

ANEXO 40

ANÁLISIS DE ESTADO ESTABLE ESCENARIO REGMTHCB8QA



de

Flujos de Potencia

Caso 1: REGMHTCB8



de

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO**



de

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV

THU, OCT 30 2008 14:44

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	PANII	230		230.00	6	1.0021	230.49	5	CHO230			230.00	6	1.0072	231.65
8	LSA	230		230.00	6	1.0258	235.94	11	M.N230			230.00	6	1.0274	236.30
14	PRO	230		230.00	6	1.0319	237.33	85	FTP230			230.00	6	1.0219	235.04
96	FOR	230		230.00	6	1.0208	234.78	100	BAY230			230.00	6	1.0286	236.57
103	COPE	230		230.00	6	1.0063	231.46	105	PAN-AM23			230.00	6	1.0072	231.67
115	PACOR	230		230.00	6	1.0098	232.26	144	CANJ230			230.00	6	1.0250	235.75
147	GUASQ	230		230.00	6	1.0250	235.76	148	VELADERO	230	230.00	6	1.0334	237.68	
190	CHANG	230		230.00	6	1.0278	236.39	511	LGUIAS230			230.00	6	1.0186	234.28
6000	FRONTER			230.00	6	1.0325	237.48								

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)
1	PAN	230		230.00	6	0.9985	229.65								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV

THU, OCT 30 2008 14:44

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	1.0103	116.18	4	PANII	115		115.00	6	1.0060	115.70
6	CHO	115		115.00	6	1.0493	120.67	9	LSA	115		115.00	6	1.0439	120.05
12	M.N	115		115.00	6	1.0213	117.45	15	PRO	115		115.00	6	1.0312	118.59
18	CAC	115		115.00	6	1.0099	116.14	20	CH.AZUL			115.00	6	1.0319	118.67
21	C.BAN	115		115.00	6	1.0010	115.12	23	CH	115		115.00	6	1.0106	116.22
26	LOC	115		115.00	6	1.0021	115.24	30	MAR	115		115.00	6	1.0014	115.16
33	STM	115		115.00	6	1.0086	115.99	48	TINAJ	115		115.00	6	1.0083	115.95
50	M.O	115		115.00	6	1.0084	115.96	52	TOC	115		115.00	6	1.0037	115.42
54	LM	115		115.00	6	1.0285	118.27	55	LM2	115		115.00	6	1.0293	118.37
61	FFIELD			115.00	9	1.0253	117.91	87	CAL	115		115.00	6	1.0275	118.17
88	EST	115		115.00	6	1.0290	118.34	92	L.V	115		115.00	6	1.0281	118.24
109	STA RITA	115		115.00	6	1.0265	118.05	123	MIR	115		115.00	7	1.0124	116.43
154	CEMPAN	115		115.00	6	1.0322	118.70	191	CHANG	115		115.00	6	1.0246	117.82
522	TCATIVÁ	115		115.00	6	1.0291	118.35								

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	1.0000	114.99	37	SAN	115		115.00	6	0.9997	114.97

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV

THU, OCT 30 2008 14:43

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
66	BLM	13B		13.800	V2	28.0	9.7	25.0	0.0	1.0000	29.6	0.9445	47.0			1	6	



Handwritten signature or initials.

67	BLM13C	13.800	V3	28.0	9.7	25.0	0.0	1.0000	29.6	0.9445	47.0	1	6
68	BLM13D	13.800	V4	28.0	10.2	25.0	0.0	1.0000	29.8	0.9401	47.0	1	6
90	EST-13L	13.800	E1	22.0	0.8	12.0	-5.0	0.9800	22.5	0.9993	27.0	1	6
91	EST-13T	13.800	E2	22.0	0.8	12.0	-5.0	0.9800	22.5	0.9993	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	1.2	12.0	-5.0	0.9800	24.5	0.9987	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	1.2	12.0	-5.0	0.9800	24.5	0.9987	27.0	1	6
97	FOR13A	13.800	F1	95.0	-31.4	50.0	-50.0	0.9800	102.1	0.9496	111.0	1	6
98	FOR13B	13.800	F2	95.0	-31.4	50.0	-50.0	0.9800	102.1	0.9496	111.0	1	6
99	FOR13C	13.800	F3	95.0	-31.4	50.0	-50.0	0.9800	102.1	0.9496	111.0	1	6
101	BAY13A	13.800	B1	77.3	19.9	50.0	-25.0	1.0000	79.9	0.9685	96.0	1	6
102	BAY13B	13.800	B2	76.9	19.8	50.0	-25.0	1.0000	79.4	0.9683	96.0	1	6
106	PANAM13A	13.800	M1	15.0	3.3	9.0	0.0	1.0000	15.4	0.9766	20.7	1	6
106	PANAM13A	13.800	M2	15.0	3.3	9.0	0.0	1.0000	15.4	0.9766	20.7	1	6
106	PANAM13A	13.800	M3	15.0	3.3	9.0	0.0	1.0000	15.4	0.9766	20.7	1	6
107	PANAM13B	13.800	M4	15.0	3.3	9.0	0.0	1.0000	15.4	0.9766	20.7	1	6
107	PANAM13B	13.800	M5	15.0	3.3	9.0	0.0	1.0000	15.4	0.9766	20.7	1	6
107	PANAM13B	13.800	M6	15.0	3.3	9.0	0.0	1.0000	15.4	0.9766	20.7	1	6
108	BAY13C	13.800	B3	76.9	19.8	50.0	-25.0	1.0000	79.4	0.9683	100.0	1	6
116	PACORA13	13.800	P1	17.0	0.0	8.8	0.0	1.0022	17.0	1.0000	21.7	1	6
116	PACORA13	13.800	P2	17.0	0.0	8.8	0.0	1.0022	17.0	1.0000	21.7	1	6
142	CANJ13A	13.800	C1	55.0	12.1	29.0	-29.0	0.9900	56.9	0.9766	69.0	1	6
143	CANJ13B	13.800	C2	55.0	12.1	29.0	-29.0	0.9900	56.9	0.9766	69.0	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9694	11.1	0.8849	13.5	1	6
302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9675	5.3	0.9216	6.2	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0055	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0055	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0055	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.0	1.3	2.8	1.3	1.0055	3.3	0.9173	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.5	6.6	-6.6	0.9900	8.4	0.9838	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.5	6.6	-6.6	0.9900	8.4	0.9838	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.5	6.6	-6.6	0.9900	8.4	0.9838	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.5	6.6	-6.6	0.9900	8.4	0.9838	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.5	6.6	-6.6	0.9900	8.4	0.9838	10.9	1	6
524	TCATIVÁ 13B	13.800	G10	8.2	2.7	6.6	-6.6	1.0000	8.6	0.9482	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	2.7	6.6	-6.6	1.0000	8.6	0.9482	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	2.7	6.6	-6.6	1.0000	8.6	0.9482	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	2.7	6.6	-6.6	1.0000	8.6	0.9482	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	2.7	6.6	-6.6	1.0000	8.6	0.9482	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.0	6.4	3.0	1.0063	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.0	6.4	3.0	1.0063	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.0	6.4	3.0	1.0063	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.0	6.4	3.0	1.0063	8.5	0.9363	10.9	1	6
SUBSYSTEM TOTALS				1068.2	88.7	662.1	-358.4				1371.6		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 14:43
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV

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
129	MIR13D	13.800	G4	35.0	1.3	15.0	0.0	1.0000	35.0	0.9993	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0095	16.9	1.0000	27.7			2	7	
140	GAT6A	6.9000	G1	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9953	4.1			2	7	
140	GAT6A	6.9000	G2	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9953	4.1			2	7	
140	GAT6A	6.9000	G3	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9953	4.1			2	7	
141	GAT6B	6.9000	G4	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9725	5.6			2	7	



Handwritten signature or initials.

141 GAT6B	6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9725	6.2	2	7
141 GAT6B	6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9725	6.2	2	7
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0239	17.9	0.9281	23.0	2	7
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0330	17.7	0.9281	23.0	2	7
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0330	17.7	0.9281	23.0	2	7
SUBSYSTEM TOTALS			120.5	18.4	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 14:44
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2009 ESC MOD DEM MAX INV 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	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0



Handwritten signature or initials.

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	147.3	
5	1344.9	1324.8	0.0	0.0	0.0	0.8	19.3	0.0
C.RICA	245.7	569.4	-236.5	0.0	470.5	26.0	357.3	
6	1068.2	1024.7	0.0	0.0	0.0	20.8	22.7	25.0
PANAMA	88.7	179.5	0.0	0.0	447.9	49.8	307.3	
7	120.5	39.8	0.0	0.0	0.0	79.5	1.3	50.0
ACANAL	18.4	7.0	0.0	0.0	0.0	-7.0	18.5	
9	0.0	100.9	0.0	0.0	0.0	-101.0	0.1	-75.0
COLON	0.0	17.7	0.0	0.0	1.1	-22.3	5.7	
TOTALS	6338.0	6217.0	0.0	0.0	0.0	0.0	121.0	0.0
	571.3	1820.5	-848.0	0.0	1998.4	0.0	1597.3	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA VERANO**



de

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	1.0005	230.12	8		LSA230		230.00	6	1.0255	235.86
11		M.N230		230.00	6	1.0262	236.03	14		PRO230		230.00	6	1.0314	237.22
85		PTP230		230.00	6	1.0218	235.02	96		FOR230		230.00	6	1.0207	234.76
100		BAY230		230.00	6	1.0159	233.65	105		PAN-AM23		230.00	6	1.0005	230.12
115		PACORA23		230.00	6	1.0021	230.48	144		CANJ230		230.00	6	1.0258	235.93
147		GUASQ230		230.00	6	1.0258	235.93	148		VELADERO	230	230.00	6	1.0344	237.91
190		CHANG230		230.00	6	1.0277	236.38	511		LGUIAS230		230.00	6	1.0161	233.70
6000		FRONTER		230.00	6	1.0322	237.40								

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	0.9930	228.38	3		PANII230		230.00	6	0.9958	229.04
103		COPESA23		230.00	6	0.9992	229.81								

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	115.59	4		PANII115		115.00	6	1.0086	115.98
6		CHO115		115.00	6	1.0423	119.86	9		LSA115		115.00	6	1.0436	120.01
12		M.N115		115.00	6	1.0172	116.97	15		PRO115		115.00	6	1.0307	118.53
18		CAC115		115.00	6	1.0050	115.57	19		C.V115		115.00	6	1.0004	115.05
20		CH.AZUL		115.00	6	1.0315	118.62	23		CH115		115.00	6	1.0067	115.77
33		STM115		115.00	6	1.0035	115.40	48		TINAJ115		115.00	6	1.0031	115.36
50		M.O115		115.00	6	1.0032	115.37	52		TOC115		115.00	6	1.0062	115.71
54		LM1115		115.00	6	1.0282	118.25	55		LM2115		115.00	6	1.0284	118.27
61		FFIELD		115.00	9	1.0251	117.88	87		CAL115		115.00	6	1.0158	116.81
88		EST115		115.00	6	1.0155	116.78	92		L.V115		115.00	6	1.0157	116.81
109		STA RITA115		115.00	6	1.0296	118.40	123		MIR115		115.00	7	1.0077	115.89
154		CEMPAN15		115.00	6	1.0296	118.40	191		CHANG115		115.00	6	1.0245	117.82
522		TCATIVÁ	115	115.00	6	1.0286	118.28								

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	0.9968	114.64	26		LOC115		115.00	6	0.9977	114.73
30		MAR115		115.00	6	0.9966	114.61	37		SAN115		115.00	6	0.9960	114.54

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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	28.0	1.2	25.0	0.0	0.9800	28.6	0.9992	47.0	1	6
67	BLM13C	13.800	V3	28.0	1.2	25.0	0.0	0.9800	28.6	0.9992	47.0	1	6
68	BLM13D	13.800	V4	28.0	1.1	25.0	0.0	0.9800	28.6	0.9992	47.0	1	6
90	EST-13L	13.800	E1	22.0	-4.4	12.0	-5.0	0.9500	23.6	0.9805	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	-4.3	12.0	-5.0	0.9500	25.7	0.9842	27.0	1	6
97	FOR13A	13.800	F1	95.0	-31.3	50.0	-50.0	0.9800	102.1	0.9499	111.0	1	6
98	FOR13B	13.800	F2	95.0	-31.3	50.0	-50.0	0.9800	102.1	0.9499	111.0	1	6
99	FOR13C	13.800	F3	95.0	-31.3	50.0	-50.0	0.9800	102.1	0.9499	111.0	1	6
101	BAY13A	13.800	B1	58.9	11.9	50.0	-25.0	0.9800	61.4	0.9801	96.0	1	6
102	BAY13B	13.800	B2	58.6	11.9	50.0	-25.0	0.9800	61.1	0.9800	96.0	1	6
106	PANAM13A	13.800	M1	15.2	0.0	9.0	0.0	0.9701	15.7	1.0000	20.7	1	6
106	PANAM13A	13.800	M2	15.2	0.0	9.0	0.0	0.9701	15.7	1.0000	20.7	1	6
106	PANAM13A	13.800	M3	15.2	0.0	9.0	0.0	0.9701	15.7	1.0000	20.7	1	6
107	PANAM13B	13.800	M4	15.2	0.0	9.0	0.0	0.9701	15.7	1.0000	20.7	1	6
107	PANAM13B	13.800	M5	15.2	0.0	9.0	0.0	0.9701	15.7	1.0000	20.7	1	6
107	PANAM13B	13.800	M6	15.2	0.0	9.0	0.0	0.9701	15.7	1.0000	20.7	1	6
108	BAY13C	13.800	B3	58.6	11.9	50.0	-25.0	0.9800	61.1	0.9800	100.0	1	6
116	PACORA13	13.800	P1	17.5	0.0	8.8	0.0	0.9925	17.6	1.0000	21.7	1	6
116	PACORA13	13.800	P2	17.5	0.0	8.8	0.0	0.9925	17.6	1.0000	21.7	1	6
116	PACORA13	13.800	P3	17.5	0.0	8.8	0.0	0.9925	17.6	1.0000	21.7	1	6
142	CANJ13A	13.800	C1	40.0	5.7	29.0	-29.0	0.9800	41.2	0.9901	69.0	1	6
143	CANJ13B	13.800	C2	40.0	5.7	29.0	-29.0	0.9800	41.2	0.9901	69.0	1	6
301	CONC13.8	13.800	G1	8.3	5.0	5.0	-5.0	0.9653	10.0	0.8566	13.5	1	6
302	PASOANCH13.8	13.800	P1	3.7	2.0	2.0	-2.0	0.9634	4.4	0.8797	6.2	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0029	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0029	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0029	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.6	1.3	2.8	1.3	1.0029	3.8	0.9404	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9823	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9823	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9823	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9823	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9823	10.9	1	6
524	TCATIVÁ 13B	13.800	G10	8.2	2.8	6.6	-6.6	1.0000	8.7	0.9458	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	2.8	6.6	-6.6	1.0000	8.7	0.9458	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	2.8	6.6	-6.6	1.0000	8.7	0.9458	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	2.8	6.6	-6.6	1.0000	8.7	0.9458	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	2.8	6.6	-6.6	1.0000	8.7	0.9458	10.9	1	6
525	TCOLON 13A	13.800	G1	36.0	10.6	18.4	9.2	1.0000	37.5	0.9595	44.4	1	6
526	TCOLON 13B	13.800	G2	36.0	10.6	18.4	9.2	1.0000	37.5	0.9595	44.4	1	6
527	TCOLON 13C	13.800	V1	36.0	10.6	18.4	5.8	1.0000	37.5	0.9595	44.4	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.0	6.4	3.0	1.0039	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.0	6.4	3.0	1.0039	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.0	6.4	3.0	1.0039	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.0	6.4	3.0	1.0039	8.5	0.9363	10.9	1	6
SUBSYSTEM TOTALS				1063.3	25.8	702.1	-324.1				1472.5		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 15:54
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX VER

AREA 7 [ACANAL] MACHINE SUMMARY:
 BUS# X-- NAME --X BASKV ID MW MVAR QMAX QMIN ETERM CURRENT PF MVABASE
 129 MIR13D 13.800 G4 35.0 2.5 15.0 0.0 1.0000 35.1 0.9976 44.1
 130 MIR13F 13.800 G5 17.1 0.0 8.0 0.0 1.0066 17.0 1.0000 27.7
 140 GAT6A 6.9000 G1 1.9 -0.1 2.0 -2.0 1.0000 1.9 0.9976 4.1

X T R A N GENTAP ZONE AREA SWING
 2 7
 2 7
 2 7



140 GAT6A	6.9000 G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9976	4.1	2	7			
140 GAT6A	6.9000 G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9976	4.1	2	7			
141 GAT6B	6.9000 G4	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9755	5.6	2	7			
141 GAT6B	6.9000 G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9755	6.2	2	7			
141 GAT6B	6.9000 G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9755	6.2	2	7			
170 MIR13G	13.800 M1	17.0	6.8	11.2	6.8	1.0211	17.9	0.9281	23.0	2	7			
171 MIR13H	13.800 M1	17.0	6.8	11.2	6.8	1.0302	17.8	0.9281	23.0	2	7			
171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0302	17.8	0.9281	23.0	2	7			
SUBSYSTEM TOTALS										120.5	19.9	71.5	5.5	171.3

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 15:54
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2009 ESC MOD DEM MAX VER 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	55.6	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	147.3	



Handwritten signature or initials.

5	1344.9	1324.8	0.0	0.0	0.0	0.8	19.3	0.0
C.RICA	245.7	569.4	-236.5	0.0	470.5	26.1	357.2	
6	1063.3	1024.7	0.0	0.0	0.0	20.8	17.8	25.0
PANAMA	25.8	179.5	0.0	0.0	446.3	48.3	244.3	
7	120.5	39.8	0.0	0.0	0.0	79.5	1.3	50.0
ACANAL	19.9	7.0	0.0	0.0	0.0	-5.7	18.6	
9	0.0	100.9	0.0	0.0	0.0	-101.0	0.1	-75.0
COLON	0.0	17.7	0.0	0.0	1.1	-22.3	5.7	
TOTALS	6333.0	6217.0	0.0	0.0	0.0	0.0	116.0	0.0
	509.9	1820.5	-848.0	0.0	1996.8	0.0	1534.2	

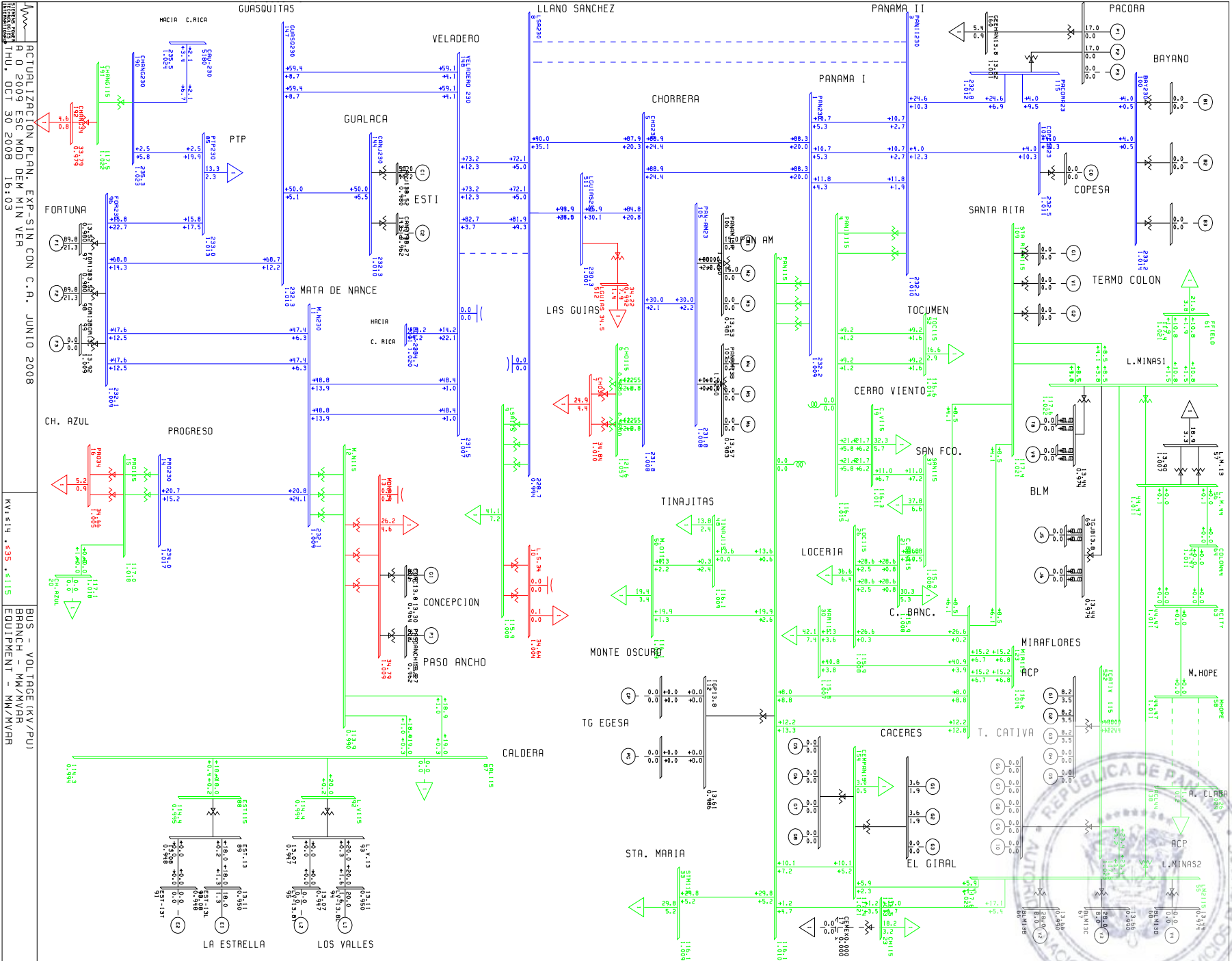


Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2009 ESCENARIO MODERADO DEMANDA MÍNIMA VERANO**



de



ACTUALIZACION PLN. EXP-SIN CON C.R. JUNIO 2008
 R 0 2009 ESC MOD DEN MEN VER
 ITHU, OCT 30 2008 16:03

KV:14 . 535 . 1115
 BUS - VOLTAJE (KV/PU)
 BRNCH - MW/MVA
 EQUIPMENT - MW/MVA



Handwritten signature or initials in the bottom right corner of the page.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MIN VER

THU, OCT 30 2008 16:02

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	1.0095	232.17	3	PANII230	230.00	6	1.0097	232.23				
5	CHO230	230.00	6	1.0077	231.78	11	M.N230	230.00	6	1.0090	232.08				
14	PRO230	230.00	6	1.0174	234.00	85	PTP230	230.00	6	1.0132	233.04				
96	FOR230	230.00	6	1.0089	232.06	100	BAY230	230.00	6	1.0138	233.17				
103	COPESA23	230.00	6	1.0108	232.48	105	PAN-AM23	230.00	6	1.0077	231.78				
115	PACORA23	230.00	6	1.0120	232.76	144	CANJ230	230.00	6	1.0099	232.27				
147	GUASQ230	230.00	6	1.0099	232.27	148	VELADERO	230230.00	6	1.0066	231.52				
190	CHANG230	230.00	6	1.0230	235.29	511	LGUIAS230	230.00	6	1.0013	230.30				
6000	FRONTER	230.00	6	1.0184	234.24										

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)
8	LSA230	230.00	6	0.9945	228.73										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MIN VER

THU, OCT 30 2008 16:02

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	1.0098	116.13	4	PANII115	115.00	6	1.0150	116.72				
6	CHO115	115.00	6	1.0574	121.60	9	LSA115	115.00	6	1.0079	115.91				
15	PRO115	115.00	6	1.0177	117.04	18	CAC115	115.00	6	1.0100	116.15				
19	C.V115	115.00	6	1.0110	116.26	20	CH.AZUL	115.00	6	1.0184	117.12				
21	C.BAN115	115.00	6	1.0076	115.88	23	CH115	115.00	6	1.0126	116.45				
26	LOC115	115.00	6	1.0078	115.90	30	MAR115	115.00	6	1.0071	115.81				
33	STM115	115.00	6	1.0092	116.06	37	SAN115	115.00	6	1.0075	115.87				
48	TINAJ115	115.00	6	1.0093	116.07	50	M.O115	115.00	6	1.0094	116.08				
52	TOC115	115.00	6	1.0141	116.62	54	LM1115	115.00	6	1.0224	117.58				
55	LM2115	115.00	6	1.0228	117.63	61	FFIELD	115.00	9	1.0212	117.44				
109	STA RITA115	115.00	6	1.0212	117.44	123	MIR115	115.00	7	1.0138	116.58				
154	CEMPAN15	115.00	6	1.0211	117.43	191	CHANG115	115.00	6	1.0218	117.51				
522	TCATIVÁ	115.00	6	1.0227	117.61										

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)
12	M.N115	115.00	6	0.9901	113.86	87	CAL115	115.00	6	0.9942	114.33				
88	EST115	115.00	6	0.9950	114.42	92	L.V115	115.00	6	0.9945	114.37				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MIN VER

THU, OCT 30 2008 16:01

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	28.0	8.0	25.0	0.0	0.9900	29.4	0.9618	47.0					1	6	



Handwritten signature or mark.

67	BLM13C	13.800	V3	28.0	8.0	25.0	0.0	0.9900	29.4	0.9618	47.0	1	6
90	EST-13L	13.800	E1	18.0	1.3	12.0	-5.0	0.9500	19.0	0.9974	27.0	1	6
94	LV-13.8L	13.800	L1	20.0	1.6	12.0	-5.0	0.9500	21.1	0.9969	27.0	1	6
97	FOR13A	13.800	F1	89.8	-21.3	50.0	-50.0	0.9800	94.2	0.9731	111.0	1	6
98	FOR13B	13.800	F2	89.8	-21.3	50.0	-50.0	0.9800	94.2	0.9731	111.0	1	6
106	PANAM13A	13.800	M1	15.0	0.0	9.0	0.0	0.9806	15.3	1.0000	20.7	1	6
106	PANAM13A	13.800	M2	15.0	0.0	9.0	0.0	0.9806	15.3	1.0000	20.7	1	6
116	PACORA13	13.800	P1	17.0	0.0	8.8	0.0	1.0085	16.9	1.0000	21.7	1	6
116	PACORA13	13.800	P2	17.0	0.0	8.8	0.0	1.0085	16.9	1.0000	21.7	1	6
142	CANJ13A	13.800	C1	50.0	11.2	29.0	-29.0	0.9800	52.3	0.9756	69.0	1	6
301	CONC13.8	13.800	G1	8.3	5.0	5.0	-5.0	0.9636	10.1	0.8566	13.5	1	6
302	PASOANCH13.8	13.800	P1	3.7	2.0	2.0	-2.0	0.9618	4.4	0.8797	6.2	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.9	2.8	1.3	0.9900	4.1	0.8858	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.9	2.8	1.3	0.9900	4.1	0.8858	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	3.5	6.6	-6.6	0.9900	9.0	0.9217	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	3.5	6.6	-6.6	0.9900	9.0	0.9217	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	3.5	6.6	-6.6	0.9900	9.0	0.9217	10.9	1	6
SUBSYSTEM TOTALS				431.5	8.6	271.0	-163.1				586.0		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 16:01
ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
AÑO 2009 ESC MOD DEM MIN VER

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
170	MIR13G	13.800	M1	15.5	6.8	11.2	6.8	1.0464	16.2	0.9150	23.0					2	7	
171	MIR13H	13.800	M1	15.5	6.8	11.2	6.8	1.0555	16.0	0.9149	23.0					2	7	
171	MIR13H	13.800	M2	15.5	6.8	11.2	6.8	1.0555	16.0	0.9149	23.0					2	7	
SUBSYSTEM TOTALS				46.4	20.5	33.5	20.5						69.1					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 16:02
ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
AÑO 2009 ESC MOD DEM MIN VER 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



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	0.9	19.3	0.0
C.RICA	262.3	569.4	-236.6	0.0	468.5	40.8	357.3	
6	431.5	411.1	0.0	0.0	0.0	9.3	11.2	25.0
PANAMA	8.6	72.0	181.0	0.0	363.7	-1.4	120.7	
7	46.4	16.0	0.0	0.0	0.0	30.4	0.1	50.0
ACANAL	20.5	2.8	0.0	0.0	0.0	13.5	4.2	
9	0.0	40.5	0.0	0.0	0.0	-40.5	0.0	-75.0
COLON	0.0	7.1	0.0	0.0	1.1	-6.9	0.9	
TOTALS	5627.1	5519.1	0.0	0.0	0.0	0.0	108.0	0.0
	510.5	1698.2	-667.1	0.0	1912.1	0.0	1391.5	

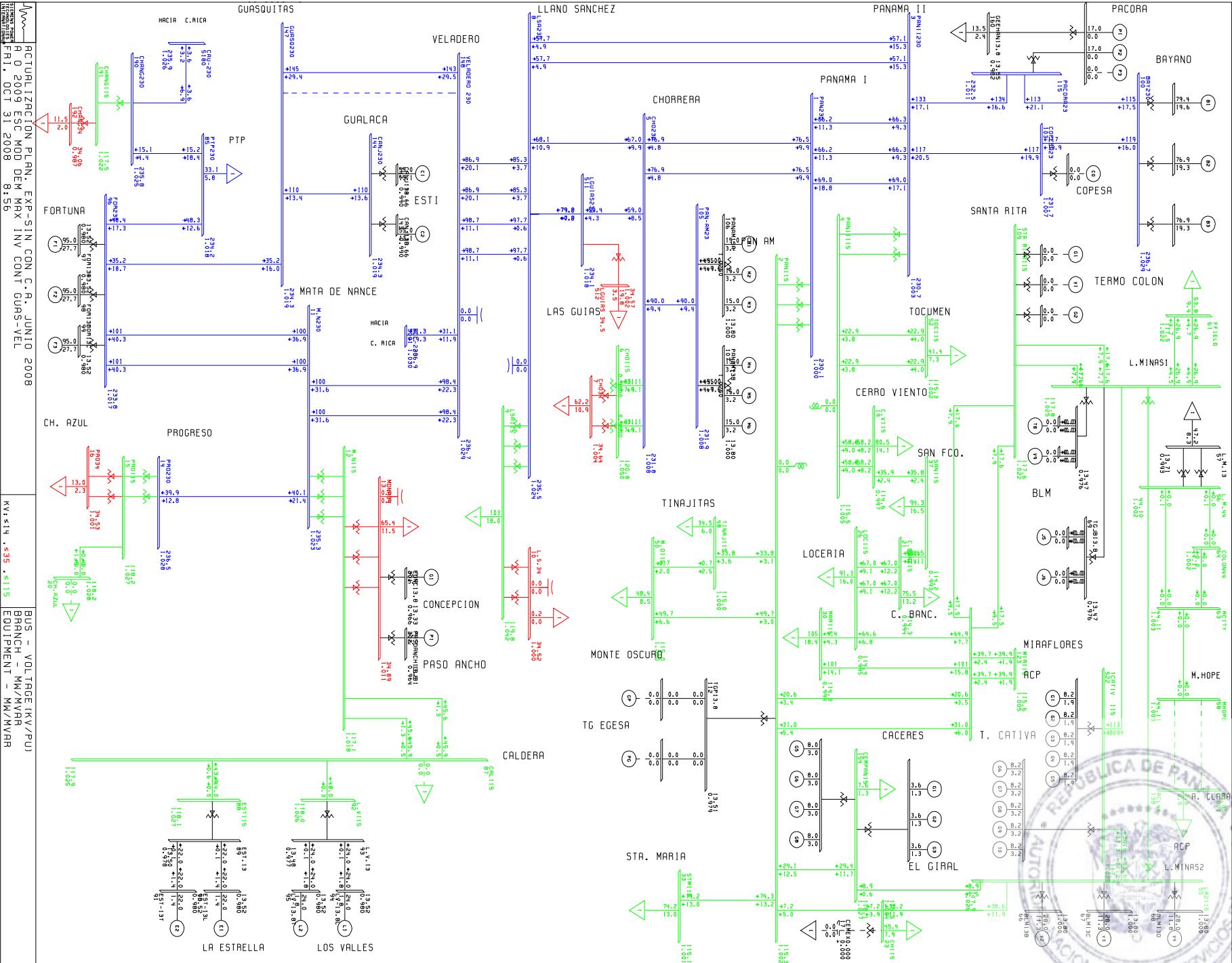


Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA GUASQUITAS VELADERO**



de



ACTUALIZATION PLAN. EXP-SIN CON C.A.R. JUNIO 2008
 R O 2009 ESC MOD DEM MAX INV CONT GUAS-VEL
 C.R.I. OCT 31 2008 8:56

CH. AZUL
 PROGRESO
 FORTUNA

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

LA ESTRELLA
 LOS VALLES

Handwritten signature or initials.

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	1.0032	230.75
5		CHO230		230.00	6	1.0080	231.84	8		LSA230		230.00	6	1.0237	235.45
11		M.N230		230.00	6	1.0230	235.30	14		PRO230		230.00	6	1.0282	236.48
85		PTP230		230.00	6	1.0181	234.16	96		FOR230		230.00	6	1.0167	233.83
100		BAY230		230.00	6	1.0293	236.73	103		COPESA23		230.00	6	1.0074	231.70
105		PAN-AM23		230.00	6	1.0081	231.85	115		PACORA23		230.00	6	1.0108	232.49
144		CANJ230		230.00	6	1.0187	234.30	147		GUASQ230		230.00	6	1.0187	234.30
148		VELADERO	230	230.00	6	1.0292	236.71	190		CHANG230		230.00	6	1.0251	235.76
511		LGUIAS230		230.00	6	1.0177	234.08	6000		FRONTER		230.00	6	1.0289	236.65

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)
* 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	1.0023	115.27	4		PANII115		115.00	6	1.0048	115.55
6		CHO115		115.00	6	1.0502	120.77	9		LSA115		115.00	6	1.0417	119.80
12		M.N115		115.00	6	1.0180	117.07	15		PRO115		115.00	6	1.0275	118.16
18		CAC115		115.00	6	1.0021	115.24	20		CH.AZUL		115.00	6	1.0282	118.24
23		CH115		115.00	6	1.0044	115.50	33		STM115		115.00	6	1.0007	115.08
48		TINAJ115		115.00	6	1.0003	115.04	50		M.O115		115.00	6	1.0004	115.05
52		TOC115		115.00	6	1.0024	115.27	54		LM115		115.00	6	1.0247	117.84
55		LM2115		115.00	6	1.0256	117.94	61		FFIELD		115.00	9	1.0215	117.48
87		CAL115		115.00	6	1.0253	117.91	88		EST115		115.00	6	1.0270	118.11
92		L.V115		115.00	6	1.0260	117.99	109		STA RITA115		115.00	6	1.0222	117.56
123		MIR115		115.00	7	1.0050	115.58	154		CEMPAN15		115.00	6	1.0272	118.13
191		CHANG115		115.00	6	1.0218	117.51	522		TCATIVÁ	115	115.00	6	1.0254	117.92

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	0.9968	114.63	21		C.BAN115		115.00	6	0.9939	114.30
26		LOC115		115.00	6	0.9948	114.40	30		MAR115		115.00	6	0.9938	114.28
37		SAN115		115.00	6	0.9930	114.19								

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	28.0	11.3	25.0	0.0	1.0000	30.2	0.9268	47.0			1	6	



Handwritten signature or initials.

67	BLM13C	13.800	V3	28.0	11.3	25.0	0.0	1.0000	30.2	0.9268	47.0	1	6
68	BLM13D	13.800	V4	28.0	11.8	25.0	0.0	1.0000	30.4	0.9210	47.0	1	6
90	EST-13L	13.800	E1	22.0	1.4	12.0	-5.0	0.9800	22.5	0.9980	27.0	1	6
91	EST-13T	13.800	E2	22.0	1.4	12.0	-5.0	0.9800	22.5	0.9980	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	1.8	12.0	-5.0	0.9800	24.6	0.9971	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	1.8	12.0	-5.0	0.9800	24.6	0.9971	27.0	1	6
97	FOR13A	13.800	F1	95.0	-27.7	50.0	-50.0	0.9800	101.0	0.9601	111.0	1	6
98	FOR13B	13.800	F2	95.0	-27.7	50.0	-50.0	0.9800	101.0	0.9601	111.0	1	6
99	FOR13C	13.800	F3	95.0	-27.7	50.0	-50.0	0.9800	101.0	0.9601	111.0	1	6
101	BAY13A	13.800	B1	79.4	19.6	50.0	-25.0	1.0000	81.8	0.9709	96.0	1	6
102	BAY13B	13.800	B2	76.9	19.3	50.0	-25.0	1.0000	79.3	0.9699	96.0	1	6
106	PANAM13A	13.800	M1	15.0	3.2	9.0	0.0	1.0000	15.3	0.9782	20.7	1	6
106	PANAM13A	13.800	M2	15.0	3.2	9.0	0.0	1.0000	15.3	0.9782	20.7	1	6
106	PANAM13A	13.800	M3	15.0	3.2	9.0	0.0	1.0000	15.3	0.9782	20.7	1	6
107	PANAM13B	13.800	M4	15.0	3.2	9.0	0.0	1.0000	15.3	0.9782	20.7	1	6
107	PANAM13B	13.800	M5	15.0	3.2	9.0	0.0	1.0000	15.3	0.9782	20.7	1	6
107	PANAM13B	13.800	M6	15.0	3.2	9.0	0.0	1.0000	15.3	0.9782	20.7	1	6
108	BAY13C	13.800	B3	76.9	19.3	50.0	-25.0	1.0000	79.3	0.9699	100.0	1	6
116	PACORA13	13.800	P1	17.0	0.0	8.8	0.0	1.0033	16.9	1.0000	21.7	1	6
116	PACORA13	13.800	P2	17.0	0.0	8.8	0.0	1.0033	16.9	1.0000	21.7	1	6
142	CANJ13A	13.800	C1	55.0	13.1	29.0	-29.0	0.9900	57.1	0.9726	69.0	1	6
143	CANJ13B	13.800	C2	55.0	13.1	29.0	-29.0	0.9900	57.1	0.9726	69.0	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9662	11.1	0.8849	13.5	1	6
302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9644	5.3	0.9216	6.2	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0008	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0008	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0008	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.0	1.3	2.8	1.3	1.0008	3.3	0.9173	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9732	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9732	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9732	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9732	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9732	10.9	1	6
524	TCATIVÁ 13B	13.800	G1	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9318	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9318	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9318	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9318	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9318	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.0	6.4	3.0	1.0017	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.0	6.4	3.0	1.0017	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.0	6.4	3.0	1.0017	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.0	6.4	3.0	1.0017	8.5	0.9363	10.9	1	6
SUBSYSTEM TOTALS				1070.3	111.5	662.1	-358.4				1371.6		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, OCT 31 2008 8:55
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV CONT GUAS-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
129	MIR13D	13.800	G4	35.0	3.1	15.0	0.0	1.0000	35.1	0.9961	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0050	17.0	1.0000	27.7			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	-0.8	3.0	-3.0	1.0000	4.0	0.9772	5.6			2	7	



141 GAT6B	6.9000	G5	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9772	6.2	2	7				
141 GAT6B	6.9000	G6	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9772	6.2	2	7				
170 MIR13G	13.8000	M1	17.0	6.8	11.2	6.8	1.0195	18.0	0.9281	23.0	2	7				
171 MIR13H	13.8000	M1	17.0	6.8	11.2	6.8	1.0286	17.8	0.9281	23.0	2	7				
171 MIR13H	13.8000	M2	17.0	6.8	11.2	6.8	1.0286	17.8	0.9281	23.0	2	7				
SUBSYSTEM TOTALS											120.5	20.7	71.5	5.5		171.3

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, OCT 31 2008 8:55
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2009 ESC MOD DEM MAX INV CONT GUAS-VEL 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	1006.8	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	



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	0.7	19.4	0.0
C.RICA	251.3	569.4	-236.3	0.0	469.9	30.4	357.7	
6	1070.3	1024.7	0.0	0.0	0.0	20.8	24.8	25.0
PANAMA	111.5	179.5	0.0	0.0	429.5	43.2	318.3	
7	120.5	39.8	0.0	0.0	0.0	79.5	1.3	50.0
ACANAL	20.7	7.0	0.0	0.0	0.0	-4.9	18.6	
9	0.0	100.9	0.0	0.0	0.0	-101.0	0.1	-75.0
COLON	0.0	17.7	0.0	0.0	1.1	-22.4	5.8	
TOTALS	6340.1	6217.0	0.0	0.0	0.0	0.0	123.1	0.0
	602.2	1820.5	-847.7	0.0	1979.4	0.0	1608.9	

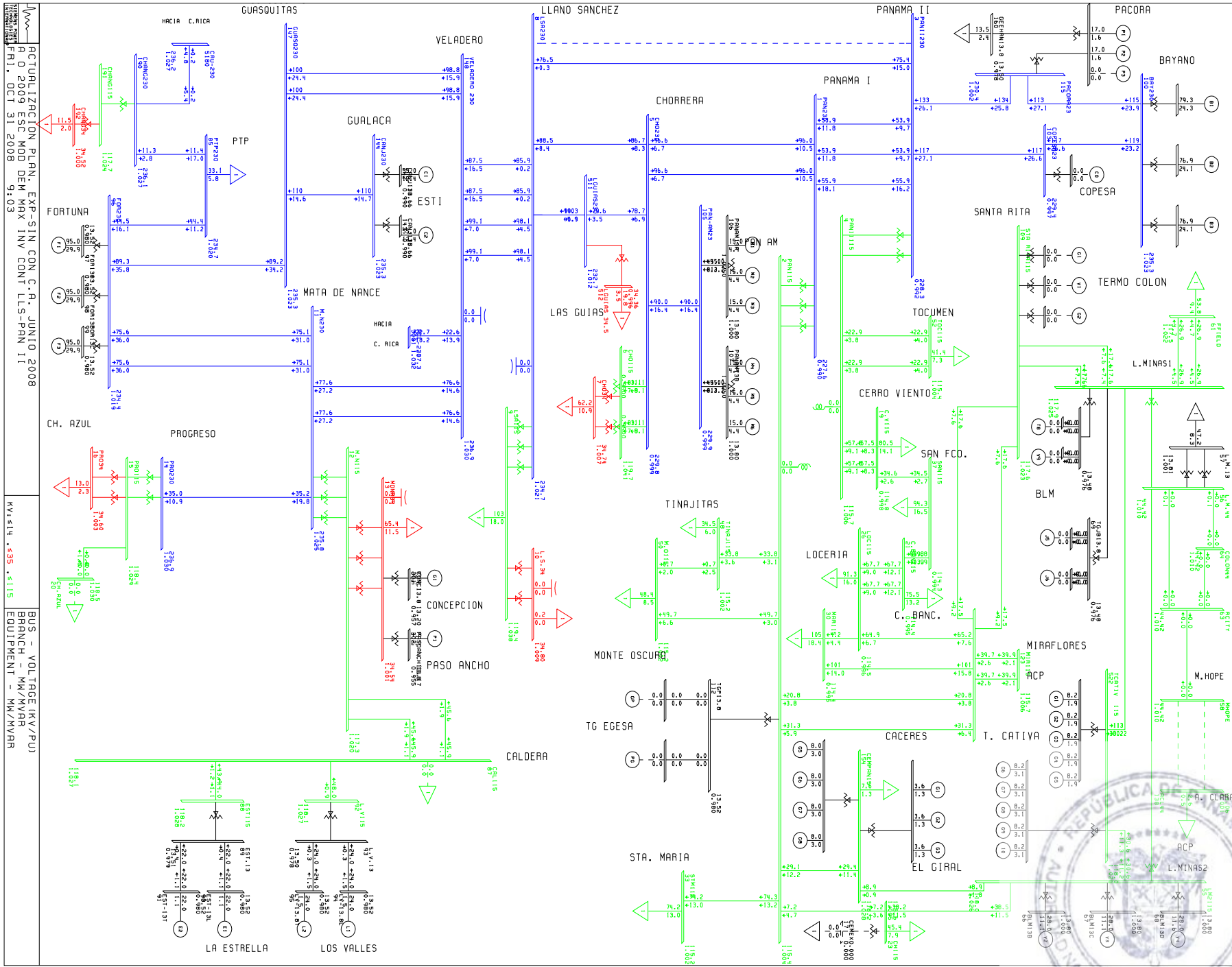


Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA LLANO SÁNCHEZ-PANAMÁ II**



de



ACTUALIZATION PLAN. EXP-SIN CON C.A. JUNIO 2008
 R O 2009 ESC MOD DEM MAX INV CONT LLS-PAN II
 FRI. OCT 31 2008 9:03

KV*114 *325 *115

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

Handwritten signature or initials.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, OCT 31 2008 9:00
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV CONT LLS-PAN 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)
8		LSA230		230.00	6	1.0206	234.73	11		M.N230		230.00	6	1.0254	235.85
14		PRO230		230.00	6	1.0301	236.93	85		PTP230		230.00	6	1.0204	234.70
96		FOR230		230.00	6	1.0192	234.41	100		BAY230		230.00	6	1.0229	235.27
115		PACORA23		230.00	6	1.0017	230.39	144		CANJ230		230.00	6	1.0230	235.28
147		GUASQ230		230.00	6	1.0230	235.29	148		VELADERO	230	230.00	6	1.0301	236.92
190		CHANG230		230.00	6	1.0267	236.15	511		LGUIAS230		230.00	6	1.0117	232.68
6000		FRONTER		230.00	6	1.0308	237.08								

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	0.9897	227.63	3		PANII230		230.00	6	0.9925	228.27
5		CHO230		230.00	6	0.9993	229.84	103		COPESA23		230.00	6	0.9973	229.38
105		PAN-AM23		230.00	6	0.9994	229.86								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, OCT 31 2008 9:00
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV CONT LLS-PAN 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	1.0036	115.41	4		PANII115		115.00	6	1.0059	115.68
6		CHO115		115.00	6	1.0410	119.71	9		LSA115		115.00	6	1.0385	119.42
12		M.N115		115.00	6	1.0198	117.28	15		PRO115		115.00	6	1.0294	118.38
18		CAC115		115.00	6	1.0033	115.38	20		CH.AZUL		115.00	6	1.0302	118.47
23		CH115		115.00	6	1.0054	115.62	33		STM115		115.00	6	1.0019	115.22
48		TINAJ115		115.00	6	1.0015	115.18	50		M.O115		115.00	6	1.0016	115.19
52		TOC115		115.00	6	1.0035	115.41	54		LM115		115.00	6	1.0253	117.91
55		LM2115		115.00	6	1.0262	118.01	61		FFIELD		115.00	9	1.0221	117.54
87		CAL115		115.00	6	1.0265	118.05	88		EST115		115.00	6	1.0281	118.23
92		L.V115		115.00	6	1.0272	118.13	109		STA RITA115		115.00	6	1.0229	117.63
123		MIR115		115.00	7	1.0062	115.71	154		CEMPAN15		115.00	6	1.0280	118.22
191		CHANG115		115.00	6	1.0235	117.71	522		TCATIVÁ	115	115.00	6	1.0260	117.99

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)
19		C.V115		115.00	6	0.9980	114.77	21		C.BAN115		115.00	6	0.9951	114.44
26		LOC115		115.00	6	0.9960	114.54	30		MAR115		115.00	6	0.9950	114.42
37		SAN115		115.00	6	0.9942	114.33								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, OCT 31 2008 9:00
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV CONT LLS-PAN 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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	28.0	11.1	25.0	0.0	1.0000	30.1	0.9297	47.0	1	6
67	BLM13C	13.800	V3	28.0	11.1	25.0	0.0	1.0000	30.1	0.9297	47.0	1	6
68	BLM13D	13.800	V4	28.0	11.6	25.0	0.0	1.0000	30.3	0.9241	47.0	1	6
90	EST-13L	13.800	E1	22.0	1.1	12.0	-5.0	0.9800	22.5	0.9988	27.0	1	6
91	EST-13T	13.800	E2	22.0	1.1	12.0	-5.0	0.9800	22.5	0.9988	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	1.5	12.0	-5.0	0.9800	24.5	0.9980	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	1.5	12.0	-5.0	0.9800	24.5	0.9980	27.0	1	6
97	FOR13A	13.800	F1	95.0	-29.9	50.0	-50.0	0.9800	101.6	0.9538	111.0	1	6
98	FOR13B	13.800	F2	95.0	-29.9	50.0	-50.0	0.9800	101.6	0.9538	111.0	1	6
99	FOR13C	13.800	F3	95.0	-29.9	50.0	-50.0	0.9800	101.6	0.9538	111.0	1	6
101	BAY13A	13.800	B1	79.3	24.3	50.0	-25.0	1.0000	82.9	0.9560	96.0	1	6
102	BAY13B	13.800	B2	76.9	24.1	50.0	-25.0	1.0000	80.6	0.9543	96.0	1	6
106	PANAM13A	13.800	M1	15.0	4.4	9.0	0.0	1.0000	15.6	0.9593	20.7	1	6
106	PANAM13A	13.800	M2	15.0	4.4	9.0	0.0	1.0000	15.6	0.9593	20.7	1	6
106	PANAM13A	13.800	M3	15.0	4.4	9.0	0.0	1.0000	15.6	0.9593	20.7	1	6
107	PANAM13B	13.800	M4	15.0	4.4	9.0	0.0	1.0000	15.6	0.9593	20.7	1	6
107	PANAM13B	13.800	M5	15.0	4.4	9.0	0.0	1.0000	15.6	0.9593	20.7	1	6
107	PANAM13B	13.800	M6	15.0	4.4	9.0	0.0	1.0000	15.6	0.9593	20.7	1	6
108	BAY13C	13.800	B3	76.9	24.1	50.0	-25.0	1.0000	80.6	0.9543	100.0	1	6
116	PACORA13	13.800	P1	17.0	1.6	8.8	0.0	1.0000	17.1	0.9956	21.7	1	6
116	PACORA13	13.800	P2	17.0	1.6	8.8	0.0	1.0000	17.1	0.9956	21.7	1	6
142	CANJ13A	13.800	C1	55.0	12.4	29.0	-29.0	0.9900	57.0	0.9754	69.0	1	6
143	CANJ13B	13.800	C2	55.0	12.4	29.0	-29.0	0.9900	57.0	0.9754	69.0	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9565	11.2	0.8849	13.5	1	6
302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9547	5.4	0.9216	6.2	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0016	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0016	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0016	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.0	1.3	2.8	1.3	1.0016	3.3	0.9173	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9751	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9751	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9751	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9751	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9751	10.9	1	6
524	TCATIVÁ 13B	13.800	10	8.2	3.1	6.6	-6.6	1.0000	8.8	0.9345	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	3.1	6.6	-6.6	1.0000	8.8	0.9345	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	3.1	6.6	-6.6	1.0000	8.8	0.9345	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	3.1	6.6	-6.6	1.0000	8.8	0.9345	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	3.1	6.6	-6.6	1.0000	8.8	0.9345	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.0	6.4	3.0	1.0024	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.0	6.4	3.0	1.0024	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.0	6.4	3.0	1.0024	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.0	6.4	3.0	1.0024	8.5	0.9363	10.9	1	6
SUBSYSTEM TOTALS				1070.2	125.4	662.1	-358.4				1371.6		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, OCT 31 2008 9:00
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV CONT LLS-PAN 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
129	MIR13D	13.800	G4	35.0	2.8	15.0	0.0	1.0000	35.1	0.9968	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0057	17.0	1.0000	27.7			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	



Handwritten signature or initials.

141 GAT6B	6.9000	G4	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9765	5.6	2	7			
141 GAT6B	6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9765	6.2	2	7			
141 GAT6B	6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9765	6.2	2	7			
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0202	18.0	0.9281	23.0	2	7			
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0293	17.8	0.9281	23.0	2	7			
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0293	17.8	0.9281	23.0	2	7			
SUBSYSTEM TOTALS											120.5	20.4	71.5	5.5	171.3

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, OCT 31 2008 9:00
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2009 ESC MOD DEM MAX INV CONT LLS-PAN 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	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	



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	0.8	19.3	0.0
C.RICA	248.7	569.4	-236.0	0.0	470.2	28.0	357.5	
6	1070.2	1024.7	0.0	0.0	0.0	20.8	24.7	25.0
PANAMA	125.4	179.5	0.0	0.0	418.1	45.8	318.2	
7	120.5	39.8	0.0	0.0	0.0	79.5	1.3	50.0
ACANAL	20.4	7.0	0.0	0.0	0.0	-5.2	18.6	
9	0.0	100.9	0.0	0.0	0.0	-101.0	0.1	-75.0
COLON	0.0	17.7	0.0	0.0	1.1	-22.3	5.7	
TOTALS	6339.9	6217.0	0.0	0.0	0.0	0.0	122.9	0.0
	613.1	1820.5	-847.5	0.0	1968.3	0.0	1608.4	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA FORTUNA-GUASQUITAS**



de

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	1.0036	230.83	3	PANII230	230.00	6	1.0066	231.53				
5	CHO230	230.00	6	1.0119	232.73	8	LSA230	230.00	6	1.0310	237.13				
11	M.N230	230.00	6	1.0253	235.81	14	PRO230	230.00	6	1.0307	237.07				
85	PTP230	230.00	6	1.0181	234.16	96	FOR230	230.00	6	1.0167	233.84				
100	BAY230	230.00	6	1.0313	237.20	103	COPESA23	230.00	6	1.0106	232.44				
105	PAN-AM23	230.00	6	1.0119	232.74	115	PACORA23	230.00	6	1.0139	233.19				
144	CANJ230	230.00	6	1.0410	239.42	147	GUASQ230	230.00	6	1.0411	239.45				
148	VELADERO	230230.00	6	1.0386	238.87	190	CHANG230	230.00	6	1.0251	235.78				
511	LGUIAS230	230.00	6	1.0237	235.44	6000	FRONTER	230.00	6	1.0316	237.26				

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)
* 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	1.0054	115.62	4	PANII115	115.00	6	1.0081	115.93				
6	CHO115	115.00	6	1.0543	121.25	9	LSA115	115.00	6	1.0493	120.67				
12	M.N115	115.00	6	1.0197	117.26	15	PRO115	115.00	6	1.0300	118.45				
18	CAC115	115.00	6	1.0051	115.59	19	C.V115	115.00	6	1.0001	115.01				
20	CH.AZUL	115.00	6	1.0308	118.54	23	CH115	115.00	6	1.0068	115.78				
33	STM115	115.00	6	1.0037	115.43	48	TINAJ115	115.00	6	1.0033	115.38				
50	M.O115	115.00	6	1.0035	115.40	52	TOC115	115.00	6	1.0057	115.66				
54	LM115	115.00	6	1.0261	118.00	55	LM2115	115.00	6	1.0270	118.11				
61	FFIELD	115.00	9	1.0230	117.64	87	CAL115	115.00	6	1.0265	118.04				
88	EST115	115.00	6	1.0280	118.22	92	L.V115	115.00	6	1.0271	118.12				
109	STA RITA115	115.00	6	1.0239	117.74	123	MIR115	115.00	7	1.0079	115.91				
154	CEMPAN15	115.00	6	1.0291	118.35	191	CHANG115	115.00	6	1.0219	117.52				
522	TCATIVÁ	115 115.00	6	1.0268	118.08										

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)
21	C.BAN115	115.00	6	0.9970	114.65	26	LOC115	115.00	6	0.9979	114.75				
30	MAR115	115.00	6	0.9968	114.63	37	SAN115	115.00	6	0.9961	114.55				

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	28.0	10.7	25.0	0.0	1.0000	30.0	0.9338	47.0	1	6					



Handwritten signature or initials.

67	BLM13C	13.800	V3	28.0	10.7	25.0	0.0	1.0000	30.0	0.9338	47.0	1	6
68	BLM13D	13.800	V4	28.0	11.2	25.0	0.0	1.0000	30.2	0.9285	47.0	1	6
90	EST-13L	13.800	E1	22.0	1.1	12.0	-5.0	0.9800	22.5	0.9987	27.0	1	6
91	EST-13T	13.800	E2	22.0	1.1	12.0	-5.0	0.9800	22.5	0.9987	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	1.5	12.0	-5.0	0.9800	24.5	0.9980	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	1.5	12.0	-5.0	0.9800	24.5	0.9980	27.0	1	6
97	FOR13A	13.800	F1	95.0	-27.7	50.0	-50.0	0.9800	101.0	0.9601	111.0	1	6
98	FOR13B	13.800	F2	95.0	-27.7	50.0	-50.0	0.9800	101.0	0.9601	111.0	1	6
99	FOR13C	13.800	F3	95.0	-27.7	50.0	-50.0	0.9800	101.0	0.9601	111.0	1	6
101	BAY13A	13.800	B1	79.7	18.1	50.0	-25.0	1.0000	81.8	0.9753	96.0	1	6
102	BAY13B	13.800	B2	76.9	17.8	50.0	-25.0	1.0000	78.9	0.9743	96.0	1	6
106	PANAM13A	13.800	M1	15.0	2.6	9.0	0.0	1.0000	15.2	0.9849	20.7	1	6
106	PANAM13A	13.800	M2	15.0	2.6	9.0	0.0	1.0000	15.2	0.9849	20.7	1	6
106	PANAM13A	13.800	M3	15.0	2.6	9.0	0.0	1.0000	15.2	0.9849	20.7	1	6
107	PANAM13B	13.800	M4	15.0	2.6	9.0	0.0	1.0000	15.2	0.9849	20.7	1	6
107	PANAM13B	13.800	M5	15.0	2.6	9.0	0.0	1.0000	15.2	0.9849	20.7	1	6
107	PANAM13B	13.800	M6	15.0	2.6	9.0	0.0	1.0000	15.2	0.9849	20.7	1	6
108	BAY13C	13.800	B3	76.9	17.8	50.0	-25.0	1.0000	78.9	0.9743	100.0	1	6
116	PACORA13	13.800	P1	17.0	0.0	8.8	0.0	1.0063	16.9	1.0000	21.7	1	6
116	PACORA13	13.800	P2	17.0	0.0	8.8	0.0	1.0063	16.9	1.0000	21.7	1	6
142	CANJ13A	13.800	C1	55.0	9.5	29.0	-29.0	0.9900	56.4	0.9855	69.0	1	6
143	CANJ13B	13.800	C2	55.0	9.5	29.0	-29.0	0.9900	56.4	0.9855	69.0	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9564	11.2	0.8849	13.5	1	6
302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9546	5.4	0.9216	6.2	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0026	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0026	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0026	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.0	1.3	2.8	1.3	1.0026	3.3	0.9173	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9775	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9775	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9775	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9775	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9775	10.9	1	6
524	TCATIVÁ 13B	13.800	G10	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9383	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9383	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9383	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9383	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9383	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.0	6.4	3.0	1.0034	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.0	6.4	3.0	1.0034	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.0	6.4	3.0	1.0034	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.0	6.4	3.0	1.0034	8.5	0.9363	10.9	1	6
SUBSYSTEM TOTALS				1070.6	91.4	662.1	-358.4				1371.6		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, OCT 31 2008 9:16
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV CONT FOR-GUAS

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
129	MIR13D	13.800	G4	35.0	2.4	15.0	0.0	1.0000	35.1	0.9976	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0067	17.0	1.0000	27.7			2	7	
140	GAT6A	6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9976	4.1			2	7	
140	GAT6A	6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9976	4.1			2	7	
140	GAT6A	6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9976	4.1			2	7	
141	GAT6B	6.9000	G4	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9754	5.6			2	7	



Handwritten signature or initials.

141 GAT6B	6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9754	6.2	2	7
141 GAT6B	6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9754	6.2	2	7
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0212	17.9	0.9281	23.0	2	7
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0303	17.8	0.9281	23.0	2	7
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0303	17.8	0.9281	23.0	2	7
SUBSYSTEM TOTALS			120.5	19.8	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, OCT 31 2008 9:17
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2009 ESC MOD DEM MAX INV CONT FOR-GUAS 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	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	0.7	19.4	0.0
C.RICA	248.6	569.4	-236.0	0.0	470.3	27.5	358.0	
6	1070.6	1024.7	0.0	0.0	0.0	20.9	25.0	25.0
PANAMA	91.4	179.5	0.0	0.0	447.7	46.9	312.7	
7	120.5	39.8	0.0	0.0	0.0	79.5	1.3	50.0
ACANAL	19.8	7.0	0.0	0.0	0.0	-5.7	18.6	
9	0.0	100.9	0.0	0.0	0.0	-101.0	0.1	-75.0
COLON	0.0	17.7	0.0	0.0	1.1	-22.3	5.8	
TOTALS	6340.4	6217.0	0.0	0.0	0.0	0.0	123.4	0.0
	578.5	1820.5	-847.5	0.0	1997.9	0.0	1603.5	

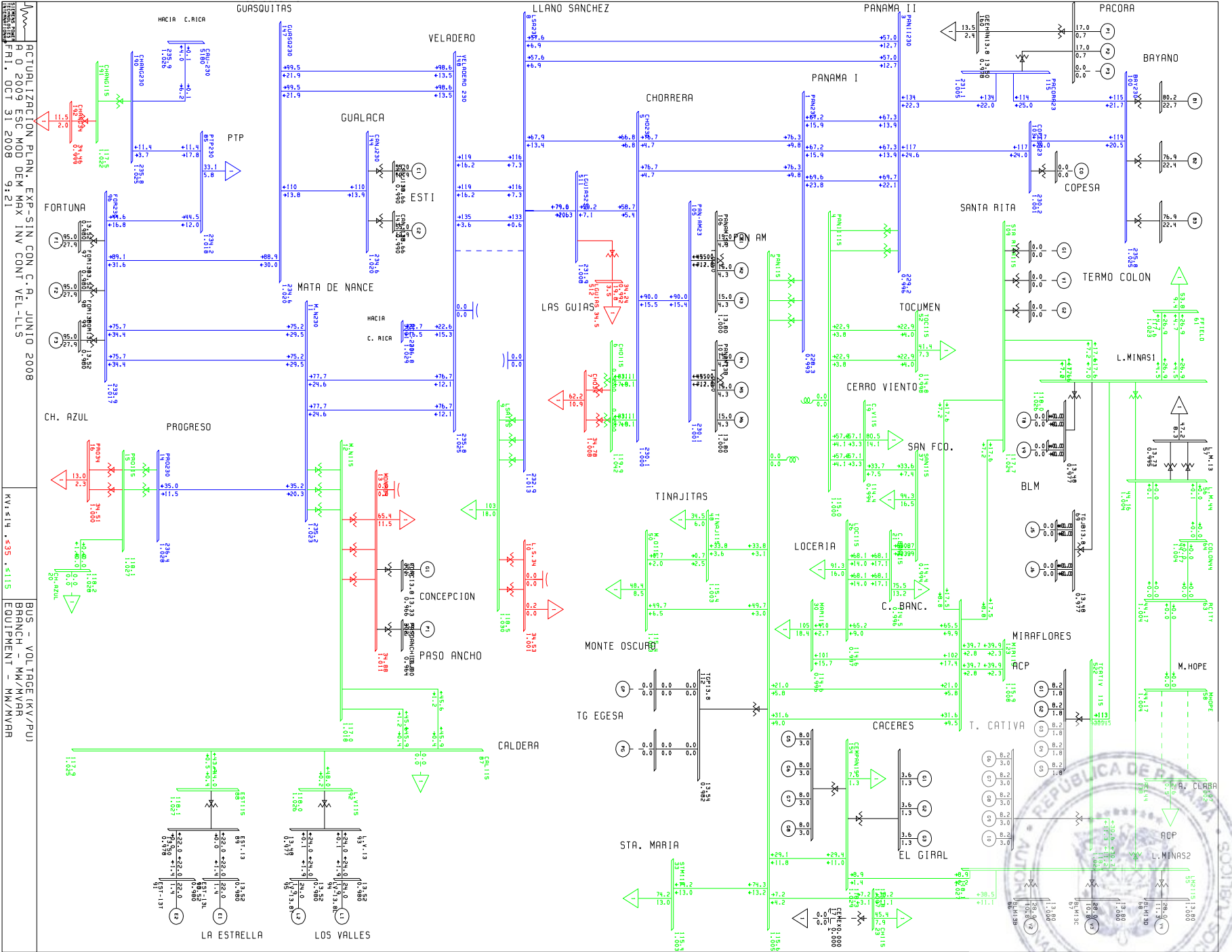


Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2009 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA VELADERO- LLANO SÁNCHEZ**



de



ACTUALIZACION PLAN. EXP. SIN CON. C. R. JUNIO 2008
 P. 0 2009 ESC. MOD. DEM. MRA. INV. CONT. VEL.-LLS
 F.R.I., OCT. 31 2008 9121

KV.15.14 .435 .4115

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



Handwritten signature or initials.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV CONT VEL-LLS

FRI, OCT 31 2008 9:21

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	1.0005	230.11	8		LSA230		230.00	6	1.0127	232.93
11		M.N230		230.00	6	1.0226	235.21	14		PRO230		230.00	6	1.0276	236.35
85		PTP230		230.00	6	1.0183	234.22	96		FOR230		230.00	6	1.0169	233.88
100		BAY230		230.00	6	1.0252	235.79	103		COPESA23		230.00	6	1.0009	230.21
105		PAN-AM23		230.00	6	1.0006	230.13	115		PACORA23		230.00	6	1.0049	231.13
144		CANJ230		230.00	6	1.0201	234.62	147		GUASQ230		230.00	6	1.0201	234.62
148		VELADERO	230	230.00	6	1.0253	235.83	190		CHANG230		230.00	6	1.0253	235.81
511		LGUIAS230		230.00	6	1.0081	231.87	6000		FRONTER		230.00	6	1.0283	236.52

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	0.9927	228.32	3		PANII230		230.00	6	0.9964	229.16

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV CONT VEL-LLS

FRI, OCT 31 2008 9:21

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	1.0004	115.04
6		CHO115		115.00	6	1.0422	119.85	9		LSA115		115.00	6	1.0304	118.49
12		M.N115		115.00	6	1.0177	117.04	15		PRO115		115.00	6	1.0269	118.09
18		CAC115		115.00	6	1.0048	115.55	20		CH.AZUL		115.00	6	1.0277	118.18
23		CH115		115.00	6	1.0065	115.75	33		STM115		115.00	6	1.0034	115.39
48		TINAJ115		115.00	6	1.0030	115.35	50		M.O115		115.00	6	1.0032	115.36
54		LM1115		115.00	6	1.0260	117.99	55		LM2115		115.00	6	1.0269	118.09
61		FFIELD		115.00	9	1.0228	117.62	87		CAL115		115.00	6	1.0251	117.89
88		EST115		115.00	6	1.0269	118.09	92		L.V115		115.00	6	1.0258	117.97
109		STA RITA115		115.00	6	1.0237	117.72	123		MIR115		115.00	7	1.0076	115.87
154		CEMPAN15		115.00	6	1.0289	118.33	191		CHANG115		115.00	6	1.0220	117.53
522		TCATIVÁ	115	115.00	6	1.0267	118.07								

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	0.9944	114.35	21		C.BAN115		115.00	6	0.9957	114.51
26		LOC115		115.00	6	0.9968	114.63	30		MAR115		115.00	6	0.9961	114.55
37		SAN115		115.00	6	0.9944	114.36	52		TOC115		115.00	6	0.9979	114.76

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV CONT VEL-LLS

FRI, OCT 31 2008 9:20

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	28.0	10.8	25.0	0.0	1.0000	30.0	0.9331	47.0			1	6	



Handwritten signature or initials.

67	BLM13C	13.800	V3	28.0	10.8	25.0	0.0	1.0000	30.0	0.9331	47.0	1	6
68	BLM13D	13.800	V4	28.0	11.3	25.0	0.0	1.0000	30.2	0.9277	47.0	1	6
90	EST-13L	13.800	E1	22.0	1.4	12.0	-5.0	0.9800	22.5	0.9979	27.0	1	6
91	EST-13T	13.800	E2	22.0	1.4	12.0	-5.0	0.9800	22.5	0.9979	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	1.9	12.0	-5.0	0.9800	24.6	0.9969	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	1.9	12.0	-5.0	0.9800	24.6	0.9969	27.0	1	6
97	FOR13A	13.800	F1	95.0	-27.9	50.0	-50.0	0.9800	101.0	0.9596	111.0	1	6
98	FOR13B	13.800	F2	95.0	-27.9	50.0	-50.0	0.9800	101.0	0.9596	111.0	1	6
99	FOR13C	13.800	F3	95.0	-27.9	50.0	-50.0	0.9800	101.0	0.9596	111.0	1	6
101	BAY13A	13.800	B1	80.2	22.7	50.0	-25.0	1.0000	83.3	0.9621	96.0	1	6
102	BAY13B	13.800	B2	76.9	22.4	50.0	-25.0	1.0000	80.1	0.9602	96.0	1	6
106	PANAM13A	13.800	M1	15.0	4.3	9.0	0.0	1.0000	15.6	0.9621	20.7	1	6
106	PANAM13A	13.800	M2	15.0	4.3	9.0	0.0	1.0000	15.6	0.9621	20.7	1	6
106	PANAM13A	13.800	M3	15.0	4.3	9.0	0.0	1.0000	15.6	0.9621	20.7	1	6
107	PANAM13B	13.800	M4	15.0	4.3	9.0	0.0	1.0000	15.6	0.9621	20.7	1	6
107	PANAM13B	13.800	M5	15.0	4.3	9.0	0.0	1.0000	15.6	0.9621	20.7	1	6
107	PANAM13B	13.800	M6	15.0	4.3	9.0	0.0	1.0000	15.6	0.9621	20.7	1	6
108	BAY13C	13.800	B3	76.9	22.4	50.0	-25.0	1.0000	80.1	0.9602	100.0	1	6
116	PACORA13	13.800	P1	17.0	0.7	8.8	0.0	1.0000	17.0	0.9991	21.7	1	6
116	PACORA13	13.800	P2	17.0	0.7	8.8	0.0	1.0000	17.0	0.9991	21.7	1	6
142	CANJ13A	13.800	C1	55.0	12.9	29.0	-29.0	0.9900	57.1	0.9735	69.0	1	6
143	CANJ13B	13.800	C2	55.0	12.9	29.0	-29.0	0.9900	57.1	0.9735	69.0	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9659	11.1	0.8849	13.5	1	6
302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9641	5.3	0.9216	6.2	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0024	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0024	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0024	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.0	1.3	2.8	1.3	1.0024	3.3	0.9173	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	1	6
524	TCATIVÁ 13B	13.800	G1	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9376	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9376	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9376	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9376	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9376	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.0	6.4	3.0	1.0033	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.0	6.4	3.0	1.0033	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.0	6.4	3.0	1.0033	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.0	6.4	3.0	1.0033	8.5	0.9363	10.9	1	6
SUBSYSTEM TOTALS				1071.1	124.6	662.1	-358.4				1371.6		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, OCT 31 2008 9:20
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2009 ESC MOD DEM MAX INV CONT VEL-LLS

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
129	MIR13D	13.800	G4	35.0	2.5	15.0	0.0	1.0000	35.1	0.9975	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0065	17.0	1.0000	27.7			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
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0210	17.9	0.9281	23.0	2	7
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0301	17.8	0.9281	23.0	2	7
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0301	17.8	0.9281	23.0	2	7
SUBSYSTEM TOTALS			120.5	19.9	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, OCT 31 2008 9:21
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2009 ESC MOD DEM MAX INV CONT VEL-LLS 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	



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	0.8	19.3	0.0
C.RICA	251.9	569.4	-236.2	0.0	469.8	31.1	357.5	
6	1071.1	1024.7	0.0	0.0	0.0	20.7	25.6	25.0
PANAMA	124.6	179.5	0.0	0.0	420.7	43.2	322.6	
7	120.5	39.8	0.0	0.0	0.0	79.5	1.3	50.0
ACANAL	19.9	7.0	0.0	0.0	0.0	-5.6	18.6	
9	0.0	100.9	0.0	0.0	0.0	-101.0	0.1	-75.0
COLON	0.0	17.7	0.0	0.0	1.1	-22.3	5.8	
TOTALS	6340.8	6217.0	0.0	0.0	0.0	0.0	123.8	0.0
	615.1	1820.5	-847.7	0.0	1970.6	0.0	1612.9	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2010 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO**



de

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	1.0142	233.26	11	M.N230	230.00	6	1.0306	237.05				
14	PRO230	230.00	6	1.0325	237.49	85	PTP230	230.00	6	1.0272	236.25				
96	FOR230	230.00	6	1.0268	236.16	100	BAY230	230.00	6	1.0209	234.81				
144	CANJ230	230.00	6	1.0283	236.51	145	BJOMIN230	230.00	6	1.0305	237.01				
147	GUASQ230	230.00	6	1.0283	236.51	148	VELADERO 230	230.00	6	1.0293	236.73				
190	CHANG230	230.00	6	1.0311	237.15	310	CONCEPCION23	230.00	6	1.0317	237.29				
511	LGUIAS230	230.00	6	1.0051	231.18	540	ANTON 230	230.00	6	1.0062	231.43				
6000	FRONTER	230.00	6	1.0329	237.57										

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	0.9864	226.86	3	PANII230	230.00	6	0.9896	227.60				
5	CHO230	230.00	6	0.9930	228.40	103	COPESA23	230.00	6	0.9946	228.75				
105	PAN-AM23	230.00	6	0.9931	228.41	115	PACORA23	230.00	6	0.9989	229.75				

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	116.02	4	PANII115	115.00	6	1.0047	115.54				
6	CHO115	115.00	6	1.0334	118.85	9	LSA115	115.00	6	1.0313	118.60				
12	M.N115	115.00	6	1.0274	118.15	15	PRO115	115.00	6	1.0317	118.65				
18	CAC115	115.00	6	1.0085	115.98	20	CH.AZUL	115.00	6	1.0325	118.74				
23	CH115	115.00	6	1.0090	116.03	26	LOC115	115.00	6	1.0002	115.03				
33	STM115	115.00	6	1.0072	115.82	48	TINAJ115	115.00	6	1.0067	115.78				
50	M.O115	115.00	6	1.0069	115.79	52	TOC115	115.00	6	1.0021	115.25				
54	LM115	115.00	6	1.0277	118.18	55	LM2115	115.00	6	1.0287	118.30				
61	FFIELD	115.00	9	1.0243	117.80	87	CAL115	115.00	6	1.0400	119.60				
88	EST115	115.00	6	1.0423	119.87	92	L.V115	115.00	6	1.0409	119.71				
109	STA RITA115	115.00	6	1.0256	117.94	123	MIR115	115.00	7	1.0111	116.27				
154	CEMPAN15	115.00	6	1.0312	118.59	191	CHANG115	115.00	6	1.0277	118.19				
522	TCATIVÁ 115	115.00	6	1.0284	118.27										

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)
19	C.V115	115.00	6	0.9981	114.79	21	C.BAN115	115.00	6	0.9991	114.89				
30	MAR115	115.00	6	0.9994	114.94	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	38.0	10.8	25.0	0.0	1.0000	39.5	0.9622	47.0					1	6	



Handwritten signature or initials.

67	BLM13C	13.800	V3	38.0	10.8	25.0	0.0	1.0000	39.5	0.9622	47.0	1	6
68	BLM13D	13.800	V4	38.0	11.2	25.0	0.0	1.0000	39.6	0.9595	47.0	1	6
90	EST-13L	13.800	E1	22.0	3.0	12.0	-5.0	1.0000	22.2	0.9906	27.0	1	6
91	EST-13T	13.800	E2	22.0	3.0	12.0	-5.0	1.0000	22.2	0.9906	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	3.6	12.0	-5.0	1.0000	24.3	0.9890	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	3.6	12.0	-5.0	1.0000	24.3	0.9890	27.0	1	6
97	FOR13A	13.800	F1	95.0	-19.5	50.0	-50.0	1.0000	97.0	0.9796	111.0	1	6
98	FOR13B	13.800	F2	95.0	-19.5	50.0	-50.0	1.0000	97.0	0.9796	111.0	1	6
99	FOR13C	13.800	F3	95.0	-19.5	50.0	-50.0	1.0000	97.0	0.9796	111.0	1	6
101	BAY13A	13.800	B1	73.4	25.2	50.0	-25.0	1.0000	77.6	0.9457	96.0	1	6
102	BAY13B	13.800	B2	71.3	25.0	50.0	-25.0	1.0000	75.6	0.9436	96.0	1	6
106	PANAM13A	13.800	M1	15.0	7.3	9.0	0.0	1.0000	16.7	0.8992	20.7	1	6
106	PANAM13A	13.800	M2	15.0	7.3	9.0	0.0	1.0000	16.7	0.8992	20.7	1	6
108	BAY13C	13.800	B3	71.3	25.0	50.0	-25.0	1.0000	75.6	0.9436	100.0	1	6
116	PACORA13	13.800	P1	17.0	4.6	8.8	0.0	1.0000	17.6	0.9649	21.7	1	6
142	CANJ13A	13.800	C1	55.0	13.1	29.0	-29.0	1.0000	56.5	0.9727	69.0	1	6
143	CANJ13B	13.800	C2	55.0	13.1	29.0	-29.0	1.0000	56.5	0.9727	69.0	1	6
204	BJOMIN13	13.800	G1	23.0	-10.2	13.0	-13.0	1.0000	25.2	0.9142	28.9	1	6
204	BJOMIN13	13.800	G2	23.0	-10.2	13.0	-13.0	1.0000	25.2	0.9142	28.9	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9628	11.1	0.8849	13.5	1	6
302	PASOANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9610	5.4	0.9216	6.2	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9917	9.5	0.9772	13.5	1	6
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1171	8.1	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1171	8.1	1.0000	35.3	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0045	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0045	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0045	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.0	1.3	2.8	1.3	1.0045	3.3	0.9173	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9820	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9820	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9820	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9820	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9820	10.9	1	6
524	TCATIVÁ 13B	13.800	G1	8.2	2.8	6.6	-6.6	1.0000	8.7	0.9452	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	2.8	6.6	-6.6	1.0000	8.7	0.9452	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	2.8	6.6	-6.6	1.0000	8.7	0.9452	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	2.8	6.6	-6.6	1.0000	8.7	0.9452	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	2.8	6.6	-6.6	1.0000	8.7	0.9452	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.0	6.4	3.0	1.0054	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.0	6.4	3.0	1.0054	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.0	6.4	3.0	1.0054	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.0	6.4	3.0	1.0054	8.5	0.9363	10.9	1	6
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	1.0060	59.7	0.9997	136.0	1	6
SUBSYSTEM TOTALS				1139.3	137.4	646.7	-383.0				1545.1		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 8:34
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2010 ESC MOD DEM MAX INV

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
129	MIR13D	13.800	G4	35.0	1.7	15.0	0.0	1.0000	35.0	0.9989	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0086	17.0	1.0000	27.7			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	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9740	5.6	2	7
141 GAT6B	6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9740	6.2	2	7
141 GAT6B	6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9740	6.2	2	7
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0230	17.9	0.9281	23.0	2	7
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0321	17.7	0.9281	23.0	2	7
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0321	17.7	0.9281	23.0	2	7
SUBSYSTEM TOTALS			120.5	19.0	71.5	5.5				171.3		



Handwritten signature or initials.

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	55.6	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	147.3	
5	1344.9	1324.8	0.0	0.0	0.0	0.8	19.3	0.0
C.RICA	244.2	569.4	-236.2	0.0	470.6	24.3	357.2	
6	1139.3	1081.9	0.0	0.0	0.0	28.6	28.8	25.0
PANAMA	137.4	189.5	0.0	0.0	455.9	52.4	351.4	
7	120.5	42.0	0.0	0.0	0.0	77.3	1.2	50.0
ACANAL	19.0	7.4	0.0	0.0	0.0	-6.4	18.0	
9	0.0	106.6	0.0	0.0	0.0	-106.7	0.1	-75.0
COLON	0.0	18.7	0.0	0.0	1.1	-23.9	6.3	
TOTALS	6409.0	6282.0	0.0	0.0	0.0	0.0	127.0	0.0
	619.1	1831.9	-847.7	0.0	2006.5	0.0	1641.4	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2010 ESCENARIO MODERADO DEMANDA MÁXIMA VERANO**



de

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	1.0004	230.09	3	PANII230	230.00	6	1.0027	230.63				
5	CHO230	230.00	6	1.0097	232.24	8	LSA230	230.00	6	1.0309	237.10				
11	M.N230	230.00	6	1.0285	236.56	14	PRO230	230.00	6	1.0333	237.66				
85	PTP230	230.00	6	1.0232	235.34	96	FOR230	230.00	6	1.0224	235.15				
100	BAY230	230.00	6	1.0200	234.60	103	COPESA23	230.00	6	1.0057	231.30				
105	PAN-AM23	230.00	6	1.0098	232.26	115	PACORA23	230.00	6	1.0082	231.88				
144	CANJ230	230.00	6	1.0279	236.43	147	GUASQ230	230.00	6	1.0279	236.43				
148	VELADERO	230230.00	6	1.0379	238.71	190	CHANG230	230.00	6	1.0286	236.57				
511	LGUIAS230	230.00	6	1.0230	235.29	6000	FRONTER	230.00	6	1.0340	237.82				

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)
* 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	1.0001	115.01	4	PANII115	115.00	6	1.0029	115.33				
6	CHO115	115.00	6	1.0512	120.89	9	LSA115	115.00	6	1.0486	120.59				
12	M.N115	115.00	6	1.0187	117.15	15	PRO115	115.00	6	1.0325	118.74				
20	CH.AZUL	115.00	6	1.0333	118.82	23	CH115	115.00	6	1.0042	115.49				
52	TOC115	115.00	6	1.0003	115.04	54	LM115	115.00	6	1.0322	118.70				
55	LM2115	115.00	6	1.0323	118.72	61	FFIELD	115.00	9	1.0289	118.32				
87	CAL115	115.00	6	1.0188	117.16	88	EST115	115.00	6	1.0183	117.11				
92	L.V115	115.00	6	1.0186	117.14	109	STA RITA115	115.00	6	1.0319	118.67				
123	MIR115	115.00	7	1.0029	115.33	154	CEMPAN15	115.00	6	1.0303	118.48				
191	CHANG115	115.00	6	1.0251	117.89	522	TCATIVÁ	115 115.00	6	1.0325	118.73				

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)
18	CAC115	115.00	6	0.9999	114.99	19	C.V115	115.00	6	0.9944	114.36				
21	C.BAN115	115.00	6	0.9911	113.97	26	LOC115	115.00	6	0.9920	114.08				
30	MAR115	115.00	6	0.9910	113.96	33	STM115	115.00	6	0.9983	114.81				
37	SAN115	115.00	6	0.9902	113.87	48	TINAJ115	115.00	6	0.9979	114.76				
50	M.O115	115.00	6	0.9980	114.77										

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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	38.0	4.7	25.0	0.0	0.9900	38.7	0.9924	47.0	1	6
67	BLM13C	13.800	V3	38.0	4.7	25.0	0.0	0.9900	38.7	0.9924	47.0	1	6
68	BLM13D	13.800	V4	38.0	4.8	25.0	0.0	0.9900	38.7	0.9922	47.0	1	6
70	TGJB13A	13.800	J5	20.4	8.4	20.0	0.0	1.0000	22.1	0.9256	39.4	1	6
73	BLMCCB	13.800	V9	20.0	8.3	40.0	0.0	1.0000	21.7	0.9229	71.0	1	6
90	EST-13L	13.800	E1	22.0	-5.0	12.0	-5.0	0.9508	23.7	0.9751	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	-5.0	12.0	-5.0	0.9506	25.8	0.9790	27.0	1	6
97	FOR13A	13.800	F1	91.0	-33.2	50.0	-50.0	0.9800	98.8	0.9394	111.0	1	6
98	FOR13B	13.800	F2	91.0	-33.2	50.0	-50.0	0.9800	98.8	0.9394	111.0	1	6
99	FOR13C	13.800	F3	91.0	-33.2	50.0	-50.0	0.9800	98.8	0.9394	111.0	1	6
101	BAY13A	13.800	B1	57.9	8.8	50.0	-25.0	0.9800	59.8	0.9885	96.0	1	6
102	BAY13B	13.800	B2	57.2	8.8	50.0	-25.0	0.9800	59.0	0.9884	96.0	1	6
106	PANAM13A	13.800	M1	15.0	2.9	9.0	0.0	1.0000	15.3	0.9814	20.7	1	6
106	PANAM13A	13.800	M2	15.0	2.9	9.0	0.0	1.0000	15.3	0.9814	20.7	1	6
106	PANAM13A	13.800	M3	15.0	2.9	9.0	0.0	1.0000	15.3	0.9814	20.7	1	6
107	PANAM13B	13.800	M4	15.0	2.9	9.0	0.0	1.0000	15.3	0.9814	20.7	1	6
107	PANAM13B	13.800	M5	15.0	2.9	9.0	0.0	1.0000	15.3	0.9814	20.7	1	6
107	PANAM13B	13.800	M6	15.0	2.9	9.0	0.0	1.0000	15.3	0.9814	20.7	1	6
108	BAY13C	13.800	B3	57.2	8.8	50.0	-25.0	0.9800	59.0	0.9884	100.0	1	6
116	PACORA13	13.800	P1	17.0	0.0	8.8	0.0	0.9984	17.0	1.0000	21.7	1	6
116	PACORA13	13.800	P2	17.0	0.0	8.8	0.0	0.9984	17.0	1.0000	21.7	1	6
116	PACORA13	13.800	P3	17.0	0.0	8.8	0.0	0.9984	17.0	1.0000	21.7	1	6
142	CANJ13A	13.800	C1	40.0	5.3	29.0	-29.0	0.9800	41.2	0.9912	69.0	1	6
143	CANJ13B	13.800	C2	40.0	5.3	29.0	-29.0	0.9800	41.2	0.9912	69.0	1	6
301	CONC13.8	13.800	G1	8.3	5.0	5.0	-5.0	0.9658	10.0	0.8566	13.5	1	6
302	PASOANCH13.8	13.800	P1	3.4	2.0	2.0	-2.0	0.9639	4.1	0.8619	6.2	1	6
304	ALGA13.8	13.800	A1	8.1	2.0	2.0	0.0	0.9715	8.6	0.9708	13.5	1	6
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.0964	8.2	1.0000	35.3	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0037	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0037	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0037	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.0	1.3	2.8	1.3	1.0037	3.3	0.9173	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.1	6.6	-6.6	0.9900	8.4	0.9911	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.1	6.6	-6.6	0.9900	8.4	0.9911	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.1	6.6	-6.6	0.9900	8.4	0.9911	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.1	6.6	-6.6	0.9900	8.4	0.9911	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.1	6.6	-6.6	0.9900	8.4	0.9911	10.9	1	6
524	TCATIVÁ 13B	13.800	10	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9613	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9613	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9613	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9613	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	2.4	6.6	-6.6	1.0000	8.5	0.9613	10.9	1	6
525	TCOLON 13A	13.800	G1	36.0	9.5	18.4	9.2	1.0000	37.2	0.9669	44.4	1	6
526	TCOLON 13B	13.800	G2	36.0	9.5	18.4	9.2	1.0000	37.2	0.9669	44.4	1	6
527	TCOLON 13C	13.800	V1	36.0	9.5	18.4	5.8	1.0000	37.2	0.9669	44.4	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.0	6.4	3.0	1.0045	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.0	6.4	3.0	1.0045	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.0	6.4	3.0	1.0045	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.0	6.4	3.0	1.0045	8.5	0.9363	10.9	1	6
SUBSYSTEM TOTALS				1131.3	48.0	764.1	-324.1				1631.7		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 8:43
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2010 ESC MOD DEM MAX VER

AREA 7 [ACANAL] MACHINE SUMMARY:



Handwritten signature or initials.

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
129		MIR13D		13.800	G4	35.0	3.6	15.0	0.0	1.0000	35.2	0.9946	44.1			2	7	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0036	17.0	1.0000	27.7			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	-0.8	3.0	-3.0	1.0000	4.0	0.9790	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9790	6.2			2	7	
141		GAT6B		6.9000	G6	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9790	6.2			2	7	
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0182	18.0	0.9281	23.0			2	7	
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0273	17.8	0.9281	23.0			2	7	
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0273	17.8	0.9281	23.0			2	7	
SUBSYSTEM TOTALS						120.5	21.5	71.5	5.5				171.3					



Handwritten signature or initials.

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	1344.2	1324.8	0.0	0.0	0.0	0.1	19.3	0.0
C.RICA	243.5	569.4	-236.3	0.0	470.8	24.2	356.9	
6	1131.3	1081.9	0.0	0.0	0.0	29.3	20.0	25.0
PANAMA	48.0	189.5	0.0	0.0	449.6	50.3	257.7	
7	120.5	42.0	0.0	0.0	0.0	77.3	1.2	50.0
ACANAL	21.5	7.4	0.0	0.0	0.0	-4.0	18.1	
9	0.0	106.6	0.0	0.0	0.0	-106.7	0.1	-75.0
COLON	0.0	18.7	0.0	0.0	1.1	-24.0	6.4	
TOTALS	6400.2	6282.0	0.0	0.0	0.0	0.0	118.2	0.0
	531.4	1831.9	-847.7	0.0	2000.3	0.0	1547.6	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2010 ESCENARIO MODERADO DEMANDA MÍNIMA VERANO**

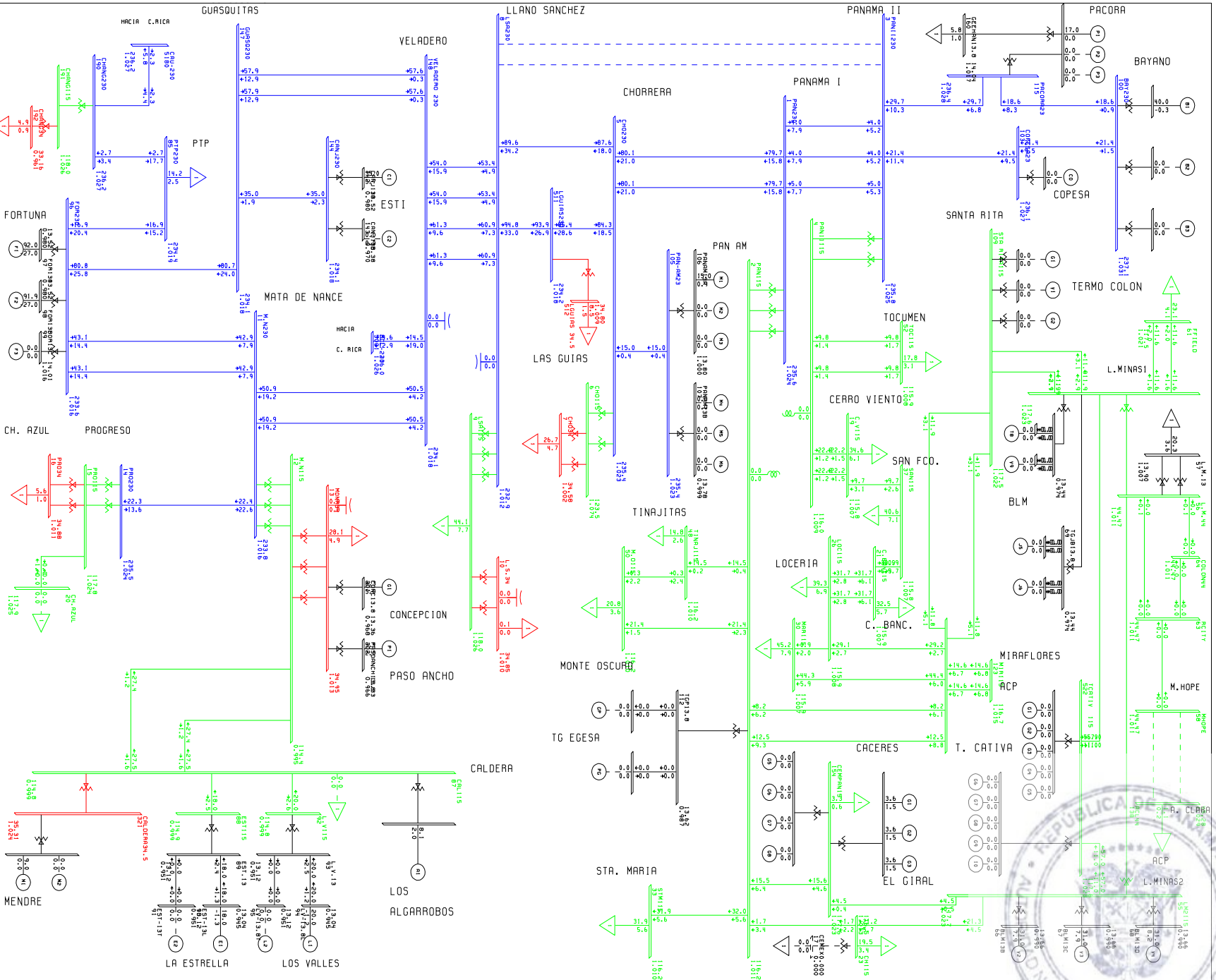


de

ACTUALIZACIÓN PLAN. EXP-SIN CON C.R. JUNIO 2008
 P.O 2010 ESC MOD DEM MAX VER
 ECUADOR
 ITHU, OCT 30 2008 15:14

KV: 115, 235, 5115

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



Handwritten signature or initials.

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	1.0245	235.63	3	PANII230	230.00	6	1.0252	235.79				
5	CHO230	230.00	6	1.0235	235.40	8	LSA230	230.00	6	1.0124	232.86				
11	M.N230	230.00	6	1.0165	233.79	14	PRO230	230.00	6	1.0238	235.48				
85	PTP230	230.00	6	1.0192	234.41	96	FOR230	230.00	6	1.0155	233.57				
100	BAY230	230.00	6	1.0308	237.09	103	COPESA23	230.00	6	1.0265	236.10				
105	PAN-AM23	230.00	6	1.0235	235.40	115	PACORA23	230.00	6	1.0276	236.35				
144	CANJ230	230.00	6	1.0180	234.15	147	GUASQ230	230.00	6	1.0180	234.14				
148	VELADERO	230230.00	6	1.0180	234.14	190	CHANG230	230.00	6	1.0271	236.23				
511	LGUIAS230	230.00	6	1.0184	234.24	6000	FRONTER	230.00	6	1.0247	235.68				

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)
* 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	1.0108	116.25	4	PANII115	115.00	6	1.0089	116.02				
6	CHO115	115.00	6	1.0737	123.48	9	LSA115	115.00	6	1.0262	118.01				
15	PRO115	115.00	6	1.0241	117.77	18	CAC115	115.00	6	1.0109	116.26				
19	C.V115	115.00	6	1.0066	115.76	20	CH.AZUL	115.00	6	1.0249	117.86				
21	C.BAN115	115.00	6	1.0074	115.86	23	CH115	115.00	6	1.0132	116.52				
26	LOC115	115.00	6	1.0078	115.90	30	MAR115	115.00	6	1.0074	115.85				
33	STM115	115.00	6	1.0101	116.17	37	SAN115	115.00	6	1.0069	115.80				
48	TINAJ115	115.00	6	1.0103	116.18	50	M.O115	115.00	6	1.0103	116.19				
52	TOC115	115.00	6	1.0079	115.91	54	LM115	115.00	6	1.0227	117.61				
55	LM2115	115.00	6	1.0234	117.69	61	FFIELD	115.00	9	1.0214	117.46				
109	STA RITA115	115.00	6	1.0215	117.48	123	MIR115	115.00	7	1.0146	116.68				
154	CEMPAN15	115.00	6	1.0228	117.62	191	CHANG115	115.00	6	1.0258	117.97				
522	TCATIVÁ	115	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)
12	M.N115	115.00	6	0.9949	114.41	87	CAL115	115.00	6	0.9985	114.83				
88	EST115	115.00	6	0.9988	114.86	92	L.V115	115.00	6	0.9987	114.85				

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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	31.0	7.9	25.0	0.0	0.9900	32.3	0.9687	47.0	1	6
67	BLM13C	13.800	V3	31.0	7.9	25.0	0.0	0.9900	32.3	0.9687	47.0	1	6
68	BLM13D	13.800	V4	31.0	8.2	25.0	0.0	0.9900	32.4	0.9664	47.0	1	6
90	EST-13L	13.800	E1	18.0	-1.3	12.0	-5.0	0.9450	19.1	0.9972	27.0	1	6
94	LV-13.8L	13.800	L1	20.0	-1.2	12.0	-5.0	0.9450	21.2	0.9983	27.0	1	6
97	FOR13A	13.800	F1	92.0	-27.0	50.0	-50.0	0.9800	97.8	0.9596	111.0	1	6
98	FOR13B	13.800	F2	91.9	-27.0	50.0	-50.0	0.9800	97.8	0.9595	111.0	1	6
101	BAY13A	13.800	B1	40.0	-0.3	50.0	-25.0	0.9800	40.8	1.0000	96.0	1	6
106	PANAM13A	13.800	M1	15.0	0.9	9.0	0.0	1.0000	15.0	0.9982	20.7	1	6
116	PACORA13	13.800	P1	17.0	0.0	8.8	0.0	1.0252	16.6	1.0000	21.7	1	6
142	CANJ13A	13.800	C1	35.0	5.7	29.0	-29.0	0.9800	36.2	0.9872	69.0	1	6
301	CONC13.8	13.800	G1	8.3	5.0	5.0	-5.0	0.9679	10.0	0.8566	13.5	1	6
302	PASOANCH13.8	13.800	P1	3.4	2.0	2.0	-2.0	0.9660	4.1	0.8619	6.2	1	6
304	ALGA13.8	13.800	A1	8.1	2.0	2.0	0.0	0.9522	8.8	0.9708	13.5	1	6
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.0745	8.4	1.0000	35.3	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.5	2.8	1.3	1.0000	3.9	0.9241	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.5	2.8	1.3	1.0000	3.9	0.9241	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.5	2.8	1.3	1.0000	3.9	0.9241	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.6	1.5	2.8	1.3	1.0000	3.9	0.9241	4.8	1	6
SUBSYSTEM TOTALS				465.1	-11.1	316.1	-165.8				712.3		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 8:48
ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
AÑO 2010 ESC MOD DEM MAX VER

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
170		MIR13G		13.800	M1	15.5	6.8	11.2	6.8	1.0470	16.1	0.9150	23.0			2	7	
171		MIR13H		13.800	M1	15.5	6.8	11.2	6.8	1.0561	16.0	0.9149	23.0			2	7	
171		MIR13H		13.800	M2	15.5	6.8	11.2	6.8	1.0561	16.0	0.9149	23.0			2	7	
SUBSYSTEM TOTALS						46.4	20.5	33.5	20.5				69.1					



Handwritten signature or initials.

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	1344.2	1324.8	0.0	0.0	0.0	0.1	19.2	0.0
C.RICA	253.6	569.4	-236.5	0.0	469.5	33.3	356.9	
6	465.1	440.9	0.0	0.0	0.0	14.1	10.1	25.0
PANAMA	-11.1	77.2	185.1	0.0	392.0	7.1	111.4	
7	46.4	17.1	0.0	0.0	0.0	29.2	0.1	50.0
ACANAL	20.5	3.0	0.0	0.0	0.0	13.4	4.1	
9	0.0	43.4	0.0	0.0	0.0	-43.4	0.0	-75.0
COLON	0.0	7.6	0.0	0.0	1.1	-7.5	1.0	
TOTALS	5660.0	5553.0	0.0	0.0	0.0	0.0	107.0	0.0
	481.8	1704.2	-662.8	0.0	1941.5	0.0	1381.9	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2010 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA GUASQUITAS-VELADERO**



de

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	1.0084	231.93		11	M.N230		230.00	6	1.0255	235.86	
14	PRO230		230.00	6	1.0283	236.50		85	PTP230		230.00	6	1.0233	235.36	
96	FOR230		230.00	6	1.0227	235.21		100	BAY230		230.00	6	1.0193	234.45	
144	CANJ230		230.00	6	1.0226	235.21		145	BJOMIN230		230.00	6	1.0265	236.10	
147	GUASQ230		230.00	6	1.0226	235.20		148	VELADERO	230230.00	6	1.0217	234.98		
190	CHANG230		230.00	6	1.0283	236.52		310	CONCEPCION23	230.00	6	1.0273	236.29		
511	LGUIAS230		230.00	6	1.0003	230.07		540	ANTON	230	230.00	6	1.0016	230.36	
6000	FRONTER		230.00	6	1.0287	236.60									

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)
1	PAN230		230.00	6	0.9835	226.21		3	PANII230		230.00	6	0.9868	226.97	
5	CHO230		230.00	6	0.9897	227.63		103	COPESA23		230.00	6	0.9920	228.16	
105	PAN-AM23		230.00	6	0.9897	227.64		115	PACORA23		230.00	6	0.9966	229.22	

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)
2	PAN115		115.00	6	1.0063	115.72		4	PANII115		115.00	6	1.0019	115.22	
6	CHO115		115.00	6	1.0298	118.43		9	LSA115		115.00	6	1.0253	117.91	
12	M.N115		115.00	6	1.0235	117.70		15	PRO115		115.00	6	1.0275	118.16	
18	CAC115		115.00	6	1.0060	115.69		20	CH.AZUL		115.00	6	1.0282	118.24	
23	CH115		115.00	6	1.0069	115.80		33	STM115		115.00	6	1.0046	115.52	
48	TINAJ115		115.00	6	1.0041	115.48		50	M.O115		115.00	6	1.0043	115.49	
54	LM115		115.00	6	1.0264	118.04		55	LM2115		115.00	6	1.0275	118.16	
61	FFIELD		115.00	9	1.0231	117.66		87	CAL115		115.00	6	1.0374	119.30	
88	EST115		115.00	6	1.0400	119.60		92	L.V115		115.00	6	1.0384	119.42	
109	STA RITA115		115.00	6	1.0242	117.78		123	MIR115		115.00	7	1.0086	115.99	
154	CEMPAN15		115.00	6	1.0296	118.40		191	CHANG115		115.00	6	1.0249	117.87	
522	TCATIVÁ	115	115.00	6	1.0272	118.13									

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)
19	C.V115		115.00	6	0.9954	114.47		21	C.BAN115		115.00	6	0.9964	114.59	
26	LOC115		115.00	6	0.9976	114.72		30	MAR115		115.00	6	0.9968	114.64	
37	SAN115		115.00	6	0.9951	114.44		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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	38.0	11.3	25.0	0.0	1.0000	39.6	0.9586	47.0	1	6
67	BLM13C	13.800	V3	38.0	11.3	25.0	0.0	1.0000	39.6	0.9586	47.0	1	6
68	BLM13D	13.800	V4	38.0	11.7	25.0	0.0	1.0000	39.8	0.9556	47.0	1	6
90	EST-13L	13.800	E1	22.0	3.7	12.0	-5.0	1.0000	22.3	0.9860	27.0	1	6
91	EST-13T	13.800	E2	22.0	3.7	12.0	-5.0	1.0000	22.3	0.9860	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	4.3	12.0	-5.0	1.0000	24.4	0.9841	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	4.3	12.0	-5.0	1.0000	24.4	0.9841	27.0	1	6
97	FOR13A	13.800	F1	95.0	-15.7	50.0	-50.0	1.0000	96.3	0.9866	111.0	1	6
98	FOR13B	13.800	F2	95.0	-15.7	50.0	-50.0	1.0000	96.3	0.9866	111.0	1	6
99	FOR13C	13.800	F3	95.0	-15.7	50.0	-50.0	1.0000	96.3	0.9866	111.0	1	6
101	BAY13A	13.800	B1	75.9	26.7	50.0	-25.0	1.0000	80.5	0.9436	96.0	1	6
102	BAY13B	13.800	B2	71.3	26.2	50.0	-25.0	1.0000	76.0	0.9387	96.0	1	6
106	PANAM13A	13.800	M1	15.0	8.0	9.0	0.0	1.0000	17.0	0.8821	20.7	1	6
106	PANAM13A	13.800	M2	15.0	8.0	9.0	0.0	1.0000	17.0	0.8821	20.7	1	6
108	BAY13C	13.800	B3	71.3	26.2	50.0	-25.0	1.0000	76.0	0.9387	100.0	1	6
116	PACORA13	13.800	P1	17.0	5.9	8.8	0.0	1.0000	18.0	0.9454	21.7	1	6
142	CANJ13A	13.800	C1	55.0	14.0	29.0	-29.0	1.0000	56.8	0.9689	69.0	1	6
143	CANJ13B	13.800	C2	55.0	14.0	29.0	-29.0	1.0000	56.8	0.9689	69.0	1	6
204	BJOMIN13	13.800	G1	23.0	-8.8	13.0	-13.0	1.0000	24.6	0.9343	28.9	1	6
204	BJOMIN13	13.800	G2	23.0	-8.8	13.0	-13.0	1.0000	24.6	0.9343	28.9	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9591	11.2	0.8849	13.5	1	6
302	PASOANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9572	5.4	0.9216	6.2	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9892	9.5	0.9772	13.5	1	6
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1143	8.1	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1143	8.1	1.0000	35.3	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0030	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0030	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0030	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.0	1.3	2.8	1.3	1.0030	3.3	0.9173	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.7	6.6	-6.6	0.9900	8.5	0.9786	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.7	6.6	-6.6	0.9900	8.5	0.9786	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.7	6.6	-6.6	0.9900	8.5	0.9786	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.7	6.6	-6.6	0.9900	8.5	0.9786	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.7	6.6	-6.6	0.9900	8.5	0.9786	10.9	1	6
524	TCATIVÁ 13B	13.800	10	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9399	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9399	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9399	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9399	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9399	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.0	6.4	3.0	1.0039	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.0	6.4	3.0	1.0039	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.0	6.4	3.0	1.0039	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.0	6.4	3.0	1.0039	8.5	0.9363	10.9	1	6
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	1.0014	59.9	0.9997	136.0	1	6
SUBSYSTEM TOTALS				1141.9	165.8	646.7	-383.0				1545.1		

SYST

 PII INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 8:54
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2010 ESC MOD DEM MAX INV CONT GUAS-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
129	MIR13D	13.800	G4	35.0	2.3	15.0	0.0	1.0000	35.1	0.9979	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0071	17.0	1.0000	27.7			2	7	
140	GAT6A	6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9976	4.1			2	7	
140	GAT6A	6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9976	4.1			2	7	



140	GAT6A	6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9976	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
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0216	17.9	0.9281	23.0	2	7
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0307	17.8	0.9281	23.0	2	7
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0307	17.8	0.9281	23.0	2	7
SUBSYSTEM TOTALS				120.5	19.7	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 8:55
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2010 ESC MOD DEM MAX INV CONT GUAS-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	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		1006.8	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
			32.5	224.5	-98.9	0.0	143.2	-97.2	147.4	



Handwritten signature or initials.

5	1344.9	1324.8	0.0	0.0	0.0	0.8	19.4	0.0
C.RICA	250.4	569.4	-236.3	0.0	469.9	29.6	357.6	
6	1141.9	1081.9	0.0	0.0	0.0	28.6	31.4	25.0
PANAMA	165.8	189.5	0.0	0.0	435.7	46.3	365.6	
7	120.5	42.0	0.0	0.0	0.0	77.3	1.2	50.0
ACANAL	19.7	7.4	0.0	0.0	0.0	-5.7	18.0	
9	0.0	106.6	0.0	0.0	0.0	-106.7	0.1	-75.0
COLON	0.0	18.7	0.0	0.0	1.1	-23.9	6.3	
TOTALS	6411.6	6282.0	0.0	0.0	0.0	0.0	129.6	0.0
	654.6	1831.9	-847.7	0.0	1985.6	0.0	1656.0	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2010 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA LLANO SÁNCHEZ-PANAMÁ II**



de

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	1.0043	230.98	11		M.N230		230.00	6	1.0273	236.28
14		PRO230		230.00	6	1.0298	236.85	85		PTP230		230.00	6	1.0246	235.66
96		FOR230		230.00	6	1.0240	235.51	100		BAY230		230.00	6	1.0118	232.70
144		CANJ230		230.00	6	1.0247	235.68	145		BJOMIN230		230.00	6	1.0279	236.42
147		GUASQ230		230.00	6	1.0247	235.67	148		VELADERO	230	230.00	6	1.0232	235.34
190		CHANG230		230.00	6	1.0293	236.74	310		CONCEPCION232	30	230.00	6	1.0289	236.65
6000		FRONTER		230.00	6	1.0302	236.95								

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	0.9709	223.32	3		PANII230		230.00	6	0.9740	224.02
5		CHO230		230.00	6	0.9782	224.99	103		COPESA23		230.00	6	0.9800	225.40
105		PAN-AM23		230.00	6	0.9783	225.01	115		PACORA23		230.00	6	0.9857	226.70
511		LGUIAS230		230.00	6	0.9922	228.21	540		ANTON	230	230.00	6	0.9927	228.32

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	1.0057	115.66	4		PANII115		115.00	6	1.0010	115.11
6		CHO115		115.00	6	1.0176	117.02	9		LSA115		115.00	6	1.0211	117.42
12		M.N115		115.00	6	1.0249	117.86	15		PRO115		115.00	6	1.0290	118.33
18		CAC115		115.00	6	1.0054	115.62	20		CH.AZUL		115.00	6	1.0297	118.42
23		CH115		115.00	6	1.0065	115.75	33		STM115		115.00	6	1.0040	115.46
48		TINAJ115		115.00	6	1.0036	115.41	50		M.O115		115.00	6	1.0037	115.42
54		LM115		115.00	6	1.0262	118.01	55		LM2115		115.00	6	1.0272	118.13
61		FFIELD		115.00	9	1.0228	117.62	87		CAL115		115.00	6	1.0383	119.41
88		EST115		115.00	6	1.0408	119.69	92		L.V115		115.00	6	1.0393	119.52
109		STA RITA115		115.00	6	1.0239	117.75	123		MIR115		115.00	7	1.0081	115.93
154		CEMPAN15		115.00	6	1.0292	118.36	191		CHANG115		115.00	6	1.0259	117.98
522		TCATIVÁ	115	115.00	6	1.0269	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)
19		C.V115		115.00	6	0.9946	114.38	21		C.BAN115		115.00	6	0.9958	114.52
26		LOC115		115.00	6	0.9970	114.65	30		MAR115		115.00	6	0.9962	114.57
37		SAN115		115.00	6	0.9945	114.36	52		TOC115		115.00	6	0.9984	114.82

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	11.4	25.0	0.0	1.0000	39.7	0.9578	47.0			1	6	



Handwritten signature or initials.

67	BLM13C	13.800	V3	38.0	11.4	25.0	0.0	1.0000	39.7	0.9578	47.0	1	6
68	BLM13D	13.800	V4	38.0	11.8	25.0	0.0	1.0000	39.8	0.9548	47.0	1	6
90	EST-13L	13.800	E1	22.0	3.5	12.0	-5.0	1.0000	22.3	0.9878	27.0	1	6
91	EST-13T	13.800	E2	22.0	3.5	12.0	-5.0	1.0000	22.3	0.9878	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	95.0	-16.9	50.0	-50.0	1.0000	96.5	0.9845	111.0	1	6
98	FOR13B	13.800	F2	95.0	-16.9	50.0	-50.0	1.0000	96.5	0.9845	111.0	1	6
99	FOR13C	13.800	F3	95.0	-16.9	50.0	-50.0	1.0000	96.5	0.9845	111.0	1	6
101	BAY13A	13.800	B1	76.3	32.4	50.0	-25.0	1.0000	82.9	0.9206	96.0	1	6
102	BAY13B	13.800	B2	71.3	31.9	50.0	-25.0	1.0000	78.1	0.9130	96.0	1	6
106	PANAM13A	13.800	M1	15.0	9.0	9.0	0.0	0.9936	17.6	0.8575	20.7	1	6
106	PANAM13A	13.800	M2	15.0	9.0	9.0	0.0	0.9936	17.6	0.8575	20.7	1	6
108	BAY13C	13.800	B3	71.3	31.9	50.0	-25.0	1.0000	78.1	0.9130	100.0	1	6
116	PACORA13	13.800	P1	17.0	8.8	8.8	0.0	0.9945	19.3	0.8874	21.7	1	6
142	CANJ13A	13.800	C1	55.0	13.7	29.0	-29.0	1.0000	56.7	0.9703	69.0	1	6
143	CANJ13B	13.800	C2	55.0	13.7	29.0	-29.0	1.0000	56.7	0.9703	69.0	1	6
204	BJOMIN13	13.800	G1	23.0	-9.3	13.0	-13.0	1.0000	24.8	0.9273	28.9	1	6
204	BJOMIN13	13.800	G2	23.0	-9.3	13.0	-13.0	1.0000	24.8	0.9273	28.9	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9604	11.2	0.8849	13.5	1	6
302	PASOANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9586	5.4	0.9216	6.2	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9901	9.5	0.9772	13.5	1	6
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1153	8.1	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1153	8.1	1.0000	35.3	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0027	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0027	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0027	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.0	1.3	2.8	1.3	1.0027	3.3	0.9173	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9778	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9778	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9778	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9778	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9778	10.9	1	6
524	TCATIVÁ 13B	13.800	G1	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9387	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9387	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9387	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9387	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9387	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.0	6.4	3.0	1.0035	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.0	6.4	3.0	1.0035	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.0	6.4	3.0	1.0035	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.0	6.4	3.0	1.0035	8.5	0.9363	10.9	1	6
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	0.9925	60.5	0.9997	136.0	1	6
SUBSYSTEM TOTALS				1142.2	182.2	646.7	-383.0				1545.1		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 8:57
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2010 ESC MOD DEM MAX INV CONT LLS-PAN 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
129	MIR13D	13.800	G4	35.0	2.4	15.0	0.0	1.0000	35.1	0.9977	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0068	17.0	1.0000	27.7			2	7	
140	GAT6A	6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9979	4.1			2	7	
140	GAT6A	6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9979	4.1			2	7	
140	GAT6A	6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9979	4.1			2	7	



141 GAT6B	6.9000	G4	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9759	5.6	2	7
141 GAT6B	6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9759	6.2	2	7
141 GAT6B	6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9759	6.2	2	7
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0213	17.9	0.9281	23.0	2	7
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0304	17.8	0.9281	23.0	2	7
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0304	17.8	0.9281	23.0	2	7
SUBSYSTEM TOTALS			120.5	19.9	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 8:57
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2010 ESC MOD DEM MAX INV CONT LLS-PAN II 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	1006.8	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	



Handwritten signature or initials.

5	1344.9	1324.8	0.0	0.0	0.0	0.8	19.3	0.0
C.RICA	248.4	569.4	-236.0	0.0	470.1	27.8	357.4	
6	1142.2	1081.9	0.0	0.0	0.0	28.6	31.8	25.0
PANAMA	182.2	189.5	0.0	0.0	424.4	48.0	369.1	
7	120.5	42.0	0.0	0.0	0.0	77.3	1.2	50.0
ACANAL	19.9	7.4	0.0	0.0	0.0	-5.5	18.0	
9	0.0	106.6	0.0	0.0	0.0	-106.7	0.1	-75.0
COLON	0.0	18.7	0.0	0.0	1.1	-23.9	6.4	
TOTALS	6412.0	6282.0	0.0	0.0	0.0	0.0	130.0	0.0
	669.2	1831.9	-847.5	0.0	1974.5	0.0	1659.3	

PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008



de

**AÑO 2010 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA FORTUNA-GUASQUITAS**



de

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	1.0133	233.07	11	M.N230			230.00	6	1.0274	236.30
14	PRO230			230.00	6	1.0299	236.88	85	PTP230			230.00	6	1.0246	235.65
96	FOR230			230.00	6	1.0241	235.54	100	BAY230			230.00	6	1.0207	234.76
144	CANJ230			230.00	6	1.0326	237.49	145	BJOMIN230			230.00	6	1.0280	236.44
147	GUASQ230			230.00	6	1.0326	237.50	148	VELADERO	230230.00			6	1.0280	236.43
190	CHANG230			230.00	6	1.0292	236.71	310	CONCEPCION23	230.00			6	1.0290	236.67
511	LGUIAS230			230.00	6	1.0045	231.03	540	ANTON	230		230.00	6	1.0056	231.28
6000	FRONTER			230.00	6	1.0304	236.98								

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	0.9860	226.77	3	PANII230			230.00	6	0.9892	227.51
5	CHO230			230.00	6	0.9926	228.29	103	COPESA23			230.00	6	0.9942	228.67
105	PAN-AM23			230.00	6	0.9926	228.31	115	PACORA23			230.00	6	0.9986	229.67

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	1.0043	115.49
6	CHO115			115.00	6	1.0330	118.79	9	LSA115			115.00	6	1.0305	118.50
12	M.N115			115.00	6	1.0249	117.87	15	PRO115			115.00	6	1.0291	118.35
18	CAC115			115.00	6	1.0082	115.94	20	CH.AZUL			115.00	6	1.0299	118.44
23	CH115			115.00	6	1.0087	116.00	33	STM115			115.00	6	1.0068	115.78
48	TINAJ115			115.00	6	1.0064	115.73	50	M.O115			115.00	6	1.0065	115.75
52	TOC115			115.00	6	1.0018	115.20	54	LM115			115.00	6	1.0275	118.16
55	LM2115			115.00	6	1.0285	118.28	61	FFIELD			115.00	9	1.0242	117.78
87	CAL115			115.00	6	1.0384	119.41	88	EST115			115.00	6	1.0408	119.70
92	L.V115			115.00	6	1.0393	119.52	109	STA RITA115			115.00	6	1.0254	117.92
123	MIR115			115.00	7	1.0107	116.23	154	CEMPAN15			115.00	6	1.0310	118.56
191	CHANG115			115.00	6	1.0258	117.97	522	TCATIVÁ	115		115.00	6	1.0282	118.25

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)
19	C.V115			115.00	6	0.9978	114.74	21	C.BAN115			115.00	6	0.9987	114.85
26	LOC115			115.00	6	0.9999	114.98	30	MAR115			115.00	6	0.9991	114.89
37	SAN115			115.00	6	0.9974	114.70								

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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or mark.

66	BLM13B	13.800	V2	38.0	10.8	25.0	0.0	1.0000	39.5	0.9617	47.0	1	6
67	BLM13C	13.800	V3	38.0	10.8	25.0	0.0	1.0000	39.5	0.9617	47.0	1	6
68	BLM13D	13.800	V4	38.0	11.2	25.0	0.0	1.0000	39.6	0.9590	47.0	1	6
90	EST-13L	13.800	E1	22.0	3.5	12.0	-5.0	1.0000	22.3	0.9879	27.0	1	6
91	EST-13T	13.800	E2	22.0	3.5	12.0	-5.0	1.0000	22.3	0.9879	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	4.1	12.0	-5.0	1.0000	24.3	0.9860	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	4.1	12.0	-5.0	1.0000	24.3	0.9860	27.0	1	6
97	FOR13A	13.800	F1	95.0	-17.0	50.0	-50.0	1.0000	96.5	0.9843	111.0	1	6
98	FOR13B	13.800	F2	95.0	-17.0	50.0	-50.0	1.0000	96.5	0.9843	111.0	1	6
99	FOR13C	13.800	F3	95.0	-17.0	50.0	-50.0	1.0000	96.5	0.9843	111.0	1	6
101	BAY13A	13.800	B1	76.6	25.7	50.0	-25.0	1.0000	80.8	0.9481	96.0	1	6
102	BAY13B	13.800	B2	71.3	25.2	50.0	-25.0	1.0000	75.7	0.9430	96.0	1	6
106	PANAM13A	13.800	M1	15.0	7.4	9.0	0.0	1.0000	16.7	0.8970	20.7	1	6
106	PANAM13A	13.800	M2	15.0	7.4	9.0	0.0	1.0000	16.7	0.8970	20.7	1	6
108	BAY13C	13.800	B3	71.3	25.2	50.0	-25.0	1.0000	75.7	0.9430	100.0	1	6
116	PACORA13	13.800	P1	17.0	4.8	8.8	0.0	1.0000	17.7	0.9623	21.7	1	6
142	CANJ13A	13.800	C1	55.0	12.4	29.0	-29.0	1.0000	56.4	0.9755	69.0	1	6
143	CANJ13B	13.800	C2	55.0	12.4	29.0	-29.0	1.0000	56.4	0.9755	69.0	1	6
204	BJOMIN13	13.800	G1	23.0	-9.3	13.0	-13.0	1.0000	24.8	0.9270	28.9	1	6
204	BJOMIN13	13.800	G2	23.0	-9.3	13.0	-13.0	1.0000	24.8	0.9270	28.9	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9605	11.2	0.8849	13.5	1	6
302	PASOANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9586	5.4	0.9216	6.2	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9901	9.5	0.9772	13.5	1	6
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1153	8.1	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1153	8.1	1.0000	35.3	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0043	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0043	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0043	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.0	1.3	2.8	1.3	1.0043	3.3	0.9173	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9815	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9815	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9815	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9815	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.6	6.6	-6.6	0.9900	8.4	0.9815	10.9	1	6
524	TCATIVÁ 13B	13.800	10	8.2	2.9	6.6	-6.6	1.0000	8.7	0.9445	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	2.9	6.6	-6.6	1.0000	8.7	0.9445	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	2.9	6.6	-6.6	1.0000	8.7	0.9445	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	2.9	6.6	-6.6	1.0000	8.7	0.9445	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	2.9	6.6	-6.6	1.0000	8.7	0.9445	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.0	6.4	3.0	1.0052	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.0	6.4	3.0	1.0052	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.0	6.4	3.0	1.0052	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.0	6.4	3.0	1.0052	8.5	0.9363	10.9	1	6
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	1.0054	59.7	0.9997	136.0	1	6
SUBSYSTEM TOTALS				1142.6	148.4	646.7	-383.0				1545.1		

SYST

 PII INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 9:04
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 Año 2010 ESC MOD DEM MAX INV CONT FOR-GUAS

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
129	MIR13D	13.800	G4	35.0	1.8	15.0	0.0	1.0000	35.0	0.9987	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0083	17.0	1.0000	27.7			2	7	
140	GAT6A	6.9000	G1	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9967	4.1			2	7	
140	GAT6A	6.9000	G2	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9967	4.1			2	7	



Handwritten signature or initials.

140	GAT6A	6.9000	G3	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9967	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9742	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9742	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9742	6.2	2	7
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0228	17.9	0.9281	23.0	2	7
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0319	17.8	0.9281	23.0	2	7
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0319	17.8	0.9281	23.0	2	7
SUBSYSTEM TOTALS				120.5	19.1	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 9:04
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2010 ESC MOD DEM MAX INV CONT FOR-GUAS 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	1006.8	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	



Handwritten signature or initials.

5	1344.9	1324.8	0.0	0.0	0.0	0.7	19.4	0.0
C.RICA	248.5	569.4	-236.0	0.0	470.1	27.2	357.9	
6	1142.6	1081.9	0.0	0.0	0.0	28.7	32.0	25.0
PANAMA	148.4	189.5	0.0	0.0	452.1	49.3	361.7	
7	120.5	42.0	0.0	0.0	0.0	77.3	1.2	50.0
ACANAL	19.1	7.4	0.0	0.0	0.0	-6.3	18.0	
9	0.0	106.6	0.0	0.0	0.0	-106.7	0.1	-75.0
COLON	0.0	18.7	0.0	0.0	1.1	-23.9	6.3	
TOTALS	6412.3	6282.0	0.0	0.0	0.0	0.0	130.3	0.0
	634.6	1831.9	-847.5	0.0	2002.2	0.0	1652.4	

PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008



de

**AÑO 2010 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA VELADERO-LLANO SÁNCHEZ**



de

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	1.0259	235.96	14	PRO230			230.00	6	1.0287	236.59
85	PTP230			230.00	6	1.0235	235.41	96	FOR230			230.00	6	1.0228	235.24
100	BAY230			230.00	6	1.0160	233.68	144	CANJ230			230.00	6	1.0232	235.33
145	BJOMIN230			230.00	6	1.0269	236.18	147	GUASQ230			230.00	6	1.0231	235.32
148	VELADERO	230230.00		230.00	6	1.0206	234.75	190	CHANG230			230.00	6	1.0285	236.57
310	CONCEPCION23230.00			230.00	6	1.0277	236.38	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	0.9780	224.94	3	PANII230			230.00	6	0.9811	225.65
5	CHO230			230.00	6	0.9831	226.12	8	LSA230			230.00	6	0.9975	229.42
103	COPESA23			230.00	6	0.9866	226.92	105	PAN-AM23			230.00	6	0.9832	226.14
115	PACORA23			230.00	6	0.9919	228.13	511	LGUIAS230			230.00	6	0.9911	227.96
540	ANTON	230		230.00	6	0.9928	228.34								

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	1.0025	115.29	4	PANII115			115.00	6	1.0056	115.64
6	CHO115			115.00	6	1.0229	117.63	9	LSA115			115.00	6	1.0140	116.61
12	M.N115			115.00	6	1.0238	117.74	15	PRO115			115.00	6	1.0279	118.20
18	CAC115			115.00	6	1.0023	115.26	20	CH.AZUL			115.00	6	1.0286	118.29
23	CH115			115.00	6	1.0040	115.46	33	STM115			115.00	6	1.0008	115.09
48	TINAJ115			115.00	6	1.0003	115.04	50	M.O115			115.00	6	1.0005	115.05
52	TOC115			115.00	6	1.0031	115.35	54	LM115			115.00	6	1.0246	117.83
55	LM2115			115.00	6	1.0257	117.95	61	FFIELD			115.00	9	1.0213	117.45
87	CAL115			115.00	6	1.0376	119.32	88	EST115			115.00	6	1.0402	119.62
92	L.V115			115.00	6	1.0386	119.44	109	STA RITA115			115.00	6	1.0222	117.55
123	MIR115			115.00	7	1.0051	115.59	154	CEMPAN15			115.00	6	1.0272	118.13
191	CHANG115			115.00	6	1.0252	117.89	522	TCATIVÁ	115		115.00	6	1.0254	117.92

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	0.9970	114.66	21	C.BAN115			115.00	6	0.9936	114.26
26	LOC115			115.00	6	0.9945	114.37	30	MAR115			115.00	6	0.9934	114.24
37	SAN115			115.00	6	0.9927	114.16								

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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	38.0	12.1	25.0	0.0	1.0000	39.9	0.9531	47.0	1	6
67	BLM13C	13.800	V3	38.0	12.1	25.0	0.0	1.0000	39.9	0.9531	47.0	1	6
68	BLM13D	13.800	V4	38.0	12.5	25.0	0.0	1.0000	40.0	0.9498	47.0	1	6
90	EST-13L	13.800	E1	22.0	3.7	12.0	-5.0	1.0000	22.3	0.9865	27.0	1	6
91	EST-13T	13.800	E2	22.0	3.7	12.0	-5.0	1.0000	22.3	0.9865	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	4.3	12.0	-5.0	1.0000	24.4	0.9846	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	4.3	12.0	-5.0	1.0000	24.4	0.9846	27.0	1	6
97	FOR13A	13.800	F1	95.0	-15.9	50.0	-50.0	1.0000	96.3	0.9864	111.0	1	6
98	FOR13B	13.800	F2	95.0	-15.9	50.0	-50.0	1.0000	96.3	0.9864	111.0	1	6
99	FOR13C	13.800	F3	95.0	-15.9	50.0	-50.0	1.0000	96.3	0.9864	111.0	1	6
101	BAY13A	13.800	B1	77.4	29.3	50.0	-25.0	1.0000	82.8	0.9353	96.0	1	6
102	BAY13B	13.800	B2	71.3	28.7	50.0	-25.0	1.0000	76.9	0.9278	96.0	1	6
106	PANAM13A	13.800	M1	15.0	9.0	9.0	0.0	0.9982	17.5	0.8575	20.7	1	6
106	PANAM13A	13.800	M2	15.0	9.0	9.0	0.0	0.9982	17.5	0.8575	20.7	1	6
108	BAY13C	13.800	B3	71.3	28.7	50.0	-25.0	1.0000	76.9	0.9278	100.0	1	6
116	PACORA13	13.800	P1	17.0	8.4	8.8	0.0	1.0000	19.0	0.8960	21.7	1	6
142	CANJ13A	13.800	C1	55.0	14.0	29.0	-29.0	1.0000	56.7	0.9693	69.0	1	6
143	CANJ13B	13.800	C2	55.0	14.0	29.0	-29.0	1.0000	56.7	0.9693	69.0	1	6
204	BJOMIN13	13.800	G1	23.0	-8.9	13.0	-13.0	1.0000	24.7	0.9326	28.9	1	6
204	BJOMIN13	13.800	G2	23.0	-8.9	13.0	-13.0	1.0000	24.7	0.9326	28.9	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9594	11.2	0.8849	13.5	1	6
302	PASOANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9576	5.4	0.9216	6.2	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9894	9.5	0.9772	13.5	1	6
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1145	8.1	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1145	8.1	1.0000	35.3	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0008	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0008	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0008	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.0	1.3	2.8	1.3	1.0008	3.3	0.9173	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9733	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9733	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9733	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9733	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.9	6.6	-6.6	0.9900	8.5	0.9733	10.9	1	6
524	TCATIVÁ 13B	13.800	10	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9319	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9319	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9319	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9319	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9319	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.0	6.4	3.0	1.0017	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.0	6.4	3.0	1.0017	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.0	6.4	3.0	1.0017	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.0	6.4	3.0	1.0017	8.5	0.9363	10.9	1	6
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	0.9926	60.5	0.9997	136.0	1	6
SUBSYSTEM TOTALS				1143.4	181.4	646.7	-383.0				1545.1		

SYST

 PII INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 9:08
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2010 ESC MOD DEM MAX INV CONT VEL-LLS

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
129	MIR13D	13.800	G4	35.0	3.1	15.0	0.0	1.0000	35.1	0.9961	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0050	17.0	1.0000	27.7			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	



Handwritten signature or initials.

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	-0.8	3.0	-3.0	1.0000	4.0	0.9777	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9777	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9777	6.2	2	7
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0195	18.0	0.9281	23.0	2	7
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0286	17.8	0.9281	23.0	2	7
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0286	17.8	0.9281	23.0	2	7
SUBSYSTEM TOTALS				120.5	20.8	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 9:09
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2010 ESC MOD DEM MAX INV CONT VEL-LLS 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	1347.4	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	1006.8	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		538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0



Handwritten signature or initials.

NICA	32.5	224.5	-98.9	0.0	143.2	-97.2	147.4	
5	1344.9	1324.8	0.0	0.0	0.0	0.8	19.3	0.0
C.RICA	249.7	569.4	-236.3	0.0	470.0	29.3	357.3	
6	1143.4	1081.9	0.0	0.0	0.0	28.6	32.9	25.0
PANAMA	181.4	189.5	0.0	0.0	427.8	45.6	374.1	
7	120.5	42.0	0.0	0.0	0.0	77.3	1.2	50.0
ACANAL	20.8	7.4	0.0	0.0	0.0	-4.6	18.1	
9	0.0	106.6	0.0	0.0	0.0	-106.7	0.1	-75.0
COLON	0.0	18.7	0.0	0.0	1.1	-23.9	6.4	
TOTALS	6413.1	6282.0	0.0	0.0	0.0	0.0	131.1	0.0
	670.6	1831.9	-847.8	0.0	1977.8	0.0	1664.3	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2010 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA ANTÓN-PANAMÁ**

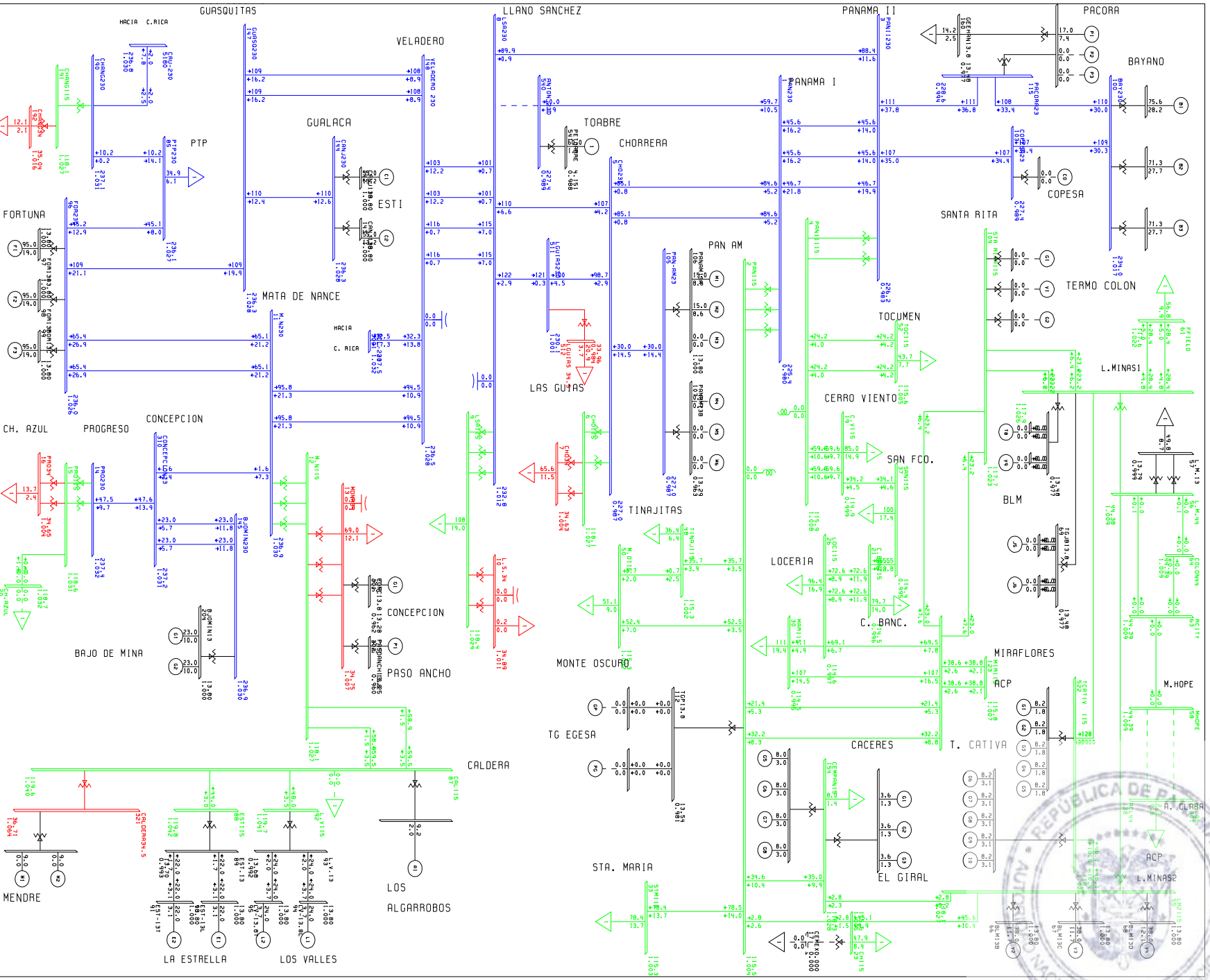


de

ACTUALIZATION PLAN. EXP-SIN CON C.-R. JUNIO 2008
 R 0 2010 ESC MOD DEM MAX INV CONT ANTON-PANAM

KV: 114. *35. *115

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



Handwritten signature or initials.

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	1.0122	232.81		11	M.N230		230.00	6	1.0300	236.89	
14	PRO230		230.00	6	1.0320	237.36		85	PTP230		230.00	6	1.0266	236.13	
96	FOR230		230.00	6	1.0262	236.03		100	BAY230		230.00	6	1.0173	233.97	
144	CANJ230		230.00	6	1.0276	236.34		145	BJOMIN230		230.00	6	1.0300	236.89	
147	GUASQ230		230.00	6	1.0276	236.34		148	VELADERO	230230.00	6	1.0281	236.45		
190	CHANG230		230.00	6	1.0307	237.07		310	CONCEPCION23	230.00	6	1.0311	237.16		
511	LGUIAS230		230.00	6	1.0006	230.13		6000	FRONTER	230.00	6	1.0324	237.45		

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	0.9833	226.15	
5	CHO230		230.00	6	0.9871	227.02		103	COPESA23		230.00	6	0.9887	227.40	
105	PAN-AM23		230.00	6	0.9871	227.04		115	PACORA23		230.00	6	0.9937	228.55	
540	ANTON 230		230.00	6	0.9886	227.37									

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	115.51		4	PANII115		115.00	6	1.0078	115.90	
6	CHO115		115.00	6	1.0270	118.11		9	LSA115		115.00	6	1.0293	118.37	
12	M.N115		115.00	6	1.0269	118.09		15	PRO115		115.00	6	1.0312	118.59	
18	CAC115		115.00	6	1.0042	115.48		20	CH.AZUL		115.00	6	1.0320	118.67	
23	CH115		115.00	6	1.0055	115.63		33	STM115		115.00	6	1.0027	115.31	
48	TINAJ115		115.00	6	1.0023	115.26		50	M.O115		115.00	6	1.0024	115.28	
52	TOC115		115.00	6	1.0053	115.61		54	LM115		115.00	6	1.0256	117.94	
55	LM2115		115.00	6	1.0266	118.06		61	FFIELD		115.00	9	1.0222	117.56	
87	CAL115		115.00	6	1.0397	119.56		88	EST115		115.00	6	1.0420	119.83	
92	L.V115		115.00	6	1.0406	119.67		109	STA RITA115		115.00	6	1.0232	117.67	
123	MIR115		115.00	7	1.0069	115.80		154	CEMPAN15		115.00	6	1.0284	118.27	
191	CHANG115		115.00	6	1.0274	118.15		522	TCATIVÁ	115 115.00	6	1.0263	118.03		

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)
19	C.V115		115.00	6	0.9992	114.91		21	C.BAN115		115.00	6	0.9956	114.49	
26	LOC115		115.00	6	0.9965	114.60		30	MAR115		115.00	6	0.9954	114.47	
37	SAN115		115.00	6	0.9947	114.39									

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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	38.0	11.7	25.0	0.0	1.0000	39.7	0.9560	47.0	1	6
67	BLM13C	13.800	V3	38.0	11.7	25.0	0.0	1.0000	39.7	0.9560	47.0	1	6
68	BLM13D	13.800	V4	38.0	12.1	25.0	0.0	1.0000	39.9	0.9528	47.0	1	6
90	EST-13L	13.800	E1	22.0	3.1	12.0	-5.0	1.0000	22.2	0.9901	27.0	1	6
91	EST-13T	13.800	E2	22.0	3.1	12.0	-5.0	1.0000	22.2	0.9901	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	3.7	12.0	-5.0	1.0000	24.3	0.9884	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	3.7	12.0	-5.0	1.0000	24.3	0.9884	27.0	1	6
97	FOR13A	13.800	F1	95.0	-19.0	50.0	-50.0	1.0000	96.9	0.9806	111.0	1	6
98	FOR13B	13.800	F2	95.0	-19.0	50.0	-50.0	1.0000	96.9	0.9806	111.0	1	6
99	FOR13C	13.800	F3	95.0	-19.0	50.0	-50.0	1.0000	96.9	0.9806	111.0	1	6
101	BAY13A	13.800	B1	75.6	28.2	50.0	-25.0	1.0000	80.6	0.9371	96.0	1	6
102	BAY13B	13.800	B2	71.3	27.7	50.0	-25.0	1.0000	76.5	0.9320	96.0	1	6
106	PANAM13A	13.800	M1	15.0	8.6	9.0	0.0	1.0000	17.3	0.8684	20.7	1	6
106	PANAM13A	13.800	M2	15.0	8.6	9.0	0.0	1.0000	17.3	0.8684	20.7	1	6
108	BAY13C	13.800	B3	71.3	27.7	50.0	-25.0	1.0000	76.5	0.9320	100.0	1	6
116	PACORA13	13.800	P1	17.0	7.4	8.8	0.0	1.0000	18.6	0.9161	21.7	1	6
142	CANJ13A	13.800	C1	55.0	13.2	29.0	-29.0	1.0000	56.6	0.9723	69.0	1	6
143	CANJ13B	13.800	C2	55.0	13.2	29.0	-29.0	1.0000	56.6	0.9723	69.0	1	6
204	BJOMIN13	13.800	G1	23.0	-10.0	13.0	-13.0	1.0000	25.1	0.9169	28.9	1	6
204	BJOMIN13	13.800	G2	23.0	-10.0	13.0	-13.0	1.0000	25.1	0.9169	28.9	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9623	11.2	0.8849	13.5	1	6
302	PASOANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9605	5.4	0.9216	6.2	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9913	9.5	0.9772	13.5	1	6
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1168	8.1	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1168	8.1	1.0000	35.3	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0019	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0019	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0019	3.8	0.9404	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.0	1.3	2.8	1.3	1.0019	3.3	0.9173	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9761	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9761	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9761	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9761	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.8	6.6	-6.6	0.9900	8.5	0.9761	10.9	1	6
524	TCATIVÁ 13B	13.800	10	8.2	3.1	6.6	-6.6	1.0000	8.8	0.9361	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	3.1	6.6	-6.6	1.0000	8.8	0.9361	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	3.1	6.6	-6.6	1.0000	8.8	0.9361	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	3.1	6.6	-6.6	1.0000	8.8	0.9361	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	3.1	6.6	-6.6	1.0000	8.8	0.9361	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.0	6.4	3.0	1.0028	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.0	6.4	3.0	1.0028	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.0	6.4	3.0	1.0028	8.5	0.9363	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.0	6.4	3.0	1.0028	8.5	0.9363	10.9	1	6
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	0.9884	60.7	0.9997	136.0	1	6
SUBSYSTEM TOTALS				1141.5	158.9	646.7	-383.0				1545.1		

SYST

 PII INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 9:12
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2010 ESC MOD DEM MAX INV CONT ANTON-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
129	MIR13D	13.800	G4	35.0	2.7	15.0	0.0	1.0000	35.1	0.9971	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0061	17.0	1.0000	27.7			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	



Handwritten signature or initials.

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	0.9766	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9766	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9766	6.2	2	7
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0206	17.9	0.9281	23.0	2	7
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0297	17.8	0.9281	23.0	2	7
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0297	17.8	0.9281	23.0	2	7
SUBSYSTEM TOTALS				120.5	20.2	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 30 2008 9:12
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2010 ESC MOD DEM MAX INV CONT ANTON-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		1347.4	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		1006.8	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	



Handwritten signature or initials.

5	1344.9	1324.8	0.0	0.0	0.0	0.8	19.3	0.0
C.RICA	245.1	569.4	-236.1	0.0	470.5	25.0	357.3	
6	1141.5	1081.9	0.0	0.0	0.0	28.6	31.0	25.0
PANAMA	158.9	189.5	0.0	0.0	443.2	50.5	362.1	
7	120.5	42.0	0.0	0.0	0.0	77.3	1.2	50.0
ACANAL	20.2	7.4	0.0	0.0	0.0	-5.2	18.1	
9	0.0	106.6	0.0	0.0	0.0	-106.7	0.1	-75.0
COLON	0.0	18.7	0.0	0.0	1.1	-23.9	6.4	
TOTALS	6411.2	6282.0	0.0	0.0	0.0	0.0	129.2	0.0
	642.8	1831.9	-847.6	0.0	1993.7	0.0	1652.2	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO**



de

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	1.0240	235.51	14	PRO230			230.00	6	1.0289	236.65
85	PTP230			230.00	6	1.0219	235.04	96	FOR230			230.00	6	1.0257	235.91
100	BAY230			230.00	6	1.0207	234.76	144	CANJ230			230.00	6	1.0199	234.58
145	BJOMIN230			230.00	6	1.0341	237.85	146	GUALACA230			230.00	6	1.0208	234.77
147	GUASQ230			230.00	6	1.0198	234.55	148	VELADERO 230	230.00		6	1.0047	231.09	
190	CHANG230			230.00	6	1.0292	236.72	306	CHAN1 230			230.00	6	1.0305	237.01
310	CONCEPCION23	230.00		6	1.0306	237.04		6000	FRONTER			230.00	6	1.0284	236.53

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	0.9841	226.35	3	PANII230			230.00	6	0.9902	227.75
5	CHO230			230.00	6	0.9784	225.02	8	LSA230			230.00	6	0.9827	226.02
103	COPESA23			230.00	6	0.9952	228.89	105	PAN-AM23			230.00	6	0.9784	225.02
115	PACORA23			230.00	6	0.9983	229.60	511	LGUIAS230			230.00	6	0.9788	225.12
540	ANTON 230			230.00	6	0.9822	225.92								

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	1.0101	116.16
6	CHO115			115.00	6	1.0168	116.94	12	M.N115			115.00	6	1.0227	117.61
15	PRO115			115.00	6	1.0280	118.22	18	CAC115			115.00	6	1.0025	115.29
20	CH.AZUL			115.00	6	1.0287	118.30	33	STM115			115.00	6	1.0010	115.12
48	TINAJ115			115.00	6	1.0006	115.07	50	M.O115			115.00	6	1.0007	115.08
52	TOC115			115.00	6	1.0074	115.85	54	LM115			115.00	6	1.0142	116.63
55	LM2115			115.00	6	1.0150	116.72	61	FFIELD			115.00	9	1.0106	116.22
87	CAL115			115.00	6	1.0403	119.64	88	EST115			115.00	6	1.0436	120.02
92	L.V115			115.00	6	1.0416	119.79	109	STA RITA115			115.00	6	1.0131	116.50
123	MIR115			115.00	7	1.0058	115.67	154	CEMPAN15			115.00	6	1.0107	116.23
191	CHANG115			115.00	6	1.0256	117.95	522	TCATIVÁ 115			115.00	6	1.0147	116.69

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)
9	LSA115			115.00	6	0.9981	114.78	19	C.V115			115.00	6	0.9999	114.99
21	C.BAN115			115.00	6	0.9939	114.30	23	CH115			115.00	6	0.9994	114.93
26	LOC115			115.00	6	0.9948	114.40	30	MAR115			115.00	6	0.9934	114.24
37	SAN115			115.00	6	0.9932	114.21								

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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	30.0	16.0	25.0	0.0	1.0000	34.0	0.8819	47.0	1	6
67	BLM13C	13.800	V3	30.0	16.0	25.0	0.0	1.0000	34.0	0.8819	47.0	1	6
68	BLM13D	13.800	V4	30.0	16.8	25.0	0.0	1.0000	34.4	0.8729	47.0	1	6
90	EST-13L	13.800	E1	21.0	5.7	12.0	-5.0	1.0100	21.5	0.9654	27.0	1	6
91	EST-13T	13.800	E2	21.0	5.7	12.0	-5.0	1.0100	21.5	0.9654	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	6.5	12.0	-5.0	1.0100	24.6	0.9654	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	6.5	12.0	-5.0	1.0100	24.6	0.9654	27.0	1	6
97	FOR13A	13.800	F1	91.0	7.4	50.0	-50.0	1.0290	88.7	0.9967	111.0	1	6
98	FOR13B	13.800	F2	91.0	7.4	50.0	-50.0	1.0290	88.7	0.9967	111.0	1	6
99	FOR13C	13.800	F3	91.0	7.4	50.0	-50.0	1.0290	88.7	0.9967	111.0	1	6
101	BAY13A	13.800	B1	52.9	23.7	50.0	-25.0	1.0000	57.9	0.9127	96.0	1	6
102	BAY13B	13.800	B2	75.2	25.6	50.0	-25.0	1.0000	79.4	0.9468	96.0	1	6
108	BAY13C	13.800	B3	75.2	25.6	50.0	-25.0	1.0000	79.4	0.9468	100.0	1	6
142	CANJ13A	13.800	C1	55.0	16.1	29.0	-29.0	1.0100	56.7	0.9597	69.0	1	6
143	CANJ13B	13.800	C2	55.0	16.1	29.0	-29.0	1.0100	56.7	0.9597	69.0	1	6
151	GUALACA13.8	13.800	G1	23.8	-9.7	10.0	-10.0	1.0100	25.4	0.9266	26.7	1	6
204	BJOMIN13	13.800	G1	23.0	-8.0	13.0	-13.0	1.0100	24.1	0.9443	28.9	1	6
204	BJOMIN13	13.800	G2	23.0	-8.0	13.0	-13.0	1.0100	24.1	0.9443	28.9	1	6
205	BAITUN13.8	13.800	G1	40.0	12.0	26.6	-26.6	1.0100	41.3	0.9579	50.6	1	6
205	BAITUN13.8	13.800	G2	40.0	12.0	26.6	-26.6	1.0100	41.3	0.9579	50.6	1	6
302	PASOANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9609	5.4	0.9216	6.2	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9920	9.5	0.9772	13.5	1	6
307	CHAN1 A	13.800	G1	100.0	-5.4	50.0	-50.0	1.0200	98.2	0.9986	118.6	1	6
308	CHAN1 B	13.800	G2	100.0	-5.4	50.0	-50.0	1.0200	98.2	0.9986	118.6	1	6
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1175	8.1	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1175	8.1	1.0000	35.3	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	3.9	6.6	-6.6	0.9900	9.2	0.9046	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	3.9	6.6	-6.6	0.9900	9.2	0.9046	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	3.9	6.6	-6.6	0.9900	9.2	0.9046	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	3.9	6.6	-6.6	0.9900	9.2	0.9046	10.9	1	6
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	0.9820	61.1	0.9997	136.0	1	6
SUBSYSTEM TOTALS				1240.8	210.8	701.9	-519.1				1705.0		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, OCT 28 2008 17:03
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2011 ESC MOD DEM MAX INV

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
129	MIR13D		13.800	G4	35.0	5.4	15.0	0.0	1.0100	35.1	0.9883	44.1			2	7	
130	MIR13F		13.800	G5	17.1	0.1	8.0	0.0	1.0100	16.9	1.0000	27.7			2	7	
140	GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0100	1.9	1.0000	4.1			2	7	
140	GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0100	1.9	1.0000	4.1			2	7	
140	GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0100	1.9	1.0000	4.1			2	7	
141	GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0100	3.9	0.9824	5.6			2	7	



141 GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0100	3.9	0.9824	6.2	2	7
141 GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0100	3.9	0.9824	6.2	2	7
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0242	17.9	0.9281	23.0	2	7
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0333	17.7	0.9281	23.0	2	7
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0333	17.7	0.9281	23.0	2	7
SUBSYSTEM TOTALS			120.5	23.8	71.5	5.5				171.3		



Handwritten signature or initials.

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		1344.9	1324.8	0.0	0.0	0.0	0.3	19.8	0.0
C.RICA		252.8	569.4	-237.4	0.0	469.5	30.4	359.9	
6		1240.8	1139.0	0.0	0.0	0.0	36.9	64.8	25.0
PANAMA		210.8	199.5	-182.8	0.0	474.1	42.9	625.2	
7		120.5	44.2	0.0	0.0	0.0	75.1	1.2	50.0
ACANAL		23.8	7.7	0.0	0.0	0.0	-1.3	17.4	
9		0.0	112.2	0.0	0.0	0.0	-112.3	0.1	-75.0
COLON		0.0	19.7	0.0	0.0	1.1	-25.7	7.2	
TOTALS		6510.5	6347.0	0.0	0.0	0.0	0.0	163.5	0.0
		706.3	1843.2	-1031.6	0.0	2023.5	0.0	1918.2	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA VERANO**



de

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	LSA	230	230.00	6	1.0102	232.34		11	M.N	230	230.00	6	1.0346	237.97	
14	PRO	230	230.00	6	1.0390	238.97		85	PTP	230	230.00	6	1.0318	237.30	
96	FOR	230	230.00	6	1.0317	237.29		100	BAY	230	230.00	6	1.0216	234.96	
115	PACORA	23	230.00	6	1.0009	230.20		144	CANJ	230	230.00	6	1.0319	237.34	
145	BJOMIN	230	230.00	6	1.0424	239.76		146	GUALACA	230	230.00	6	1.0325	237.47	
147	GUASQ	230	230.00	6	1.0317	237.30		148	VELADERO	230	230.00	6	1.0285	236.56	
190	CHANG	230	230.00	6	1.0338	237.78		306	CHAN1	230	230.00	6	1.0339	237.79	
310	CONCEPCION	23	230.00	6	1.0402	239.24		511	LGUIAS	230	230.00	6	1.0027	230.63	
540	ANTON	230	230.00	6	1.0017	230.40		6000	FRONTER	230.00	6	1.0386	238.89		

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	PAN	230	230.00	6	0.9876	227.14		3	PANII	230	230.00	6	0.9915	228.04	
5	CHO	230	230.00	6	0.9919	228.14		103	COPE	SA23	230.00	6	0.9964	229.17	
105	PAN-AM	23	230.00	6	0.9920	228.16									

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	1.0130	116.50		4	PANII	115	115.00	6	1.0127	116.46	
6	CHO	115	115.00	6	1.0313	118.60		9	LSA	115	115.00	6	1.0266	118.06	
12	M.N	115	115.00	6	1.0328	118.77		15	PRO	115	115.00	6	1.0381	119.38	
18	CAC	115	115.00	6	1.0126	116.45		19	C.V	115	115.00	6	1.0047	115.54	
20	CH.AZUL	115	115.00	6	1.0389	119.47		21	C.BAN	115	115.00	6	1.0032	115.37	
23	CH	115	115.00	6	1.0106	116.22		26	LOC	115	115.00	6	1.0043	115.49	
30	MAR	115	115.00	6	1.0033	115.38		33	STM	115	115.00	6	1.0112	116.29	
37	SAN	115	115.00	6	1.0020	115.23		48	TINAJ	115	115.00	6	1.0107	116.23	
50	M.O	115	115.00	6	1.0109	116.25		52	TOC	115	115.00	6	1.0101	116.16	
54	LM	115	115.00	6	1.0267	118.07		55	LM2	115	115.00	6	1.0276	118.18	
61	FFIELD	115	115.00	9	1.0232	117.67		87	CAL	115	115.00	6	1.0408	119.69	
88	EST	115	115.00	6	1.0420	119.83		92	L.V	115	115.00	6	1.0413	119.75	
109	STA RITA	115	115.00	6	1.0253	117.91		123	MIR	115	115.00	7	1.0154	116.77	
154	CEMPAN	15	115.00	6	1.0254	117.92		191	CHANG	115	115.00	6	1.0302	118.48	
522	TCATIVÁ	115	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 *

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	



Handwritten signature or initials.

66	BLM13B	13.800	V2	38.0	11.2	25.0	0.0	1.0000	39.6	0.9591	47.0	1	6
67	BLM13C	13.800	V3	38.0	11.2	25.0	0.0	1.0000	39.6	0.9591	47.0	1	6
68	BLM13D	13.800	V4	38.0	11.6	25.0	0.0	1.0000	39.7	0.9562	47.0	1	6
90	EST-13L	13.800	E1	21.0	3.1	12.0	-5.0	1.0000	21.2	0.9890	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
97	FOR13A	13.800	F1	91.0	-15.5	50.0	-50.0	1.0100	91.4	0.9858	111.0	1	6
98	FOR13B	13.800	F2	91.0	-15.5	50.0	-50.0	1.0100	91.4	0.9858	111.0	1	6
99	FOR13C	13.800	F3	91.0	-15.5	50.0	-50.0	1.0100	91.4	0.9858	111.0	1	6
101	BAY13A	13.800	B1	57.6	23.4	50.0	-25.0	1.0000	62.2	0.9266	96.0	1	6
102	BAY13B	13.800	B2	55.5	23.2	50.0	-25.0	1.0000	60.2	0.9226	96.0	1	6
106	PANAM13A	13.800	M1	15.0	7.5	9.0	0.0	1.0000	16.8	0.8936	20.7	1	6
106	PANAM13A	13.800	M2	15.0	7.5	9.0	0.0	1.0000	16.8	0.8936	20.7	1	6
108	BAY13C	13.800	B3	55.5	23.2	50.0	-25.0	1.0000	60.2	0.9226	100.0	1	6
116	PACORA13	13.800	P1	17.0	2.1	8.8	0.0	1.0000	17.1	0.9924	21.7	1	6
116	PACORA13	13.800	P2	17.0	2.1	8.8	0.0	1.0000	17.1	0.9924	21.7	1	6
142	CANJ13A	13.800	C1	37.0	8.8	29.0	-29.0	1.0100	37.6	0.9730	69.0	1	6
143	CANJ13B	13.800	C2	37.0	8.8	29.0	-29.0	1.0100	37.6	0.9730	69.0	1	6
151	GUALACA13.8	13.800	G1	20.0	-10.0	10.0	-10.0	1.0216	21.9	0.8944	26.7	1	6
204	BJOMIN13	13.800	G1	23.0	-13.0	13.0	-13.0	1.0243	25.8	0.8706	28.9	1	6
205	BAITUN13.8	13.800	G1	40.0	14.6	26.6	-26.6	1.0100	42.2	0.9393	50.6	1	6
301	CONC13.8	13.800	G1	8.3	5.0	5.0	-5.0	0.9668	10.0	0.8566	13.5	1	6
302	PASOANCH13.8	13.800	P1	3.6	2.0	2.0	-2.0	0.9650	4.3	0.8742	6.2	1	6
304	ALGA13.8	13.800	A1	8.1	2.0	2.0	0.0	0.9924	8.4	0.9708	13.5	1	6
307	CHAN1 A	13.800	G1	75.0	-10.9	50.0	-50.0	1.0200	74.3	0.9897	118.6	1	6
308	CHAN1 B	13.800	G2	75.0	-10.9	50.0	-50.0	1.0200	74.3	0.9897	118.6	1	6
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1201	8.0	1.0000	35.3	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.4	2.8	1.3	1.0000	3.8	0.9353	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.4	2.8	1.3	1.0000	3.8	0.9353	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.4	2.8	1.3	1.0000	3.8	0.9353	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.0	1.3	2.8	1.3	1.0000	3.3	0.9173	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	1.7	6.6	-6.6	0.9900	8.5	0.9793	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	1.7	6.6	-6.6	0.9900	8.5	0.9793	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	1.7	6.6	-6.6	0.9900	8.5	0.9793	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	1.7	6.6	-6.6	0.9900	8.5	0.9793	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	1.7	6.6	-6.6	0.9900	8.5	0.9793	10.9	1	6
524	TCATIVÁ 13B	13.800	G10	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9409	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9409	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9409	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9409	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9409	10.9	1	6
541	PETOABRE	4.2000	1	116.3	1.4	1.4	1.4	0.9977	116.6	0.9999	136.0	1	6
SUBSYSTEM TOTALS				1212.7	109.7	729.6	-508.6				1719.5		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, OCT 28 2008 17:10
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2011 ESC MOD DEM MAX VER

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
129	MIR13D	13.800	G4	35.0	3.1	15.0	0.0	1.0100	34.8	0.9961	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0154	16.8	1.0000	27.7			2	7	
140	GAT6A	6.9000	G1	1.9	-0.1	2.0	-2.0	1.0100	1.9	0.9989	4.1			2	7	
140	GAT6A	6.9000	G2	1.9	-0.1	2.0	-2.0	1.0100	1.9	0.9989	4.1			2	7	
140	GAT6A	6.9000	G3	1.9	-0.1	2.0	-2.0	1.0100	1.9	0.9989	4.1			2	7	
141	GAT6B	6.9000	G4	3.9	-0.8	3.0	-3.0	1.0100	3.9	0.9770	5.6			2	7	



141 GAT6B	6.9000	G5	3.9	-0.8	3.0	-3.0	1.0100	3.9	0.9770	6.2	2	7
141 GAT6B	6.9000	G6	3.9	-0.8	3.0	-3.0	1.0100	3.9	0.9770	6.2	2	7
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0298	17.8	0.9281	23.0	2	7
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0388	17.6	0.9281	23.0	2	7
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0388	17.6	0.9281	23.0	2	7
SUBSYSTEM TOTALS			120.5	20.8	71.5	5.5				171.3		



Handwritten signature or initials.

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	1006.8	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	1344.9	1324.8	0.0	0.0	0.0	0.4	19.7	0.0
C.RICA	239.2	569.4	-236.4	0.0	471.1	18.1	359.2	
6	1212.7	1139.0	0.0	0.0	0.0	36.8	36.9	25.0
PANAMA	109.7	199.5	-61.6	0.0	483.8	58.3	397.3	
7	120.5	44.2	0.0	0.0	0.0	75.1	1.2	50.0
ACANAL	20.8	7.7	0.0	0.0	0.0	-4.2	17.2	
9	0.0	112.2	0.0	0.0	0.0	-112.3	0.1	-75.0
COLON	0.0	19.7	0.0	0.0	1.1	-25.6	7.1	
TOTALS	6482.5	6347.0	0.0	0.0	0.0	0.0	135.5	0.0
	588.1	1843.2	-909.4	0.0	2034.9	0.0	1689.2	

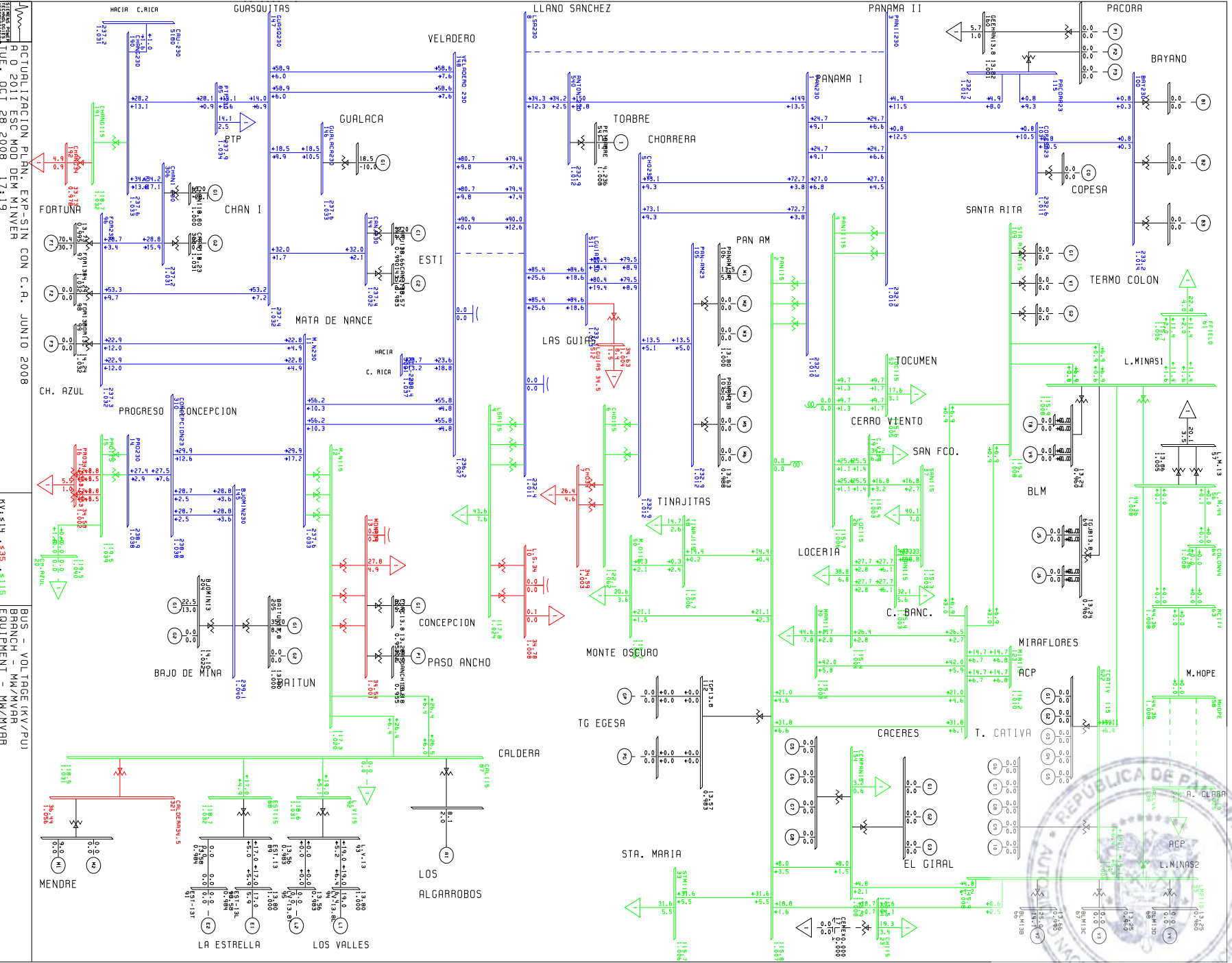


Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2011 ESCENARIO MODERADO DEMANDA MÍNIMA VERANO**



de



ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 R 0 2011 ESC MOD DEM MINVER
 TUE., OCT 28 2008 17:19

KV:115 . *S5 . *115

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



Handwritten signature or initials in the bottom right corner of the page.

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	1.0098	232.26	3		PANII230		230.00	6	1.0102	232.34
5		CHO230		230.00	6	1.0125	232.87	8		LSA230		230.00	6	1.0105	232.42
11		M.N230		230.00	6	1.0332	237.64	14		PRO230		230.00	6	1.0385	238.85
85		PTP230		230.00	6	1.0342	237.87	96		FOR230		230.00	6	1.0319	237.34
100		BAY230		230.00	6	1.0138	233.17	103		COPESA23		230.00	6	1.0112	232.58
105		PAN-AM23		230.00	6	1.0125	232.87	115		PACORA23		230.00	6	1.0116	232.68
144		CANJ230		230.00	6	1.0324	237.44	145		BJOMIN230		230.00	6	1.0398	239.15
146		GUALACA230		230.00	6	1.0330	237.59	147		GUASQ230		230.00	6	1.0323	237.43
148		VELADERO 230		230.00	6	1.0268	236.17	190		CHANG230		230.00	6	1.0331	237.62
306		CHAN1 230		230.00	6	1.0313	237.19	310		CONCEPCION23		230.00	6	1.0384	238.83
511		LGUIAS230		230.00	6	1.0134	233.09	540		ANTON 230		230.00	6	1.0124	232.86
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 *															

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	1.0068	115.78	4		PANII115		115.00	6	1.0058	115.66
6		CHO115		115.00	6	1.0621	122.14	9		LSA115		115.00	6	1.0243	117.79
12		M.N115		115.00	6	1.0200	117.30	15		PRO115		115.00	6	1.0388	119.46
18		CAC115		115.00	6	1.0067	115.78	19		C.V115		115.00	6	1.0032	115.37
20		CH.AZUL		115.00	6	1.0396	119.55	21		C.BAN115		115.00	6	1.0035	115.40
23		CH115		115.00	6	1.0044	115.50	26		LOC115		115.00	6	1.0038	115.44
30		MAR115		115.00	6	1.0033	115.38	33		STM115		115.00	6	1.0061	115.70
37		SAN115		115.00	6	1.0030	115.34	48		TINAJ115		115.00	6	1.0062	115.71
50		M.O115		115.00	6	1.0062	115.72	52		TOC115		115.00	6	1.0048	115.55
54		LM1115		115.00	6	1.0076	115.88	55		LM2115		115.00	6	1.0079	115.91
61		FFIELD		115.00	9	1.0063	115.73	87		CAL115		115.00	6	1.0305	118.51
88		EST115		115.00	6	1.0322	118.70	92		L.V115		115.00	6	1.0311	118.58
109		STA RITA115		115.00	6	1.0078	115.89	123		MIR115		115.00	7	1.0104	116.20
154		CEMPAN15		115.00	6	1.0076	115.87	191		CHANG115		115.00	6	1.0319	118.67
522		TCATIVÁ		115.00	6	1.0078	115.89								

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 *															



Handwritten signature or initials.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, OCT 28 2008 17:18
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2011 ESC MOD DEM MINVER

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	25.0	14.1	25.0	0.0	0.9900	29.0	0.8706	47.0			1	6	
90	EST-13L	13.800	E1	17.0	5.9	12.0	-5.0	1.0000	18.0	0.9445	27.0			1	6	
94	LV-13.8L	13.800	L1	19.0	6.4	12.0	-5.0	1.0000	20.0	0.9484	27.0			1	6	
97	FOR13A	13.800	F1	70.4	-30.7	50.0	-50.0	0.9950	77.2	0.9165	111.0			1	6	SYST
106	PANAM13A	13.800	M1	13.5	5.5	9.0	0.0	1.0000	14.6	0.9257	20.7			1	6	
142	CANJ13A	13.800	C1	32.0	4.3	29.0	-29.0	0.9900	32.6	0.9909	69.0			1	6	
151	GUALACA13.8	13.800	G1	18.5	-10.0	10.0	-10.0	1.0221	20.6	0.8797	26.7			1	6	
204	BJOMIN13	13.800	G1	22.5	-13.0	13.0	-13.0	1.0216	25.4	0.8659	28.9			1	6	
205	BAITUN13.8	13.800	G1	35.0	8.4	26.6	-26.6	1.0000	36.0	0.9723	50.6			1	6	
301	CONC13.8	13.800	G1	8.3	5.0	5.0	-5.0	0.9567	10.1	0.8566	13.5			1	6	
302	PASOANCH13.8	13.800	P1	3.6	2.0	2.0	-2.0	0.9548	4.3	0.8742	6.2			1	6	
304	ALGA13.8	13.800	A1	8.1	2.0	2.0	0.0	0.9826	8.5	0.9708	13.5			1	6	
307	CHAN1 A	13.800	G1	63.0	-28.1	50.0	-50.0	1.0000	69.0	0.9133	118.6			1	6	
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1090	8.1	1.0000	35.3			1	6	
541	PETOABRE	4.2000	1	116.3	1.4	1.4	1.4	1.0085	115.3	0.9999	136.0			1	6	
SUBSYSTEM TOTALS				461.1	-26.8	247.0	-194.3				731.0					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, OCT 28 2008 17:18
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2011 ESC MOD DEM MINVER

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
170	MIR13G	13.800	M1	15.5	6.8	11.2	6.8	1.0430	16.2	0.9150	23.0			2	7	
171	MIR13H	13.800	M1	15.5	6.8	11.2	6.8	1.0521	16.1	0.9149	23.0			2	7	
171	MIR13H	13.800	M2	15.5	6.8	11.2	6.8	1.0521	16.1	0.9149	23.0			2	7	
SUBSYSTEM TOTALS				46.4	20.5	33.5	20.5				69.1					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, OCT 28 2008 17:19
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2011 ESC MOD DEM MINVER

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	1347.4	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	



Handwritten signature or initials.

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	32.2	224.5	-98.9	0.0	143.3	-97.4	147.3	
5	1344.9	1324.8	0.0	0.0	0.0	0.7	19.4	0.0
C. RICA	239.0	569.4	-236.4	0.0	471.1	19.6	357.5	
6	461.1	435.6	0.0	0.0	0.0	12.8	12.8	25.0
PANAMA	-26.8	76.3	185.0	0.0	439.8	21.0	130.7	
7	46.4	16.9	0.0	0.0	0.0	29.4	0.1	50.0
ACANAL	20.5	3.0	0.0	0.0	0.0	13.4	4.1	
9	0.0	42.9	0.0	0.0	0.0	-42.9	0.0	-75.0
COLON	0.0	7.5	0.0	0.0	1.1	-7.5	1.0	
TOTALS	5656.8	5547.0	0.0	0.0	0.0	0.0	109.8	0.0
	451.0	1703.1	-663.0	0.0	1990.9	0.0	1401.8	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA GUASQUITAS-VELADERO**



de

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	1.0155	233.56	14	PRO230	230.00	6	1.0214	234.93				
85	PTP230	230.00	6	1.0184	234.23	96	FOR230	230.00	6	1.0210	234.84				
100	BAY230	230.00	6	1.0133	233.07	144	CANJ230	230.00	6	1.0155	233.56				
145	BJOMIN230	230.00	6	1.0284	236.53	146	GUALACA230	230.00	6	1.0165	233.78				
147	GUASQ230	230.00	6	1.0154	233.53	190	CHANG230	230.00	6	1.0270	236.22				
306	CHAN1 230	230.00	6	1.0285	236.56	310	CONCEPCION23230.00	6	1.0237	235.45					
6000	FRONTER	230.00	6	1.0208	234.78										

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	0.9713	223.40	3	PANII230	230.00	6	0.9779	224.92				
5	CHO230	230.00	6	0.9643	221.78	8	LSA230	230.00	6	0.9654	222.04				
103	COPESA23	230.00	6	0.9836	226.22	105	PAN-AM23	230.00	6	0.9643	221.78				
115	PACORA23	230.00	6	0.9873	227.08	148	VELADERO 230230.00	6	0.9864	226.86					
511	LGUIAS230	230.00	6	0.9626	221.40	540	ANTON 230	230.00	6	0.9665	222.30				

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	1.0020	115.23	4	PANII115	115.00	6	1.0093	116.07				
6	CHO115	115.00	6	1.0018	115.20	12	M.N115	115.00	6	1.0190	117.19				
15	PRO115	115.00	6	1.0205	117.36	18	CAC115	115.00	6	1.0016	115.19				
20	CH.AZUL	115.00	6	1.0213	117.44	33	STM115	115.00	6	1.0002	115.02				
52	TOC115	115.00	6	1.0067	115.77	54	LM115	115.00	6	1.0137	116.57				
55	LM2115	115.00	6	1.0144	116.66	61	FFIELD	115.00	9	1.0101	116.16				
87	CAL115	115.00	6	1.0414	119.76	88	EST115	115.00	6	1.0456	120.25				
92	L.V115	115.00	6	1.0430	119.94	109	STA RITA115	115.00	6	1.0125	116.44				
123	MIR115	115.00	7	1.0050	115.58	154	CEMPAN15	115.00	6	1.0101	116.16				
191	CHANG115	115.00	6	1.0235	117.70	522	TCATIVÁ 115	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	0.9802	112.72	19	C.V115	115.00	6	0.9991	114.90				
21	C.BAN115	115.00	6	0.9930	114.20	23	CH115	115.00	6	0.9987	114.85				
26	LOC115	115.00	6	0.9939	114.30	30	MAR115	115.00	6	0.9925	114.14				
37	SAN115	115.00	6	0.9923	114.11	48	TINAJ115	115.00	6	0.9997	114.96				
50	M.O115	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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	30.0	16.3	25.0	0.0	1.0000	34.1	0.8792	47.0	1	6
67	BLM13C	13.800	V3	30.0	16.3	25.0	0.0	1.0000	34.1	0.8792	47.0	1	6
68	BLM13D	13.800	V4	30.0	17.0	25.0	0.0	1.0000	34.5	0.8701	47.0	1	6
90	EST-13L	13.800	E1	21.0	8.2	12.0	-5.0	1.0200	22.1	0.9310	27.0	1	6
91	EST-13T	13.800	E2	21.0	8.2	12.0	-5.0	1.0200	22.1	0.9310	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	9.2	12.0	-5.0	1.0200	25.2	0.9333	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	9.2	12.0	-5.0	1.0200	25.2	0.9333	27.0	1	6
97	FOR13A	13.800	F1	91.0	11.8	50.0	-50.0	1.0290	89.2	0.9917	111.0	1	6
98	FOR13B	13.800	F2	91.0	11.8	50.0	-50.0	1.0290	89.2	0.9917	111.0	1	6
99	FOR13C	13.800	F3	91.0	11.8	50.0	-50.0	1.0290	89.2	0.9917	111.0	1	6
101	BAY13A	13.800	B1	60.2	29.7	50.0	-25.0	1.0000	67.1	0.8966	96.0	1	6
102	BAY13B	13.800	B2	75.2	31.1	50.0	-25.0	1.0000	81.3	0.9242	96.0	1	6
108	BAY13C	13.800	B3	75.2	31.1	50.0	-25.0	1.0000	81.3	0.9242	100.0	1	6
142	CANJ13A	13.800	C1	55.0	16.8	29.0	-29.0	1.0100	57.0	0.9562	69.0	1	6
143	CANJ13B	13.800	C2	55.0	16.8	29.0	-29.0	1.0100	57.0	0.9562	69.0	1	6
151	GUALACA13.8	13.800	G1	23.8	-5.7	10.0	-10.0	1.0100	24.2	0.9727	26.7	1	6
204	BJOMIN13	13.800	G1	23.0	-5.9	13.0	-13.0	1.0100	23.5	0.9682	28.9	1	6
204	BJOMIN13	13.800	G2	23.0	-5.9	13.0	-13.0	1.0100	23.5	0.9682	28.9	1	6
205	BAITUN13.8	13.800	G1	40.0	14.2	26.6	-26.6	1.0100	42.0	0.9427	50.6	1	6
205	BAITUN13.8	13.800	G2	40.0	14.2	26.6	-26.6	1.0100	42.0	0.9427	50.6	1	6
302	PASOANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9574	5.4	0.9216	6.2	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9930	9.5	0.9772	13.5	1	6
307	CHAN1 A	13.800	G1	100.0	-3.4	50.0	-50.0	1.0200	98.1	0.9994	118.6	1	6
308	CHAN1 B	13.800	G2	100.0	-3.4	50.0	-50.0	1.0200	98.1	0.9994	118.6	1	6
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1186	8.0	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1186	8.0	1.0000	35.3	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	3.9	6.6	-6.6	0.9900	9.2	0.9014	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	3.9	6.6	-6.6	0.9900	9.2	0.9014	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	3.9	6.6	-6.6	0.9900	9.2	0.9014	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	3.9	6.6	-6.6	0.9900	9.2	0.9014	10.9	1	6
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	0.9662	62.1	0.9997	136.0	1	6
SUBSYSTEM TOTALS				1248.0	270.5	701.9	-519.1				1705.0		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, OCT 28 2008 17:25
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2011 ESC MOD DEM MAX INV CONT GUAS-VEL

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
129	MIR13D	13.800	G4	35.0	5.5	15.0	0.0	1.0100	35.1	0.9877	44.1				2	7	
130	MIR13F	13.800	G5	17.1	0.3	8.0	0.0	1.0100	16.9	0.9999	27.7				2	7	
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0100	1.9	0.9999	4.1				2	7	
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0100	1.9	0.9999	4.1				2	7	
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0100	1.9	0.9999	4.1				2	7	
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0100	3.9	0.9827	5.6				2	7	
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0100	3.9	0.9827	6.2				2	7	
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0100	3.9	0.9827	6.2				2	7	
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0239	17.9	0.9281	23.0				2	7	
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0329	17.7	0.9281	23.0				2	7	
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0329	17.7	0.9281	23.0				2	7	
SUBSYSTEM TOTALS				120.5	24.2	71.5	5.5					171.3					



Handwritten signature or initials.

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	1006.8	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	32.9	224.5	-98.9	0.0	143.2	-96.9	147.4	
5	1344.9	1324.8	0.0	0.0	0.0	0.0	20.1	0.0
C.RICA	264.5	569.4	-236.8	0.0	468.2	38.0	362.0	
6	1248.0	1139.0	0.0	0.0	0.0	37.2	71.8	25.0
PANAMA	270.5	199.5	-182.5	0.0	448.2	34.5	667.1	
7	120.5	44.2	0.0	0.0	0.0	75.1	1.2	50.0
ACANAL	24.2	7.7	0.0	0.0	0.0	-1.0	17.4	
9	0.0	112.2	0.0	0.0	0.0	-112.3	0.1	-75.0
COLON	0.0	19.7	0.0	0.0	1.1	-25.6	7.1	
TOTALS	6517.8	6347.0	0.0	0.0	0.0	0.0	170.8	0.0
	778.3	1843.2	-1030.7	0.0	1996.3	0.0	1962.2	

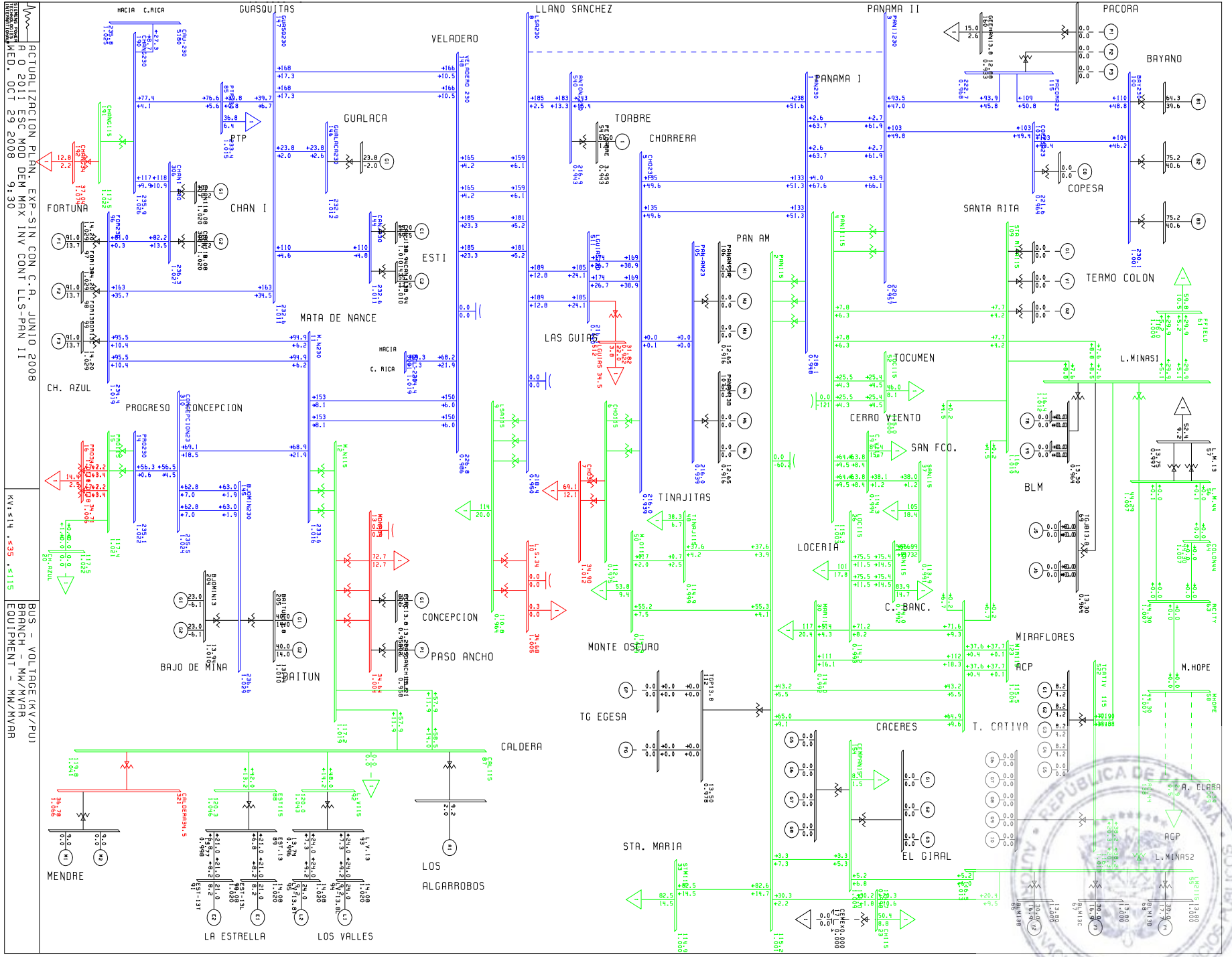


Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA LLANO SÁNCHEZ-PANAMÁ II**



de



ACTUALIZACION PLAN. EXP-SIN CON C.R. JUNIO 2008
 A 0 2011 ESC MOD DEM MAX INV CONT LLS-PAN II
 REVISADO: [illegible]
 DISEÑADO: [illegible]
 [illegible] OCT 29 2008 9:30

KV. 115 • 435 • 115

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



[Handwritten signature]

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	1.0157	233.61	14	PRO230	230.00	6	1.0222	235.10				
85	PTP230	230.00	6	1.0150	233.44	96	FOR230	230.00	6	1.0190	234.38				
100	BAY230	230.00	6	1.0006	230.13	144	CANJ230	230.00	6	1.0114	232.62				
145	BJOMIN230	230.00	6	1.0287	236.61	146	GUALACA230	230.00	6	1.0124	232.86				
147	GUASQ230	230.00	6	1.0112	232.58	190	CHANG230	230.00	6	1.0256	235.88				
306	CHAN1 230	230.00	6	1.0273	236.28	310	CONCEPCION23230.00	6	1.0241	235.54					
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	0.9484	218.13	3	PANII230	230.00	6	0.9567	220.05				
5	CHO230	230.00	6	0.9393	216.04	8	LSA230	230.00	6	0.9497	218.44				
103	COPESA23	230.00	6	0.9637	221.64	105	PAN-AM23	230.00	6	0.9393	216.04				
115	PACORA23	230.00	6	0.9684	222.74	148	VELADERO 230230.00	6	0.9861	226.79					
511	LGUIAS230	230.00	6	0.9398	216.15	540	ANTON 230	230.00	6	0.9430	216.88				

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	1.0014	115.16	4	PANII115	115.00	6	1.0027	115.31				
12	M.N115	115.00	6	1.0192	117.20	15	PRO115	115.00	6	1.0212	117.44				
18	CAC115	115.00	6	1.0010	115.11	20	CH.AZUL	115.00	6	1.0220	117.53				
54	LM1115	115.00	6	1.0121	116.39	55	LM2115	115.00	6	1.0129	116.48				
61	FFIELD	115.00	9	1.0085	115.98	87	CAL115	115.00	6	1.0415	119.77				
88	EST115	115.00	6	1.0457	120.26	92	L.V115	115.00	6	1.0431	119.96				
109	STA RITA115	115.00	6	1.0105	116.20	123	MIR115	115.00	7	1.0044	115.51				
154	CEMPAN15	115.00	6	1.0088	116.01	191	CHANG115	115.00	6	1.0220	117.53				
522	TCATIVÁ 115	115.00	6	1.0126	116.45										

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	0.9751	112.14	9	LSA115	115.00	6	0.9639	110.85				
19	C.V115	115.00	6	0.9941	114.32	21	C.BAN115	115.00	6	0.9916	114.04				
23	CH115	115.00	6	0.9977	114.73	26	LOC115	115.00	6	0.9927	114.16				
30	MAR115	115.00	6	0.9916	114.03	33	STM115	115.00	6	0.9996	114.95				
37	SAN115	115.00	6	0.9906	113.91	48	TINAJ115	115.00	6	0.9991	114.89				
50	M.O115	115.00	6	0.9992	114.91	52	TOC115	115.00	6	1.0000	115.00				

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	16.9	25.0	0.0	1.0000	34.4	0.8709	47.0						1	6



Handwritten signature or mark.

67	BLM13C	13.800	V3	30.0	16.9	25.0	0.0	1.0000	34.4	0.8709	47.0	1	6
68	BLM13D	13.800	V4	30.0	17.7	25.0	0.0	1.0000	34.8	0.8613	47.0	1	6
90	EST-13L	13.800	E1	21.0	8.2	12.0	-5.0	1.0200	22.1	0.9314	27.0	1	6
91	EST-13T	13.800	E2	21.0	8.2	12.0	-5.0	1.0200	22.1	0.9314	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	9.2	12.0	-5.0	1.0200	25.2	0.9337	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	9.2	12.0	-5.0	1.0200	25.2	0.9337	27.0	1	6
97	FOR13A	13.800	F1	91.0	13.7	50.0	-50.0	1.0290	89.4	0.9889	111.0	1	6
98	FOR13B	13.800	F2	91.0	13.7	50.0	-50.0	1.0290	89.4	0.9889	111.0	1	6
99	FOR13C	13.800	F3	91.0	13.7	50.0	-50.0	1.0290	89.4	0.9889	111.0	1	6
101	BAY13A	13.800	B1	64.3	39.6	50.0	-25.0	1.0000	75.6	0.8514	96.0	1	6
102	BAY13B	13.800	B2	75.2	40.6	50.0	-25.0	1.0000	85.4	0.8796	96.0	1	6
108	BAY13C	13.800	B3	75.2	40.6	50.0	-25.0	1.0000	85.4	0.8796	100.0	1	6
142	CANJ13A	13.800	C1	55.0	17.5	29.0	-29.0	1.0100	57.2	0.9528	69.0	1	6
143	CANJ13B	13.800	C2	55.0	17.5	29.0	-29.0	1.0100	57.2	0.9528	69.0	1	6
151	GUALACA13.8	13.800	G1	23.8	-2.0	10.0	-10.0	1.0100	23.6	0.9967	26.7	1	6
204	BJOMIN13	13.800	G1	23.0	-6.1	13.0	-13.0	1.0100	23.6	0.9669	28.9	1	6
204	BJOMIN13	13.800	G2	23.0	-6.1	13.0	-13.0	1.0100	23.6	0.9669	28.9	1	6
205	BAITUN13.8	13.800	G1	40.0	14.0	26.6	-26.6	1.0100	42.0	0.9437	50.6	1	6
205	BAITUN13.8	13.800	G2	40.0	14.0	26.6	-26.6	1.0100	42.0	0.9437	50.6	1	6
302	PASOANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9575	5.4	0.9216	6.2	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9931	9.5	0.9772	13.5	1	6
307	CHANI A	13.800	G1	100.0	-2.2	50.0	-50.0	1.0200	98.1	0.9998	118.6	1	6
308	CHANI B	13.800	G2	100.0	-2.2	50.0	-50.0	1.0200	98.1	0.9998	118.6	1	6
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1187	8.0	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1187	8.0	1.0000	35.3	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	4.2	6.6	-6.6	0.9900	9.3	0.8913	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	4.2	6.6	-6.6	0.9900	9.3	0.8913	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	4.2	6.6	-6.6	0.9900	9.3	0.8913	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	4.2	6.6	-6.6	0.9900	9.3	0.8913	10.9	1	6
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	0.9426	63.7	0.9997	136.0	1	6
SUBSYSTEM TOTALS				1252.2	315.0	701.9	-519.1				1705.0		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 29 2008 9:17
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2011 ESC MOD DEM MAX INV CONT LLS-PAN 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
129	MIR13D	13.800	G4	35.0	5.6	15.0	0.0	1.0100	35.1	0.9873	44.1	2	7					
130	MIR13F	13.800	G5	17.1	0.4	8.0	0.0	1.0100	16.9	0.9997	27.7	2	7					
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0100	1.9	0.9999	4.1	2	7					
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0100	1.9	0.9999	4.1	2	7					
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0100	1.9	0.9999	4.1	2	7					
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0100	3.9	0.9830	5.6	2	7					
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0100	3.9	0.9830	6.2	2	7					
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0100	3.9	0.9830	6.2	2	7					
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0236	17.9	0.9281	23.0	2	7					
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0327	17.7	0.9281	23.0	2	7					
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0327	17.7	0.9281	23.0	2	7					
SUBSYSTEM TOTALS				120.5	24.4	71.5	5.5				171.3							



Handwritten signature or initials.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 29 2008 9:19
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2011 ESC MOD DEM MAX INV CONT LLS-PAN 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	



Handwritten signature or initials.

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	32.9	224.5	-98.9	0.0	143.2	-96.9	147.4	
5	1344.9	1324.8	0.0	0.0	0.0	0.3	19.8	0.0
C. RICA	263.3	569.4	-236.9	0.0	468.3	38.8	360.4	
6	1252.2	1139.0	0.0	0.0	0.0	36.9	76.2	25.0
PANAMA	315.0	199.5	-180.8	0.0	432.7	33.6	695.4	
7	120.5	44.2	0.0	0.0	0.0	75.1	1.2	50.0
ACANAL	24.4	7.7	0.0	0.0	0.0	-0.8	17.5	
9	0.0	112.2	0.0	0.0	0.0	-112.3	0.1	-75.0
COLON	0.0	19.7	0.0	0.0	1.1	-25.7	7.1	
TOTALS	6522.0	6347.0	0.0	0.0	0.0	0.0	175.0	0.0
	821.9	1843.2	-1029.1	0.0	1981.0	0.0	1988.8	

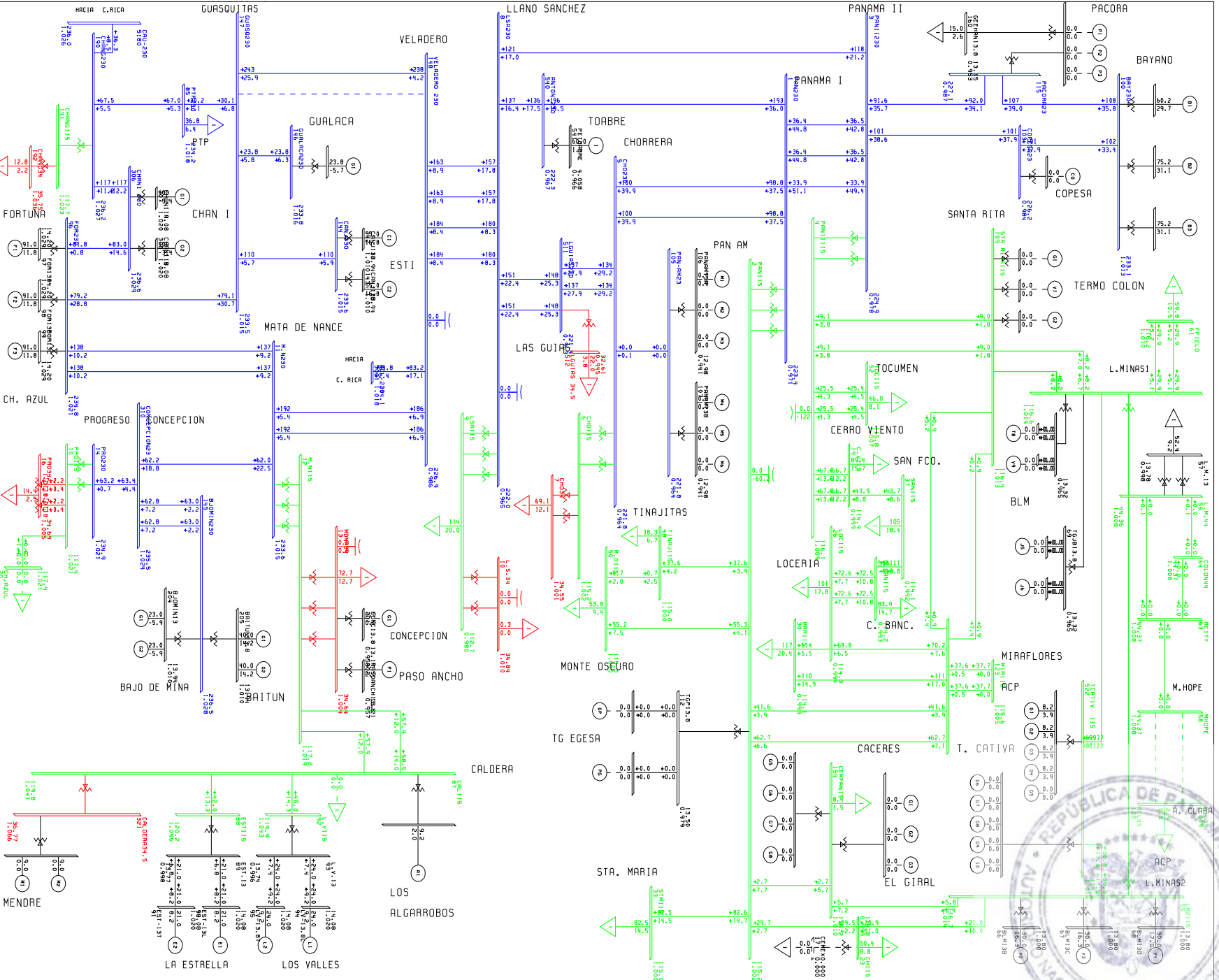


Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA FORTUNA-GUASQUITAS**



de



Handwritten signature or initials in the bottom right corner of the page.

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	1.0223	235.12	14	PRO230			230.00	6	1.0260	235.98
85	PTP230			230.00	6	1.0096	232.20	96	FOR230			230.00	6	1.0296	236.82
100	BAY230			230.00	6	1.0164	233.78	144	CANJ230			230.00	6	1.0059	231.36
145	BJOMIN230			230.00	6	1.0325	237.47	146	GUALACA230			230.00	6	1.0071	231.63
147	GUASQ230			230.00	6	1.0057	231.31	190	CHANG230			230.00	6	1.0246	235.66
306	CHAN1 230			230.00	6	1.0281	236.47	310	CONCEPCION230			230.00	6	1.0286	236.58
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	0.9761	224.51	3	PANII230			230.00	6	0.9831	226.10
5	CHO230			230.00	6	0.9699	223.08	8	LSA230			230.00	6	0.9731	223.82
103	COPESA23			230.00	6	0.9884	227.33	105	PAN-AM23			230.00	6	0.9699	223.08
115	PACORA23			230.00	6	0.9919	228.13	148	VELADERO 230			230.00	6	0.9948	228.81
511	LGUIAS230			230.00	6	0.9696	223.00	540	ANTON 230			230.00	6	0.9732	223.84

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	115.59	4	PANII115			115.00	6	1.0061	115.70
6	CHO115			115.00	6	1.0078	115.90	12	M.N115			115.00	6	1.0242	117.78
15	PRO115			115.00	6	1.0251	117.88	18	CAC115			115.00	6	1.0047	115.54
20	CH.AZUL			115.00	6	1.0258	117.97	23	CH115			115.00	6	1.0008	115.09
33	STM115			115.00	6	1.0033	115.38	48	TINAJ115			115.00	6	1.0028	115.32
50	M.O115			115.00	6	1.0029	115.34	52	TOC115			115.00	6	1.0034	115.39
54	LM115			115.00	6	1.0144	116.65	55	LM2115			115.00	6	1.0151	116.74
61	FFIELD			115.00	9	1.0108	116.24	87	CAL115			115.00	6	1.0448	120.15
88	EST115			115.00	6	1.0487	120.60	92	L.V115			115.00	6	1.0463	120.33
109	STA RITA115			115.00	6	1.0130	116.50	123	MIR115			115.00	7	1.0079	115.90
154	CEMPAN15			115.00	6	1.0115	116.32	191	CHANG115			115.00	6	1.0210	117.41
522	TCATIVÁ			115.00	6	1.0149	116.71								

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)
9	LSA115			115.00	6	0.9882	113.64	19	C.V115			115.00	6	0.9976	114.73
21	C.BAN115			115.00	6	0.9953	114.46	26	LOC115			115.00	6	0.9964	114.59
30	MAR115			115.00	6	0.9953	114.46	37	SAN115			115.00	6	0.9942	114.34



Handwritten signature or initials.

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	16.0	25.0	0.0	1.0000	34.0	0.8829	47.0			1	6		
67		BLM13C		13.800	V3	30.0	16.0	25.0	0.0	1.0000	34.0	0.8829	47.0			1	6		
68		BLM13D		13.800	V4	30.0	16.7	25.0	0.0	1.0000	34.3	0.8740	47.0			1	6		
90		EST-13L		13.800	E1	21.0	7.3	12.0	-5.0	1.0200	21.8	0.9443	27.0			1	6		
91		EST-13T		13.800	E2	21.0	7.3	12.0	-5.0	1.0200	21.8	0.9443	27.0			1	6		
94		LV-13.8L		13.800	L1	24.0	8.2	12.0	-5.0	1.0200	24.9	0.9457	27.0			1	6		
95		LV-13.8T		13.800	L2	24.0	8.2	12.0	-5.0	1.0200	24.9	0.9457	27.0			1	6		
97		FOR13A		13.800	F1	91.0	3.7	50.0	-50.0	1.0290	88.5	0.9992	111.0			1	6		
98		FOR13B		13.800	F2	91.0	3.7	50.0	-50.0	1.0290	88.5	0.9992	111.0			1	6		
99		FOR13C		13.800	F3	91.0	3.7	50.0	-50.0	1.0290	88.5	0.9992	111.0			1	6		
101		BAY13A		13.800	B1	59.0	27.3	50.0	-25.0	1.0000	65.0	0.9075	96.0			1	6	SYST	
102		BAY13B		13.800	B2	75.2	28.8	50.0	-25.0	1.0000	80.5	0.9340	96.0			1	6		
108		BAY13C		13.800	B3	75.2	28.8	50.0	-25.0	1.0000	80.5	0.9340	100.0			1	6		
142		CANJ13A		13.800	C1	55.0	18.5	29.0	-29.0	1.0100	57.4	0.9481	69.0			1	6		
143		CANJ13B		13.800	C2	55.0	18.5	29.0	-29.0	1.0100	57.4	0.9481	69.0			1	6		
151		GUALACA13.8		13.800	G1	23.8	3.0	10.0	-10.0	1.0100	23.8	0.9921	26.7			1	6		
204		BJOMIN13		13.800	G1	23.0	-7.4	13.0	-13.0	1.0100	23.9	0.9517	28.9			1	6		
204		BJOMIN13		13.800	G2	23.0	-7.4	13.0	-13.0	1.0100	23.9	0.9517	28.9			1	6		
205		BAITUN13.8		13.800	G1	40.0	12.6	26.6	-26.6	1.0100	41.5	0.9537	50.6			1	6		
205		BAITUN13.8		13.800	G2	40.0	12.6	26.6	-26.6	1.0100	41.5	0.9537	50.6			1	6		
302		PASOANCH13.8		13.800	P1	4.7	2.0	2.0	-2.0	0.9624	5.4	0.9216	6.2			1	6		
304		ALGA13.8		13.800	A1	9.2	2.0	2.0	0.0	0.9962	9.5	0.9772	13.5			1	6		
307		CHAN1 A		13.800	G1	100.0	-3.0	50.0	-50.0	1.0200	98.1	0.9995	118.6			1	6		
308		CHAN1 B		13.800	G2	100.0	-3.0	50.0	-50.0	1.0200	98.1	0.9995	118.6			1	6		
317		MENDRE13.8		13.800	M1	9.0	0.0	0.0	0.0	1.1223	8.0	1.0000	35.3			1	6		
317		MENDRE13.8		13.800	M2	9.0	0.0	0.0	0.0	1.1223	8.0	1.0000	35.3			1	6		
523		TCATIVÁ 13A		13.800	G1	8.2	3.8	6.6	-6.6	0.9900	9.1	0.9058	10.9			1	6		
523		TCATIVÁ 13A		13.800	G2	8.2	3.8	6.6	-6.6	0.9900	9.1	0.9058	10.9			1	6		
523		TCATIVÁ 13A		13.800	G3	8.2	3.8	6.6	-6.6	0.9900	9.1	0.9058	10.9			1	6		
523		TCATIVÁ 13A		13.800	G4	8.2	3.8	6.6	-6.6	0.9900	9.1	0.9058	10.9			1	6		
541		PETOABRE		4.2000	1	60.0	1.4	1.4	1.4	0.9730	61.7	0.9997	136.0			1	6		
SUBSYSTEM TOTALS						1246.9	240.7	701.9	-519.1				1705.0						

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
129		MIR13D		13.800	G4	35.0	4.9	15.0	0.0	1.0100	35.0	0.9902	44.1			2	7	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0109	16.9	1.0000	27.7			2	7	
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0100	1.9	1.0000	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0100	1.9	1.0000	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0100	1.9	1.0000	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.8	3.0	-3.0	1.0100	3.9	0.9814	5.6			2	7	



Handwritten signature or initials.

141 GAT6B	6.9000	G5	3.9	-0.8	3.0	-3.0	1.0100	3.9	0.9814	6.2	2	7
141 GAT6B	6.9000	G6	3.9	-0.8	3.0	-3.0	1.0100	3.9	0.9814	6.2	2	7
170 MIR13G	13.8000	M1	17.0	6.8	11.2	6.8	1.0253	17.9	0.9281	23.0	2	7
171 MIR13H	13.8000	M1	17.0	6.8	11.2	6.8	1.0344	17.7	0.9281	23.0	2	7
171 MIR13H	13.8000	M2	17.0	6.8	11.2	6.8	1.0344	17.7	0.9281	23.0	2	7
SUBSYSTEM TOTALS			120.5	23.1	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 29 2008 9:40
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2011 ESC MOD DEM MAX INV CONT FOR-GUAS 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



Handwritten signature or initials.

HONDURAS	55.7	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	1344.9	1324.8	0.0	0.0	0.0	0.4	19.7	0.0
C.RICA	260.1	569.4	-237.1	0.0	468.8	37.0	359.5	
6	1246.9	1139.0	0.0	0.0	0.0	36.8	71.1	25.0
PANAMA	240.7	199.5	-182.1	0.0	465.0	36.7	651.5	
7	120.5	44.2	0.0	0.0	0.0	75.1	1.2	50.0
ACANAL	23.1	7.7	0.0	0.0	0.0	-2.0	17.4	
9	0.0	112.2	0.0	0.0	0.0	-112.3	0.1	-75.0
COLON	0.0	19.7	0.0	0.0	1.1	-25.7	7.2	
TOTALS	6516.6	6347.0	0.0	0.0	0.0	0.0	169.6	0.0
	742.9	1843.2	-1030.6	0.0	2013.7	0.0	1943.9	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA VELADERO-LLANO SÁNCHEZ**



de

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 29 2008 9:59
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2011 ESC MOD DEM MAX INV CONT VEL-LLS

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	1.0134	233.07	14	PRO230			230.00	6	1.0203	234.68
85	PTP230			230.00	6	1.0131	233.02	96	FOR230			230.00	6	1.0172	233.96
100	BAY230			230.00	6	1.0007	230.16	144	CANJ230			230.00	6	1.0091	232.10
145	BJOMIN230			230.00	6	1.0272	236.26	146	GUALACA230			230.00	6	1.0102	232.35
147	GUASQ230			230.00	6	1.0090	232.06	190	CHANG230			230.00	6	1.0246	235.66
306	CHAN1	230		230.00	6	1.0265	236.09	310	CONCEPCION232	30.00		6	1.0223	235.13	
6000	FRONTER			230.00	6	1.0198	234.54								

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	0.9489	218.25	3	PANII230			230.00	6	0.9570	220.10
5	CHO230			230.00	6	0.9399	216.18	8	LSA230			230.00	6	0.9367	215.44
103	COPESA23			230.00	6	0.9639	221.69	105	PAN-AM23			230.00	6	0.9399	216.18
115	PACORA23			230.00	6	0.9686	222.78	148	VELADERO	230	230.00	6	0.9813	225.69	
511	LGUIAS230			230.00	6	0.9352	215.10	540	ANTON	230	230.00	6	0.9398	216.15	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 29 2008 10:00
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2011 ESC MOD DEM MAX INV CONT VEL-LLS

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	1.0018	115.21	4	PANII115			115.00	6	1.0030	115.35
12	M.N115			115.00	6	1.0174	117.00	15	PRO115			115.00	6	1.0194	117.23
18	CAC115			115.00	6	1.0014	115.16	20	CH.AZUL			115.00	6	1.0201	117.32
52	TOC115			115.00	6	1.0004	115.04	54	LM115			115.00	6	1.0124	116.42
55	LM2115			115.00	6	1.0132	116.51	61	FFIELD			115.00	9	1.0088	116.01
87	CAL115			115.00	6	1.0403	119.63	88	EST115			115.00	6	1.0447	120.14
92	L.V115			115.00	6	1.0420	119.83	109	STA RITA115			115.00	6	1.0108	116.24
123	MIR115			115.00	7	1.0048	115.55	154	CEMPAN15			115.00	6	1.0091	116.05
191	CHANG115			115.00	6	1.0210	117.42	522	TCATIVÁ	115	115.00	6	1.0129	116.48	

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)
6	CHO115			115.00	6	0.9758	112.22	9	LSA115			115.00	6	0.9503	109.29
19	C.V115			115.00	6	0.9945	114.37	21	C.BAN115			115.00	6	0.9921	114.09
23	CH115			115.00	6	0.9980	114.77	26	LOC115			115.00	6	0.9931	114.21
30	MAR115			115.00	6	0.9920	114.08	33	STM115			115.00	6	1.0000	115.00
37	SAN115			115.00	6	0.9910	113.96	48	TINAJ115			115.00	6	0.9995	114.94
50	M.O115			115.00	6	0.9996	114.96								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 29 2008 9:59
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2011 ESC MOD DEM MAX INV CONT VEL-LLS

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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	30.0	16.8	25.0	0.0	1.0000	34.4	0.8724	47.0	1	6
67	BLM13C	13.800	V3	30.0	16.8	25.0	0.0	1.0000	34.4	0.8724	47.0	1	6
68	BLM13D	13.800	V4	30.0	17.6	25.0	0.0	1.0000	34.8	0.8628	47.0	1	6
90	EST-13L	13.800	E1	21.0	8.5	12.0	-5.0	1.0200	22.2	0.9266	27.0	1	6
91	EST-13T	13.800	E2	21.0	8.5	12.0	-5.0	1.0200	22.2	0.9266	27.0	1	6
94	LV-13.8L	13.800	L1	24.0	9.5	12.0	-5.0	1.0200	25.3	0.9292	27.0	1	6
95	LV-13.8T	13.800	L2	24.0	9.5	12.0	-5.0	1.0200	25.3	0.9292	27.0	1	6
97	FOR13A	13.800	F1	91.0	15.4	50.0	-50.0	1.0290	89.7	0.9860	111.0	1	6
98	FOR13B	13.800	F2	91.0	15.4	50.0	-50.0	1.0290	89.7	0.9860	111.0	1	6
99	FOR13C	13.800	F3	91.0	15.4	50.0	-50.0	1.0290	89.7	0.9860	111.0	1	6
101	BAY13A	13.800	B1	67.2	39.8	50.0	-25.0	1.0000	78.1	0.8606	96.0	1	6
102	BAY13B	13.800	B2	75.2	40.5	50.0	-25.0	1.0000	85.4	0.8802	96.0	1	6
108	BAY13C	13.800	B3	75.2	40.5	50.0	-25.0	1.0000	85.4	0.8802	100.0	1	6
142	CANJ13A	13.800	C1	55.0	17.9	29.0	-29.0	1.0100	57.3	0.9509	69.0	1	6
143	CANJ13B	13.800	C2	55.0	17.9	29.0	-29.0	1.0100	57.3	0.9509	69.0	1	6
151	GUALACA13.8	13.800	G1	23.8	0.1	10.0	-10.0	1.0100	23.6	1.0000	26.7	1	6
204	BJOMIN13	13.800	G1	23.0	-5.5	13.0	-13.0	1.0100	23.4	0.9724	28.9	1	6
204	BJOMIN13	13.800	G2	23.0	-5.5	13.0	-13.0	1.0100	23.4	0.9724	28.9	1	6
205	BAITUN13.8	13.800	G1	40.0	14.6	26.6	-26.6	1.0100	42.2	0.9394	50.6	1	6
205	BAITUN13.8	13.800	G2	40.0	14.6	26.6	-26.6	1.0100	42.2	0.9394	50.6	1	6
302	PASOANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9558	5.4	0.9216	6.2	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9919	9.5	0.9772	13.5	1	6
307	CHAN1 A	13.800	G1	100.0	-1.4	50.0	-50.0	1.0200	98.0	0.9999	118.6	1	6
308	CHAN1 B	13.800	G2	100.0	-1.4	50.0	-50.0	1.0200	98.0	0.9999	118.6	1	6
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1174	8.1	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1174	8.1	1.0000	35.3	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	4.1	6.6	-6.6	0.9900	9.3	0.8932	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	4.1	6.6	-6.6	0.9900	9.3	0.8932	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	4.1	6.6	-6.6	0.9900	9.3	0.8932	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	4.1	6.6	-6.6	0.9900	9.3	0.8932	10.9	1	6
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	0.9394	63.9	0.9997	136.0	1	6
SUBSYSTEM TOTALS				1255.1	327.5	701.9	-519.1				1705.0		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 29 2008 9:59
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2011 ESC MOD DEM MAX INV CONT VEL-LLS

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
129	MIR13D	13.800	G4	35.0	5.6	15.0	0.0	1.0100	35.1	0.9876	44.1					2	7	
130	MIR13F	13.800	G5	17.1	0.3	8.0	0.0	1.0100	16.9	0.9998	27.7					2	7	
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0100	1.9	0.9999	4.1					2	7	
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0100	1.9	0.9999	4.1					2	7	
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0100	1.9	0.9999	4.1					2	7	
141	GAT6B	6.9000	G4	3.9	-0.7	3.0	-3.0	1.0100	3.9	0.9828	5.6					2	7	
141	GAT6B	6.9000	G5	3.9	-0.7	3.0	-3.0	1.0100	3.9	0.9828	6.2					2	7	
141	GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0100	3.9	0.9828	6.2					2	7	
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0238	17.9	0.9281	23.0					2	7	
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0328	17.7	0.9281	23.0					2	7	
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0328	17.7	0.9281	23.0					2	7	
SUBSYSTEM TOTALS				120.5	24.3	71.5	5.5				171.3							



Handwritten signature or initials.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 29 2008 10:00
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2011 ESC MOD DEM MAX INV CONT VEL-LLS 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	38.4	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	32.9	224.5	-98.9	0.0	143.2	-96.9	147.4	
5	1344.9	1324.8	0.0	0.0	0.0	0.3	19.8	0.0
C.RICA	266.1	569.4	-236.8	0.0	468.0	41.0	360.5	
6	1255.1	1139.0	0.0	0.0	0.0	36.9	79.1	25.0
PANAMA	327.5	199.5	-180.9	0.0	434.0	31.4	711.5	
7	120.5	44.2	0.0	0.0	0.0	75.1	1.2	50.0
ACANAL	24.3	7.7	0.0	0.0	0.0	-0.9	17.4	
9	0.0	112.2	0.0	0.0	0.0	-112.3	0.1	-75.0
COLON	0.0	19.7	0.0	0.0	1.1	-25.7	7.1	
TOTALS	6524.8	6347.0	0.0	0.0	0.0	0.0	177.8	0.0
	837.1	1843.2	-1029.1	0.0	1982.0	0.0	2005.0	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2011 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA ANTÓN-PANAMÁ**

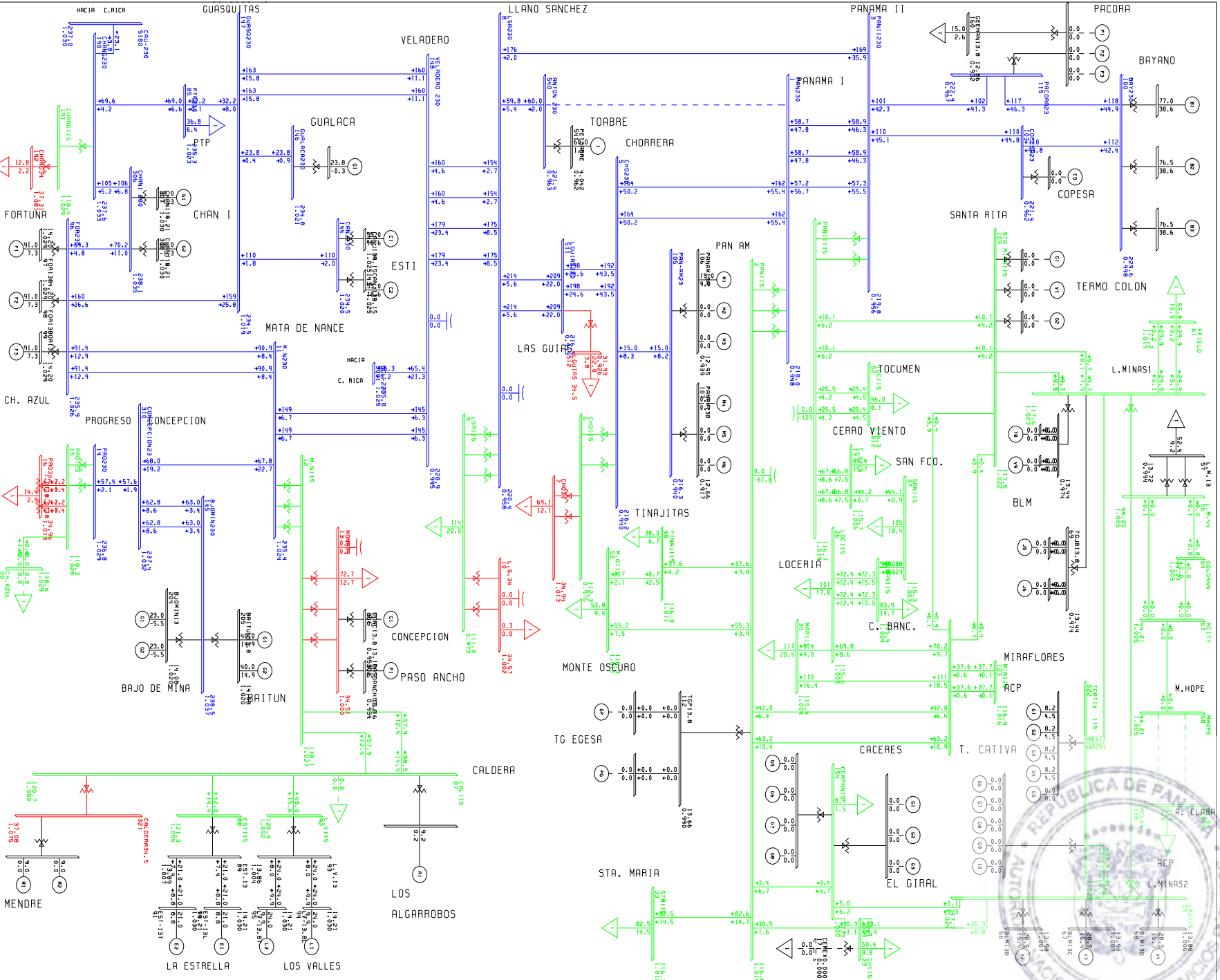


de

ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 R 0 2011 ESC MOD MAX INX CONT ANTON-PANAM

BRANCH - MM/VVFR
 EQUIPMENT - MM/VVFR

BUS - VOLTAGE (KV/PU)
 BUS - VOLTAGE (KV/PU)
 BUS - VOLTAGE (KV/PU)



Handwritten signature or initials in the bottom right corner.

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	1.0235	235.41	14	PRO230			230.00	6	1.0294	236.75
85	PTP230			230.00	6	1.0231	235.31	96	FOR230			230.00	6	1.0258	235.93
144	CANJ230			230.00	6	1.0196	234.51	145	BJOMIN230			230.00	6	1.0370	238.52
146	GUALACA230			230.00	6	1.0207	234.75	147	GUASQ230			230.00	6	1.0194	234.47
190	CHANG230			230.00	6	1.0329	237.58	306	CHAN1 230			230.00	6	1.0351	238.08
310	CONCEPCION23			230.00	6	1.0320	237.36	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)
1	PAN230			230.00	6	0.9480	218.05	3	PANII230			230.00	6	0.9559	219.85
5	CHO230			230.00	6	0.9402	216.25	8	LSA230			230.00	6	0.9581	220.37
100	BAY230			230.00	6	0.9981	229.55	103	COPESA23			230.00	6	0.9625	221.37
105	PAN-AM23			230.00	6	0.9402	216.26	115	PACORA23			230.00	6	0.9670	222.42
148	VELADERO 230			230.00	6	0.9952	228.91	511	LGUIAS230			230.00	6	0.9431	216.91
540	ANTON 230			230.00	6	0.9626	221.40								

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	1.0135	116.56	4	PANII115			115.00	6	1.0144	116.65
12	M.N115			115.00	6	1.0274	118.15	15	PRO115			115.00	6	1.0284	118.27
18	CAC115			115.00	6	1.0131	116.51	19	C.V115			115.00	6	1.0060	115.69
20	CH.AZUL			115.00	6	1.0292	118.36	21	C.BAN115			115.00	6	1.0039	115.44
23	CH115			115.00	6	1.0093	116.07	26	LOC115			115.00	6	1.0049	115.57
30	MAR115			115.00	6	1.0038	115.44	33	STM115			115.00	6	1.0117	116.35
37	SAN115			115.00	6	1.0027	115.32	48	TINAJ115			115.00	6	1.0113	116.29
50	M.O115			115.00	6	1.0114	116.31	52	TOC115			115.00	6	1.0117	116.35
54	LM1115			115.00	6	1.0229	117.63	55	LM2115			115.00	6	1.0237	117.72
61	FFIELD			115.00	9	1.0194	117.23	87	CAL115			115.00	6	1.0499	120.74
88	EST115			115.00	6	1.0544	121.25	92	L.V115			115.00	6	1.0516	120.93
109	STA RITA115			115.00	6	1.0216	117.48	123	MIR115			115.00	7	1.0164	116.88
154	CEMPAN15			115.00	6	1.0200	117.30	191	CHANG115			115.00	6	1.0294	118.38
522	TCATIVÁ 115			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)
6	CHO115			115.00	6	0.9761	112.25	9	LSA115			115.00	6	0.9726	111.85



Handwritten signature or initials.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2011 ESC MOD DEM MAX INV CONT ANTON-PANAMÁ

WED, OCT 29 2008 10:56

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	15.4	25.0	0.0	1.0070	32.2	0.8792	47.0			1	6	
67	BLM13C	13.800	V3	28.5	15.4	25.0	0.0	1.0070	32.2	0.8792	47.0			1	6	
68	BLM13D	13.800	V4	28.5	15.7	25.0	0.0	1.0060	32.3	0.8763	47.0			1	6	
90	EST-13L	13.800	E1	21.0	8.8	12.0	-5.0	1.0300	22.1	0.9219	27.0			1	6	
91	EST-13T	13.800	E2	21.0	8.8	12.0	-5.0	1.0300	22.1	0.9219	27.0			1	6	
94	LV-13.8L	13.800	L1	24.0	9.9	12.0	-5.0	1.0300	25.2	0.9249	27.0			1	6	
95	LV-13.8T	13.800	L2	24.0	9.9	12.0	-5.0	1.0300	25.2	0.9249	27.0			1	6	
97	FOR13A	13.800	F1	91.0	7.3	50.0	-50.0	1.0290	88.7	0.9968	111.0			1	6	
98	FOR13B	13.800	F2	91.0	7.3	50.0	-50.0	1.0290	88.7	0.9968	111.0			1	6	
99	FOR13C	13.800	F3	91.0	7.3	50.0	-50.0	1.0290	88.7	0.9968	111.0			1	6	
101	BAY13A	13.800	B1	77.0	38.6	50.0	-25.0	0.9950	86.6	0.8939	96.0			1	6	SYST
102	BAY13B	13.800	B2	76.5	38.6	50.0	-25.0	0.9950	86.1	0.8928	96.0			1	6	
106	PANAM13A	13.800	M1	15.0	9.0	9.0	0.0	0.9386	18.6	0.8575	20.7			1	6	
108	BAY13C	13.800	B3	76.5	38.6	50.0	-25.0	0.9950	86.1	0.8928	100.0			1	6	
142	CANJ13A	13.800	C1	55.0	18.6	29.0	-29.0	1.0250	56.6	0.9472	69.0			1	6	
143	CANJ13B	13.800	C2	55.0	18.6	29.0	-29.0	1.0250	56.6	0.9472	69.0			1	6	
151	GUALACA13.8	13.800	G1	23.8	-0.3	10.0	-10.0	1.0200	23.3	0.9999	26.7			1	6	
204	BJOMIN13	13.800	G1	23.0	-5.5	13.0	-13.0	1.0200	23.2	0.9724	28.9			1	6	
204	BJOMIN13	13.800	G2	23.0	-5.5	13.0	-13.0	1.0200	23.2	0.9724	28.9			1	6	
205	BAITUN13.8	13.800	G1	40.0	14.9	26.6	-26.6	1.0200	41.9	0.9368	50.6			1	6	
205	BAITUN13.8	13.800	G2	40.0	14.9	26.6	-26.6	1.0200	41.9	0.9368	50.6			1	6	
302	PASOANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9539	5.4	0.9216	6.2			1	6	
304	ALGA13.8	13.800	A1	9.2	0.2	2.0	0.0	1.0000	9.2	0.9997	13.5			1	6	
307	CHAN1 A	13.800	G1	88.0	-1.3	50.0	-50.0	1.0300	85.4	0.9999	118.6			1	6	
308	CHAN1 B	13.800	G2	88.0	-1.3	50.0	-50.0	1.0300	85.4	0.9999	118.6			1	6	
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1278	8.0	1.0000	35.3			1	6	
317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1278	8.0	1.0000	35.3			1	6	
523	TCATIVÁ 13A	13.800	G1	8.2	4.5	6.6	-6.6	1.0020	9.3	0.8776	10.9			1	6	
523	TCATIVÁ 13A	13.800	G2	8.2	4.5	6.6	-6.6	1.0020	9.3	0.8776	10.9			1	6	
523	TCATIVÁ 13A	13.800	G3	8.2	4.5	6.6	-6.6	1.0020	9.3	0.8776	10.9			1	6	
523	TCATIVÁ 13A	13.800	G4	8.2	4.5	6.6	-6.6	1.0020	9.3	0.8776	10.9			1	6	
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	0.9623	62.4	0.9997	136.0			1	6	
SUBSYSTEM TOTALS				1254.0	305.4	710.9	-519.1				1725.7					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2011 ESC MOD DEM MAX INV CONT ANTON-PANAMÁ

WED, OCT 29 2008 10:56

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
129	MIR13D	13.800	G4	35.0	5.4	15.0	0.0	1.0200	34.7	0.9885	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0203	16.8	1.0000	27.7			2	7	
140	GAT6A	6.9000	G1	1.9	0.0	2.0	-2.0	1.0200	1.9	1.0000	4.1			2	7	
140	GAT6A	6.9000	G2	1.9	0.0	2.0	-2.0	1.0200	1.9	1.0000	4.1			2	7	
140	GAT6A	6.9000	G3	1.9	0.0	2.0	-2.0	1.0200	1.9	1.0000	4.1			2	7	
141	GAT6B	6.9000	G4	3.9	-0.8	3.0	-3.0	1.0200	3.9	0.9812	5.6			2	7	



Handwritten signature or initials.

141 GAT6B	6.9000	G5	3.9	-0.8	3.0	-3.0	1.0200	3.9	0.9812	6.2	2	7
141 GAT6B	6.9000	G6	3.9	-0.8	3.0	-3.0	1.0200	3.9	0.9812	6.2	2	7
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0346	17.7	0.9281	23.0	2	7
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0436	17.6	0.9281	23.0	2	7
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0436	17.6	0.9281	23.0	2	7
SUBSYSTEM TOTALS			120.5	23.6	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 29 2008 10:57
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2011 ESC MOD DEM MAX INV CONT ANTON-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		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



Handwritten signature or initials.

NICA	32.6	224.5	-98.9	0.0	143.2	-97.2	147.4	
5	1344.9	1324.8	0.0	0.0	0.0	0.4	19.7	0.0
C.RICA	250.9	569.4	-237.4	0.0	469.6	29.2	359.3	
6	1254.0	1139.0	0.0	0.0	0.0	36.8	78.2	25.0
PANAMA	305.4	199.5	-185.1	0.0	448.1	43.9	695.1	
7	120.5	44.2	0.0	0.0	0.0	75.1	1.2	50.0
ACANAL	23.6	7.7	0.0	0.0	0.0	-1.3	17.1	
9	0.0	112.2	0.0	0.0	0.0	-112.3	0.1	-75.0
COLON	0.0	19.7	0.0	0.0	1.1	-25.7	7.1	
TOTALS	6523.8	6347.0	0.0	0.0	0.0	0.0	176.8	0.0
	798.7	1843.2	-1034.0	0.0	1997.6	0.0	1987.0	

PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008



de

AÑO 2012 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO



de

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	1.0171	233.94	14	PRO230	230.00	6	1.0235	235.40				
85	PTP230	230.00	6	1.0131	233.02	96	FOR230	230.00	6	1.0143	233.29				
100	BAY230	230.00	6	1.0159	233.65	144	CANJ230	230.00	6	1.0112	232.59				
145	BJOMIN230	230.00	6	1.0276	236.35	146	GUALACA230	230.00	6	1.0157	233.62				
147	GUASQ230	230.00	6	1.0111	232.56	148	VELADERO 230	230.00	6	1.0072	231.66				
190	CHANG230	230.00	6	1.0210	234.82	306	CHAN1 230	230.00	6	1.0214	234.91				
310	CONCEPCION230	230.00	6	1.0239	235.51	341	PRUDENCIA230	230.00	6	1.0229	235.27				
345	LORENA230	230.00	6	1.0205	234.71	6000	FRONTER	230.00	6	1.0235	235.41				

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	0.9762	224.54	3	PANII230	230.00	6	0.9834	226.18				
5	CHO230	230.00	6	0.9756	224.39	8	LSA230	230.00	6	0.9975	229.44				
103	COPESA23	230.00	6	0.9887	227.41	105	PAN-AM23	230.00	6	0.9756	224.39				
115	PACORA23	230.00	6	0.9921	228.18	511	LGUIAS230	230.00	6	0.9862	226.83				
540	ANTON 230	230.00	6	0.9878	227.20										

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	1.0153	116.76	4	PANII115	115.00	6	1.0107	116.22				
6	CHO115	115.00	6	1.0190	117.18	9	LSA115	115.00	6	1.0541	121.22				
12	M.N115	115.00	6	1.0167	116.92	15	PRO115	115.00	6	1.0225	117.58				
18	CAC115	115.00	6	1.0146	116.67	19	C.V115	115.00	6	1.0033	115.38				
20	CH.AZUL	115.00	6	1.0232	117.67	21	C.BAN115	115.00	6	1.0043	115.50				
23	CH115	115.00	6	1.0032	115.37	26	LOC115	115.00	6	1.0056	115.64				
30	MAR115	115.00	6	1.0046	115.53	33	STM115	115.00	6	1.0134	116.54				
37	SAN115	115.00	6	1.0028	115.33	48	TINAJ115	115.00	6	1.0129	116.48				
50	M.O115	115.00	6	1.0130	116.50	52	TOC115	115.00	6	1.0079	115.90				
54	LM115	115.00	6	1.0073	115.84	55	LM2115	115.00	6	1.0078	115.89				
61	FFIELD	115.00	9	1.0036	115.41	87	CAL115	115.00	6	1.0363	119.18				
88	EST115	115.00	6	1.0401	119.61	92	L.V115	115.00	6	1.0378	119.35				
109	STA RITA115	115.00	6	1.0090	116.04	123	MIR115	115.00	7	1.0166	116.91				
154	CEMPAN15	115.00	6	1.0091	116.04	191	CHANG115	115.00	6	1.0171	116.97				
522	TCATIVÁ	115.00	6	1.0076	115.87										

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)

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	



Handwritten signature or initials.

66	BLM13B	13.800	V2	29.0	14.4	25.0	0.0	0.9900	32.7	0.8953	47.0	1	6
67	BLM13C	13.800	V3	29.0	14.4	25.0	0.0	0.9900	32.7	0.8953	47.0	1	6
90	EST-13L	13.800	E1	22.0	6.8	12.0	-5.0	1.0100	22.8	0.9557	27.0	1	6
91	EST-13T	13.800	E2	22.0	6.8	12.0	-5.0	1.0100	22.8	0.9557	27.0	1	6
94	LV-13.8L	13.800	L1	25.0	7.7	12.0	-5.0	1.0100	25.9	0.9558	27.0	1	6
95	LV-13.8T	13.800	L2	25.0	7.7	12.0	-5.0	1.0100	25.9	0.9558	27.0	1	6
97	FOR13A	13.800	F1	95.0	0.9	50.0	-50.0	1.0100	94.1	1.0000	111.0	1	6
98	FOR13B	13.800	F2	95.0	0.9	50.0	-50.0	1.0100	94.1	1.0000	111.0	1	6
99	FOR13C	13.800	F3	95.0	0.9	50.0	-50.0	1.0100	94.1	1.0000	111.0	1	6
101	BAY13A	13.800	B1	57.1	27.6	50.0	-25.0	1.0000	63.5	0.9004	96.0	1	6
102	BAY13B	13.800	B2	48.5	27.0	50.0	-25.0	1.0000	55.5	0.8736	96.0	1	6
108	BAY13C	13.800	B3	48.5	27.0	550.0	-25.0	1.0000	55.5	0.8736	100.0	1	6
142	CANJ13A	13.800	C1	57.0	18.3	29.0	-29.0	1.0100	59.3	0.9521	69.0	1	6
143	CANJ13B	13.800	C2	57.0	18.3	29.0	-29.0	1.0100	59.3	0.9521	69.0	1	6
151	GUALACA13.8	13.800	G1	23.8	-5.0	10.0	-10.0	1.0100	24.1	0.9785	26.7	1	6
204	BJOMIN13	13.800	G1	24.7	-5.5	13.0	-13.0	1.0100	25.1	0.9757	28.9	1	6
204	BJOMIN13	13.800	G2	24.7	-5.5	13.0	-13.0	1.0100	25.1	0.9757	28.9	1	6
205	BAITUN13.8	13.800	G1	40.0	14.5	26.6	-26.6	1.0100	42.1	0.9405	50.6	1	6
205	BAITUN13.8	13.800	G2	40.0	14.5	26.6	-26.6	1.0100	42.1	0.9405	50.6	1	6
302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9541	5.4	0.9216	6.2	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9882	9.5	0.9772	13.5	1	6
307	CHANI A	13.800	G1	100.0	-6.0	50.0	-50.0	1.0100	99.2	0.9982	118.6	1	6
308	CHANI B	13.800	G2	100.0	-6.0	50.0	-50.0	1.0100	99.2	0.9982	118.6	1	6
311	PANDO13.8	13.800	G1	14.0	-1.1	10.0	-5.0	1.0000	14.0	0.9970	19.9	1	6
311	PANDO13.8	13.800	G2	14.0	-1.1	10.0	-5.0	1.0000	14.0	0.9970	19.9	1	6
316	MONTE LIRIO	13.800	G1	24.5	-4.6	12.0	-5.0	1.0000	24.9	0.9825	27.0	1	6
316	MONTE LIRIO	13.800	G2	24.5	-4.6	12.0	-5.0	1.0000	24.9	0.9825	27.0	1	6
317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.1129	8.4	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.1129	8.4	1.0000	35.3	1	6
342	LORENA13.8	13.800	G1	16.9	-5.0	10.5	-5.0	1.0090	17.5	0.9589	19.9	1	6
342	LORENA13.8	13.800	G2	16.9	-5.0	10.5	-5.0	1.0090	17.5	0.9589	19.9	1	6
343	PRUDENCIA138	13.800	G1	26.0	-9.8	9.8	-9.8	1.0000	27.8	0.9362	33.0	1	6
343	PRUDENCIA138	13.800	G2	26.0	-9.8	9.8	-9.8	1.0000	27.8	0.9362	33.0	1	6
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	0.9876	60.8	0.9997	136.0	1	6
SUBSYSTEM TOTALS				1313.8	143.9	1235.2	-542.4				1813.8		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E FRI, OCT 24 2008 15:20
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2012 ESC MOD DEM MAX INV

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
129	MIR13D	13.800	G4	35.0	0.4	15.0	0.0	1.0000	35.0	0.9999	44.1			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0117	16.9	1.0000	27.7			2	7	
140	GAT6A	6.9000	G1	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9946	4.1			2	7	
140	GAT6A	6.9000	G2	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9946	4.1			2	7	
140	GAT6A	6.9000	G3	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9946	4.1			2	7	
141	GAT6B	6.9000	G4	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9716	5.6			2	7	



Handwritten signature or mark.

141 GAT6B	6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9716	6.2	2	7
141 GAT6B	6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9716	6.2	2	7
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0262	17.8	0.9281	23.0	2	7
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0353	17.7	0.9281	23.0	2	7
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0353	17.7	0.9281	23.0	2	7
SUBSYSTEM TOTALS			120.5	17.4	71.5	5.5				171.3		



de

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	1006.8	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	-5.2	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	1344.9	1324.8	0.0	0.0	0.0	0.5	19.7	0.0
C.RICA	261.9	569.4	-236.9	0.0	468.7	38.9	359.2	
6	1313.8	1194.2	0.0	0.0	0.0	44.3	75.3	25.0
PANAMA	143.9	209.2	-253.8	0.0	569.5	42.0	715.9	
7	120.5	46.3	0.0	0.0	0.0	73.0	1.2	50.0
ACANAL	17.4	8.1	0.0	0.0	0.0	-7.6	16.9	
9	0.0	117.6	0.0	0.0	0.0	-117.8	0.1	-75.0
COLON	0.0	20.6	0.0	0.0	1.1	-27.2	7.7	
TOTALS	6583.6	6409.7	0.0	0.0	0.0	0.0	173.9	0.0
	642.2	1854.2	-1102.1	0.0	2118.1	0.0	2008.1	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2012 ESCENARIO MODERADO DEMANDA MÁXIMA VERANO**



de

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	1.0017	230.39	11	M.N230	230.00	6	1.0241	235.55				
14	PRO230	230.00	6	1.0302	236.95	85	PTP230	230.00	6	1.0196	234.50				
96	FOR230	230.00	6	1.0206	234.74	100	BAY230	230.00	6	1.0208	234.78				
144	CANJ230	230.00	6	1.0202	234.65	145	BJOMIN230	230.00	6	1.0326	237.51				
146	GUALACA230	230.00	6	1.0216	234.97	147	GUASQ230	230.00	6	1.0201	234.62				
148	VELADERO 230	230.00	6	1.0179	234.12	190	CHANG230	230.00	6	1.0211	234.85				
306	CHAN1 230	230.00	6	1.0195	234.49	310	CONCEPCION230	230.00	6	1.0304	237.00				
345	LORENA230	230.00	6	1.0226	235.20	6000	FRONTER	230.00	6	1.0302	236.95				

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	0.9856	226.69	3	PANII230	230.00	6	0.9901	227.72				
5	CHO230	230.00	6	0.9889	227.44	103	COPESA23	230.00	6	0.9951	228.87				
105	PAN-AM23	230.00	6	0.9889	227.45	115	PACORA23	230.00	6	0.9997	229.93				
511	LGUIAS230	230.00	6	0.9963	229.14	540	ANTON 230	230.00	6	0.9960	229.09				

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	PANII115	115.00	6	1.0135	116.55				
6	CHO115	115.00	6	1.0330	118.79	9	LSA115	115.00	6	1.0173	116.99				
12	M.N115	115.00	6	1.0235	117.70	15	PRO115	115.00	6	1.0292	118.36				
18	CAC115	115.00	6	1.0129	116.48	19	C.V115	115.00	6	1.0049	115.56				
20	CH.AZUL	115.00	6	1.0299	118.44	21	C.BAN115	115.00	6	1.0031	115.35				
23	CH115	115.00	6	1.0111	116.28	26	LOC115	115.00	6	1.0042	115.48				
30	MAR115	115.00	6	1.0031	115.36	33	STM115	115.00	6	1.0115	116.32				
37	SAN115	115.00	6	1.0019	115.21	48	TINAJ115	115.00	6	1.0110	116.26				
50	M.O115	115.00	6	1.0111	116.28	52	TOC115	115.00	6	1.0107	116.23				
54	LM115	115.00	6	1.0282	118.25	55	LM2115	115.00	6	1.0293	118.37				
61	FFIELD	115.00	9	1.0245	117.82	87	CAL115	115.00	6	1.0336	118.86				
88	EST115	115.00	6	1.0352	119.05	92	L.V115	115.00	6	1.0342	118.93				
109	STA RITA115	115.00	6	1.0254	117.92	123	MIR115	115.00	7	1.0151	116.73				
154	CEMPAN15	115.00	6	1.0336	118.86	191	CHANG115	115.00	6	1.0172	116.98				
522	TCATIVÁ 115	115.00	6	1.0291	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)

• 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	6.0	25.0	0.0	0.9900	38.9	0.9879	47.0							



Handwritten signature or initials.

67	BLM13C	13.800	V3	38.0	6.0	25.0	0.0	0.9900	38.9	0.9879	47.0	1	6
68	BLM13D	13.800	V4	38.0	10.9	25.0	0.0	1.0000	39.5	0.9615	47.0	1	6
90	EST-13L	13.800	E1	22.0	5.3	12.0	-5.0	1.0000	22.6	0.9723	27.0	1	6
94	LV-13.8L	13.800	L1	25.0	5.8	12.0	-5.0	1.0000	25.7	0.9739	27.0	1	6
97	FOR13A	13.800	F1	95.0	-13.9	50.0	-50.0	1.0000	96.0	0.9895	111.0	1	6
98	FOR13B	13.800	F2	95.0	-13.9	50.0	-50.0	1.0000	96.0	0.9895	111.0	1	6
99	FOR13C	13.800	F3	95.0	-13.9	50.0	-50.0	1.0000	96.0	0.9895	111.0	1	6
101	BAY13A	13.800	B1	56.2	23.9	50.0	-25.0	1.0000	61.1	0.9205	96.0	1	6
102	BAY13B	13.800	B2	56.5	23.9	50.0	-25.0	1.0000	61.3	0.9210	96.0	1	6
106	PANAM13A	13.800	M1	15.0	5.9	9.0	0.0	1.0000	16.1	0.9305	20.7	1	6
106	PANAM13A	13.800	M2	15.0	5.9	9.0	0.0	1.0000	16.1	0.9305	20.7	1	6
106	PANAM13A	13.800	M3	15.0	5.9	9.0	0.0	1.0000	16.1	0.9305	20.7	1	6
108	BAY13C	13.800	B3	56.5	23.9	550.0	-25.0	1.0000	61.3	0.9210	100.0	1	6
116	PACORA13	13.800	P1	17.0	2.6	8.8	0.0	1.0000	17.2	0.9889	21.7	1	6
116	PACORA13	13.800	P2	17.0	2.6	8.8	0.0	1.0000	17.2	0.9889	21.7	1	6
142	CANJ13A	13.800	C1	40.0	9.8	29.0	-29.0	1.0000	41.2	0.9715	69.0	1	6
143	CANJ13B	13.800	C2	40.0	9.8	29.0	-29.0	1.0000	41.2	0.9715	69.0	1	6
151	GUALACA13.8	13.800	G1	20.5	-10.0	10.0	-10.0	1.0106	22.6	0.8988	26.7	1	6
204	BJOMIN13	13.800	G1	24.0	-13.0	13.0	-13.0	1.0142	26.9	0.8793	28.9	1	6
205	BAITUN13.8	13.800	G1	40.0	14.0	26.6	-26.6	1.0000	42.4	0.9440	50.6	1	6
301	CONC13.8	13.800	G1	8.3	5.0	5.0	-5.0	0.9685	10.0	0.8566	13.5	1	6
302	PASOANCH13.8	13.800	P1	3.7	2.0	2.0	-2.0	0.9667	4.4	0.8797	6.2	1	6
304	ALGA13.8	13.800	A1	8.1	2.0	2.0	0.0	0.9856	8.5	0.9708	13.5	1	6
307	CHAN1 A	13.800	G1	70.0	-16.3	50.0	-50.0	1.0000	71.9	0.9739	118.6	1	6
308	CHAN1 B	13.800	G2	70.0	-16.3	50.0	-50.0	1.0000	71.9	0.9739	118.6	1	6
317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.1123	8.5	1.0000	35.3	1	6
342	LORENA13.8	13.800	G1	16.9	-5.0	10.5	-5.0	1.0171	17.3	0.9589	19.9	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.5	2.8	1.3	1.0100	3.9	0.9243	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.5	2.8	1.3	1.0100	3.9	0.9243	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.5	2.8	1.3	1.0100	3.9	0.9243	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.6	1.5	2.8	1.3	1.0100	3.9	0.9243	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	4.0	6.6	-6.6	1.0100	9.0	0.8973	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	4.0	6.6	-6.6	1.0100	9.0	0.8973	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	4.0	6.6	-6.6	1.0100	9.0	0.8973	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	4.0	6.6	-6.6	1.0100	9.0	0.8973	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	4.0	6.6	-6.6	1.0100	9.0	0.8973	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	4.0	6.6	-6.6	1.0100	9.0	0.8973	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	4.0	6.6	-6.6	1.0100	9.0	0.8973	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	4.0	6.6	-6.6	1.0100	9.0	0.8973	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	4.0	6.6	-6.6	1.0100	9.0	0.8973	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.0	3.3	6.4	3.0	1.0100	8.6	0.9251	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.0	3.3	6.4	3.0	1.0100	8.6	0.9251	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.0	3.3	6.4	3.0	1.0100	8.6	0.9251	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.0	3.3	6.4	3.0	1.0100	8.6	0.9251	10.9	1	6
541	PETOABRE	4.2000	1	105.0	1.4	1.4	1.4	0.9929	105.8	0.9999	136.0	1	6
SUBSYSTEM TOTALS				1278.4	129.5	1274.7	-501.6				1803.7		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E TUE, NOV 11 2008 15:29
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2012 ESC MOD DEM MAX VER

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
129		MIR13D		13.800	G4	35.0	0.8	15.0	0.0	1.0000	35.0	0.9998	44.1			2	7	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0108	16.9	1.0000	27.7			2	7	



Handwritten signature or initials.

140	GAT6A	6.9000	G1	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9955	4.1	2	7
140	GAT6A	6.9000	G2	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9955	4.1	2	7
140	GAT6A	6.9000	G3	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9955	4.1	2	7
141	GAT6B	6.9000	G4	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9726	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9726	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9726	6.2	2	7
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0253	17.9	0.9281	23.0	2	7
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0343	17.7	0.9281	23.0	2	7
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0343	17.7	0.9281	23.0	2	7
SUBSYSTEM TOTALS				120.5	17.9	71.5	5.5				171.3		



Handwritten signature or initials.

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	1006.8	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	1344.9	1324.8	0.0	0.0	0.0	0.4	19.7	0.0
C.RICA	254.1	569.4	-237.4	0.0	469.7	32.8	359.0	
6	1278.4	1194.2	0.0	0.0	0.0	44.4	39.9	25.0
PANAMA	129.5	209.2	-61.6	0.0	481.8	48.0	415.8	
7	120.5	46.3	0.0	0.0	0.0	73.0	1.2	50.0
ACANAL	17.9	8.1	0.0	0.0	0.0	-7.2	16.9	
9	0.0	117.6	0.0	0.0	0.0	-117.8	0.1	-75.0
COLON	0.0	20.6	0.0	0.0	1.1	-27.4	7.9	
TOTALS	6548.2	6409.7	0.0	0.0	0.0	0.0	138.5	0.0
	620.3	1854.2	-910.5	0.0	2031.5	0.0	1708.1	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2012 ESCENARIO MODERADO DEMANDA MÍNIMA VERANO**



de

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	1.0056	231.28	3	PANII230	230.00	6	1.0060	231.37				
5	CHO230	230.00	6	1.0076	231.75	8	LSA230	230.00	6	1.0102	232.35				
11	M.N230	230.00	6	1.0274	236.29	14	PRO230	230.00	6	1.0332	237.65				
85	PTP230	230.00	6	1.0285	236.54	96	FOR230	230.00	6	1.0263	236.05				
100	BAY230	230.00	6	1.0095	232.19	103	COPESA23	230.00	6	1.0070	231.61				
105	PAN-AM23	230.00	6	1.0076	231.75	115	PACORA23	230.00	6	1.0074	231.69				
144	CANJ230	230.00	6	1.0268	236.17	145	BJOMIN230	230.00	6	1.0334	237.67				
146	GUALACA230	230.00	6	1.0280	236.44	147	GUASQ230	230.00	6	1.0268	236.15				
148	VELADERO 230	230.00	6	1.0222	235.11	190	CHANG230	230.00	6	1.0274	236.31				
306	CHAN1 230	230.00	6	1.0250	235.75	310	CONCEPCION23	230.00	6	1.0324	237.46				
345	LORENA230	230.00	6	1.0288	236.62	511	LGUIAS230	230.00	6	1.0109	232.51				
540	ANTON 230	230.00	6	1.0106	232.44	6000	FRONTER	230.00	6	1.0333	237.66				

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 *															

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	1.0142	116.63	4	PANII115	115.00	6	1.0143	116.65				
6	CHO115	115.00	6	1.0580	121.67	9	LSA115	115.00	6	1.0235	117.70				
12	M.N115	115.00	6	1.0127	116.46	15	PRO115	115.00	6	1.0334	118.85				
18	CAC115	115.00	6	1.0142	116.63	19	C.V115	115.00	6	1.0111	116.28				
20	CH.AZUL	115.00	6	1.0342	118.93	21	C.BAN115	115.00	6	1.0105	116.21				
23	CH115	115.00	6	1.0129	116.48	26	LOC115	115.00	6	1.0109	116.26				
30	MAR115	115.00	6	1.0103	116.19	33	STM115	115.00	6	1.0134	116.54				
37	SAN115	115.00	6	1.0101	116.16	48	TINAJ115	115.00	6	1.0135	116.55				
50	M.O115	115.00	6	1.0135	116.56	52	TOC115	115.00	6	1.0132	116.52				
54	LM115	115.00	6	1.0184	117.11	55	LM2115	115.00	6	1.0189	117.17				
61	FFIELD	115.00	9	1.0169	116.94	87	CAL115	115.00	6	1.0225	117.59				
88	EST115	115.00	6	1.0241	117.77	92	L.V115	115.00	6	1.0231	117.66				
109	STA RITA115	115.00	6	1.0179	117.06	123	MIR115	115.00	7	1.0177	117.03				
154	CEMPAN15	115.00	6	1.0175	117.01	191	CHANG115	115.00	6	1.0260	117.99				
522	TCATIVÁ	115.00	6	1.0186	117.14										

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 *															



Handwritten signature or initials.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2012 ESC MOD DEM MIN VER

TUE, NOV 11 2008 15:35

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	10.4	25.0	0.0	0.9900	39.8	0.9645	47.0			1	6	
67	BLM13C	13.800	V3	38.0	10.4	25.0	0.0	0.9900	39.8	0.9645	47.0			1	6	
90	EST-13L	13.800	E1	18.0	5.2	12.0	-5.0	0.9900	18.9	0.9608	27.0			1	6	
94	LV-13.8L	13.800	L1	20.0	5.6	12.0	-5.0	0.9900	21.0	0.9628	27.0			1	6	
97	FOR13A	13.800	F1	95.6	-27.7	50.0	-50.0	0.9900	100.5	0.9604	111.0			1	6	SYST
142	CANJ13A	13.800	C1	35.0	7.5	29.0	-29.0	1.0000	35.8	0.9779	69.0			1	6	
151	GUALACA13.8	13.800	G1	18.5	-10.0	10.0	-10.0	1.0171	20.7	0.8797	26.7			1	6	
204	BJOMIN13	13.800	G1	24.0	-13.0	13.0	-13.0	1.0150	26.9	0.8793	28.9			1	6	
205	BAITUN13.8	13.800	G1	33.0	5.2	26.6	-26.6	0.9900	33.8	0.9876	50.6			1	6	
301	CONC13.8	13.800	G1	8.3	5.0	5.0	-5.0	0.9606	10.1	0.8566	13.5			1	6	
302	PASOANCH13.8	13.800	P1	3.7	2.0	2.0	-2.0	0.9587	4.4	0.8797	6.2			1	6	
304	ALGA13.8	13.800	A1	8.1	2.0	2.0	0.0	0.9751	8.6	0.9708	13.5			1	6	
307	CHAN1 A	13.800	G1	62.0	-31.4	50.0	-50.0	0.9900	70.2	0.8922	118.6			1	6	
317	MENDRE13.8	13.800	M1	8.0	0.0	0.0	0.0	1.1006	7.3	1.0000	35.3			1	6	
342	LORENA13.8	13.800	G1	13.7	-5.0	10.5	-5.0	1.0234	14.3	0.9394	19.9			1	6	
541	PETOABRE	4.2000	1	105.0	1.4	1.4	1.4	1.0076	104.2	0.9999	136.0			1	6	
SUBSYSTEM TOTALS				528.9	-32.4	273.5	-199.3				777.3					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2012 ESC MOD DEM MIN VER

TUE, NOV 11 2008 15:35

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
170	MIR13G	13.800	M1	15.5	6.8	11.2	6.8	1.0496	16.1	0.9150	23.0			2	7	
171	MIR13H	13.800	M1	15.5	6.8	11.2	6.8	1.0588	16.0	0.9149	23.0			2	7	
171	MIR13H	13.800	M2	15.5	6.8	11.2	6.8	1.0588	16.0	0.9149	23.0			2	7	
SUBSYSTEM TOTALS				46.4	20.5	33.5	20.5				69.1					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2012 ESC MOD DEM MIN VER

TUE, NOV 11 2008 15:36

AREA TOTALS
 IN MW/MVAR

FROM	TO	TO BUS	TO LINE	FROM	TO	DESIRED				
AREA	AREA	SHUNT	SHUNT	CHARGING	NET INT	NET INT				
X--	AREA	--X	GENERATION	LOAD	SHUNT	SHUNT	CHARGING	NET INT	LOSSES	NET INT



Handwritten signature or initials.

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	32.4	224.5	-98.9	0.0	143.3	-97.3	147.4	
5	1344.9	1324.8	0.0	0.0	0.0	0.8	19.4	0.0
C.RICA	246.5	569.4	-236.9	0.0	470.4	26.9	357.4	
6	528.9	494.5	0.0	0.0	0.0	20.8	13.6	25.0
PANAMA	-32.4	86.6	184.7	0.0	462.9	15.0	144.2	
7	46.4	19.2	0.0	0.0	0.0	27.1	0.1	50.0
ACANAL	20.5	3.4	0.0	0.0	0.0	13.2	3.9	
9	0.0	48.7	0.0	0.0	0.0	-48.7	0.0	-75.0
COLON	0.0	8.5	0.0	0.0	1.1	-8.7	1.3	
TOTALS	5724.5	5613.9	0.0	0.0	0.0	0.0	110.6	0.0
	453.1	1714.8	-663.7	0.0	2013.3	0.0	1415.2	

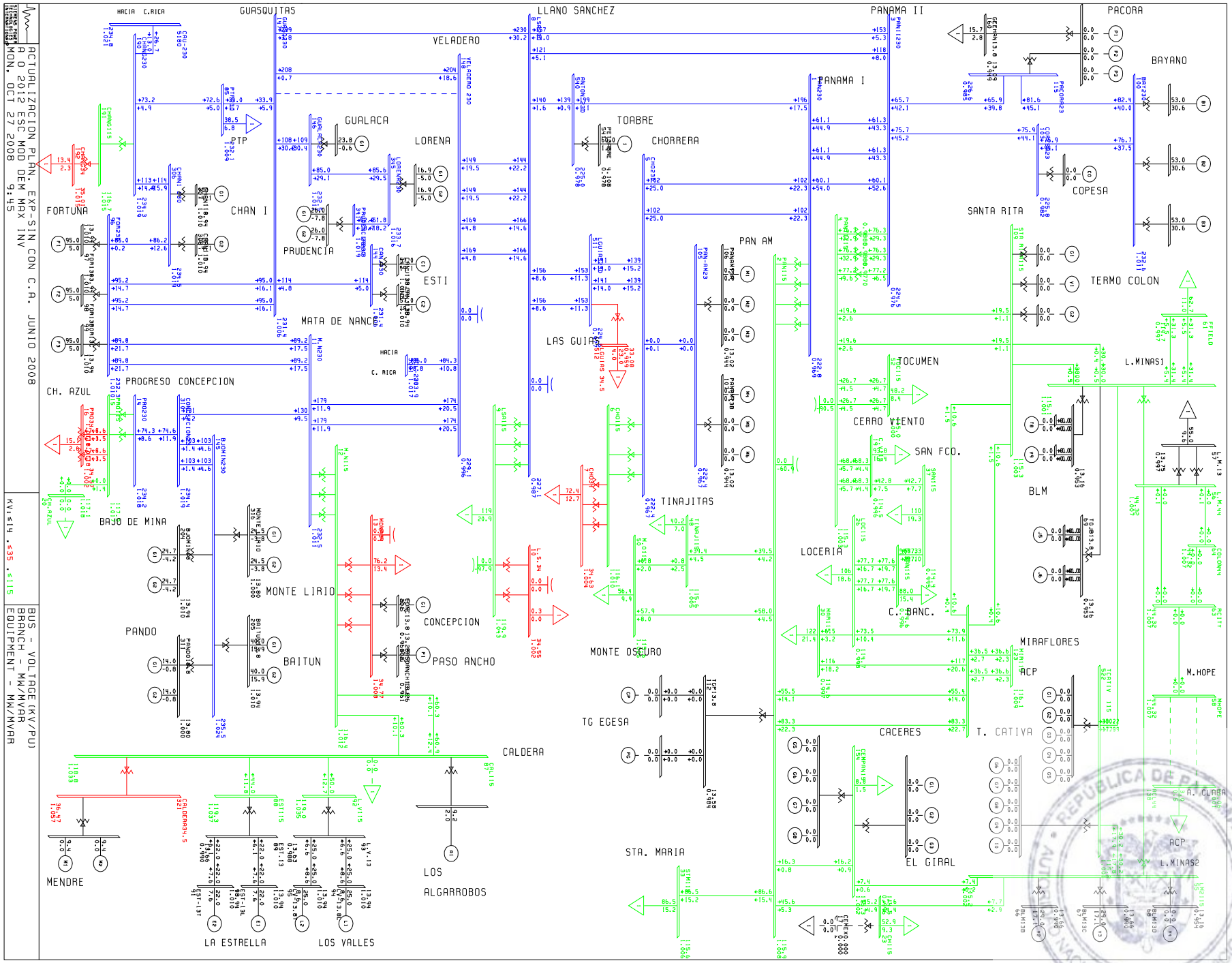


Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2012 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA GUASQUITAS-VELADERO**



de



ACTUALIZACION PLAN. EXP-SIN CON C.R. JUNIO 2008
 A 0 2012 ESC MOD DEM MAX INV
 MON. OCT 27 2008 9:45

KVS14 .K35 .L115

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



Handwritten signature or initials in the bottom right corner of the page.

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	1.0107	232.46	14	PRO230			230.00	6	1.0184	234.23
85	PTP230			230.00	6	1.0091	232.10	96	FOR230			230.00	6	1.0099	232.28
100	BAY230			230.00	6	1.0114	232.62	144	CANJ230			230.00	6	1.0062	231.44
145	BJOMIN230			230.00	6	1.0239	235.50	146	GUALACA230			230.00	6	1.0110	232.53
147	GUASQ230			230.00	6	1.0061	231.40	190	CHANG230			230.00	6	1.0187	234.31
306	CHAN1 230			230.00	6	1.0194	234.46	310	CONCEPCION230			230.00	6	1.0192	234.41
341	PRUDENCIA230			230.00	6	1.0185	234.26	345	LORENA230			230.00	6	1.0159	233.66
6000	FRONTER			230.00	6	1.0183	234.21								

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	0.9685	222.76	3	PANII230			230.00	6	0.9759	224.45
5	CHO230			230.00	6	0.9671	222.44	8	LSA230			230.00	6	0.9872	227.06
103	COPESA23			230.00	6	0.9817	225.78	105	PAN-AM23			230.00	6	0.9671	222.44
115	PACORA23			230.00	6	0.9854	226.64	148	VELADERO 230			230.00	6	0.9961	229.10
511	LGUIAS230			230.00	6	0.9765	224.60	540	ANTON 230			230.00	6	0.9784	225.04

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	1.0075	115.86	4	PANII115			115.00	6	1.0030	115.35
6	CHO115			115.00	6	1.0099	116.14	9	LSA115			115.00	6	1.0429	119.93
12	M.N115			115.00	6	1.0118	116.36	15	PRO115			115.00	6	1.0173	116.99
18	CAC115			115.00	6	1.0068	115.78	20	CH.AZUL			115.00	6	1.0181	117.08
33	STM115			115.00	6	1.0056	115.64	48	TINAJ115			115.00	6	1.0051	115.58
50	M.O115			115.00	6	1.0052	115.60	52	TOC115			115.00	6	1.0002	115.02
54	LM115			115.00	6	1.0011	115.13	55	LM2115			115.00	6	1.0016	115.18
87	CAL115			115.00	6	1.0331	118.81	88	EST115			115.00	6	1.0372	119.28
92	L.V115			115.00	6	1.0347	118.99	109	STA RITA115			115.00	6	1.0025	115.29
123	MIR115			115.00	7	1.0093	116.07	154	CEMPAN15			115.00	6	1.0024	115.28
191	CHANG115			115.00	6	1.0149	116.71	522	TCATIVÁ 115			115.00	6	1.0014	115.16

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)
19	C.V115			115.00	6	0.9956	114.49	21	C.BAN115			115.00	6	0.9965	114.59
23	CH115			115.00	6	0.9960	114.54	26	LOC115			115.00	6	0.9977	114.74
30	MAR115			115.00	6	0.9968	114.63	37	SAN115			115.00	6	0.9950	114.42
61	FFIELD			115.00	9	0.9973	114.69								

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	17.1	25.0	0.0	0.9900	34.0	0.8620	47.0			1	6			



Handwritten signature or initials.

67	BLM13C	13.800	V3	29.0	17.1	25.0	0.0	0.9900	34.0	0.8620	47.0	1	6
90	EST-13L	13.800	E1	22.0	7.6	12.0	-5.0	1.0100	23.1	0.9447	27.0	1	6
91	EST-13T	13.800	E2	22.0	7.6	12.0	-5.0	1.0100	23.1	0.9447	27.0	1	6
94	LV-13.8L	13.800	L1	25.0	8.6	12.0	-5.0	1.0100	26.2	0.9455	27.0	1	6
95	LV-13.8T	13.800	L2	25.0	8.6	12.0	-5.0	1.0100	26.2	0.9455	27.0	1	6
97	FOR13A	13.800	F1	95.0	5.0	50.0	-50.0	1.0100	94.2	0.9986	111.0	1	6
98	FOR13B	13.800	F2	95.0	5.0	50.0	-50.0	1.0100	94.2	0.9986	111.0	1	6
99	FOR13C	13.800	F3	95.0	5.0	50.0	-50.0	1.0100	94.2	0.9986	111.0	1	6
101	BAY13A	13.800	B1	53.0	30.6	50.0	-25.0	1.0000	61.2	0.8658	96.0	1	6
102	BAY13B	13.800	B2	53.0	30.6	50.0	-25.0	1.0000	61.2	0.8658	96.0	1	6
108	BAY13C	13.800	B3	53.0	30.6	550.0	-25.0	1.0000	61.2	0.8658	100.0	1	6
142	CANJ13A	13.800	C1	57.0	19.1	29.0	-29.0	1.0100	59.5	0.9479	69.0	1	6
143	CANJ13B	13.800	C2	57.0	19.1	29.0	-29.0	1.0100	59.5	0.9479	69.0	1	6
151	GUALACA13.8	13.800	G1	23.8	-0.6	10.0	-10.0	1.0100	23.6	0.9996	26.7	1	6
204	BJOMIN13	13.800	G1	24.7	-4.2	13.0	-13.0	1.0100	24.8	0.9858	28.9	1	6
204	BJOMIN13	13.800	G2	24.7	-4.2	13.0	-13.0	1.0100	24.8	0.9858	28.9	1	6
205	BAITUN13.8	13.800	G1	40.0	15.9	26.6	-26.6	1.0100	42.6	0.9297	50.6	1	6
205	BAITUN13.8	13.800	G2	40.0	15.9	26.6	-26.6	1.0100	42.6	0.9297	50.6	1	6
302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9611	5.4	0.9216	6.2	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9851	9.6	0.9772	13.5	1	6
307	CHAN1 A	13.800	G1	100.0	-4.1	50.0	-50.0	1.0100	99.1	0.9992	118.6	1	6
308	CHAN1 B	13.800	G2	100.0	-4.1	50.0	-50.0	1.0100	99.1	0.9992	118.6	1	6
311	PANDO13.8	13.800	G1	14.0	-0.8	10.0	-5.0	1.0000	14.0	0.9984	19.9	1	6
311	PANDO13.8	13.800	G2	14.0	-0.8	10.0	-5.0	1.0000	14.0	0.9984	19.9	1	6
316	MONTE LIRIO	13.800	G1	24.5	-3.8	12.0	-5.0	1.0000	24.8	0.9879	27.0	1	6
316	MONTE LIRIO	13.800	G2	24.5	-3.8	12.0	-5.0	1.0000	24.8	0.9879	27.0	1	6
317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.1094	8.5	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.1094	8.5	1.0000	35.3	1	6
342	LORENA13.8	13.800	G1	16.9	-5.0	10.5	-5.0	1.0044	17.5	0.9589	19.9	1	6
342	LORENA13.8	13.800	G2	16.9	-5.0	10.5	-5.0	1.0044	17.5	0.9589	19.9	1	6
343	PRUDENCIA138	13.800	G1	26.0	-7.8	9.8	-9.8	1.0000	27.1	0.9583	33.0	1	6
343	PRUDENCIA138	13.800	G2	26.0	-7.8	9.8	-9.8	1.0000	27.1	0.9583	33.0	1	6
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	0.9782	61.4	0.9997	136.0	1	6
SUBSYSTEM TOTALS				1318.8	196.9	1235.2	-542.4				1813.8		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 27 2008 9:40
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2012 ESC MOD DEM MAX INV CONT GUAS-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
129		MIR13D		13.800	G4	35.0	2.2	15.0	0.0	1.0000	35.1	0.9981	44.1			2	7	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0073	17.0	1.0000	27.7			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	-0.9	3.0	-3.0	1.0000	4.0	0.9763	5.6			2	7	



Handwritten signature or mark.

141 GAT6B	6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9763	6.2	2	7
141 GAT6B	6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9763	6.2	2	7
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0218	17.9	0.9281	23.0	2	7
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0309	17.8	0.9281	23.0	2	7
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0309	17.8	0.9281	23.0	2	7
SUBSYSTEM TOTALS			120.5	19.7	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 27 2008 9:41
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2012 ESC MOD DEM MAX INV CONT GUAS-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	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	0.3	19.8	0.0
C.RICA	270.2	569.4	-236.5	0.0	467.8	44.5	360.6	
6	1318.8	1194.2	0.0	0.0	0.0	44.5	80.2	25.0
PANAMA	196.9	209.2	-249.3	0.0	545.3	34.1	748.2	
7	120.5	46.3	0.0	0.0	0.0	73.0	1.2	50.0
ACANAL	19.7	8.1	0.0	0.0	0.0	-5.4	17.0	
9	0.0	117.6	0.0	0.0	0.0	-117.8	0.1	-75.0
COLON	0.0	20.6	0.0	0.0	1.1	-27.4	7.8	
TOTALS	6588.6	6409.7	0.0	0.0	0.0	0.0	178.9	0.0
	706.1	1854.2	-1097.2	0.0	2093.0	0.0	2042.1	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2012 ESCENARIO MODERADO DEMANDA MÁXIMA DE INVIERNO
CONTINGENCIA LLANO SÁNCHEZ-PANAMÁ II**



de

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	1.0235	235.40	14	PRO230	230.00	6	1.0291	236.69				
85	PTP230	230.00	6	1.0213	234.91	96	FOR230	230.00	6	1.0229	235.26				
144	CANJ230	230.00	6	1.0181	234.15	145	BJOMIN230	230.00	6	1.0362	238.32				
146	GUALACA230	230.00	6	1.0230	235.29	147	GUASQ230	230.00	6	1.0179	234.12				
148	VELADERO 230	230.00	6	1.0032	230.74	190	CHANG230	230.00	6	1.0318	237.31				
306	CHAN1 230	230.00	6	1.0341	237.85	310	CONCEPCION230	230.00	6	1.0312	237.17				
341	PRUDENCIA230	230.00	6	1.0310	237.14	345	LORENA230	230.00	6	1.0282	236.50				
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	0.9402	216.24	3	PANII230	230.00	6	0.9476	217.94				
5	CHO230	230.00	6	0.9404	216.28	8	LSA230	230.00	6	0.9780	224.94				
100	BAY230	230.00	6	0.9860	226.77	103	COPESA23	230.00	6	0.9538	219.37				
105	PAN-AM23	230.00	6	0.9404	216.28	115	PACORA23	230.00	6	0.9578	220.30				
511	LGUIAS230	230.00	6	0.9577	220.28	540	ANTON 230	230.00	6	0.9580	220.34				

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	1.0098	116.13				
9	LSA115	115.00	6	1.0329	118.79	12	M.N115	115.00	6	1.0270	118.11				
15	PRO115	115.00	6	1.0281	118.23	18	CAC115	115.00	6	1.0144	116.66				
19	C.V115	115.00	6	1.0027	115.31	20	CH.AZUL	115.00	6	1.0288	118.31				
21	C.BAN115	115.00	6	1.0041	115.47	23	CH115	115.00	6	1.0018	115.21				
26	LOC115	115.00	6	1.0054	115.62	30	MAR115	115.00	6	1.0045	115.51				
33	STM115	115.00	6	1.0132	116.52	37	SAN115	115.00	6	1.0026	115.30				
48	TINAJ115	115.00	6	1.0127	116.47	50	M.O115	115.00	6	1.0129	116.48				
52	TOC115	115.00	6	1.0070	115.81	54	LM1115	115.00	6	1.0043	115.49				
55	LM2115	115.00	6	1.0047	115.54	61	FFIELD	115.00	9	1.0005	115.06				
87	CAL115	115.00	6	1.0502	120.78	88	EST115	115.00	6	1.0547	121.29				
92	L.V115	115.00	6	1.0520	120.98	109	STA RITA115	115.00	6	1.0065	115.75				
123	MIR115	115.00	7	1.0175	117.01	154	CEMPAN15	115.00	6	1.0068	115.79				
191	CHANG115	115.00	6	1.0280	118.23	522	TCATIVÁ	115.00	6	1.0045	115.52				

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	0.9815	112.87										

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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	29.0	10.4	25.0	0.0	0.9783	31.5	0.9410	47.0	1	6
67	BLM13C	13.800	V3	29.0	10.4	25.0	0.0	0.9783	31.5	0.9410	47.0	1	6
90	EST-13L	13.800	E1	22.0	8.8	12.0	-5.0	1.0300	23.0	0.9287	27.0	1	6
91	EST-13T	13.800	E2	22.0	8.8	12.0	-5.0	1.0300	23.0	0.9287	27.0	1	6
94	LV-13.8L	13.800	L1	25.0	9.8	12.0	-5.0	1.0300	26.1	0.9306	27.0	1	6
95	LV-13.8T	13.800	L2	25.0	9.8	12.0	-5.0	1.0300	26.1	0.9306	27.0	1	6
97	FOR13A	13.800	F1	95.0	11.4	50.0	-50.0	1.0300	92.9	0.9929	111.0	1	6
98	FOR13B	13.800	F2	95.0	11.4	50.0	-50.0	1.0300	92.9	0.9929	111.0	1	6
99	FOR13C	13.800	F3	95.0	11.4	50.0	-50.0	1.0300	92.9	0.9929	111.0	1	6
101	BAY13A	13.800	B1	54.0	33.4	50.0	-25.0	0.9800	64.8	0.8501	96.0	1	6
102	BAY13B	13.800	B2	54.0	33.5	50.0	-25.0	0.9800	64.8	0.8502	96.0	1	6
108	BAY13C	13.800	B3	54.0	33.5	550.0	-25.0	0.9800	64.8	0.8502	100.0	1	6
142	CANJ13A	13.800	C1	57.0	18.8	29.0	-29.0	1.0200	58.8	0.9498	69.0	1	6
143	CANJ13B	13.800	C2	57.0	18.8	29.0	-29.0	1.0200	58.8	0.9498	69.0	1	6
151	GUALACA13.8	13.800	G1	23.8	-2.5	10.0	-10.0	1.0200	23.5	0.9945	26.7	1	6
204	BJOMIN13	13.800	G1	24.7	-5.1	13.0	-13.0	1.0200	24.7	0.9793	28.9	1	6
204	BJOMIN13	13.800	G2	24.7	-5.1	13.0	-13.0	1.0200	24.7	0.9793	28.9	1	6
205	BAITUN13.8	13.800	G1	40.0	15.3	26.6	-26.6	1.0200	42.0	0.9343	50.6	1	6
205	BAITUN13.8	13.800	G2	40.0	15.3	26.6	-26.6	1.0200	42.0	0.9343	50.6	1	6
302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9642	5.3	0.9216	6.2	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	1.0014	9.4	0.9772	13.5	1	6
307	CHANI A	13.800	G1	100.0	0.8	50.0	-50.0	1.0300	97.1	1.0000	118.6	1	6
308	CHANI B	13.800	G2	100.0	0.8	50.0	-50.0	1.0300	97.1	1.0000	118.6	1	6
311	PANDO13.8	13.800	G1	14.0	-0.2	10.0	-5.0	1.0200	13.7	0.9999	19.9	1	6
311	PANDO13.8	13.800	G2	14.0	-0.2	10.0	-5.0	1.0200	13.7	0.9999	19.9	1	6
316	MONTE LIRIO	13.800	G1	24.5	-2.3	12.0	-5.0	1.0200	24.1	0.9957	27.0	1	6
316	MONTE LIRIO	13.800	G2	24.5	-2.3	12.0	-5.0	1.0200	24.1	0.9957	27.0	1	6
317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.1280	8.3	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.1280	8.3	1.0000	35.3	1	6
342	LORENA13.8	13.800	G1	16.9	-3.6	10.5	-5.0	1.0200	16.9	0.9785	19.9	1	6
342	LORENA13.8	13.800	G2	16.9	-3.6	10.5	-5.0	1.0200	16.9	0.9785	19.9	1	6
343	PRUDENCIA138	13.800	G1	26.0	-4.5	9.8	-9.8	1.0200	25.9	0.9856	33.0	1	6
343	PRUDENCIA138	13.800	G2	26.0	-4.5	9.8	-9.8	1.0200	25.9	0.9856	33.0	1	6
541	PETOABRE	4.2000	1	60.0	1.4	1.4	1.4	0.9577	62.7	0.9997	136.0	1	6
SUBSYSTEM TOTALS				1321.8	234.0	1235.2	-542.4				1813.8		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 27 2008 9:51
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2012 ESC MOD DEM MAX INV CONT LLS-PAN 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
129	MIR13D	13.800	G4	35.0	5.5	15.0	0.0	1.0200	34.7	0.9878	44.1					2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0200	16.8	1.0000	27.7					2	7	
140	GAT6A	6.9000	G1	1.9	-0.2	2.0	-2.0	1.0100	1.9	0.9963	4.1					2	7	
140	GAT6A	6.9000	G2	1.9	-0.2	2.0	-2.0	1.0100	1.9	0.9963	4.1					2	7	
140	GAT6A	6.9000	G3	1.9	-0.2	2.0	-2.0	1.0100	1.9	0.9963	4.1					2	7	
141	GAT6B	6.9000	G4	3.9	-0.9	3.0	-3.0	1.0100	3.9	0.9726	5.6					2	7	



Handwritten signature or initials.

141 GAT6B	6.9000	G5	3.9	-0.9	3.0	-3.0	1.0100	3.9	0.9726	6.2	2	7
141 GAT6B	6.9000	G6	3.9	-0.9	3.0	-3.0	1.0100	3.9	0.9726	6.2	2	7
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0342	17.7	0.9281	23.0	2	7
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0432	17.6	0.9281	23.0	2	7
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0432	17.6	0.9281	23.0	2	7
SUBSYSTEM TOTALS			120.5	22.7	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 27 2008 9:51
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2012 ESC MOD DEM MAX INV CONT LLS-PAN II 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	38.4	158.1	
3	1006.8	985.5	0.0	0.0	0.0	0.0	21.4	0.0



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	0.5	19.7	0.0
C.RICA	250.5	569.4	-237.6	0.0	469.6	29.6	358.7	
6	1321.8	1194.2	0.0	0.0	0.0	44.3	83.3	25.0
PANAMA	234.0	209.2	-249.6	0.0	534.1	46.1	762.4	
7	120.5	46.3	0.0	0.0	0.0	73.0	1.2	50.0
ACANAL	22.7	8.1	0.0	0.0	0.0	-2.1	16.7	
9	0.0	117.6	0.0	0.0	0.0	-117.8	0.1	-75.0
COLON	0.0	20.6	0.0	0.0	1.1	-27.4	7.9	
TOTALS	6591.6	6409.7	0.0	0.0	0.0	0.0	181.9	0.0
	725.9	1854.2	-1098.7	0.0	2083.6	0.0	2054.1	



de

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2012 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA FORTUNA-GUASQUITAS**



de

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	1.0164	233.78	14	PRO230	230.00	6	1.0228	235.24				
85	PTP230	230.00	6	1.0111	232.56	96	FOR230	230.00	6	1.0144	233.30				
100	BAY230	230.00	6	1.0151	233.47	144	CANJ230	230.00	6	1.0089	232.06				
145	BJOMIN230	230.00	6	1.0272	236.25	146	GUALACA230	230.00	6	1.0136	233.12				
147	GUASQ230	230.00	6	1.0088	232.02	148	VELADERO 230	230.00	6	1.0053	231.22				
190	CHANG230	230.00	6	1.0202	234.64	306	CHAN1 230	230.00	6	1.0209	234.81				
310	CONCEPCION230	230.00	6	1.0234	235.37	341	PRUDENCIA230	230.00	6	1.0209	234.80				
345	LORENA230	230.00	6	1.0184	234.23	6000	FRONTER	230.00	6	1.0228	235.24				

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	0.9749	224.23	3	PANII230	230.00	6	0.9821	225.88				
5	CHO230	230.00	6	0.9741	224.05	8	LSA230	230.00	6	0.9957	229.02				
103	COPESA23	230.00	6	0.9875	227.12	105	PAN-AM23	230.00	6	0.9741	224.05				
115	PACORA23	230.00	6	0.9909	227.91	511	LGUIAS230	230.00	6	0.9845	226.44				
540	ANTON 230	230.00	6	0.9862	226.82										

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	1.0139	116.60	4	PANII115	115.00	6	1.0093	116.07				
6	CHO115	115.00	6	1.0174	117.00	9	LSA115	115.00	6	1.0521	120.99				
12	M.N115	115.00	6	1.0162	116.86	15	PRO115	115.00	6	1.0218	117.50				
18	CAC115	115.00	6	1.0132	116.52	19	C.V115	115.00	6	1.0020	115.23				
20	CH.AZUL	115.00	6	1.0225	117.59	21	C.BAN115	115.00	6	1.0029	115.34				
23	CH115	115.00	6	1.0019	115.22	26	LOC115	115.00	6	1.0042	115.48				
30	MAR115	115.00	6	1.0033	115.38	33	STM115	115.00	6	1.0120	116.38				
37	SAN115	115.00	6	1.0015	115.17	48	TINAJ115	115.00	6	1.0115	116.32				
50	M.O115	115.00	6	1.0116	116.34	52	TOC115	115.00	6	1.0065	115.75				
54	LM1115	115.00	6	1.0062	115.72	55	LM2115	115.00	6	1.0067	115.77				
61	FFIELD	115.00	9	1.0025	115.29	87	CAL115	115.00	6	1.0360	119.14				
88	EST115	115.00	6	1.0398	119.58	92	L.V115	115.00	6	1.0375	119.31				
109	STA RITA115	115.00	6	1.0079	115.91	123	MIR115	115.00	7	1.0154	116.77				
154	CEMPAN15	115.00	6	1.0079	115.91	191	CHANG115	115.00	6	1.0163	116.88				
522	TCATIVÁ 115	115.00	6	1.0065	115.74										

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 *															



Handwritten signature or initials.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2012 ESC MOD DEM MAX INV CONT FOR-GUAS

MON, OCT 27 2008 9:57

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	
66		BLM13B		13.800	V2	29.0	14.9	25.0	0.0	0.9900	32.9	0.8896	47.0			1	6		
67		BLM13C		13.800	V3	29.0	14.9	25.0	0.0	0.9900	32.9	0.8896	47.0			1	6		
90		EST-13L		13.800	E1	22.0	6.9	12.0	-5.0	1.0100	22.8	0.9546	27.0			1	6		
91		EST-13T		13.800	E2	22.0	6.9	12.0	-5.0	1.0100	22.8	0.9546	27.0			1	6		
94		LV-13.8L		13.800	L1	25.0	7.8	12.0	-5.0	1.0100	25.9	0.9548	27.0			1	6		
95		LV-13.8T		13.800	L2	25.0	7.8	12.0	-5.0	1.0100	25.9	0.9548	27.0			1	6		
97		FOR13A		13.800	F1	95.0	0.9	50.0	-50.0	1.0100	94.1	1.0000	111.0			1	6		
98		FOR13B		13.800	F2	95.0	0.9	50.0	-50.0	1.0100	94.1	1.0000	111.0			1	6		
99		FOR13C		13.800	F3	95.0	0.9	50.0	-50.0	1.0100	94.1	1.0000	111.0			1	6		
101		BAY13A		13.800	B1	58.2	28.3	50.0	-25.0	1.0000	64.7	0.8994	96.0			1	6	SYST	
102		BAY13B		13.800	B2	48.5	27.6	50.0	-25.0	1.0000	55.8	0.8691	96.0			1	6		
108		BAY13C		13.800	B3	48.5	27.6	550.0	-25.0	1.0000	55.8	0.8691	100.0			1	6		
142		CANJ13A		13.800	C1	57.0	18.7	29.0	-29.0	1.0100	59.4	0.9502	69.0			1	6		
143		CANJ13B		13.800	C2	57.0	18.7	29.0	-29.0	1.0100	59.4	0.9502	69.0			1	6		
151		GUALACA13.8		13.800	G1	23.8	-3.0	10.0	-10.0	1.0100	23.8	0.9922	26.7			1	6		
204		BJOMIN13		13.800	G1	24.7	-5.4	13.0	-13.0	1.0100	25.0	0.9770	28.9			1	6		
204		BJOMIN13		13.800	G2	24.7	-5.4	13.0	-13.0	1.0100	25.0	0.9770	28.9			1	6		
205		BAITUN13.8		13.800	G1	40.0	14.6	26.6	-26.6	1.0100	42.2	0.9392	50.6			1	6		
205		BAITUN13.8		13.800	G2	40.0	14.6	26.6	-26.6	1.0100	42.2	0.9392	50.6			1	6		
302		PASOANCH13.8		13.800	P1	4.8	2.0	2.0	-2.0	0.9654	5.3	0.9216	6.2			1	6		
304		ALGA13.8		13.800	A1	9.2	2.0	2.0	0.0	0.9879	9.5	0.9772	13.5			1	6		
307		CHAN1 A		13.800	G1	100.0	-5.6	50.0	-50.0	1.0100	99.2	0.9985	118.6			1	6		
308		CHAN1 B		13.800	G2	100.0	-5.6	50.0	-50.0	1.0100	99.2	0.9985	118.6			1	6		
311		PANDO13.8		13.800	G1	14.0	-1.1	10.0	-5.0	1.0000	14.0	0.9972	19.9			1	6		
311		PANDO13.8		13.800	G2	14.0	-1.1	10.0	-5.0	1.0000	14.0	0.9972	19.9			1	6		
316		MONTE LIRIO		13.800	G1	24.5	-4.6	12.0	-5.0	1.0000	24.9	0.9832	27.0			1	6		
316		MONTE LIRIO		13.800	G2	24.5	-4.6	12.0	-5.0	1.0000	24.9	0.9832	27.0			1	6		
317		MENDRE13.8		13.800	M1	9.4	0.0	0.0	0.0	1.1125	8.4	1.0000	35.3			1	6		
317		MENDRE13.8		13.800	M2	9.4	0.0	0.0	0.0	1.1125	8.4	1.0000	35.3			1	6		
342		LORENA13.8		13.800	G1	16.9	-5.0	10.5	-5.0	1.0069	17.5	0.9589	19.9			1	6		
342		LORENA13.8		13.800	G2	16.9	-5.0	10.5	-5.0	1.0069	17.5	0.9589	19.9			1	6		
343		PRUDENCIA13813.800		G1	26.0	-8.8	9.8	-9.8	1.0000	27.5	0.9467	33.0			1	6			
343		PRUDENCIA13813.800		G2	26.0	-8.8	9.8	-9.8	1.0000	27.5	0.9467	33.0			1	6			
541		PETOABRE		4.2000	1	60.0	1.4	1.4	1.4	0.9860	60.9	0.9997	136.0			1	6		
SUBSYSTEM TOTALS						1314.9	153.3	1235.2	-542.4				1813.8						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2012 ESC MOD DEM MAX INV CONT FOR-GUAS

MON, OCT 27 2008 9:57

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
129		MIR13D		13.800	G4	35.0	0.7	15.0	0.0	1.0000	35.0	0.9998	44.1			2	7	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0110	16.9	1.0000	27.7			2	7	
140		GAT6A		6.9000	G1	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9953	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9953	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9953	4.1			2	7	



Handwritten signature or initials.

141	GAT6B	6.9000	G4	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9725	5.6	2	7
141	GAT6B	6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9725	6.2	2	7
141	GAT6B	6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9725	6.2	2	7
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0254	17.9	0.9281	23.0	2	7
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0345	17.7	0.9281	23.0	2	7
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0345	17.7	0.9281	23.0	2	7
SUBSYSTEM TOTALS				120.5	17.8	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 27 2008 9:58
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2012 ESC MOD DEM MAX INV CONT FOR-GUAS 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		1006.8 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



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	0.5	19.6	0.0
C.RICA	263.3	569.4	-236.8	0.0	468.6	40.1	359.2	
6	1314.9	1194.2	0.0	0.0	0.0	44.3	76.4	25.0
PANAMA	153.3	209.2	-253.0	0.0	564.9	40.4	721.7	
7	120.5	46.3	0.0	0.0	0.0	73.0	1.2	50.0
ACANAL	17.8	8.1	0.0	0.0	0.0	-7.2	16.9	
9	0.0	117.6	0.0	0.0	0.0	-117.8	0.1	-75.0
COLON	0.0	20.6	0.0	0.0	1.1	-27.3	7.7	
TOTALS	6584.6	6409.7	0.0	0.0	0.0	0.0	174.9	0.0
	653.6	1854.2	-1101.2	0.0	2113.4	0.0	2014.0	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2012 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA VELADERO-LLANO SÁNCHEZ**



de

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	1.0146	233.35	14	PRO230			230.00	6	1.0216	234.96
85	PTP230			230.00	6	1.0119	232.74	96	FOR230			230.00	6	1.0132	233.04
144	CANJ230			230.00	6	1.0081	231.87	145	BJOMIN230			230.00	6	1.0272	236.26
146	GUALACA230			230.00	6	1.0131	233.02	147	GUASQ230			230.00	6	1.0080	231.84
190	CHANG230			230.00	6	1.0236	235.42	306	CHAN1 230			230.00	6	1.0253	235.81
310	CONCEPCION230			230.00	6	1.0226	235.20	341	PRUDENCIA230			230.00	6	1.0212	234.89
345	LORENA230			230.00	6	1.0184	234.24	6000	FRONTER			230.00	6	1.0214	234.92

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	0.9523	219.03	3	PANII230			230.00	6	0.9592	220.62
5	CHO230			230.00	6	0.9504	218.58	8	LSA230			230.00	6	0.9702	223.16
100	BAY230			230.00	6	0.9972	229.36	103	COPESA23			230.00	6	0.9653	222.03
105	PAN-AM23			230.00	6	0.9504	218.58	115	PACORA23			230.00	6	0.9694	222.95
148	VELADERO 230			230.00	6	0.9957	229.02	511	LGUIAS230			230.00	6	0.9593	220.65
540	ANTON 230			230.00	6	0.9614	221.12								

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	1.0044	115.51	4	PANII115			115.00	6	1.0073	115.84
9	LSA115			115.00	6	1.0246	117.83	12	M.N115			115.00	6	1.0175	117.02
15	PRO115			115.00	6	1.0205	117.36	18	CAC115			115.00	6	1.0038	115.44
20	CH.AZUL			115.00	6	1.0213	117.45	33	STM115			115.00	6	1.0025	115.29
48	TINAJ115			115.00	6	1.0020	115.23	50	M.O115			115.00	6	1.0021	115.24
52	TOC115			115.00	6	1.0045	115.51	55	LM2115			115.00	6	1.0003	115.04
87	CAL115			115.00	6	1.0404	119.65	88	EST115			115.00	6	1.0448	120.15
92	L.V115			115.00	6	1.0421	119.84	109	STA RITA115			115.00	6	1.0017	115.19
123	MIR115			115.00	7	1.0069	115.79	154	CEMPAN15			115.00	6	1.0006	115.07
191	CHANG115			115.00	6	1.0198	117.27	522	TCATIVÁ 115			115.00	6	1.0001	115.01

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)
6	CHO115			115.00	6	0.9921	114.09	19	C.V115			115.00	6	0.9978	114.75
21	C.BAN115			115.00	6	0.9943	114.34	23	CH115			115.00	6	0.9936	114.27
26	LOC115			115.00	6	0.9954	114.47	30	MAR115			115.00	6	0.9941	114.32
37	SAN115			115.00	6	0.9932	114.22	54	LM1115			115.00	6	0.9999	114.99



Handwritten signature or initials in the bottom right corner of the page.

61 FFIELD 115.00 9 0.9961 114.55

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 27 2008 10:06
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2012 ESC MOD DEM MAX INV CONT VEL-LLS

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	16.3	25.0	0.0	0.9873	33.7	0.8712	47.0			1	6		
67		BLM13C		13.800	V3	29.0	16.3	25.0	0.0	0.9873	33.7	0.8712	47.0			1	6		
90		EST-13L		13.800	E1	22.0	8.5	12.0	-5.0	1.0200	23.1	0.9322	27.0			1	6		
91		EST-13T		13.800	E2	22.0	8.5	12.0	-5.0	1.0200	23.1	0.9322	27.0			1	6		
94		LV-13.8L		13.800	L1	25.0	9.6	12.0	-5.0	1.0200	26.2	0.9338	27.0			1	6		
95		LV-13.8T		13.800	L2	25.0	9.6	12.0	-5.0	1.0200	26.2	0.9338	27.0			1	6		
97		FOR13A		13.800	F1	95.0	11.1	50.0	-50.0	1.0200	93.8	0.9932	111.0			1	6		
98		FOR13B		13.800	F2	95.0	11.1	50.0	-50.0	1.0200	93.8	0.9932	111.0			1	6		
99		FOR13C		13.800	F3	95.0	11.1	50.0	-50.0	1.0200	93.8	0.9932	111.0			1	6		
101		BAY13A		13.800	B1	54.2	33.2	50.0	-25.0	0.9900	64.2	0.8529	96.0			1	6	SYST	
102		BAY13B		13.800	B2	54.7	33.2	50.0	-25.0	0.9900	64.7	0.8546	96.0			1	6		
108		BAY13C		13.800	B3	54.7	33.2	550.0	-25.0	0.9900	64.7	0.8546	100.0			1	6		
142		CANJ13A		13.800	C1	57.0	18.8	29.0	-29.0	1.0100	59.4	0.9495	69.0			1	6		
143		CANJ13B		13.800	C2	57.0	18.8	29.0	-29.0	1.0100	59.4	0.9495	69.0			1	6		
151		GUALACA13.8		13.800	G1	23.8	-2.6	10.0	-10.0	1.0100	23.7	0.9941	26.7			1	6		
204		BJOMIN13		13.800	G1	24.7	-5.4	13.0	-13.0	1.0100	25.0	0.9768	28.9			1	6		
204		BJOMIN13		13.800	G2	24.7	-5.4	13.0	-13.0	1.0100	25.0	0.9768	28.9			1	6		
205		BAITUN13.8		13.800	G1	40.0	14.6	26.6	-26.6	1.0100	42.2	0.9394	50.6			1	6		
205		BAITUN13.8		13.800	G2	40.0	14.6	26.6	-26.6	1.0100	42.2	0.9394	50.6			1	6		
302		PASOANCH13.8		13.800	P1	4.8	2.0	2.0	-2.0	0.9667	5.3	0.9216	6.2			1	6		
304		ALGA13.8		13.800	A1	9.2	2.0	2.0	0.0	0.9921	9.5	0.9772	13.5			1	6		
307		CHANI A		13.800	G1	100.0	-0.2	50.0	-50.0	1.0200	98.0	1.0000	118.6			1	6		
308		CHANI B		13.800	G2	100.0	-0.2	50.0	-50.0	1.0200	98.0	1.0000	118.6			1	6		
311		PANDO13.8		13.800	G1	14.0	-0.3	10.0	-5.0	1.0100	13.9	0.9998	19.9			1	6		
311		PANDO13.8		13.800	G2	14.0	-0.3	10.0	-5.0	1.0100	13.9	0.9998	19.9			1	6		
316		MONTE LIRIO		13.800	G1	24.5	-2.4	12.0	-5.0	1.0100	24.4	0.9951	27.0			1	6		
316		MONTE LIRIO		13.800	G2	24.5	-2.4	12.0	-5.0	1.0100	24.4	0.9951	27.0			1	6		
317		MENDRE13.8		13.800	M1	9.4	0.0	0.0	0.0	1.1173	8.4	1.0000	35.3			1	6		
317		MENDRE13.8		13.800	M2	9.4	0.0	0.0	0.0	1.1173	8.4	1.0000	35.3			1	6		
342		LORENA13.8		13.800	G1	16.9	-3.6	10.5	-5.0	1.0100	17.1	0.9781	19.9			1	6		
342		LORENA13.8		13.800	G2	16.9	-3.6	10.5	-5.0	1.0100	17.1	0.9781	19.9			1	6		
343		PRUDENCIA138		13.800	G1	26.0	-4.5	9.8	-9.8	1.0100	26.1	0.9854	33.0			1	6		
343		PRUDENCIA138		13.800	G2	26.0	-4.5	9.8	-9.8	1.0100	26.1	0.9854	33.0			1	6		
541		PETOABRE		4.2000	1	60.0	1.4	1.4	1.4	0.9611	62.4	0.9997	136.0			1	6		
SUBSYSTEM TOTALS						1323.4	238.8	1235.2	-542.4				1813.8						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 27 2008 10:06
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2012 ESC MOD DEM MAX INV CONT VEL-LLS

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
129		MIR13D		13.800	G4	35.0	5.5	15.0	0.0	1.0100	35.1	0.9878	44.1			2	7	
130		MIR13F		13.800	G5	17.1	0.3	8.0	0.0	1.0100	16.9	0.9999	27.7			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	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9741	5.6			2	7	



Handwritten signature or initials.

141 GAT6B	6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9741	6.2	2	7
141 GAT6B	6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9741	6.2	2	7
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0239	17.9	0.9281	23.0	2	7
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0330	17.7	0.9281	23.0	2	7
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0330	17.7	0.9281	23.0	2	7
SUBSYSTEM TOTALS			120.5	23.1	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 27 2008 10:07
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2012 ESC MOD DEM MAX INV CONT VEL-LLS 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	1006.8	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	



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	0.5	19.6	0.0
C.RICA	263.1	569.4	-236.8	0.0	468.4	39.8	359.1	
6	1323.4	1194.2	0.0	0.0	0.0	44.3	84.9	25.0
PANAMA	238.8	209.2	-246.3	0.0	533.8	35.5	774.2	
7	120.5	46.3	0.0	0.0	0.0	73.0	1.2	50.0
ACANAL	23.1	8.1	0.0	0.0	0.0	-2.1	17.0	
9	0.0	117.6	0.0	0.0	0.0	-117.8	0.1	-75.0
COLON	0.0	20.6	0.0	0.0	1.1	-27.3	7.7	
TOTALS	6593.2	6409.7	0.0	0.0	0.0	0.0	183.5	0.0
	744.1	1854.2	-1094.5	0.0	2082.1	0.0	2066.5	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2012 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA ANTÓN-PANAMÁ**



de

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	1.0261	236.01	14	PRO230			230.00	6	1.0309	237.10
85	PTP230			230.00	6	1.0230	235.29	96	FOR230			230.00	6	1.0248	235.70
144	CANJ230			230.00	6	1.0201	234.62	145	BJOMIN230			230.00	6	1.0376	238.65
146	GUALACA230			230.00	6	1.0249	235.72	147	GUASQ230			230.00	6	1.0199	234.58
148	VELADERO 230	230.00		6	1.0071	231.64	190	CHANG230			230.00	6	1.0327	237.53	
306	CHAN1 230			230.00	6	1.0350	238.04	310	CONCEPCION23	230.00		6	1.0330	237.59	
341	PRUDENCIA230	230.00		6	1.0327	237.52	345	LORENA230			230.00	6	1.0300	236.89	
6000	FRONTER			230.00	6	1.0302	236.95								

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	0.9472	217.85	3	PANII230			230.00	6	0.9543	219.49
5	CHO230			230.00	6	0.9453	217.41	8	LSA230			230.00	6	0.9841	226.34
100	BAY230			230.00	6	0.9932	228.43	103	COPESA23			230.00	6	0.9606	220.93
105	PAN-AM23			230.00	6	0.9453	217.41	115	PACORA23			230.00	6	0.9647	221.88
511	LGUIAS230			230.00	6	0.9616	221.16	540	ANTON 230			230.00	6	0.9887	227.40

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	1.0130	116.50	4	PANII115			115.00	6	1.0151	116.74
9	LSA115			115.00	6	1.0395	119.54	12	M.N115			115.00	6	1.0317	118.65
15	PRO115			115.00	6	1.0298	118.43	18	CAC115			115.00	6	1.0125	116.43
19	C.V115			115.00	6	1.0059	115.68	20	CH.AZUL			115.00	6	1.0306	118.52
21	C.BAN115			115.00	6	1.0029	115.34	23	CH115			115.00	6	1.0023	115.26
26	LOC115			115.00	6	1.0040	115.46	30	MAR115			115.00	6	1.0028	115.32
33	STM115			115.00	6	1.0111	116.28	37	SAN115			115.00	6	1.0018	115.21
48	TINAJ115			115.00	6	1.0106	116.22	50	M.O115			115.00	6	1.0108	116.24
52	TOC115			115.00	6	1.0123	116.42	54	LM115			115.00	6	1.0084	115.96
55	LM2115			115.00	6	1.0088	116.01	61	FFIELD			115.00	9	1.0046	115.53
87	CAL115			115.00	6	1.0569	121.54	88	EST115			115.00	6	1.0618	122.10
92	L.V115			115.00	6	1.0588	121.76	109	STA RITA115			115.00	6	1.0101	116.16
123	MIR115			115.00	7	1.0157	116.81	154	CEMPAN15			115.00	6	1.0092	116.05
191	CHANG115			115.00	6	1.0290	118.33	522	TCATIVÁ 115			115.00	6	1.0086	115.99

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)
6	CHO115			115.00	6	0.9867	113.47								



Handwritten signature or initials.

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	16.3	25.0	0.0	0.9950	33.4	0.8719	47.0			1	6	
67		BLM13C		13.800	V3	29.0	16.3	25.0	0.0	0.9950	33.4	0.8719	47.0			1	6	
90		EST-13L		13.800	E1	22.0	9.9	12.0	-5.0	1.0400	23.2	0.9120	27.0			1	6	
91		EST-13T		13.800	E2	22.0	9.9	12.0	-5.0	1.0400	23.2	0.9120	27.0			1	6	
94		LV-13.8L		13.800	L1	25.0	11.0	12.0	-5.0	1.0400	26.3	0.9149	27.0			1	6	
95		LV-13.8T		13.800	L2	25.0	11.0	12.0	-5.0	1.0400	26.3	0.9149	27.0			1	6	
97		FOR13A		13.800	F1	95.0	9.6	50.0	-50.0	1.0300	92.7	0.9949	111.0			1	6	
98		FOR13B		13.800	F2	95.0	9.6	50.0	-50.0	1.0300	92.7	0.9949	111.0			1	6	
99		FOR13C		13.800	F3	95.0	9.6	50.0	-50.0	1.0300	92.7	0.9949	111.0			1	6	
101		BAY13A		13.800	B1	56.0	34.1	50.0	-25.0	0.9873	66.4	0.8537	96.0			1	6	SYST
102		BAY13B		13.800	B2	55.9	34.1	50.0	-25.0	0.9873	66.4	0.8536	96.0			1	6	
108		BAY13C		13.800	B3	55.9	34.1	550.0	-25.0	0.9873	66.4	0.8536	100.0			1	6	
142		CANJ13A		13.800	C1	57.0	18.4	29.0	-29.0	1.0200	58.7	0.9514	69.0			1	6	
143		CANJ13B		13.800	C2	57.0	18.4	29.0	-29.0	1.0200	58.7	0.9514	69.0			1	6	
151		GUALACA13.8		13.800	G1	23.8	-4.3	10.0	-10.0	1.0200	23.7	0.9844	26.7			1	6	
204		BJOMIN13		13.800	G1	24.7	-5.6	13.0	-13.0	1.0200	24.8	0.9750	28.9			1	6	
204		BJOMIN13		13.800	G2	24.7	-5.6	13.0	-13.0	1.0200	24.8	0.9750	28.9			1	6	
205		BAITUN13.8		13.800	G1	40.0	14.7	26.6	-26.6	1.0200	41.8	0.9384	50.6			1	6	
205		BAITUN13.8		13.800	G2	40.0	14.7	26.6	-26.6	1.0200	41.8	0.9384	50.6			1	6	
302		PASOANCH13.8		13.800	P1	4.8	2.0	2.0	-2.0	0.9571	5.4	0.9216	6.2			1	6	
304		ALGA13.8		13.800	A1	9.2	2.0	2.0	0.0	1.0077	9.3	0.9772	13.5			1	6	
307		CHAN1 A		13.800	G1	100.0	0.0	50.0	-50.0	1.0300	97.1	1.0000	118.6			1	6	
308		CHAN1 B		13.800	G2	100.0	0.0	50.0	-50.0	1.0300	97.1	1.0000	118.6			1	6	
311		PANDO13.8		13.800	G1	14.0	-0.3	10.0	-5.0	1.0200	13.7	0.9997	19.9			1	6	
311		PANDO13.8		13.800	G2	14.0	-0.3	10.0	-5.0	1.0200	13.7	0.9997	19.9			1	6	
316		MONTE LIRIO		13.800	G1	24.5	-2.6	12.0	-5.0	1.0200	24.2	0.9945	27.0			1	6	
316		MONTE LIRIO		13.800	G2	24.5	-2.6	12.0	-5.0	1.0200	24.2	0.9945	27.0			1	6	
317		MENDRE13.8		13.800	M1	9.4	0.0	0.0	0.0	1.1352	8.3	1.0000	35.3			1	6	
317		MENDRE13.8		13.800	M2	9.4	0.0	0.0	0.0	1.1352	8.3	1.0000	35.3			1	6	
342		LORENA13.8		13.800	G1	16.9	-4.4	10.5	-5.0	1.0200	17.1	0.9682	19.9			1	6	
342		LORENA13.8		13.800	G2	16.9	-4.4	10.5	-5.0	1.0200	17.1	0.9682	19.9			1	6	
343		PRUDENCIA13813.800		13.800	G1	26.0	-5.2	9.8	-9.8	1.0200	26.0	0.9803	33.0			1	6	
343		PRUDENCIA13813.800		13.800	G2	26.0	-5.2	9.8	-9.8	1.0200	26.0	0.9803	33.0			1	6	
541		PETOABRE		4.2000	1	60.0	1.4	1.4	1.4	0.9885	60.7	0.9997	136.0			1	6	
SUBSYSTEM TOTALS						1327.6	236.8	1235.2	-542.4				1813.8					

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
129		MIR13D		13.800	G4	35.0	5.5	15.0	0.0	1.0200	34.7	0.9877	44.1			2	7	
130		MIR13F		13.800	G5	17.1	0.1	8.0	0.0	1.0200	16.8	1.0000	27.7			2	7	
140		GAT6A		6.9000	G1	1.9	0.0	2.0	-2.0	1.0200	1.9	0.9999	4.1			2	7	
140		GAT6A		6.9000	G2	1.9	0.0	2.0	-2.0	1.0200	1.9	0.9999	4.1			2	7	
140		GAT6A		6.9000	G3	1.9	0.0	2.0	-2.0	1.0200	1.9	0.9999	4.1			2	7	
141		GAT6B		6.9000	G4	3.9	-0.7	3.0	-3.0	1.0200	3.9	0.9820	5.6			2	7	
141		GAT6B		6.9000	G5	3.9	-0.7	3.0	-3.0	1.0200	3.9	0.9820	6.2			2	7	



Handwritten signature or initials.

141 GAT6B	6.9000	G6	3.9	-0.7	3.0	-3.0	1.0200	3.9	0.9820	6.2	2	7
170 MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0342	17.7	0.9281	23.0	2	7
171 MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0432	17.6	0.9281	23.0	2	7
171 MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0432	17.6	0.9281	23.0	2	7
SUBSYSTEM TOTALS			23.5	23.9	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E MON, OCT 27 2008 10:59
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2012 ESC MOD DEM MAX INV CONT ANTON-PANAMA 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	



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	0.5	19.7	0.0
C.RICA	248.1	569.4	-237.6	0.0	469.9	27.5	358.7	
6	1327.6	1194.2	0.0	0.0	0.0	44.3	89.1	25.0
PANAMA	236.8	209.2	-267.0	0.0	548.0	47.0	795.5	
7	120.5	46.3	0.0	0.0	0.0	73.0	1.2	50.0
ACANAL	23.9	8.1	0.0	0.0	0.0	-0.8	16.6	
9	0.0	117.6	0.0	0.0	0.0	-117.8	0.1	-75.0
COLON	0.0	20.6	0.0	0.0	1.1	-27.4	7.9	
TOTALS	6597.3	6409.7	0.0	0.0	0.0	0.0	187.6	0.0
	727.5	1854.2	-1116.0	0.0	2097.8	0.0	2087.1	

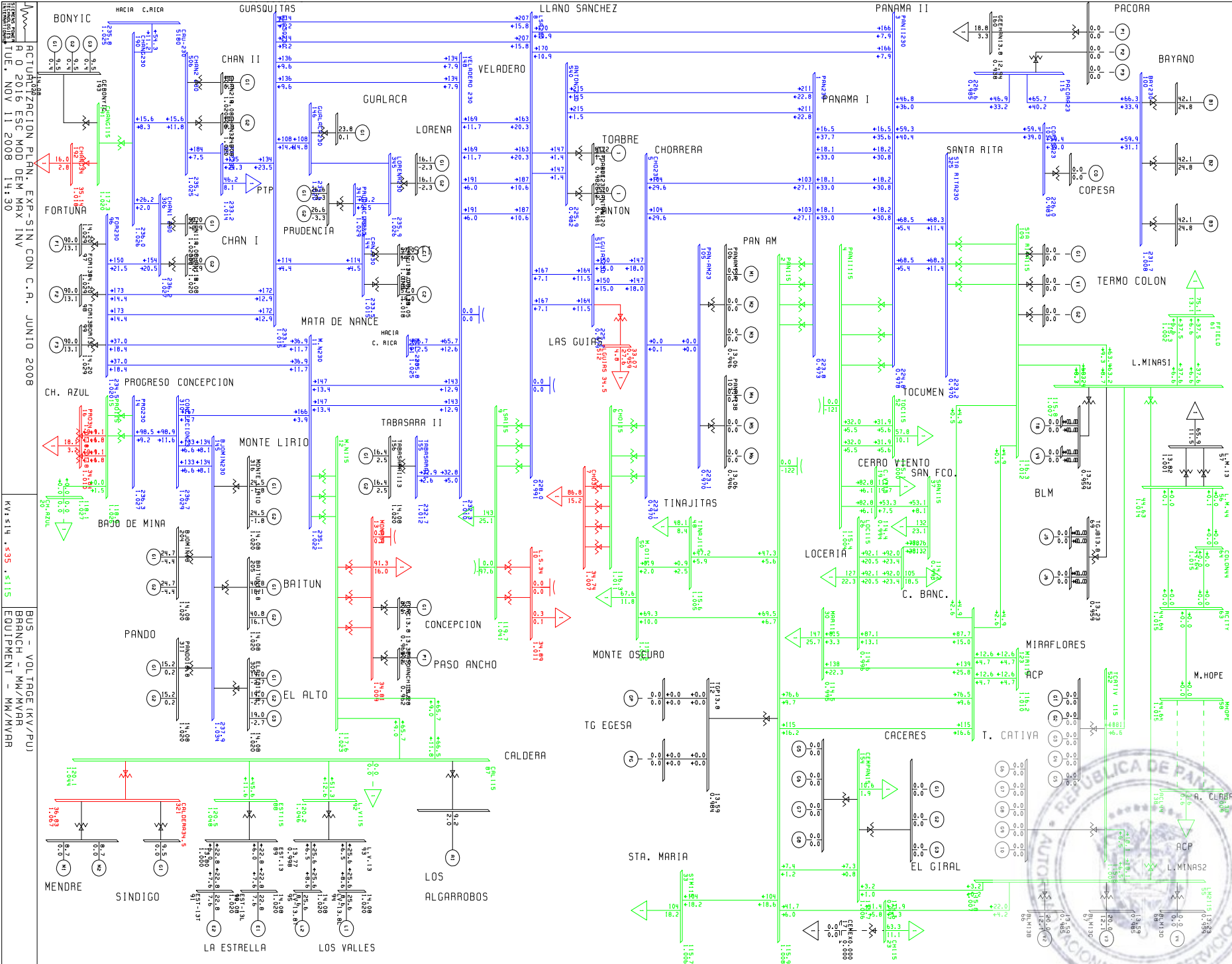


Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2016 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO**

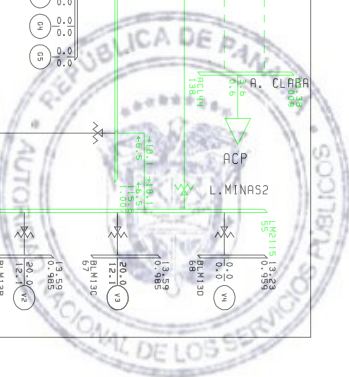


de



ACTUALIZACION PLAN, EXP-SIN CON C.A. JUNIO 2008
 R 0 2016 ESC MOD DEM MAX INV
 TUE, NOV 11 2008 14:30

KV:14 . 335 . 115
 BUS - VOLTAGE (KV/PU)
 BRANCH - MW/MVAR
 EQUIPMENT - MW/MVAR



Handwritten initials or signature in the bottom right corner.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:20
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2016 ESC MOD DEM MAX INV

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	1.0222	235.11	14	PRO230			230.00	6	1.0272	236.27
85	PTP230			230.00	6	1.0139	233.19	96	FOR230			230.00	6	1.0196	234.50
100	BAY230			230.00	6	1.0075	231.73	144	CANJ230			230.00	6	1.0150	233.45
145	BJOMIN230			230.00	6	1.0342	237.87	146	GUALACA230			230.00	6	1.0202	234.64
147	GUASQ230			230.00	6	1.0148	233.41	148	VELADERO 230	230.00		6	1.0102	232.34	
155	TABASARAI I			230.00	6	1.0116	232.66	190	CHANG230			230.00	6	1.0262	236.02
306	CHAN1 230			230.00	6	1.0270	236.22	310	CONCEPCION23	230.00		6	1.0291	236.69	
341	PRUDENCIA230	230.00		6	1.0285	236.56	345	LORENA230			230.00	6	1.0256	235.88	
506	CHAN2 230			230.00	6	1.0247	235.69	6000	FRONTER			230.00	6	1.0269	236.20

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)
1	PAN230			230.00	6	0.9730	223.79	3	PANII230			230.00	6	0.9776	224.85
5	CHO230			230.00	6	0.9700	223.10	8	LSA230			230.00	6	0.9914	228.02
103	COPESA23			230.00	6	0.9826	225.99	105	PAN-AM23			230.00	6	0.9700	223.10
115	PACORA23			230.00	6	0.9853	226.62	325	STA RITA230			230.00	6	0.9704	223.18
511	LGUIAS230			230.00	6	0.9792	225.22	540	ANTON 230			230.00	6	0.9820	225.86

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:20
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2016 ESC MOD DEM MAX INV

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	115.93	4	PANII115			115.00	6	1.0039	115.44
6	CHO115			115.00	6	1.0115	116.32	9	LSA115			115.00	6	1.0411	119.73
12	M.N115			115.00	6	1.0228	117.63	15	PRO115			115.00	6	1.0258	117.96
18	CAC115			115.00	6	1.0074	115.85	20	CH.AZUL			115.00	6	1.0265	118.05
33	STM115			115.00	6	1.0058	115.67	48	TINAJ115			115.00	6	1.0051	115.58
50	M.O115			115.00	6	1.0052	115.60	52	TOC115			115.00	6	1.0005	115.05
54	LM1115			115.00	6	1.0069	115.79	55	LM2115			115.00	6	1.0068	115.78
61	FFIELD			115.00	9	1.0024	115.27	87	CAL115			115.00	6	1.0441	120.07
88	EST115			115.00	6	1.0481	120.54	92	L.V115			115.00	6	1.0456	120.25
109	STA RITA115			115.00	6	1.0116	116.33	123	MIR115			115.00	7	1.0102	116.17
154	CEMPAN15			115.00	6	1.0060	115.70	191	CHANG115			115.00	6	1.0199	117.29
522	TCATIVÁ 115			115.00	6	1.0068	115.79								

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)
19	C.V115			115.00	6	0.9945	114.37	21	C.BAN115			115.00	6	0.9948	114.40
23	CH115			115.00	6	0.9966	114.61	26	LOC115			115.00	6	0.9963	114.58
30	MAR115			115.00	6	0.9953	114.46	37	SAN115			115.00	6	0.9931	114.21

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:19
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2016 ESC MOD DEM MAX INV

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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	20.0	12.1	25.0	0.0	0.9850	23.7	0.8565	47.0	1	6
67	BLM13C	13.800	V3	20.0	12.1	25.0	0.0	0.9850	23.7	0.8565	47.0	1	6
90	EST-13L	13.800	E1	22.8	7.6	12.0	-5.0	1.0200	23.6	0.9485	27.0	1	6
91	EST-13T	13.800	E2	22.8	7.6	12.0	-5.0	1.0200	23.6	0.9485	27.0	1	6
94	LV-13.8L	13.800	L1	25.6	8.6	12.0	-5.0	1.0200	26.5	0.9483	27.0	1	6
95	LV-13.8T	13.800	L2	25.6	8.6	12.0	-5.0	1.0200	26.5	0.9483	27.0	1	6
97	FOR13A	13.800	F1	90.0	13.1	50.0	-50.0	1.0290	88.4	0.9896	111.0	1	6
98	FOR13B	13.800	F2	90.0	13.1	50.0	-50.0	1.0290	88.4	0.9896	111.0	1	6
99	FOR13C	13.800	F3	90.0	13.1	50.0	-50.0	1.0290	88.4	0.9896	111.0	1	6
101	BAY13A	13.800	B1	42.1	24.8	50.0	-25.0	0.9900	49.3	0.8615	96.0	1	6
102	BAY13B	13.800	B2	42.1	24.8	50.0	-25.0	0.9900	49.3	0.8615	96.0	1	6
108	BAY13C	13.800	B3	42.1	24.8	50.0	-25.0	0.9900	49.3	0.8615	100.0	1	6
142	CANJ13A	13.800	C1	57.0	19.0	29.0	-29.0	1.0181	59.0	0.9487	69.0	1	6
143	CANJ13B	13.800	C2	57.0	19.0	29.0	-29.0	1.0181	59.0	0.9487	69.0	1	6
151	GUALACA13.8	13.800	G1	23.8	0.1	10.0	-10.0	1.0200	23.4	1.0000	26.7	1	6
156	TABASARAI1313.800	G1	16.4	2.5	5.7	0.2	1.0200	16.3	0.9885	20.5	1	6	
156	TABASARAI1313.800	G2	16.4	2.5	5.7	0.2	1.0200	16.3	0.9885	20.5	1	6	
193	GEBONYIC	13.800	G1	9.5	0.4	4.0	-4.0	1.0200	9.3	0.9990	35.3	1	6
193	GEBONYIC	13.800	G2	9.5	0.4	4.0	-4.0	1.0200	9.3	0.9990	35.3	1	6
193	GEBONYIC	13.800	G3	9.5	0.4	4.0	-4.0	1.0200	9.3	0.9990	35.3	1	6
204	BJOMIN13	13.800	G1	24.7	-4.4	13.0	-13.0	1.0200	24.6	0.9846	28.9	1	6
204	BJOMIN13	13.800	G2	24.7	-4.4	13.0	-13.0	1.0200	24.6	0.9846	28.9	1	6
205	BAITUN13.8	13.800	G1	40.8	16.1	26.6	-26.6	1.0200	43.1	0.9303	50.6	1	6
205	BAITUN13.8	13.800	G2	40.8	16.1	26.6	-26.6	1.0200	43.1	0.9303	50.6	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9639	11.1	0.8849	13.5	1	6
302	PASOANCH13.813.800	P1	4.4	2.0	2.0	-2.0	0.9621	5.0	0.9110	6.2	1	6	
303	SIND13.8	13.800	G1	9.5	0.0	5.0	0.0	1.1207	8.5	1.0000	13.5	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9955	9.5	0.9772	13.5	1	6
305	ELALTO13.8	13.800	G1	19.0	-2.7	12.0	-5.0	1.0200	18.8	0.9897	20.6	1	6
305	ELALTO13.8	13.800	G2	19.0	-2.7	12.0	-5.0	1.0200	18.8	0.9897	20.6	1	6
305	ELALTO13.8	13.800	G3	19.0	-2.7	12.0	-5.0	1.0200	18.8	0.9897	20.6	1	6
307	CHAN1 A	13.800	G1	90.0	-2.9	50.0	-50.0	1.0200	88.3	0.9995	118.6	1	6
308	CHAN1 B	13.800	G2	90.0	-2.9	50.0	-50.0	1.0200	88.3	0.9995	118.6	1	6
311	PANDO13.8	13.800	G1	15.2	0.2	10.0	-5.0	1.0200	14.9	0.9999	19.9	1	6
311	PANDO13.8	13.800	G2	15.2	0.2	10.0	-5.0	1.0200	14.9	0.9999	19.9	1	6
316	MONTE LIRIO	13.800	G1	24.5	-1.8	12.0	-5.0	1.0200	24.1	0.9972	27.0	1	6
316	MONTE LIRIO	13.800	G2	24.5	-1.8	12.0	-5.0	1.0200	24.1	0.9972	27.0	1	6
317	MENDRE13.8	13.800	M1	8.7	0.0	4.0	0.0	1.1202	7.8	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	8.7	0.0	4.0	0.0	1.1202	7.8	1.0000	35.3	1	6
342	LORENA13.8	13.800	G1	16.1	-2.3	10.5	-5.0	1.0200	15.9	0.9895	19.9	1	6
342	LORENA13.8	13.800	G2	16.1	-2.3	10.5	-5.0	1.0200	15.9	0.9895	19.9	1	6
343	PRUDENCIA13813.800	G1	26.6	-3.3	9.8	-9.8	1.0200	26.3	0.9926	33.0	1	6	
343	PRUDENCIA13813.800	G2	26.6	-3.3	9.8	-9.8	1.0200	26.3	0.9926	33.0	1	6	
507	CHAN2 A	13.800	G1	100.0	0.3	50.0	-50.0	1.0200	98.0	1.0000	118.6	1	6
508	CHAN32 B	13.800	G2	100.0	0.3	50.0	-50.0	1.0200	98.0	1.0000	118.6	1	6
541	PETOABRE	4.2000	1	61.2	1.4	1.4	1.4	0.9817	62.4	0.9997	136.0	1	6
542	PEANTON	4.2000	1	75.0	1.4	1.4	1.4	0.9809	76.5	0.9998	136.0	1	6
SUBSYSTEM TOTALS				1651.4	221.9	913.9	-672.6				2422.8		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:19
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2016 ESC MOD DEM MAX INV

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
128		MIR13C		12.000	G3	12.6	4.4	11.0	0.0	1.0200	13.1	0.9432	29.4			2		



130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0227	16.7	1.0000	27.7	2	7
170	MIR13G	13.800	M1	17.1	6.8	11.2	6.8	1.0370	17.8	0.9289	23.0	2	7
171	MIR13H	13.800	M1	17.1	6.8	11.2	6.8	1.0460	17.6	0.9289	23.0	2	7
171	MIR13H	13.800	M2	17.1	6.8	11.2	6.8	1.0460	17.6	0.9289	23.0	2	7
SUBSYSTEM TOTALS				81.0	24.9	52.5	20.5				126.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:20
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2016 ESC MOD DEM MAX INV 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	



Handwritten signature or initials.

5	1344.9	1324.8	0.0	0.0	0.0	-0.7	20.8	0.0
C.RICA	258.6	569.4	-237.5	0.0	469.0	29.9	365.7	
6	1651.4	1430.6	0.0	0.0	0.0	116.5	104.3	25.0
PANAMA	221.9	250.6	-340.4	0.0	706.6	41.5	976.8	
7	81.0	55.5	0.0	0.0	0.0	25.2	0.2	50.0
ACANAL	24.9	9.7	0.0	0.0	0.0	9.4	5.8	
9	0.0	140.9	0.0	0.0	0.0	-141.1	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-34.7	11.1	
TOTALS	6881.7	6678.6	0.0	0.0	0.0	0.0	203.1	0.0
	724.4	1901.3	-1189.3	0.0	2255.6	0.0	2268.0	

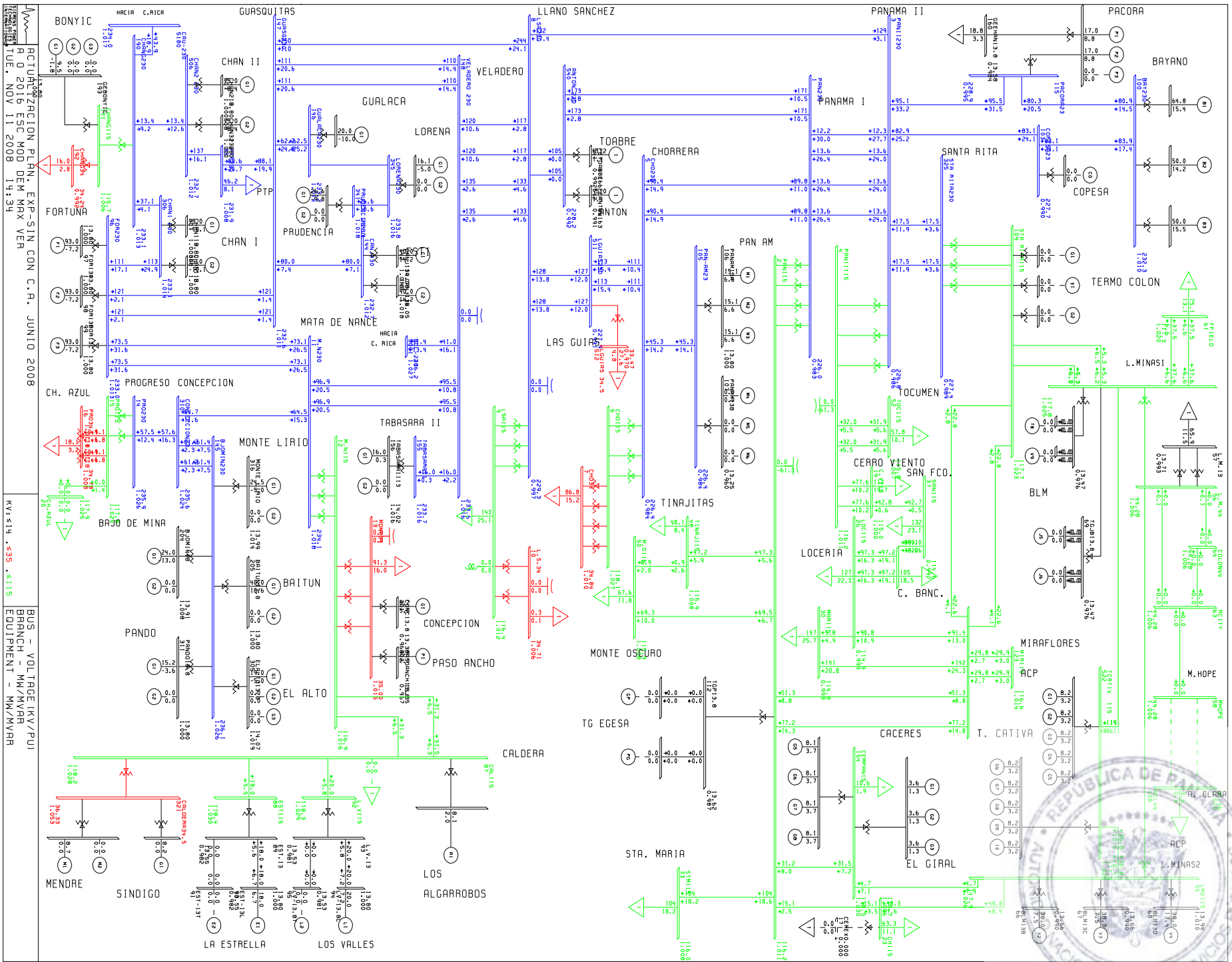


Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2016 ESCENARIO MODERADO DEMANDA MÁXIMA VERANO**



de



ACTUACION PLAN. EXP. SIN CON. C.R. JUNIO 2008
 P. O. 2016 ESC. MOD. DEM. MX. VER
 TUE. NOV. 11 2008 14:34

KY:514 .535 .1115
 BUS - VOLTAGE (KV/PV)
 BRNCH - MW/MVAR
 EQUIPMENT - MW/MVAR



Handwritten signature or initials.

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	1.0180	234.14	14	PRO230	230.00	6	1.0255	235.87				
85	PTP230	230.00	6	1.0081	231.87	96	FOR230	230.00	6	1.0131	233.00				
100	BAY230	230.00	6	1.0101	232.31	144	CANJ230	230.00	6	1.0117	232.70				
145	BJOMIN230	230.00	6	1.0264	236.07	146	GUALACA230	230.00	6	1.0140	233.22				
147	GUASQ230	230.00	6	1.0114	232.62	148	VELADERO 230	230.00	6	1.0156	233.59				
155	TABASARAI I	230.00	6	1.0161	233.71	190	CHANG230	230.00	6	1.0134	233.09				
306	CHAN1 230	230.00	6	1.0135	233.11	310	CONCEPCION23	230.00	6	1.0245	235.62				
341	PRUDENCIA230	230.00	6	1.0177	234.08	345	LORENA230	230.00	6	1.0164	233.78				
506	CHAN2 230	230.00	6	1.0118	232.70	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	0.9826	225.99	3	PANII230	230.00	6	0.9861	226.81				
5	CHO230	230.00	6	0.9842	226.36	8	LSA230	230.00	6	0.9970	229.30				
103	COPESA23	230.00	6	0.9901	227.73	105	PAN-AM23	230.00	6	0.9843	226.38				
115	PACORA23	230.00	6	0.9951	228.88	325	STA RITA230	230.00	6	0.9888	227.42				
511	LGUIAS230	230.00	6	0.9907	227.86	540	ANTON 230	230.00	6	0.9922	228.20				

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	1.0107	116.23	4	PANII115	115.00	6	1.0107	116.23				
6	CHO115	115.00	6	1.0266	118.06	9	LSA115	115.00	6	1.0121	116.39				
12	M.N115	115.00	6	1.0164	116.89	15	PRO115	115.00	6	1.0240	117.77				
18	CAC115	115.00	6	1.0102	116.17	19	C.V115	115.00	6	1.0003	115.03				
20	CH.AZUL	115.00	6	1.0248	117.85	23	CH115	115.00	6	1.0060	115.68				
33	STM115	115.00	6	1.0084	115.97	48	TINAJ115	115.00	6	1.0077	115.88				
50	M.O115	115.00	6	1.0078	115.90	52	TOC115	115.00	6	1.0073	115.84				
54	LM115	115.00	6	1.0247	117.84	55	LM2115	115.00	6	1.0256	117.95				
61	FFIELD	115.00	9	1.0202	117.32	87	CAL115	115.00	6	1.0280	118.22				
88	EST115	115.00	6	1.0299	118.44	92	L.V115	115.00	6	1.0287	118.30				
109	STA RITA115	115.00	6	1.0231	117.65	123	MIR115	115.00	7	1.0139	116.60				
154	CEMPAN15	115.00	6	1.0302	118.47	191	CHANG115	115.00	6	1.0060	115.69				
522	TCATIVÁ	115 115.00	6	1.0254	117.92										

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	0.9980	114.77	26	LOC115	115.00	6	0.9994	114.93				
30	MAR115	115.00	6	0.9982	114.79	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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	38.0	7.5	25.0	0.0	0.9900	39.1	0.9809	47.0	1	6
67	BLM13C	13.800	V3	38.0	7.5	25.0	0.0	0.9900	39.1	0.9809	47.0	1	6
68	BLM13D	13.800	V4	38.0	17.4	25.0	0.0	1.0100	41.4	0.9092	47.0	1	6
90	EST-13L	13.800	E1	18.0	6.7	12.0	-5.0	1.0000	19.2	0.9376	27.0	1	6
94	LV-13.8L	13.800	L1	20.0	7.2	12.0	-5.0	1.0000	21.2	0.9415	27.0	1	6
97	FOR13A	13.800	F1	93.0	-7.2	50.0	-50.0	1.0000	93.3	0.9971	111.0	1	6
98	FOR13B	13.800	F2	93.0	-7.2	50.0	-50.0	1.0000	93.3	0.9971	111.0	1	6
99	FOR13C	13.800	F3	93.0	-7.2	50.0	-50.0	1.0000	93.3	0.9971	111.0	1	6
101	BAY13A	13.800	B1	64.8	15.4	50.0	-25.0	0.9783	68.1	0.9730	96.0	1	6
102	BAY13B	13.800	B2	50.0	14.2	50.0	-25.0	0.9783	53.1	0.9619	96.0	1	6
106	PANAM13A	13.800	M1	15.1	6.6	9.0	0.0	1.0000	16.5	0.9168	20.7	1	6
106	PANAM13A	13.800	M2	15.1	6.6	9.0	0.0	1.0000	16.5	0.9168	20.7	1	6
106	PANAM13A	13.800	M3	15.1	6.6	9.0	0.0	1.0000	16.5	0.9168	20.7	1	6
108	BAY13C	13.800	B3	50.0	15.5	50.0	-25.0	0.9800	53.4	0.9550	100.0	1	6
116	PACORA13	13.800	P1	17.0	8.8	8.8	0.0	1.0161	18.9	0.8874	21.7	1	6
116	PACORA13	13.800	P2	17.0	8.8	8.8	0.0	1.0161	18.9	0.8874	21.7	1	6
142	CANJ13A	13.800	C1	40.0	14.2	29.0	-29.0	1.0181	41.7	0.9427	69.0	1	6
143	CANJ13B	13.800	C2	40.0	14.2	29.0	-29.0	1.0181	41.7	0.9427	69.0	1	6
151	GUALACA13.8	13.800	G1	20.0	-10.0	10.0	-10.0	1.0029	22.3	0.8944	26.7	1	6
156	TABASARAI13	13.800	G1	16.0	0.2	5.7	0.2	1.0161	15.7	0.9999	20.5	1	6
193	GEBONYIC	13.800	G1	9.5	-1.8	4.0	-4.0	1.0000	9.7	0.9829	35.3	1	6
204	BJOMIN13	13.800	G1	24.0	-13.0	13.0	-13.0	1.0078	27.1	0.8793	28.9	1	6
205	BAITUN13.8	13.800	G1	40.0	18.6	26.6	-26.6	1.0000	44.1	0.9064	50.6	1	6
301	CONC13.8	13.800	G1	8.2	5.0	5.0	-5.0	0.9693	9.9	0.8538	13.5	1	6
302	PASOANCH13.8	13.800	P1	3.6	2.0	2.0	-2.0	0.9674	4.3	0.8742	6.2	1	6
303	SIND13.8	13.800	G1	8.2	0.0	5.0	0.0	1.1056	7.4	1.0000	13.5	1	6
304	ALGA13.8	13.800	A1	8.1	2.0	2.0	0.0	0.9803	8.5	0.9708	13.5	1	6
305	ELALTO13.8	13.800	G1	19.0	-5.0	12.0	-5.0	1.0192	19.3	0.9671	20.6	1	6
307	CHANI A	13.800	G1	75.0	-10.1	50.0	-50.0	1.0000	75.7	0.9910	118.6	1	6
308	CHANI B	13.800	G2	75.0	-10.1	50.0	-50.0	1.0000	75.7	0.9910	118.6	1	6
311	PANDO13.8	13.800	G1	15.2	-3.6	10.0	-5.0	1.0000	15.6	0.9726	19.9	1	6
316	MONTE LIRIO	13.800	G1	24.5	-5.0	12.0	-5.0	1.0135	24.7	0.9798	27.0	1	6
317	MENDRE13.8	13.800	M1	8.7	0.0	4.0	0.0	1.1055	7.9	1.0000	35.3	1	6
342	LORENA13.8	13.800	G1	16.1	-5.0	10.5	-5.0	1.0109	16.6	0.9548	19.9	1	6
343	PRUDENCIA138	13.800	G1	26.6	-9.8	9.8	-9.8	1.0067	28.1	0.9388	33.0	1	6
507	CHAN2 A	13.800	G1	75.0	-8.4	50.0	-50.0	1.0000	75.5	0.9937	118.6	1	6
508	CHAN32 B	13.800	G2	75.0	-8.4	50.0	-50.0	1.0000	75.5	0.9937	118.6	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0034	3.8	0.9407	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0034	3.8	0.9407	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0034	3.8	0.9407	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.6	1.3	2.8	1.3	1.0034	3.8	0.9407	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9320	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9320	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9320	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9320	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9320	10.9	1	6
524	TCATIVÁ 13B	13.800	10	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9320	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9320	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9320	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9320	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9320	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.1	3.7	6.4	3.0	1.0100	8.8	0.9103	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.1	3.7	6.4	3.0	1.0100	8.8	0.9103	10.9	1	6
531	EGIRAL13.8	213.800	G7	8.1	3.7	6.4	3.0	1.0100	8.8	0.9103	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.1	3.7	6.4	3.0	1.0100	8.8	0.9103	10.9	1	6
541	PETOABRE	4.2000	1	61.2	1.4	1.4	1.4	0.9919	61.7	0.9997	136.0	1	6
542	PEANTON	4.2000	1	75.0	1.4	1.4	1.4	0.9912	75.7	0.9998	136.0	1	6
SUBSYSTEM TOTALS				1567.7	127.8	938.5	-628.8				2346.7		

SYST



Handwritten signature or mark.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2016 ESC MOD DEM MAX VER

TUE, NOV 11 2008 14:20

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
128		MIR13C		12.000	G3	12.6	4.0	11.0	0.0	1.0200	13.0	0.9534	29.4			2	7	
129		MIR13D		13.800	G4	35.0	3.7	15.0	0.0	1.0200	34.5	0.9946	44.1			2	7	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0244	16.7	1.0000	27.7			2	7	
170		MIR13G		13.800	M1	17.1	6.8	11.2	6.8	1.0387	17.7	0.9289	23.0			2	7	
171		MIR13H		13.800	M1	17.1	6.8	11.2	6.8	1.0477	17.6	0.9289	23.0			2	7	
171		MIR13H		13.800	M2	17.1	6.8	11.2	6.8	1.0477	17.6	0.9289	23.0			2	7	
SUBSYSTEM TOTALS						116.0	28.1	67.5	20.5				170.3					



Handwritten signature or initials.

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	-5.2	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	-97.0	147.4	
5	1344.9	1324.8	0.0	0.0	0.0	-0.3	20.4	0.0
C.RICA	264.1	569.4	-237.2	0.0	468.8	37.0	363.7	
6	1567.7	1430.6	0.0	0.0	0.0	81.8	55.4	25.0
PANAMA	127.8	250.6	-122.6	0.0	604.3	38.4	565.7	
7	116.0	55.5	0.0	0.0	0.0	59.6	0.9	50.0
ACANAL	28.1	9.7	0.0	0.0	0.0	5.5	12.9	
9	0.0	140.9	0.0	0.0	0.0	-141.1	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-34.8	11.3	
TOTALS	6833.0	6678.6	0.0	0.0	0.0	0.0	154.4	0.0
	639.1	1901.3	-971.2	0.0	2153.1	0.0	1862.0	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DE 2008
AÑO 2016 ESCENARIO MODERADO DEMANDA MÍNIMA VERANO**



de

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	1.0080	231.84	3		PANII230		230.00	6	1.0082	231.88
5		CHO230		230.00	6	1.0116	232.66	8		LSA230		230.00	6	1.0200	234.60
11		M.N230		230.00	6	1.0409	239.40	14		PRO230		230.00	6	1.0448	240.31
85		PTP230		230.00	6	1.0441	240.15	96		FOR230		230.00	6	1.0409	239.40
100		BAY230		230.00	6	1.0117	232.69	103		COPESA23		230.00	6	1.0092	232.12
105		PAN-AM23		230.00	6	1.0116	232.66	115		PACORA23		230.00	6	1.0095	232.18
144		CANJ230		230.00	6	1.0412	239.47	145		BJOMIN230		230.00	6	1.0434	239.99
146		GUALACA230		230.00	6	1.0433	239.97	147		GUASQ230		230.00	6	1.0411	239.46
148		VELADERO 230		230.00	6	1.0373	238.58	155		TABASARAI		230.00	6	1.0379	238.71
190		CHANG230		230.00	6	1.0460	240.59	306		CHAN1 230		230.00	6	1.0470	240.81
310		CONCEPCION232		230.00	6	1.0437	240.05	325		STA RITA230		230.00	6	1.0084	231.94
341		PRUDENCIA230		230.00	6	1.0464	240.68	345		LORENA230		230.00	6	1.0454	240.43
506		CHAN2 230		230.00	6	1.0466	240.72	511		LGUIAS230		230.00	6	1.0184	234.23
540		ANTON 230		230.00	6	1.0169	233.88	6000		FRONTER		230.00	6	1.0451	240.37

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	1.0032	115.37	4		PANII115		115.00	6	1.0031	115.36
6		CHO115		115.00	6	1.0616	122.09	9		LSA115		115.00	6	1.0347	118.99
12		M.N115		115.00	6	1.0250	117.88	15		PRO115		115.00	6	1.0449	120.16
18		CAC115		115.00	6	1.0031	115.35	20		CH.AZUL		115.00	6	1.0457	120.25
33		STM115		115.00	6	1.0022	115.26	48		TINAJ115		115.00	6	1.0022	115.25
50		M.O115		115.00	6	1.0023	115.26	52		TOC115		115.00	6	1.0018	115.20
54		LM1115		115.00	6	1.0038	115.44	55		LM2115		115.00	6	1.0039	115.45
61		FFIELD		115.00	9	1.0020	115.23	87		CAL115		115.00	6	1.0347	118.99
88		EST115		115.00	6	1.0361	119.15	92		L.V115		115.00	6	1.0352	119.05
109		STA RITA115		115.00	6	1.0051	115.58	123		MIR115		115.00	7	1.0063	115.73
154		CEMPAN15		115.00	6	1.0036	115.41	191		CHANG115		115.00	6	1.0388	119.46
522		TCATIVÁ 115		115.00	6	1.0039	115.45								

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	114.90	21		C.BAN115		115.00	6	0.9985	114.82
23		CH115		115.00	6	0.9993	114.92	26		LOC115		115.00	6	0.9990	114.88
30		MAR115		115.00	6	0.9983	114.81	37		SAN115		115.00	6	0.9979	114.76



Handwritten signature or initials.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2016 ESC MOD DEM MIN VER

THU, OCT 23 2008 14:28

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	28.0	11.5	25.0	0.0	0.9800	30.9	0.9255	47.0			1	6	
90	EST-13L	13.800	E1	17.0	4.7	12.0	-5.0	1.0000	17.6	0.9637	27.0			1	6	
94	LV-13.8L	13.800	L1	18.0	5.0	12.0	-5.0	1.0000	18.7	0.9629	27.0			1	6	
97	FOR13A	13.800	F1	82.3	-33.6	50.0	-50.0	1.0000	88.9	0.9260	111.0			1	6	SYST
142	CANJ13A	13.800	C1	32.0	4.6	29.0	-29.0	1.0000	32.3	0.9900	69.0			1	6	
151	GUALACA13.8	13.800	G1	19.0	-10.0	10.0	-10.0	1.0326	20.8	0.8849	26.7			1	6	
156	TABASARAI13	13.800	G1	15.1	0.2	5.7	0.2	1.0379	14.6	0.9999	20.5			1	6	
193	GEBONYIC	13.800	G1	8.5	-4.0	4.0	-4.0	1.0264	9.2	0.9048	35.3			1	6	
204	BJOMIN13	13.800	G1	22.0	-13.0	13.0	-13.0	1.0253	24.9	0.8609	28.9			1	6	
205	BAITUN13.8	13.800	G1	30.0	5.5	26.6	-26.6	1.0000	30.5	0.9838	50.6			1	6	
301	CONC13.8	13.800	G1	8.3	5.0	5.0	-5.0	0.9592	10.1	0.8566	13.5			1	6	
302	PASOANCH13.8	13.800	P1	3.6	2.0	2.0	-2.0	0.9573	4.3	0.8742	6.2			1	6	
303	SIND13.8	13.800	G1	8.3	0.0	5.0	0.0	1.1129	7.5	1.0000	13.5			1	6	
304	ALGA13.8	13.800	A1	8.1	2.0	2.0	0.0	0.9866	8.5	0.9708	13.5			1	6	
305	ELALTO13.8	13.800	G1	16.0	-5.0	12.0	-5.0	1.0365	16.2	0.9545	20.6			1	6	
311	PANDO13.8	13.800	G1	12.0	-5.0	10.0	-5.0	1.0107	12.9	0.9231	19.9			1	6	
316	MONTE LIRIO	13.800	G1	20.0	-5.0	12.0	-5.0	1.0313	20.0	0.9701	27.0			1	6	
317	MENDRE13.8	13.800	M1	8.0	0.0	4.0	0.0	1.1129	7.2	1.0000	35.3			1	6	
342	LORENA13.8	13.800	G1	14.7	-5.0	10.5	-5.0	1.0400	14.9	0.9467	19.9			1	6	
343	PRUDENCIA13	13.800	G1	23.0	-9.8	9.8	-9.8	1.0359	24.1	0.9205	33.0			1	6	
541	PETOABRE	4.2000	1	116.3	1.4	1.4	1.4	1.0130	114.8	0.9999	136.0			1	6	
542	PEANTON	4.2000	1	140.0	1.4	1.4	1.4	1.0107	138.5*	1.0000	136.0			1	6	
SUBSYSTEM TOTALS				650.2	-47.1	262.4	-176.4				917.5					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2016 ESC MOD DEM MIN VER

THU, OCT 23 2008 14:28

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
170	MIR13G	13.800	M1	15.5	6.8	11.2	6.8	1.0378	16.3	0.9150	23.0			2	7	
171	MIR13H	13.800	M1	15.5	6.8	11.2	6.8	1.0470	16.1	0.9149	23.0			2	7	
171	MIR13H	13.800	M2	15.5	6.8	11.2	6.8	1.0470	16.1	0.9149	23.0			2	7	
SUBSYSTEM TOTALS				46.4	20.5	33.5	20.5				69.1					



Handwritten signature or initials.

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	29.7	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	21.3	0.0
HONDURAS	55.5	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	31.9	224.5	-98.9	0.0	143.3	-97.7	147.3	
5	1344.9	1324.8	0.0	0.0	0.0	0.7	19.4	0.0
C.RICA	221.8	569.4	-236.4	0.0	472.8	4.2	357.4	
6	650.2	599.7	0.0	0.0	0.0	35.3	15.3	25.0
PANAMA	-47.1	105.0	187.6	0.0	553.0	41.2	172.1	
7	46.4	23.3	0.0	0.0	0.0	23.1	0.1	50.0
ACANAL	20.5	4.1	0.0	0.0	0.0	12.7	3.7	
9	0.0	59.1	0.0	0.0	0.0	-59.1	0.0	-75.0
COLON	0.0	10.3	0.0	0.0	1.1	-11.2	1.9	
TOTALS	5845.9	5733.6	0.0	0.0	0.0	0.0	112.3	0.0
	413.1	1735.8	-660.3	0.0	2105.8	0.0	1443.5	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2008
AÑO 2016 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA 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)
11	M.N230			230.00	6	1.0158	233.63	14	PRO230			230.00	6	1.0216	234.96
85	PTP230			230.00	6	1.0101	232.32	96	FOR230			230.00	6	1.0149	233.43
144	CANJ230			230.00	6	1.0095	232.19	145	BJOMIN230			230.00	6	1.0308	237.08
146	GUALACA230			230.00	6	1.0151	233.47	147	GUASQ230			230.00	6	1.0093	232.15
155	TABASARAI			230.00	6	1.0006	230.15	190	CHANG230			230.00	6	1.0246	235.65
306	CHAN1 230			230.00	6	1.0254	235.85	310	CONCEPCION230			230.00	6	1.0243	235.59
341	PRUDENCIA230			230.00	6	1.0240	235.52	345	LORENA230			230.00	6	1.0209	234.80
506	CHAN2 230			230.00	6	1.0231	235.32	6000	FRONTER			230.00	6	1.0210	234.83

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	0.9579	220.32	3	PANII230			230.00	6	0.9623	221.33
5	CHO230			230.00	6	0.9547	219.59	8	LSA230			230.00	6	0.9773	224.79
100	BAY230			230.00	6	0.9942	228.66	103	COPESA23			230.00	6	0.9676	222.54
105	PAN-AM23			230.00	6	0.9547	219.59	115	PACORA23			230.00	6	0.9705	223.22
148	VELADERO 230			230.00	6	0.9986	229.68	325	STA RITA230			230.00	6	0.9550	219.66
511	LGUIAS230			230.00	6	0.9644	221.81	540	ANTON 230			230.00	6	0.9671	222.44

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	115.64	4	PANII115			115.00	6	1.0102	116.17
9	LSA115			115.00	6	1.0260	117.99	12	M.N115			115.00	6	1.0180	117.07
15	PRO115			115.00	6	1.0201	117.31	18	CAC115			115.00	6	1.0049	115.56
20	CH.AZUL			115.00	6	1.0208	117.40	33	STM115			115.00	6	1.0032	115.37
48	TINAJ115			115.00	6	1.0025	115.29	50	M.O115			115.00	6	1.0027	115.31
52	TOC115			115.00	6	1.0068	115.78	54	LM115			115.00	6	1.0033	115.38
55	LM2115			115.00	6	1.0032	115.37	87	CAL115			115.00	6	1.0408	119.69
88	EST115			115.00	6	1.0452	120.20	92	L.V115			115.00	6	1.0425	119.89
109	STA RITA115			115.00	6	1.0081	115.93	123	MIR115			115.00	7	1.0077	115.89
154	CEMPAN15			115.00	6	1.0028	115.32	191	CHANG115			115.00	6	1.0188	117.16
522	TCATIVÁ			115 115.00	6	1.0033	115.38								

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)
6	CHO115			115.00	6	0.9952	114.45	19	C.V115			115.00	6	0.9984	114.81
21	C.BAN115			115.00	6	0.9934	114.24	23	CH115			115.00	6	0.9936	114.26
26	LOC115			115.00	6	0.9947	114.39	30	MAR115			115.00	6	0.9932	114.21
37	SAN115			115.00	6	0.9922	114.10	61	FFIELD			115.00	9	0.9988	114.86

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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	20.0	11.3	25.0	0.0	0.9800	23.4	0.8708	47.0	1	6
67	BLM13C	13.800	V3	20.0	11.3	25.0	0.0	0.9800	23.4	0.8708	47.0	1	6
90	EST-13L	13.800	E1	22.8	8.5	12.0	-5.0	1.0200	23.9	0.9372	27.0	1	6
91	EST-13T	13.800	E2	22.8	8.5	12.0	-5.0	1.0200	23.9	0.9372	27.0	1	6
94	LV-13.8L	13.800	L1	25.6	9.5	12.0	-5.0	1.0200	26.8	0.9376	27.0	1	6
95	LV-13.8T	13.800	L2	25.6	9.5	12.0	-5.0	1.0200	26.8	0.9376	27.0	1	6
97	FOR13A	13.800	F1	90.0	17.5	50.0	-50.0	1.0290	89.1	0.9817	111.0	1	6
98	FOR13B	13.800	F2	90.0	17.5	50.0	-50.0	1.0290	89.1	0.9817	111.0	1	6
99	FOR13C	13.800	F3	90.0	17.5	50.0	-50.0	1.0290	89.1	0.9817	111.0	1	6
101	BAY13A	13.800	B1	43.9	26.7	50.0	-25.0	0.9800	52.4	0.8538	96.0	1	6
102	BAY13B	13.800	B2	43.5	26.7	50.0	-25.0	0.9800	52.1	0.8519	96.0	1	6
108	BAY13C	13.800	B3	43.5	26.7	50.0	-25.0	0.9800	52.1	0.8519	100.0	1	6
142	CANJ13A	13.800	C1	57.0	19.9	29.0	-29.0	1.0181	59.3	0.9440	69.0	1	6
143	CANJ13B	13.800	C2	57.0	19.9	29.0	-29.0	1.0181	59.3	0.9440	69.0	1	6
151	GUALACA13.8	13.800	G1	23.8	4.9	10.0	-10.0	1.0200	23.9	0.9796	26.7	1	6
156	TABASARAI1313.800	G1	16.4	5.0	5.7	0.2	1.0200	16.8	0.9566	20.5	1	6	
156	TABASARAI1313.800	G2	16.4	5.0	5.7	0.2	1.0200	16.8	0.9566	20.5	1	6	
193	GEBONYIC	13.800	G1	9.5	0.5	4.0	-4.0	1.0200	9.3	0.9984	35.3	1	6
193	GEBONYIC	13.800	G2	9.5	0.5	4.0	-4.0	1.0200	9.3	0.9984	35.3	1	6
193	GEBONYIC	13.800	G3	9.5	0.5	4.0	-4.0	1.0200	9.3	0.9984	35.3	1	6
204	BJOMIN13	13.800	G1	24.7	-3.1	13.0	-13.0	1.0200	24.4	0.9921	28.9	1	6
204	BJOMIN13	13.800	G2	24.7	-3.1	13.0	-13.0	1.0200	24.4	0.9921	28.9	1	6
205	BAITUN13.8	13.800	G1	40.8	17.4	26.6	-26.6	1.0200	43.5	0.9198	50.6	1	6
205	BAITUN13.8	13.800	G2	40.8	17.4	26.6	-26.6	1.0200	43.5	0.9198	50.6	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9592	11.2	0.8849	13.5	1	6
302	PASOANCH13.813.800	P1	4.4	2.0	2.0	-2.0	0.9573	5.1	0.9110	6.2	1	6	
303	SIND13.8	13.800	G1	9.5	0.0	5.0	0.0	1.1171	8.5	1.0000	13.5	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9924	9.5	0.9772	13.5	1	6
305	ELALTO13.8	13.800	G1	19.0	-1.9	12.0	-5.0	1.0200	18.7	0.9950	20.6	1	6
305	ELALTO13.8	13.800	G2	19.0	-1.9	12.0	-5.0	1.0200	18.7	0.9950	20.6	1	6
305	ELALTO13.8	13.800	G3	19.0	-1.9	12.0	-5.0	1.0200	18.7	0.9950	20.6	1	6
307	CHAN1 A	13.800	G1	90.0	-1.3	50.0	-50.0	1.0200	88.2	0.9999	118.6	1	6
308	CHAN1 B	13.800	G2	90.0	-1.3	50.0	-50.0	1.0200	88.2	0.9999	118.6	1	6
311	PANDO13.8	13.800	G1	15.2	0.5	10.0	-5.0	1.0200	14.9	0.9996	19.9	1	6
311	PANDO13.8	13.800	G2	15.2	0.5	10.0	-5.0	1.0200	14.9	0.9996	19.9	1	6
316	MONTE LIRIO	13.800	G1	24.5	-1.1	12.0	-5.0	1.0200	24.1	0.9991	27.0	1	6
316	MONTE LIRIO	13.800	G2	24.5	-1.1	12.0	-5.0	1.0200	24.1	0.9991	27.0	1	6
317	MENDRE13.8	13.800	M1	8.7	0.0	4.0	0.0	1.1167	7.8	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	8.7	0.0	4.0	0.0	1.1167	7.8	1.0000	35.3	1	6
342	LORENA13.8	13.800	G1	16.1	-0.1	10.5	-5.0	1.0200	15.7	1.0000	19.9	1	6
342	LORENA13.8	13.800	G2	16.1	-0.1	10.5	-5.0	1.0200	15.7	1.0000	19.9	1	6
343	PRUDENCIA13813.800	G1	26.6	-1.1	9.8	-9.8	1.0200	26.1	0.9991	33.0	1	6	
343	PRUDENCIA13813.800	G2	26.6	-1.1	9.8	-9.8	1.0200	26.1	0.9991	33.0	1	6	
507	CHAN2 A	13.800	G1	100.0	1.9	50.0	-50.0	1.0200	98.1	0.9998	118.6	1	6
508	CHAN32 B	13.800	G2	100.0	1.9	50.0	-50.0	1.0200	98.1	0.9998	118.6	1	6
541	PETOABRE	4.2000	1	61.2	1.4	1.4	1.4	0.9668	63.3	0.9997	136.0	1	6
542	PEANTON	4.2000	1	75.0	1.4	1.4	1.4	0.9660	77.7	0.9998	136.0	1	6
SUBSYSTEM TOTALS				1656.1	279.6	913.9	-672.6				2422.8		

SYST

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:42
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2016 ESC MOD DEM MAX INV CONT GUAS-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
128		MIR13C		12.000	G3	12.6	4.9	11.0	0.0	1.0200	13.3	0.9315	29.4			2	7	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0209	16.7	1.0000	27.7			2	7	



170 MIR13G	13.800 M1	17.1	6.8	11.2	6.8	1.0352	17.8	0.9289	23.0	2	7			
171 MIR13H	13.800 M1	17.1	6.8	11.2	6.8	1.0442	17.6	0.9289	23.0	2	7			
171 MIR13H	13.800 M2	17.1	6.8	11.2	6.8	1.0442	17.6	0.9289	23.0	2	7			
SUBSYSTEM TOTALS										81.0	25.4	52.5	20.5	126.2

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:43
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2016 ESC MOD DEM MAX INV CONT GUAS-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	55.8	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	-96.9	147.4	
5	1344.9	1324.8	0.0	0.0	0.0	-0.9	21.0	0.0
C.RICA	268.3	569.4	-237.0	0.0	468.0	36.0	367.8	
6	1656.1	1430.6	0.0	0.0	0.0	116.8	108.7	25.0
PANAMA	279.6	250.6	-338.5	0.0	676.5	34.8	1009.2	
7	81.0	55.5	0.0	0.0	0.0	25.2	0.2	50.0
ACANAL	25.4	9.7	0.0	0.0	0.0	9.8	5.9	
9	0.0	140.9	0.0	0.0	0.0	-141.1	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-34.8	11.2	
TOTALS	6886.3	6678.6	0.0	0.0	0.0	0.0	207.7	0.0
	792.5	1901.3	-1187.0	0.0	2224.4	0.0	2302.5	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2008
AÑO 2016 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA LLANO SÁNCHEZ-PANAMÁ 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	1.0127	232.92	14	PRO230			230.00	6	1.0195	234.49
85	PTP230			230.00	6	1.0066	231.52	96	FOR230			230.00	6	1.0112	232.58
144	CANJ230			230.00	6	1.0050	231.15	145	BJOMIN230			230.00	6	1.0293	236.74
146	GUALACA230			230.00	6	1.0109	232.51	147	GUASQ230			230.00	6	1.0048	231.10
190	CHANG230			230.00	6	1.0234	235.38	306	CHAN1 230			230.00	6	1.0242	235.56
310	CONCEPCION230			230.00	6	1.0223	235.12	341	PRUDENCIA230			230.00	6	1.0203	234.66
345	LORENA230			230.00	6	1.0170	233.91	506	CHAN2 230			230.00	6	1.0217	234.99
6000	FRONTER			230.00	6	1.0189	234.35								

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	0.9352	215.10	3	PANII230			230.00	6	0.9406	216.35
5	CHO230			230.00	6	0.9299	213.87	8	LSA230			230.00	6	0.9589	220.54
100	BAY230			230.00	6	0.9896	227.61	103	COPESA23			230.00	6	0.9485	218.15
105	PAN-AM23			230.00	6	0.9299	213.87	115	PACORA23			230.00	6	0.9536	219.33
148	VELADERO	230		230.00	6	0.9921	228.18	155	TABASARAI			230.00	6	0.9943	228.69
325	STA RITA230			230.00	6	0.9345	214.93	511	LGUIAS230			230.00	6	0.9405	216.31
540	ANTON 230			230.00	6	0.9429	216.87								

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	1.0074	115.85	4	PANII115			115.00	6	1.0121	116.39
9	LSA115			115.00	6	1.0061	115.71	12	M.N115			115.00	6	1.0159	116.82
15	PRO115			115.00	6	1.0180	117.07	18	CAC115			115.00	6	1.0067	115.77
19	C.V115			115.00	6	1.0003	115.03	20	CH.AZUL			115.00	6	1.0188	117.16
33	STM115			115.00	6	1.0050	115.58	48	TINAJ115			115.00	6	1.0043	115.50
50	M.O115			115.00	6	1.0045	115.52	52	TOC115			115.00	6	1.0087	116.00
54	LM1115			115.00	6	1.0087	116.00	55	LM2115			115.00	6	1.0087	116.00
61	FFIELD			115.00	9	1.0042	115.48	87	CAL115			115.00	6	1.0394	119.53
88	EST115			115.00	6	1.0439	120.05	92	L.V115			115.00	6	1.0411	119.73
109	STA RITA115			115.00	6	1.0124	116.43	123	MIR115			115.00	7	1.0095	116.09
154	CEMPAN15			115.00	6	1.0072	115.82	191	CHANG115			115.00	6	1.0180	117.07
522	TCATIVÁ	115		115.00	6	1.0087	116.00								

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)
6	CHO115			115.00	6	0.9688	111.41	21	C.BAN115			115.00	6	0.9952	114.45
23	CH115			115.00	6	0.9970	114.65	26	LOC115			115.00	6	0.9965	114.60
30	MAR115			115.00	6	0.9950	114.43	37	SAN115			115.00	6	0.9940	114.31



Handwritten signature or initials.

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	20.0	18.2	25.0	0.0	1.0000	27.0	0.7405	47.0			1	6	
67		BLM13C		13.800	V3	20.0	18.2	25.0	0.0	1.0000	27.0	0.7405	47.0			1	6	
90		EST-13L		13.800	E1	22.0	8.8	12.0	-5.0	1.0200	23.2	0.9282	27.0			1	6	
91		EST-13T		13.800	E2	22.0	8.8	12.0	-5.0	1.0200	23.2	0.9282	27.0			1	6	
94		LV-13.8L		13.800	L1	25.0	9.9	12.0	-5.0	1.0200	26.4	0.9301	27.0			1	6	
95		LV-13.8T		13.800	L2	25.0	9.9	12.0	-5.0	1.0200	26.4	0.9301	27.0			1	6	
97		FOR13A		13.800	F1	90.0	20.9	50.0	-50.0	1.0290	89.8	0.9740	111.0			1	6	
98		FOR13B		13.800	F2	90.0	20.9	50.0	-50.0	1.0290	89.8	0.9740	111.0			1	6	
99		FOR13C		13.800	F3	90.0	20.9	50.0	-50.0	1.0290	89.8	0.9740	111.0			1	6	
101		BAY13A		13.800	B1	47.6	46.5	50.0	-25.0	1.0000	66.6	0.7148	96.0			1	6	SYST
102		BAY13B		13.800	B2	47.6	46.5	50.0	-25.0	1.0000	66.5	0.7147	96.0			1	6	
108		BAY13C		13.800	B3	47.6	46.5	50.0	-25.0	1.0000	66.5	0.7147	100.0			1	6	
142		CANJ13A		13.800	C1	57.0	20.7	29.0	-29.0	1.0181	59.6	0.9400	69.0			1	6	
143		CANJ13B		13.800	C2	57.0	20.7	29.0	-29.0	1.0181	59.6	0.9400	69.0			1	6	
151		GUALACA13.8		13.800	G1	23.8	8.8	10.0	-10.0	1.0200	24.9	0.9381	26.7			1	6	
156		TABASARAI13		13.800	G1	16.4	5.7	5.7	0.2	1.0166	17.1	0.9453	20.5			1	6	
156		TABASARAI13		13.800	G2	16.4	5.7	5.7	0.2	1.0166	17.1	0.9453	20.5			1	6	
193		GEBONYIC		13.800	G1	9.5	0.6	4.0	-4.0	1.0200	9.3	0.9979	35.3			1	6	
193		GEBONYIC		13.800	G2	9.5	0.6	4.0	-4.0	1.0200	9.3	0.9979	35.3			1	6	
193		GEBONYIC		13.800	G3	9.5	0.6	4.0	-4.0	1.0200	9.3	0.9979	35.3			1	6	
204		BJOMIN13		13.800	G1	24.7	-2.6	13.0	-13.0	1.0200	24.3	0.9946	28.9			1	6	
204		BJOMIN13		13.800	G2	24.7	-2.6	13.0	-13.0	1.0200	24.3	0.9946	28.9			1	6	
205		BAITUN13.8		13.800	G1	40.8	18.0	26.6	-26.6	1.0200	43.8	0.9152	50.6			1	6	
205		BAITUN13.8		13.800	G2	40.8	18.0	26.6	-26.6	1.0200	43.8	0.9152	50.6			1	6	
301		CONC13.8		13.800	G1	9.5	5.0	5.0	-5.0	0.9572	11.2	0.8849	13.5			1	6	
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9553	5.1	0.9110	6.2			1	6	
303		SIND13.8		13.800	G1	9.5	0.0	5.0	0.0	1.1156	8.5	1.0000	13.5			1	6	
304		ALGA13.8		13.800	A1	9.2	2.0	2.0	0.0	0.9911	9.5	0.9772	13.5			1	6	
305		ELALTO13.8		13.800	G1	19.0	-1.5	12.0	-5.0	1.0200	18.7	0.9967	20.6			1	6	
305		ELALTO13.8		13.800	G2	19.0	-1.5	12.0	-5.0	1.0200	18.7	0.9967	20.6			1	6	
305		ELALTO13.8		13.800	G3	19.0	-1.5	12.0	-5.0	1.0200	18.7	0.9967	20.6			1	6	
307		CHAN1 A		13.800	G1	90.0	-0.1	50.0	-50.0	1.0200	88.2	1.0000	118.6			1	6	
308		CHAN1 B		13.800	G2	90.0	-0.1	50.0	-50.0	1.0200	88.2	1.0000	118.6			1	6	
311		PANDO13.8		13.800	G1	15.2	0.6	10.0	-5.0	1.0200	14.9	0.9993	19.9			1	6	
311		PANDO13.8		13.800	G2	15.2	0.6	10.0	-5.0	1.0200	14.9	0.9993	19.9			1	6	
316		MONTE LIRIO		13.800	G1	24.5	-0.7	12.0	-5.0	1.0200	24.0	0.9995	27.0			1	6	
316		MONTE LIRIO		13.800	G2	24.5	-0.7	12.0	-5.0	1.0200	24.0	0.9995	27.0			1	6	
317		MENDRE13.8		13.800	M1	8.7	0.0	4.0	0.0	1.1151	7.8	1.0000	35.3			1	6	
317		MENDRE13.8		13.800	M2	8.7	0.0	4.0	0.0	1.1151	7.8	1.0000	35.3			1	6	
342		LORENA13.8		13.800	G1	16.1	1.7	10.5	-5.0	1.0200	15.8	0.9946	19.9			1	6	
342		LORENA13.8		13.800	G2	16.1	1.7	10.5	-5.0	1.0200	15.8	0.9946	19.9			1	6	
343		PRUDENCIA138		13.800	G1	26.6	0.6	9.8	-9.8	1.0200	26.1	0.9997	33.0			1	6	
343		PRUDENCIA138		13.800	G2	26.6	0.6	9.8	-9.8	1.0200	26.1	0.9997	33.0			1	6	
507		CHAN2 A		13.800	G1	100.0	3.3	50.0	-50.0	1.0200	98.1	0.9995	118.6			1	6	
508		CHAN32 B		13.800	G2	100.0	3.3	50.0	-50.0	1.0200	98.1	0.9995	118.6			1	6	



Handwritten signature or mark.

541 PETOABRE	4.2000	1	61.2	1.4	1.4	1.4	0.9425	65.0	0.9997	136.0	1	6
542 PEANTON	4.2000	1	75.0	1.4	1.4	1.4	0.9416	79.7	0.9998	136.0	1	6
SUBSYSTEM TOTALS			1665.0	388.2	913.9	-672.6				2422.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:49
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2016 ESC MOD DEM MAX INV CONT LLS-PAN 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
128		MIR13C		12.000	G3	12.6	4.6	11.0	0.0	1.0200	13.1	0.9402	29.4			2	7	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0223	16.7	1.0000	27.7			2	7	
170		MIR13G		13.800	M1	17.1	6.8	11.2	6.8	1.0365	17.8	0.9289	23.0			2	7	
171		MIR13H		13.800	M1	17.1	6.8	11.2	6.8	1.0455	17.6	0.9289	23.0			2	7	
171		MIR13H		13.800	M2	17.1	6.8	11.2	6.8	1.0455	17.6	0.9289	23.0			2	7	
SUBSYSTEM TOTALS						81.0	25.0	52.5	20.5				126.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:50
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2016 ESC MOD DEM MAX INV CONT LLS-PAN 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		55.8	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	-98.8	0.0	143.2	-96.8	147.4	



Handwritten signature or initials.

5	1344.9	1324.8	0.0	0.0	0.0	-0.6	20.8	0.0
C.RICA	270.5	569.4	-236.9	0.0	467.7	39.5	366.2	
6	1665.0	1430.6	0.0	0.0	0.0	116.5	118.0	25.0
PANAMA	388.2	250.6	-335.8	0.0	634.7	31.7	1076.3	
7	81.0	55.5	0.0	0.0	0.0	25.2	0.2	50.0
ACANAL	25.0	9.7	0.0	0.0	0.0	9.5	5.8	
9	0.0	140.9	0.0	0.0	0.0	-141.1	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-35.0	11.4	
TOTALS	6895.3	6678.6	0.0	0.0	0.0	0.0	216.7	0.0
	903.2	1901.3	-1184.1	0.0	2182.2	0.0	2368.2	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2008
AÑO 2016 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA FORTUNA-GUASQUITAS**



de

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	PRO230	230.00	6	1.0256	235.89				
85	PTP230	230.00	6	1.0108	232.47	96	FOR230	230.00	6	1.0194	234.46				
100	BAY230	230.00	6	1.0018	230.42	144	CANJ230	230.00	6	1.0112	232.58				
145	BJOMIN230	230.00	6	1.0333	237.67	146	GUALACA230	230.00	6	1.0167	233.83				
147	GUASQ230	230.00	6	1.0111	232.54	148	VELADERO 230	230.00	6	1.0062	231.43				
155	TABASARAI I	230.00	6	1.0078	231.81	190	CHANG230	230.00	6	1.0255	235.86				
306	CHAN1 230	230.00	6	1.0267	236.14	310	CONCEPCION23	230.00	6	1.0279	236.41				
341	PRUDENCIA230	230.00	6	1.0254	235.85	345	LORENA230	230.00	6	1.0224	235.14				
506	CHAN2 230	230.00	6	1.0236	235.43	6000	FRONTER	230.00	6	1.0252	235.79				

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	0.9672	222.47	3	PANII230	230.00	6	0.9716	223.46				
5	CHO230	230.00	6	0.9642	221.77	8	LSA230	230.00	6	0.9861	226.81				
103	COPESA23	230.00	6	0.9766	224.61	105	PAN-AM23	230.00	6	0.9642	221.77				
115	PACORA23	230.00	6	0.9793	225.25	325	STA RITA230	230.00	6	0.9646	221.86				
511	LGUIAS230	230.00	6	0.9736	223.94	540	ANTON 230	230.00	6	0.9764	224.57				

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	1.0030	115.34	4	PANII115	115.00	6	1.0076	115.87				
6	CHO115	115.00	6	1.0053	115.61	9	LSA115	115.00	6	1.0355	119.08				
12	M.N115	115.00	6	1.0217	117.50	15	PRO115	115.00	6	1.0242	117.78				
18	CAC115	115.00	6	1.0023	115.27	20	CH.AZUL	115.00	6	1.0249	117.86				
33	STM115	115.00	6	1.0007	115.08	50	M.O115	115.00	6	1.0001	115.01				
52	TOC115	115.00	6	1.0042	115.48	54	LM115	115.00	6	1.0012	115.13				
55	LM2115	115.00	6	1.0011	115.12	87	CAL115	115.00	6	1.0433	119.98				
88	EST115	115.00	6	1.0475	120.46	92	L.V115	115.00	6	1.0449	120.17				
109	STA RITA115	115.00	6	1.0058	115.66	123	MIR115	115.00	7	1.0053	115.61				
154	CEMPAN15	115.00	6	1.0005	115.06	191	CHANG115	115.00	6	1.0194	117.23				
522	TCATIVÁ 115	115.00	6	1.0011	115.13										

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)
19	C.V115	115.00	6	0.9957	114.51	21	C.BAN115	115.00	6	0.9908	113.94				
23	CH115	115.00	6	0.9912	113.98	26	LOC115	115.00	6	0.9921	114.09				
30	MAR115	115.00	6	0.9906	113.91	37	SAN115	115.00	6	0.9896	113.80				



Handwritten signature or initials.

48 TINAJ115 115.00 6 0.9999 114.99 61 FFIELD 115.00 9 0.9966 114.61

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:53
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2016 ESC MOD DEM MAX INV CONT FOR-GUAS

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	20.0	12.2	25.0	0.0	0.9800	23.9	0.8537	47.0				1	6	
67		BLM13C		13.800	V3	20.0	12.2	25.0	0.0	0.9800	23.9	0.8537	47.0				1	6	
90		EST-13L		13.800	E1	22.8	7.8	12.0	-5.0	1.0200	23.6	0.9461	27.0				1	6	
91		EST-13T		13.800	E2	22.8	7.8	12.0	-5.0	1.0200	23.6	0.9461	27.0				1	6	
94		LV-13.8L		13.800	L1	25.6	8.8	12.0	-5.0	1.0200	26.6	0.9460	27.0				1	6	
95		LV-13.8T		13.800	L2	25.6	8.8	12.0	-5.0	1.0200	26.6	0.9460	27.0				1	6	
97		FOR13A		13.800	F1	90.0	13.2	50.0	-50.0	1.0290	88.4	0.9894	111.0				1	6	
98		FOR13B		13.800	F2	90.0	13.2	50.0	-50.0	1.0290	88.4	0.9894	111.0				1	6	
99		FOR13C		13.800	F3	90.0	13.2	50.0	-50.0	1.0290	88.4	0.9894	111.0				1	6	
101		BAY13A		13.800	B1	42.8	25.1	50.0	-25.0	0.9850	50.3	0.8628	96.0				1	6	SYST
102		BAY13B		13.800	B2	42.7	25.1	50.0	-25.0	0.9850	50.3	0.8627	96.0				1	6	
108		BAY13C		13.800	B3	42.7	25.1	50.0	-25.0	0.9850	50.3	0.8627	100.0				1	6	
142		CANJ13A		13.800	C1	57.0	19.6	29.0	-29.0	1.0181	59.2	0.9455	69.0				1	6	
143		CANJ13B		13.800	C2	57.0	19.6	29.0	-29.0	1.0181	59.2	0.9455	69.0				1	6	
151		GUALACA13.8		13.800	G1	23.8	3.4	10.0	-10.0	1.0200	23.6	0.9899	26.7				1	6	
156		TABASARAI13		13.800	G1	16.4	3.4	5.7	0.2	1.0200	16.4	0.9797	20.5				1	6	
156		TABASARAI13		13.800	G2	16.4	3.4	5.7	0.2	1.0200	16.4	0.9797	20.5				1	6	
193		GEBONYIC		13.800	G1	9.5	0.5	4.0	-4.0	1.0200	9.3	0.9988	35.3				1	6	
193		GEBONYIC		13.800	G2	9.5	0.5	4.0	-4.0	1.0200	9.3	0.9988	35.3				1	6	
193		GEBONYIC		13.800	G3	9.5	0.5	4.0	-4.0	1.0200	9.3	0.9988	35.3				1	6	
204		BJOMIN13		13.800	G1	24.7	-4.1	13.0	-13.0	1.0200	24.5	0.9867	28.9				1	6	
204		BJOMIN13		13.800	G2	24.7	-4.1	13.0	-13.0	1.0200	24.5	0.9867	28.9				1	6	
205		BAITUN13.8		13.800	G1	40.8	16.4	26.6	-26.6	1.0200	43.2	0.9277	50.6				1	6	
205		BAITUN13.8		13.800	G2	40.8	16.4	26.6	-26.6	1.0200	43.2	0.9277	50.6				1	6	
301		CONC13.8		13.800	G1	9.5	5.0	5.0	-5.0	0.9629	11.1	0.8849	13.5				1	6	
302		PASOANCH13.8		13.800	P1	4.4	2.0	2.0	-2.0	0.9610	5.0	0.9110	6.2				1	6	
303		SIND13.8		13.800	G1	9.5	0.0	5.0	0.0	1.1199	8.5	1.0000	13.5				1	6	
304		ALGA13.8		13.800	A1	9.2	2.0	2.0	0.0	0.9948	9.5	0.9772	13.5				1	6	
305		ELALTO13.8		13.800	G1	19.0	-2.5	12.0	-5.0	1.0200	18.8	0.9912	20.6				1	6	
305		ELALTO13.8		13.800	G2	19.0	-2.5	12.0	-5.0	1.0200	18.8	0.9912	20.6				1	6	
305		ELALTO13.8		13.800	G3	19.0	-2.5	12.0	-5.0	1.0200	18.8	0.9912	20.6				1	6	
307		CHAN1 A		13.800	G1	90.0	-2.6	50.0	-50.0	1.0200	88.3	0.9996	118.6				1	6	
308		CHAN1 B		13.800	G2	90.0	-2.6	50.0	-50.0	1.0200	88.3	0.9996	118.6				1	6	
311		PANDO13.8		13.800	G1	15.2	0.2	10.0	-5.0	1.0200	14.9	0.9999	19.9				1	6	
311		PANDO13.8		13.800	G2	15.2	0.2	10.0	-5.0	1.0200	14.9	0.9999	19.9				1	6	
316		MONTE LIRIO		13.800	G1	24.5	-1.6	12.0	-5.0	1.0200	24.1	0.9978	27.0				1	6	
316		MONTE LIRIO		13.800	G2	24.5	-1.6	12.0	-5.0	1.0200	24.1	0.9978	27.0				1	6	
317		MENDRE13.8		13.800	M1	8.7	0.0	4.0	0.0	1.1194	7.8	1.0000	35.3				1	6	
317		MENDRE13.8		13.800	M2	8.7	0.0	4.0	0.0	1.1194	7.8	1.0000	35.3				1	6	
342		LORENA13.8		13.800	G1	16.1	-0.8	10.5	-5.0	1.0200	15.8	0.9987	19.9				1	6	
342		LORENA13.8		13.800	G2	16.1	-0.8	10.5	-5.0	1.0200	15.8	0.9987	19.9				1	6	
343		PRUDENCIA138		13.800	G1	26.6	-1.8	9.8	-9.8	1.0200	26.1	0.9977	33.0				1	6	
343		PRUDENCIA138		13.800	G2	26.6	-1.8	9.8	-9.8	1.0200	26.1	0.9977	33.0				1	6	
507		CHAN2 A		13.800	G1	100.0	1.4	50.0	-50.0	1.0200	98.0	0.9999	118.6				1	6	
508		CHAN32 B		13.800	G2	100.0	1.4	50.0	-50.0	1.0200	98.0	0.9999	118.6				1	6	
541		PETOABRE		4.2000	1	61.2	1.4	1.4	1.4	0.9761	62.7	0.9997	136.0				1	6	



Handwritten signature or initials.

542 PEANTON 4.2000 1 75.0 1.4 1.4 1.4 0.9753 76.9 0.9998 136.0
 SUBSYSTEM TOTALS 1653.5 241.9 913.9 -672.6 2422.8

1 6

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:53
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2016 ESC MOD DEM MAX INV CONT FOR-GUAS

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
128		MIR13C		12.000	G3	12.6	5.3	11.0	0.0	1.0200	13.4	0.9209	29.4			2	7	
130		MIR13F		13.800	G5	17.1	0.3	8.0	0.0	1.0200	16.8	0.9999	27.7			2	7	
170		MIR13G		13.800	M1	17.1	6.8	11.2	6.8	1.0337	17.8	0.9289	23.0			2	7	
171		MIR13H		13.800	M1	17.1	6.8	11.2	6.8	1.0427	17.7	0.9289	23.0			2	7	
171		MIR13H		13.800	M2	17.1	6.8	11.2	6.8	1.0427	17.7	0.9289	23.0			2	7	
SUBSYSTEM TOTALS						81.0	26.1	52.5	20.5				126.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:54
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2016 ESC MOD DEM MAX INV CONT FOR-GUAS

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		1347.4	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	-5.2	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	



Handwritten signature or initials.

5	1344.9	1324.8	0.0	0.0	0.0	-0.6	20.8	0.0
C.RICA	261.4	569.4	-237.3	0.0	468.7	32.2	365.8	
6	1653.5	1430.6	0.0	0.0	0.0	116.5	106.4	25.0
PANAMA	241.9	250.6	-339.0	0.0	697.9	38.2	990.0	
7	81.0	55.5	0.0	0.0	0.0	25.2	0.2	50.0
ACANAL	26.1	9.7	0.0	0.0	0.0	10.4	5.9	
9	0.0	140.9	0.0	0.0	0.0	-141.1	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-34.9	11.3	
TOTALS	6883.7	6678.6	0.0	0.0	0.0	0.0	205.2	0.0
	748.5	1901.3	-1187.8	0.0	2246.5	0.0	2281.5	

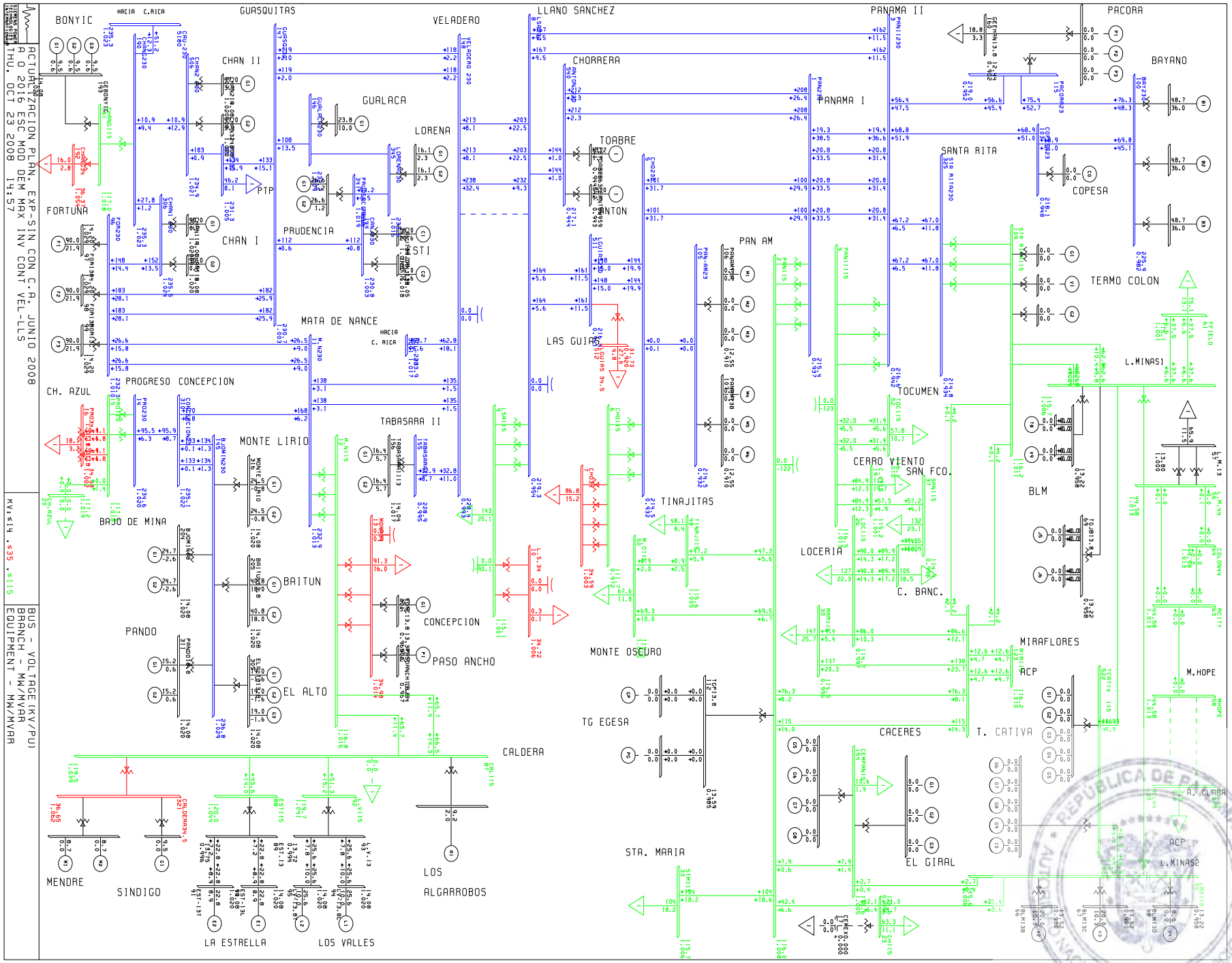


Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2008
AÑO 2016 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA VELADERO-LLANO SÁNCHEZ**



de



ACTUALIZACION PLAN. EXP-SIN CON C-R. JUNIO 2008
 R 0 2016 ESC MOD DEM MAX INV CONT VEL-LLS
 THU, OCT 23 2008 14:57

KV:114, *35, *115

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



Handwritten signature or initials.

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	1.0126	232.89	14	PRO230			230.00	6	1.0199	234.57
85	PTP230			230.00	6	1.0055	231.26	96	FOR230			230.00	6	1.0101	232.33
144	CANJ230			230.00	6	1.0034	230.79	145	BJOMIN230			230.00	6	1.0294	236.75
146	GUALACA230			230.00	6	1.0094	232.16	147	GUASQ230			230.00	6	1.0032	230.73
190	CHANG230			230.00	6	1.0231	235.31	306	CHAN1 230			230.00	6	1.0239	235.49
310	CONCEPCION230			230.00	6	1.0223	235.14	341	PRUDENCIA230			230.00	6	1.0189	234.35
345	LORENA230			230.00	6	1.0156	233.59	506	CHAN2 230			230.00	6	1.0213	234.90
6000	FRONTER			230.00	6	1.0193	234.45								

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	0.9367	215.45	3	PANII230			230.00	6	0.9417	216.58
5	CHO230			230.00	6	0.9325	214.47	8	LSA230			230.00	6	0.9537	219.35
100	BAY230			230.00	6	0.9820	225.85	103	COPESA23			230.00	6	0.9482	218.08
105	PAN-AM23			230.00	6	0.9325	214.47	115	PACORA23			230.00	6	0.9521	218.99
148	VELADERO	230		230.00	6	0.9930	228.39	155	TABASARAI			230.00	6	0.9952	228.90
325	STA RITA230			230.00	6	0.9338	214.78	511	LGUIAS230			230.00	6	0.9409	216.41
540	ANTON 230			230.00	6	0.9440	217.12								

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	1.0083	115.95	4	PANII115			115.00	6	1.0132	116.52
9	LSA115			115.00	6	1.0006	115.07	12	M.N115			115.00	6	1.0156	116.79
15	PRO115			115.00	6	1.0184	117.11	18	CAC115			115.00	6	1.0076	115.88
19	C.V115			115.00	6	1.0014	115.16	20	CH.AZUL			115.00	6	1.0191	117.20
33	STM115			115.00	6	1.0060	115.69	48	TINAJ115			115.00	6	1.0053	115.61
50	M.O115			115.00	6	1.0054	115.62	52	TOC115			115.00	6	1.0098	116.13
54	LM1115			115.00	6	1.0057	115.66	55	LM2115			115.00	6	1.0056	115.65
61	FFIELD			115.00	9	1.0012	115.14	87	CAL115			115.00	6	1.0392	119.51
88	EST115			115.00	6	1.0438	120.03	92	L.V115			115.00	6	1.0410	119.71
109	STA RITA115			115.00	6	1.0106	116.22	123	MIR115			115.00	7	1.0104	116.20
154	CEMPAN15			115.00	6	1.0053	115.61	191	CHANG115			115.00	6	1.0178	117.05
522	TCATIVÁ	115		115.00	6	1.0057	115.65								

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)
6	CHO115			115.00	6	0.9715	111.72	21	C.BAN115			115.00	6	0.9962	114.56
23	CH115			115.00	6	0.9962	114.57	26	LOC115			115.00	6	0.9975	114.71
30	MAR115			115.00	6	0.9960	114.54	37	SAN115			115.00	6	0.9950	114.43



Handwritten signature or initials.

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	20.0	10.3	25.0	0.0	0.9800	22.9	0.8894	47.0				1	6
67		BLM13C		13.800	V3	20.0	10.3	25.0	0.0	0.9800	22.9	0.8894	47.0				1	6
90		EST-13L		13.800	E1	22.8	8.9	12.0	-5.0	1.0200	24.0	0.9314	27.0				1	6
91		EST-13T		13.800	E2	22.8	8.9	12.0	-5.0	1.0200	24.0	0.9314	27.0				1	6
94		LV-13.8L		13.800	L1	25.6	10.0	12.0	-5.0	1.0200	27.0	0.9320	27.0				1	6
95		LV-13.8T		13.800	L2	25.6	10.0	12.0	-5.0	1.0200	27.0	0.9320	27.0				1	6
97		FOR13A		13.800	F1	90.0	21.9	50.0	-50.0	1.0290	90.0	0.9715	111.0				1	6
98		FOR13B		13.800	F2	90.0	21.9	50.0	-50.0	1.0290	90.0	0.9715	111.0				1	6
99		FOR13C		13.800	F3	90.0	21.9	50.0	-50.0	1.0290	90.0	0.9715	111.0				1	6
101		BAY13A		13.800	B1	48.7	36.0	50.0	-25.0	0.9800	61.8	0.8040	96.0				1	6
102		BAY13B		13.800	B2	48.7	36.0	50.0	-25.0	0.9800	61.8	0.8040	96.0				1	6
108		BAY13C		13.800	B3	48.7	36.0	50.0	-25.0	0.9800	61.8	0.8040	100.0				1	6
142		CANJ13A		13.800	C1	56.0	20.6	29.0	-29.0	1.0181	58.6	0.9386	69.0				1	6
143		CANJ13B		13.800	C2	56.0	20.6	29.0	-29.0	1.0181	58.6	0.9386	69.0				1	6
151		GUALACA13.8		13.800	G1	23.8	10.0	10.0	-10.0	1.0198	25.4	0.9222	26.7				1	6
156		TABASARAI1313.800		G1	16.4	5.7	5.7	0.2	1.0175	17.1	0.9453	20.5				1	6	
156		TABASARAI1313.800		G2	16.4	5.7	5.7	0.2	1.0175	17.1	0.9453	20.5				1	6	
193		GEBONYIC		13.800	G1	9.5	0.6	4.0	-4.0	1.0200	9.3	0.9977	35.3				1	6
193		GEBONYIC		13.800	G2	9.5	0.6	4.0	-4.0	1.0200	9.3	0.9977	35.3				1	6
193		GEBONYIC		13.800	G3	9.5	0.6	4.0	-4.0	1.0200	9.3	0.9977	35.3				1	6
204		BJOMIN13		13.800	G1	24.7	-2.6	13.0	-13.0	1.0200	24.3	0.9945	28.9				1	6
204		BJOMIN13		13.800	G2	24.7	-2.6	13.0	-13.0	1.0200	24.3	0.9945	28.9				1	6
205		BAITUN13.8		13.800	G1	40.8	18.0	26.6	-26.6	1.0200	43.8	0.9154	50.6				1	6
205		BAITUN13.8		13.800	G2	40.8	18.0	26.6	-26.6	1.0200	43.8	0.9154	50.6				1	6
301		CONC13.8		13.800	G1	9.5	5.0	5.0	-5.0	0.9686	11.1	0.8849	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
303		SIND13.8		13.800	G1	9.5	0.0	5.0	0.0	1.1154	8.5	1.0000	13.5				1	6
304		ALGA13.8		13.800	A1	9.2	2.0	2.0	0.0	0.9909	9.5	0.9772	13.5				1	6
305		ELALTO13.8		13.800	G1	19.0	-1.6	12.0	-5.0	1.0200	18.7	0.9967	20.6				1	6
305		ELALTO13.8		13.800	G2	19.0	-1.6	12.0	-5.0	1.0200	18.7	0.9967	20.6				1	6
305		ELALTO13.8		13.800	G3	19.0	-1.6	12.0	-5.0	1.0200	18.7	0.9967	20.6				1	6
307		CHANI A		13.800	G1	90.0	0.2	50.0	-50.0	1.0200	88.2	1.0000	118.6				1	6
308		CHANI B		13.800	G2	90.0	0.2	50.0	-50.0	1.0200	88.2	1.0000	118.6				1	6
311		PANDO13.8		13.800	G1	15.2	0.6	10.0	-5.0	1.0200	14.9	0.9993	19.9				1	6
311		PANDO13.8		13.800	G2	15.2	0.6	10.0	-5.0	1.0200	14.9	0.9993	19.9				1	6
316		MONTE LIRIO		13.800	G1	24.5	-0.8	12.0	-5.0	1.0200	24.0	0.9995	27.0				1	6
316		MONTE LIRIO		13.800	G2	24.5	-0.8	12.0	-5.0	1.0200	24.0	0.9995	27.0				1	6
317		MENDRE13.8		13.800	M1	8.7	0.0	4.0	0.0	1.1149	7.8	1.0000	35.3				1	6
317		MENDRE13.8		13.800	M2	8.7	0.0	4.0	0.0	1.1149	7.8	1.0000	35.3				1	6
342		LORENA13.8		13.800	G1	16.1	2.3	10.5	-5.0	1.0200	15.9	0.9898	19.9				1	6
342		LORENA13.8		13.800	G2	16.1	2.3	10.5	-5.0	1.0200	15.9	0.9898	19.9				1	6
343		PRUDENCIA13813.800		G1	26.6	1.2	9.8	-9.8	1.0200	26.1	0.9989	33.0				1	6	
343		PRUDENCIA13813.800		G2	26.6	1.2	9.8	-9.8	1.0200	26.1	0.9989	33.0				1	6	



Handwritten signature or initials.

507	CHAN2 A	13.800	G1	97.0	3.4	50.0	-50.0	1.0200	95.2	0.9994	118.6	1	6
508	CHAN32 B	13.800	G2	97.0	3.4	50.0	-50.0	1.0200	95.2	0.9994	118.6	1	6
541	PETOABRE	4.2000	1	61.2	1.4	1.4	1.4	0.9436	64.9	0.9997	136.0	1	6
542	PEANTON	4.2000	1	75.0	1.4	1.4	1.4	0.9427	79.6	0.9998	136.0	1	6
SUBSYSTEM TOTALS				1663.3	348.5	913.9	-672.6				2422.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:56
ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
AÑO 2016 ESC MOD DEM MAX INV CONT VEL-LLS

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
128		MIR13C		12.000	G3	12.6	4.4	11.0	0.0	1.0200	13.1	0.9443	29.4			2	7	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0229	16.7	1.0000	27.7			2	7	
170		MIR13G		13.800	M1	17.1	6.8	11.2	6.8	1.0372	17.7	0.9289	23.0			2	7	
171		MIR13H		13.800	M1	17.1	6.8	11.2	6.8	1.0462	17.6	0.9289	23.0			2	7	
171		MIR13H		13.800	M2	17.1	6.8	11.2	6.8	1.0462	17.6	0.9289	23.0			2	7	
SUBSYSTEM TOTALS						81.0	24.8	52.5	20.5				126.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 14:56
ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
AÑO 2016 ESC MOD DEM MAX INV CONT VEL-LLS 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	



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	-0.5	20.6	0.0
C.RICA	269.6	569.4	-236.9	0.0	467.8	39.6	365.3	
6	1663.3	1430.6	0.0	0.0	0.0	116.4	116.3	25.0
PANAMA	348.5	250.6	-335.3	0.0	655.5	31.7	1057.0	
7	81.0	55.5	0.0	0.0	0.0	25.2	0.2	50.0
ACANAL	24.8	9.7	0.0	0.0	0.0	9.3	5.8	
9	0.0	140.9	0.0	0.0	0.0	-141.1	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-34.8	11.1	
TOTALS	6893.5	6678.6	0.0	0.0	0.0	0.0	214.9	0.0
	862.3	1901.3	-1183.7	0.0	2203.2	0.0	2347.8	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2008
AÑO 2016 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA ANTÓN-PANAMÁ**



de

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	1.0144	233.31	14	PRO230			230.00	6	1.0210	234.82
85	PTP230			230.00	6	1.0079	231.81	96	FOR230			230.00	6	1.0127	232.92
144	CANJ230			230.00	6	1.0068	231.56	145	BJOMIN230			230.00	6	1.0302	236.95
146	GUALACA230			230.00	6	1.0125	232.88	147	GUASQ230			230.00	6	1.0066	231.51
190	CHANG230			230.00	6	1.0239	235.49	306	CHAN1 230			230.00	6	1.0247	235.68
310	CONCEPCION230			230.00	6	1.0235	235.41	341	PRUDENCIA230			230.00	6	1.0217	234.99
345	LORENA230			230.00	6	1.0185	234.25	506	CHAN2 230			230.00	6	1.0223	235.12
6000	FRONTER			230.00	6	1.0204	234.69								

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	0.9374	215.61	3	PANII230			230.00	6	0.9428	216.83
5	CHO230			230.00	6	0.9331	214.61	8	LSA230			230.00	6	0.9643	221.79
100	BAY230			230.00	6	0.9867	226.93	103	COPESA23			230.00	6	0.9498	218.46
105	PAN-AM23			230.00	6	0.9331	214.61	115	PACORA23			230.00	6	0.9543	219.49
148	VELADERO	230		230.00	6	0.9953	228.93	155	TABASARAI			230.00	6	0.9975	229.44
325	STA RITA230			230.00	6	0.9356	215.20	511	LGUIAS230			230.00	6	0.9453	217.41
540	ANTON 230			230.00	6	0.9536	219.34								

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	1.0093	116.07	4	PANII115			115.00	6	1.0144	116.65
9	LSA115			115.00	6	1.0120	116.38	12	M.N115			115.00	6	1.0169	116.94
15	PRO115			115.00	6	1.0195	117.24	18	CAC115			115.00	6	1.0087	116.00
19	C.V115			115.00	6	1.0025	115.29	20	CH.AZUL			115.00	6	1.0202	117.33
33	STM115			115.00	6	1.0070	115.81	48	TINAJ115			115.00	6	1.0063	115.73
50	M.O115			115.00	6	1.0065	115.74	52	TOC115			115.00	6	1.0110	116.27
54	LM1115			115.00	6	1.0087	116.01	55	LM2115			115.00	6	1.0087	116.00
61	FFIELD			115.00	9	1.0042	115.49	87	CAL115			115.00	6	1.0401	119.61
88	EST115			115.00	6	1.0446	120.13	92	L.V115			115.00	6	1.0418	119.81
109	STA RITA115			115.00	6	1.0131	116.51	123	MIR115			115.00	7	1.0114	116.31
154	CEMPAN15			115.00	6	1.0078	115.89	191	CHANG115			115.00	6	1.0184	117.11
522	TCATIVÁ	115		115.00	6	1.0087	116.00								

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)
6	CHO115			115.00	6	0.9722	111.80	21	C.BAN115			115.00	6	0.9973	114.69
23	CH115			115.00	6	0.9982	114.79	26	LOC115			115.00	6	0.9985	114.83
30	MAR115			115.00	6	0.9970	114.66	37	SAN115			115.00	6	0.9961	114.55



Handwritten signature or initials.

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	22.0	13.6	25.0	0.0	0.9900	26.1	0.8501	47.0	1	6					
67	BLM13C	13.800	V3	22.0	13.6	25.0	0.0	0.9900	26.1	0.8501	47.0	1	6					
90	EST-13L	13.800	E1	22.8	8.7	12.0	-5.0	1.0200	23.9	0.9347	27.0	1	6					
91	EST-13T	13.800	E2	22.8	8.7	12.0	-5.0	1.0200	23.9	0.9347	27.0	1	6					
94	LV-13.8L	13.800	L1	25.6	9.7	12.0	-5.0	1.0200	26.9	0.9352	27.0	1	6					
95	LV-13.8T	13.800	L2	25.6	9.7	12.0	-5.0	1.0200	26.9	0.9352	27.0	1	6					
97	FOR13A	13.800	F1	90.0	19.5	50.0	-50.0	1.0290	89.5	0.9772	111.0	1	6					
98	FOR13B	13.800	F2	90.0	19.5	50.0	-50.0	1.0290	89.5	0.9772	111.0	1	6					
99	FOR13C	13.800	F3	90.0	19.5	50.0	-50.0	1.0290	89.5	0.9772	111.0	1	6					
101	BAY13A	13.800	B1	46.5	40.5	50.0	-25.0	0.9900	62.3	0.7544	96.0	1	6					SYST
102	BAY13B	13.800	B2	46.5	40.5	50.0	-25.0	0.9900	62.3	0.7545	96.0	1	6					
108	BAY13C	13.800	B3	46.5	40.5	50.0	-25.0	0.9900	62.3	0.7545	100.0	1	6					
142	CANJ13A	13.800	C1	57.0	20.4	29.0	-29.0	1.0181	59.5	0.9416	69.0	1	6					
143	CANJ13B	13.800	C2	57.0	20.4	29.0	-29.0	1.0181	59.5	0.9416	69.0	1	6					
151	GUALACA13.8	13.800	G1	23.0	7.3	10.0	-10.0	1.0200	23.7	0.9534	26.7	1	6					
156	TABASARAI1313.800	G1	16.0	5.7	5.7	0.2	1.0199	16.6	0.9426	20.5	1	6						
156	TABASARAI1313.800	G2	16.0	5.7	5.7	0.2	1.0199	16.6	0.9426	20.5	1	6						
193	GEBONYIC	13.800	G1	9.5	0.6	4.0	-4.0	1.0200	9.3	0.9981	35.3	1	6					
193	GEBONYIC	13.800	G2	9.5	0.6	4.0	-4.0	1.0200	9.3	0.9981	35.3	1	6					
193	GEBONYIC	13.800	G3	9.5	0.6	4.0	-4.0	1.0200	9.3	0.9981	35.3	1	6					
204	BJOMIN13	13.800	G1	24.7	-2.9	13.0	-13.0	1.0200	24.4	0.9931	28.9	1	6					
204	BJOMIN13	13.800	G2	24.7	-2.9	13.0	-13.0	1.0200	24.4	0.9931	28.9	1	6					
205	BAITUN13.8	13.800	G1	40.0	17.6	26.6	-26.6	1.0200	42.8	0.9157	50.6	1	6					
205	BAITUN13.8	13.800	G2	40.0	17.6	26.6	-26.6	1.0200	42.8	0.9157	50.6	1	6					
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9582	11.2	0.8849	13.5	1	6					
302	PASOANCH13.813.800	P1	4.4	2.0	2.0	-2.0	0.9563	5.1	0.9110	6.2	1	6						
303	SIND13.8	13.800	G1	9.5	0.0	5.0	0.0	1.1163	8.5	1.0000	13.5	1	6					
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9918	9.5	0.9772	13.5	1	6					
305	ELALTO13.8	13.800	G1	19.0	-1.8	12.0	-5.0	1.0200	18.7	0.9957	20.6	1	6					
305	ELALTO13.8	13.800	G2	19.0	-1.8	12.0	-5.0	1.0200	18.7	0.9957	20.6	1	6					
305	ELALTO13.8	13.800	G3	19.0	-1.8	12.0	-5.0	1.0200	18.7	0.9957	20.6	1	6					
307	CHAN1 A	13.800	G1	90.0	-0.6	50.0	-50.0	1.0200	88.2	1.0000	118.6	1	6					
308	CHAN1 B	13.800	G2	90.0	-0.6	50.0	-50.0	1.0200	88.2	1.0000	118.6	1	6					
311	PANDO13.8	13.800	G1	15.0	0.5	10.0	-5.0	1.0200	14.7	0.9995	19.9	1	6					
311	PANDO13.8	13.800	G2	15.0	0.5	10.0	-5.0	1.0200	14.7	0.9995	19.9	1	6					
316	MONTE LIRIO	13.800	G1	24.0	-1.0	12.0	-5.0	1.0200	23.5	0.9991	27.0	1	6					
316	MONTE LIRIO	13.800	G2	24.0	-1.0	12.0	-5.0	1.0200	23.5	0.9991	27.0	1	6					
317	MENDRE13.8	13.800	M1	8.7	0.0	4.0	0.0	1.1159	7.8	1.0000	35.3	1	6					
317	MENDRE13.8	13.800	M2	8.7	0.0	4.0	0.0	1.1159	7.8	1.0000	35.3	1	6					
342	LORENA13.8	13.800	G1	16.1	1.0	10.5	-5.0	1.0200	15.8	0.9982	19.9	1	6					
342	LORENA13.8	13.800	G2	16.1	1.0	10.5	-5.0	1.0200	15.8	0.9982	19.9	1	6					
343	PRUDENCIA13813.800	G1	26.6	-0.1	9.8	-9.8	1.0200	26.1	1.0000	33.0	1	6						
343	PRUDENCIA13813.800	G2	26.6	-0.1	9.8	-9.8	1.0200	26.1	1.0000	33.0	1	6						
507	CHAN2 A	13.800	G1	100.0	2.8	50.0	-50.0	1.0200	98.1	0.9996	118.6	1	6					
508	CHAN32 B	13.800	G2	100.0	2.8	50.0	-50.0	1.0200	98.1	0.9996	118.6	1	6					
541	PETOABRE	4.2000	1	61.2	1.4	1.4	1.4	0.9533	64.2	0.9997	136.0	1	6					
542	PEANTON	4.2000	1	75.0	1.4	1.4	1.4	0.9524	78.8	0.9998	136.0	1	6					



Handwritten signature or initials.

SUBSYSTEM TOTALS 1664.0 346.2 913.9 -672.6 2422.8

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 15:01
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2016 ESC MOD DEM MAX INV CONT ANTON-PANAMÁ

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					
128	MIR13C	12.000	G3	12.6	4.2	11.0	0.0	1.0200	13.0	0.9490	29.4			2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0237	16.7	1.0000	27.7			2	7	
170	MIR13G	13.800	M1	17.1	6.8	11.2	6.8	1.0379	17.7	0.9289	23.0			2	7	
171	MIR13H	13.800	M1	17.1	6.8	11.2	6.8	1.0469	17.6	0.9289	23.0			2	7	
171	MIR13H	13.800	M2	17.1	6.8	11.2	6.8	1.0469	17.6	0.9289	23.0			2	7	
SUBSYSTEM TOTALS				81.0	24.6	52.5	20.5				126.2					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 15:01
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2016 ESC MOD DEM MAX INV CONT ANTON-PANAMÁ 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		1347.4	1312.2	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	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	21.4	0.0
HONDURAS		55.8	290.6	-188.3	0.0	302.8	-5.2	261.6



Handwritten signature or initials.

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	-96.9	147.4	
5	1344.9	1324.8	0.0	0.0	0.0	-0.7	20.8	0.0
C.RICA	268.4	569.4	-237.0	0.0	467.9	37.8	366.1	
6	1664.0	1430.6	0.0	0.0	0.0	116.5	116.9	25.0
PANAMA	346.2	250.6	-337.9	0.0	666.1	33.8	1065.8	
7	81.0	55.5	0.0	0.0	0.0	25.2	0.2	50.0
ACANAL	24.6	9.7	0.0	0.0	0.0	9.1	5.8	
9	0.0	140.9	0.0	0.0	0.0	-141.1	0.2	-75.0
COLON	0.0	24.7	0.0	0.0	1.1	-34.8	11.2	
TOTALS	6894.2	6678.6	0.0	0.0	0.0	0.0	215.6	0.0
	858.5	1901.3	-1186.3	0.0	2213.9	0.0	2357.4	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2008
AÑO 2021 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO**

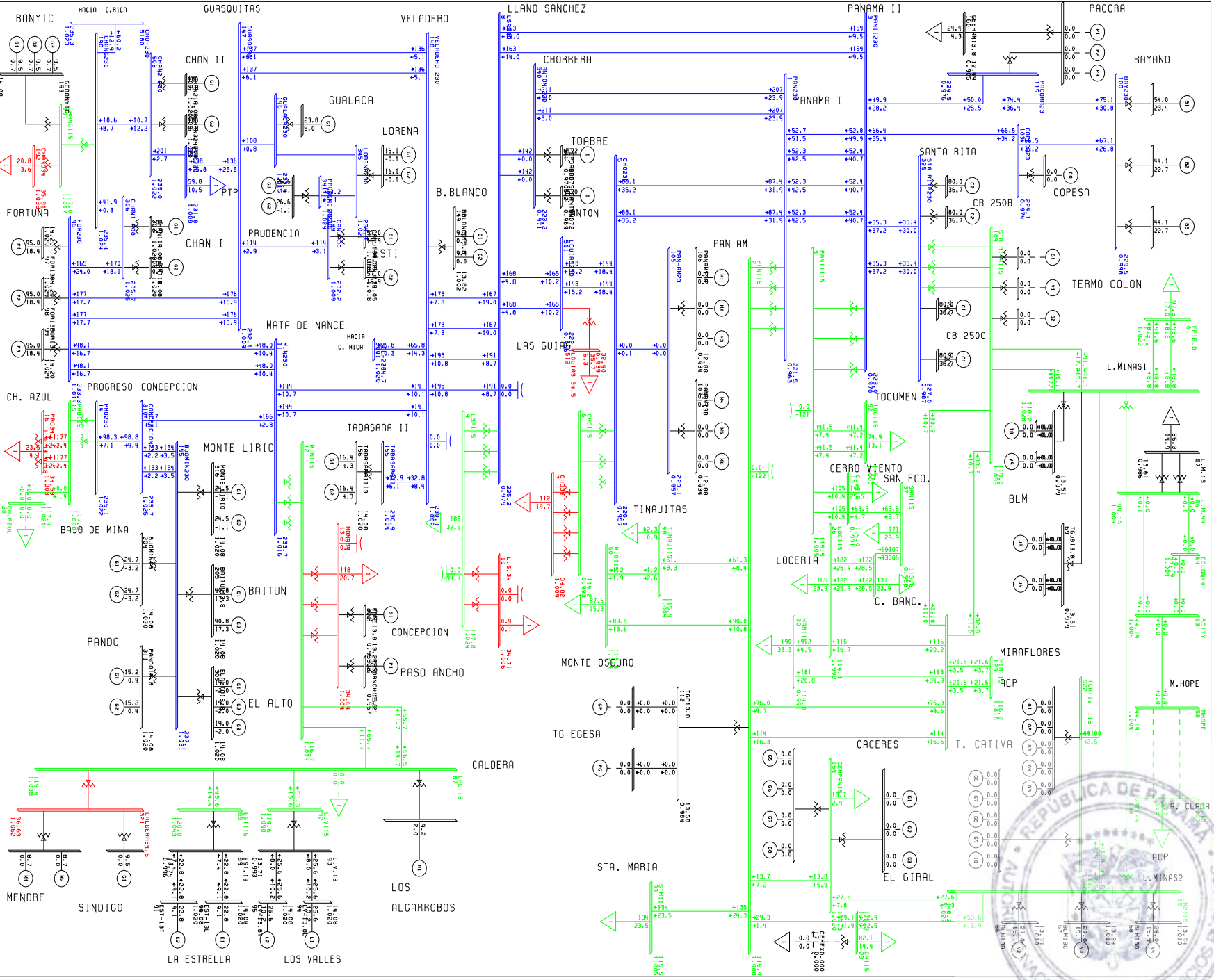


de

ACTUACION PLAN. EXP SIN CON C.R. JUNIO 2008
 PROYECTO DE OBRAS DE RECONSTRUCCION DEL SISTEMA DE TRANSMISION DEL AREA DE LA ZONA DE LA CORDILLERA DE LA SIERRA DE LA NEBLINA, CANTON HU, OCT 23 2008 14:01

KV: 514 - *35 - 5115

BUS - VOLTAGE (KV/PU)
 BRNCH - MM/MWR
 EQUIPMENT - MM/MWR



Handwritten signature or initials in the bottom right corner.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 13:44
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV

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	1.0159	233.66	14	PRO230			230.00	6	1.0222	235.11
85	PTP230			230.00	6	1.0076	231.76	96	FOR230			230.00	6	1.0145	233.33
144	CANJ230			230.00	6	1.0094	232.16	145	BJOMIN230			230.00	6	1.0310	237.12
146	GUALACA230			230.00	6	1.0149	233.44	147	GUASQ230			230.00	6	1.0092	232.11
148	VELADERO	230230.00		6	1.0020	230.45		155	TABASARAI			230.00	6	1.0038	230.88
190	CHANG230			230.00	6	1.0235	235.41	306	CHAN1	230		230.00	6	1.0247	235.69
310	CONCEPCION23	230.00		6	1.0246	235.66		341	PRUDENCIA230	230.00		6	1.0239	235.49	
345	LORENA230			230.00	6	1.0208	234.77	506	CHAN2	230		230.00	6	1.0219	235.03
6000	FRONTER			230.00	6	1.0219	235.04								

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)
1	PAN230			230.00	6	0.9629	221.47	3	PANII230			230.00	6	0.9697	223.04
5	CHO230			230.00	6	0.9569	220.08	8	LSA230			230.00	6	0.9790	225.18
100	BAY230			230.00	6	0.9979	229.52	103	COPESA23			230.00	6	0.9744	224.11
105	PAN-AM23			230.00	6	0.9569	220.08	115	PACORA23			230.00	6	0.9763	224.54
325	STA RITA230			230.00	6	0.9868	226.96	511	LGUIAS230			230.00	6	0.9656	222.09
540	ANTON	230		230.00	6	0.9705	223.23								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 13:44
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV

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	1.0046	115.52
9	LSA115			115.00	6	1.0241	117.77	12	M.N115			115.00	6	1.0144	116.66
15	PRO115			115.00	6	1.0199	117.28	18	CAC115			115.00	6	1.0069	115.79
20	CH.AZUL			115.00	6	1.0206	117.37	23	CH115			115.00	6	1.0014	115.16
33	STM115			115.00	6	1.0046	115.53	48	TINAJ115			115.00	6	1.0035	115.40
50	M.O115			115.00	6	1.0037	115.42	52	TOC115			115.00	6	1.0001	115.02
54	LM115			115.00	6	1.0278	118.20	55	LM2115			115.00	6	1.0274	118.16
61	FFIELD			115.00	9	1.0220	117.53	87	CAL115			115.00	6	1.0384	119.42
88	EST115			115.00	6	1.0431	119.96	92	L.V115			115.00	6	1.0402	119.63
109	STA RITA115			115.00	6	1.0351	119.04	123	MIR115			115.00	7	1.0101	116.16
154	CEMPAN15			115.00	6	1.0200	117.30	191	CHANG115			115.00	6	1.0170	116.95
522	TCATIVÁ	115		115.00	6	1.0276	118.18								

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)
6	CHO115			115.00	6	0.9935	114.25	19	C.V115			115.00	6	0.9914	114.01
21	C.BAN115			115.00	6	0.9903	113.88	26	LOC115			115.00	6	0.9922	114.11
30	MAR115			115.00	6	0.9909	113.95	37	SAN115			115.00	6	0.9882	113.64

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 13:43
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV

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	15.1	25.0	0.0	1.0100	30.6	0.8726	47.0	1	6											
67	BLM13C	13.800	V3	27.0	15.1	25.0	0.0	1.0100	30.6	0.8726	47.0	1	6											
68	BLM13D	13.800	V4	28.0	15.9	25.0	0.0	1.0100	31.9	0.8700	47.0	1	6											
90	EST-13L	13.800	E1	22.8	9.1	12.0	-5.0	1.0200	24.1	0.9286	27.0	1	6											
91	EST-13T	13.800	E2	22.8	9.1	12.0	-5.0	1.0200	24.1	0.9286	27.0	1	6											
94	LV-13.8L	13.800	L1	25.6	10.2	12.0	-5.0	1.0200	27.1	0.9294	27.0	1	6											
95	LV-13.8T	13.800	L2	25.6	10.2	12.0	-5.0	1.0200	27.1	0.9294	27.0	1	6											
97	FOR13A	13.800	F1	95.0	18.4	50.0	-50.0	1.0290	94.0	0.9818	111.0	1	6											
98	FOR13B	13.800	F2	95.0	18.4	50.0	-50.0	1.0290	94.0	0.9818	111.0	1	6											
99	FOR13C	13.800	F3	95.0	18.4	50.0	-50.0	1.0290	94.0	0.9818	111.0	1	6											
101	BAY13A	13.800	B1	54.0	23.4	50.0	-25.0	0.9783	60.1	0.9177	96.0	1	6											
102	BAY13B	13.800	B2	44.1	22.7	50.0	-25.0	0.9783	50.7	0.8892	96.0	1	6											
108	BAY13C	13.800	B3	44.1	22.7	50.0	-25.0	0.9783	50.7	0.8892	100.0	1	6											
119	CB250B-1	13.800	C1	80.0	36.7	75.6	0.0	1.0100	87.1	0.9090	143.5	1	6											
120	CB250B-2	13.800	C2	80.0	36.7	75.6	0.0	1.0100	87.1	0.9090	143.5	1	6											
121	CB250C-1	13.800	C1	80.0	36.7	75.6	0.0	1.0100	87.1	0.9090	143.5	1	6											
122	CB250C-2	13.800	C2	80.0	36.7	75.6	0.0	1.0100	87.1	0.9090	143.5	1	6											
142	CANJ13A	13.800	C1	57.0	19.9	29.0	-29.0	1.0181	59.3	0.9439	69.0	1	6											
143	CANJ13B	13.800	C2	57.0	19.9	29.0	-29.0	1.0181	59.3	0.9439	69.0	1	6											
149	BBLANCO13.8	13.800	G1	9.4	0.0	6.1	0.0	1.0017	9.4	1.0000	11.6	1	6											
149	BBLANCO13.8	13.800	G2	9.4	0.0	6.1	0.0	1.0017	9.4	1.0000	11.6	1	6											
151	GUALACA13.8	13.800	G1	23.8	5.0	10.0	-10.0	1.0200	23.9	0.9785	26.7	1	6											
156	TABASARAI1313.800	G1	16.4	4.3	5.7	0.2	1.0200	16.7	0.9676	20.5	1	6												
156	TABASARAI1313.800	G2	16.4	4.3	5.7	0.2	1.0200	16.6	0.9676	20.5	1	6												
193	GEBONYIC	13.800	G1	9.5	0.7	4.0	-4.0	1.0200	9.3	0.9970	35.3	1	6											
193	GEBONYIC	13.800	G2	9.5	0.7	4.0	-4.0	1.0200	9.3	0.9970	35.3	1	6											
193	GEBONYIC	13.800	G3	9.5	0.7	4.0	-4.0	1.0200	9.3	0.9970	35.3	1	6											
204	BJOMIN13	13.800	G1	24.7	-3.2	13.0	-13.0	1.0200	24.4	0.9917	28.9	1	6											
204	BJOMIN13	13.800	G2	24.7	-3.2	13.0	-13.0	1.0200	24.4	0.9917	28.9	1	6											
205	BAITUN13.8	13.800	G1	40.8	17.3	26.6	-26.6	1.0200	43.5	0.9205	50.6	1	6											
205	BAITUN13.8	13.800	G2	40.8	17.3	26.6	-26.6	1.0200	43.5	0.9205	50.6	1	6											
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9593	11.2	0.8849	13.5	1	6											
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9575	5.1	0.9110	6.2	1	6											
303	SIND13.8	13.800	G1	9.5	0.0	5.0	0.0	1.1146	8.5	1.0000	13.5	1	6											
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9902	9.5	0.9772	13.5	1	6											
305	ELALTO13.8	13.800	G1	19.0	-2.0	12.0	-5.0	1.0200	18.7	0.9948	20.6	1	6											
305	ELALTO13.8	13.800	G2	19.0	-2.0	12.0	-5.0	1.0200	18.7	0.9948	20.6	1	6											
305	ELALTO13.8	13.800	G3	19.0	-2.0	12.0	-5.0	1.0200	18.7	0.9948	20.6	1	6											
307	CHAN1 A	13.800	G1	105.9	0.9	50.0	-50.0	1.0200	103.9	1.0000	118.6	1	6											
308	CHAN1 B	13.800	G2	105.9	0.9	50.0	-50.0	1.0200	103.9	1.0000	118.6	1	6											
311	PANDO13.8	13.800	G1	15.2	0.4	10.0	-5.0	1.0200	14.9	0.9996	19.9	1	6											
311	PANDO13.8	13.800	G2	15.2	0.4	10.0	-5.0	1.0200	14.9	0.9996	19.9	1	6											
316	MONTE LIRIO	13.800	G1	24.5	-1.1	12.0	-5.0	1.0200	24.1	0.9990	27.0	1	6											
316	MONTE LIRIO	13.800	G2	24.5	-1.1	12.0	-5.0	1.0200	24.1	0.9990	27.0	1	6											
317	MENDRE13.8	13.800	M1	8.7	0.0	4.0	0.0	1.1141	7.8	1.0000	35.3	1	6											
317	MENDRE13.8	13.800	M2	8.7	0.0	4.0	0.0	1.1141	7.8	1.0000	35.3	1	6											
342	LORENA13.8	13.800	G1	16.1	-0.1	10.5	-5.0	1.0200	15.7	1.0000	19.9	1	6											
342	LORENA13.8	13.800	G2	16.1	-0.1	10.5	-5.0	1.0200	15.7	1.0000	19.9	1	6											
343	PRUDENCIA13813.800	G1	26.6	-1.1	9.8	-9.8	1.0200	26.1	0.9992	33.0	1	6												
343	PRUDENCIA13813.800	G2	26.6	-1.1	9.8	-9.8	1.0200	26.1	0.9992	33.0	1	6												
507	CHAN2 A	13.800	G1	105.9	3.8	50.0	-50.0	1.0200	103.9	0.9994	118.6	1	6											
508	CHAN32 B	13.800	G2	105.9	3.8	50.0	-50.0	1.0200	103.9	0.9994	118.6	1	6											
541	PETOABRE	4.2000	1	61.2	1.4	1.4	1.4	0.9702	63.1	0.9997	136.0	1	6											
542	PEANTON	4.2000	1	75.0	1.4	1.4	1.4	0.9694	77.4	0.9998	136.0	1	6											
SUBSYSTEM TOTALS												2106.9	450.9	1253.6	-672.6							3067.2		

SYST



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
128		MIR13C		12.000	G3	12.6	4.9	11.0	0.0	1.0200	13.3	0.9313	29.4			2	7	
129		MIR13D		13.800	G4	35.0	5.1	15.0	0.0	1.0200	34.7	0.9896	44.1			2	7	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0209	16.7	1.0000	27.7			2	7	
170		MIR13G		13.800	M1	17.1	6.8	11.2	6.8	1.0352	17.8	0.9289	23.0			2	7	
171		MIR13H		13.800	M1	17.1	6.8	11.2	6.8	1.0442	17.6	0.9289	23.0			2	7	
171		MIR13H		13.800	M2	17.1	6.8	11.2	6.8	1.0442	17.6	0.9289	23.0			2	7	
SUBSYSTEM TOTALS						116.0	30.5	67.5	20.5				170.3					

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		100.8	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	



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	-0.9	21.0	0.0
C.RICA	266.9	569.4	-237.1	0.0	468.2	35.2	367.6	
6	2106.9	1853.5	0.0	0.0	0.0	140.6	112.8	25.0
PANAMA	450.9	324.7	-337.3	0.0	695.6	53.6	1105.5	
7	116.0	71.9	0.0	0.0	0.0	43.2	0.9	50.0
ACANAL	30.5	12.6	0.0	0.0	0.0	7.0	10.9	
9	0.0	182.6	0.0	0.0	0.0	-182.9	0.3	-75.0
COLON	0.0	32.0	0.0	0.0	1.1	-50.0	19.1	
TOTALS	7372.1	7159.6	0.0	0.0	0.0	0.0	212.6	0.0
	967.6	1985.6	-1185.8	0.0	2243.7	0.0	2411.5	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2008
AÑO 2021 ESCENARIO MODERADO DEMANDA MÁXIMA VERANO**



de

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	1.0243	235.58	11	M.N230			230.00	6	1.0371	238.53
14	PRO230			230.00	6	1.0406	239.35	85	PTP230			230.00	6	1.0277	236.38
96	FOR230			230.00	6	1.0337	237.75	100	BAY230			230.00	6	1.0209	234.81
103	COPESA23			230.00	6	1.0010	230.23	115	PACORA23			230.00	6	1.0056	231.29
144	CANJ230			230.00	6	1.0351	238.07	145	BJOMIN230			230.00	6	1.0395	239.08
146	GUALACA230			230.00	6	1.0376	238.64	147	GUASQ230			230.00	6	1.0350	238.05
148	VELADERO	230	230.00	6	1.0415	239.54	155	TABASARAI			230.00	6	1.0420	239.67	
190	CHANG230			230.00	6	1.0255	235.86	306	CHAN1	230	230.00	6	1.0263	236.04	
310	CONCEPCION	232	230.00	6	1.0396	239.11	325	STA RITA	230	230.00	6	1.0035	230.82		
341	PRUDENCIA	230	230.00	6	1.0412	239.48	345	LORENA	230	230.00	6	1.0399	239.18		
506	CHAN2	230	230.00	6	1.0247	235.68	511	LGUIAS	230	230.00	6	1.0127	232.91		
540	ANTON	230	230.00	6	1.0132	233.03	6000	FRONTER			230.00	6	1.0415	239.54	

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	0.9923	228.23	3	PANII230			230.00	6	0.9970	229.31
5	CHO230			230.00	6	0.9965	229.20	105	PAN-AM23			230.00	6	0.9966	229.22

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)
2	PAN115			115.00	6	1.0071	115.82	4	PANII115			115.00	6	1.0067	115.77
6	CHO115			115.00	6	1.0359	119.12	9	LSA115			115.00	6	1.0369	119.25
12	M.N115			115.00	6	1.0293	118.37	15	PRO115			115.00	6	1.0384	119.41
18	CAC115			115.00	6	1.0063	115.73	20	CH.AZUL			115.00	6	1.0391	119.50
23	CH115			115.00	6	1.0027	115.31	33	STM115			115.00	6	1.0041	115.47
48	TINAJ115			115.00	6	1.0030	115.35	50	M.O115			115.00	6	1.0032	115.37
52	TOC115			115.00	6	1.0023	115.27	54	LM1115			115.00	6	1.0327	118.76
55	LM2115			115.00	6	1.0330	118.79	61	FFIELD			115.00	9	1.0269	118.10
87	CAL115			115.00	6	1.0407	119.68	88	EST115			115.00	6	1.0425	119.89
92	L.V115			115.00	6	1.0414	119.76	109	STA RITA	115	115.00	6	1.0343	118.95	
123	MIR115			115.00	7	1.0084	115.96	154	CEMPAN15			115.00	6	1.0332	118.81
191	CHANG115			115.00	6	1.0128	116.47	522	TCATIVÁ	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)
19	C.V115			115.00	6	0.9929	114.19	21	C.BAN115			115.00	6	0.9901	113.86
26	LOC115			115.00	6	0.9920	114.08	30	MAR115			115.00	6	0.9905	113.90
37	SAN115			115.00	6	0.9882	113.64								

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
------	-----	------	-----	-------	----	----	------	------	------	-------	---------	----	---------	-----------	--------	------	------	-------



Handwritten signature or initials.

66	BLM13B	13.800	V2	38.0	13.5	25.0	0.0	1.0100	39.9	0.9422	47.0	1	6
67	BLM13C	13.800	V3	38.0	13.5	25.0	0.0	1.0100	39.9	0.9422	47.0	1	6
68	BLM13D	13.800	V4	38.0	14.1	25.0	0.0	1.0100	40.1	0.9379	47.0	1	6
90	EST-13L	13.800	E1	22.8	6.4	12.0	-5.0	1.0100	23.4	0.9631	27.0	1	6
94	LV-13.8L	13.800	L1	25.6	6.9	12.0	-5.0	1.0100	26.3	0.9653	27.0	1	6
97	FOR13A	13.800	F1	95.0	-17.0	50.0	-50.0	1.0100	95.6	0.9844	111.0	1	6
98	FOR13B	13.800	F2	95.0	-17.0	50.0	-50.0	1.0100	95.6	0.9844	111.0	1	6
99	FOR13C	13.800	F3	95.0	-17.0	50.0	-50.0	1.0100	95.6	0.9844	111.0	1	6
101	BAY13A	13.800	B1	54.2	15.7	50.0	-25.0	0.9900	57.0	0.9606	96.0	1	6
102	BAY13B	13.800	B2	50.0	15.4	50.0	-25.0	0.9900	52.8	0.9558	96.0	1	6
106	PANAM13A	13.800	M1	15.2	4.8	9.0	0.0	1.0000	16.0	0.9529	20.7	1	6
106	PANAM13A	13.800	M2	15.2	4.8	9.0	0.0	1.0000	16.0	0.9529	20.7	1	6
106	PANAM13A	13.800	M3	15.2	4.8	9.0	0.0	1.0000	16.0	0.9529	20.7	1	6
108	BAY13C	13.800	B3	50.0	15.4	50.0	-25.0	0.9900	52.8	0.9558	100.0	1	6
116	PACORA13	13.800	P1	17.5	8.8	8.8	0.0	1.0215	19.2	0.8926	21.7	1	6
116	PACORA13	13.800	P2	17.5	8.8	8.8	0.0	1.0215	19.2	0.8926	21.7	1	6
119	CB250B-1	13.800	C1	115.0	14.0	75.6	0.0	1.0100	114.7	0.9926	143.5	1	6
120	CB250B-2	13.800	C2	115.0	14.0	75.6	0.0	1.0100	114.7	0.9926	143.5	1	6
121	CB250C-1	13.800	C1	115.0	14.0	75.6	0.0	1.0100	114.7	0.9926	143.5	1	6
122	CB250C-2	13.800	C2	115.0	14.0	75.6	0.0	1.0100	114.7	0.9926	143.5	1	6
142	CANJ13A	13.800	C1	37.0	6.6	29.0	-29.0	1.0000	37.6	0.9844	69.0	1	6
143	CANJ13B	13.800	C2	37.0	6.6	29.0	-29.0	1.0000	37.6	0.9844	69.0	1	6
149	BBLANCO13.8	13.800	G1	9.4	0.0	6.1	0.0	1.0414	9.0	1.0000	11.6	1	6
151	GUALACA13.8	13.800	G1	20.5	-10.0	10.0	-10.0	1.0267	22.2	0.8988	26.7	1	6
156	TABASARAI13	13.800	G1	16.4	0.2	5.7	0.2	1.0420	15.8	0.9999	20.5	1	6
193	GEBONYIC	13.800	G1	9.5	-1.8	4.0	-4.0	1.0000	9.7	0.9828	35.3	1	6
193	GEBONYIC	13.800	G2	9.5	-1.8	4.0	-4.0	1.0000	9.7	0.9828	35.3	1	6
204	BJOMIN13	13.800	G1	24.7	-13.0	13.0	-13.0	1.0212	27.3	0.8849	28.9	1	6
205	BAITUN13.8	13.800	G1	40.8	8.9	26.6	-26.6	1.0000	41.8	0.9770	50.6	1	6
301	CONC13.8	13.800	G1	8.2	5.0	5.0	-5.0	0.9619	10.0	0.8538	13.5	1	6
302	PASOANCH13.8	13.800	P1	3.7	2.0	2.0	-2.0	0.9600	4.4	0.8797	6.2	1	6
303	SIND13.8	13.800	G1	8.2	0.0	5.0	0.0	1.1192	7.3	1.0000	13.5	1	6
304	ALGA13.8	13.800	A1	7.5	2.0	2.0	0.0	0.9923	7.8	0.9662	13.5	1	6
305	ELALTO13.8	13.800	G1	12.0	-5.0	12.0	-5.0	1.0254	12.7	0.9231	20.6	1	6
305	ELALTO13.8	13.800	G2	12.0	-5.0	12.0	-5.0	1.0254	12.7	0.9231	20.6	1	6
307	CHAN1 A	13.800	G1	80.0	-22.0	50.0	-50.0	1.0000	83.0	0.9641	118.6	1	6
311	PANDO13.8	13.800	G1	15.2	-5.0	10.0	-5.0	1.0050	15.9	0.9499	19.9	1	6
316	MONTE LIRIO	13.800	G1	24.5	-5.0	12.0	-5.0	1.0268	24.4	0.9798	27.0	1	6
317	MENDRE13.8	13.800	M1	8.7	0.0	4.0	0.0	1.1192	7.8	1.0000	35.3	1	6
342	LORENA13.8	13.800	G1	16.1	-5.0	10.5	-5.0	1.0345	16.3	0.9548	19.9	1	6
343	PRUDENCIA138	13.800	G1	26.6	-9.8	9.8	-9.8	1.0305	27.5	0.9388	33.0	1	6
508	CHAN32 B	13.800	G2	80.0	-20.5	50.0	-50.0	1.0000	82.6	0.9687	118.6	1	6
521	EGIRAL13.8	113.800	G1	3.6	1.5	2.8	1.3	1.0100	3.9	0.9227	4.8	1	6
521	EGIRAL13.8	113.800	G2	3.6	1.5	2.8	1.3	1.0100	3.9	0.9227	4.8	1	6
521	EGIRAL13.8	113.800	G3	3.6	1.5	2.8	1.3	1.0100	3.9	0.9227	4.8	1	6
521	EGIRAL13.8	113.800	G4	3.6	1.5	2.8	1.3	1.0100	3.9	0.9227	4.8	1	6
523	TCATIVÁ 13A	13.800	G1	8.3	3.6	6.6	-6.6	1.0100	8.9	0.9186	10.9	1	6
523	TCATIVÁ 13A	13.800	G2	8.3	3.6	6.6	-6.6	1.0100	8.9	0.9186	10.9	1	6
523	TCATIVÁ 13A	13.800	G3	8.3	3.6	6.6	-6.6	1.0100	8.9	0.9186	10.9	1	6
523	TCATIVÁ 13A	13.800	G4	8.3	3.6	6.6	-6.6	1.0100	8.9	0.9186	10.9	1	6
523	TCATIVÁ 13A	13.800	G5	8.3	3.6	6.6	-6.6	1.0100	8.9	0.9186	10.9	1	6
524	TCATIVÁ 13B	13.800	10	8.3	3.6	6.6	-6.6	1.0100	8.9	0.9186	10.9	1	6
524	TCATIVÁ 13B	13.800	G6	8.3	3.6	6.6	-6.6	1.0100	8.9	0.9186	10.9	1	6
524	TCATIVÁ 13B	13.800	G7	8.3	3.6	6.6	-6.6	1.0100	8.9	0.9186	10.9	1	6
524	TCATIVÁ 13B	13.800	G8	8.3	3.6	6.6	-6.6	1.0100	8.9	0.9186	10.9	1	6
524	TCATIVÁ 13B	13.800	G9	8.3	3.6	6.6	-6.6	1.0100	8.9	0.9186	10.9	1	6
531	EGIRAL13.8	213.800	G5	8.1	3.3	6.4	3.0	1.0100	8.7	0.9242	10.9	1	6
531	EGIRAL13.8	213.800	G6	8.1	3.3	6.4	3.0	1.0100	8.6	0.9242	10.9	1	6

SYST



Handwritten signature or initials.

531	EGIRAL13.8	213.800	G7	8.1	3.3	6.4	3.0	1.0100	8.6	0.9242	10.9	1	6
531	EGIRAL13.8	213.800	G8	8.1	3.3	6.4	3.0	1.0100	8.6	0.9242	10.9	1	6
541	PETOABRE	4.2000	1	116.3	1.4	1.4	1.4	1.0092	115.2	0.9999	136.0	1	6
542	PEANTON	4.2000	1	141.0	1.4	1.4	1.4	1.0068	140.1*	1.0000	136.0	1	6
SUBSYSTEM TOTALS				2036.4	123.3	1163.0	-537.8				2751.1		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 13:45
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX VER

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									
128		MIR13C		12.000	G3	12.6	2.2	11.0	0.0	1.0000	12.8	0.9845	29.4			2	7					
129		MIR13D		13.800	G4	35.0	1.0	15.0	0.0	1.0000	35.0	0.9996	44.1			2	7					
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0101	16.9	1.0000	27.7			2	7					
170		MIR13G		13.800	M1	17.1	6.8	11.2	6.8	1.0246	18.0	0.9289	23.0			2	7					
171		MIR13H		13.800	M1	17.1	6.8	11.2	6.8	1.0336	17.8	0.9289	23.0			2	7					
171		MIR13H		13.800	M2	17.1	6.8	11.2	6.8	1.0336	17.8	0.9289	23.0			2	7					
SUBSYSTEM TOTALS						116.0	23.8	67.5	20.5				170.3									

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 23 2008 13:46
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2021 ESC MOD DEM MAX VER 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	



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	0.4	19.8	0.0
C.RICA	237.8	569.4	-236.6	0.0	471.6	17.4	359.2	
6	2036.4	1853.5	0.0	0.0	0.0	139.4	43.5	25.0
PANAMA	123.3	324.7	-106.5	0.0	739.4	79.1	565.4	
7	116.0	71.9	0.0	0.0	0.0	43.2	0.9	50.0
ACANAL	23.8	12.6	0.0	0.0	0.0	0.3	10.9	
9	0.0	182.6	0.0	0.0	0.0	-182.9	0.3	-75.0
COLON	0.0	32.0	0.0	0.0	1.1	-50.0	19.2	
TOTALS	7301.6	7159.6	0.0	0.0	0.0	0.0	142.0	0.0
	603.0	1985.6	-954.5	0.0	2291.1	0.0	1863.1	

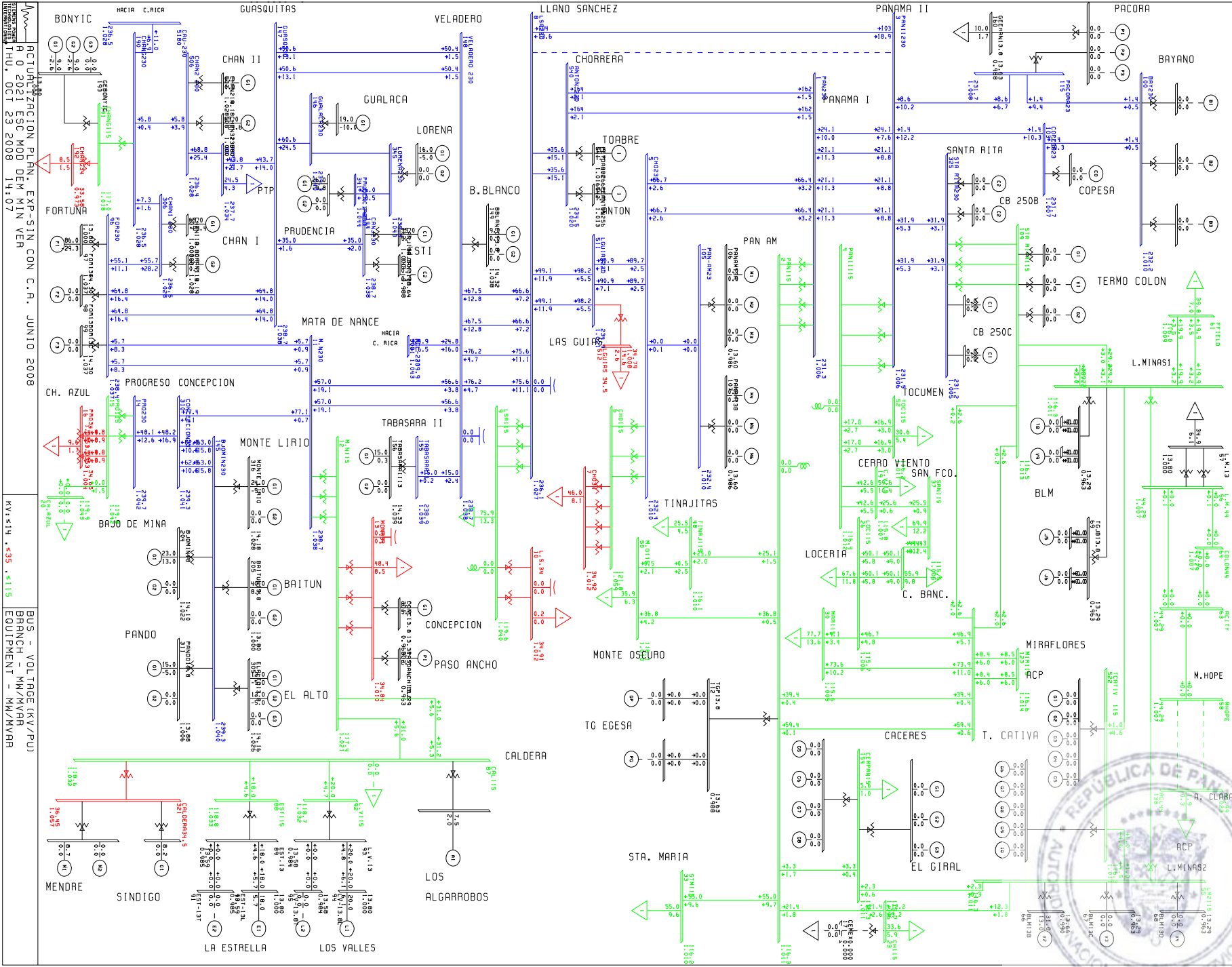


Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2008
AÑO 2021 ESCENARIO MODERADO DEMANDA MÍNIMA VERANO**



de



ACTUACION PLN. EXP. SIN CON. C.R. JUNIO 2008
 R 0 2021 ESC MOD DEM KIN VER
 THU, OCT 23 2009 14:07

KV:14 .535 .115
 BUS - VOLTRAE (KV/PU)
 BRANCH - MW/MVAR
 EQUIPMENT - MW/MVAR

Handwritten signature or initials.

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	1.0057	231.31	3	PANII230	230.00	6	1.0064	231.47				
5	CHO230	230.00	6	1.0103	232.36	8	LSA230	230.00	6	1.0265	236.10				
11	M.N230	230.00	6	1.0377	238.67	14	PRO230	230.00	6	1.0422	239.70				
85	PTP230	230.00	6	1.0335	237.71	96	FOR230	230.00	6	1.0365	238.41				
100	BAY230	230.00	6	1.0098	232.25	103	COPESA23	230.00	6	1.0074	231.70				
105	PAN-AM23	230.00	6	1.0103	232.36	115	PACORA23	230.00	6	1.0075	231.73				
144	CANJ230	230.00	6	1.0378	238.70	145	BJOMIN230	230.00	6	1.0403	239.27				
146	GUALACA230	230.00	6	1.0402	239.25	147	GUASQ230	230.00	6	1.0378	238.69				
148	VELADERO 230	230.00	6	1.0380	238.74	155	TABASARAI	230.00	6	1.0385	238.86				
190	CHANG230	230.00	6	1.0282	236.49	306	CHAN1 230	230.00	6	1.0284	236.54				
310	CONCEPCION23	230.00	6	1.0406	239.33	325	STA RITA230	230.00	6	1.0053	231.23				
341	PRUDENCIA230	230.00	6	1.0438	240.07	345	LORENA230	230.00	6	1.0426	239.79				
506	CHAN2 230	230.00	6	1.0276	236.36	511	LGUIAS230	230.00	6	1.0212	234.87				
540	ANTON 230	230.00	6	1.0195	234.49	6000	FRONTER	230.00	6	1.0426	239.81				

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 *

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	116.29	4	PANII115	115.00	6	1.0123	116.42				
6	CHO115	115.00	6	1.0593	121.82	9	LSA115	115.00	6	1.0403	119.64				
12	M.N115	115.00	6	1.0210	117.41	15	PRO115	115.00	6	1.0419	119.82				
18	CAC115	115.00	6	1.0110	116.27	19	C.V115	115.00	6	1.0068	115.79				
20	CH.AZUL	115.00	6	1.0427	119.91	21	C.BAN115	115.00	6	1.0052	115.60				
23	CH115	115.00	6	1.0059	115.68	26	LOC115	115.00	6	1.0058	115.67				
30	MAR115	115.00	6	1.0050	115.58	33	STM115	115.00	6	1.0100	116.15				
37	SAN115	115.00	6	1.0045	115.52	48	TINAJ115	115.00	6	1.0099	116.14				
50	M.O115	115.00	6	1.0100	116.15	52	TOC115	115.00	6	1.0106	116.22				
54	LM1115	115.00	6	1.0114	116.31	55	LM2115	115.00	6	1.0114	116.32				
61	FFIELD	115.00	9	1.0091	116.04	87	CAL115	115.00	6	1.0315	118.63				
88	EST115	115.00	6	1.0332	118.82	92	L.V115	115.00	6	1.0321	118.70				
109	STA RITA115	115.00	6	1.0133	116.53	123	MIR115	115.00	7	1.0138	116.59				
154	CEMPAN15	115.00	6	1.0111	116.27	191	CHANG115	115.00	6	1.0176	117.03				
522	TCATIVÁ	115.00	6	1.0114	116.31										

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)
------	-----	------	-----	-------	------	-------	-------	------	-----	------	-----	-------	------	-------	-------

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MIN VER

THU, OCT 23 2008 13:47

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	13.0	25.0	0.0	0.9900	34.0	0.9221	47.0			1	6		
90		EST-13L		13.800	E1	18.0	5.7	12.0	-5.0	1.0000	18.9	0.9539	27.0			1	6		
94		LV-13.8L		13.800	L1	20.0	6.1	12.0	-5.0	1.0000	20.9	0.9565	27.0			1	6		
97		FOR13A		13.800	F1	86.0	-29.3	50.0	-50.0	1.0000	90.8	0.9465	111.0			1	6	SYST	
142		CANJ13A		13.800	C1	35.0	5.7	29.0	-29.0	1.0000	35.5	0.9869	69.0			1	6		
149		BBLANCO13.8		13.800	G1	9.0	0.0	6.1	0.0	1.0379	8.7	1.0000	11.6			1	6		
151		GUALACA13.8		13.800	G1	19.0	-10.0	10.0	-10.0	1.0294	20.9	0.8849	26.7			1	6		
156		TABASARAI13.800		13.800	G1	15.0	0.2	5.7	0.2	1.0386	14.4	0.9999	20.5			1	6		
193		GEBONYIC		13.800	G1	9.0	-2.6	4.0	-4.0	1.0000	9.4	0.9611	35.3			1	6		
193		GEBONYIC		13.800	G2	9.0	-2.6	4.0	-4.0	1.0000	9.4	0.9611	35.3			1	6		
204		BJOMIN13		13.800	G1	23.0	-13.0	13.0	-13.0	1.0221	25.8	0.8706	28.9			1	6		
205		BAITUN13.8		13.800	G1	40.0	8.2	26.6	-26.6	1.0000	40.8	0.9794	50.6			1	6		
301		CONC13.8		13.800	G1	8.2	5.0	5.0	-5.0	0.9648	10.0	0.8538	13.5			1	6		
302		PASOANCH13.8		13.800	P1	3.7	2.0	2.0	-2.0	0.9629	4.4	0.8797	6.2			1	6		
303		SIND13.8		13.800	G1	8.2	0.0	5.0	0.0	1.1094	7.4	1.0000	13.5			1	6		
304		ALGA13.8		13.800	A1	7.5	2.0	2.0	0.0	0.9836	7.9	0.9662	13.5			1	6		
305		ELALTO13.8		13.800	G1	12.0	-5.0	12.0	-5.0	1.0262	12.7	0.9231	20.6			1	6		
305		ELALTO13.8		13.800	G2	12.0	-5.0	12.0	-5.0	1.0262	12.7	0.9231	20.6			1	6		
307		CHAN1 A		13.800	G1	63.0	-25.4	50.0	-50.0	1.0000	67.9	0.9276	118.6			1	6		
311		PANDO13.8		13.800	G1	15.0	-5.0	10.0	-5.0	1.0060	15.7	0.9487	19.9			1	6		
316		MONTE LIRIO		13.800	G1	24.0	-5.0	12.0	-5.0	1.0277	23.9	0.9790	27.0			1	6		
317		MENDRE13.8		13.800	M1	8.7	0.0	4.0	0.0	1.1093	7.9	1.0000	35.3			1	6		
342		LORENA13.8		13.800	G1	16.0	-5.0	10.5	-5.0	1.0372	16.2	0.9545	19.9			1	6		
343		PRUDENCIA138		13.800	G1	26.0	-9.8	9.8	-9.8	1.0331	26.9	0.9362	33.0			1	6		
508		CHAN32 B		13.800	G2	63.0	-24.6	50.0	-50.0	1.0000	67.6	0.9315	118.6			1	6		
541		PETOABRE		4.2000	1	116.3	1.4	1.4	1.4	1.0157	114.5	0.9999	136.0			1	6		
542		PEANTON		4.2000	1	141.0	1.4	1.4	1.4	1.0133	139.2*	1.0000	136.0			1	6		
SUBSYSTEM TOTALS						838.6	-91.5	384.5	-285.4				1222.2						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MIN VER

THU, OCT 23 2008 13:47

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	
170		MIR13G		13.800	M1	15.5	6.8	11.2	6.8	1.0439	16.2	0.9150	23.0			2	7		
171		MIR13H		13.800	M1	15.5	6.8	11.2	6.8	1.0530	16.0	0.9149	23.0			2	7		
171		MIR13H		13.800	M2	15.5	6.8	11.2	6.8	1.0530	16.0	0.9149	23.0			2	7		
SUBSYSTEM TOTALS						46.4	20.5	33.5	20.5				69.1						



Handwritten signature or initials.

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MIN VER

THU, OCT 23 2008 13:48
 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	538.2	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	1344.9	1324.8	0.0	0.0	0.0	0.5	19.6	0.0
C.RICA	235.2	569.4	-236.7	0.0	471.8	16.1	358.2	
6	838.6	758.8	0.0	0.0	0.0	57.4	22.4	25.0
PANAMA	-91.5	132.9	189.1	0.0	696.6	33.7	249.3	
7	46.4	29.4	0.0	0.0	0.0	16.9	0.1	50.0
ACANAL	20.5	5.2	0.0	0.0	0.0	12.0	3.3	
9	0.0	74.7	0.0	0.0	0.0	-74.8	0.1	-75.0
COLON	0.0	13.1	0.0	0.0	1.1	-15.1	3.1	
TOTALS	6034.2	5914.6	0.0	0.0	0.0	0.0	119.6	0.0
	382.4	1767.5	-659.0	0.0	2248.4	0.0	1522.3	

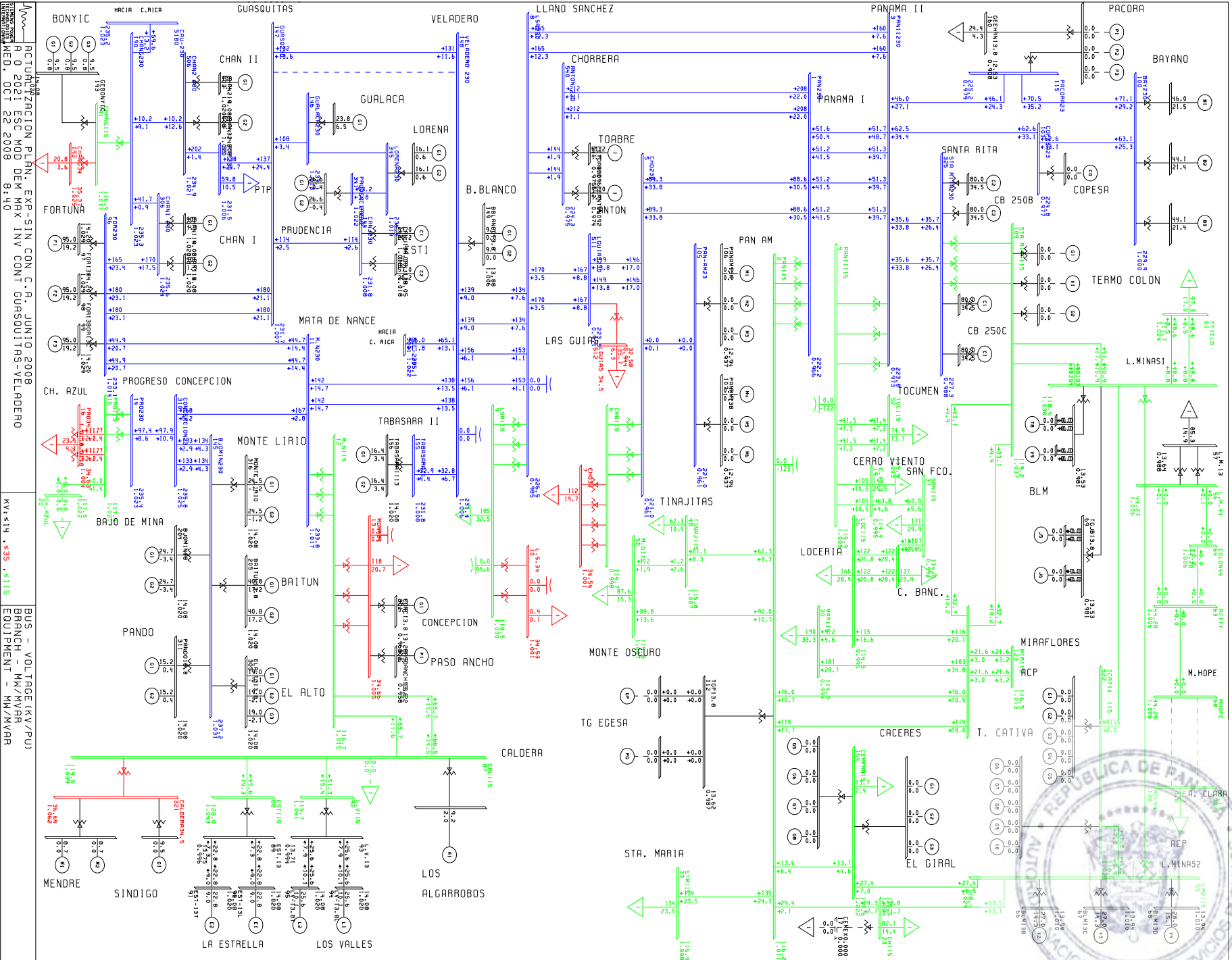


Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2008
AÑO 2021 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA GUASQUITAS- VELADERO**



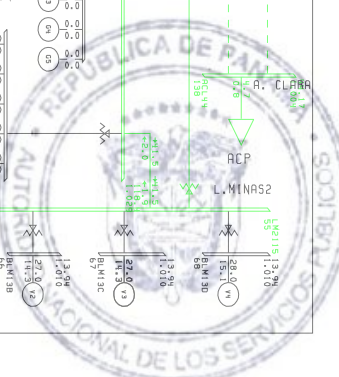
de



ACTUACION PLAN. EXP.-INV CON C.A. JUNIO 2008
 R 0 2021 ESC MOD DEM MAX INV CONT GURSQUITAS-VELADERO
 MED, OCT 22 2008 8:10

BRANCH - MM/VVFR
 EQUIPMENT - MM/VVFR

BUS - VOLTAGE (KV/PU)
 EQUIPMENT - MM/VVFR



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 8:25
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT 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)
11	M.N230	230.00	6	1.0166	233.81	14	PRO230	230.00	6	1.0233	235.37				
85	PTP230	230.00	6	1.0064	231.47	96	FOR230	230.00	6	1.0136	233.13				
144	CANJ230	230.00	6	1.0077	231.76	145	BJOMIN230	230.00	6	1.0315	237.24				
146	GUALACA230	230.00	6	1.0134	233.07	147	GUASQ230	230.00	6	1.0075	231.72				
148	VELADERO	230230.00	6	1.0061	231.39	155	TABASARAI	230.00	6	1.0077	231.77				
190	CHANG230	230.00	6	1.0232	235.34	306	CHAN1	230	230.00	6	1.0244	235.61			
310	CONCEPCION23	230.00	6	1.0253	235.82	341	PRUDENCIA230	230.00	6	1.0225	235.17				
345	LORENA230	230.00	6	1.0193	234.44	506	CHAN2	230	230.00	6	1.0214	234.93			
6000	FRONTER	230.00	6	1.0232	235.34										

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	0.9662	222.22	3	PANII230	230.00	6	0.9728	223.75				
5	CHO230	230.00	6	0.9608	220.98	8	LSA230	230.00	6	0.9849	226.53				
100	BAY230	230.00	6	0.9997	229.92	103	COPESA23	230.00	6	0.9773	224.78				
105	PAN-AM23	230.00	6	0.9608	220.98	115	PACORA23	230.00	6	0.9790	225.17				
325	STA RITA230	230.00	6	0.9883	227.30	511	LGUIAS230	230.00	6	0.9707	223.26				
540	ANTON	230	230.00	6	0.9754	224.35									

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 8:25
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT 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	1.0108	116.24	4	PANII115	115.00	6	1.0078	115.90				
9	LSA115	115.00	6	1.0305	118.50	12	M.N115	115.00	6	1.0149	116.72				
15	PRO115	115.00	6	1.0210	117.42	18	CAC115	115.00	6	1.0101	116.16				
20	CH.AZUL	115.00	6	1.0217	117.50	23	CH115	115.00	6	1.0040	115.46				
33	STM115	115.00	6	1.0078	115.90	48	TINAJ115	115.00	6	1.0068	115.78				
50	M.O115	115.00	6	1.0069	115.80	52	TOC115	115.00	6	1.0034	115.40				
54	LM115	115.00	6	1.0296	118.40	55	LM2115	115.00	6	1.0292	118.36				
61	FFIELD	115.00	9	1.0238	117.74	87	CAL115	115.00	6	1.0388	119.46				
88	EST115	115.00	6	1.0434	119.99	92	L.V115	115.00	6	1.0406	119.66				
109	STA RITA115	115.00	6	1.0369	119.25	123	MIR115	115.00	7	1.0131	116.51				
154	CEMPAN15	115.00	6	1.0222	117.55	191	CHANG115	115.00	6	1.0167	116.92				
522	TCATIVÁ	115	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)
6	CHO115	115.00	6	0.9976	114.72	19	C.V115	115.00	6	0.9948	114.40				
21	C.BAN115	115.00	6	0.9936	114.26	26	LOC115	115.00	6	0.9955	114.49				
30	MAR115	115.00	6	0.9942	114.33	37	SAN115	115.00	6	0.9915	114.02				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 8:25
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT 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	14.3	25.0	0.0	1.0100	30.3	0.8830	47.0									1	6	



Handwritten signature or mark.

67	BLM13C	13.800	V3	27.0	14.3	25.0	0.0	1.0100	30.3	0.8830	47.0	1	6
68	BLM13D	13.800	V4	28.0	15.1	25.0	0.0	1.0100	31.5	0.8805	47.0	1	6
90	EST-13L	13.800	E1	22.8	9.0	12.0	-5.0	1.0200	24.0	0.9299	27.0	1	6
91	EST-13T	13.800	E2	22.8	9.0	12.0	-5.0	1.0200	24.0	0.9299	27.0	1	6
94	LV-13.8L	13.800	L1	25.6	10.1	12.0	-5.0	1.0200	27.0	0.9306	27.0	1	6
95	LV-13.8T	13.800	L2	25.6	10.1	12.0	-5.0	1.0200	27.0	0.9306	27.0	1	6
97	FOR13A	13.800	F1	95.0	19.2	50.0	-50.0	1.0290	94.2	0.9803	111.0	1	6
98	FOR13B	13.800	F2	95.0	19.2	50.0	-50.0	1.0290	94.2	0.9803	111.0	1	6
99	FOR13C	13.800	F3	95.0	19.2	50.0	-50.0	1.0290	94.2	0.9803	111.0	1	6
101	BAY13A	13.800	B1	46.0	21.5	50.0	-25.0	0.9783	51.9	0.9056	96.0	1	6
102	BAY13B	13.800	B2	44.1	21.4	50.0	-25.0	0.9783	50.1	0.8995	96.0	1	6
108	BAY13C	13.800	B3	44.1	21.4	50.0	-25.0	0.9783	50.1	0.8995	100.0	1	6
119	CB250B-1	13.800	C1	80.0	34.5	75.6	0.0	1.0100	86.2	0.9184	143.5	1	6
120	CB250B-2	13.800	C2	80.0	34.5	75.6	0.0	1.0100	86.2	0.9184	143.5	1	6
121	CB250C-1	13.800	C1	80.0	34.5	75.6	0.0	1.0100	86.2	0.9184	143.5	1	6
122	CB250C-2	13.800	C2	80.0	34.5	75.6	0.0	1.0100	86.2	0.9184	143.5	1	6
142	CANJ13A	13.800	C1	57.0	20.2	29.0	-29.0	1.0181	59.4	0.9424	69.0	1	6
143	CANJ13B	13.800	C2	57.0	20.2	29.0	-29.0	1.0181	59.4	0.9424	69.0	1	6
149	BBLANCO13.8	13.800	G1	9.4	0.0	6.1	0.0	1.0058	9.4	1.0000	11.6	1	6
149	BBLANCO13.8	13.800	G2	9.4	0.0	6.1	0.0	1.0058	9.4	1.0000	11.6	1	6
151	GUALACA13.8	13.800	G1	23.8	6.5	10.0	-10.0	1.0200	24.2	0.9648	26.7	1	6
156	TABASARAI13	13.800	G1	16.4	3.4	5.7	0.2	1.0200	16.5	0.9793	20.5	1	6
156	TABASARAI13	13.800	G2	16.4	3.4	5.7	0.2	1.0200	16.4	0.9793	20.5	1	6
193	GEBONYIC	13.800	G1	9.5	0.8	4.0	-4.0	1.0200	9.3	0.9968	35.3	1	6
193	GEBONYIC	13.800	G2	9.5	0.8	4.0	-4.0	1.0200	9.3	0.9968	35.3	1	6
193	GEBONYIC	13.800	G3	9.5	0.8	4.0	-4.0	1.0200	9.3	0.9968	35.3	1	6
204	BJOMIN13	13.800	G1	24.7	-3.4	13.0	-13.0	1.0200	24.4	0.9907	28.9	1	6
204	BJOMIN13	13.800	G2	24.7	-3.4	13.0	-13.0	1.0200	24.4	0.9907	28.9	1	6
205	BAITUN13.8	13.800	G1	40.8	17.2	26.6	-26.6	1.0200	43.4	0.9220	50.6	1	6
205	BAITUN13.8	13.800	G2	40.8	17.2	26.6	-26.6	1.0200	43.4	0.9220	50.6	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9598	11.2	0.8849	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	G1	9.5	0.0	5.0	0.0	1.1149	8.5	1.0000	13.5	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9905	9.5	0.9772	13.5	1	6
305	ELALTO13.8	13.800	G1	19.0	-2.1	12.0	-5.0	1.0200	18.7	0.9941	20.6	1	6
305	ELALTO13.8	13.800	G2	19.0	-2.1	12.0	-5.0	1.0200	18.7	0.9941	20.6	1	6
305	ELALTO13.8	13.800	G3	19.0	-2.1	12.0	-5.0	1.0200	18.7	0.9941	20.6	1	6
307	CHAN1 A	13.800	G1	105.9	1.3	50.0	-50.0	1.0200	103.9	0.9999	118.6	1	6
308	CHAN1 B	13.800	G2	105.9	1.3	50.0	-50.0	1.0200	103.9	0.9999	118.6	1	6
311	PANDO13.8	13.800	G1	15.2	0.4	10.0	-5.0	1.0200	14.9	0.9997	19.9	1	6
311	PANDO13.8	13.800	G2	15.2	0.4	10.0	-5.0	1.0200	14.9	0.9997	19.9	1	6
316	MONTE LIRIO	13.800	G1	24.5	-1.2	12.0	-5.0	1.0200	24.1	0.9987	27.0	1	6
316	MONTE LIRIO	13.800	G2	24.5	-1.2	12.0	-5.0	1.0200	24.1	0.9987	27.0	1	6
317	MENDRE13.8	13.800	M1	8.7	0.0	4.0	0.0	1.1145	7.8	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	8.7	0.0	4.0	0.0	1.1145	7.8	1.0000	35.3	1	6
342	LORENA13.8	13.800	G1	16.1	0.6	10.5	-5.0	1.0200	15.8	0.9993	19.9	1	6
342	LORENA13.8	13.800	G2	16.1	0.6	10.5	-5.0	1.0200	15.8	0.9993	19.9	1	6
343	PRUDENCIA138	13.800	G1	26.6	-0.4	9.8	-9.8	1.0200	26.1	0.9999	33.0	1	6
343	PRUDENCIA138	13.800	G2	26.6	-0.4	9.8	-9.8	1.0200	26.1	0.9999	33.0	1	6
507	CHAN2 A	13.800	G1	105.9	4.2	50.0	-50.0	1.0200	103.9	0.9992	118.6	1	6
508	CHAN32 B	13.800	G2	105.9	4.2	50.0	-50.0	1.0200	103.9	0.9992	118.6	1	6
541	PETOABRE	4.2000	1	61.2	1.4	1.4	1.4	0.9751	62.8	0.9997	136.0	1	6
542	PEANTON	4.2000	1	75.0	1.4	1.4	1.4	0.9743	77.0	0.9998	136.0	1	6
SUBSYSTEM TOTALS				2098.9	440.6	1253.6	-672.6				3067.2		

SYST



ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT 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
128		MIR13C		12.000	G3	12.6	4.5	11.0	0.0	1.0200	13.1	0.9419	29.4			2	7	
129		MIR13D		13.800	G4	35.0	4.4	15.0	0.0	1.0200	34.6	0.9921	44.1			2	7	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0225	16.7	1.0000	27.7			2	7	
170		MIR13G		13.800	M1	17.1	6.8	11.2	6.8	1.0368	17.8	0.9289	23.0			2	7	
171		MIR13H		13.800	M1	17.1	6.8	11.2	6.8	1.0458	17.6	0.9289	23.0			2	7	
171		MIR13H		13.800	M2	17.1	6.8	11.2	6.8	1.0458	17.6	0.9289	23.0			2	7	
SUBSYSTEM TOTALS						116.0	29.4	67.5	20.5				170.3					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 8:26
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
 AÑO 2021 ESC MOD DEM MAX INV CONT 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		1347.4	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	



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	-0.9	21.0	0.0
C.RICA	265.1	569.4	-237.2	0.0	468.4	34.0	367.3	
6	2098.9	1853.5	0.0	0.0	0.0	140.6	104.9	25.0
PANAMA	440.6	324.7	-340.1	0.0	651.4	55.9	1051.5	
7	116.0	71.9	0.0	0.0	0.0	43.2	0.9	50.0
ACANAL	29.4	12.6	0.0	0.0	0.0	6.0	10.8	
9	0.0	182.6	0.0	0.0	0.0	-182.9	0.3	-75.0
COLON	0.0	32.0	0.0	0.0	1.1	-49.9	19.1	
TOTALS	7364.2	7159.6	0.0	0.0	0.0	0.0	204.6	0.0
	954.3	1985.6	-1188.7	0.0	2199.7	0.0	2357.1	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2008
AÑO 2021 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA LLANO SÁNCHEZ- PANAMÁ II**



de

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 9:13
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT LLS-PAN 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	1.0133	233.07	14	PRO230			230.00	6	1.0210	234.83
85	PTP230			230.00	6	1.0033	230.76	96	FOR230			230.00	6	1.0102	232.35
144	CANJ230			230.00	6	1.0037	230.84	145	BJOMIN230			230.00	6	1.0299	236.88
146	GUALACA230			230.00	6	1.0097	232.22	147	GUASQ230			230.00	6	1.0034	230.79
155	TABASARAI I			230.00	6	1.0015	230.36	190	CHANG230			230.00	6	1.0221	235.08
306	CHAN1 230			230.00	6	1.0232	235.34	310	CONCEPCION23			230.00	6	1.0231	235.31
341	PRUDENCIA230			230.00	6	1.0191	234.40	345	LORENA230			230.00	6	1.0158	233.64
506	CHAN2 230			230.00	6	1.0201	234.63	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	0.9488	218.22	3	PANII230			230.00	6	0.9563	219.95
5	CHO230			230.00	6	0.9411	216.44	8	LSA230			230.00	6	0.9699	223.07
100	BAY230			230.00	6	0.9898	227.66	103	COPESA23			230.00	6	0.9618	221.21
105	PAN-AM23			230.00	6	0.9411	216.44	115	PACORA23			230.00	6	0.9643	221.78
148	VELADERO 230			230.00	6	0.9996	229.90	325	STA RITA230			230.00	6	0.9796	225.30
511	LGUIAS230			230.00	6	0.9511	218.76	540	ANTON 230			230.00	6	0.9558	219.82

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 9:14
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT LLS-PAN 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	1.0061	115.70	4	PANII115			115.00	6	1.0027	115.31
9	LSA115			115.00	6	1.0142	116.63	12	M.N115			115.00	6	1.0125	116.43
15	PRO115			115.00	6	1.0187	117.15	18	CAC115			115.00	6	1.0054	115.62
20	CH.AZUL			115.00	6	1.0194	117.23	23	CH115			115.00	6	1.0015	115.18
33	STM115			115.00	6	1.0031	115.35	48	TINAJ115			115.00	6	1.0020	115.23
50	M.O115			115.00	6	1.0022	115.25	54	LM1115			115.00	6	1.0303	118.49
55	LM2115			115.00	6	1.0299	118.44	61	FFIELD			115.00	9	1.0246	117.82
87	CAL115			115.00	6	1.0371	119.27	88	EST115			115.00	6	1.0419	119.82
92	L.V115			115.00	6	1.0390	119.48	109	STA RITA115			115.00	6	1.0384	119.42
123	MIR115			115.00	7	1.0087	116.00	154	CEMPAN15			115.00	6	1.0213	117.45
191	CHANG115			115.00	6	1.0160	116.84	522	TCATIVÁ 115			115.00	6	1.0301	118.46

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)
6	CHO115			115.00	6	0.9765	112.30	19	C.V115			115.00	6	0.9897	113.82
21	C.BAN115			115.00	6	0.9887	113.70	26	LOC115			115.00	6	0.9907	113.93
30	MAR115			115.00	6	0.9894	113.78	37	SAN115			115.00	6	0.9866	113.46
52	TOC115			115.00	6	0.9983	114.81								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 9:13
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT LLS-PAN 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



Handwritten signature or initials.

66	BLM13B	13.800	V2	27.0	14.1	25.0	0.0	1.0100	30.1	0.8870	47.0	1	6
67	BLM13C	13.800	V3	27.0	14.1	25.0	0.0	1.0100	30.1	0.8870	47.0	1	6
68	BLM13D	13.800	V4	28.0	14.8	25.0	0.0	1.0100	31.3	0.8846	47.0	1	6
90	EST-13L	13.800	E1	22.8	9.5	12.0	-5.0	1.0200	24.2	0.9236	27.0	1	6
91	EST-13T	13.800	E2	22.8	9.5	12.0	-5.0	1.0200	24.2	0.9236	27.0	1	6
94	LV-13.8L	13.800	L1	25.6	10.6	12.0	-5.0	1.0200	27.2	0.9246	27.0	1	6
95	LV-13.8T	13.800	L2	25.6	10.6	12.0	-5.0	1.0200	27.2	0.9246	27.0	1	6
97	FOR13A	13.800	F1	95.0	22.4	50.0	-50.0	1.0290	94.8	0.9734	111.0	1	6
98	FOR13B	13.800	F2	95.0	22.4	50.0	-50.0	1.0290	94.8	0.9734	111.0	1	6
99	FOR13C	13.800	F3	95.0	22.4	50.0	-50.0	1.0290	94.8	0.9734	111.0	1	6
101	BAY13A	13.800	B1	47.8	28.8	50.0	-25.0	0.9783	57.1	0.8561	96.0	1	6
102	BAY13B	13.800	B2	47.8	28.8	50.0	-25.0	0.9783	57.0	0.8560	96.0	1	6
108	BAY13C	13.800	B3	47.8	28.8	50.0	-25.0	0.9783	57.0	0.8560	100.0	1	6
119	CB250B-1	13.800	C1	80.0	47.4	75.6	0.0	1.0100	92.1	0.8604	143.5	1	6
120	CB250B-2	13.800	C2	80.0	47.4	75.6	0.0	1.0100	92.1	0.8604	143.5	1	6
121	CB250C-1	13.800	C1	80.0	47.4	75.6	0.0	1.0100	92.1	0.8604	143.5	1	6
122	CB250C-2	13.800	C2	80.0	47.4	75.6	0.0	1.0100	92.1	0.8604	143.5	1	6
142	CANJ13A	13.800	C1	57.0	20.9	29.0	-29.0	1.0181	59.6	0.9388	69.0	1	6
143	CANJ13B	13.800	C2	57.0	20.9	29.0	-29.0	1.0181	59.6	0.9388	69.0	1	6
149	BBLANCO13.8	13.800	G1	9.4	0.0	6.1	0.0	0.9993	9.4	1.0000	11.6	1	6
149	BBLANCO13.8	13.800	G2	9.4	0.0	6.1	0.0	0.9993	9.4	1.0000	11.6	1	6
151	GUALACA13.8	13.800	G1	23.8	10.0	10.0	-10.0	1.0200	25.3	0.9225	26.7	1	6
156	TABASARAI1313.800	G1	16.4	4.8	5.7	0.2	1.0200	16.8	0.9598	20.5	1	6	
156	TABASARAI1313.800	G2	16.4	4.8	5.7	0.2	1.0200	16.8	0.9598	20.5	1	6	
193	GEBONYIC	13.800	G1	9.5	0.8	4.0	-4.0	1.0200	9.4	0.9961	35.3	1	6
193	GEBONYIC	13.800	G2	9.5	0.8	4.0	-4.0	1.0200	9.4	0.9961	35.3	1	6
193	GEBONYIC	13.800	G3	9.5	0.8	4.0	-4.0	1.0200	9.4	0.9961	35.3	1	6
204	BJOMIN13	13.800	G1	24.7	-2.8	13.0	-13.0	1.0200	24.4	0.9936	28.9	1	6
204	BJOMIN13	13.800	G2	24.7	-2.8	13.0	-13.0	1.0200	24.4	0.9936	28.9	1	6
205	BAITUN13.8	13.800	G1	40.8	17.8	26.6	-26.6	1.0200	43.7	0.9171	50.6	1	6
205	BAITUN13.8	13.800	G2	40.8	17.8	26.6	-26.6	1.0200	43.7	0.9171	50.6	1	6
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9574	11.2	0.8849	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	G1	9.5	0.0	5.0	0.0	1.1131	8.5	1.0000	13.5	1	6
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9889	9.5	0.9772	13.5	1	6
305	ELALTO13.8	13.800	G1	19.0	-1.7	12.0	-5.0	1.0200	18.7	0.9961	20.6	1	6
305	ELALTO13.8	13.800	G2	19.0	-1.7	12.0	-5.0	1.0200	18.7	0.9961	20.6	1	6
305	ELALTO13.8	13.800	G3	19.0	-1.7	12.0	-5.0	1.0200	18.7	0.9961	20.6	1	6
307	CHAN1 A	13.800	G1	105.9	2.4	50.0	-50.0	1.0200	103.9	0.9997	118.6	1	6
308	CHAN1 B	13.800	G2	105.9	2.4	50.0	-50.0	1.0200	103.9	0.9997	118.6	1	6
311	PANDO13.8	13.800	G1	15.2	0.5	10.0	-5.0	1.0200	14.9	0.9994	19.9	1	6
311	PANDO13.8	13.800	G2	15.2	0.5	10.0	-5.0	1.0200	14.9	0.9994	19.9	1	6
316	MONTE LIRIO	13.800	G1	24.5	-0.9	12.0	-5.0	1.0200	24.0	0.9994	27.0	1	6
316	MONTE LIRIO	13.800	G2	24.5	-0.9	12.0	-5.0	1.0200	24.0	0.9994	27.0	1	6
317	MENDRE13.8	13.800	M1	8.7	0.0	4.0	0.0	1.1127	7.9	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	8.7	0.0	4.0	0.0	1.1127	7.9	1.0000	35.3	1	6
342	LORENA13.8	13.800	G1	16.1	2.2	10.5	-5.0	1.0200	15.9	0.9906	19.9	1	6
342	LORENA13.8	13.800	G2	16.1	2.2	10.5	-5.0	1.0200	15.9	0.9906	19.9	1	6
343	PRUDENCIA13813.800	G1	26.6	1.1	9.8	-9.8	1.0200	26.1	0.9991	33.0	1	6	
343	PRUDENCIA13813.800	G2	26.6	1.1	9.8	-9.8	1.0200	26.1	0.9991	33.0	1	6	
507	CHAN2 A	13.800	G1	105.9	5.5	50.0	-50.0	1.0200	104.0	0.9987	118.6	1	6
508	CHAN32 B	13.800	G2	105.9	5.5	50.0	-50.0	1.0200	104.0	0.9987	118.6	1	6
541	PETOABRE	4.2000	1	61.2	1.4	1.4	1.4	0.9554	64.1	0.9997	136.0	1	6
542	PEANTON	4.2000	1	75.0	1.4	1.4	1.4	0.9545	78.6	0.9998	136.0	1	6
SUBSYSTEM TOTALS													
				2108.1	548.5	1253.6	-672.6				3067.2		



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT LLS-PAN II

WED, OCT 22 2008 9:13

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
128		MIR13C		12.000	G3	12.6	5.1	11.0	0.0	1.0200	13.3	0.9263	29.4			2	7	
129		MIR13D		13.800	G4	35.0	5.4	15.0	0.0	1.0200	34.7	0.9883	44.1			2	7	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0202	16.8	1.0000	27.7			2	7	
170		MIR13G		13.800	M1	17.1	6.8	11.2	6.8	1.0345	17.8	0.9289	23.0			2	7	
171		MIR13H		13.800	M1	17.1	6.8	11.2	6.8	1.0435	17.6	0.9289	23.0			2	7	
171		MIR13H		13.800	M2	17.1	6.8	11.2	6.8	1.0435	17.6	0.9289	23.0			2	7	
SUBSYSTEM TOTALS						116.0	31.0	67.5	20.5				170.3					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT LLS-PAN II

WED, OCT 22 2008 9:14

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		1347.4	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			1006.9	985.5	0.0	0.0	0.0	0.0	21.4	0.0



Handwritten signature or initials.

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	1344.9	1324.8	0.0	0.0	0.0	-0.7	20.8	0.0
C.RICA	268.1	569.4	-237.0	0.0	468.0	37.5	366.3	
6	2108.1	1853.5	0.0	0.0	0.0	140.4	114.2	25.0
PANAMA	548.5	324.7	-334.7	0.0	611.3	50.8	1119.0	
7	116.0	71.9	0.0	0.0	0.0	43.2	0.9	50.0
ACANAL	31.0	12.6	0.0	0.0	0.0	7.5	10.9	
9	0.0	182.6	0.0	0.0	0.0	-182.9	0.3	-75.0
COLON	0.0	32.0	0.0	0.0	1.1	-49.9	19.0	
TOTALS	7373.3	7159.6	0.0	0.0	0.0	0.0	213.8	0.0
	1066.8	1985.6	-1183.2	0.0	2159.3	0.0	2423.7	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2008
AÑO 2021 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA FORTUNA- GUASQUITAS**



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	1.0186	234.29	14	PRO230	230.00	6	1.0247	235.68				
85	PTP230	230.00	6	1.0053	231.22	96	FOR230	230.00	6	1.0164	233.77				
144	CANJ230	230.00	6	1.0071	231.63	145	BJOMIN230	230.00	6	1.0325	237.47				
146	GUALACA230	230.00	6	1.0128	232.95	147	GUASQ230	230.00	6	1.0069	231.58				
148	VELADERO	230230.00	6	1.0075	231.73	155	TABASARAI	230.00	6	1.0091	232.09				
190	CHANG230	230.00	6	1.0234	235.38	306	CHAN1	230	230.00	6	1.0250	235.75			
310	CONCEPCION23	230.00	6	1.0267	236.13	341	PRUDENCIA230	230.00	6	1.0220	235.05				
345	LORENA230	230.00	6	1.0188	234.32	506	CHAN2	230	230.00	6	1.0211	234.86			
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)
1	PAN230	230.00	6	0.9668	222.36	3	PANII230	230.00	6	0.9734	223.88				
5	CHO230	230.00	6	0.9615	221.14	8	LSA230	230.00	6	0.9859	226.76				
100	BAY230	230.00	6	1.0000	230.00	103	COPESA23	230.00	6	0.9778	224.90				
105	PAN-AM23	230.00	6	0.9615	221.14	115	PACORA23	230.00	6	0.9795	225.29				
325	STA RITA230	230.00	6	0.9885	227.36	511	LGUIAS230	230.00	6	0.9716	223.47				
540	ANTON	230	230.00	6	0.9763	224.54									

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	1.0114	116.31	4	PANII115	115.00	6	1.0084	115.97				
9	LSA115	115.00	6	1.0315	118.63	12	M.N115	115.00	6	1.0165	116.90				
15	PRO115	115.00	6	1.0224	117.57	18	CAC115	115.00	6	1.0107	116.23				
20	CH.AZUL	115.00	6	1.0231	117.66	23	CH115	115.00	6	1.0045	115.52				
33	STM115	115.00	6	1.0084	115.97	48	TINAJ115	115.00	6	1.0073	115.84				
50	M.O115	115.00	6	1.0075	115.87	52	TOC115	115.00	6	1.0040	115.46				
54	LM1115	115.00	6	1.0299	118.44	55	LM2115	115.00	6	1.0295	118.39				
61	FFIELD	115.00	9	1.0241	117.77	87	CAL115	115.00	6	1.0399	119.58				
88	EST115	115.00	6	1.0444	120.10	92	L.V115	115.00	6	1.0416	119.78				
109	STA RITA115	115.00	6	1.0373	119.29	123	MIR115	115.00	7	1.0137	116.57				
154	CEMPAN15	115.00	6	1.0226	117.60	191	CHANG115	115.00	6	1.0169	116.94				
522	TCATIVÁ	115	115.00	6	1.0297	118.42									

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)
6	CHO115	115.00	6	0.9983	114.81	19	C.V115	115.00	6	0.9953	114.47				
21	C.BAN115	115.00	6	0.9942	114.33	26	LOC115	115.00	6	0.9961	114.55				
30	MAR115	115.00	6	0.9948	114.40	37	SAN115	115.00	6	0.9921	114.09				



Handwritten signature or initials.

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	14.2	25.0	0.0	1.0100	30.2	0.8849	47.0			1	6	
67	BLM13C	13.800	V3	27.0	14.2	25.0	0.0	1.0100	30.2	0.8849	47.0			1	6	
68	BLM13D	13.800	V4	28.0	14.9	25.0	0.0	1.0100	31.4	0.8824	47.0			1	6	
90	EST-13L	13.800	E1	22.8	8.7	12.0	-5.0	1.0200	23.9	0.9338	27.0			1	6	
91	EST-13T	13.800	E2	22.8	8.7	12.0	-5.0	1.0200	23.9	0.9338	27.0			1	6	
94	LV-13.8L	13.800	L1	25.6	9.8	12.0	-5.0	1.0200	26.9	0.9343	27.0			1	6	
95	LV-13.8T	13.800	L2	25.6	9.8	12.0	-5.0	1.0200	26.9	0.9343	27.0			1	6	
97	FOR13A	13.800	F1	95.0	16.6	50.0	-50.0	1.0290	93.7	0.9852	111.0			1	6	
98	FOR13B	13.800	F2	95.0	16.6	50.0	-50.0	1.0290	93.7	0.9852	111.0			1	6	
99	FOR13C	13.800	F3	95.0	16.6	50.0	-50.0	1.0290	93.7	0.9852	111.0			1	6	
101	BAY13A	13.800	B1	46.0	21.3	50.0	-25.0	0.9783	51.8	0.9076	96.0			1	6	SYST
102	BAY13B	13.800	B2	44.1	21.2	50.0	-25.0	0.9783	50.0	0.9014	96.0			1	6	
108	BAY13C	13.800	B3	44.1	21.2	50.0	-25.0	0.9783	50.0	0.9014	100.0			1	6	
119	CB250B-1	13.800	C1	80.0	34.1	75.6	0.0	1.0100	86.1	0.9200	143.5			1	6	
120	CB250B-2	13.800	C2	80.0	34.1	75.6	0.0	1.0100	86.1	0.9200	143.5			1	6	
121	CB250C-1	13.800	C1	80.0	34.1	75.6	0.0	1.0100	86.1	0.9200	143.5			1	6	
122	CB250C-2	13.800	C2	80.0	34.1	75.6	0.0	1.0100	86.1	0.9200	143.5			1	6	
142	CANJ13A	13.800	C1	57.0	20.3	29.0	-29.0	1.0181	59.4	0.9418	69.0			1	6	
143	CANJ13B	13.800	C2	57.0	20.3	29.0	-29.0	1.0181	59.4	0.9418	69.0			1	6	
149	BBLANCO13.8	13.800	G1	9.4	0.0	6.1	0.0	1.0073	9.3	1.0000	11.6			1	6	
149	BBLANCO13.8	13.800	G2	9.4	0.0	6.1	0.0	1.0073	9.3	1.0000	11.6			1	6	
151	GUALACA13.8	13.800	G1	23.8	7.0	10.0	-10.0	1.0200	24.4	0.9593	26.7			1	6	
156	TABASARAI13.8	13.800	G1	16.4	3.1	5.7	0.2	1.0200	16.4	0.9829	20.5			1	6	
156	TABASARAI13.8	13.800	G2	16.4	3.1	5.7	0.2	1.0200	16.4	0.9829	20.5			1	6	
193	GEBONYIC	13.800	G1	9.5	0.7	4.0	-4.0	1.0200	9.3	0.9969	35.3			1	6	
193	GEBONYIC	13.800	G2	9.5	0.7	4.0	-4.0	1.0200	9.3	0.9969	35.3			1	6	
193	GEBONYIC	13.800	G3	9.5	0.7	4.0	-4.0	1.0200	9.3	0.9969	35.3			1	6	
204	BJOMIN13	13.800	G1	24.7	-3.7	13.0	-13.0	1.0200	24.5	0.9887	28.9			1	6	
204	BJOMIN13	13.800	G2	24.7	-3.7	13.0	-13.0	1.0200	24.5	0.9887	28.9			1	6	
205	BAITUN13.8	13.800	G1	40.8	16.8	26.6	-26.6	1.0200	43.3	0.9250	50.6			1	6	
205	BAITUN13.8	13.800	G2	40.8	16.8	26.6	-26.6	1.0200	43.3	0.9250	50.6			1	6	
301	CONC13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9614	11.2	0.8849	13.5			1	6	
302	PASOANCH13.8	13.800	P1	4.4	2.0	2.0	-2.0	0.9596	5.1	0.9110	6.2			1	6	
303	SIND13.8	13.800	G1	9.5	0.0	5.0	0.0	1.1161	8.5	1.0000	13.5			1	6	
304	ALGA13.8	13.800	A1	9.2	2.0	2.0	0.0	0.9915	9.5	0.9772	13.5			1	6	
305	ELALTO13.8	13.800	G1	19.0	-2.3	12.0	-5.0	1.0200	18.8	0.9927	20.6			1	6	
305	ELALTO13.8	13.800	G2	19.0	-2.3	12.0	-5.0	1.0200	18.8	0.9927	20.6			1	6	
305	ELALTO13.8	13.800	G3	19.0	-2.3	12.0	-5.0	1.0200	18.8	0.9927	20.6			1	6	
307	CHANI A	13.800	G1	105.9	0.7	50.0	-50.0	1.0200	103.8	1.0000	118.6			1	6	
308	CHANI B	13.800	G2	105.9	0.7	50.0	-50.0	1.0200	103.8	1.0000	118.6			1	6	
311	PANDO13.8	13.800	G1	15.2	0.3	10.0	-5.0	1.0200	14.9	0.9998	19.9			1	6	
311	PANDO13.8	13.800	G2	15.2	0.3	10.0	-5.0	1.0200	14.9	0.9998	19.9			1	6	
316	MONTE LIRIO	13.800	G1	24.5	-1.4	12.0	-5.0	1.0200	24.1	0.9983	27.0			1	6	
316	MONTE LIRIO	13.800	G2	24.5	-1.4	12.0	-5.0	1.0200	24.1	0.9983	27.0			1	6	
317	MENDRE13.8	13.800	M1	8.7	0.0	4.0	0.0	1.1157	7.8	1.0000	35.3			1	6	
317	MENDRE13.8	13.800	M2	8.7	0.0	4.0	0.0	1.1157	7.8	1.0000	35.3			1	6	
342	LORENA13.8	13.800	G1	16.1	0.8	10.5	-5.0	1.0200	15.8	0.9986	19.9			1	6	
342	LORENA13.8	13.800	G2	16.1	0.8	10.5	-5.0	1.0200	15.8	0.9986	19.9			1	6	



Handwritten signature or mark.

343	PRUDENCIA13813.800	G1	26.6	-0.2	9.8	-9.8	1.0200	26.1	1.0000	33.0	1	6
343	PRUDENCIA13813.800	G2	26.6	-0.2	9.8	-9.8	1.0200	26.1	1.0000	33.0	1	6
507	CHAN2 A	13.800 G1	105.9	4.5	50.0	-50.0	1.0200	103.9	0.9991	118.6	1	6
508	CHAN32 B	13.800 G2	105.9	4.5	50.0	-50.0	1.0200	103.9	0.9991	118.6	1	6
541	PETOABRE	4.2000 1	61.2	1.4	1.4	1.4	0.9760	62.7	0.9997	136.0	1	6
542	PEANTON	4.2000 1	75.0	1.4	1.4	1.4	0.9752	76.9	0.9998	136.0	1	6
SUBSYSTEM TOTALS			2099.0	426.3	1253.6	-672.6				3067.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 9:24
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT FOR-GUAS

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
128	MIR13C	12.000	G3	12.6	4.4	11.0	0.0	1.0200	13.1	0.9437	29.4					2	7	
129	MIR13D	13.800	G4	35.0	4.3	15.0	0.0	1.0200	34.6	0.9925	44.1					2	7	
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0228	16.7	1.0000	27.7					2	7	
170	MIR13G	13.800	M1	17.1	6.8	11.2	6.8	1.0371	17.8	0.9289	23.0					2	7	
171	MIR13H	13.800	M1	17.1	6.8	11.2	6.8	1.0461	17.6	0.9289	23.0					2	7	
171	MIR13H	13.800	M2	17.1	6.8	11.2	6.8	1.0461	17.6	0.9289	23.0					2	7	
SUBSYSTEM TOTALS						116.0	29.2	67.5	20.5							170.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 9:25
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT FOR-GUAS

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		1347.4	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
			32.8	224.5	-98.9	0.0	143.2	-97.0	147.4	



Handwritten signature or initials.

5	1344.9	1324.8	0.0	0.0	0.0	-0.7	20.8	0.0
C.RICA	262.7	569.4	-237.3	0.0	468.6	33.3	366.0	
6	2099.0	1853.5	0.0	0.0	0.0	140.4	105.1	25.0
PANAMA	426.3	324.7	-340.5	0.0	665.1	56.8	1050.5	
7	116.0	71.9	0.0	0.0	0.0	43.2	0.9	50.0
ACANAL	29.2	12.6	0.0	0.0	0.0	5.8	10.8	
9	0.0	182.6	0.0	0.0	0.0	-182.9	0.3	-75.0
COLON	0.0	32.0	0.0	0.0	1.1	-49.9	19.0	
TOTALS	7364.2	7159.6	0.0	0.0	0.0	0.0	204.7	0.0
	937.4	1985.6	-1189.3	0.0	2213.7	0.0	2354.8	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2008
AÑO 2021 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA VELADERO- LLANO SÁNCHEZ**



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	1.0154	233.54	14	PRO230	230.00	6	1.0231	235.31				
85	PTP230	230.00	6	1.0039	230.89	96	FOR230	230.00	6	1.0112	232.57				
144	CANJ230	230.00	6	1.0046	231.05	145	BJOMIN230	230.00	6	1.0311	237.14				
146	GUALACA230	230.00	6	1.0105	232.42	147	GUASQ230	230.00	6	1.0044	231.00				
148	VELADERO 230	230.00	6	1.0045	231.03	155	TABASARAI	230.00	6	1.0062	231.42				
190	CHANG230	230.00	6	1.0224	235.15	306	CHAN1 230	230.00	6	1.0235	235.42				
310	CONCEPCION230	230.00	6	1.0247	235.68	341	PRUDENCIA230	230.00	6	1.0199	234.58				
345	LORENA230	230.00	6	1.0166	233.83	506	CHAN2 230	230.00	6	1.0204	234.69				
6000	FRONTER	230.00	6	1.0230	235.30										

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)
1	PAN230	230.00	6	0.9595	220.67	3	PANII230	230.00	6	0.9665	222.29				
5	CHO230	230.00	6	0.9528	219.13	8	LSA230	230.00	6	0.9734	223.88				
100	BAY230	230.00	6	0.9959	229.06	103	COPESA23	230.00	6	0.9714	223.41				
105	PAN-AM23	230.00	6	0.9528	219.13	115	PACORA23	230.00	6	0.9733	223.87				
325	STA RITA230	230.00	6	0.9852	226.60	511	LGUIAS230	230.00	6	0.9604	220.90				
540	ANTON 230	230.00	6	0.9656	222.09										

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	1.0011	115.13				
9	LSA115	115.00	6	1.0180	117.07	12	M.N115	115.00	6	1.0140	116.61				
15	PRO115	115.00	6	1.0207	117.38	18	CAC115	115.00	6	1.0035	115.41				
20	CH.AZUL	115.00	6	1.0215	117.47	33	STM115	115.00	6	1.0012	115.14				
48	TINAJ115	115.00	6	1.0001	115.01	50	M.O115	115.00	6	1.0003	115.03				
54	LM1115	115.00	6	1.0260	117.99	55	LM2115	115.00	6	1.0256	117.95				
61	FFIELD	115.00	9	1.0202	117.32	87	CAL115	115.00	6	1.0382	119.39				
88	EST115	115.00	6	1.0429	119.93	92	L.V115	115.00	6	1.0400	119.60				
109	STA RITA115	115.00	6	1.0333	118.83	123	MIR115	115.00	7	1.0070	115.80				
154	CEMPAN15	115.00	6	1.0177	117.04	191	CHANG115	115.00	6	1.0162	116.86				
522	TCATIVÁ	115.00	6	1.0258	117.97										

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)
6	CHO115	115.00	6	0.9890	113.74	19	C.V115	115.00	6	0.9880	113.62				
21	C.BAN115	115.00	6	0.9868	113.49	23	CH115	115.00	6	0.9986	114.84				
26	LOC115	115.00	6	0.9888	113.71	30	MAR115	115.00	6	0.9875	113.56				



Handwritten signature or initials.

37 SAN115 115.00 6 0.9847 113.24 52 TOC115 115.00 6 0.9967 114.62

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 9:30
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT VEL-LLS

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	15.9	25.0	0.0	1.0100	31.0	0.8616	47.0			1	6	
67		BLM13C		13.800	V3	27.0	15.9	25.0	0.0	1.0100	31.0	0.8616	47.0			1	6	
68		BLM13D		13.800	V4	28.0	16.7	25.0	0.0	1.0100	32.3	0.8587	47.0			1	6	
90		EST-13L		13.800	E1	22.8	9.2	12.0	-5.0	1.0200	24.1	0.9276	27.0			1	6	
91		EST-13T		13.800	E2	22.8	9.2	12.0	-5.0	1.0200	24.1	0.9276	27.0			1	6	
94		LV-13.8L		13.800	L1	25.6	10.3	12.0	-5.0	1.0200	27.1	0.9284	27.0			1	6	
95		LV-13.8T		13.800	L2	25.6	10.3	12.0	-5.0	1.0200	27.1	0.9284	27.0			1	6	
97		FOR13A		13.800	F1	95.0	21.4	50.0	-50.0	1.0290	94.6	0.9755	111.0			1	6	
98		FOR13B		13.800	F2	95.0	21.4	50.0	-50.0	1.0290	94.6	0.9755	111.0			1	6	
99		FOR13C		13.800	F3	95.0	21.4	50.0	-50.0	1.0290	94.6	0.9755	111.0			1	6	
101		BAY13A		13.800	B1	51.6	24.7	50.0	-25.0	0.9783	58.4	0.9022	96.0			1	6	SYST
102		BAY13B		13.800	B2	44.1	24.2	50.0	-25.0	0.9783	51.4	0.8770	96.0			1	6	
108		BAY13C		13.800	B3	44.1	24.2	50.0	-25.0	0.9783	51.4	0.8770	100.0			1	6	
119		CB250B-1		13.800	C1	80.0	39.0	75.6	0.0	1.0100	88.1	0.8989	143.5			1	6	
120		CB250B-2		13.800	C2	80.0	39.0	75.6	0.0	1.0100	88.1	0.8989	143.5			1	6	
121		CB250C-1		13.800	C1	80.0	39.0	75.6	0.0	1.0100	88.1	0.8989	143.5			1	6	
122		CB250C-2		13.800	C2	80.0	39.0	75.6	0.0	1.0100	88.1	0.8989	143.5			1	6	
142		CANJ13A		13.800	C1	57.0	20.8	29.0	-29.0	1.0181	59.6	0.9396	69.0			1	6	
143		CANJ13B		13.800	C2	57.0	20.8	29.0	-29.0	1.0181	59.6	0.9396	69.0			1	6	
149		BBLANCO13.8		13.800	G1	9.4	0.0	6.1	0.0	1.0043	9.4	1.0000	11.6			1	6	
149		BBLANCO13.8		13.800	G2	9.4	0.0	6.1	0.0	1.0043	9.4	1.0000	11.6			1	6	
151		GUALACA13.8		13.800	G1	23.8	9.2	10.0	-10.0	1.0200	25.0	0.9333	26.7			1	6	
156		TABASARAI1313.800		13.800	G1	16.4	3.7	5.7	0.2	1.0200	16.5	0.9751	20.5			1	6	
156		TABASARAI1313.800		13.800	G2	16.4	3.7	5.7	0.2	1.0200	16.5	0.9751	20.5			1	6	
193		GEBONYIC		13.800	G1	9.5	0.8	4.0	-4.0	1.0200	9.3	0.9963	35.3			1	6	
193		GEBONYIC		13.800	G2	9.5	0.8	4.0	-4.0	1.0200	9.3	0.9963	35.3			1	6	
193		GEBONYIC		13.800	G3	9.5	0.8	4.0	-4.0	1.0200	9.3	0.9963	35.3			1	6	
204		BJOMIN13		13.800	G1	24.7	-3.2	13.0	-13.0	1.0200	24.4	0.9916	28.9			1	6	
204		BJOMIN13		13.800	G2	24.7	-3.2	13.0	-13.0	1.0200	24.4	0.9916	28.9			1	6	
205		BAITUN13.8		13.800	G1	40.8	17.3	26.6	-26.6	1.0200	43.5	0.9207	50.6			1	6	
205		BAITUN13.8		13.800	G2	40.8	17.3	26.6	-26.6	1.0200	43.5	0.9207	50.6			1	6	
301		CONC13.8		13.800	G1	9.5	5.0	5.0	-5.0	0.9589	11.2	0.8849	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	G1	9.5	0.0	5.0	0.0	1.1143	8.5	1.0000	13.5			1	6	
304		ALGA13.8		13.800	A1	9.2	2.0	2.0	0.0	0.9899	9.5	0.9772	13.5			1	6	
305		ELALTO13.8		13.800	G1	19.0	-2.0	12.0	-5.0	1.0200	18.7	0.9946	20.6			1	6	
305		ELALTO13.8		13.800	G2	19.0	-2.0	12.0	-5.0	1.0200	18.7	0.9946	20.6			1	6	
305		ELALTO13.8		13.800	G3	19.0	-2.0	12.0	-5.0	1.0200	18.7	0.9946	20.6			1	6	
307		CHANI A		13.800	G1	105.9	2.1	50.0	-50.0	1.0200	103.9	0.9998	118.6			1	6	
308		CHANI B		13.800	G2	105.9	2.1	50.0	-50.0	1.0200	103.9	0.9998	118.6			1	6	
311		PANDO13.8		13.800	G1	15.2	0.4	10.0	-5.0	1.0200	14.9	0.9996	19.9			1	6	
311		PANDO13.8		13.800	G2	15.2	0.4	10.0	-5.0	1.0200	14.9	0.9996	19.9			1	6	



Handwritten signature or initials.

316	MONTE LIRIO	13.800	G1	24.5	-1.1	12.0	-5.0	1.0200	24.1	0.9989	27.0	1	6
316	MONTE LIRIO	13.800	G2	24.5	-1.1	12.0	-5.0	1.0200	24.1	0.9989	27.0	1	6
317	MENDRE13.8	13.800	M1	8.7	0.0	4.0	0.0	1.1138	7.8	1.0000	35.3	1	6
317	MENDRE13.8	13.800	M2	8.7	0.0	4.0	0.0	1.1138	7.8	1.0000	35.3	1	6
342	LORENA13.8	13.800	G1	16.1	1.8	10.5	-5.0	1.0200	15.8	0.9935	19.9	1	6
342	LORENA13.8	13.800	G2	16.1	1.8	10.5	-5.0	1.0200	15.8	0.9935	19.9	1	6
343	PRUDENCIA13813.800	13.800	G1	26.6	0.8	9.8	-9.8	1.0200	26.1	0.9996	33.0	1	6
343	PRUDENCIA13813.800	13.800	G2	26.6	0.8	9.8	-9.8	1.0200	26.1	0.9996	33.0	1	6
507	CHAN2 A	13.800	G1	105.9	5.2	50.0	-50.0	1.0200	104.0	0.9988	118.6	1	6
508	CHAN32 B	13.800	G2	105.9	5.2	50.0	-50.0	1.0200	104.0	0.9988	118.6	1	6
541	PETOABRE	4.2000	1	61.2	1.4	1.4	1.4	0.9653	63.4	0.9997	136.0	1	6
542	PEANTON	4.2000	1	75.0	1.4	1.4	1.4	0.9644	77.8	0.9998	136.0	1	6
SUBSYSTEM TOTALS				2104.5	493.9	1253.6	-672.6				3067.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 9:30
ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
AÑO 2021 ESC MOD DEM MAX INV CONT VEL-LLS

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
128	MIR13C	12.000	G3	12.6	5.3	11.0	0.0	1.0200	13.4	0.9210	29.4	2	7					
129	MIR13D	13.800	G4	35.0	5.7	15.0	0.0	1.0200	34.8	0.9870	44.1	2	7					
130	MIR13F	13.800	G5	17.1	0.3	8.0	0.0	1.0200	16.8	0.9999	27.7	2	7					
170	MIR13G	13.800	M1	17.1	6.8	11.2	6.8	1.0337	17.8	0.9289	23.0	2	7					
171	MIR13H	13.800	M1	17.1	6.8	11.2	6.8	1.0427	17.7	0.9289	23.0	2	7					
171	MIR13H	13.800	M2	17.1	6.8	11.2	6.8	1.0427	17.7	0.9289	23.0	2	7					
SUBSYSTEM TOTALS				116.0	31.8	67.5	20.5				170.3							

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 9:30
ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008 AREA TOTALS
AÑO 2021 ESC MOD DEM MAX INV CONT VEL-LLS 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			538.2	527.1	0.0	0.0	0.0	0.0	11.1	0.0



Handwritten signature or initials.

NICA	32.8	224.5	-98.9	0.0	143.2	-97.0	147.4	
5	1344.9	1324.8	0.0	0.0	0.0	-0.6	20.7	0.0
C.RICA	264.5	569.4	-237.2	0.0	468.5	35.3	365.5	
6	2104.5	1853.5	0.0	0.0	0.0	140.3	110.7	25.0
PANAMA	493.9	324.7	-334.6	0.0	640.1	52.5	1091.3	
7	116.0	71.9	0.0	0.0	0.0	43.2	0.9	50.0
ACANAL	31.8	12.6	0.0	0.0	0.0	8.2	10.9	
9	0.0	182.6	0.0	0.0	0.0	-182.9	0.3	-75.0
COLON	0.0	32.0	0.0	0.0	1.1	-50.1	19.2	
TOTALS	7369.7	7159.6	0.0	0.0	0.0	0.0	210.2	0.0
	1009.3	1985.6	-1183.2	0.0	2188.5	0.0	2395.4	



Handwritten signature or initials.

**PLAN DE EXPANSION DEL SIN CON CENTROAMERICA JUNIO DEL 2008
AÑO 2021 ESCENARIO MODERADO DEMANDA MÁXIMA INVIERNO
CONTINGENCIA ANTÓN- 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	1.0175	234.02	14	PRO230			230.00	6	1.0243	235.59
85	PTP230			230.00	6	1.0067	231.54	96	FOR230			230.00	6	1.0141	233.24
144	CANJ230			230.00	6	1.0083	231.92	145	BJOMIN230			230.00	6	1.0320	237.36
146	GUALACA230			230.00	6	1.0140	233.22	147	GUASQ230			230.00	6	1.0081	231.87
148	VELADERO	230230.00		230.00	6	1.0070	231.61	155	TABASARAI			230.00	6	1.0086	231.97
190	CHANG230			230.00	6	1.0234	235.38	306	CHAN1	230		230.00	6	1.0246	235.65
310	CONCEPCION23	230.00		230.00	6	1.0260	235.99	341	PRUDENCIA230	230.00		230.00	6	1.0230	235.30
345	LORENA230			230.00	6	1.0199	234.57	506	CHAN2	230		230.00	6	1.0215	234.96
6000	FRONTER			230.00	6	1.0242	235.57								

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	0.9625	221.36	3	PANII230			230.00	6	0.9693	222.94
5	CHO230			230.00	6	0.9563	219.95	8	LSA230			230.00	6	0.9829	226.07
100	BAY230			230.00	6	0.9976	229.44	103	COPESA23			230.00	6	0.9740	224.02
105	PAN-AM23			230.00	6	0.9563	219.95	115	PACORA23			230.00	6	0.9759	224.45
325	STA RITA230			230.00	6	0.9866	226.91	511	LGUIAS230			230.00	6	0.9666	222.33
540	ANTON	230		230.00	6	0.9684	222.74								

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	1.0041	115.47
9	LSA115			115.00	6	1.0283	118.26	12	M.N115			115.00	6	1.0157	116.80
15	PRO115			115.00	6	1.0220	117.53	18	CAC115			115.00	6	1.0064	115.74
20	CH.AZUL			115.00	6	1.0227	117.61	23	CH115			115.00	6	1.0010	115.11
33	STM115			115.00	6	1.0041	115.48	48	TINAJ115			115.00	6	1.0030	115.35
50	M.O115			115.00	6	1.0032	115.37	54	LM115			115.00	6	1.0276	118.17
55	LM2115			115.00	6	1.0272	118.13	61	FFIELD			115.00	9	1.0218	117.51
87	CAL115			115.00	6	1.0393	119.51	88	EST115			115.00	6	1.0438	120.04
92	L.V115			115.00	6	1.0410	119.72	109	STA RITA115			115.00	6	1.0349	119.01
123	MIR115			115.00	7	1.0097	116.11	154	CEMPAN15			115.00	6	1.0197	117.27
191	CHANG115			115.00	6	1.0169	116.94	522	TCATIVÁ	115		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)
6	CHO115			115.00	6	0.9929	114.18	19	C.V115			115.00	6	0.9910	113.96
21	C.BAN115			115.00	6	0.9898	113.83	26	LOC115			115.00	6	0.9918	114.05
30	MAR115			115.00	6	0.9904	113.90	37	SAN115			115.00	6	0.9877	113.59



Handwritten signature or initials.

52 TOC115 115.00 6 0.9997 114.97

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 9:33
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT ANTON-PAN 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	15.2	25.0	0.0	1.0100	30.7	0.8712	47.0			1	6	
67		BLM13C		13.800	V3	27.0	15.2	25.0	0.0	1.0100	30.7	0.8712	47.0			1	6	
68		BLM13D		13.800	V4	28.0	16.0	25.0	0.0	1.0100	31.9	0.8685	47.0			1	6	
90		EST-13L		13.800	E1	22.8	8.9	12.0	-5.0	1.0200	24.0	0.9316	27.0			1	6	
91		EST-13T		13.800	E2	22.8	8.9	12.0	-5.0	1.0200	24.0	0.9316	27.0			1	6	
94		LV-13.8L		13.800	L1	25.6	10.0	12.0	-5.0	1.0200	27.0	0.9322	27.0			1	6	
95		LV-13.8T		13.800	L2	25.6	10.0	12.0	-5.0	1.0200	27.0	0.9322	27.0			1	6	
97		FOR13A		13.800	F1	95.0	18.7	50.0	-50.0	1.0290	94.1	0.9811	111.0			1	6	
98		FOR13B		13.800	F2	95.0	18.7	50.0	-50.0	1.0290	94.1	0.9811	111.0			1	6	
99		FOR13C		13.800	F3	95.0	18.7	50.0	-50.0	1.0290	94.1	0.9811	111.0			1	6	
101		BAY13A		13.800	B1	48.2	23.2	50.0	-25.0	0.9783	54.7	0.9009	96.0			1	6	SYST
102		BAY13B		13.800	B2	44.1	23.0	50.0	-25.0	0.9783	50.8	0.8870	96.0			1	6	
108		BAY13C		13.800	B3	44.1	23.0	50.0	-25.0	0.9783	50.8	0.8870	100.0			1	6	
119		CB250B-1		13.800	C1	80.0	37.0	75.6	0.0	1.0100	87.3	0.9077	143.5			1	6	
120		CB250B-2		13.800	C2	80.0	37.0	75.6	0.0	1.0100	87.3	0.9077	143.5			1	6	
121		CB250C-1		13.800	C1	80.0	37.0	75.6	0.0	1.0100	87.3	0.9077	143.5			1	6	
122		CB250C-2		13.800	C2	80.0	37.0	75.6	0.0	1.0100	87.3	0.9077	143.5			1	6	
142		CANJ13A		13.800	C1	57.0	20.1	29.0	-29.0	1.0181	59.4	0.9430	69.0			1	6	
143		CANJ13B		13.800	C2	57.0	20.1	29.0	-29.0	1.0181	59.4	0.9430	69.0			1	6	
149		BBLANCO13.8		13.800	G1	9.4	0.0	6.1	0.0	1.0068	9.3	1.0000	11.6			1	6	
149		BBLANCO13.8		13.800	G2	9.4	0.0	6.1	0.0	1.0068	9.3	1.0000	11.6			1	6	
151		GUALACA13.8		13.800	G1	23.8	5.9	10.0	-10.0	1.0200	24.1	0.9706	26.7			1	6	
156		TABASARAI13		13.800	G1	16.4	3.2	5.7	0.2	1.0200	16.4	0.9816	20.5			1	6	
156		TABASARAI13		13.800	G2	16.4	3.2	5.7	0.2	1.0200	16.4	0.9816	20.5			1	6	
193		GEBONYIC		13.800	G1	9.5	0.7	4.0	-4.0	1.0200	9.3	0.9969	35.3			1	6	
193		GEBONYIC		13.800	G2	9.5	0.7	4.0	-4.0	1.0200	9.3	0.9969	35.3			1	6	
193		GEBONYIC		13.800	G3	9.5	0.7	4.0	-4.0	1.0200	9.3	0.9969	35.3			1	6	
204		BJOMIN13		13.800	G1	24.7	-3.6	13.0	-13.0	1.0200	24.5	0.9897	28.9			1	6	
204		BJOMIN13		13.800	G2	24.7	-3.6	13.0	-13.0	1.0200	24.5	0.9897	28.9			1	6	
205		BAITUN13.8		13.800	G1	40.8	16.9	26.6	-26.6	1.0200	43.4	0.9237	50.6			1	6	
205		BAITUN13.8		13.800	G2	40.8	16.9	26.6	-26.6	1.0200	43.4	0.9237	50.6			1	6	
301		CONC13.8		13.800	G1	9.5	5.0	5.0	-5.0	0.9605	11.2	0.8849	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	G1	9.5	0.0	5.0	0.0	1.1154	8.5	1.0000	13.5			1	6	
304		ALGA13.8		13.800	A1	9.2	2.0	2.0	0.0	0.9910	9.5	0.9772	13.5			1	6	
305		ELALTO13.8		13.800	G1	19.0	-2.2	12.0	-5.0	1.0200	18.8	0.9933	20.6			1	6	
305		ELALTO13.8		13.800	G2	19.0	-2.2	12.0	-5.0	1.0200	18.8	0.9933	20.6			1	6	
305		ELALTO13.8		13.800	G3	19.0	-2.2	12.0	-5.0	1.0200	18.8	0.9933	20.6			1	6	
307		CHAN1 A		13.800	G1	105.9	1.1	50.0	-50.0	1.0200	103.9	0.9999	118.6			1	6	
308		CHAN1 B		13.800	G2	105.9	1.1	50.0	-50.0	1.0200	103.9	0.9999	118.6			1	6	
311		PANDO13.8		13.800	G1	15.2	0.3	10.0	-5.0	1.0200	14.9	0.9997	19.9			1	6	
311		PANDO13.8		13.800	G2	15.2	0.3	10.0	-5.0	1.0200	14.9	0.9997	19.9			1	6	
316		MONTE LIRIO		13.800	G1	24.5	-1.3	12.0	-5.0	1.0200	24.1	0.9985	27.0			1	6	
316		MONTE LIRIO		13.800	G2	24.5	-1.3	12.0	-5.0	1.0200	24.1	0.9985	27.0			1	6	



Handwritten signature or initials.

317	MENDRE13.8	13.800	M1	8.7	0.0	4.0	0.0	1.1150	7.8	1.0000	35.3	1	6			
317	MENDRE13.8	13.800	M2	8.7	0.0	4.0	0.0	1.1150	7.8	1.0000	35.3	1	6			
342	LORENA13.8	13.800	G1	16.1	0.3	10.5	-5.0	1.0200	15.7	0.9998	19.9	1	6			
342	LORENA13.8	13.800	G2	16.1	0.3	10.5	-5.0	1.0200	15.7	0.9998	19.9	1	6			
343	PRUDENCIA13813.800	13.800	G1	26.6	-0.7	9.8	-9.8	1.0200	26.1	0.9997	33.0	1	6			
343	PRUDENCIA13813.800	13.800	G2	26.6	-0.7	9.8	-9.8	1.0200	26.1	0.9997	33.0	1	6			
507	CHAN2 A	13.800	G1	105.9	4.1	50.0	-50.0	1.0200	103.9	0.9993	118.6	1	6			
508	CHAN32 B	13.800	G2	105.9	4.1	50.0	-50.0	1.0200	103.9	0.9993	118.6	1	6			
541	PETOABRE	4.2000	1	61.2	1.4	1.4	1.4	0.9681	63.2	0.9997	136.0	1	6			
542	PEANTON	4.2000	1	75.0	1.4	1.4	1.4	0.9673	77.5	0.9998	136.0	1	6			
SUBSYSTEM TOTALS												2101.2	451.9	1253.6	-672.6	3067.2

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 9:33
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT ANTON-PAN 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
128	MIR13C	12.000	G3	12.6	5.0	11.0	0.0	1.0200	13.3	0.9297	29.4	2	7					
129	MIR13D	13.800	G4	35.0	5.2	15.0	0.0	1.0200	34.7	0.9892	44.1	2	7					
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0207	16.8	1.0000	27.7	2	7					
170	MIR13G	13.800	M1	17.1	6.8	11.2	6.8	1.0350	17.8	0.9289	23.0	2	7					
171	MIR13H	13.800	M1	17.1	6.8	11.2	6.8	1.0440	17.6	0.9289	23.0	2	7					
171	MIR13H	13.800	M2	17.1	6.8	11.2	6.8	1.0440	17.6	0.9289	23.0	2	7					
SUBSYSTEM TOTALS												116.0	30.6	67.5	20.5	170.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 22 2008 9:34
 ACTUALIZACION PLAN. EXP-SIN CON C.A. JUNIO 2008
 AÑO 2021 ESC MOD DEM MAX INV CONT ANTON-PAN II

AREA TOTALS										
IN MW/MVAR										
X--	AREA	--X	GENERATION	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	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	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	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	0.0



Handwritten signature or initials.

NICA	32.8	224.5	-98.9	0.0	143.2	-97.0	147.4	
5	1344.9	1324.8	0.0	0.0	0.0	-0.7	20.8	0.0
C.RICA	262.9	569.4	-237.3	0.0	468.6	33.4	366.0	
6	2101.1	1853.5	0.0	0.0	0.0	140.4	107.3	25.0
PANAMA	451.9	324.7	-337.9	0.0	655.6	55.4	1065.2	
7	116.0	71.9	0.0	0.0	0.0	43.2	0.9	50.0
ACANAL	30.6	12.6	0.0	0.0	0.0	7.2	10.9	
9	0.0	182.6	0.0	0.0	0.0	-182.9	0.3	-75.0
COLON	0.0	32.0	0.0	0.0	1.1	-50.0	19.1	
TOTALS	7366.4	7159.6	0.0	0.0	0.0	0.0	206.8	0.0
	964.5	1985.6	-1186.6	0.0	2204.2	0.0	2369.7	



de