77
12	M.N115	115.00	6	1.0200	117.30	15	PRO115	115.00	6	1.0219	117.51
18	CAC115	115.00	6	1.0113	116.30	19	C.V115	115.00	6	1.0022	115.26
20	CH.AZUL	115.00	6	1.0180	117.07	23	CH115	115.00	6	1.0085	115.98
26	LOC115	115.00	6	1.0003	115.03	33	STMI115	115.00	6	1.0100	116.15
48	TINAJ115	115.00	6	1.0072	115.82	50	M.O115	115.00	6	1.0076	115.87
52	TOC115	115.00	6	1.0102	116.17	54	LM115	115.00	6	1.0255	117.93
55	LM2115	115.00	6	1.0254	117.92	61	FFIELD	115.00	9	1.0169	116.95
87	CAL115	115.00	6	1.0291	118.34	88	EST115	115.00	6	1.0313	118.60
92	L.V115	115.00	6	1.0299	118.44	109	STA RITA115	115.00	6	1.0246	117.83
110	PTMD115A	115.00	6	1.0198	117.27	111	PTMD115B	115.00	6	1.0198	117.27
123	MIR115	115.00	7	1.0101	116.16	154	CEMPAN15	115.00	6	1.0198	117.28
191	CHANG115	115.00	6	1.0169	116.95						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
21	C.BAN115	115.00	6	0.9989	114.87	30	MAR115	115.00	6	0.9983	114.81
37	SAN115	115.00	6	0.9976	114.72						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:57  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

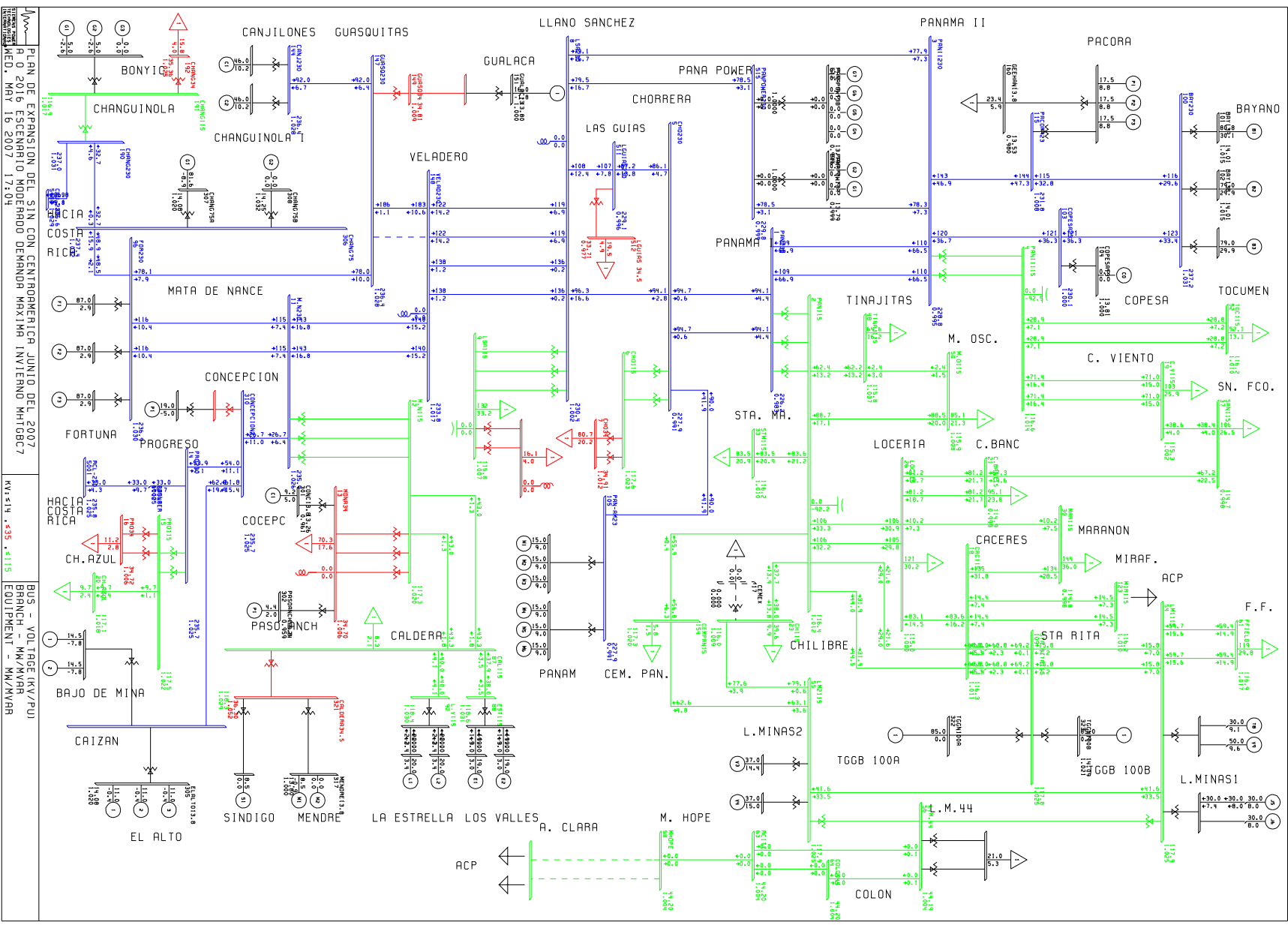
AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	37.0	14.4	17.0	0.0	1.0050	39.5	0.9320	47.0			1	6		
67		BLM13C		13.800	V3	37.0	14.4	17.0	0.0	1.0050	39.5	0.9320	47.0			1	6		
68		BLM13D		13.800	V4	37.0	15.0	17.0	0.0	1.0050	39.7	0.9269	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	8.0	20.0	0.0	1.0000	31.0	0.9666	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	8.0	20.0	0.0	1.0000	31.0	0.9666	39.4			1	6		
72		BLMCCA		13.800	T8	30.0	9.1	20.0	0.0	1.0000	31.4	0.9565	50.0			1	6		
73		BLMCCB		13.800	V9	50.0	9.6	40.0	0.0	1.0000	50.9	0.9821	71.0			1	6		
90		EST-13L		13.800	E1	19.0	3.0	12.0	-5.0	0.9900	19.4	0.9880	27.0			1	6		
91		EST-13T		13.800	E2	19.0	3.0	12.0	-5.0	0.9900	19.4	0.9880	27.0			1	6		
94		LV-13.8L		13.800	L1	20.0	3.4	12.0	-5.0	0.9900	20.5	0.9856	27.0			1	6		
95		LV-13.8T		13.800	L2	20.0	3.4	12.0	-5.0	0.9900	20.5	0.9856	27.0			1	6		
97		FOR13A		13.800	F1	87.0	2.9	50.0	-50.0	1.0290	84.6	0.9995	111.0			1	6		
98		FOR13B		13.800	F2	87.0	2.9	50.0	-50.0	1.0290	84.6	0.9995	111.0			1	6		
99		FOR13C		13.800	F3	87.0	2.9	50.0	-50.0	1.0290	84.6	0.9995	111.0			1	6		
101		BAY13A		13.800	B1	80.8	30.1	50.0	-25.0	1.0150	84.9	0.9370	96.0			1	6	SYST	
102		BAY13B		13.800	B2	79.0	29.9	50.0	-25.0	1.0150	83.2	0.9351	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	1.0222	17.1	0.8575	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	1.0222	17.1	0.8575	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	1.0222	17.1	0.8575	20.7			1	6		
107		PANAM13B		13.800	M4	15.0	9.0	9.0	0.0	1.0222	17.1	0.8575	20.7			1	6		
107		PANAM13B		13.800	M5	15.0	9.0	9.0	0.0	1.0222	17.1	0.8575	20.7			1	6		
107		PANAM13B		13.800	M6	15.0	9.0	9.0	0.0	1.0222	17.1	0.8575	20.7			1	6		
108		BAY13C		13.800	B3	79.0	29.9	50.0	-25.0	1.0150	83.2	0.9351	100.0			1	6		
116		PACORA13		13.800	P1	17.5	8.8	8.8	0.0	1.0358	18.9	0.8928	21.7			1	6		
116		PACORA13		13.800	P2	17.5	8.8	8.8	0.0	1.0358	18.9	0.8928	21.7			1	6		
116		PACORA13		13.800	P3	17.5	8.8	8.8	0.0	1.0358	18.9	0.8928	21.7			1	6		
142		CANJ13A		13.800	C1	46.0	10.2	29.0	-29.0	1.0000	47.1	0.9762	69.0			1	6		
143		CANJ13B		13.800	C2	46.0	10.2	29.0	-29.0	1.0000	47.1	0.9762	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-1.8	10.0	-10.0	1.0000	16.1	0.9939	26.7			1	6		
193		GEBONYIC		13.800	G1	5.0	-2.6	4.0	-4.0	1.0000	5.7	0.8838	35.3			1	6		
193		GEBONYIC		13.800	G2	5.0	-2.6	4.0	-4.0	1.0000	5.7	0.8838	35.3			1	6		
204		BJOMIN13		13.800	1	14.5	-7.8	13.0	-13.0	1.0000	16.5	0.8796	28.9			1	6		
204		BJOMIN13		13.800	2	14.5	-7.8	13.0	-13.0	1.0000	16.5	0.8796	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9610	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9592	5.1	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	8.5	0.0	5.0	0.0	1.0018	8.5	1.0000	13.5			1	6		
305		ELALTO13.8		13.800	1	11.0	-0.4	12.0	-5.0	1.0200	10.8	0.9993	20.6			1	6		
305		ELALTO13.8		13.800	2	11.0	-0.4	12.0	-5.0	1.0200	10.8	0.9993	20.6			1	6		
305		ELALTO13.8		13.800	3	11.0	-0.4	12.0	-5.0	1.0200	10.8	0.9993	20.6			1	6		
307		CHANG75A		13.800	G1	81.6	-8.9	22.0	-22.0	1.0200	80.5	0.9942	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-0.9	4.0	-4.0	1.0000	8.5	0.9949	35.3			1	6		
322		TGGN100A		13.800	1	85.0	0.0	62.0	0.0	1.0211	83.2	1.0000	118.0			1	6		
323		TGGN100B		13.800	1	85.0	0.0	62.0	0.0	1.0211	83.2	1.0000	118.0			1	6		
340		PEDGALITO138		13.800	P1	19.0	-5.0	12.0	-5.0	1.0441	18.8	0.9671	27.0			1	6		
SUBSYSTEM TOTALS						1452.4	259.0	891.5	-400.0				2068.1						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 14:57  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0472	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0473	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	10.4	4.5	8.0	0.0	1.0000	11.3	0.9179	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9943	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9944	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9944	13.0	2	7
140	GAT6A	6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9988	4.1	2	7
140	GAT6A	6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9988	4.1	2	7
140	GAT6A	6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9988	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9866	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9866	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9866	6.2	2	7
SUBSYSTEM TOTALS				74.3	6.0	51.0	-33.0				124.2		





**PLAN DE EXPANSIÓN DEL SIN**  
**AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**  
**Contingencia Mata de Nance-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:03  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0040	230.91	11		M.N230		230.00	6	1.0271	236.23
14		PRO230		230.00	6	1.0255	235.86	96		FOR230		230.00	6	1.0296	236.80

100 BAY230	230.00	6	1.0322	237.40	103 COPESA23	230.00	6	1.0016	230.37
115 PACORA23	230.00	6	1.0089	232.05	144 CANJ230	230.00	6	1.0266	236.13
147 GUASQ230	230.00	6	1.0266	236.11	148 VELAD230	230.00	6	1.0192	234.41
190 CHANG230	230.00	6	1.0305	237.02	306 CHANG75	230.00	6	1.0322	237.41
309 CAISAN230	230.00	6	1.0233	235.37	310 CONCEPCION23	230.00	6	1.0257	235.91
515 PANPOWER230	230.00	6	1.0005	230.10	6000 FRONTER	230.00	6	1.0259	235.96

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9845	226.44	3		PANII230		230.00	6	0.9959	229.06
5		CHO230		230.00	6	0.9921	228.19	105		PAN-AM23		230.00	6	0.9923	228.24
511		LGUIAS230		230.00	6	0.9981	229.56								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:03  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0133	116.53	4		PANII115		115.00	6	1.0150	116.73
6		CHO115		115.00	6	1.0242	117.79	9		LSA115		115.00	6	1.0089	116.02
12		M.N115		115.00	6	1.0209	117.41	15		PRO115		115.00	6	1.0227	117.61
18		CAC115		115.00	6	1.0124	116.43	19		C.V115		115.00	6	1.0034	115.40
20		CH.AZUL		115.00	6	1.0188	117.17	21		C.BAN115		115.00	6	1.0001	115.01
23		CH115		115.00	6	1.0094	116.09	26		LOC115		115.00	6	1.0014	115.17
33		STM115		115.00	6	1.0112	116.29	48		TINAJ115		115.00	6	1.0083	115.96
50		M.O115		115.00	6	1.0087	116.00	52		TOC115		115.00	6	1.0114	116.31
54		LM1115		115.00	6	1.0261	118.00	55		LM2115		115.00	6	1.0260	117.99
61		FFIELD		115.00	9	1.0175	117.02	87		CAL115		115.00	6	1.0297	118.41
88		EST115		115.00	6	1.0319	118.66	92		L.V115		115.00	6	1.0305	118.51
109		STA RITA115		115.00	6	1.0253	117.90	110		PTMD115A		115.00	6	1.0206	117.37
111		PTMD115B		115.00	6	1.0206	117.37	123		MIR115		115.00	7	1.0112	116.28
154		CEMPAN15		115.00	6	1.0206	117.37	191		CHANG115		115.00	6	1.0169	116.94

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
30		MAR115		115.00	6	0.9995	114.94	37		SAN115		115.00	6	0.9988	114.86

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:03  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

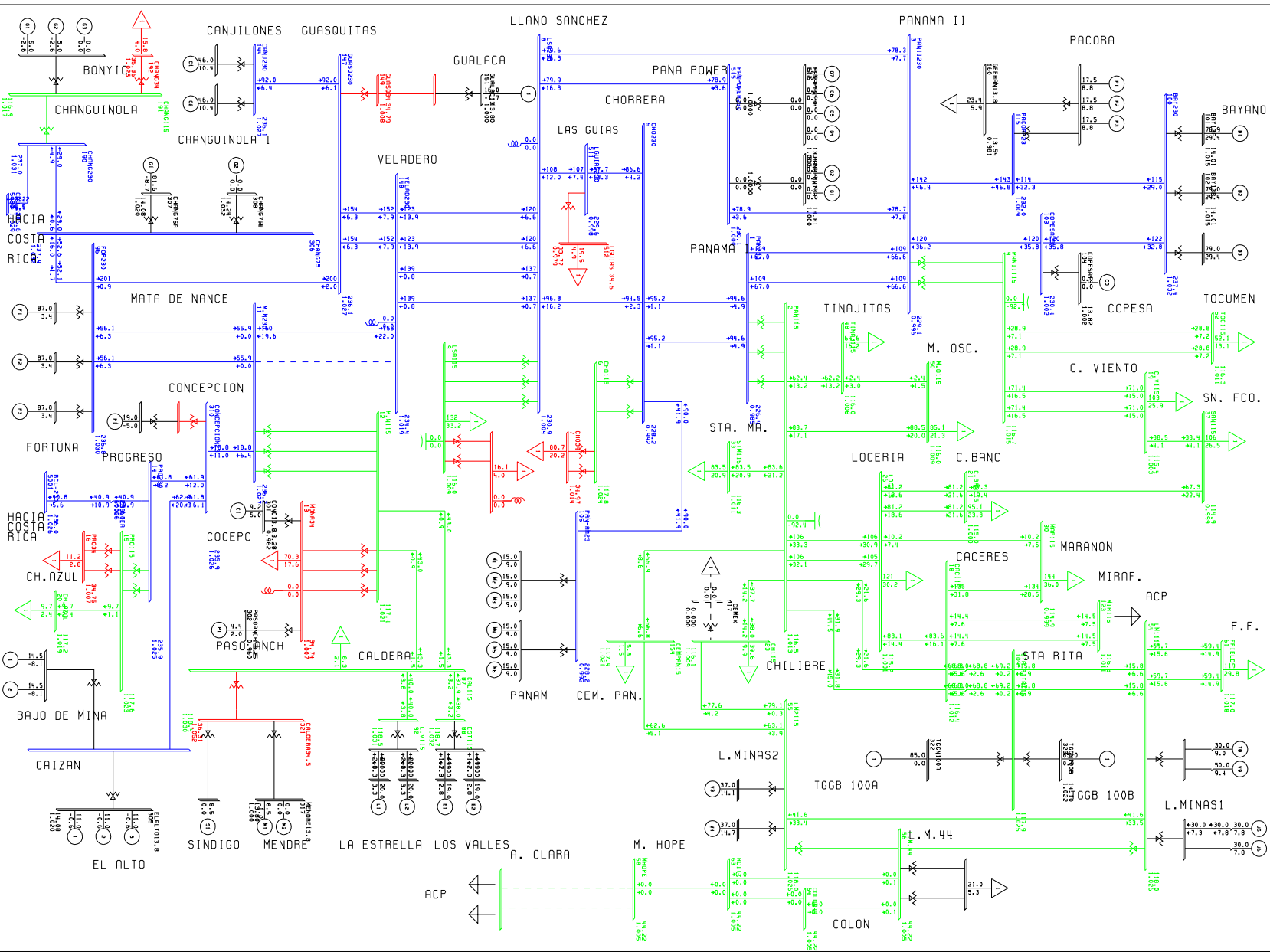
BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66	BLM13B	13.800	V2	37.0	14.1	17.0	0.0	1.0050	39.4	0.9341	47.0			1	6		
67	BLM13C	13.800	V3	37.0	14.1	17.0	0.0	1.0050	39.4	0.9341	47.0			1	6		
68	BLM13D	13.800	V4	37.0	14.7	17.0	0.0	1.0050	39.6	0.9292	47.0			1	6		
70	TGJB13A	13.800	J5	30.0	7.8	20.0	0.0	1.0000	31.0	0.9678	39.4			1	6		
71	TGJB13B	13.800	J6	30.0	7.8	20.0	0.0	1.0000	31.0	0.9678	39.4			1	6		
72	BLMCCA	13.800	T8	30.0	9.0	20.0	0.0	1.0000	31.3	0.9579	50.0			1	6		
73	BLMCCB	13.800	V9	50.0	9.4	40.0	0.0	1.0000	50.9	0.9827	71.0			1	6		
90	EST-13L	13.800	E1	19.0	2.8	12.0	-5.0	0.9900	19.4	0.9892	27.0			1	6		
91	EST-13T	13.800	E2	19.0	2.8	12.0	-5.0	0.9900	19.4	0.9892	27.0			1	6		
94	LV-13.8L	13.800	L1	20.0	3.3	12.0	-5.0	0.9900	20.5	0.9870	27.0			1	6		
95	LV-13.8T	13.800	L2	20.0	3.3	12.0	-5.0	0.9900	20.5	0.9870	27.0			1	6		
97	FOR13A	13.800	F1	87.0	3.4	50.0	-50.0	1.0290	84.6	0.9992	111.0			1	6		
98	FOR13B	13.800	F2	87.0	3.4	50.0	-50.0	1.0290	84.6	0.9992	111.0			1	6		
99	FOR13C	13.800	F3	87.0	3.4	50.0	-50.0	1.0290	84.6	0.9992	111.0			1	6		
101	BAY13A	13.800	B1	78.9	29.4	50.0	-25.0	1.0150	82.9	0.9371	96.0			1	6	SYST	
102	BAY13B	13.800	B2	79.0	29.4	50.0	-25.0	1.0150	83.0	0.9372	96.0			1	6		
106	PANAM13A	13.800	M1	15.0	9.0	9.0	0.0	1.0235	17.1	0.8575	20.7			1	6		
106	PANAM13A	13.800	M2	15.0	9.0	9.0	0.0	1.0235	17.1	0.8575	20.7			1	6		
106	PANAM13A	13.800	M3	15.0	9.0	9.0	0.0	1.0235	17.1	0.8575	20.7			1	6		
107	PANAM13B	13.800	M4	15.0	9.0	9.0	0.0	1.0235	17.1	0.8575	20.7			1	6		
107	PANAM13B	13.800	M5	15.0	9.0	9.0	0.0	1.0235	17.1	0.8575	20.7			1	6		
107	PANAM13B	13.800	M6	15.0	9.0	9.0	0.0	1.0235	17.1	0.8575	20.7			1	6		
108	BAY13C	13.800	B3	79.0	29.4	50.0	-25.0	1.0150	83.0	0.9372	100.0			1	6		
116	PACORA13	13.800	P1	17.5	8.8	8.8	0.0	1.0368	18.9	0.8928	21.7			1	6		
116	PACORA13	13.800	P2	17.5	8.8	8.8	0.0	1.0368	18.9	0.8928	21.7			1	6		
116	PACORA13	13.800	P3	17.5	8.8	8.8	0.0	1.0368	18.9	0.8928	21.7			1	6		
142	CANJ13A	13.800	C1	46.0	10.4	29.0	-29.0	1.0000	47.2	0.9754	69.0			1	6		
143	CANJ13B	13.800	C2	46.0	10.4	29.0	-29.0	1.0000	47.2	0.9754	69.0			1	6		
151	GUALAC13	13.800	1	16.0	-1.7	10.0	-10.0	1.0000	16.1	0.9945	26.7			1	6		
193	GEBONYIC	13.800	G1	5.0	-2.6	4.0	-4.0	1.0000	5.7	0.8843	35.3			1	6		
193	GEBONYIC	13.800	G2	5.0	-2.6	4.0	-4.0	1.0000	5.7	0.8843	35.3			1	6		
204	BJOMIN13	13.800	1	14.5	-8.1	13.0	-13.0	1.0000	16.6	0.8737	28.9			1	6		
204	BJOMIN13	13.800	2	14.5	-8.1	13.0	-13.0	1.0000	16.6	0.8737	28.9			1	6		
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9620	10.9	0.8784	13.5			1	6		
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9601	5.1	0.9110	6.2			1	6		
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0021	8.5	1.0000	13.5			1	6		
305	ELALTO13.8	13.800	1	11.0	-0.6	12.0	-5.0	1.0200	10.8	0.9986	20.6			1	6		
305	ELALTO13.8	13.800	2	11.0	-0.6	12.0	-5.0	1.0200	10.8	0.9986	20.6			1	6		
305	ELALTO13.8	13.800	3	11.0	-0.6	12.0	-5.0	1.0200	10.8	0.9986	20.6			1	6		
307	CHANG75A	13.800	G1	81.6	-8.7	22.0	-22.0	1.0200	80.5	0.9944	118.6			1	6		
317	MENDRE13.8	13.800	M1	8.5	-1.0	4.0	-4.0	1.0000	8.6	0.9932	35.3			1	6		
322	TGGN100A	13.800	1	85.0	0.0	62.0	0.0	1.0218	83.2	1.0000	118.0			1	6		
323	TGGN100B	13.800	1	85.0	0.0	62.0	0.0	1.0218	83.2	1.0000	118.0			1	6		
340	PEDGALITO138	13.800	P1	19.0	-5.0	12.0	-5.0	1.0451	18.8	0.9671	27.0			1	6		
SUBSYSTEM TOTALS				1450.6	256.2	891.5	-400.0				2068.1						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:03  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING
------	----------	-----------	----	----	------	------	------	-------	---------	----	--------	-----------	--------	------	------	-------

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0478	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0478	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	10.4	4.2	8.0	0.0	1.0000	11.2	0.9258	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0	2	7
140	GAT6A	6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9990	4.1	2	7
140	GAT6A	6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9990	4.1	2	7
140	GAT6A	6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9990	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9862	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9862	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9862	6.2	2	7
SUBSYSTEM TOTALS				74.3	5.6	51.0	-33.0				124.2		



PLAN DE EXPANSION DEL SIN CON CENTROOPERATIVA JUNIO DEL 2007  
 P. O 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO HHTOBC7  
 M.D., MAY 16 2007. 17:05  
 KW:514 -435 -5115  
 BUS - VOL TIGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Santa Rita-Cáceres**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:09  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0254	235.84	14	PRO	230		230.00	6	1.0246	235.65
96	FOR	230		230.00	6	1.0288	236.63	100	BAY	230		230.00	6	1.0166	233.81
144	CANJ	230		230.00	6	1.0257	235.90	147	GUASQ	230		230.00	6	1.0256	235.88

148	VELAD230	230.00	6	1.0149	233.43	190	CHANG230	230.00	6	1.0303	236.97
306	CHANG75	230.00	6	1.0319	237.34	309	CAISAN230	230.00	6	1.0226	235.19
310	CONCEPCION23	230.00	6	1.0246	235.65	6000	FRONTER	230.00	6	1.0251	235.76

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9563	219.94	3		PANII230		230.00	6	0.9701	223.12
5		CHO230		230.00	6	0.9667	222.34	8		LSA230		230.00	6	0.9900	227.70
103		COPESA23		230.00	6	0.9773	224.79	105		PAN-AM23		230.00	6	0.9669	222.38
115		PACORA23		230.00	6	0.9860	226.77	511		LGUIAS230		230.00	6	0.9791	225.19
515		PANPOWER230		230.00	6	0.9765	224.60								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:09  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0166	116.91	4		PANII115		115.00	6	1.0113	116.30
12		M.N115		115.00	6	1.0197	117.26	15		PRO115		115.00	6	1.0218	117.51
18		CAC115		115.00	6	1.0156	116.79	19		C.V115		115.00	6	1.0016	115.19
20		CH.AZUL		115.00	6	1.0179	117.06	21		C.BAN115		115.00	6	1.0025	115.29
23		CH115		115.00	6	1.0111	116.27	26		LOC115		115.00	6	1.0041	115.47
30		MAR115		115.00	6	1.0024	115.28	33		STM115		115.00	6	1.0145	116.67
37		SAN115		115.00	6	1.0008	115.09	48		TINAJ115		115.00	6	1.0117	116.34
50		M.O115		115.00	6	1.0121	116.39	52		TOC115		115.00	6	1.0077	115.88
54		LM115		115.00	6	1.0286	118.29	55		LM2115		115.00	6	1.0281	118.24
61		FFIELD		115.00	9	1.0201	117.31	87		CAL115		115.00	6	1.0289	118.32
88		EST115		115.00	6	1.0312	118.58	92		L.V115		115.00	6	1.0298	118.42
109		STA RITA115		115.00	6	1.0287	118.30	110		PTMD115A		115.00	6	1.0233	117.68
123		MIR115		115.00	7	1.0141	116.62	154		CEMPAN15		115.00	6	1.0221	117.54
191		CHANG115		115.00	6	1.0168	116.93								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6		CHO115		115.00	6	0.9968	114.63	9		LSA115		115.00	6	0.9942	114.33



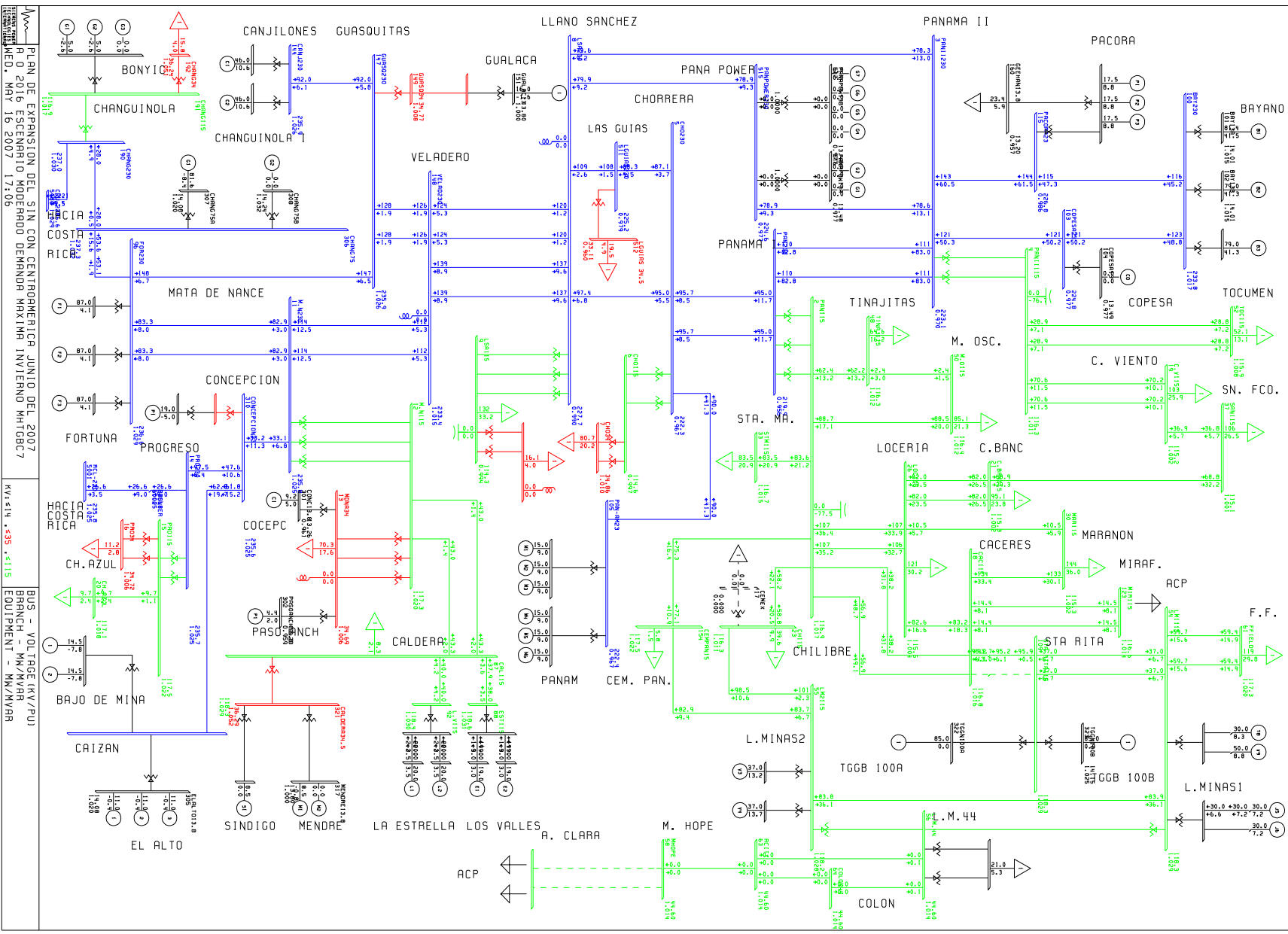
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:09  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	37.0	13.2	17.0	0.0	1.0050	39.1	0.9418	47.0			1	6	
67		BLM13C		13.800	V3	37.0	13.2	17.0	0.0	1.0050	39.1	0.9418	47.0			1	6	
68		BLM13D		13.800	V4	37.0	13.7	17.0	0.0	1.0050	39.3	0.9374	47.0			1	6	
70		TGJB13A		13.800	J5	30.0	7.2	20.0	0.0	1.0000	30.8	0.9727	39.4			1	6	
71		TGJB13B		13.800	J6	30.0	7.2	20.0	0.0	1.0000	30.8	0.9727	39.4			1	6	
72		BLMCCA		13.800	T8	30.0	8.3	20.0	0.0	1.0000	31.1	0.9634	50.0			1	6	
73		BLMCCB		13.800	V9	50.0	8.8	40.0	0.0	1.0000	50.8	0.9849	71.0			1	6	
90		EST-13L		13.800	E1	19.0	3.0	12.0	-5.0	0.9900	19.4	0.9877	27.0			1	6	
91		EST-13T		13.800	E2	19.0	3.0	12.0	-5.0	0.9900	19.4	0.9877	27.0			1	6	
94		LV-13.8L		13.800	L1	20.0	3.5	12.0	-5.0	0.9900	20.5	0.9852	27.0			1	6	
95		LV-13.8T		13.800	L2	20.0	3.5	12.0	-5.0	0.9900	20.5	0.9852	27.0			1	6	
97		FOR13A		13.800	F1	87.0	4.1	50.0	-50.0	1.0290	84.6	0.9989	111.0			1	6	
98		FOR13B		13.800	F2	87.0	4.1	50.0	-50.0	1.0290	84.6	0.9989	111.0			1	6	
99		FOR13C		13.800	F3	87.0	4.1	50.0	-50.0	1.0290	84.6	0.9989	111.0			1	6	
101		BAY13A		13.800	B1	81.4	41.5	50.0	-25.0	1.0150	90.0	0.8908	96.0			1	6	SYST
102		BAY13B		13.800	B2	79.0	41.3	50.0	-25.0	1.0150	87.8	0.8863	96.0			1	6	
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	0.9998	17.5	0.8575	20.7			1	6	
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	0.9998	17.5	0.8575	20.7			1	6	
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	0.9998	17.5	0.8575	20.7			1	6	
107		PANAM13B		13.800	M4	15.0	9.0	9.0	0.0	0.9998	17.5	0.8575	20.7			1	6	
107		PANAM13B		13.800	M5	15.0	9.0	9.0	0.0	0.9998	17.5	0.8575	20.7			1	6	
107		PANAM13B		13.800	M6	15.0	9.0	9.0	0.0	0.9998	17.5	0.8575	20.7			1	6	
108		BAY13C		13.800	B3	79.0	41.3	50.0	-25.0	1.0150	87.8	0.8863	100.0			1	6	
116		PACORA13		13.800	P1	17.5	8.8	8.8	0.0	1.0140	19.3	0.8928	21.7			1	6	
116		PACORA13		13.800	P2	17.5	8.8	8.8	0.0	1.0140	19.3	0.8928	21.7			1	6	
116		PACORA13		13.800	P3	17.5	8.8	8.8	0.0	1.0140	19.3	0.8928	21.7			1	6	
142		CANJ13A		13.800	C1	46.0	10.6	29.0	-29.0	1.0000	47.2	0.9747	69.0			1	6	
143		CANJ13B		13.800	C2	46.0	10.6	29.0	-29.0	1.0000	47.2	0.9747	69.0			1	6	
151		GUALAC13		13.800	1	16.0	-1.6	10.0	-10.0	1.0000	16.1	0.9951	26.7			1	6	
193		GEBONYIC		13.800	G1	5.0	-2.6	4.0	-4.0	1.0000	5.6	0.8860	35.3			1	6	
193		GEBONYIC		13.800	G2	5.0	-2.6	4.0	-4.0	1.0000	5.6	0.8860	35.3			1	6	
204		BJOMIN13		13.800	1	14.5	-7.8	13.0	-13.0	1.0000	16.5	0.8808	28.9			1	6	
204		BJOMIN13		13.800	2	14.5	-7.8	13.0	-13.0	1.0000	16.5	0.8808	28.9			1	6	
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9608	10.9	0.8784	13.5			1	6	
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9589	5.1	0.9110	6.2			1	6	
303		SIND13.8		13.800	S1	8.5	0.0	5.0	0.0	1.0017	8.5	1.0000	13.5			1	6	
305		ELALTO13.8		13.800	1	11.0	-0.4	12.0	-5.0	1.0200	10.8	0.9994	20.6			1	6	
305		ELALTO13.8		13.800	2	11.0	-0.4	12.0	-5.0	1.0200	10.8	0.9994	20.6			1	6	
305		ELALTO13.8		13.800	3	11.0	-0.4	12.0	-5.0	1.0200	10.8	0.9994	20.6			1	6	
307		CHANG75A		13.800	G1	81.6	-8.4	22.0	-22.0	1.0200	80.4	0.9947	118.6			1	6	
317		MENDRE13.8		13.800	M1	8.5	-0.8	4.0	-4.0	1.0000	8.5	0.9954	35.3			1	6	
322		TGGN100A		13.800	1	85.0	0.0	62.0	0.0	1.0252	82.9	1.0000	118.0			1	6	
323		TGGN100B		13.800	1	85.0	0.0	62.0	0.0	1.0252	82.9	1.0000	118.0			1	6	
340		PEDGALITO138		13.800	P1	19.0	-5.0	12.0	-5.0	1.0439	18.8	0.9671	27.0			1	6	
SUBSYSTEM TOTALS						1453.0	291.7	891.5	-400.0				2068.1					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:09  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0494	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0494	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	10.4	3.6	8.0	0.0	1.0000	11.0	0.9460	27.7	2	7
134	MAD6A	6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0	2	7
135	MAD6B	6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9956	13.0	2	7
136	MAD6C	6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9956	13.0	2	7
140	GAT6A	6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9995	4.1	2	7
140	GAT6A	6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9995	4.1	2	7
140	GAT6A	6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9995	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2	2	7
SUBSYSTEM TOTALS				74.3	4.5	51.0	-33.0				124.2		



PLAN DE EXPANSION DEL SIN CON CENTRIGRICA JUNIO DEL 2007  
 A 0 2016 ESCENARIO MODERADO DEMANDA MXL114H INVIERNO HATBOC7  
 MED. MAY 16 2007 17:06

KV:114 .535 .5115  
 BUS - VOLTAJE (KV/FU)  
 BRANCHA - MW/MVAR  
 EQUIPAMIENTO - MW/MVAR

**MHTGDC7**  
**Flujos de Potencia**

**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:37  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0172	233.95	14	PRO230	230.00	6	1.0177	234.08				
96	FOR230	230.00	6	1.0212	234.88	100	BAY230	230.00	6	1.0142	233.26				
144	CANJ230	230.00	6	1.0167	233.84	147	GUASQ230	230.00	6	1.0165	233.80				
148	VELAD230	230.00	6	1.0026	230.60	190	CHANG230	230.00	6	1.0271	236.23				
306	CHANG75	230.00	6	1.0283	236.50	309	CAISAN230	230.00	6	1.0163	233.76				
310	CONCEPCION230	230.00	6	1.0175	234.02	6000	FRONTER	230.00	6	1.0182	234.18				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9574	220.20	3	PANII230	230.00	6	0.9695	222.97				
5	CHO230	230.00	6	0.9646	221.85	8	LSA230	230.00	6	0.9786	225.07				
103	COPESA23	230.00	6	0.9764	224.58	105	PAN-AM23	230.00	6	0.9648	221.89				
115	PACORA23	230.00	6	0.9850	226.54	511	LGUIAS230	230.00	6	0.9706	223.23				
515	PANPOWER230	230.00	6	0.9728	223.74										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:38  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0138	116.58	4	PANIII115	115.00	6	1.0091	116.05				
12	M.N115	115.00	6	1.0144	116.66	15	PRO115	115.00	6	1.0153	116.76				
18	CAC115	115.00	6	1.0130	116.49	19	C.V115	115.00	6	1.0006	115.07				
20	CH.AZUL	115.00	6	1.0119	116.37	21	C.BAN115	115.00	6	1.0015	115.17				
23	CH115	115.00	6	1.0124	116.42	26	LOC115	115.00	6	1.0029	115.33				
30	MAR115	115.00	6	1.0014	115.16	33	STM115	115.00	6	1.0119	116.37				
48	TINAJ115	115.00	6	1.0095	116.09	50	M.O115	115.00	6	1.0098	116.13				
52	TOC115	115.00	6	1.0060	115.69	54	LM1115	115.00	6	1.0257	117.95				
55	LM2115	115.00	6	1.0263	118.03	61	FFIELD	115.00	9	1.0183	117.11				
87	CAL115	115.00	6	1.0258	117.96	88	EST115	115.00	6	1.0283	118.26				
92	L.V115	115.00	6	1.0268	118.08	109	STA RITA115	115.00	6	1.0244	117.80				
110	PTMD115A	115.00	6	1.0200	117.30	111	PTMD115B	115.00	6	1.0200	117.30				
123	MIR115	115.00	7	1.0119	116.36	154	CEMPAN15	115.00	6	1.0222	117.55				
191	CHANG115	115.00	6	1.0143	116.64										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6	CHO115	115.00	6	0.9978	114.74	9	LSA115	115.00	6	0.9851	113.29				
37	SAN115	115.00	6	1.0000	115.00										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:37  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	13.5	17.0	0.0	1.0050	32.7	0.9123	47.0				1	6	
67		BLM13C		13.800	V3	30.0	13.5	17.0	0.0	1.0050	32.7	0.9123	47.0				1	6	
68		BLM13D		13.800	V4	30.0	14.1	17.0	0.0	1.0050	33.0	0.9054	47.0				1	6	
70		TGJB13A		13.800	J5	30.0	7.9	20.0	0.0	1.0000	31.0	0.9670	39.4				1	6	
71		TGJB13B		13.800	J6	30.0	7.9	20.0	0.0	1.0000	31.0	0.9670	39.4				1	6	
73		BLMCCB		13.800	V9	25.0	11.5	40.0	0.0	1.0000	27.5	0.9087	71.0				1	6	
90		EST-13L		13.800	E1	19.0	3.8	12.0	-5.0	0.9900	19.6	0.9804	27.0				1	6	
91		EST-13T		13.800	E2	19.0	3.8	12.0	-5.0	0.9900	19.6	0.9804	27.0				1	6	
94		LV-13.8L		13.800	L1	21.0	4.4	12.0	-5.0	0.9900	21.7	0.9787	27.0				1	6	
95		LV-13.8T		13.800	L2	21.0	4.4	12.0	-5.0	0.9900	21.7	0.9787	27.0				1	6	
97		FOR13A		13.800	F1	87.0	11.3	50.0	-50.0	1.0290	85.3	0.9917	111.0				1	6	
98		FOR13B		13.800	F2	87.0	11.3	50.0	-50.0	1.0290	85.3	0.9917	111.0				1	6	
99		FOR13C		13.800	F3	87.0	11.3	50.0	-50.0	1.0290	85.3	0.9917	111.0				1	6	
101		BAY13A		13.800	B1	80.3	39.1	50.0	-25.0	1.0100	88.4	0.8991	96.0				1	6	
102		BAY13B		13.800	B2	80.1	39.1	50.0	-25.0	1.0100	88.3	0.8988	96.0				1	6	
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	0.9978	17.5	0.8575	20.7				1	6	
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	0.9978	17.5	0.8575	20.7				1	6	
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	0.9978	17.5	0.8575	20.7				1	6	
107		PANAM13B		13.800	M4	15.0	9.0	9.0	0.0	0.9978	17.5	0.8575	20.7				1	6	
107		PANAM13B		13.800	M5	15.0	9.0	9.0	0.0	0.9978	17.5	0.8575	20.7				1	6	
107		PANAM13B		13.800	M6	15.0	9.0	9.0	0.0	0.9978	17.5	0.8575	20.7				1	6	
108		BAY13C		13.800	B3	80.1	39.1	50.0	-25.0	1.0100	88.3	0.8988	100.0				1	6	
116		PACORA13		13.800	P1	14.6	8.8	8.8	0.0	1.0171	16.8	0.8557	21.7				1	6	
116		PACORA13		13.800	P2	14.6	8.8	8.8	0.0	1.0171	16.8	0.8557	21.7				1	6	
116		PACORA13		13.800	P3	14.6	8.8	8.8	0.0	1.0171	16.8	0.8557	21.7				1	6	
142		CANJ13A		13.800	C1	43.5	11.3	29.0	-29.0	1.0000	44.9	0.9680	69.0				1	6	
143		CANJ13B		13.800	C2	43.5	11.3	29.0	-29.0	1.0000	44.9	0.9680	69.0				1	6	
151		GUALAC13		13.800	1	16.0	-0.8	10.0	-10.0	1.0000	16.0	0.9988	26.7				1	6	
193		GEBONYIC		13.800	G1	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9883	35.3				1	6	
193		GEBONYIC		13.800	G2	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9883	35.3				1	6	
193		GEBONYIC		13.800	G3	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9883	35.3				1	6	
204		BJOMIN13		13.800	1	18.5	-5.4	13.0	-13.0	1.0000	19.3	0.9602	28.9				1	6	
204		BJOMIN13		13.800	2	18.5	-5.4	13.0	-13.0	1.0000	19.3	0.9602	28.9				1	6	
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9581	10.9	0.8784	13.5				1	6	
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9562	5.1	0.9110	6.2				1	6	
303		SIND13.8		13.800	S1	9.0	0.0	5.0	0.0	1.0002	9.0	1.0000	13.5				1	6	
307		CHANG75A		13.800	G1	87.0	-4.4	22.0	-22.0	1.0200	85.4	0.9987	118.6				1	6	
308		CHANG75B		13.800	G2	87.0	-4.4	50.0	-22.0	1.0200	85.4	0.9987	118.6				1	6	
317		MENDRE13.8		13.800	M1	8.5	-0.1	4.0	-4.0	1.0000	8.5	0.9999	35.3				1	6	
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0358	19.9	0.9701	27.0				1	6	
SUBSYSTEM TOTALS						1279.5	316.8	765.5	-411.0				1874.2						

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:37  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

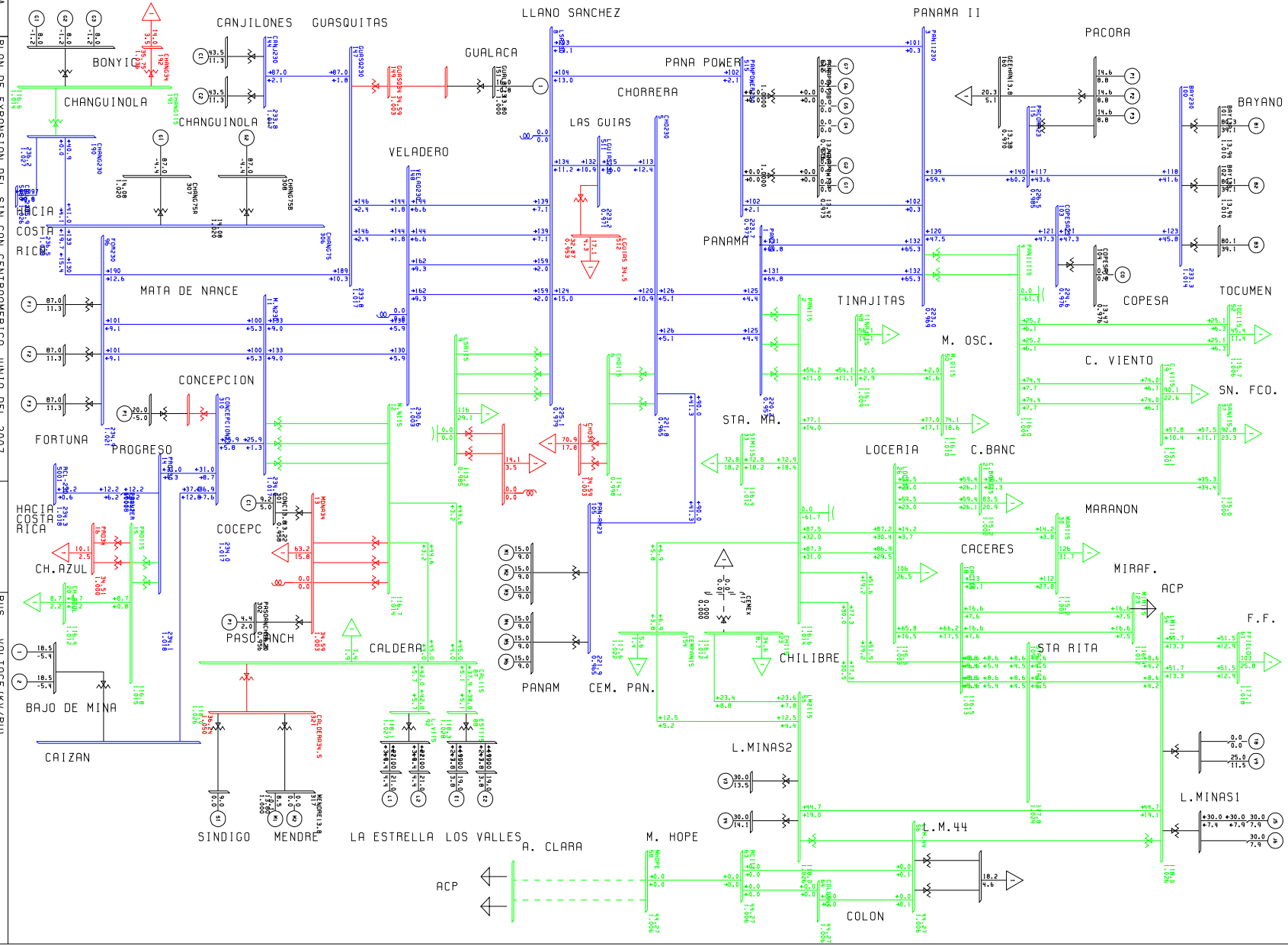
126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0489	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0489	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	3.8	8.0	0.0	1.0000	10.4	0.9320	27.7	2	7
134	MAD6A	6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9954	13.0	2	7
135	MAD6B	6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0	2	7
136	MAD6C	6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9846	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9846	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9846	6.2	2	7
SUBSYSTEM TOTALS				73.3	4.6	51.0	-33.0				124.2		



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:38  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.8	290.6	-188.3	0.0	302.8	-5.2	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.9	224.5	-98.9	0.0	143.2	-96.9	147.4	
5	1345.6	1324.8	0.0	0.0	0.0	0.1	20.7	0.0
C.RICA	265.2	569.4	-237.1	0.0	468.2	35.7	365.3	
6	1279.5	1136.0	0.0	0.0	0.0	88.4	55.1	25.0
PANAMA	316.8	284.7	-122.8	0.0	452.0	57.1	549.7	
7	73.3	38.7	0.0	0.0	0.0	33.1	1.5	50.0
ACANAL	4.6	9.7	0.0	0.0	0.0	-15.2	10.1	
9	0.0	121.3	0.0	0.0	0.0	-121.6	0.4	-75.0
COLON	0.0	30.4	0.0	0.0	1.1	-31.8	2.5	
TOTALS	6502.7	6347.6	0.0	0.0	0.0	0.0	155.1	0.0
	805.9	1941.1	-971.3	0.0	2000.1	0.0	1836.1	

PLAN DE EXPANSION DEL SIN CON CENTROFERICA JUNIO DEL 2007  
 A O 2013 ESCENARIO MODERNO DEMANDA MAXIMA INVIERNO  
 MED. MAY 16 2007 15:55  
 KY:514 .435 .4115  
 BUS - VOLTAGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MM/MVAR



**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MAXIMA VERANO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:51  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0030	230.70	11		M.N230		230.00	6	1.0272	236.27
14		PRO230		230.00	6	1.0261	236.00	96		FOR230		230.00	6	1.0297	236.83
100		BAY230		230.00	6	1.0276	236.36	115		PACORA23		230.00	6	1.0057	231.31
144		CANJ230		230.00	6	1.0277	236.36	147		GUASQ230		230.00	6	1.0276	236.34
148		VELAD230		230.00	6	1.0202	234.65	190		CHANG230		230.00	6	1.0293	236.74
306		CHANG75		230.00	6	1.0308	237.09	309		CAISAN230		230.00	6	1.0230	235.30
310		CONCEPCION23		230.00	6	1.0260	235.97	6000		FRONTER		230.00	6	1.0265	236.10

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9824	225.95	3		PANII230		230.00	6	0.9932	228.43
5		CHO230		230.00	6	0.9903	227.76	103		COPESA23		230.00	6	0.9988	229.72
105		PAN-AM23		230.00	6	0.9904	227.80	511		LGUIAS230		230.00	6	0.9964	229.18
515		PANPOWER230		230.00	6	0.9982	229.57								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:51  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0138	116.59	4		PANII115		115.00	6	1.0091	116.04
6		CHO115		115.00	6	1.0254	117.92	9		LSA115		115.00	6	1.0108	116.24
12		M.N115		115.00	6	1.0222	117.55	15		PRO115		115.00	6	1.0237	117.73
18		CAC115		115.00	6	1.0130	116.50	19		C.V115		115.00	6	1.0006	115.07
20		CH.AZUL		115.00	6	1.0203	117.34	21		C.BAN115		115.00	6	1.0015	115.18
23		CH115		115.00	6	1.0127	116.46	26		LOC115		115.00	6	1.0029	115.34
30		MAR115		115.00	6	1.0015	115.17	33		STM115		115.00	6	1.0120	116.37
37		SAN115		115.00	6	1.0000	115.00	48		TINAJ115		115.00	6	1.0096	116.10
50		M.O115		115.00	6	1.0099	116.14	52		TOC115		115.00	6	1.0059	115.68
54		LM1115		115.00	6	1.0272	118.13	55		LM2115		115.00	6	1.0277	118.18
61		FFIELD		115.00	9	1.0198	117.28	87		CAL115		115.00	6	1.0305	118.50
88		EST115		115.00	6	1.0325	118.74	92		L.V115		115.00	6	1.0313	118.60
109		STA RITA115		115.00	6	1.0255	117.94	110		PTMD115A		115.00	6	1.0211	117.42
111		PTMD115B		115.00	6	1.0211	117.42	123		MIR115		115.00	7	1.0119	116.37
154		CEMPAN15		115.00	6	1.0230	117.64	191		CHANG115		115.00	6	1.0163	116.88

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:50  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGDC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	34.5	13.2	17.0	0.0	1.0050	36.8	0.9338	47.0			1	6	
67	BLM13C	13.800	V3	34.5	13.2	17.0	0.0	1.0050	36.8	0.9338	47.0			1	6	
68	BLM13D	13.800	V4	34.5	13.8	17.0	0.0	1.0050	37.0	0.9288	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	7.5	20.0	0.0	1.0000	30.9	0.9700	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	7.5	20.0	0.0	1.0000	30.9	0.9700	39.4			1	6	
72	BLMCCA	13.800	T8	30.0	8.7	20.0	0.0	1.0000	31.2	0.9604	50.0			1	6	
73	BLMCCB	13.800	V9	50.0	9.1	40.0	0.0	1.0000	50.8	0.9837	71.0			1	6	
90	EST-13L	13.800	E1	18.0	2.6	12.0	-5.0	0.9900	18.4	0.9901	27.0			1	6	
91	EST-13T	13.800	E2	18.0	2.6	12.0	-5.0	0.9900	18.4	0.9901	27.0			1	6	
94	LV-13.8L	13.800	L1	20.0	3.0	12.0	-5.0	0.9900	20.4	0.9887	27.0			1	6	
95	LV-13.8T	13.800	L2	20.0	3.0	12.0	-5.0	0.9900	20.4	0.9887	27.0			1	6	
97	FOR13A	13.800	F1	87.0	3.3	50.0	-50.0	1.0290	84.6	0.9993	111.0			1	6	
98	FOR13B	13.800	F2	87.0	3.3	50.0	-50.0	1.0290	84.6	0.9993	111.0			1	6	
99	FOR13C	13.800	F3	87.0	3.3	50.0	-50.0	1.0290	84.6	0.9993	111.0			1	6	
101	BAY13A	13.800	B1	57.7	26.9	50.0	-25.0	1.0100	63.0	0.9064	96.0			1	6	SYST
102	BAY13B	13.800	B2	57.5	26.9	50.0	-25.0	1.0100	62.8	0.9059	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	8.7	9.0	0.0	1.0200	17.0	0.8644	20.7			1	6	
106	PANAM13A	13.800	M2	15.0	8.7	9.0	0.0	1.0200	17.0	0.8644	20.7			1	6	
106	PANAM13A	13.800	M3	15.0	8.7	9.0	0.0	1.0200	17.0	0.8644	20.7			1	6	
107	PANAM13B	13.800	M4	15.0	8.7	9.0	0.0	1.0200	17.0	0.8644	20.7			1	6	
107	PANAM13B	13.800	M5	15.0	8.7	9.0	0.0	1.0200	17.0	0.8644	20.7			1	6	
107	PANAM13B	13.800	M6	15.0	8.7	9.0	0.0	1.0200	17.0	0.8644	20.7			1	6	
108	BAY13C	13.800	B3	57.5	26.9	50.0	-25.0	1.0100	62.8	0.9059	100.0			1	6	
116	PACORA13	13.800	P1	17.3	7.6	8.8	0.0	1.0300	18.3	0.9164	21.7			1	6	
116	PACORA13	13.800	P2	17.3	7.6	8.8	0.0	1.0300	18.3	0.9164	21.7			1	6	
116	PACORA13	13.800	P3	17.3	7.6	8.8	0.0	1.0300	18.3	0.9164	21.7			1	6	
142	CANJ13A	13.800	C1	40.0	8.6	29.0	-29.0	1.0000	40.9	0.9779	69.0			1	6	
143	CANJ13B	13.800	C2	40.0	8.6	29.0	-29.0	1.0000	40.9	0.9779	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-1.8	10.0	-10.0	1.0000	16.1	0.9939	26.7			1	6	
193	GEBONYIC	13.800	G1	5.3	-1.6	4.0	-4.0	1.0000	5.5	0.9562	35.3			1	6	
193	GEBONYIC	13.800	G2	5.3	-1.6	4.0	-4.0	1.0000	5.5	0.9562	35.3			1	6	
193	GEBONYIC	13.800	G3	5.3	-1.6	4.0	-4.0	1.0000	5.5	0.9562	35.3			1	6	
204	BJOMIN13	13.800	1	15.0	-7.9	13.0	-13.0	1.0000	17.0	0.8837	28.9			1	6	
204	BJOMIN13	13.800	2	15.0	-7.9	13.0	-13.0	1.0000	17.0	0.8837	28.9			1	6	
301	CONC13.8	13.800	C1	8.5	5.0	5.0	-5.0	0.9655	10.2	0.8619	13.5			1	6	
302	PASOANCH13.8	13.800	P1	3.7	2.0	2.0	-2.0	0.9637	4.4	0.8797	6.2			1	6	
303	SIND13.8	13.800	S1	6.4	0.0	5.0	0.0	1.0027	6.4	1.0000	13.5			1	6	
307	CHANG75A	13.800	G1	79.0	-7.5	22.0	-22.0	1.0200	77.8	0.9955	118.6			1	6	
308	CHANG75B	13.800	G2	79.0	-7.5	50.0	-22.0	1.0200	77.8	0.9955	118.6			1	6	
317	MENDRE13.8	13.800	M1	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9876	35.3			1	6	
340	PEDGALITO138	13.800	P1	20.0	-5.0	12.0	-5.0	1.0450	19.7	0.9701	27.0			1	6	
516	PANAPOW13A	13.800	G1	14.0	0.9	12.5	0.5	1.0000	14.0	0.9981	20.9			1	6	
516	PANAPOW13A	13.800	G2	14.0	0.9	12.5	0.5	1.0000	14.0	0.9981	20.9			1	6	
SUBSYSTEM TOTALS				1269.5	231.7	810.5	-409.9				1966.0					

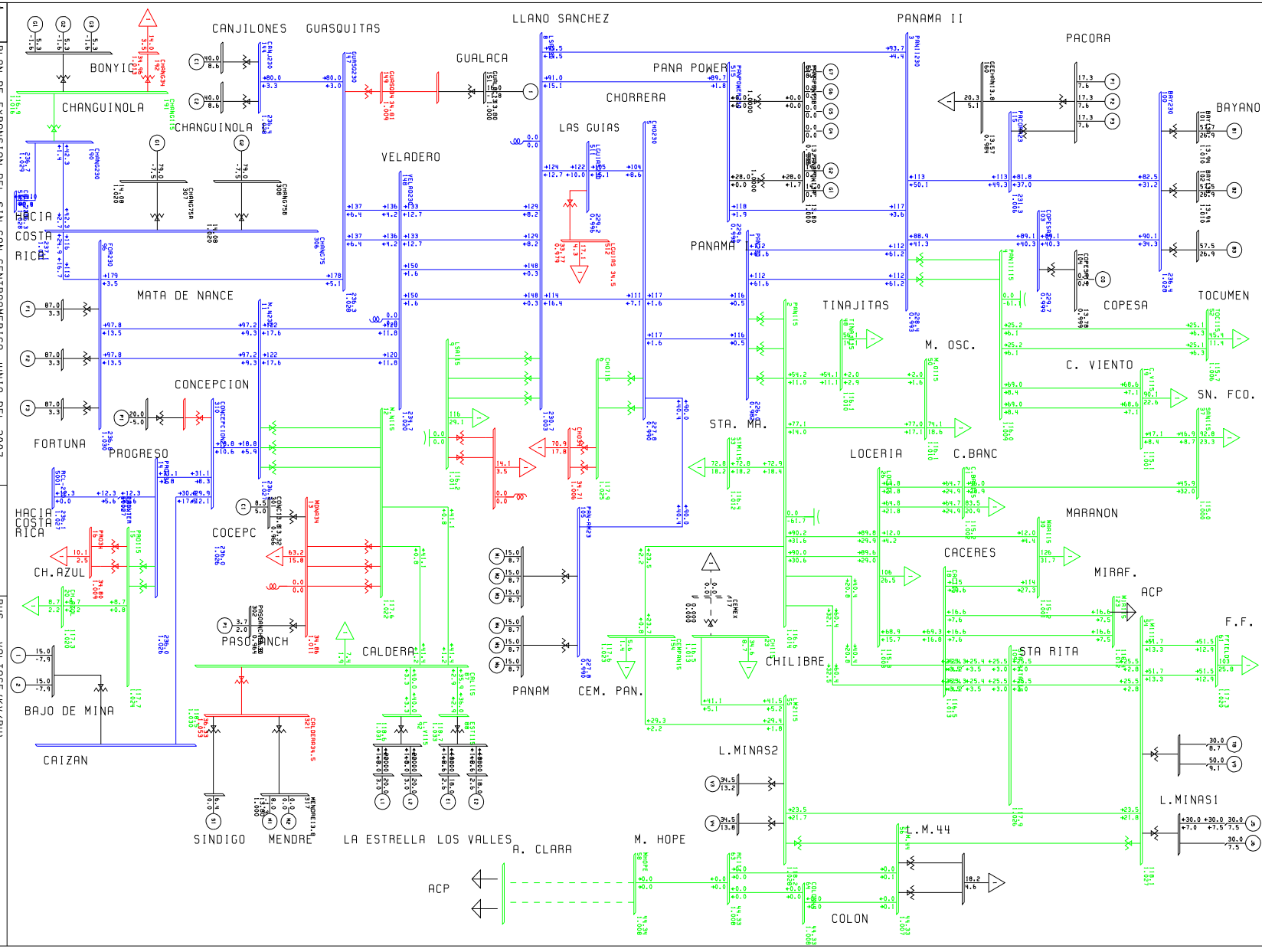
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:50  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0489	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0489	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	3.7	8.0	0.0	1.0000	10.4	0.9326	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9846	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9846	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9846	6.2			2	7	
SUBSYSTEM TOTALS						73.3	4.6	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SAT, MAY 12 2007 11:51  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGDC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.6	224.5	-98.9	0.0	143.2	-97.1	147.4	
5	1345.6	1324.8	0.0	0.0	0.0	0.3	20.4	0.0
C.RICA	253.8	569.4	-237.5	0.0	469.5	27.8	363.5	
6	1269.5	1136.0	0.0	0.0	0.0	88.2	45.3	25.0
PANAMA	231.7	284.7	-122.8	0.0	467.2	65.4	471.6	
7	73.3	38.7	0.0	0.0	0.0	33.1	1.5	50.0
ACANAL	4.6	9.7	0.0	0.0	0.0	-15.2	10.1	
9	0.0	121.3	0.0	0.0	0.0	-121.6	0.4	-75.0
COLON	0.0	30.4	0.0	0.0	1.1	-31.8	2.5	
TOTALS	6492.7	6347.6	0.0	0.0	0.0	0.0	145.1	0.0
	709.0	1941.1	-971.7	0.0	2016.6	0.0	1756.2	



PLAN DE EXPANSION DEL SIN CON CENTROERICA JUNIO DEL 2007  
 BRANCH - MW/MGR  
 EQUIPMENT - MW/MGR  
 MAY 16 2007 15:59  
 KY-S14 - 435 - 4115



**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÍNIMA EN VERANO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SUN, MAY 13 2007 16:46  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0246	235.66	3		PANII230		230.00	6	1.0282	236.48
5		CHO230		230.00	6	1.0295	236.78	8		LSA230		230.00	6	1.0314	237.21
11		M.N230		230.00	6	1.0369	238.49	14		PRO230		230.00	6	1.0381	238.76
96		FOR230		230.00	6	1.0392	239.01	100		BAY230		230.00	6	1.0324	237.46
103		COPESA23		230.00	6	1.0293	236.74	105		PAN-AM23		230.00	6	1.0295	236.78
115		PACORA23		230.00	6	1.0307	237.06	144		CANJ230		230.00	6	1.0399	239.18
147		GUASQ230		230.00	6	1.0399	239.17	148		VELAD230		230.00	6	1.0373	238.57
190		CHANG230		230.00	6	1.0369	238.48	306		CHANG75		230.00	6	1.0378	238.70
309		CAISAN230		230.00	6	1.0350	238.04	310		CONCEPCION23		230.00	6	1.0371	238.54
511		LGUIAS230		230.00	6	1.0330	237.59	515		PANPOWER230		230.00	6	1.0333	237.67
6000		FRONTER		230.00	6	1.0383	238.80								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SUN, MAY 13 2007 16:46  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0144	116.66	4		PANII115		115.00	6	1.0113	116.30
6		CHO115		115.00	6	1.0784	124.02	9		LSA115		115.00	6	1.0414	119.76
12		M.N115		115.00	6	1.0170	116.96	15		PRO115		115.00	6	1.0378	119.35
18		CAC115		115.00	6	1.0141	116.62	19		C.V115		115.00	6	1.0086	115.99
20		CH.AZUL		115.00	6	1.0369	119.25	21		C.BAN115		115.00	6	1.0099	116.14
23		CH115		115.00	6	1.0131	116.50	26		LOC115		115.00	6	1.0104	116.20
30		MAR115		115.00	6	1.0097	116.12	33		STM115		115.00	6	1.0137	116.57
37		SAN115		115.00	6	1.0093	116.06	48		TINAJ115		115.00	6	1.0130	116.50
50		M.O115		115.00	6	1.0132	116.51	52		TOC115		115.00	6	1.0101	116.16
54		LM115		115.00	6	1.0167	116.93	55		LM2115		115.00	6	1.0166	116.91
61		FFIELD		115.00	9	1.0139	116.59	87		CAL115		115.00	6	1.0240	117.76
88		EST115		115.00	6	1.0254	117.92	92		L.V115		115.00	6	1.0245	117.82
109		STA RITA115		115.00	6	1.0167	116.92	110		PTMD115A		115.00	6	1.0160	116.84
111		PTMD115B		115.00	6	1.0160	116.84	123		MIR115		115.00	7	1.0139	116.60
154		CEMPAN15		115.00	6	1.0161	116.85	191		CHANG115		115.00	6	1.0294	118.38

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SUN, MAY 13 2007 16:46  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGDC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
70		TGJB13A		13.800	J5	27.0	9.9	20.0	0.0	1.0000	28.7	0.9394	39.4			1	6		
71		TGJB13B		13.800	J6	27.0	9.9	20.0	0.0	1.0000	28.7	0.9394	39.4			1	6		
90		EST-13L		13.800	E1	16.0	4.7	12.0	-5.0	0.9900	16.8	0.9597	27.0			1	6		
94		LV-13.8L		13.800	L1	18.0	5.1	12.0	-5.0	0.9900	18.9	0.9626	27.0			1	6		
97		FOR13A		13.800	F1	61.4	-7.6	50.0	-50.0	1.0290	60.1	0.9925	111.0			1	6	SYST	
98		FOR13B		13.800	F2	63.1	-7.5	50.0	-50.0	1.0290	61.8	0.9931	111.0			1	6		
106		PANAM13A		13.800	M1	15.0	4.0	9.0	0.0	1.0200	15.2	0.9668	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	4.0	9.0	0.0	1.0200	15.2	0.9668	20.7			1	6		
116		PACORA13		13.800	P1	17.3	1.4	8.8	0.0	1.0300	16.8	0.9969	21.7			1	6		
116		PACORA13		13.800	P2	17.3	1.4	8.8	0.0	1.0300	16.8	0.9969	21.7			1	6		
142		CANJ13A		13.800	C1	40.0	6.6	29.0	-29.0	1.0000	40.5	0.9867	69.0			1	6		
151		GUALAC13		13.800	1	15.0	-3.0	10.0	-10.0	1.0000	15.3	0.9805	26.7			1	6		
193		GEBOYIC		13.800	G1	7.5	-4.0	4.0	-4.0	1.0169	8.4	0.8824	35.3			1	6		
204		BJOMIN13		13.800	1	22.0	-13.0	13.0	-13.0	1.0167	25.1	0.8609	28.9			1	6		
303		SIND13.8		13.800	S1	5.0	0.0	5.0	0.0	1.0000	5.0	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	60.0	-15.8	22.0	-22.0	1.0200	60.8	0.9672	118.6			1	6		
340		PEDGALITO138		13.800	P1	16.0	-5.0	12.0	-5.0	1.0584	15.8	0.9545	27.0			1	6		
516		PANAPOW13A		13.800	G1	13.2	0.5	12.5	0.5	1.0341	12.8	0.9992	20.9			1	6		
SUBSYSTEM TOTALS						455.8	-8.6	307.2	-192.5				779.5						

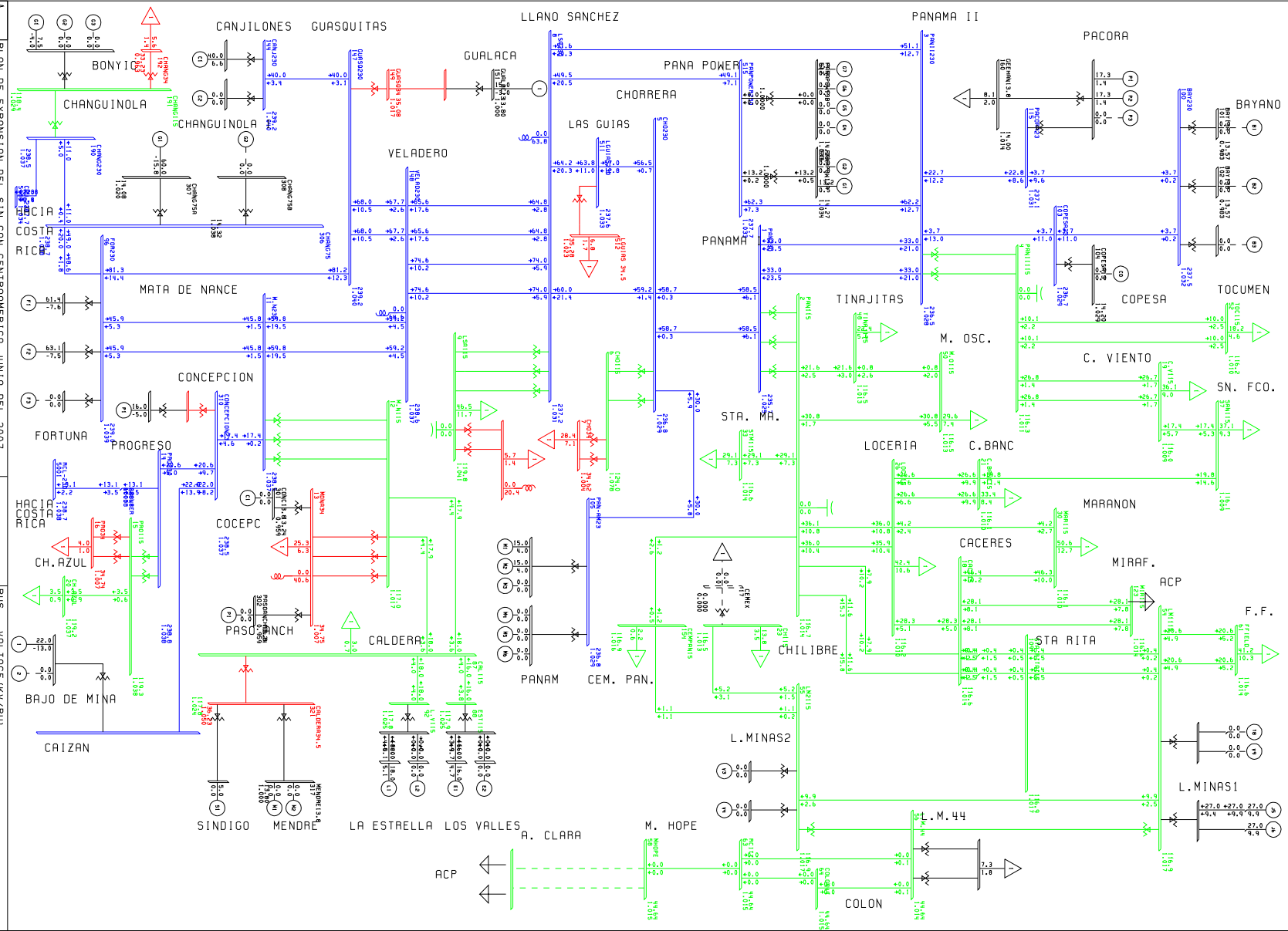
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SUN, MAY 13 2007 16:46  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0523	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0523	8.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.7	2.3	8.0	0.0	1.0000	9.9	0.9730	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	0.7	6.0	-6.0	1.0000	9.7	0.9976	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	0.7	6.0	-6.0	1.0000	9.7	0.9976	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	0.7	6.0	-6.0	1.0000	9.7	0.9976	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9983	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9983	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9983	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9767	5.6			2	7		
141		GAT6B		6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9767	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9767	6.2			2	7		
SUBSYSTEM TOTALS						73.3	1.4	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      SUN, MAY 13 2007 16:46  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007      AREA TOTALS  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGDC7      IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.3	527.1	0.0	0.0	0.0	0.1	11.1	0.0
NICA	32.2	224.5	-98.9	0.0	143.3	-97.5	147.3	
5	1345.2	1324.8	0.0	0.0	0.0	0.8	19.6	0.0
C.RICA	235.5	569.4	-236.5	0.0	471.4	15.6	358.5	
6	455.8	454.4	0.0	0.0	0.0	-8.4	9.8	25.0
PANAMA	-8.6	113.9	189.4	0.0	486.2	58.8	115.6	
7	73.3	15.5	0.0	0.0	0.0	56.1	1.7	50.0
ACANAL	1.4	3.9	0.0	0.0	0.0	-16.2	13.8	
9	0.0	48.5	0.0	0.0	0.0	-48.6	0.1	-75.0
COLON	0.0	12.2	0.0	0.0	1.1	-11.5	0.4	
TOTALS	5678.7	5570.0	0.0	0.0	0.0	0.0	108.7	0.0
	446.6	1746.2	-658.7	0.0	2037.6	0.0	1396.7	



PLAN DE EXPANSION DEL SIN CON CENTROBERG JUNIO DEL 2007  
 BRANCH - VOLTAJE (KV/FU)  
 EQUIPMENT - MW/MVAR  
 MAY 16 2007 16:00  
 KV: 138, 115, 69

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Pacora-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:20  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0009	230.21	8		LSA230		230.00	6	1.0018	230.41
11		M.N230		230.00	6	1.0248	235.69	14		PRO230		230.00	6	1.0240	235.53
96		FOR230		230.00	6	1.0274	236.29	100		BAY230		230.00	6	1.0427	239.82

103	COPESA23	230.00	6	1.0062	231.43	115	PACORA23	230.00	6	1.0434	239.97
144	CANJ230	230.00	6	1.0248	235.70	147	GUASQ230	230.00	6	1.0247	235.67
148	VELAD230	230.00	6	1.0168	233.87	190	CHANG230	230.00	6	1.0288	236.61
306	CHANG75	230.00	6	1.0301	236.93	309	CAISAN230	230.00	6	1.0216	234.96
310	CONCEPCION230	230.00	6	1.0239	235.50	515	PANPOWER230	230.00	6	1.0032	230.73
6000	FRONTER	230.00	6	1.0244	235.62						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9934	228.48	5		CHO230		230.00	6	0.9973	229.38
105		PAN-AM23		230.00	6	0.9975	229.42	511		LGUIAS230		230.00	6	0.9982	229.58

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:20  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0113	116.30	4		PANII115		115.00	6	1.0173	116.99
6		CHO115		115.00	6	1.0330	118.79	9		LSA115		115.00	6	1.0095	116.09
12		M.N115		115.00	6	1.0199	117.29	15		PRO115		115.00	6	1.0217	117.49
18		CAC115		115.00	6	1.0106	116.21	19		C.V115		115.00	6	1.0059	115.68
20		CH.AZUL		115.00	6	1.0182	117.10	21		C.BAN115		115.00	6	1.0004	115.04
23		CH115		115.00	6	1.0104	116.19	26		LOC115		115.00	6	1.0015	115.17
33		STM115		115.00	6	1.0094	116.08	48		TINAJ115		115.00	6	1.0070	115.80
50		M.O115		115.00	6	1.0073	115.84	52		TOC115		115.00	6	1.0142	116.63
54		LM1115		115.00	6	1.0244	117.81	55		LM2115		115.00	6	1.0251	117.88
61		FFIELD		115.00	9	1.0171	116.96	87		CAL115		115.00	6	1.0292	118.36
88		EST115		115.00	6	1.0314	118.61	92		L.V115		115.00	6	1.0301	118.46
109		STA RITA115		115.00	6	1.0230	117.65	110		PTMD115A		115.00	6	1.0182	117.09
111		PTMD115B		115.00	6	1.0182	117.09	123		MIR115		115.00	7	1.0096	116.10
154		CEMPAN15		115.00	6	1.0206	117.37	191		CHANG115		115.00	6	1.0154	116.78

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
30		MAR115		115.00	6	0.9995	114.94	37		SAN115		115.00	6	0.9994	114.93

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:20  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	14.0	17.0	0.0	1.0050	32.9	0.9061	47.0			1	6		
67		BLM13C		13.800	V3	30.0	14.0	17.0	0.0	1.0050	32.9	0.9061	47.0			1	6		
68		BLM13D		13.800	V4	30.0	14.6	17.0	0.0	1.0050	33.2	0.8988	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	8.2	20.0	0.0	1.0000	31.1	0.9644	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	8.2	20.0	0.0	1.0000	31.1	0.9644	39.4			1	6		
73		BLMCCB		13.800	V9	25.0	12.0	40.0	0.0	1.0000	27.7	0.9011	71.0			1	6		
90		EST-13L		13.800	E1	19.0	2.9	12.0	-5.0	0.9900	19.4	0.9883	27.0			1	6		
91		EST-13T		13.800	E2	19.0	2.9	12.0	-5.0	0.9900	19.4	0.9883	27.0			1	6		
94		LV-13.8L		13.800	L1	21.0	3.5	12.0	-5.0	0.9900	21.5	0.9867	27.0			1	6		
95		LV-13.8T		13.800	L2	21.0	3.5	12.0	-5.0	0.9900	21.5	0.9867	27.0			1	6		
97		FOR13A		13.800	F1	87.0	5.5	50.0	-50.0	1.0290	84.7	0.9980	111.0			1	6		
98		FOR13B		13.800	F2	87.0	5.5	50.0	-50.0	1.0290	84.7	0.9980	111.0			1	6		
99		FOR13C		13.800	F3	87.0	5.5	50.0	-50.0	1.0290	84.7	0.9980	111.0			1	6		
101		BAY13A		13.800	B1	81.1	17.6	50.0	-25.0	1.0100	82.1	0.9773	96.0			1	6	SYST	
102		BAY13B		13.800	B2	81.0	17.6	50.0	-25.0	1.0100	82.1	0.9773	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	7.7	9.0	0.0	1.0200	16.5	0.8894	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	7.7	9.0	0.0	1.0200	16.5	0.8894	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	7.7	9.0	0.0	1.0200	16.5	0.8894	20.7			1	6		
107		PANAM13B		13.800	M4	15.0	7.7	9.0	0.0	1.0200	16.5	0.8894	20.7			1	6		
107		PANAM13B		13.800	M5	15.0	7.7	9.0	0.0	1.0200	16.5	0.8894	20.7			1	6		
107		PANAM13B		13.800	M6	15.0	7.7	9.0	0.0	1.0200	16.5	0.8894	20.7			1	6		
108		BAY13C		13.800	B3	81.0	17.6	50.0	-25.0	1.0100	82.1	0.9773	100.0			1	6		
116		PACORA13		13.800	P1	14.6	0.4	8.8	0.0	1.0300	14.2	0.9996	21.7			1	6		
116		PACORA13		13.800	P2	14.6	0.4	8.8	0.0	1.0300	14.2	0.9996	21.7			1	6		
116		PACORA13		13.800	P3	14.6	0.4	8.8	0.0	1.0300	14.2	0.9996	21.7			1	6		
142		CANJ13A		13.800	C1	43.5	10.0	29.0	-29.0	1.0000	44.6	0.9747	69.0			1	6		
143		CANJ13B		13.800	C2	43.5	10.0	29.0	-29.0	1.0000	44.6	0.9747	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-1.5	10.0	-10.0	1.0000	16.1	0.9956	26.7			1	6		
193		GEBONYIC		13.800	G1	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9858	35.3			1	6		
193		GEBONYIC		13.800	G2	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9858	35.3			1	6		
193		GEBONYIC		13.800	G3	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9858	35.3			1	6		
204		BJOMIN13		13.800	1	18.5	-7.3	13.0	-13.0	1.0000	19.9	0.9309	28.9			1	6		
204		BJOMIN13		13.800	2	18.5	-7.3	13.0	-13.0	1.0000	19.9	0.9309	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9634	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9616	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	5.0	0.0	1.0018	9.0	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	87.0	-6.2	22.0	-22.0	1.0200	85.5	0.9975	118.6			1	6		
308		CHANG75B		13.800	G2	87.0	-6.2	22.0	-22.0	1.0200	85.5	0.9975	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-0.9	4.0	-4.0	1.0000	8.5	0.9948	35.3			1	6		
340		PEDGALITO13813		13.800	P1	20.0	-5.0	12.0	-5.0	1.0428	19.8	0.9701	27.0			1	6		
SUBSYSTEM TOTALS						1282.0	189.2	765.5	-411.0				1874.2						

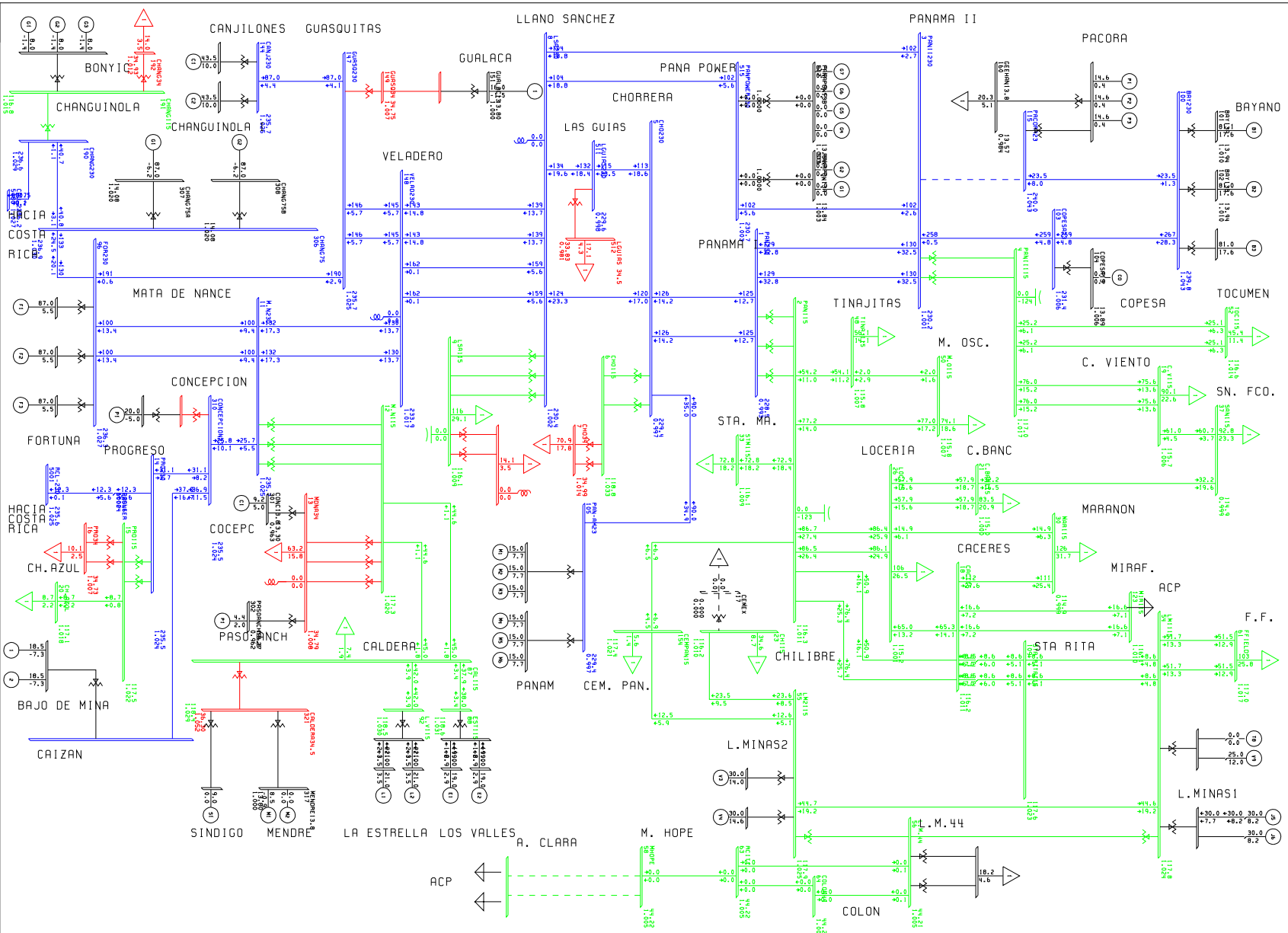
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:20  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING



126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0477	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0477	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	4.3	8.0	0.0	1.0000	10.6	0.9143	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9948	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9948	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9948	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9854	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9854	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9854	6.2	2	7
SUBSYSTEM TOTALS				73.3	5.4	51.0	-33.0				124.2		

PLAN DE EXPANSION DEL SIN CON CENTROERICA JUNIO DEL 2007  
 R O 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO  
 MAY 16 2007 16:04  
 BUS - VOLTAJE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR  
 KV:415 - 435 - 4115



**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Panamá I-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:30  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0029	230.68	11		M.N230		230.00	6	1.0241	235.53

14	PRO230	230.00	6	1.0235	235.39	96	FOR230	230.00	6	1.0268	236.16
100	BAY230	230.00	6	1.0340	237.82	103	COPESA23	230.00	6	1.0079	231.81
115	PACORA23	230.00	6	1.0136	233.13	144	CANJ230	230.00	6	1.0240	235.53
147	GUASQ230	230.00	6	1.0239	235.50	148	VELAD230	230.00	6	1.0155	233.57
190	CHANG230	230.00	6	1.0286	236.58	306	CHANG75	230.00	6	1.0300	236.89
309	CAISAN230	230.00	6	1.0211	234.85	310	CONCEPCION23	230.00	6	1.0233	235.37
515	PANPOWER230	230.00	6	1.0046	231.06	6000	FRONTER	230.00	6	1.0239	235.49

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9846	226.45	5		CHO230		230.00	6	0.9904	227.79
8		LSA230		230.00	6	0.9997	229.92	105		PAN-AM23		230.00	6	0.9906	227.83
511		LGUIAS230		230.00	6	0.9938	228.58								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:30  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0099	116.14	4		PANII115		115.00	6	1.0127	116.46
6		CHO115		115.00	6	1.0255	117.93	9		LSA115		115.00	6	1.0073	115.84
12		M.N115		115.00	6	1.0194	117.24	15		PRO115		115.00	6	1.0211	117.42
18		CAC115		115.00	6	1.0092	116.06	19		C.V115		115.00	6	1.0021	115.24
20		CH.AZUL		115.00	6	1.0177	117.03	23		CH115		115.00	6	1.0093	116.07
33		STM115		115.00	6	1.0081	115.93	48		TINAJ115		115.00	6	1.0057	115.65
50		M.O115		115.00	6	1.0060	115.69	52		TOC115		115.00	6	1.0096	116.10
54		LM1115		115.00	6	1.0238	117.73	55		LM2115		115.00	6	1.0244	117.81
61		FFIELD		115.00	9	1.0164	116.88	87		CAL115		115.00	6	1.0289	118.32
88		EST115		115.00	6	1.0312	118.58	92		L.V115		115.00	6	1.0298	118.43
109		STA RITA115		115.00	6	1.0222	117.56	110		PTMD115A		115.00	6	1.0172	116.98
111		PTMD115B		115.00	6	1.0172	116.98	123		MIR115		115.00	7	1.0083	115.96
154		CEMPAN15		115.00	6	1.0197	117.27	191		CHANG115		115.00	6	1.0153	116.76

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9986	114.84	26		LOC115		115.00	6	0.9998	114.98
30		MAR115		115.00	6	0.9980	114.77	37		SAN115		115.00	6	0.9974	114.70

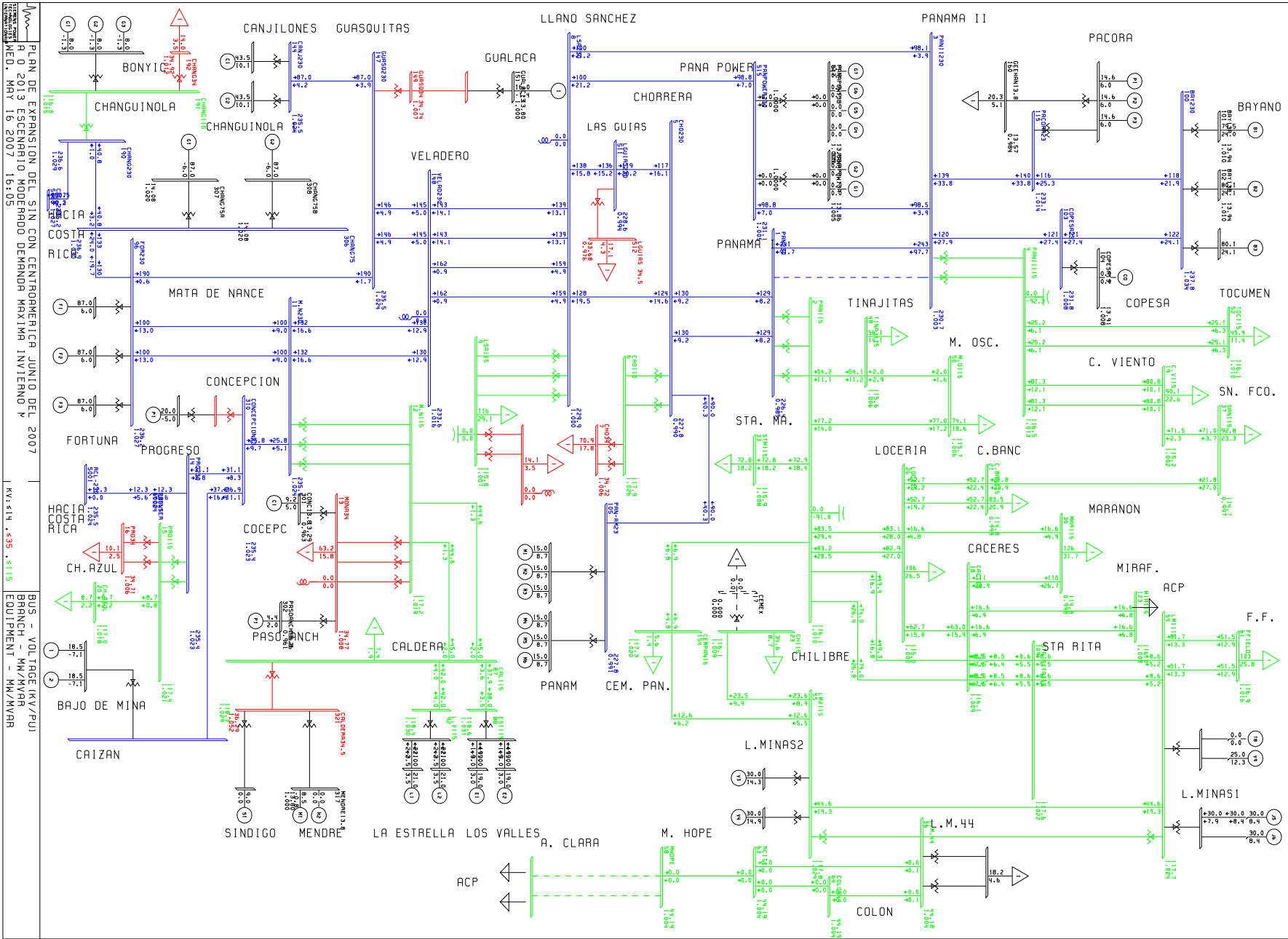
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:30  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	14.3	17.0	0.0	1.0050	33.1	0.9028	47.0			1	6		
67		BLM13C		13.800	V3	30.0	14.3	17.0	0.0	1.0050	33.1	0.9028	47.0			1	6		
68		BLM13D		13.800	V4	30.0	14.9	17.0	0.0	1.0050	33.3	0.8952	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	8.4	20.0	0.0	1.0000	31.2	0.9630	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	8.4	20.0	0.0	1.0000	31.2	0.9630	39.4			1	6		
73		BLMCCB		13.800	V9	25.0	12.3	40.0	0.0	1.0000	27.9	0.8968	71.0			1	6		
90		EST-13L		13.800	E1	19.0	3.0	12.0	-5.0	0.9900	19.4	0.9877	27.0			1	6		
91		EST-13T		13.800	E2	19.0	3.0	12.0	-5.0	0.9900	19.4	0.9877	27.0			1	6		
94		LV-13.8L		13.800	L1	21.0	3.5	12.0	-5.0	0.9900	21.5	0.9861	27.0			1	6		
95		LV-13.8T		13.800	L2	21.0	3.5	12.0	-5.0	0.9900	21.5	0.9861	27.0			1	6		
97		FOR13A		13.800	F1	87.0	6.0	50.0	-50.0	1.0290	84.7	0.9976	111.0			1	6		
98		FOR13B		13.800	F2	87.0	6.0	50.0	-50.0	1.0290	84.7	0.9976	111.0			1	6		
99		FOR13C		13.800	F3	87.0	6.0	50.0	-50.0	1.0290	84.7	0.9976	111.0			1	6		
101		BAY13A		13.800	B1	79.5	24.0	50.0	-25.0	1.0100	82.2	0.9573	96.0			1	6	SYST	
102		BAY13B		13.800	B2	80.1	24.1	50.0	-25.0	1.0100	82.9	0.9577	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	8.7	9.0	0.0	1.0200	17.0	0.8649	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	8.7	9.0	0.0	1.0200	17.0	0.8649	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	8.7	9.0	0.0	1.0200	17.0	0.8649	20.7			1	6		
107		PANAM13B		13.800	M4	15.0	8.7	9.0	0.0	1.0200	17.0	0.8649	20.7			1	6		
107		PANAM13B		13.800	M5	15.0	8.7	9.0	0.0	1.0200	17.0	0.8649	20.7			1	6		
107		PANAM13B		13.800	M6	15.0	8.7	9.0	0.0	1.0200	17.0	0.8649	20.7			1	6		
108		BAY13C		13.800	B3	80.1	24.1	50.0	-25.0	1.0100	82.9	0.9577	100.0			1	6		
116		PACORA13		13.800	P1	14.6	6.0	8.8	0.0	1.0300	15.3	0.9259	21.7			1	6		
116		PACORA13		13.800	P2	14.6	6.0	8.8	0.0	1.0300	15.3	0.9259	21.7			1	6		
116		PACORA13		13.800	P3	14.6	6.0	8.8	0.0	1.0300	15.3	0.9259	21.7			1	6		
142		CANJ13A		13.800	C1	43.5	10.1	29.0	-29.0	1.0000	44.7	0.9742	69.0			1	6		
143		CANJ13B		13.800	C2	43.5	10.1	29.0	-29.0	1.0000	44.7	0.9742	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-1.4	10.0	-10.0	1.0000	16.1	0.9960	26.7			1	6		
193		GEBONYIC		13.800	G1	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9861	35.3			1	6		
193		GEBONYIC		13.800	G2	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9861	35.3			1	6		
193		GEBONYIC		13.800	G3	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9861	35.3			1	6		
204		BJOMIN13		13.800	1	18.5	-7.1	13.0	-13.0	1.0000	19.8	0.9338	28.9			1	6		
204		BJOMIN13		13.800	2	18.5	-7.1	13.0	-13.0	1.0000	19.8	0.9338	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9629	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9611	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	5.0	0.0	1.0017	9.0	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	87.0	-6.0	22.0	-22.0	1.0200	85.5	0.9976	118.6			1	6		
308		CHANG75B		13.800	G2	87.0	-6.0	22.0	-22.0	1.0200	85.5	0.9976	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-0.8	4.0	-4.0	1.0000	8.5	0.9956	35.3			1	6		
340		PEDGALITO13813		13.800	P1	20.0	-5.0	12.0	-5.0	1.0422	19.8	0.9701	27.0			1	6		
SUBSYSTEM TOTALS						1278.7	235.7	765.5	-411.0				1874.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:30  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0470	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0470	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	4.6	8.0	0.0	1.0000	10.7	0.9040	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9944	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9944	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9944	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9992	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9858	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9858	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9858	6.2	2	7
SUBSYSTEM TOTALS				73.3	5.9	51.0	-33.0				124.2		



**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Pana Power-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:39  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0216	234.96	14	PRO	230		230.00	6	1.0214	234.91
96	FOR	230		230.00	6	1.0248	235.70	100	BAY	230		230.00	6	1.0244	235.62
144	CANJ	230		230.00	6	1.0214	234.92	147	GUASQ	230		230.00	6	1.0212	234.89



148	VELAD230	230.00	6	1.0109	232.51	190	CHANG230	230.00	6	1.0280	236.45
306	CHANG75	230.00	6	1.0293	236.75	309	CAISAN230	230.00	6	1.0194	234.45
310	CONCEPCION23	230.00	6	1.0212	234.88	515	PANPOWER230	230.00	6	1.0144	233.31
6000	FRONTER	230.00	6	1.0218	235.01						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9757	224.42	3	PANII230	230.00	6	0.9865	226.89				
5	CHO230	230.00	6	0.9798	225.35	8	LSA230	230.00	6	0.9924	228.24				
103	COPESA23	230.00	6	0.9924	228.26	105	PAN-AM23	230.00	6	0.9800	225.40				
115	PACORA23	230.00	6	1.0000	229.99	511	LGUIAS230	230.00	6	0.9831	226.11				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:39  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0122	116.41	4	PANII115	115.00	6	1.0095	116.09				
6	CHO115	115.00	6	1.0142	116.63	12	M.N115	115.00	6	1.0176	117.03				
15	PRO115	115.00	6	1.0190	117.18	18	CAC115	115.00	6	1.0114	116.32				
19	C.V115	115.00	6	1.0005	115.05	20	CH.AZUL	115.00	6	1.0156	116.79				
21	C.BAN115	115.00	6	1.0002	115.02	23	CH115	115.00	6	1.0111	116.28				
26	LOC115	115.00	6	1.0015	115.18	33	STM115	115.00	6	1.0104	116.19				
48	TINAJ115	115.00	6	1.0079	115.91	50	M.O115	115.00	6	1.0083	115.95				
52	TOC115	115.00	6	1.0063	115.73	54	LM1115	115.00	6	1.0249	117.87				
55	LM2115	115.00	6	1.0255	117.94	61	FFIELD	115.00	9	1.0175	117.02				
87	CAL115	115.00	6	1.0278	118.19	88	EST115	115.00	6	1.0301	118.46				
92	L.V115	115.00	6	1.0287	118.30	109	STA RITA115	115.00	6	1.0235	117.70				
110	PTMD115A	115.00	6	1.0189	117.17	111	PTMD115B	115.00	6	1.0189	117.17				
123	MIR115	115.00	7	1.0104	116.20	154	CEMPAN15	115.00	6	1.0212	117.44				
191	CHANG115	115.00	6	1.0150	116.72										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	0.9996	114.95	30	MAR115	115.00	6	1.0000	115.00				
37	SAN115	115.00	6	0.9988	114.86										

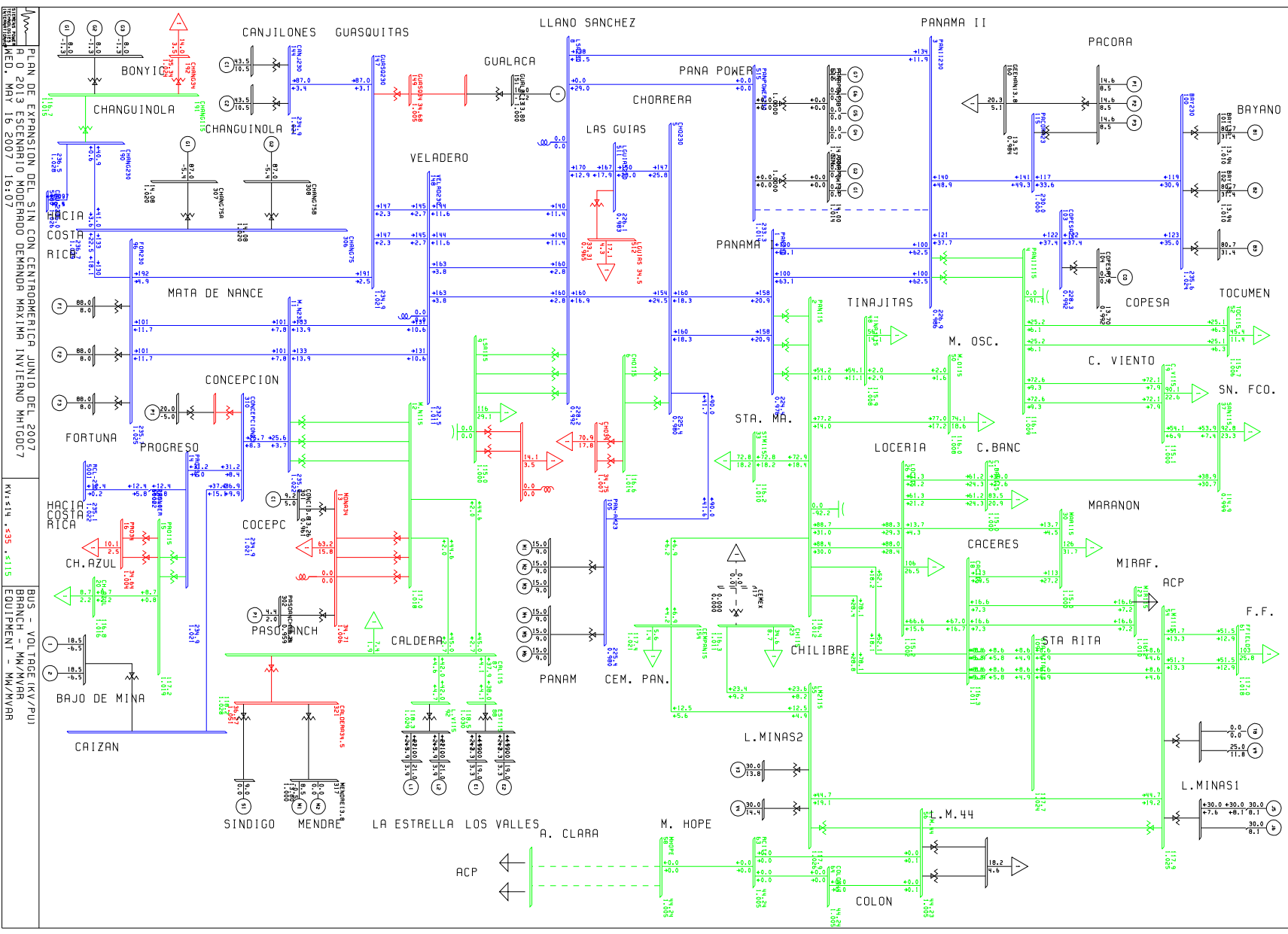
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:39  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	13.8	17.0	0.0	1.0050	32.9	0.9085	47.0			1	6		
67		BLM13C		13.800	V3	30.0	13.8	17.0	0.0	1.0050	32.9	0.9085	47.0			1	6		
68		BLM13D		13.800	V4	30.0	14.4	17.0	0.0	1.0050	33.1	0.9013	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	8.1	20.0	0.0	1.0000	31.1	0.9654	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	8.1	20.0	0.0	1.0000	31.1	0.9654	39.4			1	6		
73		BLMCCB		13.800	V9	25.0	11.8	40.0	0.0	1.0000	27.7	0.9040	71.0			1	6		
90		EST-13L		13.800	E1	19.0	3.3	12.0	-5.0	0.9900	19.5	0.9852	27.0			1	6		
91		EST-13T		13.800	E2	19.0	3.3	12.0	-5.0	0.9900	19.5	0.9852	27.0			1	6		
94		LV-13.8L		13.800	L1	21.0	3.9	12.0	-5.0	0.9900	21.6	0.9836	27.0			1	6		
95		LV-13.8T		13.800	L2	21.0	3.9	12.0	-5.0	0.9900	21.6	0.9836	27.0			1	6		
97		FOR13A		13.800	F1	88.0	8.0	50.0	-50.0	1.0290	85.9	0.9959	111.0			1	6		
98		FOR13B		13.800	F2	88.0	8.0	50.0	-50.0	1.0290	85.9	0.9959	111.0			1	6		
99		FOR13C		13.800	F3	88.0	8.0	50.0	-50.0	1.0290	85.9	0.9959	111.0			1	6		
101		BAY13A		13.800	B1	80.7	31.4	50.0	-25.0	1.0100	85.8	0.9321	96.0			1	6	SYST	
102		BAY13B		13.800	B2	80.8	31.4	50.0	-25.0	1.0100	85.8	0.9321	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	1.0120	17.3	0.8575	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	1.0120	17.3	0.8575	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	1.0120	17.3	0.8575	20.7			1	6		
107		PANAM13B		13.800	M4	15.0	9.0	9.0	0.0	1.0120	17.3	0.8575	20.7			1	6		
107		PANAM13B		13.800	M5	15.0	9.0	9.0	0.0	1.0120	17.3	0.8575	20.7			1	6		
107		PANAM13B		13.800	M6	15.0	9.0	9.0	0.0	1.0120	17.3	0.8575	20.7			1	6		
108		BAY13C		13.800	B3	80.8	31.4	50.0	-25.0	1.0100	85.8	0.9321	100.0			1	6		
116		PACORA13		13.800	P1	14.6	8.5	8.8	0.0	1.0300	16.4	0.8644	21.7			1	6		
116		PACORA13		13.800	P2	14.6	8.5	8.8	0.0	1.0300	16.4	0.8644	21.7			1	6		
116		PACORA13		13.800	P3	14.6	8.5	8.8	0.0	1.0300	16.4	0.8644	21.7			1	6		
142		CANJ13A		13.800	C1	43.5	10.5	29.0	-29.0	1.0000	44.8	0.9720	69.0			1	6		
143		CANJ13B		13.800	C2	43.5	10.5	29.0	-29.0	1.0000	44.8	0.9720	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-1.2	10.0	-10.0	1.0000	16.0	0.9972	26.7			1	6		
193		GEBONYIC		13.800	G1	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9869	35.3			1	6		
193		GEBONYIC		13.800	G2	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9869	35.3			1	6		
193		GEBONYIC		13.800	G3	8.0	-1.3	4.0	-4.0	1.0000	8.1	0.9869	35.3			1	6		
204		BJOMIN13		13.800	1	18.5	-6.5	13.0	-13.0	1.0000	19.6	0.9440	28.9			1	6		
204		BJOMIN13		13.800	2	18.5	-6.5	13.0	-13.0	1.0000	19.6	0.9440	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9612	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9593	5.1	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	5.0	0.0	1.0011	9.0	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	87.0	-5.4	22.0	-22.0	1.0200	85.5	0.9981	118.6			1	6		
308		CHANG75B		13.800	G2	87.0	-5.4	22.0	-22.0	1.0200	85.5	0.9981	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-0.5	4.0	-4.0	1.0000	8.5	0.9980	35.3			1	6		
340		PEDGALITO13813		13.800	P1	20.0	-5.0	12.0	-5.0	1.0399	19.8	0.9701	27.0			1	6		
SUBSYSTEM TOTALS						1284.2	275.6	765.5	-411.0				1874.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:39  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0481	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0481	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	4.1	8.0	0.0	1.0000	10.5	0.9211	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9950	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9951	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9951	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9851	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9851	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9851	6.2	2	7
SUBSYSTEM TOTALS				73.3	5.1	51.0	-33.0				124.2		



PLAN DE EXPANSION DEL SIN CON CENTROGRFICA JUNIO DEL 2007  
 0 2013 ESCENARIO MODERNO MEXIYAH INVIERNO MHTDDC7  
 MED. MAY 16 2007 16:07  
 BUS - VOLTAGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR  
 KEY: 114 - 535 - 5115

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Guasquitas-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:55  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0167	233.85	14	PRO	230		230.00	6	1.0169	233.90
96	FOR	230		230.00	6	1.0223	235.14	100	BAY	230		230.00	6	1.0299	236.89
103	COPE	SA23		230.00	6	1.0013	230.30	115	PACOR	A23		230.00	6	1.0078	231.79

144	CANJ230	230.00	6	1.0189	234.34	147	GUASQ230	230.00	6	1.0187	234.31
148	VELAD230	230.00	6	1.0028	230.65	190	CHANG230	230.00	6	1.0272	236.25
306	CHANG75	230.00	6	1.0286	236.57	309	CAISAN230	230.00	6	1.0159	233.65
310	CONCEPCION230	230.00	6	1.0169	233.88	6000	FRONTER	230.00	6	1.0173	233.99

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9861	226.81	3	PANII230	230.00	6	0.9959	229.07
5	CHO230	230.00	6	0.9897	227.64	8	LSA230	230.00	6	0.9901	227.73
105	PAN-AM23	230.00	6	0.9899	227.68	511	LGUIAS230	230.00	6	0.9881	227.26
515	PANPOWER230	230.00	6	0.9969	229.29						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:55  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0119	116.37	4	PANII115	115.00	6	1.0167	116.92
6	CHO115	115.00	6	1.0248	117.85	12	M.N115	115.00	6	1.0141	116.62
15	PRO115	115.00	6	1.0145	116.67	18	CAC115	115.00	6	1.0112	116.28
19	C.V115	115.00	6	1.0056	115.64	20	CH.AZUL	115.00	6	1.0111	116.28
21	C.BAN115	115.00	6	1.0008	115.10	23	CH115	115.00	6	1.0109	116.25
26	LOC115	115.00	6	1.0020	115.23	30	MAR115	115.00	6	1.0000	115.01
33	STM115	115.00	6	1.0100	116.15	48	TINAJ115	115.00	6	1.0076	115.87
50	M.O115	115.00	6	1.0079	115.91	52	TOC115	115.00	6	1.0136	116.56
54	LM115	115.00	6	1.0248	117.85	55	LM2115	115.00	6	1.0254	117.92
61	FFIELD	115.00	9	1.0174	117.00	87	CAL115	115.00	6	1.0256	117.94
88	EST115	115.00	6	1.0282	118.24	92	L.V115	115.00	6	1.0266	118.06
109	STA RITA115	115.00	6	1.0233	117.68	110	PTMD115A	115.00	6	1.0187	117.15
111	PTMD115B	115.00	6	1.0187	117.15	123	MIR115	115.00	7	1.0102	116.17
154	CEMPAN15	115.00	6	1.0210	117.41	191	CHANG115	115.00	6	1.0143	116.65

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	0.9973	114.69	37	SAN115	115.00	6	0.9998	114.98

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:55  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

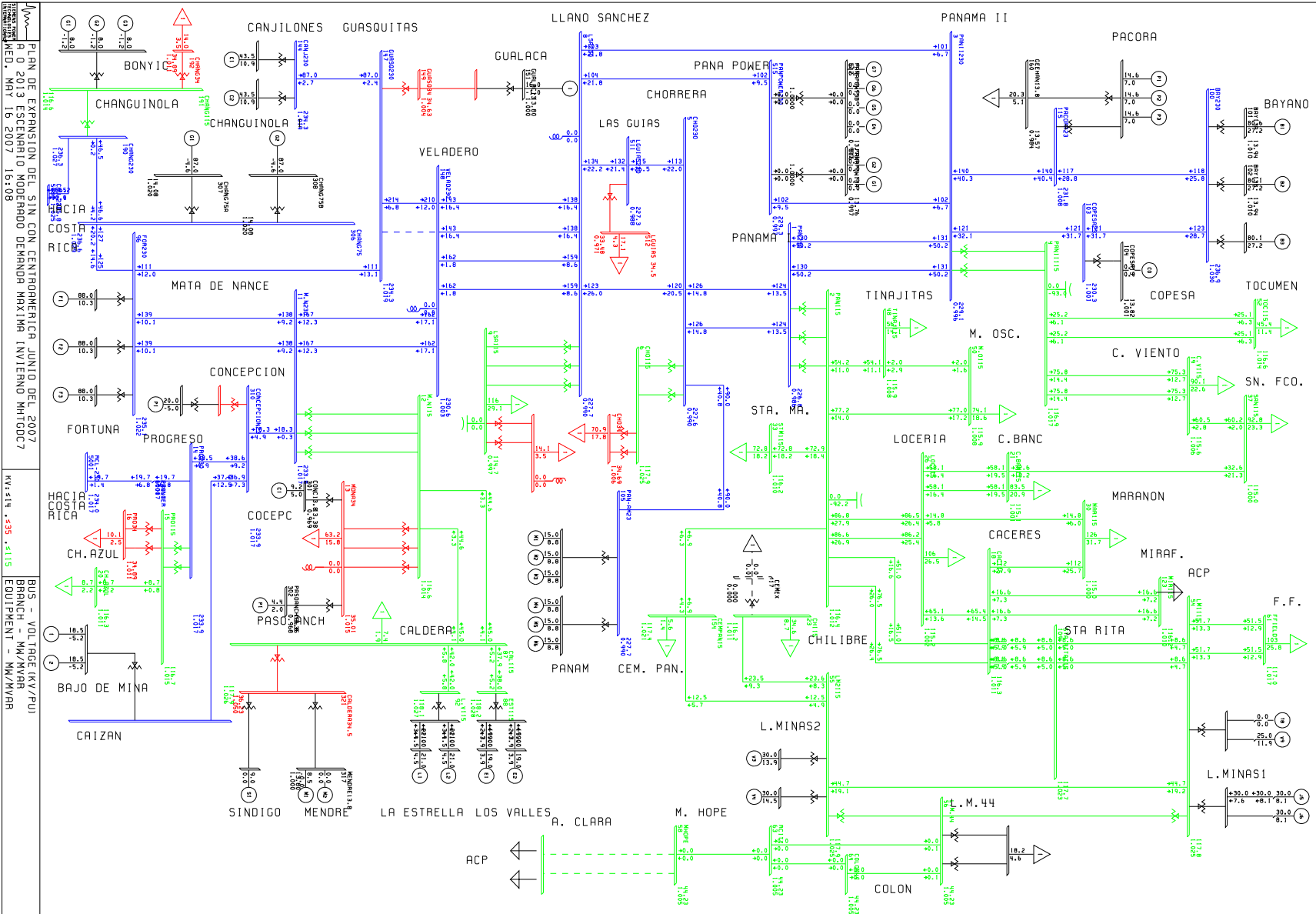
AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	13.9	17.0	0.0	1.0050	32.9	0.9077	47.0			1	6		
67		BLM13C		13.800	V3	30.0	13.9	17.0	0.0	1.0050	32.9	0.9077	47.0			1	6		
68		BLM13D		13.800	V4	30.0	14.5	17.0	0.0	1.0050	33.1	0.9005	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	8.1	20.0	0.0	1.0000	31.1	0.9651	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	8.1	20.0	0.0	1.0000	31.1	0.9651	39.4			1	6		
73		BLMCCB		13.800	V9	25.0	11.9	40.0	0.0	1.0000	27.7	0.9030	71.0			1	6		
90		EST-13L		13.800	E1	19.0	3.9	12.0	-5.0	0.9900	19.6	0.9798	27.0			1	6		
91		EST-13T		13.800	E2	19.0	3.9	12.0	-5.0	0.9900	19.6	0.9798	27.0			1	6		
94		LV-13.8L		13.800	L1	21.0	4.5	12.0	-5.0	0.9900	21.7	0.9781	27.0			1	6		
95		LV-13.8T		13.800	L2	21.0	4.5	12.0	-5.0	0.9900	21.7	0.9781	27.0			1	6		
97		FOR13A		13.800	F1	88.0	10.3	50.0	-50.0	1.0290	86.1	0.9932	111.0			1	6		
98		FOR13B		13.800	F2	88.0	10.3	50.0	-50.0	1.0290	86.1	0.9932	111.0			1	6		
99		FOR13C		13.800	F3	88.0	10.3	50.0	-50.0	1.0290	86.1	0.9932	111.0			1	6		
101		BAY13A		13.800	B1	80.6	27.2	50.0	-25.0	1.0100	84.2	0.9475	96.0			1	6	SYST	
102		BAY13B		13.800	B2	80.1	27.2	50.0	-25.0	1.0100	83.8	0.9471	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	8.8	9.0	0.0	1.0200	17.1	0.8625	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	8.8	9.0	0.0	1.0200	17.1	0.8625	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	8.8	9.0	0.0	1.0200	17.1	0.8625	20.7			1	6		
107		PANAM13B		13.800	M4	15.0	8.8	9.0	0.0	1.0200	17.1	0.8625	20.7			1	6		
107		PANAM13B		13.800	M5	15.0	8.8	9.0	0.0	1.0200	17.1	0.8625	20.7			1	6		
107		PANAM13B		13.800	M6	15.0	8.8	9.0	0.0	1.0200	17.1	0.8625	20.7			1	6		
108		BAY13C		13.800	B3	80.1	27.2	50.0	-25.0	1.0100	83.8	0.9471	100.0			1	6		
116		PACORA13		13.800	P1	14.6	7.0	8.8	0.0	1.0300	15.7	0.9009	21.7			1	6		
116		PACORA13		13.800	P2	14.6	7.0	8.8	0.0	1.0300	15.7	0.9009	21.7			1	6		
116		PACORA13		13.800	P3	14.6	7.0	8.8	0.0	1.0300	15.7	0.9009	21.7			1	6		
142		CANJ13A		13.800	C1	43.5	10.9	29.0	-29.0	1.0000	44.9	0.9699	69.0			1	6		
143		CANJ13B		13.800	C2	43.5	10.9	29.0	-29.0	1.0000	44.9	0.9699	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-1.0	10.0	-10.0	1.0000	16.0	0.9982	26.7			1	6		
193		GEBONYIC		13.800	G1	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9881	35.3			1	6		
193		GEBONYIC		13.800	G2	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9881	35.3			1	6		
193		GEBONYIC		13.800	G3	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9881	35.3			1	6		
204		BJOMIN13		13.800	1	18.5	-5.2	13.0	-13.0	1.0000	19.2	0.9626	28.9			1	6		
204		BJOMIN13		13.800	2	18.5	-5.2	13.0	-13.0	1.0000	19.2	0.9626	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9694	10.8	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9676	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	5.0	0.0	1.0001	9.0	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	87.0	-4.6	22.0	-22.0	1.0200	85.4	0.9986	118.6			1	6		
308		CHANG75B		13.800	G2	87.0	-4.6	22.0	-22.0	1.0200	85.4	0.9986	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	0.0	4.0	-4.0	1.0000	8.5	1.0000	35.3			1	6		
340		PEDGALITO13813		13.800	P1	20.0	-5.0	12.0	-5.0	1.0352	19.9	0.9701	27.0			1	6		
SUBSYSTEM TOTALS						1282.8	272.7	765.5	-411.0				1874.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 15:55  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0480	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0480	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	4.2	8.0	0.0	1.0000	10.5	0.9189	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9949	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9950	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9950	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2	2	7
SUBSYSTEM TOTALS				73.3	5.2	51.0	-33.0				124.2		





PLAN DE EXPANSION DEL SIN CON CENTROOPERATOR JUNIO DEL 2007  
 A O 2013 ESPERANDO MODERNO DEMANDA MAXIMA INTERNO MHTDC07

KV-514 - 435 - 5115

BUS - VOLTAGE (KV/PD)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN**  
**AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**  
**Contingencia Mata de Nance-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E           TUE, MAY 15 2007 16:01  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0121	232.77	14		PRO230		230.00	6	1.0122	232.81
96		FOR230		230.00	6	1.0154	233.54	100		BAY230		230.00	6	1.0100	232.31

144 CANJ230	230.00	6	1.0080	231.85	147 GUASQ230	230.00	6	1.0078	231.80
190 CHANG230	230.00	6	1.0254	235.85	306 CHANG75	230.00	6	1.0265	236.09
309 CAISAN230	230.00	6	1.0123	232.83	310 CONCEPCION230	230.00	6	1.0125	232.88
6000 FRONTER	230.00	6	1.0125	232.87					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9504	218.60	3		PANII230		230.00	6	0.9626	221.40
5		CHO230		230.00	6	0.9564	219.97	8		LSA230		230.00	6	0.9667	222.34
103		COPESA23		230.00	6	0.9700	223.10	105		PAN-AM23		230.00	6	0.9566	220.01
115		PACORA23		230.00	6	0.9789	225.14	148		VELAD230		230.00	6	0.9891	227.49
511		LGUIAS230		230.00	6	0.9601	220.81	515		PANPOWER230		230.00	6	0.9650	221.94

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 16:01  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0071	115.82	4		PANII115		115.00	6	1.0020	115.23
12		M.N115		115.00	6	1.0107	116.23	15		PRO115		115.00	6	1.0098	116.13
18		CAC115		115.00	6	1.0064	115.73	20		CH.AZUL		115.00	6	1.0063	115.73
23		CH115		115.00	6	1.0070	115.81	33		STM115		115.00	6	1.0052	115.60
48		TINAJ115		115.00	6	1.0028	115.32	50		M.O115		115.00	6	1.0031	115.36
54		LM1115		115.00	6	1.0223	117.57	55		LM2115		115.00	6	1.0230	117.64
61		FFIELD		115.00	9	1.0149	116.72	87		CAL115		115.00	6	1.0235	117.70
88		EST115		115.00	6	1.0263	118.03	92		L.V115		115.00	6	1.0246	117.83
109		STA RITA115		115.00	6	1.0206	117.37	110		PTMD115A		115.00	6	1.0150	116.73
111		PTMD115B		115.00	6	1.0150	116.73	123		MIR115		115.00	7	1.0057	115.65
154		CEMPAN15		115.00	6	1.0179	117.05	191		CHANG115		115.00	6	1.0132	116.51

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6		CHO115		115.00	6	0.9890	113.73	9		LSA115		115.00	6	0.9726	111.85
19		C.V115		115.00	6	0.9935	114.26	21		C.BAN115		115.00	6	0.9947	114.39
26		LOC115		115.00	6	0.9962	114.56	30		MAR115		115.00	6	0.9947	114.39
37		SAN115		115.00	6	0.9931	114.21	52		TOC115		115.00	6	0.9988	114.86

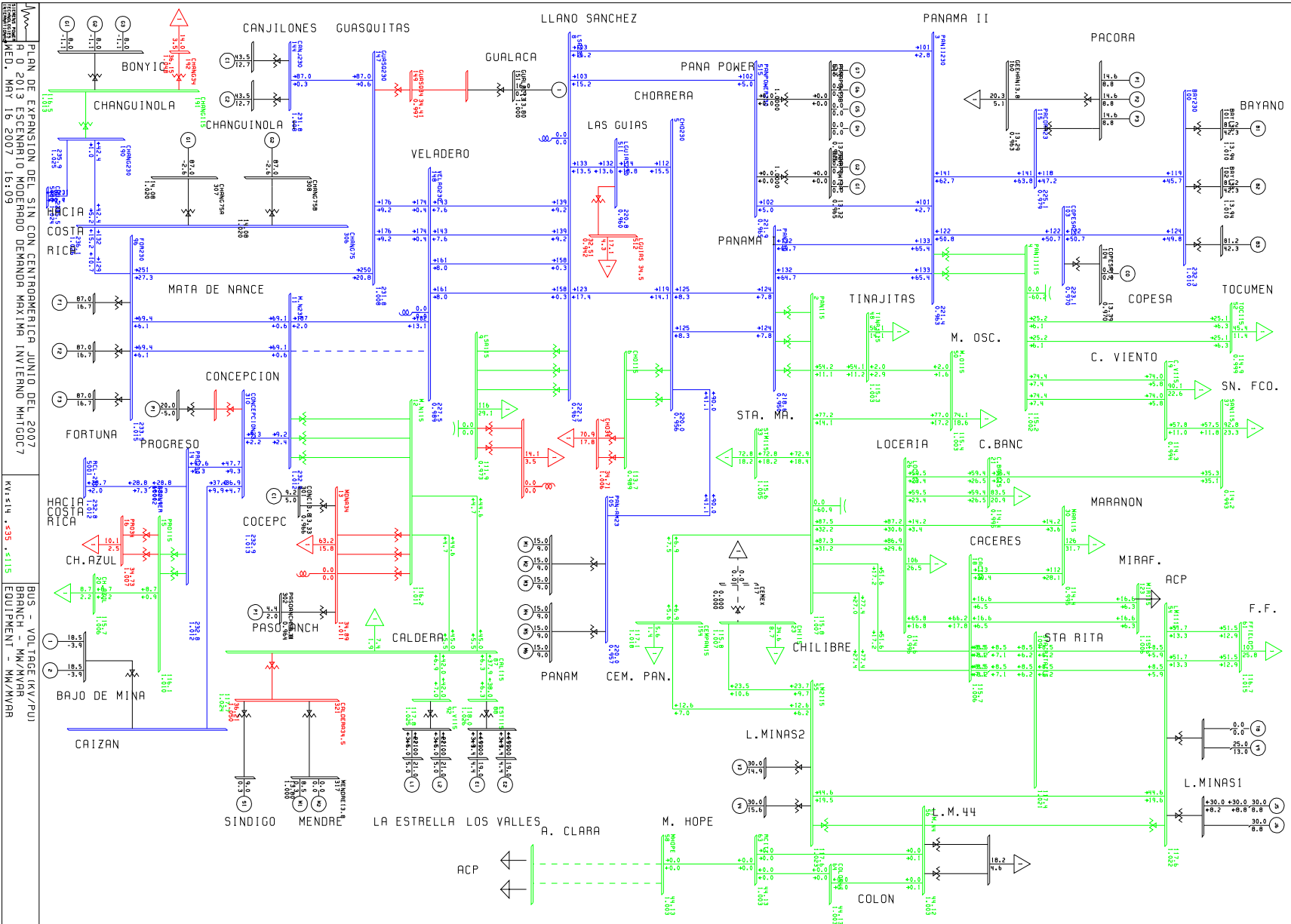
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 16:01  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	14.9	17.0	0.0	1.0050	33.3	0.8955	47.0			1	6		
67		BLM13C		13.800	V3	30.0	14.9	17.0	0.0	1.0050	33.3	0.8955	47.0			1	6		
68		BLM13D		13.800	V4	30.0	15.6	17.0	0.0	1.0050	33.6	0.8874	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	8.8	20.0	0.0	1.0000	31.3	0.9599	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	8.8	20.0	0.0	1.0000	31.3	0.9599	39.4			1	6		
73		BLMCCB		13.800	V9	25.0	13.0	40.0	0.0	1.0000	28.2	0.8876	71.0			1	6		
90		EST-13L		13.800	E1	19.0	4.4	12.0	-5.0	0.9900	19.7	0.9741	27.0			1	6		
91		EST-13T		13.800	E2	19.0	4.4	12.0	-5.0	0.9900	19.7	0.9741	27.0			1	6		
94		LV-13.8L		13.800	L1	21.0	5.0	12.0	-5.0	0.9900	21.8	0.9724	27.0			1	6		
95		LV-13.8T		13.800	L2	21.0	5.0	12.0	-5.0	0.9900	21.8	0.9724	27.0			1	6		
97		FOR13A		13.800	F1	87.0	16.7	50.0	-50.0	1.0290	86.1	0.9820	111.0			1	6		
98		FOR13B		13.800	F2	87.0	16.7	50.0	-50.0	1.0290	86.1	0.9820	111.0			1	6		
99		FOR13C		13.800	F3	87.0	16.7	50.0	-50.0	1.0290	86.1	0.9820	111.0			1	6		
101		BAY13A		13.800	B1	81.2	42.3	50.0	-25.0	1.0100	90.7	0.8868	96.0			1	6	SYST	
102		BAY13B		13.800	B2	81.2	42.3	50.0	-25.0	1.0100	90.6	0.8868	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	0.9901	17.7	0.8575	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	0.9901	17.7	0.8575	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	0.9901	17.7	0.8575	20.7			1	6		
107		PANAM13B		13.800	M4	15.0	9.0	9.0	0.0	0.9901	17.7	0.8575	20.7			1	6		
107		PANAM13B		13.800	M5	15.0	9.0	9.0	0.0	0.9901	17.7	0.8575	20.7			1	6		
107		PANAM13B		13.800	M6	15.0	9.0	9.0	0.0	0.9901	17.7	0.8575	20.7			1	6		
108		BAY13C		13.800	B3	81.2	42.3	50.0	-25.0	1.0100	90.6	0.8868	100.0			1	6		
116		PACORA13		13.800	P1	14.6	8.8	8.8	0.0	1.0111	16.9	0.8557	21.7			1	6		
116		PACORA13		13.800	P2	14.6	8.8	8.8	0.0	1.0111	16.9	0.8557	21.7			1	6		
116		PACORA13		13.800	P3	14.6	8.8	8.8	0.0	1.0111	16.9	0.8557	21.7			1	6		
142		CANJ13A		13.800	C1	43.5	12.7	29.0	-29.0	1.0000	45.3	0.9600	69.0			1	6		
143		CANJ13B		13.800	C2	43.5	12.7	29.0	-29.0	1.0000	45.3	0.9600	69.0			1	6		
151		GUALAC13		13.800	1	16.0	0.0	10.0	-10.0	1.0000	16.0	1.0000	26.7			1	6		
193		GEBONYIC		13.800	G1	8.0	-1.1	4.0	-4.0	1.0000	8.1	0.9904	35.3			1	6		
193		GEBONYIC		13.800	G2	8.0	-1.1	4.0	-4.0	1.0000	8.1	0.9904	35.3			1	6		
193		GEBONYIC		13.800	G3	8.0	-1.1	4.0	-4.0	1.0000	8.1	0.9904	35.3			1	6		
204		BJOMIN13		13.800	1	18.5	-3.9	13.0	-13.0	1.0000	18.9	0.9782	28.9			1	6		
204		BJOMIN13		13.800	2	18.5	-3.9	13.0	-13.0	1.0000	18.9	0.9782	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9661	10.8	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9643	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.0	0.3	5.0	0.0	1.0000	9.0	0.9995	13.5			1	6		
307		CHANG75A		13.800	G1	87.0	-2.6	22.0	-22.0	1.0200	85.3	0.9996	118.6			1	6		
308		CHANG75B		13.800	G2	87.0	-2.6	22.0	-22.0	1.0200	85.3	0.9996	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	0.3	4.0	-4.0	1.0000	8.5	0.9995	35.3			1	6		
340		PEDGALITO13813		13.800	P1	20.0	-5.0	12.0	-5.0	1.0305	20.0	0.9701	27.0			1	6		
SUBSYSTEM TOTALS						1282.5	363.9	765.5	-411.0				1874.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 16:01  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0456	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0456	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	5.2	8.0	0.0	1.0000	11.0	0.8810	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9935	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9936	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9936	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9987	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9987	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9987	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9867	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9867	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9867	6.2	2	7
SUBSYSTEM TOTALS				73.3	6.9	51.0	-33.0				124.2		



PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 R O 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTCOCC  
 MAY 16 2007 16:09  
 BUS - VOL TAGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MM/MVAR  
 KY:SIH -335 -3115

**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Santa Rita-Cáceres**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 16:08  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0167	233.84	14	PRO	230		230.00	6	1.0173	233.98
96	FOR	230		230.00	6	1.0208	234.78	100	BAY	230		230.00	6	1.0129	232.96
144	CANJ	230		230.00	6	1.0161	233.71	147	GUASQ	230		230.00	6	1.0160	233.68

148 VELAD230	230.00	6	1.0017	230.38	190 CHANG230	230.00	6	1.0270	236.20
306 CHANG75	230.00	6	1.0281	236.47	309 CAISAN230	230.00	6	1.0160	233.67
310 CONCEPCION23	230.00	6	1.0170	233.92	6000 FRONTER	230.00	6	1.0178	234.08

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9551	219.67	3		PANII230		230.00	6	0.9673	222.48
5		CHO230		230.00	6	0.9624	221.35	8		LSA230		230.00	6	0.9770	224.71
103		COPESA23		230.00	6	0.9744	224.11	105		PAN-AM23		230.00	6	0.9626	221.39
115		PACORA23		230.00	6	0.9831	226.10	511		LGUIAS230		230.00	6	0.9687	222.80
515		PANPOWER230		230.00	6	0.9707	223.27								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 16:08  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0110	116.26	4		PANII115		115.00	6	1.0067	115.77
12		M.N115		115.00	6	1.0140	116.62	15		PRO115		115.00	6	1.0149	116.71
18		CAC115		115.00	6	1.0101	116.17	20		CH.AZUL		115.00	6	1.0114	116.32
23		CH115		115.00	6	1.0108	116.24	26		LOC115		115.00	6	1.0001	115.01
33		STM115		115.00	6	1.0091	116.05	48		TINAJ115		115.00	6	1.0067	115.77
50		M.O115		115.00	6	1.0070	115.81	52		TOC115		115.00	6	1.0035	115.41
54		LM115		115.00	6	1.0260	117.99	55		LM2115		115.00	6	1.0265	118.05
61		FFIELD		115.00	9	1.0186	117.14	87		CAL115		115.00	6	1.0255	117.94
88		EST115		115.00	6	1.0281	118.23	92		L.V115		115.00	6	1.0265	118.05
109		STA RITA115		115.00	6	1.0251	117.89	110		PTMD115A		115.00	6	1.0193	117.22
123		MIR115		115.00	7	1.0092	116.06	154		CEMPAN15		115.00	6	1.0215	117.48
191		CHANG115		115.00	6	1.0142	116.63								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6		CHO115		115.00	6	0.9954	114.47	9		LSA115		115.00	6	0.9835	113.10
19		C.V115		115.00	6	0.9980	114.77	21		C.BAN115		115.00	6	0.9987	114.85
30		MAR115		115.00	6	0.9986	114.84	37		SAN115		115.00	6	0.9972	114.68



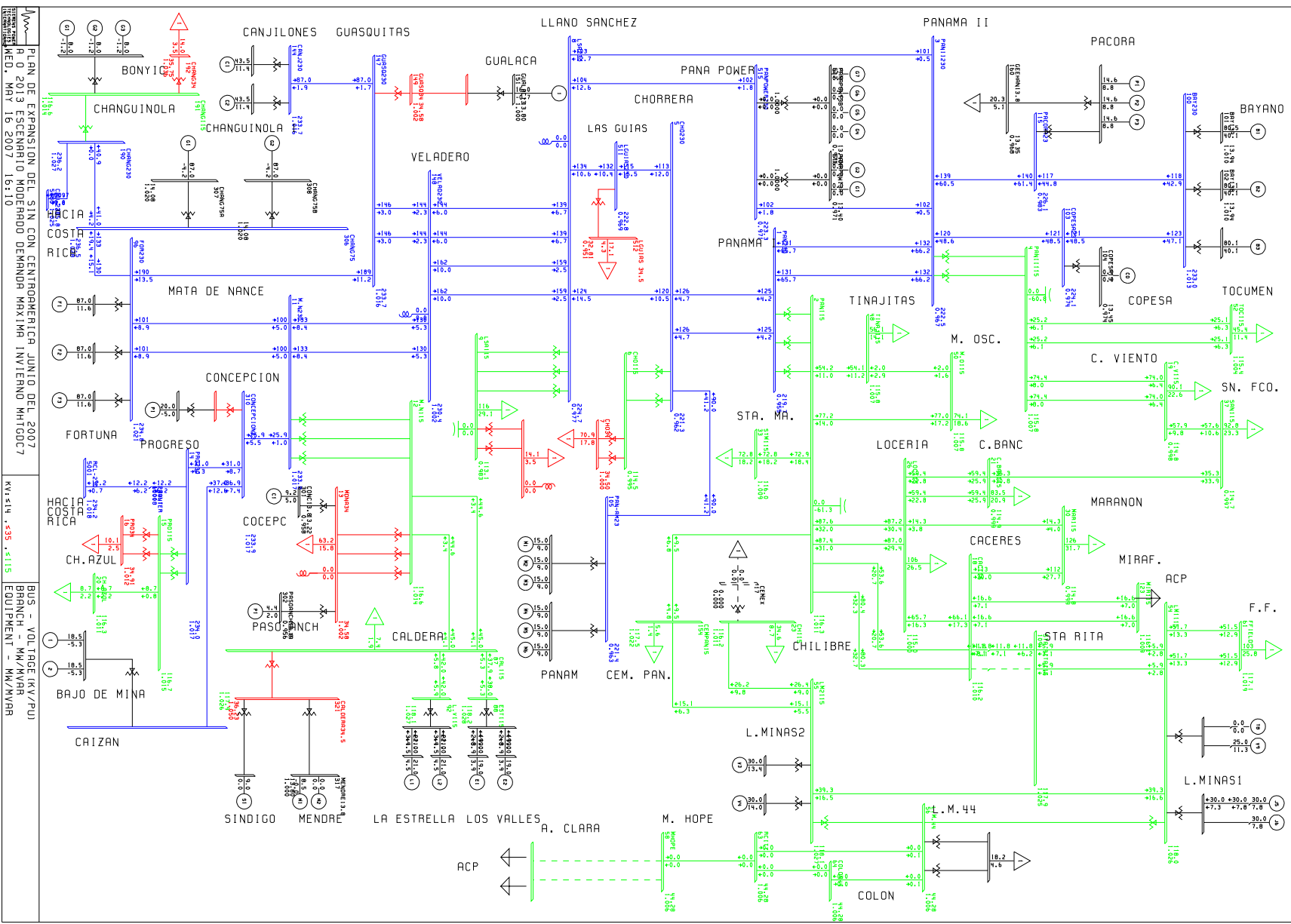
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 16:08  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	13.4	17.0	0.0	1.0050	32.7	0.9134	47.0			1	6		
67		BLM13C		13.800	V3	30.0	13.4	17.0	0.0	1.0050	32.7	0.9134	47.0			1	6		
68		BLM13D		13.800	V4	30.0	14.0	17.0	0.0	1.0050	32.9	0.9066	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	7.8	20.0	0.0	1.0000	31.0	0.9676	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	7.8	20.0	0.0	1.0000	31.0	0.9676	39.4			1	6		
73		BLMCCB		13.800	V9	25.0	11.3	40.0	0.0	1.0000	27.5	0.9107	71.0			1	6		
90		EST-13L		13.800	E1	19.0	3.9	12.0	-5.0	0.9900	19.6	0.9798	27.0			1	6		
91		EST-13T		13.800	E2	19.0	3.9	12.0	-5.0	0.9900	19.6	0.9798	27.0			1	6		
94		LV-13.8L		13.800	L1	21.0	4.5	12.0	-5.0	0.9900	21.7	0.9780	27.0			1	6		
95		LV-13.8T		13.800	L2	21.0	4.5	12.0	-5.0	0.9900	21.7	0.9780	27.0			1	6		
97		FOR13A		13.800	F1	87.0	11.6	50.0	-50.0	1.0290	85.3	0.9912	111.0			1	6		
98		FOR13B		13.800	F2	87.0	11.6	50.0	-50.0	1.0290	85.3	0.9912	111.0			1	6		
99		FOR13C		13.800	F3	87.0	11.6	50.0	-50.0	1.0290	85.3	0.9912	111.0			1	6		
101		BAY13A		13.800	B1	80.5	40.1	50.0	-25.0	1.0100	89.1	0.8951	96.0			1	6	SYST	
102		BAY13B		13.800	B2	80.1	40.1	50.0	-25.0	1.0100	88.7	0.8944	96.0			1	6		
106		PANAM13A		13.800	M1	15.0	9.0	9.0	0.0	0.9957	17.6	0.8575	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	9.0	9.0	0.0	0.9957	17.6	0.8575	20.7			1	6		
106		PANAM13A		13.800	M3	15.0	9.0	9.0	0.0	0.9957	17.6	0.8575	20.7			1	6		
107		PANAM13B		13.800	M4	15.0	9.0	9.0	0.0	0.9957	17.6	0.8575	20.7			1	6		
107		PANAM13B		13.800	M5	15.0	9.0	9.0	0.0	0.9957	17.6	0.8575	20.7			1	6		
107		PANAM13B		13.800	M6	15.0	9.0	9.0	0.0	0.9957	17.6	0.8575	20.7			1	6		
108		BAY13C		13.800	B3	80.1	40.1	50.0	-25.0	1.0100	88.7	0.8944	100.0			1	6		
116		PACORA13		13.800	P1	14.6	8.8	8.8	0.0	1.0152	16.8	0.8557	21.7			1	6		
116		PACORA13		13.800	P2	14.6	8.8	8.8	0.0	1.0152	16.8	0.8557	21.7			1	6		
116		PACORA13		13.800	P3	14.6	8.8	8.8	0.0	1.0152	16.8	0.8557	21.7			1	6		
142		CANJ13A		13.800	C1	43.5	11.4	29.0	-29.0	1.0000	45.0	0.9675	69.0			1	6		
143		CANJ13B		13.800	C2	43.5	11.4	29.0	-29.0	1.0000	45.0	0.9675	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-0.7	10.0	-10.0	1.0000	16.0	0.9990	26.7			1	6		
193		GEBONYIC		13.800	G1	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9884	35.3			1	6		
193		GEBONYIC		13.800	G2	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9884	35.3			1	6		
193		GEBONYIC		13.800	G3	8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9884	35.3			1	6		
204		BJOMIN13		13.800	1	18.5	-5.3	13.0	-13.0	1.0000	19.2	0.9620	28.9			1	6		
204		BJOMIN13		13.800	2	18.5	-5.3	13.0	-13.0	1.0000	19.2	0.9620	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9577	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9559	5.1	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	5.0	0.0	1.0001	9.0	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	87.0	-4.2	22.0	-22.0	1.0200	85.4	0.9988	118.6			1	6		
308		CHANG75B		13.800	G2	87.0	-4.2	22.0	-22.0	1.0200	85.4	0.9988	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	0.0	4.0	-4.0	1.0000	8.5	1.0000	35.3			1	6		
340		PEDGALITO13813		13.800	P1	20.0	-5.0	12.0	-5.0	1.0354	19.9	0.9701	27.0			1	6		
SUBSYSTEM TOTALS						1279.7	321.4	765.5	-411.0				1874.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, MAY 15 2007 16:08  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0475	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0475	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	4.4	8.0	0.0	1.0000	10.6	0.9112	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9855	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9855	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9855	6.2	2	7
SUBSYSTEM TOTALS				73.3	5.6	51.0	-33.0				124.2		



PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA JUNIO DEL 2007  
 B O 2013 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO MHTCC07  
 MED. MAY 16 2007 16:10  
 BUS - VOLTAJE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR  
 KY:SIH -435 -5115

**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E           SUN, MAY 13 2007 17:40  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0190	234.38	14	PRO230	230.00	6	1.0194	234.47				
96	FOR230	230.00	6	1.0229	235.27	100	BAY230	230.00	6	1.0081	231.87				
144	CANJ230	230.00	6	1.0192	234.41	147	GUASQ230	230.00	6	1.0190	234.36				
148	VELAD230	230.00	6	1.0060	231.38	190	CHANG230	230.00	6	1.0274	236.31				
306	CHANG75	230.00	6	1.0287	236.60	309	CAISAN230	230.00	6	1.0199	234.57				
310	CONCEPCION23	230.00	6	1.0196	234.50	6000	FRONTER	230.00	6	1.0198	234.56				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9686	222.78	3	PANII230	230.00	6	0.9804	225.49				
5	CHO230	230.00	6	0.9736	223.93	8	LSA230	230.00	6	0.9840	226.32				
103	COPESA23	230.00	6	0.9848	226.50	105	PAN-AM23	230.00	6	0.9738	223.98				
115	PACORA23	230.00	6	0.9910	227.92	511	LGUIAS230	230.00	6	0.9772	224.77				
515	PANPOWER230	230.00	6	0.9854	226.64										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E           SUN, MAY 13 2007 17:40  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0151	116.74	4	PANII115	115.00	6	1.0100	116.15				
6	CHO115	115.00	6	1.0042	115.48	12	M.N115	115.00	6	1.0149	116.71				
15	PRO115	115.00	6	1.0166	116.91	18	CAC115	115.00	6	1.0142	116.63				
19	C.V115	115.00	6	1.0001	115.01	20	CH.AZUL	115.00	6	1.0127	116.46				
21	C.BAN115	115.00	6	1.0010	115.11	23	CH115	115.00	6	1.0121	116.40				
26	LOC115	115.00	6	1.0026	115.30	30	MAR115	115.00	6	1.0010	115.11				
33	STM115	115.00	6	1.0130	116.49	48	TINAJ115	115.00	6	1.0101	116.16				
50	M.O115	115.00	6	1.0105	116.21	52	TOC115	115.00	6	1.0063	115.73				
54	LM115	115.00	6	1.0267	118.07	55	LM2115	115.00	6	1.0272	118.12				
61	FFIELD	115.00	9	1.0182	117.09	87	CAL115	115.00	6	1.0260	117.99				
88	EST115	115.00	6	1.0284	118.27	92	L.V115	115.00	6	1.0270	118.10				
109	STA RITA115	115.00	6	1.0257	117.96	110	PTMD115A	115.00	6	1.0217	117.50				
111	PTMD115B	115.00	6	1.0217	117.50	123	MIR115	115.00	7	1.0128	116.47				
154	CEMPAN15	115.00	6	1.0229	117.63	191	CHANG115	115.00	6	1.0143	116.64				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	0.9879	113.60	37	SAN115	115.00	6	0.9993	114.91				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E SUN, MAY 13 2007 17:40

PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007

AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	37.0	13.6	17.0	0.0	1.0050	39.2	0.9383	47.0			1	6		
67		BLM13C		13.800	V3	37.0	13.6	17.0	0.0	1.0050	39.2	0.9383	47.0			1	6		
68		BLM13D		13.800	V4	37.0	14.2	17.0	0.0	1.0050	39.4	0.9337	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	7.6	20.0	0.0	1.0000	31.0	0.9690	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	7.6	20.0	0.0	1.0000	31.0	0.9690	39.4			1	6		
72		BLMCCA		13.800	T8	30.0	8.2	20.0	0.0	1.0000	31.1	0.9647	50.0			1	6		
73		BLMCCB		13.800	V9	40.0	8.4	40.0	0.0	1.0000	40.9	0.9787	71.0			1	6		
90		EST-13L		13.800	E1	17.0	3.7	12.0	-5.0	0.9900	17.6	0.9775	27.0			1	6		
91		EST-13T		13.800	E2	17.0	3.7	12.0	-5.0	0.9900	17.6	0.9775	27.0			1	6		
94		LV-13.8L		13.800	L1	19.0	4.2	12.0	-5.0	0.9900	19.7	0.9762	27.0			1	6		
95		LV-13.8T		13.800	L2	19.0	4.2	12.0	-5.0	0.9900	19.7	0.9762	27.0			1	6		
97		FOR13A		13.800	F1	83.0	9.3	50.0	-50.0	1.0290	81.2	0.9938	111.0			1	6		
98		FOR13B		13.800	F2	83.0	9.3	50.0	-50.0	1.0290	81.2	0.9938	111.0			1	6		
99		FOR13C		13.800	F3	83.0	9.3	50.0	-50.0	1.0290	81.2	0.9938	111.0			1	6		
101		BAY13A		13.800	B1	74.6	19.0	50.0	-25.0	0.9800	78.5	0.9690	96.0			1	6	SYST	
102		BAY13B		13.800	B2	79.5	19.5	50.0	-25.0	0.9800	83.5	0.9711	96.0			1	6		
106		PANAMI3A		13.800	M1	15.3	9.0	9.0	0.0	1.0060	17.6	0.8619	20.7			1	6		
106		PANAMI3A		13.800	M2	15.3	9.0	9.0	0.0	1.0060	17.6	0.8619	20.7			1	6		
106		PANAMI3A		13.800	M3	15.3	9.0	9.0	0.0	1.0060	17.6	0.8619	20.7			1	6		
107		PANAMI3B		13.800	M4	15.3	9.0	9.0	0.0	1.0060	17.6	0.8619	20.7			1	6		
107		PANAMI3B		13.800	M5	15.3	9.0	9.0	0.0	1.0060	17.6	0.8619	20.7			1	6		
107		PANAMI3B		13.800	M6	15.3	9.0	9.0	0.0	1.0060	17.6	0.8619	20.7			1	6		
108		BAY13C		13.800	B3	79.5	19.5	50.0	-25.0	0.9800	83.5	0.9711	100.0			1	6		
116		PACORA13		13.800	P1	17.5	8.8	8.8	0.0	1.0190	19.2	0.8928	21.7			1	6		
116		PACORA13		13.800	P2	17.5	8.8	8.8	0.0	1.0190	19.2	0.8928	21.7			1	6		
116		PACORA13		13.800	P3	17.5	8.8	8.8	0.0	1.0190	19.2	0.8928	21.7			1	6		
142		CANJ13A		13.800	C1	35.0	8.7	29.0	-29.0	1.0000	36.1	0.9704	69.0			1	6		
143		CANJ13B		13.800	C2	35.0	8.7	29.0	-29.0	1.0000	36.1	0.9704	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-1.0	10.0	-10.0	1.0000	16.0	0.9981	26.7			1	6		
193		GEBONYIC		13.800	G1	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9825	35.3			1	6		
193		GEBONYIC		13.800	G2	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9825	35.3			1	6		
193		GEBONYIC		13.800	G3	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9825	35.3			1	6		
204		BJOMIN13		13.800	1	20.5	-6.5	13.0	-13.0	1.0000	21.5	0.9527	28.9			1	6		
204		BJOMIN13		13.800	2	20.5	-6.5	13.0	-13.0	1.0000	21.5	0.9527	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9678	10.8	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9660	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	8.5	0.1	5.0	0.0	1.0000	8.5	0.9999	13.5			1	6		
305		ELALTO13.8		13.800	1	18.5	0.7	12.0	-5.0	1.0200	18.2	0.9992	20.6			1	6		
305		ELALTO13.8		13.800	2	18.5	0.7	12.0	-5.0	1.0200	18.2	0.9992	20.6			1	6		
305		ELALTO13.8		13.800	3	18.5	0.7	12.0	-5.0	1.0200	18.2	0.9992	20.6			1	6		
307		CHANG75A		13.800	G1	80.0	-5.4	22.0	-22.0	1.0200	78.6	0.9978	118.6			1	6		
308		CHANG75B		13.800	G2	80.0	-5.4	50.0	-22.0	1.0200	78.6	0.9978	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	0.2	4.0	-4.0	1.0000	8.5	0.9998	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	0.2	4.0	-4.0	1.0000	8.5	0.9998	35.3			1	6		
322		CCGD250		13.800	C1	35.0	0.0	45.0	0.0	1.0256	34.1	1.0000	118.0			1	6		
340		PEDGALITO138		13.800	P1	21.5	-5.0	12.0	-5.0	1.0375	21.3	0.9740	27.0			1	6		
517		PANAPOW13B		13.800	G4	15.8	2.8	12.5	0.5	1.0000	16.0	0.9846	20.9			1	6		
517		PANAPOW13B		13.800	G5	15.8	2.8	12.5	0.5	1.0000	16.0	0.9846	20.9			1	6		
517		PANAPOW13B		13.800	G6	15.8	2.8	12.5	0.5	1.0000	16.0	0.9846	20.9			1	6		
517		PANAPOW13B		13.800	G7	15.8	2.8	12.5	0.5	1.0000	16.0	0.9846	20.9			1	6		
SUBSYSTEM TOTALS						1461.9	260.2	920.6	-427.8				2222.9						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      SUN, MAY 13 2007 17:40  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 7 [ACANAL            ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0487	8.2	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0487	8.2	1.0000	13.5				2	7
130		MIR13F		13.800	G5	10.4	3.9	8.0	0.0	1.0000	11.1	0.9371	27.7				2	7
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9951	13.0				2	7
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9952	13.0				2	7
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9952	13.0				2	7
140		GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9993	4.1				2	7
140		GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9993	4.1				2	7
140		GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9993	4.1				2	7
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9857	5.6				2	7
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9857	6.2				2	7
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9857	6.2				2	7
SUBSYSTEM TOTALS						74.3	5.0	51.0	-33.0				124.2					

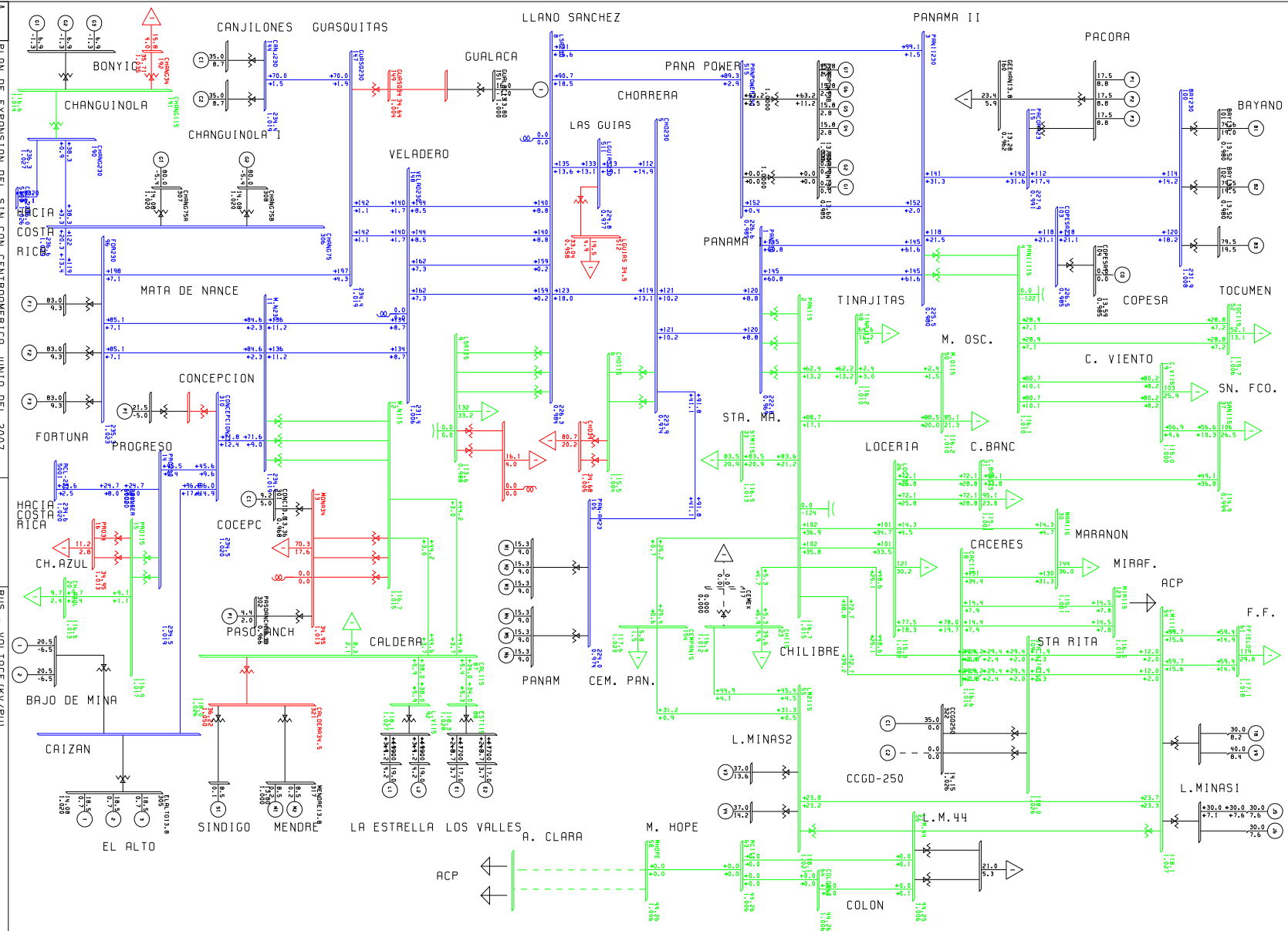




PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E                   SUN, MAY 13 2007 17:40  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007                   AREA TOTALS  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7                   IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.8	290.6	-188.3	0.0	302.8	-5.2	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.8	224.5	-98.9	0.0	143.2	-97.0	147.4	
5	1344.6	1324.8	0.0	0.0	0.0	-0.5	20.3	0.0
C.RICA	261.4	569.4	-237.7	0.0	468.5	35.4	362.8	
6	1461.9	1293.9	0.0	0.0	0.0	112.0	56.0	25.0
PANAMA	260.2	324.3	-246.1	0.0	456.0	63.7	574.3	
7	74.3	43.9	0.0	0.0	0.0	28.9	1.4	50.0
ACANAL	5.0	11.0	0.0	0.0	0.0	-15.8	9.8	
9	0.0	139.9	0.0	0.0	0.0	-140.4	0.5	-75.0
COLON	0.0	35.1	0.0	0.0	1.1	-37.3	3.4	
TOTALS	6685.0	6529.3	0.0	0.0	0.0	0.0	155.7	0.0
	745.8	1986.7	-1095.2	0.0	2004.4	0.0	1858.7	

PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 A 0 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGCC7  
 MED. MAY 16 2007 16:13  
 KW:414 .435 .5115  
 BUS - VOL TAGE (KV/FU)  
 BRNCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MAXIMA VERANO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 8:36  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0070	231.61	3		PANII230		230.00	6	1.0165	233.80
5		CHO230		230.00	6	1.0143	233.28	8		LSA230		230.00	6	1.0285	236.55
11		M.N230		230.00	6	1.0365	238.38	14		PRO230		230.00	6	1.0336	237.74
96		FOR230		230.00	6	1.0378	238.70	100		BAY230		230.00	6	1.0292	236.71
103		COPESA23		230.00	6	1.0188	234.32	105		PAN-AM23		230.00	6	1.0144	233.31
115		PACORA23		230.00	6	1.0226	235.19	144		CANJ230		230.00	6	1.0391	239.00
147		GUASQ230		230.00	6	1.0391	238.99	148		VELAD230		230.00	6	1.0394	239.06
190		CHANG230		230.00	6	1.0314	237.23	306		CHANG75		230.00	6	1.0330	237.60
309		CAISAN230		230.00	6	1.0285	236.56	310		CONCEPCION23		230.00	6	1.0334	237.69
511		LGUIAS230		230.00	6	1.0224	235.15	515		PANPOWER230		230.00	6	1.0224	235.16
6000		FRONTER		230.00	6	1.0342	237.86								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 8:37  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0132	116.52	4		PANII115		115.00	6	1.0098	116.13
6		CHO115		115.00	6	1.0480	120.52	9		LSA115		115.00	6	1.0347	118.99
12		M.N115		115.00	6	1.0256	117.94	15		PRO115		115.00	6	1.0309	118.55
18		CAC115		115.00	6	1.0124	116.42	20		CH.AZUL		115.00	6	1.0271	118.11
23		CH115		115.00	6	1.0084	115.97	26		LOC115		115.00	6	1.0008	115.10
33		STM115		115.00	6	1.0111	116.28	48		TINAJ115		115.00	6	1.0083	115.95
50		M.O115		115.00	6	1.0086	115.99	52		TOC115		115.00	6	1.0062	115.71
54		LM115		115.00	6	1.0250	117.87	55		LM2115		115.00	6	1.0248	117.85
61		FFIELD		115.00	9	1.0164	116.89	87		CAL115		115.00	6	1.0322	118.71
88		EST115		115.00	6	1.0340	118.91	92		L.V115		115.00	6	1.0329	118.79
109		STA RITA115		115.00	6	1.0239	117.75	110		PTMD115A		115.00	6	1.0197	117.26
111		PTMD115B		115.00	6	1.0197	117.26	123		MIR115		115.00	7	1.0121	116.39
154		CEMPAN15		115.00	6	1.0193	117.22	191		CHANG115		115.00	6	1.0171	116.97

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
19		C.V115		115.00	6	0.9996	114.96	21		C.BAN115		115.00	6	0.9993	114.92
30		MAR115		115.00	6	0.9991	114.90	37		SAN115		115.00	6	0.9978	114.74

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	37.0	14.7	17.0	0.0	1.0050	39.6	0.9297	47.0				1	6
67	BLM13C	13.800	V3	37.0	14.7	17.0	0.0	1.0050	39.6	0.9297	47.0				1	6
68	BLM13D	13.800	V4	37.0	15.3	17.0	0.0	1.0050	39.8	0.9244	47.0				1	6
70	TGJB13A	13.800	J5	30.0	8.1	20.0	0.0	1.0000	31.1	0.9656	39.4				1	6
71	TGJB13B	13.800	J6	30.0	8.1	20.0	0.0	1.0000	31.1	0.9656	39.4				1	6
72	BLMCCA	13.800	T8	30.0	9.1	20.0	0.0	1.0000	31.3	0.9572	50.0				1	6
73	BLMCCB	13.800	V9	47.0	9.4	40.0	0.0	1.0000	47.9	0.9805	71.0				1	6
90	EST-13L	13.800	E1	16.0	2.0	12.0	-5.0	0.9900	16.3	0.9922	27.0				1	6
91	EST-13T	13.800	E2	16.0	2.0	12.0	-5.0	0.9900	16.3	0.9922	27.0				1	6
94	LV-13.8L	13.800	L1	17.5	2.4	12.0	-5.0	0.9900	17.8	0.9907	27.0				1	6
95	LV-13.8T	13.800	L2	17.5	2.4	12.0	-5.0	0.9900	17.8	0.9907	27.0				1	6
97	FOR13A	13.800	F1	65.0	-6.1	50.0	-50.0	1.0290	63.4	0.9956	111.0				1	6
98	FOR13B	13.800	F2	65.0	-6.1	50.0	-50.0	1.0290	63.4	0.9956	111.0				1	6
99	FOR13C	13.800	F3	65.0	-6.1	50.0	-50.0	1.0290	63.4	0.9956	111.0				1	6
101	BAY13A	13.800	B1	58.7	2.2	50.0	-25.0	0.9800	60.0	0.9993	96.0				1	6 SYST
102	BAY13B	13.800	B2	58.7	2.2	50.0	-25.0	0.9800	59.9	0.9993	96.0				1	6
106	PANAM13A	13.800	M1	15.3	6.8	9.0	0.0	1.0300	16.3	0.9136	20.7				1	6
106	PANAM13A	13.800	M2	15.3	6.8	9.0	0.0	1.0300	16.3	0.9136	20.7				1	6
106	PANAM13A	13.800	M3	15.3	6.8	9.0	0.0	1.0300	16.3	0.9136	20.7				1	6
107	PANAM13B	13.800	M4	15.3	6.8	9.0	0.0	1.0300	16.3	0.9136	20.7				1	6
107	PANAM13B	13.800	M5	15.3	6.8	9.0	0.0	1.0300	16.3	0.9136	20.7				1	6
107	PANAM13B	13.800	M6	15.3	6.8	9.0	0.0	1.0300	16.3	0.9136	20.7				1	6
108	BAY13C	13.800	B3	58.7	2.2	50.0	-25.0	0.9800	59.9	0.9993	100.0				1	6
116	PACORA13	13.800	P1	17.5	7.4	8.8	0.0	1.0430	18.2	0.9204	21.7				1	6
116	PACORA13	13.800	P2	17.5	7.4	8.8	0.0	1.0430	18.2	0.9204	21.7				1	6
116	PACORA13	13.800	P3	17.5	7.4	8.8	0.0	1.0430	18.2	0.9204	21.7				1	6
142	CANJ13A	13.800	C1	36.0	5.7	29.0	-29.0	1.0000	36.5	0.9875	69.0				1	6
143	CANJ13B	13.800	C2	36.0	5.7	29.0	-29.0	1.0000	36.5	0.9875	69.0				1	6
151	GUALAC13	13.800	1	16.0	-2.8	10.0	-10.0	1.0000	16.2	0.9849	26.7				1	6
193	GEBONYIC	13.800	G1	6.3	-1.7	4.0	-4.0	1.0000	6.5	0.9676	35.3				1	6
193	GEBONYIC	13.800	G2	6.3	-1.7	4.0	-4.0	1.0000	6.5	0.9676	35.3				1	6
193	GEBONYIC	13.800	G3	6.3	-1.7	4.0	-4.0	1.0000	6.5	0.9676	35.3				1	6
204	BJOMIN13	13.800	1	16.0	-9.9	13.0	-13.0	1.0000	18.8	0.8513	28.9				1	6
204	BJOMIN13	13.800	2	16.0	-9.9	13.0	-13.0	1.0000	18.8	0.8513	28.9				1	6
303	SIND13.8	13.800	S1	4.5	0.0	5.0	0.0	1.0037	4.5	1.0000	13.5				1	6
305	ELALTO13.8	13.800	1	12.5	-2.9	12.0	-5.0	1.0200	12.6	0.9741	20.6				1	6
305	ELALTO13.8	13.800	2	12.5	-2.9	12.0	-5.0	1.0200	12.6	0.9741	20.6				1	6
307	CHANG75A	13.800	G1	65.0	-10.7	22.0	-22.0	1.0200	64.6	0.9867	118.6				1	6
308	CHANG75B	13.800	G2	65.0	-10.7	22.0	-22.0	1.0200	64.6	0.9867	118.6				1	6
317	MENDRE13.8	13.800	M1	8.5	-1.7	4.0	-4.0	1.0000	8.7	0.9805	35.3				1	6
322	CCGD250	13.800	C1	106.0	0.0	45.0	0.0	1.0185	104.1	1.0000	118.0				1	6
322	CCGD250	13.800	C2	106.0	0.0	45.0	0.0	1.0185	104.1	1.0000	118.0				1	6
340	PEDGALITO138	13.800	P1	12.0	-5.0	12.0	-5.0	1.0554	12.3	0.9231	27.0				1	6
517	PANAPOW13B	13.800	G4	15.8	0.5	12.5	0.5	1.0184	15.5	0.9994	20.9				1	6
517	PANAPOW13B	13.800	G5	15.8	0.5	12.5	0.5	1.0184	15.5	0.9994	20.9				1	6
517	PANAPOW13B	13.800	G6	15.8	0.5	12.5	0.5	1.0184	15.5	0.9994	20.9				1	6
517	PANAPOW13B	13.800	G7	15.8	0.5	12.5	0.5	1.0184	15.5	0.9994	20.9				1	6
SUBSYSTEM TOTALS				1424.6	91.7	942.6	-411.8				2265.2					

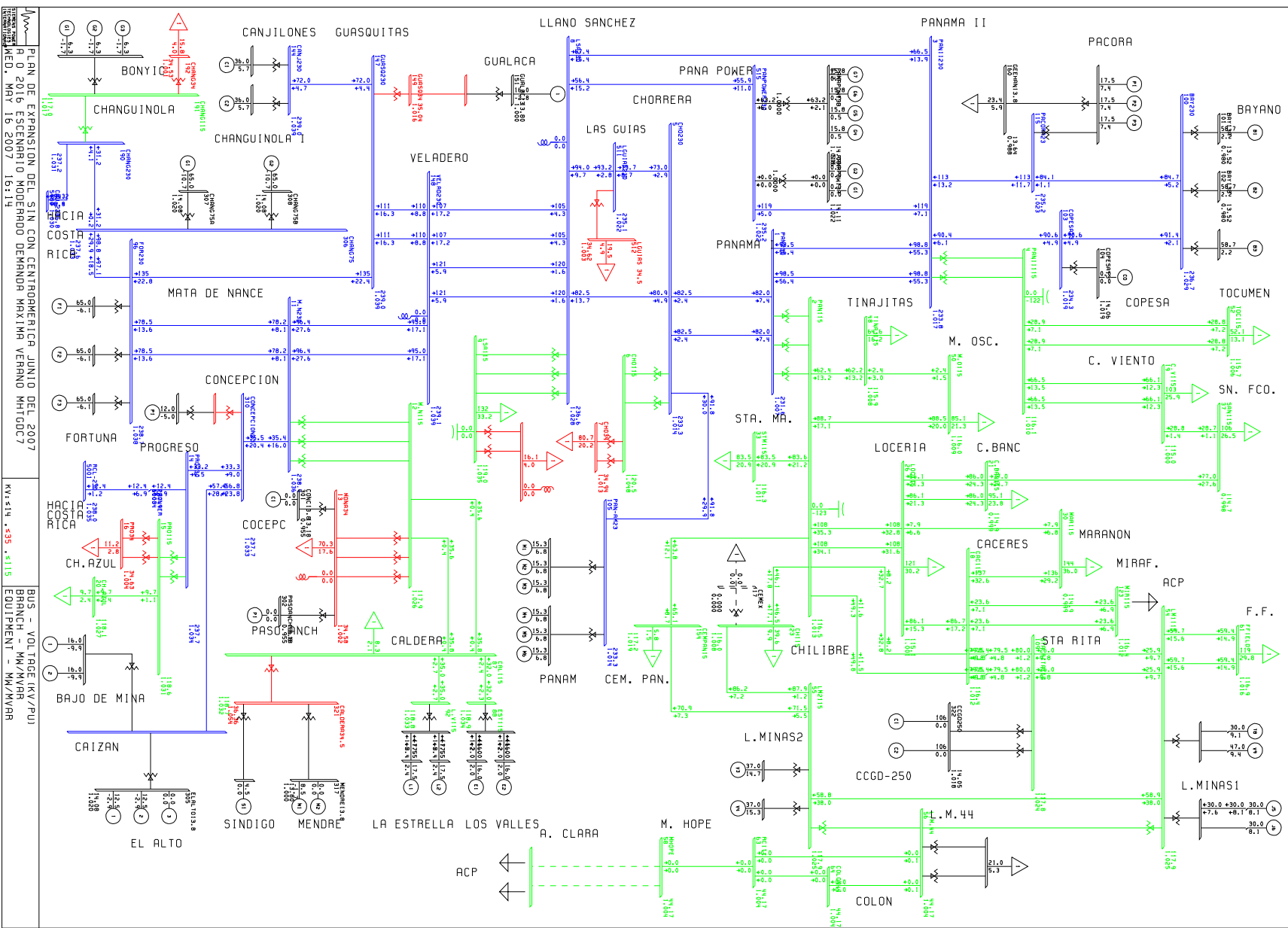
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 8:36  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	9.6	0.0	5.0	0.0	1.0520	9.1	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	9.6	0.0	5.0	0.0	1.0520	9.1	1.0000	13.5			2	7	
128		MIR13C		12.000	G3	16.5	7.2	11.0	0.0	1.0000	18.0	0.9162	29.4			2	7	
130		MIR13F		13.800	G5	10.4	2.4	8.0	0.0	1.0000	10.7	0.9753	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9969	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9969	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9969	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.0	2.0	-2.0	1.0000	2.0	0.9999	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.0	2.0	-2.0	1.0000	2.0	0.9999	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.0	2.0	-2.0	1.0000	2.0	0.9999	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9834	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9834	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9834	6.2			2	7	
SUBSYSTEM TOTALS						92.8	9.8	62.0	-33.0				153.6					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 8:37  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTGDC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.3	224.5	-98.9	0.0	143.3	-97.4	147.3	
5	1344.6	1324.8	0.0	0.0	0.0	-0.3	20.1	0.0
C.RICA	242.4	569.4	-237.7	0.0	470.7	20.5	360.9	
6	1424.6	1293.9	0.0	0.0	0.0	93.6	37.2	25.0
PANAMA	91.7	324.3	-245.6	0.0	482.4	77.5	417.9	
7	92.8	43.9	0.0	0.0	0.0	47.1	1.7	50.0
ACANAL	9.8	11.0	0.0	0.0	0.0	-14.1	12.9	
9	0.0	139.9	0.0	0.0	0.0	-140.4	0.5	-75.0
COLON	0.0	35.1	0.0	0.0	1.1	-37.3	3.4	
TOTALS	6666.3	6529.3	0.0	0.0	0.0	0.0	137.0	0.0
	562.3	1986.7	-1094.8	0.0	2033.1	0.0	1703.5	



PLAN DE EXPANSION DEL SIN CON CENTROGRUPA JUNIO DEL 2007  
 0 2016 ESCENARIO MODERADO MEXIYHA VERANO MHTC007  
 MED. MAY 16 2007 16:14

KV: 514 - 535 - 5115  
 BUS - VOLTAGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

AC



**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÍNIMA EN VERANO**



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 10:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGDC7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	35.0	17.0	17.0	0.0	1.0000	38.9	0.8995	47.0			1	6		
70		TGJB13A		13.800	J5	35.0	17.6	20.0	0.0	1.0000	39.2	0.8931	39.4			1	6		
90		EST-13L		13.800	E1	16.0	5.8	12.0	-5.0	0.9900	17.2	0.9410	27.0			1	6		
94		LV-13.8L		13.800	L1	17.5	6.2	12.0	-5.0	0.9900	18.7	0.9434	27.0			1	6		
97		FOR13A		13.800	F1	84.4	-0.8	50.0	-50.0	1.0290	82.0	1.0000	111.0			1	6	SYST	
98		FOR13B		13.800	F2	84.2	-0.8	50.0	-50.0	1.0290	81.8	0.9999	111.0			1	6		
106		PANAM13A		13.800	M1	15.3	8.7	9.0	0.0	1.0300	17.1	0.8693	20.7			1	6		
106		PANAM13A		13.800	M2	15.3	8.7	9.0	0.0	1.0300	17.1	0.8693	20.7			1	6		
116		PACORA13		13.800	P1	17.5	8.0	8.8	0.0	1.0430	18.5	0.9087	21.7			1	6		
116		PACORA13		13.800	P2	17.5	8.0	8.8	0.0	1.0430	18.5	0.9087	21.7			1	6		
142		CANJ13A		13.800	C1	40.0	7.7	29.0	-29.0	1.0000	40.7	0.9822	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-2.3	10.0	-10.0	1.0000	16.2	0.9900	26.7			1	6		
193		GEBONYIC		13.800	G1	6.3	-2.1	4.0	-4.0	1.0000	6.7	0.9485	35.3			1	6		
193		GEBONYIC		13.800	G2	6.3	-2.1	4.0	-4.0	1.0000	6.7	0.9485	35.3			1	6		
193		GEBONYIC		13.800	G3	6.3	-2.1	4.0	-4.0	1.0000	6.7	0.9485	35.3			1	6		
303		SIND13.8		13.800	S1	4.5	0.6	5.0	0.0	1.0000	4.5	0.9898	13.5			1	6		
305		ELALTO13.8		13.800	1	12.5	-4.1	12.0	-5.0	1.0200	12.9	0.9508	20.6			1	6		
305		ELALTO13.8		13.800	2	12.5	-4.1	12.0	-5.0	1.0200	12.9	0.9508	20.6			1	6		
307		CHANG75A		13.800	G1	67.0	-12.4	22.0	-22.0	1.0200	66.8	0.9832	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	0.7	4.0	-4.0	1.0000	8.5	0.9966	35.3			1	6		
340		PEDGALITO138		13.800	P1	13.5	-5.0	12.0	-5.0	1.0538	13.7	0.9377	27.0			1	6		
SUBSYSTEM TOTALS						531.1	53.1	314.6	-202.0				884.4						

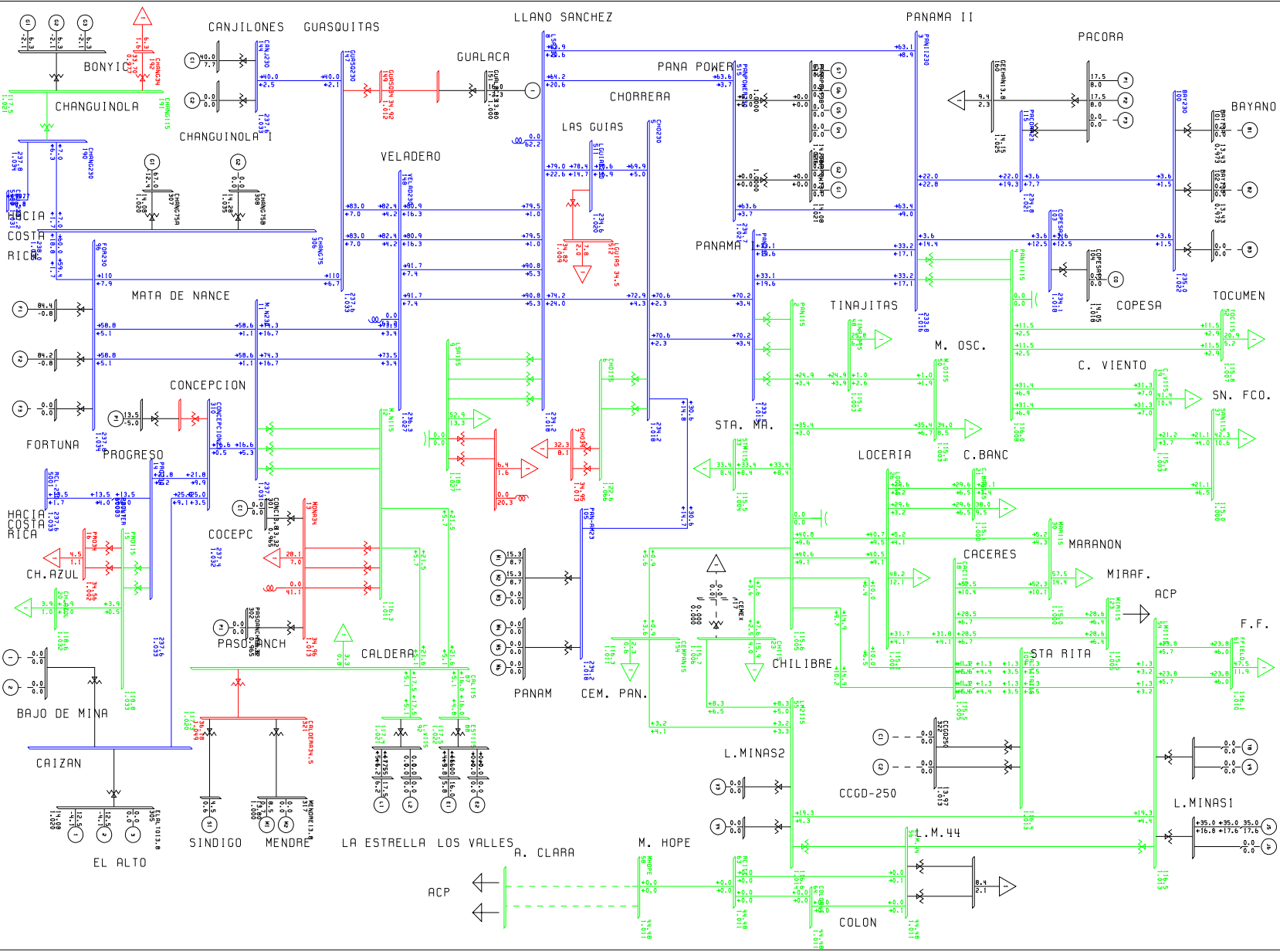
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 10:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	9.6	0.0	5.0	0.0	1.0468	9.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	9.6	0.0	5.0	0.0	1.0468	9.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	10.4	4.6	8.0	0.0	1.0000	11.4	0.9143	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9950	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9951	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9951	13.0			2	7		
140		GAT6A		6.9000	G1	2.0	0.0	2.0	-2.0	1.0000	2.0	0.9999	4.1			2	7		
140		GAT6A		6.9000	G2	2.0	0.0	2.0	-2.0	1.0000	2.0	0.9999	4.1			2	7		
140		GAT6A		6.9000	G3	2.0	0.0	2.0	-2.0	1.0000	2.0	0.9999	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.8	3.0	-3.0	1.0000	3.9	0.9810	6.2			2	7		
141		GAT6B		6.9000	G5	3.9	-0.8	3.0	-3.0	1.0000	3.9	0.9810	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.8	3.0	-3.0	1.0000	3.9	0.9810	6.2			2	7		
SUBSYSTEM TOTALS						76.3	5.1	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 10:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTGDC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.5	224.5	-98.7	0.0	143.2	-97.4	147.4	
5	1344.9	1324.8	0.0	0.0	0.0	0.4	19.7	0.0
C.RICA	243.3	569.4	-236.2	0.0	470.6	21.3	359.3	
6	531.1	517.5	0.0	0.0	0.0	-1.3	14.9	25.0
PANAMA	53.1	129.7	187.0	0.0	477.3	52.0	161.7	
7	76.3	17.6	0.0	0.0	0.0	57.0	1.7	50.0
ACANAL	5.1	4.4	0.0	0.0	0.0	-13.4	14.1	
9	0.0	56.0	0.0	0.0	0.0	-56.0	0.1	-75.0
COLON	0.0	14.0	0.0	0.0	1.1	-13.5	0.5	
TOTALS	5756.6	5642.6	0.0	0.0	0.0	0.0	114.0	0.0
	520.3	1764.4	-660.5	0.0	2027.8	0.0	1444.2	



PLAN DE EXPANSION DEL SIN CON CENTROPONERICA JUNIO DEL 2007  
 0 2016 ESCENARIO MODERADO MINIMA VERRANO MHT007  
 MED. MAY 16 2007 16:15

KV: 514 . 535 . 5115

BUS - VOLTAJE (KV/FU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Pacora-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      WED, MAY 16 2007    8:30  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0185	234.25	14	PRO	230		230.00	6	1.0185	234.26
96	FOR	230		230.00	6	1.0219	235.03	100	BAY	230		230.00	6	1.0239	235.51
115	PACORA	23		230.00	6	1.0310	237.13	144	CANJ	230		230.00	6	1.0172	233.96

147	GUASQ230	230.00	6	1.0170	233.92	148	VELAD230	230.00	6	1.0014	230.31
190	CHANG230	230.00	6	1.0271	236.24	306	CHANG75	230.00	6	1.0284	236.52
309	CAISAN230	230.00	6	1.0194	234.47	310	CONCEPCION230	230.00	6	1.0189	234.36
6000	FRONTER	230.00	6	1.0189	234.34						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9522	219.01	3	PANII230	230.00	6	0.9628	221.45				
5	CHO230	230.00	6	0.9585	220.45	8	LSA230	230.00	6	0.9743	224.08				
103	COPESA23	230.00	6	0.9711	223.35	105	PAN-AM23	230.00	6	0.9587	220.50				
511	LGUIAS230	230.00	6	0.9651	221.97	515	PANPOWER230	230.00	6	0.9709	223.30				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 8:31  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0119	116.36	4	PANII115	115.00	6	1.0135	116.56				
12	M.N115	115.00	6	1.0206	117.37	15	PRO115	115.00	6	1.0157	116.81				
18	CAC115	115.00	6	1.0110	116.26	19	C.V115	115.00	6	1.0018	115.21				
20	CH.AZUL	115.00	6	1.0118	116.36	23	CH115	115.00	6	1.0095	116.09				
26	LOC115	115.00	6	1.0000	115.00	33	STM115	115.00	6	1.0097	116.12				
48	TINAJ115	115.00	6	1.0069	115.79	50	M.O115	115.00	6	1.0072	115.83				
52	TOC115	115.00	6	1.0099	116.14	54	LM115	115.00	6	1.0251	117.89				
55	LM2115	115.00	6	1.0255	117.94	61	FFIELD	115.00	9	1.0166	116.90				
87	CAL115	115.00	6	1.0377	119.33	88	EST115	115.00	6	1.0416	119.78				
92	L.V115	115.00	6	1.0392	119.50	109	STA RITA115	115.00	6	1.0239	117.75				
110	PTMD115A	115.00	6	1.0193	117.22	111	PTMD115B	115.00	6	1.0193	117.22				
123	MIR115	115.00	7	1.0098	116.13	154	CEMPAN15	115.00	6	1.0208	117.39				
191	CHANG115	115.00	6	1.0141	116.62										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6	CHO115	115.00	6	0.9878	113.60	9	LSA115	115.00	6	0.9776	112.42				
21	C.BAN115	115.00	6	0.9986	114.84	30	MAR115	115.00	6	0.9981	114.78				
37	SAN115	115.00	6	0.9973	114.68										

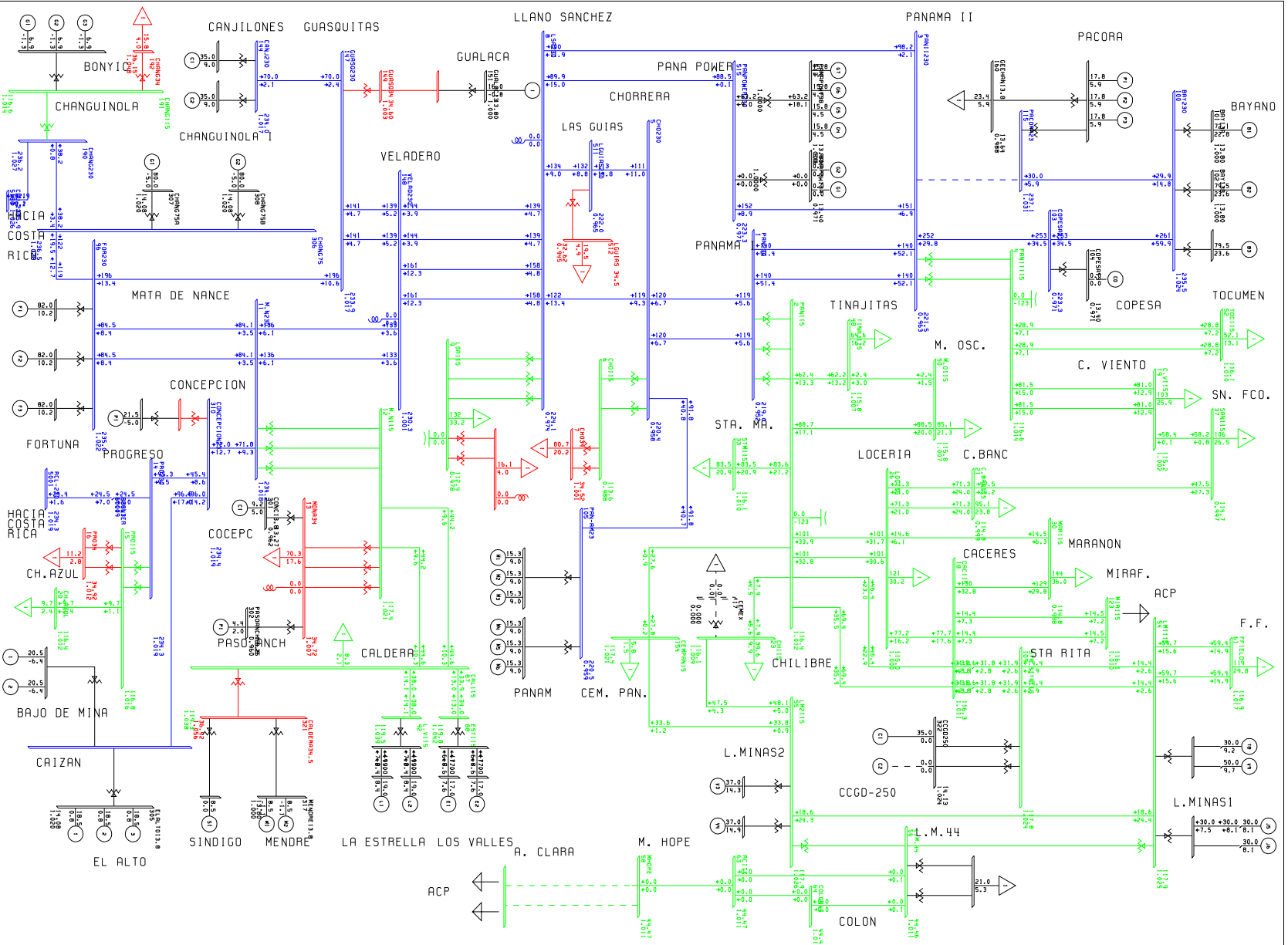
AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66	BLM13B	13.800	V2	37.0	14.3	17.0	0.0	1.0050	39.5	0.9324	47.0			1	6		
67	BLM13C	13.800	V3	37.0	14.3	17.0	0.0	1.0050	39.5	0.9324	47.0			1	6		
68	BLM13D	13.800	V4	37.0	14.9	17.0	0.0	1.0050	39.7	0.9274	47.0			1	6		
70	TGJB13A	13.800	J5	30.0	8.1	20.0	0.0	1.0000	31.1	0.9658	39.4			1	6		
71	TGJB13B	13.800	J6	30.0	8.1	20.0	0.0	1.0000	31.1	0.9658	39.4			1	6		
72	BLMCCA	13.800	T8	30.0	9.2	20.0	0.0	1.0000	31.4	0.9557	50.0			1	6		
73	BLMCCB	13.800	V9	50.0	9.7	40.0	0.0	1.0000	50.9	0.9818	71.0			1	6		
90	EST-13L	13.800	E1	17.0	7.6	12.0	-5.0	1.0150	18.3	0.9130	27.0			1	6		
91	EST-13T	13.800	E2	17.0	7.6	12.0	-5.0	1.0150	18.3	0.9130	27.0			1	6		
94	LV-13.8L	13.800	L1	19.0	8.4	12.0	-5.0	1.0150	20.5	0.9141	27.0			1	6		
95	LV-13.8T	13.800	L2	19.0	8.4	12.0	-5.0	1.0150	20.5	0.9141	27.0			1	6		
97	FOR13A	13.800	F1	82.0	10.2	50.0	-50.0	1.0290	80.3	0.9924	111.0			1	6		
98	FOR13B	13.800	F2	82.0	10.2	50.0	-50.0	1.0290	80.3	0.9924	111.0			1	6		
99	FOR13C	13.800	F3	82.0	10.2	50.0	-50.0	1.0290	80.3	0.9924	111.0			1	6		
101	BAY13A	13.800	B1	72.1	22.8	50.0	-25.0	1.0000	75.6	0.9533	96.0			1	6	SYST	
102	BAY13B	13.800	B2	79.5	23.6	50.0	-25.0	1.0000	82.9	0.9587	96.0			1	6		
106	PANAM13A	13.800	M1	15.3	9.0	9.0	0.0	0.9919	17.9	0.8619	20.7			1	6		
106	PANAM13A	13.800	M2	15.3	9.0	9.0	0.0	0.9919	17.9	0.8619	20.7			1	6		
106	PANAM13A	13.800	M3	15.3	9.0	9.0	0.0	0.9919	17.9	0.8619	20.7			1	6		
107	PANAM13B	13.800	M4	15.3	9.0	9.0	0.0	0.9919	17.9	0.8619	20.7			1	6		
107	PANAM13B	13.800	M5	15.3	9.0	9.0	0.0	0.9919	17.9	0.8619	20.7			1	6		
107	PANAM13B	13.800	M6	15.3	9.0	9.0	0.0	0.9919	17.9	0.8619	20.7			1	6		
108	BAY13C	13.800	B3	79.5	23.6	50.0	-25.0	1.0000	82.9	0.9587	100.0			1	6		
116	PACORA13	13.800	P1	17.8	5.9	8.8	0.0	1.0430	18.0	0.9498	21.7			1	6		
116	PACORA13	13.800	P2	17.8	5.9	8.8	0.0	1.0430	18.0	0.9498	21.7			1	6		
116	PACORA13	13.800	P3	17.8	5.9	8.8	0.0	1.0430	18.0	0.9498	21.7			1	6		
142	CANJ13A	13.800	C1	35.0	9.0	29.0	-29.0	1.0000	36.1	0.9684	69.0			1	6		
143	CANJ13B	13.800	C2	35.0	9.0	29.0	-29.0	1.0000	36.1	0.9684	69.0			1	6		
151	GUALAC13	13.800	1	16.0	-0.8	10.0	-10.0	1.0000	16.0	0.9987	26.7			1	6		
193	GEBONYIC	13.800	G1	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9830	35.3			1	6		
193	GEBONYIC	13.800	G2	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9830	35.3			1	6		
193	GEBONYIC	13.800	G3	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9830	35.3			1	6		
204	BJOMIN13	13.800	1	20.5	-6.4	13.0	-13.0	1.0000	21.5	0.9548	28.9			1	6		
204	BJOMIN13	13.800	2	20.5	-6.4	13.0	-13.0	1.0000	21.5	0.9548	28.9			1	6		
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9617	10.9	0.8784	13.5			1	6		
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9598	5.1	0.9110	6.2			1	6		
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0053	8.5	1.0000	13.5			1	6		
305	ELALTO13.8	13.800	1	18.5	0.8	12.0	-5.0	1.0200	18.2	0.9990	20.6			1	6		
305	ELALTO13.8	13.800	2	18.5	0.8	12.0	-5.0	1.0200	18.2	0.9990	20.6			1	6		
305	ELALTO13.8	13.800	3	18.5	0.8	12.0	-5.0	1.0200	18.2	0.9990	20.6			1	6		
307	CHANG75A	13.800	G1	80.0	-5.0	22.0	-22.0	1.0200	78.6	0.9980	118.6			1	6		
308	CHANG75B	13.800	G2	80.0	-5.0	22.0	-22.0	1.0200	78.6	0.9980	118.6			1	6		
317	MENDRE13.8	13.800	M1	8.5	-1.1	4.0	-4.0	1.0000	8.6	0.9911	35.3			1	6		
317	MENDRE13.8	13.800	M2	8.5	-1.1	4.0	-4.0	1.0000	8.6	0.9911	35.3			1	6		
322	CCGD250	13.800	C1	35.0	0.0	45.0	0.0	1.0238	34.2	1.0000	118.0			1	6		
340	PEDGALITO13.8	13.800	P1	21.5	-5.0	12.0	-5.0	1.0368	21.3	0.9740	27.0			1	6		
517	PANAPOW13B	13.800	G4	15.8	4.5	12.5	0.5	1.0000	16.4	0.9612	20.9			1	6		
517	PANAPOW13B	13.800	G5	15.8	4.5	12.5	0.5	1.0000	16.4	0.9612	20.9			1	6		
517	PANAPOW13B	13.800	G6	15.8	4.5	12.5	0.5	1.0000	16.4	0.9612	20.9			1	6		
517	PANAPOW13B	13.800	G7	15.8	4.5	12.5	0.5	1.0000	16.4	0.9612	20.9			1	6		
SUBSYSTEM TOTALS				1467.2	293.6	920.6	-427.8				2222.9						



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 8:31  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0471	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0471	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.4	4.6	8.0	0.0	1.0000	11.4	0.9158	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9942	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9943	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9943	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9988	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9988	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9988	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9867	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9867	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9867	6.2			2	7	
SUBSYSTEM TOTALS						74.3	6.1	51.0	-33.0				124.2					



PLAN DE EXPANSION DEL SIN CON CENTROPRICER JUNIO DEL 2007  
 0 2016 ESCENARIO MODERADO PROXIMA INVIERNO HHTDC07  
 MED. MAY 16 2007 16:17

BUS - VOLTAJE (KV/VI)  
 BRANCH - KW/MVAR  
 EQUIPMENT - KW/MVAR

KV: 514, 255, 115

**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Panamá I-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 8:42  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

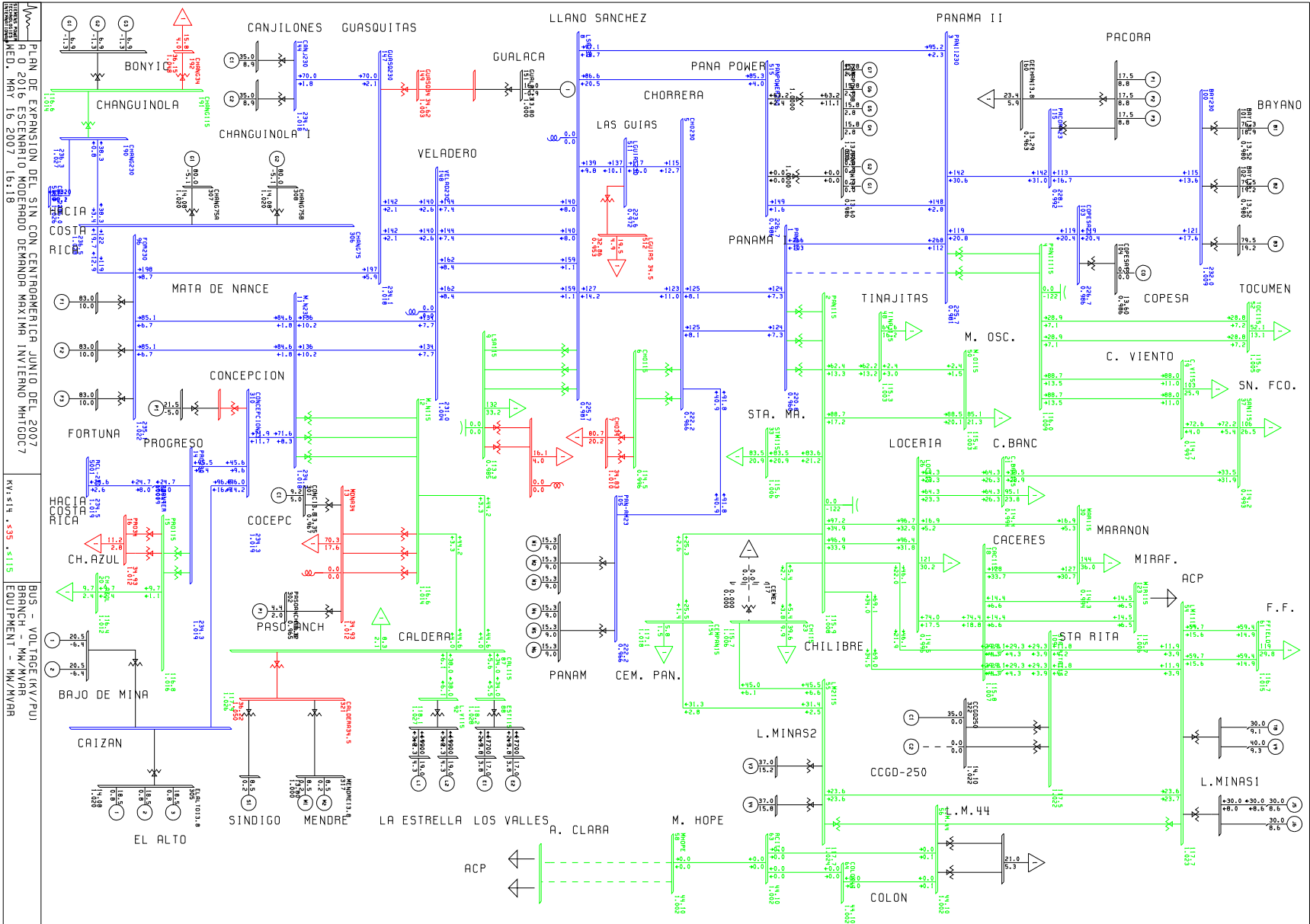
BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0182	234.18	14		PRO230		230.00	6	1.0187	234.31



AREA 6 [PANAMA ] MACHINE SUMMARY:																
BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	37.0	15.2	17.0	0.0	1.0050	39.8	0.9250	47.0			1	6	
67	BLM13C	13.800	V3	37.0	15.2	17.0	0.0	1.0050	39.8	0.9250	47.0			1	6	
68	BLM13D	13.800	V4	37.0	15.8	17.0	0.0	1.0050	40.0	0.9194	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	8.6	20.0	0.0	1.0000	31.2	0.9615	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	8.6	20.0	0.0	1.0000	31.2	0.9615	39.4			1	6	
72	BLMCCA	13.800	T8	30.0	9.1	20.0	0.0	1.0000	31.4	0.9568	50.0			1	6	
73	BLMCCB	13.800	V9	40.0	9.3	40.0	0.0	1.0000	41.1	0.9740	71.0			1	6	
90	EST-13L	13.800	E1	17.0	3.8	12.0	-5.0	0.9900	17.6	0.9763	27.0			1	6	
91	EST-13T	13.800	E2	17.0	3.8	12.0	-5.0	0.9900	17.6	0.9763	27.0			1	6	
94	LV-13.8L	13.800	L1	19.0	4.3	12.0	-5.0	0.9900	19.7	0.9750	27.0			1	6	
95	LV-13.8T	13.800	L2	19.0	4.3	12.0	-5.0	0.9900	19.7	0.9750	27.0			1	6	
97	FOR13A	13.800	F1	83.0	10.0	50.0	-50.0	1.0290	81.2	0.9928	111.0			1	6	
98	FOR13B	13.800	F2	83.0	10.0	50.0	-50.0	1.0290	81.2	0.9928	111.0			1	6	
99	FOR13C	13.800	F3	83.0	10.0	50.0	-50.0	1.0290	81.2	0.9928	111.0			1	6	
101	BAY13A	13.800	B1	76.3	18.9	50.0	-25.0	0.9800	80.2	0.9708	96.0			1	6	SYST
102	BAY13B	13.800	B2	79.5	19.2	50.0	-25.0	0.9800	83.4	0.9721	96.0			1	6	
106	PANAM13A	13.800	M1	15.3	9.0	9.0	0.0	0.9989	17.8	0.8619	20.7			1	6	
106	PANAM13A	13.800	M2	15.3	9.0	9.0	0.0	0.9989	17.8	0.8619	20.7			1	6	
106	PANAM13A	13.800	M3	15.3	9.0	9.0	0.0	0.9989	17.8	0.8619	20.7			1	6	
107	PANAM13B	13.800	M4	15.3	9.0	9.0	0.0	0.9989	17.8	0.8619	20.7			1	6	
107	PANAM13B	13.800	M5	15.3	9.0	9.0	0.0	0.9989	17.8	0.8619	20.7			1	6	
107	PANAM13B	13.800	M6	15.3	9.0	9.0	0.0	0.9989	17.8	0.8619	20.7			1	6	
108	BAY13C	13.800	B3	79.5	19.2	50.0	-25.0	0.9800	83.4	0.9721	100.0			1	6	
116	PACORA13	13.800	P1	17.5	8.8	8.8	0.0	1.0197	19.2	0.8928	21.7			1	6	
116	PACORA13	13.800	P2	17.5	8.8	8.8	0.0	1.0197	19.2	0.8928	21.7			1	6	
116	PACORA13	13.800	P3	17.5	8.8	8.8	0.0	1.0197	19.2	0.8928	21.7			1	6	
142	CANJ13A	13.800	C1	35.0	8.9	29.0	-29.0	1.0000	36.1	0.9694	69.0			1	6	
143	CANJ13B	13.800	C2	35.0	8.9	29.0	-29.0	1.0000	36.1	0.9694	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-0.9	10.0	-10.0	1.0000	16.0	0.9984	26.7			1	6	
193	GEBONYIC	13.800	G1	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9828	35.3			1	6	
193	GEBONYIC	13.800	G2	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9828	35.3			1	6	
193	GEBONYIC	13.800	G3	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9828	35.3			1	6	
204	BJOMIN13	13.800	1	20.5	-6.4	13.0	-13.0	1.0000	21.5	0.9550	28.9			1	6	
204	BJOMIN13	13.800	2	20.5	-6.4	13.0	-13.0	1.0000	21.5	0.9550	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9672	10.8	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9654	5.0	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.2	5.0	0.0	1.0000	8.5	0.9998	13.5			1	6	
305	ELALTO13.8	13.800	1	18.5	0.8	12.0	-5.0	1.0200	18.2	0.9990	20.6			1	6	
305	ELALTO13.8	13.800	2	18.5	0.8	12.0	-5.0	1.0200	18.2	0.9990	20.6			1	6	
305	ELALTO13.8	13.800	3	18.5	0.8	12.0	-5.0	1.0200	18.2	0.9990	20.6			1	6	
307	CHANG75A	13.800	G1	80.0	-5.1	22.0	-22.0	1.0200	78.6	0.9979	118.6			1	6	
308	CHANG75B	13.800	G2	80.0	-5.1	50.0	-22.0	1.0200	78.6	0.9979	118.6			1	6	
317	MENDRE13.8	13.800	M1	8.5	0.2	4.0	-4.0	1.0000	8.5	0.9997	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	0.2	4.0	-4.0	1.0000	8.5	0.9997	35.3			1	6	
322	CCGD250	13.800	C1	35.0	0.0	45.0	0.0	1.0215	34.3	1.0000	118.0			1	6	
340	PEDGALITO138	13.800	P1	21.5	-5.0	12.0	-5.0	1.0368	21.3	0.9740	27.0			1	6	
517	PANAPOW13B	13.800	G4	15.8	2.8	12.5	0.5	1.0000	16.0	0.9850	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.8	2.8	12.5	0.5	1.0000	16.0	0.9850	20.9			1	6	
517	PANAPOW13B	13.800	G6	15.8	2.8	12.5	0.5	1.0000	16.0	0.9850	20.9			1	6	
517	PANAPOW13B	13.800	G7	15.8	2.8	12.5	0.5	1.0000	16.0	0.9850	20.9			1	6	
SUBSYSTEM TOTALS				1463.6	271.7	920.6	-427.8				2222.9					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 8:40  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0451	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0451	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.4	5.4	8.0	0.0	1.0000	11.7	0.8861	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9930	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9931	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9931	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9979	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9979	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9979	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9879	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9879	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9879	6.2			2	7	
SUBSYSTEM TOTALS						74.3	7.5	51.0	-33.0				124.2					



PLAN DE EXPANSION DEL SIN CON CENTROPERICIA JUNIO DEL 2007  
 B O 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MH10CC7  
 MED. MAY 16 2007 16:18

KV:518 .435 .5115

BUS - VOLTAGG (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Pana Power-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      WED, MAY 16 2007    9:22  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0193	234.43	14	PRO	230		230.00	6	1.0189	234.34
96	FOR	230		230.00	6	1.0222	235.11	100	BAY	230		230.00	6	1.0125	232.88
144	CANJ	230		230.00	6	1.0173	233.98	147	GUASQ	230		230.00	6	1.0171	233.93



148	VELAD230	230.00	6	1.0008	230.19	190	CHANG230	230.00	6	1.0272	236.26
306	CHANG75	230.00	6	1.0285	236.55	309	CAISAN230	230.00	6	1.0198	234.55
310	CONCEPCION23	230.00	6	1.0194	234.47	6000	FRONTER	230.00	6	1.0192	234.41

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9536	219.32	3	PANII230	230.00	6	0.9668	222.37
5	CHO230	230.00	6	0.9553	219.72	8	LSA230	230.00	6	0.9725	223.68
103	COPESA23	230.00	6	0.9739	224.00	105	PAN-AM23	230.00	6	0.9555	219.77
115	PACORA23	230.00	6	0.9824	225.96	511	LGUIAS230	230.00	6	0.9594	220.65
515	PANPOWER230	230.00	6	0.9963	229.15						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 9:22  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0124	116.42	4	PANII115	115.00	6	1.0076	115.88
12	M.N115	115.00	6	1.0249	117.86	15	PRO115	115.00	6	1.0161	116.85
18	CAC115	115.00	6	1.0115	116.32	20	CH.AZUL	115.00	6	1.0122	116.40
23	CH115	115.00	6	1.0100	116.15	33	STM115	115.00	6	1.0103	116.18
48	TINAJ115	115.00	6	1.0074	115.85	50	M.O115	115.00	6	1.0078	115.89
52	TOC115	115.00	6	1.0040	115.46	54	LM115	115.00	6	1.0254	117.92
55	LM2115	115.00	6	1.0258	117.97	61	FFIELD	115.00	9	1.0168	116.93
87	CAL115	115.00	6	1.0452	120.20	88	EST115	115.00	6	1.0500	120.75
92	L.V115	115.00	6	1.0470	120.41	109	STA RITA115	115.00	6	1.0242	117.79
110	PTMD115A	115.00	6	1.0197	117.27	111	PTMD115B	115.00	6	1.0197	117.27
123	MIR115	115.00	7	1.0102	116.18	154	CEMPAN15	115.00	6	1.0212	117.43
191	CHANG115	115.00	6	1.0142	116.63						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6	CHO115	115.00	6	0.9845	113.22	9	LSA115	115.00	6	0.9758	112.22
19	C.V115	115.00	6	0.9977	114.73	21	C.BAN115	115.00	6	0.9983	114.80
26	LOC115	115.00	6	0.9999	114.99	30	MAR115	115.00	6	0.9982	114.80
37	SAN115	115.00	6	0.9966	114.61						

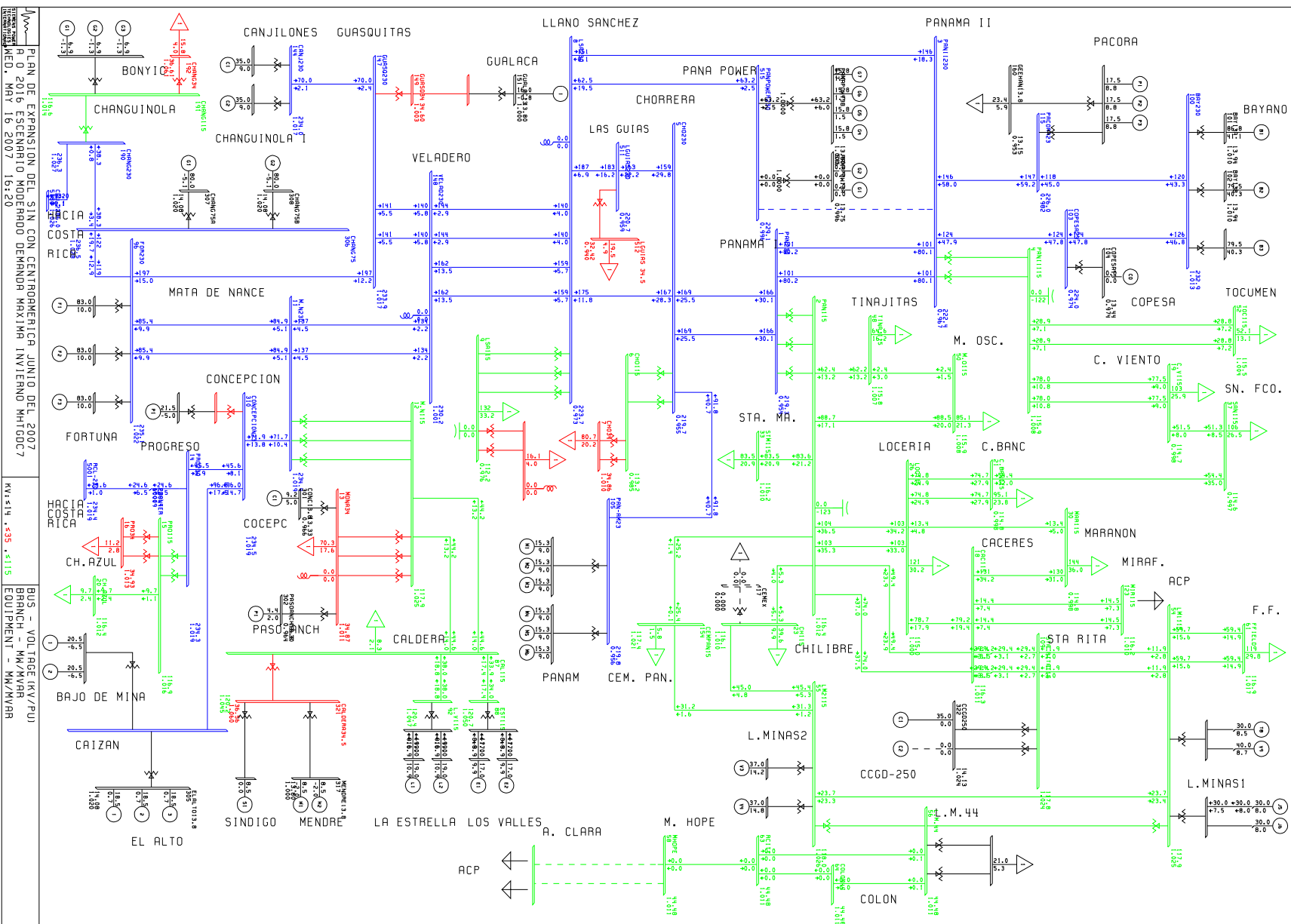
AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	37.0	14.2	17.0	0.0	1.0050	39.4	0.9335	47.0			1	6	
67	BLM13C	13.800	V3	37.0	14.2	17.0	0.0	1.0050	39.4	0.9335	47.0			1	6	
68	BLM13D	13.800	V4	37.0	14.8	17.0	0.0	1.0050	39.7	0.9285	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	8.0	20.0	0.0	1.0000	31.0	0.9663	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	8.0	20.0	0.0	1.0000	31.0	0.9663	39.4			1	6	
72	BLMCCA	13.800	T8	30.0	8.5	20.0	0.0	1.0000	31.2	0.9618	50.0			1	6	
73	BLMCCB	13.800	V9	40.0	8.7	40.0	0.0	1.0000	40.9	0.9770	71.0			1	6	
90	EST-13L	13.800	E1	17.0	9.9	12.0	-5.0	1.0300	19.1	0.8641	27.0			1	6	
91	EST-13T	13.800	E2	17.0	9.9	12.0	-5.0	1.0300	19.1	0.8641	27.0			1	6	
94	LV-13.8L	13.800	L1	19.0	10.9	12.0	-5.0	1.0300	21.3	0.8674	27.0			1	6	
95	LV-13.8T	13.800	L2	19.0	10.9	12.0	-5.0	1.0300	21.3	0.8674	27.0			1	6	
97	FOR13A	13.800	F1	83.0	10.0	50.0	-50.0	1.0290	81.2	0.9929	111.0			1	6	
98	FOR13B	13.800	F2	83.0	10.0	50.0	-50.0	1.0290	81.2	0.9929	111.0			1	6	
99	FOR13C	13.800	F3	83.0	10.0	50.0	-50.0	1.0290	81.2	0.9929	111.0			1	6	
101	BAY13A	13.800	B1	86.8	41.1	50.0	-25.0	1.0100	95.0	0.9039	96.0			1	6	SYST
102	BAY13B	13.800	B2	79.5	40.3	50.0	-25.0	1.0100	88.2	0.8921	96.0			1	6	
106	PANAM13A	13.800	M1	15.3	9.0	9.0	0.0	0.9889	17.9	0.8619	20.7			1	6	
106	PANAM13A	13.800	M2	15.3	9.0	9.0	0.0	0.9889	17.9	0.8619	20.7			1	6	
106	PANAM13A	13.800	M3	15.3	9.0	9.0	0.0	0.9889	17.9	0.8619	20.7			1	6	
107	PANAM13B	13.800	M4	15.3	9.0	9.0	0.0	0.9889	17.9	0.8619	20.7			1	6	
107	PANAM13B	13.800	M5	15.3	9.0	9.0	0.0	0.9889	17.9	0.8619	20.7			1	6	
107	PANAM13B	13.800	M6	15.3	9.0	9.0	0.0	0.9889	17.9	0.8619	20.7			1	6	
108	BAY13C	13.800	B3	79.5	40.3	50.0	-25.0	1.0100	88.2	0.8921	100.0			1	6	
116	PACORA13	13.800	P1	17.5	8.8	8.8	0.0	1.0105	19.4	0.8928	21.7			1	6	
116	PACORA13	13.800	P2	17.5	8.8	8.8	0.0	1.0105	19.4	0.8928	21.7			1	6	
116	PACORA13	13.800	P3	17.5	8.8	8.8	0.0	1.0105	19.4	0.8928	21.7			1	6	
142	CANJ13A	13.800	C1	35.0	9.0	29.0	-29.0	1.0000	36.1	0.9684	69.0			1	6	
143	CANJ13B	13.800	C2	35.0	9.0	29.0	-29.0	1.0000	36.1	0.9684	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-0.8	10.0	-10.0	1.0000	16.0	0.9987	26.7			1	6	
193	GEBONYIC	13.800	G1	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9828	35.3			1	6	
193	GEBONYIC	13.800	G2	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9828	35.3			1	6	
193	GEBONYIC	13.800	G3	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9828	35.3			1	6	
204	BJOMIN13	13.800	1	20.5	-6.5	13.0	-13.0	1.0000	21.5	0.9532	28.9			1	6	
204	BJOMIN13	13.800	2	20.5	-6.5	13.0	-13.0	1.0000	21.5	0.9532	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9658	10.8	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9640	5.0	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0090	8.4	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	18.5	0.7	12.0	-5.0	1.0200	18.2	0.9992	20.6			1	6	
305	ELALTO13.8	13.800	2	18.5	0.7	12.0	-5.0	1.0200	18.2	0.9992	20.6			1	6	
305	ELALTO13.8	13.800	3	18.5	0.7	12.0	-5.0	1.0200	18.2	0.9992	20.6			1	6	
307	CHANG75A	13.800	G1	80.0	-5.1	22.0	-22.0	1.0200	78.6	0.9979	118.6			1	6	
308	CHANG75B	13.800	G2	80.0	-5.1	50.0	-22.0	1.0200	78.6	0.9979	118.6			1	6	
317	MENDRE13.8	13.800	M1	8.5	-2.0	4.0	-4.0	1.0000	8.7	0.9733	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.5	-2.0	4.0	-4.0	1.0000	8.7	0.9733	35.3			1	6	
322	CCGD250	13.800	C1	35.0	0.0	45.0	0.0	1.0241	34.2	1.0000	118.0			1	6	
340	PEDGALITO13.8	13.800	P1	21.5	-5.0	12.0	-5.0	1.0374	21.3	0.9740	27.0			1	6	
517	PANAPOW13B	13.800	G4	15.8	1.5	12.5	0.5	1.0000	15.9	0.9955	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.8	1.5	12.5	0.5	1.0000	15.9	0.9955	20.9			1	6	
517	PANAPOW13B	13.800	G6	15.8	1.5	12.5	0.5	1.0000	15.9	0.9955	20.9			1	6	
517	PANAPOW13B	13.800	G7	15.8	1.5	12.5	0.5	1.0000	15.9	0.9955	20.9			1	6	
SUBSYSTEM TOTALS				1474.1	346.3	920.6	-427.8				2222.9					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 9:22  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0473	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0473	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.4	4.5	8.0	0.0	1.0000	11.3	0.9192	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9944	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9944	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9944	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9989	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9989	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9989	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9865	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9865	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9865	6.2			2	7	
SUBSYSTEM TOTALS						74.3	5.9	51.0	-33.0				124.2					



PLAN DE EXPANSION DEL SIN CON CENTROBARRA JUNIO DEL 2007  
 9.0 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTCOD7  
 MED. MAY 16 2007 16:20  
 BUS - VOLTAJE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR  
 KV-S14 - 355 - 5115

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Guasquitas-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      WED, MAY 16 2007    9:28  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.	N230		230.00	6	1.0116	232.67	14	PRO	230		230.00	6	1.0130	232.99
96	FOR	230		230.00	6	1.0187	234.30	100	BAY	230		230.00	6	1.0041	230.94
144	CANJ	230		230.00	6	1.0147	233.38	147	GUASQ	230		230.00	6	1.0145	233.33

190	CHANG230	230.00	6	1.0261	236.00	306	CHANG75	230.00	6	1.0273	236.29
309	CAISAN230	230.00	6	1.0157	233.60	310	CONCEPCION23230.00	230.00	6	1.0135	233.10
6000	FRONTER	230.00	6	1.0133	233.07						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9617	221.20	3		PANII230		230.00	6	0.9737	223.95
5		CHO230		230.00	6	0.9654	222.05	8		LSA230		230.00	6	0.9717	223.49
103		COPESA23		230.00	6	0.9785	225.05	105		PAN-AM23		230.00	6	0.9656	222.09
115		PACORA23		230.00	6	0.9850	226.55	148		VELAD230		230.00	6	0.9914	228.02
511		LGUIAS230		230.00	6	0.9665	222.30	515		PANPOWER230		230.00	6	0.9785	225.05

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 9:28  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0085	115.98	4		PANII115		115.00	6	1.0030	115.35
12		M.N115		115.00	6	1.0095	116.10	15		PRO115		115.00	6	1.0102	116.17
18		CAC115		115.00	6	1.0076	115.88	20		CH.AZUL		115.00	6	1.0062	115.72
23		CH115		115.00	6	1.0069	115.79	33		STM115		115.00	6	1.0064	115.73
48		TINAJ115		115.00	6	1.0035	115.40	50		M.O115		115.00	6	1.0039	115.45
54		LM1115		115.00	6	1.0234	117.70	55		LM2115		115.00	6	1.0239	117.75
61		FFIELD		115.00	9	1.0149	116.71	87		CAL115		115.00	6	1.0227	117.61
88		EST115		115.00	6	1.0255	117.93	92		L.V115		115.00	6	1.0238	117.74
109		STA RITA115		115.00	6	1.0221	117.54	110		PTMD115A		115.00	6	1.0168	116.93
111		PTMD115B		115.00	6	1.0168	116.93	123		MIR115		115.00	7	1.0066	115.76
154		CEMPAN15		115.00	6	1.0187	117.15	191		CHANG115		115.00	6	1.0133	116.53

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6		CHO115		115.00	6	0.9954	114.47	9		LSA115		115.00	6	0.9749	112.11
19		C.V115		115.00	6	0.9932	114.22	21		C.BAN115		115.00	6	0.9943	114.34
26		LOC115		115.00	6	0.9959	114.53	30		MAR115		115.00	6	0.9943	114.35
37		SAN115		115.00	6	0.9925	114.14	52		TOC115		115.00	6	0.9994	114.93

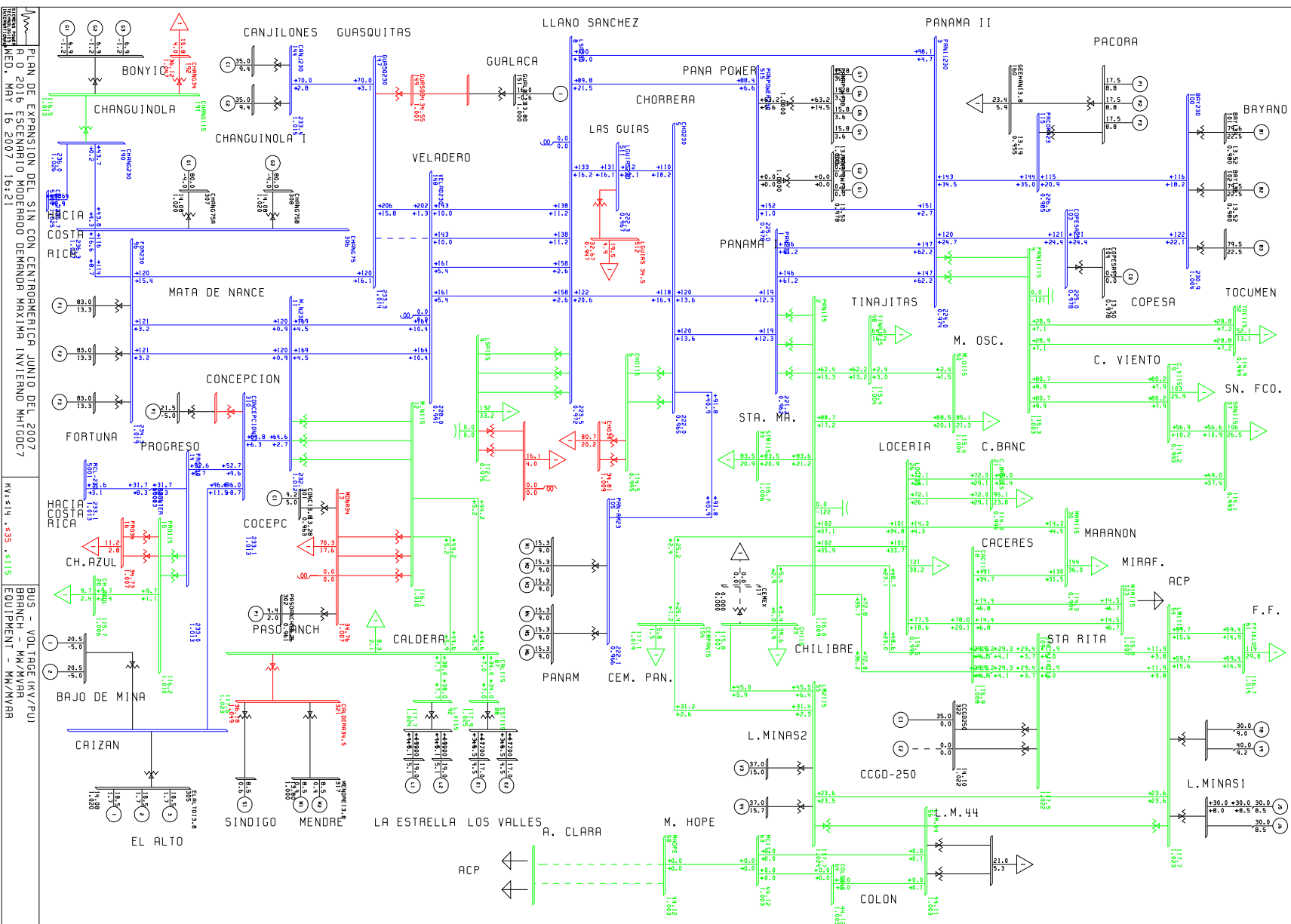
AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	37.0	15.0	17.0	0.0	1.0050	39.7	0.9264	47.0			1	6		
67		BLM13C		13.800	V3	37.0	15.0	17.0	0.0	1.0050	39.7	0.9264	47.0			1	6		
68		BLM13D		13.800	V4	37.0	15.7	17.0	0.0	1.0050	40.0	0.9208	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	8.5	20.0	0.0	1.0000	31.2	0.9623	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	8.5	20.0	0.0	1.0000	31.2	0.9623	39.4			1	6		
72		BLMCCA		13.800	T8	30.0	9.0	20.0	0.0	1.0000	31.3	0.9576	50.0			1	6		
73		BLMCCB		13.800	V9	40.0	9.2	40.0	0.0	1.0000	41.0	0.9745	71.0			1	6		
90		EST-13L		13.800	E1	17.0	4.5	12.0	-5.0	0.9900	17.8	0.9664	27.0			1	6		
91		EST-13T		13.800	E2	17.0	4.5	12.0	-5.0	0.9900	17.8	0.9664	27.0			1	6		
94		LV-13.8L		13.800	L1	19.0	5.1	12.0	-5.0	0.9900	19.9	0.9654	27.0			1	6		
95		LV-13.8T		13.800	L2	19.0	5.1	12.0	-5.0	0.9900	19.9	0.9654	27.0			1	6		
97		FOR13A		13.800	F1	83.0	13.3	50.0	-50.0	1.0290	81.7	0.9875	111.0			1	6		
98		FOR13B		13.800	F2	83.0	13.3	50.0	-50.0	1.0290	81.7	0.9875	111.0			1	6		
99		FOR13C		13.800	F3	83.0	13.3	50.0	-50.0	1.0290	81.7	0.9875	111.0			1	6		
101		BAY13A		13.800	B1	79.6	22.5	50.0	-25.0	0.9800	84.4	0.9622	96.0			1	6	SYST	
102		BAY13B		13.800	B2	79.5	22.5	50.0	-25.0	0.9800	84.3	0.9622	96.0			1	6		
106		PANAM13A		13.800	M1	15.3	9.0	9.0	0.0	0.9984	17.8	0.8619	20.7			1	6		
106		PANAM13A		13.800	M2	15.3	9.0	9.0	0.0	0.9984	17.8	0.8619	20.7			1	6		
106		PANAM13A		13.800	M3	15.3	9.0	9.0	0.0	0.9984	17.8	0.8619	20.7			1	6		
107		PANAM13B		13.800	M4	15.3	9.0	9.0	0.0	0.9984	17.8	0.8619	20.7			1	6		
107		PANAM13B		13.800	M5	15.3	9.0	9.0	0.0	0.9984	17.8	0.8619	20.7			1	6		
107		PANAM13B		13.800	M6	15.3	9.0	9.0	0.0	0.9984	17.8	0.8619	20.7			1	6		
108		BAY13C		13.800	B3	79.5	22.5	50.0	-25.0	0.9800	84.3	0.9622	100.0			1	6		
116		PACORA13		13.800	P1	17.5	8.8	8.8	0.0	1.0131	19.3	0.8928	21.7			1	6		
116		PACORA13		13.800	P2	17.5	8.8	8.8	0.0	1.0131	19.3	0.8928	21.7			1	6		
116		PACORA13		13.800	P3	17.5	8.8	8.8	0.0	1.0131	19.3	0.8928	21.7			1	6		
142		CANJ13A		13.800	C1	35.0	9.4	29.0	-29.0	1.0000	36.2	0.9656	69.0			1	6		
143		CANJ13B		13.800	C2	35.0	9.4	29.0	-29.0	1.0000	36.2	0.9656	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-0.6	10.0	-10.0	1.0000	16.0	0.9993	26.7			1	6		
193		GEBONYIC		13.800	G1	6.9	-1.2	4.0	-4.0	1.0000	7.0	0.9850	35.3			1	6		
193		GEBONYIC		13.800	G2	6.9	-1.2	4.0	-4.0	1.0000	7.0	0.9850	35.3			1	6		
193		GEBONYIC		13.800	G3	6.9	-1.2	4.0	-4.0	1.0000	7.0	0.9850	35.3			1	6		
204		BJOMIN13		13.800	1	20.5	-5.0	13.0	-13.0	1.0000	21.1	0.9712	28.9			1	6		
204		BJOMIN13		13.800	2	20.5	-5.0	13.0	-13.0	1.0000	21.1	0.9712	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9626	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9607	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	8.5	0.6	5.0	0.0	1.0000	8.5	0.9975	13.5			1	6		
305		ELALTO13.8		13.800	1	18.5	1.7	12.0	-5.0	1.0200	18.2	0.9956	20.6			1	6		
305		ELALTO13.8		13.800	2	18.5	1.7	12.0	-5.0	1.0200	18.2	0.9956	20.6			1	6		
305		ELALTO13.8		13.800	3	18.5	1.7	12.0	-5.0	1.0200	18.2	0.9956	20.6			1	6		
307		CHANG75A		13.800	G1	80.0	-4.0	22.0	-22.0	1.0200	78.5	0.9987	118.6			1	6		
308		CHANG75B		13.800	G2	80.0	-4.0	50.0	-22.0	1.0200	78.5	0.9987	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	0.4	4.0	-4.0	1.0000	8.5	0.9988	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	0.4	4.0	-4.0	1.0000	8.5	0.9988	35.3			1	6		
322		CCGD250		13.800	C1	35.0	0.0	45.0	0.0	1.0219	34.2	1.0000	118.0			1	6		
340		PEDGALITO138		13.800	P1	21.5	-5.0	12.0	-5.0	1.0309	21.4	0.9740	27.0			1	6		
517		PANAPOW13B		13.800	G4	15.8	3.6	12.5	0.5	1.0000	16.2	0.9746	20.9			1	6		
517		PANAPOW13B		13.800	G5	15.8	3.6	12.5	0.5	1.0000	16.2	0.9746	20.9			1	6		
517		PANAPOW13B		13.800	G6	15.8	3.6	12.5	0.5	1.0000	16.2	0.9746	20.9			1	6		
517		PANAPOW13B		13.800	G7	15.8	3.6	12.5	0.5	1.0000	16.2	0.9746	20.9			1	6		
SUBSYSTEM TOTALS						1466.9	307.7	920.6	-427.8				2222.9						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 9:26  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0454	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0454	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.4	5.3	8.0	0.0	1.0000	11.7	0.8914	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9932	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9933	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9933	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9981	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9981	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9981	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9877	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9877	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9877	6.2			2	7	
SUBSYSTEM TOTALS						74.3	7.2	51.0	-33.0				124.2					





PLAN DE EXPANSION DEL SIN CON CENTROMERIA JUNIO DEL 2007  
 0 2016 ESCENARIO MODERNO DEMANDA MAXIMA INVIERNO MHTCOD7  
 MED. MAY 16 2007 16:21  
 BUS - VOLTAJE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR  
 KV-S14 - 355 - 5115

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Mata de Nance-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E            WED, MAY 16 2007 10:02  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

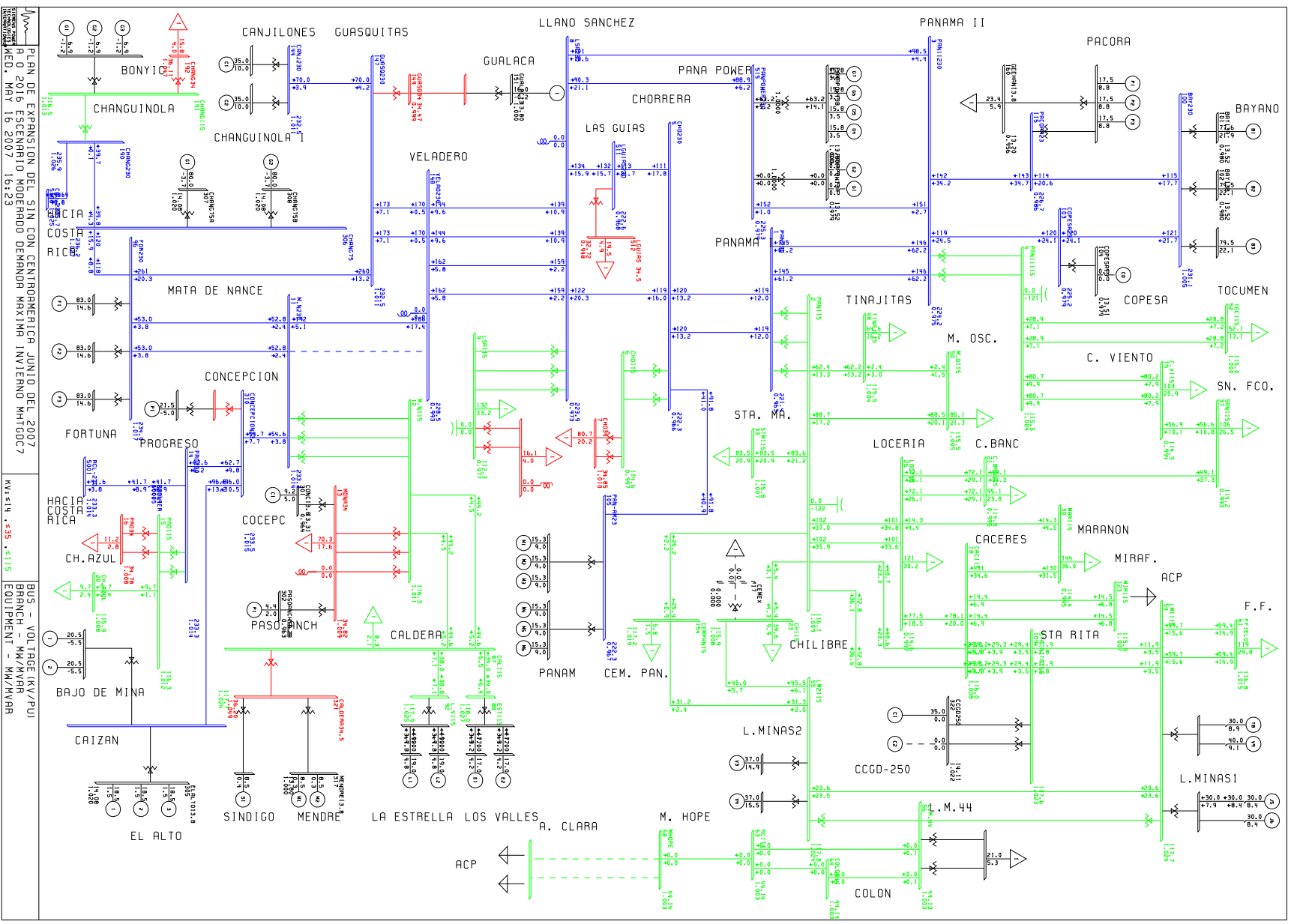
BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0142	233.26	14		PRO230		230.00	6	1.0144	233.31
96		FOR230		230.00	6	1.0173	233.98	100		BAY230		230.00	6	1.0046	231.06



AREA 6 [PANAMA] MACHINE SUMMARY:																	
BUS#	X-- NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B		13.800	V2	37.0	14.9	17.0	0.0	1.0050	39.7	0.9279	47.0			1	6	
67	BLM13C		13.800	V3	37.0	14.9	17.0	0.0	1.0050	39.7	0.9279	47.0			1	6	
68	BLM13D		13.800	V4	37.0	15.5	17.0	0.0	1.0050	39.9	0.9225	47.0			1	6	
70	TGJB13A		13.800	J5	30.0	8.4	20.0	0.0	1.0000	31.1	0.9632	39.4			1	6	
71	TGJB13B		13.800	J6	30.0	8.4	20.0	0.0	1.0000	31.1	0.9632	39.4			1	6	
72	BLMCCA		13.800	T8	30.0	8.9	20.0	0.0	1.0000	31.3	0.9585	50.0			1	6	
73	BLMCCB		13.800	V9	40.0	9.1	40.0	0.0	1.0000	41.0	0.9750	71.0			1	6	
90	EST-13L		13.800	E1	17.0	4.2	12.0	-5.0	0.9900	17.7	0.9704	27.0			1	6	
91	EST-13T		13.800	E2	17.0	4.2	12.0	-5.0	0.9900	17.7	0.9704	27.0			1	6	
94	LV-13.8L		13.800	L1	19.0	4.8	12.0	-5.0	0.9900	19.8	0.9693	27.0			1	6	
95	LV-13.8T		13.800	L2	19.0	4.8	12.0	-5.0	0.9900	19.8	0.9693	27.0			1	6	
97	FOR13A		13.800	F1	83.0	14.6	50.0	-50.0	1.0290	81.9	0.9850	111.0			1	6	
98	FOR13B		13.800	F2	83.0	14.6	50.0	-50.0	1.0290	81.9	0.9850	111.0			1	6	
99	FOR13C		13.800	F3	83.0	14.6	50.0	-50.0	1.0290	81.9	0.9850	111.0			1	6	
101	BAY13A		13.800	B1	77.6	21.9	50.0	-25.0	0.9800	82.2	0.9623	96.0			1	6	SYST
102	BAY13B		13.800	B2	79.5	22.1	50.0	-25.0	0.9800	84.2	0.9634	96.0			1	6	
106	PANAM13A		13.800	M1	15.3	9.0	9.0	0.0	0.9993	17.8	0.8619	20.7			1	6	
106	PANAM13A		13.800	M2	15.3	9.0	9.0	0.0	0.9993	17.8	0.8619	20.7			1	6	
106	PANAM13A		13.800	M3	15.3	9.0	9.0	0.0	0.9993	17.8	0.8619	20.7			1	6	
107	PANAM13B		13.800	M4	15.3	9.0	9.0	0.0	0.9993	17.8	0.8619	20.7			1	6	
107	PANAM13B		13.800	M5	15.3	9.0	9.0	0.0	0.9993	17.8	0.8619	20.7			1	6	
107	PANAM13B		13.800	M6	15.3	9.0	9.0	0.0	0.9993	17.8	0.8619	20.7			1	6	
108	BAY13C		13.800	B3	79.5	22.1	50.0	-25.0	0.9800	84.2	0.9634	100.0			1	6	
116	PACORA13		13.800	P1	17.5	8.8	8.8	0.0	1.0138	19.3	0.8928	21.7			1	6	
116	PACORA13		13.800	P2	17.5	8.8	8.8	0.0	1.0138	19.3	0.8928	21.7			1	6	
116	PACORA13		13.800	P3	17.5	8.8	8.8	0.0	1.0138	19.3	0.8928	21.7			1	6	
142	CANJ13A		13.800	C1	35.0	10.0	29.0	-29.0	1.0000	36.4	0.9613	69.0			1	6	
143	CANJ13B		13.800	C2	35.0	10.0	29.0	-29.0	1.0000	36.4	0.9613	69.0			1	6	
151	GUALAC13		13.800	1	16.0	-0.2	10.0	-10.0	1.0000	16.0	0.9999	26.7			1	6	
193	GEBONYIC		13.800	G1	6.9	-1.2	4.0	-4.0	1.0000	7.0	0.9854	35.3			1	6	
193	GEBONYIC		13.800	G2	6.9	-1.2	4.0	-4.0	1.0000	7.0	0.9854	35.3			1	6	
193	GEBONYIC		13.800	G3	6.9	-1.2	4.0	-4.0	1.0000	7.0	0.9854	35.3			1	6	
204	BJOMIN13		13.800	1	20.5	-5.5	13.0	-13.0	1.0000	21.2	0.9664	28.9			1	6	
204	BJOMIN13		13.800	2	20.5	-5.5	13.0	-13.0	1.0000	21.2	0.9664	28.9			1	6	
301	CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9644	10.8	0.8784	13.5			1	6	
302	PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9625	5.0	0.9110	6.2			1	6	
303	SIND13.8		13.800	S1	8.5	0.4	5.0	0.0	1.0000	8.5	0.9987	13.5			1	6	
305	ELALTO13.8		13.800	1	18.5	1.5	12.0	-5.0	1.0200	18.2	0.9969	20.6			1	6	
305	ELALTO13.8		13.800	2	18.5	1.5	12.0	-5.0	1.0200	18.2	0.9969	20.6			1	6	
305	ELALTO13.8		13.800	3	18.5	1.5	12.0	-5.0	1.0200	18.2	0.9969	20.6			1	6	
307	CHANG75A		13.800	G1	80.0	-3.7	22.0	-22.0	1.0200	78.5	0.9989	118.6			1	6	
308	CHANG75B		13.800	G2	80.0	-3.7	50.0	-22.0	1.0200	78.5	0.9989	118.6			1	6	
317	MENDRE13.8		13.800	M1	8.5	0.3	4.0	-4.0	1.0000	8.5	0.9992	35.3			1	6	
317	MENDRE13.8		13.800	M2	8.5	0.3	4.0	-4.0	1.0000	8.5	0.9992	35.3			1	6	
322	CCGD250		13.800	C1	35.0	0.0	45.0	0.0	1.0224	34.2	1.0000	118.0			1	6	
340	PEDGALITO13.8		13.800	P1	21.5	-5.0	12.0	-5.0	1.0328	21.4	0.9740	27.0			1	6	
517	PANAPOW13B		13.800	G4	15.8	3.5	12.5	0.5	1.0000	16.2	0.9760	20.9			1	6	
517	PANAPOW13B		13.800	G5	15.8	3.5	12.5	0.5	1.0000	16.2	0.9760	20.9			1	6	
517	PANAPOW13B		13.800	G6	15.8	3.5	12.5	0.5	1.0000	16.2	0.9760	20.9			1	6	
517	PANAPOW13B		13.800	G7	15.8	3.5	12.5	0.5	1.0000	16.2	0.9760	20.9			1	6	
SUBSYSTEM TOTALS					1464.9	307.9	920.6	-427.8				2222.9					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 10:01  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0458	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0459	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.4	5.1	8.0	0.0	1.0000	11.6	0.8977	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9935	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9936	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9935	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9983	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9983	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9983	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9875	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9875	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9875	6.2			2	7	
SUBSYSTEM TOTALS						74.3	6.9	51.0	-33.0				124.2					



PLAN DE EXPANSION DEL SIN CON CENTRIORAMA JUNIO DEL 2007  
 0 2016 ESCENARIO MODERNO DEMANDA MAXIMA INVIERNO MHTCOD7  
 MED. MAY 16 2007 16:23

KV: 114, 135, 115

BUS - VOLTAJE KV/PV/PU  
 BRANCH - MW/MVAR  
 EQUIPMENT - M/M/MVAR

**PLAN DE EXPANSIÓN DEL SIN**  
**AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**  
**Contingencia Santa Rita-Cáceres**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E            WED, MAY 16 2007 10:09  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0185	234.24	14		PRO230		230.00	6	1.0190	234.36
96		FOR230		230.00	6	1.0224	235.15	100		BAY230		230.00	6	1.0065	231.49
144		CANJ230		230.00	6	1.0185	234.26	147		GUASQ230		230.00	6	1.0183	234.21

148	VELAD230	230.00	6	1.0048	231.11	190	CHANG230	230.00	6	1.0273	236.28
306	CHANG75	230.00	6	1.0285	236.56	309	CAISAN230	230.00	6	1.0195	234.49
310	CONCEPCION23	230.00	6	1.0191	234.40	6000	FRONTER	230.00	6	1.0194	234.46

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9657	222.11	3	PANII230	230.00	6	0.9777	224.87
5	CHO230	230.00	6	0.9709	223.30	8	LSA230	230.00	6	0.9821	225.88
103	COPESA23	230.00	6	0.9822	225.92	105	PAN-AM23	230.00	6	0.9711	223.35
115	PACORA23	230.00	6	0.9886	227.37	511	LGUIAS230	230.00	6	0.9749	224.24
515	PANPOWER230	230.00	6	0.9831	226.11						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 10:09  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0115	116.33	4	PANII115	115.00	6	1.0069	115.79
6	CHO115	115.00	6	1.0012	115.14	12	M.N115	115.00	6	1.0145	116.67
15	PRO115	115.00	6	1.0162	116.86	18	CAC115	115.00	6	1.0106	116.21
20	CH.AZUL	115.00	6	1.0122	116.41	23	CH115	115.00	6	1.0098	116.12
33	STM115	115.00	6	1.0094	116.08	48	TINAJ115	115.00	6	1.0065	115.75
50	M.O115	115.00	6	1.0069	115.80	52	TOC115	115.00	6	1.0033	115.38
54	LM1115	115.00	6	1.0267	118.08	55	LM2115	115.00	6	1.0270	118.11
61	FFIELD	115.00	9	1.0182	117.09	87	CAL115	115.00	6	1.0257	117.96
88	EST115	115.00	6	1.0282	118.24	92	L.V115	115.00	6	1.0267	118.07
109	STA RITA115	115.00	6	1.0262	118.02	110	PTMD115A	115.00	6	1.0205	117.36
123	MIR115	115.00	7	1.0094	116.08	154	CEMPAN15	115.00	6	1.0216	117.48
191	CHANG115	115.00	6	1.0142	116.63						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	0.9858	113.37	19	C.V115	115.00	6	0.9969	114.64
21	C.BAN115	115.00	6	0.9974	114.70	26	LOC115	115.00	6	0.9990	114.89
30	MAR115	115.00	6	0.9973	114.69	37	SAN115	115.00	6	0.9957	114.51

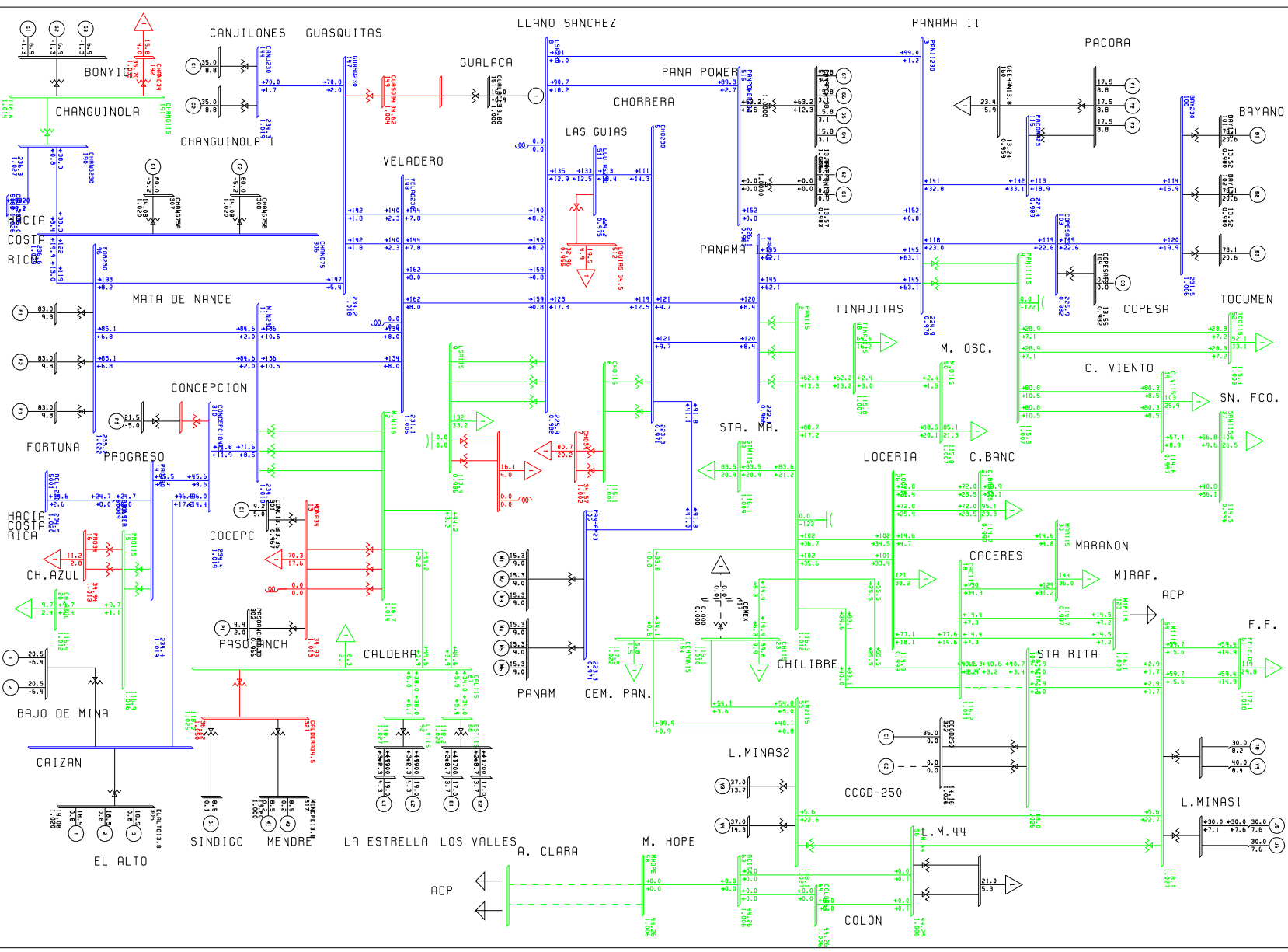


AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	37.0	13.7	17.0	0.0	1.0050	39.3	0.9378	47.0			1	6		
67		BLM13C		13.800	V3	37.0	13.7	17.0	0.0	1.0050	39.3	0.9378	47.0			1	6		
68		BLM13D		13.800	V4	37.0	14.3	17.0	0.0	1.0050	39.5	0.9332	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	7.6	20.0	0.0	1.0000	31.0	0.9691	39.4			1	6		
71		TGJB13B		13.800	J6	30.0	7.6	20.0	0.0	1.0000	31.0	0.9691	39.4			1	6		
72		BLMCCA		13.800	T8	30.0	8.2	20.0	0.0	1.0000	31.1	0.9648	50.0			1	6		
73		BLMCCB		13.800	V9	40.0	8.4	40.0	0.0	1.0000	40.9	0.9788	71.0			1	6		
90		EST-13L		13.800	E1	17.0	3.7	12.0	-5.0	0.9900	17.6	0.9767	27.0			1	6		
91		EST-13T		13.800	E2	17.0	3.7	12.0	-5.0	0.9900	17.6	0.9767	27.0			1	6		
94		LV-13.8L		13.800	L1	19.0	4.3	12.0	-5.0	0.9900	19.7	0.9754	27.0			1	6		
95		LV-13.8T		13.800	L2	19.0	4.3	12.0	-5.0	0.9900	19.7	0.9754	27.0			1	6		
97		FOR13A		13.800	F1	83.0	9.8	50.0	-50.0	1.0290	81.2	0.9931	111.0			1	6		
98		FOR13B		13.800	F2	83.0	9.8	50.0	-50.0	1.0290	81.2	0.9931	111.0			1	6		
99		FOR13C		13.800	F3	83.0	9.8	50.0	-50.0	1.0290	81.2	0.9931	111.0			1	6		
101		BAY13A		13.800	B1	78.1	20.6	50.0	-25.0	0.9800	82.4	0.9669	96.0			1	6	SYST	
102		BAY13B		13.800	B2	78.1	20.6	50.0	-25.0	0.9800	82.4	0.9669	96.0			1	6		
106		PANAM13A		13.800	M1	15.3	9.0	9.0	0.0	1.0035	17.7	0.8619	20.7			1	6		
106		PANAM13A		13.800	M2	15.3	9.0	9.0	0.0	1.0035	17.7	0.8619	20.7			1	6		
106		PANAM13A		13.800	M3	15.3	9.0	9.0	0.0	1.0035	17.7	0.8619	20.7			1	6		
107		PANAM13B		13.800	M4	15.3	9.0	9.0	0.0	1.0035	17.7	0.8619	20.7			1	6		
107		PANAM13B		13.800	M5	15.3	9.0	9.0	0.0	1.0035	17.7	0.8619	20.7			1	6		
107		PANAM13B		13.800	M6	15.3	9.0	9.0	0.0	1.0035	17.7	0.8619	20.7			1	6		
108		BAY13C		13.800	B3	78.1	20.6	50.0	-25.0	0.9800	82.4	0.9669	100.0			1	6		
116		PACORA13		13.800	P1	17.5	8.8	8.8	0.0	1.0166	19.3	0.8928	21.7			1	6		
116		PACORA13		13.800	P2	17.5	8.8	8.8	0.0	1.0166	19.3	0.8928	21.7			1	6		
116		PACORA13		13.800	P3	17.5	8.8	8.8	0.0	1.0166	19.3	0.8928	21.7			1	6		
142		CANJ13A		13.800	C1	35.0	8.8	29.0	-29.0	1.0000	36.1	0.9697	69.0			1	6		
143		CANJ13B		13.800	C2	35.0	8.8	29.0	-29.0	1.0000	36.1	0.9697	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-0.9	10.0	-10.0	1.0000	16.0	0.9983	26.7			1	6		
193		GEBONYIC		13.800	G1	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9827	35.3			1	6		
193		GEBONYIC		13.800	G2	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9827	35.3			1	6		
193		GEBONYIC		13.800	G3	6.9	-1.3	4.0	-4.0	1.0000	7.0	0.9827	35.3			1	6		
204		BJOMIN13		13.800	1	20.5	-6.4	13.0	-13.0	1.0000	21.5	0.9543	28.9			1	6		
204		BJOMIN13		13.800	2	20.5	-6.4	13.0	-13.0	1.0000	21.5	0.9543	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9674	10.8	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9656	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	8.5	0.1	5.0	0.0	1.0000	8.5	0.9999	13.5			1	6		
305		ELALTO13.8		13.800	1	18.5	0.8	12.0	-5.0	1.0200	18.2	0.9991	20.6			1	6		
305		ELALTO13.8		13.800	2	18.5	0.8	12.0	-5.0	1.0200	18.2	0.9991	20.6			1	6		
305		ELALTO13.8		13.800	3	18.5	0.8	12.0	-5.0	1.0200	18.2	0.9991	20.6			1	6		
307		CHANG75A		13.800	G1	80.0	-5.2	22.0	-22.0	1.0200	78.6	0.9979	118.6			1	6		
308		CHANG75B		13.800	G2	80.0	-5.2	50.0	-22.0	1.0200	78.6	0.9979	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	0.2	4.0	-4.0	1.0000	8.5	0.9998	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	0.2	4.0	-4.0	1.0000	8.5	0.9998	35.3			1	6		
322		CCGD250		13.800	C1	35.0	0.0	45.0	0.0	1.0261	34.1	1.0000	118.0			1	6		
340		PEDGALITO13.8		13.800	P1	21.5	-5.0	12.0	-5.0	1.0370	21.3	0.9740	27.0			1	6		
517		PANAPOW13B		13.800	G4	15.8	3.1	12.5	0.5	1.0000	16.1	0.9815	20.9			1	6		
517		PANAPOW13B		13.800	G5	15.8	3.1	12.5	0.5	1.0000	16.1	0.9815	20.9			1	6		
517		PANAPOW13B		13.800	G6	15.8	3.1	12.5	0.5	1.0000	16.1	0.9815	20.9			1	6		
517		PANAPOW13B		13.800	G7	15.8	3.1	12.5	0.5	1.0000	16.1	0.9815	20.9			1	6		
SUBSYSTEM TOTALS						1462.5	267.9	920.6	-427.8				2222.9						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 10:09  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGDC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0469	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0469	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.4	4.7	8.0	0.0	1.0000	11.4	0.9127	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9941	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9942	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9942	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9987	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9987	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9987	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9868	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9868	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9868	6.2			2	7	
SUBSYSTEM TOTALS						74.3	6.2	51.0	-33.0				124.2					

PLAN DE EXPANSION DEL SIN CON CENTROPERIJE JUNIO DEL 2007  
 B. O 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTCOCC7  
 MED. MAY 16 2007 16:24  
 KV:518 .435 .1115  
 BUS - VOLTAJE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



**MHTTLA7**  
**Flujos de Potencia**

**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 11:25  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	17.0	17.0	0.0	0.9895	34.8	0.8700	47.0				1	6	
70		TGJB13A		13.800	J5	28.0	14.0	20.0	0.0	1.0000	31.3	0.8946	39.4				1	6	
71		TGJB13B		13.800	J6	28.0	14.0	20.0	0.0	1.0000	31.3	0.8946	39.4				1	6	
90		EST-13L		13.800	E1	19.0	5.6	12.0	-5.0	1.0150	19.5	0.9591	27.0				1	6	
91		EST-13T		13.800	E2	19.0	5.6	12.0	-5.0	1.0150	19.5	0.9591	27.0				1	6	
94		LV-13.8L		13.800	L1	19.5	6.2	12.0	-5.0	1.0150	20.2	0.9525	27.0				1	6	
95		LV-13.8T		13.800	L2	19.5	6.2	12.0	-5.0	1.0150	20.2	0.9525	27.0				1	6	
97		FOR13A		13.800	F1	88.0	-1.0	50.0	-50.0	1.0290	85.5	0.9999	111.0				1	6	
98		FOR13B		13.800	F2	88.0	-1.0	50.0	-50.0	1.0290	85.5	0.9999	111.0				1	6	
99		FOR13C		13.800	F3	88.0	-1.0	50.0	-50.0	1.0290	85.5	0.9999	111.0				1	6	
101		BAY13A		13.800	B1	80.6	27.3	50.0	-25.0	1.0100	84.2	0.9473	96.0				1	6	
102		BAY13B		13.800	B2	82.8	27.5	50.0	-25.0	1.0100	86.4	0.9491	96.0				1	6	
106		PANAM13A		13.800	M1	15.1	8.4	9.0	0.0	1.0200	17.0	0.8733	20.7				1	6	
106		PANAM13A		13.800	M2	15.1	8.4	9.0	0.0	1.0200	17.0	0.8733	20.7				1	6	
106		PANAM13A		13.800	M3	15.1	8.4	9.0	0.0	1.0200	17.0	0.8733	20.7				1	6	
107		PANAM13B		13.800	M4	15.1	8.4	9.0	0.0	1.0200	17.0	0.8733	20.7				1	6	
107		PANAM13B		13.800	M5	15.1	8.4	9.0	0.0	1.0200	17.0	0.8733	20.7				1	6	
107		PANAM13B		13.800	M6	15.1	8.4	9.0	0.0	1.0200	17.0	0.8733	20.7				1	6	
108		BAY13C		13.800	B3	82.8	27.5	50.0	-25.0	1.0100	86.4	0.9491	100.0				1	6	
116		PACORA13		13.800	P1	17.5	7.2	8.8	0.0	1.0300	18.4	0.9249	21.7				1	6	
116		PACORA13		13.800	P2	17.5	7.2	8.8	0.0	1.0300	18.4	0.9249	21.7				1	6	
116		PACORA13		13.800	P3	17.5	7.2	8.8	0.0	1.0300	18.4	0.9249	21.7				1	6	
142		CANJ13A		13.800	C1	42.0	9.8	29.0	-29.0	1.0100	42.7	0.9739	69.0				1	6	
143		CANJ13B		13.800	C2	42.0	9.8	29.0	-29.0	1.0100	42.7	0.9739	69.0				1	6	
151		GUALAC13		13.800	1	15.0	-2.4	10.0	-10.0	1.0000	15.2	0.9874	26.7				1	6	
193		GEBONYIC		13.800	G1	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9826	35.3				1	6	
193		GEBONYIC		13.800	G2	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9826	35.3				1	6	
193		GEBONYIC		13.800	G3	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9826	35.3				1	6	
204		BJOMIN13		13.800	1	18.3	-9.4	13.0	-13.0	1.0000	20.6	0.8899	28.9				1	6	
204		BJOMIN13		13.800	2	18.3	-9.4	13.0	-13.0	1.0000	20.6	0.8899	28.9				1	6	
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9643	10.9	0.8784	13.5				1	6	
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9624	5.0	0.9110	6.2				1	6	
303		SIND13.8		13.800	S1	8.5	0.0	5.0	0.0	1.0111	8.4	1.0000	13.5				1	6	
307		CHANG75A		13.800	G1	72.0	-9.5	22.0	-22.0	1.0200	71.2	0.9915	118.6				1	6	
308		CHANG75B		13.800	G2	72.0	-9.5	50.0	-22.0	1.0200	71.2	0.9915	118.6				1	6	
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0027	9.4	0.9048	35.3				1	6	
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0506	19.6	0.9701	27.0				1	6	
517		PANAPOW13B		13.800	G4	15.8	0.5	12.5	0.5	1.0012	15.8	0.9994	20.9				1	6	
517		PANAPOW13B		13.800	G5	15.8	0.5	12.5	0.5	1.0012	15.8	0.9994	20.9				1	6	
518		PGREENP13A		13.800	E1	18.8	8.0	8.0	-5.0	0.9948	20.5	0.9198	20.6				1	6	
518		PGREENP13A		13.800	E2	18.8	8.0	8.0	-5.0	0.9948	20.5	0.9198	20.6				1	6	
518		PGREENP13A		13.800	E3	18.8	8.0	8.0	-5.0	0.9948	20.5	0.9198	20.6				1	6	
518		PGREENP13A		13.800	E4	18.8	8.0	8.0	-5.0	0.9948	20.5	0.9198	20.6				1	6	
SUBSYSTEM TOTALS						1277.1	226.0	748.5	-429.9				1833.4						

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 11:25  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

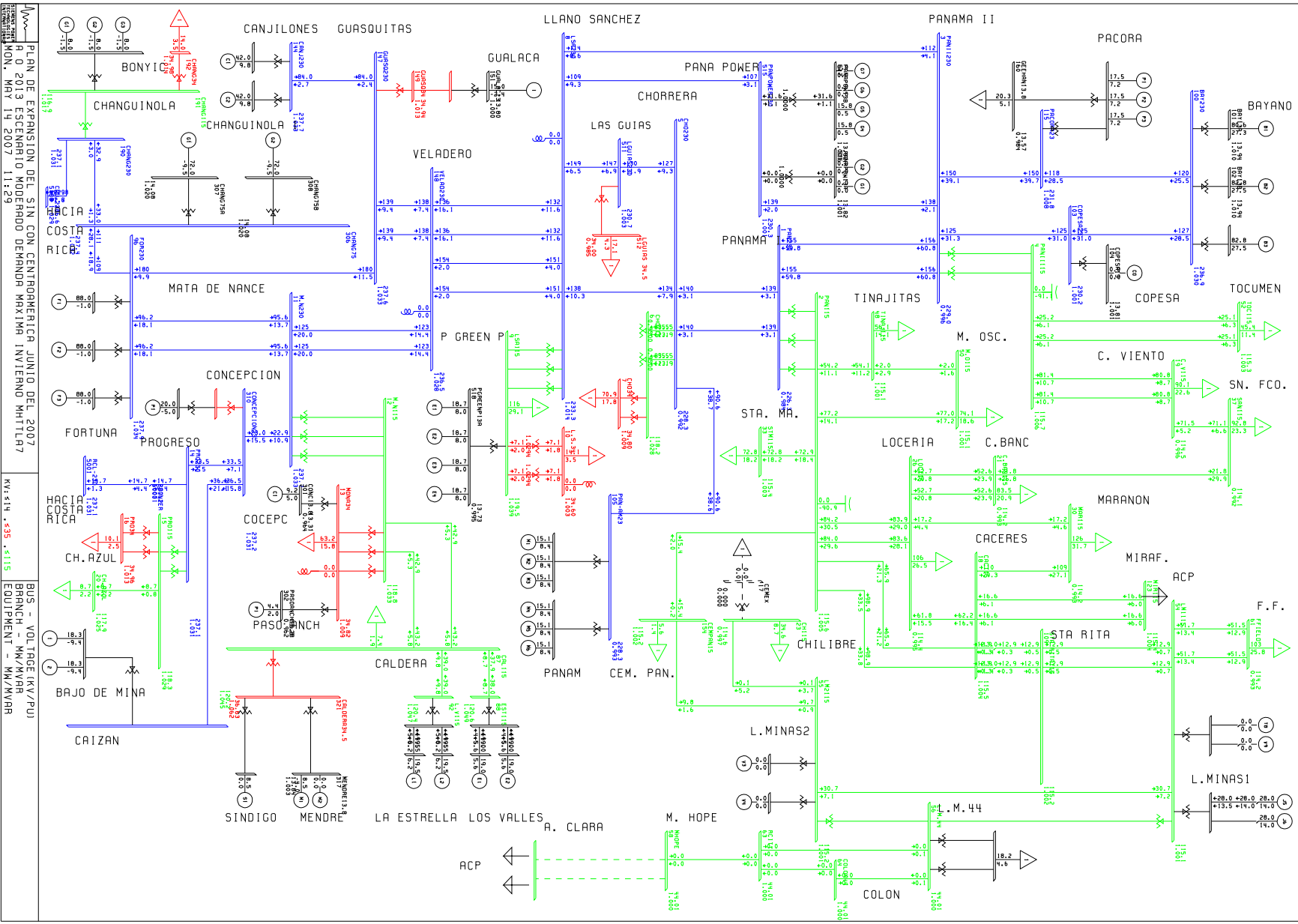
AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0446	8.2	1.0000	13.5			2	7	
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0446	8.2	1.0000	13.5			2	7	
130	MIR13F	13.800	G5	9.7	5.6	8.0	0.0	1.0000	11.2	0.8637	27.7			2	7	
134	MAD6A	6.9000	G1	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9928	13.0			2	7	
135	MAD6B	6.9000	G2	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9929	13.0			2	7	
136	MAD6C	6.9000	G3	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9929	13.0			2	7	
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9983	4.1			2	7	
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9983	4.1			2	7	
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9983	4.1			2	7	
141	GAT6B	6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9874	5.6			2	7	
141	GAT6B	6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9874	6.2			2	7	
141	GAT6B	6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9874	6.2			2	7	
SUBSYSTEM TOTALS				73.3	7.6	51.0	-33.0				124.2					



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 11:25  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.5	224.5	-98.9	0.0	143.3	-97.3	147.4	
5	1345.6	1324.8	0.0	0.0	0.0	0.4	20.4	0.0
C.RICA	247.9	569.4	-237.8	0.0	470.1	23.4	363.1	
6	1277.1	1136.0	0.0	0.0	0.0	88.1	53.0	25.0
PANAMA	226.0	284.7	-182.0	0.0	471.8	67.1	528.0	
7	73.3	38.7	0.0	0.0	0.0	33.1	1.5	50.0
ACANAL	7.6	9.7	0.0	0.0	0.0	-12.2	10.1	
9	0.0	121.3	0.0	0.0	0.0	-121.7	0.4	-75.0
COLON	0.0	30.4	0.0	0.0	1.1	-32.0	2.6	
TOTALS	6500.4	6347.6	0.0	0.0	0.0	0.0	152.8	0.0
	700.2	1941.1	-1031.3	0.0	2021.8	0.0	1812.2	



PLN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 A Q 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTLAT  
 MON. MAY 14 2007 11:29  
 KY:K14 - \*35 - \*115  
 BUS - VOLTAGE (KV/PUI)  
 BRANCH - MW/MVA  
 EQUIPMENT - MW/MVA

**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MAXIMA VERANO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 11:35  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0084	231.93	5		CHO230		230.00	6	1.0069	231.59
8		LSA230		230.00	6	1.0265	236.09	11		M.N230		230.00	6	1.0403	239.28
14		PRO230		230.00	6	1.0399	239.17	96		FOR230		230.00	6	1.0401	239.23
100		BAY230		230.00	6	1.0366	238.41	103		COPESA23		230.00	6	1.0130	233.00
105		PAN-AM23		230.00	6	1.0071	231.63	115		PACORA23		230.00	6	1.0183	234.21
144		CANJ230		230.00	6	1.0406	239.35	147		GUASQ230		230.00	6	1.0405	239.33
148		VELAD230		230.00	6	1.0394	239.06	190		CHANG230		230.00	6	1.0324	237.44
306		CHANG75		230.00	6	1.0339	237.81	309		CAISAN230		230.00	6	1.0419	239.65
310		CONCEPCION23		230.00	6	1.0410	239.44	511		LGUIAS230		230.00	6	1.0177	234.08
515		PANPOWER230		230.00	6	1.0147	233.38	6000		FRONTER		230.00	6	1.0398	239.15

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9985	229.67								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 11:35  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0065	115.75	4		PANII115		115.00	6	1.0009	115.10
6		CHO115		115.00	6	1.0433	119.98	9		LSA115		115.00	6	1.0397	119.56
12		M.N115		115.00	6	1.0327	118.77	15		PRO115		115.00	6	1.0376	119.32
18		CAC115		115.00	6	1.0058	115.66	20		CH.AZUL		115.00	6	1.0342	118.93
23		CH115		115.00	6	1.0069	115.80	33		STM115		115.00	6	1.0046	115.53
48		TINAJ115		115.00	6	1.0022	115.25	50		M.O115		115.00	6	1.0025	115.29
54		LM1115		115.00	6	1.0236	117.71	55		LM2115		115.00	6	1.0241	117.77
61		FFIELD		115.00	9	1.0162	116.86	87		CAL115		115.00	6	1.0411	119.73
88		EST115		115.00	6	1.0431	119.95	92		L.V115		115.00	6	1.0419	119.81
109		STA RITA115		115.00	6	1.0215	117.47	110		PTMD115A		115.00	6	1.0156	116.79
111		PTMD115B		115.00	6	1.0156	116.79	123		MIR115		115.00	7	1.0051	115.59
154		CEMPAN15		115.00	6	1.0183	117.10	191		CHANG115		115.00	6	1.0180	117.07

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
19		C.V115		115.00	6	0.9926	114.15	21		C.BAN115		115.00	6	0.9940	114.31
26		LOC115		115.00	6	0.9955	114.48	30		MAR115		115.00	6	0.9941	114.32
37		SAN115		115.00	6	0.9925	114.13	52		TOC115		115.00	6	0.9977	114.74

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 11:35  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTTLA7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66	BLM13B	13.800	V2	35.0	14.8	17.0	0.0	1.0050	37.8	0.9209	47.0			1	6		
67	BLM13C	13.800	V3	35.0	14.8	17.0	0.0	1.0050	37.8	0.9209	47.0			1	6		
68	BLM13D	13.800	V4	35.0	15.4	17.0	0.0	1.0050	38.1	0.9149	47.0			1	6		
70	TGJB13A	13.800	J5	30.0	8.4	20.0	0.0	1.0000	31.2	0.9626	39.4			1	6		
71	TGJB13B	13.800	J6	30.0	8.4	20.0	0.0	1.0000	31.2	0.9626	39.4			1	6		
72	BLMCCA	13.800	T8	30.0	9.4	20.0	0.0	1.0000	31.4	0.9540	50.0			1	6		
73	BLMCCB	13.800	V9	47.0	9.8	40.0	0.0	1.0000	48.0	0.9790	71.0			1	6		
90	EST-13L	13.800	E1	17.0	2.5	12.0	-5.0	1.0000	17.2	0.9894	27.0			1	6		
91	EST-13T	13.800	E2	17.0	2.5	12.0	-5.0	1.0000	17.2	0.9894	27.0			1	6		
94	LV-13.8L	13.800	L1	18.0	2.9	12.0	-5.0	1.0000	18.2	0.9872	27.0			1	6		
95	LV-13.8T	13.800	L2	18.0	2.9	12.0	-5.0	1.0000	18.2	0.9872	27.0			1	6		
97	FOR13A	13.800	F1	88.0	-6.4	50.0	-50.0	1.0290	85.7	0.9974	111.0			1	6		
98	FOR13B	13.800	F2	88.0	-6.4	50.0	-50.0	1.0290	85.7	0.9974	111.0			1	6		
99	FOR13C	13.800	F3	88.0	-6.4	50.0	-50.0	1.0290	85.7	0.9974	111.0			1	6		
101	BAY13A	13.800	B1	58.7	20.2	50.0	-25.0	1.0100	61.5	0.9455	96.0			1	6	SYST	
102	BAY13B	13.800	B2	59.8	20.3	50.0	-25.0	1.0100	62.6	0.9470	96.0			1	6		
106	PANAM13A	13.800	M1	15.1	6.3	9.0	0.0	1.0200	16.1	0.9223	20.7			1	6		
106	PANAM13A	13.800	M2	15.1	6.3	9.0	0.0	1.0200	16.1	0.9223	20.7			1	6		
106	PANAM13A	13.800	M3	15.1	6.3	9.0	0.0	1.0200	16.1	0.9223	20.7			1	6		
107	PANAM13B	13.800	M4	15.1	6.3	9.0	0.0	1.0200	16.1	0.9223	20.7			1	6		
107	PANAM13B	13.800	M5	15.1	6.3	9.0	0.0	1.0200	16.1	0.9223	20.7			1	6		
107	PANAM13B	13.800	M6	15.1	6.3	9.0	0.0	1.0200	16.1	0.9223	20.7			1	6		
108	BAY13C	13.800	B3	59.8	20.3	50.0	-25.0	1.0100	62.6	0.9470	100.0			1	6		
116	PACORA13	13.800	P1	17.5	5.2	8.8	0.0	1.0300	17.7	0.9582	21.7			1	6		
116	PACORA13	13.800	P2	17.5	5.2	8.8	0.0	1.0300	17.7	0.9582	21.7			1	6		
116	PACORA13	13.800	P3	17.5	5.2	8.8	0.0	1.0300	17.7	0.9582	21.7			1	6		
142	CANJ13A	13.800	C1	42.0	8.6	29.0	-29.0	1.0100	42.4	0.9797	69.0			1	6		
143	CANJ13B	13.800	C2	42.0	8.6	29.0	-29.0	1.0100	42.4	0.9797	69.0			1	6		
151	GUALAC13	13.800	1	15.0	-3.1	10.0	-10.0	1.0000	15.3	0.9797	26.7			1	6		
193	GEBONYIC	13.800	G1	8.0	-1.6	4.0	-4.0	1.0000	8.2	0.9798	35.3			1	6		
193	GEBONYIC	13.800	G2	8.0	-1.6	4.0	-4.0	1.0000	8.2	0.9798	35.3			1	6		
193	GEBONYIC	13.800	G3	8.0	-1.6	4.0	-4.0	1.0000	8.2	0.9798	35.3			1	6		
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0163	8.4	1.0000	13.5			1	6		
307	CHANG75A	13.800	G1	67.0	-11.5	22.0	-22.0	1.0200	66.6	0.9856	118.6			1	6		
308	CHANG75B	13.800	G2	67.0	-11.5	22.0	-22.0	1.0200	66.6	0.9856	118.6			1	6		
340	PEDGALITO138	13.800	P1	16.4	-5.0	12.0	-5.0	1.0624	16.1	0.9565	27.0			1	6		
517	PANAPOW13B	13.800	G4	15.8	0.5	12.5	0.5	1.0104	15.6	0.9994	20.9			1	6		
517	PANAPOW13B	13.800	G5	15.8	0.5	12.5	0.5	1.0104	15.6	0.9994	20.9			1	6		
517	PANAPOW13B	13.800	G6	15.8	0.5	12.5	0.5	1.0104	15.6	0.9994	20.9			1	6		
517	PANAPOW13B	13.800	G7	15.8	0.5	12.5	0.5	1.0104	15.6	0.9994	20.9			1	6		
518	PGREENP13A	13.800	E1	19.0	8.0	8.0	-5.0	0.9915	20.8	0.9216	20.6			1	6		
SUBSYSTEM TOTALS				1261.6	178.5	806.6	-376.8				1915.5						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 11:35  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTTLA7

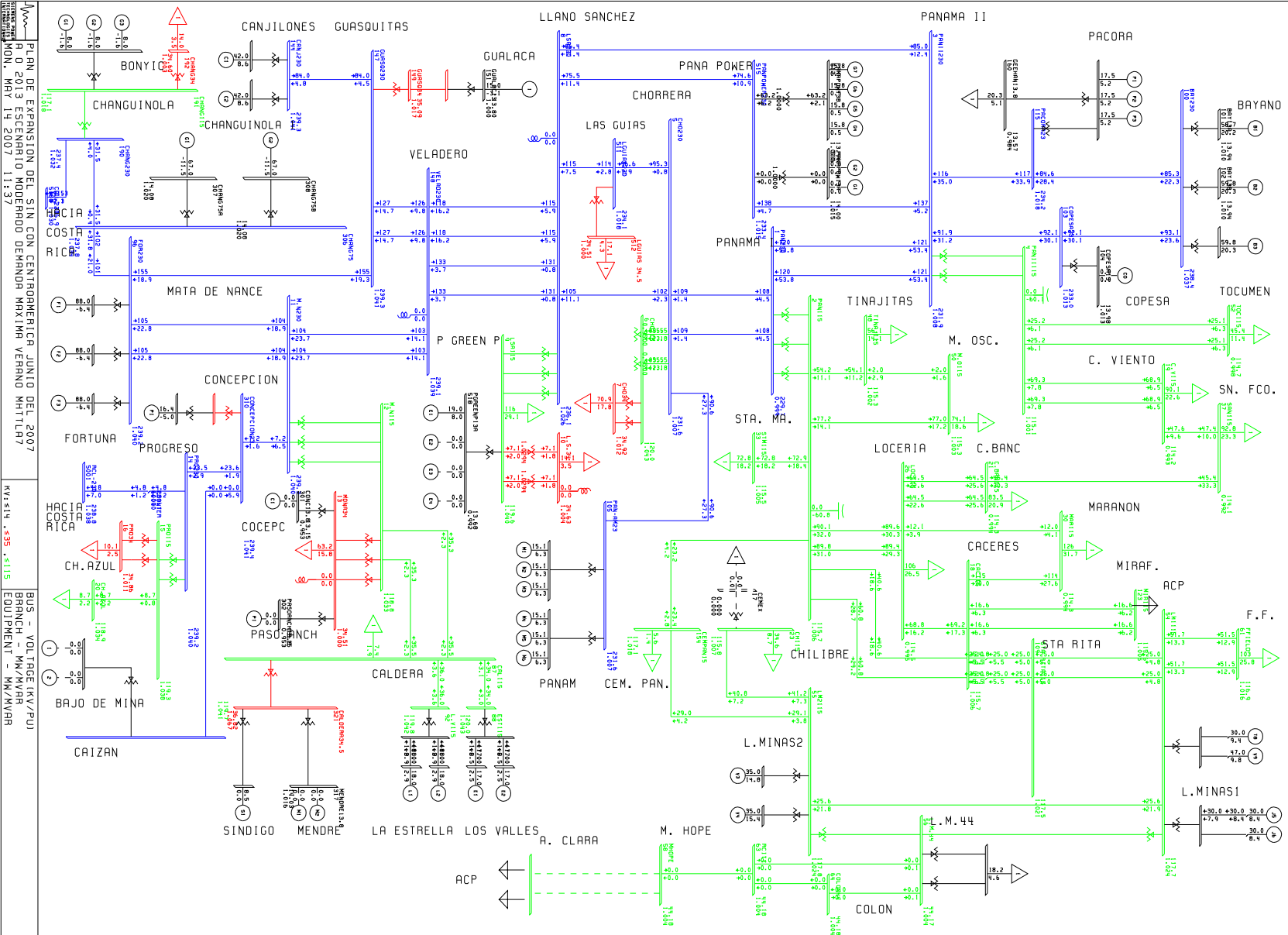
AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
------	----------	-----------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------

126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0453	8.2	1.0000	13.5	2	7
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0453	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	9.7	5.3	8.0	0.0	1.0000	11.0	0.8761	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9933	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9934	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9934	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9986	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9986	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9986	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9869	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9869	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9869	6.2	2	7
SUBSYSTEM TOTALS				73.3	7.1	51.0	-33.0				124.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 11:36  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTTLA7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.2	224.5	-98.9	0.0	143.3	-97.5	147.3	
5	1345.6	1324.8	0.0	0.0	0.0	0.4	20.4	0.0
C.RICA	239.0	569.4	-237.4	0.0	471.2	15.3	363.0	
6	1261.6	1136.0	0.0	0.0	0.0	88.1	37.4	25.0
PANAMA	178.5	284.7	-120.9	0.0	481.1	75.8	420.0	
7	73.3	38.7	0.0	0.0	0.0	33.1	1.5	50.0
ACANAL	7.1	9.7	0.0	0.0	0.0	-12.7	10.1	
9	0.0	121.3	0.0	0.0	0.0	-121.6	0.4	-75.0
COLON	0.0	30.4	0.0	0.0	1.1	-31.8	2.5	
TOTALS	6484.8	6347.6	0.0	0.0	0.0	0.0	137.2	0.0
	643.0	1941.1	-969.8	0.0	2032.3	0.0	1704.0	



PLN DE EXPANSION DEL SIN CON CENTROPERICA JUNIO DEL 2007  
 D 0 2013 ESTACION DE PODERADO DE BAYANO MAXIMA VARIACION MULTIPLE  
 MON. MAY 14 2007 11:37

KV=414 .435 .4115

BUS - VOLTAJE (KV/PV)  
 BRNCH - MM/PVBR  
 EQUIPMT - MM/PVBR



**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÍNIMA EN VERANO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 11:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0335	237.71	3		PANII230		230.00	6	1.0360	238.29
5		CHO230		230.00	6	1.0363	238.36	8		LSA230		230.00	6	1.0327	237.53
11		M.N230		230.00	6	1.0254	235.84	14		PRO230		230.00	6	1.0313	237.19
96		FOR230		230.00	6	1.0230	235.29	100		BAY230		230.00	6	1.0401	239.22
103		COPESA23		230.00	6	1.0372	238.55	105		PAN-AM23		230.00	6	1.0364	238.36
115		PACORA23		230.00	6	1.0382	238.78	144		CANJ230		230.00	6	1.0271	236.24
147		GUASQ230		230.00	6	1.0270	236.22	148		VELAD230		230.00	6	1.0310	237.13
190		CHANG230		230.00	6	1.0309	237.10	306		CHANG75		230.00	6	1.0311	237.16
309		CAISAN230		230.00	6	1.0301	236.93	310		CONCEPCION23		230.00	6	1.0292	236.72
511		LGUIAS230		230.00	6	1.0367	238.43	515		PANPOWER230		230.00	6	1.0401	239.23
6000		FRONTER		230.00	6	1.0319	237.33								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 11:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0033	115.38	4		PANII115		115.00	6	1.0055	115.63
6		CHO115		115.00	6	1.0857	124.85	9		LSA115		115.00	6	1.0468	120.39
12		M.N115		115.00	6	1.0060	115.69	15		PRO115		115.00	6	1.0310	118.56
18		CAC115		115.00	6	1.0031	115.36	19		C.V115		115.00	6	1.0013	115.15
20		CH.AZUL		115.00	6	1.0301	118.46	23		CH115		115.00	6	1.0052	115.60
33		STM115		115.00	6	1.0025	115.29	48		TINAJ115		115.00	6	1.0018	115.21
50		M.O115		115.00	6	1.0020	115.23	52		TOC115		115.00	6	1.0042	115.49
54		LM1115		115.00	6	1.0132	116.52	55		LM2115		115.00	6	1.0134	116.54
61		FFIELD		115.00	9	1.0103	116.18	87		CAL115		115.00	6	1.0140	116.61
88		EST115		115.00	6	1.0154	116.78	92		L.V115		115.00	6	1.0146	116.67
109		STA RITA115		115.00	6	1.0123	116.41	110		PTMD115A		115.00	6	1.0087	116.00
111		PTMD115B		115.00	6	1.0087	116.00	123		MIR115		115.00	7	1.0036	115.42
154		CEMPAN15		115.00	6	1.0106	116.22	191		CHANG115		115.00	6	1.0233	117.68

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9994	114.93	26		LOC115		115.00	6	0.9998	114.98
30		MAR115		115.00	6	0.9989	114.87	37		SAN115		115.00	6	0.9991	114.89

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 11:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTTLA7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	28.5	17.0	17.0	0.0	1.0008	33.2	0.8588	47.0			1	6		
70		TGJB13A		13.800	J5	30.0	17.3	20.0	0.0	1.0000	34.7	0.8657	39.4			1	6		
90		EST-13L		13.800	E1	16.0	4.5	12.0	-5.0	0.9800	17.0	0.9629	27.0			1	6		
94		LV-13.8L		13.800	L1	17.0	4.8	12.0	-5.0	0.9800	18.0	0.9622	27.0			1	6		
97		FOR13A		13.800	F1	65.4	-36.0	50.0	-50.0	0.9800	76.1	0.8761	111.0			1	6	SYST	
98		FOR13B		13.800	F2	65.4	-36.0	50.0	-50.0	0.9800	76.1	0.8761	111.0			1	6		
106		PANAM13A		13.800	M1	14.5	2.4	9.0	0.0	1.0200	14.4	0.9861	20.7			1	6		
106		PANAM13A		13.800	M2	14.5	2.4	9.0	0.0	1.0200	14.4	0.9861	20.7			1	6		
116		PACORA13		13.800	P1	17.0	0.0	8.8	0.0	1.0326	16.5	1.0000	21.7			1	6		
116		PACORA13		13.800	P2	17.0	0.0	8.8	0.0	1.0326	16.5	1.0000	21.7			1	6		
142		CANJ13A		13.800	C1	37.0	9.5	29.0	-29.0	1.0100	37.8	0.9683	69.0			1	6		
151		GUALAC13		13.800	1	15.0	-1.8	10.0	-10.0	1.0000	15.1	0.9925	26.7			1	6		
193		GEBONYIC		13.800	G1	8.0	-4.0	4.0	-4.0	1.0107	8.8	0.8944	35.3			1	6		
303		SIND13.8		13.800	S1	8.5	2.4	5.0	0.0	1.0000	8.8	0.9634	13.5			1	6		
307		CHANG75A		13.800	G1	63.0	-9.0	22.0	-22.0	1.0200	62.4	0.9900	118.6			1	6		
340		PEDGALITO13813		13.800	P1	12.0	-5.0	12.0	-5.0	1.0509	12.4	0.9231	27.0			1	6		
516		PANAPOW13A		13.800	G1	15.8	0.5	12.5	0.5	1.0407	15.2	0.9994	20.9			1	6		
518		PGREENP13A		13.800	E1	19.0	8.0	8.0	-5.0	0.9996	20.6	0.9216	20.6			1	6		
SUBSYSTEM TOTALS						463.5	-22.8	299.2	-184.5				778.8						

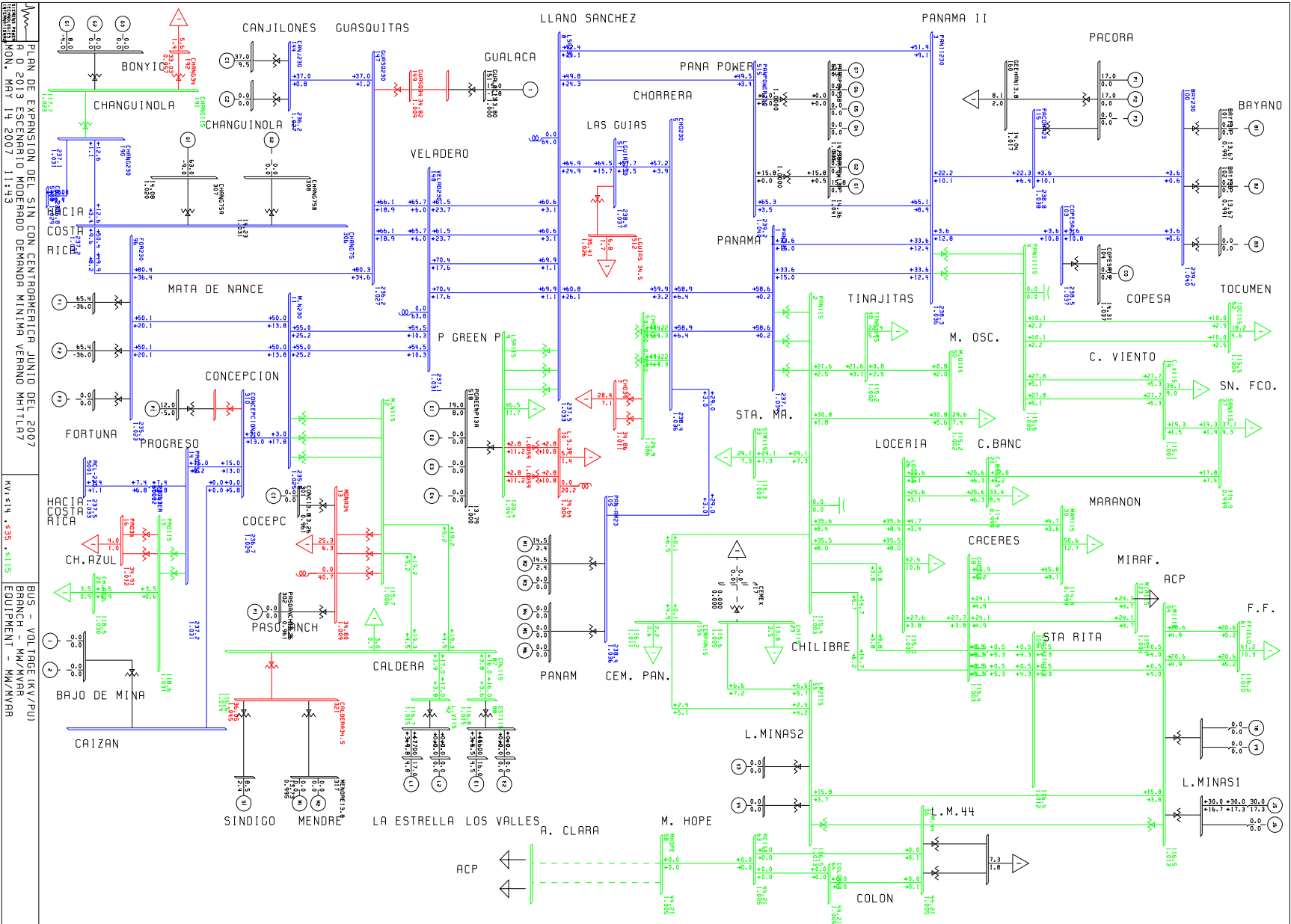
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 11:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTTLA7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0496	8.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0496	8.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.7	3.4	8.0	0.0	1.0000	10.3	0.9420	27.7			2	7		
134		MAD6A		6.9000	G1	9.3	0.8	6.0	-6.0	1.0000	9.3	0.9963	13.0			2	7		
135		MAD6B		6.9000	G2	9.3	0.8	6.0	-6.0	1.0000	9.3	0.9963	13.0			2	7		
136		MAD6C		6.9000	G3	9.3	0.8	6.0	-6.0	1.0000	9.3	0.9963	13.0			2	7		
140		GAT6A		6.9000	G1	1.5	0.1	2.0	-2.0	1.0000	1.5	0.9975	4.1			2	7		
140		GAT6A		6.9000	G2	1.5	0.1	2.0	-2.0	1.0000	1.5	0.9975	4.1			2	7		
141		GAT6B		6.9000	G4	3.5	-1.1	3.0	-3.0	1.0000	3.7	0.9559	5.6			2	7		
141		GAT6B		6.9000	G5	3.5	-1.1	3.0	-3.0	1.0000	3.7	0.9559	6.2			2	7		
SUBSYSTEM TOTALS						64.8	3.9	46.0	-28.0				113.8						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 11:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTTLA7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.3	527.1	0.0	0.0	0.0	0.1	11.1	0.0
NICA	32.4	224.5	-98.9	0.0	143.3	-97.3	147.4	
5	1345.3	1324.8	0.0	0.0	0.0	0.8	19.6	0.0
C.RICA	245.7	569.4	-236.1	0.0	470.4	23.8	359.0	
6	463.5	454.4	0.0	0.0	0.0	-0.5	9.7	25.0
PANAMA	-22.8	113.9	188.6	0.0	483.9	43.9	114.7	
7	64.8	15.5	0.0	0.0	0.0	48.2	1.1	50.0
ACANAL	3.9	3.9	0.0	0.0	0.0	-9.8	9.9	
9	0.0	48.5	0.0	0.0	0.0	-48.6	0.1	-75.0
COLON	0.0	12.2	0.0	0.0	1.1	-11.5	0.4	
TOTALS	5678.0	5570.0	0.0	0.0	0.0	0.0	108.0	0.0
	445.4	1746.2	-658.9	0.0	2034.3	0.0	1392.4	



**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Pacora-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      WED, MAY 16 2007 11:25  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0097	232.24	11		M.N230		230.00	6	1.0319	237.34

14	PRO230	230.00	6	1.0295	236.79	96	FOR230	230.00	6	1.0331	237.60
100	BAY230	230.00	6	1.0377	238.67	115	PACORA23	230.00	6	1.0398	239.14
144	CANJ230	230.00	6	1.0316	237.27	147	GUASQ230	230.00	6	1.0314	237.23
148	VELAD230	230.00	6	1.0251	235.78	190	CHANG230	230.00	6	1.0304	237.00
306	CHANG75	230.00	6	1.0318	237.32	309	CAISAN230	230.00	6	1.0264	236.06
310	CONCEPCION23	230.00	6	1.0298	236.85	6000	FRONTER	230.00	6	1.0298	236.85

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9780	224.94	3	PANII230	230.00	6	0.9885	227.35
5	CHO230	230.00	6	0.9871	227.03	103	COPESA23	230.00	6	0.9947	228.78
105	PAN-AM23	230.00	6	0.9873	227.08	511	LGUIAS230	230.00	6	0.9978	229.50
515	PANPOWER230	230.00	6	0.9949	228.83						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 11:25  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0140	116.61	4	PANII115	115.00	6	1.0088	116.01
6	CHO115	115.00	6	1.0219	117.52	9	LSA115	115.00	6	1.0342	118.94
12	M.N115	115.00	6	1.0316	118.64	15	PRO115	115.00	6	1.0272	118.13
18	CAC115	115.00	6	1.0130	116.50	19	C.V115	115.00	6	1.0003	115.04
20	CH.AZUL	115.00	6	1.0238	117.74	21	C.BAN115	115.00	6	1.0016	115.19
23	CH115	115.00	6	1.0051	115.59	26	LOC115	115.00	6	1.0031	115.35
30	MAR115	115.00	6	1.0015	115.18	33	STM115	115.00	6	1.0122	116.40
37	SAN115	115.00	6	1.0000	115.00	48	TINAJ115	115.00	6	1.0098	116.12
50	M.O115	115.00	6	1.0101	116.16	52	TOC115	115.00	6	1.0057	115.65
54	LM1115	115.00	6	1.0083	115.96	55	LM2115	115.00	6	1.0087	116.00
61	FFIELD	115.00	9	1.0008	115.10	87	CAL115	115.00	6	1.0447	120.14
88	EST115	115.00	6	1.0480	120.52	92	L.V115	115.00	6	1.0459	120.28
109	STA RITA115	115.00	6	1.0092	116.06	110	PTMD115A	115.00	6	1.0109	116.25
111	PTMD115B	115.00	6	1.0109	116.25	123	MIR115	115.00	7	1.0119	116.37
154	CEMPAN15	115.00	6	1.0097	116.12	191	CHANG115	115.00	6	1.0166	116.91

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)

\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 11:25  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	17.0	17.0	0.0	0.9963	34.6	0.8700	47.0			1	6		
70		TGJB13A		13.800	J5	29.0	12.2	20.0	0.0	1.0000	31.5	0.9221	39.4			1	6		
71		TGJB13B		13.800	J6	28.0	12.2	20.0	0.0	1.0000	30.5	0.9173	39.4			1	6		
90		EST-13L		13.800	E1	19.0	5.8	12.0	-5.0	1.0150	19.6	0.9561	27.0			1	6		
91		EST-13T		13.800	E2	19.0	5.8	12.0	-5.0	1.0150	19.6	0.9561	27.0			1	6		
94		LV-13.8L		13.800	L1	19.5	6.5	12.0	-5.0	1.0150	20.2	0.9492	27.0			1	6		
95		LV-13.8T		13.800	L2	19.5	6.5	12.0	-5.0	1.0150	20.2	0.9492	27.0			1	6		
97		FOR13A		13.800	F1	89.0	0.3	50.0	-50.0	1.0290	86.5	1.0000	111.0			1	6		
98		FOR13B		13.800	F2	89.0	0.3	50.0	-50.0	1.0290	86.5	1.0000	111.0			1	6		
99		FOR13C		13.800	F3	89.0	0.3	50.0	-50.0	1.0290	86.5	1.0000	111.0			1	6		
101		BAY13A		13.800	B1	82.8	21.6	50.0	-25.0	1.0100	84.7	0.9677	96.0			1	6	SYST	
102		BAY13B		13.800	B2	82.8	21.6	50.0	-25.0	1.0100	84.7	0.9677	96.0			1	6		
106		PANAM13A		13.800	M1	15.1	9.0	9.0	0.0	1.0188	17.3	0.8590	20.7			1	6		
106		PANAM13A		13.800	M2	15.1	9.0	9.0	0.0	1.0188	17.3	0.8590	20.7			1	6		
106		PANAM13A		13.800	M3	15.1	9.0	9.0	0.0	1.0188	17.3	0.8590	20.7			1	6		
107		PANAM13B		13.800	M4	15.1	9.0	9.0	0.0	1.0188	17.3	0.8590	20.7			1	6		
107		PANAM13B		13.800	M5	15.1	9.0	9.0	0.0	1.0188	17.3	0.8590	20.7			1	6		
107		PANAM13B		13.800	M6	15.1	9.0	9.0	0.0	1.0188	17.3	0.8590	20.7			1	6		
108		BAY13C		13.800	B3	82.8	21.6	50.0	-25.0	1.0100	84.7	0.9677	100.0			1	6		
116		PACORA13		13.800	P1	17.5	1.2	8.8	0.0	1.0300	17.0	0.9975	21.7			1	6		
116		PACORA13		13.800	P2	17.5	1.2	8.8	0.0	1.0300	17.0	0.9975	21.7			1	6		
116		PACORA13		13.800	P3	17.5	1.2	8.8	0.0	1.0300	17.0	0.9975	21.7			1	6		
142		CANJ13A		13.800	C1	42.0	10.1	29.0	-29.0	1.0100	42.8	0.9724	69.0			1	6		
143		CANJ13B		13.800	C2	42.0	10.1	29.0	-29.0	1.0100	42.8	0.9724	69.0			1	6		
151		GUALAC13		13.800	1	15.0	-2.2	10.0	-10.0	1.0000	15.2	0.9890	26.7			1	6		
193		GEBONYIC		13.800	G1	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9832	35.3			1	6		
193		GEBONYIC		13.800	G2	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9832	35.3			1	6		
193		GEBONYIC		13.800	G3	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9832	35.3			1	6		
204		BJOMIN13		13.800	1	18.3	-9.0	13.0	-13.0	1.0000	20.4	0.8977	28.9			1	6		
204		BJOMIN13		13.800	2	18.3	-9.0	13.0	-13.0	1.0000	20.4	0.8977	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9631	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9613	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	8.5	0.0	5.0	0.0	1.0103	8.4	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	72.0	-9.1	22.0	-22.0	1.0200	71.1	0.9922	118.6			1	6		
308		CHANG75B		13.800	G2	72.0	-9.1	50.0	-22.0	1.0200	71.1	0.9922	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0018	9.4	0.9048	35.3			1	6		
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0491	19.7	0.9701	27.0			1	6		
517		PANAPOW13B		13.800	G4	15.8	1.7	12.5	0.5	1.0000	15.9	0.9941	20.9			1	6		
517		PANAPOW13B		13.800	G5	15.8	1.7	12.5	0.5	1.0000	15.9	0.9941	20.9			1	6		
518		PGREENP13A		13.800	E1	18.8	8.0	8.0	-5.0	0.9903	20.6	0.9198	20.6			1	6		
518		PGREENP13A		13.800	E2	18.8	8.0	8.0	-5.0	0.9903	20.6	0.9198	20.6			1	6		
518		PGREENP13A		13.800	E3	18.8	8.0	8.0	-5.0	0.9903	20.6	0.9198	20.6			1	6		
518		PGREENP13A		13.800	E4	18.8	8.0	8.0	-5.0	0.9903	20.6	0.9198	20.6			1	6		
SUBSYSTEM TOTALS						1283.2	200.0	748.5	-429.9				1833.4						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 11:25  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 7 [ACANAL ] MACHINE SUMMARY:



BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0489	8.2	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0489	8.2	1.0000	13.5				2	7
130		MIR13F		13.800	G5	9.7	3.7	8.0	0.0	1.0000	10.4	0.9325	27.7				2	7
134		MAD6A		6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9954	13.0				2	7
135		MAD6B		6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0				2	7
136		MAD6C		6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9955	13.0				2	7
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1				2	7
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1				2	7
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1				2	7
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9846	5.6				2	7
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9846	6.2				2	7
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9846	6.2				2	7
SUBSYSTEM TOTALS						73.3	4.6	51.0	-33.0				124.2					



**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Panamá I-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 11:35  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0093	232.14	11		M.N230		230.00	6	1.0319	237.33

14	PRO230	230.00	6	1.0295	236.79	96	FOR230	230.00	6	1.0330	237.60
100	BAY230	230.00	6	1.0288	236.61	115	PACORA23	230.00	6	1.0061	231.41
144	CANJ230	230.00	6	1.0316	237.26	147	GUASQ230	230.00	6	1.0314	237.23
148	VELAD230	230.00	6	1.0250	235.75	190	CHANG230	230.00	6	1.0304	237.00
306	CHANG75	230.00	6	1.0318	237.32	309	CAISAN230	230.00	6	1.0263	236.06
310	CONCEPCION23	230.00	6	1.0298	236.85	6000	FRONTER	230.00	6	1.0298	236.85

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN	230	230.00	6	0.9708	223.30	3	PANII	230	230.00	6	0.9937	228.56		
5	CHO	230	230.00	6	0.9812	225.66	103	COPESA	230	230.00	6	0.9992	229.82		
105	PAN-AM	230	230.00	6	0.9813	225.71	511	LGUIAS	230	230.00	6	0.9949	228.83		
515	PANPOWER	230	230.00	6	0.9990	229.77									

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 11:35  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN	115	115.00	6	1.0038	115.44	4	PANII	115	115.00	6	1.0043	115.50		
6	CHO	115	115.00	6	1.0156	116.80	9	LSA	115	115.00	6	1.0338	118.89		
12	M.N	115	115.00	6	1.0316	118.63	15	PRO	115	115.00	6	1.0272	118.12		
18	CAC	115	115.00	6	1.0029	115.33	20	CH.AZUL	115	115.00	6	1.0238	117.73		
33	STM	115	115.00	6	1.0020	115.22	52	TOC	115	115.00	6	1.0011	115.13		
55	LM	115	115.00	6	1.0002	115.02	87	CAL	115	115.00	6	1.0447	120.14		
88	EST	115	115.00	6	1.0480	120.52	92	L.V	115	115.00	6	1.0459	120.28		
109	STA RITA	115	115.00	6	1.0005	115.06	110	PTMD115A	115	115.00	6	1.0015	115.17		
111	PTMD115B	115	115.00	6	1.0015	115.17	123	MIR	115	115.00	7	1.0024	115.28		
154	CEMPAN	115	115.00	6	1.0007	115.08	191	CHANG	115	115.00	6	1.0166	116.91		

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
19	C.V	115	115.00	6	0.9940	114.32	21	C.BAN	115	115.00	6	0.9920	114.08		
23	CH	115	115.00	6	0.9955	114.48	26	LOC	115	115.00	6	0.9933	114.23		
30	MAR	115	115.00	6	0.9915	114.03	37	SAN	115	115.00	6	0.9907	113.93		
48	TINAJ	115	115.00	6	0.9995	114.94	50	M.O	115	115.00	6	0.9999	114.98		
54	LM	115	115.00	6	0.9998	114.98	61	FFIELD	115	115.00	9	0.9922	114.11		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 11:33  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	30.0	17.0	17.0	0.0	0.9884	34.9	0.8700	47.0			1	6	
70	TGJB13A	13.800	J5	28.0	14.3	20.0	0.0	1.0000	31.4	0.8908	39.4			1	6	
71	TGJB13B	13.800	J6	28.0	14.3	20.0	0.0	1.0000	31.4	0.8908	39.4			1	6	
90	EST-13L	13.800	E1	19.0	5.8	12.0	-5.0	1.0150	19.6	0.9561	27.0			1	6	
91	EST-13T	13.800	E2	19.0	5.8	12.0	-5.0	1.0150	19.6	0.9561	27.0			1	6	
94	LV-13.8L	13.800	L1	19.5	6.5	12.0	-5.0	1.0150	20.2	0.9492	27.0			1	6	
95	LV-13.8T	13.800	L2	19.5	6.5	12.0	-5.0	1.0150	20.2	0.9492	27.0			1	6	
97	FOR13A	13.800	F1	88.0	0.2	50.0	-50.0	1.0290	85.5	1.0000	111.0			1	6	
98	FOR13B	13.800	F2	88.0	0.2	50.0	-50.0	1.0290	85.5	1.0000	111.0			1	6	
99	FOR13C	13.800	F3	88.0	0.2	50.0	-50.0	1.0290	85.5	1.0000	111.0			1	6	
101	BAY13A	13.800	B1	82.8	28.3	50.0	-25.0	1.0100	86.6	0.9462	96.0			1	6	SYST
102	BAY13B	13.800	B2	82.8	28.3	50.0	-25.0	1.0100	86.7	0.9462	96.0			1	6	
106	PANAM13A	13.800	M1	15.1	9.0	9.0	0.0	1.0132	17.3	0.8590	20.7			1	6	
106	PANAM13A	13.800	M2	15.1	9.0	9.0	0.0	1.0132	17.3	0.8590	20.7			1	6	
106	PANAM13A	13.800	M3	15.1	9.0	9.0	0.0	1.0132	17.3	0.8590	20.7			1	6	
107	PANAM13B	13.800	M4	15.1	9.0	9.0	0.0	1.0132	17.3	0.8590	20.7			1	6	
107	PANAM13B	13.800	M5	15.1	9.0	9.0	0.0	1.0132	17.3	0.8590	20.7			1	6	
107	PANAM13B	13.800	M6	15.1	9.0	9.0	0.0	1.0132	17.3	0.8590	20.7			1	6	
108	BAY13C	13.800	B3	82.8	28.3	50.0	-25.0	1.0100	86.7	0.9462	100.0			1	6	
116	PACORA13	13.800	P1	17.5	7.5	8.8	0.0	1.0300	18.5	0.9193	21.7			1	6	
116	PACORA13	13.800	P2	17.5	7.5	8.8	0.0	1.0300	18.5	0.9193	21.7			1	6	
116	PACORA13	13.800	P3	17.5	7.5	8.8	0.0	1.0300	18.5	0.9193	21.7			1	6	
142	CANJ13A	13.800	C1	42.0	10.1	29.0	-29.0	1.0100	42.8	0.9724	69.0			1	6	
143	CANJ13B	13.800	C2	42.0	10.1	29.0	-29.0	1.0100	42.8	0.9724	69.0			1	6	
151	GUALAC13	13.800	1	15.0	-2.2	10.0	-10.0	1.0000	15.2	0.9890	26.7			1	6	
193	GEBONYIC	13.800	G1	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9831	35.3			1	6	
193	GEBONYIC	13.800	G2	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9831	35.3			1	6	
193	GEBONYIC	13.800	G3	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9831	35.3			1	6	
204	BJOMIN13	13.800	1	18.3	-9.0	13.0	-13.0	1.0000	20.4	0.8978	28.9			1	6	
204	BJOMIN13	13.800	2	18.3	-9.0	13.0	-13.0	1.0000	20.4	0.8978	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9631	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9612	5.0	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0103	8.4	1.0000	13.5			1	6	
307	CHANG75A	13.800	G1	72.0	-9.1	22.0	-22.0	1.0200	71.1	0.9922	118.6			1	6	
308	CHANG75B	13.800	G2	72.0	-9.1	50.0	-22.0	1.0200	71.1	0.9922	118.6			1	6	
317	MENDRE13.8	13.800	M1	8.5	-4.0	4.0	-4.0	1.0018	9.4	0.9048	35.3			1	6	
340	PEDGALITO138	13.800	P1	20.0	-5.0	12.0	-5.0	1.0491	19.7	0.9701	27.0			1	6	
517	PANAPOW13B	13.800	G4	15.8	0.8	12.5	0.5	1.0000	15.8	0.9988	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.8	0.8	12.5	0.5	1.0000	15.8	0.9988	20.9			1	6	
518	PGREENP13A	13.800	E1	18.8	8.0	8.0	-5.0	0.9899	20.6	0.9198	20.6			1	6	
518	PGREENP13A	13.800	E2	18.8	8.0	8.0	-5.0	0.9899	20.6	0.9198	20.6			1	6	
518	PGREENP13A	13.800	E3	18.8	8.0	8.0	-5.0	0.9899	20.6	0.9198	20.6			1	6	
518	PGREENP13A	13.800	E4	18.8	8.0	8.0	-5.0	0.9899	20.6	0.9198	20.6			1	6	
SUBSYSTEM TOTALS				1279.4	241.2	748.5	-429.9				1833.4					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 11:33  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0439	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0439	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	5.9	8.0	0.0	1.0000	11.4	0.8520	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9924	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9925	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9925	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9980	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9980	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9980	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9878	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9878	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9878	6.2			2	7	
SUBSYSTEM TOTALS						73.3	8.1	51.0	-33.0				124.2					

PLAN DE EXPANSION DEL SIN CON CENTROERFICA JUNIO DEL 2007  
 A 0 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO HMTTLA7  
 MED. MAY 16 2007 11:37

KV/414 .435 .5115  
 BUS - VOLTAJE (KV/FU)  
 BRNCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

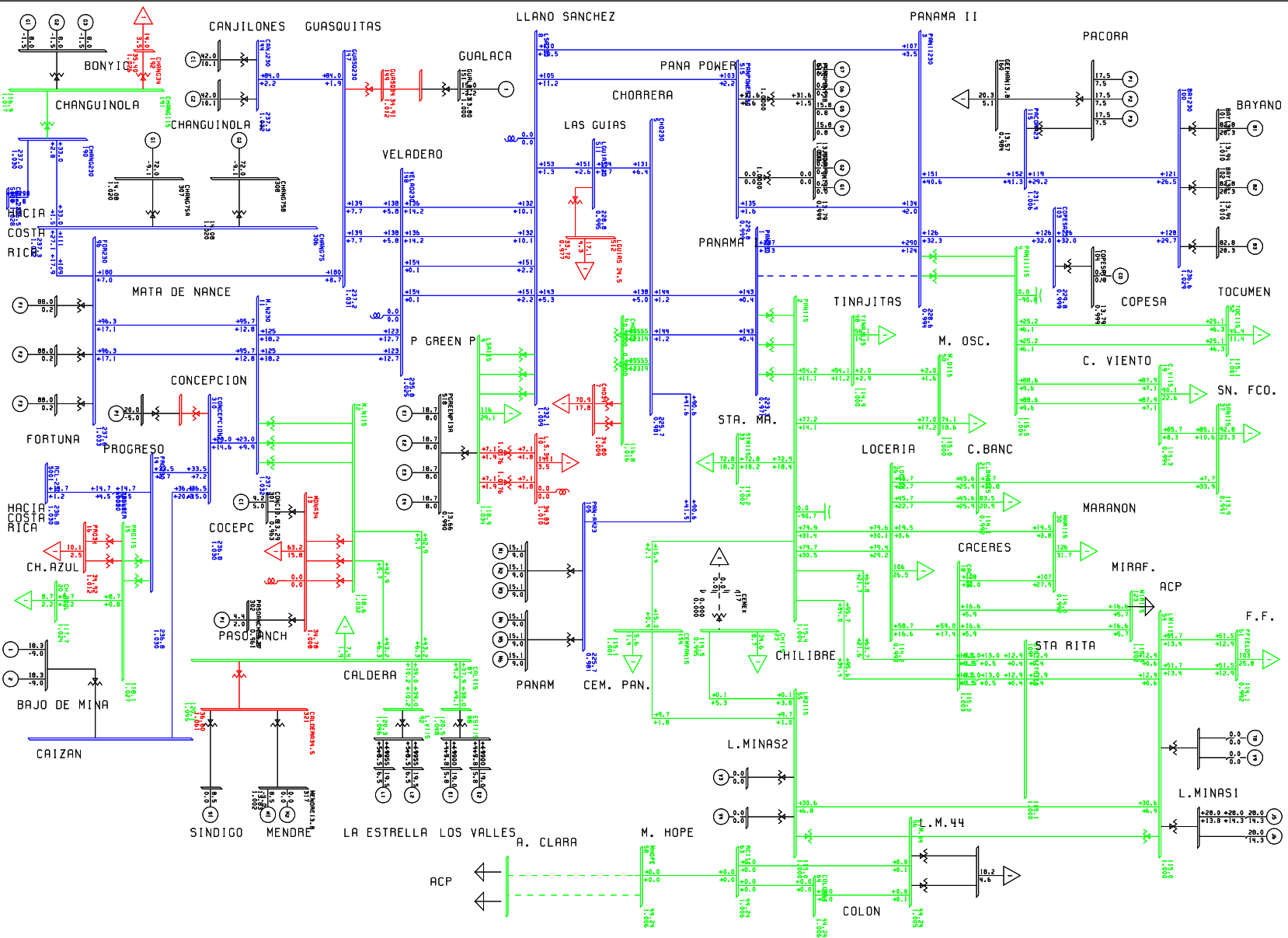


Diagram labels and equipment specifications:

- Substations: CANJILONES, GUASQUITAS, LLANO SANCHEZ, PANAMA II, PACORA, BAYANO, CHORRERA, LAS GUIAS, PANAMA POWER, GUALACA, VELADERO, MATA DE NANCE, CONCEPCION, FORTUNA, PROGRESO, COCEPC, PASO ANCH, CALDERA, PANAM, CEM. PAN., L. MINAS2, M. HOPE, COLON, CHILIBRE, STA. MA., TINAJITAS, M. OSC., LOCERIA, C. BANC, MARANON, MIRAF., ACP, F.F., L. MINAS1, CACERES, COPESA, TOCUMEN, SN. FCO., C. VIENTO, M. 44, and LA ESTRELLA LOS VALLES.
- Transmission Lines: Various lines connecting the substations, labeled with voltage levels and equipment ratings.
- Equipment: Breakers, transformers, busbars, and other electrical components are shown with their respective specifications.

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Pana Power-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E            WED, MAY 16 2007 11:44  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0165	233.79	11		M.N230		230.00	6	1.0339	237.79
14		PRO230		230.00	6	1.0312	237.17	96		FOR230		230.00	6	1.0346	237.97
100		BAY230		230.00	6	1.0310	237.12	103		COPESA23		230.00	6	1.0028	230.65



115	PACORA23	230.00	6	1.0093	232.14	144	CANJ230	230.00	6	1.0337	237.75
147	GUASQ230	230.00	6	1.0336	237.72	148	VELAD230	230.00	6	1.0290	236.67
190	CHANG230	230.00	6	1.0309	237.10	306	CHANG75	230.00	6	1.0323	237.44
309	CAISAN230	230.00	6	1.0277	236.38	310	CONCEPCION23230.00	230.00	6	1.0315	237.24
511	LGUIAS230	230.00	6	1.0006	230.15	515	PANPOWER230	230.00	6	1.0418	239.62
6000	FRONTER	230.00	6	1.0314	237.23						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9865	226.89	3	PANII230	230.00	6	0.9976	229.44
5	CHO230	230.00	6	0.9915	228.03	105	PAN-AM23	230.00	6	0.9916	228.08

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 11:44  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0120	116.38	4	PANII115	115.00	6	1.0151	116.73
6	CHO115	115.00	6	1.0267	118.07	9	LSA115	115.00	6	1.0412	119.74
12	M.N115	115.00	6	1.0331	118.81	15	PRO115	115.00	6	1.0288	118.32
18	CAC115	115.00	6	1.0111	116.27	19	C.V115	115.00	6	1.0044	115.50
20	CH.AZUL	115.00	6	1.0255	117.93	21	C.BAN115	115.00	6	1.0007	115.07
23	CH115	115.00	6	1.0032	115.37	26	LOC115	115.00	6	1.0018	115.21
33	STM115	115.00	6	1.0101	116.17	48	TINAJ115	115.00	6	1.0077	115.89
50	M.O115	115.00	6	1.0081	115.93	52	TOC115	115.00	6	1.0119	116.37
54	LM1115	115.00	6	1.0068	115.78	55	LM2115	115.00	6	1.0072	115.83
87	CAL115	115.00	6	1.0457	120.25	88	EST115	115.00	6	1.0489	120.62
92	L.V115	115.00	6	1.0469	120.39	109	STA RITA115	115.00	6	1.0076	115.87
110	PTMD115A	115.00	6	1.0091	116.05	111	PTMD115B	115.00	6	1.0091	116.05
123	MIR115	115.00	7	1.0101	116.16	154	CEMPAN15	115.00	6	1.0080	115.92
191	CHANG115	115.00	6	1.0169	116.95						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
30	MAR115	115.00	6	0.9999	114.99	37	SAN115	115.00	6	0.9995	114.95
61	FFIELD	115.00	9	0.9993	114.92						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 11:44  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	30.0	17.0	17.0	0.0	0.9949	34.7	0.8700	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	12.7	20.0	0.0	1.0000	32.6	0.9206	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	12.7	20.0	0.0	1.0000	32.6	0.9206	39.4			1	6	
90	EST-13L	13.800	E1	19.0	5.6	12.0	-5.0	1.0150	19.5	0.9598	27.0			1	6	
91	EST-13T	13.800	E2	19.0	5.6	12.0	-5.0	1.0150	19.5	0.9598	27.0			1	6	
94	LV-13.8L	13.800	L1	19.5	6.2	12.0	-5.0	1.0150	20.2	0.9533	27.0			1	6	
95	LV-13.8T	13.800	L2	19.5	6.2	12.0	-5.0	1.0150	20.2	0.9533	27.0			1	6	
97	FOR13A	13.800	F1	89.0	-1.2	50.0	-50.0	1.0290	86.5	0.9999	111.0			1	6	
98	FOR13B	13.800	F2	89.0	-1.2	50.0	-50.0	1.0290	86.5	0.9999	111.0			1	6	
99	FOR13C	13.800	F3	89.0	-1.2	50.0	-50.0	1.0290	86.5	0.9999	111.0			1	6	
101	BAY13A	13.800	B1	81.6	26.5	50.0	-25.0	1.0100	85.0	0.9510	96.0			1	6	SYST
102	BAY13B	13.800	B2	81.6	26.5	50.0	-25.0	1.0100	85.0	0.9510	96.0			1	6	
106	PANAM13A	13.800	M1	15.1	8.6	9.0	0.0	1.0200	17.0	0.8699	20.7			1	6	
106	PANAM13A	13.800	M2	15.1	8.6	9.0	0.0	1.0200	17.0	0.8699	20.7			1	6	
106	PANAM13A	13.800	M3	15.1	8.6	9.0	0.0	1.0200	17.0	0.8699	20.7			1	6	
107	PANAM13B	13.800	M4	15.1	8.6	9.0	0.0	1.0200	17.0	0.8699	20.7			1	6	
107	PANAM13B	13.800	M5	15.1	8.6	9.0	0.0	1.0200	17.0	0.8699	20.7			1	6	
107	PANAM13B	13.800	M6	15.1	8.6	9.0	0.0	1.0200	17.0	0.8699	20.7			1	6	
108	BAY13C	13.800	B3	81.6	26.5	50.0	-25.0	1.0100	85.0	0.9510	100.0			1	6	
116	PACORA13	13.800	P1	17.5	6.9	8.8	0.0	1.0300	18.3	0.9303	21.7			1	6	
116	PACORA13	13.800	P2	17.5	6.9	8.8	0.0	1.0300	18.3	0.9303	21.7			1	6	
116	PACORA13	13.800	P3	17.5	6.9	8.8	0.0	1.0300	18.3	0.9303	21.7			1	6	
142	CANJ13A	13.800	C1	42.0	9.7	29.0	-29.0	1.0100	42.7	0.9742	69.0			1	6	
143	CANJ13B	13.800	C2	42.0	9.7	29.0	-29.0	1.0100	42.7	0.9742	69.0			1	6	
151	GUALAC13	13.800	1	15.0	-2.4	10.0	-10.0	1.0000	15.2	0.9870	26.7			1	6	
193	GEBONYIC	13.800	G1	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9824	35.3			1	6	
193	GEBONYIC	13.800	G2	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9824	35.3			1	6	
193	GEBONYIC	13.800	G3	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9824	35.3			1	6	
204	BJOMIN13	13.800	1	18.3	-9.5	13.0	-13.0	1.0000	20.6	0.8880	28.9			1	6	
204	BJOMIN13	13.800	2	18.3	-9.5	13.0	-13.0	1.0000	20.6	0.8880	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9645	10.8	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9627	5.0	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0113	8.4	1.0000	13.5			1	6	
307	CHANG75A	13.800	G1	74.0	-9.4	22.0	-22.0	1.0200	73.1	0.9920	118.6			1	6	
308	CHANG75B	13.800	G2	74.0	-9.4	50.0	-22.0	1.0200	73.1	0.9920	118.6			1	6	
317	MENDRE13.8	13.800	M1	8.5	-4.0	4.0	-4.0	1.0028	9.4	0.9048	35.3			1	6	
340	PEDGALITO138	13.800	P1	20.0	-5.0	12.0	-5.0	1.0510	19.6	0.9701	27.0			1	6	
517	PANAPOW13B	13.800	G4	15.8	0.5	12.5	0.5	1.0420	15.2	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.8	0.5	12.5	0.5	1.0420	15.2	0.9994	20.9			1	6	
518	PGREENP13A	13.800	E1	18.8	8.0	8.0	-5.0	0.9969	20.4	0.9198	20.6			1	6	
518	PGREENP13A	13.800	E2	18.8	8.0	8.0	-5.0	0.9969	20.4	0.9198	20.6			1	6	
518	PGREENP13A	13.800	E3	18.8	8.0	8.0	-5.0	0.9969	20.4	0.9198	20.6			1	6	
518	PGREENP13A	13.800	E4	18.8	8.0	8.0	-5.0	0.9969	20.4	0.9198	20.6			1	6	
SUBSYSTEM TOTALS				1286.8	219.8	748.5	-429.9				1833.4					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 11:44  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0479	8.2	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0480	8.2	1.0000	13.5				2	7
130		MIR13F		13.800	G5	9.7	4.2	8.0	0.0	1.0000	10.5	0.9181	27.7				2	7
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9949	13.0				2	7
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9950	13.0				2	7
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9950	13.0				2	7
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1				2	7
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1				2	7
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9995	4.1				2	7
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	5.6				2	7
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2				2	7
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9852	6.2				2	7
SUBSYSTEM TOTALS						73.3	5.3	51.0	-33.0				124.2					



**PLAN DE EXPANSIÓN DEL SIN**  
**AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**  
**Contingencia Guasquitas-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      WED, MAY 16 2007 13:27  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0054	231.25	11		M.N230		230.00	6	1.0267	236.15
14		PRO230		230.00	6	1.0249	235.74	96		FOR230		230.00	6	1.0300	236.90
100		BAY230		230.00	6	1.0274	236.30	115		PACORA23		230.00	6	1.0042	230.97

144	CANJ230	230.00	6	1.0279	236.42	147	GUASQ230	230.00	6	1.0278	236.39
148	VELAD230	230.00	6	1.0167	233.85	190	CHANG230	230.00	6	1.0294	236.77
306	CHANG75	230.00	6	1.0309	237.10	309	CAISAN230	230.00	6	1.0227	235.21
310	CONCEPCION230	230.00	6	1.0253	235.81	6000	FRONTER	230.00	6	1.0252	235.80

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9795	225.29	3	PANII230	230.00	6	0.9914	228.03				
5	CHO230	230.00	6	0.9874	227.10	103	COPESA23	230.00	6	0.9971	229.32				
105	PAN-AM23	230.00	6	0.9876	227.15	511	LGUIAS230	230.00	6	0.9955	228.97				
515	PANPOWER230	230.00	6	0.9965	229.19										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 13:27  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0009	115.10	4	PANII115	115.00	6	1.0015	115.18				
6	CHO115	115.00	6	1.0223	117.56	9	LSA115	115.00	6	1.0298	118.43				
12	M.N115	115.00	6	1.0278	118.19	15	PRO115	115.00	6	1.0226	117.60				
20	CH.AZUL	115.00	6	1.0192	117.20	87	CAL115	115.00	6	1.0421	119.85				
88	EST115	115.00	6	1.0457	120.26	92	L.V115	115.00	6	1.0435	120.00				
191	CHANG115	115.00	6	1.0159	116.83										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
18	CAC115	115.00	6	0.9999	114.99	19	C.V115	115.00	6	0.9913	114.00				
21	C.BAN115	115.00	6	0.9890	113.74	23	CH115	115.00	6	0.9927	114.16				
26	LOC115	115.00	6	0.9903	113.89	30	MAR115	115.00	6	0.9885	113.68				
33	STM115	115.00	6	0.9990	114.88	37	SAN115	115.00	6	0.9878	113.59				
48	TINAJ115	115.00	6	0.9965	114.60	50	M.O115	115.00	6	0.9969	114.64				
52	TOC115	115.00	6	0.9984	114.81	54	LM115	115.00	6	0.9974	114.70				
55	LM2115	115.00	6	0.9978	114.75	61	FFIELD	115.00	9	0.9898	113.83				
109	STA RITA115	115.00	6	0.9980	114.77	110	PTMD115A	115.00	6	0.9989	114.87				
111	PTMD115B	115.00	6	0.9989	114.87	123	MIR115	115.00	7	0.9997	114.96				
154	CEMPAN15	115.00	6	0.9981	114.78										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 13:26  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 6 [PANAMA ] MACHINE SUMMARY:

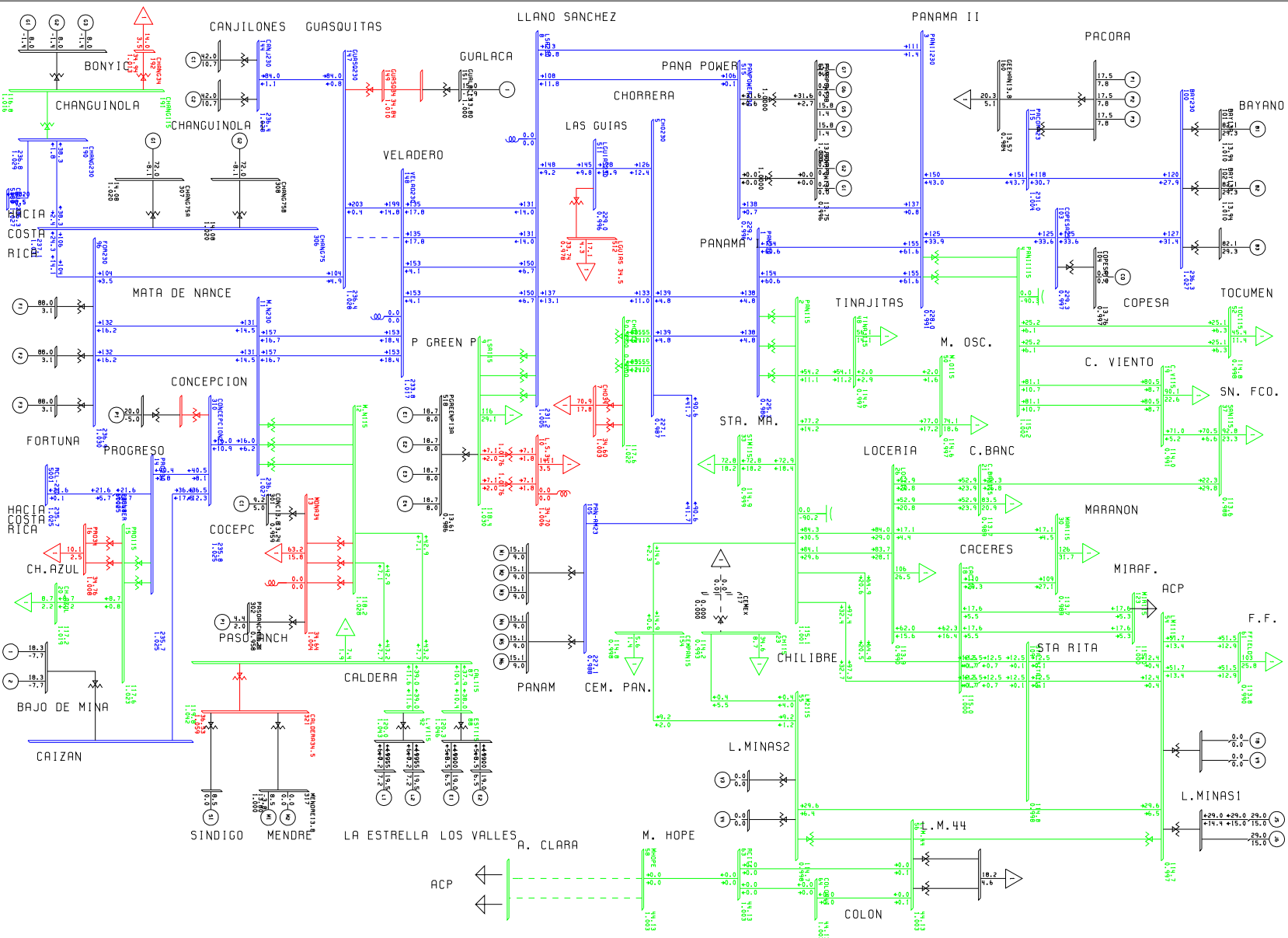
BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	30.0	17.0	17.0	0.0	0.9862	35.0	0.8700	47.0			1	6	
70	TGJB13A	13.800	J5	29.0	15.0	20.0	0.0	1.0000	32.7	0.8881	39.4			1	6	
71	TGJB13B	13.800	J6	29.0	15.0	20.0	0.0	1.0000	32.7	0.8881	39.4			1	6	
90	EST-13L	13.800	E1	19.0	6.5	12.0	-5.0	1.0150	19.8	0.9462	27.0			1	6	
91	EST-13T	13.800	E2	19.0	6.5	12.0	-5.0	1.0150	19.8	0.9462	27.0			1	6	
94	LV-13.8L	13.800	L1	19.5	7.2	12.0	-5.0	1.0150	20.5	0.9383	27.0			1	6	
95	LV-13.8T	13.800	L2	19.5	7.2	12.0	-5.0	1.0150	20.5	0.9383	27.0			1	6	
97	FOR13A	13.800	F1	88.0	3.1	50.0	-50.0	1.0290	85.6	0.9994	111.0			1	6	
98	FOR13B	13.800	F2	88.0	3.1	50.0	-50.0	1.0290	85.6	0.9994	111.0			1	6	
99	FOR13C	13.800	F3	88.0	3.1	50.0	-50.0	1.0290	85.6	0.9994	111.0			1	6	
101	BAY13A	13.800	B1	82.1	29.3	50.0	-25.0	1.0100	86.3	0.9419	96.0			1	6	SYST
102	BAY13B	13.800	B2	82.1	29.3	50.0	-25.0	1.0100	86.3	0.9419	96.0			1	6	
106	PANAM13A	13.800	M1	15.1	9.0	9.0	0.0	1.0190	17.3	0.8590	20.7			1	6	
106	PANAM13A	13.800	M2	15.1	9.0	9.0	0.0	1.0190	17.3	0.8590	20.7			1	6	
106	PANAM13A	13.800	M3	15.1	9.0	9.0	0.0	1.0190	17.3	0.8590	20.7			1	6	
107	PANAM13B	13.800	M4	15.1	9.0	9.0	0.0	1.0190	17.3	0.8590	20.7			1	6	
107	PANAM13B	13.800	M5	15.1	9.0	9.0	0.0	1.0190	17.3	0.8590	20.7			1	6	
107	PANAM13B	13.800	M6	15.1	9.0	9.0	0.0	1.0190	17.3	0.8590	20.7			1	6	
108	BAY13C	13.800	B3	82.1	29.3	50.0	-25.0	1.0100	86.3	0.9419	100.0			1	6	
116	PACORA13	13.800	P1	17.5	7.8	8.8	0.0	1.0300	18.6	0.9125	21.7			1	6	
116	PACORA13	13.800	P2	17.5	7.8	8.8	0.0	1.0300	18.6	0.9125	21.7			1	6	
116	PACORA13	13.800	P3	17.5	7.8	8.8	0.0	1.0300	18.6	0.9125	21.7			1	6	
142	CANJ13A	13.800	C1	42.0	10.7	29.0	-29.0	1.0100	42.9	0.9692	69.0			1	6	
143	CANJ13B	13.800	C2	42.0	10.7	29.0	-29.0	1.0100	42.9	0.9692	69.0			1	6	
151	GUALAC13	13.800	1	15.0	-1.9	10.0	-10.0	1.0000	15.1	0.9919	26.7			1	6	
193	GEBONYIC	13.800	G1	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9848	35.3			1	6	
193	GEBONYIC	13.800	G2	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9848	35.3			1	6	
193	GEBONYIC	13.800	G3	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9848	35.3			1	6	
204	BJOMIN13	13.800	1	18.3	-7.7	13.0	-13.0	1.0000	19.8	0.9225	28.9			1	6	
204	BJOMIN13	13.800	2	18.3	-7.7	13.0	-13.0	1.0000	19.8	0.9225	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9594	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9576	5.1	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0081	8.4	1.0000	13.5			1	6	
307	CHANG75A	13.800	G1	72.0	-8.1	22.0	-22.0	1.0200	71.0	0.9937	118.6			1	6	
308	CHANG75B	13.800	G2	72.0	-8.1	50.0	-22.0	1.0200	71.0	0.9937	118.6			1	6	
317	MENDRE13.8	13.800	M1	8.5	-3.8	4.0	-4.0	1.0000	9.3	0.9112	35.3			1	6	
340	PEDGALITO138	13.800	P1	20.0	-5.0	12.0	-5.0	1.0442	19.7	0.9701	27.0			1	6	
517	PANAPOW13B	13.800	G4	15.8	1.4	12.5	0.5	1.0000	15.9	0.9963	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.8	1.4	12.5	0.5	1.0000	15.9	0.9963	20.9			1	6	
518	PGREENP13A	13.800	E1	18.8	8.0	8.0	-5.0	0.9861	20.7	0.9198	20.6			1	6	
518	PGREENP13A	13.800	E2	18.8	8.0	8.0	-5.0	0.9861	20.7	0.9198	20.6			1	6	
518	PGREENP13A	13.800	E3	18.8	8.0	8.0	-5.0	0.9861	20.7	0.9198	20.6			1	6	
518	PGREENP13A	13.800	E4	18.8	8.0	8.0	-5.0	0.9861	20.7	0.9198	20.6			1	6	
SUBSYSTEM TOTALS				1279.3	265.6	748.5	-429.9				1833.4					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 13:26  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0423	8.3	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0423	8.3	1.0000	13.5				2	7
130		MIR13F		13.800	G5	11.7	6.7	8.0	0.0	1.0000	13.4	0.8682	27.7				2	7
134		MAD6A		6.9000	G1	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9913	13.0				2	7
135		MAD6B		6.9000	G2	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9914	13.0				2	7
136		MAD6C		6.9000	G3	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9914	13.0				2	7
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9971	4.1				2	7
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9971	4.1				2	7
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9971	4.1				2	7
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9887	5.6				2	7
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9887	6.2				2	7
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9887	6.2				2	7
SUBSYSTEM TOTALS						75.3	9.2	51.0	-33.0				124.2					





PLAN DE EXPANSION DEL SIN CON CENTROPERICIA JUNIO DEL 2007  
 A 0 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTLAT7  
 MED. MAY 16 2007 13:29  
 KV:516 .435 .5115  
 BUS - VOLTAGE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN**  
**AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**  
**Contingencia Mata de Nance-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      WED, MAY 16 2007 13:33  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0071	231.64	11		M.N230		230.00	6	1.0283	236.52
14		PRO230		230.00	6	1.0260	235.98	96		FOR230		230.00	6	1.0293	236.75



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 13:32  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

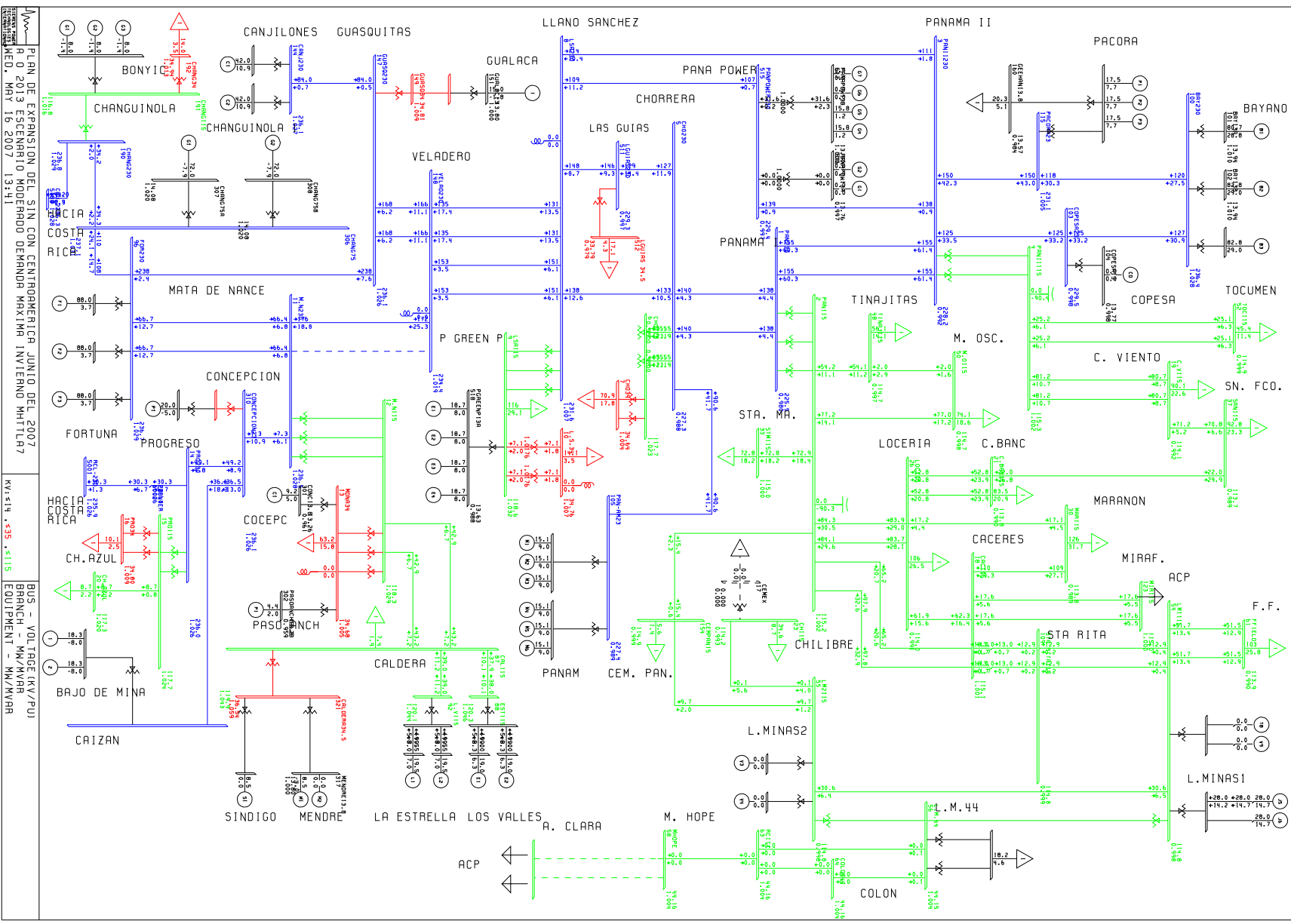
AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	30.0	17.0	17.0	0.0	0.9868	34.9	0.8700	47.0			1	6	
70	TGJB13A	13.800	J5	28.0	14.7	20.0	0.0	1.0000	31.6	0.8848	39.4			1	6	
71	TGJB13B	13.800	J6	28.0	14.7	20.0	0.0	1.0000	31.6	0.8848	39.4			1	6	
90	EST-13L	13.800	E1	19.0	6.3	12.0	-5.0	1.0150	19.7	0.9492	27.0			1	6	
91	EST-13T	13.800	E2	19.0	6.3	12.0	-5.0	1.0150	19.7	0.9492	27.0			1	6	
94	LV-13.8L	13.800	L1	19.5	7.0	12.0	-5.0	1.0150	20.4	0.9416	27.0			1	6	
95	LV-13.8T	13.800	L2	19.5	7.0	12.0	-5.0	1.0150	20.4	0.9416	27.0			1	6	
97	FOR13A	13.800	F1	88.0	3.7	50.0	-50.0	1.0290	85.6	0.9991	111.0			1	6	
98	FOR13B	13.800	F2	88.0	3.7	50.0	-50.0	1.0290	85.6	0.9991	111.0			1	6	
99	FOR13C	13.800	F3	88.0	3.7	50.0	-50.0	1.0290	85.6	0.9991	111.0			1	6	
101	BAY13A	13.800	B1	80.7	28.8	50.0	-25.0	1.0100	84.8	0.9418	96.0			1	6	SYST
102	BAY13B	13.800	B2	82.8	29.0	50.0	-25.0	1.0100	86.9	0.9437	96.0			1	6	
106	PANAM13A	13.800	M1	15.1	9.0	9.0	0.0	1.0200	17.2	0.8590	20.7			1	6	
106	PANAM13A	13.800	M2	15.1	9.0	9.0	0.0	1.0200	17.2	0.8590	20.7			1	6	
106	PANAM13A	13.800	M3	15.1	9.0	9.0	0.0	1.0200	17.2	0.8590	20.7			1	6	
107	PANAM13B	13.800	M4	15.1	9.0	9.0	0.0	1.0200	17.2	0.8590	20.7			1	6	
107	PANAM13B	13.800	M5	15.1	9.0	9.0	0.0	1.0200	17.2	0.8590	20.7			1	6	
107	PANAM13B	13.800	M6	15.1	9.0	9.0	0.0	1.0200	17.2	0.8590	20.7			1	6	
108	BAY13C	13.800	B3	82.8	29.0	50.0	-25.0	1.0100	86.9	0.9437	100.0			1	6	
116	PACORA13	13.800	P1	17.5	7.7	8.8	0.0	1.0300	18.6	0.9148	21.7			1	6	
116	PACORA13	13.800	P2	17.5	7.7	8.8	0.0	1.0300	18.6	0.9148	21.7			1	6	
116	PACORA13	13.800	P3	17.5	7.7	8.8	0.0	1.0300	18.6	0.9148	21.7			1	6	
142	CANJ13A	13.800	C1	42.0	10.9	29.0	-29.0	1.0100	43.0	0.9680	69.0			1	6	
143	CANJ13B	13.800	C2	42.0	10.9	29.0	-29.0	1.0100	43.0	0.9680	69.0			1	6	
151	GUALAC13	13.800	1	15.0	-1.8	10.0	-10.0	1.0000	15.1	0.9929	26.7			1	6	
193	GEBONYIC	13.800	G1	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9848	35.3			1	6	
193	GEBONYIC	13.800	G2	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9848	35.3			1	6	
193	GEBONYIC	13.800	G3	8.0	-1.4	4.0	-4.0	1.0000	8.1	0.9848	35.3			1	6	
204	BJOMIN13	13.800	1	18.3	-8.0	13.0	-13.0	1.0000	20.0	0.9160	28.9			1	6	
204	BJOMIN13	13.800	2	18.3	-8.0	13.0	-13.0	1.0000	20.0	0.9160	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9605	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9587	5.1	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0085	8.4	1.0000	13.5			1	6	
307	CHANG75A	13.800	G1	72.0	-7.9	22.0	-22.0	1.0200	71.0	0.9940	118.6			1	6	
308	CHANG75B	13.800	G2	72.0	-7.9	50.0	-22.0	1.0200	71.0	0.9940	118.6			1	6	
317	MENDRE13.8	13.800	M1	8.5	-4.0	4.0	-4.0	1.0000	9.4	0.9048	35.3			1	6	
340	PEDGALITO138	13.800	P1	20.0	-5.0	12.0	-5.0	1.0456	19.7	0.9701	27.0			1	6	
517	PANAPOW13B	13.800	G4	15.8	1.2	12.5	0.5	1.0000	15.8	0.9973	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.8	1.2	12.5	0.5	1.0000	15.8	0.9973	20.9			1	6	
518	PGREENP13A	13.800	E1	18.8	8.0	8.0	-5.0	0.9878	20.6	0.9198	20.6			1	6	
518	PGREENP13A	13.800	E2	18.8	8.0	8.0	-5.0	0.9878	20.6	0.9198	20.6			1	6	
518	PGREENP13A	13.800	E3	18.8	8.0	8.0	-5.0	0.9878	20.6	0.9198	20.6			1	6	
518	PGREENP13A	13.800	E4	18.8	8.0	8.0	-5.0	0.9878	20.6	0.9198	20.6			1	6	
SUBSYSTEM TOTALS				1277.2	264.4	748.5	-429.9				1833.4					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 13:32  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0427	8.3	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0427	8.3	1.0000	13.5				2	7
130		MIR13F		13.800	G5	11.7	6.5	8.0	0.0	1.0000	13.4	0.8737	27.7				2	7
134		MAD6A		6.9000	G1	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9916	13.0				2	7
135		MAD6B		6.9000	G2	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9917	13.0				2	7
136		MAD6C		6.9000	G3	9.7	1.3	6.0	-6.0	1.0000	9.8	0.9917	13.0				2	7
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9974	4.1				2	7
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9974	4.1				2	7
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9974	4.1				2	7
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9885	5.6				2	7
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9885	6.2				2	7
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9885	6.2				2	7
SUBSYSTEM TOTALS						75.3	8.9	51.0	-33.0				124.2					



PLAN DE EXPANSION DEL SIN CON CENTROPERICIA JUNIO DEL 2007  
 A 0 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTIAT7  
 MED. MAY 16 2007 13:41  
 KV:51W .435 .5115  
 BUS - VOLTAJE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Santa Rita-Cáceres**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      WED, MAY 16 2007 13:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0139	233.19	11		M.N230		230.00	6	1.0334	237.67
14		PRO230		230.00	6	1.0307	237.07	96		FOR230		230.00	6	1.0342	237.87
100		BAY230		230.00	6	1.0295	236.78	103		COPESA23		230.00	6	1.0004	230.10

115	PACORA23	230.00	6	1.0072	231.65	144	CANJ230	230.00	6	1.0331	237.62
147	GUASQ230	230.00	6	1.0330	237.59	148	VELAD230	230.00	6	1.0278	236.39
190	CHANG230	230.00	6	1.0307	237.07	306	CHANG75	230.00	6	1.0322	237.40
309	CAISAN230	230.00	6	1.0274	236.29	310	CONCEPCION230	230.00	6	1.0310	237.14
511	LGUIAS230	230.00	6	1.0023	230.54	515	PANPOWER230	230.00	6	1.0005	230.12
6000	FRONTER	230.00	6	1.0310	237.13						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9832	226.13	3	PANII230	230.00	6	0.9950	228.85
5	CHO230	230.00	6	0.9918	228.12	105	PAN-AM23	230.00	6	0.9920	228.16

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 13:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0043	115.49	4	PANII115	115.00	6	1.0052	115.60
6	CHO115	115.00	6	1.0270	118.11	9	LSA115	115.00	6	1.0385	119.43
12	M.N115	115.00	6	1.0327	118.76	15	PRO115	115.00	6	1.0284	118.27
18	CAC115	115.00	6	1.0034	115.39	20	CH.AZUL	115.00	6	1.0250	117.88
33	STM115	115.00	6	1.0024	115.28	50	M.O115	115.00	6	1.0003	115.04
52	TOC115	115.00	6	1.0020	115.23	87	CAL115	115.00	6	1.0454	120.22
88	EST115	115.00	6	1.0487	120.60	92	L.V115	115.00	6	1.0466	120.36
110	PTMD115A	115.00	6	1.0008	115.09	123	MIR115	115.00	7	1.0028	115.33
154	CEMPAN15	115.00	6	1.0000	115.00	191	CHANG115	115.00	6	1.0168	116.94

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
19	C.V115	115.00	6	0.9950	114.42	21	C.BAN115	115.00	6	0.9926	114.14
23	CH115	115.00	6	0.9953	114.46	26	LOC115	115.00	6	0.9938	114.29
30	MAR115	115.00	6	0.9920	114.08	37	SAN115	115.00	6	0.9913	114.00
48	TINAJ115	115.00	6	1.0000	115.00	54	LM115	115.00	6	0.9987	114.85
55	LM2115	115.00	6	0.9991	114.90	61	FFIELD	115.00	9	0.9911	113.98
109	STA RITA115	115.00	6	0.9991	114.90						



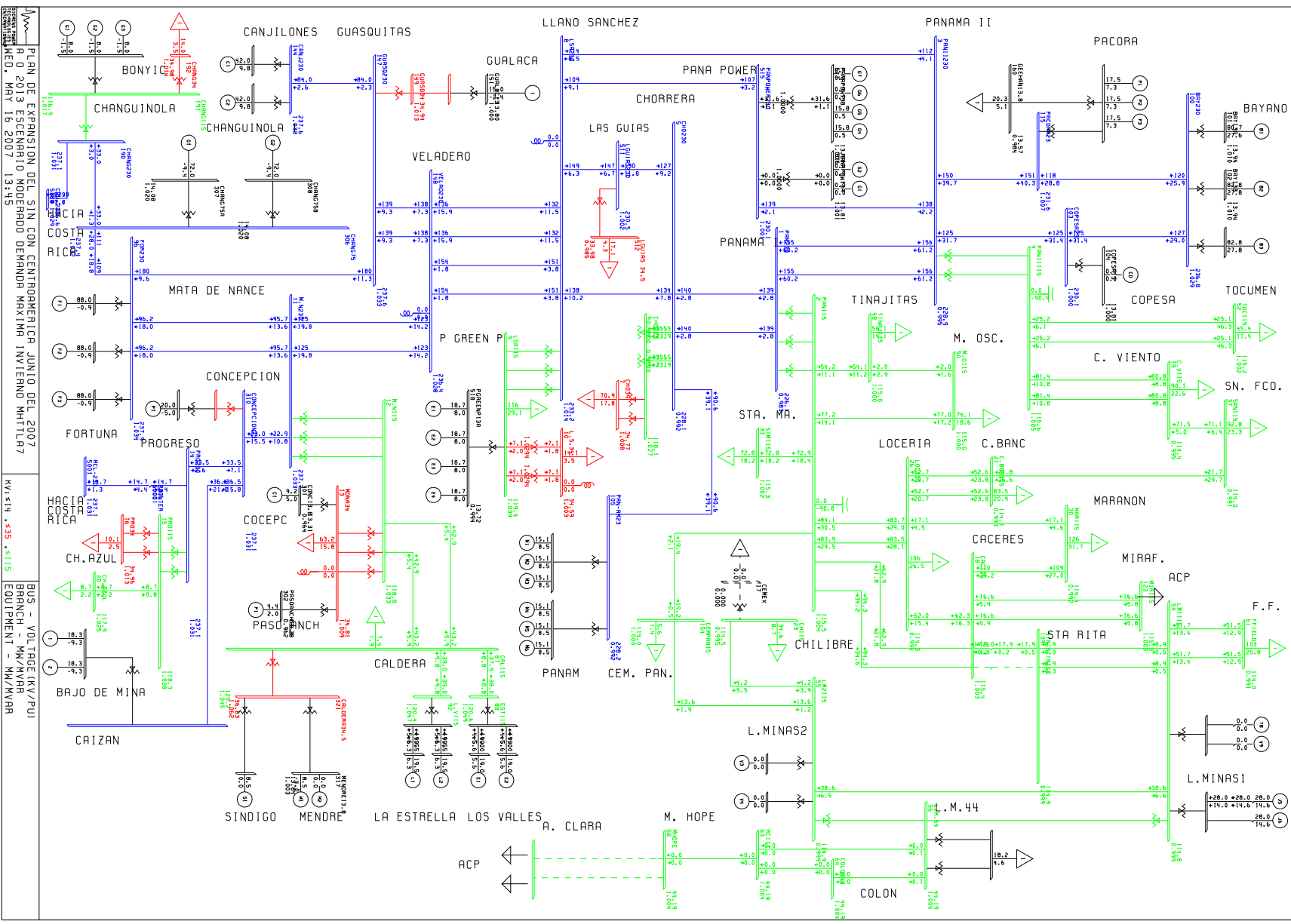
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 13:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	17.0	17.0	0.0	0.9875	34.9	0.8700	47.0			1	6		
70		TGJB13A		13.800	J5	28.0	14.6	20.0	0.0	1.0000	31.6	0.8870	39.4			1	6		
71		TGJB13B		13.800	J6	28.0	14.6	20.0	0.0	1.0000	31.6	0.8870	39.4			1	6		
90		EST-13L		13.800	E1	19.0	5.6	12.0	-5.0	1.0150	19.5	0.9588	27.0			1	6		
91		EST-13T		13.800	E2	19.0	5.6	12.0	-5.0	1.0150	19.5	0.9588	27.0			1	6		
94		LV-13.8L		13.800	L1	19.5	6.3	12.0	-5.0	1.0150	20.2	0.9522	27.0			1	6		
95		LV-13.8T		13.800	L2	19.5	6.3	12.0	-5.0	1.0150	20.2	0.9522	27.0			1	6		
97		FOR13A		13.800	F1	88.0	-0.9	50.0	-50.0	1.0290	85.5	0.9999	111.0			1	6		
98		FOR13B		13.800	F2	88.0	-0.9	50.0	-50.0	1.0290	85.5	0.9999	111.0			1	6		
99		FOR13C		13.800	F3	88.0	-0.9	50.0	-50.0	1.0290	85.5	0.9999	111.0			1	6		
101		BAY13A		13.800	B1	80.7	27.6	50.0	-25.0	1.0100	84.5	0.9464	96.0			1	6	SYST	
102		BAY13B		13.800	B2	82.8	27.8	50.0	-25.0	1.0100	86.5	0.9481	96.0			1	6		
106		PANAM13A		13.800	M1	15.1	8.5	9.0	0.0	1.0200	17.0	0.8711	20.7			1	6		
106		PANAM13A		13.800	M2	15.1	8.5	9.0	0.0	1.0200	17.0	0.8711	20.7			1	6		
106		PANAM13A		13.800	M3	15.1	8.5	9.0	0.0	1.0200	17.0	0.8711	20.7			1	6		
107		PANAM13B		13.800	M4	15.1	8.5	9.0	0.0	1.0200	17.0	0.8711	20.7			1	6		
107		PANAM13B		13.800	M5	15.1	8.5	9.0	0.0	1.0200	17.0	0.8711	20.7			1	6		
107		PANAM13B		13.800	M6	15.1	8.5	9.0	0.0	1.0200	17.0	0.8711	20.7			1	6		
108		BAY13C		13.800	B3	82.8	27.8	50.0	-25.0	1.0100	86.5	0.9481	100.0			1	6		
116		PACORA13		13.800	P1	17.5	7.3	8.8	0.0	1.0300	18.4	0.9230	21.7			1	6		
116		PACORA13		13.800	P2	17.5	7.3	8.8	0.0	1.0300	18.4	0.9230	21.7			1	6		
116		PACORA13		13.800	P3	17.5	7.3	8.8	0.0	1.0300	18.4	0.9230	21.7			1	6		
142		CANJ13A		13.800	C1	42.0	9.8	29.0	-29.0	1.0100	42.7	0.9737	69.0			1	6		
143		CANJ13B		13.800	C2	42.0	9.8	29.0	-29.0	1.0100	42.7	0.9737	69.0			1	6		
151		GUALAC13		13.800	1	15.0	-2.4	10.0	-10.0	1.0000	15.2	0.9876	26.7			1	6		
193		GEBONYIC		13.800	G1	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9826	35.3			1	6		
193		GEBONYIC		13.800	G2	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9826	35.3			1	6		
193		GEBONYIC		13.800	G3	8.0	-1.5	4.0	-4.0	1.0000	8.1	0.9826	35.3			1	6		
204		BJOMIN13		13.800	1	18.3	-9.3	13.0	-13.0	1.0000	20.5	0.8906	28.9			1	6		
204		BJOMIN13		13.800	2	18.3	-9.3	13.0	-13.0	1.0000	20.5	0.8906	28.9			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9642	10.9	0.8784	13.5			1	6		
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9623	5.0	0.9110	6.2			1	6		
303		SIND13.8		13.800	S1	8.5	0.0	5.0	0.0	1.0110	8.4	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	72.0	-9.4	22.0	-22.0	1.0200	71.2	0.9916	118.6			1	6		
308		CHANG75B		13.800	G2	72.0	-9.4	50.0	-22.0	1.0200	71.2	0.9916	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0026	9.4	0.9048	35.3			1	6		
340		PEDGALITO138		13.800	P1	20.0	-5.0	12.0	-5.0	1.0505	19.6	0.9701	27.0			1	6		
517		PANAPOW13B		13.800	G4	15.8	0.5	12.5	0.5	1.0005	15.8	0.9994	20.9			1	6		
517		PANAPOW13B		13.800	G5	15.8	0.5	12.5	0.5	1.0005	15.8	0.9994	20.9			1	6		
518		PGREENP13A		13.800	E1	18.8	8.0	8.0	-5.0	0.9943	20.5	0.9198	20.6			1	6		
518		PGREENP13A		13.800	E2	18.8	8.0	8.0	-5.0	0.9943	20.5	0.9198	20.6			1	6		
518		PGREENP13A		13.800	E3	18.8	8.0	8.0	-5.0	0.9943	20.5	0.9198	20.6			1	6		
518		PGREENP13A		13.800	E4	18.8	8.0	8.0	-5.0	0.9943	20.5	0.9198	20.6			1	6		
SUBSYSTEM TOTALS						1277.3	229.6	748.5	-429.9				1833.4						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 13:43  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0441	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0441	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	5.8	8.0	0.0	1.0000	11.3	0.8560	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9925	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9926	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9926	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9981	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9981	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9981	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9876	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9876	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9876	6.2			2	7	
SUBSYSTEM TOTALS						73.3	7.9	51.0	-33.0				124.2					



PLAN DE EXPANSION DEL SIN CON CENTROPERICIA JUNIO DEL 2007  
 A 0 2013 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTIAT7  
 MED. MAY 16 2007 13:45  
 KV:514 .435 .5115  
 BUS - VOLTAJE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 14:12  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0283	236.51	14	PRO230	230.00	6	1.0262	236.02				
96	FOR230	230.00	6	1.0303	236.96	100	BAY230	230.00	6	1.0163	233.75				
144	CANJ230	230.00	6	1.0284	236.54	147	GUASQ230	230.00	6	1.0282	236.49				
148	VELAD230	230.00	6	1.0179	234.11	190	CHANG230	230.00	6	1.0292	236.72				
306	CHANG75	230.00	6	1.0308	237.09	309	CAISAN230	230.00	6	1.0239	235.49				
310	CONCEPCION23	230.00	6	1.0265	236.11	6000	FRONTER	230.00	6	1.0265	236.09				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9533	219.26	3	PANII230	230.00	6	0.9675	222.52				
5	CHO230	230.00	6	0.9639	221.70	8	LSA230	230.00	6	0.9959	229.05				
103	COPEA23	230.00	6	0.9750	224.26	105	PAN-AM23	230.00	6	0.9641	221.75				
115	PACORA23	230.00	6	0.9840	226.31	511	LGUIAS230	230.00	6	0.9799	225.37				
515	PANPOWER230	230.00	6	0.9802	225.45										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 14:12  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0046	115.53	4	PANII115	115.00	6	1.0035	115.40				
9	LSA115	115.00	6	1.0170	116.95	12	M.N115	115.00	6	1.0289	118.32				
15	PRO115	115.00	6	1.0234	117.69	18	CAC115	115.00	6	1.0037	115.43				
20	CH.AZUL	115.00	6	1.0195	117.24	23	CH115	115.00	6	1.0010	115.12				
33	STM115	115.00	6	1.0025	115.28	54	LM115	115.00	6	1.0148	116.70				
55	LM2115	115.00	6	1.0150	116.73	61	FFIELD	115.00	9	1.0062	115.71				
87	CAL115	115.00	6	1.0448	120.15	88	EST115	115.00	6	1.0481	120.53				
92	L.V115	115.00	6	1.0465	120.34	109	STA RITA115	115.00	6	1.0144	116.65				
110	PTMD115A	115.00	6	1.0107	116.23	111	PTMD115B	115.00	6	1.0107	116.23				
123	MIR115	115.00	7	1.0028	115.33	154	CEMPAN15	115.00	6	1.0114	116.31				
191	CHANG115	115.00	6	1.0159	116.82										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6	CHO115	115.00	6	0.9938	114.28	19	C.V115	115.00	6	0.9924	114.13				
21	C.BAN115	115.00	6	0.9909	113.95	26	LOC115	115.00	6	0.9924	114.13				
30	MAR115	115.00	6	0.9906	113.91	37	SAN115	115.00	6	0.9893	113.77				
48	TINAJ115	115.00	6	0.9996	114.95	50	M.O115	115.00	6	1.0000	115.00				
52	TOC115	115.00	6	0.9999	114.98										

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	35.0	17.0	17.0	0.0	1.0013	38.9	0.8995	47.0			1	6	
67	BLM13C	13.800	V3	35.0	17.0	17.0	0.0	1.0013	38.9	0.8995	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	10.7	20.0	0.0	1.0000	31.8	0.9421	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	10.7	20.0	0.0	1.0000	31.8	0.9421	39.4			1	6	
73	BLMCCB	13.800	V9	28.0	16.5	40.0	0.0	1.0000	32.5	0.8617	71.0			1	6	
90	EST-13L	13.800	E1	19.0	5.8	12.0	-5.0	1.0150	19.6	0.9564	27.0			1	6	
91	EST-13T	13.800	E2	19.0	5.8	12.0	-5.0	1.0150	19.6	0.9564	27.0			1	6	
94	LV-13.8L	13.800	L1	20.0	9.8	12.0	-5.0	1.0260	21.7	0.8973	27.0			1	6	
95	LV-13.8T	13.800	L2	20.0	9.8	12.0	-5.0	1.0260	21.7	0.8973	27.0			1	6	
97	FOR13A	13.800	F1	80.0	2.1	50.0	-50.0	1.0290	77.8	0.9996	111.0			1	6	
98	FOR13B	13.800	F2	80.0	2.1	50.0	-50.0	1.0290	77.8	0.9996	111.0			1	6	
99	FOR13C	13.800	F3	80.0	2.1	50.0	-50.0	1.0290	77.8	0.9996	111.0			1	6	
101	BAY13A	13.800	B1	82.2	44.3	50.0	-25.0	1.0180	91.7	0.8802	96.0			1	6	SYST
102	BAY13B	13.800	B2	82.2	44.3	50.0	-25.0	1.0180	91.7	0.8802	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	9.0	9.0	0.0	0.9972	17.5	0.8575	20.7			1	6	
106	PANAM13A	13.800	M2	15.0	9.0	9.0	0.0	0.9972	17.5	0.8575	20.7			1	6	
106	PANAM13A	13.800	M3	15.0	9.0	9.0	0.0	0.9972	17.5	0.8575	20.7			1	6	
107	PANAM13B	13.800	M4	15.0	9.0	9.0	0.0	0.9972	17.5	0.8575	20.7			1	6	
107	PANAM13B	13.800	M5	15.0	9.0	9.0	0.0	0.9972	17.5	0.8575	20.7			1	6	
107	PANAM13B	13.800	M6	15.0	9.0	9.0	0.0	0.9972	17.5	0.8575	20.7			1	6	
108	BAY13C	13.800	B3	82.2	44.3	50.0	-25.0	1.0180	91.7	0.8802	100.0			1	6	
116	PACORA13	13.800	P1	17.6	8.8	8.8	0.0	1.0120	19.5	0.8938	21.7			1	6	
116	PACORA13	13.800	P2	17.6	8.8	8.8	0.0	1.0120	19.5	0.8938	21.7			1	6	
116	PACORA13	13.800	P3	17.6	8.8	8.8	0.0	1.0120	19.5	0.8938	21.7			1	6	
142	CANJ13A	13.800	C1	37.0	10.7	29.0	-29.0	1.0180	37.8	0.9608	69.0			1	6	
143	CANJ13B	13.800	C2	37.0	10.7	29.0	-29.0	1.0180	37.8	0.9608	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-1.0	10.0	-10.0	1.0100	15.9	0.9982	26.7			1	6	
193	GEBOYIC	13.800	G1	5.0	-1.6	4.0	-4.0	1.0000	5.2	0.9533	35.3			1	6	
193	GEBOYIC	13.800	G2	5.0	-1.6	4.0	-4.0	1.0000	5.2	0.9533	35.3			1	6	
193	GEBOYIC	13.800	G3	5.0	-1.6	4.0	-4.0	1.0000	5.2	0.9533	35.3			1	6	
204	BJOMIN13	13.800	1	14.0	-8.3	13.0	-13.0	1.0000	16.3	0.8607	28.9			1	6	
204	BJOMIN13	13.800	2	14.0	-8.3	13.0	-13.0	1.0000	16.3	0.8607	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9581	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9563	5.1	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0089	8.4	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	10.6	-0.7	12.0	-5.0	1.0200	10.4	0.9977	20.6			1	6	
305	ELALTO13.8	13.800	2	10.6	-0.7	12.0	-5.0	1.0200	10.4	0.9977	20.6			1	6	
305	ELALTO13.8	13.800	3	10.6	-0.7	12.0	-5.0	1.0200	10.4	0.9977	20.6			1	6	
307	CHANG75A	13.800	G1	77.0	-7.7	22.0	-22.0	1.0200	75.9	0.9950	118.6			1	6	
308	CHANG75B	13.800	G2	77.0	-7.7	50.0	-22.0	1.0200	75.9	0.9950	118.6			1	6	
317	MENDRE13.8	13.800	M1	7.5	-2.0	4.0	-4.0	1.0000	7.8	0.9653	35.3			1	6	
317	MENDRE13.8	13.800	M2	7.5	-2.0	4.0	-4.0	1.0000	7.8	0.9653	35.3			1	6	
322	TURBA-250A	13.800	1	90.0	0.0	62.0	0.0	1.0103	89.1	1.0000	118.0			1	6	
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0463	17.9	0.9635	27.0			1	6	
516	PANAPOW13A	13.800	G1	15.5	5.2	12.5	0.5	1.0000	16.3	0.9482	20.9			1	6	
516	PANAPOW13A	13.800	G2	15.5	5.2	12.5	0.5	1.0000	16.3	0.9482	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	5.2	12.5	0.5	1.0000	16.3	0.9482	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.5	5.2	12.5	0.5	1.0000	16.3	0.9482	20.9			1	6	
518	PGREENP13A	13.800	E1	18.0	8.0	8.0	-5.0	0.9791	20.1	0.9138	20.6			1	6	
518	PGREENP13A	13.800	E2	18.0	8.0	8.0	-5.0	0.9791	20.1	0.9138	20.6			1	6	
518	PGREENP13A	13.800	E3	18.0	8.0	8.0	-5.0	0.9791	20.1	0.9138	20.6			1	6	
518	PGREENP13A	13.800	E4	18.0	8.0	8.0	-5.0	0.9791	20.1	0.9138	20.6			1	6	

SUBSYSTEM TOTALS                    1463.2   355.1   932.6   -447.9                    2208.3

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E            MON, MAY 14 2007 14:12  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	6.5	0.0	5.0	0.0	1.0440	6.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	6.5	0.0	5.0	0.0	1.0440	6.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.4	6.0	8.0	0.0	1.0000	12.0	0.8653	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.2	6.0	-6.0	1.0000	9.8	0.9921	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.2	6.0	-6.0	1.0000	9.8	0.9922	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.2	6.0	-6.0	1.0000	9.8	0.9922	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9972	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9972	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9972	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9887	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9887	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9887	6.2			2	7	
SUBSYSTEM TOTALS						70.0	8.4	51.0	-33.0				124.2					





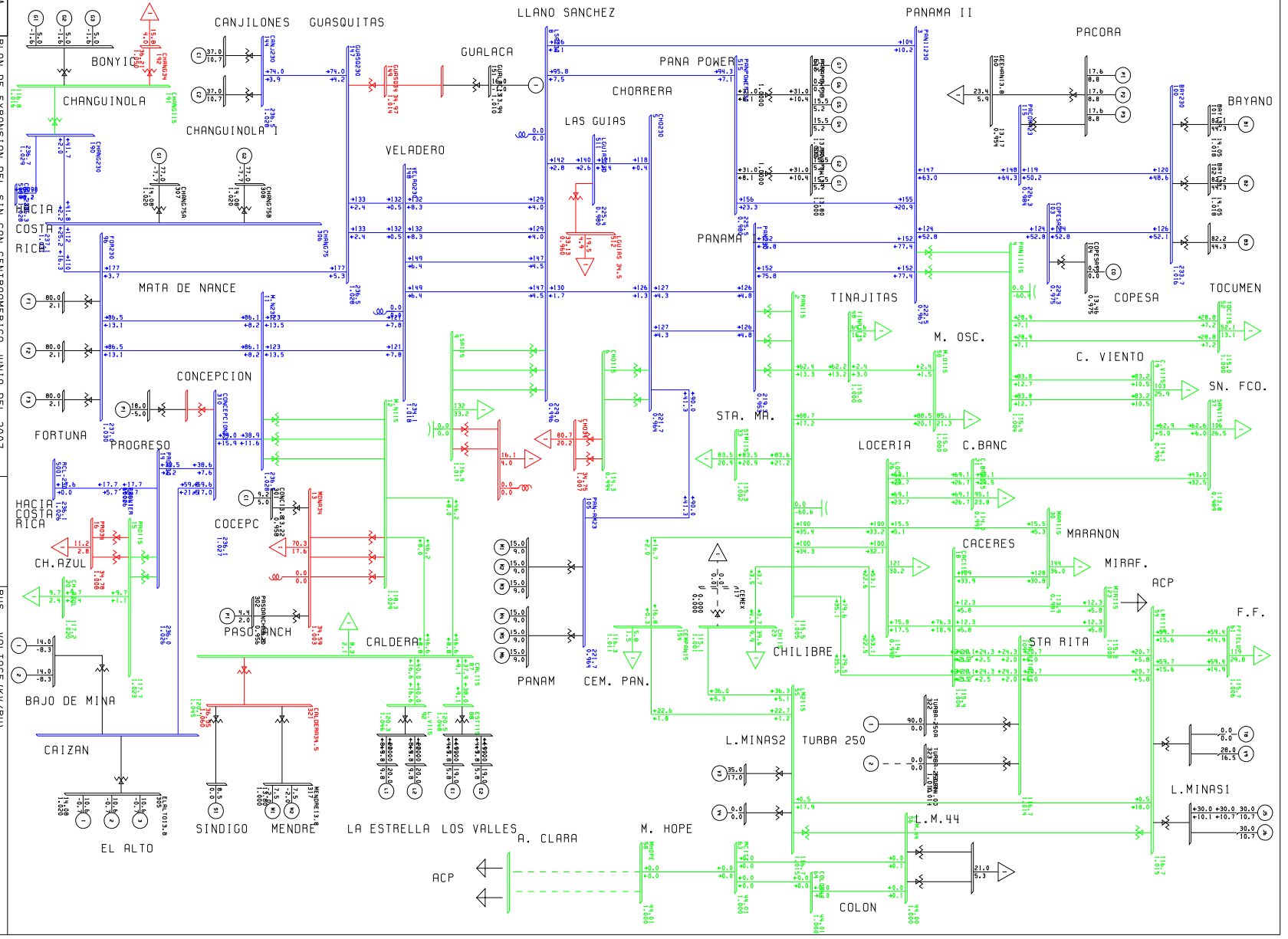
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 14:12  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTGBC7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.6	224.5	-98.9	0.0	143.2	-97.2	147.4	
5	1344.6	1324.8	0.0	0.0	0.0	-0.5	20.3	0.0
C.RICA	253.2	569.4	-237.7	0.0	469.5	28.8	362.2	
6	1463.2	1293.9	0.0	0.0	0.0	116.2	53.1	25.0
PANAMA	355.1	324.3	-121.0	0.0	459.7	66.5	545.1	
7	70.0	43.9	0.0	0.0	0.0	24.7	1.4	50.0
ACANAL	8.4	11.0	0.0	0.0	0.0	-11.7	9.0	
9	0.0	139.9	0.0	0.0	0.0	-140.4	0.5	-75.0
COLON	0.0	35.1	0.0	0.0	1.1	-37.4	3.4	
TOTALS	6682.1	6529.3	0.0	0.0	0.0	0.0	152.8	0.0
	835.6	1986.7	-970.1	0.0	2009.2	0.0	1828.2	

PLAN DE EXPANSION DEL SIN CON CENTROAERATORIO JUNIO DEL 2007  
 P.0 2016 ESCENARIO MODERNO DEMONSTRACION INVIERNO WHITL7  
 MAY 16 2007 15:49

KV:114 .553 .5115

BUS - VOLTAJE (KV/FU)  
 BRNCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MAXIMA VERANO**



AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	35.0	14.5	17.0	0.0	1.0050	37.7	0.9240	47.0			1	6	
67	BLM13C	13.800	V3	35.0	14.5	17.0	0.0	1.0050	37.7	0.9240	47.0			1	6	
68	BLM13D	13.800	V4	35.0	15.1	17.0	0.0	1.0050	37.9	0.9182	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	8.1	20.0	0.0	1.0000	31.1	0.9656	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	8.1	20.0	0.0	1.0000	31.1	0.9656	39.4			1	6	
72	BLMCCA	13.800	T8	30.0	8.9	20.0	0.0	1.0000	31.3	0.9584	50.0			1	6	
73	BLMCCB	13.800	V9	45.0	9.2	40.0	0.0	1.0000	45.9	0.9796	71.0			1	6	
90	EST-13L	13.800	E1	16.0	2.9	12.0	-5.0	1.0000	16.3	0.9838	27.0			1	6	
91	EST-13T	13.800	E2	16.0	2.9	12.0	-5.0	1.0000	16.3	0.9838	27.0			1	6	
94	LV-13.8L	13.800	L1	18.0	3.4	12.0	-5.0	1.0000	18.3	0.9826	27.0			1	6	
95	LV-13.8T	13.800	L2	18.0	3.4	12.0	-5.0	1.0000	18.3	0.9826	27.0			1	6	
97	FOR13A	13.800	F1	67.0	-9.6	50.0	-50.0	1.0290	65.8	0.9900	111.0			1	6	
98	FOR13B	13.800	F2	67.0	-9.6	50.0	-50.0	1.0290	65.8	0.9900	111.0			1	6	
99	FOR13C	13.800	F3	67.0	-9.6	50.0	-50.0	1.0290	65.8	0.9900	111.0			1	6	
101	BAY13A	13.800	B1	63.1	27.9	50.0	-25.0	1.0180	67.8	0.9147	96.0			1	6	SYST
102	BAY13B	13.800	B2	62.9	27.9	50.0	-25.0	1.0180	67.6	0.9143	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	8.7	9.0	0.0	1.0300	16.8	0.8647	20.7			1	6	
106	PANAM13A	13.800	M2	15.0	8.7	9.0	0.0	1.0300	16.8	0.8647	20.7			1	6	
106	PANAM13A	13.800	M3	15.0	8.7	9.0	0.0	1.0300	16.8	0.8647	20.7			1	6	
107	PANAM13B	13.800	M4	15.0	8.7	9.0	0.0	1.0300	16.8	0.8647	20.7			1	6	
107	PANAM13B	13.800	M5	15.0	8.7	9.0	0.0	1.0300	16.8	0.8647	20.7			1	6	
107	PANAM13B	13.800	M6	15.0	8.7	9.0	0.0	1.0300	16.8	0.8647	20.7			1	6	
108	BAY13C	13.800	B3	62.9	27.9	50.0	-25.0	1.0180	67.6	0.9143	100.0			1	6	
116	PACORA13	13.800	P1	17.6	8.8	8.8	0.0	1.0409	18.9	0.8938	21.7			1	6	
116	PACORA13	13.800	P2	17.6	8.8	8.8	0.0	1.0409	18.9	0.8938	21.7			1	6	
116	PACORA13	13.800	P3	17.6	8.8	8.8	0.0	1.0409	18.9	0.8938	21.7			1	6	
142	CANJ13A	13.800	C1	35.0	7.8	29.0	-29.0	1.0180	35.2	0.9763	69.0			1	6	
143	CANJ13B	13.800	C2	35.0	7.8	29.0	-29.0	1.0180	35.2	0.9763	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-2.4	10.0	-10.0	1.0100	16.0	0.9893	26.7			1	6	
193	GEBONYIC	13.800	G1	6.7	-2.8	4.0	-4.0	1.0000	7.2	0.9251	35.3			1	6	
193	GEBONYIC	13.800	G2	6.7	-2.8	4.0	-4.0	1.0000	7.2	0.9251	35.3			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0068	8.4	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	10.6	-5.0	12.0	-5.0	1.0255	11.4	0.9044	20.6			1	6	
305	ELALTO13.8	13.800	2	10.6	-5.0	12.0	-5.0	1.0255	11.4	0.9044	20.6			1	6	
307	CHANG75A	13.800	G1	60.0	-12.0	22.0	-22.0	1.0200	60.0	0.9806	118.6			1	6	
308	CHANG75B	13.800	G2	60.0	-12.0	50.0	-22.0	1.0200	60.0	0.9806	118.6			1	6	
317	MENDRE13.8	13.800	M1	7.8	-3.2	4.0	-4.0	1.0000	8.4	0.9241	35.3			1	6	
322	TURBA-250A	13.800	1	102.0	0.0	62.0	0.0	1.0190	100.1	1.0000	118.0			1	6	
323	TURBA-250B	13.800	2	102.0	0.0	62.0	0.0	1.0190	100.1	1.0000	118.0			1	6	
340	PEDGALITO138	13.800	P1	16.0	-5.0	12.0	-5.0	1.0622	15.8	0.9545	27.0			1	6	
516	PANAPOW13A	13.800	G1	15.5	0.5	12.5	0.5	1.0093	15.4	0.9994	20.9			1	6	
516	PANAPOW13A	13.800	G2	15.5	0.5	12.5	0.5	1.0093	15.4	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	0.5	12.5	0.5	1.0051	15.4	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.5	0.5	12.5	0.5	1.0051	15.4	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G6	15.5	0.5	12.5	0.5	1.0051	15.4	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G7	15.8	0.5	12.5	0.5	1.0051	15.7	0.9994	20.9			1	6	
518	PGREENP13A	13.800	E1	18.7	8.0	8.0	-5.0	0.9910	20.5	0.9194	20.6			1	6	
SUBSYSTEM TOTALS				1429.7	201.4	979.6	-385.8				2234.5					

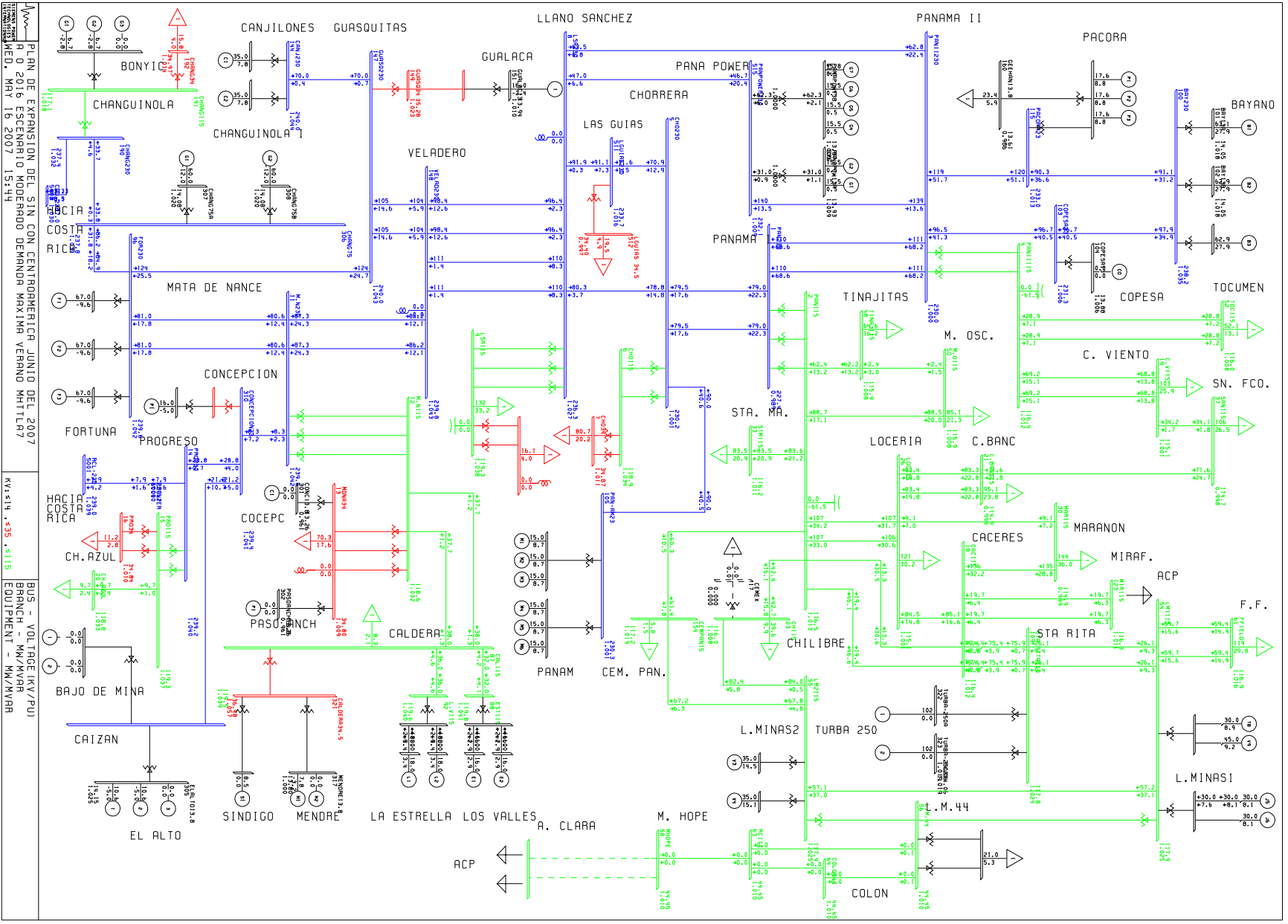
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 14:54  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTTLA7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	6.5	0.0	5.0	0.0	1.0528	6.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	6.5	0.0	5.0	0.0	1.0528	6.2	1.0000	13.5			2	7	
128		MIR13C		12.000	G3	15.9	7.2	11.0	0.0	1.0000	17.4	0.9112	29.4			2	7	
130		MIR13F		13.800	G5	9.4	2.2	8.0	0.0	1.0000	9.6	0.9741	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	0.7	6.0	-6.0	1.0000	9.7	0.9970	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	0.7	6.0	-6.0	1.0000	9.7	0.9970	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	0.7	6.0	-6.0	1.0000	9.7	0.9970	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.0	2.0	-2.0	1.0000	2.0	1.0000	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.0	2.0	-2.0	1.0000	2.0	1.0000	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.0	2.0	-2.0	1.0000	2.0	1.0000	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9831	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9831	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9831	6.2			2	7	
SUBSYSTEM TOTALS						84.9	9.5	62.0	-33.0				153.6					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 14:55  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHTTLA7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.2	224.5	-98.9	0.0	143.3	-97.5	147.3	
5	1344.6	1324.8	0.0	0.0	0.0	-0.3	20.0	0.0
C.RICA	237.2	569.4	-237.3	0.0	471.4	16.0	360.5	
6	1429.7	1293.9	0.0	0.0	0.0	101.3	34.5	25.0
PANAMA	201.4	324.3	-123.0	0.0	481.1	80.8	400.3	
7	84.9	43.9	0.0	0.0	0.0	39.4	1.6	50.0
ACANAL	9.5	11.0	0.0	0.0	0.0	-12.8	11.3	
9	0.0	139.9	0.0	0.0	0.0	-140.4	0.5	-75.0
COLON	0.0	35.1	0.0	0.0	1.1	-37.3	3.3	
TOTALS	6663.5	6529.3	0.0	0.0	0.0	0.0	134.2	0.0
	666.3	1986.7	-971.8	0.0	2032.5	0.0	1684.0	



PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 R 0 2016 ESCENARIO MODERADO DEMANDA MAXIMA VERANO MHT1A7  
 MAY 16 2007 15:44

KV-114 - 535 - 5115  
 BUS - VOLTAJE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÍNIMA EN VERANO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 15:16  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0325	237.47	3		PANII230		230.00	6	1.0358	238.22
5		CHO230		230.00	6	1.0366	238.41	8		LSA230		230.00	6	1.0365	238.40
11		M.N230		230.00	6	1.0375	238.62	14		PRO230		230.00	6	1.0392	239.01
96		FOR230		230.00	6	1.0402	239.24	100		BAY230		230.00	6	1.0402	239.25
103		COPESA23		230.00	6	1.0369	238.50	105		PAN-AM23		230.00	6	1.0366	238.42
115		PACORA23		230.00	6	1.0385	238.87	144		CANJ230		230.00	6	1.0419	239.63
147		GUASQ230		230.00	6	1.0418	239.61	148		VELAD230		230.00	6	1.0400	239.19
190		CHANG230		230.00	6	1.0356	238.18	306		CHANG75		230.00	6	1.0369	238.49
309		CAISAN230		230.00	6	1.0371	238.53	310		CONCEPCION23		230.00	6	1.0384	238.82
511		LGUIAS230		230.00	6	1.0388	238.92	515		PANPOWER230		230.00	6	1.0401	239.21
6000		FRONTER		230.00	6	1.0394	239.05								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 15:16  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0111	116.27	4		PANII115		115.00	6	1.0066	115.76
6		CHO115		115.00	6	1.0851	124.78	9		LSA115		115.00	6	1.0483	120.56
12		M.N115		115.00	6	1.0119	116.37	15		PRO115		115.00	6	1.0387	119.45
18		CAC115		115.00	6	1.0108	116.25	19		C.V115		115.00	6	1.0037	115.43
20		CH.AZUL		115.00	6	1.0377	119.33	21		C.BAN115		115.00	6	1.0057	115.66
23		CH115		115.00	6	1.0144	116.65	26		LOC115		115.00	6	1.0063	115.73
30		MAR115		115.00	6	1.0057	115.65	33		STM115		115.00	6	1.0102	116.17
37		SAN115		115.00	6	1.0049	115.57	48		TINAJ115		115.00	6	1.0094	116.08
50		M.O115		115.00	6	1.0095	116.10	52		TOC115		115.00	6	1.0052	115.60
54		LM1115		115.00	6	1.0253	117.91	55		LM2115		115.00	6	1.0256	117.95
61		FFIELD		115.00	9	1.0220	117.53	87		CAL115		115.00	6	1.0148	116.70
88		EST115		115.00	6	1.0150	116.72	92		L.V115		115.00	6	1.0149	116.71
109		STA RITA115		115.00	6	1.0237	117.73	110		PTMD115A		115.00	6	1.0189	117.17
111		PTMD115B		115.00	6	1.0189	117.17	123		MIR115		115.00	7	1.0107	116.23
154		CEMPAN15		115.00	6	1.0215	117.47	191		CHANG115		115.00	6	1.0229	117.64

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 15:16  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTTLA7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	30.0	13.8	17.0	0.0	1.0050	32.8	0.9088	47.0			1	6		
67		BLM13C		13.800	V3	30.0	13.8	17.0	0.0	1.0050	32.8	0.9088	47.0			1	6		
70		TGJB13A		13.800	J5	31.0	8.1	20.0	0.0	1.0000	32.0	0.9674	39.4			1	6		
71		TGJB13B		13.800	J6	31.0	8.1	20.0	0.0	1.0000	32.0	0.9674	39.4			1	6		
90		EST-13L		13.800	E1	16.0	-1.6	12.0	-5.0	0.9600	16.8	0.9949	27.0			1	6		
94		LV-13.8L		13.800	L1	18.0	-1.5	12.0	-5.0	0.9600	18.8	0.9966	27.0			1	6		
97		FOR13A		13.800	F1	66.7	-8.2	50.0	-50.0	1.0290	65.3	0.9926	111.0			1	6	SYST	
98		FOR13B		13.800	F2	66.7	-8.2	50.0	-50.0	1.0290	65.3	0.9926	111.0			1	6		
106		PANAM13A		13.800	M1	14.0	4.6	9.0	0.0	1.0300	14.3	0.9497	20.7			1	6		
106		PANAM13A		13.800	M2	14.0	4.6	9.0	0.0	1.0300	14.3	0.9497	20.7			1	6		
116		PACORA13		13.800	P1	15.0	2.9	8.8	0.0	1.0430	14.7	0.9816	21.7			1	6		
116		PACORA13		13.800	P2	15.0	2.9	8.8	0.0	1.0430	14.7	0.9816	21.7			1	6		
142		CANJ13A		13.800	C1	35.0	8.0	29.0	-29.0	1.0180	35.3	0.9746	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-2.2	10.0	-10.0	1.0100	16.0	0.9906	26.7			1	6		
193		GEBONYIC		13.800	G1	6.7	-3.6	4.0	-4.0	1.0000	7.6	0.8835	35.3			1	6		
193		GEBONYIC		13.800	G2	6.7	-3.6	4.0	-4.0	1.0000	7.6	0.8835	35.3			1	6		
303		SIND13.8		13.800	S1	8.5	1.6	5.0	0.0	1.0000	8.6	0.9833	13.5			1	6		
305		ELALTO13.8		13.800	1	10.6	-5.0	12.0	-5.0	1.0231	11.5	0.9044	20.6			1	6		
305		ELALTO13.8		13.800	2	10.6	-5.0	12.0	-5.0	1.0231	11.5	0.9044	20.6			1	6		
307		CHANG75A		13.800	G1	50.0	-15.4	22.0	-22.0	1.0200	51.3	0.9559	118.6			1	6		
317		MENDRE13.8		13.800	M1	7.8	1.6	4.0	-4.0	1.0000	8.0	0.9805	35.3			1	6		
340		PEDGALITO138		13.800	P1	16.0	-5.0	12.0	-5.0	1.0597	15.8	0.9545	27.0			1	6		
518		PGREENP13A		13.800	E1	18.7	4.8	8.0	-5.0	1.0000	19.3	0.9684	20.6			1	6		
SUBSYSTEM TOTALS						534.1	15.7	355.6	-203.0				956.1						

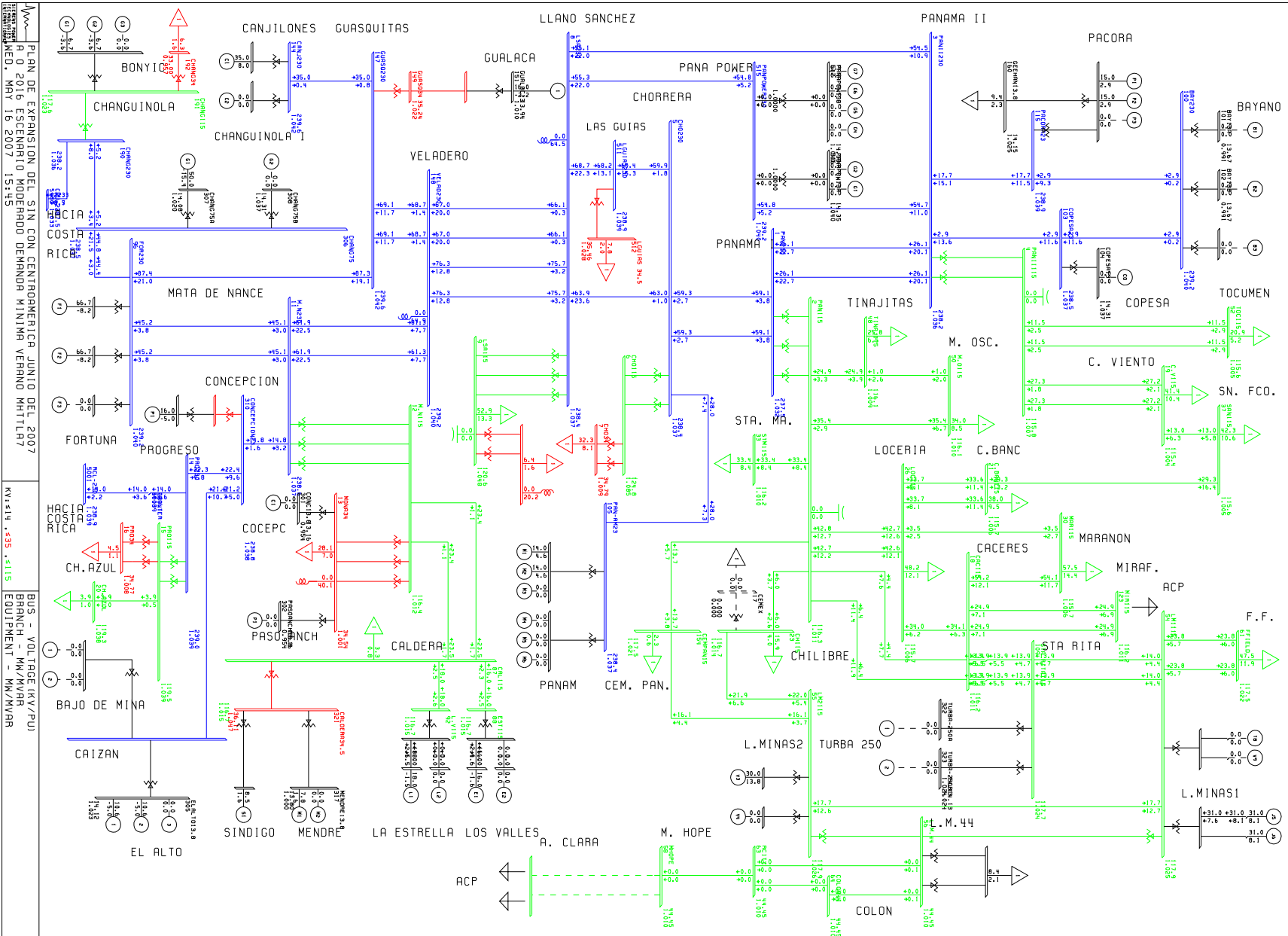
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 15:16  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTTLA7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	6.5	0.0	5.0	0.0	1.0510	6.2	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	6.5	0.0	5.0	0.0	1.0511	6.2	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	9.4	2.9	8.0	0.0	1.0000	9.9	0.9543	27.7			2	7		
134		MAD6A		6.9000	G1	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9969	13.0			2	7		
135		MAD6B		6.9000	G2	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9969	13.0			2	7		
136		MAD6C		6.9000	G3	9.7	0.8	6.0	-6.0	1.0000	9.7	0.9969	13.0			2	7		
140		GAT6A		6.9000	G1	2.0	-0.1	2.0	-2.0	1.0000	2.0	0.9992	4.1			2	7		
140		GAT6A		6.9000	G2	2.0	-0.1	2.0	-2.0	1.0000	2.0	0.9992	4.1			2	7		
140		GAT6A		6.9000	G3	2.0	-0.1	2.0	-2.0	1.0000	2.0	0.9992	4.1			2	7		
141		GAT6B		6.9000	G4	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9782	5.6			2	7		
141		GAT6B		6.9000	G5	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9782	6.2			2	7		
141		GAT6B		6.9000	G6	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9782	6.2			2	7		
SUBSYSTEM TOTALS						69.0	2.5	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, MAY 14 2007 15:16  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007 AREA TOTALS  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO MHTTLA7 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.2	224.5	-98.9	0.0	143.3	-97.5	147.3	
5	1345.0	1324.8	0.0	0.0	0.0	0.6	19.6	0.0
C.RICA	235.2	569.4	-236.6	0.0	471.5	15.4	358.5	
6	534.1	517.5	0.0	0.0	0.0	5.6	10.9	25.0
PANAMA	15.7	129.7	189.7	0.0	489.4	59.0	126.8	
7	69.0	17.6	0.0	0.0	0.0	49.8	1.7	50.0
ACANAL	2.5	4.4	0.0	0.0	0.0	-14.3	12.4	
9	0.0	56.0	0.0	0.0	0.0	-56.0	0.1	-75.0
COLON	0.0	14.0	0.0	0.0	1.1	-13.4	0.5	
TOTALS	5752.4	5642.6	0.0	0.0	0.0	0.0	109.8	0.0
	471.8	1764.4	-658.4	0.0	2041.0	0.0	1406.7	



PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 R 0 2016 ESCENARIO MODERADO DEMANDA MINIMA VERANO WHITLBR7  
 MAY 16 2007 15:45

KV:514 .555 .5115

BUS - VOLTAGE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Pacora-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E            WED, MAY 16 2007 14:03  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0098	232.26	11		M.N230		230.00	6	1.0326	237.50

14	PRO230	230.00	6	1.0296	236.80	96	FOR230	230.00	6	1.0338	237.78
100	BAY230	230.00	6	1.0430	239.88	115	PACORA23	230.00	6	1.0464	240.66
144	CANJ230	230.00	6	1.0331	237.62	147	GUASQ230	230.00	6	1.0329	237.57
148	VELAD230	230.00	6	1.0263	236.04	190	CHANG230	230.00	6	1.0302	236.94
306	CHANG75	230.00	6	1.0319	237.34	309	CAISAN230	230.00	6	1.0262	236.03
310	CONCEPCION23	230.00	6	1.0300	236.89	6000	FRONTER	230.00	6	1.0299	236.87

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9769	224.68	3	PANII230	230.00	6	0.9872	227.05
5	CHO230	230.00	6	0.9857	226.72	103	COPESA23	230.00	6	0.9945	228.73
105	PAN-AM23	230.00	6	0.9859	226.76	511	LGUIAS230	230.00	6	0.9974	229.40
515	PANPOWER230	230.00	6	0.9954	228.93						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 14:03  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0120	116.38	4	PANII115	115.00	6	1.0144	116.65
6	CHO115	115.00	6	1.0173	116.98	9	LSA115	115.00	6	1.0314	118.61
12	M.N115	115.00	6	1.0320	118.68	15	PRO115	115.00	6	1.0268	118.08
18	CAC115	115.00	6	1.0110	116.27	19	C.V115	115.00	6	1.0024	115.28
20	CH.AZUL	115.00	6	1.0230	117.64	23	CHI115	115.00	6	1.0074	115.86
26	LOC115	115.00	6	1.0002	115.02	33	STM115	115.00	6	1.0098	116.13
48	TINAJ115	115.00	6	1.0070	115.80	50	M.O115	115.00	6	1.0074	115.85
52	TOC115	115.00	6	1.0108	116.24	54	LM115	115.00	6	1.0198	117.28
55	LM2115	115.00	6	1.0200	117.30	61	FFIELD	115.00	9	1.0112	116.29
87	CAL115	115.00	6	1.0467	120.37	88	EST115	115.00	6	1.0498	120.73
92	L.V115	115.00	6	1.0483	120.56	109	STA RITA115	115.00	6	1.0196	117.26
110	PTMD115A	115.00	6	1.0169	116.94	111	PTMD115B	115.00	6	1.0169	116.94
123	MIR115	115.00	7	1.0097	116.12	154	CEMPAN15	115.00	6	1.0170	116.96
191	CHANG115	115.00	6	1.0165	116.90						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
21	C.BAN115	115.00	6	0.9988	114.86	30	MAR115	115.00	6	0.9982	114.79
37	SAN115	115.00	6	0.9975	114.71						

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	35.0	16.6	17.0	0.0	1.0050	38.5	0.9039	47.0			1	6	
67	BLM13C	13.800	V3	35.0	16.6	17.0	0.0	1.0050	38.5	0.9039	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	9.4	20.0	0.0	1.0000	31.4	0.9542	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	9.4	20.0	0.0	1.0000	31.4	0.9542	39.4			1	6	
73	BLMCCB	13.800	V9	28.0	14.3	40.0	0.0	1.0000	31.4	0.8909	71.0			1	6	
90	EST-13L	13.800	E1	19.0	5.3	12.0	-5.0	1.0150	19.4	0.9635	27.0			1	6	
91	EST-13T	13.800	E2	19.0	5.3	12.0	-5.0	1.0150	19.4	0.9635	27.0			1	6	
94	LV-13.8L	13.800	L1	20.0	9.3	12.0	-5.0	1.0260	21.5	0.9072	27.0			1	6	
95	LV-13.8T	13.800	L2	20.0	9.3	12.0	-5.0	1.0260	21.5	0.9072	27.0			1	6	
97	FOR13A	13.800	F1	80.0	-1.2	50.0	-50.0	1.0290	77.8	0.9999	111.0			1	6	
98	FOR13B	13.800	F2	80.0	-1.2	50.0	-50.0	1.0290	77.8	0.9999	111.0			1	6	
99	FOR13C	13.800	F3	80.0	-1.2	50.0	-50.0	1.0290	77.8	0.9999	111.0			1	6	
101	BAY13A	13.800	B1	85.8	24.3	50.0	-25.0	1.0180	87.6	0.9620	96.0			1	6	SYST
102	BAY13B	13.800	B2	82.2	23.9	50.0	-25.0	1.0180	84.1	0.9600	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	9.0	9.0	0.0	1.0176	17.2	0.8575	20.7			1	6	
106	PANAM13A	13.800	M2	15.0	9.0	9.0	0.0	1.0176	17.2	0.8575	20.7			1	6	
106	PANAM13A	13.800	M3	15.0	9.0	9.0	0.0	1.0176	17.2	0.8575	20.7			1	6	
107	PANAM13B	13.800	M4	15.0	9.0	9.0	0.0	1.0176	17.2	0.8575	20.7			1	6	
107	PANAM13B	13.800	M5	15.0	9.0	9.0	0.0	1.0176	17.2	0.8575	20.7			1	6	
107	PANAM13B	13.800	M6	15.0	9.0	9.0	0.0	1.0176	17.2	0.8575	20.7			1	6	
108	BAY13C	13.800	B3	82.2	23.9	50.0	-25.0	1.0180	84.1	0.9600	100.0			1	6	
116	PACORA13	13.800	P1	17.6	3.0	8.8	0.0	1.0430	17.1	0.9862	21.7			1	6	
116	PACORA13	13.800	P2	17.6	3.0	8.8	0.0	1.0430	17.1	0.9862	21.7			1	6	
116	PACORA13	13.800	P3	17.6	3.0	8.8	0.0	1.0430	17.1	0.9862	21.7			1	6	
142	CANJ13A	13.800	C1	37.0	9.9	29.0	-29.0	1.0180	37.6	0.9660	69.0			1	6	
143	CANJ13B	13.800	C2	37.0	9.9	29.0	-29.0	1.0180	37.6	0.9660	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-1.4	10.0	-10.0	1.0100	15.9	0.9962	26.7			1	6	
193	GEBOYIC	13.800	G1	5.0	-1.7	4.0	-4.0	1.0000	5.3	0.9495	35.3			1	6	
193	GEBOYIC	13.800	G2	5.0	-1.7	4.0	-4.0	1.0000	5.3	0.9495	35.3			1	6	
193	GEBOYIC	13.800	G3	5.0	-1.7	4.0	-4.0	1.0000	5.3	0.9495	35.3			1	6	
204	BJOMIN13	13.800	1	14.0	-9.1	13.0	-13.0	1.0000	16.7	0.8379	28.9			1	6	
204	BJOMIN13	13.800	2	14.0	-9.1	13.0	-13.0	1.0000	16.7	0.8379	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9611	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9593	5.1	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0099	8.4	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	10.6	-1.3	12.0	-5.0	1.0200	10.5	0.9927	20.6			1	6	
305	ELALTO13.8	13.800	2	10.6	-1.3	12.0	-5.0	1.0200	10.5	0.9927	20.6			1	6	
305	ELALTO13.8	13.800	3	10.6	-1.3	12.0	-5.0	1.0200	10.5	0.9927	20.6			1	6	
307	CHANG75A	13.800	G1	77.0	-8.8	22.0	-22.0	1.0200	76.0	0.9936	118.6			1	6	
308	CHANG75B	13.800	G2	77.0	-8.8	50.0	-22.0	1.0200	76.0	0.9936	118.6			1	6	
317	MENDRE13.8	13.800	M1	7.5	-2.3	4.0	-4.0	1.0000	7.8	0.9577	35.3			1	6	
317	MENDRE13.8	13.800	M2	7.5	-2.3	4.0	-4.0	1.0000	7.8	0.9577	35.3			1	6	
322	TURBA-250A	13.800	1	90.0	0.0	62.0	0.0	1.0156	88.6	1.0000	118.0			1	6	
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0500	17.8	0.9635	27.0			1	6	
516	PANAPOW13A	13.800	G1	15.5	1.6	12.5	0.5	1.0000	15.6	0.9947	20.9			1	6	
516	PANAPOW13A	13.800	G2	15.5	1.6	12.5	0.5	1.0000	15.6	0.9947	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	1.6	12.5	0.5	1.0000	15.6	0.9947	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.5	1.6	12.5	0.5	1.0000	15.6	0.9947	20.9			1	6	
518	PGREENP13A	13.800	E1	18.0	8.0	8.0	-5.0	0.9928	19.8	0.9138	20.6			1	6	
518	PGREENP13A	13.800	E2	18.0	8.0	8.0	-5.0	0.9928	19.8	0.9138	20.6			1	6	
518	PGREENP13A	13.800	E3	18.0	8.0	8.0	-5.0	0.9928	19.8	0.9138	20.6			1	6	
518	PGREENP13A	13.800	E4	18.0	8.0	8.0	-5.0	0.9928	19.8	0.9138	20.6			1	6	



SUBSYSTEM TOTALS                    1466.8    236.6    932.6    -447.9                    2208.3

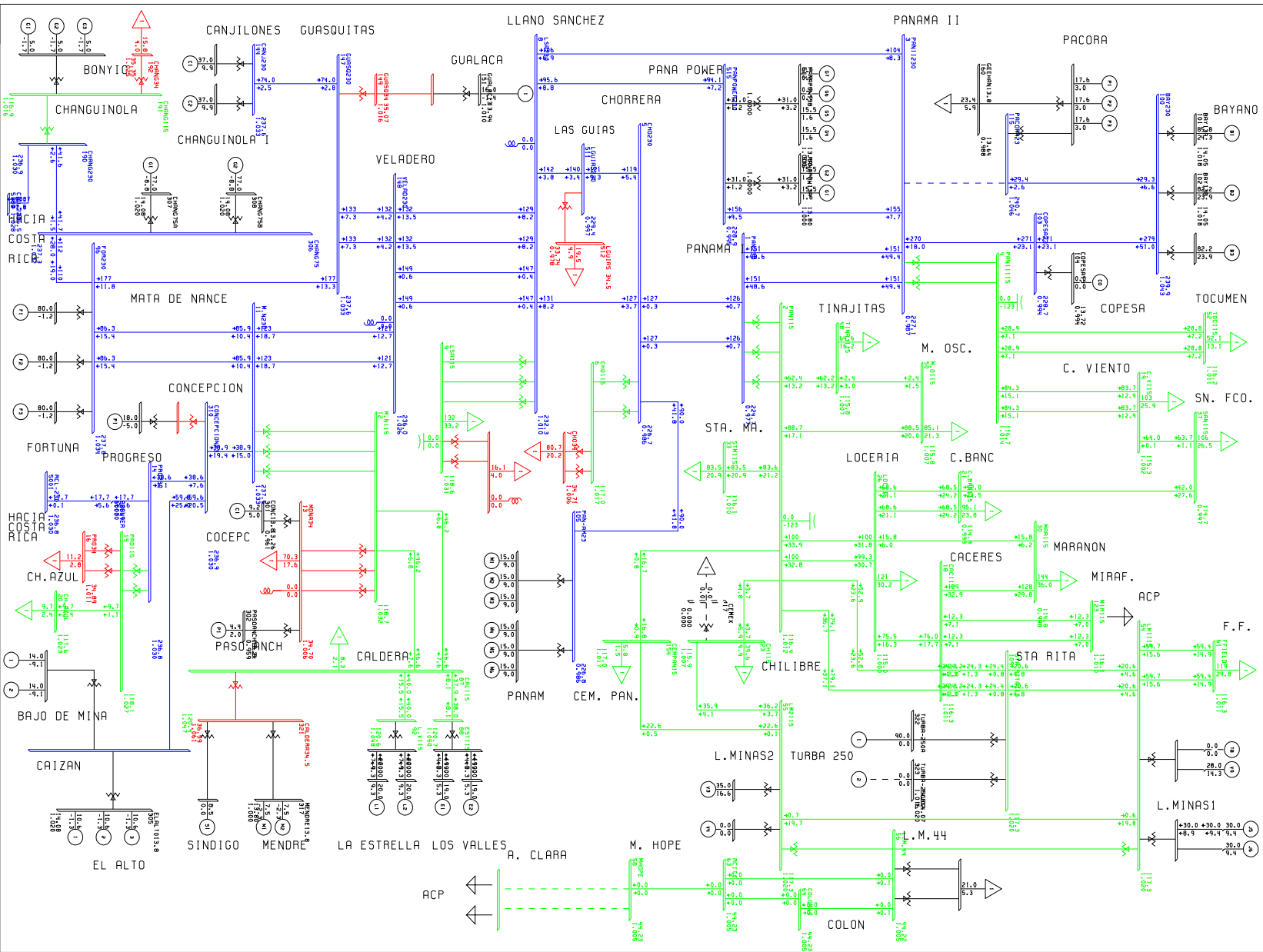
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E            WED, MAY 16 2007 14:04  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 7 [ACANAL            ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	6.5	0.0	5.0	0.0	1.0477	6.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	6.5	0.0	5.0	0.0	1.0477	6.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.4	4.4	8.0	0.0	1.0000	11.3	0.9198	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9944	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9945	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9945	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9989	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9989	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9989	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9865	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9865	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9865	6.2			2	7	
SUBSYSTEM TOTALS						70.0	5.9	51.0	-33.0				124.2					

PLAN DE EXPANSION DEL SIN CON CENTROEMERITA JUNIO DEL 2007  
 R 0 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO WHITLAF

KV:514 .535 .5115

BUS - VOLTAGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Panamá I-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      WED, MAY 16 2007 14:19  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0181	234.16	5		CHO230		230.00	6	1.0039	230.89

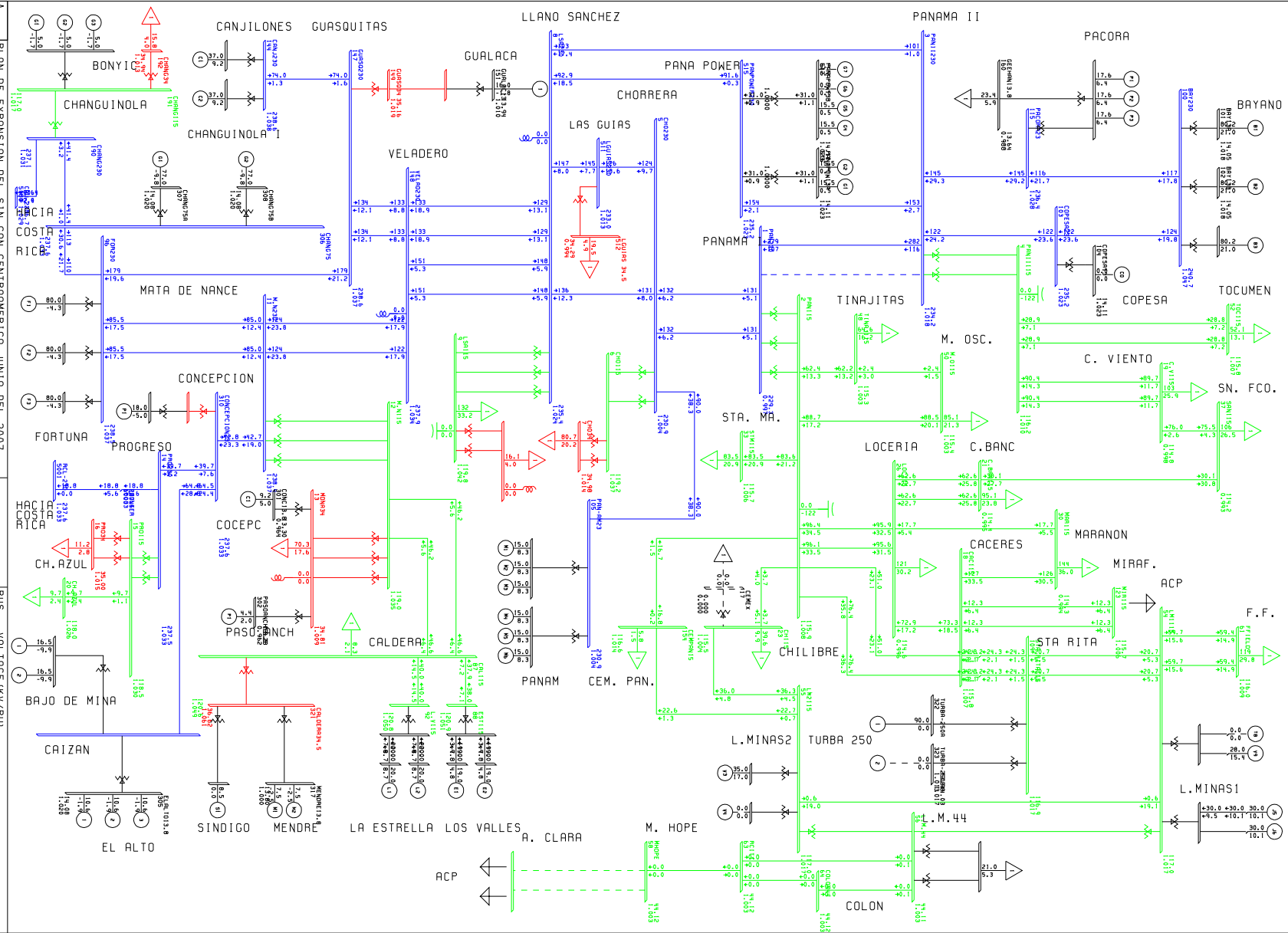


AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	35.0	17.0	17.0	0.0	1.0035	38.8	0.8995	47.0			1	6	
67	BLM13C	13.800	V3	35.0	17.0	17.0	0.0	1.0035	38.8	0.8995	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	10.1	20.0	0.0	1.0000	31.6	0.9480	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	10.1	20.0	0.0	1.0000	31.6	0.9480	39.4			1	6	
73	BLMCCB	13.800	V9	28.0	15.4	40.0	0.0	1.0000	32.0	0.8759	71.0			1	6	
90	EST-13L	13.800	E1	19.0	4.8	12.0	-5.0	1.0150	19.3	0.9697	27.0			1	6	
91	EST-13T	13.800	E2	19.0	4.8	12.0	-5.0	1.0150	19.3	0.9697	27.0			1	6	
94	LV-13.8L	13.800	L1	20.0	8.7	12.0	-5.0	1.0260	21.3	0.9163	27.0			1	6	
95	LV-13.8T	13.800	L2	20.0	8.7	12.0	-5.0	1.0260	21.3	0.9163	27.0			1	6	
97	FOR13A	13.800	F1	80.0	-4.3	50.0	-50.0	1.0290	77.9	0.9986	111.0			1	6	
98	FOR13B	13.800	F2	80.0	-4.3	50.0	-50.0	1.0290	77.9	0.9986	111.0			1	6	
99	FOR13C	13.800	F3	80.0	-4.3	50.0	-50.0	1.0290	77.9	0.9986	111.0			1	6	
101	BAY13A	13.800	B1	80.2	21.0	50.0	-25.0	1.0180	81.5	0.9673	96.0			1	6	SYST
102	BAY13B	13.800	B2	80.2	21.0	50.0	-25.0	1.0180	81.5	0.9673	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	8.3	9.0	0.0	1.0300	16.6	0.8751	20.7			1	6	
106	PANAM13A	13.800	M2	15.0	8.3	9.0	0.0	1.0300	16.6	0.8751	20.7			1	6	
106	PANAM13A	13.800	M3	15.0	8.3	9.0	0.0	1.0300	16.6	0.8751	20.7			1	6	
107	PANAM13B	13.800	M4	15.0	8.3	9.0	0.0	1.0300	16.6	0.8751	20.7			1	6	
107	PANAM13B	13.800	M5	15.0	8.3	9.0	0.0	1.0300	16.6	0.8751	20.7			1	6	
107	PANAM13B	13.800	M6	15.0	8.3	9.0	0.0	1.0300	16.6	0.8751	20.7			1	6	
108	BAY13C	13.800	B3	80.2	21.0	50.0	-25.0	1.0180	81.5	0.9673	100.0			1	6	
116	PACORA13	13.800	P1	17.6	6.4	8.8	0.0	1.0430	18.0	0.9396	21.7			1	6	
116	PACORA13	13.800	P2	17.6	6.4	8.8	0.0	1.0430	18.0	0.9396	21.7			1	6	
116	PACORA13	13.800	P3	17.6	6.4	8.8	0.0	1.0430	18.0	0.9396	21.7			1	6	
142	CANJ13A	13.800	C1	37.0	9.2	29.0	-29.0	1.0180	37.4	0.9705	69.0			1	6	
143	CANJ13B	13.800	C2	37.0	9.2	29.0	-29.0	1.0180	37.4	0.9705	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-1.8	10.0	-10.0	1.0100	15.9	0.9937	26.7			1	6	
193	GEBOYIC	13.800	G1	5.0	-1.7	4.0	-4.0	1.0000	5.3	0.9457	35.3			1	6	
193	GEBOYIC	13.800	G2	5.0	-1.7	4.0	-4.0	1.0000	5.3	0.9457	35.3			1	6	
193	GEBOYIC	13.800	G3	5.0	-1.7	4.0	-4.0	1.0000	5.3	0.9457	35.3			1	6	
204	BJOMIN13	13.800	1	16.5	-9.9	13.0	-13.0	1.0000	19.2	0.8585	28.9			1	6	
204	BJOMIN13	13.800	2	16.5	-9.9	13.0	-13.0	1.0000	19.2	0.8585	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9640	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9621	5.0	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0108	8.4	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	10.6	-1.9	12.0	-5.0	1.0200	10.6	0.9850	20.6			1	6	
305	ELALTO13.8	13.800	2	10.6	-1.9	12.0	-5.0	1.0200	10.6	0.9850	20.6			1	6	
305	ELALTO13.8	13.800	3	10.6	-1.9	12.0	-5.0	1.0200	10.6	0.9850	20.6			1	6	
307	CHANG75A	13.800	G1	77.0	-9.8	22.0	-22.0	1.0200	76.1	0.9921	118.6			1	6	
308	CHANG75B	13.800	G2	77.0	-9.8	50.0	-22.0	1.0200	76.1	0.9921	118.6			1	6	
317	MENDRE13.8	13.800	M1	7.5	-2.5	4.0	-4.0	1.0000	7.9	0.9500	35.3			1	6	
317	MENDRE13.8	13.800	M2	7.5	-2.5	4.0	-4.0	1.0000	7.9	0.9500	35.3			1	6	
322	TURBA-250A	13.800	1	90.0	0.0	62.0	0.0	1.0129	88.9	1.0000	118.0			1	6	
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0535	17.7	0.9635	27.0			1	6	
516	PANAPOW13A	13.800	G1	15.5	0.5	12.5	0.5	1.0227	15.2	0.9994	20.9			1	6	
516	PANAPOW13A	13.800	G2	15.5	0.5	12.5	0.5	1.0227	15.2	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	0.5	12.5	0.5	1.0227	15.2	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.5	0.5	12.5	0.5	1.0227	15.2	0.9994	20.9			1	6	
518	PGREENP13A	13.800	E1	18.0	6.0	8.0	-5.0	1.0000	19.0	0.9485	20.6			1	6	
518	PGREENP13A	13.800	E2	18.0	6.0	8.0	-5.0	1.0000	19.0	0.9485	20.6			1	6	
518	PGREENP13A	13.800	E3	18.0	6.0	8.0	-5.0	1.0000	19.0	0.9485	20.6			1	6	
518	PGREENP13A	13.800	E4	18.0	6.0	8.0	-5.0	1.0000	19.0	0.9485	20.6			1	6	



PLAN DE EXPANSION DEL SIN CON CENTRABOMBA JUNIO DEL 2007  
 a 0 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTLAT7  
 MED. MAY 16 2007 14:55  
 BUS - VOLTAGETIK/PU  
 BRANCH - MW/MVAR  
 EQUIPMENT - MN/MVAR  
 KY:514 .335 .5115



**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Pana Power-Panamá II**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      WED, MAY 16 2007 15:14  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0058	231.33	11		M.N230		230.00	6	1.0309	237.10
14		PRO230		230.00	6	1.0282	236.48	96		FOR230		230.00	6	1.0324	237.45
100		BAY230		230.00	6	1.0276	236.35	115		PACORA23		230.00	6	1.0006	230.15



144 CANJ230	230.00	6	1.0313	237.19	147 GUASQ230	230.00	6	1.0310	237.14
148 VELAD230	230.00	6	1.0232	235.33	190 CHANG230	230.00	6	1.0298	236.85
306 CHANG75	230.00	6	1.0315	237.24	309 CAISAN230	230.00	6	1.0254	235.84
310 CONCEPCION230	230.00	6	1.0286	236.58	515 PANPOWER230	230.00	6	1.0317	237.29
6000 FRONTER	230.00	6	1.0285	236.55					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9735	223.91	3		PANII230		230.00	6	0.9862	226.83
5		CHO230		230.00	6	0.9781	224.95	103		COPESA23		230.00	6	0.9927	228.32
105		PAN-AM23		230.00	6	0.9783	225.00	511		LGUIAS230		230.00	6	0.9882	227.28

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 15:14  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0077	115.89	4		PANIII115		115.00	6	1.0035	115.40
6		CHO115		115.00	6	1.0090	116.04	9		LSA115		115.00	6	1.0272	118.13
12		M.N115		115.00	6	1.0308	118.54	15		PRO115		115.00	6	1.0254	117.93
18		CAC115		115.00	6	1.0068	115.78	20		CH.AZUL		115.00	6	1.0216	117.48
23		CH115		115.00	6	1.0038	115.43	33		STM115		115.00	6	1.0056	115.64
48		TINAJ115		115.00	6	1.0027	115.31	50		M.O115		115.00	6	1.0031	115.35
54		LM1115		115.00	6	1.0170	116.96	55		LM2115		115.00	6	1.0172	116.98
61		FFIELD		115.00	9	1.0084	115.97	87		CAL115		115.00	6	1.0460	120.28
88		EST115		115.00	6	1.0491	120.65	92		L.V115		115.00	6	1.0476	120.47
109		STA RITA115		115.00	6	1.0167	116.92	110		PTMD115A		115.00	6	1.0133	116.53
111		PTMD115B		115.00	6	1.0133	116.53	123		MIR115		115.00	7	1.0057	115.66
154		CEMPAN15		115.00	6	1.0138	116.59	191		CHANG115		115.00	6	1.0162	116.86

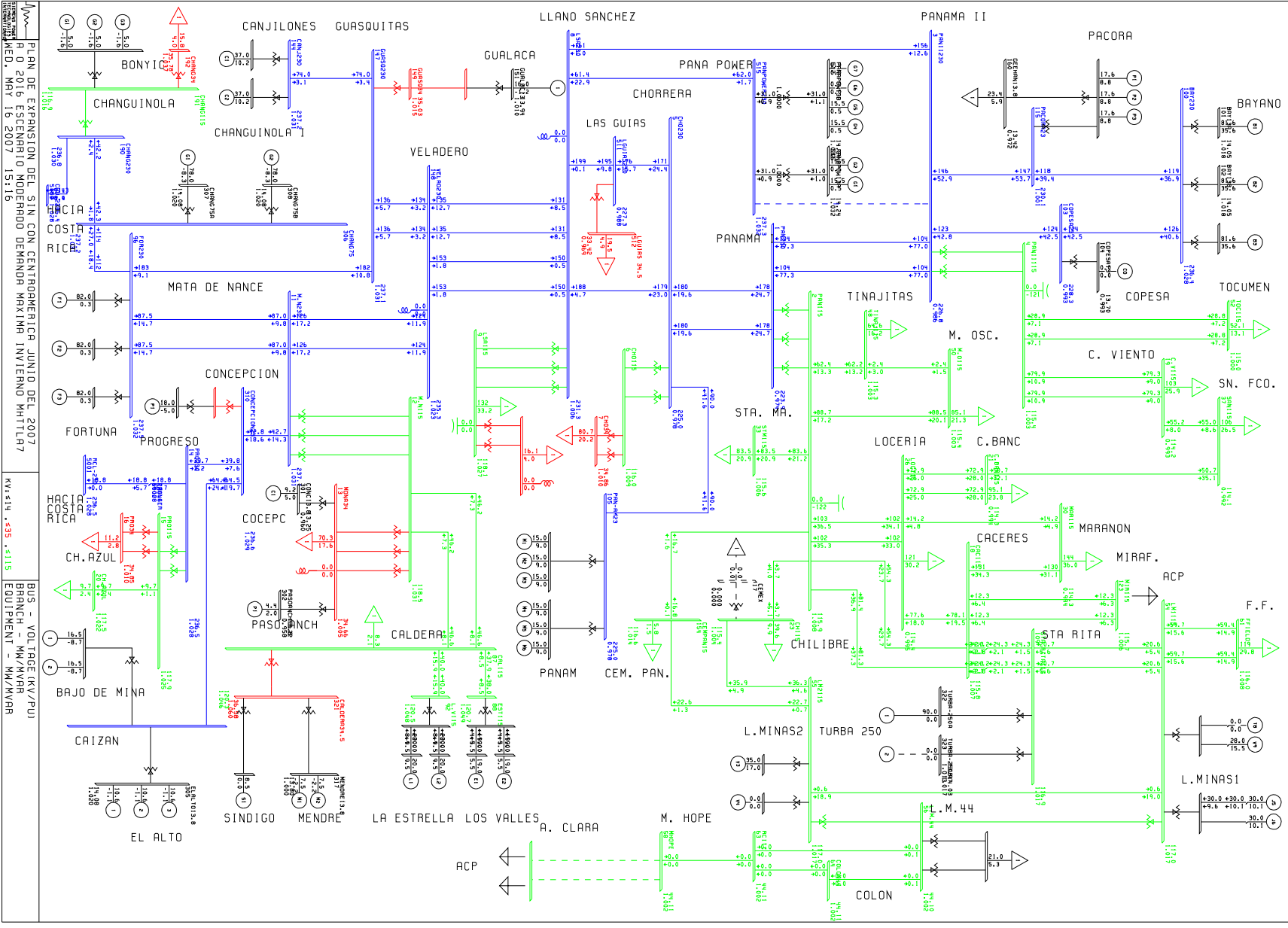
BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
19		C.V115		115.00	6	0.9933	114.23	21		C.BAN115		115.00	6	0.9936	114.26
26		LOC115		115.00	6	0.9952	114.45	30		MAR115		115.00	6	0.9935	114.25
37		SAN115		115.00	6	0.9919	114.07	52		TOC115		115.00	6	0.9998	114.98

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	35.0	17.0	17.0	0.0	1.0034	38.8	0.8995	47.0			1	6	
67	BLM13C	13.800	V3	35.0	17.0	17.0	0.0	1.0034	38.8	0.8995	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	10.1	20.0	0.0	1.0000	31.7	0.9476	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	10.1	20.0	0.0	1.0000	31.7	0.9476	39.4			1	6	
73	BLMCCB	13.800	V9	28.0	15.5	40.0	0.0	1.0000	32.0	0.8747	71.0			1	6	
90	EST-13L	13.800	E1	19.0	5.5	12.0	-5.0	1.0150	19.5	0.9608	27.0			1	6	
91	EST-13T	13.800	E2	19.0	5.5	12.0	-5.0	1.0150	19.5	0.9608	27.0			1	6	
94	LV-13.8L	13.800	L1	20.0	9.5	12.0	-5.0	1.0260	21.6	0.9033	27.0			1	6	
95	LV-13.8T	13.800	L2	20.0	9.5	12.0	-5.0	1.0260	21.6	0.9033	27.0			1	6	
97	FOR13A	13.800	F1	82.0	0.3	50.0	-50.0	1.0290	79.7	1.0000	111.0			1	6	
98	FOR13B	13.800	F2	82.0	0.3	50.0	-50.0	1.0290	79.7	1.0000	111.0			1	6	
99	FOR13C	13.800	F3	82.0	0.3	50.0	-50.0	1.0290	79.7	1.0000	111.0			1	6	
101	BAY13A	13.800	B1	81.6	35.6	50.0	-25.0	1.0180	87.5	0.9166	96.0			1	6	SYST
102	BAY13B	13.800	B2	81.6	35.6	50.0	-25.0	1.0180	87.5	0.9166	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	9.0	9.0	0.0	1.0104	17.3	0.8575	20.7			1	6	
106	PANAM13A	13.800	M2	15.0	9.0	9.0	0.0	1.0104	17.3	0.8575	20.7			1	6	
106	PANAM13A	13.800	M3	15.0	9.0	9.0	0.0	1.0104	17.3	0.8575	20.7			1	6	
107	PANAM13B	13.800	M4	15.0	9.0	9.0	0.0	1.0104	17.3	0.8575	20.7			1	6	
107	PANAM13B	13.800	M5	15.0	9.0	9.0	0.0	1.0104	17.3	0.8575	20.7			1	6	
107	PANAM13B	13.800	M6	15.0	9.0	9.0	0.0	1.0104	17.3	0.8575	20.7			1	6	
108	BAY13C	13.800	B3	81.6	35.6	50.0	-25.0	1.0180	87.5	0.9166	100.0			1	6	
116	PACORA13	13.800	P1	17.6	8.8	8.8	0.0	1.0286	19.1	0.8938	21.7			1	6	
116	PACORA13	13.800	P2	17.6	8.8	8.8	0.0	1.0286	19.1	0.8938	21.7			1	6	
116	PACORA13	13.800	P3	17.6	8.8	8.8	0.0	1.0286	19.1	0.8938	21.7			1	6	
142	CANJ13A	13.800	C1	37.0	10.2	29.0	-29.0	1.0180	37.7	0.9640	69.0			1	6	
143	CANJ13B	13.800	C2	37.0	10.2	29.0	-29.0	1.0180	37.7	0.9640	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-1.2	10.0	-10.0	1.0100	15.9	0.9971	26.7			1	6	
193	GEBONYIC	13.800	G1	5.0	-1.6	4.0	-4.0	1.0000	5.3	0.9511	35.3			1	6	
193	GEBONYIC	13.800	G2	5.0	-1.6	4.0	-4.0	1.0000	5.3	0.9511	35.3			1	6	
193	GEBONYIC	13.800	G3	5.0	-1.6	4.0	-4.0	1.0000	5.3	0.9511	35.3			1	6	
204	BJOMIN13	13.800	1	16.5	-8.7	13.0	-13.0	1.0000	18.7	0.8839	28.9			1	6	
204	BJOMIN13	13.800	2	16.5	-8.7	13.0	-13.0	1.0000	18.7	0.8839	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9599	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9581	5.1	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0095	8.4	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	10.6	-1.1	12.0	-5.0	1.0200	10.4	0.9947	20.6			1	6	
305	ELALTO13.8	13.800	2	10.6	-1.1	12.0	-5.0	1.0200	10.4	0.9947	20.6			1	6	
305	ELALTO13.8	13.800	3	10.6	-1.1	12.0	-5.0	1.0200	10.4	0.9947	20.6			1	6	
307	CHANG75A	13.800	G1	78.0	-8.3	22.0	-22.0	1.0200	76.9	0.9944	118.6			1	6	
308	CHANG75B	13.800	G2	78.0	-8.3	50.0	-22.0	1.0200	76.9	0.9944	118.6			1	6	
317	MENDRE13.8	13.800	M1	7.5	-2.2	4.0	-4.0	1.0000	7.8	0.9608	35.3			1	6	
317	MENDRE13.8	13.800	M2	7.5	-2.2	4.0	-4.0	1.0000	7.8	0.9608	35.3			1	6	
322	TURBA-250A	13.800	1	90.0	0.0	62.0	0.0	1.0127	88.9	1.0000	118.0			1	6	
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0486	17.8	0.9635	27.0			1	6	
516	PANAPOW13A	13.800	G1	15.5	0.5	12.5	0.5	1.0319	15.0	0.9994	20.9			1	6	
516	PANAPOW13A	13.800	G2	15.5	0.5	12.5	0.5	1.0319	15.0	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	0.5	12.5	0.5	1.0319	15.0	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.5	0.5	12.5	0.5	1.0319	15.0	0.9994	20.9			1	6	
518	PGREENP13A	13.800	E1	18.0	8.0	8.0	-5.0	0.9888	19.9	0.9138	20.6			1	6	
518	PGREENP13A	13.800	E2	18.0	8.0	8.0	-5.0	0.9888	19.9	0.9138	20.6			1	6	
518	PGREENP13A	13.800	E3	18.0	8.0	8.0	-5.0	0.9888	19.9	0.9138	20.6			1	6	
518	PGREENP13A	13.800	E4	18.0	8.0	8.0	-5.0	0.9888	19.9	0.9138	20.6			1	6	





PLAN DE EXPANSION DEL SIN CON CENTROGRFICA JUNIO DEL 2007  
 A 0 2016 ESCENARIO MODERADO MEXIYHA INVIERNO HATLLANZ  
 MED. MAY 16 2007 15:16

KV: 114 - 455 - 5115

BUS - VOLTAGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia Guasquitas-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 15:22  
PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0017	230.39	3		PANII230		230.00	6	1.0136	233.13
5		CHO230		230.00	6	1.0067	231.54	8		LSA230		230.00	6	1.0196	234.50
11		M.N230		230.00	6	1.0319	237.34	14		PRO230		230.00	6	1.0288	236.62

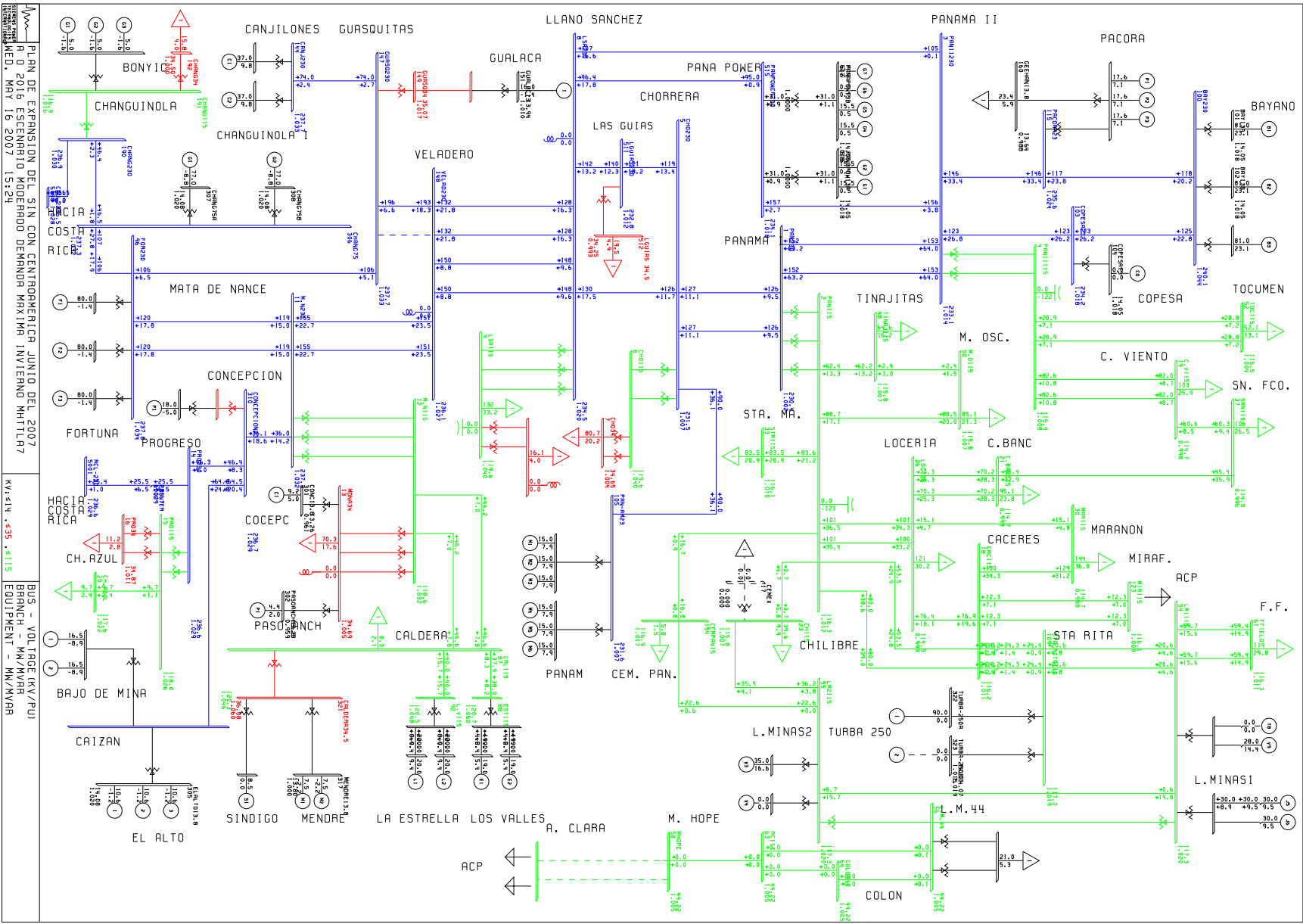


AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	35.0	16.6	17.0	0.0	1.0050	38.6	0.9031	47.0			1	6	
67	BLM13C	13.800	V3	35.0	16.6	17.0	0.0	1.0050	38.6	0.9031	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	9.5	20.0	0.0	1.0000	31.5	0.9538	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	9.5	20.0	0.0	1.0000	31.5	0.9538	39.4			1	6	
73	BLMCCB	13.800	V9	28.0	14.4	40.0	0.0	1.0000	31.5	0.8899	71.0			1	6	
90	EST-13L	13.800	E1	19.0	5.4	12.0	-5.0	1.0150	19.5	0.9624	27.0			1	6	
91	EST-13T	13.800	E2	19.0	5.4	12.0	-5.0	1.0150	19.5	0.9624	27.0			1	6	
94	LV-13.8L	13.800	L1	20.0	9.4	12.0	-5.0	1.0260	21.5	0.9056	27.0			1	6	
95	LV-13.8T	13.800	L2	20.0	9.4	12.0	-5.0	1.0260	21.5	0.9056	27.0			1	6	
97	FOR13A	13.800	F1	80.0	-1.4	50.0	-50.0	1.0290	77.8	0.9998	111.0			1	6	
98	FOR13B	13.800	F2	80.0	-1.4	50.0	-50.0	1.0290	77.8	0.9998	111.0			1	6	
99	FOR13C	13.800	F3	80.0	-1.4	50.0	-50.0	1.0290	77.8	0.9998	111.0			1	6	
101	BAY13A	13.800	B1	81.0	23.1	50.0	-25.0	1.0180	82.7	0.9617	96.0			1	6	SYST
102	BAY13B	13.800	B2	80.9	23.1	50.0	-25.0	1.0180	82.7	0.9617	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	7.9	9.0	0.0	1.0300	16.5	0.8851	20.7			1	6	
106	PANAM13A	13.800	M2	15.0	7.9	9.0	0.0	1.0300	16.5	0.8851	20.7			1	6	
106	PANAM13A	13.800	M3	15.0	7.9	9.0	0.0	1.0300	16.5	0.8851	20.7			1	6	
107	PANAM13B	13.800	M4	15.0	7.9	9.0	0.0	1.0300	16.5	0.8851	20.7			1	6	
107	PANAM13B	13.800	M5	15.0	7.9	9.0	0.0	1.0300	16.5	0.8851	20.7			1	6	
107	PANAM13B	13.800	M6	15.0	7.9	9.0	0.0	1.0300	16.5	0.8851	20.7			1	6	
108	BAY13C	13.800	B3	80.9	23.1	50.0	-25.0	1.0180	82.7	0.9617	100.0			1	6	
116	PACORA13	13.800	P1	17.6	7.1	8.8	0.0	1.0430	18.2	0.9272	21.7			1	6	
116	PACORA13	13.800	P2	17.6	7.1	8.8	0.0	1.0430	18.2	0.9272	21.7			1	6	
116	PACORA13	13.800	P3	17.6	7.1	8.8	0.0	1.0430	18.2	0.9272	21.7			1	6	
142	CANJ13A	13.800	C1	37.0	9.8	29.0	-29.0	1.0180	37.6	0.9664	69.0			1	6	
143	CANJ13B	13.800	C2	37.0	9.8	29.0	-29.0	1.0180	37.6	0.9664	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-1.4	10.0	-10.0	1.0100	15.9	0.9960	26.7			1	6	
193	GEBONYIC	13.800	G1	5.0	-1.6	4.0	-4.0	1.0000	5.3	0.9500	35.3			1	6	
193	GEBONYIC	13.800	G2	5.0	-1.6	4.0	-4.0	1.0000	5.3	0.9500	35.3			1	6	
193	GEBONYIC	13.800	G3	5.0	-1.6	4.0	-4.0	1.0000	5.3	0.9500	35.3			1	6	
204	BJOMIN13	13.800	1	16.5	-8.9	13.0	-13.0	1.0000	18.8	0.8799	28.9			1	6	
204	BJOMIN13	13.800	2	16.5	-8.9	13.0	-13.0	1.0000	18.8	0.8799	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9606	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9588	5.1	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0097	8.4	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	10.6	-1.2	12.0	-5.0	1.0200	10.5	0.9935	20.6			1	6	
305	ELALTO13.8	13.800	2	10.6	-1.2	12.0	-5.0	1.0200	10.5	0.9935	20.6			1	6	
305	ELALTO13.8	13.800	3	10.6	-1.2	12.0	-5.0	1.0200	10.5	0.9935	20.6			1	6	
307	CHANG75A	13.800	G1	77.0	-8.8	22.0	-22.0	1.0200	76.0	0.9935	118.6			1	6	
308	CHANG75B	13.800	G2	77.0	-8.8	50.0	-22.0	1.0200	76.0	0.9935	118.6			1	6	
317	MENDRE13.8	13.800	M1	7.5	-2.2	4.0	-4.0	1.0000	7.8	0.9590	35.3			1	6	
317	MENDRE13.8	13.800	M2	7.5	-2.2	4.0	-4.0	1.0000	7.8	0.9590	35.3			1	6	
322	TURBA-250A	13.800	1	90.0	0.0	62.0	0.0	1.0154	88.6	1.0000	118.0			1	6	
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0494	17.8	0.9635	27.0			1	6	
516	PANAPOW13A	13.800	G1	15.5	0.5	12.5	0.5	1.0181	15.2	0.9994	20.9			1	6	
516	PANAPOW13A	13.800	G2	15.5	0.5	12.5	0.5	1.0181	15.2	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	0.5	12.5	0.5	1.0181	15.2	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.5	0.5	12.5	0.5	1.0181	15.2	0.9994	20.9			1	6	
518	PGREENP13A	13.800	E1	18.0	7.3	8.0	-5.0	1.0000	19.4	0.9272	20.6			1	6	
518	PGREENP13A	13.800	E2	18.0	7.3	8.0	-5.0	1.0000	19.4	0.9272	20.6			1	6	
518	PGREENP13A	13.800	E3	18.0	7.3	8.0	-5.0	1.0000	19.4	0.9272	20.6			1	6	
518	PGREENP13A	13.800	E4	18.0	7.3	8.0	-5.0	1.0000	19.4	0.9272	20.6			1	6	







PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 6 0 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTLAT7  
 MED. MAY 16 2007 15:24

BUS - VOL TAGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Mata de Nance-Veladero**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      WED, MAY 16 2007 15:29  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0024	230.56	3		PANII230		230.00	6	1.0143	233.30
5		CHO230		230.00	6	1.0074	231.71	8		LSA230		230.00	6	1.0208	234.78



AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	35.0	16.5	17.0	0.0	1.0050	38.5	0.9048	47.0			1	6	
67	BLM13C	13.800	V3	35.0	16.5	17.0	0.0	1.0050	38.5	0.9048	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	9.4	20.0	0.0	1.0000	31.4	0.9547	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	9.4	20.0	0.0	1.0000	31.4	0.9547	39.4			1	6	
73	BLMCCB	13.800	V9	28.0	14.2	40.0	0.0	1.0000	31.4	0.8921	71.0			1	6	
90	EST-13L	13.800	E1	19.0	5.3	12.0	-5.0	1.0150	19.4	0.9634	27.0			1	6	
91	EST-13T	13.800	E2	19.0	5.3	12.0	-5.0	1.0150	19.4	0.9634	27.0			1	6	
94	LV-13.8L	13.800	L1	20.0	9.3	12.0	-5.0	1.0260	21.5	0.9070	27.0			1	6	
95	LV-13.8T	13.800	L2	20.0	9.3	12.0	-5.0	1.0260	21.5	0.9070	27.0			1	6	
97	FOR13A	13.800	F1	80.0	-0.6	50.0	-50.0	1.0290	77.7	1.0000	111.0			1	6	
98	FOR13B	13.800	F2	80.0	-0.6	50.0	-50.0	1.0290	77.7	1.0000	111.0			1	6	
99	FOR13C	13.800	F3	80.0	-0.6	50.0	-50.0	1.0290	77.7	1.0000	111.0			1	6	
101	BAY13A	13.800	B1	79.6	22.7	50.0	-25.0	1.0180	81.3	0.9618	96.0			1	6	SYST
102	BAY13B	13.800	B2	79.6	22.7	50.0	-25.0	1.0180	81.3	0.9618	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	7.8	9.0	0.0	1.0300	16.4	0.8878	20.7			1	6	
106	PANAM13A	13.800	M2	15.0	7.8	9.0	0.0	1.0300	16.4	0.8878	20.7			1	6	
106	PANAM13A	13.800	M3	15.0	7.8	9.0	0.0	1.0300	16.4	0.8878	20.7			1	6	
107	PANAM13B	13.800	M4	15.0	7.8	9.0	0.0	1.0300	16.4	0.8878	20.7			1	6	
107	PANAM13B	13.800	M5	15.0	7.8	9.0	0.0	1.0300	16.4	0.8878	20.7			1	6	
107	PANAM13B	13.800	M6	15.0	7.8	9.0	0.0	1.0300	16.4	0.8878	20.7			1	6	
108	BAY13C	13.800	B3	79.6	22.7	50.0	-25.0	1.0180	81.3	0.9618	100.0			1	6	
116	PACORA13	13.800	P1	17.6	7.0	8.8	0.0	1.0430	18.2	0.9293	21.7			1	6	
116	PACORA13	13.800	P2	17.6	7.0	8.8	0.0	1.0430	18.2	0.9293	21.7			1	6	
116	PACORA13	13.800	P3	17.6	7.0	8.8	0.0	1.0430	18.2	0.9293	21.7			1	6	
142	CANJ13A	13.800	C1	37.0	10.0	29.0	-29.0	1.0180	37.7	0.9653	69.0			1	6	
143	CANJ13B	13.800	C2	37.0	10.0	29.0	-29.0	1.0180	37.7	0.9653	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-1.3	10.0	-10.0	1.0100	15.9	0.9965	26.7			1	6	
193	GEBONYIC	13.800	G1	5.0	-1.6	4.0	-4.0	1.0000	5.3	0.9505	35.3			1	6	
193	GEBONYIC	13.800	G2	5.0	-1.6	4.0	-4.0	1.0000	5.3	0.9505	35.3			1	6	
193	GEBONYIC	13.800	G3	5.0	-1.6	4.0	-4.0	1.0000	5.3	0.9505	35.3			1	6	
204	BJOMIN13	13.800	1	16.5	-9.0	13.0	-13.0	1.0000	18.8	0.8776	28.9			1	6	
204	BJOMIN13	13.800	2	16.5	-9.0	13.0	-13.0	1.0000	18.8	0.8776	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9611	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9592	5.1	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0099	8.4	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	10.6	-1.3	12.0	-5.0	1.0200	10.5	0.9927	20.6			1	6	
305	ELALTO13.8	13.800	2	10.6	-1.3	12.0	-5.0	1.0200	10.5	0.9927	20.6			1	6	
305	ELALTO13.8	13.800	3	10.6	-1.3	12.0	-5.0	1.0200	10.5	0.9927	20.6			1	6	
307	CHANG75A	13.800	G1	77.0	-8.6	22.0	-22.0	1.0200	76.0	0.9938	118.6			1	6	
308	CHANG75B	13.800	G2	77.0	-8.6	50.0	-22.0	1.0200	76.0	0.9938	118.6			1	6	
317	MENDRE13.8	13.800	M1	7.5	-2.2	4.0	-4.0	1.0000	7.8	0.9579	35.3			1	6	
317	MENDRE13.8	13.800	M2	7.5	-2.2	4.0	-4.0	1.0000	7.8	0.9579	35.3			1	6	
322	TURBA-250A	13.800	1	90.0	0.0	62.0	0.0	1.0159	88.6	1.0000	118.0			1	6	
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0498	17.8	0.9635	27.0			1	6	
516	PANAPOW13A	13.800	G1	15.5	0.5	12.5	0.5	1.0189	15.2	0.9994	20.9			1	6	
516	PANAPOW13A	13.800	G2	15.5	0.5	12.5	0.5	1.0189	15.2	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	0.5	12.5	0.5	1.0189	15.2	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.5	0.5	12.5	0.5	1.0189	15.2	0.9994	20.9			1	6	
518	PGREENP13A	13.800	E1	18.0	6.9	8.0	-5.0	1.0000	19.3	0.9341	20.6			1	6	
518	PGREENP13A	13.800	E2	18.0	6.9	8.0	-5.0	1.0000	19.3	0.9341	20.6			1	6	
518	PGREENP13A	13.800	E3	18.0	6.9	8.0	-5.0	1.0000	19.3	0.9341	20.6			1	6	
518	PGREENP13A	13.800	E4	18.0	6.9	8.0	-5.0	1.0000	19.3	0.9341	20.6			1	6	

SUBSYSTEM TOTALS                    1460.6    230.6    932.6    -447.9                                    2208.3

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E                    WED, MAY 16 2007 15:29  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 7 [ACANAL                    ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	6.5	0.0	5.0	0.0	1.0478	6.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	6.5	0.0	5.0	0.0	1.0478	6.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	12.4	4.4	8.0	0.0	1.0000	13.2	0.9415	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9945	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9945	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9945	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9989	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9989	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9989	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9864	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9864	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9864	6.2			2	7	
SUBSYSTEM TOTALS						72.0	5.8	51.0	-33.0				124.2					



**PLAN DE EXPANSIÓN DEL SIN  
 AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
 Contingencia Santa Rita-Cáceres**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E            WED, MAY 16 2007 15:39  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0027	230.62	3		PANII230		230.00	6	1.0147	233.38
5		CHO230		230.00	6	1.0083	231.90	8		LSA230		230.00	6	1.0240	235.52
11		M.N230		230.00	6	1.0367	238.45	14		PRO230		230.00	6	1.0328	237.55

96 FOR230	230.00	6	1.0372	238.56	100 BAY230	230.00	6	1.0445	240.25
103 COPESA23	230.00	6	1.0194	234.47	105 PAN-AM23	230.00	6	1.0084	231.94
115 PACORA23	230.00	6	1.0252	235.80	144 CANJ230	230.00	6	1.0377	238.66
147 GUASQ230	230.00	6	1.0375	238.62	148 VELAD230	230.00	6	1.0345	237.93
190 CHANG230	230.00	6	1.0311	237.15	306 CHANG75	230.00	6	1.0329	237.58
309 CAISAN230	230.00	6	1.0286	236.58	310 CONCEPCION230	230.00	6	1.0333	237.65
511 LGUIAS230	230.00	6	1.0153	233.51	515 PANPOWER230	230.00	6	1.0196	234.51
6000 FRONTER	230.00	6	1.0331	237.62					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
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\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, MAY 16 2007 15:39  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0120	116.38	4		PANII115		115.00	6	1.0087	116.00
6		CHO115		115.00	6	1.0415	119.77	9		LSA115		115.00	6	1.0421	119.84
12		M.N115		115.00	6	1.0349	119.01	15		PRO115		115.00	6	1.0301	118.46
18		CAC115		115.00	6	1.0110	116.27	20		CH.AZUL		115.00	6	1.0263	118.02
23		CH115		115.00	6	1.0078	115.90	33		STM115		115.00	6	1.0099	116.14
48		TINAJ115		115.00	6	1.0070	115.81	50		M.O115		115.00	6	1.0074	115.85
52		TOC115		115.00	6	1.0051	115.58	54		LM115		115.00	6	1.0211	117.43
55		LM2115		115.00	6	1.0212	117.43	61		FFIELD		115.00	9	1.0125	116.44
87		CAL115		115.00	6	1.0483	120.55	88		EST115		115.00	6	1.0518	120.95
92		L.V115		115.00	6	1.0496	120.70	109		STA RITA115		115.00	6	1.0213	117.45
110		PTMD115A		115.00	6	1.0179	117.06	123		MIR115		115.00	7	1.0097	116.12
154		CEMPAN15		115.00	6	1.0178	117.04	191		CHANG115		115.00	6	1.0171	116.97

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
19		C.V115		115.00	6	0.9983	114.80	21		C.BAN115		115.00	6	0.9981	114.78
26		LOC115		115.00	6	0.9997	114.96	30		MAR115		115.00	6	0.9979	114.76
37		SAN115		115.00	6	0.9964	114.59								



AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	35.0	16.1	17.0	0.0	1.0050	38.3	0.9089	47.0			1	6	
67	BLM13C	13.800	V3	35.0	16.1	17.0	0.0	1.0050	38.3	0.9089	47.0			1	6	
70	TGJB13A	13.800	J5	30.0	9.1	20.0	0.0	1.0000	31.3	0.9572	39.4			1	6	
71	TGJB13B	13.800	J6	30.0	9.1	20.0	0.0	1.0000	31.3	0.9572	39.4			1	6	
73	BLMCCB	13.800	V9	28.0	13.7	40.0	0.0	1.0000	31.2	0.8983	71.0			1	6	
90	EST-13L	13.800	E1	19.0	6.3	12.0	-5.0	1.0200	19.6	0.9494	27.0			1	6	
91	EST-13T	13.800	E2	19.0	6.3	12.0	-5.0	1.0200	19.6	0.9494	27.0			1	6	
94	LV-13.8L	13.800	L1	20.0	7.0	12.0	-5.0	1.0200	20.8	0.9441	27.0			1	6	
95	LV-13.8T	13.800	L2	20.0	7.0	12.0	-5.0	1.0200	20.8	0.9441	27.0			1	6	
97	FOR13A	13.800	F1	80.0	-4.4	50.0	-50.0	1.0290	77.9	0.9985	111.0			1	6	
98	FOR13B	13.800	F2	80.0	-4.4	50.0	-50.0	1.0290	77.9	0.9985	111.0			1	6	
99	FOR13C	13.800	F3	80.0	-4.4	50.0	-50.0	1.0290	77.9	0.9985	111.0			1	6	
101	BAY13A	13.800	B1	79.8	22.5	50.0	-25.0	1.0180	81.5	0.9625	96.0			1	6	SYST
102	BAY13B	13.800	B2	79.8	22.5	50.0	-25.0	1.0180	81.5	0.9625	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	7.7	9.0	0.0	1.0300	16.4	0.8907	20.7			1	6	
106	PANAM13A	13.800	M2	15.0	7.7	9.0	0.0	1.0300	16.4	0.8907	20.7			1	6	
106	PANAM13A	13.800	M3	15.0	7.7	9.0	0.0	1.0300	16.4	0.8907	20.7			1	6	
107	PANAM13B	13.800	M4	15.0	7.7	9.0	0.0	1.0300	16.4	0.8907	20.7			1	6	
107	PANAM13B	13.800	M5	15.0	7.7	9.0	0.0	1.0300	16.4	0.8907	20.7			1	6	
107	PANAM13B	13.800	M6	15.0	7.7	9.0	0.0	1.0300	16.4	0.8907	20.7			1	6	
108	BAY13C	13.800	B3	79.8	22.5	50.0	-25.0	1.0180	81.5	0.9625	100.0			1	6	
116	PACORA13	13.800	P1	17.6	6.9	8.8	0.0	1.0430	18.1	0.9303	21.7			1	6	
116	PACORA13	13.800	P2	17.6	6.9	8.8	0.0	1.0430	18.1	0.9303	21.7			1	6	
116	PACORA13	13.800	P3	17.6	6.9	8.8	0.0	1.0430	18.1	0.9303	21.7			1	6	
142	CANJ13A	13.800	C1	37.0	9.2	29.0	-29.0	1.0180	37.4	0.9706	69.0			1	6	
143	CANJ13B	13.800	C2	37.0	9.2	29.0	-29.0	1.0180	37.4	0.9706	69.0			1	6	
151	GUALAC13	13.800	1	16.0	-1.8	10.0	-10.0	1.0100	15.9	0.9936	26.7			1	6	
193	GEBOYIC	13.800	G1	5.0	-1.7	4.0	-4.0	1.0000	5.3	0.9457	35.3			1	6	
193	GEBOYIC	13.800	G2	5.0	-1.7	4.0	-4.0	1.0000	5.3	0.9457	35.3			1	6	
193	GEBOYIC	13.800	G3	5.0	-1.7	4.0	-4.0	1.0000	5.3	0.9457	35.3			1	6	
204	BJOMIN13	13.800	1	16.5	-9.9	13.0	-13.0	1.0000	19.2	0.8581	28.9			1	6	
204	BJOMIN13	13.800	2	16.5	-9.9	13.0	-13.0	1.0000	19.2	0.8581	28.9			1	6	
301	CONC13.8	13.800	C1	9.2	5.0	5.0	-5.0	0.9638	10.9	0.8784	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9620	5.0	0.9110	6.2			1	6	
303	SIND13.8	13.800	S1	8.5	0.0	5.0	0.0	1.0106	8.4	1.0000	13.5			1	6	
305	ELALTO13.8	13.800	1	10.6	-1.9	12.0	-5.0	1.0200	10.6	0.9848	20.6			1	6	
305	ELALTO13.8	13.800	2	10.6	-1.9	12.0	-5.0	1.0200	10.6	0.9848	20.6			1	6	
305	ELALTO13.8	13.800	3	10.6	-1.9	12.0	-5.0	1.0200	10.6	0.9848	20.6			1	6	
307	CHANG75A	13.800	G1	77.0	-9.8	22.0	-22.0	1.0200	76.1	0.9920	118.6			1	6	
308	CHANG75B	13.800	G2	77.0	-9.8	22.0	-22.0	1.0200	76.1	0.9920	118.6			1	6	
317	MENDRE13.8	13.800	M1	7.5	-2.4	4.0	-4.0	1.0000	7.9	0.9513	35.3			1	6	
317	MENDRE13.8	13.800	M2	7.5	-2.4	4.0	-4.0	1.0000	7.9	0.9513	35.3			1	6	
322	TURBA-250A	13.800	1	90.0	0.0	62.0	0.0	1.0174	88.5	1.0000	118.0			1	6	
340	PEDGALITO138	13.800	P1	18.0	-5.0	12.0	-5.0	1.0536	17.7	0.9635	27.0			1	6	
516	PANAPOW13A	13.800	G1	15.5	0.5	12.5	0.5	1.0198	15.2	0.9994	20.9			1	6	
516	PANAPOW13A	13.800	G2	15.5	0.5	12.5	0.5	1.0198	15.2	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G4	15.5	0.5	12.5	0.5	1.0198	15.2	0.9994	20.9			1	6	
517	PANAPOW13B	13.800	G5	15.5	0.5	12.5	0.5	1.0198	15.2	0.9994	20.9			1	6	
518	PGREENP13A	13.800	E1	18.0	5.9	8.0	-5.0	1.0000	18.9	0.9507	20.6			1	6	
518	PGREENP13A	13.800	E2	18.0	5.9	8.0	-5.0	1.0000	18.9	0.9507	20.6			1	6	
518	PGREENP13A	13.800	E3	18.0	5.9	8.0	-5.0	1.0000	18.9	0.9507	20.6			1	6	
518	PGREENP13A	13.800	E4	18.0	5.9	8.0	-5.0	1.0000	18.9	0.9507	20.6			1	6	

SUBSYSTEM TOTALS                      1461.2    200.8    932.6    -447.9    2208.3

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E                      WED, MAY 16 2007    15:39  
 PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
 AÑO 2016 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO MHTTLA7

AREA 7 [ACANAL		] MACHINE SUMMARY:															
BUS#	X-- NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126	MIR13A		12.000	G1	6.5	0.0	5.0	0.0	1.0477	6.2	1.0000	13.5			2	7	
127	MIR13B		12.000	G2	6.5	0.0	5.0	0.0	1.0477	6.2	1.0000	13.5			2	7	
130	MIR13F		13.800	G5	10.4	4.4	8.0	0.0	1.0000	11.3	0.9196	27.7			2	7	
134	MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9944	13.0			2	7	
135	MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9945	13.0			2	7	
136	MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9945	13.0			2	7	
140	GAT6A		6.9000	G1	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9989	4.1			2	7	
140	GAT6A		6.9000	G2	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9989	4.1			2	7	
140	GAT6A		6.9000	G3	2.0	0.1	2.0	-2.0	1.0000	2.0	0.9989	4.1			2	7	
141	GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9865	5.6			2	7	
141	GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9865	6.2			2	7	
141	GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9865	6.2			2	7	
SUBSYSTEM TOTALS					70.0	5.9	51.0	-33.0				124.2					



**ACTUALIZACIÓN DEL PLAN DE EXPANSION  
JUNIO DEL 2007**

**CASO MHT7  
CON NUEVA GENERACIÓN EN COLON  
TERMICAS: BALBOA, CARIBE Y ATLÁNTICO**

**AÑO 2009**

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2009 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 8:54  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0309	237.12	11		M.N230		230.00	6	1.0354	238.14
14		PRO230		230.00	6	1.0381	238.77	96		FOR230		230.00	6	1.0317	237.28
100		BAY230		230.00	6	1.0231	235.32	115		PACORA23		230.00	6	1.0040	230.93
144		CANJ230		230.00	6	1.0360	238.29	147		GUASQ230		230.00	6	1.0361	238.30
148		VELAD230		230.00	6	1.0432	239.94	190		CHANG230		230.00	6	1.0375	238.63
511		LGUIAS230		230.00	6	1.0191	234.40	515		PANPOWER230		230.00	6	1.0061	231.40
6000		FRONTER		230.00	6	1.0386	238.88								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9875	227.13	3		PANII230		230.00	6	0.9952	228.91
5		CHO230		230.00	6	0.9986	229.68	103		COPESA23		230.00	6	0.9999	229.97
105		PAN-AM23		230.00	6	0.9987	229.69								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 8:54  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0126	116.45	4		PANIII115		115.00	6	1.0101	116.16
6		CHO115		115.00	6	1.0376	119.32	9		LSA115		115.00	6	1.0345	118.96
12		M.N115		115.00	6	1.0196	117.25	15		PRO115		115.00	6	1.0363	119.17
18		CAC115		115.00	6	1.0122	116.40	19		C.V115		115.00	6	1.0029	115.34
20		CH.AZUL		115.00	6	1.0335	118.85	21		C.BAN115		115.00	6	1.0026	115.30
23		CH115		115.00	6	1.0146	116.68	26		LOC115		115.00	6	1.0036	115.42
30		MAR115		115.00	6	1.0024	115.27	33		STM115		115.00	6	1.0110	116.26
37		SAN115		115.00	6	1.0015	115.17	48		TINAJ115		115.00	6	1.0097	116.12
50		M.O115		115.00	6	1.0096	116.11	52		TOC115		115.00	6	1.0075	115.87
54		LM115		115.00	6	1.0381	119.38	55		LM2115		115.00	6	1.0381	119.38
61		FFIELD		115.00	9	1.0322	118.70	87		CAL115		115.00	6	1.0194	117.23
88		EST115		115.00	6	1.0194	117.24	92		L.V115		115.00	6	1.0197	117.26
109		STA RITA115		115.00	6	1.0365	119.20	110		PTMD115A		115.00	6	1.0264	118.04
111		PTMD115B		115.00	6	1.0264	118.04	123		MIR115		115.00	7	1.0114	116.31
154		CEMPAN15		115.00	6	1.0348	119.00	191		CHANG115		115.00	6	1.0330	118.80
522		TBALBOA	115	115.00	6	1.0383	119.41								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 8:52  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	33.0	6.3	17.0	0.0	1.0000	33.6	0.9821	47.0			1	6		
67		BLM13C		13.800	V3	33.0	6.3	17.0	0.0	1.0000	33.6	0.9821	47.0			1	6		
68		BLM13D		13.800	V4	33.0	6.5	30.0	0.0	1.0000	33.6	0.9809	47.0			1	6		
70		TGJB13A		13.800	J5	31.0	4.8	20.0	0.0	1.0000	31.4	0.9880	39.4			1	6		
71		TGJB13B		13.800	J6	31.0	4.8	20.0	0.0	1.0000	31.4	0.9880	39.4			1	6		
72		BLMCCA		13.800	T8	31.0	5.8	20.0	0.0	1.0000	31.5	0.9830	50.0			1	6		
73		BLMCCB		13.800	V9	47.0	6.1	40.0	0.0	1.0000	47.4	0.9916	71.0			1	6		
90		EST-13L		13.800	E1	20.0	-2.5	12.0	-5.0	0.9600	21.0	0.9924	27.0			1	6		
91		EST-13T		13.800	E2	20.0	-2.5	12.0	-5.0	0.9600	21.0	0.9924	27.0			1	6		
94		LV-13.8L		13.800	L1	22.0	-2.6	12.0	-5.0	0.9600	23.1	0.9933	27.0			1	6		
95		LV-13.8T		13.800	L2	22.0	0.7	12.0	-5.0	0.9700	22.7	0.9995	27.0			1	6		
97		FOR13A		13.800	F1	70.0	-43.3	50.0	-50.0	0.9800	84.0	0.8502	111.0			1	6		
98		FOR13B		13.800	F2	70.0	-43.3	50.0	-50.0	0.9800	84.0	0.8502	111.0			1	6		
101		BAY13A		13.800	B1	43.8	21.3	50.0	-25.0	1.0000	48.7	0.8994	96.0			1	6	SYST	
102		BAY13B		13.800	B2	43.5	21.3	50.0	-25.0	1.0000	48.4	0.8985	96.0			1	6		
106		PANAM13A		13.800	M1	13.5	1.5	9.0	0.0	0.9800	13.9	0.9941	20.7			1	6		
106		PANAM13A		13.800	M2	13.5	1.5	9.0	0.0	0.9800	13.9	0.9941	20.7			1	6		
106		PANAM13A		13.800	M3	13.5	1.5	9.0	0.0	0.9800	13.9	0.9941	20.7			1	6		
107		PANAM13B		13.800	M4	13.5	1.5	9.0	0.0	0.9800	13.9	0.9941	20.7			1	6		
107		PANAM13B		13.800	M5	13.5	1.5	9.0	0.0	0.9800	13.9	0.9941	20.7			1	6		
107		PANAM13B		13.800	M6	13.5	1.5	9.0	0.0	0.9800	13.9	0.9941	20.7			1	6		
108		BAY13C		13.800	B3	43.5	21.3	50.0	-25.0	1.0000	48.4	0.8985	100.0			1	6		
116		PACORA13		13.800	P1	14.0	1.5	8.8	0.0	1.0000	14.1	0.9940	21.7			1	6		
116		PACORA13		13.800	P2	14.0	1.5	8.8	0.0	1.0000	14.1	0.9940	21.7			1	6		
116		PACORA13		13.800	P3	14.0	1.5	8.8	0.0	1.0000	14.1	0.9940	21.7			1	6		
142		CANJ13A		13.800	C1	40.0	3.8	29.0	-29.0	0.9783	41.1	0.9955	69.0			1	6		
143		CANJ13B		13.800	C2	40.0	3.8	29.0	-29.0	0.9783	41.1	0.9955	69.0			1	6		
521		TCARIBE	13.813	13.800	G1	15.8	3.6	12.5	0.0	1.0000	16.2	0.9749	20.9			1	6		
521		TCARIBE	13.813	13.800	G2	15.8	3.6	12.5	0.0	1.0000	16.2	0.9749	20.9			1	6		
521		TCARIBE	13.813	13.800	G3	15.8	3.6	12.5	0.0	1.0000	16.2	0.9749	20.9			1	6		
523		TBALBOA	13A	13.800	G1	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9802	10.9			1	6		
523		TBALBOA	13A	13.800	G2	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9802	10.9			1	6		
523		TBALBOA	13A	13.800	G3	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9802	10.9			1	6		
523		TBALBOA	13A	13.800	G4	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9802	10.9			1	6		
523		TBALBOA	13A	13.800	G5	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9802	10.9			1	6		
524		TBALBOA	13B	13.800	10	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9802	10.9			1	6		
524		TBALBOA	13B	13.800	G6	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9802	10.9			1	6		
524		TBALBOA	13B	13.800	G7	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9802	10.9			1	6		
524		TBALBOA	13B	13.800	G8	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9802	10.9			1	6		
524		TBALBOA	13B	13.800	G9	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9802	10.9			1	6		
525		TATLANTIC13A	13.800	G1	36.0	6.1	28.5	0.0	1.0000	36.5	0.9859	47.5			1	6			
525		TATLANTIC13A	13.800	G2	36.0	6.1	28.5	0.0	1.0000	36.5	0.9859	47.5			1	6			
526		TATLANTIC13B	13.800	V1	18.3	4.5	15.0	0.0	1.0000	18.9	0.9705	25.0			1	6			
526		TATLANTIC13B	13.800	V2	18.3	4.5	15.0	0.0	1.0000	18.9	0.9705	25.0			1	6			
SUBSYSTEM TOTALS						1034.8	80.9	790.6	-318.6				1607.0						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 8:52  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0492	8.2	1.0000	13.5			2	7	

127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0493	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	10.7	3.6	8.0	0.0	1.0000	11.3	0.9465	27.7	2	7
134	MAD6A	6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9958	13.0	2	7
135	MAD6B	6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9958	13.0	2	7
136	MAD6C	6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9958	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9831	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9831	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9831	6.2	2	7
SUBSYSTEM TOTALS				74.3	4.2	51.0	-33.0				124.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 8:54  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV AREA TOTALS  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA) IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.1	224.5	-98.9	0.0	143.3	-97.6	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	233.1	569.4	-236.5	0.0	471.7	15.0	356.9	
6	1034.8	957.0	0.0	0.0	0.0	58.7	19.2	25.0
PANAMA	80.9	239.8	0.0	0.0	474.4	71.9	243.5	
7	74.3	33.0	0.0	0.0	0.0	39.8	1.5	50.0
ACANAL	4.2	8.3	0.0	0.0	0.0	-15.1	11.0	
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6257.8	6140.0	0.0	0.0	0.0	0.0	117.8	0.0
	536.4	1889.1	-848.0	0.0	2026.2	0.0	1521.4	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 8:54  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV SHUNT  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME --X	BASKV	N O M I N A L		VOLTAGE	
			MW	MVAR		
2	PAN115	115.00	0.0	0.0	1.0126	SWITCHED
8	LSA230	230.00	0.0	0.0	1.0309	SWITCHED
10	L.S.34	34.500	0.0	0.0	1.0054	SWITCHED
13	MDNA34	34.500	0.0	0.0	1.0021	SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0432	SWITCHED





**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007**  
**AÑO 2009 ESCENARIO MODERADO DEMANDA MAXIMA VERANO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 9:10  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STARITA)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0197	234.54	11		M.N230		230.00	6	1.0237	235.45
14		PRO230		230.00	6	1.0285	236.55	96		FOR230		230.00	6	1.0198	234.54
100		BAY230		230.00	6	1.0205	234.72	115		PACORA23		230.00	6	1.0001	230.02
144		CANJ230		230.00	6	1.0241	235.54	147		GUASQ230		230.00	6	1.0241	235.54
148		VELAD230		230.00	6	1.0308	237.09	190		CHANG230		230.00	6	1.0300	236.91
511		LGUIAS230		230.00	6	1.0097	232.24	6000		FRONTER		230.00	6	1.0294	236.76

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9823	225.92	3		PANII230		230.00	6	0.9903	227.77
5		CHO230		230.00	6	0.9925	228.27	103		COPESA23		230.00	6	0.9953	228.91
105		PAN-AM23		230.00	6	0.9925	228.28	515		PANPOWER230		230.00	6	0.9998	229.94

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 9:10  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STARITA)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0100	116.15	4		PANII115		115.00	6	1.0061	115.70
6		CHO115		115.00	6	1.0310	118.56	9		LSA115		115.00	6	1.0226	117.60
12		M.N115		115.00	6	1.0133	116.53	15		PRO115		115.00	6	1.0266	118.06
18		CAC115		115.00	6	1.0095	116.09	20		CH.AZUL		115.00	6	1.0238	117.73
23		CH115		115.00	6	1.0129	116.49	26		LOC115		115.00	6	1.0009	115.10
33		STM115		115.00	6	1.0083	115.96	48		TINAJ115		115.00	6	1.0070	115.81
50		M.O115		115.00	6	1.0070	115.80	52		TOC115		115.00	6	1.0035	115.40
54		LM1115		115.00	6	1.0340	118.92	55		LM2115		115.00	6	1.0345	118.97
61		FFIELD		115.00	9	1.0281	118.23	87		CAL115		115.00	6	1.0136	116.56
88		EST115		115.00	6	1.0139	116.60	92		L.V115		115.00	6	1.0137	116.58
109		STA RITA115		115.00	6	1.0304	118.50	110		PTMD115A		115.00	6	1.0224	117.57
111		PTMD115B		115.00	6	1.0224	117.57	123		MIR115		115.00	7	1.0089	116.02
154		CEMPAN15		115.00	6	1.0330	118.80	191		CHANG115		115.00	6	1.0255	117.93
522		TBALBOA	115	115.00	6	1.0345	118.97								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
19		C.V115		115.00	6	0.9992	114.91	21		C.BAN115		115.00	6	0.9997	114.97
30		MAR115		115.00	6	0.9996	114.96	37		SAN115		115.00	6	0.9985	114.83





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 9:09  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STARITA)

AREA 6 [PANAMA ] MACHINE SUMMARY:																							
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X	T	R	A	N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	33.0	7.9	17.0	0.0	1.0000	33.9	0.9728	47.0								1	6	
67		BLM13C		13.800	V3	33.0	7.9	17.0	0.0	1.0000	33.9	0.9728	47.0								1	6	
68		BLM13D		13.800	V4	33.0	8.1	30.0	0.0	1.0000	34.0	0.9709	47.0								1	6	
70		TGJB13A		13.800	J5	31.0	5.9	20.0	0.0	1.0000	31.6	0.9824	39.4								1	6	
71		TGJB13B		13.800	J6	31.0	5.9	20.0	0.0	1.0000	31.6	0.9824	39.4								1	6	
72		BLMCCA		13.800	T8	31.0	6.8	20.0	0.0	1.0000	31.7	0.9766	50.0								1	6	
73		BLMCCB		13.800	V9	47.0	7.2	40.0	0.0	1.0000	47.5	0.9886	71.0								1	6	
90		EST-13L		13.800	E1	17.0	-1.2	12.0	-5.0	0.9600	17.8	0.9973	27.0								1	6	
94		LV-13.8L		13.800	L1	19.0	-1.1	12.0	-5.0	0.9600	19.8	0.9984	27.0								1	6	
97		FOR13A		13.800	F1	90.0	-30.9	50.0	-50.0	0.9800	97.1	0.9456	111.0								1	6	
98		FOR13B		13.800	F2	90.0	-30.9	50.0	-50.0	0.9800	97.1	0.9456	111.0								1	6	
99		FOR13C		13.800	F3	90.0	-30.9	50.0	-50.0	0.9800	97.1	0.9456	111.0								1	6	
101		BAY13A		13.800	B1	47.4	23.5	50.0	-25.0	1.0000	52.9	0.8963	96.0								1	6	
102		BAY13B		13.800	B2	47.4	23.5	50.0	-25.0	1.0000	52.9	0.8963	96.0								1	6	
106		PANAM13A		13.800	M1	15.1	2.5	9.0	0.0	0.9800	15.6	0.9867	20.7								1	6	
106		PANAM13A		13.800	M2	15.1	2.5	9.0	0.0	0.9800	15.6	0.9867	20.7								1	6	
106		PANAM13A		13.800	M3	15.1	2.5	9.0	0.0	0.9800	15.6	0.9867	20.7								1	6	
107		PANAM13B		13.800	M4	15.1	2.5	9.0	0.0	0.9800	15.6	0.9867	20.7								1	6	
107		PANAM13B		13.800	M5	15.1	2.5	9.0	0.0	0.9800	15.6	0.9867	20.7								1	6	
107		PANAM13B		13.800	M6	15.1	2.5	9.0	0.0	0.9800	15.6	0.9867	20.7								1	6	
108		BAY13C		13.800	B3	47.4	23.5	50.0	-25.0	1.0000	52.9	0.8963	100.0								1	6	
116		PACORA13		13.800	P1	16.1	2.4	8.8	0.0	1.0000	16.3	0.9894	21.7								1	6	
116		PACORA13		13.800	P2	16.1	2.4	8.8	0.0	1.0000	16.3	0.9894	21.7								1	6	
116		PACORA13		13.800	P3	16.1	2.4	8.8	0.0	1.0000	16.3	0.9894	21.7								1	6	
142		CANJ13A		13.800	C1	40.0	5.7	29.0	-29.0	0.9783	41.3	0.9901	69.0								1	6	
143		CANJ13B		13.800	C2	40.0	5.7	29.0	-29.0	0.9783	41.3	0.9901	69.0								1	6	
521		TCARIBE	13.813	13.800	G1	15.8	4.0	12.5	0.0	1.0000	16.3	0.9700	20.9								1	6	
521		TCARIBE	13.813	13.800	G2	15.8	4.0	12.5	0.0	1.0000	16.3	0.9700	20.9								1	6	
521		TCARIBE	13.813	13.800	G3	15.8	4.0	12.5	0.0	1.0000	16.3	0.9700	20.9								1	6	
523		TBALBOA	13A	13.800	G1	8.2	2.1	6.6	-6.6	1.0000	8.5	0.9685	10.9								1	6	
523		TBALBOA	13A	13.800	G2	8.2	2.1	6.6	-6.6	1.0000	8.5	0.9685	10.9								1	6	
523		TBALBOA	13A	13.800	G3	8.2	2.1	6.6	-6.6	1.0000	8.5	0.9685	10.9								1	6	
523		TBALBOA	13A	13.800	G4	8.2	2.1	6.6	-6.6	1.0000	8.5	0.9685	10.9								1	6	
523		TBALBOA	13A	13.800	G5	8.2	2.1	6.6	-6.6	1.0000	8.5	0.9685	10.9								1	6	
524		TBALBOA	13B	13.800	10	8.2	2.1	6.6	-6.6	1.0000	8.5	0.9685	10.9								1	6	
524		TBALBOA	13B	13.800	G6	8.2	2.1	6.6	-6.6	1.0000	8.5	0.9685	10.9								1	6	
524		TBALBOA	13B	13.800	G7	8.2	2.1	6.6	-6.6	1.0000	8.5	0.9685	10.9								1	6	
524		TBALBOA	13B	13.800	G8	8.2	2.1	6.6	-6.6	1.0000	8.5	0.9685	10.9								1	6	
524		TBALBOA	13B	13.800	G9	8.2	2.1	6.6	-6.6	1.0000	8.5	0.9685	10.9								1	6	
SUBSYSTEM TOTALS						1035.5	91.2	729.6	-358.6				1519.0										

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 9:09  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER  
 Año 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STARITA)

AREA 7 [ACANAL ] MACHINE SUMMARY:																		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0479	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0479	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	9.7	4.2	8.0	0.0	1.0000	10.6	0.9180	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9951	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9952	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9952	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	4.0	0.9844	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	4.0	0.9844	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	4.0	0.9844	6.2			2	7	
SUBSYSTEM TOTALS						73.4	5.1	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 9:10  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER AREA TOTALS  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STARITA) IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.4	224.5	-98.9	0.0	143.3	-97.3	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	247.1	569.4	-236.0	0.0	470.2	26.8	357.2	
6	1035.5	957.0	0.0	0.0	0.0	59.6	18.9	25.0
PANAMA	91.2	239.8	0.0	0.0	466.0	58.8	258.6	
7	73.4	33.0	0.0	0.0	0.0	38.9	1.5	50.0
ACANAL	5.1	8.3	0.0	0.0	0.0	-14.0	10.9	
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6257.6	6140.0	0.0	0.0	0.0	0.0	117.6	0.0
	562.1	1889.1	-847.5	0.0	2016.2	0.0	1536.7	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 9:10  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER SHUNT  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STARITA) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME --X	BASKV	N O M I N A L		
			MW	MVAR	VOLTAGE
2	PAN115	115.00	0.0	0.0	1.0100 SWITCHED
4	PAN1115	115.00	0.0	0.0	1.0061 SWITCHED
8	LSA230	230.00	0.0	0.0	1.0197 SWITCHED
10	L.S.34	34.500	0.0	0.0	1.0054 SWITCHED
13	MDNA34	34.500	0.0	0.0	1.0080 SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0308 SWITCHED

OUTPUT FOR AREA 9 [COLON ]

\* NONE \*





**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2009 ESCENARIO MODERADO DEMANDA MINIMA VERANO**



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, SEP 17 2007 11:55  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MINIMA DE VERANO. MHT7

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	24.0	3.4	17.0	0.0	0.9700	25.0	0.9903	47.0			1	6	
67		BLM13C		13.800	V3	24.0	3.4	17.0	0.0	0.9700	25.0	0.9903	47.0			1	6	
68		BLM13D		13.800	V4	24.0	3.5	30.0	0.0	0.9700	25.0	0.9897	47.0			1	6	
90		EST-13L		13.800	E1	15.0	-1.2	12.0	-5.0	0.9500	15.8	0.9968	27.0			1	6	
94		LV-13.8L		13.800	L1	17.0	-1.1	12.0	-5.0	0.9500	17.9	0.9981	27.0			1	6	
97		FOR13A		13.800	F1	55.0	-31.2	50.0	-50.0	0.9900	63.9	0.8699	111.0			1	6	SYST
98		FOR13B		13.800	F2	55.0	-31.2	50.0	-50.0	0.9900	63.9	0.8700	111.0			1	6	
106		PANAM13A		13.800	M1	14.1	0.0	9.0	0.0	1.0066	14.0	1.0000	20.7			1	6	
106		PANAM13A		13.800	M2	14.1	0.0	9.0	0.0	1.0066	14.0	1.0000	20.7			1	6	
106		PANAM13A		13.800	M3	14.1	0.0	9.0	0.0	1.0066	14.0	1.0000	20.7			1	6	
116		PACORA13		13.800	P1	16.1	0.0	8.8	0.0	1.0319	15.6	1.0000	21.7			1	6	
116		PACORA13		13.800	P2	16.1	0.0	8.8	0.0	1.0319	15.6	1.0000	21.7			1	6	
116		PACORA13		13.800	P3	16.1	0.0	8.8	0.0	1.0319	15.6	1.0000	21.7			1	6	
142		CANJ13A		13.800	C1	50.0	7.8	29.0	-29.0	0.9783	51.7	0.9880	69.0			1	6	
521		TCARIBE	13.813	13.800	G1	10.0	1.9	8.8	0.0	0.9700	10.5	0.9833	21.7			1	6	
521		TCARIBE	13.813	13.800	G2	10.0	1.9	8.8	0.0	0.9700	10.5	0.9833	21.7			1	6	
523		TBALBOA	13A	13.800	G1	10.0	2.1	8.8	0.0	0.9700	10.5	0.9786	21.7			1	6	
523		TBALBOA	13A	13.800	G2	10.0	2.1	8.8	0.0	0.9700	10.5	0.9786	21.7			1	6	
SUBSYSTEM TOTALS						394.7	-38.7	305.8	-139.0				699.9					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, SEP 17 2007 11:55  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007  
 AÑO 2009 ESCENARIO MOD DEMANDA MINIMA DE VERANO. MHT7

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
135		MAD6B		6.9000	G2	10.0	1.6	6.0	-6.0	1.0000	10.1	0.9879	13.0			2	7	
136		MAD6C		6.9000	G3	10.0	1.6	6.0	-6.0	1.0000	10.1	0.9879	13.0			2	7	
140		GAT6A		6.9000	G1	2.0	0.0	2.0	-2.0	1.0000	2.0	0.9997	4.1			2	7	
140		GAT6A		6.9000	G2	2.0	0.0	2.0	-2.0	1.0000	2.0	0.9997	4.1			2	7	
140		GAT6A		6.9000	G3	2.0	0.0	2.0	-2.0	1.0000	2.0	0.9997	4.1			2	7	
141		GAT6B		6.9000	G4	4.0	-0.8	3.0	-3.0	1.0000	4.1	0.9816	5.6			2	7	
141		GAT6B		6.9000	G5	4.0	-0.8	3.0	-3.0	1.0000	4.1	0.9816	6.2			2	7	
141		GAT6B		6.9000	G6	4.0	-0.8	3.0	-3.0	1.0000	4.1	0.9816	6.2			2	7	
SUBSYSTEM TOTALS						38.0	0.7	27.0	-27.0				56.4					



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 14:45  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007 AREA TOTALS  
 AÑO 2009 ESCENARIO MOD DEMANDA MINIMA DE VERANO. MHT7 IN MW/MVAR

X-- AREA	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.4	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.3	224.5	-98.9	0.0	143.3	-97.4	147.3	
5	1344.6	1324.8	0.0	0.0	0.0	0.5	19.3	0.0
C.RICA	239.1	569.4	-236.4	0.0	471.0	20.1	356.9	
6	394.7	376.3	0.0	0.0	0.0	14.4	4.0	25.0
PANAMA	-38.7	94.3	188.4	0.0	440.8	44.7	74.7	
7	38.0	13.0	0.0	0.0	0.0	23.9	1.2	50.0
ACANAL	0.7	3.2	0.0	0.0	0.0	-9.4	6.8	
9	0.0	38.7	0.0	0.0	0.0	-38.8	0.0	-75.0
COLON	0.0	9.7	0.0	0.0	1.1	-8.9	0.3	
TOTALS	5581.6	5479.6	0.0	0.0	0.0	0.0	102.0	0.0
	419.4	1723.6	-659.5	0.0	1991.7	0.0	1347.1	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, SEP 17 2007 11:58  
 PLAN DE EXPANSION DEL SIN CON C.A. JUNIO 2007 SHUNT  
 AÑO 2009 ESCENARIO MOD DEMANDA MINIMA DE VERANO. MHT7 SUMMARY  
 OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME	--X BASKV	N O M I N A L		VOLTAGE
			MW	MVAR	
2	PAN115	115.00	0.0	0.0	1.0036 SWITCHED
8	LSA230	230.00	0.0	-60.0	1.0311 SWITCHED
10	L.S.34	34.500	0.0	-20.0	1.0041 SWITCHED
13	MDNA34	34.500	0.0	-40.0	1.0056 SWITCHED
148	VELAD230	230.00	0.0	-60.0	1.0326 SWITCHED



**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA DE INVIERNO  
Contingencia 1: Panamá – Cemento Panamá**



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 9:56  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT1  
 AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	33.0	7.2	17.0	0.0	1.0000	33.8	0.9768	47.0			1	6		
67		BLM13C		13.800	V3	33.0	7.2	17.0	0.0	1.0000	33.8	0.9768	47.0			1	6		
68		BLM13D		13.800	V4	33.0	7.5	30.0	0.0	1.0000	33.8	0.9752	47.0			1	6		
70		TGJB13A		13.800	J5	31.0	5.5	20.0	0.0	1.0000	31.5	0.9844	39.4			1	6		
71		TGJB13B		13.800	J6	31.0	5.5	20.0	0.0	1.0000	31.5	0.9844	39.4			1	6		
72		BLMCCA		13.800	T8	31.0	6.5	20.0	0.0	1.0000	31.7	0.9789	50.0			1	6		
73		BLMCCB		13.800	V9	47.0	6.8	40.0	0.0	1.0000	47.5	0.9897	71.0			1	6		
90		EST-13L		13.800	E1	20.0	-2.3	12.0	-5.0	0.9600	21.0	0.9935	27.0			1	6		
91		EST-13T		13.800	E2	20.0	-2.3	12.0	-5.0	0.9600	21.0	0.9935	27.0			1	6		
94		LV-13.8L		13.800	L1	22.0	-2.4	12.0	-5.0	0.9600	23.0	0.9943	27.0			1	6		
95		LV-13.8T		13.800	L2	22.0	0.9	12.0	-5.0	0.9700	22.7	0.9992	27.0			1	6		
97		FOR13A		13.800	F1	70.0	-42.2	50.0	-50.0	0.9800	83.4	0.8565	111.0			1	6		
98		FOR13B		13.800	F2	70.0	-42.2	50.0	-50.0	0.9800	83.4	0.8565	111.0			1	6		
101		BAY13A		13.800	B1	47.5	23.8	50.0	-25.0	1.0000	53.1	0.8940	96.0			1	6	SYST	
102		BAY13B		13.800	B2	43.5	23.6	50.0	-25.0	1.0000	49.5	0.8793	96.0			1	6		
106		PANAM13A		13.800	M1	13.5	2.2	9.0	0.0	0.9800	13.9	0.9875	20.7			1	6		
106		PANAM13A		13.800	M2	13.5	2.2	9.0	0.0	0.9800	13.9	0.9875	20.7			1	6		
106		PANAM13A		13.800	M3	13.5	2.2	9.0	0.0	0.9800	13.9	0.9875	20.7			1	6		
107		PANAM13B		13.800	M4	13.5	2.2	9.0	0.0	0.9800	13.9	0.9875	20.7			1	6		
107		PANAM13B		13.800	M5	13.5	2.2	9.0	0.0	0.9800	13.9	0.9875	20.7			1	6		
107		PANAM13B		13.800	M6	13.5	2.2	9.0	0.0	0.9800	13.9	0.9875	20.7			1	6		
108		BAY13C		13.800	B3	43.5	23.6	50.0	-25.0	1.0000	49.5	0.8793	100.0			1	6		
116		PACORA13		13.800	P1	14.0	2.4	8.8	0.0	1.0000	14.2	0.9862	21.7			1	6		
116		PACORA13		13.800	P2	14.0	2.4	8.8	0.0	1.0000	14.2	0.9862	21.7			1	6		
116		PACORA13		13.800	P3	14.0	2.4	8.8	0.0	1.0000	14.2	0.9862	21.7			1	6		
142		CANJ13A		13.800	C1	40.0	4.0	29.0	-29.0	0.9783	41.1	0.9949	69.0			1	6		
143		CANJ13B		13.800	C2	40.0	4.0	29.0	-29.0	0.9783	41.1	0.9949	69.0			1	6		
521		TCARIBE	13.813	13.800	G1	15.8	2.2	12.5	0.0	1.0000	15.9	0.9908	20.9			1	6		
521		TCARIBE	13.813	13.800	G2	15.8	2.2	12.5	0.0	1.0000	15.9	0.9908	20.9			1	6		
521		TCARIBE	13.813	13.800	G3	15.8	2.2	12.5	0.0	1.0000	15.9	0.9908	20.9			1	6		
523		TBALBOA	13A	13.800	G1	8.2	1.9	6.6	-6.6	1.0000	8.4	0.9731	10.9			1	6		
523		TBALBOA	13A	13.800	G2	8.2	1.9	6.6	-6.6	1.0000	8.4	0.9731	10.9			1	6		
523		TBALBOA	13A	13.800	G3	8.2	1.9	6.6	-6.6	1.0000	8.4	0.9731	10.9			1	6		
523		TBALBOA	13A	13.800	G4	8.2	1.9	6.6	-6.6	1.0000	8.4	0.9731	10.9			1	6		
523		TBALBOA	13A	13.800	G5	8.2	1.9	6.6	-6.6	1.0000	8.4	0.9731	10.9			1	6		
524		TBALBOA	13B	13.800	10	8.2	1.9	6.6	-6.6	1.0000	8.4	0.9731	10.9			1	6		
524		TBALBOA	13B	13.800	G6	8.2	1.9	6.6	-6.6	1.0000	8.4	0.9731	10.9			1	6		
524		TBALBOA	13B	13.800	G7	8.2	1.9	6.6	-6.6	1.0000	8.4	0.9731	10.9			1	6		
524		TBALBOA	13B	13.800	G8	8.2	1.9	6.6	-6.6	1.0000	8.4	0.9731	10.9			1	6		
524		TBALBOA	13B	13.800	G9	8.2	1.9	6.6	-6.6	1.0000	8.4	0.9731	10.9			1	6		
525		TATLANTIC13A13.800		G1	36.0	7.3	28.5	0.0	1.0000	36.7	0.9798	47.5			1	6			
525		TATLANTIC13A13.800		G2	36.0	7.3	28.5	0.0	1.0000	36.7	0.9798	47.5			1	6			
526		TATLANTIC13B13.800		V1	18.3	5.8	15.0	0.0	1.0000	19.2	0.9538	25.0			1	6			
526		TATLANTIC13B13.800		V2	18.3	5.8	15.0	0.0	1.0000	19.2	0.9538	25.0			1	6			
SUBSYSTEM TOTALS						1038.6	107.1	790.6	-318.6				1607.0						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 9:56  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT1  
 AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0453	8.2	1.0000	13.5			2	7	

127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0453	8.2	1.0000	13.5	2	7
130	MIR13F	13.800	G5	10.7	5.3	8.0	0.0	1.0000	11.9	0.8946	27.7	2	7
134	MAD6A	6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9935	13.0	2	7
135	MAD6B	6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9936	13.0	2	7
136	MAD6C	6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9936	13.0	2	7
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1	2	7
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1	2	7
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9857	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9857	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9857	6.2	2	7
SUBSYSTEM TOTALS				74.3	6.9	51.0	-33.0				124.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 9:57  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT1 AREA TOTALS  
 Año 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA) IN MW/MVAR

X-- AREA	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.2	224.5	-98.9	0.0	143.3	-97.5	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	235.0	569.4	-236.4	0.0	471.5	16.6	356.9	
6	1038.6	957.0	0.0	0.0	0.0	58.7	22.9	25.0
PANAMA	107.1	239.8	0.0	0.0	469.3	67.6	268.9	
7	74.3	33.0	0.0	0.0	0.0	39.9	1.5	50.0
ACANAL	6.9	8.3	0.0	0.0	0.0	-12.4	11.0	
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6261.5	6140.0	0.0	0.0	0.0	0.0	121.6	0.0
	567.2	1889.1	-847.9	0.0	2020.8	0.0	1546.8	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 9:57  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT1 SHUNT  
 Año 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA) SUMMARY  
 OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME	--X BASKV	N O M I N A L		VOLTAGE	
			MW	MVAR		
2	PAN115	115.00	0.0	0.0	1.0048	SWITCHED
8	LSA230	230.00	0.0	0.0	1.0273	SWITCHED
10	L.S.34	34.500	0.0	0.0	1.0016	SWITCHED
13	MDNA34	34.500	0.0	0.0	1.0009	SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0409	SWITCHED

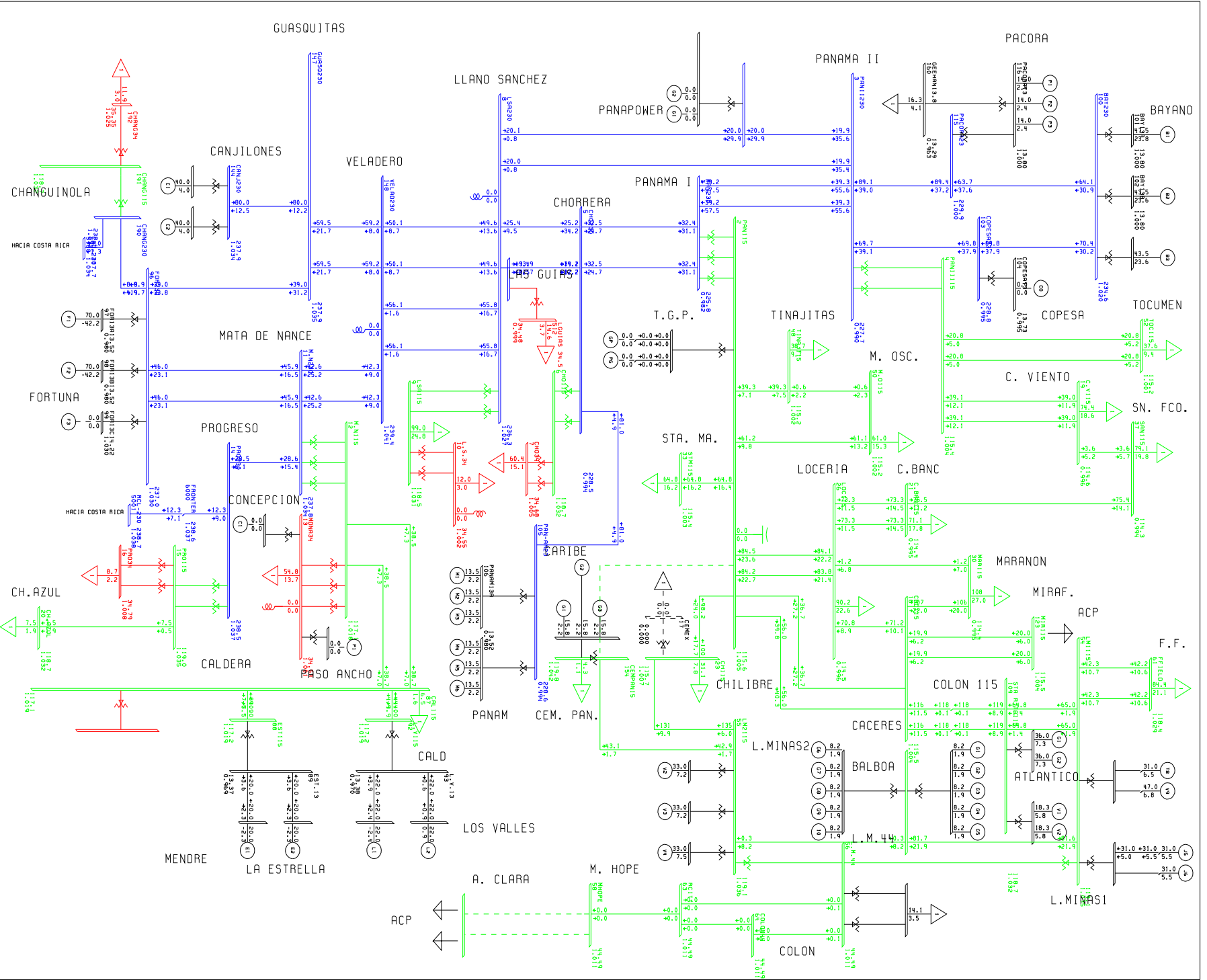




P. EXP-SIN CON C.A. JUN 2007 MHTZ MAXINV CNT1  
 R 0 2009 TBRUBOR,TCARIBE Y ATLANTICO (EN STA RITR)  
 TUE, OCT 02 2007 19:07

KW:514 .435 .4115

BUS - VOLTAGE (KV/PV)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR



GUASQUITAS

LLANO SANCHEZ

PANAMA II

PACORA

BAYANO

PANAPOWER

PANAMA I

CHORRERA

CANJILONES

VELADERO

CHANGUINOLA

FORTUNA

MATA DE NANCE

PROGRESO

CONCEPCION

CH. AZUL

CALDERA

MENDRE

LA ESTRELLA

ACP

LOS VALLES

A. CLARA

M. HOPE

COLON

CHILIBRE

L. MINAS2

BALBOA

L. M. 44

CACERES

COLON 115

ATLANTICO

L. MINAS1

ACP

F.F.

MIRAF.

MARANON

C. BANC

C. VIENTO

SN. FCO.

TINAJITAS

M. OSC.

STA. MA.

T.G.P.

PANAMA I

CHORRERA

LLANO SANCHEZ

PANAMA II

PACORA

BAYANO

PANAPOWER

PANAMA I

CHORRERA

LLANO SANCHEZ

PANAMA II

PACORA

BAYANO

PANAPOWER

PANAMA I

CHORRERA

LLANO SANCHEZ

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LLANO SANCHEZ

PANAMA II

PACORA

BAYANO

PANAPOWER

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA DE INVIERNO  
Contingencia 2: Minas 2 – Chilibre**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 10:16  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT2  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0269	236.20	11		M.N230		230.00	6	1.0338	237.77
14		PRO230		230.00	6	1.0367	238.43	96		FOR230		230.00	6	1.0302	236.95
100		BAY230		230.00	6	1.0197	234.53	144		CANJ230		230.00	6	1.0343	237.90
147		GUASQ230		230.00	6	1.0344	237.91	148		VELAD230		230.00	6	1.0406	239.34
190		CHANG230		230.00	6	1.0366	238.42	511		LGUIAS230		230.00	6	1.0145	233.33
515		PANPOWER230		230.00	6	1.0004	230.10	6000		FRONTER		230.00	6	1.0372	238.56

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9809	225.62	3		PANII230		230.00	6	0.9893	227.53
5		CHO230		230.00	6	0.9932	228.43	103		COPESA23		230.00	6	0.9943	228.69
105		PAN-AM23		230.00	6	0.9932	228.44	115		PACORA23		230.00	6	0.9991	229.79

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 10:16  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT2  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0040	115.46	4		PANII115		115.00	6	1.0033	115.38
6		CHO115		115.00	6	1.0317	118.65	9		LSA115		115.00	6	1.0302	118.48
12		M.N115		115.00	6	1.0183	117.11	15		PRO115		115.00	6	1.0348	119.00
18		CAC115		115.00	6	1.0036	115.41	20		CH.AZUL		115.00	6	1.0320	118.68
33		STM115		115.00	6	1.0024	115.27	48		TINAJ115		115.00	6	1.0010	115.12
50		M.O115		115.00	6	1.0010	115.11	52		TOC115		115.00	6	1.0007	115.08
54		LM1115		115.00	6	1.0370	119.26	55		LM2115		115.00	6	1.0377	119.34
61		FFIELD		115.00	9	1.0311	118.58	87		CAL115		115.00	6	1.0185	117.13
88		EST115		115.00	6	1.0187	117.15	92		L.V115		115.00	6	1.0189	117.17
109		STA RITA115		115.00	6	1.0335	118.85	110		PTMD115A		115.00	6	1.0197	117.27
111		PTMD115B		115.00	6	1.0197	117.27	123		MIR115		115.00	7	1.0033	115.38
154		CEMPAN15		115.00	6	1.0306	118.52	191		CHANG115		115.00	6	1.0321	118.69
522		TBALBOA 115		115.00	6	1.0376	119.32								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
19		C.V115		115.00	6	0.9955	114.49	21		C.BAN115		115.00	6	0.9941	114.32
23		CH115		115.00	6	0.9931	114.20	26		LOC115		115.00	6	0.9951	114.44
30		MAR115		115.00	6	0.9937	114.28	37		SAN115		115.00	6	0.9931	114.20



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 10:16

P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT2  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	33.0	6.5	17.0	0.0	1.0000	33.6	0.9812	47.0			1	6	
67		BLM13C		13.800	V3	33.0	6.5	17.0	0.0	1.0000	33.6	0.9812	47.0			1	6	
68		BLM13D		13.800	V4	33.0	6.7	30.0	0.0	1.0000	33.7	0.9800	47.0			1	6	
70		TGJB13A		13.800	J5	31.0	5.1	20.0	0.0	1.0000	31.4	0.9866	39.4			1	6	
71		TGJB13B		13.800	J6	31.0	5.1	20.0	0.0	1.0000	31.4	0.9866	39.4			1	6	
72		BLMCCA		13.800	T8	31.0	6.1	20.0	0.0	1.0000	31.6	0.9814	50.0			1	6	
73		BLMCCB		13.800	V9	47.0	6.4	40.0	0.0	1.0000	47.4	0.9909	71.0			1	6	
90		EST-13L		13.800	E1	20.0	-2.3	12.0	-5.0	0.9600	21.0	0.9936	27.0			1	6	
91		EST-13T		13.800	E2	20.0	-2.3	12.0	-5.0	0.9600	21.0	0.9936	27.0			1	6	
94		LV-13.8L		13.800	L1	22.0	-2.3	12.0	-5.0	0.9600	23.0	0.9944	27.0			1	6	
95		LV-13.8T		13.800	L2	22.0	0.9	12.0	-5.0	0.9700	22.7	0.9991	27.0			1	6	
97		FOR13A		13.800	F1	70.0	-42.1	50.0	-50.0	0.9800	83.3	0.8571	111.0			1	6	
98		FOR13B		13.800	F2	70.0	-42.1	50.0	-50.0	0.9800	83.3	0.8571	111.0			1	6	
101		BAY13A		13.800	B1	47.8	24.1	50.0	-25.0	1.0000	53.5	0.8931	96.0			1	6	SYST
102		BAY13B		13.800	B2	43.5	23.8	50.0	-25.0	1.0000	49.6	0.8773	96.0			1	6	
106		PANAM13A		13.800	M1	13.5	2.2	9.0	0.0	0.9800	14.0	0.9867	20.7			1	6	
106		PANAM13A		13.800	M2	13.5	2.2	9.0	0.0	0.9800	14.0	0.9867	20.7			1	6	
106		PANAM13A		13.800	M3	13.5	2.2	9.0	0.0	0.9800	14.0	0.9867	20.7			1	6	
107		PANAM13B		13.800	M4	13.5	2.2	9.0	0.0	0.9800	14.0	0.9867	20.7			1	6	
107		PANAM13B		13.800	M5	13.5	2.2	9.0	0.0	0.9800	14.0	0.9867	20.7			1	6	
107		PANAM13B		13.800	M6	13.5	2.2	9.0	0.0	0.9800	14.0	0.9867	20.7			1	6	
108		BAY13C		13.800	B3	43.5	23.8	50.0	-25.0	1.0000	49.6	0.8773	100.0			1	6	
116		PACORA13		13.800	P1	14.0	2.4	8.8	0.0	1.0000	14.2	0.9852	21.7			1	6	
116		PACORA13		13.800	P2	14.0	2.4	8.8	0.0	1.0000	14.2	0.9852	21.7			1	6	
116		PACORA13		13.800	P3	14.0	2.4	8.8	0.0	1.0000	14.2	0.9852	21.7			1	6	
142		CANJ13A		13.800	C1	40.0	4.1	29.0	-29.0	0.9783	41.1	0.9949	69.0			1	6	
143		CANJ13B		13.800	C2	40.0	4.1	29.0	-29.0	0.9783	41.1	0.9949	69.0			1	6	
521		TCARIBE	13.813	13.800	G1	15.8	4.4	12.5	0.0	1.0000	16.4	0.9626	20.9			1	6	
521		TCARIBE	13.813	13.800	G2	15.8	4.4	12.5	0.0	1.0000	16.4	0.9626	20.9			1	6	
521		TCARIBE	13.813	13.800	G3	15.8	4.4	12.5	0.0	1.0000	16.4	0.9626	20.9			1	6	
523		TBALBOA	13A	13.800	G1	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9782	10.9			1	6	
523		TBALBOA	13A	13.800	G2	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9782	10.9			1	6	
523		TBALBOA	13A	13.800	G3	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9782	10.9			1	6	
523		TBALBOA	13A	13.800	G4	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9782	10.9			1	6	
523		TBALBOA	13A	13.800	G5	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9782	10.9			1	6	
524		TBALBOA	13B	13.800	10	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9782	10.9			1	6	
524		TBALBOA	13B	13.800	G6	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9782	10.9			1	6	
524		TBALBOA	13B	13.800	G7	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9782	10.9			1	6	
524		TBALBOA	13B	13.800	G8	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9782	10.9			1	6	
524		TBALBOA	13B	13.800	G9	8.2	1.7	6.6	-6.6	1.0000	8.4	0.9782	10.9			1	6	
525		TATLANTIC13A	13.800	G1	36.0	7.0	28.5	0.0	1.0000	36.7	0.9816	47.5			1	6		
525		TATLANTIC13A	13.800	G2	36.0	7.0	28.5	0.0	1.0000	36.7	0.9816	47.5			1	6		
526		TATLANTIC13B	13.800	V1	18.3	5.4	15.0	0.0	1.0000	19.1	0.9587	25.0			1	6		
526		TATLANTIC13B	13.800	V2	18.3	5.4	15.0	0.0	1.0000	19.1	0.9587	25.0			1	6		
SUBSYSTEM TOTALS						1038.8	108.4	790.6	-318.6				1607.0					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 10:16

P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT2  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0449	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0450	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.7	5.5	8.0	0.0	1.0000	12.0	0.8889	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9933	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9934	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.1	6.0	-6.0	1.0000	9.7	0.9934	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9991	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9991	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9991	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9860	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9860	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9860	6.2			2	7	
SUBSYSTEM TOTALS						74.3	7.1	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 10:17  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT2 AREA TOTALS  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA) IN MW/MVAR

X-- AREA	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.2	224.5	-98.9	0.0	143.3	-97.5	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	235.2	569.4	-236.4	0.0	471.5	16.7	356.9	
6	1038.8	957.0	0.0	0.0	0.0	58.7	23.2	25.0
PANAMA	108.4	239.8	0.0	0.0	469.4	67.2	270.8	
7	74.3	33.0	0.0	0.0	0.0	39.9	1.5	50.0
ACANAL	7.1	8.3	0.0	0.0	0.0	-12.1	11.0	
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6261.8	6140.0	0.0	0.0	0.0	0.0	121.8	0.0
	569.0	1889.1	-847.9	0.0	2020.9	0.0	1548.7	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 10:17  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT2 SHUNT  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME	--X BASKV	N O M I N A L		
			MW	MVAR	VOLTAGE
2	PAN115	115.00	0.0	0.0	1.0040 SWITCHED
8	LSA230	230.00	0.0	0.0	1.0269 SWITCHED
10	L.S.34	34.500	0.0	0.0	1.0012 SWITCHED
13	MDNA34	34.500	0.0	0.0	1.0008 SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0406 SWITCHED









**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA DE INVIERNO  
Contingencia 3: Minas 1 – Santa Rita**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 10:29  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT3  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0308	237.09	11		M.N230		230.00	6	1.0354	238.13
14		PRO230		230.00	6	1.0381	238.76	96		FOR230		230.00	6	1.0316	237.27
100		BAY230		230.00	6	1.0230	235.29	115		PACORA23		230.00	6	1.0039	230.89
144		CANJ230		230.00	6	1.0360	238.28	147		GUASQ230		230.00	6	1.0360	238.29
148		VELAD230		230.00	6	1.0431	239.92	190		CHANG230		230.00	6	1.0375	238.62
511		LGUIAS230		230.00	6	1.0190	234.37	515		PANPOWER230		230.00	6	1.0059	231.36
6000		FRONTER		230.00	6	1.0386	238.87								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9873	227.08	3		PANII230		230.00	6	0.9951	228.86
5		CHO230		230.00	6	0.9985	229.64	103		COPESA23		230.00	6	0.9997	229.94
105		PAN-AM23		230.00	6	0.9985	229.65								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 10:29  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT3  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0124	116.42	4		PANIII115		115.00	6	1.0099	116.14
6		CHO115		115.00	6	1.0374	119.30	9		LSA115		115.00	6	1.0343	118.95
12		M.N115		115.00	6	1.0195	117.25	15		PRO115		115.00	6	1.0362	119.17
18		CAC115		115.00	6	1.0119	116.37	19		C.V115		115.00	6	1.0027	115.31
20		CH.AZUL		115.00	6	1.0334	118.84	21		C.BAN115		115.00	6	1.0023	115.27
23		CH115		115.00	6	1.0144	116.66	26		LOC115		115.00	6	1.0034	115.39
30		MAR115		115.00	6	1.0021	115.24	33		STM115		115.00	6	1.0107	116.23
37		SAN115		115.00	6	1.0012	115.14	48		TINAJ115		115.00	6	1.0094	116.08
50		M.O115		115.00	6	1.0094	116.08	52		TOC115		115.00	6	1.0073	115.84
54		LM1115		115.00	6	1.0384	119.41	55		LM2115		115.00	6	1.0383	119.40
61		FFIELD		115.00	9	1.0324	118.73	87		CAL115		115.00	6	1.0193	117.22
88		EST115		115.00	6	1.0194	117.23	92		L.V115		115.00	6	1.0196	117.26
109		STA RITA115		115.00	6	1.0356	119.09	110		PTMD115A		115.00	6	1.0259	117.98
111		PTMD115B		115.00	6	1.0259	117.98	123		MIR115		115.00	7	1.0111	116.28
154		CEMPAN15		115.00	6	1.0348	119.00	191		CHANG115		115.00	6	1.0330	118.79
522		TBALBOA 115		115.00	6	1.0386	119.43								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT3  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)  
AREA 6 [PANAMA ] MACHINE SUMMARY:

TUE, SEP 25 2007 10:29

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X	T	R	A	N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	33.0	6.2	17.0	0.0	1.0000	33.6	0.9826	47.0								1	6	
67		BLM13C		13.800	V3	33.0	6.2	17.0	0.0	1.0000	33.6	0.9826	47.0								1	6	
68		BLM13D		13.800	V4	33.0	6.4	30.0	0.0	1.0000	33.6	0.9815	47.0								1	6	
70		TGJB13A		13.800	J5	31.0	4.8	20.0	0.0	1.0000	31.4	0.9883	39.4								1	6	
71		TGJB13B		13.800	J6	31.0	4.8	20.0	0.0	1.0000	31.4	0.9883	39.4								1	6	
72		BLMCCA		13.800	T8	31.0	5.7	20.0	0.0	1.0000	31.5	0.9834	50.0								1	6	
73		BLMCCB		13.800	V9	47.0	6.1	40.0	0.0	1.0000	47.4	0.9918	71.0								1	6	
90		EST-13L		13.800	E1	20.0	-2.5	12.0	-5.0	0.9600	21.0	0.9924	27.0								1	6	
91		EST-13T		13.800	E2	20.0	-2.5	12.0	-5.0	0.9600	21.0	0.9924	27.0								1	6	
94		LV-13.8L		13.800	L1	22.0	-2.6	12.0	-5.0	0.9600	23.1	0.9933	27.0								1	6	
95		LV-13.8T		13.800	L2	22.0	0.7	12.0	-5.0	0.9700	22.7	0.9995	27.0								1	6	
97		FOR13A		13.800	F1	70.0	-43.3	50.0	-50.0	0.9800	84.0	0.8504	111.0								1	6	
98		FOR13B		13.800	F2	70.0	-43.3	50.0	-50.0	0.9800	84.0	0.8504	111.0								1	6	
101		BAY13A		13.800	B1	44.0	21.4	50.0	-25.0	1.0000	48.9	0.8994	96.0								1	6	
102		BAY13B		13.800	B2	43.5	21.3	50.0	-25.0	1.0000	48.5	0.8978	96.0								1	6	
106		PANAM13A		13.800	M1	13.5	1.5	9.0	0.0	0.9800	13.9	0.9939	20.7								1	6	
106		PANAM13A		13.800	M2	13.5	1.5	9.0	0.0	0.9800	13.9	0.9939	20.7								1	6	
106		PANAM13A		13.800	M3	13.5	1.5	9.0	0.0	0.9800	13.9	0.9939	20.7								1	6	
107		PANAM13B		13.800	M4	13.5	1.5	9.0	0.0	0.9800	13.9	0.9939	20.7								1	6	
107		PANAM13B		13.800	M5	13.5	1.5	9.0	0.0	0.9800	13.9	0.9939	20.7								1	6	
107		PANAM13B		13.800	M6	13.5	1.5	9.0	0.0	0.9800	13.9	0.9939	20.7								1	6	
108		BAY13C		13.800	B3	43.5	21.3	50.0	-25.0	1.0000	48.5	0.8978	100.0								1	6	
116		PACORA13		13.800	P1	14.0	1.6	8.8	0.0	1.0000	14.1	0.9938	21.7								1	6	
116		PACORA13		13.800	P2	14.0	1.6	8.8	0.0	1.0000	14.1	0.9938	21.7								1	6	
116		PACORA13		13.800	P3	14.0	1.6	8.8	0.0	1.0000	14.1	0.9938	21.7								1	6	
142		CANJ13A		13.800	C1	40.0	3.8	29.0	-29.0	0.9783	41.1	0.9955	69.0								1	6	
143		CANJ13B		13.800	C2	40.0	3.8	29.0	-29.0	0.9783	41.1	0.9955	69.0								1	6	
521		TCARIBE	13.813	13.800	G1	15.8	3.6	12.5	0.0	1.0000	16.2	0.9748	20.9								1	6	
521		TCARIBE	13.813	13.800	G2	15.8	3.6	12.5	0.0	1.0000	16.2	0.9748	20.9								1	6	
521		TCARIBE	13.813	13.800	G3	15.8	3.6	12.5	0.0	1.0000	16.2	0.9748	20.9								1	6	
523		TBALBOA	13A	13.800	G1	8.2	1.6	6.6	-6.6	1.0000	8.4	0.9808	10.9								1	6	
523		TBALBOA	13A	13.800	G2	8.2	1.6	6.6	-6.6	1.0000	8.4	0.9808	10.9								1	6	
523		TBALBOA	13A	13.800	G3	8.2	1.6	6.6	-6.6	1.0000	8.4	0.9808	10.9								1	6	
523		TBALBOA	13A	13.800	G4	8.2	1.6	6.6	-6.6	1.0000	8.4	0.9808	10.9								1	6	
523		TBALBOA	13A	13.800	G5	8.2	1.6	6.6	-6.6	1.0000	8.4	0.9808	10.9								1	6	
524		TBALBOA	13B	13.800	10	8.2	1.6	6.6	-6.6	1.0000	8.4	0.9808	10.9								1	6	
524		TBALBOA	13B	13.800	G6	8.2	1.6	6.6	-6.6	1.0000	8.4	0.9808	10.9								1	6	
524		TBALBOA	13B	13.800	G7	8.2	1.6	6.6	-6.6	1.0000	8.4	0.9808	10.9								1	6	
524		TBALBOA	13B	13.800	G8	8.2	1.6	6.6	-6.6	1.0000	8.4	0.9808	10.9								1	6	
524		TBALBOA	13B	13.800	G9	8.2	1.6	6.6	-6.6	1.0000	8.4	0.9808	10.9								1	6	
525		TATLANTIC13A	13.800	G1	36.0	6.4	28.5	0.0	1.0000	36.6	0.9846	47.5									1	6	
525		TATLANTIC13A	13.800	G2	36.0	6.4	28.5	0.0	1.0000	36.6	0.9846	47.5									1	6	
526		TATLANTIC13B	13.800	V1	18.3	4.8	15.0	0.0	1.0000	18.9	0.9671	25.0									1	6	
526		TATLANTIC13B	13.800	V2	18.3	4.8	15.0	0.0	1.0000	18.9	0.9671	25.0									1	6	
SUBSYSTEM TOTALS						1035.0	81.7	790.6	-318.6				1607.0										

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT3  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA)

TUE, SEP 25 2007 10:29

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0491	8.2	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0491	8.2	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.7	3.7	8.0	0.0	1.0000	11.3	0.9449	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9957	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9957	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	0.9	6.0	-6.0	1.0000	9.7	0.9957	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	1.0000	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9832	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9832	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9832	6.2			2	7	
SUBSYSTEM TOTALS						74.3	4.3	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 10:30  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT3 AREA TOTALS  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA) IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.1	224.5	-98.9	0.0	143.3	-97.6	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	233.2	569.4	-236.5	0.0	471.7	15.1	356.9	
6	1035.0	957.0	0.0	0.0	0.0	58.7	19.4	25.0
PANAMA	81.7	239.8	0.0	0.0	474.0	71.8	244.1	
7	74.3	33.0	0.0	0.0	0.0	39.8	1.5	50.0
ACANAL	4.3	8.3	0.0	0.0	0.0	-15.0	11.0	
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6258.0	6140.0	0.0	0.0	0.0	0.0	118.0	0.0
	537.4	1889.1	-848.0	0.0	2025.8	0.0	1522.0	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 25 2007 10:29  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT3 SHUNT  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS# X--	NAME --X	BASKV	N O M I N A L		VOLTAGE	
			MW	MVAR		
2	PAN115	115.00	0.0	0.0	1.0124	SWITCHED
8	LSA230	230.00	0.0	0.0	1.0308	SWITCHED
10	L.S.34	34.500	0.0	0.0	1.0052	SWITCHED
13	MDNA34	34.500	0.0	0.0	1.0020	SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0431	SWITCHED









**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO**

**Caso en que la Térmica Atlántico se conecta en Las Minas  
(Línea 115-20) Descartado por sobrecarga en líneas**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 18 2007 10:45  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	33.0	8.2	17.0	0.0	1.0000	34.0	0.9708	47.0			1	6	
67		BLM13C		13.800	V3	33.0	8.2	17.0	0.0	1.0000	34.0	0.9708	47.0			1	6	
68		BLM13D		13.800	V4	33.0	8.5	30.0	0.0	1.0000	34.1	0.9687	47.0			1	6	
70		TGJB13A		13.800	J5	31.0	6.1	20.0	0.0	1.0000	31.6	0.9814	39.4			1	6	
71		TGJB13B		13.800	J6	31.0	6.1	20.0	0.0	1.0000	31.6	0.9814	39.4			1	6	
72		BLMCCA		13.800	T8	31.0	7.0	20.0	0.0	1.0000	31.8	0.9754	50.0			1	6	
73		BLMCCB		13.800	V9	47.0	7.3	40.0	0.0	1.0000	47.6	0.9880	71.0			1	6	
90		EST-13L		13.800	E1	20.0	-2.4	12.0	-5.0	0.9600	21.0	0.9928	27.0			1	6	
91		EST-13T		13.800	E2	20.0	-2.4	12.0	-5.0	0.9600	21.0	0.9928	27.0			1	6	
94		LV-13.8L		13.800	L1	22.0	-2.5	12.0	-5.0	0.9600	23.1	0.9937	27.0			1	6	
95		LV-13.8T		13.800	L2	22.0	0.8	12.0	-5.0	0.9700	22.7	0.9994	27.0			1	6	
97		FOR13A		13.800	F1	70.0	-42.9	50.0	-50.0	0.9800	83.8	0.8528	111.0			1	6	
98		FOR13B		13.800	F2	70.0	-42.9	50.0	-50.0	0.9800	83.8	0.8528	111.0			1	6	
101		BAY13A		13.800	B1	44.7	22.3	50.0	-25.0	1.0000	49.9	0.8948	96.0			1	6	SYST
102		BAY13B		13.800	B2	43.5	22.2	50.0	-25.0	1.0000	48.9	0.8906	96.0			1	6	
106		PANAM13A		13.800	M1	13.5	1.8	9.0	0.0	0.9800	13.9	0.9917	20.7			1	6	
106		PANAM13A		13.800	M2	13.5	1.8	9.0	0.0	0.9800	13.9	0.9917	20.7			1	6	
106		PANAM13A		13.800	M3	13.5	1.8	9.0	0.0	0.9800	13.9	0.9917	20.7			1	6	
107		PANAM13B		13.800	M4	13.5	1.8	9.0	0.0	0.9800	13.9	0.9917	20.7			1	6	
107		PANAM13B		13.800	M5	13.5	1.8	9.0	0.0	0.9800	13.9	0.9917	20.7			1	6	
107		PANAM13B		13.800	M6	13.5	1.8	9.0	0.0	0.9800	13.9	0.9917	20.7			1	6	
108		BAY13C		13.800	B3	43.5	22.2	50.0	-25.0	1.0000	48.9	0.8906	100.0			1	6	
116		PACORA13		13.800	P1	14.0	1.9	8.8	0.0	1.0000	14.1	0.9911	21.7			1	6	
116		PACORA13		13.800	P2	14.0	1.9	8.8	0.0	1.0000	14.1	0.9911	21.7			1	6	
116		PACORA13		13.800	P3	14.0	1.9	8.8	0.0	1.0000	14.1	0.9911	21.7			1	6	
142		CANJ13A		13.800	C1	40.0	3.9	29.0	-29.0	0.9783	41.1	0.9953	69.0			1	6	
143		CANJ13B		13.800	C2	40.0	3.9	29.0	-29.0	0.9783	41.1	0.9953	69.0			1	6	
521		TCARIBE	13.813	13.800	G1	15.8	4.3	12.5	0.0	1.0000	16.4	0.9651	20.9			1	6	
521		TCARIBE	13.813	13.800	G2	15.8	4.3	12.5	0.0	1.0000	16.4	0.9651	20.9			1	6	
521		TCARIBE	13.813	13.800	G3	15.8	4.3	12.5	0.0	1.0000	16.4	0.9651	20.9			1	6	
523		TBALBOA	13A	13.800	G1	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9670	10.9			1	6	
523		TBALBOA	13A	13.800	G2	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9670	10.9			1	6	
523		TBALBOA	13A	13.800	G3	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9670	10.9			1	6	
523		TBALBOA	13A	13.800	G4	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9670	10.9			1	6	
523		TBALBOA	13A	13.800	G5	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9670	10.9			1	6	
524		TBALBOA	13B	13.800	10	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9670	10.9			1	6	
524		TBALBOA	13B	13.800	G6	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9670	10.9			1	6	
524		TBALBOA	13B	13.800	G7	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9670	10.9			1	6	
524		TBALBOA	13B	13.800	G8	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9670	10.9			1	6	
524		TBALBOA	13B	13.800	G9	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9670	10.9			1	6	
525		TATLANTIC13A	13.800	G1	36.0	0.0	28.5	0.0	1.0793	33.4	1.0000	47.5			1	6		
525		TATLANTIC13A	13.800	G2	36.0	0.0	28.5	0.0	1.0793	33.4	1.0000	47.5			1	6		
526		TATLANTIC13B	13.800	V1	18.3	0.0	15.0	0.0	1.0842	16.9	1.0000	25.0			1	6		
526		TATLANTIC13B	13.800	V2	18.3	0.0	15.0	0.0	1.0842	16.9	1.0000	25.0			1	6		
SUBSYSTEM TOTALS						1035.7	84.1	790.6	-318.6				1607.0					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 18 2007 10:45  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVBASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0476	8.2	1.0000	13.5			2	7		
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0476	8.2	1.0000	13.5			2	7		
130	MIR13F	13.800	G5	10.7	4.4	8.0	0.0	1.0000	11.5	0.9261	27.7			2	7		
134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9949	13.0			2	7		
135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9949	13.0			2	7		
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9949	13.0			2	7		
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7		
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7		
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7		
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9842	5.6			2	7		
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9842	6.2			2	7		
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9842	6.2			2	7		
SUBSYSTEM TOTALS				74.3	5.3	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 18 2007 10:45  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
8	LSA230	230.00	6	1.0294	236.77	11	M.N230	230.00	6	1.0348	238.00
14	PRO230	230.00	6	1.0376	238.64	96	FOR230	230.00	6	1.0311	237.16
100	BAY230	230.00	6	1.0218	235.02	115	PACORA23	230.00	6	1.0022	230.50
144	CANJ230	230.00	6	1.0354	238.14	147	GUASQ230	230.00	6	1.0355	238.15
148	VELAD230	230.00	6	1.0423	239.72	190	CHANG230	230.00	6	1.0372	238.55
511	LGUIAS230	230.00	6	1.0174	234.00	515	PANPOWER230	230.00	6	1.0040	230.92
6000	FRONTER	230.00	6	1.0381	238.76						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9851	226.56	3	PANII230	230.00	6	0.9930	228.39
5	CHO230	230.00	6	0.9966	229.22	103	COPESA23	230.00	6	0.9978	229.49
105	PAN-AM23	230.00	6	0.9966	229.23						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 18 2007 10:48  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0094	116.08	4	PANIII115	115.00	6	1.0076	115.87
6	CHO115	115.00	6	1.0354	119.07	9	LSA115	115.00	6	1.0329	118.78
12	M.N115	115.00	6	1.0191	117.20	15	PRO115	115.00	6	1.0357	119.11
18	CAC115	115.00	6	1.0089	116.02	19	C.V115	115.00	6	1.0002	115.02
20	CH.AZUL	115.00	6	1.0329	118.79	23	CH115	115.00	6	1.0107	116.23
26	LOC115	115.00	6	1.0004	115.05	33	STM115	115.00	6	1.0078	115.89
48	TINAJ115	115.00	6	1.0064	115.74	50	M.O115	115.00	6	1.0064	115.74
52	TOC115	115.00	6	1.0050	115.57	54	LM115	115.00	6	1.0334	118.84
55	LM2115	115.00	6	1.0338	118.89	61	FFIELD	115.00	9	1.0274	118.15

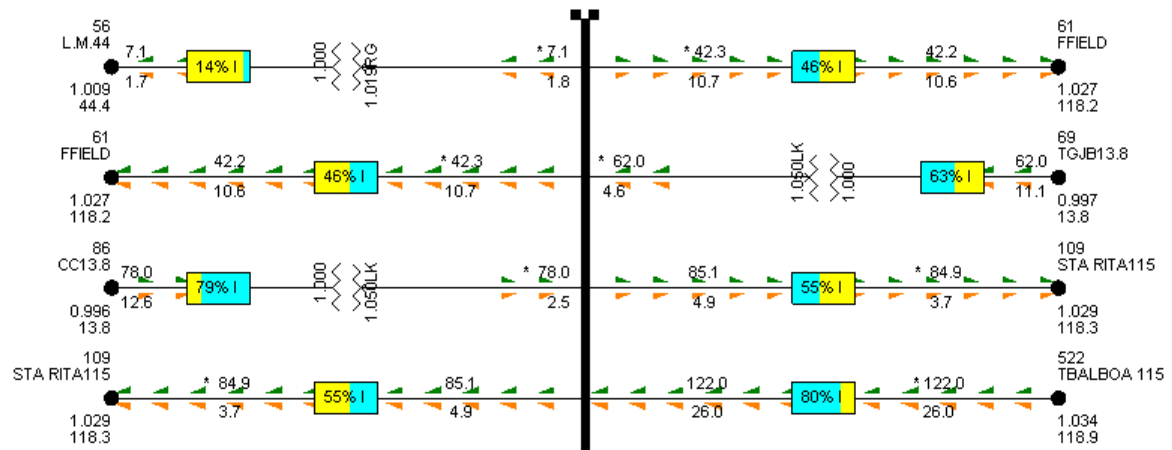


PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 10 2007 13:57  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV AREA TOTALS  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS) IN MW/MVAR

X-- AREA	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.1	224.5	-98.9	0.0	143.3	-97.5	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	233.9	569.4	-236.4	0.0	471.6	15.7	356.9	
6	1035.7	957.0	0.0	0.0	0.0	58.7	20.1	25.0
PANAMA	84.1	239.8	0.0	0.0	473.1	70.1	247.3	
7	74.3	33.0	0.0	0.0	0.0	39.8	1.5	50.0
ACANAL	5.3	8.3	0.0	0.0	0.0	-13.9	11.0	
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6258.7	6140.0	0.0	0.0	0.0	0.0	118.7	0.0
	541.6	1889.1	-847.9	0.0	2024.8	0.0	1525.3	

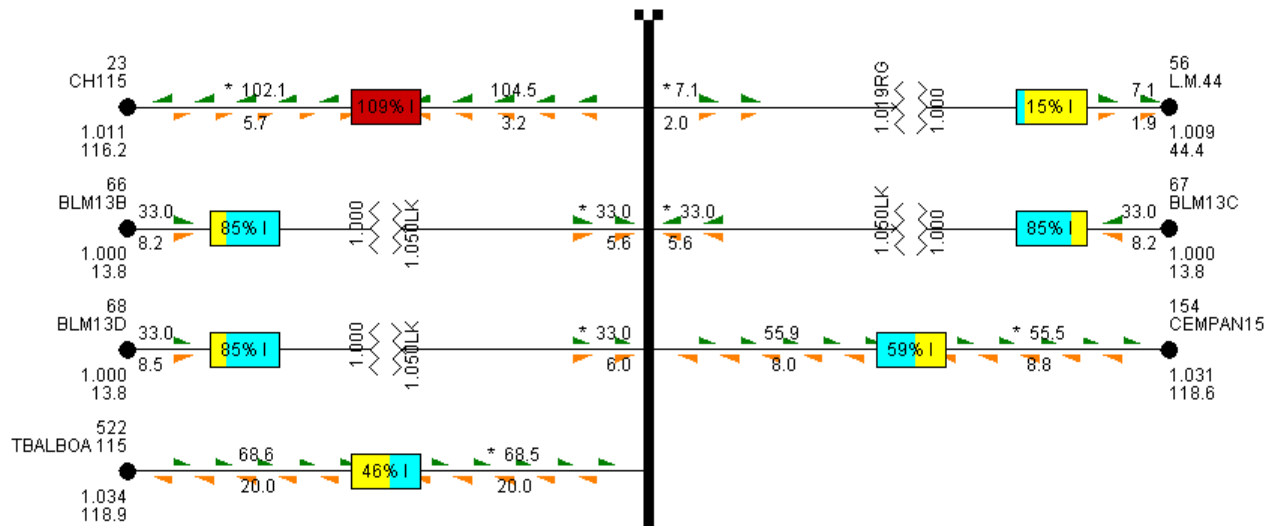
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, SEP 17 2007 10:53  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV SHUNT  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME	--X BASKV	N O M I N A L		VOLTAGE
			MW	MVAR	
2	PAN115	115.00	0.0	0.0	1.0094 SWITCHED
8	LSA230	230.00	0.0	0.0	1.0295 SWITCHED
10	L.S.34	34.500	0.0	0.0	1.0038 SWITCHED
13	MDNA34	34.500	0.0	0.0	1.0016 SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0423 SWITCHED

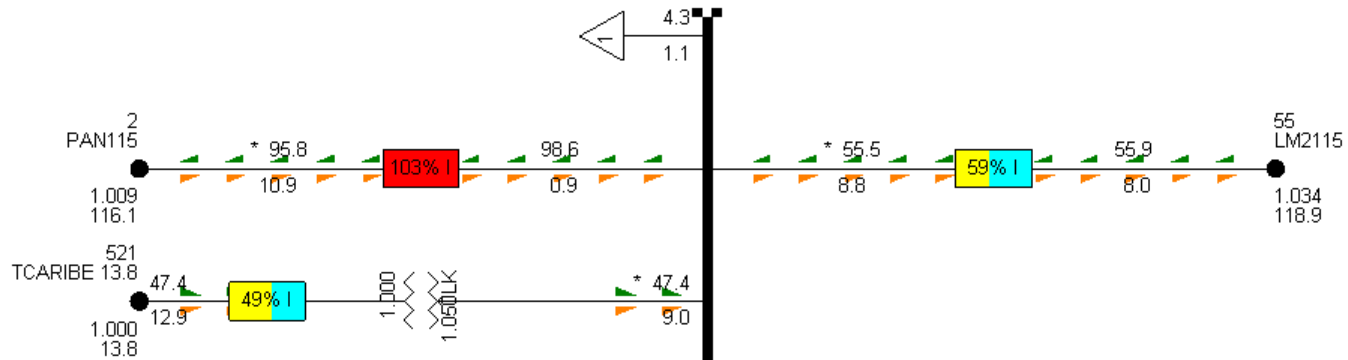


BUS # 54  
 LM1115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.03335PU  
 118.835KV  
 ANGLE 2.23Deg

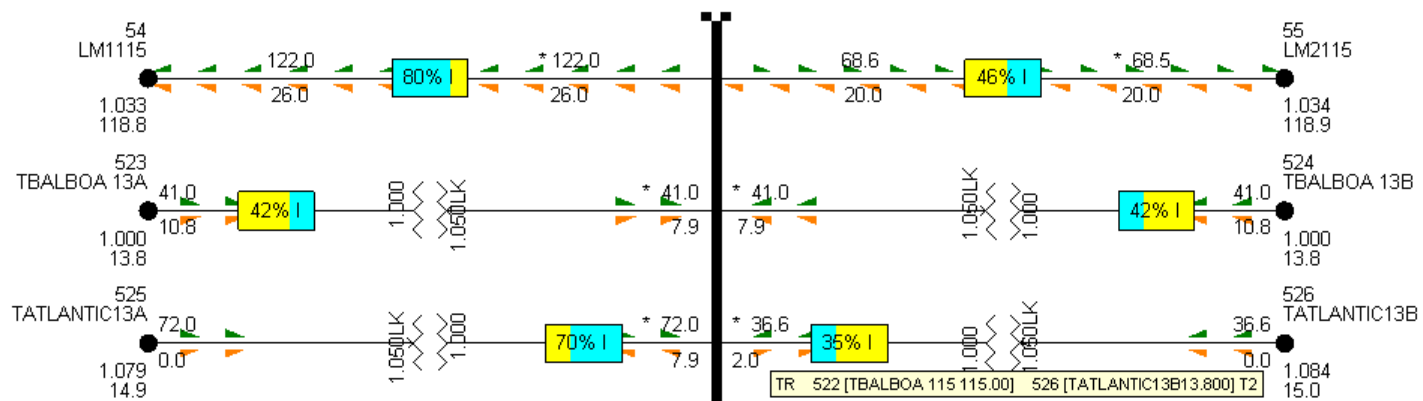




BUS # 55  
 LM2115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.03383PU  
 118.891KV  
 ANGLE 2.23Deg



BUS # 154  
 CEMPAN15 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.03139PU  
 118.610KV  
 ANGLE 0.54Deg



BUS # 522  
 TBALBOA 115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.03407PU  
 118.918KV  
 ANGLE 2.26Deg

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO**

**Contingencia 1: Panamá – Cemento Panamá**

**Caso en que la Térmica Atlántico se conecta en Las Minas  
(Línea 115-20) Descartado por sobrecarga en líneas**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	33.0	9.6	17.0	0.0	1.0000	34.4	0.9602	47.0				1	6
67	BLM13C	13.800	V3	33.0	9.6	17.0	0.0	1.0000	34.4	0.9602	47.0				1	6
68	BLM13D	13.800	V4	33.0	10.0	30.0	0.0	1.0000	34.5	0.9573	47.0				1	6
70	TGJB13A	13.800	J5	31.0	7.1	20.0	0.0	1.0000	31.8	0.9749	39.4				1	6
71	TGJB13B	13.800	J6	31.0	7.1	20.0	0.0	1.0000	31.8	0.9749	39.4				1	6
72	BLMCCA	13.800	T8	31.0	8.0	20.0	0.0	1.0000	32.0	0.9681	50.0				1	6
73	BLMCCB	13.800	V9	47.0	8.4	40.0	0.0	1.0000	47.7	0.9845	71.0				1	6
90	EST-13L	13.800	E1	20.0	-2.2	12.0	-5.0	0.9600	21.0	0.9940	27.0				1	6
91	EST-13T	13.800	E2	20.0	-2.2	12.0	-5.0	0.9600	21.0	0.9940	27.0				1	6
94	LV-13.8L	13.800	L1	22.0	-2.3	12.0	-5.0	0.9600	23.0	0.9948	27.0				1	6
95	LV-13.8T	13.800	L2	22.0	1.0	12.0	-5.0	0.9700	22.7	0.9990	27.0				1	6
97	FOR13A	13.800	F1	70.0	-41.6	50.0	-50.0	0.9800	83.1	0.8597	111.0				1	6
98	FOR13B	13.800	F2	70.0	-41.6	50.0	-50.0	0.9800	83.1	0.8597	111.0				1	6
101	BAY13A	13.800	B1	47.7	25.0	50.0	-25.0	1.0000	53.9	0.8854	96.0				1	6
102	BAY13B	13.800	B2	43.5	24.8	50.0	-25.0	1.0000	50.1	0.8689	96.0				1	6
106	PANAM13A	13.800	M1	13.5	2.5	9.0	0.0	0.9800	14.0	0.9832	20.7				1	6
106	PANAM13A	13.800	M2	13.5	2.5	9.0	0.0	0.9800	14.0	0.9832	20.7				1	6
106	PANAM13A	13.800	M3	13.5	2.5	9.0	0.0	0.9800	14.0	0.9832	20.7				1	6
107	PANAM13B	13.800	M4	13.5	2.5	9.0	0.0	0.9800	14.0	0.9832	20.7				1	6
107	PANAM13B	13.800	M5	13.5	2.5	9.0	0.0	0.9800	14.0	0.9832	20.7				1	6
107	PANAM13B	13.800	M6	13.5	2.5	9.0	0.0	0.9800	14.0	0.9832	20.7				1	6
108	BAY13C	13.800	B3	43.5	24.8	50.0	-25.0	1.0000	50.1	0.8689	100.0				1	6
116	PACORA13	13.800	P1	14.0	2.8	8.8	0.0	1.0000	14.3	0.9810	21.7				1	6
116	PACORA13	13.800	P2	14.0	2.8	8.8	0.0	1.0000	14.3	0.9810	21.7				1	6
116	PACORA13	13.800	P3	14.0	2.8	8.8	0.0	1.0000	14.3	0.9810	21.7				1	6
142	CANJ13A	13.800	C1	40.0	4.2	29.0	-29.0	0.9783	41.1	0.9946	69.0				1	6
143	CANJ13B	13.800	C2	40.0	4.2	29.0	-29.0	0.9783	41.1	0.9946	69.0				1	6
521	TCARIBE	13.813	G1	15.8	3.0	12.5	0.0	1.0000	16.1	0.9826	20.9				1	6
521	TCARIBE	13.813	G2	15.8	3.0	12.5	0.0	1.0000	16.1	0.9826	20.9				1	6
521	TCARIBE	13.813	G3	15.8	3.0	12.5	0.0	1.0000	16.1	0.9826	20.9				1	6
523	TBALBOA	13A	G1	8.2	2.6	6.6	-6.6	1.0000	8.6	0.9534	10.9				1	6
523	TBALBOA	13A	G2	8.2	2.6	6.6	-6.6	1.0000	8.6	0.9534	10.9				1	6
523	TBALBOA	13A	G3	8.2	2.6	6.6	-6.6	1.0000	8.6	0.9534	10.9				1	6
523	TBALBOA	13A	G4	8.2	2.6	6.6	-6.6	1.0000	8.6	0.9534	10.9				1	6
523	TBALBOA	13A	G5	8.2	2.6	6.6	-6.6	1.0000	8.6	0.9534	10.9				1	6
524	TBALBOA	13B	G10	8.2	2.6	6.6	-6.6	1.0000	8.6	0.9534	10.9				1	6
524	TBALBOA	13B	G6	8.2	2.6	6.6	-6.6	1.0000	8.6	0.9534	10.9				1	6
524	TBALBOA	13B	G7	8.2	2.6	6.6	-6.6	1.0000	8.6	0.9534	10.9				1	6
524	TBALBOA	13B	G8	8.2	2.6	6.6	-6.6	1.0000	8.6	0.9534	10.9				1	6
524	TBALBOA	13B	G9	8.2	2.6	6.6	-6.6	1.0000	8.6	0.9534	10.9				1	6
525	TATLANTIC13A	13.800	G1	18.3	0.0	14.5	0.0	1.0782	17.0	1.0000	24.2				1	6
525	TATLANTIC13A	13.800	G2	18.3	0.0	14.5	0.0	1.0782	17.0	1.0000	24.2				1	6
525	TATLANTIC13A	13.800	G3	18.3	0.0	14.5	0.0	1.0782	17.0	1.0000	24.2				1	6
526	TATLANTIC13B	13.800	G1	18.3	0.0	14.5	0.0	1.0782	17.0	1.0000	24.2				1	6
526	TATLANTIC13B	13.800	G2	18.3	0.0	14.5	0.0	1.0782	17.0	1.0000	24.2				1	6
526	TATLANTIC13B	13.800	G3	18.3	0.0	14.5	0.0	1.0782	17.0	1.0000	24.2				1	6
SUBSYSTEM TOTALS				1040.0	112.1	790.5	-318.6				1607.0					

SYST

P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
 Año2009 BALBOA, CARIBE Y ATLANT( MINAS) CNT 1 PMA-CEMPA

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0433	8.3	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0433	8.3	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.7	6.2	8.0	0.0	1.0000	12.4	0.8638	27.7			2	7	
134		MAD6A		6.9000	G1	9.7	1.2	6.0	-6.0	1.0000	9.8	0.9922	13.0			2	7	
135		MAD6B		6.9000	G2	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9923	13.0			2	7	
136		MAD6C		6.9000	G3	9.7	1.2	6.0	-6.0	1.0000	9.7	0.9923	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9985	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9985	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9985	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9870	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9870	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9870	6.2			2	7	
SUBSYSTEM TOTALS						74.3	8.3	51.0	-33.0				124.2					



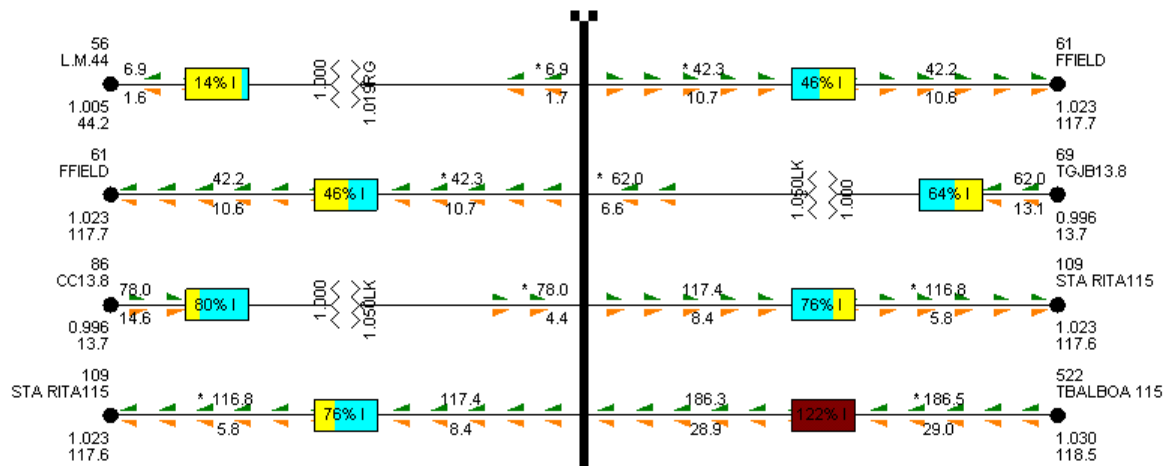
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 10 2007 15:07  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV AREA TOTALS  
 Año2009 BALBOA, CARIBE Y ATLANT( MINAS) CNT 1 PMA-CEMPA IN MW/MVAR

X-- AREA	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.2	224.5	-98.9	0.0	143.3	-97.5	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	236.0	569.4	-236.3	0.0	471.4	17.4	356.9	
6	1040.0	957.0	0.0	0.0	0.0	58.7	24.3	25.0
PANAMA	112.1	239.8	0.0	0.0	467.7	65.4	274.6	
7	74.3	33.0	0.0	0.0	0.0	39.9	1.5	50.0
ACANAL	8.3	8.3	0.0	0.0	0.0	-11.0	11.0	
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6262.9	6140.0	0.0	0.0	0.0	0.0	122.9	0.0
	574.7	1889.1	-847.8	0.0	2019.0	0.0	1552.5	

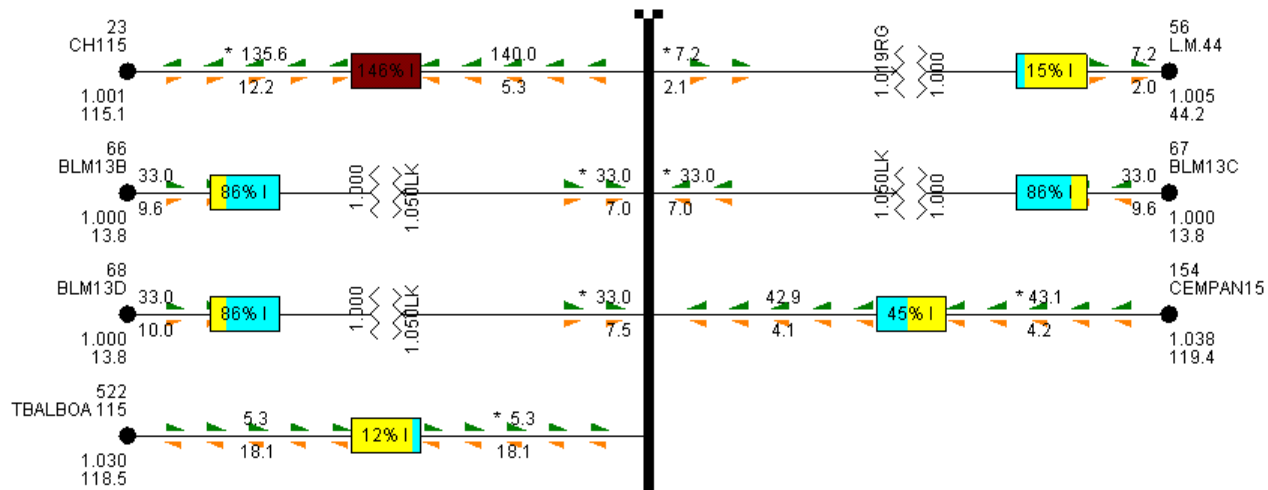
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 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV SHUNT  
 Año2009 BALBOA, CARIBE Y ATLANT( MINAS) CNT 1 PMA-CEMPA SUMMARY  
 OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME	--X BASKV	N O M I N A L		
			MW	MVAR	VOLTAGE
2	PAN115	115.00	0.0	0.0	1.0008 SWITCHED
8	LSA230	230.00	0.0	0.0	1.0254 SWITCHED
10	L.S.34	34.500	0.0	0.0	1.0114 SWITCHED
13	MDNA34	34.500	0.0	0.0	1.0003 SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0397 SWITCHED

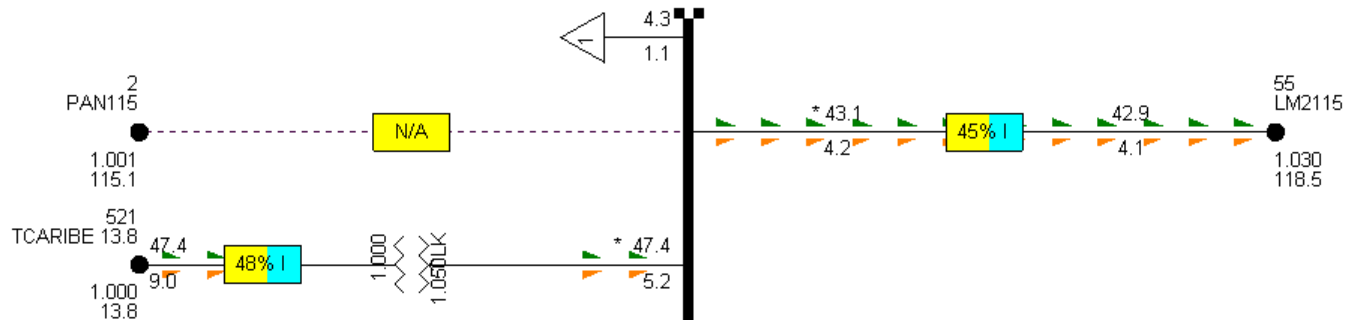


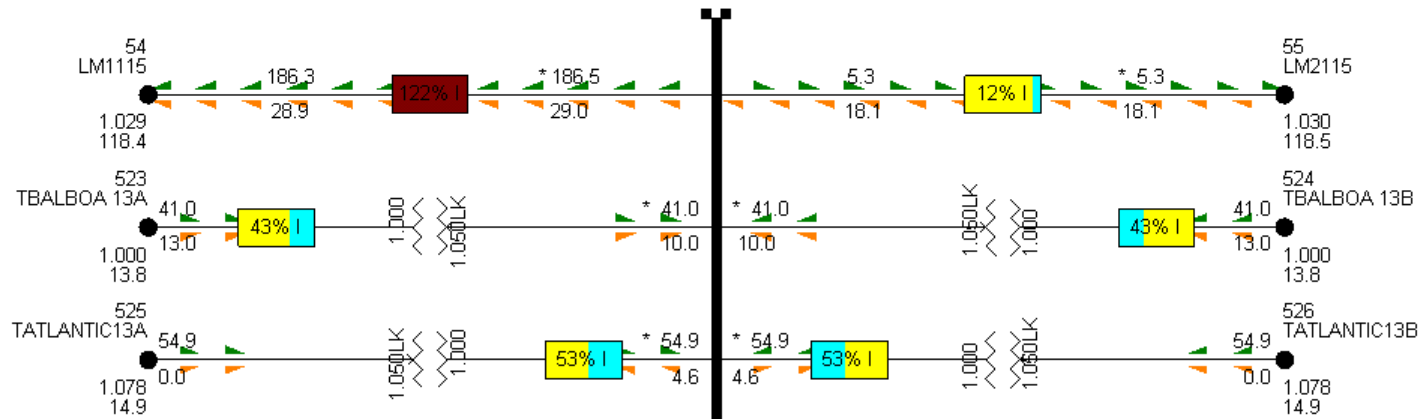


BUS # 54  
 LM1115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.02937PU  
 118.377KV  
 ANGLE 5.50Deg



**BUS # 55**  
 LM2115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.03047PU  
 118.504KV  
 ANGLE 5.54Deg





BUS # 522  
 TBALBOA 115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.03041PU  
 118.497KV  
 ANGLE 5.54Deg

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO**

**Contingencia 2: Minas 2 - Chilibre**

**Caso en que la Térmica Atlántico se conecta en Las Minas  
(Línea 115-20) Descartado por sobrecarga en líneas**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	33.0	8.7	17.0	0.0	1.0000	34.1	0.9666	47.0			1	6	
67	BLM13C	13.800	V3	33.0	8.7	17.0	0.0	1.0000	34.1	0.9666	47.0			1	6	
68	BLM13D	13.800	V4	33.0	9.1	30.0	0.0	1.0000	34.2	0.9642	47.0			1	6	
70	TGJB13A	13.800	J5	31.0	6.6	20.0	0.0	1.0000	31.7	0.9780	39.4			1	6	
71	TGJB13B	13.800	J6	31.0	6.6	20.0	0.0	1.0000	31.7	0.9780	39.4			1	6	
72	BLMCCA	13.800	T8	31.0	7.5	20.0	0.0	1.0000	31.9	0.9716	50.0			1	6	
73	BLMCCB	13.800	V9	47.0	7.9	40.0	0.0	1.0000	47.7	0.9862	71.0			1	6	
90	EST-13L	13.800	E1	20.0	-2.2	12.0	-5.0	0.9600	21.0	0.9941	27.0			1	6	
91	EST-13T	13.800	E2	20.0	-2.2	12.0	-5.0	0.9600	21.0	0.9941	27.0			1	6	
94	LV-13.8L	13.800	L1	22.0	-2.2	12.0	-5.0	0.9600	23.0	0.9948	27.0			1	6	
95	LV-13.8T	13.800	L2	22.0	1.0	12.0	-5.0	0.9700	22.7	0.9989	27.0			1	6	
97	FOR13A	13.800	F1	70.0	-41.5	50.0	-50.0	0.9800	83.0	0.8601	111.0			1	6	
98	FOR13B	13.800	F2	70.0	-41.5	50.0	-50.0	0.9800	83.0	0.8601	111.0			1	6	
101	BAY13A	13.800	B1	48.0	25.2	50.0	-25.0	1.0000	54.2	0.8852	96.0			1	6	SYST
102	BAY13B	13.800	B2	43.5	24.9	50.0	-25.0	1.0000	50.2	0.8677	96.0			1	6	
106	PANAM13A	13.800	M1	13.5	2.5	9.0	0.0	0.9800	14.0	0.9826	20.7			1	6	
106	PANAM13A	13.800	M2	13.5	2.5	9.0	0.0	0.9800	14.0	0.9826	20.7			1	6	
106	PANAM13A	13.800	M3	13.5	2.5	9.0	0.0	0.9800	14.0	0.9826	20.7			1	6	
107	PANAM13B	13.800	M4	13.5	2.5	9.0	0.0	0.9800	14.0	0.9826	20.7			1	6	
107	PANAM13B	13.800	M5	13.5	2.5	9.0	0.0	0.9800	14.0	0.9826	20.7			1	6	
107	PANAM13B	13.800	M6	13.5	2.5	9.0	0.0	0.9800	14.0	0.9826	20.7			1	6	
108	BAY13C	13.800	B3	43.5	24.9	50.0	-25.0	1.0000	50.2	0.8677	100.0			1	6	
116	PACORA13	13.800	P1	14.0	2.8	8.8	0.0	1.0000	14.3	0.9803	21.7			1	6	
116	PACORA13	13.800	P2	14.0	2.8	8.8	0.0	1.0000	14.3	0.9803	21.7			1	6	
116	PACORA13	13.800	P3	14.0	2.8	8.8	0.0	1.0000	14.3	0.9803	21.7			1	6	
142	CANJ13A	13.800	C1	40.0	4.2	29.0	-29.0	0.9783	41.1	0.9946	69.0			1	6	
143	CANJ13B	13.800	C2	40.0	4.2	29.0	-29.0	0.9783	41.1	0.9946	69.0			1	6	
521	TCARIBE	13.813	G1	15.8	5.3	12.5	0.0	1.0000	16.7	0.9480	20.9			1	6	
521	TCARIBE	13.813	G2	15.8	5.3	12.5	0.0	1.0000	16.7	0.9480	20.9			1	6	
521	TCARIBE	13.813	G3	15.8	5.3	12.5	0.0	1.0000	16.7	0.9480	20.9			1	6	
523	TBALBOA	13A	G1	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9607	10.9			1	6	
523	TBALBOA	13A	G2	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9607	10.9			1	6	
523	TBALBOA	13A	G3	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9607	10.9			1	6	
523	TBALBOA	13A	G4	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9607	10.9			1	6	
523	TBALBOA	13A	G5	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9607	10.9			1	6	
524	TBALBOA	13B	G10	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9607	10.9			1	6	
524	TBALBOA	13B	G6	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9607	10.9			1	6	
524	TBALBOA	13B	G7	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9607	10.9			1	6	
524	TBALBOA	13B	G8	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9607	10.9			1	6	
524	TBALBOA	13B	G9	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9607	10.9			1	6	
525	TATLANTIC13A	13.800	G1	18.3	0.0	14.5	0.0	1.0802	16.9	1.0000	24.2			1	6	
525	TATLANTIC13A	13.800	G2	18.3	0.0	14.5	0.0	1.0802	16.9	1.0000	24.2			1	6	
525	TATLANTIC13A	13.800	G3	18.3	0.0	14.5	0.0	1.0802	16.9	1.0000	24.2			1	6	
526	TATLANTIC13B	13.800	G1	18.3	0.0	14.5	0.0	1.0802	16.9	1.0000	24.2			1	6	
526	TATLANTIC13B	13.800	G2	18.3	0.0	14.5	0.0	1.0802	16.9	1.0000	24.2			1	6	
526	TATLANTIC13B	13.800	G3	18.3	0.0	14.5	0.0	1.0802	16.9	1.0000	24.2			1	6	
SUBSYSTEM TOTALS				1040.2	113.4	790.5	-318.6				1607.0					

P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INVÔê\_  
 Año2009 BALBOA, CARIBE Y TATLANT(MINAS) CNT2 MINAS2-CHILIBRE

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.6	0.0	5.0	0.0	1.0430	8.3	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.6	0.0	5.0	0.0	1.0431	8.3	1.0000	13.5				2	7
130		MIR13F		13.800	G5	10.7	6.3	8.0	0.0	1.0000	12.4	0.8603	27.7				2	7
134		MAD6A		6.9000	G1	9.7	1.2	6.0	-6.0	1.0000	9.8	0.9920	13.0				2	7
135		MAD6B		6.9000	G2	9.7	1.2	6.0	-6.0	1.0000	9.8	0.9921	13.0				2	7
136		MAD6C		6.9000	G3	9.7	1.2	6.0	-6.0	1.0000	9.8	0.9921	13.0				2	7
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9984	4.1				2	7
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9984	4.1				2	7
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9984	4.1				2	7
141		GAT6B		6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9871	5.6				2	7
141		GAT6B		6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9871	6.2				2	7
141		GAT6B		6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9871	6.2				2	7
SUBSYSTEM TOTALS						74.3	8.4	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 10 2007 15:18  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INVÔë\_  
AÑO2009 BALBOA, CARIBE Y TATLANT(MINAS) CNT2 MINAS2-CHILIBRE

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8	LSA230	230.00	6	1.0252	235.80	11	M.N230	230.00	6	1.0331	237.60				
14	PRO230	230.00	6	1.0360	238.29	96	FOR230	230.00	6	1.0296	236.81				
100	BAY230	230.00	6	1.0182	234.19	144	CANJ230	230.00	6	1.0336	237.73				
147	GUASQ230	230.00	6	1.0336	237.74	148	VELAD230	230.00	6	1.0395	239.09				
190	CHANG230	230.00	6	1.0362	238.33	511	LGUIAS230	230.00	6	1.0125	232.87				
6000	FRONTER	230.00	6	1.0366	238.42										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9781	224.97	3	PANII230	230.00	6	0.9867	226.93				
5	CHO230	230.00	6	0.9908	227.89	103	COPESA23	230.00	6	0.9919	228.13				
105	PAN-AM23	230.00	6	0.9909	227.91	115	PACORA23	230.00	6	0.9969	229.30				
515	PANPOWER230	230.00	6	0.9980	229.54										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 10 2007 15:18  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INVÔë\_  
AÑO2009 BALBOA, CARIBE Y TATLANT(MINAS) CNT2 MINAS2-CHILIBRE

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0003	115.03	4	PANII115	115.00	6	1.0003	115.03				
6	CHO115	115.00	6	1.0292	118.36	9	LSA115	115.00	6	1.0284	118.27				
12	M.N115	115.00	6	1.0178	117.05	15	PRO115	115.00	6	1.0342	118.93				
20	CH.AZUL	115.00	6	1.0314	118.61	54	LM1115	115.00	6	1.0312	118.59				
55	LM2115	115.00	6	1.0324	118.73	61	FFIELD	115.00	9	1.0253	117.91				
87	CAL115	115.00	6	1.0182	117.09	88	EST115	115.00	6	1.0184	117.11				
92	L.V115	115.00	6	1.0185	117.13	109	STA RITA115	115.00	6	1.0245	117.81				
110	PTMD115A	115.00	6	1.0130	116.49	111	PTMD115B	115.00	6	1.0130	116.49				
154	CEMPAN15	115.00	6	1.0263	118.02	191	CHANG115	115.00	6	1.0317	118.65				
522	TBALBOA 115	115.00	6	1.0323	118.72										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
18	CAC115	115.00	6	0.9998	114.97	19	C.V115	115.00	6	0.9923	114.11				
21	C.BAN115	115.00	6	0.9904	113.89	23	CH115	115.00	6	0.9893	113.76				
26	LOC115	115.00	6	0.9914	114.01	30	MAR115	115.00	6	0.9900	113.85				
33	STM115	115.00	6	0.9986	114.84	37	SAN115	115.00	6	0.9894	113.78				
48	TINAJ115	115.00	6	0.9973	114.69	50	M.O115	115.00	6	0.9972	114.68				
52	TOC115	115.00	6	0.9977	114.73	123	MIR115	115.00	7	0.9997	114.97				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 10 2007 15:19  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INVÔë\_  
AÑO2009 BALBOA, CARIBE Y TATLANT(MINAS) CNT2 MINAS2-CHILIBRE

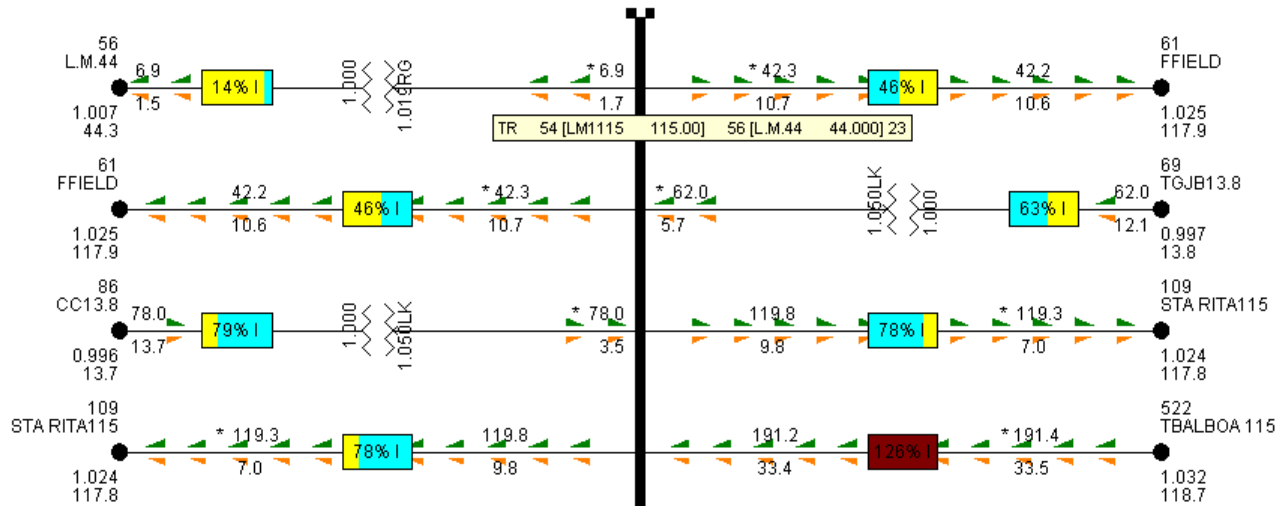
IN MW/MVAR  
X-- AREA --X GENERATION TO LOAD TO BUS SHUNT TO LINE SHUNT FROM CHARGING TO NET INT DESIRED NET INT



1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.2	224.5	-98.9	0.0	143.3	-97.5	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	236.1	569.4	-236.3	0.0	471.4	17.5	356.9	
6	1040.2	957.0	0.0	0.0	0.0	58.7	24.6	25.0
PANAMA	113.4	239.8	0.0	0.0	467.9	65.1	276.4	
7	74.3	33.0	0.0	0.0	0.0	39.9	1.5	50.0
ACANAL	8.4	8.3	0.0	0.0	0.0	-10.8	11.0	
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6263.2	6140.0	0.0	0.0	0.0	0.0	123.2	0.0
	576.2	1889.1	-847.8	0.0	2019.3	0.0	1554.3	

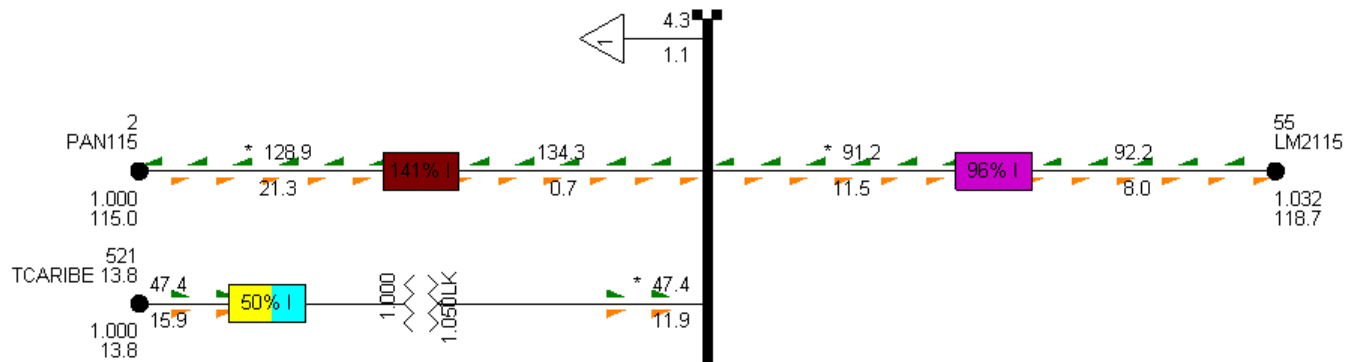
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 10 2007 15:19  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INVÔê\_  
AÑO2009 BALBOA, CARIBE Y TATLANT(MINAS) CNT2 MINAS2-CHILIBRE SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME	--X BASKV	N O M I N A L		VOLTAGE	
			MW	MVAR		
2	PAN115	115.00	0.0	0.0	1.0003	SWITCHED
8	LSA230	230.00	0.0	0.0	1.0252	SWITCHED
10	L.S.34	34.500	0.0	0.0	1.0112	SWITCHED
13	MDNA34	34.500	0.0	0.0	1.0003	SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0395	SWITCHED

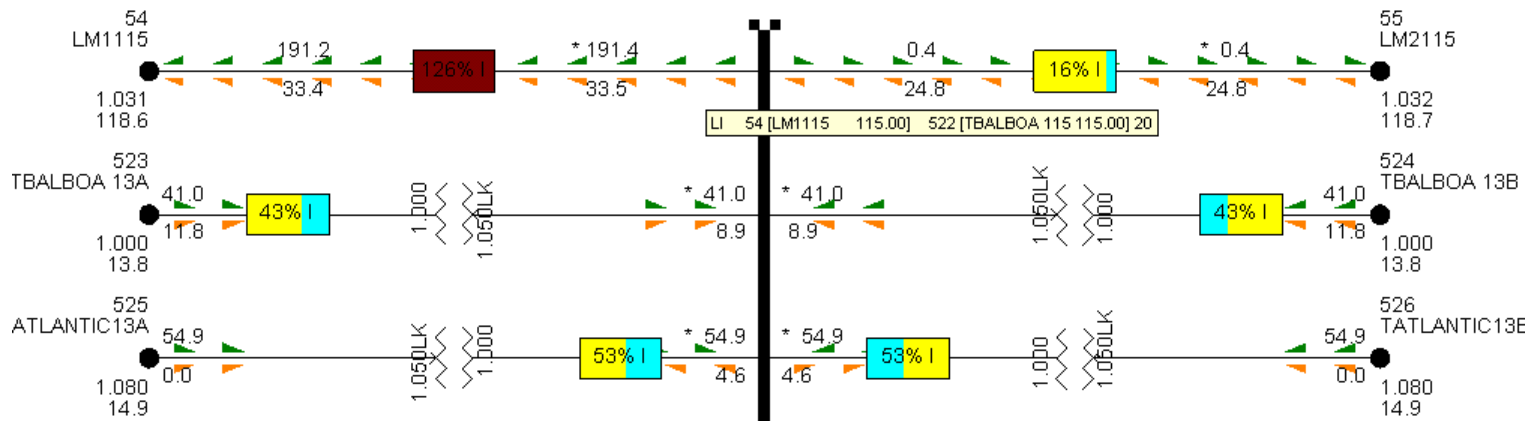


BUS # 54  
 LM1115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.03123PU  
 118.592KV  
 ANGLE 5.71Deg





BUS # 154  
 CEMPAN15 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.02625PU  
 118.019KV  
 ANGLE 2.97Deg



BUS # 522  
 TBALBOA 115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.03232PU  
 118.717KV  
 ANGLE 5.75Deg

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO**

**Contingencia 3: Minas 3 – Santa Rita**

**Caso en que la Térmica Atlántico se conecta en Las Minas  
(Línea 115-20) Descartado por sobrecarga en líneas**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	33.0	8.2	17.0	0.0	1.0000	34.0	0.9704	47.0			1	6	
67	BLM13C	13.800	V3	33.0	8.2	17.0	0.0	1.0000	34.0	0.9704	47.0			1	6	
68	BLM13D	13.800	V4	33.0	8.5	30.0	0.0	1.0000	34.1	0.9683	47.0			1	6	
70	TGJB13A	13.800	J5	31.0	6.1	20.0	0.0	1.0000	31.6	0.9813	39.4			1	6	
71	TGJB13B	13.800	J6	31.0	6.1	20.0	0.0	1.0000	31.6	0.9813	39.4			1	6	
72	BLMCCA	13.800	T8	31.0	7.0	20.0	0.0	1.0000	31.8	0.9753	50.0			1	6	
73	BLMCCB	13.800	V9	47.0	7.4	40.0	0.0	1.0000	47.6	0.9880	71.0			1	6	
90	EST-13L	13.800	E1	20.0	-2.4	12.0	-5.0	0.9600	21.0	0.9930	27.0			1	6	
91	EST-13T	13.800	E2	20.0	-2.4	12.0	-5.0	0.9600	21.0	0.9930	27.0			1	6	
94	LV-13.8L	13.800	L1	22.0	-2.4	12.0	-5.0	0.9600	23.1	0.9939	27.0			1	6	
95	LV-13.8T	13.800	L2	22.0	0.8	12.0	-5.0	0.9700	22.7	0.9993	27.0			1	6	
97	FOR13A	13.800	F1	70.0	-42.7	50.0	-50.0	0.9800	83.7	0.8538	111.0			1	6	
98	FOR13B	13.800	F2	70.0	-42.7	50.0	-50.0	0.9800	83.7	0.8538	111.0			1	6	
101	BAY13A	13.800	B1	45.5	22.7	50.0	-25.0	1.0000	50.8	0.8946	96.0			1	6	SYST
102	BAY13B	13.800	B2	43.5	22.6	50.0	-25.0	1.0000	49.0	0.8874	96.0			1	6	
106	PANAM13A	13.800	M1	13.5	1.9	9.0	0.0	0.9800	13.9	0.9906	20.7			1	6	
106	PANAM13A	13.800	M2	13.5	1.9	9.0	0.0	0.9800	13.9	0.9906	20.7			1	6	
106	PANAM13A	13.800	M3	13.5	1.9	9.0	0.0	0.9800	13.9	0.9906	20.7			1	6	
107	PANAM13B	13.800	M4	13.5	1.9	9.0	0.0	0.9800	13.9	0.9906	20.7			1	6	
107	PANAM13B	13.800	M5	13.5	1.9	9.0	0.0	0.9800	13.9	0.9906	20.7			1	6	
107	PANAM13B	13.800	M6	13.5	1.9	9.0	0.0	0.9800	13.9	0.9906	20.7			1	6	
108	BAY13C	13.800	B3	43.5	22.6	50.0	-25.0	1.0000	49.0	0.8874	100.0			1	6	
116	PACORA13	13.800	P1	14.0	2.0	8.8	0.0	1.0000	14.1	0.9899	21.7			1	6	
116	PACORA13	13.800	P2	14.0	2.0	8.8	0.0	1.0000	14.1	0.9899	21.7			1	6	
116	PACORA13	13.800	P3	14.0	2.0	8.8	0.0	1.0000	14.1	0.9899	21.7			1	6	
142	CANJ13A	13.800	C1	40.0	3.9	29.0	-29.0	0.9783	41.1	0.9952	69.0			1	6	
143	CANJ13B	13.800	C2	40.0	3.9	29.0	-29.0	0.9783	41.1	0.9952	69.0			1	6	
521	TCARIBE	13.813	G1	15.8	4.4	12.5	0.0	1.0000	16.4	0.9632	20.9			1	6	
521	TCARIBE	13.813	G2	15.8	4.4	12.5	0.0	1.0000	16.4	0.9632	20.9			1	6	
521	TCARIBE	13.813	G3	15.8	4.4	12.5	0.0	1.0000	16.4	0.9632	20.9			1	6	
523	TBALBOA	13A	G1	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9667	10.9			1	6	
523	TBALBOA	13A	G2	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9667	10.9			1	6	
523	TBALBOA	13A	G3	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9667	10.9			1	6	
523	TBALBOA	13A	G4	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9667	10.9			1	6	
523	TBALBOA	13A	G5	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9667	10.9			1	6	
524	TBALBOA	13B	G10	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9667	10.9			1	6	
524	TBALBOA	13B	G6	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9667	10.9			1	6	
524	TBALBOA	13B	G7	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9667	10.9			1	6	
524	TBALBOA	13B	G8	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9667	10.9			1	6	
524	TBALBOA	13B	G9	8.2	2.2	6.6	-6.6	1.0000	8.5	0.9667	10.9			1	6	
525	TATLANTIC13A	13.800	G1	36.0	0.0	28.5	0.0	1.0793	33.4	1.0000	47.5			1	6	
525	TATLANTIC13A	13.800	G2	36.0	0.0	28.5	0.0	1.0793	33.4	1.0000	47.5			1	6	
526	TATLANTIC13B	13.800	V1	18.3	0.0	15.0	0.0	1.0841	16.9	1.0000	25.0			1	6	
526	TATLANTIC13B	13.800	V2	18.3	0.0	15.0	0.0	1.0841	16.9	1.0000	25.0			1	6	
SUBSYSTEM TOTALS				1036.5	87.6	790.6	-318.6				1607.0					

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126	MIR13A	12.000	G1	8.6	0.0	5.0	0.0	1.0469	8.2	1.0000	13.5			2	7	
127	MIR13B	12.000	G2	8.6	0.0	5.0	0.0	1.0470	8.2	1.0000	13.5			2	7	
130	MIR13F	13.800	G5	10.7	4.6	8.0	0.0	1.0000	11.6	0.9174	27.7			2	7	
134	MAD6A	6.9000	G1	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9945	13.0			2	7	
135	MAD6B	6.9000	G2	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9946	13.0			2	7	
136	MAD6C	6.9000	G3	9.7	1.0	6.0	-6.0	1.0000	9.7	0.9946	13.0			2	7	
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9997	4.1			2	7	
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9997	4.1			2	7	
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9997	4.1			2	7	
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9847	5.6			2	7	
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9847	6.2			2	7	
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0000	3.9	0.9847	6.2			2	7	
SUBSYSTEM TOTALS				74.3	5.8	51.0	-33.0				124.2					



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 10 2007 15:41  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT3 MINAS1-SRITA  
 AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)A

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
8	LSA230	230.00	6	1.0288	236.64	11	M.N230	230.00	6	1.0346	237.95
14	PRO230	230.00	6	1.0374	238.59	96	FOR230	230.00	6	1.0309	237.11
100	BAY230	230.00	6	1.0213	234.91	115	PACORA23	230.00	6	1.0014	230.33
144	CANJ230	230.00	6	1.0351	238.08	147	GUASQ230	230.00	6	1.0352	238.10
148	VELAD230	230.00	6	1.0419	239.63	190	CHANG230	230.00	6	1.0370	238.52
511	LGUIAS230	230.00	6	1.0167	233.84	515	PANPOWER230	230.00	6	1.0031	230.72
6000	FRONTER	230.00	6	1.0379	238.71						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9841	226.34	3	PANII230	230.00	6	0.9921	228.19
5	CHO230	230.00	6	0.9958	229.03	103	COPESA23	230.00	6	0.9970	229.30
105	PAN-AM23	230.00	6	0.9958	229.04						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 10 2007 15:47  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT3 MINAS1-SRITA  
 AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)A

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0081	115.94	4	PANII115	115.00	6	1.0065	115.75
6	CHO115	115.00	6	1.0345	118.97	9	LSA115	115.00	6	1.0323	118.71
12	M.N115	115.00	6	1.0189	117.18	15	PRO115	115.00	6	1.0355	119.08
18	CAC115	115.00	6	1.0076	115.87	20	CH.AZUL	115.00	6	1.0327	118.76
23	CH115	115.00	6	1.0095	116.10	33	STM115	115.00	6	1.0065	115.74
48	TINAJ115	115.00	6	1.0052	115.59	50	M.O115	115.00	6	1.0051	115.59
52	TOC115	115.00	6	1.0039	115.45	54	LM115	115.00	6	1.0333	118.83
55	LM2115	115.00	6	1.0337	118.88	61	FFIELD	115.00	9	1.0274	118.15
87	CAL115	115.00	6	1.0189	117.18	88	EST115	115.00	6	1.0190	117.19
92	L.V115	115.00	6	1.0192	117.21	109	STA RITA115	115.00	6	1.0251	117.89
110	PTMD115A	115.00	6	1.0182	117.10	111	PTMD115B	115.00	6	1.0182	117.10
123	MIR115	115.00	7	1.0071	115.82	154	CEMPAN15	115.00	6	1.0308	118.54
191	CHANG115	115.00	6	1.0325	118.74	522	TBALBOA 115	115.00	6	1.0340	118.91

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
19	C.V115	115.00	6	0.9991	114.89	21	C.BAN115	115.00	6	0.9981	114.78
26	LOC115	115.00	6	0.9992	114.90	30	MAR115	115.00	6	0.9978	114.75
37	SAN115	115.00	6	0.9971	114.66						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 10 2007 15:49  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT3 MINAS1-SRITA  
 AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)A

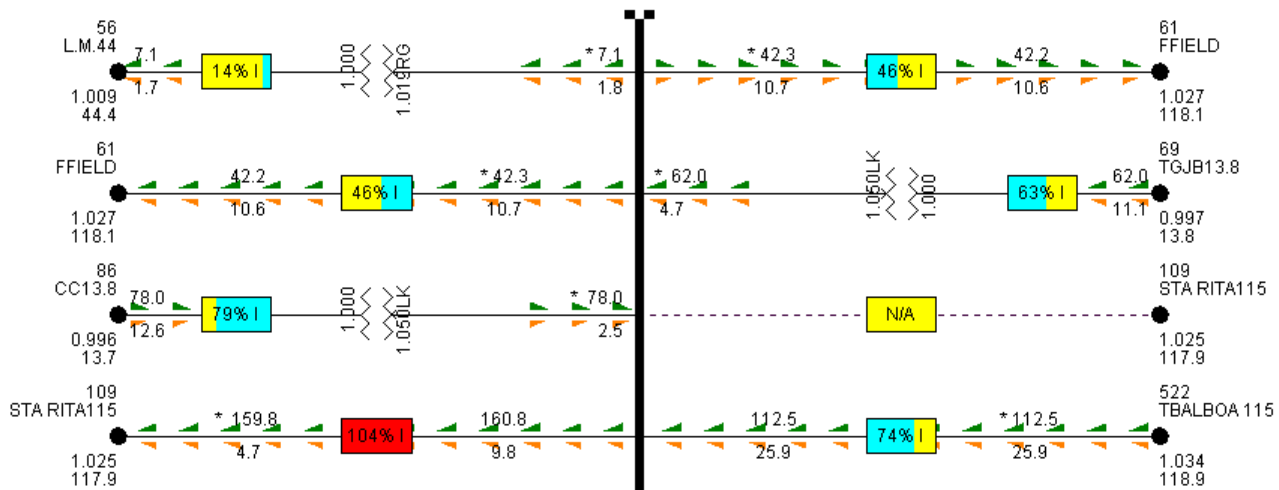
FROM	TO	TO BUS	TO LINE	FROM	TO	DESIRED		
X-- AREA	--X GENERATION	LOAD	SHUNT	SHUNT	CHARGING	NET INT	LOSSES	NET INT

AREA TOTALS  
 IN MW/MVAR

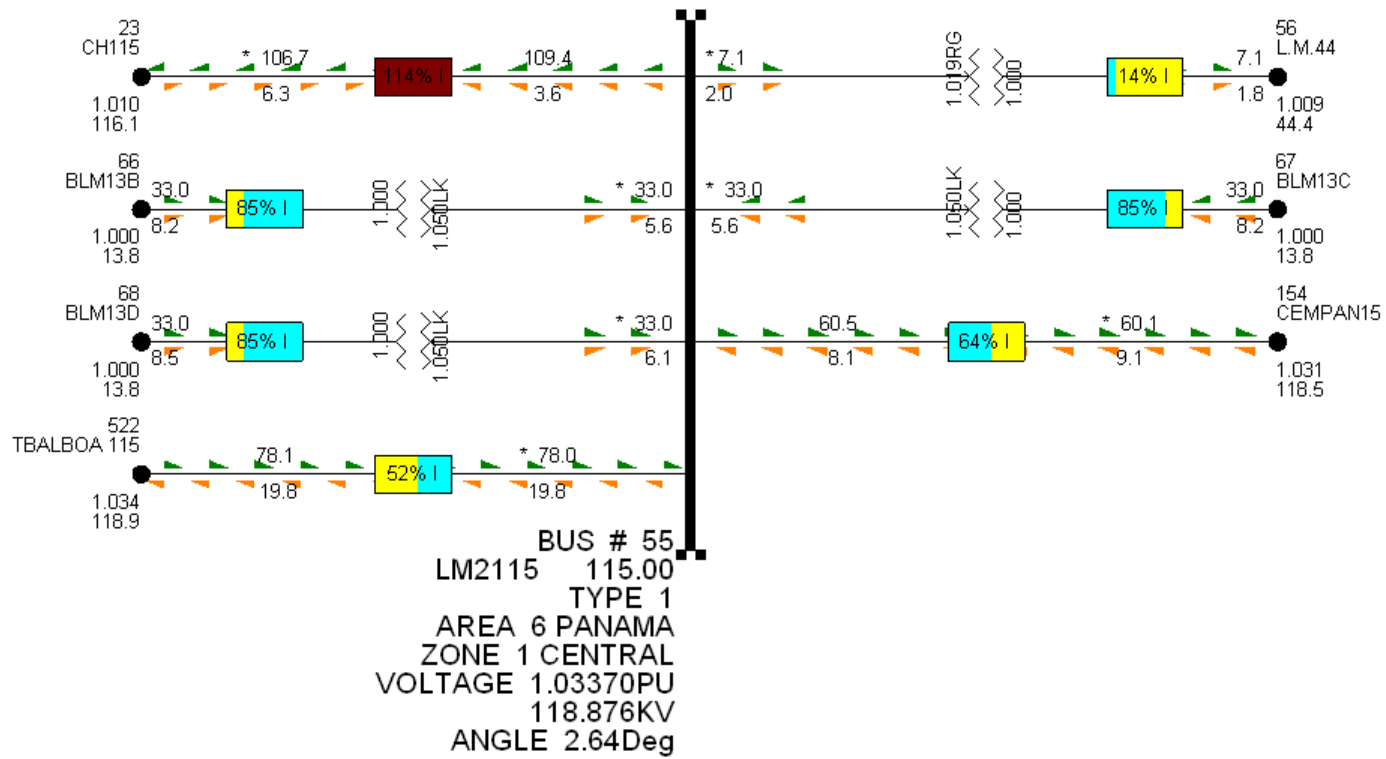
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.1	224.5	-98.9	0.0	143.3	-97.5	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	234.2	569.4	-236.4	0.0	471.6	15.9	356.9	
6	1036.5	957.0	0.0	0.0	0.0	58.7	20.9	25.0
PANAMA	87.6	239.8	0.0	0.0	472.3	69.4	250.7	
7	74.3	33.0	0.0	0.0	0.0	39.9	1.5	50.0
ACANAL	5.8	8.3	0.0	0.0	0.0	-13.5	11.0	
9	0.0	98.5	0.0	0.0	0.0	-98.7	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-25.2	1.6	
TOTALS	6259.5	6140.0	0.0	0.0	0.0	0.0	119.5	0.0
	545.9	1889.1	-847.9	0.0	2023.9	0.0	1528.7	

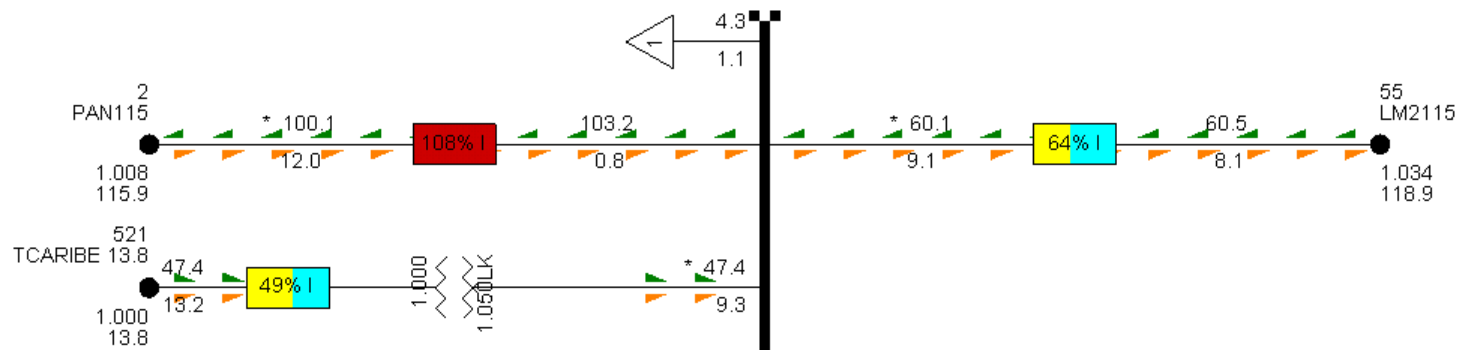
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 10 2007 15:48  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT3 MINAS1-SRITA SHUNT  
AÑO 2009 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)A SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME	--X BASKV	N O M I N A L			
			MW	MVAR	VOLTAGE	
2	PAN115	115.00	0.0	0.0	1.0081	SWITCHED
8	LSA230	230.00	0.0	0.0	1.0288	SWITCHED
10	L.S.34	34,500	0.0	0.0	1.0032	SWITCHED
13	MDNA34	34,500	0.0	0.0	1.0014	SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0419	SWITCHED

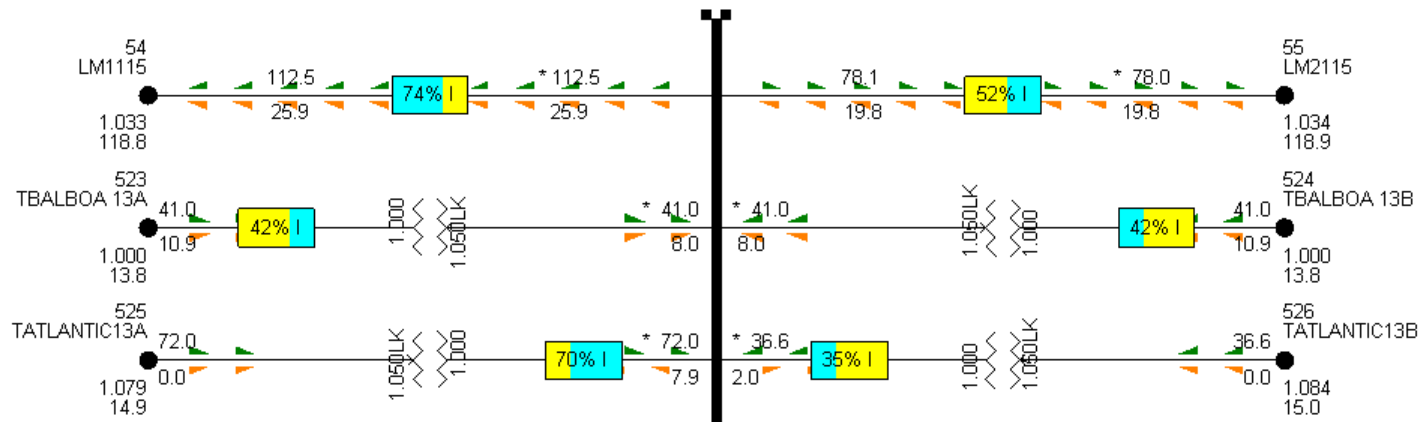


BUS # 54  
 LM1115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.03332PU  
 118.831KV  
 ANGLE 2.64Deg





BUS # 154  
 CEMPAN15 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.03078PU  
 118.540KV  
 ANGLE 0.81Deg



BUS # 522  
 TBALBOA 115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.03399PU  
 118.908KV  
 ANGLE 2.66Deg

**AÑO 2011**

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2011 ESCENARIO MODERADO DEMANDA MAXIMA INVIERNO**



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 10:35  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0057	231.31	5		CHO230		230.00	6	1.0039	230.90
8		LSA230		230.00	6	1.0309	237.12	11		M.N230		230.00	6	1.0355	238.16
14		PRO230		230.00	6	1.0374	238.60	96		FOR230		230.00	6	1.0288	236.61
100		BAY230		230.00	6	1.0205	234.71	103		COPESA23		230.00	6	1.0084	231.92
105		PAN-AM23		230.00	6	1.0040	230.92	115		PACORA23		230.00	6	1.0097	232.23
117		STA RITA230		230.00	6	1.0243	235.60	144		CANJ230		230.00	6	1.0341	237.85
147		GUASQ230		230.00	6	1.0340	237.83	148		VELAD230		230.00	6	1.0414	239.52
190		CHANG230		230.00	6	1.0271	236.24	306		CHANG75		230.00	6	1.0270	236.20
511		LGUIAS230		230.00	6	1.0209	234.82	515		PANPOWER230		230.00	6	1.0145	233.33
6000		FRONTER		230.00	6	1.0378	238.69								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9943	228.69								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 10:36  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0308	118.54	4		PANIII115		115.00	6	1.0325	118.74
6		CHO115		115.00	6	1.0427	119.91	9		LSA115		115.00	6	1.0337	118.88
12		M.N115		115.00	6	1.0313	118.59	15		PRO115		115.00	6	1.0355	119.08
18		CAC115		115.00	6	1.0300	118.46	19		C.V115		115.00	6	1.0239	117.74
20		CH.AZUL		115.00	6	1.0326	118.74	21		C.BAN115		115.00	6	1.0210	117.41
23		CH115		115.00	6	1.0279	118.21	26		LOC115		115.00	6	1.0220	117.53
30		MAR115		115.00	6	1.0203	117.34	33		STM115		115.00	6	1.0292	118.35
37		SAN115		115.00	6	1.0201	117.31	48		TINAJ115		115.00	6	1.0275	118.16
50		M.O115		115.00	6	1.0276	118.18	52		TOC115		115.00	6	1.0298	118.43
54		LM115		115.00	6	1.0404	119.65	55		LM2115		115.00	6	1.0412	119.73
61		FFIELD		115.00	9	1.0342	118.94	87		CAL115		115.00	6	1.0442	120.08
88		EST115		115.00	6	1.0471	120.42	92		L.V115		115.00	6	1.0453	120.21
109		STA RITA115		115.00	6	1.0354	119.08	123		MIR115		115.00	7	1.0282	118.24
154		CEMPAN115		115.00	6	1.0418	119.81	191		CHANG115		115.00	6	1.0225	117.58
522		TBALBOA 115		115.00	6	1.0410	119.72								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.0	10.0	17.0	0.0	1.0100	38.9	0.9673	47.0				1	6
67	BLM13C	13.800	V3	38.0	10.0	17.0	0.0	1.0100	38.9	0.9673	47.0				1	6
68	BLM13D	13.800	V4	38.0	10.3	30.0	0.0	1.0100	39.0	0.9650	47.0				1	6
70	TGJB13A	13.800	J5	31.0	6.9	20.0	0.0	1.0100	31.5	0.9758	39.4				1	6
71	TGJB13B	13.800	J6	31.0	6.9	20.0	0.0	1.0100	31.5	0.9758	39.4				1	6
72	BLMCCA	13.800	T8	31.0	7.9	20.0	0.0	1.0100	31.7	0.9692	50.0				1	6
73	BLMCCB	13.800	V9	47.0	8.2	40.0	0.0	1.0100	47.2	0.9851	71.0				1	6
90	EST-13L	13.800	E1	22.0	4.7	12.0	-5.0	1.0100	22.3	0.9778	27.0				1	6
91	EST-13T	13.800	E2	22.0	4.7	12.0	-5.0	1.0100	22.3	0.9778	27.0				1	6
94	LV-13.8L	13.800	L1	24.0	5.4	12.0	-5.0	1.0100	24.4	0.9757	27.0				1	6
95	LV-13.8T	13.800	L2	24.0	5.4	12.0	-5.0	1.0100	24.4	0.9757	27.0				1	6
97	FOR13A	13.800	F1	84.0	-47.1	50.0	-50.0	0.9710	99.2	0.8723	111.0				1	6
98	FOR13B	13.800	F2	84.0	-47.1	50.0	-50.0	0.9710	99.2	0.8723	111.0				1	6
101	BAY13A	13.800	B1	40.6	7.3	50.0	-25.0	0.9800	42.1	0.9842	96.0				1	6 SYST
102	BAY13B	13.800	B2	40.6	7.3	50.0	-25.0	0.9800	42.1	0.9842	96.0				1	6
106	PANAM13A	13.800	M1	14.0	2.2	9.0	0.0	0.9900	14.3	0.9878	20.7				1	6
106	PANAM13A	13.800	M2	14.0	2.2	9.0	0.0	0.9900	14.3	0.9878	20.7				1	6
106	PANAM13A	13.800	M3	14.0	2.2	9.0	0.0	0.9900	14.3	0.9878	20.7				1	6
107	PANAM13B	13.800	M4	14.0	2.2	9.0	0.0	0.9900	14.3	0.9878	20.7				1	6
107	PANAM13B	13.800	M5	14.0	2.2	9.0	0.0	0.9900	14.3	0.9878	20.7				1	6
107	PANAM13B	13.800	M6	14.0	2.2	9.0	0.0	0.9900	14.3	0.9878	20.7				1	6
108	BAY13C	13.800	B3	40.6	7.3	50.0	-25.0	0.9800	42.1	0.9842	100.0				1	6
116	PACORA13	13.800	P1	15.0	7.3	8.8	0.0	1.0000	16.7	0.8982	21.7				1	6
116	PACORA13	13.800	P2	15.0	7.3	8.8	0.0	1.0000	16.7	0.8982	21.7				1	6
116	PACORA13	13.800	P3	15.0	7.3	8.8	0.0	1.0000	16.7	0.8982	21.7				1	6
142	CANJ13A	13.800	C1	40.0	7.5	29.0	-29.0	1.0000	40.7	0.9828	69.0				1	6
143	CANJ13B	13.800	C2	40.0	7.5	29.0	-29.0	1.0000	40.7	0.9828	69.0				1	6
303	SIND13.8	13.800	S1	9.0	0.0	50.0	0.0	1.1240	8.0	1.0000	13.5				1	6
307	CHANG75A	13.800	G1	65.0	-22.0	22.0	-22.0	1.0019	68.5	0.9472	118.6				1	6
521	TCARIBE 13.813.800	G1		15.6	2.2	12.5	0.0	1.0000	15.8	0.9901	20.9				1	6
521	TCARIBE 13.813.800	G2		15.6	2.2	12.5	0.0	1.0000	15.8	0.9901	20.9				1	6
521	TCARIBE 13.813.800	G3		15.6	2.2	12.5	0.0	1.0000	15.8	0.9901	20.9				1	6
523	TBALBOA 13A 13.800	G1		8.1	1.3	6.6	-6.6	1.0000	8.2	0.9868	10.9				1	6
523	TBALBOA 13A 13.800	G2		8.1	1.3	6.6	-6.6	1.0000	8.2	0.9868	10.9				1	6
523	TBALBOA 13A 13.800	G3		8.1	1.3	6.6	-6.6	1.0000	8.2	0.9868	10.9				1	6
523	TBALBOA 13A 13.800	G4		8.1	1.3	6.6	-6.6	1.0000	8.2	0.9868	10.9				1	6
523	TBALBOA 13A 13.800	G5		8.1	1.3	6.6	-6.6	1.0000	8.2	0.9868	10.9				1	6
524	TBALBOA 13B 13.800	10		8.1	1.3	6.6	-6.6	1.0000	8.2	0.9868	10.9				1	6
524	TBALBOA 13B 13.800	G6		8.1	1.3	6.6	-6.6	1.0000	8.2	0.9868	10.9				1	6
524	TBALBOA 13B 13.800	G7		8.1	1.3	6.6	-6.6	1.0000	8.2	0.9868	10.9				1	6
524	TBALBOA 13B 13.800	G8		8.1	1.3	6.6	-6.6	1.0000	8.2	0.9868	10.9				1	6
524	TBALBOA 13B 13.800	G9		8.1	1.3	6.6	-6.6	1.0000	8.2	0.9868	10.9				1	6
525	TATLANTIC13A13.800	G1		36.0	6.4	28.5	0.0	1.0000	36.6	0.9844	47.5				1	6
525	TATLANTIC13A13.800	G2		36.0	6.4	28.5	0.0	1.0000	36.6	0.9844	47.5				1	6
526	TATLANTIC13B13.800	V1		18.3	4.9	15.0	0.0	1.0000	18.9	0.9665	25.0				1	6
526	TATLANTIC13B13.800	V2		18.3	4.9	15.0	0.0	1.0000	18.9	0.9665	25.0				1	6
SUBSYSTEM TOTALS				1155.3	79.0	862.6	-340.6				1739.1					

P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
 Año 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0588	8.0	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0588	8.0	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.6	0.0	8.0	0.0	1.0011	10.6	1.0000	27.7			2	7	
134		MAD6A		6.9000	G1	9.6	0.4	6.0	-6.0	1.0000	9.6	0.9992	13.0			2	7	
135		MAD6B		6.9000	G2	9.6	0.4	6.0	-6.0	1.0000	9.6	0.9992	13.0			2	7	
136		MAD6C		6.9000	G3	9.6	0.4	6.0	-6.0	1.0000	9.6	0.9992	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9982	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9982	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9982	4.1			2	7	
141		GAT6B		6.9000	G4	3.8	-0.9	3.0	-3.0	1.0000	3.9	0.9756	6.2			2	7	
141		GAT6B		6.9000	G5	3.8	-0.9	3.0	-3.0	1.0000	3.9	0.9756	6.2			2	7	
141		GAT6B		6.9000	G6	3.8	-0.9	3.0	-3.0	1.0000	3.9	0.9756	6.2			2	7	
SUBSYSTEM TOTALS						73.5	-1.8	51.0	-33.0				124.2					

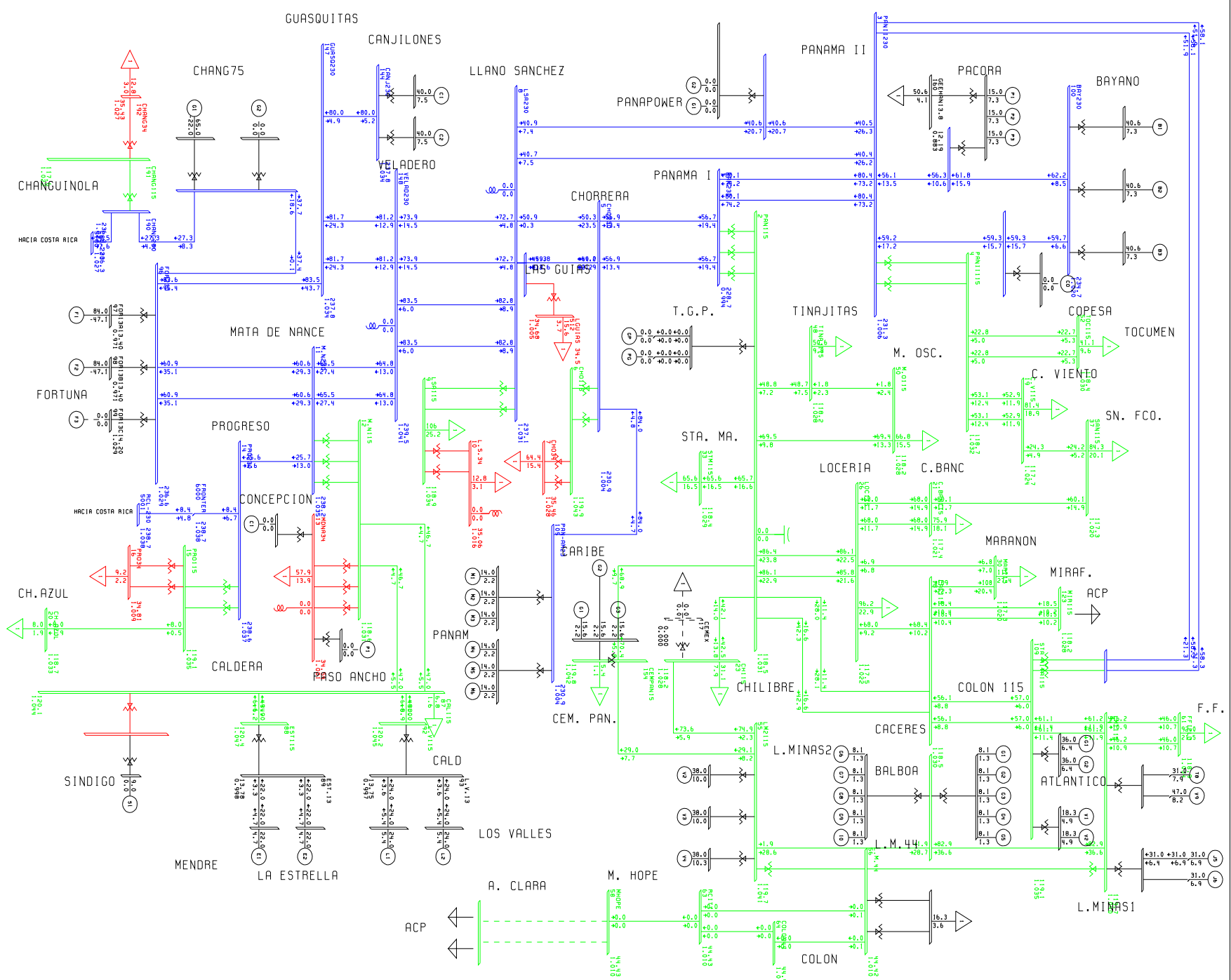


PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 11:38  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV AREA TOTALS  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
			29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	SALVADOR		911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
			100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	HONDURAS		1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
			55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	NICA		538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
			32.3	224.5	-98.9	0.0	143.3	-97.4	147.3	
5	C.RICA		1344.3	1324.8	0.0	0.0	0.0	-0.1	19.6	0.0
			241.9	569.4	-236.3	0.0	471.0	21.5	358.4	
6	PANAMA		1155.3	1062.8	0.0	0.0	0.0	71.8	20.7	25.0
			79.0	243.4	0.0	0.0	541.3	71.7	305.2	
7	ACANAL		73.5	35.2	0.0	0.0	0.0	36.9	1.5	50.0
			-1.8	8.4	0.0	0.0	0.0	-20.8	10.6	
9	COLON		0.0	108.3	0.0	0.0	0.0	-108.6	0.3	-75.0
			0.0	25.1	0.0	0.0	1.1	-25.9	1.9	
TOTALS			6377.4	6257.9	0.0	0.0	0.0	0.0	119.6	0.0
			537.6	1893.1	-847.8	0.0	2092.3	0.0	1584.7	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 10:36  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV SHUNT  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) SUMMARY  
 OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X--	NAME	--X	BASKV	N O M I N A L		VOLTAGE	
					MW	MVAR		
2		PAN115		115.00	0.0	0.0	1.0308	SWITCHED
4		PAN1115		115.00	0.0	0.0	1.0325	SWITCHED
8		LSA230		230.00	0.0	0.0	1.0309	SWITCHED
10		L.S.34		34.500	0.0	0.0	1.0163	SWITCHED
13		MDNA34		34.500	0.0	0.0	1.0013	SWITCHED
148		VELAD230		230.00	0.0	0.0	1.0414	SWITCHED



P - EXP - SIN CON C.A.R. JUNIO 2007 MH17 ESC MOD DEM MAX INV  
 R 0 2011 TBAI.BOR, I CARIBE Y TALANTICO I EN STR RITA 1151  
 FRI, SEP 28 2007 15:14

KW:514 .\*35 .\*115

BUS - VOLTAGE (KV/PUI)  
 BRANCH - KM/MVAR  
 EQUIPMENT - KM/MVAR

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA VERANO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 11:52  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3	PANII230	230.00	6	1.0075	231.73	5	CHO230	230.00	6	1.0065	231.49				
8	LSA230	230.00	6	1.0359	238.25	11	M.N230	230.00	6	1.0403	239.28				
14	PRO230	230.00	6	1.0415	239.54	96	FOR230	230.00	6	1.0354	238.13				
100	BAY230	230.00	6	1.0220	235.06	103	COPESA23	230.00	6	1.0101	232.33				
105	PAN-AM23	230.00	6	1.0065	231.50	115	PACORA23	230.00	6	1.0113	232.60				
117	STA RITA230	230.00	6	1.0258	235.94	144	CANJ230	230.00	6	1.0402	239.24				
147	GUASQ230	230.00	6	1.0401	239.23	148	VELAD230	230.00	6	1.0470	240.81				
190	CHANG230	230.00	6	1.0312	237.17	306	CHANG75	230.00	6	1.0315	237.25				
511	LGUIAS230	230.00	6	1.0250	235.75	515	PANPOWER230	230.00	6	1.0170	233.91				
6000	FRONTER	230.00	6	1.0417	239.59										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9963	229.14										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 11:52  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0326	118.75	4	PANII115	115.00	6	1.0344	118.96				
6	CHO115	115.00	6	1.0455	120.23	9	LSA115	115.00	6	1.0389	119.48				
12	M.N115	115.00	6	1.0362	119.17	15	PRO115	115.00	6	1.0396	119.55				
18	CAC115	115.00	6	1.0318	118.66	19	C.V115	115.00	6	1.0258	117.96				
20	CH.AZUL	115.00	6	1.0367	119.22	21	C.BAN115	115.00	6	1.0228	117.63				
23	CH115	115.00	6	1.0293	118.37	26	LOC115	115.00	6	1.0238	117.74				
30	MAR115	115.00	6	1.0222	117.55	33	STM115	115.00	6	1.0310	118.56				
37	SAN115	115.00	6	1.0219	117.52	48	TINAJ115	115.00	6	1.0293	118.37				
50	M.O115	115.00	6	1.0294	118.39	52	TOC115	115.00	6	1.0318	118.65				
54	LM1115	115.00	6	1.0412	119.74	55	LM2115	115.00	6	1.0419	119.82				
61	FFIELD	115.00	9	1.0350	119.03	87	CAL115	115.00	6	1.0431	119.96				
88	EST115	115.00	6	1.0446	120.13	92	L.V115	115.00	6	1.0437	120.02				
109	STA RITA115	115.00	6	1.0364	119.19	123	MIR115	115.00	7	1.0299	118.44				
154	CEMPAN15	115.00	6	1.0427	119.91	191	CHANG115	115.00	6	1.0265	118.05				
522	TBALBOA	115.00	6	1.0418	119.81										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 11:52  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.0	9.6	17.0	0.0	1.0100	38.8	0.9693	47.0			1	6	
67	BLM13C	13.800	V3	38.0	9.6	17.0	0.0	1.0100	38.8	0.9693	47.0			1	6	
68	BLM13D	13.800	V4	38.0	10.0	30.0	0.0	1.0100	38.9	0.9673	47.0			1	6	
70	TGJB13A	13.800	J5	31.0	6.7	20.0	0.0	1.0100	31.4	0.9771	39.4			1	6	
71	TGJB13B	13.800	J6	31.0	6.7	20.0	0.0	1.0100	31.4	0.9771	39.4			1	6	
72	BLMCCA	13.800	T8	31.0	7.7	20.0	0.0	1.0100	31.6	0.9707	50.0			1	6	
73	BLMCCB	13.800	V9	47.0	8.0	40.0	0.0	1.0100	47.2	0.9858	71.0			1	6	
90	EST-13L	13.800	E1	15.0	5.3	12.0	-5.0	1.0100	15.7	0.9436	27.0			1	6	
94	LV-13.8L	13.800	L1	17.0	5.7	12.0	-5.0	1.0100	17.7	0.9488	27.0			1	6	
97	FOR13A	13.800	F1	80.0	-28.7	50.0	-50.0	1.0000	85.0	0.9411	111.0			1	6	
98	FOR13B	13.800	F2	80.0	-28.7	50.0	-50.0	1.0000	85.0	0.9411	111.0			1	6	
99	FOR13C	13.800	F3	80.0	-28.7	50.0	-50.0	1.0000	85.0	0.9411	111.0			1	6	
101	BAY13A	13.800	B1	47.5	6.6	50.0	-25.0	0.9800	48.9	0.9904	96.0			1	6	SYST
102	BAY13B	13.800	B2	47.4	6.6	50.0	-25.0	0.9800	48.9	0.9904	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	2.0	9.0	0.0	0.9900	15.3	0.9916	20.7			1	6	
106	PANAM13A	13.800	M2	15.0	2.0	9.0	0.0	0.9900	15.3	0.9916	20.7			1	6	
106	PANAM13A	13.800	M3	15.0	2.0	9.0	0.0	0.9900	15.3	0.9916	20.7			1	6	
107	PANAM13B	13.800	M4	15.0	2.0	9.0	0.0	0.9900	15.3	0.9916	20.7			1	6	
107	PANAM13B	13.800	M5	15.0	2.0	9.0	0.0	0.9900	15.3	0.9916	20.7			1	6	
107	PANAM13B	13.800	M6	15.0	2.0	9.0	0.0	0.9900	15.3	0.9916	20.7			1	6	
108	BAY13C	13.800	B3	47.4	6.6	50.0	-25.0	0.9800	48.9	0.9904	100.0			1	6	
116	PACORA13	13.800	P1	15.0	7.1	8.8	0.0	1.0000	16.6	0.9050	21.7			1	6	
116	PACORA13	13.800	P2	15.0	7.1	8.8	0.0	1.0000	16.6	0.9050	21.7			1	6	
116	PACORA13	13.800	P3	15.0	7.1	8.8	0.0	1.0000	16.6	0.9050	21.7			1	6	
142	CANJ13A	13.800	C1	40.0	6.5	29.0	-29.0	1.0000	40.5	0.9869	69.0			1	6	
303	SIND13.8	13.800	S1	9.0	0.0	50.0	0.0	1.1228	8.0	1.0000	13.5			1	6	
307	CHANG75A	13.800	G1	65.0	-22.0	22.0	-22.0	1.0066	68.2	0.9472	118.6			1	6	
521	TCARIBE	13.813.800	G1	15.6	2.0	12.5	0.0	1.0000	15.7	0.9916	20.9			1	6	
521	TCARIBE	13.813.800	G2	15.6	2.0	12.5	0.0	1.0000	15.7	0.9916	20.9			1	6	
521	TCARIBE	13.813.800	G3	15.6	2.0	12.5	0.0	1.0000	15.7	0.9916	20.9			1	6	
523	TBALBOA	13A 13.800	G1	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9885	10.9			1	6	
523	TBALBOA	13A 13.800	G2	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9885	10.9			1	6	
523	TBALBOA	13A 13.800	G3	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9885	10.9			1	6	
523	TBALBOA	13A 13.800	G4	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9885	10.9			1	6	
523	TBALBOA	13A 13.800	G5	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9885	10.9			1	6	
524	TBALBOA	13B 13.800	10	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9885	10.9			1	6	
524	TBALBOA	13B 13.800	G6	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9885	10.9			1	6	
524	TBALBOA	13B 13.800	G7	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9885	10.9			1	6	
524	TBALBOA	13B 13.800	G8	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9885	10.9			1	6	
524	TBALBOA	13B 13.800	G9	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9885	10.9			1	6	
525	TATLANTIC13A	13.800	G1	36.0	6.1	28.5	0.0	1.0000	36.5	0.9858	47.5			1	6	
525	TATLANTIC13A	13.800	G2	36.0	6.1	28.5	0.0	1.0000	36.5	0.9858	47.5			1	6	
526	TATLANTIC13B	13.800	V1	18.3	4.6	15.0	0.0	1.0000	18.9	0.9702	25.0			1	6	
526	TATLANTIC13B	13.800	V2	18.3	4.6	15.0	0.0	1.0000	18.9	0.9702	25.0			1	6	
SUBSYSTEM TOTALS				1153.7	60.3	859.6	-351.6				1727.1					

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 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 11:52  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0601	8.0	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0601	8.0	1.0000	13.5				2	7
130		MIR13F		13.800	G5	10.6	0.0	8.0	0.0	1.0024	10.6	1.0000	27.7				2	7
134		MAD6A		6.9000	G1	9.6	0.3	6.0	-6.0	1.0000	9.6	0.9995	13.0				2	7
135		MAD6B		6.9000	G2	9.6	0.3	6.0	-6.0	1.0000	9.6	0.9995	13.0				2	7
136		MAD6C		6.9000	G3	9.6	0.3	6.0	-6.0	1.0000	9.6	0.9995	13.0				2	7
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9975	4.1				2	7
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9975	4.1				2	7
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9975	4.1				2	7
141		GAT6B		6.9000	G4	3.8	-0.9	3.0	-3.0	1.0000	3.9	0.9744	5.6				2	7
141		GAT6B		6.9000	G5	3.8	-0.9	3.0	-3.0	1.0000	3.9	0.9744	6.2				2	7
141		GAT6B		6.9000	G6	3.8	-0.9	3.0	-3.0	1.0000	3.9	0.9744	6.2				2	7
SUBSYSTEM TOTALS						73.5	-2.1	51.0	-33.0				124.					

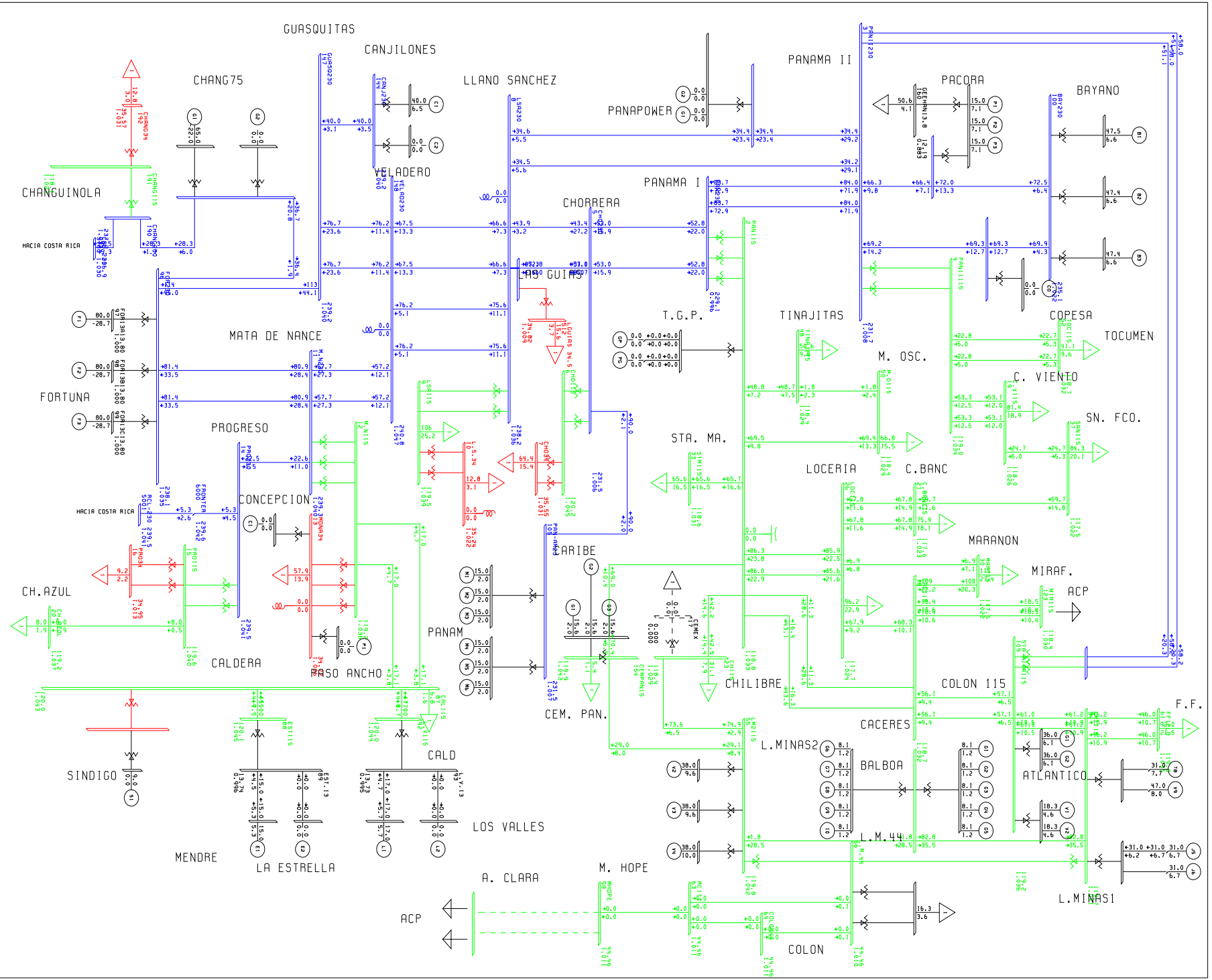
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 11:53  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER AREA TOTALS  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.4	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.1	224.5	-98.9	0.0	143.3	-97.6	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	-0.1	19.6	0.0
C.RICA	235.2	569.4	-236.6	0.0	471.7	15.8	358.3	
6	1153.7	1062.8	0.0	0.0	0.0	71.8	19.1	25.0
PANAMA	60.3	243.4	0.0	0.0	545.3	78.0	284.3	
7	73.5	35.2	0.0	0.0	0.0	36.9	1.5	50.0
ACANAL	-2.1	8.4	0.0	0.0	0.0	-21.2	10.7	
9	0.0	108.3	0.0	0.0	0.0	-108.6	0.3	-75.0
COLON	0.0	25.1	0.0	0.0	1.1	-25.9	1.9	
TOTALS	6375.9	6257.9	0.0	0.0	0.0	0.0	118.0	0.0
	511.6	1893.1	-848.1	0.0	2097.1	0.0	1563.7	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 11:53  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER SHUNT  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME --X	BASKV	N O M I N A L		
			MW	MVAR	VOLTAGE
2	PAN115	115.00	0.0	0.0	1.0326 SWITCHED
4	PANII115	115.00	0.0	0.0	1.0344 SWITCHED
8	LSA230	230.00	0.0	0.0	1.0359 SWITCHED
10	L.S.34	34.500	0.0	0.0	1.0215 SWITCHED
13	MDNA34	34.500	0.0	0.0	1.0063 SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0470 SWITCHED





**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2011 ESCENARIO MODERADO DEMANDA MÍNIMA VERANO**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 11:27  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MIN VER  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0083	231.91	5		CHO230		230.00	6	1.0051	231.17
8		LSA230		230.00	6	1.0135	233.09	11		M.N230		230.00	6	1.0240	235.52
14		PRO230		230.00	6	1.0285	236.54	96		FOR230		230.00	6	1.0256	235.89
100		BAY230		230.00	6	1.0119	232.73	103		COPESA23		230.00	6	1.0094	232.15
105		PAN-AM23		230.00	6	1.0051	231.17	115		PACORA23		230.00	6	1.0097	232.23
117		STA RITA230		230.00	6	1.0245	235.64	144		CANJ230		230.00	6	1.0272	236.24
147		GUASQ230		230.00	6	1.0271	236.23	148		VELAD230		230.00	6	1.0239	235.49
190		CHANG230		230.00	6	1.0261	236.01	306		CHANG75		230.00	6	1.0255	235.85
511		LGUIAS230		230.00	6	1.0122	232.81	515		PANPOWER230		230.00	6	1.0138	233.16
6000		FRONTER		230.00	6	1.0291	236.69								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9996	229.90								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 11:27  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MIN VER  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0398	119.58	4		PANIII115		115.00	6	1.0376	119.32
6		CHO115		115.00	6	1.0473	120.44	9		LSA115		115.00	6	1.0042	115.49
12		M.N115		115.00	6	1.0014	115.16	15		PRO115		115.00	6	1.0267	118.07
18		CAC115		115.00	6	1.0391	119.50	19		C.V115		115.00	6	1.0327	118.76
20		CH.AZUL		115.00	6	1.0248	117.85	21		C.BAN115		115.00	6	1.0329	118.78
23		CH115		115.00	6	1.0349	119.02	26		LOC115		115.00	6	1.0337	118.87
30		MAR115		115.00	6	1.0328	118.77	33		STM115		115.00	6	1.0387	119.45
37		SAN115		115.00	6	1.0320	118.68	48		TINAJ115		115.00	6	1.0378	119.34
50		M.O115		115.00	6	1.0378	119.35	52		TOC115		115.00	6	1.0358	119.11
54		LM115		115.00	6	1.0369	119.24	55		LM2115		115.00	6	1.0377	119.34
61		FFIELD		115.00	9	1.0325	118.74	87		CAL115		115.00	6	1.0065	115.75
88		EST115		115.00	6	1.0077	115.89	92		L.V115		115.00	6	1.0070	115.80
109		STA RITA115		115.00	6	1.0343	118.94	123		MIR115		115.00	7	1.0369	119.24
154		CEMPAN15		115.00	6	1.0416	119.79	191		CHANG115		115.00	6	1.0220	117.53
522		TBALBOA	115	115.00	6	1.0374	119.30								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 11:25  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MIN VER  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 6 [PANAMA ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	24.0	5.9	17.0	0.0	1.0000	24.7	0.9711	47.0			1	6		
67		BLM13C		13.800	V3	24.0	5.9	17.0	0.0	1.0000	24.7	0.9711	47.0			1	6		
68		BLM13D		13.800	V4	24.0	6.1	30.0	0.0	1.0000	24.8	0.9688	47.0			1	6		
90		EST-13L		13.800	E1	15.0	3.6	12.0	-5.0	0.9700	15.9	0.9728	27.0			1	6		
94		LV-13.8L		13.800	L1	17.0	3.9	12.0	-5.0	0.9700	18.0	0.9746	27.0			1	6		
97		FOR13A		13.800	F1	63.1	-21.1	50.0	-50.0	1.0000	66.6	0.9482	111.0			1	6	SYST	
106		PANAM13A		13.800	M1	14.0	2.0	9.0	0.0	0.9900	14.3	0.9895	20.7			1	6		
106		PANAM13A		13.800	M2	14.0	2.0	9.0	0.0	0.9900	14.3	0.9895	20.7			1	6		
106		PANAM13A		13.800	M3	14.0	2.0	9.0	0.0	0.9900	14.3	0.9895	20.7			1	6		
116		PACORA13		13.800	P1	15.0	1.0	8.8	0.0	1.0000	15.0	0.9977	21.7			1	6		
116		PACORA13		13.800	P2	15.0	1.0	8.8	0.0	1.0000	15.0	0.9977	21.7			1	6		
142		CANJ13A		13.800	C1	45.0	10.0	29.0	-29.0	1.0000	46.1	0.9761	69.0			1	6		
307		CHANG75A		13.800	G1	60.0	-22.0	22.0	-22.0	1.0007	63.9	0.9389	118.6			1	6		
521		TCARIBE	13.813	13.800	G1	10.0	2.6	12.5	0.0	1.0000	10.3	0.9668	20.9			1	6		
521		TCARIBE	13.813	13.800	G2	10.0	2.6	12.5	0.0	1.0000	10.3	0.9668	20.9			1	6		
523		TBALBOA	13A	13.800	G1	4.6	1.9	6.6	-6.6	1.0000	5.0	0.9220	10.9			1	6		
523		TBALBOA	13A	13.800	G2	4.6	1.9	6.6	-6.6	1.0000	5.0	0.9220	10.9			1	6		
523		TBALBOA	13A	13.800	G3	4.6	1.9	6.6	-6.6	1.0000	5.0	0.9220	10.9			1	6		
523		TBALBOA	13A	13.800	G4	4.6	1.9	6.6	-6.6	1.0000	5.0	0.9220	10.9			1	6		
524		TBALBOA	13B	13.800	G6	4.6	1.9	6.6	-6.6	1.0000	5.0	0.9220	10.9			1	6		
524		TBALBOA	13B	13.800	G7	4.6	1.9	6.6	-6.6	1.0000	5.0	0.9220	10.9			1	6		
524		TBALBOA	13B	13.800	G8	4.6	1.9	6.6	-6.6	1.0000	5.0	0.9220	10.9			1	6		
524		TBALBOA	13B	13.800	G9	4.6	1.9	6.6	-6.6	1.0000	5.0	0.9220	10.9			1	6		
525		TATLANTIC13A		13.800	G1	18.0	0.0	28.5	0.0	0.9846	18.3	1.0000	47.5			1	6		
526		TATLANTIC13B		13.800	V1	16.0	9.5	15.0	0.0	1.0000	18.6	0.8597	25.0			1	6		
SUBSYSTEM TOTALS						434.9	30.7	354.6	-163.5				800.8						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 11:25  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MIN VER  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 7 [ACANAL ] MACHINE SUMMARY:																			
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
135		MAD6B		6.9000	G2	10.0	0.1	6.0	-6.0	1.0000	10.0	0.9999	13.0			2	7		
136		MAD6C		6.9000	G3	10.0	0.1	6.0	-6.0	1.0000	10.0	0.9999	13.0			2	7		
140		GAT6A		6.9000	G1	2.0	-0.3	2.0	-2.0	1.0000	2.0	0.9868	4.1			2	7		
140		GAT6A		6.9000	G2	2.0	-0.3	2.0	-2.0	1.0000	2.0	0.9868	4.1			2	7		
140		GAT6A		6.9000	G3	2.0	-0.3	2.0	-2.0	1.0000	2.0	0.9868	4.1			2	7		
141		GAT6B		6.9000	G4	4.0	-1.1	3.0	-3.0	1.0000	4.1	0.9664	5.6			2	7		
141		GAT6B		6.9000	G5	4.0	-1.1	3.0	-3.0	1.0000	4.1	0.9664	6.2			2	7		
141		GAT6B		6.9000	G6	4.0	-1.1	3.0	-3.0	1.0000	4.1	0.9664	6.2			2	7		
SUBSYSTEM TOTALS						38.0	-3.9	27.0	-27.0				56.4						

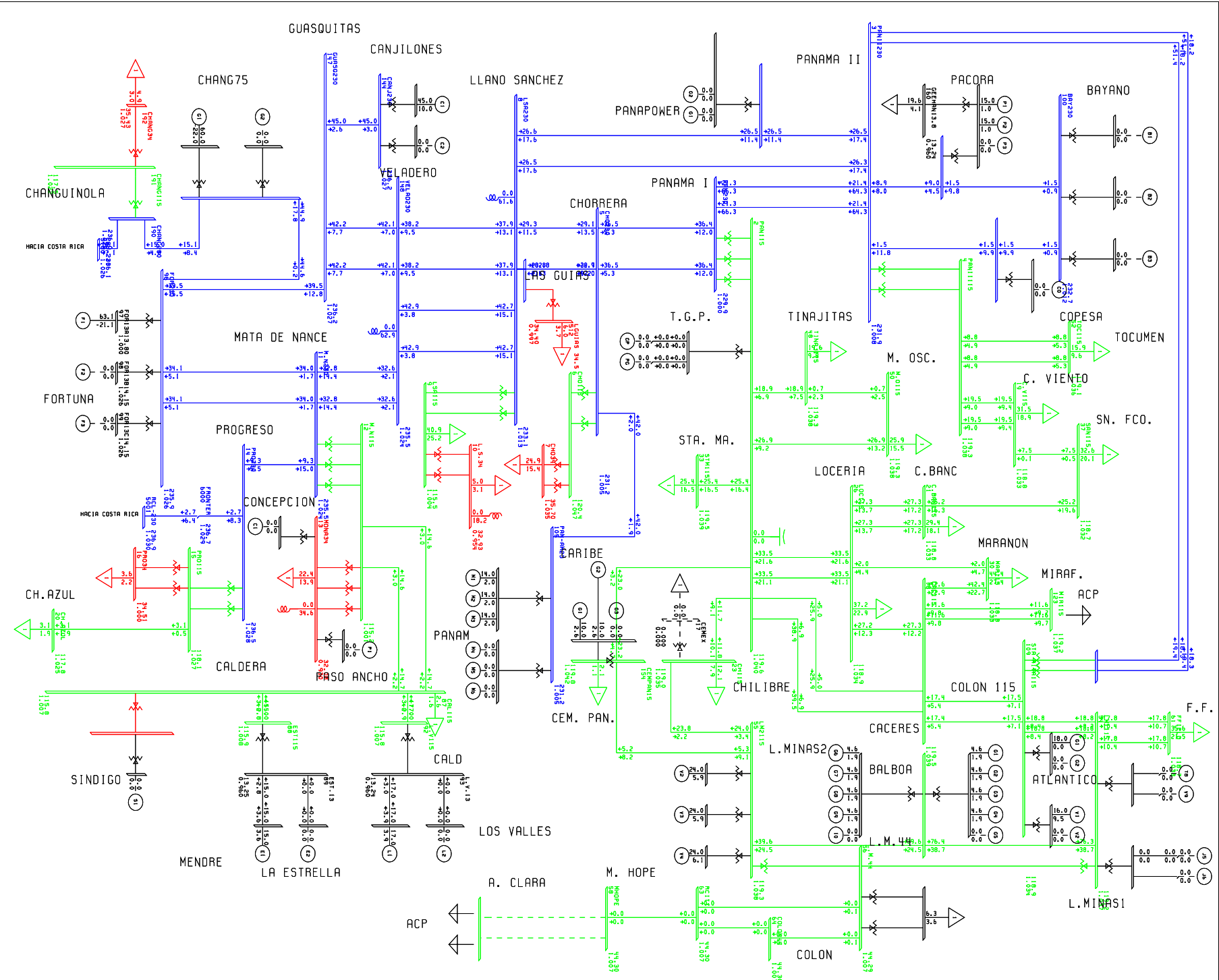
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 11:27  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MIN VER AREA TOTALS  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.5	224.5	-98.9	0.0	143.2	-97.2	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	0.0	19.5	0.0
C.RICA	250.3	569.4	-236.8	0.0	469.9	29.9	357.8	
6	434.9	411.5	0.0	0.0	0.0	18.7	4.7	25.0
PANAMA	30.7	243.4	177.3	0.0	533.6	60.3	83.3	
7	38.0	13.6	0.0	0.0	0.0	23.2	1.2	50.0
ACANAL	-3.9	8.4	0.0	0.0	0.0	-19.6	7.2	
9	0.0	41.9	0.0	0.0	0.0	-42.0	0.1	-75.0
COLON	0.0	25.1	0.0	0.0	1.1	-24.3	0.4	
TOTALS	5621.5	5518.6	0.0	0.0	0.0	0.0	103.0	0.0
	495.9	1893.1	-670.9	0.0	2083.5	0.0	1357.1	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 11:27  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MIN VER SHUNT  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) SUMMARY  
 OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME --X	BASKV	N O M I N A L		
			MW	MVAR	VOLTAGE
2	PAN115	115.00	0.0	0.0	1.0398 SWITCHED
4	PAN1115	115.00	0.0	0.0	1.0376 SWITCHED
8	LSA230	230.00	0.0	-60.0	1.0135 SWITCHED
10	L.S.34	34.500	0.0	-20.0	0.9545 SWITCHED
13	MDNA34	34.500	0.0	-40.0	0.9300 SWITCHED
148	VELAD230	230.00	0.0	-60.0	1.0239 SWITCHED

P. EXP-SIN CON C.A. JUNIO 2007 MH17 ESC MOD DEM MIN VER  
 R 0 2011 TBR/BOB, TCR/ABE Y TATLANTICO (EN STA RITR 115)  
 FRI, SEP 28 2007 15:25  
 KW:514 .435 .4115  
 BUS - VOLTAGE (KV/P/U)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR



**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO  
Contingencia 1: Panamá – Cemento Panamá**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 11:42  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT1 PMA-C.PMA  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0033	230.75	5		CHO230		230.00	6	1.0016	230.38
8		LSA230		230.00	6	1.0293	236.73	11		M.N230		230.00	6	1.0348	238.00
14		PRO230		230.00	6	1.0368	238.46	96		FOR230		230.00	6	1.0282	236.48
100		BAY230		230.00	6	1.0191	234.40	103		COPESA23		230.00	6	1.0061	231.40
105		PAN-AM23		230.00	6	1.0017	230.39	115		PACORA23		230.00	6	1.0077	231.77
117		STA RITA230		230.00	6	1.0221	235.08	144		CANJ230		230.00	6	1.0334	237.68
147		GUASQ230		230.00	6	1.0333	237.66	148		VELAD230		230.00	6	1.0403	239.27
190		CHANG230		230.00	6	1.0267	236.15	306		CHANG75		230.00	6	1.0265	236.10
511		LGUIAS230		230.00	6	1.0190	234.37	515		PANPOWER230		230.00	6	1.0122	232.80
6000		FRONTER		230.00	6	1.0372	238.55								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9915	228.05								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 11:42  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT1 PMA-C.PMA  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0277	118.19	4		PANIII115		115.00	6	1.0299	118.44
6		CHO115		115.00	6	1.0402	119.63	9		LSA115		115.00	6	1.0320	118.68
12		M.N115		115.00	6	1.0307	118.53	15		PRO115		115.00	6	1.0349	119.01
18		CAC115		115.00	6	1.0270	118.10	19		C.V115		115.00	6	1.0211	117.43
20		CH.AZUL		115.00	6	1.0319	118.67	21		C.BAN115		115.00	6	1.0179	117.06
23		CH115		115.00	6	1.0248	117.85	26		LOC115		115.00	6	1.0189	117.17
30		MAR115		115.00	6	1.0172	116.98	33		STM115		115.00	6	1.0261	118.00
37		SAN115		115.00	6	1.0170	116.96	48		TINAJ115		115.00	6	1.0244	117.81
50		M.O115		115.00	6	1.0245	117.82	52		TOC115		115.00	6	1.0273	118.14
54		LM115		115.00	6	1.0387	119.45	55		LM2115		115.00	6	1.0399	119.59
61		FFIELD		115.00	9	1.0324	118.73	87		CAL115		115.00	6	1.0438	120.04
88		EST115		115.00	6	1.0468	120.38	92		L.V115		115.00	6	1.0450	120.17
109		STA RITA115		115.00	6	1.0329	118.78	123		MIR115		115.00	7	1.0252	117.90
154		CEMPAN15		115.00	6	1.0450	120.17	191		CHANG115		115.00	6	1.0221	117.54
522		TBALBOA 115		115.00	6	1.0395	119.54								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*



AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.0	10.5	17.0	0.0	1.0100	39.0	0.9637	47.0				1	6
67	BLM13C	13.800	V3	38.0	10.5	17.0	0.0	1.0100	39.0	0.9637	47.0				1	6
68	BLM13D	13.800	V4	38.0	10.9	30.0	0.0	1.0100	39.1	0.9612	47.0				1	6
70	TGJB13A	13.800	J5	31.0	7.4	20.0	0.0	1.0100	31.6	0.9726	39.4				1	6
71	TGJB13B	13.800	J6	31.0	7.4	20.0	0.0	1.0100	31.6	0.9726	39.4				1	6
72	BLMCCA	13.800	T8	31.0	8.3	20.0	0.0	1.0100	31.8	0.9657	50.0				1	6
73	BLMCCB	13.800	V9	47.0	8.7	40.0	0.0	1.0100	47.3	0.9834	71.0				1	6
90	EST-13L	13.800	E1	22.0	4.8	12.0	-5.0	1.0100	22.3	0.9769	27.0				1	6
91	EST-13T	13.800	E2	22.0	4.8	12.0	-5.0	1.0100	22.3	0.9769	27.0				1	6
94	LV-13.8L	13.800	L1	24.0	5.5	12.0	-5.0	1.0100	24.4	0.9747	27.0				1	6
95	LV-13.8T	13.800	L2	24.0	5.5	12.0	-5.0	1.0100	24.4	0.9747	27.0				1	6
97	FOR13A	13.800	F1	84.0	-46.6	50.0	-50.0	0.9710	98.9	0.8746	111.0				1	6
98	FOR13B	13.800	F2	84.0	-46.6	50.0	-50.0	0.9710	98.9	0.8746	111.0				1	6
101	BAY13A	13.800	B1	41.8	8.4	50.0	-25.0	0.9800	43.5	0.9804	96.0				1	6
102	BAY13B	13.800	B2	40.6	8.3	50.0	-25.0	0.9800	42.3	0.9796	96.0				1	6
106	PANAM13A	13.800	M1	14.0	2.5	9.0	0.0	0.9900	14.4	0.9841	20.7				1	6
106	PANAM13A	13.800	M2	14.0	2.5	9.0	0.0	0.9900	14.4	0.9841	20.7				1	6
106	PANAM13A	13.800	M3	14.0	2.5	9.0	0.0	0.9900	14.4	0.9841	20.7				1	6
107	PANAM13B	13.800	M4	14.0	2.5	9.0	0.0	0.9900	14.4	0.9841	20.7				1	6
107	PANAM13B	13.800	M5	14.0	2.5	9.0	0.0	0.9900	14.4	0.9841	20.7				1	6
107	PANAM13B	13.800	M6	14.0	2.5	9.0	0.0	0.9900	14.4	0.9841	20.7				1	6
108	BAY13C	13.800	B3	40.6	8.3	50.0	-25.0	0.9800	42.3	0.9796	100.0				1	6
116	PACORA13	13.800	P1	15.0	7.7	8.8	0.0	1.0000	16.9	0.8896	21.7				1	6
116	PACORA13	13.800	P2	15.0	7.7	8.8	0.0	1.0000	16.9	0.8896	21.7				1	6
116	PACORA13	13.800	P3	15.0	7.7	8.8	0.0	1.0000	16.9	0.8896	21.7				1	6
142	CANJ13A	13.800	C1	40.0	7.6	29.0	-29.0	1.0000	40.7	0.9823	69.0				1	6
143	CANJ13B	13.800	C2	40.0	7.6	29.0	-29.0	1.0000	40.7	0.9823	69.0				1	6
303	SIND13.8	13.800	S1	9.0	0.0	50.0	0.0	1.1234	8.0	1.0000	13.5				1	6
307	CHANG75A	13.800	G1	65.0	-22.0	22.0	-22.0	1.0015	68.5	0.9472	118.6				1	6
521	TCARIBE 13.813.800	G1	15.6	1.6	12.5	0.0	1.0000	15.7	0.9949	20.9					1	6
521	TCARIBE 13.813.800	G2	15.6	1.6	12.5	0.0	1.0000	15.7	0.9949	20.9					1	6
521	TCARIBE 13.813.800	G3	15.6	1.6	12.5	0.0	1.0000	15.7	0.9949	20.9					1	6
523	TBALBOA 13A 13.800	G1	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9830	10.9					1	6
523	TBALBOA 13A 13.800	G2	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9830	10.9					1	6
523	TBALBOA 13A 13.800	G3	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9830	10.9					1	6
523	TBALBOA 13A 13.800	G4	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9830	10.9					1	6
523	TBALBOA 13A 13.800	G5	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9830	10.9					1	6
524	TBALBOA 13B 13.800	10	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9830	10.9					1	6
524	TBALBOA 13B 13.800	G6	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9830	10.9					1	6
524	TBALBOA 13B 13.800	G7	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9830	10.9					1	6
524	TBALBOA 13B 13.800	G8	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9830	10.9					1	6
524	TBALBOA 13B 13.800	G9	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9830	10.9					1	6
525	TATLANTIC13A13.800	G1	36.0	7.2	28.5	0.0	1.0000	36.7	0.9806	47.5					1	6
525	TATLANTIC13A13.800	G2	36.0	7.2	28.5	0.0	1.0000	36.7	0.9806	47.5					1	6
526	TATLANTIC13B13.800	V1	18.3	5.6	15.0	0.0	1.0000	19.1	0.9561	25.0					1	6
526	TATLANTIC13B13.800	V2	18.3	5.6	15.0	0.0	1.0000	19.1	0.9561	25.0					1	6
SUBSYSTEM TOTALS				1156.5	93.3	862.6	-340.6				1739.1					

P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT1 PMA-C.PMA  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0568	8.0	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0568	8.0	1.0000	13.5				2	7
130		MIR13F		13.800	G5	10.6	0.3	8.0	0.0	1.0000	10.6	0.9995	27.7				2	7
134		MAD6A		6.9000	G1	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9987	13.0				2	7
135		MAD6B		6.9000	G2	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9987	13.0				2	7
136		MAD6C		6.9000	G3	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9987	13.0				2	7
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9990	4.1				2	7
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9990	4.1				2	7
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9990	4.1				2	7
141		GAT6B		6.9000	G4	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9772	5.6				2	7
141		GAT6B		6.9000	G5	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9772	6.2				2	7
141		GAT6B		6.9000	G6	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9772	6.2				2	7
SUBSYSTEM TOTALS						73.5	-0.9	51.0	-33.0				124.2					



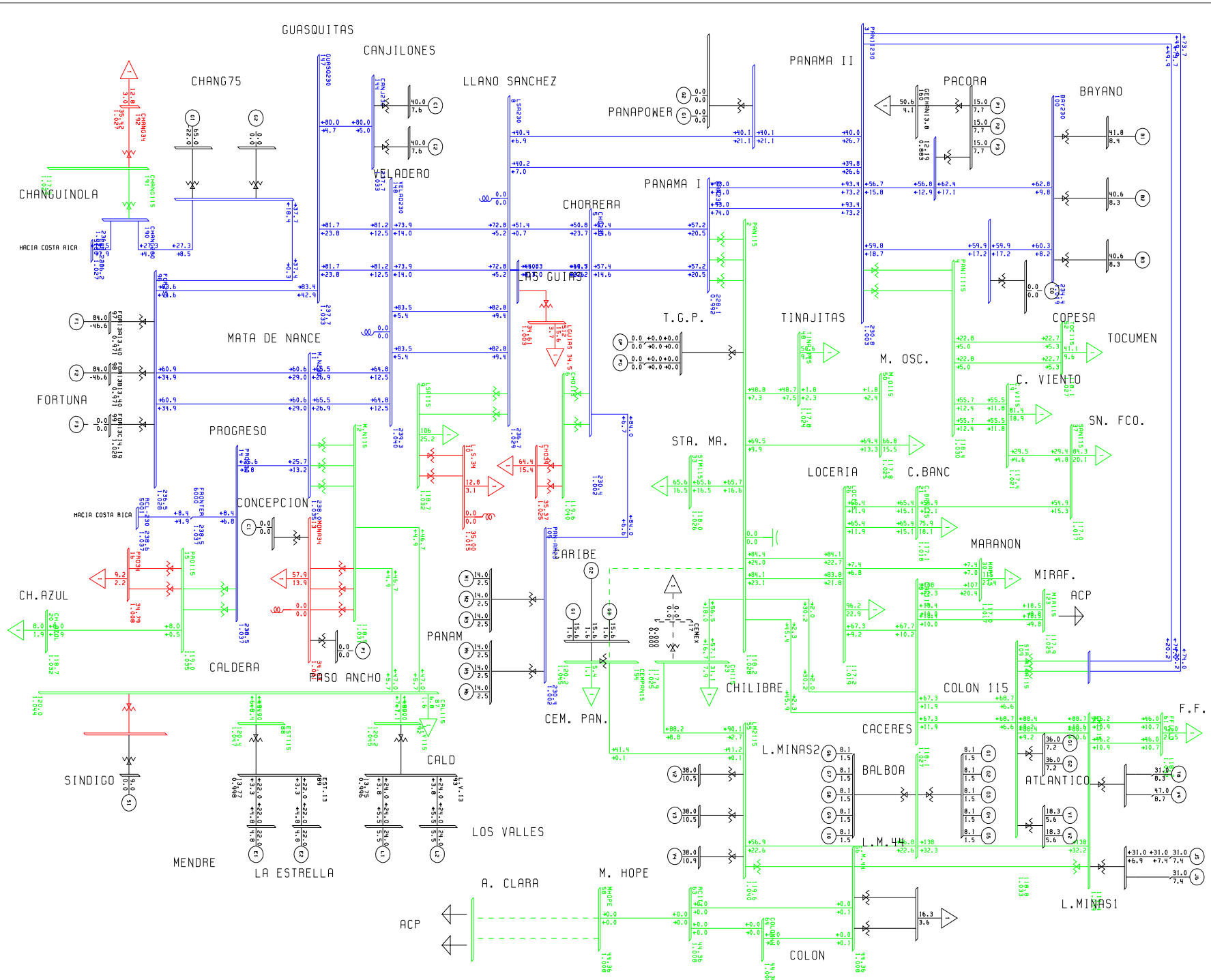
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 11:42  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT1 PMA-C.PMA AREA TOTALS  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5 29.8	1312.2 349.5	0.0 -266.2	0.0 0.0	0.0 412.9	0.0 17.9	35.2 341.4	0.0
2	SALVADOR		911.8 100.8	902.0 182.3	0.0 -58.1	0.0 0.0	0.0 219.9	0.0 38.3	9.8 158.1	0.0
3	HONDURAS		1006.8 55.6	985.5 290.6	0.0 -188.3	0.0 0.0	0.0 302.9	0.0 -5.3	21.4 261.6	0.0
4	NICA		538.2 32.3	527.1 224.5	0.0 -98.9	0.0 0.0	0.0 143.3	0.0 -97.4	11.1 147.3	0.0
5	C.RICA		1344.3 242.8	1324.8 569.4	0.0 -236.3	0.0 0.0	0.0 470.9	-0.1 22.2	19.6 358.4	0.0
6	PANAMA		1156.5 93.3	1062.8 243.4	0.0 0.0	0.0 0.0	0.0 537.4	71.8 70.1	21.9 317.2	25.0
7	ACANAL		73.5 -0.9	35.2 8.4	0.0 0.0	0.0 0.0	0.0 0.0	36.9 -19.9	1.5 10.6	50.0
9	COLON		0.0 0.0	108.3 25.1	0.0 0.0	0.0 0.0	0.0 1.1	-108.6 -25.9	0.3 1.9	-75.0
TOTALS			6378.6 553.6	6257.9 1893.1	0.0 -847.8	0.0 0.0	0.0 2088.4	0.0 0.0	120.8 1596.6	0.0

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 11:42  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT1 PMA-C.PMA SHUNT  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) SUMMARY  
 OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X--	NAME	--X	BASKV	N O M I N A L		
					MW	MVAR	VOLTAGE
2		PAN115		115.00	0.0	0.0	1.0277 SWITCHED
4		PANII115		115.00	0.0	0.0	1.0299 SWITCHED
8		LSA230		230.00	0.0	0.0	1.0293 SWITCHED
10		L.S.34		34.500	0.0	0.0	1.0146 SWITCHED
13		MDNA34		34.500	0.0	0.0	1.0008 SWITCHED
148		VELAD230		230.00	0.0	0.0	1.0403 SWITCHED





P. EXP-STIN CON C.R. JUN 2007 MAT7 MAXINV DTI PMA-C.PMA  
 R 0 2011 TBRUBOR, TCRHIBE Y TRLANTICO IEN STR RITA I1S1  
 TRENES PARA EL TREN DE PASAJEROS  
 R1, SEP 28 2007 15:17  
 kW:414 \*335 \*1115  
 BUS - VOLTAGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO  
Contingencia 2: Minas 2 – Chilibre**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 13:31  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT2 MINAS2-CHIL  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0030	230.68	5		CHO230		230.00	6	1.0013	230.30
8		LSA230		230.00	6	1.0291	236.68	11		M.N230		230.00	6	1.0347	237.98
14		PRO230		230.00	6	1.0367	238.44	96		FOR230		230.00	6	1.0281	236.46
100		BAY230		230.00	6	1.0189	234.36	103		COPESA23		230.00	6	1.0058	231.34
105		PAN-AM23		230.00	6	1.0013	230.31	115		PACORA23		230.00	6	1.0075	231.72
117		STA RITA230		230.00	6	1.0221	235.08	144		CANJ230		230.00	6	1.0333	237.66
147		GUASQ230		230.00	6	1.0332	237.64	148		VELAD230		230.00	6	1.0401	239.23
190		CHANG230		230.00	6	1.0267	236.14	306		CHANG75		230.00	6	1.0265	236.09
511		LGUIAS230		230.00	6	1.0187	234.30	515		PANPOWER230		230.00	6	1.0119	232.73
6000		FRONTER		230.00	6	1.0371	238.53								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9911	227.96								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 13:31  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT2 MINAS2-CHIL  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)  
 BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0271	118.11	4		PANII115		115.00	6	1.0295	118.40
6		CHO115		115.00	6	1.0399	119.58	9		LSA115		115.00	6	1.0317	118.65
12		M.N115		115.00	6	1.0307	118.53	15		PRO115		115.00	6	1.0348	119.00
18		CAC115		115.00	6	1.0263	118.03	19		C.V115		115.00	6	1.0206	117.37
20		CH.AZUL		115.00	6	1.0319	118.66	21		C.BAN115		115.00	6	1.0173	116.99
23		CH115		115.00	6	1.0163	116.87	26		LOC115		115.00	6	1.0183	117.10
30		MAR115		115.00	6	1.0166	116.91	33		STM115		115.00	6	1.0254	117.92
37		SAN115		115.00	6	1.0164	116.89	48		TINAJ115		115.00	6	1.0238	117.73
50		M.O115		115.00	6	1.0239	117.75	52		TOC115		115.00	6	1.0269	118.09
54		LM1115		115.00	6	1.0395	119.54	55		LM2115		115.00	6	1.0408	119.69
61		FFIELD		115.00	9	1.0333	118.82	87		CAL115		115.00	6	1.0438	120.03
88		EST115		115.00	6	1.0468	120.38	92		L.V115		115.00	6	1.0449	120.17
109		STA RITA115		115.00	6	1.0333	118.83	123		MIR115		115.00	7	1.0246	117.83
154		CEMPAN15		115.00	6	1.0401	119.61	191		CHANG115		115.00	6	1.0220	117.53
522		TBALBOA 115		115.00	6	1.0403	119.64								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*



AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.0	10.1	17.0	0.0	1.0100	38.9	0.9662	47.0				1	6
67	BLM13C	13.800	V3	38.0	10.1	17.0	0.0	1.0100	38.9	0.9662	47.0				1	6
68	BLM13D	13.800	V4	38.0	10.5	30.0	0.0	1.0100	39.0	0.9639	47.0				1	6
70	TGJB13A	13.800	J5	31.0	7.2	20.0	0.0	1.0100	31.5	0.9741	39.4				1	6
71	TGJB13B	13.800	J6	31.0	7.2	20.0	0.0	1.0100	31.5	0.9741	39.4				1	6
72	BLMCCA	13.800	T8	31.0	8.1	20.0	0.0	1.0100	31.7	0.9673	50.0				1	6
73	BLMCCB	13.800	V9	47.0	8.5	40.0	0.0	1.0100	47.3	0.9842	71.0				1	6
90	EST-13L	13.800	E1	22.0	4.8	12.0	-5.0	1.0100	22.3	0.9769	27.0				1	6
91	EST-13T	13.800	E2	22.0	4.8	12.0	-5.0	1.0100	22.3	0.9769	27.0				1	6
94	LV-13.8L	13.800	L1	24.0	5.5	12.0	-5.0	1.0100	24.4	0.9747	27.0				1	6
95	LV-13.8T	13.800	L2	24.0	5.5	12.0	-5.0	1.0100	24.4	0.9747	27.0				1	6
97	FOR13A	13.800	F1	84.0	-46.5	50.0	-50.0	0.9710	98.9	0.8750	111.0				1	6
98	FOR13B	13.800	F2	84.0	-46.5	50.0	-50.0	0.9710	98.9	0.8750	111.0				1	6
101	BAY13A	13.800	B1	41.9	8.5	50.0	-25.0	0.9800	43.6	0.9799	96.0				1	6
102	BAY13B	13.800	B2	40.6	8.5	50.0	-25.0	0.9800	42.4	0.9790	96.0				1	6
106	PANAM13A	13.800	M1	14.0	2.6	9.0	0.0	0.9900	14.4	0.9835	20.7				1	6
106	PANAM13A	13.800	M2	14.0	2.6	9.0	0.0	0.9900	14.4	0.9835	20.7				1	6
106	PANAM13A	13.800	M3	14.0	2.6	9.0	0.0	0.9900	14.4	0.9835	20.7				1	6
107	PANAM13B	13.800	M4	14.0	2.6	9.0	0.0	0.9900	14.4	0.9835	20.7				1	6
107	PANAM13B	13.800	M5	14.0	2.6	9.0	0.0	0.9900	14.4	0.9835	20.7				1	6
107	PANAM13B	13.800	M6	14.0	2.6	9.0	0.0	0.9900	14.4	0.9835	20.7				1	6
108	BAY13C	13.800	B3	40.6	8.5	50.0	-25.0	0.9800	42.4	0.9790	100.0				1	6
116	PACORA13	13.800	P1	15.0	7.7	8.8	0.0	1.0000	16.9	0.8885	21.7				1	6
116	PACORA13	13.800	P2	15.0	7.7	8.8	0.0	1.0000	16.9	0.8885	21.7				1	6
116	PACORA13	13.800	P3	15.0	7.7	8.8	0.0	1.0000	16.9	0.8885	21.7				1	6
142	CANJ13A	13.800	C1	40.0	7.6	29.0	-29.0	1.0000	40.7	0.9822	69.0				1	6
143	CANJ13B	13.800	C2	40.0	7.6	29.0	-29.0	1.0000	40.7	0.9822	69.0				1	6
303	SIND13.8	13.800	S1	9.0	0.0	50.0	0.0	1.1236	8.0	1.0000	13.5				1	6
307	CHANG75A	13.800	G1	65.0	-22.0	22.0	-22.0	1.0014	68.5	0.9472	118.6				1	6
521	TCARIBE 13.813.800	G1		15.6	2.5	12.5	0.0	1.0000	15.8	0.9869	20.9				1	6
521	TCARIBE 13.813.800	G2		15.6	2.5	12.5	0.0	1.0000	15.8	0.9869	20.9				1	6
521	TCARIBE 13.813.800	G3		15.6	2.5	12.5	0.0	1.0000	15.8	0.9869	20.9				1	6
523	TBALBOA 13A 13.800	G1		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9852	10.9				1	6
523	TBALBOA 13A 13.800	G2		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9852	10.9				1	6
523	TBALBOA 13A 13.800	G3		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9852	10.9				1	6
523	TBALBOA 13A 13.800	G4		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9852	10.9				1	6
523	TBALBOA 13A 13.800	G5		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9852	10.9				1	6
524	TBALBOA 13B 13.800	10		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9852	10.9				1	6
524	TBALBOA 13B 13.800	G6		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9852	10.9				1	6
524	TBALBOA 13B 13.800	G7		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9852	10.9				1	6
524	TBALBOA 13B 13.800	G8		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9852	10.9				1	6
524	TBALBOA 13B 13.800	G9		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9852	10.9				1	6
525	TATLANTIC13A13.800	G1		36.0	7.1	28.5	0.0	1.0000	36.7	0.9812	47.5				1	6
525	TATLANTIC13A13.800	G2		36.0	7.1	28.5	0.0	1.0000	36.7	0.9812	47.5				1	6
526	TATLANTIC13B13.800	V1		18.3	5.5	15.0	0.0	1.0000	19.1	0.9578	25.0				1	6
526	TATLANTIC13B13.800	V2		18.3	5.5	15.0	0.0	1.0000	19.1	0.9578	25.0				1	6
SUBSYSTEM TOTALS				1156.6	93.7	862.6	-340.6				1739.1					

P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT2 MINAS2-CHIL  
 Año 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0565	8.0	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0565	8.0	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.6	0.5	8.0	0.0	1.0000	10.6	0.9990	27.7			2	7	
134		MAD6A		6.9000	G1	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9986	13.0			2	7	
135		MAD6B		6.9000	G2	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9986	13.0			2	7	
136		MAD6C		6.9000	G3	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9986	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9991	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9991	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9991	4.1			2	7	
141		GAT6B		6.9000	G4	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9774	5.6			2	7	
141		GAT6B		6.9000	G5	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9774	6.2			2	7	
141		GAT6B		6.9000	G6	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9774	6.2			2	7	
SUBSYSTEM TOTALS						73.5	-0.7	51.0	-33.0				124.2					



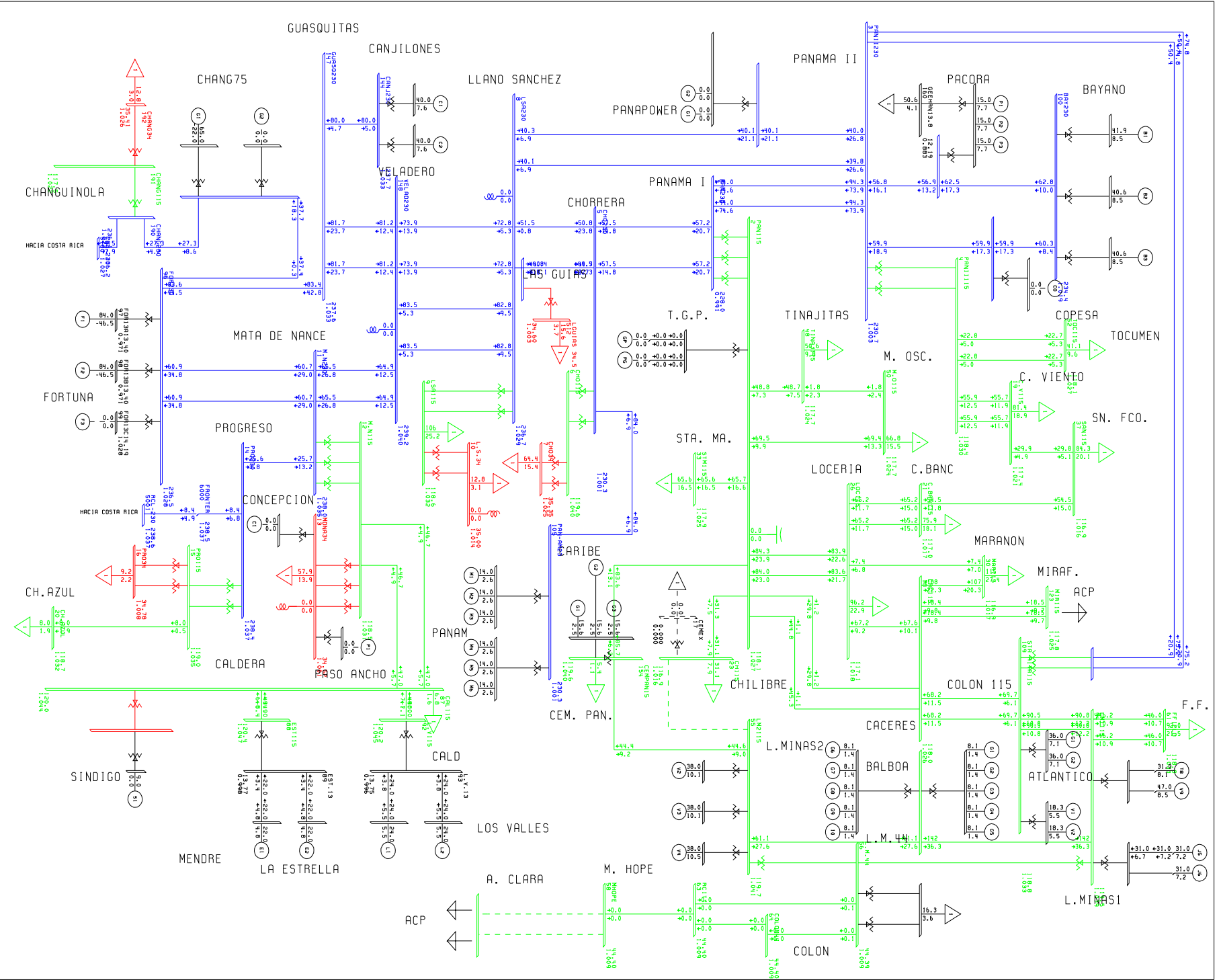
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 13:36  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT2 MINAS2-CHIL AREA TOTALS  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) IN MW/MVAR

X-- AREA	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.3	224.5	-98.9	0.0	143.3	-97.4	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	-0.1	19.6	0.0
C.RICA	242.9	569.4	-236.3	0.0	470.9	22.3	358.4	
6	1156.6	1062.8	0.0	0.0	0.0	71.8	22.0	25.0
PANAMA	93.7	243.4	0.0	0.0	537.7	69.8	318.3	
7	73.5	35.2	0.0	0.0	0.0	36.9	1.5	50.0
ACANAL	-0.7	8.4	0.0	0.0	0.0	-19.7	10.6	
9	0.0	108.3	0.0	0.0	0.0	-108.6	0.3	-75.0
COLON	0.0	25.1	0.0	0.0	1.1	-25.9	1.9	
TOTALS	6378.7	6257.9	0.0	0.0	0.0	0.0	120.9	0.0
	554.3	1893.1	-847.8	0.0	2088.7	0.0	1597.7	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 13:36  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAX INV CNT2 MINAS2-CHIL SHUNT  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME	--X BASKV	N O M I N A L		VOLTAGE	
			MW	MVAR		
2	PAN115	115.00	0.0	0.0	1.0271	SWITCHED
4	PANII115	115.00	0.0	0.0	1.0295	SWITCHED
8	LSA230	230.00	0.0	0.0	1.0291	SWITCHED
10	L.S.34	34.500	0.0	0.0	1.0144	SWITCHED
13	MDNA34	34.500	0.0	0.0	1.0007	SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0401	SWITCHED

P. EXP-SIN CON C.A. JUN 2007 MHTZ MAX INV CNT2 MINAS-CHIL  
 R 0 2011 TBRUBOR, TCRARIBE Y TATLANTICO (EN STRA RITA 115)  
 FRI, SEP 28 2007 15:19  
 BUS - VOLTAGE (KV/PU)  
 BRANCH - MM/MVAR  
 EQUIPMENT - MM/MVAR  
 KW:514 .435 .4115



**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO  
Contingencia 3: Minas 1 – Santa Rita**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 14:01  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT 3 MINAS1-STARI  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0046	231.06	5		CHO230		230.00	6	1.0031	230.71
8		LSA230		230.00	6	1.0303	236.96	11		M.N230		230.00	6	1.0352	238.09
14		PRO230		230.00	6	1.0371	238.54	96		FOR230		230.00	6	1.0285	236.56
100		BAY230		230.00	6	1.0199	234.58	103		COPESA23		230.00	6	1.0074	231.70
105		PAN-AM23		230.00	6	1.0032	230.73	115		PACORA23		230.00	6	1.0088	232.03
117		STA RITA230		230.00	6	1.0227	235.22	144		CANJ230		230.00	6	1.0338	237.78
147		GUASQ230		230.00	6	1.0338	237.76	148		VELAD230		230.00	6	1.0409	239.42
190		CHANG230		230.00	6	1.0270	236.21	306		CHANG75		230.00	6	1.0268	236.16
511		LGUIAS230		230.00	6	1.0202	234.65	515		PANPOWER230		230.00	6	1.0135	233.10
6000		FRONTER		230.00	6	1.0375	238.63								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9933	228.46								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 14:01  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT 3 MINAS1-STARI  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0297	118.41	4		PANIII115		115.00	6	1.0314	118.61
6		CHO115		115.00	6	1.0418	119.81	9		LSA115		115.00	6	1.0330	118.80
12		M.N115		115.00	6	1.0311	118.57	15		PRO115		115.00	6	1.0352	119.05
18		CAC115		115.00	6	1.0289	118.32	19		C.V115		115.00	6	1.0227	117.61
20		CH.AZUL		115.00	6	1.0323	118.72	21		C.BAN115		115.00	6	1.0198	117.28
23		CH115		115.00	6	1.0275	118.16	26		LOC115		115.00	6	1.0208	117.40
30		MAR115		115.00	6	1.0192	117.21	33		STM115		115.00	6	1.0280	118.22
37		SAN115		115.00	6	1.0189	117.18	48		TINAJ115		115.00	6	1.0264	118.03
50		M.O115		115.00	6	1.0265	118.05	52		TOC115		115.00	6	1.0287	118.30
54		LM115		115.00	6	1.0416	119.78	55		LM2115		115.00	6	1.0422	119.85
61		FFIELD		115.00	9	1.0354	119.07	87		CAL115		115.00	6	1.0440	120.06
88		EST115		115.00	6	1.0470	120.41	92		L.V115		115.00	6	1.0452	120.20
109		STA RITA115		115.00	6	1.0332	118.81	123		MIR115		115.00	7	1.0271	118.12
154		CEMPAN115		115.00	6	1.0420	119.83	191		CHANG115		115.00	6	1.0223	117.57
522		TBALBOA 115		115.00	6	1.0421	119.84								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*

P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT 3 MINASI-STARI  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

## AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.0	9.5	17.0	0.0	1.0100	38.8	0.9700	47.0			1	6	
67	BLM13C	13.800	V3	38.0	9.5	17.0	0.0	1.0100	38.8	0.9700	47.0			1	6	
68	BLM13D	13.800	V4	38.0	9.9	30.0	0.0	1.0100	38.9	0.9679	47.0			1	6	
70	TGJB13A	13.800	J5	31.0	6.7	20.0	0.0	1.0100	31.4	0.9777	39.4			1	6	
71	TGJB13B	13.800	J6	31.0	6.7	20.0	0.0	1.0100	31.4	0.9777	39.4			1	6	
72	BLMCCA	13.800	T8	31.0	7.6	20.0	0.0	1.0100	31.6	0.9714	50.0			1	6	
73	BLMCCB	13.800	V9	47.0	7.9	40.0	0.0	1.0100	47.2	0.9861	71.0			1	6	
90	EST-13L	13.800	E1	22.0	4.7	12.0	-5.0	1.0100	22.3	0.9775	27.0			1	6	
91	EST-13T	13.800	E2	22.0	4.7	12.0	-5.0	1.0100	22.3	0.9775	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	5.4	12.0	-5.0	1.0100	24.4	0.9753	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	5.4	12.0	-5.0	1.0100	24.4	0.9753	27.0			1	6	
97	FOR13A	13.800	F1	84.0	-46.9	50.0	-50.0	0.9710	99.1	0.8732	111.0			1	6	
98	FOR13B	13.800	F2	84.0	-46.9	50.0	-50.0	0.9710	99.1	0.8732	111.0			1	6	
101	BAY13A	13.800	B1	41.1	7.8	50.0	-25.0	0.9800	42.7	0.9826	96.0			1	6	SYST
102	BAY13B	13.800	B2	40.6	7.8	50.0	-25.0	0.9800	42.2	0.9823	96.0			1	6	
106	PANAM13A	13.800	M1	14.0	2.3	9.0	0.0	0.9900	14.3	0.9865	20.7			1	6	
106	PANAM13A	13.800	M2	14.0	2.3	9.0	0.0	0.9900	14.3	0.9865	20.7			1	6	
106	PANAM13A	13.800	M3	14.0	2.3	9.0	0.0	0.9900	14.3	0.9865	20.7			1	6	
107	PANAM13B	13.800	M4	14.0	2.3	9.0	0.0	0.9900	14.3	0.9865	20.7			1	6	
107	PANAM13B	13.800	M5	14.0	2.3	9.0	0.0	0.9900	14.3	0.9865	20.7			1	6	
107	PANAM13B	13.800	M6	14.0	2.3	9.0	0.0	0.9900	14.3	0.9865	20.7			1	6	
108	BAY13C	13.800	B3	40.6	7.8	50.0	-25.0	0.9800	42.2	0.9823	100.0			1	6	
116	PACORA13	13.800	P1	15.0	7.5	8.8	0.0	1.0000	16.8	0.8945	21.7			1	6	
116	PACORA13	13.800	P2	15.0	7.5	8.8	0.0	1.0000	16.8	0.8945	21.7			1	6	
116	PACORA13	13.800	P3	15.0	7.5	8.8	0.0	1.0000	16.8	0.8945	21.7			1	6	
142	CANJ13A	13.800	C1	40.0	7.6	29.0	-29.0	1.0000	40.7	0.9826	69.0			1	6	
143	CANJ13B	13.800	C2	40.0	7.6	29.0	-29.0	1.0000	40.7	0.9826	69.0			1	6	
303	SIND13.8	13.800	S1	9.0	0.0	50.0	0.0	1.1239	8.0	1.0000	13.5			1	6	
307	CHANG75A	13.800	G1	65.0	-22.0	22.0	-22.0	1.0018	68.5	0.9472	118.6			1	6	
521	TCARIBE 13.813.800	G1	15.6	2.2	12.5	0.0	1.0000	15.8	0.9904	20.9				1	6	
521	TCARIBE 13.813.800	G2	15.6	2.2	12.5	0.0	1.0000	15.8	0.9904	20.9				1	6	
521	TCARIBE 13.813.800	G3	15.6	2.2	12.5	0.0	1.0000	15.8	0.9904	20.9				1	6	
523	TBALBOA 13A 13.800	G1	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9891	10.9				1	6	
523	TBALBOA 13A 13.800	G2	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9891	10.9				1	6	
523	TBALBOA 13A 13.800	G3	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9891	10.9				1	6	
523	TBALBOA 13A 13.800	G4	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9891	10.9				1	6	
523	TBALBOA 13A 13.800	G5	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9891	10.9				1	6	
524	TBALBOA 13B 13.800	10	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9891	10.9				1	6	
524	TBALBOA 13B 13.800	G6	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9891	10.9				1	6	
524	TBALBOA 13B 13.800	G7	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9891	10.9				1	6	
524	TBALBOA 13B 13.800	G8	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9891	10.9				1	6	
524	TBALBOA 13B 13.800	G9	8.1	1.2	6.6	-6.6	1.0000	8.2	0.9891	10.9				1	6	
525	TATLANTIC13A13.800	G1	36.0	7.1	28.5	0.0	1.0000	36.7	0.9810	47.5				1	6	
525	TATLANTIC13A13.800	G2	36.0	7.1	28.5	0.0	1.0000	36.7	0.9810	47.5				1	6	
526	TATLANTIC13B13.800	V1	18.3	5.5	15.0	0.0	1.0000	19.1	0.9571	25.0				1	6	
526	TATLANTIC13B13.800	V2	18.3	5.5	15.0	0.0	1.0000	19.1	0.9571	25.0				1	6	
SUBSYSTEM TOTALS				1155.8	81.1	862.6	-340.6				1739.1					

P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT 3 MINAS1-STARI  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0579	8.0	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0579	8.0	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.6	0.0	8.0	0.0	1.0003	10.6	1.0000	27.7			2	7	
134		MAD6A		6.9000	G1	9.6	0.4	6.0	-6.0	1.0000	9.6	0.9990	13.0			2	7	
135		MAD6B		6.9000	G2	9.6	0.4	6.0	-6.0	1.0000	9.6	0.9990	13.0			2	7	
136		MAD6C		6.9000	G3	9.6	0.4	6.0	-6.0	1.0000	9.6	0.9990	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9986	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9986	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9986	4.1			2	7	
141		GAT6B		6.9000	G4	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9763	5.6			2	7	
141		GAT6B		6.9000	G5	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9763	6.2			2	7	
141		GAT6B		6.9000	G6	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9763	6.2			2	7	
SUBSYSTEM TOTALS						73.5	-1.6	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 14:01  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT 3 MINAS1-STARI AREA TOTALS  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) IN MW/MVAR

X--	AREA	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
		29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	SALVADOR	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
		100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	HONDURAS	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
		55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	NICA	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
		32.3	224.5	-98.9	0.0	143.3	-97.4	147.3	
5	C.RICA	1344.3	1324.8	0.0	0.0	0.0	-0.1	19.6	0.0
		242.2	569.4	-236.3	0.0	471.0	21.8	358.4	
6	PANAMA	1155.8	1062.8	0.0	0.0	0.0	71.8	21.2	25.0
		81.1	243.4	0.0	0.0	540.3	71.2	306.8	
7	ACANAL	73.5	35.2	0.0	0.0	0.0	36.9	1.5	50.0
		-1.6	8.4	0.0	0.0	0.0	-20.6	10.6	
9	COLON	0.0	108.3	0.0	0.0	0.0	-108.6	0.3	-75.0
		0.0	25.1	0.0	0.0	1.1	-25.9	1.9	
TOTALS		6377.9	6257.9	0.0	0.0	0.0	0.0	120.1	0.0
		540.2	1893.1	-847.8	0.0	2091.3	0.0	1586.2	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, SEP 28 2007 14:06  
P. EXP-SIN CON C.A. JUN 2007 MHT7 MAXINV CNT 3 MINAS1-STARI SHUNT  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X--	NAME	--X	BASKV	N O M I N A L		VOLTAGE	
					MW	MVAR		
2	PAN115			115.00	0.0	0.0	1.0297	SWITCHED
4	PANIII115			115.00	0.0	0.0	1.0314	SWITCHED
8	LSA230			230.00	0.0	0.0	1.0303	SWITCHED
10	L.S.34			34.500	0.0	0.0	1.0156	SWITCHED
13	MDNA34			34.500	0.0	0.0	1.0011	SWITCHED
148	VELAD230			230.00	0.0	0.0	1.0409	SWITCHED







**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO**

**Caso en que la Térmica Atlántico se conecta en Las Minas  
(Línea 115-20) Descartado por sobrecarga en líneas**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.0	12.7	17.0	0.0	1.0181	39.4	0.9483	47.0			1	6	
67	BLM13C	13.800	V3	38.0	12.7	17.0	0.0	1.0181	39.4	0.9483	47.0			1	6	
68	BLM13D	13.800	V4	38.0	13.2	30.0	0.0	1.0181	39.5	0.9445	47.0			1	6	
70	TGJB13A	13.800	J5	31.0	9.2	20.0	0.0	1.0200	31.7	0.9588	39.4			1	6	
71	TGJB13B	13.800	J6	31.0	9.2	20.0	0.0	1.0200	31.7	0.9588	39.4			1	6	
72	BLMCCA	13.800	T8	31.0	7.4	20.0	0.0	1.0100	31.5	0.9729	50.0			1	6	
73	BLMCCB	13.800	V9	47.0	7.7	40.0	0.0	1.0100	47.2	0.9869	71.0			1	6	
90	EST-13L	13.800	E1	15.0	3.3	12.0	-5.0	1.0100	15.2	0.9773	27.0			1	6	
91	EST-13T	13.800	E2	15.0	3.3	12.0	-5.0	1.0100	15.2	0.9773	27.0			1	6	
94	LV-13.8L	13.800	L1	17.0	3.7	12.0	-5.0	1.0100	17.2	0.9766	27.0			1	6	
95	LV-13.8T	13.800	L2	17.0	3.7	12.0	-5.0	1.0100	17.2	0.9766	27.0			1	6	
97	FOR13A	13.800	F1	90.0	-50.0	50.0	-50.0	0.9761	105.5	0.8742	111.0			1	6	
98	FOR13B	13.800	F2	90.0	-50.0	50.0	-50.0	0.9761	105.5	0.8742	111.0			1	6	
101	BAY13A	13.800	B1	43.8	6.8	50.0	-25.0	0.9800	45.2	0.9883	96.0			1	6	SYST
102	BAY13B	13.800	B2	47.3	7.0	50.0	-25.0	0.9800	48.8	0.9893	96.0			1	6	
106	PANAM13A	13.800	M1	14.0	3.2	9.0	0.0	1.0000	14.4	0.9747	20.7			1	6	
106	PANAM13A	13.800	M2	14.0	3.2	9.0	0.0	1.0000	14.4	0.9747	20.7			1	6	
106	PANAM13A	13.800	M3	14.0	3.2	9.0	0.0	1.0000	14.4	0.9747	20.7			1	6	
107	PANAM13B	13.800	M4	14.0	3.2	9.0	0.0	1.0000	14.4	0.9747	20.7			1	6	
107	PANAM13B	13.800	M5	14.0	3.2	9.0	0.0	1.0000	14.4	0.9747	20.7			1	6	
107	PANAM13B	13.800	M6	14.0	3.2	9.0	0.0	1.0000	14.4	0.9747	20.7			1	6	
108	BAY13C	13.800	B3	47.3	7.0	50.0	-25.0	0.9800	48.8	0.9893	100.0			1	6	
116	PACORA13	13.800	P1	15.0	8.7	8.8	0.0	1.0100	17.2	0.8660	21.7			1	6	
116	PACORA13	13.800	P2	15.0	8.7	8.8	0.0	1.0100	17.2	0.8660	21.7			1	6	
116	PACORA13	13.800	P3	15.0	8.7	8.8	0.0	1.0100	17.2	0.8660	21.7			1	6	
142	CANJ13A	13.800	C1	40.0	6.2	29.0	-29.0	1.0000	40.5	0.9880	69.0			1	6	
143	CANJ13B	13.800	C2	40.0	6.2	29.0	-29.0	1.0000	40.5	0.9880	69.0			1	6	
303	SIND13.8	13.800	S1	9.0	0.0	50.0	0.0	1.1284	8.0	1.0000	13.5			1	6	
307	CHANG75A	13.800	G1	65.0	-22.0	22.0	-22.0	1.0140	67.7	0.9472	118.6			1	6	
521	TCARIBE 13.813.800	G1	15.6	2.0	12.5	0.0	1.0000	15.7	0.9921	20.9				1	6	
521	TCARIBE 13.813.800	G2	15.6	2.0	12.5	0.0	1.0000	15.7	0.9921	20.9				1	6	
521	TCARIBE 13.813.800	G3	15.6	2.0	12.5	0.0	1.0000	15.7	0.9921	20.9				1	6	
523	TBALBOA 13A 13.800	G1	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9917	10.9				1	6	
523	TBALBOA 13A 13.800	G2	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9917	10.9				1	6	
523	TBALBOA 13A 13.800	G3	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9917	10.9				1	6	
523	TBALBOA 13A 13.800	G4	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9917	10.9				1	6	
523	TBALBOA 13A 13.800	G5	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9917	10.9				1	6	
524	TBALBOA 13B 13.800	10	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9917	10.9				1	6	
524	TBALBOA 13B 13.800	G6	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9917	10.9				1	6	
524	TBALBOA 13B 13.800	G7	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9917	10.9				1	6	
524	TBALBOA 13B 13.800	G8	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9917	10.9				1	6	
524	TBALBOA 13B 13.800	G9	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9917	10.9				1	6	
525	TATLANTIC13A13.800	G1	36.0	0.0	28.5	0.0	1.0893	33.0	1.0000	47.5				1	6	
525	TATLANTIC13A13.800	G2	36.0	0.0	28.5	0.0	1.0893	33.0	1.0000	47.5				1	6	
526	TATLANTIC13B13.800	V1	18.3	0.0	15.0	0.0	1.0939	16.7	1.0000	25.0				1	6	
526	TATLANTIC13B13.800	V2	18.3	0.0	15.0	0.0	1.0939	16.7	1.0000	25.0				1	6	
SUBSYSTEM TOTALS				1155.8	59.0	862.6	-340.6				1739.1					

P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0593	8.0	1.0000	13.5			2		7	
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0593	8.0	1.0000	13.5			2		7	
130		MIR13F		13.800	G5	10.6	0.0	8.0	0.0	1.0016	10.6	1.0000	27.7			2		7	
134		MAD6A		6.9000	G1	9.6	0.4	6.0	-6.0	1.0000	9.6	0.9993	13.0			2		7	
135		MAD6B		6.9000	G2	9.6	0.4	6.0	-6.0	1.0000	9.6	0.9993	13.0			2		7	
136		MAD6C		6.9000	G3	9.6	0.4	6.0	-6.0	1.0000	9.6	0.9993	13.0			2		7	
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9980	4.1			2		7	
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9980	4.1			2		7	
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9980	4.1			2		7	
141		GAT6B		6.9000	G4	3.8	-0.9	3.0	-3.0	1.0000	3.9	0.9752	5.6			2		7	
141		GAT6B		6.9000	G5	3.8	-0.9	3.0	-3.0	1.0000	3.9	0.9752	6.2			2		7	
141		GAT6B		6.9000	G6	3.8	-0.9	3.0	-3.0	1.0000	3.9	0.9752	6.2			2		7	
SUBSYSTEM TOTALS						73.5	-1.9	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 18 2007 16:19  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0064	231.47	5		CHO230		230.00	6	1.0071	231.63
8		LSA230		230.00	6	1.0364	238.37	11		M.N230		230.00	6	1.0428	239.84
14		PRO230		230.00	6	1.0434	239.99	96		FOR230		230.00	6	1.0374	238.60
100		BAY230		230.00	6	1.0215	234.95	103		COPESA23		230.00	6	1.0091	232.09
105		PAN-AM23		230.00	6	1.0072	231.65	115		PACORA23		230.00	6	1.0110	232.54
117		STA RITA230		230.00	6	1.0212	234.88	144		CANJ230		230.00	6	1.0420	239.67
147		GUASQ230		230.00	6	1.0420	239.66	148		VELAD230		230.00	6	1.0483	241.12
190		CHANG230		230.00	6	1.0394	239.07	306		CHANG75		230.00	6	1.0387	238.90
511		LGUIAS230		230.00	6	1.0255	235.87	515		PANPOWER230		230.00	6	1.0161	233.69
6000		FRONTER		230.00	6	1.0436	240.03								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9956	229.00								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 18 2007 16:20  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0315	118.62	4		PANII115		115.00	6	1.0331	118.81
6		CHO115		115.00	6	1.0461	120.30	9		LSA115		115.00	6	1.0395	119.54
12		M.N115		115.00	6	1.0386	119.44	15		PRO115		115.00	6	1.0416	119.78
18		CAC115		115.00	6	1.0307	118.53	19		C.V115		115.00	6	1.0245	117.82
20		CH.AZUL		115.00	6	1.0387	119.45	21		C.BAN115		115.00	6	1.0217	117.49
23		CH115		115.00	6	1.0289	118.32	26		LOC115		115.00	6	1.0226	117.60
30		MAR115		115.00	6	1.0210	117.42	33		STM115		115.00	6	1.0299	118.43
37		SAN115		115.00	6	1.0208	117.39	48		TINAJ115		115.00	6	1.0282	118.24
50		M.O115		115.00	6	1.0283	118.26	52		TOC115		115.00	6	1.0305	118.50

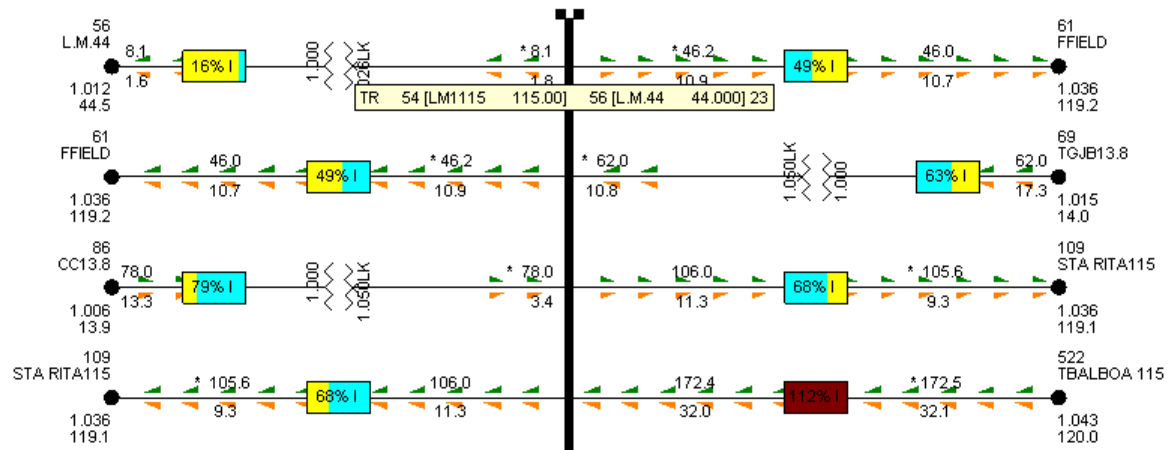
54 LM1115	115.00	6	1.0424	119.88	55 LM2115	115.00	6	1.0435	120.00
61 FFIELD	115.00	9	1.0362	119.16	87 CAL115	115.00	6	1.0485	120.57
88 EST115	115.00	6	1.0507	120.83	92 L.V115	115.00	6	1.0493	120.67
109 STA RITA115	115.00	6	1.0359	119.13	123 MIR115	115.00	7	1.0288	118.32
154 CEMPAN15	115.00	6	1.0430	119.94	191 CHANG115	115.00	6	1.0348	119.01
522 TBALBOA 115	115.00	6	1.0434	119.99					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS# X-- NAME --X BASKV AREA	V(PU)	V(KV)	BUS# X-- NAME --X BASKV AREA	V(PU)	V(KV)
* NONE *					

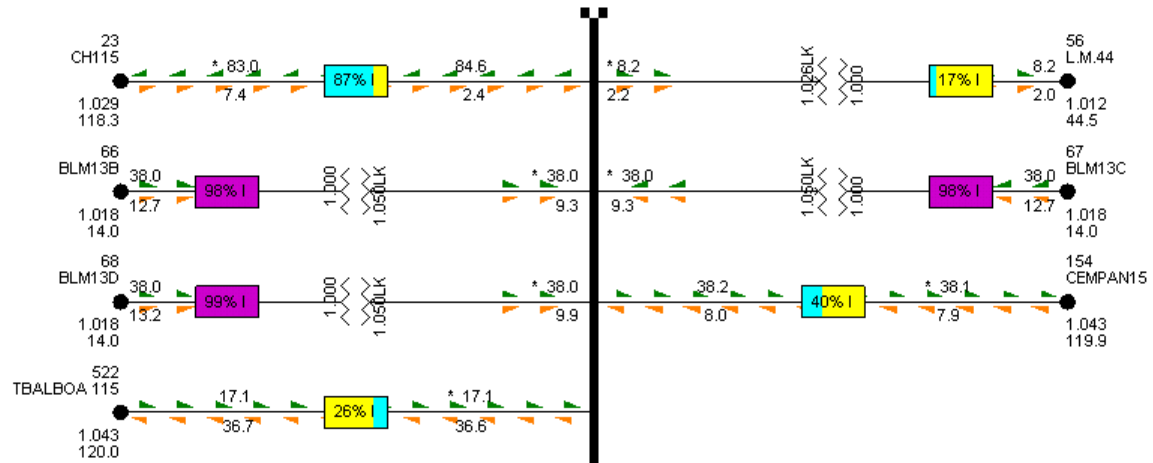
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, SEP 18 2007 16:21  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV SHUNT  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS# X-- NAME --X BASKV	N O M I N A L			
	MW	MVAR	VOLTAGE	
2 PAN115 115.00	0.0	0.0	1.0315	SWITCHED
4 PANII115 115.00	0.0	0.0	1.0331	SWITCHED
8 LSA230 230.00	0.0	0.0	1.0364	SWITCHED
10 L.S.34 34.500	0.0	0.0	1.0221	SWITCHED
13 MDNA34 34.500	0.0	0.0	1.0088	SWITCHED
148 VELAD230 230.00	0.0	0.0	1.0483	SWITCHED

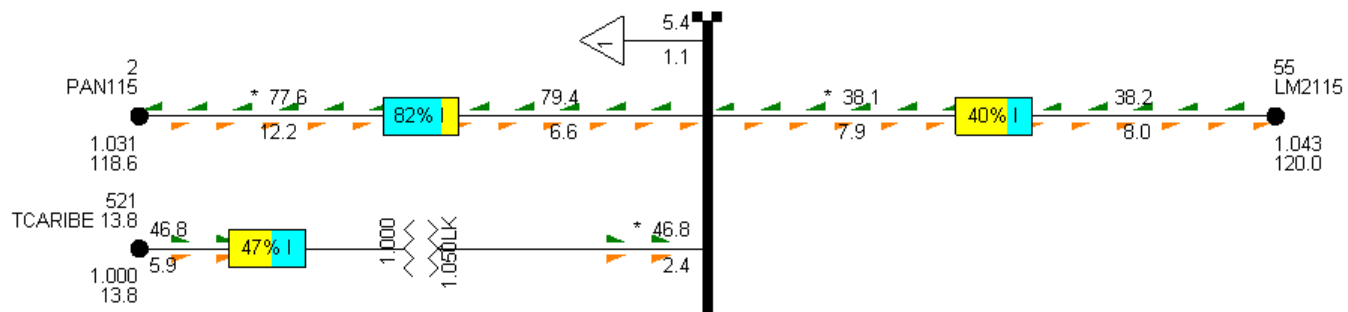


BUS # 54  
 LM1115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.04240PU  
 119.876KV  
 ANGLE -0.87Deg

Zoom Extent

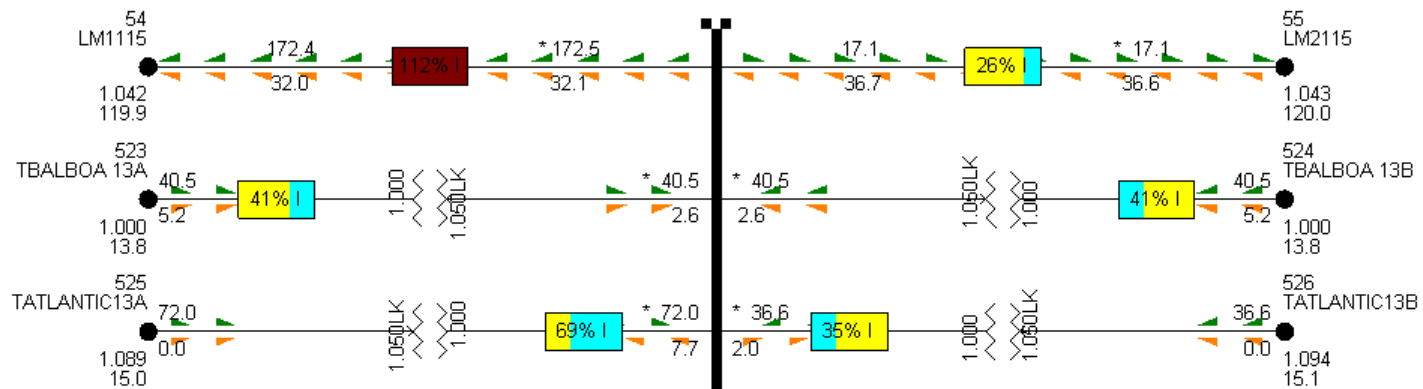


BUS # 55  
LM2115 115.00  
TYPE 1  
AREA 6 PANAMA  
ZONE 1 CENTRAL  
VOLTAGE 1.04348PU  
120.000KV  
ANGLE -0.84Deg



BUS # 154  
 CEMPAN15 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.04298PU  
 119.943KV  
 ANGLE -1.99Deg





BUS # 522  
 TBALBOA 115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.04338PU  
 119.989KV  
 ANGLE -0.83Deg



**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO  
Contingencia 1: Panamá – Cemento Panamá**

**Caso en que la Térmica Atlántico se conecta en Las Minas  
(Línea 115-20) Descartado por sobrecarga en líneas**

P. EXP-SIN CON C.A. JUN 2007 MHT7 ESC MOD MAXINV CONT1  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

## AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.0	13.8	17.0	0.0	1.0181	39.7	0.9396	47.0			1	6	
67	BLM13C	13.800	V3	38.0	13.8	17.0	0.0	1.0181	39.7	0.9396	47.0			1	6	
68	BLM13D	13.800	V4	38.0	14.4	30.0	0.0	1.0181	39.9	0.9351	47.0			1	6	
70	TGJB13A	13.800	J5	31.0	10.0	20.0	0.0	1.0200	31.9	0.9517	39.4			1	6	
71	TGJB13B	13.800	J6	31.0	10.0	20.0	0.0	1.0200	31.9	0.9517	39.4			1	6	
72	BLMCCA	13.800	T8	31.0	8.2	20.0	0.0	1.0100	31.7	0.9669	50.0			1	6	
73	BLMCCB	13.800	V9	47.0	8.5	40.0	0.0	1.0100	47.3	0.9840	71.0			1	6	
90	EST-13L	13.800	E1	15.0	3.5	12.0	-5.0	1.0100	15.2	0.9741	27.0			1	6	
91	EST-13T	13.800	E2	15.0	3.5	12.0	-5.0	1.0100	15.2	0.9741	27.0			1	6	
94	LV-13.8L	13.800	L1	17.0	4.0	12.0	-5.0	1.0100	17.3	0.9735	27.0			1	6	
95	LV-13.8T	13.800	L2	17.0	4.0	12.0	-5.0	1.0100	17.3	0.9735	27.0			1	6	
97	FOR13A	13.800	F1	90.0	-50.0	50.0	-50.0	0.9742	105.7	0.8742	111.0			1	6	
98	FOR13B	13.800	F2	90.0	-50.0	50.0	-50.0	0.9742	105.7	0.8742	111.0			1	6	
101	BAY13A	13.800	B1	45.5	8.5	50.0	-25.0	0.9800	47.3	0.9831	96.0			1	6	SYST
102	BAY13B	13.800	B2	47.3	8.6	50.0	-25.0	0.9800	49.1	0.9839	96.0			1	6	
106	PANAM13A	13.800	M1	14.0	3.7	9.0	0.0	1.0000	14.5	0.9668	20.7			1	6	
106	PANAM13A	13.800	M2	14.0	3.7	9.0	0.0	1.0000	14.5	0.9668	20.7			1	6	
106	PANAM13A	13.800	M3	14.0	3.7	9.0	0.0	1.0000	14.5	0.9668	20.7			1	6	
107	PANAM13B	13.800	M4	14.0	3.7	9.0	0.0	1.0000	14.5	0.9668	20.7			1	6	
107	PANAM13B	13.800	M5	14.0	3.7	9.0	0.0	1.0000	14.5	0.9668	20.7			1	6	
107	PANAM13B	13.800	M6	14.0	3.7	9.0	0.0	1.0000	14.5	0.9668	20.7			1	6	
108	BAY13C	13.800	B3	47.3	8.6	50.0	-25.0	0.9800	49.1	0.9839	100.0			1	6	
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0073	17.3	0.8618	21.7			1	6	
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0073	17.3	0.8618	21.7			1	6	
116	PACORA13	13.800	P3	15.0	8.8	8.8	0.0	1.0073	17.3	0.8618	21.7			1	6	
142	CANJ13A	13.800	C1	40.0	6.5	29.0	-29.0	1.0000	40.5	0.9869	69.0			1	6	
143	CANJ13B	13.800	C2	40.0	6.5	29.0	-29.0	1.0000	40.5	0.9869	69.0			1	6	
303	SIND13.8	13.800	S1	9.0	0.0	50.0	0.0	1.1275	8.0	1.0000	13.5			1	6	
307	CHANG75A	13.800	G1	65.0	-22.0	22.0	-22.0	1.0126	67.8	0.9472	118.6			1	6	
521	TCARIBE 13.813.800	G1		15.6	1.4	12.5	0.0	1.0000	15.7	0.9959	20.9			1	6	
521	TCARIBE 13.813.800	G2		15.6	1.4	12.5	0.0	1.0000	15.7	0.9959	20.9			1	6	
521	TCARIBE 13.813.800	G3		15.6	1.4	12.5	0.0	1.0000	15.7	0.9959	20.9			1	6	
523	TBALBOA 13A 13.800	G1		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9857	10.9			1	6	
523	TBALBOA 13A 13.800	G2		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9857	10.9			1	6	
523	TBALBOA 13A 13.800	G3		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9857	10.9			1	6	
523	TBALBOA 13A 13.800	G4		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9857	10.9			1	6	
523	TBALBOA 13A 13.800	G5		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9857	10.9			1	6	
524	TBALBOA 13B 13.800	10		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9857	10.9			1	6	
524	TBALBOA 13B 13.800	G6		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9857	10.9			1	6	
524	TBALBOA 13B 13.800	G7		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9857	10.9			1	6	
524	TBALBOA 13B 13.800	G8		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9857	10.9			1	6	
524	TBALBOA 13B 13.800	G9		8.1	1.4	6.6	-6.6	1.0000	8.2	0.9857	10.9			1	6	
525	TATLANTIC13A13.800	G1		36.0	0.0	28.5	0.0	1.0862	33.1	1.0000	47.5			1	6	
525	TATLANTIC13A13.800	G2		36.0	0.0	28.5	0.0	1.0862	33.1	1.0000	47.5			1	6	
526	TATLANTIC13B13.800	V1		18.3	0.0	15.0	0.0	1.0910	16.8	1.0000	25.0			1	6	
526	TATLANTIC13B13.800	V2		18.3	0.0	15.0	0.0	1.0910	16.8	1.0000	25.0			1	6	
SUBSYSTEM TOTALS				1157.6	77.3	862.6	-340.6				1739.1					

P. EXP-SIN CON C.A. JUN 2007 MHT7 ESC MOD MAXINV CONT1  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0564	8.0	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0564	8.0	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.6	0.5	8.0	0.0	1.0000	10.6	0.9987	27.7			2	7	
134		MAD6A		6.9000	G1	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9986	13.0			2	7	
135		MAD6B		6.9000	G2	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9986	13.0			2	7	
136		MAD6C		6.9000	G3	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9986	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9991	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9991	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9991	4.1			2	7	
141		GAT6B		6.9000	G4	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9775	5.6			2	7	
141		GAT6B		6.9000	G5	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9775	6.2			2	7	
141		GAT6B		6.9000	G6	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9775	6.2			2	7	
SUBSYSTEM TOTALS						73.5	-0.6	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 19 2007 10:27  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 ESC MOD MAXINV CONT1  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0026	230.61	5		CHO230		230.00	6	1.0036	230.83
8		LSA230		230.00	6	1.0335	237.71	11		M.N230		230.00	6	1.0411	239.45
14		PRO230		230.00	6	1.0420	239.66	96		FOR230		230.00	6	1.0357	238.20
100		BAY230		230.00	6	1.0193	234.44	103		COPEA23		230.00	6	1.0056	231.28
105		PAN-AM23		230.00	6	1.0037	230.85	115		PACORA23		230.00	6	1.0078	231.78
117		STA RITA230		230.00	6	1.0175	234.02	144		CANJ230		230.00	6	1.0402	239.25
147		GUASQ230		230.00	6	1.0402	239.24	148		VELAD230		230.00	6	1.0461	240.61
190		CHANG230		230.00	6	1.0381	238.76	306		CHANG75		230.00	6	1.0373	238.57
511		LGUIAS230		230.00	6	1.0224	235.15	515		PANPOWER230		230.00	6	1.0125	232.87
6000		FRONTER		230.00	6	1.0422	239.71								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9915	228.05								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 19 2007 10:27  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 ESC MOD MAXINV CONT1  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0268	118.09	4		PANII115		115.00	6	1.0291	118.35
6		CHO115		115.00	6	1.0424	119.87	9		LSA115		115.00	6	1.0365	119.19
12		M.N115		115.00	6	1.0373	119.30	15		PRO115		115.00	6	1.0401	119.61
18		CAC115		115.00	6	1.0261	118.00	19		C.V115		115.00	6	1.0203	117.33
20		CH.AZUL		115.00	6	1.0372	119.28	21		C.BAN115		115.00	6	1.0170	116.96
23		CH115		115.00	6	1.0239	117.75	26		LOC115		115.00	6	1.0180	117.07

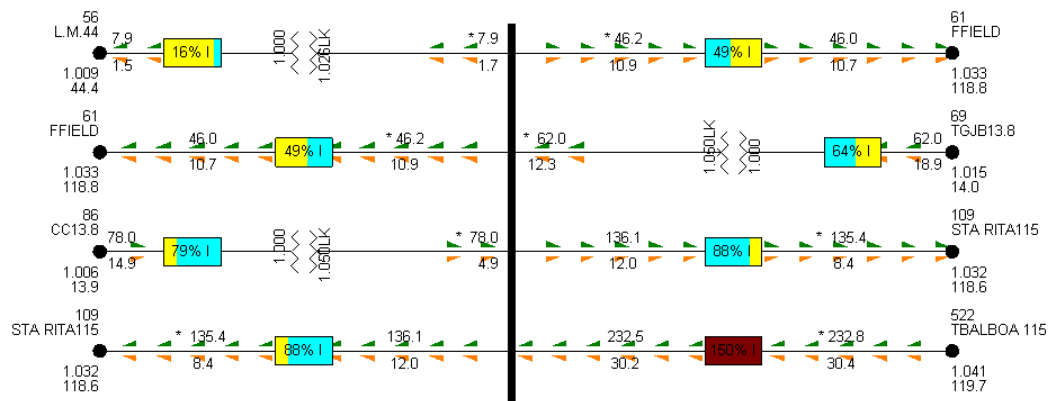
30	MAR115	115.00	6	1.0163	116.88	33	STM115	115.00	6	1.0252	117.90
37	SAN115	115.00	6	1.0162	116.86	48	TINAJ115	115.00	6	1.0235	117.71
50	M.O115	115.00	6	1.0236	117.72	52	TOC115	115.00	6	1.0265	118.04
54	LM1115	115.00	6	1.0393	119.52	55	LM2115	115.00	6	1.0409	119.70
61	FFIELD	115.00	9	1.0331	118.80	87	CAL115	115.00	6	1.0476	120.48
88	EST115	115.00	6	1.0499	120.74	92	L.V115	115.00	6	1.0485	120.58
109	STA RITA115	115.00	6	1.0315	118.62	123	MIR115	115.00	7	1.0244	117.81
154	CEMPAN15	115.00	6	1.0458	120.26	191	CHANG115	115.00	6	1.0335	118.85
522	TBALBOA 115	115.00	6	1.0405	119.66						

BUSES WITH VOLTAGE LESS THAN 1.0000:

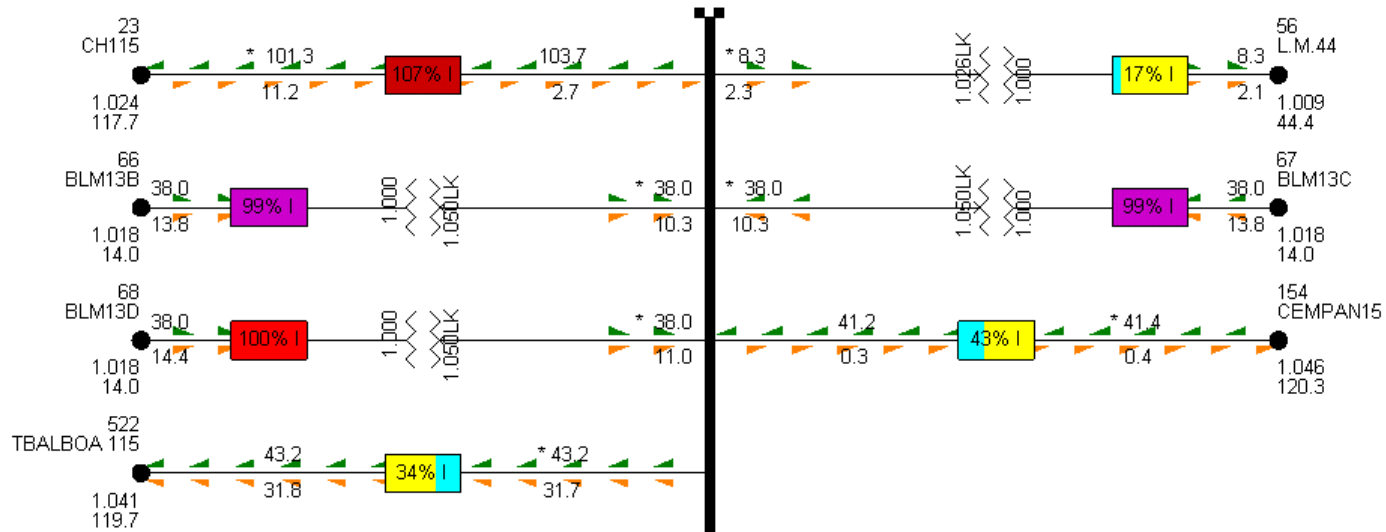
BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 19 2007 10:53  
P. EXP-SIN CON C.A. JUN 2007 MHT7 ESC MOD MAXINV CONT1 SHUNT  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

		N O M I N A L					
BUS#	X--	NAME	--X	BASKV	MW	MVAR	VOLTAGE
2		PAN115		115.00	0.0	0.0	1.0268 SWITCHED
4		PANII115		115.00	0.0	0.0	1.0291 SWITCHED
8		LSA230		230.00	0.0	0.0	1.0335 SWITCHED
10		L.S.34		34.500	0.0	0.0	1.0191 SWITCHED
13		MDNA34		34.500	0.0	0.0	1.0075 SWITCHED
148		VELAD230		230.00	0.0	0.0	1.0461 SWITCHED

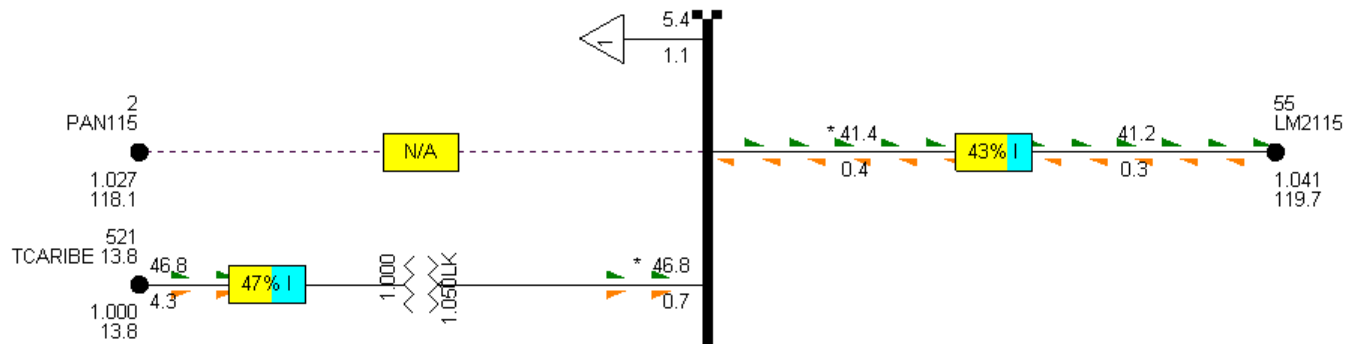


BUS # 54  
 LM1115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.03928PU  
 119.517KV  
 ANGLE 0.54Deg

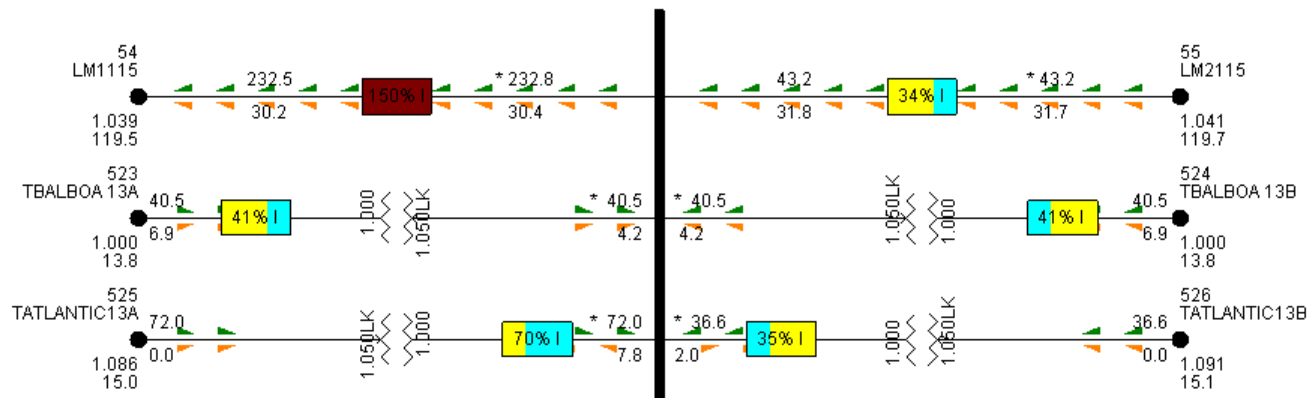


BUS # 55  
 LM2115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.04090PU  
 119.704KV  
 ANGLE 0.60Deg





BUS # 154  
 CEMPAN15 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.04577PU  
 120.264KV  
 ANGLE 1.78Deg



BUS # 522  
 TBALBOA 115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.04054PU  
 119.663KV  
 ANGLE 0.59Deg

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO  
Contingencia 2: Minas 2 – Chilibre**

**Caso en que la Térmica Atlántico se conecta en Las Minas  
(Línea 115-20) Descartado por sobrecarga en líneas**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.0	13.4	17.0	0.0	1.0181	39.6	0.9435	47.0				1	6
67	BLM13C	13.800	V3	38.0	13.4	17.0	0.0	1.0181	39.6	0.9435	47.0				1	6
68	BLM13D	13.800	V4	38.0	13.9	30.0	0.0	1.0181	39.7	0.9393	47.0				1	6
70	TGJB13A	13.800	J5	31.0	9.7	20.0	0.0	1.0200	31.9	0.9541	39.4				1	6
71	TGJB13B	13.800	J6	31.0	9.7	20.0	0.0	1.0200	31.9	0.9541	39.4				1	6
72	BLMCCA	13.800	T8	31.0	7.9	20.0	0.0	1.0100	31.7	0.9690	50.0				1	6
73	BLMCCB	13.800	V9	47.0	8.2	40.0	0.0	1.0100	47.2	0.9850	71.0				1	6
90	EST-13L	13.800	E1	15.0	3.5	12.0	-5.0	1.0100	15.3	0.9737	27.0				1	6
91	EST-13T	13.800	E2	15.0	3.5	12.0	-5.0	1.0100	15.3	0.9737	27.0				1	6
94	LV-13.8L	13.800	L1	17.0	4.0	12.0	-5.0	1.0100	17.3	0.9731	27.0				1	6
95	LV-13.8T	13.800	L2	17.0	4.0	12.0	-5.0	1.0100	17.3	0.9731	27.0				1	6
97	FOR13A	13.800	F1	90.0	-50.0	50.0	-50.0	0.9740	105.7	0.8742	111.0				1	6
98	FOR13B	13.800	F2	90.0	-50.0	50.0	-50.0	0.9740	105.7	0.8742	111.0				1	6
101	BAY13A	13.800	B1	45.7	8.7	50.0	-25.0	0.9800	47.4	0.9825	96.0				1	6
102	BAY13B	13.800	B2	47.3	8.8	50.0	-25.0	0.9800	49.1	0.9833	96.0				1	6
106	PANAM13A	13.800	M1	14.0	3.8	9.0	0.0	1.0000	14.5	0.9657	20.7				1	6
106	PANAM13A	13.800	M2	14.0	3.8	9.0	0.0	1.0000	14.5	0.9657	20.7				1	6
106	PANAM13A	13.800	M3	14.0	3.8	9.0	0.0	1.0000	14.5	0.9657	20.7				1	6
107	PANAM13B	13.800	M4	14.0	3.8	9.0	0.0	1.0000	14.5	0.9657	20.7				1	6
107	PANAM13B	13.800	M5	14.0	3.8	9.0	0.0	1.0000	14.5	0.9657	20.7				1	6
107	PANAM13B	13.800	M6	14.0	3.8	9.0	0.0	1.0000	14.5	0.9657	20.7				1	6
108	BAY13C	13.800	B3	47.3	8.8	50.0	-25.0	0.9800	49.1	0.9833	100.0				1	6
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0069	17.3	0.8618	21.7				1	6
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0069	17.3	0.8618	21.7				1	6
116	PACORA13	13.800	P3	15.0	8.8	8.8	0.0	1.0069	17.3	0.8618	21.7				1	6
142	CANJ13A	13.800	C1	40.0	6.6	29.0	-29.0	1.0000	40.5	0.9868	69.0				1	6
143	CANJ13B	13.800	C2	40.0	6.6	29.0	-29.0	1.0000	40.5	0.9868	69.0				1	6
303	SIND13.8	13.800	S1	9.0	0.0	50.0	0.0	1.1274	8.0	1.0000	13.5				1	6
307	CHANG75A	13.800	G1	65.0	-22.0	22.0	-22.0	1.0124	67.8	0.9472	118.6				1	6
521	TCARIBE	13.813.800	G1	15.6	2.6	12.5	0.0	1.0000	15.8	0.9867	20.9				1	6
521	TCARIBE	13.813.800	G2	15.6	2.6	12.5	0.0	1.0000	15.8	0.9867	20.9				1	6
521	TCARIBE	13.813.800	G3	15.6	2.6	12.5	0.0	1.0000	15.8	0.9867	20.9				1	6
523	TBALBOA	13A 13.800	G1	8.1	1.3	6.6	-6.6	1.0000	8.2	0.9881	10.9				1	6
523	TBALBOA	13A 13.800	G2	8.1	1.3	6.6	-6.6	1.0000	8.2	0.9881	10.9				1	6
523	TBALBOA	13A 13.800	G3	8.1	1.3	6.6	-6.6	1.0000	8.2	0.9881	10.9				1	6
523	TBALBOA	13A 13.800	G4	8.1	1.3	6.6	-6.6	1.0000	8.2	0.9881	10.9				1	6
523	TBALBOA	13A 13.800	G5	8.1	1.3	6.6	-6.6	1.0000	8.2	0.9881	10.9				1	6
524	TBALBOA	13B 13.800	10	8.1	1.3	6.6	-6.6	1.0000	8.2	0.9881	10.9				1	6
524	TBALBOA	13B 13.800	G6	8.1	1.3	6.6	-6.6	1.0000	8.2	0.9881	10.9				1	6
524	TBALBOA	13B 13.800	G7	8.1	1.3	6.6	-6.6	1.0000	8.2	0.9881	10.9				1	6
524	TBALBOA	13B 13.800	G8	8.1	1.3	6.6	-6.6	1.0000	8.2	0.9881	10.9				1	6
524	TBALBOA	13B 13.800	G9	8.1	1.3	6.6	-6.6	1.0000	8.2	0.9881	10.9				1	6
525	TATLANTIC13A	13.800	G1	36.0	0.0	28.5	0.0	1.0874	33.1	1.0000	47.5				1	6
525	TATLANTIC13A	13.800	G2	36.0	0.0	28.5	0.0	1.0874	33.1	1.0000	47.5				1	6
526	TATLANTIC13B	13.800	V1	18.3	0.0	15.0	0.0	1.0921	16.8	1.0000	25.0				1	6
526	TATLANTIC13B	13.800	V2	18.3	0.0	15.0	0.0	1.0921	16.8	1.0000	25.0				1	6
SUBSYSTEM TOTALS				1157.7	78.0	862.6	-340.6				1739.1					

SYST

P. EXP-SIN CON C.A. JUN 2007 MHT7 ESC MOD MAXINVCNT2  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0560	8.0	1.0000	13.5			2	7	
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0560	8.0	1.0000	13.5			2	7	
130		MIR13F		13.800	G5	10.6	0.7	8.0	0.0	1.0000	10.6	0.9979	27.7			2	7	
134		MAD6A		6.9000	G1	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9985	13.0			2	7	
135		MAD6B		6.9000	G2	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9985	13.0			2	7	
136		MAD6C		6.9000	G3	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9985	13.0			2	7	
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7	
141		GAT6B		6.9000	G4	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9778	5.6			2	7	
141		GAT6B		6.9000	G5	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9778	6.2			2	7	
141		GAT6B		6.9000	G6	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9778	6.2			2	7	
SUBSYSTEM TOTALS						73.5	-0.4	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 19 2007 10:58  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 ESC MOD MAXINVCNT2  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0022	230.51	5		CHO230		230.00	6	1.0032	230.73
8		LSA230		230.00	6	1.0332	237.63	11		M.N230		230.00	6	1.0409	239.40
14		PRO230		230.00	6	1.0418	239.62	96		FOR230		230.00	6	1.0354	238.15
100		BAY230		230.00	6	1.0191	234.38	103		COFESA23		230.00	6	1.0052	231.19
105		PAN-AM23		230.00	6	1.0033	230.75	115		PACORA23		230.00	6	1.0074	231.70
117		STA RITA230		230.00	6	1.0174	233.99	144		CANJ230		230.00	6	1.0400	239.20
147		GUASQ230		230.00	6	1.0400	239.19	148		VELAD230		230.00	6	1.0459	240.55
190		CHANG230		230.00	6	1.0379	238.73	306		CHANG75		230.00	6	1.0371	238.54
511		LGUIAS230		230.00	6	1.0220	235.06	515		PANPOWER230		230.00	6	1.0121	232.78
6000		FRONTER		230.00	6	1.0420	239.67								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9910	227.94								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 19 2007 10:58  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 ESC MOD MAXINVCNT2  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0261	118.00	4		PANIII115		115.00	6	1.0286	118.29
6		CHO115		115.00	6	1.0419	119.82	9		LSA115		115.00	6	1.0361	119.15
12		M.N115		115.00	6	1.0372	119.28	15		PRO115		115.00	6	1.0399	119.59
18		CAC115		115.00	6	1.0253	117.91	19		C.V115		115.00	6	1.0197	117.27
20		CH.AZUL		115.00	6	1.0370	119.26	21		C.BAN115		115.00	6	1.0163	116.88
23		CH115		115.00	6	1.0153	116.76	26		LOC115		115.00	6	1.0173	116.99
30		MAR115		115.00	6	1.0156	116.80	33		STM115		115.00	6	1.0245	117.81

37	SAN115	115.00	6	1.0155	116.78	48	TINAJ115	115.00	6	1.0228	117.62
50	M.O115	115.00	6	1.0229	117.63	52	TOC115	115.00	6	1.0260	117.98
54	LM1115	115.00	6	1.0403	119.64	55	LM2115	115.00	6	1.0420	119.83
61	FFIELD	115.00	9	1.0341	118.92	87	CAL115	115.00	6	1.0475	120.46
88	EST115	115.00	6	1.0498	120.73	92	L.V115	115.00	6	1.0484	120.57
109	STA RITA115	115.00	6	1.0321	118.69	123	MIR115	115.00	7	1.0237	117.73
154	CEMPAN15	115.00	6	1.0400	119.60	191	CHANG115	115.00	6	1.0333	118.83
522	TBALBOA 115	115.00	6	1.0416	119.79						

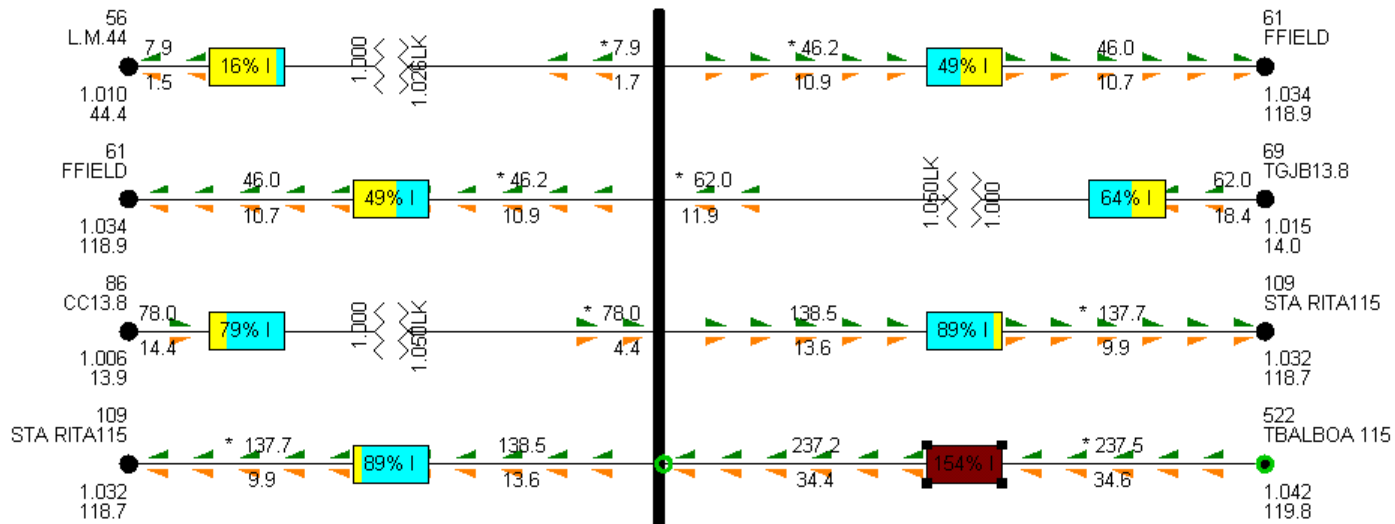
BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
------	-----	------	-----	-------	------	-------	-------	------	-----	------	-----	-------	------	-------	-------

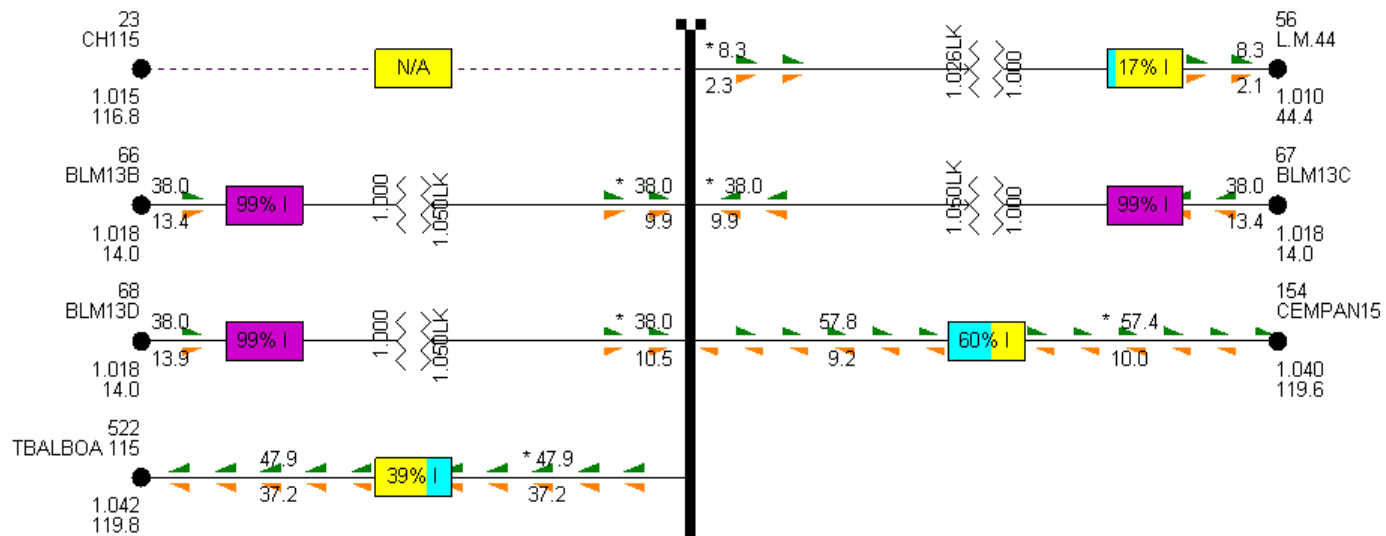
\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 19 2007 11:03  
P. EXP-SIN CON C.A. JUN 2007 MHT7 ESC MOD MAXINVCNT2 SHUNT  
Año 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X--	NAME	--X	BASKV	N O M I N A L		VOLTAGE	
					MW	MVAR		
2		PAN115		115.00	0.0	0.0	1.0261	SWITCHED
4		PANIII115		115.00	0.0	0.0	1.0286	SWITCHED
8		LSA230		230.00	0.0	0.0	1.0332	SWITCHED
10		L.S.34		34.500	0.0	0.0	1.0187	SWITCHED
13		MDNA34		34.500	0.0	0.0	1.0073	SWITCHED
148		VELAD230		230.00	0.0	0.0	1.0459	SWITCHED

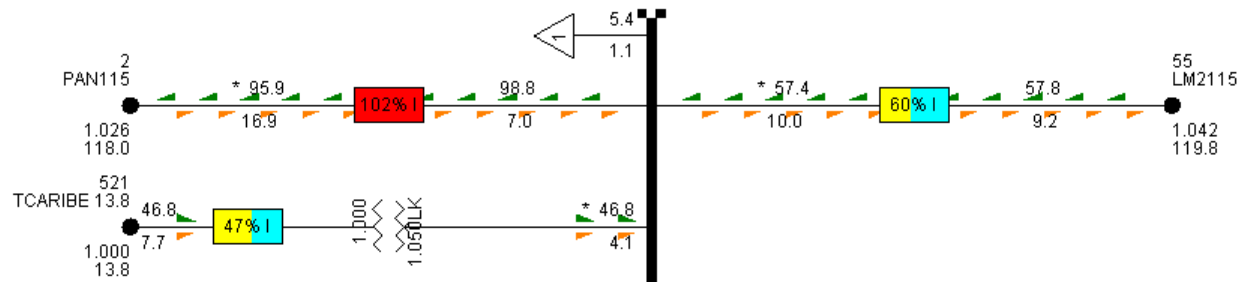


BUS # 54  
 LM1115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.04031PU  
 119.635KV  
 ANGLE 0.63Deg

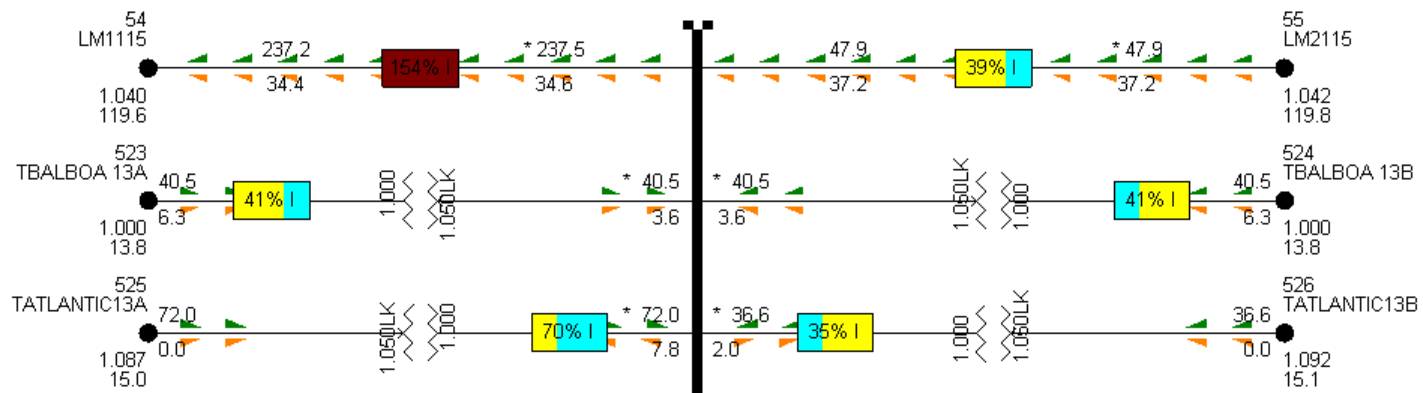


BUS # 55  
 LM2115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.04202PU  
 119.832KV  
 ANGLE 0.69Deg





BUS # 154  
 CEMPAN15 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.04001PU  
 119.602KV  
 ANGLE -1.04Deg



BUS # 522  
 TBALBOA 115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.04161PU  
 119.785KV  
 ANGLE 0.69Deg

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2007  
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO  
Contingencia 3: Minas 1 – Santa Rita**

**Caso en que la Térmica Atlántico se conecta en Las Minas  
(Línea 115-20) Descartado por sobrecarga en líneas**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.0	12.6	17.0	0.0	1.0181	39.3	0.9489	47.0			1	6	
67	BLM13C	13.800	V3	38.0	12.6	17.0	0.0	1.0181	39.3	0.9489	47.0			1	6	
68	BLM13D	13.800	V4	38.0	13.1	30.0	0.0	1.0181	39.5	0.9451	47.0			1	6	
70	TGJB13A	13.800	J5	31.0	9.1	20.0	0.0	1.0200	31.7	0.9595	39.4			1	6	
71	TGJB13B	13.800	J6	31.0	9.1	20.0	0.0	1.0200	31.7	0.9595	39.4			1	6	
72	BLMCCA	13.800	T8	31.0	7.3	20.0	0.0	1.0100	31.5	0.9735	50.0			1	6	
73	BLMCCB	13.800	V9	47.0	7.6	40.0	0.0	1.0100	47.1	0.9871	71.0			1	6	
90	EST-13L	13.800	E1	15.0	3.4	12.0	-5.0	1.0100	15.2	0.9755	27.0			1	6	
91	EST-13T	13.800	E2	15.0	3.4	12.0	-5.0	1.0100	15.2	0.9755	27.0			1	6	
94	LV-13.8L	13.800	L1	17.0	3.9	12.0	-5.0	1.0100	17.3	0.9748	27.0			1	6	
95	LV-13.8T	13.800	L2	17.0	3.9	12.0	-5.0	1.0100	17.3	0.9748	27.0			1	6	
97	FOR13A	13.800	F1	90.0	-50.0	50.0	-50.0	0.9750	105.6	0.8742	111.0			1	6	
98	FOR13B	13.800	F2	90.0	-50.0	50.0	-50.0	0.9750	105.6	0.8742	111.0			1	6	
101	BAY13A	13.800	B1	45.0	7.8	50.0	-25.0	0.9800	46.6	0.9853	96.0			1	6	SYST
102	BAY13B	13.800	B2	47.3	7.9	50.0	-25.0	0.9800	49.0	0.9862	96.0			1	6	
106	PANAM13A	13.800	M1	14.0	3.5	9.0	0.0	1.0000	14.4	0.9705	20.7			1	6	
106	PANAM13A	13.800	M2	14.0	3.5	9.0	0.0	1.0000	14.4	0.9705	20.7			1	6	
106	PANAM13A	13.800	M3	14.0	3.5	9.0	0.0	1.0000	14.4	0.9705	20.7			1	6	
107	PANAM13B	13.800	M4	14.0	3.5	9.0	0.0	1.0000	14.4	0.9705	20.7			1	6	
107	PANAM13B	13.800	M5	14.0	3.5	9.0	0.0	1.0000	14.4	0.9705	20.7			1	6	
107	PANAM13B	13.800	M6	14.0	3.5	9.0	0.0	1.0000	14.4	0.9705	20.7			1	6	
108	BAY13C	13.800	B3	47.3	7.9	50.0	-25.0	0.9800	49.0	0.9862	100.0			1	6	
116	PACORA13	13.800	P1	15.0	8.8	8.8	0.0	1.0088	17.3	0.8618	21.7			1	6	
116	PACORA13	13.800	P2	15.0	8.8	8.8	0.0	1.0088	17.3	0.8618	21.7			1	6	
116	PACORA13	13.800	P3	15.0	8.8	8.8	0.0	1.0088	17.3	0.8618	21.7			1	6	
142	CANJ13A	13.800	C1	40.0	6.4	29.0	-29.0	1.0000	40.5	0.9874	69.0			1	6	
143	CANJ13B	13.800	C2	40.0	6.4	29.0	-29.0	1.0000	40.5	0.9874	69.0			1	6	
303	SIND13.8	13.800	S1	9.0	0.0	50.0	0.0	1.1279	8.0	1.0000	13.5			1	6	
307	CHANG75A	13.800	G1	65.0	-22.0	22.0	-22.0	1.0132	67.7	0.9472	118.6			1	6	
521	TCARIBE 13.813.800	G1	15.6	2.1	12.5	0.0	1.0000	15.7	0.9908	20.9			1	6		
521	TCARIBE 13.813.800	G2	15.6	2.1	12.5	0.0	1.0000	15.7	0.9908	20.9			1	6		
521	TCARIBE 13.813.800	G3	15.6	2.1	12.5	0.0	1.0000	15.7	0.9908	20.9			1	6		
523	TBALBOA 13A 13.800	G1	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9922	10.9			1	6		
523	TBALBOA 13A 13.800	G2	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9922	10.9			1	6		
523	TBALBOA 13A 13.800	G3	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9922	10.9			1	6		
523	TBALBOA 13A 13.800	G4	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9922	10.9			1	6		
523	TBALBOA 13A 13.800	G5	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9922	10.9			1	6		
524	TBALBOA 13B 13.800	10	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9922	10.9			1	6		
524	TBALBOA 13B 13.800	G6	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9922	10.9			1	6		
524	TBALBOA 13B 13.800	G7	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9922	10.9			1	6		
524	TBALBOA 13B 13.800	G8	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9922	10.9			1	6		
524	TBALBOA 13B 13.800	G9	8.1	1.0	6.6	-6.6	1.0000	8.2	0.9922	10.9			1	6		
525	TATLANTIC13A13.800	G1	36.0	0.0	28.5	0.0	1.0895	33.0	1.0000	47.5			1	6		
525	TATLANTIC13A13.800	G2	36.0	0.0	28.5	0.0	1.0895	33.0	1.0000	47.5			1	6		
526	TATLANTIC13B13.800	V1	18.3	0.0	15.0	0.0	1.0942	16.7	1.0000	25.0			1	6		
526	TATLANTIC13B13.800	V2	18.3	0.0	15.0	0.0	1.0942	16.7	1.0000	25.0			1	6		
SUBSYSTEM TOTALS				1157.0	64.5	862.6	-340.6				1739.1					

P. EXP-SIN CON C.A. JUN 2007 MHT7 ESC MOD MAXINV CNT3  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0574	8.0	1.0000	13.5			2		7
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0574	8.0	1.0000	13.5			2		7
130		MIR13F		13.800	G5	10.6	0.1	8.0	0.0	1.0000	10.6	1.0000	27.7			2		7
134		MAD6A		6.9000	G1	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9989	13.0			2		7
135		MAD6B		6.9000	G2	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9989	13.0			2		7
136		MAD6C		6.9000	G3	9.6	0.5	6.0	-6.0	1.0000	9.6	0.9989	13.0			2		7
140		GAT6A		6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9988	4.1			2		7
140		GAT6A		6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9988	4.1			2		7
140		GAT6A		6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9988	4.1			2		7
141		GAT6B		6.9000	G4	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9767	5.6			2		7
141		GAT6B		6.9000	G5	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9767	6.2			2		7
141		GAT6B		6.9000	G6	3.8	-0.8	3.0	-3.0	1.0000	3.9	0.9767	6.2			2		7
SUBSYSTEM TOTALS						73.5	-1.3	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 19 2007 11:21  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 ESC MOD MAXINV CNT3  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0041	230.95	5		CHO230		230.00	6	1.0052	231.20
8		LSA230		230.00	6	1.0347	237.99	11		M.N230		230.00	6	1.0418	239.62
14		PRO230		230.00	6	1.0426	239.80	96		FOR230		230.00	6	1.0364	238.37
100		BAY230		230.00	6	1.0202	234.64	103		COFESA23		230.00	6	1.0070	231.60
105		PAN-AM23		230.00	6	1.0053	231.22	115		PACORA23		230.00	6	1.0091	232.09
117		STA RITA230		230.00	6	1.0181	234.17	144		CANJ230		230.00	6	1.0410	239.43
147		GUASQ230		230.00	6	1.0410	239.42	148		VELAD230		230.00	6	1.0471	240.83
190		CHANG230		230.00	6	1.0387	238.89	306		CHANG75		230.00	6	1.0379	238.71
511		LGUIAS230		230.00	6	1.0238	235.47	515		PANPOWER230		230.00	6	1.0139	233.20
6000		FRONTER		230.00	6	1.0428	239.84								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9934	228.49								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 19 2007 11:21  
 P. EXP-SIN CON C.A. JUN 2007 MHT7 ESC MOD MAXINV CNT3  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0289	118.33	4		PANIII115		115.00	6	1.0307	118.53
6		CHO115		115.00	6	1.0441	120.07	9		LSA115		115.00	6	1.0378	119.34
12		M.N115		115.00	6	1.0379	119.36	15		PRO115		115.00	6	1.0407	119.68
18		CAC115		115.00	6	1.0281	118.23	19		C.V115		115.00	6	1.0220	117.53
20		CH.AZUL		115.00	6	1.0378	119.35	21		C.BAN115		115.00	6	1.0191	117.19
23		CH115		115.00	6	1.0270	118.10	26		LOC115		115.00	6	1.0200	117.30
30		MAR115		115.00	6	1.0184	117.12	33		STM115		115.00	6	1.0273	118.14

37	SAN115	115.00	6	1.0182	117.09	48	TINAJ115	115.00	6	1.0256	117.95
50	M.O115	115.00	6	1.0257	117.96	52	TOC115	115.00	6	1.0280	118.22
54	LM1115	115.00	6	1.0427	119.91	55	LM2115	115.00	6	1.0436	120.02
61	FFIELD	115.00	9	1.0365	119.20	87	CAL115	115.00	6	1.0480	120.52
88	EST115	115.00	6	1.0502	120.77	92	L.V115	115.00	6	1.0489	120.62
109	STA RITA115	115.00	6	1.0311	118.58	123	MIR115	115.00	7	1.0263	118.03
154	CEMPAN15	115.00	6	1.0422	119.85	191	CHANG115	115.00	6	1.0341	118.92
522	TBALBOA 115	115.00	6	1.0436	120.02						

BUSES WITH VOLTAGE LESS THAN 1.0000:

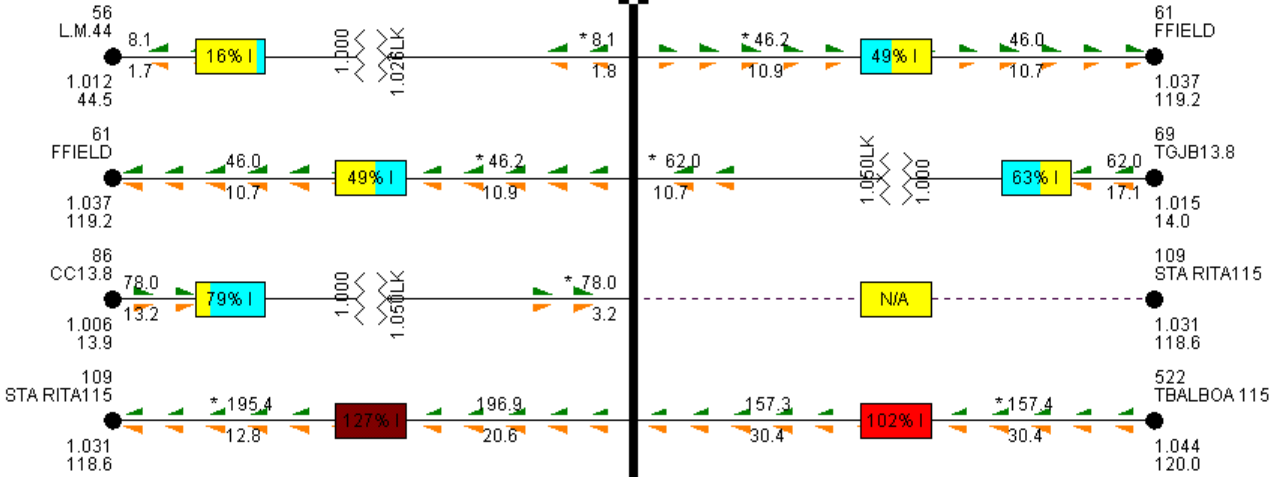
BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
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\* NONE \*

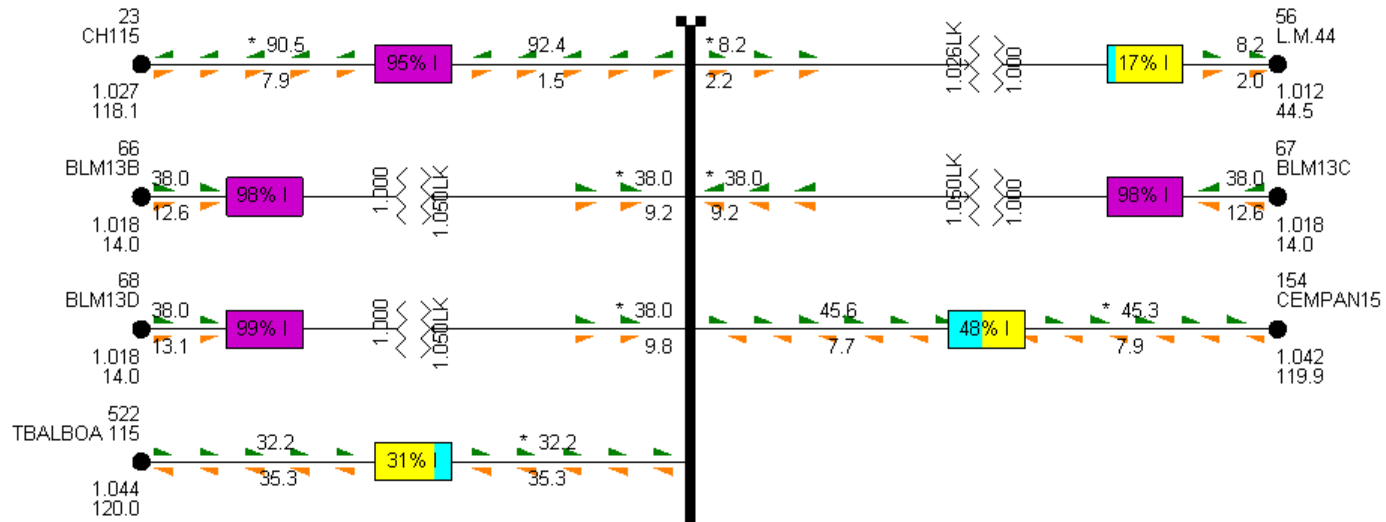
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 19 2007 11:21  
P. EXP-SIN CON C.A. JUN 2007 MHT7 ESC MOD MAXINV CNT3 SHUNT  
AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN BAHIA LAS MINAS) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X--	NAME	--X	BASKV	N O M I N A L		VOLTAGE	
					MW	MVAR		
2		PAN115		115.00	0.0	0.0	1.0289	SWITCHED
4		PANII115		115.00	0.0	0.0	1.0307	SWITCHED
8		LSA230		230.00	0.0	0.0	1.0347	SWITCHED
10		L.S.34		34.500	0.0	0.0	1.0203	SWITCHED
13		MDNA34		34.500	0.0	0.0	1.0080	SWITCHED
148		VELAD230		230.00	0.0	0.0	1.0471	SWITCHED

Current loadings



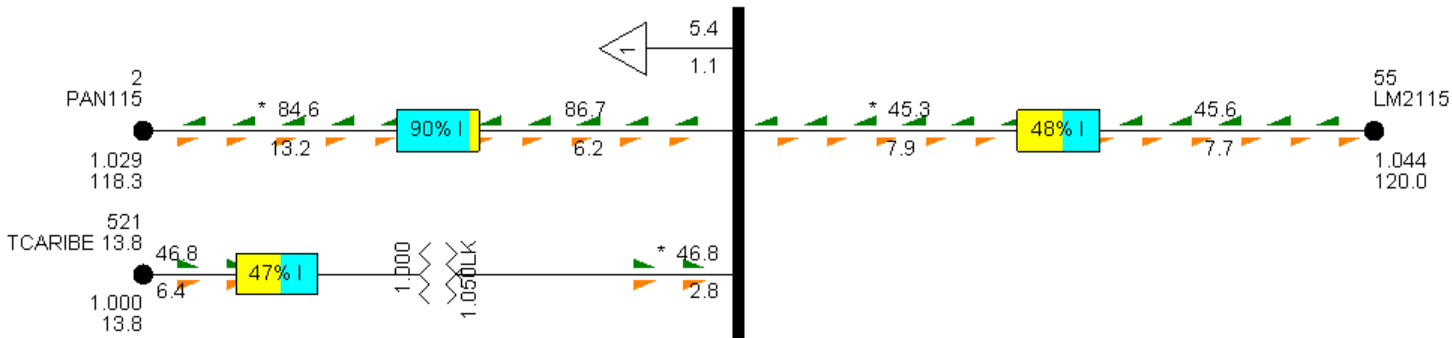
BUS # 54  
LM1115 115.00  
TYPE 1  
AREA 6 PANAMA  
ZONE 1 CENTRAL  
VOLTAGE 1.04273PU  
119.914KV  
ANGLE -0.19Deg



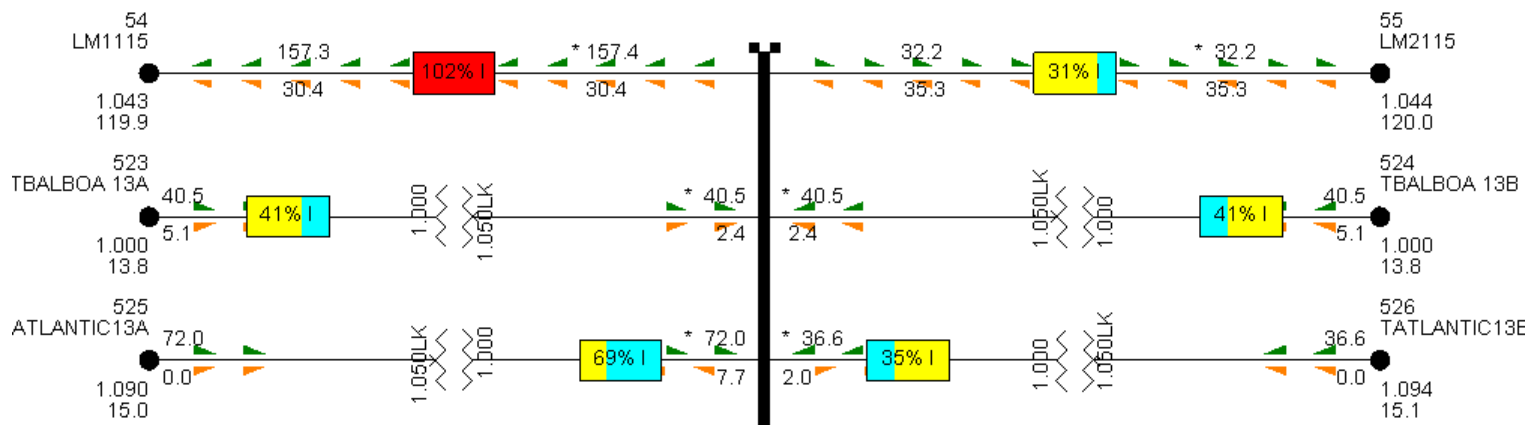
BUS # 55  
 LM2115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.04365PU  
 120.019KV  
 ANGLE -0.17Deg



Limit Checking Reports



BUS # 154  
CEMPAN15 115.00  
TYPE 1  
AREA 6 PANAMA  
ZONE 1 CENTRAL  
VOLTAGE 1.04218PU  
119.851KV  
ANGLE -1.53Deg



BUS # 522  
 TBALBOA 115 115.00  
 TYPE 1  
 AREA 6 PANAMA  
 ZONE 1 CENTRAL  
 VOLTAGE 1.04363PU  
 120.018KV  
 ANGLE -0.16Deg

**AÑO 2013**

**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Actualización**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	38.0	12.8	17.0	0.0	1.0100	39.7	0.9476	47.0			1	6		
67		BLM13C		13.800	V3	38.0	12.8	17.0	0.0	1.0100	39.7	0.9476	47.0			1	6		
68		BLM13D		13.800	V4	38.0	13.3	30.0	0.0	1.0100	39.9	0.9438	47.0			1	6		
70		TGJB13A		13.800	J5	31.0	8.6	20.0	0.0	1.0100	31.9	0.9633	39.4			1	6		
71		TGJB13B		13.800	J6	31.0	8.6	20.0	0.0	1.0100	31.9	0.9633	39.4			1	6		
72		BLMCCA		13.800	T8	31.0	9.6	20.0	0.0	1.0100	32.1	0.9554	50.0			1	6		
73		BLMCCB		13.800	V9	47.0	9.9	40.0	0.0	1.0100	47.6	0.9785	71.0			1	6		
90		EST-13L		13.800	E1	22.0	6.1	12.0	-5.0	1.0100	22.6	0.9633	27.0			1	6		
91		EST-13T		13.800	E2	22.0	6.1	12.0	-5.0	1.0100	22.6	0.9633	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	6.9	12.0	-5.0	1.0100	24.7	0.9609	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	6.9	12.0	-5.0	1.0100	24.7	0.9609	27.0			1	6		
97		FOR13A		13.800	F1	86.0	-44.0	50.0	-50.0	0.9710	99.5	0.8901	111.0			1	6		
98		FOR13B		13.800	F2	86.0	-44.0	50.0	-50.0	0.9710	99.5	0.8901	111.0			1	6		
101		BAY13A		13.800	B1	53.0	12.5	50.0	-25.0	0.9800	55.6	0.9734	96.0			1	6	SYST	
102		BAY13B		13.800	B2	53.0	12.5	50.0	-25.0	0.9800	55.6	0.9734	96.0			1	6		
106		PANAM13A		13.800	M1	14.0	4.0	9.0	0.0	0.9900	14.7	0.9621	20.7			1	6		
106		PANAM13A		13.800	M2	14.0	4.0	9.0	0.0	0.9900	14.7	0.9621	20.7			1	6		
106		PANAM13A		13.800	M3	14.0	4.0	9.0	0.0	0.9900	14.7	0.9621	20.7			1	6		
107		PANAM13B		13.800	M4	14.0	4.0	9.0	0.0	0.9900	14.7	0.9621	20.7			1	6		
107		PANAM13B		13.800	M5	14.0	4.0	9.0	0.0	0.9900	14.7	0.9621	20.7			1	6		
107		PANAM13B		13.800	M6	14.0	4.0	9.0	0.0	0.9900	14.7	0.9621	20.7			1	6		
108		BAY13C		13.800	B3	53.0	12.5	50.0	-25.0	0.9800	55.6	0.9734	100.0			1	6		
116		PACORA13		13.800	P1	15.0	2.9	8.8	0.0	1.0000	15.3	0.9821	21.7			1	6		
116		PACORA13		13.800	P2	15.0	2.9	8.8	0.0	1.0000	15.3	0.9821	21.7			1	6		
116		PACORA13		13.800	P3	15.0	2.9	8.8	0.0	1.0000	15.3	0.9821	21.7			1	6		
142		CANJ13A		13.800	C1	40.0	8.2	29.0	-29.0	1.0000	40.8	0.9795	69.0			1	6		
143		CANJ13B		13.800	C2	40.0	8.2	29.0	-29.0	1.0000	40.8	0.9795	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9564	10.9	0.8784	13.5			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	50.0	0.0	1.0954	8.2	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	65.0	-22.0	22.0	-22.0	0.9992	68.7	0.9472	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0776	8.7	0.9048	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-4.0	4.0	-4.0	1.0776	8.7	0.9048	35.3			1	6		
340		PEDGALITO13813		13.800	P1	19.0	5.6	12.0	-5.0	1.0000	19.8	0.9589	27.0			1	6		
521		TCARIBE		13.813	G1	15.6	3.7	12.5	0.0	1.0000	16.0	0.9732	20.9			1	6		
521		TCARIBE		13.813	G2	15.6	3.7	12.5	0.0	1.0000	16.0	0.9732	20.9			1	6		
521		TCARIBE		13.813	G3	15.6	3.7	12.5	0.0	1.0000	16.0	0.9732	20.9			1	6		
523		TBALBOA		13A	G1	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9678	10.9			1	6		
523		TBALBOA		13A	G2	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9678	10.9			1	6		
523		TBALBOA		13A	G3	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9678	10.9			1	6		
523		TBALBOA		13A	G4	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9678	10.9			1	6		
523		TBALBOA		13A	G5	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9678	10.9			1	6		
524		TBALBOA		13B	G10	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9678	10.9			1	6		
524		TBALBOA		13B	G6	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9678	10.9			1	6		
524		TBALBOA		13B	G7	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9678	10.9			1	6		
524		TBALBOA		13B	G8	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9678	10.9			1	6		
524		TBALBOA		13B	G9	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9678	10.9			1	6		
525		TATLANTIC13A13		13.800	G1	36.0	8.6	28.5	0.0	1.0000	37.0	0.9724	47.5			1	6		
525		TATLANTIC13A13		13.800	G2	36.0	8.6	28.5	0.0	1.0000	37.0	0.9724	47.5			1	6		
526		TATLANTIC13B13		13.800	V1	18.3	7.0	15.0	0.0	1.0000	19.6	0.9332	25.0			1	6		
526		TATLANTIC13B13		13.800	V2	18.3	7.0	15.0	0.0	1.0000	19.6	0.9332	25.0			1	6		
SUBSYSTEM TOTALS						1241.6	144.1	887.6	-358.6				1850.3						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 15:17  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0503	8.1	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0503	8.1	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	10.6	3.2	8.0	0.0	1.0000	11.1	0.9575	27.7			2	7		
134		MAD6A		6.9000	G1	9.6	0.9	6.0	-6.0	1.0000	9.6	0.9961	13.0			2	7		
135		MAD6B		6.9000	G2	9.6	0.9	6.0	-6.0	1.0000	9.6	0.9961	13.0			2	7		
136		MAD6C		6.9000	G3	9.6	0.9	6.0	-6.0	1.0000	9.6	0.9961	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1			2	7		
141		GAT6B		6.9000	G4	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9832	6.2			2	7		
141		GAT6B		6.9000	G5	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9832	6.2			2	7		
141		GAT6B		6.9000	G6	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9832	6.2			2	7		
SUBSYSTEM TOTALS						73.5	3.7	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 15:19  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0188	234.32	11		M.N230		230.00	6	1.0326	237.50
14		PRO230		230.00	6	1.0352	238.10	96		FOR230		230.00	6	1.0255	235.87
100		BAY230		230.00	6	1.0145	233.34	115		PACORA23		230.00	6	1.0006	230.15
117		STA RITA230		230.00	6	1.0144	233.30	144		CANJ230		230.00	6	1.0297	236.83
147		GUASQ230		230.00	6	1.0296	236.81	148		VELAD230		230.00	6	1.0337	237.75
190		CHANG230		230.00	6	1.0247	235.67	306		CHANG75		230.00	6	1.0243	235.60
310		CONCEPCION230		230.00	6	1.0355	238.16	511		LGUIAS230		230.00	6	1.0081	231.85

515 PANPOWER230 230.00 6 1.0023 230.53 6000 FRONTER 230.00 6 1.0355 238.16

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9812	225.68	3		PANII230		230.00	6	0.9937	228.56
5		CHO230		230.00	6	0.9914	228.01	103		COFESA23		230.00	6	0.9972	229.37
105		PAN-AM23		230.00	6	0.9915	228.03								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 15:19  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV  
 AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0161	116.85	4		PANII115		115.00	6	1.0182	117.09
6		CHO115		115.00	6	1.0267	118.07	9		LSA115		115.00	6	1.0170	116.95
12		M.N115		115.00	6	1.0270	118.10	15		PRO115		115.00	6	1.0329	118.78
18		CAC115		115.00	6	1.0153	116.76	19		C.V115		115.00	6	1.0081	115.93
20		CH.AZUL		115.00	6	1.0296	118.40	21		C.BAN115		115.00	6	1.0048	115.55
23		CH115		115.00	6	1.0159	116.83	26		LOC115		115.00	6	1.0059	115.68
30		MAR115		115.00	6	1.0042	115.48	33		STM115		115.00	6	1.0142	116.64
37		SAN115		115.00	6	1.0037	115.43	48		TINAJ115		115.00	6	1.0119	116.36
50		M.O115		115.00	6	1.0122	116.40	52		TOC115		115.00	6	1.0151	116.73
54		LM1115		115.00	6	1.0339	118.90	55		LM2115		115.00	6	1.0346	118.98
61		FFIELD		115.00	9	1.0266	118.06	87		CAL115		115.00	6	1.0388	119.46
88		EST115		115.00	6	1.0423	119.87	92		L.V115		115.00	6	1.0401	119.62
109		STA RITA115		115.00	6	1.0281	118.23	123		MIR115		115.00	7	1.0141	116.62
154		CEMPAN15		115.00	6	1.0344	118.95	191		CHANG115		115.00	6	1.0192	117.21
522		TBALBOA 115		115.00	6	1.0345	118.96								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)

\* NONE \*

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, SEP 26 2007 15:25  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV AREA TOTALS  
 AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) IN MW/MVAR

X-- AREA	--X GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.3	224.5	-98.9	0.0	143.3	-97.4	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	0.0	19.5	0.0
C.RICA	244.9	569.4	-237.3	0.0	470.7	25.7	357.8	
6	1241.6	1129.0	0.0	0.0	0.0	87.3	25.3	25.0
PANAMA	144.1	283.0	0.0	0.0	541.4	68.3	334.3	
7	73.5	38.5	0.0	0.0	0.0	33.6	1.4	50.0
ACANAL	3.7	9.6	0.0	0.0	0.0	-16.0	10.0	
9	0.0	120.5	0.0	0.0	0.0	-120.9	0.3	-75.0
COLON	0.0	30.2	0.0	0.0	1.1	-31.6	2.5	
TOTALS	6463.7	6339.6	0.0	0.0	0.0	0.0	124.1	0.0
	611.3	1939.1	-848.8	0.0	2092.1	0.0	1613.1	

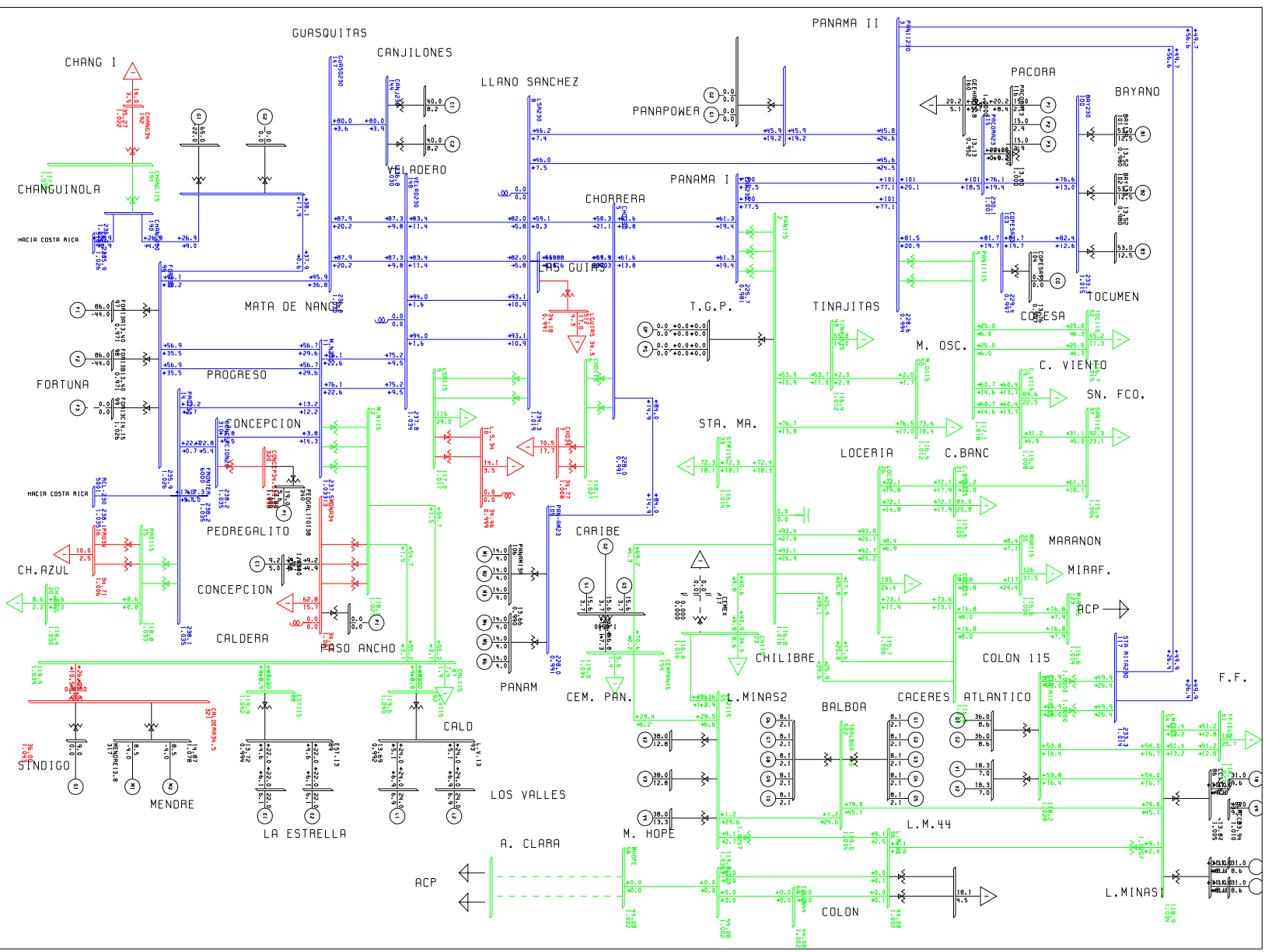
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 9:20  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX INV SHUNT  
 AÑO 2011 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) SUMMARY  
 OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME	--X BASKV	N O M I N A L		VOLTAGE	
			MW	MVAR		
2	PAN115	115.00	0.0	0.0	1.0161	SWITCHED
4	PANII115	115.00	0.0	0.0	1.0182	SWITCHED
8	LSA230	230.00	0.0	0.0	1.0188	SWITCHED
10	L.S.34	34.500	0.0	0.0	0.9988	SWITCHED
13	MDNA34	34.500	0.0	0.0	1.0009	SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0337	SWITCHED



P. EXP-51N CON C.A. JUNIO 2007 MH77 ESC. MOD. DEM. MAX. INV.  
 R 0 2011 TBR/BR, TCR/BE Y TR/LN/TICO IEN STR. RITR 1151  
 MON, OCT 01 2007 10:21

BUS - VOLTAGE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007**  
**AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA VERANO**  
**Actualización**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	38.0	12.7	17.0	0.0	1.0100	39.7	0.9486	47.0			1	6		
67		BLM13C		13.800	V3	38.0	12.7	17.0	0.0	1.0100	39.7	0.9486	47.0			1	6		
68		BLM13D		13.800	V4	38.0	13.2	30.0	0.0	1.0100	39.8	0.9449	47.0			1	6		
70		TGJB13A		13.800	J5	31.0	8.6	20.0	0.0	1.0100	31.8	0.9639	39.4			1	6		
71		TGJB13B		13.800	J6	31.0	8.6	20.0	0.0	1.0100	31.8	0.9639	39.4			1	6		
72		BLMCCA		13.800	T8	31.0	9.5	20.0	0.0	1.0100	32.1	0.9562	50.0			1	6		
73		BLMCCB		13.800	V9	47.0	9.8	40.0	0.0	1.0100	47.5	0.9788	71.0			1	6		
90		EST-13L		13.800	E1	22.0	5.2	12.0	-5.0	1.0100	22.4	0.9730	27.0			1	6		
91		EST-13T		13.800	E2	22.0	5.2	12.0	-5.0	1.0100	22.4	0.9730	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	5.9	12.0	-5.0	1.0100	24.5	0.9707	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	5.9	12.0	-5.0	1.0100	24.5	0.9707	27.0			1	6		
97		FOR13A		13.800	F1	84.0	-45.5	50.0	-50.0	0.9710	98.4	0.8792	111.0			1	6		
98		FOR13B		13.800	F2	84.0	-45.5	50.0	-50.0	0.9710	98.4	0.8792	111.0			1	6		
101		BAY13A		13.800	B1	66.5	13.1	50.0	-25.0	0.9800	69.2	0.9811	96.0			1	6	SYST	
102		BAY13B		13.800	B2	51.2	11.9	50.0	-25.0	0.9800	53.7	0.9740	96.0			1	6		
106		PANAM13A		13.800	M1	14.0	3.8	9.0	0.0	0.9900	14.7	0.9647	20.7			1	6		
106		PANAM13A		13.800	M2	14.0	3.8	9.0	0.0	0.9900	14.7	0.9647	20.7			1	6		
106		PANAM13A		13.800	M3	14.0	3.8	9.0	0.0	0.9900	14.7	0.9647	20.7			1	6		
107		PANAM13B		13.800	M4	14.0	3.8	9.0	0.0	0.9900	14.7	0.9647	20.7			1	6		
107		PANAM13B		13.800	M5	14.0	3.8	9.0	0.0	0.9900	14.7	0.9647	20.7			1	6		
107		PANAM13B		13.800	M6	14.0	3.8	9.0	0.0	0.9900	14.7	0.9647	20.7			1	6		
108		BAY13C		13.800	B3	51.2	11.9	50.0	-25.0	0.9800	53.7	0.9740	100.0			1	6		
116		PACORA13		13.800	P1	16.2	2.8	8.8	0.0	1.0000	16.4	0.9853	21.7			1	6		
116		PACORA13		13.800	P2	16.2	2.8	8.8	0.0	1.0000	16.4	0.9853	21.7			1	6		
116		PACORA13		13.800	P3	16.2	2.8	8.8	0.0	1.0000	16.4	0.9853	21.7			1	6		
142		CANJ13A		13.800	C1	40.0	8.0	29.0	-29.0	1.0000	40.8	0.9807	69.0			1	6		
143		CANJ13B		13.800	C2	40.0	8.0	29.0	-29.0	1.0000	40.8	0.9807	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9594	10.9	0.8784	13.5			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	50.0	0.0	1.1112	8.1	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	63.0	-22.0	22.0	-22.0	1.0004	66.7	0.9441	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.1027	8.5	0.9048	35.3			1	6		
340		PEDGALITO13813		13.800	P1	19.0	5.2	12.0	-5.0	1.0000	19.7	0.9640	27.0			1	6		
521		TCARIBE 13.813		13.800	G1	15.6	3.6	12.5	0.0	1.0000	16.0	0.9742	20.9			1	6		
521		TCARIBE 13.813		13.800	G2	15.6	3.6	12.5	0.0	1.0000	16.0	0.9742	20.9			1	6		
521		TCARIBE 13.813		13.800	G3	15.6	3.6	12.5	0.0	1.0000	16.0	0.9742	20.9			1	6		
523		TBALBOA 13A		13.800	G1	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9689	10.9			1	6		
523		TBALBOA 13A		13.800	G2	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9689	10.9			1	6		
523		TBALBOA 13A		13.800	G3	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9689	10.9			1	6		
523		TBALBOA 13A		13.800	G4	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9689	10.9			1	6		
523		TBALBOA 13A		13.800	G5	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9689	10.9			1	6		
524		TBALBOA 13B		13.800	10	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9689	10.9			1	6		
524		TBALBOA 13B		13.800	G6	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9689	10.9			1	6		
524		TBALBOA 13B		13.800	G7	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9689	10.9			1	6		
524		TBALBOA 13B		13.800	G8	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9689	10.9			1	6		
524		TBALBOA 13B		13.800	G9	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9689	10.9			1	6		
525		TATLANTIC13A13		13.800	G1	36.0	8.5	28.5	0.0	1.0000	37.0	0.9732	47.5			1	6		
525		TATLANTIC13A13		13.800	G2	36.0	8.5	28.5	0.0	1.0000	37.0	0.9732	47.5			1	6		
526		TATLANTIC13B13		13.800	V1	18.3	6.9	15.0	0.0	1.0000	19.6	0.9352	25.0			1	6		
526		TATLANTIC13B13		13.800	V2	18.3	6.9	15.0	0.0	1.0000	19.6	0.9352	25.0			1	6		
SUBSYSTEM TOTALS						1240.7	137.1	883.6	-354.6				1815.0						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E            THU, SEP 27 2007    9:25  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7    ESC MOD DEM MAX VER  
 AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 7 [ACANAL            ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0506	8.1	1.0000	13.5				2	7
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0506	8.1	1.0000	13.5				2	7
130		MIR13F		13.800	G5	10.6	3.0	8.0	0.0	1.0000	11.0	0.9614	27.7				2	7
134		MAD6A		6.9000	G1	9.6	0.8	6.0	-6.0	1.0000	9.6	0.9962	13.0				2	7
135		MAD6B		6.9000	G2	9.6	0.8	6.0	-6.0	1.0000	9.6	0.9963	13.0				2	7
136		MAD6C		6.9000	G3	9.6	0.8	6.0	-6.0	1.0000	9.6	0.9963	13.0				2	7
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1				2	7
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1				2	7
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9999	4.1				2	7
141		GAT6B		6.9000	G4	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9829	5.6				2	7
141		GAT6B		6.9000	G5	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9829	6.2				2	7
141		GAT6B		6.9000	G6	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9829	6.2				2	7
SUBSYSTEM TOTALS						73.5	3.5	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 9:25  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER  
AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0208	234.78	11		M.N230		230.00	6	1.0344	237.90
14		PRO230		230.00	6	1.0368	238.46	96		FOR230		230.00	6	1.0270	236.21
100		BAY230		230.00	6	1.0151	233.48	115		PACORA23		230.00	6	1.0013	230.31
117		STA RITA230		230.00	6	1.0149	233.44	144		CANJ230		230.00	6	1.0313	237.20
147		GUASQ230		230.00	6	1.0312	237.18	148		VELAD230		230.00	6	1.0358	238.22
190		CHANG230		230.00	6	1.0256	235.89	306		CHANG75		230.00	6	1.0253	235.83
310		CONCEPCION230		230.00	6	1.0371	238.53	511		LGUIAS230		230.00	6	1.0097	232.24
515		PANPOWER230		230.00	6	1.0034	230.77	6000		FRONTER		230.00	6	1.0370	238.51

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9820	225.86	3		PANII230		230.00	6	0.9945	228.73
5		CHO230		230.00	6	0.9924	228.25	103		COFESA23		230.00	6	0.9980	229.53
105		PAN-AM23		230.00	6	0.9925	228.27								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 9:26  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER  
AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0168	116.93	4		PANIII115		115.00	6	1.0190	117.18
6		CHO115		115.00	6	1.0278	118.20	9		LSA115		115.00	6	1.0191	117.20
12		M.N115		115.00	6	1.0301	118.46	15		PRO115		115.00	6	1.0345	118.97
18		CAC115		115.00	6	1.0160	116.84	19		C.V115		115.00	6	1.0089	116.02
20		CH.AZUL		115.00	6	1.0312	118.58	21		C.BAN115		115.00	6	1.0055	115.64
23		CH115		115.00	6	1.0164	116.89	26		LOC115		115.00	6	1.0067	115.77
30		MAR115		115.00	6	1.0049	115.56	33		STM115		115.00	6	1.0150	116.72
37		SAN115		115.00	6	1.0045	115.51	48		TINAJ115		115.00	6	1.0126	116.45
50		M.O115		115.00	6	1.0129	116.49	52		TOC115		115.00	6	1.0159	116.83
54		LM1115		115.00	6	1.0342	118.93	55		LM2115		115.00	6	1.0349	119.02
61		FFIELD		115.00	9	1.0269	118.10	87		CAL115		115.00	6	1.0422	119.86
88		EST115		115.00	6	1.0454	120.22	92		L.V115		115.00	6	1.0435	120.00
109		STA RITA115		115.00	6	1.0285	118.27	123		MIR115		115.00	7	1.0148	116.70
154		CEMPAN15		115.00	6	1.0347	118.99	191		CHANG115		115.00	6	1.0202	117.32
522		TBALBOA 115		115.00	6	1.0348	119.00								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
* NONE *															

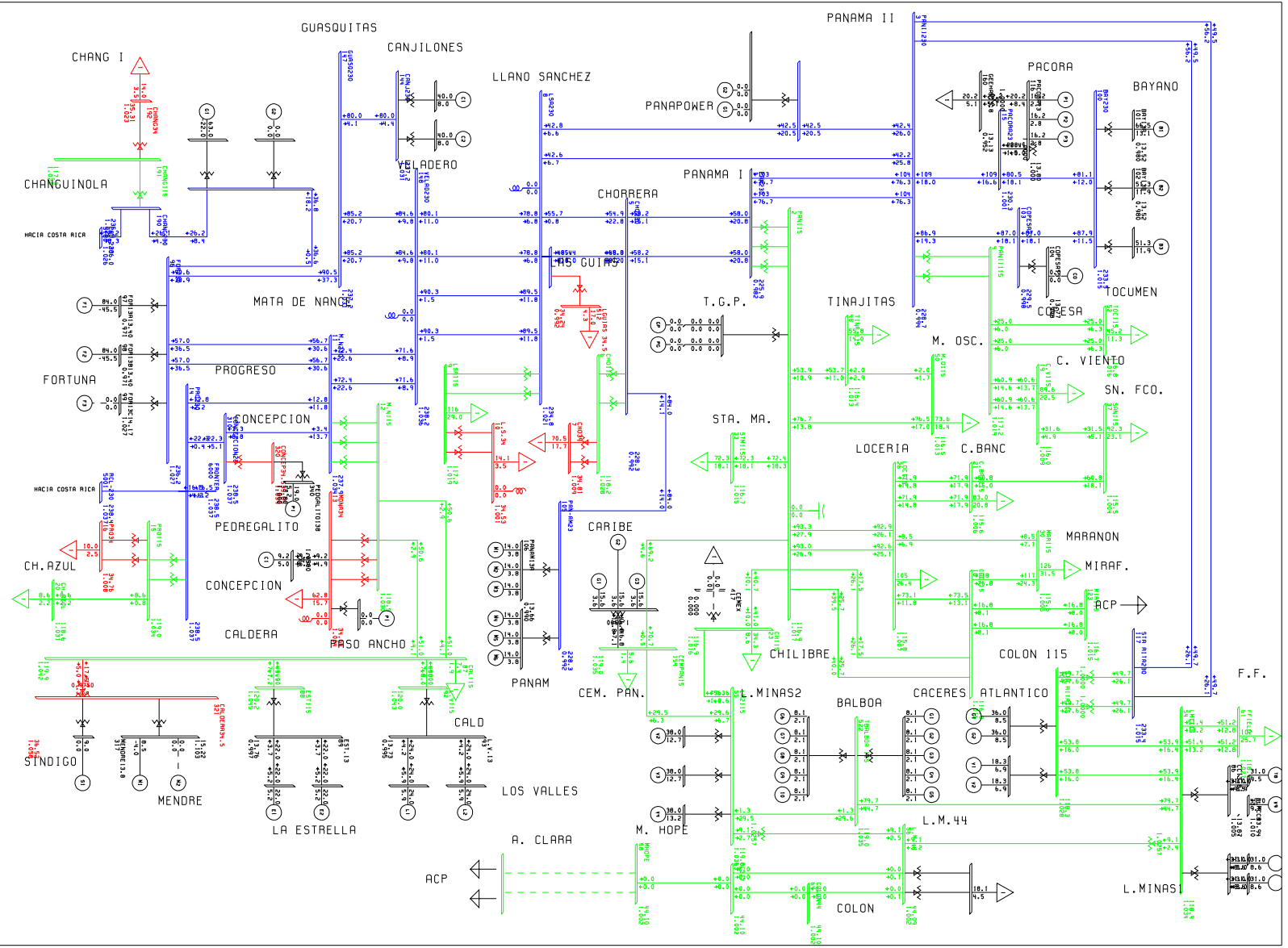
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 9:26  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER AREA TOTALS  
 AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) IN MW/MVAR

X-- AREA	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.3	224.5	-98.9	0.0	143.3	-97.4	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.0	19.5	0.0
C.RICA	242.8	569.4	-237.4	0.0	470.9	24.0	357.7	
6	1240.7	1129.0	0.0	0.0	0.0	87.3	24.3	25.0
PANAMA	137.1	283.0	0.0	0.0	542.9	70.3	326.8	
7	73.5	38.5	0.0	0.0	0.0	33.6	1.4	50.0
ACANAL	3.5	9.6	0.0	0.0	0.0	-16.2	10.1	
9	0.0	120.5	0.0	0.0	0.0	-120.9	0.3	-75.0
COLON	0.0	30.2	0.0	0.0	1.1	-31.6	2.5	
TOTALS	6462.8	6339.6	0.0	0.0	0.0	0.0	123.2	0.0
	601.8	1939.1	-848.9	0.0	2093.8	0.0	1605.4	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 11:36  
 P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MAX VER SHUNT  
 AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) SUMMARY  
 OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME	--X BASKV	N O M I N A L		VOLTAGE
			MW	MVAR	
2	PAN115	115.00	0.0	0.0	1.0168 SWITCHED
4	PANII115	115.00	0.0	0.0	1.0190 SWITCHED
8	LSA230	230.00	0.0	0.0	1.0208 SWITCHED
10	L.S.34	34.500	0.0	0.0	1.0010 SWITCHED
13	MDNA34	34.500	0.0	0.0	1.0041 SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0358 SWITCHED

P. EXP-SIN CON C.A. JUNIO 2007 MH17 ESC MOD DEM MAX VER  
 R 0 2013 TERLORA, TORIBRE Y TRILANTICO (EN STA RITA 115)  
 MON, OCT 01 2007 10:23  
 BUS - VOLTAGE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007**  
**AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÍNIMA VERANO**  
**Actualización**



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 10:14  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MIN VER  
AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	38.0	10.7	17.0	0.0	1.0100	39.1	0.9624	47.0			1	6		
67		BLM13C		13.800	V3	38.0	10.7	17.0	0.0	1.0100	39.1	0.9624	47.0			1	6		
68		BLM13D		13.800	V4	38.0	11.1	30.0	0.0	1.0100	39.2	0.9597	47.0			1	6		
70		TGJB13A		13.800	J5	31.0	7.4	20.0	0.0	1.0100	31.6	0.9723	39.4			1	6		
71		TGJB13B		13.800	J6	31.0	7.4	20.0	0.0	1.0100	31.6	0.9723	39.4			1	6		
72		BLMCCA		13.800	T8	31.0	8.4	20.0	0.0	1.0100	31.8	0.9654	50.0			1	6		
73		BLMCCB		13.800	V9	47.0	8.7	40.0	0.0	1.0100	47.3	0.9833	71.0			1	6		
90		EST-13L		13.800	E1	20.0	8.6	12.0	-5.0	1.0100	21.5	0.9189	27.0			1	6		
91		EST-13T		13.800	E2	20.0	8.6	12.0	-5.0	1.0100	21.5	0.9189	27.0			1	6		
94		LV-13.8L		13.800	L1	22.0	9.5	12.0	-5.0	1.0100	23.7	0.9176	27.0			1	6		
95		LV-13.8T		13.800	L2	22.0	9.5	12.0	-5.0	1.0100	23.7	0.9176	27.0			1	6		
97		FOR13A		13.800	F1	96.7	-39.2	50.0	-50.0	0.9710	107.5	0.9267	111.0			1	6	SYST	
106		PANAM13A		13.800	M1	14.0	3.4	9.0	0.0	0.9900	14.5	0.9724	20.7			1	6		
106		PANAM13A		13.800	M2	14.0	3.4	9.0	0.0	0.9900	14.5	0.9724	20.7			1	6		
106		PANAM13A		13.800	M3	14.0	3.4	9.0	0.0	0.9900	14.5	0.9724	20.7			1	6		
107		PANAM13B		13.800	M4	14.0	3.4	9.0	0.0	0.9900	14.5	0.9724	20.7			1	6		
107		PANAM13B		13.800	M5	14.0	3.4	9.0	0.0	0.9900	14.5	0.9724	20.7			1	6		
107		PANAM13B		13.800	M6	14.0	3.4	9.0	0.0	0.9900	14.5	0.9724	20.7			1	6		
108		BAY13C		13.800	B3	51.3	15.1	50.0	-25.0	0.9800	54.5	0.9593	100.0			1	6		
116		PACORA13		13.800	P1	16.2	1.6	8.8	0.0	1.0000	16.3	0.9950	21.7			1	6		
116		PACORA13		13.800	P2	16.2	1.6	8.8	0.0	1.0000	16.3	0.9950	21.7			1	6		
116		PACORA13		13.800	P3	16.2	1.6	8.8	0.0	1.0000	16.3	0.9950	21.7			1	6		
142		CANJ13A		13.800	C1	40.0	9.4	29.0	-29.0	1.0000	41.1	0.9735	69.0			1	6		
143		CANJ13B		13.800	C2	40.0	9.4	29.0	-29.0	1.0000	41.1	0.9735	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9034	11.6	0.8784	13.5			1	6		
307		CHANG75A		13.800	G1	63.0	-22.0	22.0	-22.0	0.9969	66.9	0.9441	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0893	8.6	0.9048	35.3			1	6		
340		PEDGALITO13813		13.800	P1	13.0	7.2	12.0	-5.0	1.0000	14.9	0.8748	27.0			1	6		
521		TCARIBE 13.813		13.800	G1	12.6	2.3	12.5	0.0	1.0000	12.8	0.9837	20.9			1	6		
521		TCARIBE 13.813		13.800	G2	12.6	2.3	12.5	0.0	1.0000	12.8	0.9837	20.9			1	6		
521		TCARIBE 13.813		13.800	G3	12.6	2.3	12.5	0.0	1.0000	12.8	0.9837	20.9			1	6		
523		TBALBOA 13A		13.800	G1	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9822	10.9			1	6		
523		TBALBOA 13A		13.800	G2	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9822	10.9			1	6		
523		TBALBOA 13A		13.800	G3	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9822	10.9			1	6		
523		TBALBOA 13A		13.800	G4	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9822	10.9			1	6		
523		TBALBOA 13A		13.800	G5	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9822	10.9			1	6		
524		TBALBOA 13B		13.800	10	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9822	10.9			1	6		
524		TBALBOA 13B		13.800	G6	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9822	10.9			1	6		
524		TBALBOA 13B		13.800	G7	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9822	10.9			1	6		
524		TBALBOA 13B		13.800	G8	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9822	10.9			1	6		
524		TBALBOA 13B		13.800	G9	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9822	10.9			1	6		
525		TATLANTIC13A13		13.800	G1	30.0	11.4	28.5	0.0	1.0000	32.1	0.9353	47.5			1	6		
SUBSYSTEM TOTALS						941.0	140.5	625.1	-254.6				1400.9						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 10:14  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MIN VER  
AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0579	8.0	1.0000	13.5			2	7	

127	MIR13B	12.000	G2	8.5	0.0	5.0	0.0	1.0579	8.0	1.0000	13.5	2	7
130	MIR13F	13.800	G5	10.6	0.0	8.0	0.0	1.0003	10.6	1.0000	27.7	2	7
134	MAD6A	6.9000	G1	9.6	0.4	6.0	-6.0	1.0000	9.6	0.9991	13.0	2	7
135	MAD6B	6.9000	G2	9.6	0.4	6.0	-6.0	1.0000	9.6	0.9991	13.0	2	7
136	MAD6C	6.9000	G3	9.6	0.4	6.0	-6.0	1.0000	9.6	0.9991	13.0	2	7
140	GAT6A	6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9981	4.1	2	7
140	GAT6A	6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9981	4.1	2	7
140	GAT6A	6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9981	4.1	2	7
141	GAT6B	6.9000	G4	3.8	-0.9	3.0	-3.0	1.0000	3.9	0.9755	5.6	2	7
141	GAT6B	6.9000	G5	3.8	-0.9	3.0	-3.0	1.0000	3.9	0.9755	6.2	2	7
141	GAT6B	6.9000	G6	3.8	-0.9	3.0	-3.0	1.0000	3.9	0.9755	6.2	2	7
SUBSYSTEM TOTALS				73.5	-1.7	51.0	-33.0				124.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 10:14  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MIN VER  
AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0002	230.04	8		LSA230		230.00	6	1.0025	230.58
11		M.N230		230.00	6	1.0235	235.42	14		PRO230		230.00	6	1.0272	236.26
96		FOR230		230.00	6	1.0213	234.90	100		BAY230		230.00	6	1.0108	232.48
103		COPESA23		230.00	6	1.0023	230.52	115		PACORA23		230.00	6	1.0043	230.99
117		STA RITA230		230.00	6	1.0196	234.51	144		CANJ230		230.00	6	1.0225	235.17
147		GUASQ230		230.00	6	1.0223	235.14	148		VELAD230		230.00	6	1.0169	233.89
190		CHANG230		230.00	6	1.0227	235.22	306		CHANG75		230.00	6	1.0219	235.03

310 CONCEPCION23230.00	6	1.0271	236.23	511 LGUIAS230	230.00	6	1.0011	230.26	
515 PANPOWER230	230.00	6	1.0049	231.13	6000 FRONTER	230.00	6	1.0277	236.36

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS# X-- NAME --X BASKV AREA V(PU) V(KV)	BUS# X-- NAME --X BASKV AREA V(PU) V(KV)
1 PAN230 230.00 6 0.9898 227.65	5 CHO230 230.00 6 0.9957 229.01
105 PAN-AM23 230.00 6 0.9958 229.02	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 10:14  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MIN VER  
AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS# X-- NAME --X BASKV AREA V(PU) V(KV)	BUS# X-- NAME --X BASKV AREA V(PU) V(KV)
2 PAN115 115.00 6 1.0292 118.36	4 PAN1115 115.00 6 1.0287 118.30
6 CHO115 115.00 6 1.0354 119.07	12 M.N115 115.00 6 1.0107 116.23
15 PRO115 115.00 6 1.0256 117.95	18 CAC115 115.00 6 1.0285 118.28
19 C.V115 115.00 6 1.0218 117.51	20 CH.AZUL 115.00 6 1.0232 117.67
21 C.BAN115 115.00 6 1.0206 117.37	23 CH115 115.00 6 1.0277 118.18
26 LOC115 115.00 6 1.0215 117.48	30 MAR115 115.00 6 1.0202 117.32
33 STM115 115.00 6 1.0278 118.20	37 SAN115 115.00 6 1.0197 117.27
48 TINAJ115 115.00 6 1.0262 118.01	50 M.O115 115.00 6 1.0264 118.04
52 TOC115 115.00 6 1.0264 118.03	54 LM1115 115.00 6 1.0385 119.43
55 LM2115 115.00 6 1.0394 119.53	61 FFIELD 115.00 9 1.0330 118.80
87 CAL115 115.00 6 1.0291 118.34	88 EST115 115.00 6 1.0335 118.85
92 L.V115 115.00 6 1.0308 118.54	109 STA RITA115 115.00 6 1.0321 118.69
123 MIR115 115.00 7 1.0269 118.09	154 CEMPAN15 115.00 6 1.0403 119.64
191 CHANG115 115.00 6 1.0184 117.11	522 TBALBOA 115 115.00 6 1.0392 119.50

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS# X-- NAME --X BASKV AREA V(PU) V(KV)	BUS# X-- NAME --X BASKV AREA V(PU) V(KV)
9 LSA115 115.00 6 0.9931 114.20	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 10:15  
P. EXP-SIN CON C.A. JUNIO 2007 MHT7 ESC MOD DEM MIN VER AREA TOTALS  
AÑO 2013 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) IN MW/MVAR

X-- AREA	--X GENERATION	FROM TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.7	290.6	-188.3	0.0	302.8	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.6	224.5	-98.9	0.0	143.2	-97.2	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	0.0	19.5	0.0
C.RICA	255.1	569.4	-236.5	0.0	469.5	33.6	358.1	





**PLAN DE EXPANSIÓN DEL SIN**  
**AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**  
**Contingencia Panamá-Cemento Panamá**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	38.0	13.3	17.0	0.0	1.0100	39.9	0.9441	47.0			1	6		
67		BLM13C		13.800	V3	38.0	13.3	17.0	0.0	1.0100	39.9	0.9441	47.0			1	6		
68		BLM13D		13.800	V4	38.0	13.8	30.0	0.0	1.0100	40.0	0.9399	47.0			1	6		
70		TGJB13A		13.800	J5	31.0	9.1	20.0	0.0	1.0100	32.0	0.9599	39.4			1	6		
71		TGJB13B		13.800	J6	31.0	9.1	20.0	0.0	1.0100	32.0	0.9599	39.4			1	6		
72		BLMCCA		13.800	T8	31.0	10.0	20.0	0.0	1.0100	32.2	0.9518	50.0			1	6		
73		BLMCCB		13.800	V9	47.0	10.3	40.0	0.0	1.0100	47.6	0.9767	71.0			1	6		
90		EST-13L		13.800	E1	22.0	6.3	12.0	-5.0	1.0100	22.6	0.9619	27.0			1	6		
91		EST-13T		13.800	E2	22.0	6.3	12.0	-5.0	1.0100	22.6	0.9619	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	7.0	12.0	-5.0	1.0100	24.8	0.9595	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	7.0	12.0	-5.0	1.0100	24.8	0.9595	27.0			1	6		
97		FOR13A		13.800	F1	86.0	-43.4	50.0	-50.0	0.9710	99.2	0.8930	111.0			1	6		
98		FOR13B		13.800	F2	86.0	-43.4	50.0	-50.0	0.9710	99.2	0.8930	111.0			1	6		
101		BAY13A		13.800	B1	53.4	13.9	50.0	-25.0	0.9800	56.3	0.9680	96.0			1	6	SYST	
102		BAY13B		13.800	B2	53.4	13.9	50.0	-25.0	0.9800	56.3	0.9680	96.0			1	6		
106		PANAM13A		13.800	M1	14.0	4.4	9.0	0.0	0.9900	14.8	0.9540	20.7			1	6		
106		PANAM13A		13.800	M2	14.0	4.4	9.0	0.0	0.9900	14.8	0.9540	20.7			1	6		
106		PANAM13A		13.800	M3	14.0	4.4	9.0	0.0	0.9900	14.8	0.9540	20.7			1	6		
107		PANAM13B		13.800	M4	14.0	4.4	9.0	0.0	0.9900	14.8	0.9540	20.7			1	6		
107		PANAM13B		13.800	M5	14.0	4.4	9.0	0.0	0.9900	14.8	0.9540	20.7			1	6		
107		PANAM13B		13.800	M6	14.0	4.4	9.0	0.0	0.9900	14.8	0.9540	20.7			1	6		
108		BAY13C		13.800	B3	53.4	13.9	50.0	-25.0	0.9800	56.3	0.9680	100.0			1	6		
116		PACORA13		13.800	P1	15.0	3.4	8.8	0.0	1.0000	15.4	0.9759	21.7			1	6		
116		PACORA13		13.800	P2	15.0	3.4	8.8	0.0	1.0000	15.4	0.9759	21.7			1	6		
116		PACORA13		13.800	P3	15.0	3.4	8.8	0.0	1.0000	15.4	0.9759	21.7			1	6		
142		CANJ13A		13.800	C1	40.0	8.4	29.0	-29.0	1.0000	40.9	0.9788	69.0			1	6		
143		CANJ13B		13.800	C2	40.0	8.4	29.0	-29.0	1.0000	40.9	0.9788	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9557	10.9	0.8784	13.5			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	50.0	0.0	1.0949	8.2	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	65.0	-22.0	22.0	-22.0	0.9987	68.7	0.9472	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0771	8.7	0.9048	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-4.0	4.0	-4.0	1.0771	8.7	0.9048	35.3			1	6		
340		PEDGALITO13813		13.800	P1	19.0	5.8	12.0	-5.0	1.0000	19.9	0.9562	27.0			1	6		
521		TCARIBE		13.813	G1	15.6	2.6	12.5	0.0	1.0000	15.8	0.9867	20.9			1	6		
521		TCARIBE		13.813	G2	15.6	2.6	12.5	0.0	1.0000	15.8	0.9867	20.9			1	6		
521		TCARIBE		13.813	G3	15.6	2.6	12.5	0.0	1.0000	15.8	0.9867	20.9			1	6		
523		TBALBOA		13A	G1	8.1	2.3	6.6	-6.6	1.0000	8.4	0.9631	10.9			1	6		
523		TBALBOA		13A	G2	8.1	2.3	6.6	-6.6	1.0000	8.4	0.9631	10.9			1	6		
523		TBALBOA		13A	G3	8.1	2.3	6.6	-6.6	1.0000	8.4	0.9631	10.9			1	6		
523		TBALBOA		13A	G4	8.1	2.3	6.6	-6.6	1.0000	8.4	0.9631	10.9			1	6		
523		TBALBOA		13A	G5	8.1	2.3	6.6	-6.6	1.0000	8.4	0.9631	10.9			1	6		
524		TBALBOA		13B	G10	8.1	2.3	6.6	-6.6	1.0000	8.4	0.9631	10.9			1	6		
524		TBALBOA		13B	G6	8.1	2.3	6.6	-6.6	1.0000	8.4	0.9631	10.9			1	6		
524		TBALBOA		13B	G7	8.1	2.3	6.6	-6.6	1.0000	8.4	0.9631	10.9			1	6		
524		TBALBOA		13B	G8	8.1	2.3	6.6	-6.6	1.0000	8.4	0.9631	10.9			1	6		
524		TBALBOA		13B	G9	8.1	2.3	6.6	-6.6	1.0000	8.4	0.9631	10.9			1	6		
525		TATLANTIC13A13		13.800	G1	36.0	9.4	28.5	0.0	1.0000	37.2	0.9674	47.5			1	6		
525		TATLANTIC13A13		13.800	G2	36.0	9.4	28.5	0.0	1.0000	37.2	0.9674	47.5			1	6		
526		TATLANTIC13B13		13.800	V1	18.3	7.8	15.0	0.0	1.0000	19.9	0.9194	25.0			1	6		
526		TATLANTIC13B13		13.800	V2	18.3	7.8	15.0	0.0	1.0000	19.9	0.9194	25.0			1	6		
SUBSYSTEM TOTALS						1242.9	159.1	887.6	-358.6				1850.3						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
 AÑO 2013. CONTINGENCIA PANAMÁ-CEMENTO PANAMÁ

THU, SEP 27 2007 11:06

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0481	8.1	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0481	8.1	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	10.6	4.2	8.0	0.0	1.0000	11.4	0.9311	27.7			2	7		
134		MAD6A		6.9000	G1	9.6	1.0	6.0	-6.0	1.0000	9.6	0.9949	13.0			2	7		
135		MAD6B		6.9000	G2	9.6	1.0	6.0	-6.0	1.0000	9.6	0.9949	13.0			2	7		
136		MAD6C		6.9000	G3	9.6	1.0	6.0	-6.0	1.0000	9.6	0.9949	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9994	4.1			2	7		
141		GAT6B		6.9000	G4	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9847	6.2			2	7		
141		GAT6B		6.9000	G5	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9847	6.2			2	7		
141		GAT6B		6.9000	G6	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9847	6.2			2	7		
SUBSYSTEM TOTALS						73.5	5.2	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
 AÑO 2013. CONTINGENCIA PANAMÁ-CEMENTO PANAMÁ

THU, SEP 27 2007 11:06

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0166	233.81	11		M.N230		230.00	6	1.0317	237.30
14		PRO230		230.00	6	1.0344	237.91	96		FOR230		230.00	6	1.0248	235.69
100		BAY230		230.00	6	1.0127	232.91	117		STA RITA230		230.00	6	1.0116	232.67
144		CANJ230		230.00	6	1.0288	236.62	147		GUASQ230		230.00	6	1.0287	236.59
148		VELAD230		230.00	6	1.0323	237.42	190		CHANG230		230.00	6	1.0242	235.56
306		CHANG75		230.00	6	1.0238	235.47	310		CONCEPCION230		230.00	6	1.0346	237.97
511		LGUIAS230		230.00	6	1.0054	231.25	6000		FRONTER		230.00	6	1.0347	237.98



BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9775	224.82	3		PANII230		230.00	6	0.9905	227.82
5		CHO230		230.00	6	0.9883	227.30	103		COPESA23		230.00	6	0.9942	228.67
105		PAN-AM23		230.00	6	0.9884	227.32	115		PACORA23		230.00	6	0.9980	229.53
515		PANPOWER230		230.00	6	0.9993	229.83								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 11:06  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
 AÑO 2013. CONTINGENCIA PANAMÁ-CEMENTO PANAMÁ

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0116	116.34	4		PANII115		115.00	6	1.0146	116.68
6		CHO115		115.00	6	1.0234	117.69	9		LSA115		115.00	6	1.0146	116.68
12		M.N115		115.00	6	1.0263	118.02	15		PRO115		115.00	6	1.0321	118.69
18		CAC115		115.00	6	1.0109	116.25	19		C.V115		115.00	6	1.0042	115.49
20		CH.AZUL		115.00	6	1.0288	118.31	21		C.BAN115		115.00	6	1.0004	115.05
23		CH115		115.00	6	1.0120	116.38	26		LOC115		115.00	6	1.0015	115.18
33		STM115		115.00	6	1.0098	116.13	48		TINAJ115		115.00	6	1.0074	115.85
50		M.O115		115.00	6	1.0077	115.89	52		TOC115		115.00	6	1.0115	116.32
54		LM1115		115.00	6	1.0323	118.71	55		LM2115		115.00	6	1.0335	118.86
61		FFIELD		115.00	9	1.0250	117.88	87		CAL115		115.00	6	1.0383	119.41
88		EST115		115.00	6	1.0419	119.82	92		L.V115		115.00	6	1.0397	119.57
109		STA RITA115		115.00	6	1.0254	117.92	123		MIR115		115.00	7	1.0100	116.14
154		CEMPAN15		115.00	6	1.0400	119.60	191		CHANG115		115.00	6	1.0187	117.15
522		TBALBOA 115		115.00	6	1.0331	118.81								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
30		MAR115		115.00	6	0.9997	114.97	37		SAN115		115.00	6	0.9994	114.93

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 11:06  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV AREA TOTALS  
 AÑO 2013. CONTINGENCIA PANAMÁ-CEMENTO PANAMÁ IN MW/MVAR

X-- AREA	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.4	224.5	-98.9	0.0	143.3	-97.4	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	0.0	19.5	0.0
C.RICA	246.1	569.4	-237.3	0.0	470.5	26.7	357.8	
6	1242.9	1129.0	0.0	0.0	0.0	87.3	26.5	25.0
PANAMA	159.1	283.0	0.0	0.0	537.1	65.8	347.5	
7	73.5	38.5	0.0	0.0	0.0	33.6	1.4	50.0
ACANAL	5.2	9.6	0.0	0.0	0.0	-14.4	10.0	
9	0.0	120.5	0.0	0.0	0.0	-120.9	0.3	-75.0
COLON	0.0	30.2	0.0	0.0	1.1	-31.6	2.5	
TOTALS	6465.0	6339.6	0.0	0.0	0.0	0.0	125.4	0.0
	629.0	1939.1	-848.8	0.0	2087.6	0.0	1626.3	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 11:07  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV SHUNT  
 AÑO 2013. CONTINGENCIA PANAMÁ-CEMENTO PANAMÁ SUMMARY  
 OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X-- NAME	--X BASKV	N O M I N A L		VOLTAGE
			MW	MVAR	
2	PAN115	115.00	0.0	0.0	1.0116 SWITCHED
4	PANII115	115.00	0.0	0.0	1.0146 SWITCHED
8	LSA230	230.00	0.0	0.0	1.0166 SWITCHED
10	L.S.34	34.500	0.0	0.0	0.9965 SWITCHED
13	MDNA34	34.500	0.0	0.0	1.0002 SWITCHED
148	VELAD230	230.00	0.0	0.0	1.0323 SWITCHED



**PLAN DE EXPANSIÓN DEL SIN**  
**AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**  
**Contingencia Las Minas 2-Chilibre**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	38.0	12.8	17.0	0.0	1.0100	39.7	0.9477	47.0			1	6		
67		BLM13C		13.800	V3	38.0	12.8	17.0	0.0	1.0100	39.7	0.9477	47.0			1	6		
68		BLM13D		13.800	V4	38.0	13.3	30.0	0.0	1.0100	39.9	0.9438	47.0			1	6		
70		TGJB13A		13.800	J5	31.0	8.8	20.0	0.0	1.0100	31.9	0.9620	39.4			1	6		
71		TGJB13B		13.800	J6	31.0	8.8	20.0	0.0	1.0100	31.9	0.9620	39.4			1	6		
72		BLMCCA		13.800	T8	31.0	9.7	20.0	0.0	1.0100	32.2	0.9541	50.0			1	6		
73		BLMCCB		13.800	V9	47.0	10.1	40.0	0.0	1.0100	47.6	0.9778	71.0			1	6		
90		EST-13L		13.800	E1	22.0	6.3	12.0	-5.0	1.0100	22.6	0.9618	27.0			1	6		
91		EST-13T		13.800	E2	22.0	6.3	12.0	-5.0	1.0100	22.6	0.9618	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	7.1	12.0	-5.0	1.0100	24.8	0.9594	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	7.1	12.0	-5.0	1.0100	24.8	0.9594	27.0			1	6		
97		FOR13A		13.800	F1	86.0	-43.3	50.0	-50.0	0.9710	99.2	0.8932	111.0			1	6		
98		FOR13B		13.800	F2	86.0	-43.3	50.0	-50.0	0.9710	99.2	0.8932	111.0			1	6		
101		BAY13A		13.800	B1	54.5	14.1	50.0	-25.0	0.9800	57.4	0.9683	96.0			1	6	SYST	
102		BAY13B		13.800	B2	53.0	14.0	50.0	-25.0	0.9800	55.9	0.9671	96.0			1	6		
106		PANAM13A		13.800	M1	14.0	4.4	9.0	0.0	0.9900	14.8	0.9530	20.7			1	6		
106		PANAM13A		13.800	M2	14.0	4.4	9.0	0.0	0.9900	14.8	0.9530	20.7			1	6		
106		PANAM13A		13.800	M3	14.0	4.4	9.0	0.0	0.9900	14.8	0.9530	20.7			1	6		
107		PANAM13B		13.800	M4	14.0	4.4	9.0	0.0	0.9900	14.8	0.9530	20.7			1	6		
107		PANAM13B		13.800	M5	14.0	4.4	9.0	0.0	0.9900	14.8	0.9530	20.7			1	6		
107		PANAM13B		13.800	M6	14.0	4.4	9.0	0.0	0.9900	14.8	0.9530	20.7			1	6		
108		BAY13C		13.800	B3	53.0	14.0	50.0	-25.0	0.9800	55.9	0.9671	100.0			1	6		
116		PACORA13		13.800	P1	15.0	3.4	8.8	0.0	1.0000	15.4	0.9753	21.7			1	6		
116		PACORA13		13.800	P2	15.0	3.4	8.8	0.0	1.0000	15.4	0.9753	21.7			1	6		
116		PACORA13		13.800	P3	15.0	3.4	8.8	0.0	1.0000	15.4	0.9753	21.7			1	6		
142		CANJ13A		13.800	C1	40.0	8.4	29.0	-29.0	1.0000	40.9	0.9787	69.0			1	6		
143		CANJ13B		13.800	C2	40.0	8.4	29.0	-29.0	1.0000	40.9	0.9787	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9557	10.9	0.8784	13.5			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	50.0	0.0	1.0948	8.2	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	65.0	-22.0	22.0	-22.0	0.9986	68.7	0.9472	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0770	8.7	0.9048	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-4.0	4.0	-4.0	1.0770	8.7	0.9048	35.3			1	6		
340		PEDGALITO13813		13.800	P1	19.0	5.8	12.0	-5.0	1.0000	19.9	0.9559	27.0			1	6		
521		TCARIBE		13.813	G1	15.6	4.0	12.5	0.0	1.0000	16.1	0.9681	20.9			1	6		
521		TCARIBE		13.813	G2	15.6	4.0	12.5	0.0	1.0000	16.1	0.9681	20.9			1	6		
521		TCARIBE		13.813	G3	15.6	4.0	12.5	0.0	1.0000	16.1	0.9681	20.9			1	6		
523		TBALBOA		13A	G1	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6		
523		TBALBOA		13A	G2	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6		
523		TBALBOA		13A	G3	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6		
523		TBALBOA		13A	G4	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6		
523		TBALBOA		13A	G5	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6		
524		TBALBOA		13B	G10	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6		
524		TBALBOA		13B	G6	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6		
524		TBALBOA		13B	G7	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6		
524		TBALBOA		13B	G8	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6		
524		TBALBOA		13B	G9	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6		
525		TATLANTIC13A13		13.800	G1	36.0	9.3	28.5	0.0	1.0000	37.2	0.9684	47.5			1	6		
525		TATLANTIC13A13		13.800	G2	36.0	9.3	28.5	0.0	1.0000	37.2	0.9684	47.5			1	6		
526		TATLANTIC13B13		13.800	V1	18.3	7.7	15.0	0.0	1.0000	19.8	0.9220	25.0			1	6		
526		TATLANTIC13B13		13.800	V2	18.3	7.7	15.0	0.0	1.0000	19.8	0.9220	25.0			1	6		
SUBSYSTEM TOTALS						1243.1	160.3	887.6	-358.6				1850.3						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
 AÑO 2013 CONTINGENCIA LAS MINAS 2-CHILIBRE

THU, SEP 27 2007 11:22

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0477	8.1	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0478	8.1	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	10.6	4.3	8.0	0.0	1.0000	11.4	0.9271	27.7			2	7		
134		MAD6A		6.9000	G1	9.6	1.0	6.0	-6.0	1.0000	9.7	0.9947	13.0			2	7		
135		MAD6B		6.9000	G2	9.6	1.0	6.0	-6.0	1.0000	9.7	0.9948	13.0			2	7		
136		MAD6C		6.9000	G3	9.6	1.0	6.0	-6.0	1.0000	9.7	0.9948	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			2	7		
141		GAT6B		6.9000	G4	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9849	5.6			2	7		
141		GAT6B		6.9000	G5	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9849	6.2			2	7		
141		GAT6B		6.9000	G6	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9849	6.2			2	7		
SUBSYSTEM TOTALS									73.5		5.5	51.0	-33.0			124.2			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
 AÑO 2013 CONTINGENCIA LAS MINAS 2-CHILIBRE

THU, SEP 27 2007 11:22

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0163	233.76	11		M.N230		230.00	6	1.0316	237.28
14		PRO230		230.00	6	1.0343	237.90	96		FOR230		230.00	6	1.0247	235.68
100		BAY230		230.00	6	1.0125	232.88	117		STA RITA230		230.00	6	1.0117	232.69
144		CANJ230		230.00	6	1.0287	236.60	147		GUASQ230		230.00	6	1.0286	236.57
148		VELAD230		230.00	6	1.0321	237.39	190		CHANG230		230.00	6	1.0241	235.55
306		CHANG75		230.00	6	1.0237	235.46	310		CONCEPCION23		230.00	6	1.0346	237.95

511 LGUIAS230 230.00 6 1.0052 231.19 6000 FRONTER 230.00 6 1.0346 237.96

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230			230.00	6	0.9771	224.73	3	PANII230			230.00	6	0.9902	227.75
5	CHO230			230.00	6	0.9879	227.22	103	COPESA23			230.00	6	0.9940	228.61
105	PAN-AM23			230.00	6	0.9880	227.25	115	PACORA23			230.00	6	0.9977	229.48
515	PANPOWER230			230.00	6	0.9990	229.76								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 11:22  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
 AÑO 2013 CONTINGENCIA LAS MINAS 2-CHILIBRE

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115			115.00	6	1.0110	116.27	4	PANII115			115.00	6	1.0142	116.64
6	CHO115			115.00	6	1.0230	117.64	9	LSA115			115.00	6	1.0144	116.65
12	M.N115			115.00	6	1.0262	118.02	15	PRO115			115.00	6	1.0320	118.68
18	CAC115			115.00	6	1.0103	116.18	19	C.V115			115.00	6	1.0038	115.43
20	CH.AZUL			115.00	6	1.0287	118.30	26	LOC115			115.00	6	1.0009	115.11
33	STM115			115.00	6	1.0092	116.05	48	TINAJ115			115.00	6	1.0068	115.78
50	M.O115			115.00	6	1.0071	115.82	52	TOC115			115.00	6	1.0111	116.28
54	LM1115			115.00	6	1.0333	118.83	55	LM2115			115.00	6	1.0346	118.98
61	FFIELD			115.00	9	1.0260	117.99	87	CAL115			115.00	6	1.0383	119.40
88	EST115			115.00	6	1.0419	119.81	92	L.V115			115.00	6	1.0397	119.56
109	STA RITA115			115.00	6	1.0259	117.98	123	MIR115			115.00	7	1.0094	116.08
154	CEMPAN15			115.00	6	1.0326	118.75	191	CHANG115			115.00	6	1.0187	117.15
522	TBALBOA	115		115.00	6	1.0342	118.93								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21	C.BAN115			115.00	6	0.9998	114.98	23	CH115			115.00	6	0.9989	114.87
30	MAR115			115.00	6	0.9991	114.90	37	SAN115			115.00	6	0.9988	114.86

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 11:23  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV AREA TOTALS  
 AÑO 2013 CONTINGENCIA LAS MINAS 2-CHILIBRE IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
			29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	SALVADOR		911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
			100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	HONDURAS		1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
			55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	NICA		538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
			32.4	224.5	-98.9	0.0	143.3	-97.4	147.4	
5			1344.3	1324.8	0.0	0.0	0.0	0.0	19.5	0.0

C.RICA	246.2	569.4	-237.3	0.0	470.5	26.8	357.8	
6	1243.1	1129.0	0.0	0.0	0.0	87.3	26.8	25.0
PANAMA	160.3	283.0	0.0	0.0	537.4	65.4	349.2	
7	73.5	38.5	0.0	0.0	0.0	33.6	1.4	50.0
ACANAL	5.5	9.6	0.0	0.0	0.0	-14.2	10.0	
9	0.0	120.5	0.0	0.0	0.0	-120.9	0.3	-75.0
COLON	0.0	30.2	0.0	0.0	1.1	-31.6	2.5	
TOTALS	6465.2	6339.6	0.0	0.0	0.0	0.0	125.6	0.0

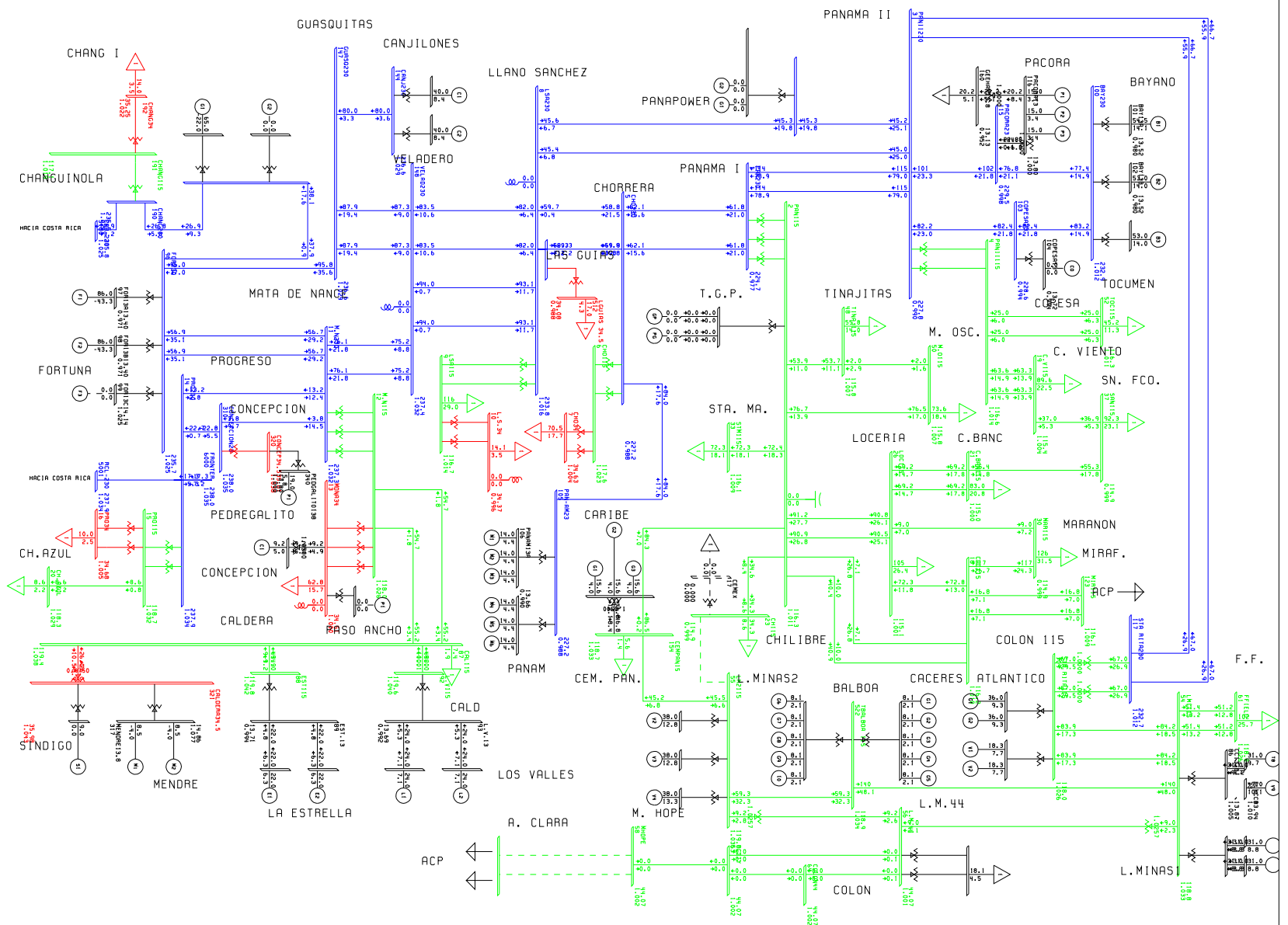
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      THU, SEP 27 2007 11:23  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV      SHUNT  
 AÑO 2013 CONTINGENCIA LAS MINAS 2-CHILIBRE      SUMMARY  
 OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X--	NAME	--X	BASKV	N O M I N A L		
					MW	MVAR	VOLTAGE
2		PAN115		115.00	0.0	0.0	1.0110 SWITCHED
4		PANII115		115.00	0.0	0.0	1.0142 SWITCHED
8		LSA230		230.00	0.0	0.0	1.0163 SWITCHED
10		L.S.34		34.500	0.0	0.0	0.9962 SWITCHED
13		MDNA34		34.500	0.0	0.0	1.0002 SWITCHED
148		VELAD230		230.00	0.0	0.0	1.0321 SWITCHED



L:\w\...  
 R 0 2011 CONTINGENCIA LMS MINAS 2-CHILIBRE  
 MON. OCT 01 2007 10:27

BUS - VOLTAGE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



**PLAN DE EXPANSIÓN DEL SIN**  
**AÑO 2013 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**  
**Contingencia Las Minas 1-Santa Rita**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	38.0	12.3	17.0	0.0	1.0100	39.5	0.9517	47.0			1	6		
67		BLM13C		13.800	V3	38.0	12.3	17.0	0.0	1.0100	39.5	0.9517	47.0			1	6		
68		BLM13D		13.800	V4	38.0	12.7	30.0	0.0	1.0100	39.7	0.9482	47.0			1	6		
70		TGJB13A		13.800	J5	31.0	8.3	20.0	0.0	1.0100	31.8	0.9661	39.4			1	6		
71		TGJB13B		13.800	J6	31.0	8.3	20.0	0.0	1.0100	31.8	0.9661	39.4			1	6		
72		BLMCCA		13.800	T8	31.0	9.2	20.0	0.0	1.0100	32.0	0.9585	50.0			1	6		
73		BLMCCB		13.800	V9	47.0	9.5	40.0	0.0	1.0100	47.5	0.9800	71.0			1	6		
90		EST-13L		13.800	E1	22.0	6.2	12.0	-5.0	1.0100	22.6	0.9629	27.0			1	6		
91		EST-13T		13.800	E2	22.0	6.2	12.0	-5.0	1.0100	22.6	0.9629	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	7.0	12.0	-5.0	1.0100	24.7	0.9604	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	7.0	12.0	-5.0	1.0100	24.7	0.9604	27.0			1	6		
97		FOR13A		13.800	F1	86.0	-43.8	50.0	-50.0	0.9710	99.4	0.8910	111.0			1	6		
98		FOR13B		13.800	F2	86.0	-43.8	50.0	-50.0	0.9710	99.4	0.8910	111.0			1	6		
101		BAY13A		13.800	B1	53.4	13.0	50.0	-25.0	0.9800	56.1	0.9717	96.0			1	6	SYST	
102		BAY13B		13.800	B2	53.0	13.0	50.0	-25.0	0.9800	55.7	0.9714	96.0			1	6		
106		PANAM13A		13.800	M1	14.0	4.1	9.0	0.0	0.9900	14.7	0.9598	20.7			1	6		
106		PANAM13A		13.800	M2	14.0	4.1	9.0	0.0	0.9900	14.7	0.9598	20.7			1	6		
106		PANAM13A		13.800	M3	14.0	4.1	9.0	0.0	0.9900	14.7	0.9598	20.7			1	6		
107		PANAM13B		13.800	M4	14.0	4.1	9.0	0.0	0.9900	14.7	0.9598	20.7			1	6		
107		PANAM13B		13.800	M5	14.0	4.1	9.0	0.0	0.9900	14.7	0.9598	20.7			1	6		
107		PANAM13B		13.800	M6	14.0	4.1	9.0	0.0	0.9900	14.7	0.9598	20.7			1	6		
108		BAY13C		13.800	B3	53.0	13.0	50.0	-25.0	0.9800	55.7	0.9714	100.0			1	6		
116		PACORA13		13.800	P1	15.0	3.0	8.8	0.0	1.0000	15.3	0.9801	21.7			1	6		
116		PACORA13		13.800	P2	15.0	3.0	8.8	0.0	1.0000	15.3	0.9801	21.7			1	6		
116		PACORA13		13.800	P3	15.0	3.0	8.8	0.0	1.0000	15.3	0.9801	21.7			1	6		
142		CANJ13A		13.800	C1	40.0	8.3	29.0	-29.0	1.0000	40.8	0.9793	69.0			1	6		
143		CANJ13B		13.800	C2	40.0	8.3	29.0	-29.0	1.0000	40.8	0.9793	69.0			1	6		
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9561	10.9	0.8784	13.5			1	6		
303		SIND13.8		13.800	S1	9.0	0.0	50.0	0.0	1.0952	8.2	1.0000	13.5			1	6		
307		CHANG75A		13.800	G1	65.0	-22.0	22.0	-22.0	0.9991	68.7	0.9472	118.6			1	6		
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0774	8.7	0.9048	35.3			1	6		
317		MENDRE13.8		13.800	M2	8.5	-4.0	4.0	-4.0	1.0774	8.7	0.9048	35.3			1	6		
340		PEDGALITO13813		13.800	P1	19.0	5.7	12.0	-5.0	1.0000	19.8	0.9581	27.0			1	6		
521		TCARIBE		13.813	G1	15.6	3.6	12.5	0.0	1.0000	16.0	0.9741	20.9			1	6		
521		TCARIBE		13.813	G2	15.6	3.6	12.5	0.0	1.0000	16.0	0.9741	20.9			1	6		
521		TCARIBE		13.813	G3	15.6	3.6	12.5	0.0	1.0000	16.0	0.9741	20.9			1	6		
523		TBALBOA		13A	G1	8.1	1.9	6.6	-6.6	1.0000	8.3	0.9722	10.9			1	6		
523		TBALBOA		13A	G2	8.1	1.9	6.6	-6.6	1.0000	8.3	0.9722	10.9			1	6		
523		TBALBOA		13A	G3	8.1	1.9	6.6	-6.6	1.0000	8.3	0.9722	10.9			1	6		
523		TBALBOA		13A	G4	8.1	1.9	6.6	-6.6	1.0000	8.3	0.9722	10.9			1	6		
523		TBALBOA		13A	G5	8.1	1.9	6.6	-6.6	1.0000	8.3	0.9722	10.9			1	6		
524		TBALBOA		13B	G10	8.1	1.9	6.6	-6.6	1.0000	8.3	0.9722	10.9			1	6		
524		TBALBOA		13B	G6	8.1	1.9	6.6	-6.6	1.0000	8.3	0.9722	10.9			1	6		
524		TBALBOA		13B	G7	8.1	1.9	6.6	-6.6	1.0000	8.3	0.9722	10.9			1	6		
524		TBALBOA		13B	G8	8.1	1.9	6.6	-6.6	1.0000	8.3	0.9722	10.9			1	6		
524		TBALBOA		13B	G9	8.1	1.9	6.6	-6.6	1.0000	8.3	0.9722	10.9			1	6		
525		TATLANTIC13A13		13.800	G1	36.0	9.4	28.5	0.0	1.0000	37.2	0.9675	47.5			1	6		
525		TATLANTIC13A13		13.800	G2	36.0	9.4	28.5	0.0	1.0000	37.2	0.9675	47.5			1	6		
526		TATLANTIC13B13		13.800	V1	18.3	7.8	15.0	0.0	1.0000	19.9	0.9196	25.0			1	6		
526		TATLANTIC13B13		13.800	V2	18.3	7.8	15.0	0.0	1.0000	19.9	0.9196	25.0			1	6		
SUBSYSTEM TOTALS						1242.0	145.8	887.6	-358.6				1850.3						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
 AÑO 2013 CONTINGENCIA LAS MINAS 1-SANTA RITA

THU, SEP 27 2007 11:46

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0497	8.1	1.0000	13.5			2	7		
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0497	8.1	1.0000	13.5			2	7		
130		MIR13F		13.800	G5	10.6	3.4	8.0	0.0	1.0000	11.1	0.9510	27.7			2	7		
134		MAD6A		6.9000	G1	9.6	0.9	6.0	-6.0	1.0000	9.6	0.9958	13.0			2	7		
135		MAD6B		6.9000	G2	9.6	0.9	6.0	-6.0	1.0000	9.6	0.9958	13.0			2	7		
136		MAD6C		6.9000	G3	9.6	0.9	6.0	-6.0	1.0000	9.6	0.9958	13.0			2	7		
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7		
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7		
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9998	4.1			2	7		
141		GAT6B		6.9000	G4	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9836	6.2			2	7		
141		GAT6B		6.9000	G5	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9836	6.2			2	7		
141		GAT6B		6.9000	G6	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9836	6.2			2	7		
SUBSYSTEM TOTALS						73.5	4.1	51.0	-33.0				124.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
 AÑO 2013 CONTINGENCIA LAS MINAS 1-SANTA RITA

THU, SEP 27 2007 11:46

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0181	234.16	11		M.N230		230.00	6	1.0323	237.44
14		PRO230		230.00	6	1.0350	238.04	96		FOR230		230.00	6	1.0253	235.81
100		BAY230		230.00	6	1.0139	233.19	117		STA RITA230		230.00	6	1.0125	232.88
144		CANJ230		230.00	6	1.0294	236.76	147		GUASQ230		230.00	6	1.0293	236.74
148		VELAD230		230.00	6	1.0332	237.65	190		CHANG230		230.00	6	1.0245	235.64
306		CHANG75		230.00	6	1.0242	235.56	310		CONCEPCION230		230.00	6	1.0352	238.10
511		LGUIAS230		230.00	6	1.0073	231.67	515		PANPOWER230		230.00	6	1.0012	230.29

6000 FRONTER 230.00 6 1.0352 238.10

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9802	225.44	3	PANII230	230.00	6	0.9926	228.30
5	CHO230	230.00	6	0.9905	227.81	103	COPESA23	230.00	6	0.9962	229.12
105	PAN-AM23	230.00	6	0.9906	227.83	115	PACORA23	230.00	6	0.9997	229.93

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 11:46  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
 AÑO 2013 CONTINGENCIA LAS MINAS 1-SANTA RITA

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0149	116.72	4	PANIII115	115.00	6	1.0170	116.95
6	CHO115	115.00	6	1.0258	117.96	9	LSA115	115.00	6	1.0162	116.86
12	M.N115	115.00	6	1.0267	118.08	15	PRO115	115.00	6	1.0327	118.76
18	CAC115	115.00	6	1.0141	116.63	19	C.V115	115.00	6	1.0069	115.79
20	CH.AZUL	115.00	6	1.0293	118.37	21	C.BAN115	115.00	6	1.0036	115.41
23	CH115	115.00	6	1.0156	116.79	26	LOC115	115.00	6	1.0048	115.55
30	MAR115	115.00	6	1.0030	115.34	33	STM115	115.00	6	1.0131	116.50
37	SAN115	115.00	6	1.0025	115.29	48	TINAJ115	115.00	6	1.0107	116.23
50	M.O115	115.00	6	1.0110	116.27	52	TOC115	115.00	6	1.0139	116.60
54	LM1115	115.00	6	1.0353	119.06	55	LM2115	115.00	6	1.0359	119.13
61	FFIELD	115.00	9	1.0280	118.22	87	CAL115	115.00	6	1.0387	119.44
88	EST115	115.00	6	1.0422	119.85	92	L.V115	115.00	6	1.0400	119.60
109	STA RITA115	115.00	6	1.0255	117.93	123	MIR115	115.00	7	1.0130	116.50
154	CEMPAN15	115.00	6	1.0347	118.99	191	CHANG115	115.00	6	1.0191	117.19
522	TBALBOA 115	115.00	6	1.0358	119.12						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
* NONE *											

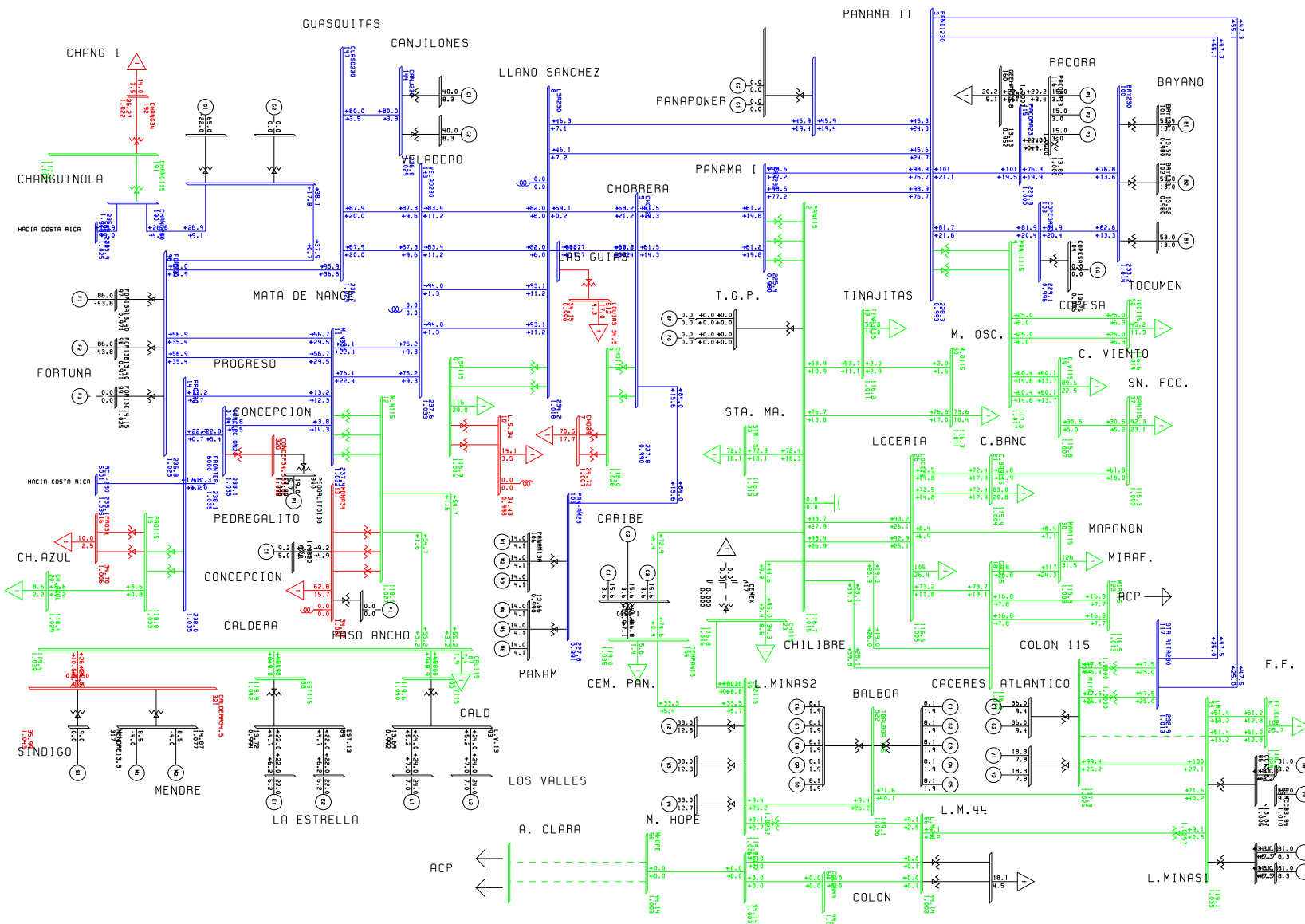
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, SEP 27 2007 11:46  
 PESIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV AREA TOTALS  
 AÑO 2013 CONTINGENCIA LAS MINAS 1-SANTA RITA IN MW/MVAR

X-- AREA	--X GENERATION	FROM TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.3	224.5	-98.9	0.0	143.3	-97.4	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	0.0	19.5	0.0
C.RICA	245.3	569.4	-237.3	0.0	470.6	26.0	357.8	

6	1242.0	1129.0	0.0	0.0	0.0	87.3	25.7	25.0
PANAMA	145.8	283.0	0.0	0.0	540.4	67.5	335.7	
7	73.5	38.5	0.0	0.0	0.0	33.6	1.4	50.0
ACANAL	4.1	9.6	0.0	0.0	0.0	-15.5	10.0	
9	0.0	120.5	0.0	0.0	0.0	-120.9	0.3	-75.0
COLON	0.0	30.2	0.0	0.0	1.1	-31.6	2.5	
TOTALS	6464.2	6339.6	0.0	0.0	0.0	0.0	124.6	0.0
	613.7	1939.1	-848.8	0.0	2091.0	0.0	1614.4	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      THU, SEP 27 2007 11:46  
 PESIN CON C.A. JUNIO 2007    ESC MOD DEM MAX INV      SHUNT  
 AÑO 2013 CONTINGENCIA LAS MINAS 1-SANTA RITA      SUMMARY  
 OUTPUT FOR AREA 6 [PANAMA      ]

BUS#	X--	NAME	--X	BASKV	N O M I N A L		
					MW	MVAR	VOLTAGE
2		PAN115		115.00	0.0	0.0	1.0149 SWITCHED
4		PANIII115		115.00	0.0	0.0	1.0170 SWITCHED
8		LSA230		230.00	0.0	0.0	1.0181 SWITCHED
10		L.S.34		34.500	0.0	0.0	0.9981 SWITCHED
13		MDNA34		34.500	0.0	0.0	1.0007 SWITCHED
148		VELAD230		230.00	0.0	0.0	1.0332 SWITCHED



ESC MOD DEM MAX INV  
 JUNIO 2007  
 C.A.R. CON INGENIERIA LAS MINAS 1-SANTA RITA  
 OCT 01 2007 10:29  
 BUS - VOLTAGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - KM/MVAR  
 .535 .4115

**AÑO 2016**



**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Actualización**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	38.0	15.2	17.0	0.0	1.0100	40.5	0.9284	47.0			1	6	
67		BLM13C		13.800	V3	38.0	15.2	17.0	0.0	1.0100	40.5	0.9284	47.0			1	6	
68		BLM13D		13.800	V4	38.0	15.8	30.0	0.0	1.0100	40.8	0.9230	47.0			1	6	
70		TGJB13A		13.800	J5	31.0	10.1	20.0	0.0	1.0100	32.3	0.9506	39.4			1	6	
71		TGJB13B		13.800	J6	31.0	10.1	20.0	0.0	1.0100	32.3	0.9506	39.4			1	6	
72		BLMCCA		13.800	T8	31.0	11.1	20.0	0.0	1.0100	32.6	0.9418	50.0			1	6	
73		BLMCCB		13.800	V9	47.0	11.4	40.0	0.0	1.0100	47.9	0.9719	71.0			1	6	
90		EST-13L		13.800	E1	22.0	9.3	12.0	-5.0	1.0100	23.7	0.9206	27.0			1	6	
91		EST-13T		13.800	E2	22.0	9.3	12.0	-5.0	1.0100	23.7	0.9206	27.0			1	6	
94		LV-13.8L		13.800	L1	24.0	10.3	12.0	-5.0	1.0100	25.9	0.9183	27.0			1	6	
95		LV-13.8T		13.800	L2	24.0	10.3	12.0	-5.0	1.0100	25.9	0.9183	27.0			1	6	
97		FOR13A		13.800	F1	81.0	-26.5	50.0	-50.0	0.9710	87.8	0.9504	111.0			1	6	
98		FOR13B		13.800	F2	81.0	-26.5	50.0	-50.0	0.9710	87.8	0.9504	111.0			1	6	
101		BAY13A		13.800	B1	74.7	18.0	50.0	-25.0	0.9800	78.4	0.9723	96.0			1	6	SYST
102		BAY13B		13.800	B2	74.7	18.0	50.0	-25.0	0.9800	78.4	0.9723	96.0			1	6	
106		PANAM13A		13.800	M1	15.0	6.5	9.0	0.0	0.9900	16.5	0.9186	20.7			1	6	
106		PANAM13A		13.800	M2	15.0	6.5	9.0	0.0	0.9900	16.5	0.9186	20.7			1	6	
106		PANAM13A		13.800	M3	15.0	6.5	9.0	0.0	0.9900	16.5	0.9186	20.7			1	6	
107		PANAM13B		13.800	M4	15.0	6.5	9.0	0.0	0.9900	16.5	0.9186	20.7			1	6	
107		PANAM13B		13.800	M5	15.0	6.5	9.0	0.0	0.9900	16.5	0.9186	20.7			1	6	
107		PANAM13B		13.800	M6	15.0	6.5	9.0	0.0	0.9900	16.5	0.9186	20.7			1	6	
108		BAY13C		13.800	B3	74.7	18.0	50.0	-25.0	0.9800	78.4	0.9723	100.0			1	6	
116		PACORA13		13.800	P1	16.2	5.0	8.8	0.0	1.0000	17.0	0.9550	21.7			1	6	
116		PACORA13		13.800	P2	16.2	5.0	8.8	0.0	1.0000	17.0	0.9550	21.7			1	6	
116		PACORA13		13.800	P3	16.2	5.0	8.8	0.0	1.0000	17.0	0.9550	21.7			1	6	
142		CANJ13A		13.800	C1	40.0	12.0	29.0	-29.0	1.0000	41.8	0.9578	69.0			1	6	
143		CANJ13B		13.800	C2	40.0	12.0	29.0	-29.0	1.0000	41.8	0.9578	69.0			1	6	
151		GUALAC13		13.800	1	16.0	0.2	10.0	-10.0	1.0000	16.0	0.9999	26.7			1	6	
193		GEBOYIC		13.800	G1	7.0	-0.1	4.0	-4.0	1.0000	7.0	0.9998	35.3			1	6	
193		GEBOYIC		13.800	G2	7.0	-0.1	4.0	-4.0	1.0000	7.0	0.9998	35.3			1	6	
193		GEBOYIC		13.800	G3	7.0	-0.1	4.0	-4.0	1.0000	7.0	0.9998	35.3			1	6	
204		BJOMIN13		13.800	1	14.5	-4.7	13.0	-13.0	1.0000	15.2	0.9520	28.9			1	6	
204		BJOMIN13		13.800	2	14.5	-4.7	13.0	-13.0	1.0000	15.2	0.9520	28.9			1	6	
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9366	11.2	0.8784	13.5			1	6	
303		SIND13.8		13.800	S1	8.7	0.0	50.0	0.0	1.0820	8.0	1.0000	13.5			1	6	
307		CHANG75A		13.800	G1	65.0	-17.3	22.0	-22.0	0.9900	67.9	0.9665	118.6			1	6	
308		CHANG75B		13.800	G2	65.0	-7.9	22.0	-22.0	1.0000	65.5	0.9928	118.6			1	6	
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0640	8.8	0.9048	35.3			1	6	
317		MENDRE13.8		13.800	M2	8.5	-4.0	4.0	-4.0	1.0640	8.8	0.9048	35.3			1	6	
340		PEDGALITO13813.800		13.800	P1	22.0	10.8	12.0	-5.0	1.0000	24.5	0.8979	27.0			1	6	
342		LORENA13.8		13.800	1	17.0	-1.2	12.0	-5.0	1.0000	17.0	0.9976	27.0			1	6	
342		LORENA13.8		13.800	2	17.0	-1.2	12.0	-5.0	1.0000	17.0	0.9976	27.0			1	6	
343		PRUDENCIA13813.800		13.800	1	17.5	-1.1	9.8	-9.8	1.0000	17.5	0.9981	21.4			1	6	
343		PRUDENCIA13813.800		13.800	2	17.5	-1.1	9.8	-9.8	1.0000	17.5	0.9981	21.4			1	6	
343		PRUDENCIA13813.800		13.800	3	17.5	-1.1	9.8	-9.8	1.0000	17.5	0.9981	21.4			1	6	
521		TCARIBE 13.813.800		13.800	G1	15.0	4.5	12.5	0.0	1.0000	15.7	0.9574	20.9			1	6	
521		TCARIBE 13.813.800		13.800	G2	15.0	4.5	12.5	0.0	1.0000	15.7	0.9574	20.9			1	6	
521		TCARIBE 13.813.800		13.800	G3	15.0	4.5	12.5	0.0	1.0000	15.7	0.9574	20.9			1	6	
523		TBALBOA 13A		13.800	G1	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9461	10.9			1	6	
523		TBALBOA 13A		13.800	G2	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9461	10.9			1	6	
523		TBALBOA 13A		13.800	G3	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9461	10.9			1	6	

523	TBALBOA	13A	13.800	G4	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9461	10.9	1	6
523	TBALBOA	13A	13.800	G5	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9461	10.9	1	6
524	TBALBOA	13B	13.800	10	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9461	10.9	1	6
524	TBALBOA	13B	13.800	G6	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9461	10.9	1	6
524	TBALBOA	13B	13.800	G7	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9461	10.9	1	6
524	TBALBOA	13B	13.800	G8	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9461	10.9	1	6
524	TBALBOA	13B	13.800	G9	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9461	10.9	1	6
525	TATLANTIC13A	13.800	G1	36.0	18.2	28.5	0.0	1.0000	40.3	0.8928	47.5	1	6	
SUBSYSTEM TOTALS					1452.1	233.9	952.4	-467.8				2179.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 10:31  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
AÑO 2016 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126	MIR13A	12.000	G1	8.5	0.0	5.0	0.0	1.0465	8.1	1.0000	13.5	2	7					
127	MIR13B	12.000	G2	8.5	0.0	5.0	0.0	1.0465	8.1	1.0000	13.5	2	7					
130	MIR13F	13.800	G5	12.5	4.9	8.0	0.0	1.0000	13.4	0.9319	27.7	2	7					
134	MAD6A	6.9000	G1	9.6	1.1	6.0	-6.0	1.0000	9.7	0.9938	13.0	2	7					
135	MAD6B	6.9000	G2	9.6	1.1	6.0	-6.0	1.0000	9.7	0.9939	13.0	2	7					
136	MAD6C	6.9000	G3	9.6	1.1	6.0	-6.0	1.0000	9.7	0.9939	13.0	2	7					
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9982	4.1	2	7					
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9982	4.1	2	7					
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9982	4.1	2	7					
141	GAT6B	6.9000	G4	3.8	-0.6	3.0	-3.0	1.0000	3.9	0.9868	5.6	2	7					
141	GAT6B	6.9000	G5	3.8	-0.6	3.0	-3.0	1.0000	3.9	0.9868	6.2	2	7					
141	GAT6B	6.9000	G6	3.8	-0.6	3.0	-3.0	1.0000	3.9	0.9868	6.2	2	7					
SUBSYSTEM TOTALS					75.4	6.6	51.0	-33.0			124.2							

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 10:32  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
AÑO 2016 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0104	232.39	14	PRO230	230.00	6	1.0147	233.37				
96	FOR230	230.00	6	1.0052	231.20	100	BAY230	230.00	6	1.0096	232.21				
117	STA RITA230	230.00	6	1.0053	231.21	144	CANJ230	230.00	6	1.0062	231.43				
147	GUASQ230	230.00	6	1.0060	231.38	148	VELAD230	230.00	6	1.0022	230.51				
190	CHANG230	230.00	6	1.0121	232.77	306	CHANG75	230.00	6	1.0104	232.40				
309	CAISAN230	230.00	6	1.0138	233.18	310	CONCEPCION23	230.00	6	1.0147	233.38				
341	NVAEST230	230.00	6	1.0099	232.27	6000	FRONTIER	230.00	6	1.0154	233.55				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9703	223.17	3		PANII230		230.00	6	0.9840	226.32
5		CHO230		230.00	6	0.9744	224.11	8		LSA230		230.00	6	0.9856	226.69
103		COPESA23		230.00	6	0.9881	227.26	105		PAN-AM23		230.00	6	0.9745	224.14
115		PACORA23		230.00	6	0.9925	228.29	511		LGUIAS230		230.00	6	0.9795	225.29
515		PANPOWER230		230.00	6	0.9870	227.02								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 10:32  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
AÑO 2016 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0104	116.20	4		PANIII115		115.00	6	1.0195	117.24
6		CHO115		115.00	6	1.0047	115.54	12		M.N115		115.00	6	1.0091	116.05
15		PRO115		115.00	6	1.0118	116.36	18		CAC115		115.00	6	1.0095	116.10
19		C.V115		115.00	6	1.0058	115.67	20		CH.AZUL		115.00	6	1.0079	115.91
23		CH115		115.00	6	1.0094	116.08	33		STM115		115.00	6	1.0083	115.95
48		TINAJ115		115.00	6	1.0054	115.62	50		M.O115		115.00	6	1.0058	115.67
52		TOC115		115.00	6	1.0159	116.83	54		LM115		115.00	6	1.0281	118.24
55		LM2115		115.00	6	1.0291	118.34	61		FFIELD		115.00	9	1.0196	117.26
87		CAL115		115.00	6	1.0267	118.07	88		EST115		115.00	6	1.0314	118.62
92		L.V115		115.00	6	1.0285	118.28	109		STA RITA115		115.00	6	1.0211	117.43
123		MIR115		115.00	7	1.0085	115.98	154		CEMPAN15		115.00	6	1.0299	118.44
191		CHANG115		115.00	6	1.0034	115.39	522		TBALBOA 115		115.00	6	1.0289	118.32

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	0.9895	113.79	21		C.BAN115		115.00	6	0.9981	114.78
26		LOC115		115.00	6	0.9992	114.91	30		MAR115		115.00	6	0.9969	114.65
37		SAN115		115.00	6	0.9972	114.68								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 10:33  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV AREA TOTALS  
AÑO 2016 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
			29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	SALVADOR		911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
			100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	HONDURAS		1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
			55.8	290.6	-188.3	0.0	302.8	-5.2	261.6	
4	NICA		538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
			33.1	224.5	-98.8	0.0	143.2	-96.8	147.4	
5	C.RICA		1344.3	1324.8	0.0	0.0	0.0	-0.6	20.1	0.0
			275.5	569.4	-236.8	0.0	467.4	48.2	362.1	

6	1452.1	1293.9	0.0	0.0	0.0	110.9	47.3	25.0
PANAMA	233.9	324.3	-123.6	0.0	525.2	49.0	509.5	
7	75.4	44.0	0.0	0.0	0.0	30.0	1.4	50.0
ACANAL	6.6	11.0	0.0	0.0	0.0	-14.2	9.7	
9	0.0	139.9	0.0	0.0	0.0	-140.4	0.5	-75.0
COLON	0.0	35.1	0.0	0.0	1.1	-37.3	3.4	
TOTALS	6676.2	6529.4	0.0	0.0	0.0	0.0	146.8	0.0
	735.4	1986.7	-971.8	0.0	2072.6	0.0	1793.1	

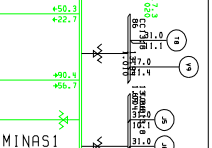
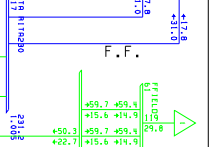
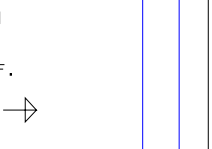
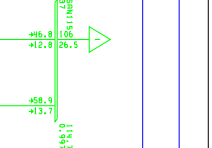
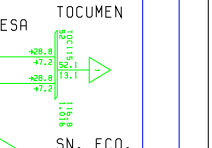
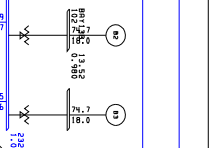
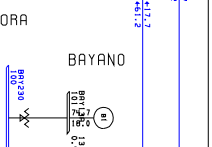
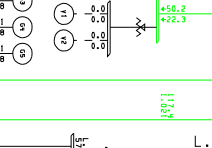
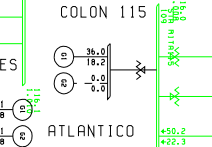
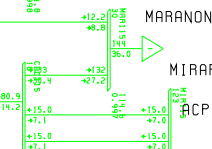
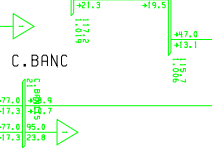
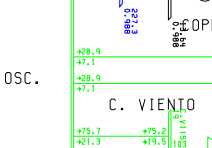
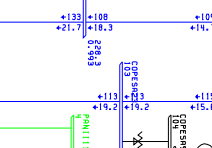
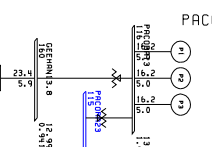
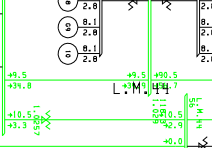
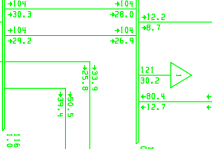
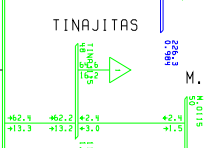
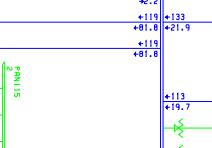
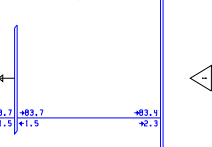
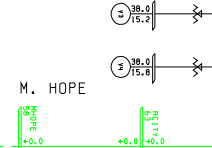
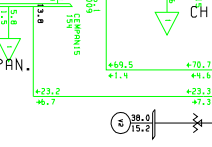
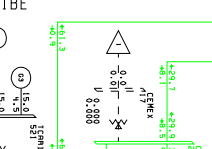
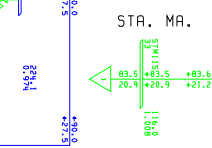
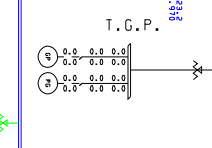
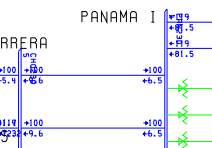
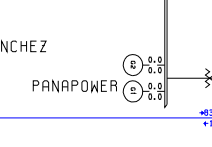
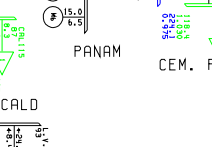
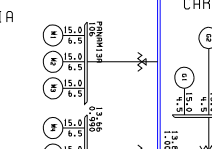
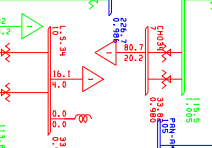
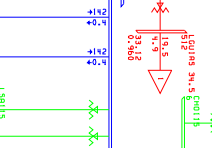
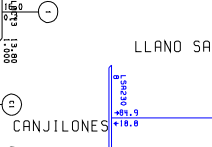
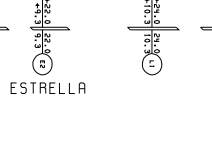
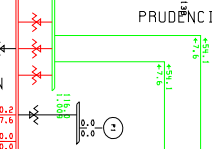
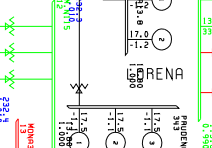
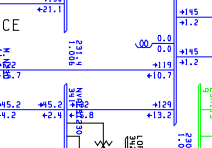
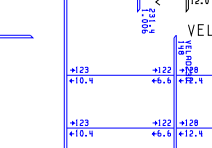
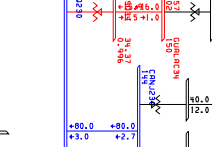
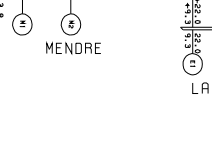
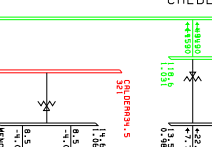
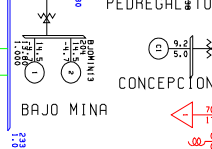
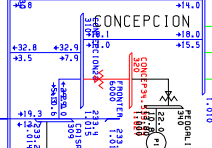
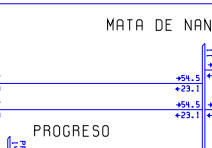
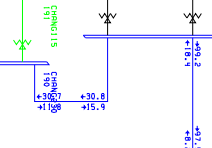
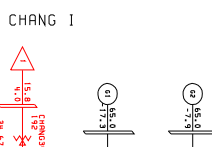
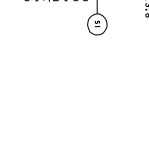
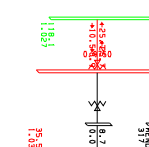
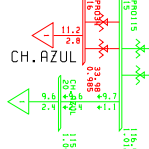
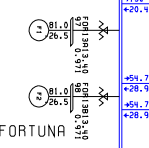
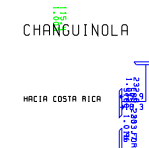
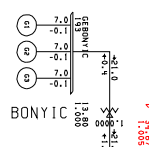
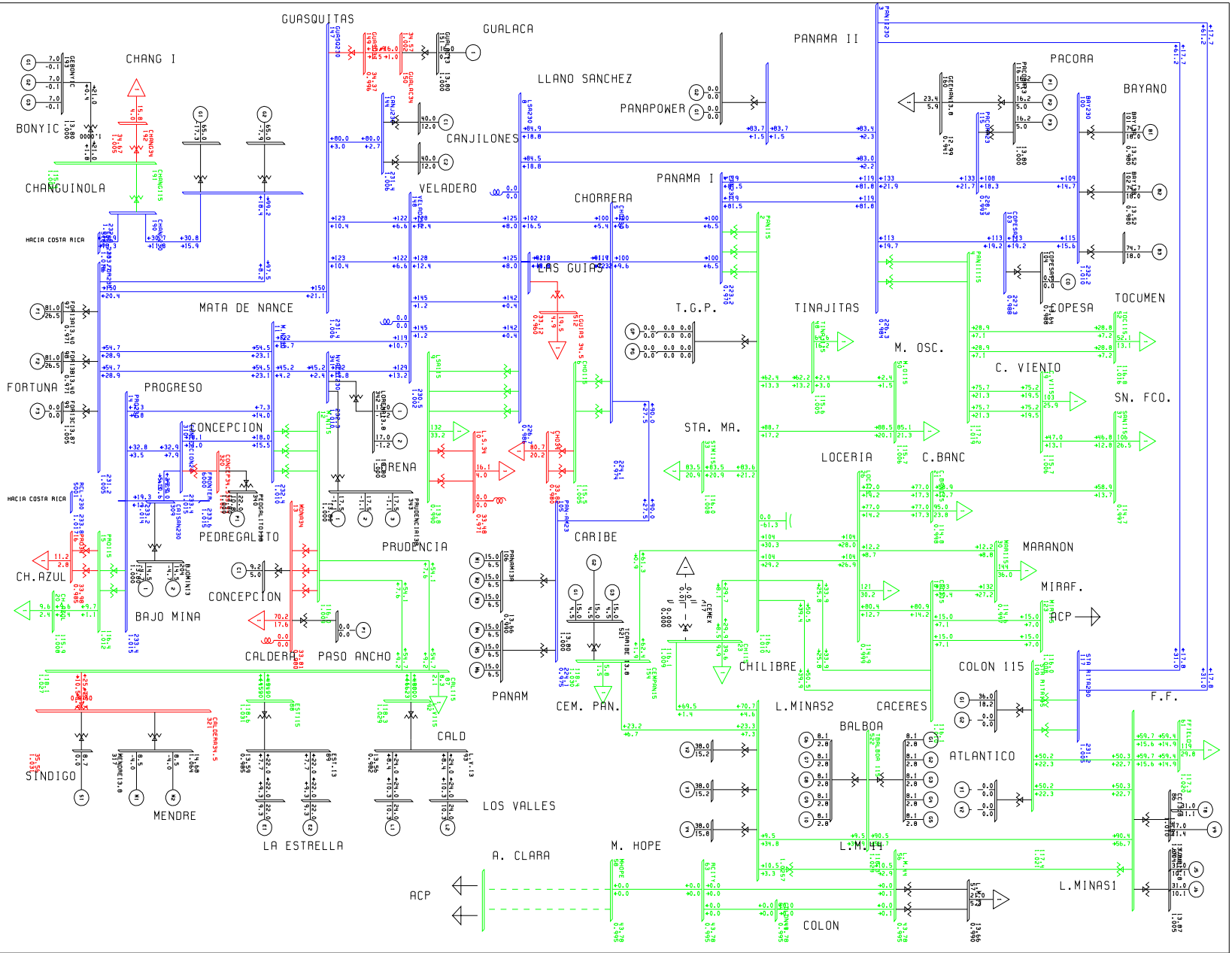
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 10:33  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV SHUNT  
AÑO 2016 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X--	NAME	--X	BASKV	N	O	M	I	N	A	L	
					MW	MVAR	VOLTAGE					
2		PAN115		115.00	0.0	60.0	1.0104	SWITCHED				
4		PANII115		115.00	0.0	60.0	1.0195	SWITCHED				
8		LSA230		230.00	0.0	0.0	0.9856	SWITCHED				
10		L.S.34		34.500	0.0	0.0	0.9705	SWITCHED				
13		MDNA34		34.500	0.0	0.0	0.9801	SWITCHED				
148		VELAD230		230.00	0.0	0.0	1.0022	SWITCHED				

P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
 R 0 2016 TBRUBA, TARBIBE Y TRLANTICO (EN STA RITR 115)  
 MON, OCT 01 2007 8:28

KV:14 .435 .4115

BUS - VOLTAGE (KV/PU)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR



**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007**  
**AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA VERANO**  
**Actualización**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	38.0	12.9	17.0	0.0	1.0100	39.7	0.9466	47.0			1	6	
67		BLM13C		13.800	V3	38.0	12.9	17.0	0.0	1.0100	39.7	0.9466	47.0			1	6	
68		BLM13D		13.800	V4	38.0	13.4	30.0	0.0	1.0100	39.9	0.9427	47.0			1	6	
70		TGJB13A		13.800	J5	31.0	8.7	20.0	0.0	1.0100	31.9	0.9626	39.4			1	6	
71		TGJB13B		13.800	J6	31.0	8.7	20.0	0.0	1.0100	31.9	0.9626	39.4			1	6	
72		BLMCCA		13.800	T8	31.0	9.7	20.0	0.0	1.0100	32.1	0.9548	50.0			1	6	
73		BLMCCB		13.800	V9	47.0	10.0	40.0	0.0	1.0100	47.6	0.9782	71.0			1	6	
90		EST-13L		13.800	E1	22.0	8.7	12.0	-5.0	1.0100	23.4	0.9293	27.0			1	6	
91		EST-13T		13.800	E2	22.0	8.7	12.0	-5.0	1.0100	23.4	0.9293	27.0			1	6	
94		LV-13.8L		13.800	L1	24.0	9.7	12.0	-5.0	1.0100	25.6	0.9269	27.0			1	6	
95		LV-13.8T		13.800	L2	24.0	9.7	12.0	-5.0	1.0100	25.6	0.9269	27.0			1	6	
97		FOR13A		13.800	F1	80.0	-33.2	50.0	-50.0	0.9710	89.2	0.9235	111.0			1	6	
98		FOR13B		13.800	F2	80.0	-33.2	50.0	-50.0	0.9710	89.2	0.9235	111.0			1	6	
101		BAY13A		13.800	B1	74.1	13.8	50.0	-25.0	0.9800	76.9	0.9831	96.0			1	6	SYST
102		BAY13B		13.800	B2	74.7	13.9	50.0	-25.0	0.9800	77.5	0.9832	96.0			1	6	
106		PANAM13A		13.800	M1	15.0	4.9	9.0	0.0	0.9900	15.9	0.9507	20.7			1	6	
106		PANAM13A		13.800	M2	15.0	4.9	9.0	0.0	0.9900	15.9	0.9507	20.7			1	6	
106		PANAM13A		13.800	M3	15.0	4.9	9.0	0.0	0.9900	15.9	0.9507	20.7			1	6	
107		PANAM13B		13.800	M4	15.0	4.9	9.0	0.0	0.9900	15.9	0.9507	20.7			1	6	
107		PANAM13B		13.800	M5	15.0	4.9	9.0	0.0	0.9900	15.9	0.9507	20.7			1	6	
107		PANAM13B		13.800	M6	15.0	4.9	9.0	0.0	0.9900	15.9	0.9507	20.7			1	6	
108		BAY13C		13.800	B3	74.7	13.9	50.0	-25.0	0.9800	77.5	0.9832	100.0			1	6	
116		PACORA13		13.800	P1	16.2	3.6	8.8	0.0	1.0000	16.6	0.9761	21.7			1	6	
116		PACORA13		13.800	P2	16.2	3.6	8.8	0.0	1.0000	16.6	0.9761	21.7			1	6	
116		PACORA13		13.800	P3	16.2	3.6	8.8	0.0	1.0000	16.6	0.9761	21.7			1	6	
142		CANJ13A		13.800	C1	40.0	10.5	29.0	-29.0	1.0000	41.4	0.9670	69.0			1	6	
143		CANJ13B		13.800	C2	40.0	10.5	29.0	-29.0	1.0000	41.4	0.9670	69.0			1	6	
151		GUALAC13		13.800	1	16.0	-0.7	10.0	-10.0	1.0000	16.0	0.9992	26.7			1	6	
193		GEBOYIC		13.800	G1	7.0	-0.5	4.0	-4.0	1.0000	7.0	0.9978	35.3			1	6	
193		GEBOYIC		13.800	G2	7.0	-0.5	4.0	-4.0	1.0000	7.0	0.9978	35.3			1	6	
193		GEBOYIC		13.800	G3	7.0	-0.5	4.0	-4.0	1.0000	7.0	0.9978	35.3			1	6	
204		BJOMIN13		13.800	1	12.0	-6.5	13.0	-13.0	1.0000	13.6	0.8799	28.9			1	6	
204		BJOMIN13		13.800	2	12.0	-6.5	13.0	-13.0	1.0000	13.6	0.8799	28.9			1	6	
303		SIND13.8		13.800	S1	6.2	0.0	50.0	0.0	1.0851	5.7	1.0000	13.5			1	6	
307		CHANG75A		13.800	G1	65.0	-21.8	22.0	-22.0	0.9900	69.2	0.9482	118.6			1	6	
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0670	8.8	0.9048	35.3			1	6	
317		MENDRE13.8		13.800	M2	8.5	-4.0	4.0	-4.0	1.0670	8.8	0.9048	35.3			1	6	
340		PEDGALITO138		13.800	P1	22.0	9.3	12.0	-5.0	1.0000	23.9	0.9205	27.0			1	6	
342		LORENA13.8		13.800	1	17.0	-2.6	12.0	-5.0	1.0000	17.2	0.9884	27.0			1	6	
342		LORENA13.8		13.800	2	17.0	-2.6	12.0	-5.0	1.0000	17.2	0.9884	27.0			1	6	
343		PRUDENCIA138		13.800	1	17.5	-2.5	9.8	-9.8	1.0000	17.7	0.9899	21.4			1	6	
343		PRUDENCIA138		13.800	2	17.5	-2.5	9.8	-9.8	1.0000	17.7	0.9899	21.4			1	6	
343		PRUDENCIA138		13.800	3	17.5	-2.5	9.8	-9.8	1.0000	17.7	0.9899	21.4			1	6	
521		TCARIBE		13.813	800 G1	15.3	3.6	12.5	0.0	1.0000	15.7	0.9740	20.9			1	6	
521		TCARIBE		13.813	800 G2	15.3	3.6	12.5	0.0	1.0000	15.7	0.9740	20.9			1	6	
521		TCARIBE		13.813	800 G3	15.3	3.6	12.5	0.0	1.0000	15.7	0.9740	20.9			1	6	
523		TBALBOA		13A	13.800 G1	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6	
523		TBALBOA		13A	13.800 G2	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6	
523		TBALBOA		13A	13.800 G3	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6	
523		TBALBOA		13A	13.800 G4	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6	
523		TBALBOA		13A	13.800 G5	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9			1	6	



524	TBALBOA	13B	13.800	10	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9	1	6
524	TBALBOA	13B	13.800	G6	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9	1	6
524	TBALBOA	13B	13.800	G7	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9	1	6
524	TBALBOA	13B	13.800	G8	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9	1	6
524	TBALBOA	13B	13.800	G9	8.1	2.1	6.6	-6.6	1.0000	8.4	0.9668	10.9	1	6
525	TATLANTIC13A	13.800	G1	36.5	8.6	28.5	0.0	1.0000	37.5	0.9734	47.5	1	6	
525	TATLANTIC13A	13.800	G2	36.5	8.6	28.5	0.0	1.0000	37.5	0.9734	47.5	1	6	
526	TATLANTIC13B	13.800	V1	18.0	6.9	15.0	0.0	1.0000	19.3	0.9333	25.0	1	6	
526	TATLANTIC13B	13.800	V2	18.0	6.9	15.0	0.0	1.0000	19.3	0.9333	25.0	1	6	
SUBSYSTEM TOTALS					1441.7	164.6	983.9	-440.8				2145.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 10:47  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX VER  
AÑO 2016 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X	T	R	A	N	GENTAP	ZONE	AREA	SWING	
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0509	8.1	1.0000	13.5								2	7	
127		MIR13B		12.000	G2	8.5	0.0	5.0	0.0	1.0509	8.1	1.0000	13.5								2	7	
130		MIR13F		13.800	G5	12.5	3.0	8.0	0.0	1.0000	12.8	0.9731	27.7								2	7	
134		MAD6A		6.9000	G1	9.6	0.8	6.0	-6.0	1.0000	9.6	0.9962	13.0								2	7	
135		MAD6B		6.9000	G2	9.6	0.8	6.0	-6.0	1.0000	9.6	0.9963	13.0								2	7	
136		MAD6C		6.9000	G3	9.6	0.8	6.0	-6.0	1.0000	9.6	0.9963	13.0								2	7	
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1								2	7	
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1								2	7	
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0000	1.9	0.9997	4.1								2	7	
141		GAT6B		6.9000	G4	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9840	5.6								2	7	
141		GAT6B		6.9000	G5	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9840	6.2								2	7	
141		GAT6B		6.9000	G6	3.8	-0.7	3.0	-3.0	1.0000	3.9	0.9840	6.2								2	7	
SUBSYSTEM TOTALS						75.4	3.5	51.0	-33.0				124.2										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 10:47  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX VER  
AÑO 2016 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0020	230.45	11		M.N230		230.00	6	1.0176	234.04
14		PRO230		230.00	6	1.0212	234.87	96		FOR230		230.00	6	1.0127	232.92
100		BAY230		230.00	6	1.0152	233.49	115		PACORA23		230.00	6	1.0005	230.11
117		STA RITA230		230.00	6	1.0142	233.27	144		CANJ230		230.00	6	1.0154	233.54
147		GUASQ230		230.00	6	1.0152	233.50	148		VELAD230		230.00	6	1.0157	233.61
190		CHANG230		230.00	6	1.0164	233.78	306		CHANG75		230.00	6	1.0151	233.48
309		CAISAN230		230.00	6	1.0186	234.29	310		CONCEPCION23		230.00	6	1.0208	234.79

341 NVAEST230 230.00 6 1.0173 233.99 6000 FRONTIER 230.00 6 1.0220 235.06

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9801	225.43	3	PANII230	230.00	6	0.9935	228.51
5	CHO230	230.00	6	0.9855	226.67	103	COPESA23	230.00	6	0.9970	229.31
105	PAN-AM23	230.00	6	0.9856	226.69	511	LGUIAS230	230.00	6	0.9946	228.76
515	PANPOWER230	230.00	6	0.9986	229.68						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 10:48  
 P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX VER  
 Año 2016 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	1.0192	117.21	4	PANIII115	115.00	6	1.0293	118.36
6	CHO115	115.00	6	1.0169	116.94	9	LSA115	115.00	6	1.0068	115.78
12	M.N115	115.00	6	1.0124	116.43	15	PRO115	115.00	6	1.0184	117.12
18	CAC115	115.00	6	1.0183	117.11	19	C.V115	115.00	6	1.0155	116.78
20	CH.AZUL	115.00	6	1.0145	116.67	21	C.BAN115	115.00	6	1.0071	115.82
23	CH115	115.00	6	1.0165	116.90	26	LOC115	115.00	6	1.0083	115.95
30	MAR115	115.00	6	1.0059	115.68	33	STM115	115.00	6	1.0171	116.97
37	SAN115	115.00	6	1.0063	115.73	48	TINAJ115	115.00	6	1.0143	116.64
50	M.O115	115.00	6	1.0147	116.69	52	TOC115	115.00	6	1.0257	117.96
54	LM1115	115.00	6	1.0336	118.86	55	LM2115	115.00	6	1.0343	118.95
61	FFIELD	115.00	9	1.0251	117.89	87	CAL115	115.00	6	1.0289	118.33
88	EST115	115.00	6	1.0334	118.85	92	L.V115	115.00	6	1.0306	118.52
109	STA RITA115	115.00	6	1.0284	118.27	123	MIR115	115.00	7	1.0167	116.93
154	CEMPAN15	115.00	6	1.0349	119.01	191	CHANG115	115.00	6	1.0065	115.75
522	TBALBOA 115	115.00	6	1.0342	118.93						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
* NONE *											

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 10:48  
 P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX VER  
 Año 2016 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

X-- AREA	--X GENERATION	FROM TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL	1347.5 1312.2	0.0	0.0	0.0	0.0	35.2	0.0
		29.8 349.5	-266.2	0.0	412.9	17.9	341.4	
2	SALVADOR	911.8 902.0	0.0	0.0	0.0	0.0	9.8	0.0
		100.8 182.3	-58.1	0.0	219.9	38.4	158.1	
3	HONDURAS	1006.8 985.5	0.0	0.0	0.0	0.0	21.4	0.0
		55.7 290.6	-188.3	0.0	302.8	-5.2	261.6	
4	NICA	538.2 527.1	0.0	0.0	0.0	0.0	11.1	0.0
		32.8 224.5	-98.9	0.0	143.2	-97.0	147.4	
5	C.RICA	1344.3 1324.8	0.0	0.0	0.0	-0.1	19.6	0.0
		263.4 569.4	-237.4	0.0	468.7	41.2	358.8	





**PLAN DE EXPANSIÓN DEL SIN CON CENTROAMÉRICA 2007  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÍNIMA VERANO  
Actualización**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 11:55  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MIN VER  
AÑO 2016 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING	
66		BLM13B		13.800	V2	34.0	1.2	17.0	0.0	0.9900	34.4	0.9994	47.0			1	6		
71		TGJB13B		13.800	J6	31.0	10.5	20.0	0.0	1.0100	32.4	0.9467	39.4			1	6		
90		EST-13L		13.800	E1	22.0	11.6	12.0	-5.0	1.0100	24.6	0.8838	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	12.0	12.0	-5.0	1.0089	26.6	0.8944	27.0			1	6		
97		FOR13A		13.800	F1	89.9	-46.1	50.0	-50.0	0.9710	104.0	0.8898	111.0			1	6	SYST	
106		PANAM13A		13.800	M1	15.0	0.0	9.0	0.0	0.9761	15.4	1.0000	20.7			1	6		
106		PANAM13A		13.800	M2	15.0	0.0	9.0	0.0	0.9761	15.4	1.0000	20.7			1	6		
106		PANAM13A		13.800	M3	14.5	0.0	9.0	0.0	0.9761	14.9	1.0000	20.7			1	6		
107		PANAM13B		13.800	M4	14.5	0.0	9.0	0.0	0.9764	14.9	1.0000	20.7			1	6		
107		PANAM13B		13.800	M5	14.5	0.0	9.0	0.0	0.9764	14.9	1.0000	20.7			1	6		
107		PANAM13B		13.800	M6	14.5	0.0	9.0	0.0	0.9764	14.9	1.0000	20.7			1	6		
116		PACORA13		13.800	P1	15.0	0.0	8.8	0.0	1.0037	14.9	1.0000	21.7			1	6		
116		PACORA13		13.800	P2	15.0	0.0	8.8	0.0	1.0037	14.9	1.0000	21.7			1	6		
116		PACORA13		13.800	P3	15.0	0.0	8.8	0.0	1.0037	14.9	1.0000	21.7			1	6		
142		CANJ13A		13.800	C1	36.0	7.3	29.0	-29.0	1.0000	36.7	0.9800	69.0			1	6		
151		GUALAC13		13.800	1	16.0	-1.9	10.0	-10.0	1.0000	16.1	0.9929	26.7			1	6		
193		GEBOYIC		13.800	G1	7.0	-3.4	4.0	-4.0	1.0000	7.8	0.9014	35.3			1	6		
193		GEBOYIC		13.800	G2	7.0	-3.4	4.0	-4.0	1.0000	7.8	0.9014	35.3			1	6		
303		SIND13.8		13.800	S1	5.4	0.0	50.0	0.0	1.0789	5.0	1.0000	13.5			1	6		
317		MENDRE13.8		13.800	M1	7.1	-4.0	4.0	-4.0	1.0609	7.7	0.8712	35.3			1	6		
317		MENDRE13.8		13.800	M2	7.1	-4.0	4.0	-4.0	1.0609	7.7	0.8712	35.3			1	6		
340		PEDGALITO138		13.800	P1	18.5	5.7	12.0	-5.0	1.0000	19.4	0.9550	27.0			1	6		
521		TCARIBE		13.813	G1	14.2	1.7	12.5	0.0	1.0000	14.3	0.9928	20.9			1	6		
521		TCARIBE		13.813	G2	14.2	1.7	12.5	0.0	1.0000	14.3	0.9928	20.9			1	6		
523		TBALBOA		13A	G1	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9834	10.9			1	6		
523		TBALBOA		13A	G2	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9834	10.9			1	6		
523		TBALBOA		13A	G3	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9834	10.9			1	6		
523		TBALBOA		13A	G4	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9834	10.9			1	6		
523		TBALBOA		13A	G5	8.1	1.5	6.6	-6.6	1.0000	8.2	0.9834	10.9			1	6		
526		TATLANTIC13B		13.800	V1	18.0	8.0	15.0	0.0	1.0000	19.7	0.9131	25.0			1	6		
SUBSYSTEM TOTALS						524.9	4.6	381.3	-152.8				839.4						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 11:55  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MIN VER  
AÑO 2016 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126		MIR13A		12.000	G1	8.5	0.0	5.0	0.0	1.0742	7.9	1.0000	13.5			2	7	

127	MIR13B	12.000	G2	8.5	0.0	5.0	0.0	1.0742	7.9	1.0000	13.5	2	7
130	MIR13F	13.800	G5	12.5	0.0	8.0	0.0	1.0155	12.3	1.0000	27.7	2	7
134	MAD6A	6.9000	G1	9.6	-0.5	6.0	-6.0	1.0000	9.6	0.9986	13.0	2	7
135	MAD6B	6.9000	G2	9.6	-0.5	6.0	-6.0	1.0000	9.6	0.9987	13.0	2	7
136	MAD6C	6.9000	G3	9.6	-0.5	6.0	-6.0	1.0000	9.6	0.9987	13.0	2	7
140	GAT6A	6.9000	G1	1.9	-0.4	2.0	-2.0	1.0000	1.9	0.9762	4.1	2	7
140	GAT6A	6.9000	G2	1.9	-0.4	2.0	-2.0	1.0000	1.9	0.9762	4.1	2	7
140	GAT6A	6.9000	G3	1.9	-0.4	2.0	-2.0	1.0000	1.9	0.9762	4.1	2	7
141	GAT6B	6.9000	G4	3.8	-1.2	3.0	-3.0	1.0000	4.0	0.9558	5.6	2	7
141	GAT6B	6.9000	G5	3.8	-1.2	3.0	-3.0	1.0000	4.0	0.9558	6.2	2	7
141	GAT6B	6.9000	G6	3.8	-1.2	3.0	-3.0	1.0000	4.0	0.9558	6.2	2	7
SUBSYSTEM TOTALS				75.4	-6.3	51.0	-33.0				124.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 11:55  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MIN VER  
Año 2016 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115)

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0021	230.48	3		PANII230		230.00	6	1.0093	232.14
5		CHO230		230.00	6	1.0063	231.45	8		LSA230		230.00	6	1.0117	232.70
11		M.N230		230.00	6	1.0303	236.97	14		PRO230		230.00	6	1.0346	237.95
96		FOR230		230.00	6	1.0283	236.51	100		BAY230		230.00	6	1.0133	233.05
103		COPESA23		230.00	6	1.0104	232.39	105		PAN-AM23		230.00	6	1.0063	231.45
115		PACORA23		230.00	6	1.0114	232.63	117		STA RITA230		230.00	6	1.0261	236.00
144		CANJ230		230.00	6	1.0293	236.74	147		GUASQ230		230.00	6	1.0292	236.72
148		VELAD230		230.00	6	1.0255	235.85	190		CHANG230		230.00	6	1.0340	237.82
306		CHANG75		230.00	6	1.0350	238.04	309		CAISAN230		230.00	6	1.0357	238.20
310		CONCEPCION230		230.00	6	1.0348	238.00	341		NVAEST230		230.00	6	1.0304	236.99
511		LGUIAS230		230.00	6	1.0115	232.65	6000		FRONTER		230.00	6	1.0347	237.99

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
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• NONE \*





1	1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
GUATEMAL	29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
SALVADOR	100.8	182.3	-58.1	0.0	219.9	38.3	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
HONDURAS	55.6	290.6	-188.3	0.0	302.9	-5.3	261.6	
4	538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
NICA	32.3	224.5	-98.9	0.0	143.3	-97.4	147.3	
5	1344.3	1324.8	0.0	0.0	0.0	0.2	19.3	0.0
C.RICA	240.7	569.4	-236.3	0.0	470.9	21.7	356.9	
6	524.9	517.5	0.0	0.0	0.0	-0.3	7.6	25.0
PANAMA	4.6	129.7	179.4	0.0	478.9	62.9	111.5	
7	75.4	17.6	0.0	0.0	0.0	56.1	1.7	50.0
ACANAL	-6.3	4.4	0.0	0.0	0.0	-24.6	13.9	
9	0.0	56.0	0.0	0.0	0.0	-56.0	0.1	-75.0
COLON	0.0	14.0	0.0	0.0	1.1	-13.4	0.5	
TOTALS	5748.9	5642.7	0.0	0.0	0.0	0.0	106.3	0.0
	457.6	1764.5	-668.4	0.0	2029.8	0.0	1391.3	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 11:56  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MIN VER SHUNT  
Año 2016 TBALBOA, TCARIBE Y TATLANTICO (EN STA RITA 115) SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X--	NAME	--X	BASKV	N O M I N A L		VOLTAGE	
					MW	MVAR		
2		PAN115		115.00	0.0	0.0	1.0476	SWITCHED
4		PANII115		115.00	0.0	0.0	1.0431	SWITCHED
8		LSA230		230.00	0.0	-60.0	1.0117	SWITCHED
10		L.S.34		34.500	0.0	-20.0	0.9727	SWITCHED
13		MDNA34		34.500	0.0	-40.0	0.9485	SWITCHED
148		VELAD230		230.00	0.0	-60.0	1.0255	SWITCHED



**PLAN DE EXPANSIÓN DEL SIN**  
**AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO**  
**Contingencia 1: Panamá - Cemento Panamá**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	38.0	15.7	17.0	0.0	1.0100	40.7	0.9245	47.0			1	6	
67		BLM13C		13.800	V3	38.0	15.7	17.0	0.0	1.0100	40.7	0.9245	47.0			1	6	
68		BLM13D		13.800	V4	38.0	16.3	30.0	0.0	1.0100	40.9	0.9189	47.0			1	6	
70		TGJB13A		13.800	J5	31.0	10.5	20.0	0.0	1.0100	32.4	0.9470	39.4			1	6	
71		TGJB13B		13.800	J6	31.0	10.5	20.0	0.0	1.0100	32.4	0.9470	39.4			1	6	
72		BLMCCA		13.800	T8	31.0	11.5	20.0	0.0	1.0100	32.7	0.9380	50.0			1	6	
73		BLMCCB		13.800	V9	47.0	11.8	40.0	0.0	1.0100	48.0	0.9700	71.0			1	6	
90		EST-13L		13.800	E1	22.0	9.4	12.0	-5.0	1.0100	23.7	0.9192	27.0			1	6	
91		EST-13T		13.800	E2	22.0	9.4	12.0	-5.0	1.0100	23.7	0.9192	27.0			1	6	
94		LV-13.8L		13.800	L1	24.0	10.4	12.0	-5.0	1.0100	25.9	0.9169	27.0			1	6	
95		LV-13.8T		13.800	L2	24.0	10.4	12.0	-5.0	1.0100	25.9	0.9169	27.0			1	6	
97		FOR13A		13.800	F1	81.0	-26.0	50.0	-50.0	0.9710	87.6	0.9523	111.0			1	6	
98		FOR13B		13.800	F2	81.0	-26.0	50.0	-50.0	0.9710	87.6	0.9523	111.0			1	6	
101		BAY13A		13.800	B1	75.9	19.6	50.0	-25.0	0.9800	80.0	0.9684	96.0			1	6	SYST
102		BAY13B		13.800	B2	74.7	19.4	50.0	-25.0	0.9800	78.8	0.9678	96.0			1	6	
106		PANAM13A		13.800	M1	15.0	6.9	9.0	0.0	0.9900	16.7	0.9078	20.7			1	6	
106		PANAM13A		13.800	M2	15.0	6.9	9.0	0.0	0.9900	16.7	0.9078	20.7			1	6	
106		PANAM13A		13.800	M3	15.0	6.9	9.0	0.0	0.9900	16.7	0.9078	20.7			1	6	
107		PANAM13B		13.800	M4	15.0	6.9	9.0	0.0	0.9900	16.7	0.9078	20.7			1	6	
107		PANAM13B		13.800	M5	15.0	6.9	9.0	0.0	0.9900	16.7	0.9078	20.7			1	6	
107		PANAM13B		13.800	M6	15.0	6.9	9.0	0.0	0.9900	16.7	0.9078	20.7			1	6	
108		BAY13C		13.800	B3	74.7	19.4	50.0	-25.0	0.9800	78.8	0.9678	100.0			1	6	
116		PACORA13		13.800	P1	16.2	5.5	8.8	0.0	1.0000	17.1	0.9460	21.7			1	6	
116		PACORA13		13.800	P2	16.2	5.5	8.8	0.0	1.0000	17.1	0.9460	21.7			1	6	
116		PACORA13		13.800	P3	16.2	5.5	8.8	0.0	1.0000	17.1	0.9460	21.7			1	6	
142		CANJ13A		13.800	C1	40.0	12.1	29.0	-29.0	1.0000	41.8	0.9569	69.0			1	6	
143		CANJ13B		13.800	C2	40.0	12.1	29.0	-29.0	1.0000	41.8	0.9569	69.0			1	6	
151		GUALAC13		13.800	1	16.0	0.3	10.0	-10.0	1.0000	16.0	0.9999	26.7			1	6	
193		GEBOYIC		13.800	G1	7.0	-0.1	4.0	-4.0	1.0000	7.0	0.9998	35.3			1	6	
193		GEBOYIC		13.800	G2	7.0	-0.1	4.0	-4.0	1.0000	7.0	0.9998	35.3			1	6	
193		GEBOYIC		13.800	G3	7.0	-0.1	4.0	-4.0	1.0000	7.0	0.9998	35.3			1	6	
204		BJOMIN13		13.800	1	14.5	-4.5	13.0	-13.0	1.0000	15.2	0.9552	28.9			1	6	
204		BJOMIN13		13.800	2	14.5	-4.5	13.0	-13.0	1.0000	15.2	0.9552	28.9			1	6	
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9361	11.2	0.8784	13.5			1	6	
303		SIND13.8		13.800	S1	8.7	0.0	50.0	0.0	1.0816	8.0	1.0000	13.5			1	6	
307		CHANG75A		13.800	G1	65.0	-17.1	22.0	-22.0	0.9900	67.9	0.9671	118.6			1	6	
308		CHANG75B		13.800	G2	65.0	-7.7	22.0	-22.0	1.0000	65.5	0.9931	118.6			1	6	
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0636	8.8	0.9048	35.3			1	6	
317		MENDRE13.8		13.800	M2	8.5	-4.0	4.0	-4.0	1.0636	8.8	0.9048	35.3			1	6	
340		PEDGALITO13813.800		13.800	P1	22.0	10.9	12.0	-5.0	1.0000	24.6	0.8957	27.0			1	6	
342		LORENA13.8		13.800	1	17.0	-1.0	12.0	-5.0	1.0000	17.0	0.9982	27.0			1	6	
342		LORENA13.8		13.800	2	17.0	-1.0	12.0	-5.0	1.0000	17.0	0.9982	27.0			1	6	
343		PRUDENCIA13813.800		13.800	1	17.5	-0.9	9.8	-9.8	1.0000	17.5	0.9985	21.4			1	6	
343		PRUDENCIA13813.800		13.800	2	17.5	-0.9	9.8	-9.8	1.0000	17.5	0.9985	21.4			1	6	
343		PRUDENCIA13813.800		13.800	3	17.5	-0.9	9.8	-9.8	1.0000	17.5	0.9985	21.4			1	6	
521		TCARIBE 13.813.800		13.800	G1	15.0	3.4	12.5	0.0	1.0000	15.4	0.9755	20.9			1	6	
521		TCARIBE 13.813.800		13.800	G2	15.0	3.4	12.5	0.0	1.0000	15.4	0.9755	20.9			1	6	
521		TCARIBE 13.813.800		13.800	G3	15.0	3.4	12.5	0.0	1.0000	15.4	0.9755	20.9			1	6	
523		TBALBOA 13A		13.800	G1	8.1	2.9	6.6	-6.6	1.0000	8.6	0.9405	10.9			1	6	
523		TBALBOA 13A		13.800	G2	8.1	2.9	6.6	-6.6	1.0000	8.6	0.9405	10.9			1	6	
523		TBALBOA 13A		13.800	G3	8.1	2.9	6.6	-6.6	1.0000	8.6	0.9405	10.9			1	6	

523	TBALBOA	13A	13.800	G4	8.1	2.9	6.6	-6.6	1.0000	8.6	0.9405	10.9	1	6
523	TBALBOA	13A	13.800	G5	8.1	2.9	6.6	-6.6	1.0000	8.6	0.9405	10.9	1	6
524	TBALBOA	13B	13.800	10	8.1	2.9	6.6	-6.6	1.0000	8.6	0.9405	10.9	1	6
524	TBALBOA	13B	13.800	G6	8.1	2.9	6.6	-6.6	1.0000	8.6	0.9405	10.9	1	6
524	TBALBOA	13B	13.800	G7	8.1	2.9	6.6	-6.6	1.0000	8.6	0.9405	10.9	1	6
524	TBALBOA	13B	13.800	G8	8.1	2.9	6.6	-6.6	1.0000	8.6	0.9405	10.9	1	6
524	TBALBOA	13B	13.800	G9	8.1	2.9	6.6	-6.6	1.0000	8.6	0.9405	10.9	1	6
525	TATLANTIC13A	13.800	G1	36.0	19.7	28.5	0.0	1.0000	41.0	0.8771	47.5	1	6	
SUBSYSTEM TOTALS					1453.3	248.9	952.4	-467.8				2179.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:21  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
AÑO 2016 CONTINGENCIA PANAMÁ-CEMENTO PANAMÁ

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126	MIR13A	12.000	G1	8.5	0.0	5.0	0.0	1.0441	8.1	1.0000	13.5	2	7					
127	MIR13B	12.000	G2	8.5	0.0	5.0	0.0	1.0441	8.1	1.0000	13.5	2	7					
130	MIR13F	13.800	G5	12.5	5.9	8.0	0.0	1.0000	13.8	0.9035	27.7	2	7					
134	MAD6A	6.9000	G1	9.6	1.2	6.0	-6.0	1.0000	9.7	0.9922	13.0	2	7					
135	MAD6B	6.9000	G2	9.6	1.2	6.0	-6.0	1.0000	9.7	0.9923	13.0	2	7					
136	MAD6C	6.9000	G3	9.6	1.2	6.0	-6.0	1.0000	9.7	0.9923	13.0	2	7					
140	GAT6A	6.9000	G1	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9968	4.1	2	7					
140	GAT6A	6.9000	G2	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9968	4.1	2	7					
140	GAT6A	6.9000	G3	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9968	4.1	2	7					
141	GAT6B	6.9000	G4	3.8	-0.6	3.0	-3.0	1.0000	3.8	0.9883	5.6	2	7					
141	GAT6B	6.9000	G5	3.8	-0.6	3.0	-3.0	1.0000	3.8	0.9883	6.2	2	7					
141	GAT6B	6.9000	G6	3.8	-0.6	3.0	-3.0	1.0000	3.8	0.9883	6.2	2	7					
SUBSYSTEM TOTALS					75.4	8.2	51.0	-33.0			124.2							

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:21  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
AÑO 2016 CONTINGENCIA PANAMÁ-CEMENTO PANAMÁ

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0097	232.24	14	PRO230	230.00	6	1.0140	233.23				
96	FOR230	230.00	6	1.0046	231.06	100	BAY230	230.00	6	1.0076	231.75				
117	STA RITA230	230.00	6	1.0025	230.57	144	CANJ230	230.00	6	1.0054	231.25				
147	GUASQ230	230.00	6	1.0052	231.19	148	VELAD230	230.00	6	1.0008	230.18				
190	CHANG230	230.00	6	1.0119	232.73	306	CHANG75	230.00	6	1.0102	232.35				
309	CAISAN230	230.00	6	1.0133	233.07	310	CONCEPCION23	230.00	6	1.0141	233.25				
341	NVAEST230	230.00	6	1.0092	232.11	6000	FRONTER	230.00	6	1.0148	233.41				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9662	222.24	3		PANII230		230.00	6	0.9805	225.52
5		CHO230		230.00	6	0.9710	223.33	8		LSA230		230.00	6	0.9832	226.14
103		COPESA23		230.00	6	0.9848	226.51	105		PAN-AM23		230.00	6	0.9712	223.37
115		PACORA23		230.00	6	0.9897	227.62	511		LGUIAS230		230.00	6	0.9767	224.63
515		PANPOWER230		230.00	6	0.9838	226.26								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:21  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
AÑO 2016 CONTINGENCIA PANAMÁ-CEMENTO PANAMÁ

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0055	115.63	4		PANIII115		115.00	6	1.0155	116.78
6		CHO115		115.00	6	1.0010	115.12	12		M.N115		115.00	6	1.0086	115.99
15		PRO115		115.00	6	1.0112	116.29	18		CAC115		115.00	6	1.0046	115.53
19		C.V115		115.00	6	1.0015	115.17	20		CH.AZUL		115.00	6	1.0073	115.84
23		CH115		115.00	6	1.0055	115.63	33		STM115		115.00	6	1.0033	115.38
48		TINAJ115		115.00	6	1.0004	115.05	50		M.O115		115.00	6	1.0008	115.10
52		TOC115		115.00	6	1.0119	116.37	54		LM115		115.00	6	1.0266	118.06
55		LM2115		115.00	6	1.0280	118.22	61		FFIELD		115.00	9	1.0181	117.08
87		CAL115		115.00	6	1.0263	118.03	88		EST115		115.00	6	1.0311	118.58
92		L.V115		115.00	6	1.0282	118.24	109		STA RITA115		115.00	6	1.0185	117.13
123		MIR115		115.00	7	1.0039	115.44	154		CEMPAN15		115.00	6	1.0357	119.10
191		CHANG115		115.00	6	1.0033	115.38	522		TBALBOA 115		115.00	6	1.0276	118.17

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	0.9870	113.51	21		C.BAN115		115.00	6	0.9932	114.22
26		LOC115		115.00	6	0.9943	114.35	30		MAR115		115.00	6	0.9920	114.08
37		SAN115		115.00	6	0.9923	114.12								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:22  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV AREA TOTALS  
AÑO 2016 CONTINGENCIA PANAMÁ-CEMENTO PANAMÁ IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
			29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	SALVADOR		911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
			100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	HONDURAS		1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
			55.8	290.6	-188.3	0.0	302.8	-5.2	261.6	
4	NICA		538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
			33.1	224.5	-98.8	0.0	143.2	-96.8	147.4	
5			1344.3	1324.8	0.0	0.0	0.0	-0.6	20.1	0.0

C.RICA	276.3	569.4	-236.7	0.0	467.3	48.8	362.1	
6	1453.3	1293.9	0.0	0.0	0.0	110.9	48.5	25.0
PANAMA	248.9	324.3	-122.5	0.0	520.9	46.7	521.4	
7	75.4	44.0	0.0	0.0	0.0	30.0	1.4	50.0
ACANAL	8.2	11.0	0.0	0.0	0.0	-12.5	9.7	
9	0.0	139.9	0.0	0.0	0.0	-140.4	0.5	-75.0
COLON	0.0	35.1	0.0	0.0	1.1	-37.3	3.4	
TOTALS	6677.3	6529.4	0.0	0.0	0.0	0.0	148.0	0.0
	752.9	1986.7	-970.7	0.0	2068.1	0.0	1805.0	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:22  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV SHUNT  
AÑO 2016 CONTINGENCIA PANAMÁ-CEMENTO PANAMÁ SUMMARY  
OUTPUT FOR AREA 6 [PANAMA ]

BUS#	X--	NAME	--X	BASKV	N O M I N A L		
					MW	MVAR	VOLTAGE
2		PAN115		115.00	0.0	60.0	1.0055 SWITCHED
4		PANIII115		115.00	0.0	60.0	1.0155 SWITCHED
8		LSA230		230.00	0.0	0.0	0.9832 SWITCHED
10		L.S.34		34.500	0.0	0.0	0.9680 SWITCHED
13		MDNA34		34.500	0.0	0.0	0.9796 SWITCHED
148		VELAD230		230.00	0.0	0.0	1.0008 SWITCHED





PLAN DE EXPANSIÓN DEL SIN  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia 2: Las Minas 2-Chilibre

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	38.0	15.2	17.0	0.0	1.0100	40.5	0.9285	47.0			1	6	
67		BLM13C		13.800	V3	38.0	15.2	17.0	0.0	1.0100	40.5	0.9285	47.0			1	6	
68		BLM13D		13.800	V4	38.0	15.8	30.0	0.0	1.0100	40.8	0.9231	47.0			1	6	
70		TGJB13A		13.800	J5	31.0	10.3	20.0	0.0	1.0100	32.3	0.9493	39.4			1	6	
71		TGJB13B		13.800	J6	31.0	10.3	20.0	0.0	1.0100	32.3	0.9493	39.4			1	6	
72		BLMCCA		13.800	T8	31.0	11.2	20.0	0.0	1.0100	32.6	0.9404	50.0			1	6	
73		BLMCCB		13.800	V9	47.0	11.5	40.0	0.0	1.0100	47.9	0.9712	71.0			1	6	
90		EST-13L		13.800	E1	22.0	9.4	12.0	-5.0	1.0100	23.7	0.9191	27.0			1	6	
91		EST-13T		13.800	E2	22.0	9.4	12.0	-5.0	1.0100	23.7	0.9191	27.0			1	6	
94		LV-13.8L		13.800	L1	24.0	10.5	12.0	-5.0	1.0100	25.9	0.9167	27.0			1	6	
95		LV-13.8T		13.800	L2	24.0	10.5	12.0	-5.0	1.0100	25.9	0.9167	27.0			1	6	
97		FOR13A		13.800	F1	81.0	-25.9	50.0	-50.0	0.9710	87.6	0.9525	111.0			1	6	
98		FOR13B		13.800	F2	81.0	-25.9	50.0	-50.0	0.9710	87.6	0.9525	111.0			1	6	
101		BAY13A		13.800	B1	76.3	19.8	50.0	-25.0	0.9800	80.4	0.9680	96.0			1	6	SYST
102		BAY13B		13.800	B2	74.7	19.6	50.0	-25.0	0.9800	78.8	0.9672	96.0			1	6	
106		PANAM13A		13.800	M1	15.0	7.0	9.0	0.0	0.9900	16.7	0.9062	20.7			1	6	
106		PANAM13A		13.800	M2	15.0	7.0	9.0	0.0	0.9900	16.7	0.9062	20.7			1	6	
106		PANAM13A		13.800	M3	15.0	7.0	9.0	0.0	0.9900	16.7	0.9062	20.7			1	6	
107		PANAM13B		13.800	M4	15.0	7.0	9.0	0.0	0.9900	16.7	0.9062	20.7			1	6	
107		PANAM13B		13.800	M5	15.0	7.0	9.0	0.0	0.9900	16.7	0.9062	20.7			1	6	
107		PANAM13B		13.800	M6	15.0	7.0	9.0	0.0	0.9900	16.7	0.9062	20.7			1	6	
108		BAY13C		13.800	B3	74.7	19.6	50.0	-25.0	0.9800	78.8	0.9672	100.0			1	6	
116		PACORA13		13.800	P1	16.2	5.6	8.8	0.0	1.0000	17.1	0.9449	21.7			1	6	
116		PACORA13		13.800	P2	16.2	5.6	8.8	0.0	1.0000	17.1	0.9449	21.7			1	6	
116		PACORA13		13.800	P3	16.2	5.6	8.8	0.0	1.0000	17.1	0.9449	21.7			1	6	
142		CANJ13A		13.800	C1	40.0	12.2	29.0	-29.0	1.0000	41.8	0.9568	69.0			1	6	
143		CANJ13B		13.800	C2	40.0	12.2	29.0	-29.0	1.0000	41.8	0.9568	69.0			1	6	
151		GUALAC13		13.800	1	16.0	0.3	10.0	-10.0	1.0000	16.0	0.9999	26.7			1	6	
193		GEBOYIC		13.800	G1	7.0	-0.1	4.0	-4.0	1.0000	7.0	0.9998	35.3			1	6	
193		GEBOYIC		13.800	G2	7.0	-0.1	4.0	-4.0	1.0000	7.0	0.9998	35.3			1	6	
193		GEBOYIC		13.800	G3	7.0	-0.1	4.0	-4.0	1.0000	7.0	0.9998	35.3			1	6	
204		BJOMIN13		13.800	1	14.5	-4.5	13.0	-13.0	1.0000	15.2	0.9557	28.9			1	6	
204		BJOMIN13		13.800	2	14.5	-4.5	13.0	-13.0	1.0000	15.2	0.9557	28.9			1	6	
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9361	11.2	0.8784	13.5			1	6	
303		SIND13.8		13.800	S1	8.7	0.0	50.0	0.0	1.0816	8.0	1.0000	13.5			1	6	
307		CHANG75A		13.800	G1	65.0	-17.1	22.0	-22.0	0.9900	67.9	0.9672	118.6			1	6	
308		CHANG75B		13.800	G2	65.0	-7.7	22.0	-22.0	1.0000	65.4	0.9931	118.6			1	6	
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0635	8.8	0.9048	35.3			1	6	
317		MENDRE13.8		13.800	M2	8.5	-4.0	4.0	-4.0	1.0635	8.8	0.9048	35.3			1	6	
340		PEDGALITO13813.800		13.800	P1	22.0	10.9	12.0	-5.0	1.0000	24.6	0.8953	27.0			1	6	
342		LORENA13.8		13.800	1	17.0	-1.0	12.0	-5.0	1.0000	17.0	0.9982	27.0			1	6	
342		LORENA13.8		13.800	2	17.0	-1.0	12.0	-5.0	1.0000	17.0	0.9982	27.0			1	6	
343		PRUDENCIA13813.800		13.800	1	17.5	-0.9	9.8	-9.8	1.0000	17.5	0.9986	21.4			1	6	
343		PRUDENCIA13813.800		13.800	2	17.5	-0.9	9.8	-9.8	1.0000	17.5	0.9986	21.4			1	6	
343		PRUDENCIA13813.800		13.800	3	17.5	-0.9	9.8	-9.8	1.0000	17.5	0.9986	21.4			1	6	
521		TCARIBE 13.813.800		13.800	G1	15.0	4.9	12.5	0.0	1.0000	15.8	0.9508	20.9			1	6	
521		TCARIBE 13.813.800		13.800	G2	15.0	4.9	12.5	0.0	1.0000	15.8	0.9508	20.9			1	6	
521		TCARIBE 13.813.800		13.800	G3	15.0	4.9	12.5	0.0	1.0000	15.8	0.9508	20.9			1	6	
523		TBALBOA 13A		13.800	G1	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9449	10.9			1	6	
523		TBALBOA 13A		13.800	G2	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9449	10.9			1	6	
523		TBALBOA 13A		13.800	G3	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9449	10.9			1	6	

523	TBALBOA	13A	13.800	G4	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9449	10.9	1	6
523	TBALBOA	13A	13.800	G5	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9449	10.9	1	6
524	TBALBOA	13B	13.800	10	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9449	10.9	1	6
524	TBALBOA	13B	13.800	G6	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9449	10.9	1	6
524	TBALBOA	13B	13.800	G7	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9449	10.9	1	6
524	TBALBOA	13B	13.800	G8	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9449	10.9	1	6
524	TBALBOA	13B	13.800	G9	8.1	2.8	6.6	-6.6	1.0000	8.6	0.9449	10.9	1	6
525	TATLANTIC13A	13.800	G1	36.0	19.5	28.5	0.0	1.0000	40.9	0.8797	47.5	1	6	
SUBSYSTEM TOTALS					1453.7	251.2	952.4	-467.8				2179.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:30  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
AÑO 2016 CONTINGENCIA LAS MINAS 2-CHILIBRE

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126	MIR13A	12.000	G1	8.5	0.0	5.0	0.0	1.0437	8.1	1.0000	13.5			2	7	
127	MIR13B	12.000	G2	8.5	0.0	5.0	0.0	1.0437	8.1	1.0000	13.5			2	7	
130	MIR13F	13.800	G5	12.5	6.1	8.0	0.0	1.0000	13.9	0.8983	27.7			2	7	
134	MAD6A	6.9000	G1	9.6	1.2	6.0	-6.0	1.0000	9.7	0.9919	13.0			2	7	
135	MAD6B	6.9000	G2	9.6	1.2	6.0	-6.0	1.0000	9.7	0.9920	13.0			2	7	
136	MAD6C	6.9000	G3	9.6	1.2	6.0	-6.0	1.0000	9.7	0.9920	13.0			2	7	
140	GAT6A	6.9000	G1	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9966	4.1			2	7	
140	GAT6A	6.9000	G2	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9966	4.1			2	7	
140	GAT6A	6.9000	G3	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9966	4.1			2	7	
141	GAT6B	6.9000	G4	3.8	-0.6	3.0	-3.0	1.0000	3.8	0.9886	5.6			2	7	
141	GAT6B	6.9000	G5	3.8	-0.6	3.0	-3.0	1.0000	3.8	0.9886	6.2			2	7	
141	GAT6B	6.9000	G6	3.8	-0.6	3.0	-3.0	1.0000	3.8	0.9886	6.2			2	7	
SUBSYSTEM TOTALS				75.4	8.5	51.0	-33.0				124.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:31  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
AÑO 2016 CONTINGENCIA LAS MINAS 2-CHILIBRE

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0096	232.22	14	PRO230	230.00	6	1.0140	233.21
96	FOR230	230.00	6	1.0045	231.04	100	BAY230	230.00	6	1.0073	231.69
117	STA RITA230	230.00	6	1.0025	230.57	144	CANJ230	230.00	6	1.0053	231.22
147	GUASQ230	230.00	6	1.0051	231.17	148	VELAD230	230.00	6	1.0006	230.14
190	CHANG230	230.00	6	1.0119	232.73	306	CHANG75	230.00	6	1.0102	232.35
309	CAISAN230	230.00	6	1.0133	233.05	310	CONCEPCION230	230.00	6	1.0140	233.23
341	NVAEST230	230.00	6	1.0091	232.09	6000	FRONTER	230.00	6	1.0147	233.39

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9656	222.10	3		PANII230		230.00	6	0.9801	225.41
5		CHO230		230.00	6	0.9705	223.22	8		LSA230		230.00	6	0.9829	226.06
103		COPESA23		230.00	6	0.9844	226.41	105		PAN-AM23		230.00	6	0.9707	223.25
115		PACORA23		230.00	6	0.9893	227.54	511		LGUIAS230		230.00	6	0.9762	224.54
515		PANPOWER230		230.00	6	0.9833	226.17								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:31  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
AÑO 2016 CONTINGENCIA LAS MINAS 2-CHILIBRE

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0046	115.53	4		PANII115		115.00	6	1.0149	116.72
6		CHO115		115.00	6	1.0005	115.06	12		M.N115		115.00	6	1.0085	115.98
15		PRO115		115.00	6	1.0111	116.28	18		CAC115		115.00	6	1.0038	115.44
19		C.V115		115.00	6	1.0008	115.10	20		CH.AZUL		115.00	6	1.0072	115.83
33		STM115		115.00	6	1.0025	115.28	52		TOC115		115.00	6	1.0113	116.30
54		LM1115		115.00	6	1.0276	118.17	55		LM2115		115.00	6	1.0291	118.35
61		FFIELD		115.00	9	1.0191	117.19	87		CAL115		115.00	6	1.0263	118.02
88		EST115		115.00	6	1.0311	118.57	92		L.V115		115.00	6	1.0281	118.23
109		STA RITA115		115.00	6	1.0190	117.18	123		MIR115		115.00	7	1.0031	115.35
154		CEMPAN15		115.00	6	1.0281	118.23	191		CHANG115		115.00	6	1.0033	115.38
522		TBALBOA 115		115.00	6	1.0286	118.29								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	0.9867	113.47	21		C.BAN115		115.00	6	0.9924	114.12
23		CH115		115.00	6	0.9904	113.89	26		LOC115		115.00	6	0.9935	114.25
30		MAR115		115.00	6	0.9911	113.98	37		SAN115		115.00	6	0.9915	114.03
48		TINAJ115		115.00	6	0.9996	114.95	50		M.O115		115.00	6	1.0000	115.00

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:31  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV AREA TOTALS  
AÑO 2016 CONTINGENCIA LAS MINAS 2-CHILIBRE IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
			29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	SALVADOR		911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
			100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	HONDURAS		1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
			55.8	290.6	-188.3	0.0	302.8	-5.2	261.6	
4			538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0

NICA	33.1	224.5	-98.8	0.0	143.2	-96.8	147.4	
5	1344.3	1324.8	0.0	0.0	0.0	-0.6	20.1	0.0
C.RICA	276.4	569.4	-236.7	0.0	467.3	48.9	362.1	
6	1453.7	1293.9	0.0	0.0	0.0	110.9	48.9	25.0
PANAMA	251.2	324.3	-122.4	0.0	521.1	46.3	524.1	
7	75.4	44.0	0.0	0.0	0.0	30.0	1.4	50.0
ACANAL	8.5	11.0	0.0	0.0	0.0	-12.2	9.7	
9	0.0	139.9	0.0	0.0	0.0	-140.4	0.5	-75.0
COLON	0.0	35.1	0.0	0.0	1.1	-37.3	3.4	
TOTALS	6677.7	6529.4	0.0	0.0	0.0	0.0	148.3	0.0
	755.6	1986.7	-970.5	0.0	2068.3	0.0	1807.7	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:31  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV SHUNT  
AÑO 2016 CONTINGENCIA LAS MINAS 2-CHILIBRE SUMMARY

OUTPUT FOR AREA 6 [PANAMA ]

N O M I N A L

BUS#	X--	NAME	--X	BASKV	MW	MVAR	VOLTAGE	
2		PAN115		115.00	0.0	60.0	1.0046	SWITCHED
4		PAN1115		115.00	0.0	60.0	1.0149	SWITCHED
8		LSA230		230.00	0.0	0.0	0.9829	SWITCHED
10		L.S.34		34.500	0.0	0.0	0.9677	SWITCHED
13		MDNA34		34.500	0.0	0.0	0.9795	SWITCHED
148		VELAD230		230.00	0.0	0.0	1.0006	SWITCHED



**PLAN DE EXPANSIÓN DEL SIN  
AÑO 2016 ESCENARIO MODERADO DE DEMANDA MÁXIMA INVIERNO  
Contingencia 3: Las Minas 1 - Santa Rita**

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	38.0	14.6	17.0	0.0	1.0100	40.3	0.9332	47.0			1	6	
67		BLM13C		13.800	V3	38.0	14.6	17.0	0.0	1.0100	40.3	0.9332	47.0			1	6	
68		BLM13D		13.800	V4	38.0	15.2	30.0	0.0	1.0100	40.5	0.9282	47.0			1	6	
70		TGJB13A		13.800	J5	31.0	9.7	20.0	0.0	1.0100	32.2	0.9539	39.4			1	6	
71		TGJB13B		13.800	J6	31.0	9.7	20.0	0.0	1.0100	32.2	0.9539	39.4			1	6	
72		BLMCCA		13.800	T8	31.0	10.7	20.0	0.0	1.0100	32.5	0.9454	50.0			1	6	
73		BLMCCB		13.800	V9	47.0	11.0	40.0	0.0	1.0100	47.8	0.9736	71.0			1	6	
90		EST-13L		13.800	E1	22.0	9.4	12.0	-5.0	1.0100	23.7	0.9201	27.0			1	6	
91		EST-13T		13.800	E2	22.0	9.4	12.0	-5.0	1.0100	23.7	0.9201	27.0			1	6	
94		LV-13.8L		13.800	L1	24.0	10.4	12.0	-5.0	1.0100	25.9	0.9177	27.0			1	6	
95		LV-13.8T		13.800	L2	24.0	10.4	12.0	-5.0	1.0100	25.9	0.9177	27.0			1	6	
97		FOR13A		13.800	F1	81.0	-26.3	50.0	-50.0	0.9710	87.7	0.9512	111.0			1	6	
98		FOR13B		13.800	F2	81.0	-26.3	50.0	-50.0	0.9710	87.7	0.9512	111.0			1	6	
101		BAY13A		13.800	B1	75.1	18.7	50.0	-25.0	0.9800	79.0	0.9704	96.0			1	6	SYST
102		BAY13B		13.800	B2	74.7	18.6	50.0	-25.0	0.9800	78.6	0.9702	96.0			1	6	
106		PANAM13A		13.800	M1	15.0	6.6	9.0	0.0	0.9900	16.6	0.9145	20.7			1	6	
106		PANAM13A		13.800	M2	15.0	6.6	9.0	0.0	0.9900	16.6	0.9145	20.7			1	6	
106		PANAM13A		13.800	M3	15.0	6.6	9.0	0.0	0.9900	16.6	0.9145	20.7			1	6	
107		PANAM13B		13.800	M4	15.0	6.6	9.0	0.0	0.9900	16.6	0.9145	20.7			1	6	
107		PANAM13B		13.800	M5	15.0	6.6	9.0	0.0	0.9900	16.6	0.9145	20.7			1	6	
107		PANAM13B		13.800	M6	15.0	6.6	9.0	0.0	0.9900	16.6	0.9145	20.7			1	6	
108		BAY13C		13.800	B3	74.7	18.6	50.0	-25.0	0.9800	78.6	0.9702	100.0			1	6	
116		PACORA13		13.800	P1	16.2	5.3	8.8	0.0	1.0000	17.0	0.9509	21.7			1	6	
116		PACORA13		13.800	P2	16.2	5.3	8.8	0.0	1.0000	17.0	0.9509	21.7			1	6	
116		PACORA13		13.800	P3	16.2	5.3	8.8	0.0	1.0000	17.0	0.9509	21.7			1	6	
142		CANJ13A		13.800	C1	40.0	12.1	29.0	-29.0	1.0000	41.8	0.9574	69.0			1	6	
143		CANJ13B		13.800	C2	40.0	12.1	29.0	-29.0	1.0000	41.8	0.9574	69.0			1	6	
151		GUALAC13		13.800	1	16.0	0.2	10.0	-10.0	1.0000	16.0	0.9999	26.7			1	6	
193		GEBOYIC		13.800	G1	7.0	-0.1	4.0	-4.0	1.0000	7.0	0.9998	35.3			1	6	
193		GEBOYIC		13.800	G2	7.0	-0.1	4.0	-4.0	1.0000	7.0	0.9998	35.3			1	6	
193		GEBOYIC		13.800	G3	7.0	-0.1	4.0	-4.0	1.0000	7.0	0.9998	35.3			1	6	
204		BJOMIN13		13.800	1	14.5	-4.6	13.0	-13.0	1.0000	15.2	0.9534	28.9			1	6	
204		BJOMIN13		13.800	2	14.5	-4.6	13.0	-13.0	1.0000	15.2	0.9534	28.9			1	6	
301		CONC13.8		13.800	C1	9.2	5.0	5.0	-5.0	0.9364	11.2	0.8784	13.5			1	6	
303		SIND13.8		13.800	S1	8.7	0.0	50.0	0.0	1.0818	8.0	1.0000	13.5			1	6	
307		CHANG75A		13.800	G1	65.0	-17.2	22.0	-22.0	0.9900	67.9	0.9667	118.6			1	6	
308		CHANG75B		13.800	G2	65.0	-7.8	22.0	-22.0	1.0000	65.5	0.9929	118.6			1	6	
317		MENDRE13.8		13.800	M1	8.5	-4.0	4.0	-4.0	1.0638	8.8	0.9048	35.3			1	6	
317		MENDRE13.8		13.800	M2	8.5	-4.0	4.0	-4.0	1.0638	8.8	0.9048	35.3			1	6	
340		PEDGALITO13813.800		13.800	P1	22.0	10.8	12.0	-5.0	1.0000	24.5	0.8970	27.0			1	6	
342		LORENA13.8		13.800	1	17.0	-1.1	12.0	-5.0	1.0000	17.0	0.9979	27.0			1	6	
342		LORENA13.8		13.800	2	17.0	-1.1	12.0	-5.0	1.0000	17.0	0.9979	27.0			1	6	
343		PRUDENCIA13813.800		13.800	1	17.5	-1.0	9.8	-9.8	1.0000	17.5	0.9983	21.4			1	6	
343		PRUDENCIA13813.800		13.800	2	17.5	-1.0	9.8	-9.8	1.0000	17.5	0.9983	21.4			1	6	
343		PRUDENCIA13813.800		13.800	3	17.5	-1.0	9.8	-9.8	1.0000	17.5	0.9983	21.4			1	6	
521		TCARIBE 13.813.800		13.800	G1	15.0	4.5	12.5	0.0	1.0000	15.7	0.9584	20.9			1	6	
521		TCARIBE 13.813.800		13.800	G2	15.0	4.5	12.5	0.0	1.0000	15.7	0.9584	20.9			1	6	
521		TCARIBE 13.813.800		13.800	G3	15.0	4.5	12.5	0.0	1.0000	15.7	0.9584	20.9			1	6	
523		TBALBOA 13A		13.800	G1	8.1	2.6	6.6	-6.6	1.0000	8.5	0.9518	10.9			1	6	
523		TBALBOA 13A		13.800	G2	8.1	2.6	6.6	-6.6	1.0000	8.5	0.9518	10.9			1	6	
523		TBALBOA 13A		13.800	G3	8.1	2.6	6.6	-6.6	1.0000	8.5	0.9518	10.9			1	6	



523	TBALBOA	13A	13.800	G4	8.1	2.6	6.6	-6.6	1.0000	8.5	0.9518	10.9	1	6
523	TBALBOA	13A	13.800	G5	8.1	2.6	6.6	-6.6	1.0000	8.5	0.9518	10.9	1	6
524	TBALBOA	13B	13.800	10	8.1	2.6	6.6	-6.6	1.0000	8.5	0.9518	10.9	1	6
524	TBALBOA	13B	13.800	G6	8.1	2.6	6.6	-6.6	1.0000	8.5	0.9518	10.9	1	6
524	TBALBOA	13B	13.800	G7	8.1	2.6	6.6	-6.6	1.0000	8.5	0.9518	10.9	1	6
524	TBALBOA	13B	13.800	G8	8.1	2.6	6.6	-6.6	1.0000	8.5	0.9518	10.9	1	6
524	TBALBOA	13B	13.800	G9	8.1	2.6	6.6	-6.6	1.0000	8.5	0.9518	10.9	1	6
525	TATLANTIC13A	13.800	G1	36.0	20.3	28.5	0.0	1.0000	41.3	0.8711	47.5	1	6	
SUBSYSTEM TOTALS					1452.5	236.4	952.4	-467.8				2179.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:41  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
AÑO 2016 CONTINGENCIA LAS MINAS 1-SANTA RITA

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
126	MIR13A	12.000	G1	8.5	0.0	5.0	0.0	1.0457	8.1	1.0000	13.5	2	7					
127	MIR13B	12.000	G2	8.5	0.0	5.0	0.0	1.0457	8.1	1.0000	13.5	2	7					
130	MIR13F	13.800	G5	12.5	5.2	8.0	0.0	1.0000	13.5	0.9225	27.7	2	7					
134	MAD6A	6.9000	G1	9.6	1.1	6.0	-6.0	1.0000	9.7	0.9933	13.0	2	7					
135	MAD6B	6.9000	G2	9.6	1.1	6.0	-6.0	1.0000	9.7	0.9933	13.0	2	7					
136	MAD6C	6.9000	G3	9.6	1.1	6.0	-6.0	1.0000	9.7	0.9933	13.0	2	7					
140	GAT6A	6.9000	G1	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9978	4.1	2	7					
140	GAT6A	6.9000	G2	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9978	4.1	2	7					
140	GAT6A	6.9000	G3	1.9	0.1	2.0	-2.0	1.0000	1.9	0.9978	4.1	2	7					
141	GAT6B	6.9000	G4	3.8	-0.6	3.0	-3.0	1.0000	3.8	0.9874	5.6	2	7					
141	GAT6B	6.9000	G5	3.8	-0.6	3.0	-3.0	1.0000	3.8	0.9874	6.2	2	7					
141	GAT6B	6.9000	G6	3.8	-0.6	3.0	-3.0	1.0000	3.8	0.9874	6.2	2	7					
SUBSYSTEM TOTALS					75.4	7.1	51.0	-33.0			124.2							

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:41  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
AÑO 2016 CONTINGENCIA LAS MINAS 1-SANTA RITA

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0101	232.33	14	PRO230	230.00	6	1.0144	233.31				
96	FOR230	230.00	6	1.0050	231.14	100	BAY230	230.00	6	1.0087	231.99				
117	STA RITA230	230.00	6	1.0027	230.62	144	CANJ230	230.00	6	1.0059	231.35				
147	GUASQ230	230.00	6	1.0057	231.30	148	VELAD230	230.00	6	1.0016	230.37				
190	CHANG230	230.00	6	1.0120	232.76	306	CHANG75	230.00	6	1.0103	232.38				
309	CAISAN230	230.00	6	1.0136	233.13	310	CONCEPCION23	230.00	6	1.0145	233.32				
341	NVAEST230	230.00	6	1.0096	232.21	6000	FRONTER	230.00	6	1.0152	233.49				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9688	222.81	3		PANII230		230.00	6	0.9824	225.94
5		CHO230		230.00	6	0.9731	223.81	8		LSA230		230.00	6	0.9846	226.45
103		COPESA23		230.00	6	0.9865	226.91	105		PAN-AM23		230.00	6	0.9732	223.85
115		PACORA23		230.00	6	0.9912	227.98	511		LGUIAS230		230.00	6	0.9784	225.02
515		PANPOWER230		230.00	6	0.9855	226.67								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:41  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV  
AÑO 2016 CONTINGENCIA LAS MINAS 1-SANTA RITA

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0087	116.01	4		PANII115		115.00	6	1.0177	117.04
6		CHO115		115.00	6	1.0033	115.38	12		M.N115		115.00	6	1.0089	116.02
15		PRO115		115.00	6	1.0116	116.33	18		CAC115		115.00	6	1.0079	115.90
19		C.V115		115.00	6	1.0041	115.47	20		CH.AZUL		115.00	6	1.0076	115.88
23		CH115		115.00	6	1.0089	116.02	33		STM115		115.00	6	1.0066	115.76
48		TINAJ115		115.00	6	1.0037	115.43	50		M.O115		115.00	6	1.0041	115.47
52		TOC115		115.00	6	1.0141	116.63	54		LM1115		115.00	6	1.0296	118.40
55		LM2115		115.00	6	1.0304	118.50	61		FFIELD		115.00	9	1.0211	117.42
87		CAL115		115.00	6	1.0265	118.05	88		EST115		115.00	6	1.0313	118.60
92		L.V115		115.00	6	1.0284	118.26	109		STA RITA115		115.00	6	1.0176	117.02
123		MIR115		115.00	7	1.0069	115.79	154		CEMPAN15		115.00	6	1.0302	118.47
191		CHANG115		115.00	6	1.0034	115.39	522		TBALBOA 115		115.00	6	1.0302	118.48

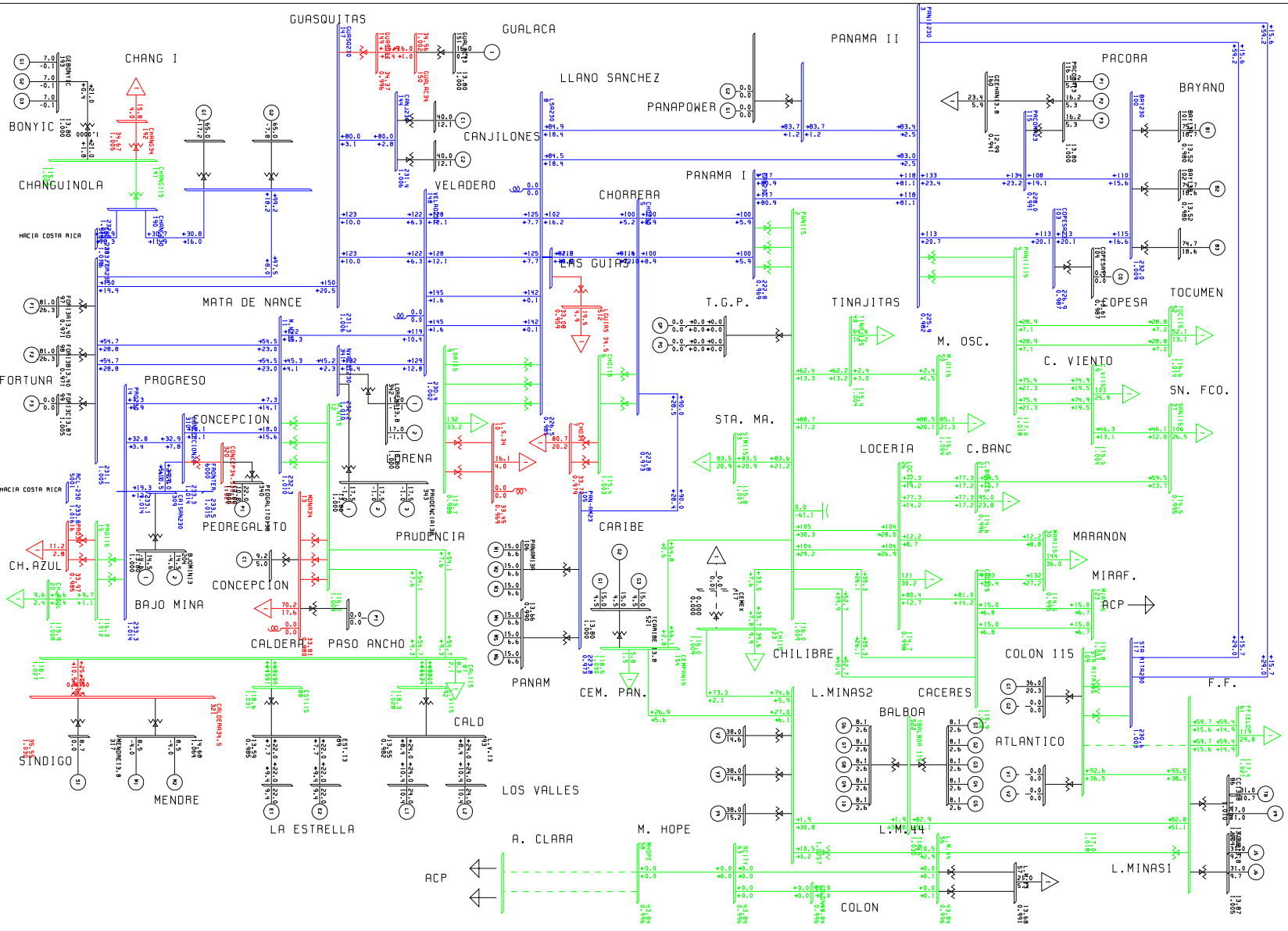
BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	0.9885	113.67	21		C.BAN115		115.00	6	0.9964	114.58
26		LOC115		115.00	6	0.9975	114.72	30		MAR115		115.00	6	0.9952	114.45
37		SAN115		115.00	6	0.9955	114.48								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 01 2007 13:41  
P. EXP-SIN CON C.A. JUNIO 2007 ESC MOD DEM MAX INV AREA TOTALS  
AÑO 2016 CONTINGENCIA LAS MINAS 1-SANTA RITA IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL		1347.5	1312.2	0.0	0.0	0.0	0.0	35.2	0.0
			29.8	349.5	-266.2	0.0	412.9	17.9	341.4	
2	SALVADOR		911.8	902.0	0.0	0.0	0.0	0.0	9.8	0.0
			100.8	182.3	-58.1	0.0	219.9	38.4	158.1	
3	HONDURAS		1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0
			55.8	290.6	-188.3	0.0	302.8	-5.2	261.6	
4	NICA		538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0
			33.1	224.5	-98.8	0.0	143.2	-96.8	147.4	





W...  
 P. EXP-SIN CON G.R. JUNIO 2007 - ESC MOD DEM MAX INV  
 R. O. 2016 CONTINGENCIA LAS KINGS 1-SMTR 817R  
 MON, OCT 01 2007 13:45  
 KY-S14 -435 -4115  
 BUS - VOLTAGE (KV/PV)  
 BRANCH - MW/MVAR  
 EQUIPMENT - MW/MVAR