



ANEXO I-8 – CORTO PLAZO

RESULTADOS DE ANALISIS DE FLUJOS DE POTENCIA ESTABILIDAD TRANSITORIA CORTOCIRCUITO



RESULTADOS DE FLUJOS DE POTENCIA

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:05
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0040	230.91	3		PANII230		230.00	6	1.0089	232.05
5		CHO230		230.00	6	1.0025	230.58	8		LSA230		230.00	6	1.0085	231.96
11		M.N230		230.00	6	1.0077	231.76	14		PRO230		230.00	6	1.0140	233.23
85		PTP230		230.00	6	1.0066	231.53	96		FOR230		230.00	6	1.0059	231.35
100		BAY230		230.00	6	1.0366	238.41	103		COPESA23		230.00	6	1.0135	233.11
105		PAN-AM23		230.00	6	1.0025	230.58	115		PACORA23		230.00	6	1.0188	234.33
144		CANJ230		230.00	6	1.0037	230.86	146		GUALACA230		230.00	6	1.0074	231.71
147		GUASQ230		230.00	6	1.0037	230.86	148		VELADERO 230		230.00	6	1.0106	232.45
190		CHANG230		230.00	6	1.0107	232.46	306		CHAN1 230		230.00	6	1.0085	231.95
310		CONCEPCION23		230.00	6	1.0124	232.84	341		PRUDENCIA230		230.00	6	1.0130	232.98
345		LORENA230		230.00	6	1.0109	232.51	370		LSA CAP 230		230.00	6	1.0085	231.96
511		LGUIAS230		230.00	6	1.0044	231.02	540		ANTON		230.00	6	1.0242	235.57
700		BAITUN230		230.00	6	1.0129	232.96	6000		FRONTER		230.00	6	1.0154	233.55
6400		FRONTCHA		230.00	6	1.0126	232.91	6500		FRONTVEL		230.00	6	1.0205	234.72

BUSES WITH VOLTAGE LESS THAN 1.0000:

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

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:05
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0052	115.59	4		PANII115		115.00	6	1.0111	116.28
6		CHO115		115.00	6	1.0033	115.37	9		LSA115		115.00	6	1.0556	121.40
12		M.N115		115.00	6	1.0005	115.05	15		PRO115		115.00	6	1.0159	116.83
18		CAC115		115.00	6	1.0050	115.57	19		C.V115		115.00	6	1.0016	115.18
20		CH.AZUL		115.00	6	1.0166	116.91	23		CH115		115.00	6	1.0091	116.05
33		STM115		115.00	6	1.0034	115.39	48		TINAJ115		115.00	6	1.0030	115.34
50		M.O115		115.00	6	1.0031	115.35	52		TOC115		115.00	6	1.0086	115.99
54		LM1115		115.00	6	1.0335	118.86	55		LM2115		115.00	6	1.0345	118.97
61		FFIELD		115.00	6	1.0306	118.52	87		CAL115		115.00	6	1.0126	116.45
88		EST115		115.00	6	1.0156	116.79	92		L.V115		115.00	6	1.0138	116.59
109		STA RITA115		115.00	6	1.0305	118.51	123		MIR115		115.00	7	1.0110	116.27
154		CEMPAN15		115.00	6	1.0284	118.27	191		CHANG115		115.00	6	1.0065	115.75



522 TCATIVÁ 115 115.00 6 1.0343 118.95 529 TCOLON 115 115.00 6 1.0320 118.68

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9965	114.60	26		LOC115		115.00	6	0.9974	114.71
30		MAR115		115.00	6	0.9962	114.57	37		SAN115		115.00	6	0.9957	114.51
701		BAITUN115		115.00	6	0.9900	113.85	702		BJOMIN115		115.00	6	0.9922	114.10

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:41
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6		66		BLM13B		13.800	V2	38.0	8.3	25.0	0.0	1.0000	38.9	0.9772	47.0	62
6		67		BLM13C		13.800	V3	38.0	8.3	25.0	0.0	1.0000	38.9	0.9772	47.0	62
6		68		BLM13D		13.800	V4	38.0	8.5	25.0	0.0	1.0000	38.9	0.9758	47.0	62
6		90		EST-13L		13.800	E1	22.0	4.7	12.0	-5.0	0.9800	22.9	0.9784	27.0	64
6		91		EST-13T		13.800	E2	22.0	4.7	12.0	-5.0	0.9800	22.9	0.9784	27.0	64
6		94		LV-13.8L		13.800	L1	25.0	5.4	12.0	-5.0	0.9800	26.1	0.9773	27.0	64
6		95		LV-13.8T		13.800	L2	25.0	5.4	12.0	-5.0	0.9800	26.1	0.9773	27.0	64
6		97		FOR13A		13.800	F1	82.0	-10.5	50.0	-50.0	0.9900	83.5	0.9918	111.0	64
6		98		FOR13B		13.800	F2	82.0	-10.5	50.0	-50.0	0.9900	83.5	0.9918	111.0	64
6		99		FOR13C		13.800	F3	82.0	-10.5	50.0	-50.0	0.9900	83.5	0.9918	111.0	64
6		101		BAY13A		13.800	B1	52.0	19.8	50.0	-25.0	1.0100	55.1	0.9348	96.0	61
SYST																
6		102		BAY13B		13.800	B2	52.0	19.8	50.0	-25.0	1.0100	55.1	0.9348	96.0	61
6		108		BAY13C		13.800	B3	52.0	19.8	50.0	-25.0	1.0100	55.1	0.9348	100.0	61
6		116		PACORA13		13.800	P1	17.5	3.9	8.8	0.0	1.0300	17.4	0.9763	21.7	61



6	116	PACORA13	13.800	P2	17.5	3.9	8.8	0.0	1.0300	17.4	0.9763	21.7	61
6	116	PACORA13	13.800	P3	17.5	3.9	8.8	0.0	1.0300	17.4	0.9763	21.7	61
6	142	CANJ13A	13.800	C1	57.0	14.8	29.0	-29.0	0.9800	60.1	0.9677	69.0	64
6	150	GUALACA 13-2	13.800	G2	14.1	-6.3	7.4	-7.4	0.9800	15.7	0.9122	14.8	64
6	151	GUALACA13.8	13.800	G1	14.1	-6.3	7.4	-7.4	0.9800	15.7	0.9122	14.8	64
6	301	CONC13.8	13.800	G1	8.9	5.0	5.0	-5.0	0.9628	10.6	0.8716	13.5	64
6	302	PASOANCH13.8	13.800	P1	4.6	2.0	2.0	-2.0	0.9610	5.2	0.9180	6.2	64
6	304	ALGA13.8	13.800	A1	4.7	-2.3	2.3	-2.3	1.0724	4.9	0.9019	5.7	64
6	304	ALGA13.8	13.800	A2	4.7	-2.3	2.3	-2.3	1.0724	4.9	0.9019	5.7	64
6	307	CHAN1 A	13.800	G1	60.0	-15.7	50.0	-50.0	0.9900	62.7	0.9673	118.6	64
6	317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0745	8.8	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.0745	8.8	1.0000	35.3	64
6	340	PEDGALITO138	13.800	P1	15.0	6.3	12.0	-5.0	0.9800	16.6	0.9229	27.0	64
6	342	LORENA13.8	13.800	L1	11.3	-5.0	10.5	-5.0	0.9953	12.4	0.9138	19.9	64
6	343	PRUDENCIA_1	13.800	G1	21.8	-8.0	9.8	-9.8	0.9800	23.7	0.9389	33.0	64
6	343	PRUDENCIA_1	13.800	G2	21.8	-8.0	9.8	-9.8	0.9800	23.7	0.9389	33.0	64
6	346	LORENA 13-2	13.800	L2	11.3	-5.0	10.5	-5.0	0.9953	12.4	0.9138	19.9	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0650	3.0	0.9514	6.2	64
6	521	EGIRAL13.8	113.800	G1	3.6	1.7	2.8	1.3	1.0100	4.0	0.8990	4.8	63
6	521	EGIRAL13.8	113.800	G2	3.6	1.7	2.8	1.3	1.0100	4.0	0.8990	4.8	63
6	521	EGIRAL13.8	113.800	G3	3.6	1.7	2.8	1.3	1.0100	4.0	0.8990	4.8	63
6	521	EGIRAL13.8	113.800	G4	3.6	1.7	2.8	1.3	1.0100	4.0	0.8990	4.8	63
6	523	TCATIVÁ 13A	13.800	G1	8.3	4.5	6.6	-6.6	1.0181	9.2	0.8802	10.9	62



6	523	TCATIVÁ 13A	13.800	G2	8.3	4.5	6.6	-6.6	1.0181	9.2	0.8802	10.9	62
6	523	TCATIVÁ 13A	13.800	G3	8.3	4.5	6.6	-6.6	1.0181	9.2	0.8802	10.9	62
6	523	TCATIVÁ 13A	13.800	G4	8.3	4.5	6.6	-6.6	1.0181	9.2	0.8802	10.9	62
6	523	TCATIVÁ 13A	13.800	G5	8.3	4.5	6.6	-6.6	1.0181	9.2	0.8802	10.9	62
6	524	TCATIVÁ 13B	13.800	G0	8.3	4.5	6.6	-6.6	1.0181	9.2	0.8802	10.9	62
6	524	TCATIVÁ 13B	13.800	G6	8.3	4.5	6.6	-6.6	1.0181	9.2	0.8802	10.9	62
6	524	TCATIVÁ 13B	13.800	G7	8.3	4.5	6.6	-6.6	1.0181	9.2	0.8802	10.9	62
6	524	TCATIVÁ 13B	13.800	G8	8.3	4.5	6.6	-6.6	1.0181	9.2	0.8802	10.9	62
6	524	TCATIVÁ 13B	13.800	G9	8.3	4.5	6.6	-6.6	1.0181	9.2	0.8802	10.9	62
6	541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0253	24.4	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	26.6	2.2	13.0	-13.0	0.9900	27.0	0.9966	30.5	64
6	704	BJOMIN13B	13.800	G2	26.6	2.2	13.0	-13.0	0.9900	27.0	0.9966	30.5	64
6	705	BAITUN13A	13.800	G1	40.9	-8.1	26.6	-26.6	0.9900	42.1	0.9810	50.6	64
6	706	BAITUN13B	13.800	G2	40.9	-8.1	26.6	-26.6	0.9900	42.1	0.9810	50.6	64
6	720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9610	4.3	0.8730	6.2	64
	SUBSYSTEM TOTALS				1194.1	94.4	766.6	-527.6				1783.2	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:41
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
129		MIR13D		13.800	G4	15.9	0.0	15.0	0.0	1.0027	15.9	1.0000	44.1			65
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0209	16.8	1.0000	27.7			65



7	140	GAT6A	6.9000	G1	1.9	-1.2	2.0	-2.0	1.0000	2.3	0.8484	4.1	65
7	140	GAT6A	6.9000	G2	1.9	-1.2	2.0	-2.0	1.0000	2.3	0.8484	4.1	65
7	140	GAT6A	6.9000	G3	1.9	-1.2	2.0	-2.0	1.0000	2.3	0.8484	4.1	65
7	141	GAT6B	6.9000	G4	3.9	-2.0	3.0	-3.0	1.0000	4.3	0.8917	5.6	65
7	141	GAT6B	6.9000	G5	3.9	-2.0	3.0	-3.0	1.0000	4.3	0.8917	6.2	65
7	141	GAT6B	6.9000	G6	3.9	-2.0	3.0	-3.0	1.0000	4.3	0.8917	6.2	65
7	170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0352	17.7	0.9281	23.0	65
7	171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0442	17.5	0.9281	23.0	65
7	171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0442	17.5	0.9281	23.0	65
7	SUBSYSTEM TOTALS				101.4	10.9	71.5	5.5				171.3	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:05
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1271.8	1330.8	0.0	0.0	0.0	-100.0	41.0	-100.0
GUATEMAL	190.5	275.1	-198.9	0.0	278.0	18.9	373.6	
2	870.1	855.0	0.0	0.0	0.0	0.0	15.2	0.0
SALVADOR	78.0	224.2	-70.7	0.0	228.7	-28.6	181.9	
3	1237.5	1203.0	0.0	0.0	0.0	-0.1	34.5	0.0
HONDURAS	467.7	321.1	-47.2	0.0	293.5	52.7	434.7	
4	532.5	525.2	0.0	0.0	0.0	-0.2	7.5	0.0
NICARAGU	38.3	207.6	-57.6	0.0	181.8	-48.2	118.3	
5	1297.1	1280.2	0.0	0.0	0.0	-0.3	17.3	0.0
COSTA RI	213.1	520.4	-230.2	0.0	417.1	43.5	296.6	
6	1194.1	1112.7	0.0	0.0	0.0	39.6	41.7	40.0
PANAMA	94.4	225.9	-64.4	0.0	474.0	-30.8	437.7	



7	101.4	39.9	0.0	0.0	0.0	61.0	0.5	60.0
ACANAL	10.9	8.1	0.0	0.0	0.0	-7.4	10.3	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6504.6	6346.8	0.0	0.0	0.0	0.0	157.8	0.0
	1093.0	1782.3	-669.0	0.0	1873.2	0.0	1852.9	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:14
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO CONT MDN-CONC

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0024	230.55	3		PANII230		230.00	6	1.0074	231.71
5		CHO230		230.00	6	1.0006	230.14	8		LSA230		230.00	6	1.0056	231.29
11		M.N230		230.00	6	1.0021	230.47	14		PRO230		230.00	6	1.0186	234.28
85		PTP230		230.00	6	1.0071	231.64	96		FOR230		230.00	6	1.0023	230.53
100		BAY230		230.00	6	1.0357	238.21	103		COPESA23		230.00	6	1.0121	232.78
105		PAN-AM23		230.00	6	1.0006	230.14	115		PACORA23		230.00	6	1.0176	234.04
144		CANJ230		230.00	6	1.0007	230.15	146		GUALACA230		230.00	6	1.0045	231.02
147		GUASQ230		230.00	6	1.0007	230.15	148		VELADERO 230		230.00	6	1.0072	231.66
190		CHANG230		230.00	6	1.0123	232.82	306		CHAN1 230		230.00	6	1.0100	232.31
310		CONCEPCION23		230.00	6	1.0206	234.74	341		PRUDENCIA230		230.00	6	1.0101	232.33
345		LORENA230		230.00	6	1.0080	231.85	370		LSA CAP 230		230.00	6	1.0056	231.29
511		LGUIAS230		230.00	6	1.0019	230.44	540		ANTON		230.00	6	1.0220	235.05
700		BAITUN230		230.00	6	1.0170	233.90	6000		FRONTER		230.00	6	1.0191	234.40
6400		FRONTCHA		230.00	6	1.0142	233.27	6500		FRONTVEL		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)
* NONE *															

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:14
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO CONT MDN-CONC

BUSES WITH VOLTAGE 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	1.0038	115.44	4		PANII115		115.00	6	1.0096	116.11
6		CHO115		115.00	6	1.0014	115.16	9		LSA115		115.00	6	1.0525	121.04
15		PRO115		115.00	6	1.0204	117.35	18		CAC115		115.00	6	1.0036	115.42
19		C.V115		115.00	6	1.0001	115.02	20		CH.AZUL		115.00	6	1.0212	117.44
23		CH115		115.00	6	1.0081	115.93	33		STM115		115.00	6	1.0020	115.24
48		TINAJ115		115.00	6	1.0016	115.18	50		M.O115		115.00	6	1.0017	115.20
52		TOC115		115.00	6	1.0071	115.81	54		LM1115		115.00	6	1.0329	118.79
55		LM2115		115.00	6	1.0339	118.90	61		FFIELD		115.00	6	1.0300	118.45
87		CAL115		115.00	6	1.0104	116.19	88		EST115		115.00	6	1.0136	116.56
92		L.V115		115.00	6	1.0117	116.34	109		STA RITA115		115.00	6	1.0298	118.43
123		MIR115		115.00	7	1.0097	116.12	154		CEMPAN15		115.00	6	1.0277	118.18
191		CHANG115		115.00	6	1.0081	115.93	522		TCATIVÁ 115		115.00	6	1.0337	118.88



529 TCOLON 115 115.00 6 1.0314 118.61

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	0.9972	114.67	21	C.BAN115			115.00	6	0.9952	114.44
26	LOC115			115.00	6	0.9961	114.55	30	MAR115			115.00	6	0.9949	114.41
37	SAN115			115.00	6	0.9943	114.35	701	BAITUN115			115.00	6	0.9926	114.15
702	BJOMIN115			115.00	6	0.9945	114.37								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:14
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO CONT MDN-CONC

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																
6	66	BLM13B		13.800	V2	38.0	8.5	25.0	0.0	1.0000	38.9	0.9758	47.0			62
6	67	BLM13C		13.800	V3	38.0	8.5	25.0	0.0	1.0000	38.9	0.9758	47.0			62
6	68	BLM13D		13.800	V4	38.0	8.8	25.0	0.0	1.0000	39.0	0.9743	47.0			62
6	90	EST-13L		13.800	E1	22.0	5.2	12.0	-5.0	0.9800	23.1	0.9730	27.0			64
6	91	EST-13T		13.800	E2	22.0	5.2	12.0	-5.0	0.9800	23.1	0.9730	27.0			64
6	94	LV-13.8L		13.800	L1	25.0	6.0	12.0	-5.0	0.9800	26.2	0.9721	27.0			64
6	95	LV-13.8T		13.800	L2	25.0	6.0	12.0	-5.0	0.9800	26.2	0.9721	27.0			64
6	97	FOR13A		13.800	F1	82.0	-7.3	50.0	-50.0	0.9900	83.2	0.9960	111.0			64
6	98	FOR13B		13.800	F2	82.0	-7.3	50.0	-50.0	0.9900	83.2	0.9960	111.0			64
6	99	FOR13C		13.800	F3	82.0	-7.3	50.0	-50.0	0.9900	83.2	0.9960	111.0			64
6	101	BAY13A		13.800	B1	52.0	20.4	50.0	-25.0	1.0100	55.3	0.9310	96.0			61
6	102	BAY13B		13.800	B2	52.0	20.4	50.0	-25.0	1.0100	55.3	0.9309	96.0			61
6	108	BAY13C		13.800	B3	52.0	20.4	50.0	-25.0	1.0100	55.3	0.9309	100.0			61
6	116	PACORA13		13.800	P1	17.5	4.1	8.8	0.0	1.0300	17.4	0.9735	21.7			61
6	116	PACORA13		13.800	P2	17.5	4.1	8.8	0.0	1.0300	17.4	0.9735	21.7			61



6	116	PACORA13	13.800	P3	17.5	4.1	8.8	0.0	1.0300	17.4	0.9735	21.7	
6	142	CANJ13A	13.800	C1	57.0	15.4	29.0	-29.0	0.9800	60.2	0.9656	69.0	
6	150	GUALACA 13-213.800	G2	14.1	-5.6	7.4	-7.4	0.9800	15.4	0.9293	14.8		
6	151	GUALACA13.8 13.800	G1	14.1	-5.6	7.4	-7.4	0.9800	15.4	0.9293	14.8	64	
6	301	CONC13.8 13.800	G1	8.9	5.0	5.0	-5.0	0.9574	10.7	0.8716	13.5	64	
6	302	PASOANCH13.813.800	P1	4.6	2.0	2.0	-2.0	0.9555	5.3	0.9180	6.2	64	
6	304	ALGA13.8 13.800	A1	4.7	-2.3	2.3	-2.3	1.0700	4.9	0.9019	5.7	64	
6	304	ALGA13.8 13.800	A2	4.7	-2.3	2.3	-2.3	1.0700	4.9	0.9019	5.7	64	
6	307	CHAN1 A 13.800	G1	60.0	-17.2	50.0	-50.0	0.9900	63.1	0.9612	118.6	64	
6	317	MENDRE13.8 13.800	M1	9.4	0.0	0.0	0.0	1.0720	8.8	1.0000	35.3	64	
6	317	MENDRE13.8 13.800	M2	9.4	0.0	0.0	0.0	1.0720	8.8	1.0000	35.3	64	
6	340	PEDGALITO13813.800	P1	15.0	4.4	12.0	-5.0	0.9800	15.9	0.9604	27.0	64	
6	342	LORENA13.8 13.800	L1	11.3	-5.0	10.5	-5.0	0.9923	12.4	0.9138	19.9	64	
6	343	PRUDENCIA_1 13.800	G1	21.8	-7.2	9.8	-9.8	0.9800	23.5	0.9492	33.0	64	
6	343	PRUDENCIA_1 13.800	G2	21.8	-7.2	9.8	-9.8	0.9800	23.5	0.9492	33.0	64	
6	346	LORENA 13-2 13.800	L2	11.3	-5.0	10.5	-5.0	0.9923	12.4	0.9138	19.9	64	
6	350	MACANO 13.8 13.800	G1	3.1	-1.0	1.0	-1.0	1.0695	3.0	0.9514	6.2	64	
6	521	EGIRAL13.8 113.800	G1	3.6	1.8	2.8	1.3	1.0100	4.0	0.8952	4.8	63	
6	521	EGIRAL13.8 113.800	G2	3.6	1.8	2.8	1.3	1.0100	4.0	0.8952	4.8	63	
6	521	EGIRAL13.8 113.800	G3	3.6	1.8	2.8	1.3	1.0100	4.0	0.8952	4.8	63	
6	521	EGIRAL13.8 113.800	G4	3.6	1.8	2.8	1.3	1.0100	4.0	0.8952	4.8	63	
6	523	TCATIVÁ 13A 13.800	G1	8.3	4.5	6.6	-6.6	1.0181	9.3	0.8770	10.9	62	
6	523	TCATIVÁ 13A 13.800	G2	8.3	4.5	6.6	-6.6	1.0181	9.3	0.8770	10.9	62	
6	523	TCATIVÁ 13A 13.800	G3	8.3	4.5	6.6	-6.6	1.0181	9.3	0.8770	10.9	62	



6	523	TCATIVÁ 13A	13.800	G4	8.3	4.5	6.6	-6.6	1.0181	9.3	0.8770	10.9	
6	523	TCATIVÁ 13A	13.800	G5	8.3	4.5	6.6	-6.6	1.0181	9.3	0.8770	10.9	
6	524	TCATIVÁ 13B	13.800	G0	8.3	4.5	6.6	-6.6	1.0181	9.3	0.8770	10.9	
6	524	TCATIVÁ 13B	13.800	G6	8.3	4.5	6.6	-6.6	1.0181	9.3	0.8770	10.9	62
6	524	TCATIVÁ 13B	13.800	G7	8.3	4.5	6.6	-6.6	1.0181	9.3	0.8770	10.9	62
6	524	TCATIVÁ 13B	13.800	G8	8.3	4.5	6.6	-6.6	1.0181	9.3	0.8770	10.9	62
6	524	TCATIVÁ 13B	13.800	G9	8.3	4.5	6.6	-6.6	1.0181	9.3	0.8770	10.9	62
6	541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0230	24.4	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	26.6	1.8	13.0	-13.0	0.9900	26.9	0.9976	30.5	64
6	704	BJOMIN13B	13.800	G2	26.6	1.8	13.0	-13.0	0.9900	26.9	0.9976	30.5	64
6	705	BAITUN13A	13.800	G1	40.9	-9.9	26.6	-26.6	0.9900	42.5	0.9721	50.6	64
6	706	BAITUN13B	13.800	G2	40.9	-9.9	26.6	-26.6	0.9900	42.5	0.9721	50.6	64
6	720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9555	4.3	0.8730	6.2	64
6	SUBSYSTEM TOTALS				1194.3	106.6	766.6	-527.6				1783.2	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:14
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO CONT MDN-CONC

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																
7		129		MIR13D	13.800	G4	15.9	0.0	15.0	0.0	1.0015	15.9	1.0000	44.1		65
7		130		MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0198	16.8	1.0000	27.7		65
7		140		GAT6A	6.9000	G1	1.9	-1.2	2.0	-2.0	1.0000	2.3	0.8538	4.1		65
7		140		GAT6A	6.9000	G2	1.9	-1.2	2.0	-2.0	1.0000	2.3	0.8538	4.1		65
7		140		GAT6A	6.9000	G3	1.9	-1.2	2.0	-2.0	1.0000	2.3	0.8538	4.1		65



7	141 GAT6B	6.9000 G4	3.9	-1.9	3.0	-3.0	1.0000	4.3	0.8943	5.6
7	141 GAT6B	6.9000 G5	3.9	-1.9	3.0	-3.0	1.0000	4.3	0.8943	6.2
7	141 GAT6B	6.9000 G6	3.9	-1.9	3.0	-3.0	1.0000	4.3	0.8943	6.2
7	170 MIR13G	13.800 M1	17.0	6.8	11.2	6.8	1.0341	17.7	0.9281	23.0
7	171 MIR13H	13.800 M1	17.0	6.8	11.2	6.8	1.0431	17.6	0.9281	23.0
7	171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0431	17.6	0.9281	23.0
7	SUBSYSTEM TOTALS		101.4	11.1	71.5	5.5				171.3

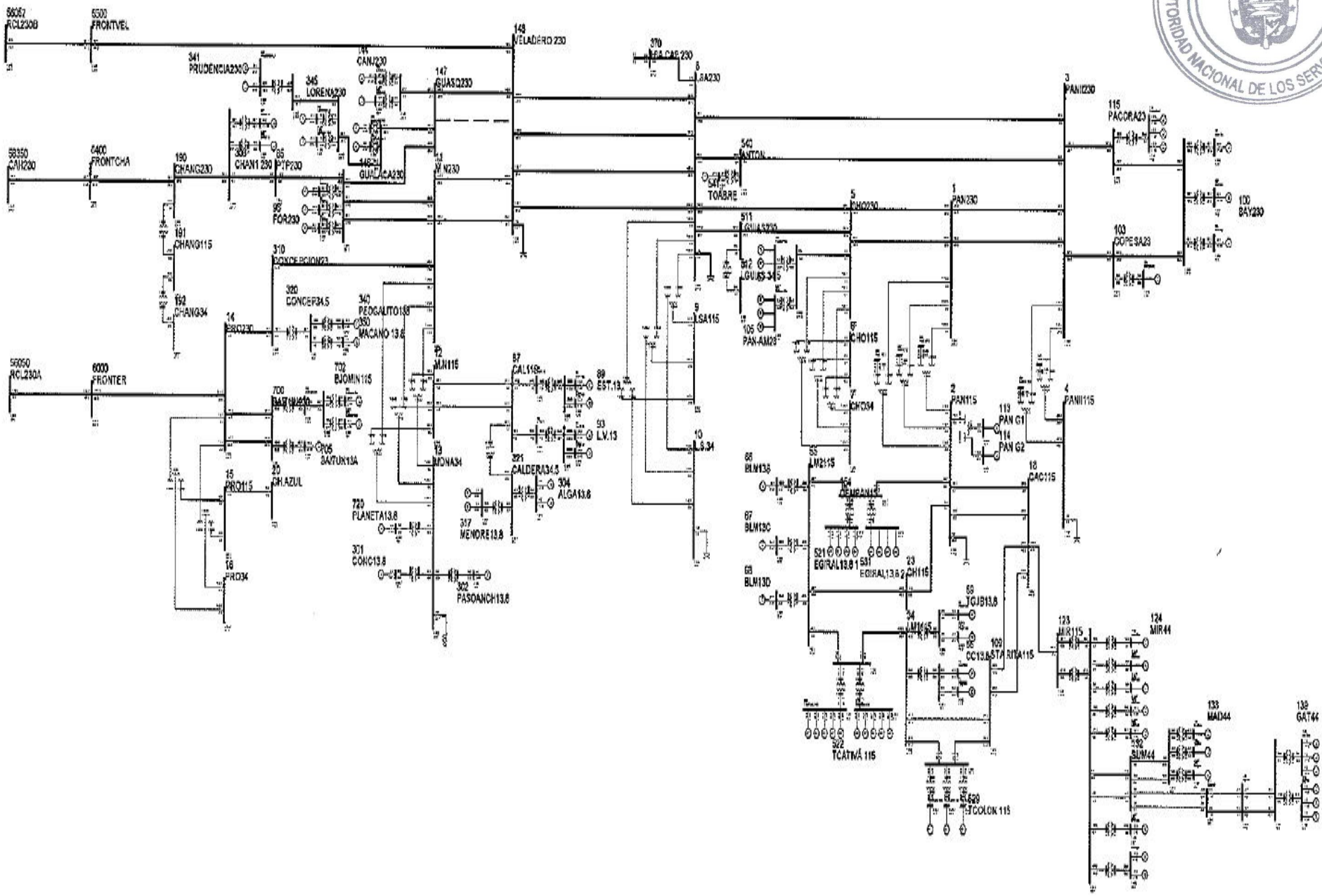
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:20
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO CONT MDN-CONC IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1 GUATEMAL	1272.0 190.5	1330.8 275.1	0.0 -198.9	0.0 0.0	0.0 278.0	-99.8 18.8	41.0 373.6	-100.0
2 SALVADOR	870.2 78.0	855.0 224.2	0.0 -70.7	0.0 0.0	0.0 228.7	0.0 -28.6	15.2 181.8	0.0
3 HONDURAS	1237.5 467.7	1203.0 321.1	0.0 -47.2	0.0 0.0	0.0 293.5	0.0 52.7	34.5 434.6	0.0
4 NICARAGU	532.5 38.2	525.2 207.6	0.0 -57.6	0.0 0.0	0.0 181.8	-0.2 -48.2	7.5 118.2	0.0
5 COSTA RI	1297.2 211.4	1280.2 520.4	0.0 -230.3	0.0 0.0	0.0 417.4	-0.3 41.8	17.4 296.8	0.0
6 PANAMA	1194.3 106.6	1112.7 225.9	0.0 -64.4	0.0 0.0	0.0 467.4	39.3 -29.2	42.3 441.7	40.0
7 ACANAL	101.4 11.1	39.9 8.1	0.0 0.0	0.0 0.0	0.0 0.0	61.0 -7.3	0.5 10.3	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
TOTALS	6505.1	6346.8	0.0	0.0	0.0	0.0	158.4	0.0

1103.5 1782.3 -669.1 0.0 1866.8 0.0 1857.1



1.1.2. Contingencia Guasquitas – Veladero





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:48
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO CONT GUAS-VEL

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0002	230.05	3		PANII230		230.00	6	1.0053	231.22
8		LSA230		230.00	6	1.0014	230.33	11		M.N230		230.00	6	1.0016	230.38
14		PRO230		230.00	6	1.0097	232.22	85		PTP230		230.00	6	1.0032	230.73
96		FOR230		230.00	6	1.0013	230.30	100		BAY230		230.00	6	1.0345	237.93
103		COPESA23		230.00	6	1.0101	232.33	115		PACORA23		230.00	6	1.0158	233.64
146		GUALACA230		230.00	6	1.0012	230.28	148		VELADERO	230	230.00	6	1.0023	230.53
190		CHANG230		230.00	6	1.0077	231.77	306		CHAN1	230	230.00	6	1.0053	231.23
310		CONCEPCION23		230.00	6	1.0073	231.69	341		PRUDENCIA230	230.00	6	1.0070	231.62	
345		LORENA230		230.00	6	1.0049	231.12	370		LSA CAP	230	230.00	6	1.0014	230.33
540		ANTON		230.00	6	1.0187	234.31	700		BAITUN230		230.00	6	1.0090	232.06
6000		FRONTER		230.00	6	1.0109	232.52	6400		FRONTCHA		230.00	6	1.0098	232.25
6500		FRONTVEL		230.00	6	1.0150	233.46								

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)
5		CHO230		230.00	6	0.9979	229.52	105		PAN-AM23		230.00	6	0.9979	229.52
144		CANJ230		230.00	6	0.9973	229.38	147		GUASQ230		230.00	6	0.9973	229.38
511		LGUIAS230		230.00	6	0.9983	229.61								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:48
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO CONT GUAS-VEL

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0019	115.22	4		PANII115		115.00	6	1.0076	115.87
9		LSA115		115.00	6	1.0480	120.53	15		PRO115		115.00	6	1.0115	116.32
18		CAC115		115.00	6	1.0017	115.20	20		CH.AZUL		115.00	6	1.0122	116.41
23		CH115		115.00	6	1.0066	115.76	33		STM115		115.00	6	1.0001	115.02
52		TOC115		115.00	6	1.0050	115.57	54		LM115		115.00	6	1.0321	118.69
55		LM2115		115.00	6	1.0331	118.80	61		FFIELD		115.00	6	1.0291	118.35
87		CAL115		115.00	6	1.0102	116.17	88		EST115		115.00	6	1.0134	116.55
92		L.V115		115.00	6	1.0115	116.32	109		STA RITA115		115.00	6	1.0289	118.32
123		MIR115		115.00	7	1.0079	115.91	154		CEMPAN15		115.00	6	1.0266	118.06
191		CHANG115		115.00	6	1.0035	115.40	522		TCATIVÁ	115	115.00	6	1.0329	118.78
529		TCOLON	115	115.00	6	1.0305	118.50								

BUSES WITH VOLTAGE LESS THAN 1.0000:



BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6		CHO115		115.00	6	0.9987	114.85	12		M.N115		115.00	6	0.9969	114.64
19		C.V115		115.00	6	0.9981	114.78	21		C.BAN115		115.00	6	0.9932	114.22
26		LOC115		115.00	6	0.9941	114.33	30		MAR115		115.00	6	0.9929	114.19
37		SAN115		115.00	6	0.9924	114.12	48		TINAJ115		115.00	6	0.9997	114.96
50		M.O115		115.00	6	0.9998	114.98	701		BAITUN115		115.00	6	0.9875	113.56
702		BJOMIN115		115.00	6	0.9899	113.83								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:48
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO CONT GUAS-VEL

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	8.9	25.0	0.0	1.0000	39.0	0.9737	47.0			62
67		BLM13C		13.800	V3	38.0	8.9	25.0	0.0	1.0000	39.0	0.9737	47.0			62
68		BLM13D		13.800	V4	38.0	9.2	25.0	0.0	1.0000	39.1	0.9720	47.0			62
90		EST-13L		13.800	E1	22.0	5.3	12.0	-5.0	0.9800	23.1	0.9725	27.0			64
91		EST-13T		13.800	E2	22.0	5.3	12.0	-5.0	0.9800	23.1	0.9725	27.0			64
94		LV-13.8L		13.800	L1	25.0	6.1	12.0	-5.0	0.9800	26.3	0.9717	27.0			64
95		LV-13.8T		13.800	L2	25.0	6.1	12.0	-5.0	0.9800	26.3	0.9717	27.0			64
97		FOR13A		13.800	F1	82.1	-6.4	50.0	-50.0	0.9900	83.2	0.9970	111.0			64
98		FOR13B		13.800	F2	82.1	-6.4	50.0	-50.0	0.9900	83.2	0.9970	111.0			64
99		FOR13C		13.800	F3	82.1	-6.4	50.0	-50.0	0.9900	83.2	0.9970	111.0			64
101		BAY13A		13.800	B1	52.1	21.3	50.0	-25.0	1.0100	55.7	0.9254	96.0			61
102		BAY13B		13.800	B2	52.1	21.3	50.0	-25.0	1.0100	55.7	0.9253	96.0			61
108		BAY13C		13.800	B3	52.1	21.3	50.0	-25.0	1.0100	55.7	0.9253	100.0			61
116		PACORA13		13.800	P1	17.5	4.4	8.8	0.0	1.0300	17.5	0.9694	21.7			61
116		PACORA13		13.800	P2	17.5	4.4	8.8	0.0	1.0300	17.5	0.9694	21.7			61



6	116	PACORA13	13.800	P3	17.5	4.4	8.8	0.0	1.0300	17.5	0.9694	21.7	61
6	142	CANJ13A	13.800	C1	57.1	15.9	29.0	-29.0	0.9800	60.4	0.9632	69.0	64
6	150	GUALACA 13-213.800	13.800	G2	14.1	-4.8	7.4	-7.4	0.9800	15.2	0.9465	14.8	64
6	151	GUALACA13.8	13.800	G1	14.1	-4.8	7.4	-7.4	0.9800	15.2	0.9465	14.8	64
6	301	CONC13.8	13.800	G1	8.9	5.0	5.0	-5.0	0.9570	10.7	0.8718	13.5	64
6	302	PASOANCH13.813.800	13.800	P1	4.6	2.0	2.0	-2.0	0.9551	5.3	0.9182	6.2	64
6	304	ALGA13.8	13.800	A1	4.7	-2.3	2.3	-2.3	1.0698	4.9	0.9019	5.7	64
6	304	ALGA13.8	13.800	A2	4.7	-2.3	2.3	-2.3	1.0698	4.9	0.9019	5.7	64
6	307	CHAN1 A	13.800	G1	60.1	-12.7	50.0	-50.0	0.9900	62.0	0.9783	118.6	64
6	317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0718	8.8	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.0718	8.8	1.0000	35.3	64
6	340	PEDGALITO13813.800	13.800	P1	15.0	7.4	12.0	-5.0	0.9800	17.1	0.8965	27.0	64
6	342	LORENA13.8	13.800	L1	11.3	-5.0	10.5	-5.0	0.9891	12.5	0.9140	19.9	64
6	343	PRUDENCIA_1	13.800	G1	21.9	-6.4	9.8	-9.8	0.9800	23.2	0.9597	33.0	64
6	343	PRUDENCIA_1	13.800	G2	21.9	-6.4	9.8	-9.8	0.9800	23.2	0.9597	33.0	64
6	346	LORENA 13-2	13.800	L2	11.3	-5.0	10.5	-5.0	0.9891	12.5	0.9140	19.9	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0622	3.1	0.9516	6.2	64
6	521	EGIRAL13.8	113.800	G1	3.6	1.8	2.8	1.3	1.0100	4.0	0.8898	4.8	63
6	521	EGIRAL13.8	113.800	G2	3.6	1.8	2.8	1.3	1.0100	4.0	0.8898	4.8	63
6	521	EGIRAL13.8	113.800	G3	3.6	1.8	2.8	1.3	1.0100	4.0	0.8898	4.8	63
6	521	EGIRAL13.8	113.800	G4	3.6	1.8	2.8	1.3	1.0100	4.0	0.8898	4.8	63
6	523	TCATIVÁ 13A	13.800	G1	8.3	4.6	6.6	-6.6	1.0181	9.3	0.8724	10.9	62
6	523	TCATIVÁ 13A	13.800	G2	8.3	4.6	6.6	-6.6	1.0181	9.3	0.8724	10.9	62



7	140	GAT6A	6.9000	G2	1.9	-1.1	2.0	-2.0	1.0000	2.2	0.8615	4.1	65
7	140	GAT6A	6.9000	G3	1.9	-1.1	2.0	-2.0	1.0000	2.2	0.8615	4.1	65
7	141	GAT6B	6.9000	G4	3.9	-1.9	3.0	-3.0	1.0000	4.3	0.8980	5.6	65
7	141	GAT6B	6.9000	G5	3.9	-1.9	3.0	-3.0	1.0000	4.3	0.8980	6.2	65
7	141	GAT6B	6.9000	G6	3.9	-1.9	3.0	-3.0	1.0000	4.3	0.8980	6.2	65
7	170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0325	17.8	0.9282	23.0	65
7	171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0415	17.6	0.9282	23.0	65
7	171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0415	17.6	0.9282	23.0	65
	SUBSYSTEM TOTALS				101.5	11.4	71.5	5.5				171.3	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:52
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO 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	1273.1 190.5	1330.8 275.1	0.0 -198.9	0.0 0.0	0.0 278.0	-98.8 18.6	41.0 373.8	-100.0
2 SALVADOR	870.6 77.8	855.0 224.2	0.0 -70.7	0.0 0.0	0.0 228.7	0.5 -28.6	15.1 181.7	0.0
3 HONDURAS	1237.9 467.4	1203.0 321.1	0.0 -47.2	0.0 0.0	0.0 293.5	0.4 52.7	34.5 434.4	0.0
4 NICARAGU	532.6 38.0	525.2 207.6	0.0 -57.6	0.0 0.0	0.0 181.8	0.0 -48.1	7.4 118.0	0.0
5 COSTA RI	1297.7 217.3	1280.2 520.4	0.0 -230.0	0.0 0.0	0.0 416.5	0.3 46.4	17.3 297.1	0.0
6 PANAMA	1195.3 135.5	1112.7 225.9	0.0 -64.2	0.0 0.0	0.0 453.5	36.7 -33.8	45.9 461.0	40.0
7 ACANAL	101.5 11.4	39.9 8.1	0.0 0.0	0.0 0.0	0.0 0.0	61.1 -7.1	0.5 10.3	60.0



10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	6508.7	6346.8	0.0	0.0	0.0	0.0	161.9	0.0
	1137.9	1782.3	-668.7	0.0	1852.1	0.0	1876.3	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:55
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

BUSES WITH VOLTAGE 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	1.0007	230.15	14		PRO230		230.00	6	1.0090	232.06
85		PTP230		230.00	6	1.0039	230.89	96		FOR230		230.00	6	1.0003	230.07
100		BAY230		230.00	6	1.0261	236.00	115		PACORA23		230.00	6	1.0039	230.90
146		GUALACA230		230.00	6	1.0008	230.18	190		CHANG230		230.00	6	1.0088	232.02
306		CHAN1 230		230.00	6	1.0064	231.48	310		CONCEPCION23		230.00	6	1.0065	231.50
341		PRUDENCIA230		230.00	6	1.0067	231.53	345		LORENA230		230.00	6	1.0045	231.03
540		ANTON		230.00	6	1.0013	230.30	700		BAITUN230		230.00	6	1.0083	231.92
6000		FRONTER		230.00	6	1.0102	232.35	6400		FRONTCHA		230.00	6	1.0108	232.48
6500		FRONTVEL		230.00	6	1.0138	233.18								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9854	226.64	3		PANII230		230.00	6	0.9909	227.91
5		CHO230		230.00	6	0.9805	225.51	8		LSA230		230.00	6	0.9869	226.99
103		COPESA23		230.00	6	0.9966	229.22	105		PAN-AM23		230.00	6	0.9805	225.52
144		CANJ230		230.00	6	0.9969	229.28	147		GUASQ230		230.00	6	0.9969	229.28
148		VELADERO		230.00	6	0.9976	229.44	370		LSA CAP 230		230.00	6	0.9869	226.99
511		LGUIAS230		230.00	6	0.9801	225.42								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:55
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	1.0325	118.74	15		PRO115		115.00	6	1.0108	116.24
20		CH.AZUL		115.00	6	1.0115	116.33	54		LM1115		115.00	6	1.0264	118.04
55		LM2115		115.00	6	1.0275	118.16	61		FFIELD		115.00	6	1.0235	117.70
87		CAL115		115.00	6	1.0098	116.13	88		EST115		115.00	6	1.0131	116.50
92		L.V115		115.00	6	1.0111	116.28	109		STA RITA115		115.00	6	1.0225	117.58
154		CEMPAN15		115.00	6	1.0195	117.24	191		CHANG115		115.00	6	1.0046	115.52
522		TCATIVÁ		115.00	6	1.0272	118.13	529		TCOLON		115.00	6	1.0244	117.81

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)
2		PAN115		115.00	6	0.9894	113.78	4		PANII115		115.00	6	0.9934	114.24
6		CHO115		115.00	6	0.9813	112.85	12		M.N115		115.00	6	0.9963	114.57



6	116	PACORA13	13.800	P3	17.5	6.6	8.8	0.0	1.0300	18.2	0.9348	21.7	61
6	142	CANJ13A	13.800	C1	57.1	16.0	29.0	-29.0	0.9800	60.5	0.9629	69.0	64
6	150	GUALACA 13-213.800	13.800	G2	14.1	-4.7	7.4	-7.4	0.9800	15.1	0.9486	14.8	64
6	151	GUALACA13.8	13.800	G1	14.1	-4.7	7.4	-7.4	0.9800	15.1	0.9486	14.8	64
6	301	CONC13.8	13.800	G1	8.9	5.0	5.0	-5.0	0.9560	10.7	0.8720	13.5	64
6	302	PASOANCH13.813.800	13.800	P1	4.6	2.0	2.0	-2.0	0.9542	5.3	0.9183	6.2	64
6	304	ALGA13.8	13.800	A1	4.7	-2.3	2.3	-2.3	1.0693	4.9	0.9019	5.7	64
6	304	ALGA13.8	13.800	A2	4.7	-2.3	2.3	-2.3	1.0693	4.9	0.9019	5.7	64
6	307	CHAN1 A	13.800	G1	60.1	-13.8	50.0	-50.0	0.9900	62.3	0.9747	118.6	64
6	317	MENDRE13.8	13.800	M1	9.5	0.0	0.0	0.0	1.0713	8.8	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.5	0.0	0.0	0.0	1.0713	8.8	1.0000	35.3	64
6	340	PEDGALITO13813.800	13.800	P1	15.0	7.6	12.0	-5.0	0.9800	17.2	0.8920	27.0	64
6	342	LORENA13.8	13.800	L1	11.3	-5.0	10.5	-5.0	0.9887	12.5	0.9141	19.9	64
6	343	PRUDENCIA_1	13.800	G1	21.9	-6.3	9.8	-9.8	0.9800	23.2	0.9609	33.0	64
6	343	PRUDENCIA_1	13.800	G2	21.9	-6.3	9.8	-9.8	0.9800	23.2	0.9609	33.0	64
6	346	LORENA 13-2	13.800	L2	11.3	-5.0	10.5	-5.0	0.9887	12.5	0.9141	19.9	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0618	3.1	0.9516	6.2	64
6	521	EGIRAL13.8	113.800	G1	3.6	2.2	2.8	1.3	1.0100	4.2	0.8526	4.8	63
6	521	EGIRAL13.8	113.800	G2	3.6	2.2	2.8	1.3	1.0100	4.2	0.8526	4.8	63
6	521	EGIRAL13.8	113.800	G3	3.6	2.2	2.8	1.3	1.0100	4.2	0.8526	4.8	63
6	521	EGIRAL13.8	113.800	G4	3.6	2.2	2.8	1.3	1.0100	4.2	0.8526	4.8	63
6	523	TCATIVÁ 13A	13.800	G1	8.3	5.3	6.6	-6.6	1.0181	9.7	0.8416	10.9	62
6	523	TCATIVÁ 13A	13.800	G2	8.3	5.3	6.6	-6.6	1.0181	9.7	0.8416	10.9	62



7	140	GAT6A	6.9000	G2	1.9	-0.9	2.0	-2.0	1.0000	2.1	0.9004	4.1
7	140	GAT6A	6.9000	G3	1.9	-0.9	2.0	-2.0	1.0000	2.1	0.9004	4.1
7	141	GAT6B	6.9000	G4	3.9	-1.7	3.0	-3.0	1.0000	4.2	0.9166	5.6
7	141	GAT6B	6.9000	G5	3.9	-1.7	3.0	-3.0	1.0000	4.2	0.9166	6.2
7	141	GAT6B	6.9000	G6	3.9	-1.7	3.0	-3.0	1.0000	4.2	0.9166	6.2
7	170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0257	17.9	0.9283	23.0
7	171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0348	17.7	0.9283	23.0
7	171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0348	17.7	0.9283	23.0
	SUBSYSTEM TOTALS				101.6	15.4	71.5	5.5				171.3

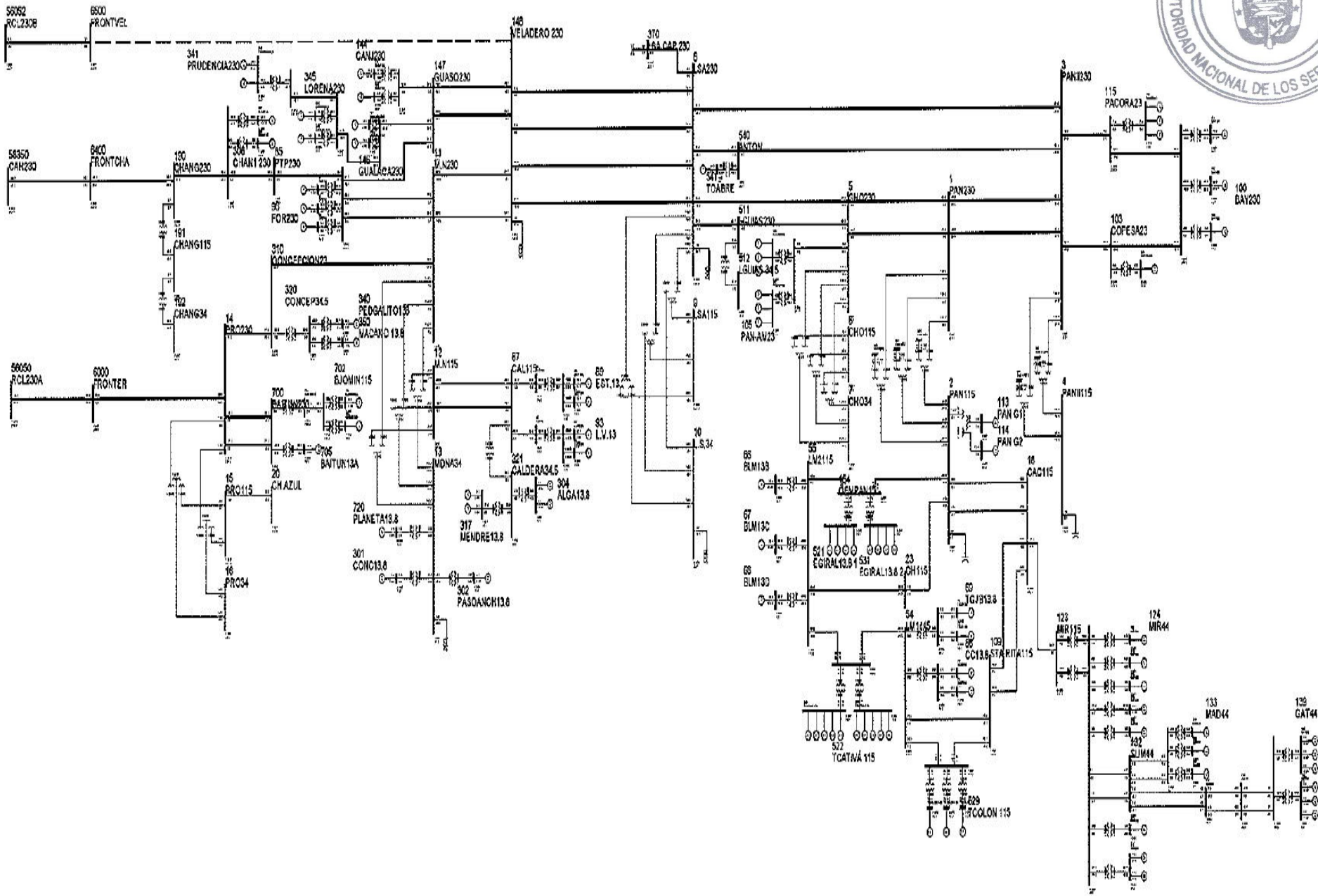
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 11:58
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII IN MW/MVAR

X--	AREA	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL	1273.8	1330.8	0.0	0.0	0.0	-98.1	41.1	-100.0
		190.5	275.1	-198.9	0.0	278.0	18.5	373.9	
2	SALVADOR	870.8	855.0	0.0	0.0	0.0	0.7	15.1	0.0
		77.7	224.2	-70.7	0.0	228.7	-28.6	181.6	
3	HONDURAS	1238.1	1203.0	0.0	0.0	0.0	0.6	34.5	0.0
		467.2	321.1	-47.2	0.0	293.6	52.7	434.3	
4	NICARAGU	532.7	525.2	0.0	0.0	0.0	0.1	7.4	0.0
		37.8	207.6	-57.6	0.0	181.8	-48.1	117.8	
5	COSTA RI	1298.1	1280.2	0.0	0.0	0.0	0.8	17.2	0.0
		217.0	520.4	-230.0	0.0	416.5	46.8	296.4	
6	PANAMA	1196.1	1112.7	0.0	0.0	0.0	34.7	48.7	40.0
		180.0	225.9	-62.5	0.0	424.7	-37.9	479.2	
7	ACANAL	101.6	39.9	0.0	0.0	0.0	61.1	0.6	60.0
		15.4	8.1	0.0	0.0	0.0	-3.3	10.5	



10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	6511.3	6346.8	0.0	0.0	0.0	0.0	164.5	0.0
	1185.7	1782.3	-667.0	0.0	1823.4	0.0	1893.7	

1.2 Demanda Mínima de Invierno





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:15
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MIN-INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0094	232.16	14	PRO230	230.00	6	1.0187	234.29				
85	PTP230	230.00	6	1.0069	231.58	96	FOR230	230.00	6	1.0099	232.27				
100	BAY230	230.00	6	1.0141	233.24	115	PACORA23	230.00	6	1.0001	230.03				
144	CANJ230	230.00	6	1.0070	231.60	146	GUALACA230	230.00	6	1.0097	232.23				
147	GUASQ230	230.00	6	1.0069	231.59	148	VELADERO 230	230.00	6	1.0027	230.61				
190	CHANG230	230.00	6	1.0085	231.95	306	CHAN1 230	230.00	6	1.0065	231.50				
310	CONCEPCION23	230.00	6	1.0158	233.63	341	PRUDENCIA230	230.00	6	1.0127	232.92				
345	LORENA230	230.00	6	1.0118	232.72	540	ANTON	230.00	6	1.0118	232.71				
700	BAITUN230	230.00	6	1.0187	234.30	6000	FRONTER	230.00	6	1.0193	234.43				
6400	FRONTCHA	230.00	6	1.0101	232.33	6500	FRONTVEL	230.00	6	1.0209	234.80				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9907	227.87	3	PANII230	230.00	6	0.9946	228.75				
5	CHO230	230.00	6	0.9924	228.26	8	LSA230	230.00	6	0.9959	229.05				
103	COPESA23	230.00	6	0.9980	229.54	105	PAN-AM23	230.00	6	0.9924	228.26				
370	LSA CAP 230	230.00	6	0.9959	229.05	511	LGUIAS230	230.00	6	0.9956	228.99				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:15
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MIN-INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	1.0441	120.07	12	M.N115	115.00	6	1.0156	116.80				
15	PRO115	115.00	6	1.0205	117.36	20	CH.AZUL	115.00	6	1.0212	117.44				
54	LM115	115.00	6	1.0039	115.45	55	LM2115	115.00	6	1.0048	115.55				
61	FFIELD	115.00	6	1.0023	115.26	87	CAL115	115.00	6	1.0272	118.13				
88	EST115	115.00	6	1.0307	118.53	92	L.V115	115.00	6	1.0279	118.21				
109	STA RITA115	115.00	6	1.0019	115.22	191	CHANG115	115.00	6	1.0049	115.56				
522	TCATIVÁ 115	115.00	6	1.0044	115.50	529	TCOLON 115	115.00	6	1.0029	115.33				
701	BAITUN115	115.00	6	1.0110	116.26	702	BJOMIN115	115.00	6	1.0116	116.33				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	0.9837	113.13	4	PANII115	115.00	6	0.9951	114.44				
6	CHO115	115.00	6	0.9931	114.21	18	CAC115	115.00	6	0.9837	113.12				



19 C.V115	115.00	6 0.9861	113.41	21 C.BAN115	115.00	6 0.9783	112.50
23 CH115	115.00	6 0.9865	113.44	26 LOC115	115.00	6 0.9788	112.56
30 MAR115	115.00	6 0.9776	112.42	33 STM115	115.00	6 0.9825	112.98
37 SAN115	115.00	6 0.9780	112.47	48 TINAJ115	115.00	6 0.9822	112.95
50 M.O115	115.00	6 0.9822	112.96	52 TOC115	115.00	6 0.9931	114.21
123 MIR115	115.00	7 0.9896	113.81	154 CEMPAN15	115.00	6 0.9981	114.78

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:15
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MIN-INVIERNO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
66		BLM13B		13.800	V2	38.0	16.4	25.0	0.0	0.9900	41.8	0.9181	47.0			62
67		BLM13C		13.800	V3	38.0	16.4	25.0	0.0	0.9900	41.8	0.9181	47.0			62
68		BLM13D		13.800	V4	38.0	17.1	25.0	0.0	0.9900	42.1	0.9121	47.0			62
90		EST-13L		13.800	E1	19.0	6.2	12.0	-5.0	1.0000	20.0	0.9505	27.0			64
91		EST-13T		13.800	E2	19.0	6.2	12.0	-5.0	1.0000	20.0	0.9505	27.0			64
94		LV-13.8L		13.800	L1	22.6	7.6	12.0	-5.0	1.0000	23.9	0.9484	27.0			64
97		FOR13A		13.800	F1	64.2	-6.7	50.0	-50.0	1.0000	64.5	0.9945	111.0			64
98		FOR13B		13.800	F2	64.2	-6.7	50.0	-50.0	1.0000	64.5	0.9945	111.0			64
101		BAY13A		13.800	B1	59.9	21.2	50.0	-25.0	0.9900	64.2	0.9429	96.0			61
102		BAY13B		13.800	B2	46.5	20.2	50.0	-25.0	0.9900	51.2	0.9172	96.0			61
142		CANJ13A		13.800	C1	52.0	14.0	29.0	-29.0	0.9900	54.4	0.9657	69.0			64
150		GUALACA 13-213.800		13.800	G2	14.0	-4.5	7.4	-7.4	0.9900	14.8	0.9524	14.8			64
151		GUALACA13.8		13.800	G1	14.0	-4.5	7.4	-7.4	0.9900	14.8	0.9524	14.8			64
301		CONC13.8		13.800	G1	8.4	5.0	5.0	-5.0	0.9556	10.2	0.8589	13.5			64
302		PASOANCH13.813.800		13.800	P1	4.3	2.0	2.0	-2.0	0.9537	5.0	0.9072	6.2			64
304		ALGA13.8		13.800	A1	4.4	-2.3	2.3	-2.3	1.0891	4.5	0.8894	5.7			64



6	304	ALGA13.8	13.800	A2	4.4	-2.3	2.3	-2.3	1.0891	4.5	0.8894	5.7	64
6	307	CHAN1 A	13.800	G1	63.0	-13.7	50.0	-50.0	0.9900	65.1	0.9772	118.6	64
6	317	MENDRE13.8	13.800	M1	8.8	0.0	0.0	0.0	1.0912	8.0	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	8.8	0.0	0.0	0.0	1.0912	8.0	1.0000	35.3	64
6	340	PEDGALITO138	13.800	P1	20.1	8.4	12.0	-5.0	0.9900	22.0	0.9235	27.0	64
6	342	LORENA13.8	13.800	L1	10.5	-5.0	10.5	-5.0	0.9963	11.7	0.9025	19.9	64
6	343	PRUDENCIA_1	13.800	G1	20.3	-9.8	9.8	-9.8	0.9942	22.7	0.9016	33.0	64
6	346	LORENA 13-2	13.800	L2	10.5	-5.0	10.5	-5.0	0.9963	11.7	0.9025	19.9	64
6	350	MACANO 13.8	13.800	G1	2.9	-1.0	1.0	-1.0	1.0717	2.8	0.9446	6.2	64
6	541	TOABRE	0.6000	1	20.0	0.0	0.0	0.0	1.0126	19.8	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	20.5	-0.3	13.0	-13.0	1.0000	20.5	0.9999	30.5	64
6	705	BAITUN13A	13.800	G1	38.0	-6.6	26.6	-26.6	1.0000	38.6	0.9852	50.6	64
6	720	PLANETA13.8	13.800	G1	3.3	2.0	2.0	-2.0	0.9537	4.1	0.8576	6.2	64
6	SUBSYSTEM TOTALS				737.6	74.3	501.8	-337.8				1237.2	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:15
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MIN-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

AREA SWING	BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
7	129	MIR13D	13.800	G4	21.2	5.9	15.0	0.0	1.0000	22.0	0.9636	44.1			65
7	140	GAT6A	6.9000	G1	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9561	4.1			65
7	140	GAT6A	6.9000	G2	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9561	4.1			65
7	140	GAT6A	6.9000	G3	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9561	4.1			65



7	141 GAT6B	6.9000 G4	3.6	-1.3	3.0	-3.0	1.0000	3.8	0.9399	5.6	65
7	141 GAT6B	6.9000 G5	3.6	-1.3	3.0	-3.0	1.0000	3.8	0.9399	6.2	65
7	141 GAT6B	6.9000 G6	3.6	-1.3	3.0	-3.0	1.0000	3.8	0.9399	6.2	65
7	171 MIR13H	13.800 M1	15.8	6.8	11.2	6.8	1.0258	16.8	0.9185	23.0	65
7	171 MIR13H	13.800 M2	15.8	6.8	11.2	6.8	1.0258	16.8	0.9185	23.0	65
	SUBSYSTEM TOTALS		69.1	13.9	52.3	-1.4				120.6	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:15
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2011 ESC-MOD DEMANDA-MIN-INVIERNO 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	1213.4 196.1	1330.8 275.1	0.0 -197.8	0.0 0.0	0.0 276.6	-158.5 27.4	41.0 368.1	-158.5
2 SALVADOR	872.4 91.6	855.0 224.2	0.0 -70.5	0.0 0.0	0.0 227.7	0.0 -28.4	17.4 194.0	0.0
3 HONDURAS	1239.0 480.8	1203.0 321.1	0.0 -47.0	0.0 0.0	0.0 292.2	0.0 52.2	36.0 446.8	0.0
4 NICARAGU	534.6 51.0	525.2 207.6	0.0 -57.2	0.0 0.0	0.0 180.7	0.0 -49.7	9.3 131.0	0.0
5 COSTA RI	1300.7 227.8	1280.2 520.4	0.0 -229.5	0.0 0.0	0.0 416.0	0.0 39.9	20.5 313.0	0.0
6 PANAMA	737.6 74.3	612.0 222.1	0.0 155.8	0.0 0.0	0.0 437.8	111.7 -40.6	13.9 174.7	111.5
7 ACANAL	69.1 13.9	21.9 8.0	0.0 0.0	0.0 0.0	0.0 0.0	46.7 -0.8	0.4 6.7	47.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
TOTALS	5966.6 1135.5	5828.1 1778.3	0.0 -446.2	0.0 0.0	0.0 1831.0	0.0 0.0	138.5 1634.4	0.0





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:26
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-VERANO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0003	230.06	11		M.N230		230.00	6	1.0080	231.85
14		PRO230		230.00	6	1.0199	234.58	96		FOR230		230.00	6	1.0049	231.12
100		BAY230		230.00	6	1.0269	236.19	103		COPESA23		230.00	6	1.0047	231.07
115		PACORA23		230.00	6	1.0085	231.95	144		CANJ230		230.00	6	1.0067	231.55
146		GUALACA230		230.00	6	1.0088	232.02	147		GUASQ230		230.00	6	1.0066	231.52
148		VELADERO 230		230.00	6	1.0093	232.15	310		CONCEPCION23		230.00	6	1.0145	233.34
345		LORENA230		230.00	6	1.0101	232.33	700		BAITUN230		230.00	6	1.0200	234.60
6000		FRONTER		230.00	6	1.0214	234.93	6400		FRONTCHA		230.00	6	1.0402	239.25
6500		FRONTVEL		230.00	6	1.0256	235.90								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9967	229.25	5		CHO230		230.00	6	0.9952	228.90
8		LSA230		230.00	6	0.9949	228.82	85		PTP230		230.00	6	0.9900	227.70
105		PAN-AM23		230.00	6	0.9952	228.90	190		CHANG230		230.00	6	0.9868	226.97
511		LGUIAS230		230.00	6	0.9948	228.81								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:26
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-VERANO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0019	115.21	9		LSA115		115.00	6	1.0357	119.11
12		M.N115		115.00	6	1.0024	115.27	15		PRO115		115.00	6	1.0217	117.50
20		CH.AZUL		115.00	6	1.0225	117.59	23		CH115		115.00	6	1.0042	115.49
54		LM1115		115.00	6	1.0363	119.17	55		LM2115		115.00	6	1.0366	119.21
61		FFIELD		115.00	6	1.0334	118.84	87		CAL115		115.00	6	1.0138	116.59
88		EST115		115.00	6	1.0166	116.91	92		L.V115		115.00	6	1.0149	116.72
109		STA RITA115		115.00	6	1.0348	119.00	123		MIR115		115.00	7	1.0035	115.41
154		CEMPAN15		115.00	6	1.0325	118.74	522		TCATIVÁ 115		115.00	6	1.0367	119.22
529		TCOLON 115		115.00	6	1.0388	119.46	702		BJOMIN115		115.00	6	1.0009	115.10

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)
2		PAN115		115.00	6	0.9972	114.68	6		CHO115		115.00	6	0.9964	114.59
18		CAC115		115.00	6	0.9971	114.67	19		C.V115		115.00	6	0.9925	114.14
21		C.BAN115		115.00	6	0.9881	113.63	26		LOC115		115.00	6	0.9891	113.74



30 MAR115	115.00	6 0.9880	113.62	33 STM115	115.00	6 0.9954	114.47
37 SAN115	115.00	6 0.9872	113.53	48 TINAJ115	115.00	6 0.9949	114.41
50 M.O115	115.00	6 0.9950	114.43	52 TOC115	115.00	6 0.9992	114.91
191 CHANG115	115.00	6 0.9823	112.97	701 BAITUN115	115.00	6 0.9986	114.84

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:26
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-VERANO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6		66		BLM13B		13.800	V2	38.0	5.1	25.0	0.0	0.9950	38.5	0.9911	47.0	62
6		67		BLM13C		13.800	V3	38.0	5.1	25.0	0.0	0.9950	38.5	0.9911	47.0	62
6		68		BLM13D		13.800	V4	38.0	5.2	25.0	0.0	0.9950	38.5	0.9908	47.0	62
6		90		EST-13L		13.800	E1	19.9	4.2	12.0	-5.0	0.9800	20.8	0.9783	27.0	64
6		91		EST-13T		13.800	E2	19.9	4.2	12.0	-5.0	0.9800	20.8	0.9783	27.0	64
6		94		LV-13.8L		13.800	L1	23.2	4.9	12.0	-5.0	0.9800	24.2	0.9780	27.0	64
6		95		LV-13.8T		13.800	L2	23.2	4.9	12.0	-5.0	0.9800	24.2	0.9780	27.0	64
6		97		FOR13A		13.800	F1	73.0	-19.2	50.0	-50.0	0.9800	77.0	0.9671	111.0	64
6		98		FOR13B		13.800	F2	73.0	-19.2	50.0	-50.0	0.9800	77.0	0.9671	111.0	64
6		99		FOR13C		13.800	F3	73.0	-19.2	50.0	-50.0	0.9800	77.0	0.9671	111.0	64
6		101		BAY13A		13.800	B1	58.5	19.4	50.0	-25.0	1.0000	61.7	0.9490	96.0	61
6		102		BAY13B		13.800	B2	58.5	19.4	50.0	-25.0	1.0000	61.7	0.9490	96.0	61
6		108		BAY13C		13.800	B3	58.5	19.4	50.0	-25.0	1.0000	61.7	0.9490	100.0	61
6		116		PACORA13		13.800	P1	17.0	0.3	8.8	0.0	1.0000	17.0	0.9998	21.7	61
6		116		PACORA13		13.800	P2	17.0	0.3	8.8	0.0	1.0000	17.0	0.9998	21.7	61
6		116		PACORA13		13.800	P3	17.0	0.3	8.8	0.0	1.0000	17.0	0.9998	21.7	61
6		142		CANJ13A		13.800	C1	35.7	7.6	29.0	-29.0	0.9800	37.2	0.9781	69.0	64



6	143	CANJ13B	13.800	C2	35.7	7.6	29.0	-29.0	0.9800	37.2	0.9781	69.0	64
6	150	GUALACA 13-2	13.800	G2	14.0	-4.3	7.4	-7.4	0.9900	14.8	0.9567	14.8	64
6	151	GUALACA13.8	13.800	G1	14.0	-4.3	7.4	-7.4	0.9900	14.8	0.9567	14.8	64
6	301	CONC13.8	13.800	G1	8.9	5.0	5.0	-5.0	0.9629	10.6	0.8716	13.5	64
6	302	PASOANCH13.8	13.800	P1	4.6	2.0	2.0	-2.0	0.9611	5.2	0.9180	6.2	64
6	304	ALGA13.8	13.800	A1	4.7	-2.3	2.3	-2.3	1.0738	4.9	0.9019	5.7	64
6	304	ALGA13.8	13.800	A2	4.7	-2.3	2.3	-2.3	1.0738	4.9	0.9019	5.7	64
6	317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0758	8.7	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.0758	8.7	1.0000	35.3	64
6	342	LORENA13.8	13.800	L1	11.3	-3.2	10.5	-5.0	1.0000	11.7	0.9621	19.9	64
6	346	LORENA 13-2	13.800	L2	11.3	-3.2	10.5	-5.0	1.0000	11.7	0.9621	19.9	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0556	3.1	0.9514	6.2	64
6	521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	1.0056	3.8	0.9400	4.8	63
6	521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	1.0056	3.8	0.9400	4.8	63
6	521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	1.0056	3.8	0.9400	4.8	63
6	521	EGIRAL13.8	113.800	G4	3.6	1.3	2.8	1.3	1.0056	3.8	0.9400	4.8	63
6	523	TCATIVÁ 13A	13.800	G1	8.3	0.6	6.6	-6.6	0.9900	8.4	0.9972	10.9	62
6	523	TCATIVÁ 13A	13.800	G2	8.3	0.6	6.6	-6.6	0.9900	8.4	0.9972	10.9	62
6	523	TCATIVÁ 13A	13.800	G3	8.3	0.6	6.6	-6.6	0.9900	8.4	0.9972	10.9	62
6	523	TCATIVÁ 13A	13.800	G4	8.3	0.6	6.6	-6.6	0.9900	8.4	0.9972	10.9	62
6	523	TCATIVÁ 13A	13.800	G5	8.3	0.6	6.6	-6.6	0.9900	8.4	0.9972	10.9	62
6	524	TCATIVÁ 13B	13.800	G0	8.3	0.6	6.6	-6.6	0.9900	8.4	0.9972	10.9	62
6	524	TCATIVÁ 13B	13.800	G6	8.3	0.6	6.6	-6.6	0.9900	8.4	0.9972	10.9	62



6	524	TCATIVÁ 13B	13.800	G7	8.3	0.6	6.6	-6.6	0.9900	8.4	0.9972	10.9	62
6	524	TCATIVÁ 13B	13.800	G8	8.3	0.6	6.6	-6.6	0.9900	8.4	0.9972	10.9	62
6	524	TCATIVÁ 13B	13.800	G9	8.3	0.6	6.6	-6.6	0.9900	8.4	0.9972	10.9	62
6	525	TCOLON 13A	13.800	G1	36.9	19.3	19.3	19.3	1.0263	40.5	0.8862	44.4	62
6	526	TCOLON 13B	13.800	G2	36.9	19.3	19.3	19.3	1.0263	40.5	0.8862	44.4	62
6	527	TCOLON 13C	13.800	V1	36.9	19.3	19.3	19.3	1.0263	40.5	0.8862	44.4	62
6	531	EGIRAL13.8	213.800	G5	8.2	3.0	6.4	3.0	1.0065	8.7	0.9391	10.9	62
6	531	EGIRAL13.8	213.800	G6	8.2	3.0	6.4	3.0	1.0065	8.7	0.9391	10.9	62
6	531	EGIRAL13.8	213.800	G7	8.2	3.0	6.4	3.0	1.0065	8.7	0.9391	10.9	62
6	531	EGIRAL13.8	213.800	G8	8.2	3.0	6.4	3.0	1.0065	8.7	0.9391	10.9	62
6	703	BJOMIN13A	13.800	G1	26.6	2.3	13.0	-13.0	1.0000	26.7	0.9962	30.5	64
6	704	BJOMIN13B	13.800	G2	26.6	2.3	13.0	-13.0	1.0000	26.7	0.9962	30.5	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9611	5.1	0.9145	6.2	64
6	SUBSYSTEM TOTALS				1110.6	125.0	744.1	-358.9				1627.3	

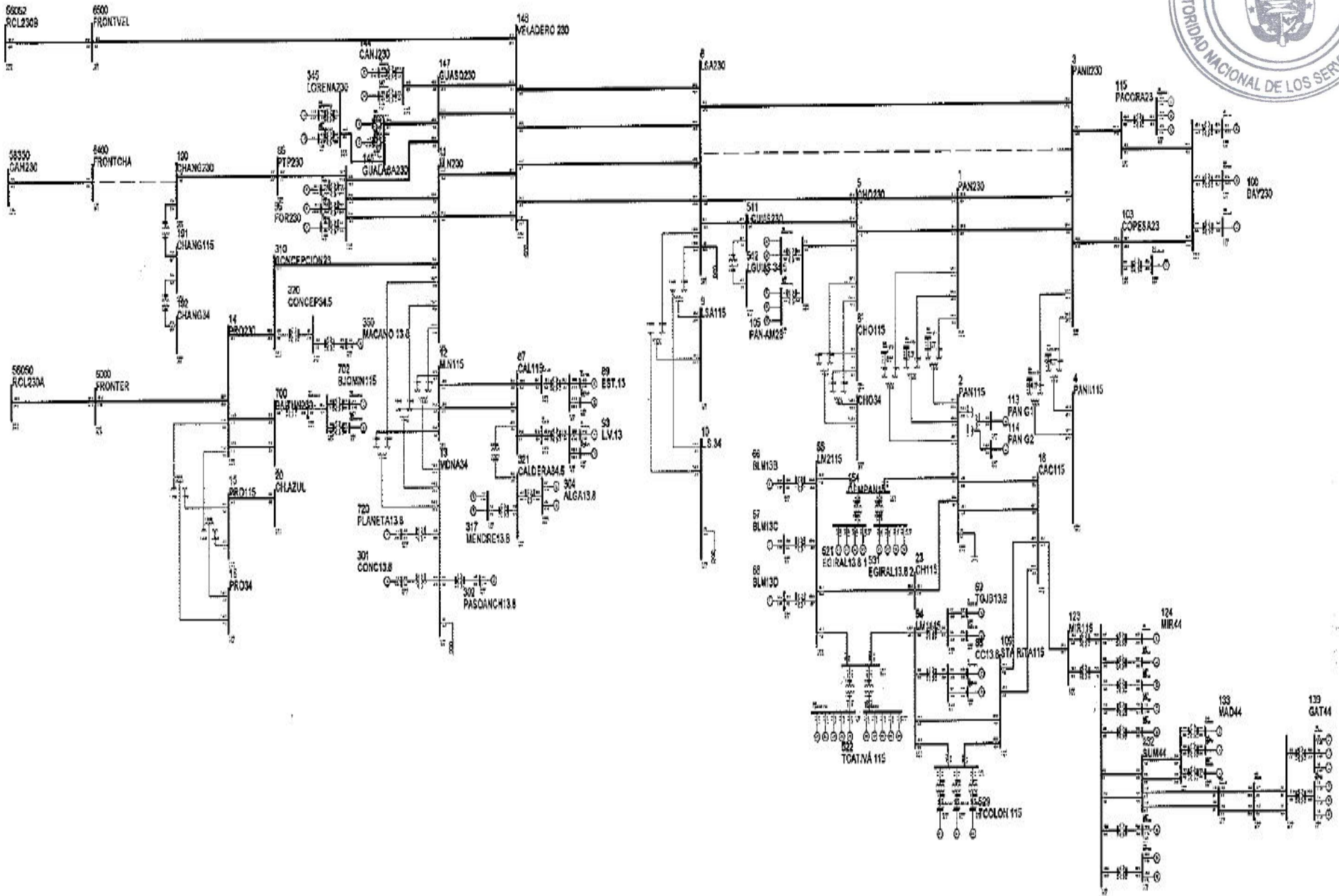
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:26
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-VERANO

AREA 7 [ACANAL] MACHINE SUMMARY:																
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
7		129		MIR13D	13.800	G4	16.0	1.8	15.0	0.0	1.0000	16.1	0.9937	44.1		65
7		130		MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0137	16.9	1.0000	27.7		65
7		140		GAT6A	6.9000	G1	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9164	4.1		65
7		140		GAT6A	6.9000	G2	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9164	4.1		65



MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6517.9	6372.8	0.0	0.0	0.0	0.0	145.1	0.0
	1107.6	1787.6	-590.7	0.0	1851.0	0.0	1761.7	

1.4 Demanda Mnima de Verano





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:29
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MIN-VERANO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0057	231.31	14	PRO230	230.00	6	1.0157	233.62				
96	FOR230	230.00	6	1.0054	231.23	100	BAY230	230.00	6	1.0097	232.23				
144	CANJ230	230.00	6	1.0066	231.51	146	GUALACA230	230.00	6	1.0076	231.75				
147	GUASQ230	230.00	6	1.0065	231.50	148	VELADERO 230	230.00	6	1.0058	231.33				
310	CONCEPCION230	230.00	6	1.0110	232.54	345	LORENA230	230.00	6	1.0085	231.95				
700	BAITUN230	230.00	6	1.0161	233.69	6000	FRONTER	230.00	6	1.0168	233.87				
6400	FRONTCHA	230.00	6	1.0345	237.94	6500	FRONTVEL	230.00	6	1.0203	234.68				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9907	227.85	3	PANII230	230.00	6	0.9926	228.31				
5	CHO230	230.00	6	0.9930	228.38	8	LSA230	230.00	6	0.9959	229.06				
85	PTP230	230.00	6	0.9995	229.87	103	COPESA23	230.00	6	0.9957	229.00				
105	PAN-AM23	230.00	6	0.9930	228.38	115	PACORA23	230.00	6	0.9984	229.62				
190	CHANG230	230.00	6	0.9978	229.49	511	LGUIAS230	230.00	6	0.9965	229.19				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:29
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MIN-VERANO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	1.0390	119.48	12	M.N115	115.00	6	1.0086	115.99				
15	PRO115	115.00	6	1.0176	117.02	20	CH.AZUL	115.00	6	1.0183	117.11				
54	LM1115	115.00	6	1.0159	116.83	55	LM2115	115.00	6	1.0169	116.94				
61	FFIELD	115.00	6	1.0144	116.66	87	CAL115	115.00	6	1.0146	116.68				
88	EST115	115.00	6	1.0160	116.84	92	L.V115	115.00	6	1.0151	116.74				
109	STA RITA115	115.00	6	1.0124	116.42	154	CEMPAN15	115.00	6	1.0158	116.82				
522	TCATIVÁ 115	115.00	6	1.0167	116.92	529	TCOLON 115	115.00	6	1.0142	116.63				
701	BAITUN115	115.00	6	1.0057	115.65	702	BJOMIN115	115.00	6	1.0061	115.70				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	0.9842	113.19	4	PANII115	115.00	6	0.9930	114.20				
6	CHO115	115.00	6	0.9940	114.31	18	CAC115	115.00	6	0.9843	113.20				
19	C.V115	115.00	6	0.9847	113.24	21	C.BAN115	115.00	6	0.9783	112.50				
23	CH115	115.00	6	0.9910	113.97	26	LOC115	115.00	6	0.9789	112.57				
30	MAR115	115.00	6	0.9779	112.45	33	STM115	115.00	6	0.9829	113.03				



37 SAN115	115.00	6	0.9779	112.46	48 TINAJ115	115.00	6	0.9826	113.00
50 M.O115	115.00	6	0.9827	113.01	52 TOC115	115.00	6	0.9910	113.97
123 MIR115	115.00	7	0.9918	114.05	191 CHANG115	115.00	6	0.9940	114.31

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:29
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MIN-VERANO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6		66		BLM13B		13.800	V2	38.0	6.8	25.0	0.0	0.9800	39.4	0.9845	47.0	62
6		67		BLM13C		13.800	V3	38.0	6.8	25.0	0.0	0.9800	39.4	0.9845	47.0	62
6		68		BLM13D		13.800	V4	38.0	7.0	25.0	0.0	0.9800	39.4	0.9837	47.0	62
6		90		EST-13L		13.800	E1	19.2	4.5	12.0	-5.0	0.9800	20.1	0.9736	27.0	64
6		94		LV-13.8L		13.800	L1	21.6	4.9	12.0	-5.0	0.9800	22.6	0.9749	27.0	64
6		97		FOR13A		13.800	F1	74.2	-19.5	50.0	-50.0	0.9800	78.3	0.9671	111.0	64
6		98		FOR13B		13.800	F2	74.2	-19.5	50.0	-50.0	0.9800	78.3	0.9671	111.0	64
6		101		BAY13A		13.800	B1	48.1	15.7	50.0	-25.0	0.9800	51.7	0.9508	96.0	61
6		102		BAY13B		13.800	B2	47.8	15.7	50.0	-25.0	0.9800	51.3	0.9502	96.0	61
6		116		PACORA13		13.800	P1	17.0	0.0	8.8	0.0	0.9890	17.2	1.0000	21.7	61
6		116		PACORA13		13.800	P2	17.0	0.0	8.8	0.0	0.9890	17.2	1.0000	21.7	61
6		116		PACORA13		13.800	P3	17.0	0.0	8.8	0.0	0.9890	17.2	1.0000	21.7	61
6		142		CANJ13A		13.800	C1	48.0	11.1	29.0	-29.0	0.9800	50.3	0.9743	69.0	64
6		150		GUALACA	13-213.800	G2		12.0	-6.5	7.4	-7.4	0.9800	13.9	0.8800	14.8	64
6		301		CONC13.8		13.800	G1	8.0	4.0	4.0	-4.0	0.9509	9.4	0.8944	13.5	64
6		302		PASOANCH13.8	13.800	P1		4.0	2.0	2.0	-2.0	0.9497	4.7	0.8944	6.2	64
6		304		ALGA13.8		13.800	A1	4.1	-2.3	2.3	-2.3	1.0776	4.3	0.8748	5.7	64



6	304	ALGA13.8	13.800	A2	4.1	-2.3	2.3	-2.3	1.0776	4.3	0.8748	5.7	64	
6	317	MENDRE13.8	13.800	M1	7.9	0.0	0.0	0.0	1.0803	7.3	1.0000	35.3	64	
6	342	LORENA13.8	13.800	L1	13.5	-2.6	10.5	-5.0	1.0000	13.8	0.9826	19.9	64	
6	350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0520	3.1	0.9514	6.2	64
6	521	EGIRAL13.8	113.800	G1	3.6	1.6	2.8	1.3	0.9950	3.9	0.9162	4.8	63	
6	521	EGIRAL13.8	113.800	G2	3.6	1.6	2.8	1.3	0.9950	3.9	0.9162	4.8	63	
6	521	EGIRAL13.8	113.800	G3	3.6	1.6	2.8	1.3	0.9950	3.9	0.9162	4.8	63	
6	521	EGIRAL13.8	113.800	G4	3.6	1.6	2.8	1.3	0.9950	3.9	0.9162	4.8	63	
6	523	TCATIVÁ	13A	13.800	G1	8.3	3.0	6.6	-6.6	0.9900	8.9	0.9413	10.9	62
6	523	TCATIVÁ	13A	13.800	G2	8.3	3.0	6.6	-6.6	0.9900	8.9	0.9413	10.9	62
6	523	TCATIVÁ	13A	13.800	G3	8.3	3.0	6.6	-6.6	0.9900	8.9	0.9413	10.9	62
6	523	TCATIVÁ	13A	13.800	G4	8.3	3.0	6.6	-6.6	0.9900	8.9	0.9413	10.9	62
6	523	TCATIVÁ	13A	13.800	G5	8.3	3.0	6.6	-6.6	0.9900	8.9	0.9413	10.9	62
6	524	TCATIVÁ	13B	13.800	G0	8.3	3.0	6.6	-6.6	0.9900	8.9	0.9413	10.9	62
6	524	TCATIVÁ	13B	13.800	G6	8.3	3.0	6.6	-6.6	0.9900	8.9	0.9413	10.9	62
6	524	TCATIVÁ	13B	13.800	G7	8.3	3.0	6.6	-6.6	0.9900	8.9	0.9413	10.9	62
6	524	TCATIVÁ	13B	13.800	G8	8.3	3.0	6.6	-6.6	0.9900	8.9	0.9413	10.9	62
6	524	TCATIVÁ	13B	13.800	G9	8.3	3.0	6.6	-6.6	0.9900	8.9	0.9413	10.9	62
6	531	EGIRAL13.8	213.800	G5	8.2	3.0	6.4	3.0	0.9909	8.8	0.9391	10.9	62	
6	531	EGIRAL13.8	213.800	G6	8.2	3.0	6.4	3.0	0.9909	8.8	0.9391	10.9	62	
6	531	EGIRAL13.8	213.800	G7	8.2	3.0	6.4	3.0	0.9909	8.8	0.9391	10.9	62	
6	531	EGIRAL13.8	213.800	G8	8.2	3.0	6.4	3.0	0.9909	8.8	0.9391	10.9	62	
6	703	BJOMIN13A	13.800	G1	22.4	-0.6	13.0	-13.0	0.9900	22.6	0.9997	30.5	64	



6 720 PLANETA13.8 13.800 G1 4.5 2.0 2.0 -2.0 0.9497 5.2 0.9145 6.2
 SUBSYSTEM TOTALS 711.5 74.1 501.4 -276.3 1059.6

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:29
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MIN-VERANO

AREA 7 [ACANAL] MACHINE SUMMARY:
 BUS# X-- NAME --X BASKV ID MW MVAR QMAX QMIN ETERM CURRENT PF MVABASE X T R A N GENTAP ZONE
 AREA SWING
 7 129 MIR13D 13.800 G4 7.3 5.1 15.0 0.0 1.0000 8.9 0.8202 44.1 65
 7 140 GAT6A 6.9000 G1 1.9 -0.6 2.0 -2.0 1.0000 2.0 0.9588 4.1 65
 7 140 GAT6A 6.9000 G2 1.9 -0.6 2.0 -2.0 1.0000 2.0 0.9588 4.1 65
 7 140 GAT6A 6.9000 G3 1.9 -0.6 2.0 -2.0 1.0000 2.0 0.9588 4.1 65
 7 141 GAT6B 6.9000 G4 3.9 -1.3 3.0 -3.0 1.0000 4.1 0.9465 5.6 65
 7 141 GAT6B 6.9000 G5 3.9 -1.3 3.0 -3.0 1.0000 4.1 0.9465 6.2 65
 7 141 GAT6B 6.9000 G6 3.9 -1.3 3.0 -3.0 1.0000 4.1 0.9465 6.2 65
 7 170 MIR13G 13.800 M1 15.0 6.8 11.2 6.8 1.0234 16.1 0.9103 23.0 65
 7 171 MIR13H 13.800 M1 15.0 6.8 11.2 6.8 1.0328 16.0 0.9103 23.0 65
 7 171 MIR13H 13.800 M2 15.0 6.8 11.2 6.8 1.0328 16.0 0.9103 23.0 65
 SUBSYSTEM TOTALS 69.7 19.9 63.5 5.5 143.6

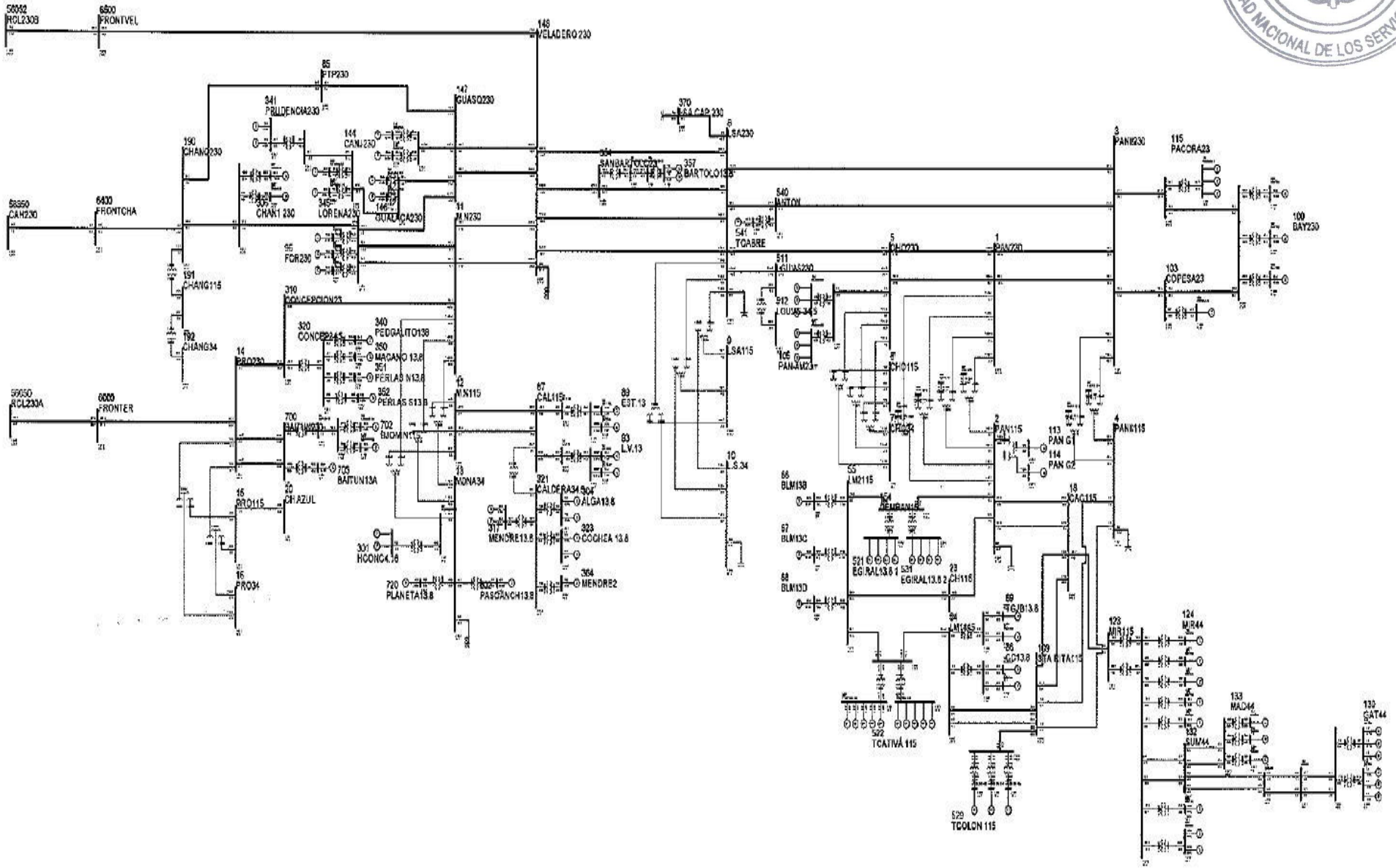
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:29
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2011 ESC-MOD DEMANDA-MIN-VERANO IN MW/MVAR

X-- AREA	--X GENERATION	FROM TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1257.1	1330.8	0.0	0.0	0.0	-115.8	42.0	-123.5
GUATEMAL	202.3	275.1	-198.2	0.0	277.2	20.1	382.6	



2	868.9	855.0	0.0	0.0	0.0	-1.8	15.7	0.0
SALVADOR	82.3	224.2	-70.6	0.0	228.4	-27.4	184.6	
3	1236.8	1203.0	0.0	0.0	0.0	-1.1	34.9	0.0
HONDURAS	471.2	321.1	-47.2	0.0	293.2	52.9	437.5	
4	531.9	525.2	0.0	0.0	0.0	-1.3	8.0	0.0
NICARAGU	41.7	207.6	-57.5	0.0	181.5	-48.6	121.7	
5	1296.1	1280.2	0.0	0.0	0.0	-3.1	19.0	0.0
COSTA RI	206.5	520.4	-230.3	0.0	418.0	29.8	304.7	
6	711.5	625.8	0.0	0.0	0.0	76.0	9.6	76.5
PANAMA	74.1	227.1	155.3	0.0	409.8	-31.8	133.2	
7	69.7	22.4	0.0	0.0	0.0	47.0	0.3	47.0
ACANAL	19.9	8.1	0.0	0.0	0.0	5.0	6.7	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	5971.9	5842.4	0.0	0.0	0.0	0.0	129.5	0.0
	1097.9	1783.5	-448.5	0.0	1808.1	0.0	1570.9	

2.1 Demanda Máxima de Invierno





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO

MON, MAY 24 2010 13:09

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)
3		PANII230		230.00	6	1.0013	230.31	11		M.N230		230.00	6	1.0013	230.31
14		PRO230		230.00	6	1.0111	232.54	85		PTP230		230.00	6	1.0060	231.39
96		FOR230		230.00	6	1.0025	230.58	100		BAY230		230.00	6	1.0266	236.12
103		COPESA23		230.00	6	1.0056	231.29	115		PACORA23		230.00	6	1.0081	231.87
144		CANJ230		230.00	6	1.0005	230.11	146		GUALACA230		230.00	6	1.0045	231.03
147		GUASQ230		230.00	6	1.0004	230.09	190		CHANG230		230.00	6	1.0137	233.15
306		CHAN1 230		230.00	6	1.0121	232.77	310		CONCEPCION23230		230.00	6	1.0090	232.07
341		PRUDENCIA230		230.00	6	1.0107	232.47	345		LORENA230		230.00	6	1.0084	231.94
540		ANTON		230.00	6	1.0127	232.92	700		BAITUN230		230.00	6	1.0105	232.41
6000		FRONTER		230.00	6	1.0121	232.78	6400		FRONTCHA		230.00	6	1.0157	233.61
6500		FRONTVEL		230.00	6	1.0141	233.25								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9946	228.76	5		CHO230		230.00	6	0.9900	227.70
8		LSA230		230.00	6	0.9992	229.82	105		PAN-AM23		230.00	6	0.9900	227.70
148		VELADERO 230		230.00	6	0.9965	229.20	354		SANBARTOLO23230		230.00	6	0.9956	228.99
370		LSA CAP 230		230.00	6	0.9992	229.82	511		LGUIAS230		230.00	6	0.9908	227.88

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO

MON, MAY 24 2010 13:09

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)
4		PANII115		115.00	6	1.0211	117.43	9		LSA115		115.00	6	1.0452	120.19
12		M.N115		115.00	6	1.0004	115.04	15		PRO115		115.00	6	1.0129	116.48
19		C.V115		115.00	6	1.0064	115.73	20		CH.AZUL		115.00	6	1.0136	116.57
52		TOC115		115.00	6	1.0185	117.12	54		LM1115		115.00	6	1.0175	117.01
55		LM2115		115.00	6	1.0184	117.12	61		FFIELD		115.00	6	1.0144	116.66
87		CAL115		115.00	6	1.0177	117.03	88		EST115		115.00	6	1.0214	117.46



92 L.V115	115.00	6	1.0191	117.20	109 STA RITA115	115.00	6	1.0161	116.86
123 MIR115	115.00	7	1.0033	115.38	154 CEMPAN15	115.00	6	1.0113	116.30
191 CHANG115	115.00	6	1.0093	116.07	522 TCATIVÁ 115	115.00	6	1.0181	117.08
529 TCOLON 115	115.00	6	1.0162	116.86					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9972	114.68	6		CHO115		115.00	6	0.9908	113.94
18		CAC115		115.00	6	0.9970	114.66	21		C.BAN115		115.00	6	0.9904	113.89
23		CH115		115.00	6	0.9975	114.71	26		LOC115		115.00	6	0.9908	113.94
30		MAR115		115.00	6	0.9887	113.70	33		STM115		115.00	6	0.9954	114.47
37		SAN115		115.00	6	0.9905	113.91	48		TINAJ115		115.00	6	0.9949	114.41
50		M.O115		115.00	6	0.9950	114.43	701		BAITUN115		115.00	6	0.9909	113.96
702		BJOMIN115		115.00	6	0.9932	114.22								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:09
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
66		BLM13B		13.800	V2	38.0	15.2	25.0	0.0	1.0000	40.9	0.9288	47.0			62	6
67		BLM13C		13.800	V3	38.0	15.2	25.0	0.0	1.0000	40.9	0.9288	47.0			62	6
68		BLM13D		13.800	V4	38.0	15.8	25.0	0.0	1.0000	41.1	0.9235	47.0			62	6
90		EST-13L		13.800	E1	22.0	6.6	12.0	-5.0	0.9920	23.2	0.9573	27.0			64	6
91		EST-13T		13.800	E2	22.0	6.6	12.0	-5.0	0.9920	23.2	0.9573	27.0			64	6
94		LV-13.8L		13.800	L1	23.2	7.4	12.0	-5.0	0.9920	24.5	0.9526	27.0			64	6
95		LV-13.8T		13.800	L2	23.2	7.4	12.0	-5.0	0.9920	24.5	0.9526	27.0			64	6
97		FOR13A		13.800	F1	78.0	-6.1	50.0	-50.0	0.9920	78.9	0.9969	111.0			64	6
98		FOR13B		13.800	F2	78.0	-6.1	50.0	-50.0	0.9920	78.9	0.9969	111.0			64	6
99		FOR13C		13.800	F3	78.0	-6.1	50.0	-50.0	0.9920	78.9	0.9969	111.0			64	6
101		BAY13A		13.800	B1	49.9	19.0	50.0	-25.0	1.0000	53.4	0.9341	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.4	19.0	50.0	-25.0	1.0000	52.0	0.9311	96.0			61	6
108		BAY13C		13.800	B3	48.4	19.0	50.0	-25.0	1.0000	52.0	0.9311	100.0			61	6
142		CANJ13A		13.800	C1	55.0	16.5	29.0	-29.0	0.9920	57.9	0.9580	69.0			64	6
143		CANJ13B		13.800	C2	55.0	16.5	29.0	-29.0	0.9920	57.9	0.9580	69.0			64	6
150		GUALACA	13-213.800	G2		13.0	-3.2	7.4	-7.4	0.9900	13.5	0.9702	14.8			64	6



151	GUALACA13.8	13.800	G1	13.0	-3.2	7.4	-7.4	0.9900	13.5	0.9702	14.8	64	6
302	PASOANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9523	5.4	0.9216	6.2	64	6
304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0833	4.7	0.8981	5.7	64	6
304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0833	4.7	0.8981	5.7	64	6
307	CHAN1 A	13.800	G1	80.0	-15.8	50.0	-50.0	0.9920	82.2	0.9810	118.6	64	6
317	MENDRE13.8	13.800	M1	9.2	0.0	0.0	0.0	1.0854	8.5	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.2	0.0	0.0	0.0	1.0854	8.5	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0858	5.0	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.0858	5.0	1.0000	35.3	64	6
340	PEDGALITO138	13.800	P1	21.0	6.4	12.0	-5.0	0.9920	22.1	0.9571	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	0.9927	13.1	0.9228	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.8	-4.2	9.8	-9.8	0.9920	22.4	0.9816	33.0	64	6
343	PRUDENCIA_1	13.800	G2	21.8	-4.2	9.8	-9.8	0.9920	22.4	0.9816	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	-5.0	10.5	-5.0	0.9927	13.1	0.9228	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0787	3.0	0.9514	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9825	10.5	0.8742	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9825	10.5	0.8742	13.5	64	6
357	BARTOLO13.8	13.800	G1	7.2	0.3	3.7	-3.7	0.9920	7.3	0.9990	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.2	0.3	3.7	-3.7	0.9920	7.3	0.9990	8.5	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9875	8.6	0.8911	8.9	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	1.6	6.6	-6.6	0.9800	8.6	0.9827	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	1.6	6.6	-6.6	0.9800	8.6	0.9827	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	1.6	6.6	-6.6	0.9800	8.6	0.9827	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	1.6	6.6	-6.6	0.9800	8.6	0.9827	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	1.6	6.6	-6.6	0.9800	8.6	0.9827	10.9	62	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0137	24.7	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	25.0	2.0	13.0	-13.0	0.9920	25.3	0.9967	30.5	64	6
704	BJOMIN13B	13.800	G2	25.0	2.0	13.0	-13.0	0.9920	25.3	0.9967	30.5	64	6
705	BAITUN13A	13.800	G1	40.0	-6.2	26.6	-26.6	0.9920	40.8	0.9880	50.6	64	6
706	BAITUN13B	13.800	G2	40.0	-6.2	26.6	-26.6	0.9920	40.8	0.9880	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9523	5.2	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1177.0	123.6	741.2	-545.2				1823.0		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:09
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

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



10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6576.0	6394.5	0.0	0.0	0.0	0.0	181.5	0.0
	1121.8	1792.0	-831.9	0.0	1894.4	0.0	2056.1	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:23
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO CONT MDN-VEL

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
14		PRO230		230.00	6	1.0054	231.24	100		BAY230		230.00	6	1.0226	235.19
115		PACORA23		230.00	6	1.0022	230.51	190		CHANG230		230.00	6	1.0095	232.18
306		CHAN1 230		230.00	6	1.0081	231.87	310		CONCEPCION23		230.00	6	1.0032	230.73
341		PRUDENCIA230		230.00	6	1.0043	230.98	345		LORENA230		230.00	6	1.0018	230.41
540		ANTON		230.00	6	1.0033	230.75	700		BAITUN230		230.00	6	1.0054	231.24
6000		FRONTER		230.00	6	1.0060	231.39	6400		FRONTCHA		230.00	6	1.0117	232.68
6500		FRONTVEL		230.00	6	1.0058	231.34								

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	0.9877	227.18	3		PANII230		230.00	6	0.9947	228.78
5		CHO230		230.00	6	0.9818	225.82	8		LSA230		230.00	6	0.9878	227.19
11		M.N230		230.00	6	0.9948	228.81	85		PTP230		230.00	6	0.9996	229.92
96		FOR230		230.00	6	0.9966	229.21	103		COPESA23		230.00	6	0.9993	229.84
105		PAN-AM23		230.00	6	0.9818	225.82	144		CANJ230		230.00	6	0.9932	228.43
146		GUALACA230		230.00	6	0.9975	229.43	147		GUASQ230		230.00	6	0.9930	228.40
148		VELADERO 230		230.00	6	0.9844	226.42	354		SANBARTOLO23		230.00	6	0.9839	226.30
370		LSA CAP 230		230.00	6	0.9878	227.19	511		LGUIAS230		230.00	6	0.9804	225.50

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:23
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO CONT MDN-VEL

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0148	116.70	9		LSA115		115.00	6	1.0329	118.78
15		PRO115		115.00	6	1.0072	115.83	20		CH.AZUL		115.00	6	1.0080	115.92
52		TOC115		115.00	6	1.0121	116.39	54		LM1115		115.00	6	1.0136	116.57
55		LM2115		115.00	6	1.0146	116.68	61		FFIELD		115.00	6	1.0106	116.21
87		CAL115		115.00	6	1.0150	116.73	88		EST115		115.00	6	1.0190	117.19
92		L.V115		115.00	6	1.0165	116.90	109		STA RITA115		115.00	6	1.0118	116.35



154 CEMPAN15	115.00	6	1.0068	115.78	191 CHANG115	115.00	6	1.0050	115.58
522 TCAVIVÁ 115	115.00	6	1.0142	116.64	529 TCOLON 115	115.00	6	1.0118	116.36

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9910	113.96	6		CHO115		115.00	6	0.9826	113.00
12		M.N115		115.00	6	0.9964	114.59	18		CAC115		115.00	6	0.9908	113.94
19		C.V115		115.00	6	1.0000	115.00	21		C.BAN115		115.00	6	0.9840	113.16
23		CH115		115.00	6	0.9922	114.10	26		LOC115		115.00	6	0.9845	113.21
30		MAR115		115.00	6	0.9824	112.97	33		STM115		115.00	6	0.9891	113.75
37		SAN115		115.00	6	0.9842	113.18	48		TINAJ115		115.00	6	0.9886	113.69
50		M.O115		115.00	6	0.9887	113.70	123		MIR115		115.00	7	0.9976	114.73
701		BAITUN115		115.00	6	0.9877	113.59	702		BJOMIN115		115.00	6	0.9902	113.88

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:23
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO CONT MDN-VEL

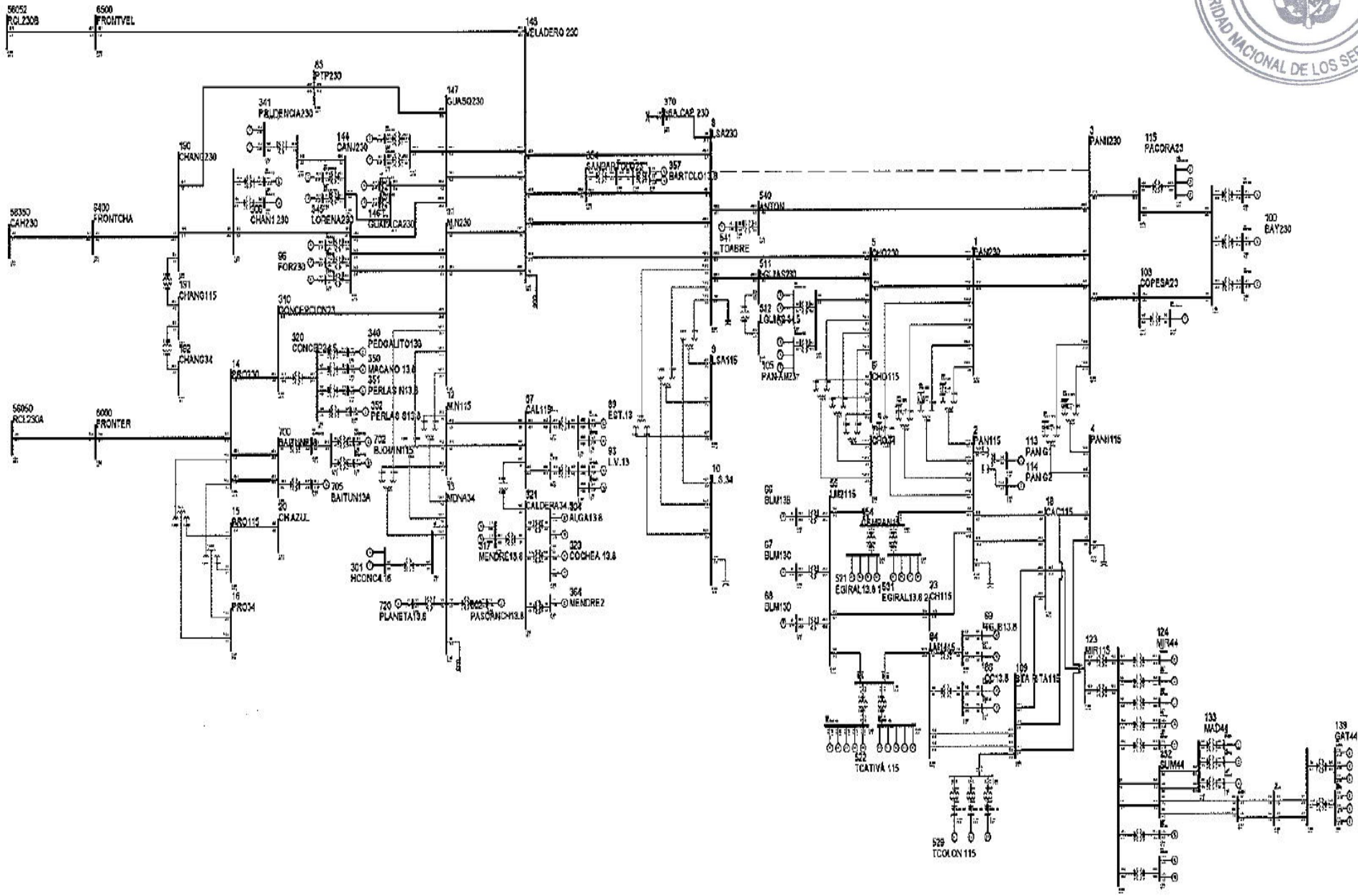
AREA 6 [PANAMA] MACHINE SUMMARY:

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	16.8	25.0	0.0	1.0000	41.6	0.9146	47.0			62	6
67		BLM13C		13.800	V3	38.0	16.8	25.0	0.0	1.0000	41.6	0.9146	47.0			62	6
68		BLM13D		13.800	V4	38.0	17.5	25.0	0.0	1.0000	41.9	0.9083	47.0			62	6
90		EST-13L		13.800	E1	22.0	7.3	12.0	-5.0	0.9920	23.4	0.9488	27.0			64	6
91		EST-13T		13.800	E2	22.0	7.3	12.0	-5.0	0.9920	23.4	0.9488	27.0			64	6
94		LV-13.8L		13.800	L1	23.2	8.1	12.0	-5.0	0.9920	24.8	0.9436	27.0			64	6
95		LV-13.8T		13.800	L2	23.2	8.1	12.0	-5.0	0.9920	24.8	0.9436	27.0			64	6
97		FOR13A		13.800	F1	78.1	-0.7	50.0	-50.0	0.9920	78.7	1.0000	111.0			64	6
98		FOR13B		13.800	F2	78.1	-0.7	50.0	-50.0	0.9920	78.7	1.0000	111.0			64	6
99		FOR13C		13.800	F3	78.1	-0.7	50.0	-50.0	0.9920	78.7	1.0000	111.0			64	6
101		BAY13A		13.800	B1	50.0	22.1	50.0	-25.0	1.0000	54.6	0.9147	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.5	22.0	50.0	-25.0	1.0000	53.2	0.9108	96.0			61	6
108		BAY13C		13.800	B3	48.5	22.0	50.0	-25.0	1.0000	53.2	0.9108	100.0			61	6
142		CANJ13A		13.800	C1	55.1	17.7	29.0	-29.0	0.9920	58.3	0.9520	69.0			64	6
143		CANJ13B		13.800	C2	55.1	17.7	29.0	-29.0	0.9920	58.3	0.9520	69.0			64	6
150		GUALACA 13-213.800		G2	13.0	13.0	-1.5	7.4	-7.4	0.9900	13.2	0.9933	14.8			64	6
151		GUALACA13.8		G1	13.0	13.0	-1.5	7.4	-7.4	0.9900	13.2	0.9933	14.8			64	6



MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6580.6	6394.5	0.0	0.0	0.0	0.0	186.1	0.0
	1191.8	1792.0	-828.2	0.0	1868.8	0.0	2096.8	

2.1.2. Contingencia Llano Sánchez – Panamá II





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:33
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
100		BAY230		230.00	6	1.0018	230.42	190		CHANG230		230.00	6	1.0060	231.37
306		CHAN1	230	230.00	6	1.0048	231.11	700		BAITUN230		230.00	6	1.0003	230.06
6000		FRONTER		230.00	6	1.0003	230.07	6400		FRONTCHA		230.00	6	1.0083	231.91

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9517	218.89	3		PANII230		230.00	6	0.9604	220.89
5		CHO230		230.00	6	0.9388	215.92	8		LSA230		230.00	6	0.9507	218.67
11		M.N230		230.00	6	0.9861	226.81	14		PRO230		230.00	6	0.9997	229.93
85		PTP230		230.00	6	0.9944	228.71	96		FOR230		230.00	6	0.9911	227.95
103		COPESA23		230.00	6	0.9671	222.43	105		PAN-AM23		230.00	6	0.9388	215.92
115		PACORA23		230.00	6	0.9717	223.49	144		CANJ230		230.00	6	0.9871	227.03
146		GUALACA230		230.00	6	0.9917	228.10	147		GUASQ230		230.00	6	0.9869	226.99
148		VELADERO	230	230.00	6	0.9674	222.51	310		CONCEPCION23	230	230.00	6	0.9961	229.10
341		PRUDENCIA23	230	230.00	6	0.9989	229.75	345		LORENA230		230.00	6	0.9963	229.16
354		SANBARTOLO23	230	230.00	6	0.9597	220.74	370		LSA CAP	230	230.00	6	0.9507	218.67
511		LGUIAS230		230.00	6	0.9346	214.96	540		ANTON		230.00	6	0.9590	220.57
6500		FRONTVEL		230.00	6	0.9988	229.72								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:33
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
15		PRO115		115.00	6	1.0015	115.17	20		CH.AZUL		115.00	6	1.0022	115.26
87		CAL115		115.00	6	1.0114	116.31	88		EST115		115.00	6	1.0158	116.82
92		L.V115		115.00	6	1.0131	116.50	191		CHANG115		115.00	6	1.0015	115.18

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)
2		PAN115		115.00	6	0.9583	110.21	4		PANII115		115.00	6	0.9818	112.91
6		CHO115		115.00	6	0.9396	108.06	9		LSA115		115.00	6	0.9932	114.22
12		M.N115		115.00	6	0.9910	113.97	18		CAC115		115.00	6	0.9583	110.20
19		C.V115		115.00	6	0.9668	111.18	21		C.BAN115		115.00	6	0.9510	109.36
23		CH115		115.00	6	0.9644	110.90	26		LOC115		115.00	6	0.9515	109.42
30		MAR115		115.00	6	0.9494	109.19	33		STM115		115.00	6	0.9564	109.99
37		SAN115		115.00	6	0.9511	109.38	48		TINAJ115		115.00	6	0.9558	109.92
50		M.O115		115.00	6	0.9560	109.94	52		TOC115		115.00	6	0.9791	112.59
54		LM1115		115.00	6	0.9931	114.20	55		LM2115		115.00	6	0.9942	114.34
61		FFIELD		115.00	6	0.9901	113.86	109		STA RITA115		115.00	6	0.9887	113.70
123		MIR115		115.00	7	0.9686	111.38	154		CEMPAN15		115.00	6	0.9828	113.02
522		TCATIVÁ 115		115.00	6	0.9938	114.29	529		TCOLON 115		115.00	6	0.9887	113.70
701		BAITUN115		115.00	6	0.9844	113.21	702		BJOMIN115		115.00	6	0.9872	113.53

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:33
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

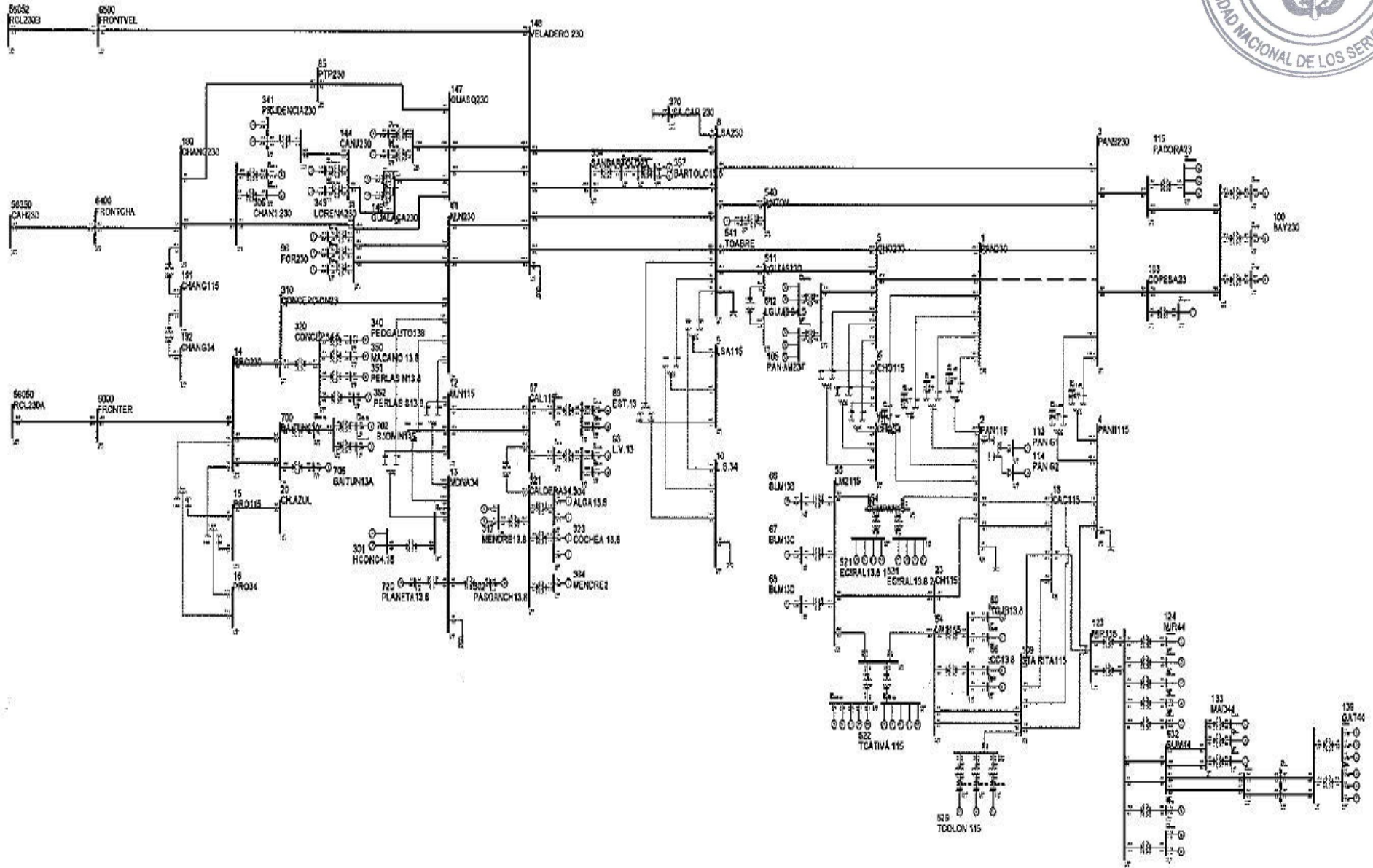
AREA 6 [PANAMA] MACHINE SUMMARY:

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	38.1	25.0	25.0	0.0	0.9988	45.6	0.8360	47.0			62	6
67		BLM13C		13.800	V3	38.1	25.0	25.0	0.0	0.9988	45.6	0.8360	47.0			62	6
68		BLM13D		13.800	V4	38.1	25.0	25.0	0.0	0.9965	45.7	0.8360	47.0			62	6
90		EST-13L		13.800	E1	22.1	8.3	12.0	-5.0	0.9920	23.8	0.9365	27.0			64	6
91		EST-13T		13.800	E2	22.1	8.3	12.0	-5.0	0.9920	23.8	0.9365	27.0			64	6
94		LV-13.8L		13.800	L1	23.3	9.2	12.0	-5.0	0.9920	25.2	0.9306	27.0			64	6
95		LV-13.8T		13.800	L2	23.3	9.2	12.0	-5.0	0.9920	25.2	0.9306	27.0			64	6
97		FOR13A		13.800	F1	78.4	4.3	50.0	-50.0	0.9920	79.2	0.9985	111.0			64	6
98		FOR13B		13.800	F2	78.4	4.3	50.0	-50.0	0.9920	79.2	0.9985	111.0			64	6
99		FOR13C		13.800	F3	78.4	4.3	50.0	-50.0	0.9920	79.2	0.9985	111.0			64	6
101		BAY13A		13.800	B1	50.2	37.6	50.0	-25.0	1.0000	62.7	0.8007	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.7	37.5	50.0	-25.0	1.0000	61.5	0.7927	96.0			61	6
108		BAY13C		13.800	B3	48.7	37.5	50.0	-25.0	1.0000	61.5	0.7927	100.0			61	6
142		CANJ13A		13.800	C1	55.2	18.8	29.0	-29.0	0.9920	58.8	0.9468	69.0			64	6
143		CANJ13B		13.800	C2	55.2	18.8	29.0	-29.0	0.9920	58.8	0.9468	69.0			64	6
150		GUALACA 13-213.800		G2		13.1	-0.1	7.4	-7.4	0.9900	13.2	1.0000	14.8			64	6
151		GUALACA13.8		G1		13.1	-0.1	7.4	-7.4	0.9900	13.2	1.0000	14.8			64	6



MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6596.1	6394.5	0.0	0.0	0.0	0.0	201.6	0.0
	1339.2	1792.0	-811.5	0.0	1827.5	0.0	2186.2	

2.1.3. Contingencia Panamá – Panamá II





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:43
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0008	230.19	11		M.N230		230.00	6	1.0005	230.11
14		PRO230		230.00	6	1.0104	232.40	85		PTP230		230.00	6	1.0054	231.23
96		FOR230		230.00	6	1.0019	230.43	100		BAY230		230.00	6	1.0263	236.05
103		COPESA23		230.00	6	1.0051	231.18	115		PACORA23		230.00	6	1.0077	231.77
146		GUALACA230		230.00	6	1.0037	230.86	190		CHANG230		230.00	6	1.0133	233.05
306		CHAN1 230		230.00	6	1.0116	232.68	310		CONCEPCION23		230.00	6	1.0083	231.91
341		PRUDENCIA230		230.00	6	1.0100	232.31	345		LORENA230		230.00	6	1.0077	231.77
540		ANTON		230.00	6	1.0113	232.60	700		BAITUN230		230.00	6	1.0099	232.28
6000		FRONTER		230.00	6	1.0115	232.63	6400		FRONTCHA		230.00	6	1.0153	233.51
6500		FRONTVEL		230.00	6	1.0133	233.06								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9887	227.41	5		CHO230		230.00	6	0.9845	226.44
8		LSA230		230.00	6	0.9966	229.22	105		PAN-AM23		230.00	6	0.9845	226.44
144		CANJ230		230.00	6	0.9997	229.93	147		GUASQ230		230.00	6	0.9996	229.91
148		VELADERO 230		230.00	6	0.9949	228.84	354		SANBARTOLO23		230.00	6	0.9937	228.55
370		LSA CAP 230		230.00	6	0.9966	229.22	511		LGUIAS230		230.00	6	0.9867	226.95

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:43
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 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0193	117.22	9		LSA115		115.00	6	1.0424	119.87
15		PRO115		115.00	6	1.0123	116.41	19		C.V115		115.00	6	1.0037	115.42
20		CH.AZUL		115.00	6	1.0130	116.50	52		TOC115		115.00	6	1.0167	116.92
54		LM1115		115.00	6	1.0152	116.74	55		LM2115		115.00	6	1.0161	116.85
61		FFIELD		115.00	6	1.0121	116.39	87		CAL115		115.00	6	1.0173	116.99
88		EST115		115.00	6	1.0211	117.43	92		L.V115		115.00	6	1.0188	117.16



109 STA RITA115	115.00	6	1.0136	116.57	154 CEMPAN15	115.00	6	1.0083	115.95
191 CHANG115	115.00	6	1.0089	116.02	522 TCATIVÁ 115	115.00	6	1.0158	116.81
529 TCOLON 115	115.00	6	1.0137	116.57					

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)
2		PAN115		115.00	6	0.9924	114.13	6		CHO115		115.00	6	0.9853	113.31
12		M.N115		115.00	6	0.9998	114.98	18		CAC115		115.00	6	0.9923	114.11
21		C.BAN115		115.00	6	0.9859	113.38	23		CH115		115.00	6	0.9937	114.27
26		LOC115		115.00	6	0.9863	113.42	30		MAR115		115.00	6	0.9840	113.16
33		STM115		115.00	6	0.9906	113.92	37		SAN115		115.00	6	0.9862	113.42
48		TINAJ115		115.00	6	0.9901	113.86	50		M.O115		115.00	6	0.9902	113.87
123		MIR115		115.00	7	0.9990	114.88	701		BAITUN115		115.00	6	0.9906	113.92
702		BJOMIN115		115.00	6	0.9928	114.18								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:43
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII

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	16.2	25.0	0.0	1.0000	41.3	0.9202	47.0			62	6
67		BLM13C		13.800	V3	38.0	16.2	25.0	0.0	1.0000	41.3	0.9202	47.0			62	6
68		BLM13D		13.800	V4	38.0	16.8	25.0	0.0	1.0000	41.6	0.9143	47.0			62	6
90		EST-13L		13.800	E1	22.0	6.7	12.0	-5.0	0.9920	23.2	0.9563	27.0			64	6
91		EST-13T		13.800	E2	22.0	6.7	12.0	-5.0	0.9920	23.2	0.9563	27.0			64	6
94		LV-13.8L		13.800	L1	23.2	7.5	12.0	-5.0	0.9920	24.6	0.9515	27.0			64	6
95		LV-13.8T		13.800	L2	23.2	7.5	12.0	-5.0	0.9920	24.6	0.9515	27.0			64	6
97		FOR13A		13.800	F1	78.0	-5.5	50.0	-50.0	0.9920	78.8	0.9975	111.0			64	6
98		FOR13B		13.800	F2	78.0	-5.5	50.0	-50.0	0.9920	78.8	0.9975	111.0			64	6
99		FOR13C		13.800	F3	78.0	-5.5	50.0	-50.0	0.9920	78.8	0.9975	111.0			64	6
101		BAY13A		13.800	B1	49.9	19.3	50.0	-25.0	1.0000	53.5	0.9328	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.4	19.2	50.0	-25.0	1.0000	52.1	0.9297	96.0			61	6
108		BAY13C		13.800	B3	48.4	19.2	50.0	-25.0	1.0000	52.1	0.9297	100.0			61	6
142		CANJ13A		13.800	C1	55.0	16.6	29.0	-29.0	0.9920	57.9	0.9574	69.0			64	6
143		CANJ13B		13.800	C2	55.0	16.6	29.0	-29.0	0.9920	57.9	0.9574	69.0			64	6
150		GUALACA	13-213.800	G2		13.0	-3.1	7.4	-7.4	0.9900	13.5	0.9734	14.8			64	6



151	GUALACA13.8	13.800	G1	13.0	-3.1	7.4	-7.4	0.9900	13.5	0.9734	14.8	64	6
302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9515	5.4	0.9217	6.2	64	6
304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0829	4.7	0.8981	5.7	64	6
304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0829	4.7	0.8981	5.7	64	6
307	CHAN1 A	13.800	G1	80.0	-15.4	50.0	-50.0	0.9920	82.2	0.9819	118.6	64	6
317	MENDRE13.8	13.800	M1	9.2	0.0	0.0	0.0	1.0850	8.5	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.2	0.0	0.0	0.0	1.0850	8.5	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0854	5.1	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.0854	5.1	1.0000	35.3	64	6
340	PEDGALITO138	13.800	P1	21.0	6.5	12.0	-5.0	0.9920	22.2	0.9549	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	0.9920	13.1	0.9236	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.8	-4.1	9.8	-9.8	0.9920	22.4	0.9832	33.0	64	6
343	PRUDENCIA_1	13.800	G2	21.8	-4.1	9.8	-9.8	0.9920	22.4	0.9832	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	-5.0	10.5	-5.0	0.9920	13.1	0.9236	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0783	3.0	0.9515	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9821	10.5	0.8742	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9821	10.5	0.8742	13.5	64	6
357	BARTOLO13.8	13.800	G1	7.2	0.4	3.7	-3.7	0.9920	7.3	0.9982	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.2	0.4	3.7	-3.7	0.9920	7.3	0.9982	8.5	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9871	8.6	0.8911	8.9	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	1.8	6.6	-6.6	0.9800	8.6	0.9764	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	1.8	6.6	-6.6	0.9800	8.6	0.9764	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	1.8	6.6	-6.6	0.9800	8.6	0.9764	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	1.8	6.6	-6.6	0.9800	8.6	0.9764	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	1.8	6.6	-6.6	0.9800	8.6	0.9764	10.9	62	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0124	24.7	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	25.0	2.1	13.0	-13.0	0.9920	25.3	0.9966	30.5	64	6
704	BJOMIN13B	13.800	G2	25.0	2.1	13.0	-13.0	0.9920	25.3	0.9966	30.5	64	6
705	BAITUN13A	13.800	G1	40.0	-6.0	26.6	-26.6	0.9920	40.8	0.9890	50.6	64	6
706	BAITUN13B	13.800	G2	40.0	-6.0	26.6	-26.6	0.9920	40.8	0.9890	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9515	5.2	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1177.4	133.3	741.2	-545.2				1823.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:43
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII

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	16.4	2.3	15.0	0.0	1.0000	16.5	0.9899	44.1
AREA									
130 MIR13F	13.800 G5	17.1	0.0	8.0	0.0	1.0122	16.9	1.0000	27.7
140 GAT6A	6.9000 G1	1.9	-0.7	2.0	-2.0	1.0000	2.0	0.9471	4.1
140 GAT6A	6.9000 G2	1.9	-0.7	2.0	-2.0	1.0000	2.0	0.9471	4.1
140 GAT6A	6.9000 G3	1.9	-0.7	2.0	-2.0	1.0000	2.0	0.9471	4.1
141 GAT6B	6.9000 G4	3.9	-1.4	3.0	-3.0	1.0000	4.1	0.9401	5.6
141 GAT6B	6.9000 G5	3.9	-1.4	3.0	-3.0	1.0000	4.1	0.9401	6.2
141 GAT6B	6.9000 G6	3.9	-1.4	3.0	-3.0	1.0000	4.1	0.9401	6.2
170 MIR13G	13.800 M1	17.0	6.8	11.2	6.8	1.0266	17.8	0.9281	23.0
171 MIR13H	13.800 M1	17.0	6.8	11.2	6.8	1.0357	17.7	0.9281	23.0
171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0357	17.7	0.9281	23.0
SUBSYSTEM TOTALS		101.9	16.6	71.5	5.5				171.3

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:45
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII 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	1363.7	1330.8	0.0	0.0	0.0	-10.5	43.4	-10.8
GUATEMAL	198.2	275.1	-198.7	0.0	277.8	1.9	397.7	
2	868.9	855.0	0.0	0.0	0.0	0.1	13.7	0.0
SALVADOR	72.9	224.2	-70.8	0.0	229.1	-26.3	175.0	
3	1236.9	1203.0	0.0	0.0	0.0	0.1	33.8	0.0
HONDURAS	461.3	321.1	-47.3	0.0	294.0	54.1	427.6	
4	531.9	525.2	0.0	0.0	0.0	0.0	6.7	0.0
NICARAGU	32.9	207.6	-57.8	0.0	182.3	-47.0	112.3	
5	1296.5	1280.2	0.0	0.0	0.0	-0.1	16.5	0.0
COSTA RI	218.6	520.4	-230.3	0.0	416.9	44.6	300.7	
6	1177.4	1158.8	0.0	0.0	0.0	-49.4	68.0	-49.2
PANAMA	133.3	235.3	-225.6	0.0	489.8	-25.3	638.6	
7	101.9	41.5	0.0	0.0	0.0	59.8	0.6	60.0
ACANAL	16.6	8.4	0.0	0.0	0.0	-2.1	10.3	



10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	6577.2	6394.5	0.0	0.0	0.0	0.0	182.7	0.0
	1133.8	1792.0	-830.5	0.0	1889.9	0.0	2062.2	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MIN-INVIERNO

MON, MAY 24 2010 13:59

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0125	232.86	14		PRO230		230.00	6	1.0234	235.37
85		PTP230		230.00	6	1.0177	234.06	96		FOR230		230.00	6	1.0128	232.94
100		BAY230		230.00	6	1.0198	234.55	103		COPESA23		230.00	6	1.0026	230.59
115		PACORA23		230.00	6	1.0049	231.13	144		CANJ230		230.00	6	1.0132	233.03
146		GUALACA230		230.00	6	1.0148	233.41	147		GUASQ230		230.00	6	1.0131	233.02
148		VELADERO	230	230.00	6	1.0090	232.07	190		CHANG230		230.00	6	1.0215	234.95
306		CHAN1	230	230.00	6	1.0203	234.66	310		CONCEPCION23	230.00	6	1.0207	234.76	
341		PRUDENCIA230	230.00	6	1.0176	234.04	345		LORENA230		230.00	6	1.0166	233.82	
354		SANBARTOLO23	230.00	6	1.0069	231.58	540		ANTON		230.00	6	1.0155	233.57	
700		BAITUN230		230.00	6	1.0231	235.32	6000		FRONTER		230.00	6	1.0241	235.55
6400		FRONTCHA		230.00	6	1.0224	235.15	6500		FRONTVEL		230.00	6	1.0264	236.07

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9945	228.74	3		PANII230		230.00	6	0.9989	229.75
5		CHO230		230.00	6	0.9955	228.96	8		LSA230		230.00	6	0.9992	229.82
105		PAN-AM23		230.00	6	0.9955	228.96	370		LSA CAP	230	230.00	6	0.9992	229.82
511		LGUIAS230		230.00	6	0.9982	229.58								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MIN-INVIERNO

MON, MAY 24 2010 13:59

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0009	115.11	9		LSA115		115.00	6	1.0472	120.43
12		M.N115		115.00	6	1.0129	116.49	15		PRO115		115.00	6	1.0252	117.90
20		CH.AZUL		115.00	6	1.0259	117.98	54		LM115		115.00	6	1.0064	115.73
55		LM2115		115.00	6	1.0072	115.82	61		FFIELD		115.00	6	1.0046	115.53
87		CAL115		115.00	6	1.0215	117.47	88		EST115		115.00	6	1.0231	117.66
92		L.V115		115.00	6	1.0221	117.54	109		STA RITA115		115.00	6	1.0045	115.52
154		CEMPAN15		115.00	6	1.0016	115.18	191		CHANG115		115.00	6	1.0178	117.05
522		TCATIVÁ	115	115.00	6	1.0068	115.78	529		TCOLON	115	115.00	6	1.0045	115.52
701		BAITUN115		115.00	6	1.0118	116.35	702		BJOMIN115		115.00	6	1.0124	116.43



BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9899	113.84	6		CHO115		115.00	6	0.9962	114.56
18		CAC115		115.00	6	0.9897	113.82	19		C.V115		115.00	6	0.9918	114.06
21		C.BAN115		115.00	6	0.9841	113.17	23		CH115		115.00	6	0.9908	113.95
26		LOC115		115.00	6	0.9846	113.23	30		MAR115		115.00	6	0.9834	113.09
33		STM115		115.00	6	0.9885	113.68	37		SAN115		115.00	6	0.9838	113.13
48		TINAJ115		115.00	6	0.9882	113.64	50		M.O115		115.00	6	0.9883	113.66
52		TOC115		115.00	6	0.9989	114.87	123		MIR115		115.00	7	0.9942	114.33

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 13:59
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MIN-INVIERNO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6		66		BLM13B	13.800	V2	30.0	14.8	25.0	0.0	0.9900	33.8	0.8973	47.0		62
6		67		BLM13C	13.800	V3	30.0	14.8	25.0	0.0	0.9900	33.8	0.8973	47.0		62
6		68		BLM13D	13.800	V4	30.0	15.4	25.0	0.0	0.9900	34.1	0.8894	47.0		62
6		90		EST-13L	13.800	E1	18.0	5.5	12.0	-5.0	0.9900	19.0	0.9565	27.0		64
6		94		LV-13.8L	13.800	L1	20.0	5.9	12.0	-5.0	0.9900	21.1	0.9588	27.0		64
6		97		FOR13A	13.800	F1	74.4	-17.5	50.0	-50.0	0.9900	77.2	0.9735	111.0		64
6		98		FOR13B	13.800	F2	74.4	-17.5	50.0	-50.0	0.9900	77.2	0.9735	111.0		64
6		101		BAY13A	13.800	B1	43.1	23.7	50.0	-25.0	1.0000	49.2	0.8761	96.0		61
SYST																
6		102		BAY13B	13.800	B2	43.1	23.7	50.0	-25.0	1.0000	49.2	0.8761	96.0		61
6		142		CANJ13A	13.800	C1	57.0	16.4	29.0	-29.0	1.0000	59.3	0.9611	69.0		64
6		150		GUALACA	13-213.800	G2	11.0	-5.9	7.4	-7.4	0.9900	12.6	0.8810	14.8		64
6		302		PASOANCH	13.813.800	P1	4.7	2.0	2.0	-2.0	0.9545	5.4	0.9216	6.2		64



6	304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0875	4.7	0.8981	5.7	64
6	304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0875	4.7	0.8981	5.7	64
6	307	CHAN1 A	13.800	G1	85.0	-15.8	50.0	-50.0	1.0000	86.5	0.9831	118.6	64
6	317	MENDRE13.8	13.800	M1	9.2	0.0	0.0	0.0	1.0896	8.5	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.2	0.0	0.0	0.0	1.0896	8.5	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0901	5.0	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.0901	5.0	1.0000	35.3	64
6	340	PEDGALITO138	13.800	P1	18.0	5.3	12.0	-5.0	1.0000	18.8	0.9587	27.0	64
6	342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	1.0010	13.0	0.9228	19.9	64
6	343	PRUDENCIA_1	13.800	G1	21.0	-9.3	9.8	-9.8	1.0000	23.0	0.9150	33.0	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0897	3.0	0.9514	6.2	64
6	351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9924	10.4	0.8742	13.5	64
6	352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9924	10.4	0.8742	13.5	64
6	357	BARTOLO13.8	13.800	G1	6.0	0.0	3.7	-3.7	1.0000	6.0	1.0000	8.5	64
6	357	BARTOLO13.8	13.800	G2	6.0	0.0	3.7	-3.7	1.0000	6.0	1.0000	8.5	64
6	364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9913	8.6	0.8911	8.9	64
6	541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0166	24.6	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	26.6	0.6	13.0	-13.0	1.0000	26.6	0.9997	30.5	64
6	705	BAITUN13A	13.800	G1	40.8	-8.3	26.6	-26.6	1.0000	41.7	0.9799	50.6	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9545	5.2	0.9145	6.2	64
6	SUBSYSTEM TOTALS				748.0	59.3	488.1	-336.6				1285.5	

MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	5996.1	5854.6	0.0	0.0	0.0	0.0	141.4	0.0
	1100.5	1788.0	-460.4	0.0	1895.1	0.0	1668.0	





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-VERANO

MON, MAY 24 2010 14:13

BUSES WITH VOLTAGE 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	1.0040	230.92	11	M.N	230	230.00	6	1.0042	230.97		
14	PRO	230	230.00	6	1.0138	233.18	85	PTP	230	230.00	6	1.0071	231.64		
96	FOR	230	230.00	6	1.0031	230.72	100	BAY	230	230.00	6	1.0282	236.49		
103	COPE	SA23	230.00	6	1.0081	231.86	115	PAC	ORA23	230.00	6	1.0115	232.65		
144	CAN	J230	230.00	6	1.0020	230.46	146	GUAL	LACA230	230.00	6	1.0071	231.63		
147	GUAS	Q230	230.00	6	1.0020	230.46	190	CHANG	230	230.00	6	1.0137	233.14		
306	CHAN	1 230	230.00	6	1.0116	232.67	310	CONCE	PCION23	230.00	6	1.0106	232.44		
341	PRUD	ENCIA230	230.00	6	1.0153	233.52	345	LORE	NA230	230.00	6	1.0124	232.85		
540	ANTON	230.00	230.00	6	1.0111	232.56	700	BAITUN	230	230.00	6	1.0138	233.16		
6000	FRON	TER	230.00	6	1.0149	233.42	6400	FRONT	CHA	230.00	6	1.0157	233.62		
6500	FRONT	VEL	230.00	6	1.0171	233.94									

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN	230	230.00	6	0.9977	229.47	5	CHO	230	230.00	6	0.9919	228.13		
8	LSA	230	230.00	6	0.9898	227.66	105	PAN-AM	23	230.00	6	0.9919	228.13		
148	VELA	DERO	230	230.00	6	0.9994	229.85	370	LSA	CAP 230	230.00	6	0.9898	227.66	
511	LGUI	AS230	230.00	6	0.9876	227.14									

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-VERANO

MON, MAY 24 2010 14:13

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN	I115	115.00	6	1.0004	115.05	4	PAN	II115	115.00	6	1.0220	117.53		
9	LSA	115	115.00	6	1.0359	119.13	15	PRO	115	115.00	6	1.0157	116.80		
18	CAC	115	115.00	6	1.0002	115.03	19	C.V	115	115.00	6	1.0077	115.88		
20	CH.AZUL	115.00	115.00	6	1.0164	116.89	23	CH	115	115.00	6	1.0030	115.35		
52	TOC	115	115.00	6	1.0193	117.21	54	LM	115	115.00	6	1.0267	118.07		
55	LM	2115	115.00	6	1.0279	118.21	61	FF	FIELD	115.00	6	1.0235	117.70		
87	CAL	115	115.00	6	1.0088	116.01	88	EST	115	115.00	6	1.0121	116.40		
92	L.V	115	115.00	6	1.0101	116.16	109	STA	RITA115	115.00	6	1.0238	117.74		
123	MIR	115	115.00	7	1.0062	115.72	154	CEMPAN	15	115.00	6	1.0253	117.91		



191 CHANG115 115.00 6 1.0092 116.05 522 TCATIVÁ 115 115.00 6 1.0276 118.17
 529 TCOLON 115 115.00 6 1.0253 117.91

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6		CHO115		115.00	6	0.9927	114.16	12		M.N115		115.00	6	0.9951	114.43
21		C.BAN115		115.00	6	0.9931	114.20	26		LOC115		115.00	6	0.9936	114.26
30		MAR115		115.00	6	0.9916	114.03	33		STM115		115.00	6	0.9985	114.83
37		SAN115		115.00	6	0.9931	114.20	48		TINAJ115		115.00	6	0.9980	114.77
50		M.O115		115.00	6	0.9982	114.79	701		BAITUN115		115.00	6	0.9946	114.38
702		BJOMIN115		115.00	6	0.9973	114.69								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:13
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-VERANO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6		66		BLM13B	13.800	V2	38.0	11.1	25.0	0.0	1.0000	39.6	0.9599	47.0		62
6		67		BLM13C	13.800	V3	38.0	11.1	25.0	0.0	1.0000	39.6	0.9599	47.0		62
6		68		BLM13D	13.800	V4	38.0	11.5	25.0	0.0	1.0000	39.7	0.9571	47.0		62
6		90		EST-13L	13.800	E1	21.8	5.6	12.0	-5.0	0.9800	23.0	0.9683	27.0		64
6		91		EST-13T	13.800	E2	21.8	5.6	12.0	-5.0	0.9800	23.0	0.9683	27.0		64
6		94		LV-13.8L	13.800	L1	24.7	6.4	12.0	-5.0	0.9800	26.0	0.9675	27.0		64
6		95		LV-13.8T	13.800	L2	24.7	6.4	12.0	-5.0	0.9800	26.0	0.9675	27.0		64
6		97		FOR13A	13.800	F1	82.0	-16.8	50.0	-50.0	0.9800	85.4	0.9796	111.0		64
6		98		FOR13B	13.800	F2	82.0	-16.8	50.0	-50.0	0.9800	85.4	0.9796	111.0		64
6		101		BAY13A	13.800	B1	42.2	17.4	50.0	-25.0	1.0000	45.6	0.9246	96.0		61
6		102		BAY13B	13.800	B2	42.2	17.4	50.0	-25.0	1.0000	45.6	0.9245	96.0		61



6	108	BAY13C	13.800	B3	42.2	17.4	50.0	-25.0	1.0000	45.6	0.9245	100.0	61
6	116	PACORA13	13.800	P1	17.5	0.0	8.8	0.0	1.0007	17.5	1.0000	21.7	61
6	116	PACORA13	13.800	P2	17.5	0.0	8.8	0.0	1.0007	17.5	1.0000	21.7	61
6	116	PACORA13	13.800	P3	17.5	0.0	8.8	0.0	1.0007	17.5	1.0000	21.7	61
6	142	CANJ13A	13.800	C1	55.0	14.3	29.0	-29.0	0.9800	58.0	0.9677	69.0	64
6	143	CANJ13B	13.800	C2	55.0	14.3	29.0	-29.0	0.9800	58.0	0.9677	69.0	64
6	150	GUALACA 13-2	13.800	G2	13.1	-3.9	7.4	-7.4	0.9900	13.8	0.9585	14.8	64
6	151	GUALACA13.8	13.800	G1	13.1	-3.9	7.4	-7.4	0.9900	13.8	0.9585	14.8	64
6	302	PASOANCH13.8	13.800	P1	4.6	2.0	2.0	-2.0	0.9638	5.2	0.9180	6.2	64
6	304	ALGA13.8	13.800	A1	4.7	-2.3	2.3	-2.3	1.0651	4.9	0.9019	5.7	64
6	304	ALGA13.8	13.800	A2	4.7	-2.3	2.3	-2.3	1.0651	4.9	0.9019	5.7	64
6	307	CHAN1 A	13.800	G1	60.0	-18.7	50.0	-50.0	0.9900	63.5	0.9546	118.6	64
6	317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0672	8.8	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.0672	8.8	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.9	0.0	0.0	0.0	1.0676	5.6	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C2	5.9	0.0	0.0	0.0	1.0676	5.6	1.0000	35.3	64
6	340	PEDGALITO138	13.800	P1	22.8	7.3	12.0	-5.0	0.9800	24.4	0.9522	27.0	64
6	342	LORENA13.8	13.800	L1	16.0	-3.7	10.5	-5.0	1.0000	16.4	0.9737	19.9	64
6	343	PRUDENCIA_1	13.800	G1	26.6	-2.9	9.8	-9.8	1.0000	26.8	0.9939	33.0	64
6	343	PRUDENCIA_1	13.800	G2	26.6	-2.9	9.8	-9.8	1.0000	26.8	0.9939	33.0	64
6	346	LORENA 13-2	13.800	L2	16.0	-3.7	10.5	-5.0	1.0000	16.4	0.9737	19.9	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0633	3.1	0.9514	6.2	64
6	523	TCATIVÁ 13A	13.800	G1	8.3	2.9	6.6	-6.6	1.0000	8.8	0.9423	10.9	62



6	523	TCATIVÁ 13A	13.800	G2	8.3	2.9	6.6	-6.6	1.0000	8.8	0.9423	10.9	62
6	523	TCATIVÁ 13A	13.800	G3	8.3	2.9	6.6	-6.6	1.0000	8.8	0.9423	10.9	62
6	523	TCATIVÁ 13A	13.800	G4	8.3	2.9	6.6	-6.6	1.0000	8.8	0.9423	10.9	62
6	523	TCATIVÁ 13A	13.800	G5	8.3	2.9	6.6	-6.6	1.0000	8.8	0.9423	10.9	62
6	524	TCATIVÁ 13B	13.800	G0	8.3	2.9	6.6	-6.6	1.0000	8.8	0.9423	10.9	62
6	524	TCATIVÁ 13B	13.800	G6	8.3	2.9	6.6	-6.6	1.0000	8.8	0.9423	10.9	62
6	524	TCATIVÁ 13B	13.800	G7	8.3	2.9	6.6	-6.6	1.0000	8.8	0.9423	10.9	62
6	524	TCATIVÁ 13B	13.800	G8	8.3	2.9	6.6	-6.6	1.0000	8.8	0.9423	10.9	62
6	524	TCATIVÁ 13B	13.800	G9	8.3	2.9	6.6	-6.6	1.0000	8.8	0.9423	10.9	62
6	531	EGIRAL13.8	213.800	G5	8.2	3.0	6.4	3.0	1.0000	8.7	0.9380	10.9	62
6	531	EGIRAL13.8	213.800	G6	8.2	3.0	6.4	3.0	1.0000	8.7	0.9380	10.9	62
6	531	EGIRAL13.8	213.800	G7	8.2	3.0	6.4	3.0	1.0000	8.7	0.9380	10.9	62
6	531	EGIRAL13.8	213.800	G8	8.2	3.0	6.4	3.0	1.0000	8.7	0.9380	10.9	62
6	541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0124	29.6	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	26.6	2.9	13.0	-13.0	1.0000	26.8	0.9943	30.5	64
6	704	BJOMIN13B	13.800	G2	26.6	2.9	13.0	-13.0	1.0000	26.8	0.9943	30.5	64
6	705	BAITUN13A	13.800	G1	40.9	-4.2	26.6	-26.6	1.0000	41.1	0.9948	50.6	64
6	706	BAITUN13B	13.800	G2	40.9	-4.2	26.6	-26.6	1.0000	41.1	0.9948	50.6	64
6	720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9638	4.3	0.8730	6.2	64
	SUBSYSTEM TOTALS				1185.8	109.8	754.8	-494.8				1822.5	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:13
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MAX-VERANO



AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
129		MIR13D		13.800	G4	18.2	0.5	15.0	0.0	1.0000	18.2	0.9996	44.1			
7		AREA SWING														
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0161	16.8	1.0000	27.7			65
7		AREA														
140		GAT6A		6.9000	G1	1.9	-0.9	2.0	-2.0	1.0000	2.2	0.8978	4.1			65
7		AREA														
140		GAT6A		6.9000	G2	1.9	-0.9	2.0	-2.0	1.0000	2.2	0.8978	4.1			65
7		AREA														
140		GAT6A		6.9000	G3	1.9	-0.9	2.0	-2.0	1.0000	2.2	0.8978	4.1			65
7		AREA														
141		GAT6B		6.9000	G4	3.9	-1.7	3.0	-3.0	1.0000	4.2	0.9154	5.6			65
7		AREA														
141		GAT6B		6.9000	G5	3.9	-1.7	3.0	-3.0	1.0000	4.2	0.9154	6.2			65
7		AREA														
141		GAT6B		6.9000	G6	3.9	-1.7	3.0	-3.0	1.0000	4.2	0.9154	6.2			65
7		AREA														
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0305	17.8	0.9281	23.0			65
7		AREA														
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0396	17.6	0.9281	23.0			65
7		AREA														
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0396	17.6	0.9281	23.0			65
7		AREA														
SUBSYSTEM TOTALS						103.7	13.0	71.5	5.5				171.3			



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:13
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2012 ESC-MOD DEMANDA-MAX-VERANO IN MW/MVAR

X-- AREA	--X GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1364.0	1330.8	0.0	0.0	0.0	-10.3	43.5	-9.7
GUATEMAL	198.3	275.1	-198.8	0.0	277.8	1.8	398.0	
2	868.7	855.0	0.0	0.0	0.0	0.0	13.7	0.0
SALVADOR	73.0	224.2	-70.8	0.0	229.1	-26.3	174.9	
3	1236.8	1203.0	0.0	0.0	0.0	0.0	33.8	0.0
HONDURAS	461.3	321.1	-47.3	0.0	294.0	54.1	427.6	
4	532.0	525.2	0.0	0.0	0.0	0.1	6.7	0.0
NICARAGU	32.8	207.6	-57.8	0.0	182.3	-47.0	112.3	
5	1296.9	1280.2	0.0	0.0	0.0	0.4	16.4	0.0
COSTA RI	216.3	520.4	-230.3	0.0	417.3	43.4	300.2	
6	1185.8	1183.9	0.0	0.0	0.0	-50.8	52.7	-50.3
PANAMA	109.8	240.4	-143.3	0.0	493.8	-19.9	526.4	
7	103.7	42.4	0.0	0.0	0.0	60.6	0.6	60.0
ACANAL	13.0	8.6	0.0	0.0	0.0	-6.1	10.5	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6587.8	6420.5	0.0	0.0	0.0	0.0	167.3	0.0
	1104.6	1797.3	-748.3	0.0	1894.3	0.0	1949.9	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MIN-VERANO

MON, MAY 24 2010 14:18

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8	LSA230	230.00	6	1.0013	230.29	11	M.N230	230.00	6	1.0076	231.74				
14	PRO230	230.00	6	1.0174	234.00	85	PTP230	230.00	6	1.0121	232.79				
96	FOR230	230.00	6	1.0073	231.69	100	BAY230	230.00	6	1.0142	233.27				
103	COPESA23	230.00	6	1.0021	230.48	115	PACORA23	230.00	6	1.0036	230.83				
144	CANJ230	230.00	6	1.0089	232.04	146	GUALACA230	230.00	6	1.0111	232.55				
147	GUASQ230	230.00	6	1.0089	232.04	148	VELADERO 230	230.00	6	1.0081	231.86				
190	CHANG230	230.00	6	1.0136	233.13	306	CHAN1 230	230.00	6	1.0108	232.47				
310	CONCEPCION23	230.00	6	1.0140	233.22	341	PRUDENCIA230	230.00	6	1.0147	233.39				
345	LORENA230	230.00	6	1.0135	233.10	370	LSA CAP 230	230.00	6	1.0013	230.29				
511	LGUIAS230	230.00	6	1.0008	230.19	540	ANTON	230.00	6	1.0172	233.96				
700	BAITUN230	230.00	6	1.0169	233.88	6000	FRONTER	230.00	6	1.0187	234.30				
6400	FRONTCHA	230.00	6	1.0152	233.49	6500	FRONTVEL	230.00	6	1.0227	235.23				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9957	229.01	3	PANII230	230.00	6	0.9994	229.86				
5	CHO230	230.00	6	0.9975	229.41	105	PAN-AM23	230.00	6	0.9975	229.41				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MIN-VERANO

MON, MAY 24 2010 14:18

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8	LSA230	230.00	6	1.0013	230.29	11	M.N230	230.00	6	1.0076	231.74				
14	PRO230	230.00	6	1.0174	234.00	85	PTP230	230.00	6	1.0121	232.79				
96	FOR230	230.00	6	1.0073	231.69	100	BAY230	230.00	6	1.0142	233.27				
103	COPESA23	230.00	6	1.0021	230.48	115	PACORA23	230.00	6	1.0036	230.83				
144	CANJ230	230.00	6	1.0089	232.04	146	GUALACA230	230.00	6	1.0111	232.55				
147	GUASQ230	230.00	6	1.0089	232.04	148	VELADERO 230	230.00	6	1.0081	231.86				
190	CHANG230	230.00	6	1.0136	233.13	306	CHAN1 230	230.00	6	1.0108	232.47				
310	CONCEPCION23	230.00	6	1.0140	233.22	341	PRUDENCIA230	230.00	6	1.0147	233.39				
345	LORENA230	230.00	6	1.0135	233.10	370	LSA CAP 230	230.00	6	1.0013	230.29				
511	LGUIAS230	230.00	6	1.0008	230.19	540	ANTON	230.00	6	1.0172	233.96				



700 BAITUN230	230.00	6	1.0169	233.88	6000 FRONTER	230.00	6	1.0187	234.30
6400 FRONTCHA	230.00	6	1.0152	233.49	6500 FRONTVEL	230.00	6	1.0227	235.23

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9957	229.01	3		PANII230		230.00	6	0.9994	229.86
5		CHO230		230.00	6	0.9975	229.41	105		PAN-AM23		230.00	6	0.9975	229.41

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:18
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MIN-VERANO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6		66		BLM13B	13.800	V2	31.0	9.2	25.0	0.0	0.9850	32.8	0.9590			62
6		67		BLM13C	13.800	V3	31.0	9.2	25.0	0.0	0.9850	32.8	0.9590			62
6		68		BLM13D	13.800	V4	31.0	9.5	25.0	0.0	0.9850	32.9	0.9559			62
6		90		EST-13L	13.800	E1	18.0	3.6	12.0	-5.0	0.9800	18.7	0.9803			64
6		94		LV-13.8L	13.800	L1	20.0	4.0	12.0	-5.0	0.9800	20.8	0.9807			64
6		97		FOR13A	13.800	F1	75.0	-21.2	50.0	-50.0	0.9800	79.5	0.9622			64
6		98		FOR13B	13.800	F2	75.0	-21.2	50.0	-50.0	0.9800	79.5	0.9622			64
6		101		BAY13A	13.800	B1	53.2	12.7	50.0	-25.0	0.9800	55.8	0.9726			61
SYST																
6		102		BAY13B	13.800	B2	53.1	12.7	50.0	-25.0	0.9800	55.7	0.9726			61
6		142		CANJ13A	13.800	C1	45.0	9.8	29.0	-29.0	0.9800	47.0	0.9772			64
6		150		GUALACA	13-213.800	G2	11.0	-5.0	7.4	-7.4	0.9900	12.2	0.9111			64
6		302		PASOANCH	13.813.800	P1	4.6	2.0	2.0	-2.0	0.9495	5.3	0.9180			64
6		304		ALGA13.8	13.800	A1	4.7	-2.3	2.3	-2.3	1.0871	4.8	0.9019			64



6	307	CHAN1 A	13.800	G1	60.0	-27.1	50.0	-50.0	0.9800	67.2	0.9112	118.6	64
6	317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0883	8.6	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.9	0.0	0.0	0.0	1.0884	5.5	1.0000	35.3	64
6	340	PEDGALITO13813.800	13.800	P1	18.0	6.1	12.0	-5.0	0.9800	19.4	0.9473	27.0	64
6	342	LORENA13.8	13.800	L1	16.0	-5.0	10.5	-5.0	0.9973	16.8	0.9545	19.9	64
6	343	PRUDENCIA_1	13.800	G1	26.6	-9.8	9.8	-9.8	0.9958	28.5	0.9388	33.0	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0657	3.0	0.9514	6.2	64
6	523	TCATIVÁ 13A	13.800	G1	8.3	3.8	6.6	-6.6	0.9900	9.2	0.9076	10.9	62
6	523	TCATIVÁ 13A	13.800	G2	8.3	3.8	6.6	-6.6	0.9900	9.2	0.9076	10.9	62
6	523	TCATIVÁ 13A	13.800	G3	8.3	3.8	6.6	-6.6	0.9900	9.2	0.9076	10.9	62
6	523	TCATIVÁ 13A	13.800	G4	8.3	3.8	6.6	-6.6	0.9900	9.2	0.9076	10.9	62
6	524	TCATIVÁ 13B	13.800	G6	8.3	3.8	6.6	-6.6	0.9900	9.2	0.9076	10.9	62
6	524	TCATIVÁ 13B	13.800	G7	8.3	3.8	6.6	-6.6	0.9900	9.2	0.9076	10.9	62
6	524	TCATIVÁ 13B	13.800	G8	8.3	3.8	6.6	-6.6	0.9900	9.2	0.9076	10.9	62
6	524	TCATIVÁ 13B	13.800	G9	8.3	3.8	6.6	-6.6	0.9900	9.2	0.9076	10.9	62
6	541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0182	24.6	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	21.0	-0.9	13.0	-13.0	0.9900	21.2	0.9990	30.5	64
6	705	BAITUN13A	13.800	G1	32.2	-10.5	26.6	-26.6	0.9900	34.3	0.9506	50.6	64
6	720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9495	4.3	0.8730	6.2	64
6	SUBSYSTEM TOTALS				739.6	7.3	517.1	-365.6				1243.8	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 14:18
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 ESC-MOD DEMANDA-MIN-VERANO

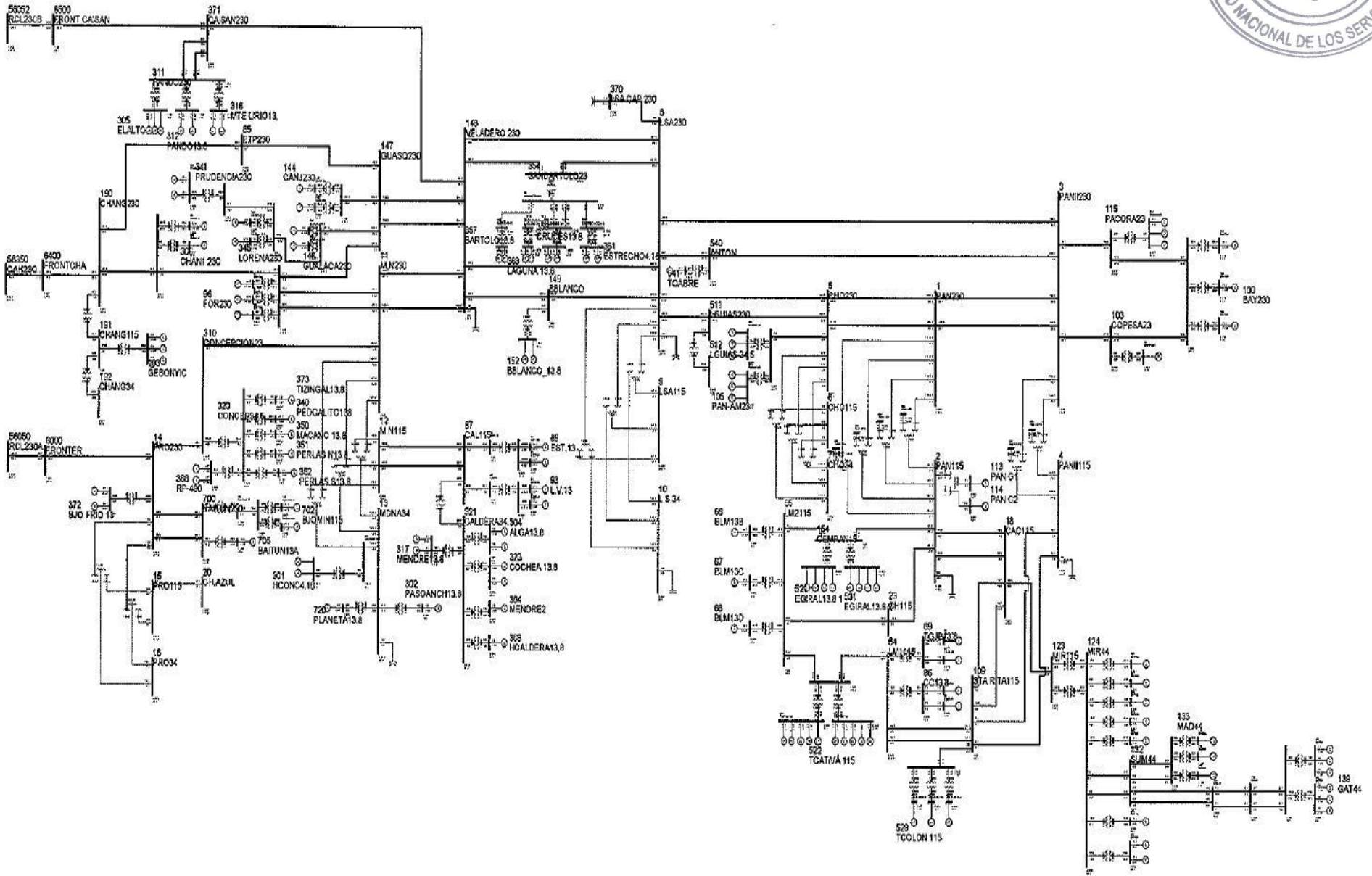
TOTALS	6002.8	5868.7	0.0	0.0	0.0	0.0	134.1	0.0
	1072.3	1793.0	-445.1	0.0	1891.2	0.0	1615.5	





3. Año 2013

3.1 Demanda Máxima de Invierno





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO

MON, MAY 24 2010 15:19

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0021	230.49	3		PANII230		230.00	6	1.0097	232.23
11		M.N230		230.00	6	1.0069	231.60	14		PRO230		230.00	6	1.0213	234.91
85		PTP230		230.00	6	1.0087	232.01	96		FOR230		230.00	6	1.0049	231.13
100		BAY230		230.00	6	1.0360	238.27	103		COPESA23		230.00	6	1.0141	233.24
115		PACORA23		230.00	6	1.0172	233.95	144		CANJ230		230.00	6	1.0038	230.87
146		GUALACA230		230.00	6	1.0083	231.91	147		GUASQ230		230.00	6	1.0037	230.86
148		VELADERO	230	230.00	6	1.0021	230.49	149		BBLANCO		230.00	6	1.0007	230.15
190		CHANG230		230.00	6	1.0152	233.50	306		CHAN1	230	230.00	6	1.0130	232.99
310		CONCEPCION23	230	230.00	6	1.0161	233.70	311		PANDO230		230.00	6	1.0404	239.29
341		PRUDENCIA230	230	230.00	6	1.0156	233.58	345		LORENA230		230.00	6	1.0128	232.95
371		CAISAN230		230.00	6	1.0391	239.00	540		ANTON		230.00	6	1.0167	233.84
700		BAITUN230		230.00	6	1.0206	234.73	6000		FRONTER		230.00	6	1.0243	235.58
6400		FRONTCHA		230.00	6	1.0173	233.97	6500		FRONT CAISAN	230	230.00	6	1.0380	238.73

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)
5		CHO230		230.00	6	0.9953	228.92	8		LSA230		230.00	6	0.9994	229.86
105		PAN-AM23		230.00	6	0.9953	228.92	354		SANBARTOLO23	230	230.00	6	0.9990	229.77
370		LSA CAP	230	230.00	6	0.9994	229.86	511		LGUIAS230		230.00	6	0.9926	228.29

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO

MON, MAY 24 2010 15:19

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0051	115.59	4		PANII115		115.00	6	1.0349	119.01
9		LSA115		115.00	6	1.0446	120.13	15		PRO115		115.00	6	1.0232	117.67
18		CAC115		115.00	6	1.0049	115.56	19		C.V115		115.00	6	1.0181	117.08
20		CH.AZUL		115.00	6	1.0240	117.75	23		CH115		115.00	6	1.0061	115.70
33		STM115		115.00	6	1.0032	115.36	48		TINAJ115		115.00	6	1.0026	115.30
50		M.O115		115.00	6	1.0027	115.32	52		TOC115		115.00	6	1.0321	118.69



54	LM1115	115.00	6	1.0284	118.26	55	LM2115	115.00	6	1.0293	118.37
61	FFIELD	115.00	6	1.0249	117.86	87	CAL115	115.00	6	1.0121	116.39
88	EST115	115.00	6	1.0151	116.74	92	L.V115	115.00	6	1.0133	116.53
109	STA RITA115	115.00	6	1.0270	118.10	123	MIR115	115.00	7	1.0104	116.20
154	CEMPAN15	115.00	6	1.0212	117.44	191	CHANG115	115.00	6	1.0065	115.75
522	TCATIVÁ 115	115.00	6	1.0290	118.34	529	TCOLON 115	115.00	6	1.0270	118.10
701	BAITUN115	115.00	6	1.0024	115.28	702	BJOMIN115	115.00	6	1.0043	115.50

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6		CHO115		115.00	6	0.9961	114.56	12		M.N115		115.00	6	0.9976	114.72
21		C.BAN115		115.00	6	0.9984	114.82	26		LOC115		115.00	6	0.9987	114.85
30		MAR115		115.00	6	0.9963	114.58	37		SAN115		115.00	6	0.9989	114.87

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:19
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
66		BLM13B		13.800	V2	38.0	10.5	25.0	0.0	1.0000	39.4	0.9638	47.0			62	6
67		BLM13C		13.800	V3	38.0	10.5	25.0	0.0	1.0000	39.4	0.9638	47.0			62	6
68		BLM13D		13.800	V4	38.0	10.9	25.0	0.0	1.0000	39.5	0.9613	47.0			62	6
90		EST-13L		13.800	E1	21.0	4.7	12.0	-5.0	0.9800	22.0	0.9756	27.0			64	6
91		EST-13T		13.800	E2	21.0	4.7	12.0	-5.0	0.9800	22.0	0.9756	27.0			64	6
94		LV-13.8L		13.800	L1	23.2	5.4	12.0	-5.0	0.9800	24.3	0.9738	27.0			64	6
95		LV-13.8T		13.800	L2	23.2	5.4	12.0	-5.0	0.9800	24.3	0.9738	27.0			64	6
97		FOR13A		13.800	F1	86.5	-18.0	50.0	-50.0	0.9800	90.2	0.9790	111.0			64	6
98		FOR13B		13.800	F2	86.5	-18.0	50.0	-50.0	0.9800	90.2	0.9790	111.0			64	6
101		BAY13A		13.800	B1	48.4	20.0	50.0	-25.0	1.0100	51.8	0.9244	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.3	20.0	50.0	-25.0	1.0100	51.8	0.9242	96.0			61	6
108		BAY13C		13.800	B3	48.3	20.0	50.0	-25.0	1.0100	51.8	0.9242	100.0			61	6
116		PACORA13		13.800	P1	17.1	0.0	8.8	0.0	1.0085	17.0	1.0000	21.7			61	6
142		CANJ13A		13.800	C1	52.0	12.9	29.0	-29.0	0.9800	54.7	0.9704	69.0			64	6
143		CANJ13B		13.800	C2	52.0	12.9	29.0	-29.0	0.9800	54.7	0.9704	69.0			64	6
150		GUALACA 13-213.800		G2	14.0	-4.1	7.4	7.4	-7.4	0.9900	14.7	0.9589	14.8			64	6
151		GUALACA13.8		G1	14.0	-4.1	7.4	7.4	-7.4	0.9900	14.7	0.9589	14.8			64	6



524	TCATIVÁ	13B	13.800	G0	8.3	3.3	6.6	-6.6	1.0000	8.9	0.9276	10.9		
524	TCATIVÁ	13B	13.800	G6	8.3	3.3	6.6	-6.6	1.0000	8.9	0.9276	10.9		
524	TCATIVÁ	13B	13.800	G7	8.3	3.3	6.6	-6.6	1.0000	8.9	0.9276	10.9		
524	TCATIVÁ	13B	13.800	G8	8.3	3.3	6.6	-6.6	1.0000	8.9	0.9276	10.9		
541	TOABRE		0.6000	1	25.0	0.0	0.0	0.0	1.0177	24.6	1.0000	88.9		
703	BJOMIN13A		13.800	G1	23.0	1.2	13.0	-13.0	1.0000	23.0	0.9987	30.5		
704	BJOMIN13B		13.800	G2	23.0	1.2	13.0	-13.0	1.0000	23.0	0.9987	30.5		
705	BAITUN13A		13.800	G1	38.0	-7.4	26.6	-26.6	1.0000	38.7	0.9814	50.6		
706	BAITUN13B		13.800	G2	38.0	-7.4	26.6	-26.6	1.0000	38.7	0.9814	50.6		
720	PLANETA13.8		13.800	G1	4.5	2.0	2.0	-2.0	0.9662	5.1	0.9145	6.2		
SUBSYSTEM TOTALS					1313.7	62.9	830.8	-594.9				2123.8		

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:19
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
129		MIR13D		13.800	G4	19.8	0.0	15.0	0.0	1.0021	19.8	1.0000	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0190	16.8	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-1.0	2.0	-2.0	1.0000	2.2	0.8955	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-1.0	2.0	-2.0	1.0000	2.2	0.8955	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-1.0	2.0	-2.0	1.0000	2.2	0.8955	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-1.7	3.0	-3.0	1.0000	4.2	0.9143	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-1.7	3.0	-3.0	1.0000	4.2	0.9143	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-1.7	3.0	-3.0	1.0000	4.2	0.9143	6.2			65	7
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0333	17.7	0.9281	23.0			65	7
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0424	17.6	0.9281	23.0			65	7
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0424	17.6	0.9281	23.0			65	7
SUBSYSTEM TOTALS					105.3	12.4	71.5	5.5					171.3				

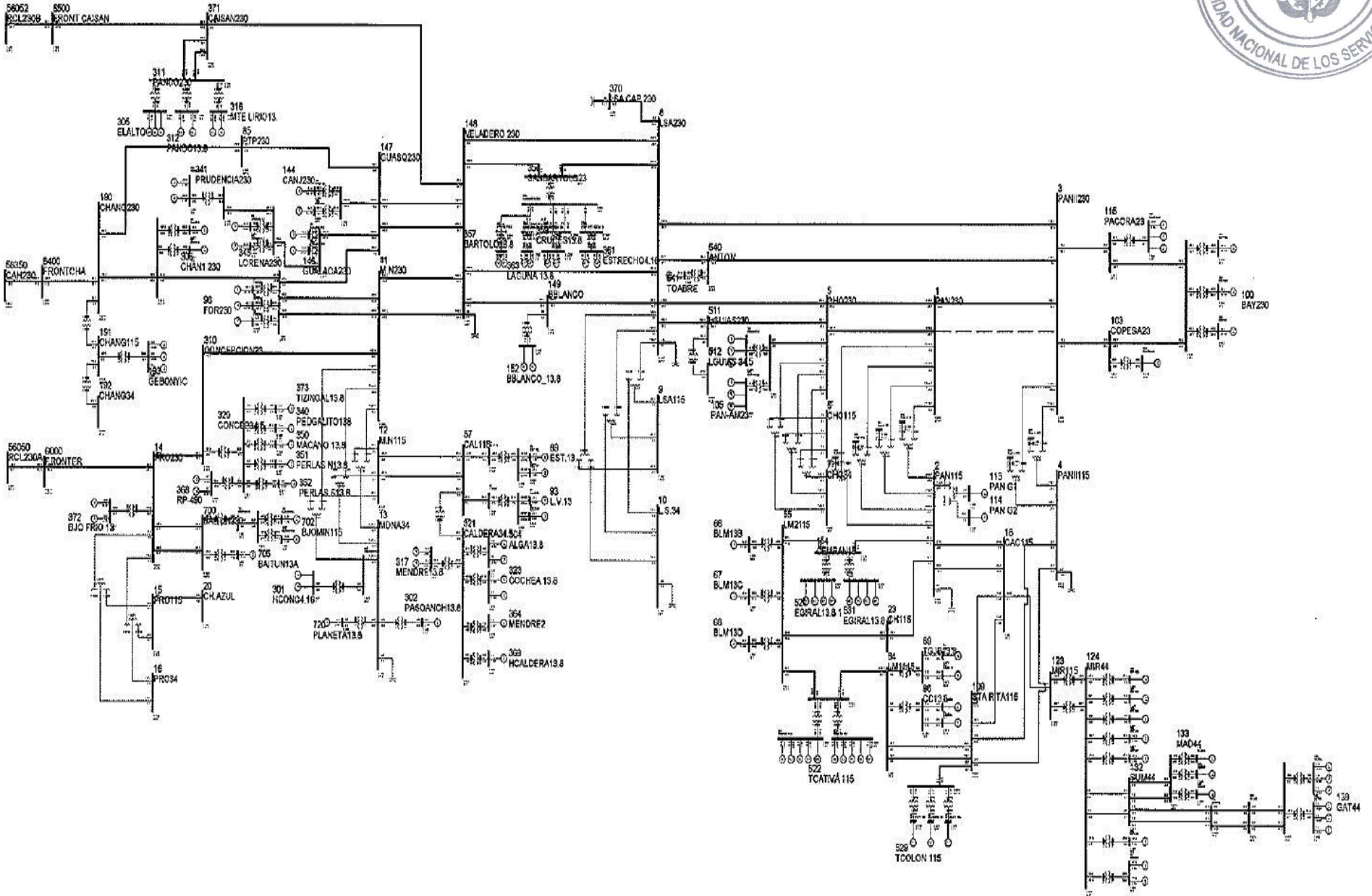
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:19
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1			1299.4	1330.8	0.0	0.0	0.0	-73.0	41.5	-73.7



GUATEMAL	191.7	275.1	-198.9	0.0	278.0	13.5	380.1	
2	869.0	855.0	0.0	0.0	0.0	-0.5	14.5	0.0
SALVADOR	75.1	224.2	-70.7	0.0	228.9	-27.6	178.2	
3	1236.8	1203.0	0.0	0.0	0.0	-0.3	34.1	0.0
HONDURAS	464.2	321.1	-47.3	0.0	293.8	53.2	431.0	
4	531.9	525.2	0.0	0.0	0.0	-0.3	7.0	0.0
NICARAGU	34.9	207.6	-57.7	0.0	182.1	-47.8	114.8	
5	1296.5	1280.2	0.0	0.0	0.0	-0.1	16.4	0.0
COSTA RI	200.8	520.4	-230.7	0.0	418.9	37.0	293.1	
6	1313.7	1230.4	0.0	0.0	0.0	13.5	69.8	13.7
PANAMA	62.9	249.8	-287.9	0.0	539.4	-21.0	661.4	
7	105.3	44.1	0.0	0.0	0.0	60.6	0.7	60.0
ACANAL	12.4	9.0	0.0	0.0	0.0	-7.2	10.7	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6652.7	6468.7	0.0	0.0	0.0	0.0	184.0	0.0
	1042.1	1807.0	-893.2	0.0	1941.2	0.0	2069.5	

3.1.1. Contingencia Panamá – Panamá II





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:28
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0094	232.16	11		M.N230		230.00	6	1.0061	231.40
14		PRO230		230.00	6	1.0208	234.78	85		PTP230		230.00	6	1.0081	231.86
96		FOR230		230.00	6	1.0042	230.97	100		BAY230		230.00	6	1.0358	238.23
103		COPESA23		230.00	6	1.0138	233.17	115		PACORA23		230.00	6	1.0169	233.89
144		CANJ230		230.00	6	1.0030	230.69	146		GUALACA230		230.00	6	1.0076	231.74
147		GUASQ230		230.00	6	1.0030	230.68	148		VELADERO 230		230.00	6	1.0005	230.12
190		CHANG230		230.00	6	1.0148	233.41	306		CHAN1 230		230.00	6	1.0126	232.90
310		CONCEPCION230		230.00	6	1.0154	233.55	311		PANDO230		230.00	6	1.0396	239.11
341		PRUDENCIA230		230.00	6	1.0149	233.42	345		LORENA230		230.00	6	1.0121	232.79
371		CAISAN230		230.00	6	1.0383	238.82	540		ANTON		230.00	6	1.0153	233.53
700		BAITUN230		230.00	6	1.0201	234.62	6000		FRONTER		230.00	6	1.0237	235.45
6400		FRONTCHA		230.00	6	1.0169	233.88	6500		FRONT CAISAN		230.00	6	1.0372	238.56

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9957	229.02	5		CHO230		230.00	6	0.9894	227.56
8		LSA230		230.00	6	0.9967	229.25	105		PAN-AM23		230.00	6	0.9894	227.56
149		BBLANCO		230.00	6	0.9989	229.76	354		SANBARTOLO230		230.00	6	0.9970	229.32
370		LSA CAP 230		230.00	6	0.9967	229.25	511		LGUIAS230		230.00	6	0.9883	227.30

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:27
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0331	118.81	9		LSA115		115.00	6	1.0417	119.80
15		PRO115		115.00	6	1.0227	117.61	19		C.V115		115.00	6	1.0153	116.76
20		CH.AZUL		115.00	6	1.0234	117.69	23		CH115		115.00	6	1.0021	115.24
52		TOC115		115.00	6	1.0303	118.49	54		LM1115		115.00	6	1.0261	118.01
55		LM2115		115.00	6	1.0271	118.11	61		FFIELD		115.00	6	1.0227	117.61



87 CAL115	115.00	6	1.0117	116.35	88 EST115	115.00	6	1.0148	116.70
92 L.V115	115.00	6	1.0129	116.49	109 STA RITA115	115.00	6	1.0245	117.82
123 MIR115	115.00	7	1.0057	115.65	154 CEMPAN15	115.00	6	1.0181	117.08
191 CHANG115	115.00	6	1.0062	115.72	522 TCATIVÁ 115	115.00	6	1.0268	118.09
529 TCOLON 115	115.00	6	1.0245	117.82	701 BAITUN115	115.00	6	1.0021	115.25
702 BJOMIN115	115.00	6	1.0040	115.46					

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)
2		PAN115		115.00	6	0.9999	114.99	6		CHO115		115.00	6	0.9903	113.88
12		M.N115		115.00	6	0.9971	114.66	18		CAC115		115.00	6	0.9998	114.98
21		C.BAN115		115.00	6	0.9936	114.27	26		LOC115		115.00	6	0.9939	114.30
30		MAR115		115.00	6	0.9913	114.00	33		STM115		115.00	6	0.9980	114.77
37		SAN115		115.00	6	0.9942	114.34	48		TINAJ115		115.00	6	0.9974	114.70
50		M.O115		115.00	6	0.9976	114.72								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:27
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII

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	11.5	25.0	0.0	1.0000	39.7	0.9574	47.0			62	6
67		BLM13C		13.800	V3	38.0	11.5	25.0	0.0	1.0000	39.7	0.9574	47.0			62	6
68		BLM13D		13.800	V4	38.0	11.9	25.0	0.0	1.0000	39.8	0.9544	47.0			62	6
90		EST-13L		13.800	E1	21.0	4.8	12.0	-5.0	0.9800	22.0	0.9747	27.0			64	6
91		EST-13T		13.800	E2	21.0	4.8	12.0	-5.0	0.9800	22.0	0.9747	27.0			64	6
94		LV-13.8L		13.800	L1	23.2	5.5	12.0	-5.0	0.9800	24.3	0.9729	27.0			64	6
95		LV-13.8T		13.800	L2	23.2	5.5	12.0	-5.0	0.9800	24.3	0.9729	27.0			64	6
97		FOR13A		13.800	F1	86.5	-17.4	50.0	-50.0	0.9800	90.1	0.9804	111.0			64	6
98		FOR13B		13.800	F2	86.5	-17.4	50.0	-50.0	0.9800	90.1	0.9804	111.0			64	6
101		BAY13A		13.800	B1	48.4	20.1	50.0	-25.0	1.0100	51.9	0.9235	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.3	20.1	50.0	-25.0	1.0100	51.8	0.9233	96.0			61	6
108		BAY13C		13.800	B3	48.3	20.1	50.0	-25.0	1.0100	51.8	0.9233	100.0			61	6
116		PACORA13		13.800	P1	17.1	0.0	8.8	0.0	1.0082	17.0	1.0000	21.7			61	6
142		CANJ13A		13.800	C1	52.0	13.1	29.0	-29.0	0.9800	54.7	0.9699	69.0			64	6
143		CANJ13B		13.800	C2	52.0	13.1	29.0	-29.0	0.9800	54.7	0.9699	69.0			64	6



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X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1299.7	1330.8	0.0	0.0	0.0	-72.6	41.5	-73.7
GUATEMAL	191.7	275.1	-198.9	0.0	278.0	13.4	380.2	
2	869.1	855.0	0.0	0.0	0.0	-0.4	14.5	0.0
SALVADOR	75.1	224.2	-70.7	0.0	228.9	-27.6	178.2	
3	1237.0	1203.0	0.0	0.0	0.0	-0.1	34.1	0.0
HONDURAS	464.1	321.1	-47.3	0.0	293.8	53.2	431.0	
4	532.0	525.2	0.0	0.0	0.0	-0.2	7.0	0.0
NICARAGU	34.8	207.6	-57.7	0.0	182.1	-47.7	114.8	
5	1296.7	1280.2	0.0	0.0	0.0	0.1	16.4	0.0
COSTA RI	201.4	520.4	-230.7	0.0	418.8	37.4	293.1	
6	1314.1	1230.4	0.0	0.0	0.0	12.6	71.1	13.7
PANAMA	73.9	249.8	-286.3	0.0	534.9	-22.5	667.8	
7	105.4	44.1	0.0	0.0	0.0	60.6	0.7	60.0
ACANAL	13.6	9.0	0.0	0.0	0.0	-6.2	10.8	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6654.0	6468.7	0.0	0.0	0.0	0.0	185.3	0.0
	1054.7	1807.0	-891.6	0.0	1936.6	0.0	2075.9	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:36
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
14		PRO230		230.00	6	1.0117	232.70	100		BAY230		230.00	6	1.0143	233.29
190		CHANG230		230.00	6	1.0079	231.83	306		CHAN1 230		230.00	6	1.0060	231.37
310		CONCEPCION23		230.00	6	1.0040	230.92	311		PANDO230		230.00	6	1.0264	236.07
341		PRUDENCIA230		230.00	6	1.0035	230.79	345		LORENA230		230.00	6	1.0004	230.10
371		CAISAN230		230.00	6	1.0250	235.75	700		BAITUN230		230.00	6	1.0119	232.75
6000		FRONTER		230.00	6	1.0142	233.27	6400		FRONTCHA		230.00	6	1.0104	232.39
6500		FRONT CAISAN		230.00	6	1.0243	235.59								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9634	221.59	3		PANII230		230.00	6	0.9733	223.85
5		CHO230		230.00	6	0.9474	217.89	8		LSA230		230.00	6	0.9519	218.94
11		M.N230		230.00	6	0.9916	228.07	85		PTP230		230.00	6	0.9970	229.31
96		FOR230		230.00	6	0.9926	228.30	103		COPESA23		230.00	6	0.9799	225.38
105		PAN-AM23		230.00	6	0.9474	217.89	115		PACORA23		230.00	6	0.9858	226.73
144		CANJ230		230.00	6	0.9900	227.70	146		GUALACA230		230.00	6	0.9952	228.90
147		GUASQ230		230.00	6	0.9899	227.68	148		VELADERO 230		230.00	6	0.9733	223.86
149		BBLANCO		230.00	6	0.9702	223.14	354		SANBARTOLO23		230.00	6	0.9640	221.73
370		LSA CAP 230		230.00	6	0.9519	218.94	511		LGUIAS230		230.00	6	0.9380	215.74
540		ANTON		230.00	6	0.9653	222.03								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:36
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0002	115.02	15		PRO115		115.00	6	1.0136	116.56
20		CH.AZUL		115.00	6	1.0143	116.65	54		LM1115		115.00	6	1.0094	116.08
55		LM2115		115.00	6	1.0105	116.21	61		FFIELD		115.00	6	1.0060	115.68
87		CAL115		115.00	6	1.0058	115.66	88		EST115		115.00	6	1.0094	116.08



92 L.V115	115.00	6	1.0072	115.82	109 STA RITA115	115.00	6	1.0048	115.55
191 CHANG115	115.00	6	1.0014	115.16	522 TCATIVÁ 115	115.00	6	1.0102	116.17
529 TCOLON 115	115.00	6	1.0048	115.55					

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)
2		PAN115		115.00	6	0.9706	111.61	6		CHO115		115.00	6	0.9483	109.05
9		LSA115		115.00	6	0.9936	114.26	12		M.N115		115.00	6	0.9882	113.64
18		CAC115		115.00	6	0.9705	111.61	19		C.V115		115.00	6	0.9831	113.05
21		C.BAN115		115.00	6	0.9635	110.80	23		CH115		115.00	6	0.9778	112.45
26		LOC115		115.00	6	0.9638	110.84	30		MAR115		115.00	6	0.9615	110.57
33		STM115		115.00	6	0.9685	111.38	37		SAN115		115.00	6	0.9639	110.84
48		TINAJ115		115.00	6	0.9679	111.31	50		M.O115		115.00	6	0.9681	111.33
52		TOC115		115.00	6	0.9973	114.69	123		MIR115		115.00	7	0.9792	112.60
154		CEMPAN15		115.00	6	0.9978	114.74	701		BAITUN115		115.00	6	0.9970	114.65
702		BJOMIN115		115.00	6	0.9993	114.92								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:36
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

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	38.1	18.6	25.0	0.0	1.0000	42.4	0.8986	47.0		62	6	
67		BLM13C		13.800	V3	38.1	18.6	25.0	0.0	1.0000	42.4	0.8986	47.0		62	6	
68		BLM13D		13.800	V4	38.1	19.4	25.0	0.0	1.0000	42.7	0.8911	47.0		62	6	
90		EST-13L		13.800	E1	21.1	6.4	12.0	-5.0	0.9800	22.5	0.9575	27.0		64	6	
91		EST-13T		13.800	E2	21.1	6.4	12.0	-5.0	0.9800	22.5	0.9575	27.0		64	6	
94		LV-13.8L		13.800	L1	23.3	7.2	12.0	-5.0	0.9800	24.9	0.9557	27.0		64	6	
95		LV-13.8T		13.800	L2	23.3	7.2	12.0	-5.0	0.9800	24.9	0.9557	27.0		64	6	
97		FOR13A		13.800	F1	86.9	-6.9	50.0	-50.0	0.9800	88.9	0.9968	111.0		64	6	
98		FOR13B		13.800	F2	86.9	-6.9	50.0	-50.0	0.9800	88.9	0.9968	111.0		64	6	
101		BAY13A		13.800	B1	48.8	36.3	50.0	-25.0	1.0100	60.2	0.8021	96.0		61	6	
SYST																	
102		BAY13B		13.800	B2	48.7	36.3	50.0	-25.0	1.0100	60.1	0.8014	96.0		61	6	
108		BAY13C		13.800	B3	48.7	36.3	50.0	-25.0	1.0100	60.1	0.8015	100.0		61	6	
116		PACORA13		13.800	P1	17.2	7.1	8.8	0.0	0.9900	18.8	0.9249	21.7		61	6	
142		CANJ13A		13.800	C1	52.2	15.3	29.0	-29.0	0.9800	55.5	0.9599	69.0		64	6	



143	CANJ13B	13.800	C2	52.2	15.3	29.0	-29.0	0.9800	55.5	0.9599	69.0	64	6
150	GUALACA 13-2	13.800	G2	14.0	-0.9	7.4	-7.4	0.9900	14.2	0.9980	14.8	64	6
151	GUALACA13.8	13.800	G1	14.0	-0.9	7.4	-7.4	0.9900	14.2	0.9980	14.8	64	6
193	GEBONYIC	13.800	G1	8.1	0.2	4.0	-4.0	1.0000	8.1	0.9998	35.3	64	6
193	GEBONYIC	13.800	G2	8.1	0.2	4.0	-4.0	1.0000	8.1	0.9998	35.3	64	6
193	GEBONYIC	13.800	G3	8.1	0.2	4.0	-4.0	1.0000	8.1	0.9998	35.3	64	6
302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9512	5.4	0.9223	6.2	64	6
304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0737	4.8	0.8981	5.7	64	6
304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0737	4.8	0.8981	5.7	64	6
305	ELALTO	13.800	G1	14.1	-5.0	12.0	-5.0	1.0193	14.6	0.9423	20.6	64	6
307	CHAN1 A	13.800	G1	62.4	-13.2	50.0	-50.0	0.9900	64.4	0.9784	118.6	64	6
312	PANDO13.8	13.800	G1	9.1	-1.7	10.0	-5.0	1.0000	9.2	0.9835	19.9	64	6
312	PANDO13.8	13.800	G2	9.1	-1.7	10.0	-5.0	1.0000	9.2	0.9835	19.9	64	6
316	MTE LIRIO13.13.800	13.800	G1	17.0	-5.0	12.0	-5.0	1.0004	17.7	0.9594	27.0	64	6
316	MTE LIRIO13.13.800	13.800	G2	17.0	-5.0	12.0	-5.0	1.0004	17.7	0.9594	27.0	64	6
317	MENDRE13.8	13.800	M1	9.3	0.0	0.0	0.0	1.0757	8.7	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.3	0.0	0.0	0.0	1.0757	8.7	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.6	0.0	0.0	0.0	1.0762	5.2	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.6	0.0	0.0	0.0	1.0762	5.2	1.0000	35.3	64	6
340	PEDGALITO138	13.800	P1	20.1	5.6	12.0	-5.0	0.9800	21.3	0.9639	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	0.1	10.5	-5.0	1.0000	12.1	1.0000	19.9	64	6
343	PRUDENCIA_1	13.800	G1	25.1	0.2	9.8	-9.8	1.0000	25.1	1.0000	33.0	64	6
343	PRUDENCIA_1	13.800	G2	25.1	0.2	9.8	-9.8	1.0000	25.1	1.0000	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	0.1	10.5	-5.0	1.0000	12.1	1.0000	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0672	3.1	0.9521	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9720	10.6	0.8752	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9720	10.6	0.8752	13.5	64	6
357	BARTOLO13.8	13.800	G1	7.3	2.6	3.7	-3.7	1.0000	7.7	0.9424	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.3	2.6	3.7	-3.7	1.0000	7.7	0.9424	8.5	64	6
359	CRUCES13.8	13.800	G1	4.6	1.2	2.3	-2.3	1.0000	4.7	0.9692	5.6	64	6
359	CRUCES13.8	13.800	G2	4.6	1.2	2.3	-2.3	1.0000	4.7	0.9692	5.6	64	6
361	ESTRECHO4.164.1600	1.600	G1	4.9	1.0	2.5	-2.5	1.0000	5.0	0.9797	5.6	64	6
361	ESTRECHO4.164.1600	1.600	G2	4.9	1.0	2.5	-2.5	1.0000	5.0	0.9797	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.7	0.7	2.4	-2.4	1.0000	4.7	0.9875	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.7	0.7	2.4	-2.4	1.0000	4.7	0.9875	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9788	8.7	0.8911	8.9	64	6
368	RP-490	13.800	G1	4.7	-1.3	2.4	-2.4	1.0000	4.9	0.9641	5.5	64	6
368	RP-490	13.800	G2	4.7	-1.3	2.4	-2.4	1.0000	4.9	0.9641	5.5	64	6
369	HCALDERA13.8	13.800	G1	3.8	1.9	1.9	-1.9	0.9776	4.4	0.8909	4.3	64	6
372	BJO FRIO 13	13.800	G1	24.1	-2.2	9.8	-9.8	1.0000	24.2	0.9960	33.0	64	6
372	BJO FRIO 13	13.800	G2	24.1	-2.2	9.8	-9.8	1.0000	24.2	0.9960	33.0	64	6
373	TIZINGAL13.8	13.800	G1	4.5	2.2	2.2	-2.2	0.9704	5.2	0.8940	21.6	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	6.1	6.6	-6.6	1.0000	10.3*	0.8047	10.9	62	6



523	TCATIVÁ	13A	13.800	G2	8.3	6.1	6.6	-6.6	1.0000	10.3*	0.8047	10.9	62	6
523	TCATIVÁ	13A	13.800	G3	8.3	6.1	6.6	-6.6	1.0000	10.3*	0.8047	10.9	62	6
523	TCATIVÁ	13A	13.800	G4	8.3	6.1	6.6	-6.6	1.0000	10.3*	0.8047	10.9	62	6
524	TCATIVÁ	13B	13.800	G0	8.3	6.1	6.6	-6.6	1.0000	10.3*	0.8047	10.9	62	6
524	TCATIVÁ	13B	13.800	G6	8.3	6.1	6.6	-6.6	1.0000	10.3*	0.8047	10.9	62	6
524	TCATIVÁ	13B	13.800	G7	8.3	6.1	6.6	-6.6	1.0000	10.3*	0.8047	10.9	62	6
524	TCATIVÁ	13B	13.800	G8	8.3	6.1	6.6	-6.6	1.0000	10.3*	0.8047	10.9	62	6
541	TOABRE		0.6000	1	25.2	0.0	0.0	0.0	0.9664	26.1	1.0000	88.9	64	6
703	BJOMIN13A		13.800	G1	23.1	1.9	13.0	-13.0	1.0000	23.2	0.9965	30.5	64	6
704	BJOMIN13B		13.800	G2	23.1	1.9	13.0	-13.0	1.0000	23.2	0.9965	30.5	64	6
705	BAITUN13A		13.800	G1	38.2	-3.6	26.6	-26.6	1.0000	38.3	0.9955	50.6	64	6
706	BAITUN13B		13.800	G2	38.2	-3.6	26.6	-26.6	1.0000	38.3	0.9955	50.6	64	6
720	PLANETA13.8		13.800	G1	4.5	2.0	2.0	-2.0	0.9512	5.2	0.9145	6.2	64	6
SUBSYSTEM TOTALS					1320.3	255.8	830.8	-594.9				2123.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:36
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

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	20.0	7.0	15.0	0.0	1.0000	21.2	0.9431	44.1							65	7	
AREA																						
130		MIR13F		13.800	G5	17.2	0.3	8.0	0.0	1.0000	17.2	0.9998	27.7							65	7	
140		GAT6A		6.9000	G1	1.9	-0.3	2.0	-2.0	1.0000	2.0	0.9873	4.1							65	7	
140		GAT6A		6.9000	G2	1.9	-0.3	2.0	-2.0	1.0000	2.0	0.9873	4.1							65	7	
140		GAT6A		6.9000	G3	1.9	-0.3	2.0	-2.0	1.0000	2.0	0.9873	4.1							65	7	
141		GAT6B		6.9000	G4	3.9	-1.1	3.0	-3.0	1.0000	4.0	0.9649	5.6							65	7	
141		GAT6B		6.9000	G5	3.9	-1.1	3.0	-3.0	1.0000	4.0	0.9649	6.2							65	7	
141		GAT6B		6.9000	G6	3.9	-1.1	3.0	-3.0	1.0000	4.0	0.9649	6.2							65	7	
170		MIR13G		13.800	M1	17.1	6.8	11.2	6.8	1.0139	18.1	0.9287	23.0							65	7	
171		MIR13H		13.800	M1	17.1	6.8	11.2	6.8	1.0231	18.0	0.9287	23.0							65	7	
171		MIR13H		13.800	M2	17.1	6.8	11.2	6.8	1.0231	18.0	0.9287	23.0							65	7	
SUBSYSTEM TOTALS						105.8	23.7	71.5	5.5				171.3									

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:38
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII IN MW/MVAR



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X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1305.1	1330.8	0.0	0.0	0.0	-67.3	41.6	-73.7
GUATEMAL	191.8	275.1	-198.8	0.0	278.0	12.5	381.2	
2	871.0	855.0	0.0	0.0	0.0	1.7	14.4	0.0
SALVADOR	74.6	224.2	-70.7	0.0	229.0	-27.8	177.9	
3	1238.6	1203.0	0.0	0.0	0.0	1.6	34.0	0.0
HONDURAS	463.4	321.1	-47.3	0.0	293.9	53.0	430.4	
4	532.5	525.2	0.0	0.0	0.0	0.4	6.9	0.0
NICARAGU	34.2	207.6	-57.7	0.0	182.1	-47.6	114.0	
5	1299.4	1280.2	0.0	0.0	0.0	3.0	16.3	0.0
COSTA RI	211.3	520.4	-230.3	0.0	417.4	44.9	293.8	
6	1320.3	1230.4	0.0	0.0	0.0	-0.4	90.2	13.7
PANAMA	255.8	249.8	-267.4	0.0	475.5	-38.3	787.1	
7	105.8	44.1	0.0	0.0	0.0	61.0	0.7	60.0
ACANAL	23.7	9.0	0.0	0.0	0.0	3.3	11.5	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6672.8	6468.7	0.0	0.0	0.0	0.0	204.1	0.0
	1254.9	1807.0	-872.3	0.0	1875.9	0.0	2195.9	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:46
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-BBL

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
14		PRO230		230.00	6	1.0154	233.53	85		PTP230		230.00	6	1.0015	230.34
100		BAY230		230.00	6	1.0281	236.45	103		COPESA23		230.00	6	1.0018	230.42
115		PACORA23		230.00	6	1.0056	231.28	146		GUALACA230		230.00	6	1.0002	230.05
190		CHANG230		230.00	6	1.0107	232.45	306		CHAN1 230		230.00	6	1.0086	231.98
310		CONCEPCION23		230.00	6	1.0086	231.98	311		PANDO230		230.00	6	1.0317	237.29
341		PRUDENCIA230		230.00	6	1.0080	231.85	345		LORENA230		230.00	6	1.0051	231.18
371		CAISAN230		230.00	6	1.0304	236.98	700		BAITUN230		230.00	6	1.0152	233.50
6000		FRONTER		230.00	6	1.0180	234.14	6400		FRONTCHA		230.00	6	1.0130	232.98
6500		FRONT CAISAN		230.00	6	1.0295	236.78								

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	0.9886	227.38	3		PANII230		230.00	6	0.9966	229.22
5		CHO230		230.00	6	0.9792	225.22	8		LSA230		230.00	6	0.9767	224.65
11		M.N230		230.00	6	0.9974	229.41	96		FOR230		230.00	6	0.9973	229.38
105		PAN-AM23		230.00	6	0.9792	225.22	144		CANJ230		230.00	6	0.9952	228.91
147		GUASQ230		230.00	6	0.9952	228.89	148		VELADERO 230		230.00	6	0.9841	226.35
149		BBLANCO		230.00	6	0.9841	226.35	354		SANBARTOLO23		230.00	6	0.9761	224.51
370		LSA CAP 230		230.00	6	0.9767	224.65	511		LGUIAS230		230.00	6	0.9721	223.58
540		ANTON		230.00	6	0.9980	229.55								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:46
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-BBL

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0226	117.59	9		LSA115		115.00	6	1.0202	117.33
15		PRO115		115.00	6	1.0172	116.98	19		C.V115		115.00	6	1.0057	115.65
20		CH.AZUL		115.00	6	1.0180	117.07	52		TOC115		115.00	6	1.0197	117.27
54		LM1115		115.00	6	1.0217	117.49	55		LM2115		115.00	6	1.0227	117.61



61	FFIELD	115.00	6	1.0182	117.10	87	CAL115	115.00	6	1.0082	115.94
88	EST115	115.00	6	1.0116	116.33	92	L.V115	115.00	6	1.0095	116.10
109	STA RITA115	115.00	6	1.0191	117.20	154	CEMPAN15	115.00	6	1.0129	116.49
191	CHANG115	115.00	6	1.0033	115.38	522	TCATIVÁ 115	115.00	6	1.0224	117.57
529	TCOLON 115	115.00	6	1.0191	117.20	702	BJOMIN115	115.00	6	1.0012	115.14

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)
2		PAN115		115.00	6	0.9929	114.19	6		CHO115		115.00	6	0.9801	112.71
12		M.N115		115.00	6	0.9918	114.06	18		CAC115		115.00	6	0.9928	114.17
21		C.BAN115		115.00	6	0.9861	113.40	23		CH115		115.00	6	0.9961	114.56
26		LOC115		115.00	6	0.9864	113.44	30		MAR115		115.00	6	0.9840	113.16
33		STM115		115.00	6	0.9910	113.96	37		SAN115		115.00	6	0.9865	113.45
48		TINAJ115		115.00	6	0.9904	113.90	50		M.O115		115.00	6	0.9905	113.91
123		MIR115		115.00	7	0.9993	114.92	701		BAITUN115		115.00	6	0.9991	114.89

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:46
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-BBL

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
66		BLM13B		13.800	V2	38.0	13.4	25.0	0.0	1.0000	40.3	0.9435	47.0			62	6
67		BLM13C		13.800	V3	38.0	13.4	25.0	0.0	1.0000	40.3	0.9435	47.0			62	6
68		BLM13D		13.800	V4	38.0	13.9	25.0	0.0	1.0000	40.5	0.9393	47.0			62	6
90		EST-13L		13.800	E1	21.0	5.7	12.0	-5.0	0.9800	22.2	0.9649	27.0			64	6
91		EST-13T		13.800	E2	21.0	5.7	12.0	-5.0	0.9800	22.2	0.9649	27.0			64	6
94		LV-13.8L		13.800	L1	23.2	6.5	12.0	-5.0	0.9800	24.6	0.9631	27.0			64	6
95		LV-13.8T		13.800	L2	23.2	6.5	12.0	-5.0	0.9800	24.6	0.9631	27.0			64	6
97		FOR13A		13.800	F1	86.6	-11.2	50.0	-50.0	0.9800	89.1	0.9918	111.0			64	6
98		FOR13B		13.800	F2	86.6	-11.2	50.0	-50.0	0.9800	89.1	0.9918	111.0			64	6
101		BAY13A		13.800	B1	48.6	25.9	50.0	-25.0	1.0100	54.5	0.8821	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.4	25.9	50.0	-25.0	1.0100	54.4	0.8816	96.0			61	6
108		BAY13C		13.800	B3	48.5	25.9	50.0	-25.0	1.0100	54.4	0.8817	100.0			61	6
116		PACORA13		13.800	P1	17.1	0.0	8.8	0.0	0.9967	17.2	1.0000	21.7			61	6
142		CANJ13A		13.800	C1	52.1	14.4	29.0	-29.0	0.9800	55.1	0.9641	69.0			64	6
143		CANJ13B		13.800	C2	52.1	14.4	29.0	-29.0	0.9800	55.1	0.9641	69.0			64	6



X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1301.6	1330.8	0.0	0.0	0.0	-70.8	41.6	-73.7
GUATEMAL	191.7	275.1	-198.9	0.0	278.0	13.1	380.5	
2	869.8	855.0	0.0	0.0	0.0	0.3	14.4	0.0
SALVADOR	74.9	224.2	-70.7	0.0	228.9	-27.7	178.1	
3	1237.5	1203.0	0.0	0.0	0.0	0.5	34.1	0.0
HONDURAS	463.9	321.1	-47.3	0.0	293.9	53.1	430.8	
4	532.1	525.2	0.0	0.0	0.0	0.0	6.9	0.0
NICARAGU	34.6	207.6	-57.7	0.0	182.1	-47.7	114.5	
5	1297.6	1280.2	0.0	0.0	0.0	1.1	16.4	0.0
COSTA RI	207.3	520.4	-230.5	0.0	418.0	42.0	293.4	
6	1316.2	1230.4	0.0	0.0	0.0	8.1	77.7	13.7
PANAMA	153.1	249.8	-279.7	0.0	525.0	-29.0	737.0	
7	105.5	44.1	0.0	0.0	0.0	60.8	0.7	60.0
ACANAL	16.0	9.0	0.0	0.0	0.0	-3.8	10.9	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6660.4	6468.7	0.0	0.0	0.0	0.0	191.7	0.0
	1141.6	1807.0	-884.8	0.0	1925.9	0.0	2145.2	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MIN-INVIERNO

MON, MAY 24 2010 16:16

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)
11		M.N230		230.00	6	1.0129	232.97	14		PRO230		230.00	6	1.0265	236.10
85		PTP230		230.00	6	1.0163	233.74	96		FOR230		230.00	6	1.0137	233.16
100		BAY230		230.00	6	1.0066	231.51	144		CANJ230		230.00	6	1.0132	233.03
146		GUALACA230		230.00	6	1.0150	233.46	147		GUASQ230		230.00	6	1.0131	233.02
148		VELADERO 230		230.00	6	1.0056	231.30	149		BBLANCO		230.00	6	1.0042	230.98
190		CHANG230		230.00	6	1.0176	234.06	306		CHAN1 230		230.00	6	1.0159	233.67
310		CONCEPCION23		230.00	6	1.0223	235.14	311		PANDO230		230.00	6	1.0462	240.64
341		PRUDENCIA230		230.00	6	1.0180	234.13	345		LORENA230		230.00	6	1.0169	233.89
354		SANBAROLO23		230.00	6	1.0007	230.16	371		CAISAN230		230.00	6	1.0448	240.31
540		ANTON		230.00	6	1.0072	231.66	700		BAITUN230		230.00	6	1.0255	235.87
6000		FRONTER		230.00	6	1.0292	236.71	6400		FRONTCHA		230.00	6	1.0185	234.25
6500		FRONT CAISAN		230.00	6	1.0434	239.98								

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	0.9881	227.27	3		PANII230		230.00	6	0.9920	228.16
5		CHO230		230.00	6	0.9880	227.23	8		LSA230		230.00	6	0.9907	227.85
103		COPESA23		230.00	6	0.9947	228.78	105		PAN-AM23		230.00	6	0.9880	227.23
115		PACORA23		230.00	6	0.9961	229.11	370		LSA CAP 230		230.00	6	0.9907	227.85
511		LGUIAS230		230.00	6	0.9895	227.58								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MIN-INVIERNO

MON, MAY 24 2010 16:16

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)
9		LSA115		115.00	6	1.0374	119.30	12		M.N115		115.00	6	1.0171	116.97
15		PRO115		115.00	6	1.0284	118.27	20		CH.AZUL		115.00	6	1.0291	118.35
54		LM1115		115.00	6	1.0066	115.76	55		LM2115		115.00	6	1.0076	115.88
61		FFIELD		115.00	6	1.0046	115.53	87		CAL115		115.00	6	1.0263	118.02



88	EST115	115.00	6	1.0283	118.25	92	L.V115	115.00	6	1.0270	118.11
109	STA RITA115	115.00	6	1.0039	115.45	154	CEMPAN15	115.00	6	1.0006	115.07
191	CHANG115	115.00	6	1.0090	116.04	522	TCATIVÁ 115	115.00	6	1.0071	115.82
529	TCOLON 115	115.00	6	1.0039	115.45	701	BAITUN115	115.00	6	1.0113	116.30
702	BJOMIN115	115.00	6	1.0115	116.33						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9859	113.38	4		PANII115		115.00	6	0.9979	114.75
6		CHO115		115.00	6	0.9887	113.70	18		CAC115		115.00	6	0.9858	113.37
19		C.V115		115.00	6	0.9881	113.63	21		C.BAN115		115.00	6	0.9797	112.66
23		CH115		115.00	6	0.9883	113.65	26		LOC115		115.00	6	0.9803	112.73
30		MAR115		115.00	6	0.9790	112.59	33		STM115		115.00	6	0.9845	113.22
37		SAN115		115.00	6	0.9794	112.63	48		TINAJ115		115.00	6	0.9841	113.17
50		M.O115		115.00	6	0.9842	113.18	52		TOC115		115.00	6	0.9957	114.50
123		MIR115		115.00	7	0.9915	114.02								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:16
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MIN-INVIERNO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X	T	R	A	N	GENTAP	ZONE	AREA
SWING																					
66		BLM13B		13.800	V2	38.0	19.8	25.0	0.0	1.0000	42.9	0.8867	47.0						62	6	
67		BLM13C		13.800	V3	38.0	19.8	25.0	0.0	1.0000	42.9	0.8867	47.0						62	6	
68		BLM13D		13.800	V4	38.0	20.7	25.0	0.0	1.0000	43.3	0.8784	47.0						62	6	
91		EST-13T		13.800	E2	20.0	7.3	12.0	-5.0	1.0000	21.3	0.9395	27.0						64	6	
95		LV-13.8T		13.800	L2	22.0	7.8	12.0	-5.0	1.0000	23.3	0.9424	27.0						64	6	
97		FOR13A		13.800	F1	65.0	-10.2	50.0	-50.0	1.0000	65.8	0.9879	111.0						64	6	
98		FOR13B		13.800	F2	65.0	-10.2	50.0	-50.0	1.0000	65.8	0.9879	111.0						64	6	
101		BAY13A		13.800	B1	62.3	30.9	50.0	-25.0	0.9950	69.9	0.8957	96.0						61	6	
SYST																					
142		CANJ13A		13.800	C1	48.0	13.2	29.0	-29.0	1.0000	49.8	0.9642	69.0						64	6	
150		GUALACA	13-213.800	G2	12.0	-3.5	7.4	7.4	-7.4	1.0000	12.5	0.9605	14.8						64	6	
152		BBLANCO	13.813.800	G1	13.7	-0.1	7.0	7.0	-7.0	1.0000	13.7	1.0000	16.0						64	6	
193		GEBONYIC	13.800	G1	9.0	-1.2	4.0	4.0	-4.0	1.0000	9.1	0.9913	35.3						64	6	
193		GEBONYIC	13.800	G2	9.0	-1.2	4.0	4.0	-4.0	1.0000	9.1	0.9913	35.3						64	6	
302		PASOANCH	13.813.800	P1	4.7	2.0	2.0	2.0	-2.0	0.9544	5.4	0.9216	6.2						64	6	



304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0886	4.7	0.8981	5.7	64	6
304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0886	4.7	0.8981	5.7	64	6
305	ELALTO	13.800	G1	18.0	-5.0	12.0	-5.0	1.0316	18.1	0.9635	20.6	64	6
305	ELALTO	13.800	G2	18.0	-5.0	12.0	-5.0	1.0316	18.1	0.9635	20.6	64	6
307	CHAN1 A	13.800	G1	61.0	-22.8	50.0	-50.0	0.9900	65.8	0.9367	118.6	64	6
312	PANDO13.8	13.800	G1	9.0	-5.0	10.0	-5.0	1.0148	10.1	0.8742	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	17.0	-5.0	12.0	-5.0	1.0344	17.1	0.9594	27.0	64	6
317	MENDRE13.8	13.800	M1	9.2	0.0	0.0	0.0	1.0911	8.4	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0913	5.0	1.0000	35.3	64	6
340	PEDGALITO13.8	13.800	P1	19.0	7.3	12.0	-5.0	1.0000	20.4	0.9334	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	1.0013	13.0	0.9228	19.9	64	6
343	PRUDENCIA_1	13.800	G1	23.0	-9.8	9.8	-9.8	0.9994	25.0	0.9205	33.0	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0852	3.0	0.9514	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9884	10.9	0.8849	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9884	10.9	0.8849	13.5	64	6
357	BARTOLO13.8	13.800	G1	6.8	1.0	3.7	-3.7	0.9900	6.9	0.9887	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.8	1.0	3.7	-3.7	0.9900	6.9	0.9887	8.5	64	6
359	CRUCES13.8	13.800	G1	4.6	0.3	2.3	-2.3	0.9900	4.7	0.9983	5.6	64	6
359	CRUCES13.8	13.800	G2	4.6	0.3	2.3	-2.3	0.9900	4.7	0.9983	5.6	64	6
361	ESTRECHO4.164	1.600	G1	4.9	0.1	2.5	-2.5	0.9900	5.0	0.9996	5.6	64	6
361	ESTRECHO4.164	1.600	G2	4.9	0.1	2.5	-2.5	0.9900	5.0	0.9996	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.7	-0.1	2.4	-2.4	0.9900	4.7	0.9999	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.7	-0.1	2.4	-2.4	0.9900	4.7	0.9999	5.8	64	6
364	MENDRE2	13.800	G1	7.6	0.3	3.9	-3.9	0.9900	7.7	0.9995	8.9	64	6
368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	1.0039	5.3	0.8906	5.5	64	6
368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	1.0039	5.3	0.8906	5.5	64	6
369	HCALDERA13.8	13.800	G1	3.8	0.2	1.9	-1.9	0.9900	3.8	0.9980	4.3	64	6
372	BJO FRIO 13	13.800	G1	23.0	-9.8	9.8	-9.8	1.0081	24.8	0.9205	33.0	64	6
373	TIZINGAL13.8	13.800	G1	4.4	2.2	2.2	-2.2	0.9867	5.0	0.8909	21.6	64	6
541	TOABRE	0.6000	1	20.0	0.0	0.0	0.0	1.0081	19.8	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	26.0	-0.8	13.0	-13.0	0.9900	26.3	0.9996	30.5	64	6
705	BAITUN13A	13.800	G1	40.0	-13.7	26.6	-26.6	0.9900	42.7	0.9462	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9544	5.2	0.9145	6.2	64	6
SUBSYSTEM TOTALS				848.4	27.8	532.4	-379.9				1397.7		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:16
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MIN-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:



BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING															
129	MIR13D	13.800	G4	20.0	5.5	15.0	0.0	1.0000	20.7	0.9645	44.1			65	
AREA															
140	GAT6A	6.9000	G1	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9600	4.1			65	7
140	GAT6A	6.9000	G2	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9600	4.1			65	7
140	GAT6A	6.9000	G3	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9600	4.1			65	7
141	GAT6B	6.9000	G4	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9472	5.6			65	7
141	GAT6B	6.9000	G5	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9472	6.2			65	7
141	GAT6B	6.9000	G6	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9472	6.2			65	7
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0178	18.0	0.9281	23.0			65	7
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0160	18.0	0.9281	23.0			65	7
SUBSYSTEM TOTALS				71.4	13.5	52.3	-1.4				120.6				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:16
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2013 ESC-MOD DEMANDA-MIN-INVIERNO 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	1175.7	1330.8	0.0	0.0	0.0	-198.4	43.3	-198.4
GUATEMAL	219.7	275.1	-195.0	0.0	274.8	35.3	379.1	
2	874.6	855.0	0.0	0.0	0.0	0.0	19.6	0.0
SALVADOR	103.4	224.2	-70.3	0.0	226.9	-30.1	206.6	
3	1240.4	1203.0	0.0	0.0	0.0	0.0	37.4	0.0
HONDURAS	493.1	321.1	-46.8	0.0	291.1	51.4	458.4	
4	536.5	525.2	0.0	0.0	0.0	0.0	11.3	0.0
NICARAGU	63.8	207.6	-56.9	0.0	179.6	-51.4	144.1	
5	1304.0	1280.2	0.0	0.0	0.0	-0.1	23.9	0.0
COSTA RI	231.0	520.4	-229.3	0.0	416.8	24.8	331.9	
6	848.4	676.7	0.0	0.0	0.0	151.7	20.0	151.4
PANAMA	27.8	245.6	111.3	0.0	535.9	-28.9	235.6	
7	71.4	24.2	0.0	0.0	0.0	46.7	0.4	47.0
ACANAL	13.5	8.8	0.0	0.0	0.0	-1.2	5.9	



10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	6051.0	5895.2	0.0	0.0	0.0	0.0	155.9	0.0
	1152.3	1802.7	-487.0	0.0	1925.1	0.0	1761.7	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-VERANO

MON, MAY 24 2010 16:22

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)
3	PANII	230	230.00	6	1.0023	230.54	11	M.N	230	230.00	6	1.0065	231.50		
14	PRO	230	230.00	6	1.0226	235.20	85	PTP	230	230.00	6	1.0082	231.88		
96	FOR	230	230.00	6	1.0044	231.02	100	BAY	230	230.00	6	1.0273	236.28		
103	COPE	SA23	230.00	6	1.0065	231.50	115	PACOR	A23	230.00	6	1.0094	232.17		
144	CANJ	230	230.00	6	1.0032	230.74	146	GUAL	ACA230	230.00	6	1.0077	231.76		
147	GUAS	Q230	230.00	6	1.0032	230.73	148	VEL	ADERO	230	230.00	6	1.0004	230.09	
190	CHANG	230	230.00	6	1.0150	233.46	306	CHAN	1	230	230.00	6	1.0128	232.95	
310	CONCE	PCION23	230.00	6	1.0164	233.78	311	PAND	O230	230.00	6	1.0409	239.41		
341	PRUDEN	CIA230	230.00	6	1.0149	233.44	345	LORE	NA230	230.00	6	1.0122	232.80		
371	CAISAN	230	230.00	6	1.0397	239.12	540	ANTON	230	230.00	6	1.0095	232.19		
700	BAITUN	230	230.00	6	1.0216	234.96	6000	FRON	TER	230	230.00	6	1.0255	235.87	
6400	FRONT	CHA	230.00	6	1.0173	233.97	6500	FRONT	CAISAN	230	230.00	6	1.0386	238.87	

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN	230	230.00	6	0.9949	228.83	5	CHO	230	230.00	6	0.9881	227.25		
8	LSA	230	230.00	6	0.9923	228.23	105	PAN-AM	23	230.00	6	0.9881	227.25		
354	SANBARTOLO	23	230.00	6	0.9953	228.91	370	LSA	CAP	230	230.00	6	0.9923	228.23	
511	LGUIAS	230	230.00	6	0.9853	226.63									

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-VERANO

MON, MAY 24 2010 16:22

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)
4	PANII	115	115.00	6	1.0279	118.21	9	LSA	115	115.00	6	1.0368	119.24		
15	PRO	115	115.00	6	1.0245	117.81	19	C.V	115	115.00	6	1.0110	116.26		
20	CH.AZUL	115	115.00	6	1.0252	117.90	23	CH	115	115.00	6	1.0005	115.06		
52	TOC	115	115.00	6	1.0251	117.88	54	LM	115	115.00	6	1.0248	117.85		
55	LM	2115	115.00	6	1.0258	117.96	61	FF	FIELD	115	115.00	6	1.0213	117.45	
87	CAL	115	115.00	6	1.0116	116.33	88	EST	115	115.00	6	1.0147	116.69		
92	L.V	115	115.00	6	1.0128	116.47	109	STA	RITA	115	115.00	6	1.0226	117.60	
123	MIR	115	115.00	7	1.0041	115.47	154	CEMPAN	15	115.00	6	1.0167	116.92		



191	CHANG115	115.00	6	1.0069	115.79	522	TCATIVÁ	115	115.00	6	1.0255	117.93
529	TCOLON	115	6	1.0227	117.61	701	BAITUN115	115.00	6	1.0002	115.02	
702	BJOMIN115	115.00	6	1.0024	115.27							

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)
2		PAN115		115.00	6	0.9983	114.80	6		CHO115		115.00	6	0.9889	113.73
12		M.N115		115.00	6	0.9968	114.64	18		CAC115		115.00	6	0.9981	114.78
21		C.BAN115		115.00	6	0.9914	114.01	26		LOC115		115.00	6	0.9917	114.05
30		MAR115		115.00	6	0.9893	113.77	33		STM115		115.00	6	0.9963	114.57
37		SAN115		115.00	6	0.9918	114.06	48		TINAJ115		115.00	6	0.9957	114.51
50		M.O115		115.00	6	0.9959	114.52								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:22
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-VERANO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6		66		BLM13B		13.800	V2	38.0	12.0	25.0	0.0	1.0000	39.9	0.9534	47.0	62
6		67		BLM13C		13.800	V3	38.0	12.0	25.0	0.0	1.0000	39.9	0.9534	47.0	62
6		68		BLM13D		13.800	V4	38.0	12.5	25.0	0.0	1.0000	40.0	0.9500	47.0	62
6		90		EST-13L		13.800	E1	22.0	4.9	12.0	-5.0	0.9800	23.0	0.9760	27.0	64
6		91		EST-13T		13.800	E2	22.0	4.9	12.0	-5.0	0.9800	23.0	0.9760	27.0	64
6		94		LV-13.8L		13.800	L1	23.2	5.5	12.0	-5.0	0.9800	24.3	0.9725	27.0	64
6		95		LV-13.8T		13.800	L2	23.2	5.5	12.0	-5.0	0.9800	24.3	0.9725	27.0	64
6		97		FOR13A		13.800	F1	80.7	-18.1	50.0	-50.0	0.9800	84.4	0.9757	111.0	64
6		98		FOR13B		13.800	F2	80.7	-18.1	50.0	-50.0	0.9800	84.4	0.9757	111.0	64
6		101		BAY13A		13.800	B1	47.3	18.4	50.0	-25.0	1.0000	50.7	0.9321	96.0	61
6		SYST														
6		102		BAY13B		13.800	B2	47.2	18.4	50.0	-25.0	1.0000	50.7	0.9319	96.0	61



6	108	BAY13C	13.800	B3	47.2	18.4	50.0	-25.0	1.0000	50.7	0.9319	100.0	61
6	116	PACORA13	13.800	P1	17.1	0.0	8.8	0.0	1.0006	17.1	1.0000	21.7	61
6	142	CANJ13A	13.800	C1	50.0	12.3	29.0	-29.0	0.9800	52.5	0.9710	69.0	64
6	143	CANJ13B	13.800	C2	50.0	12.3	29.0	-29.0	0.9800	52.5	0.9710	69.0	64
6	150	GUALACA 13-213.800	13.800	G2	13.0	-4.0	7.4	-7.4	0.9900	13.7	0.9551	14.8	64
6	151	GUALACA13.8	13.800	G1	13.0	-4.0	7.4	-7.4	0.9900	13.7	0.9551	14.8	64
6	193	GEBOYIC	13.800	G1	8.0	-0.9	4.0	-4.0	1.0000	8.1	0.9936	35.3	64
6	193	GEBOYIC	13.800	G2	8.0	-0.9	4.0	-4.0	1.0000	8.1	0.9936	35.3	64
6	302	PASOANCH13.813.800	13.800	P1	4.7	2.0	2.0	-2.0	0.9658	5.3	0.9216	6.2	64
6	304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0804	4.8	0.8981	5.7	64
6	304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0804	4.8	0.8981	5.7	64
6	305	ELALTO	13.800	G1	14.0	-5.0	12.0	-5.0	1.0340	14.4	0.9417	20.6	64
6	307	CHAN1 A	13.800	G1	62.0	-19.8	50.0	-50.0	0.9900	65.7	0.9528	118.6	64
6	312	PANDO13.8	13.800	G1	9.0	-2.9	10.0	-5.0	1.0000	9.4	0.9526	19.9	64
6	312	PANDO13.8	13.800	G2	9.0	-2.9	10.0	-5.0	1.0000	9.4	0.9526	19.9	64
6	316	MTE LIRIO13.13.800	13.800	G1	17.0	-5.0	12.0	-5.0	1.0154	17.5	0.9594	27.0	64
6	316	MTE LIRIO13.13.800	13.800	G2	17.0	-5.0	12.0	-5.0	1.0154	17.5	0.9594	27.0	64
6	317	MENDRE13.8	13.800	M1	9.2	0.0	0.0	0.0	1.0824	8.5	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.2	0.0	0.0	0.0	1.0824	8.5	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0829	5.1	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.0829	5.1	1.0000	35.3	64
6	340	PEDGALITO13813.800	13.800	P1	22.0	4.0	12.0	-5.0	0.9800	22.8	0.9837	27.0	64
6	342	LORENA13.8	13.800	L1	12.0	-3.9	10.5	-5.0	1.0000	12.6	0.9520	19.9	64



6	343	PRUDENCIA_1	13.800	G1	25.0	-3.0	9.8	-9.8	1.0000	25.2	0.9929	33.0	64	
6	343	PRUDENCIA_1	13.800	G2	25.0	-3.0	9.8	-9.8	1.0000	25.2	0.9929	33.0	64	
6	346	LORENA 13-2	13.800	L2	12.0	-3.9	10.5	-5.0	1.0000	12.6	0.9520	19.9	64	
6	350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0710	3.0	0.9514	6.2	64
6	351	PERLAS N13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9755	10.6	0.8742	13.5	64	
6	352	PERLAS S13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9755	10.6	0.8742	13.5	64	
6	357	BARTOLO13.8	13.800	G1	7.2	1.6	3.7	-3.7	1.0000	7.4	0.9779	8.5	64	
6	357	BARTOLO13.8	13.800	G2	7.2	1.6	3.7	-3.7	1.0000	7.4	0.9779	8.5	64	
6	359	CRUCES13.8	13.800	G1	4.6	0.6	2.3	-2.3	1.0000	4.6	0.9923	5.6	64	
6	359	CRUCES13.8	13.800	G2	4.6	0.6	2.3	-2.3	1.0000	4.6	0.9923	5.6	64	
6	361	ESTRECHO4.164.1600	13.800	G1	4.9	0.4	2.5	-2.5	1.0000	5.0	0.9962	5.6	64	
6	361	ESTRECHO4.164.1600	13.800	G2	4.9	0.4	2.5	-2.5	1.0000	5.0	0.9962	5.6	64	
6	363	LAGUNA 13.8	13.800	G1	4.7	0.2	2.4	-2.4	1.0000	4.7	0.9990	5.8	64	
6	363	LAGUNA 13.8	13.800	G2	4.7	0.2	2.4	-2.4	1.0000	4.7	0.9990	5.8	64	
6	364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9848	8.7	0.8911	8.9	64	
6	368	RP-490	13.800	G1	4.7	-1.6	2.4	-2.4	1.0000	5.0	0.9468	5.5	64	
6	368	RP-490	13.800	G2	4.7	-1.6	2.4	-2.4	1.0000	5.0	0.9468	5.5	64	
6	369	HCALDERA13.813.800	13.800	G1	3.8	1.9	1.9	-1.9	0.9836	4.3	0.8909	4.3	64	
6	523	TCATIVÁ 13A	13.800	G1	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9323	10.9	62	
6	523	TCATIVÁ 13A	13.800	G2	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9323	10.9	62	
6	523	TCATIVÁ 13A	13.800	G3	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9323	10.9	62	
6	523	TCATIVÁ 13A	13.800	G4	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9323	10.9	62	
6	523	TCATIVÁ 13A	13.800	G5	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9323	10.9	62	



6	524	TCATIVÁ 13B	13.800	G0	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9323	10.9	62
6	524	TCATIVÁ 13B	13.800	G6	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9323	10.9	62
6	524	TCATIVÁ 13B	13.800	G7	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9323	10.9	62
6	524	TCATIVÁ 13B	13.800	G8	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9323	10.9	62
6	524	TCATIVÁ 13B	13.800	G9	8.2	3.2	6.6	-6.6	1.0000	8.8	0.9323	10.9	62
6	541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0108	29.7	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	26.0	2.0	13.0	-13.0	1.0000	26.1	0.9971	30.5	64
6	704	BJOMIN13B	13.800	G2	26.0	2.0	13.0	-13.0	1.0000	26.1	0.9971	30.5	64
6	705	BAITUN13A	13.800	G1	37.0	-8.0	26.6	-26.6	1.0000	37.8	0.9776	50.6	64
6	706	BAITUN13B	13.800	G2	37.0	-8.0	26.6	-26.6	1.0000	37.8	0.9776	50.6	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9658	5.1	0.9145	6.2	64
6	SUBSYSTEM TOTALS				1261.1	77.4	818.1	-582.3				2022.7	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:22
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-VERANO

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
7		129		MIR13D	13.800	G4	19.8	1.0	15.0	0.0	1.0000	19.9	0.9986	44.1		65
7		130		MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0143	16.9	1.0000	27.7		65
7		140		GAT6A	6.9000	G1	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9193	4.1		65
7		140		GAT6A	6.9000	G2	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9193	4.1		65
7		140		GAT6A	6.9000	G3	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9193	4.1		65
7		141		GAT6B	6.9000	G4	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9259	5.6		65



7	141	GAT6B	6.9000	G5	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9259	6.2
7	141	GAT6B	6.9000	G6	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9259	6.2
7	170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0287	17.8	0.9281	23.0
7	171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0377	17.7	0.9281	23.0
7	171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0377	17.7	0.9281	23.0
	SUBSYSTEM TOTALS				105.3	14.3	71.5	5.5				171.3

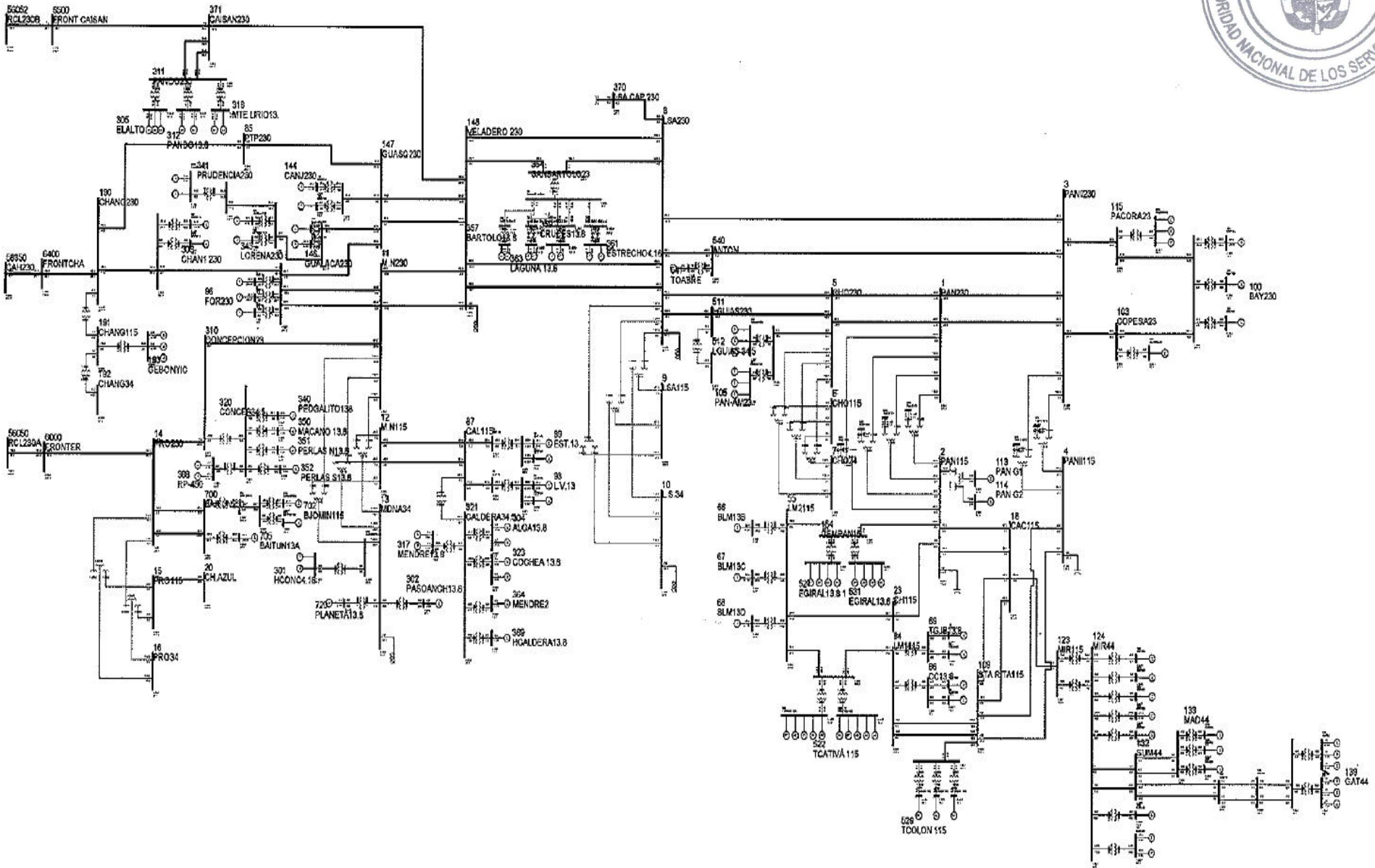
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:22
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2013 ESC-MOD DEMANDA-MAX-VERANO IN MW/MVAR

X--	AREA	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	GUATEMAL	1359.8	1330.8	0.0	0.0	0.0	-14.3	43.3	-12.7
		197.5	275.1	-198.8	0.0	277.8	2.6	396.5	
2	SALVADOR	868.7	855.0	0.0	0.0	0.0	0.0	13.7	0.0
		72.9	224.2	-70.8	0.0	229.1	-26.3	175.0	
3	HONDURAS	1236.9	1203.0	0.0	0.0	0.0	0.1	33.8	0.0
		461.3	321.1	-47.4	0.0	294.0	54.0	427.6	
4	NICARAGU	532.1	525.2	0.0	0.0	0.0	0.2	6.7	0.0
		32.6	207.6	-57.8	0.0	182.3	-47.2	112.3	
5	COSTA RI	1297.2	1280.2	0.0	0.0	0.0	0.9	16.2	0.0
		205.5	520.4	-230.8	0.0	418.9	36.5	298.3	
6	PANAMA	1261.1	1239.2	0.0	0.0	0.0	-47.1	69.1	-47.3
		77.4	251.6	-254.5	0.0	558.7	-14.0	653.0	
7	ACANAL	105.3	44.4	0.0	0.0	0.0	60.3	0.7	60.0
		14.3	9.0	0.0	0.0	0.0	-5.5	10.8	
10	MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	TOTALS	6661.2	6477.8	0.0	0.0	0.0	0.0	183.5	0.0

1061.4 1808.9 -859.9 0.0 1960.9 0.0 2073.4



3.4 Demanda Mínima de Verano





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MIN-VERANO

MON, MAY 24 2010 16:26

BUSES WITH VOLTAGE 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	1.0061	231.41	14	PRO230	230.00	6	1.0235	235.41				
85	PTP230	230.00	6	1.0101	232.32	96	FOR230	230.00	6	1.0051	231.18				
100	BAY230	230.00	6	1.0043	230.98	144	CANJ230	230.00	6	1.0054	231.24				
146	GUALACA230	230.00	6	1.0074	231.70	147	GUASQ230	230.00	6	1.0054	231.24				
148	VELADERO 230	230.00	6	1.0015	230.35	190	CHANG230	230.00	6	1.0147	233.39				
306	CHAN1 230	230.00	6	1.0127	232.91	310	CONCEPCION230	230.00	6	1.0171	233.93				
311	PANDO230	230.00	6	1.0440	240.12	341	PRUDENCIA230	230.00	6	1.0105	232.42				
345	LORENA230	230.00	6	1.0094	232.16	371	CAISAN230	230.00	6	1.0427	239.83				
540	ANTON	230.00	6	1.0052	231.20	700	BAITUN230	230.00	6	1.0221	235.08				
6000	FRONTER	230.00	6	1.0267	236.13	6400	FRONTCHA	230.00	6	1.0166	233.82				
6500	FRONT CAISAN	230.00	6	1.0414	239.53										

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	0.9863	226.85	3	PANII230	230.00	6	0.9904	227.79				
5	CHO230	230.00	6	0.9859	226.77	8	LSA230	230.00	6	0.9886	227.38				
103	COPESA23	230.00	6	0.9930	228.38	105	PAN-AM23	230.00	6	0.9859	226.77				
115	PACORA23	230.00	6	0.9943	228.70	354	SANBARTOLO230	230.00	6	0.9975	229.42				
370	LSA CAP 230	230.00	6	0.9886	227.38	511	LGUIAS230	230.00	6	0.9873	227.09				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MIN-VERANO

MON, MAY 24 2010 16:26

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	1.0351	119.04	12	M.N115	115.00	6	1.0087	116.00				
15	PRO115	115.00	6	1.0254	117.92	20	CH.AZUL	115.00	6	1.0261	118.00				
54	LM115	115.00	6	1.0026	115.29	55	LM2115	115.00	6	1.0035	115.40				
61	FFIELD	115.00	6	1.0005	115.06	87	CAL115	115.00	6	1.0186	117.14				
88	EST115	115.00	6	1.0205	117.35	92	L.V115	115.00	6	1.0193	117.22				
109	STA RITA115	115.00	6	1.0005	115.06	191	CHANG115	115.00	6	1.0040	115.46				
522	TCATIVÁ 115	115.00	6	1.0030	115.35	529	TCOLON 115	115.00	6	1.0005	115.06				
701	BAITUN115	115.00	6	1.0071	115.82	702	BJOMIN115	115.00	6	1.0071	115.81				



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)
2		PAN115		115.00	6	0.9838	113.14	4		PANII115		115.00	6	0.9982	114.80
6		CHO115		115.00	6	0.9867	113.47	18		CAC115		115.00	6	0.9837	113.12
19		C.V115		115.00	6	0.9877	113.59	21		C.BAN115		115.00	6	0.9778	112.45
23		CH115		115.00	6	0.9852	113.30	26		LOC115		115.00	6	0.9783	112.51
30		MAR115		115.00	6	0.9769	112.35	33		STM115		115.00	6	0.9824	112.97
37		SAN115		115.00	6	0.9776	112.43	48		TINAJ115		115.00	6	0.9820	112.93
50		M.O115		115.00	6	0.9821	112.94	52		TOC115		115.00	6	0.9960	114.55
123		MIR115		115.00	7	0.9893	113.77	154		CEMPAN15		115.00	6	0.9971	114.66

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:26
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MIN-VERANO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6		66		BLM13B	13.800	V2	38.0	17.0	25.0	0.0	0.9900	42.0	0.9132	47.0		62
6		67		BLM13C	13.800	V3	38.0	17.0	25.0	0.0	0.9900	42.0	0.9132	47.0		62
6		68		BLM13D	13.800	V4	38.0	17.7	25.0	0.0	0.9900	42.3	0.9068	47.0		62
6		90		EST-13L	13.800	E1	20.1	6.4	12.0	-5.0	0.9900	21.3	0.9524	27.0		64
6		94		LV-13.8L	13.800	L1	21.1	6.8	12.0	-5.0	0.9900	22.4	0.9513	27.0		64
6		97		FOR13A	13.800	F1	62.0	-20.3	50.0	-50.0	0.9800	66.6	0.9506	111.0		64
6		98		FOR13B	13.800	F2	62.0	-20.3	50.0	-50.0	0.9800	66.6	0.9506	111.0		64
6		101		BAY13A	13.800	B1	61.1	28.5	50.0	-25.0	0.9900	68.1	0.9062	96.0		61
SYST																
6		142		CANJ13A	13.800	C1	47.4	11.1	29.0	-29.0	0.9800	49.7	0.9737	69.0		64
6		150		GUALACA	13-213.800	G2	13.4	-6.3	7.4	-7.4	0.9800	15.2	0.9043	14.8		64
6		193		GEBONYIC	13.800	G1	8.0	-2.0	4.0	-4.0	0.9900	8.3	0.9692	35.3		64



6	193	GE	13.800	G2	8.0	-2.0	4.0	-4.0	0.9900	8.3	0.9692	35.3	64
6	302	PASOANCH	13.813.800	P1	4.3	2.0	2.0	-2.0	0.9480	5.0	0.9078	6.2	64
6	304	ALGA	13.800	A1	4.2	-2.3	2.3	-2.3	1.0869	4.4	0.8809	5.7	64
6	304	ALGA	13.800	A2	4.2	-2.3	2.3	-2.3	1.0869	4.4	0.8809	5.7	64
6	305	ELALTO	13.800	G1	18.0	-5.0	12.0	-5.0	1.0370	18.0	0.9635	20.6	64
6	307	CHAN1 A	13.800	G1	62.0	-19.6	50.0	-50.0	0.9900	65.7	0.9535	118.6	64
6	312	PANDO	13.800	G1	8.2	-4.7	10.0	-5.0	0.9800	9.7	0.8661	19.9	64
6	312	PANDO	13.800	G2	8.2	-4.7	10.0	-5.0	0.9800	9.7	0.8661	19.9	64
6	316	MTE LIRIO	13.800	G1	15.5	-5.0	12.0	-5.0	1.0323	15.8	0.9517	27.0	64
6	317	MENDRE	13.800	M1	8.4	0.0	0.0	0.0	1.0891	7.7	1.0000	35.3	64
6	317	MENDRE	13.800	M2	8.4	0.0	0.0	0.0	1.0891	7.7	1.0000	35.3	64
6	323	COCHEA	13.800	C1	5.0	0.0	0.0	0.0	1.0895	4.6	1.0000	35.3	64
6	323	COCHEA	13.800	C2	5.0	0.0	0.0	0.0	1.0895	4.6	1.0000	35.3	64
6	340	PEDGALITO	13.800	P1	20.1	6.8	12.0	-5.0	0.9900	21.4	0.9466	27.0	64
6	342	LORENA	13.800	L1	12.8	-5.0	10.5	-5.0	0.9936	13.8	0.9311	19.9	64
6	343	PRUDENCIA_1	13.800	G1	24.0	-9.8	9.8	-9.8	0.9917	26.1*	0.9263	33.0	64
6	350	MACANO	13.800	G1	2.8	-1.0	1.0	-1.0	1.0753	2.8	0.9424	6.2	64
6	351	PERLAS N	13.813.800	G1	9.0	5.0	5.0	-5.0	0.9794	10.5	0.8742	13.5	64
6	352	PERLAS S	13.813.800	G1	9.0	5.0	5.0	-5.0	0.9794	10.5	0.8742	13.5	64
6	357	BARTOLO	13.800	G1	6.6	-0.1	3.7	-3.7	0.9800	6.7	0.9998	8.5	64
6	359	CRUCES	13.800	G1	4.2	-0.4	2.3	-2.3	0.9800	4.3	0.9957	5.6	64
6	361	ESTRECHO	4.164.1600	G1	4.5	-0.5	2.5	-2.5	0.9800	4.6	0.9939	5.6	64
6	363	LAGUNA	13.800	G1	4.2	-0.6	2.4	-2.4	0.9800	4.4	0.9888	5.8	64



6	364	MENDRE2	13.800	G1	6.9	2.7	3.9	-3.9	0.9900	7.5	0.9307	8.9	64
6	368	RP-490	13.800	G1	4.3	-2.4	2.4	-2.4	0.9943	5.0	0.8724	5.5	64
6	368	RP-490	13.800	G2	4.3	-2.4	2.4	-2.4	0.9943	5.0	0.8724	5.5	64
6	369	HCALDERA13.813.800	13.800	G1	3.5	1.9	1.9	-1.9	0.9895	4.0	0.8727	4.3	64
6	541	TOABRE	0.6000	1	19.0	0.0	0.0	0.0	1.0060	18.9	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	23.7	-1.9	13.0	-13.0	0.9800	24.3	0.9968	30.5	64
6	705	BAITUN13A	13.800	G1	36.5	-16.6	26.6	-26.6	0.9800	40.9	0.9097	50.6	64
6	720	PLANETA13.8	13.800	G1	4.1	2.0	2.0	-2.0	0.9480	4.8	0.8997	6.2	64
6	SUBSYSTEM TOTALS				768.0	-5.3	500.4	-349.9				1371.3	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:26
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MIN-VERANO

AREA 7 [ACANAL] MACHINE SUMMARY:																	
	BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																	
7	129		MIR13D		13.800	G4	24.8	6.0	15.0	0.0	1.0000	25.5	0.9715	44.1			65
7	140		GAT6A		6.9000	G1	1.8	-0.4	2.0	-2.0	1.0000	1.8	0.9724	4.1			65
7	140		GAT6A		6.9000	G2	1.8	-0.4	2.0	-2.0	1.0000	1.8	0.9724	4.1			65
7	140		GAT6A		6.9000	G3	1.8	-0.4	2.0	-2.0	1.0000	1.8	0.9724	4.1			65
7	141		GAT6B		6.9000	G4	3.5	-1.2	3.0	-3.0	1.0000	3.7	0.9482	5.6			65
7	141		GAT6B		6.9000	G5	3.5	-1.2	3.0	-3.0	1.0000	3.7	0.9482	6.2			65
7	141		GAT6B		6.9000	G6	3.5	-1.2	3.0	-3.0	1.0000	3.7	0.9482	6.2			65
7	171		MIR13H		13.800	M1	15.5	6.8	11.2	6.8	1.0244	16.5	0.9153	23.0			65
7	171		MIR13H		13.800	M2	15.5	6.8	11.2	6.8	1.0244	16.5	0.9153	23.0			65
7	SUBSYSTEM TOTALS				71.6	14.9	52.3	-1.4						120.6			



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:26
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2013 ESC-MOD DEMANDA-MIN-VERANO 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	1260.6	1330.8	0.0	0.0	0.0	-112.0	41.8	-112.0
GUATEMAL	196.3	275.1	-198.1	0.0	277.3	19.3	377.3	
2	870.6	855.0	0.0	0.0	0.0	0.0	15.6	0.0
SALVADOR	81.5	224.2	-70.6	0.0	228.5	-27.5	183.9	
3	1237.8	1203.0	0.0	0.0	0.0	0.0	34.8	0.0
HONDURAS	470.0	321.1	-47.2	0.0	293.3	52.7	436.7	
4	533.0	525.2	0.0	0.0	0.0	0.0	7.7	0.0
NICARAGU	40.1	207.6	-57.5	0.0	181.6	-48.6	120.3	
5	1297.9	1280.2	0.0	0.0	0.0	0.0	17.7	0.0
COSTA RI	203.5	520.4	-230.5	0.0	418.7	34.4	297.9	
6	768.0	681.5	0.0	0.0	0.0	65.3	21.1	65.0
PANAMA	-5.3	247.4	95.3	0.0	555.5	-29.4	237.0	
7	71.6	24.4	0.0	0.0	0.0	46.7	0.5	47.0
ACANAL	14.9	8.9	0.0	0.0	0.0	-1.1	7.1	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6039.4	5900.2	0.0	0.0	0.0	0.0	139.2	0.0
	1001.0	1804.5	-508.7	0.0	1954.9	0.0	1660.1	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:15
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0060	231.38	11		M.N230		230.00	6	1.0142	233.27
14		PRO230		230.00	6	1.0271	236.24	85		PTP230		230.00	6	1.0161	233.70
96		FOR230		230.00	6	1.0152	233.49	100		BAY230		230.00	6	1.0368	238.47
103		COPESA23		230.00	6	1.0111	232.55	115		PACORA23		230.00	6	1.0142	233.27
144		CANJ230		230.00	6	1.0125	232.88	146		GUALACA230		230.00	6	1.0160	233.69
147		GUASQ230		230.00	6	1.0123	232.83	148		VELADERO 230		230.00	6	1.0043	230.98
149		BBLANCO		230.00	6	1.0025	230.57	190		CHANG230		230.00	6	1.0216	234.96
306		CHAN1 230		230.00	6	1.0204	234.70	310		CONCEPCION23		230.00	6	1.0228	235.24
311		PANDO230		230.00	6	1.0428	239.85	341		PRUDENCIA230		230.00	6	1.0225	235.18
345		LORENA230		230.00	6	1.0201	234.62	354		SANBARTOLO23		230.00	6	1.0001	230.01
371		CAISAN230		230.00	6	1.0416	239.56	540		ANTON		230.00	6	1.0134	233.08
700		BAITUN230		230.00	6	1.0267	236.15	6000		FRONTER		230.00	6	1.0295	236.79
6400		FRONTCHA		230.00	6	1.0232	235.33	6500		FRONT CAISAN		230.00	6	1.0406	239.33

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9978	229.49	5		CHO230		230.00	6	0.9901	227.73
8		LSA230		230.00	6	1.0000	230.00	105		PAN-AM23		230.00	6	0.9901	227.73
370		LSA CAP 230		230.00	6	1.0000	230.00	511		LGUIAS230		230.00	6	0.9890	227.48

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:15
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0015	115.17	4		PANII115		115.00	6	1.0320	118.67
9		LSA115		115.00	6	1.0443	120.10	12		M.N115		115.00	6	1.0092	116.06
15		PRO115		115.00	6	1.0290	118.34	18		CAC115		115.00	6	1.0013	115.15
19		C.V115		115.00	6	1.0143	116.64	20		CH.AZUL		115.00	6	1.0298	118.42
23		CH115		115.00	6	1.0056	115.65	52		TOC115		115.00	6	1.0290	118.33
54		LM115		115.00	6	1.0337	118.87	55		LM2115		115.00	6	1.0348	119.00
61		FFIELD		115.00	6	1.0298	118.43	87		CAL115		115.00	6	1.0271	118.11
88		EST115		115.00	6	1.0308	118.54	92		L.V115		115.00	6	1.0285	118.28
109		STA RITA115		115.00	6	1.0305	118.51	123		MIR115		115.00	7	1.0068	115.79
154		CEMPAN15		115.00	6	1.0239	117.75	191		CHANG115		115.00	6	1.0113	116.29
522		TCATIVÁ 115		115.00	6	1.0345	118.97	529		TCOLON 115		115.00	6	1.0305	118.51
701		BAITUN115		115.00	6	1.0096	116.11	702		BJOMIN115		115.00	6	1.0118	116.35



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)
6		CHO115		115.00	6	0.9911	113.97	21		C.BAN115		115.00	6	0.9941	114.32
26		LOC115		115.00	6	0.9945	114.37	30		MAR115		115.00	6	0.9920	114.08
33		STM115		115.00	6	0.9994	114.93	37		SAN115		115.00	6	0.9945	114.37
48		TINAJ115		115.00	6	0.9988	114.86	50		M.O115		115.00	6	0.9989	114.88

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:15
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6		66		BLM13B		13.800	V2	38.0	16.5	25.0	0.0	1.0180	40.7	0.9175	47.0	62
6		67		BLM13C		13.800	V3	38.0	16.5	25.0	0.0	1.0180	40.7	0.9175	47.0	62
6		68		BLM13D		13.800	V4	38.0	17.2	25.0	0.0	1.0180	41.0	0.9113	47.0	62
6		90		EST-13L		13.800	E1	22.8	6.5	12.0	-5.0	1.0000	23.7	0.9621	27.0	64
6		91		EST-13T		13.800	E2	22.8	6.5	12.0	-5.0	1.0000	23.7	0.9621	27.0	64
6		94		LV-13.8L		13.800	L1	24.3	7.2	12.0	-5.0	1.0000	25.4	0.9584	27.0	64
6		95		LV-13.8T		13.800	L2	24.3	7.2	12.0	-5.0	1.0000	25.4	0.9584	27.0	64
6		97		FOR13A		13.800	F1	80.0	-1.3	50.0	-50.0	1.0100	79.2	0.9999	111.0	64
6		98		FOR13B		13.800	F2	80.0	-1.3	50.0	-50.0	1.0100	79.2	0.9999	111.0	64
6		101		BAY13A		13.800	B1	48.7	25.8	50.0	-25.0	1.0180	54.1	0.8834	96.0	61
6		102		BAY13B		13.800	B2	48.6	25.8	50.0	-25.0	1.0180	54.1	0.8831	96.0	61
6		108		BAY13C		13.800	B3	48.6	25.8	50.0	-25.0	1.0180	54.1	0.8831	100.0	61
6		142		CANJ13A		13.800	C1	45.0	14.0	29.0	-29.0	1.0100	46.7	0.9546	69.0	64
6		143		CANJ13B		13.800	C2	45.0	14.0	29.0	-29.0	1.0100	46.7	0.9546	69.0	64
6		150		GUALACA	13-213	13.800	G2	14.0	-1.1	7.4	-7.4	1.0100	13.9	0.9967	14.8	64



6	152	BBLANCO_13.8	13.800	G1	13.0	0.1	7.0	-7.0	1.0000	13.0	1.0000	16.0	64
6	193	GEBONYIC	13.800	G1	8.0	-1.6	4.0	-4.0	1.0000	8.2	0.9803	35.3	64
6	193	GEBONYIC	13.800	G2	8.0	-1.6	4.0	-4.0	1.0000	8.2	0.9803	35.3	64
6	300	SVC-LV	13.200	1	0.0	123.1	300.0	-225.0	1.0240	120.2	0.0000	250.0	63
6	302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9712	5.3	0.9216	6.2	64
6	304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0980	4.7	0.8981	5.7	64
6	304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0980	4.7	0.8981	5.7	64
6	305	ELALTO	13.800	G1	18.0	-5.0	12.0	-5.0	1.0358	18.0	0.9635	20.6	64
6	307	CHAN1 A	13.800	G1	60.0	-17.8	50.0	-50.0	1.0000	62.6	0.9586	118.6	64
6	312	PANDO13.8	13.800	G1	9.0	-3.0	10.0	-5.0	1.0000	9.5	0.9476	19.9	64
6	312	PANDO13.8	13.800	G2	9.0	-3.0	10.0	-5.0	1.0000	9.5	0.9476	19.9	64
6	316	MTE LIRIO13.8	13.800	G1	17.0	-5.0	12.0	-5.0	1.0174	17.4	0.9594	27.0	64
6	316	MTE LIRIO13.8	13.800	G2	17.0	-5.0	12.0	-5.0	1.0174	17.4	0.9594	27.0	64
6	317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.1001	8.5	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.1001	8.5	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.1005	5.0	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.1005	5.0	1.0000	35.3	64
6	324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	0.9996	4.4	0.8929	6.2	64
6	340	PEDGALITO138	13.800	P1	22.0	7.5	12.0	-5.0	1.0000	23.2	0.9466	27.0	64
6	342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	1.0045	12.9	0.9229	19.9	64
6	343	PRUDENCIA_1	13.800	G1	23.8	-5.2	9.8	-9.8	1.0000	24.4	0.9770	33.0	64
6	343	PRUDENCIA_1	13.800	G2	23.8	-5.2	9.8	-9.8	1.0000	24.4	0.9770	33.0	64
6	346	LORENA 13-2	13.800	L2	12.0	-5.0	10.5	-5.0	1.0045	12.9	0.9229	19.9	64



6	350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0851	3.0	0.9514	6.2	64
6	351	PERLAS N13	813.800	G1	9.0	5.0	5.0	-5.0	0.9883	10.4	0.8742	13.5	64	
6	352	PERLAS S13	813.800	G1	9.0	5.0	5.0	-5.0	0.9883	10.4	0.8742	13.5	64	
6	357	BARTOLO13.8	13.800	G1	6.9	1.6	3.7	-3.7	1.0100	7.0	0.9740	8.5	64	
6	357	BARTOLO13.8	13.800	G2	6.9	1.6	3.7	-3.7	1.0100	7.0	0.9740	8.5	64	
6	359	CRUCES13.8	13.800	G1	4.4	0.6	2.3	-2.3	1.0100	4.4	0.9902	5.6	64	
6	359	CRUCES13.8	13.800	G2	4.4	0.6	2.3	-2.3	1.0100	4.4	0.9902	5.6	64	
6	361	ESTRECHO4.164	1.600	G1	4.7	0.5	2.5	-2.5	1.0100	4.7	0.9948	5.6	64	
6	361	ESTRECHO4.164	1.600	G2	4.7	0.5	2.5	-2.5	1.0100	4.7	0.9948	5.6	64	
6	363	LAGUNA 13.8	13.800	G1	4.4	0.3	2.4	-2.4	1.0100	4.4	0.9983	5.8	64	
6	363	LAGUNA 13.8	13.800	G2	4.4	0.3	2.4	-2.4	1.0100	4.4	0.9983	5.8	64	
6	364	MENDRE2	13.800	G1	7.6	2.6	3.9	-3.9	1.0000	8.0	0.9452	8.9	64	
6	368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	1.0037	5.3	0.8906	5.5	64	
6	368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	1.0037	5.3	0.8906	5.5	64	
6	369	HCALDERA13.813	800	G1	3.8	1.9	1.9	-1.9	0.9996	4.3	0.8909	4.3	64	
6	372	BJO FRIO 13	13.800	G1	23.8	-9.8	9.8	-9.8	1.0086	25.5	0.9252	33.0	64	
6	373	TIZINGAL13.813	800	G1	4.4	2.2	2.2	-2.2	0.9866	5.0	0.8909	21.6	64	
6	374	SLORENZO13.813	800	G1	3.9	-1.7	2.0	-2.0	1.0000	4.2	0.9188	4.5	64	
6	374	SLORENZO13.813	800	G2	3.9	-1.7	2.0	-2.0	1.0000	4.2	0.9188	4.5	64	
6	523	TCATIVÁ 13A	13.800	G1	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8988	10.9	62	
6	523	TCATIVÁ 13A	13.800	G2	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8988	10.9	62	
6	523	TCATIVÁ 13A	13.800	G3	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8988	10.9	62	
6	523	TCATIVÁ 13A	13.800	G4	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8988	10.9	62	



6	523	TCATIVÁ 13A	13.800	G5	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8988	10.9	62
6	524	TCATIVÁ 13B	13.800	G0	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8988	10.9	62
6	524	TCATIVÁ 13B	13.800	G6	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8988	10.9	62
6	524	TCATIVÁ 13B	13.800	G7	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8988	10.9	62
6	524	TCATIVÁ 13B	13.800	G8	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8988	10.9	62
6	524	TCATIVÁ 13B	13.800	G9	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8988	10.9	62
6	541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0144	24.6	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	23.8	1.7	13.0	-13.0	1.0100	23.6	0.9976	30.5	64
6	704	BJOMIN13B	13.800	G2	23.8	1.7	13.0	-13.0	1.0100	23.6	0.9976	30.5	64
6	705	BAITUN13A	13.800	G1	34.4	-6.1	26.6	-26.6	1.0100	34.6	0.9845	50.6	64
6	706	BAITUN13B	13.800	G2	34.4	-6.1	26.6	-26.6	1.0100	34.6	0.9845	50.6	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9712	5.1	0.9145	6.2	64
6	SUBSYSTEM TOTALS				1265.5	284.1	1126.8	-824.8				2322.2	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:15
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
7		129		MIR13D	13.800	G4	22.3	0.3	15.0	0.0	1.0000	22.3	0.9999	44.1		65
7		130		MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0154	16.8	1.0000	27.7		65
7		140		GAT6A	6.9000	G1	1.9	-1.0	2.0	-2.0	1.0000	2.2	0.8953	4.1		65
7		140		GAT6A	6.9000	G2	1.9	-1.0	2.0	-2.0	1.0000	2.2	0.8953	4.1		65
7		140		GAT6A	6.9000	G3	1.9	-1.0	2.0	-2.0	1.0000	2.2	0.8953	4.1		65

TOTALS	6763.0	6552.2	0.0	0.0	0.0	0.0	210.7	0.0
	1354.6	1824.0	-815.0	0.0	1938.0	0.0	2283.5	





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:25
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONC MDN-CONC

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0061	231.40	11		M.N230		230.00	6	1.0055	231.27
14		PRO230		230.00	6	1.0289	236.65	85		PTP230		230.00	6	1.0100	232.30
96		FOR230		230.00	6	1.0093	232.13	100		BAY230		230.00	6	1.0369	238.48
103		COPESA23		230.00	6	1.0112	232.57	115		PACORA23		230.00	6	1.0143	233.29
144		CANJ230		230.00	6	1.0072	231.66	146		GUALACA230		230.00	6	1.0109	232.50
147		GUASQ230		230.00	6	1.0070	231.61	190		CHANG230		230.00	6	1.0155	233.57
306		CHAN1 230		230.00	6	1.0151	233.47	310		CONCEPCION23		230.00	6	1.0328	237.55
311		PANDO230		230.00	6	1.0306	237.04	341		PRUDENCIA230		230.00	6	1.0177	234.06
345		LORENA230		230.00	6	1.0151	233.47	371		CAISAN230		230.00	6	1.0292	236.72
540		ANTON		230.00	6	1.0134	233.09	700		BAITUN230		230.00	6	1.0283	236.51
6000		FRONTER		230.00	6	1.0286	236.57	6400		FRONTCHA		230.00	6	1.0167	233.83
6500		FRONT CAISAN		230.00	6	1.0290	236.67								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9979	229.51	5		CHO230		230.00	6	0.9902	227.75
8		LSA230		230.00	6	1.0000	230.00	105		PAN-AM23		230.00	6	0.9902	227.75
148		VELADERO		230.00	6	0.9985	229.65	149		BBLANCO		230.00	6	0.9972	229.35
354		SANBARTOLO		230.00	6	0.9964	229.18	370		LSA CAP 230		230.00	6	1.0000	230.00
511		LGUIAS230		230.00	6	0.9891	227.49								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:25
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 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONC MDN-CONC

BUSES WITH VOLTAGE 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	1.0016	115.18	4		PANII115		115.00	6	1.0320	118.68
9		LSA115		115.00	6	1.0443	120.10	12		M.N115		115.00	6	1.0044	115.50
15		PRO115		115.00	6	1.0308	118.54	18		CAC115		115.00	6	1.0014	115.16
19		C.V115		115.00	6	1.0144	116.65	20		CH.AZUL		115.00	6	1.0315	118.63
23		CH115		115.00	6	1.0057	115.65	52		TOC115		115.00	6	1.0290	118.34
54		LM1115		115.00	6	1.0337	118.88	55		LM2115		115.00	6	1.0348	119.00
61		FFIELD		115.00	6	1.0299	118.44	87		CAL115		115.00	6	1.0241	117.78
88		EST115		115.00	6	1.0281	118.23	92		L.V115		115.00	6	1.0257	117.95
109		STA RITA115		115.00	6	1.0306	118.52	123		MIR115		115.00	7	1.0069	115.79
154		CEMPAN15		115.00	6	1.0240	117.76	191		CHANG115		115.00	6	1.0070	115.81
522		TCATIVÁ 115		115.00	6	1.0346	118.97	529		TCOLON 115		115.00	6	1.0306	118.52
701		BAITUN115		115.00	6	1.0106	116.22	702		BJOMIN115		115.00	6	1.0127	116.46



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	0.9911	113.98	21		C.BAN115		115.00	6	0.9942	114.33
26		LOC115		115.00	6	0.9946	114.38	30		MAR115		115.00	6	0.9921	114.09
33		STM115		115.00	6	0.9995	114.94	37		SAN115		115.00	6	0.9946	114.38
48		TINAJ115		115.00	6	0.9989	114.87	50		M.O115		115.00	6	0.9990	114.89

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:25
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONC MDN-CONC

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																
6		66		BLM13B		13.800	V2	38.0	16.5	25.0	0.0	1.0180	40.7	0.9178	47.0	62
6		67		BLM13C		13.800	V3	38.0	16.5	25.0	0.0	1.0180	40.7	0.9178	47.0	62
6		68		BLM13D		13.800	V4	38.0	17.2	25.0	0.0	1.0180	41.0	0.9116	47.0	62
6		90		EST-13L		13.800	E1	22.8	7.2	12.0	-5.0	1.0000	24.0	0.9533	27.0	64
6		91		EST-13T		13.800	E2	22.8	7.2	12.0	-5.0	1.0000	24.0	0.9533	27.0	64
6		94		LV-13.8L		13.800	L1	24.4	8.1	12.0	-5.0	1.0000	25.7	0.9493	27.0	64
6		95		LV-13.8T		13.800	L2	24.4	8.1	12.0	-5.0	1.0000	25.7	0.9493	27.0	64
6		97		FOR13A		13.800	F1	80.2	4.1	50.0	-50.0	1.0100	79.5	0.9987	111.0	64
6		98		FOR13B		13.800	F2	80.2	4.1	50.0	-50.0	1.0100	79.5	0.9987	111.0	64
6		101		BAY13A		13.800	B1	48.9	25.8	50.0	-25.0	1.0180	54.3	0.8845	96.0	61
6		102		BAY13B		13.800	B2	48.8	25.8	50.0	-25.0	1.0180	54.2	0.8839	96.0	61
6		108		BAY13C		13.800	B3	48.8	25.8	50.0	-25.0	1.0180	54.2	0.8840	100.0	61
6		142		CANJ13A		13.800	C1	45.1	14.9	29.0	-29.0	1.0100	47.0	0.9493	69.0	64
6		143		CANJ13B		13.800	C2	45.1	14.9	29.0	-29.0	1.0100	47.0	0.9493	69.0	64
6		150		GUALACA	13-213.800	G2		14.0	0.2	7.4	-7.4	1.0100	13.9	0.9999	14.8	64



6	152	BBLANCO_13.8	13.800	G1	13.0	1.0	7.0	-7.0	1.0000	13.0	0.9972	16.0	64
6	193	GEBONYIC	13.800	G1	8.1	-0.9	4.0	-4.0	1.0000	8.1	0.9934	35.3	64
6	193	GEBONYIC	13.800	G2	8.1	-0.9	4.0	-4.0	1.0000	8.1	0.9934	35.3	64
6	300	SVC-LV	13.200	1	0.2	173.0	300.0	-225.0	1.2137	142.5	0.0012	250.0	63
6	302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9630	5.4	0.9219	6.2	64
6	304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0973	4.7	0.8981	5.7	64
6	304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0973	4.7	0.8981	5.7	64
6	305	ELALTO	13.800	G1	18.0	-5.0	12.0	-5.0	1.0235	18.3	0.9636	20.6	64
6	307	CHAN1 A	13.800	G1	60.2	-12.7	50.0	-50.0	1.0000	61.5	0.9786	118.6	64
6	312	PANDO13.8	13.800	G1	9.0	-2.0	10.0	-5.0	1.0000	9.3	0.9758	19.9	64
6	312	PANDO13.8	13.800	G2	9.0	-2.0	10.0	-5.0	1.0000	9.3	0.9758	19.9	64
6	316	MTE LIRIO13.8	13.800	G1	17.0	-5.0	12.0	-5.0	1.0048	17.6	0.9594	27.0	64
6	316	MTE LIRIO13.8	13.800	G2	17.0	-5.0	12.0	-5.0	1.0048	17.6	0.9594	27.0	64
6	317	MENDRE13.8	13.800	M1	9.5	0.0	0.0	0.0	1.0993	8.6	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.5	0.0	0.0	0.0	1.0993	8.6	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0998	5.0	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.0998	5.0	1.0000	35.3	64
6	324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	0.9990	4.4	0.8929	6.2	64
6	340	PEDGALITO13.8	13.800	P1	22.0	5.1	12.0	-5.0	1.0000	22.6	0.9741	27.0	64
6	342	LORENA13.8	13.800	L1	12.0	-4.8	10.5	-5.0	1.0000	12.9	0.9280	19.9	64
6	343	PRUDENCIA_1	13.800	G1	23.8	-3.8	9.8	-9.8	1.0000	24.2	0.9873	33.0	64
6	343	PRUDENCIA_1	13.800	G2	23.8	-3.8	9.8	-9.8	1.0000	24.2	0.9873	33.0	64
6	346	LORENA 13-2	13.800	L2	12.0	-4.8	10.5	-5.0	1.0000	12.9	0.9280	19.9	64



6	350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0907	3.0	0.9517	6.2	64
6	351	PERLAS N13	813.800	G1	9.0	5.0	5.0	-5.0	0.9933	10.4	0.8746	13.5	64	
6	352	PERLAS S13	813.800	G1	9.0	5.0	5.0	-5.0	0.9933	10.4	0.8746	13.5	64	
6	357	BARTOLO13.8	13.800	G1	6.9	1.7	3.7	-3.7	1.0100	7.0	0.9702	8.5	64	
6	357	BARTOLO13.8	13.800	G2	6.9	1.7	3.7	-3.7	1.0100	7.0	0.9702	8.5	64	
6	359	CRUCES13.8	13.800	G1	4.4	0.7	2.3	-2.3	1.0100	4.4	0.9879	5.6	64	
6	359	CRUCES13.8	13.800	G2	4.4	0.7	2.3	-2.3	1.0100	4.4	0.9879	5.6	64	
6	361	ESTRECHO4.164	1.600	G1	4.7	0.5	2.5	-2.5	1.0100	4.7	0.9933	5.6	64	
6	361	ESTRECHO4.164	1.600	G2	4.7	0.5	2.5	-2.5	1.0100	4.7	0.9933	5.6	64	
6	363	LAGUNA 13.8	13.800	G1	4.4	0.3	2.4	-2.4	1.0100	4.4	0.9973	5.8	64	
6	363	LAGUNA 13.8	13.800	G2	4.4	0.3	2.4	-2.4	1.0100	4.4	0.9973	5.8	64	
6	364	MENDRE2	13.800	G1	7.6	3.7	3.9	-3.9	1.0000	8.5	0.8991	8.9	64	
6	368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	1.0092	5.3	0.8906	5.5	64	
6	368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	1.0092	5.3	0.8906	5.5	64	
6	369	HCALDERA13.813	800	G1	3.8	1.9	1.9	-1.9	0.9990	4.3	0.8909	4.3	64	
6	372	BJO FRIO 13	13.800	G1	23.8	-9.8	9.8	-9.8	1.0104	25.5	0.9255	33.0	64	
6	373	TIZINGAL13.813	800	G1	4.4	2.2	2.2	-2.2	0.9916	5.0	0.8922	21.6	64	
6	374	SLORENZO13.813	800	G1	3.9	-1.1	2.0	-2.0	1.0000	4.0	0.9599	4.5	64	
6	374	SLORENZO13.813	800	G2	3.9	-1.1	2.0	-2.0	1.0000	4.0	0.9599	4.5	64	
6	523	TCATIVÁ 13A	13.800	G1	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8993	10.9	62	
6	523	TCATIVÁ 13A	13.800	G2	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8993	10.9	62	
6	523	TCATIVÁ 13A	13.800	G3	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8993	10.9	62	
6	523	TCATIVÁ 13A	13.800	G4	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8993	10.9	62	



6	523	TCATIVÁ 13A	13.800	G5	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8993	10.9	62
6	524	TCATIVÁ 13B	13.800	G0	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8993	10.9	62
6	524	TCATIVÁ 13B	13.800	G6	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8993	10.9	62
6	524	TCATIVÁ 13B	13.800	G7	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8993	10.9	62
6	524	TCATIVÁ 13B	13.800	G8	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8993	10.9	62
6	524	TCATIVÁ 13B	13.800	G9	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8993	10.9	62
6	541	TOABRE	0.6000	1	25.1	0.0	0.0	0.0	1.0145	24.7	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	23.8	1.5	13.0	-13.0	1.0100	23.7	0.9979	30.5	64
6	704	BJOMIN13B	13.800	G2	23.8	1.5	13.0	-13.0	1.0100	23.7	0.9979	30.5	64
6	705	BAITUN13A	13.800	G1	34.5	-6.8	26.6	-26.6	1.0100	34.8	0.9809	50.6	64
6	706	BAITUN13B	13.800	G2	34.5	-6.8	26.6	-26.6	1.0100	34.8	0.9809	50.6	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9630	5.1	0.9145	6.2	64
6	SUBSYSTEM TOTALS				1268.4	362.3	1126.8	-824.8				2322.2	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:25
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONC MDN-CONC

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																
7		129		MIR13D	13.800	G4	22.3	0.3	15.0	0.0	1.0000	22.3	0.9999	44.1		65
7		130		MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0154	16.9	1.0000	27.7		65
7		140		GAT6A	6.9000	G1	1.9	-1.0	2.0	-2.0	1.0000	2.2	0.8952	4.1		65
7		140		GAT6A	6.9000	G2	1.9	-1.0	2.0	-2.0	1.0000	2.2	0.8952	4.1		65
7		140		GAT6A	6.9000	G3	1.9	-1.0	2.0	-2.0	1.0000	2.2	0.8952	4.1		65

TOTALS	6771.0	6552.2	0.0	0.0	0.0	0.0	218.7	0.0
	1447.2	1824.0	-814.4	0.0	1927.8	0.0	2365.3	





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:34
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

BUSES WITH VOLTAGE 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	233.05	14	PRO230	230.00	6	1.0262	236.04				
85	PTP230	230.00	6	1.0152	233.49	96	FOR230	230.00	6	1.0144	233.31				
100	BAY230	230.00	6	1.0268	236.16	144	CANJ230	230.00	6	1.0116	232.67				
146	GUALACA230	230.00	6	1.0152	233.49	147	GUASQ230	230.00	6	1.0114	232.62				
148	VELADERO	230230.00	6	1.0032	230.73	149	BBLANCO	230.00	6	1.0014	230.32				
190	CHANG230	230.00	6	1.0209	234.80	306	CHAN1	230	6	1.0198	234.55				
310	CONCEPCION23230.00	6	1.0219	235.03	311	PANDO230	230.00	6	1.0417	239.58					
341	PRUDENCIA230230.00	6	1.0217	235.00	345	LORENA230	230.00	6	1.0193	234.43					
371	CAISAN230	230.00	6	1.0404	239.29	700	BAITUN230	230.00	6	1.0259	235.97				
6000	FRONTER	230.00	6	1.0286	236.58	6400	FRONTCHA	230.00	6	1.0224	235.16				
6500	FRONT CAISAN230.00	6	1.0394	239.06											

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9803	225.46	3	PANII230	230.00	6	0.9894	227.56				
5	CHO230	230.00	6	0.9696	223.00	103	COPESA23	230.00	6	0.9955	228.96				
105	PAN-AM23	230.00	6	0.9696	223.00	115	PACORA23	230.00	6	0.9994	229.87				
354	SANBARTOLO23230.00	6	0.9992	229.81	511	LGUIAS230	230.00	6	0.9743	224.08					
540	ANTON	230.00	6	0.9964	229.17										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:34
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4	PANII115	115.00	6	1.0161	116.85	9	LSA115	115.00	6	1.0443	120.10				
12	M.N115	115.00	6	1.0085	115.98	15	PRO115	115.00	6	1.0281	118.24				
20	CH.AZUL	115.00	6	1.0289	118.32	52	TOC115	115.00	6	1.0131	116.50				
54	LM1115	115.00	6	1.0250	117.88	55	LM2115	115.00	6	1.0262	118.02				
61	FFIELD	115.00	6	1.0212	117.44	87	CAL115	115.00	6	1.0266	118.06				
88	EST115	115.00	6	1.0304	118.49	92	L.V115	115.00	6	1.0281	118.23				
109	STA RITA115	115.00	6	1.0204	117.35	154	CEMPAN15	115.00	6	1.0133	116.53				
191	CHANG115	115.00	6	1.0108	116.24	522	TCATIVÁ 115	115.00	6	1.0259	117.98				
529	TCOLON 115	115.00	6	1.0204	117.35	701	BAITUN115	115.00	6	1.0090	116.04				
702	BJOMIN115	115.00	6	1.0113	116.29										

BUSES WITH VOLTAGE LESS THAN 1.0000:



BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9859	113.37	6		CHO115		115.00	6	0.9705	111.61
18		CAC115		115.00	6	0.9858	113.36	19		C.V115		115.00	6	0.9983	114.81
21		C.BAN115		115.00	6	0.9783	112.50	23		CH115		115.00	6	0.9928	114.17
26		LOC115		115.00	6	0.9787	112.55	30		MAR115		115.00	6	0.9762	112.26
33		STM115		115.00	6	0.9838	113.13	37		SAN115		115.00	6	0.9786	112.54
48		TINAJ115		115.00	6	0.9831	113.06	50		M.O115		115.00	6	0.9832	113.07
123		MIR115		115.00	7	0.9927	114.16								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:34
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	E'TERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6		66		BLM13B		13.800	V2	38.1	20.2	25.0	0.0	1.0180	42.4	0.8832	47.0	62
6		67		BLM13C		13.800	V3	38.1	20.2	25.0	0.0	1.0180	42.4	0.8832	47.0	62
6		68		BLM13D		13.800	V4	38.1	21.1	25.0	0.0	1.0180	42.8	0.8746	47.0	62
6		90		EST-13L		13.800	E1	22.9	6.6	12.0	-5.0	1.0000	23.8	0.9611	27.0	64
6		91		EST-13T		13.800	E2	22.9	6.6	12.0	-5.0	1.0000	23.8	0.9611	27.0	64
6		94		LV-13.8L		13.800	L1	24.4	7.4	12.0	-5.0	1.0000	25.5	0.9573	27.0	64
6		95		LV-13.8T		13.800	L2	24.4	7.4	12.0	-5.0	1.0000	25.5	0.9573	27.0	64
6		97		FOR13A		13.800	F1	80.4	-0.5	50.0	-50.0	1.0100	79.6	1.0000	111.0	64
6		98		FOR13B		13.800	F2	80.4	-0.5	50.0	-50.0	1.0100	79.6	1.0000	111.0	64
6		101		BAY13A		13.800	B1	49.1	33.5	50.0	-25.0	1.0180	58.4	0.8260	96.0	61
6		102		BAY13B		13.800	B2	48.9	33.5	50.0	-25.0	1.0180	58.3	0.8254	96.0	61
6		108		BAY13C		13.800	B3	49.0	33.5	50.0	-25.0	1.0180	58.3	0.8254	100.0	61
6		142		CANJ13A		13.800	C1	45.2	14.3	29.0	-29.0	1.0100	47.0	0.9538	69.0	64
6		143		CANJ13B		13.800	C2	45.2	14.3	29.0	-29.0	1.0100	47.0	0.9538	69.0	64
6		150		GUALACA	13-213.800	G2		14.0	-0.9	7.4	-7.4	1.0100	13.9	0.9978	14.8	64



6	152	BBLANCO_13.8	13.800	G1	13.0	0.3	7.0	-7.0	1.0000	13.0	0.9998	16.0	
6	193	GEBONYIC	13.800	G1	8.1	-1.5	4.0	-4.0	1.0000	8.3	0.9828	35.3	
6	193	GEBONYIC	13.800	G2	8.1	-1.5	4.0	-4.0	1.0000	8.3	0.9828	35.3	
6	300	SVC-LV	13.200	1	0.5	277.7	300.0	-225.0	1.3164	211.0	0.0018	250.0	63
6	302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9703	5.3	0.9222	6.2	64
6	304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0979	4.7	0.8981	5.7	64
6	304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0979	4.7	0.8981	5.7	64
6	305	ELALTO	13.800	G1	18.1	-5.0	12.0	-5.0	1.0346	18.1	0.9638	20.6	64
6	307	CHAN1 A	13.800	G1	60.4	-17.2	50.0	-50.0	1.0000	62.8	0.9617	118.6	64
6	312	PANDO13.8	13.800	G1	9.1	-2.9	10.0	-5.0	1.0000	9.5	0.9516	19.9	64
6	312	PANDO13.8	13.800	G2	9.1	-2.9	10.0	-5.0	1.0000	9.5	0.9516	19.9	64
6	316	MTE LIRIO13.13.800	13.800	G1	17.0	-5.0	12.0	-5.0	1.0162	17.4	0.9594	27.0	64
6	316	MTE LIRIO13.13.800	13.800	G2	17.0	-5.0	12.0	-5.0	1.0162	17.4	0.9594	27.0	64
6	317	MENDRE13.8	13.800	M1	9.5	0.0	0.0	0.0	1.0999	8.7	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.5	0.0	0.0	0.0	1.0999	8.7	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.6	0.0	0.0	0.0	1.1004	5.1	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C2	5.6	0.0	0.0	0.0	1.1004	5.1	1.0000	35.3	64
6	324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	0.9995	4.4	0.8929	6.2	64
6	340	PEDGALITO13813.800	13.800	P1	22.1	7.7	12.0	-5.0	1.0000	23.4	0.9438	27.0	64
6	342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	1.0037	13.0	0.9236	19.9	64
6	343	PRUDENCIA_1	13.800	G1	23.9	-5.0	9.8	-9.8	1.0000	24.4	0.9791	33.0	64
6	343	PRUDENCIA_1	13.800	G2	23.9	-5.0	9.8	-9.8	1.0000	24.4	0.9791	33.0	64
6	346	LORENA 13-2	13.800	L2	12.0	-5.0	10.5	-5.0	1.0037	13.0	0.9236	19.9	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0846	3.0	0.9520	6.2	64



6	351	PERLAS N13.813.800	G1	9.0	5.0	5.0	-5.0	0.9878	10.5	0.8752	13.5	
6	352	PERLAS S13.813.800	G1	9.0	5.0	5.0	-5.0	0.9878	10.5	0.8752	13.5	
6	357	BARTOLO13.8	13.800 G1	6.9	1.6	3.7	-3.7	1.0100	7.0	0.9732	8.5	
6	357	BARTOLO13.8	13.800 G2	6.9	1.6	3.7	-3.7	1.0100	7.0	0.9732	8.5	64
6	359	CRUCES13.8	13.800 G1	4.4	0.6	2.3	-2.3	1.0100	4.4	0.9896	5.6	64
6	359	CRUCES13.8	13.800 G2	4.4	0.6	2.3	-2.3	1.0100	4.4	0.9896	5.6	64
6	361	ESTRECHO4.164.1600	G1	4.7	0.5	2.5	-2.5	1.0100	4.7	0.9944	5.6	64
6	361	ESTRECHO4.164.1600	G2	4.7	0.5	2.5	-2.5	1.0100	4.7	0.9944	5.6	64
6	363	LAGUNA	13.8 13.800 G1	4.4	0.3	2.4	-2.4	1.0100	4.4	0.9980	5.8	64
6	363	LAGUNA	13.8 13.800 G2	4.4	0.3	2.4	-2.4	1.0100	4.4	0.9980	5.8	64
6	364	MENDRE2	13.800 G1	7.6	2.8	3.9	-3.9	1.0000	8.1	0.9365	8.9	64
6	368	RP-490	13.800 G1	4.7	-2.4	2.4	-2.4	1.0032	5.3	0.8906	5.5	64
6	368	RP-490	13.800 G2	4.7	-2.4	2.4	-2.4	1.0032	5.3	0.8906	5.5	64
6	369	HCALDERA13.813.800	G1	3.8	1.9	1.9	-1.9	0.9995	4.3	0.8909	4.3	64
6	372	BJO FRIO 13	13.800 G1	23.9	-9.8	9.8	-9.8	1.0077	25.6	0.9258	33.0	64
6	373	TIZINGAL13.813.800	G1	4.5	2.2	2.2	-2.2	0.9861	5.1	0.8939	21.6	64
6	374	SLORENZO13.813.800	G1	3.9	-1.6	2.0	-2.0	1.0000	4.2	0.9236	4.5	64
6	374	SLORENZO13.813.800	G2	3.9	-1.6	2.0	-2.0	1.0000	4.2	0.9236	4.5	64
6	523	TCATIVÁ 13A	13.800 G1	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8536	10.9	62
6	523	TCATIVÁ 13A	13.800 G2	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8536	10.9	62
6	523	TCATIVÁ 13A	13.800 G3	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8536	10.9	62
6	523	TCATIVÁ 13A	13.800 G4	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8536	10.9	62
6	523	TCATIVÁ 13A	13.800 G5	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8536	10.9	62
6	524	TCATIVÁ 13B	13.800 G0	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8536	10.9	62



6	524	TCATIVÁ 13B	13.800	G6	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8536	10.9	
6	524	TCATIVÁ 13B	13.800	G7	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8536	10.9	
6	524	TCATIVÁ 13B	13.800	G8	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8536	10.9	
6	524	TCATIVÁ 13B	13.800	G9	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8536	10.9	62
6	541	TOABRE	0.6000	1	25.2	0.0	0.0	0.0	0.9975	25.2	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	23.9	1.8	13.0	-13.0	1.0100	23.7	0.9973	30.5	64
6	704	BJOMIN13B	13.800	G2	23.9	1.8	13.0	-13.0	1.0100	23.7	0.9973	30.5	64
6	705	BAITUN13A	13.800	G1	34.6	-5.8	26.6	-26.6	1.0100	34.7	0.9863	50.6	64
6	706	BAITUN13B	13.800	G2	34.6	-5.8	26.6	-26.6	1.0100	34.7	0.9863	50.6	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9703	5.1	0.9145	6.2	64
6	SUBSYSTEM TOTALS				1272.1	489.6	1126.8	-824.8				2322.2	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:34
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

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	22.4	3.8	15.0	0.0	1.0000	22.7	0.9861	44.1			65
7	AREA																
	130		MIR13F		13.800	G5	17.2	0.0	8.0	0.0	1.0067	17.1	1.0000	27.7			65
7			140		GAT6A		6.9000	G1	1.9	-0.7	2.0	-2.0	1.0000	2.0	0.9453	4.1	65
7			140		GAT6A		6.9000	G2	1.9	-0.7	2.0	-2.0	1.0000	2.0	0.9453	4.1	65
7			140		GAT6A		6.9000	G3	1.9	-0.7	2.0	-2.0	1.0000	2.0	0.9453	4.1	65
7			141		GAT6B		6.9000	G4	3.9	-1.4	3.0	-3.0	1.0000	4.1	0.9391	5.6	65
7			141		GAT6B		6.9000	G5	3.9	-1.4	3.0	-3.0	1.0000	4.1	0.9391	6.2	65
7			141		GAT6B		6.9000	G6	3.9	-1.4	3.0	-3.0	1.0000	4.1	0.9391	6.2	65



7	170 MIR13G	13.800 M1	17.1	6.8	11.2	6.8	1.0212	18.0	0.9287	23.0
7	171 MIR13H	13.800 M1	17.1	6.8	11.2	6.8	1.0303	17.8	0.9287	23.0
7	171 MIR13H	13.800 M2	17.1	6.8	11.2	6.8	1.0303	17.8	0.9287	23.0
	SUBSYSTEM TOTALS		108.2	18.0	71.5	5.5				171.3

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:37
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1459.7	1330.8	0.0	0.0	0.0	81.1	47.8	70.2
GUATEMAL	231.5	275.1	-197.5	0.0	276.0	-14.3	444.3	
2	870.7	855.0	0.0	0.0	0.0	1.0	14.7	0.0
SALVADOR	82.3	224.2	-70.6	0.0	228.4	-25.4	182.6	
3	1238.6	1203.0	0.0	0.0	0.0	0.6	35.0	0.0
HONDURAS	471.3	321.1	-47.1	0.0	292.9	55.1	435.2	
4	532.7	525.2	0.0	0.0	0.0	-1.1	8.6	0.0
NICARAGU	44.5	207.6	-57.4	0.0	181.3	-47.7	123.3	
5	1299.6	1280.2	0.0	0.0	0.0	-0.9	20.3	0.0
COSTA RI	239.2	520.4	-229.8	0.0	417.4	27.3	338.7	
6	1272.1	1311.1	0.0	0.0	0.0	-141.3	102.3	-130.2
PANAMA	489.6	266.2	-205.7	0.0	499.1	8.1	920.0	
7	108.2	47.0	0.0	0.0	0.0	60.5	0.8	60.0
ACANAL	18.0	9.5	0.0	0.0	0.0	-3.1	11.6	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6781.6	6552.2	0.0	0.0	0.0	0.0	229.4	0.0
	1576.3	1824.0	-808.2	0.0	1895.1	0.0	2455.6	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:42
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT VEL-LSA

BUSES WITH VOLTAGE 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	1.0061	231.41	11	M.N	230		230.00	6	1.0109	232.52
14	PRO	230		230.00	6	1.0246	235.66	85	PTP	230		230.00	6	1.0133	233.06
96	FOR	230		230.00	6	1.0124	232.86	100	BAY	230		230.00	6	1.0369	238.49
103	COPE	SA23		230.00	6	1.0112	232.58	115	PACOR	A23		230.00	6	1.0143	233.30
144	CANJ	230		230.00	6	1.0094	232.15	146	GUAL	ACA230		230.00	6	1.0130	232.98
147	GUASQ	230		230.00	6	1.0091	232.10	190	CHANG	230		230.00	6	1.0197	234.53
306	CHAN	1 230		230.00	6	1.0187	234.30	310	CONCE	PCION23230.00		230.00	6	1.0200	234.59
311	PANDO	230		230.00	6	1.0395	239.09	341	PRUDEN	CIA230230.00		230.00	6	1.0196	234.52
345	LORENA	230		230.00	6	1.0171	233.94	371	CAISAN	230		230.00	6	1.0382	238.79
540	ANTON	230		230.00	6	1.0135	233.11	700	BAITUN	230		230.00	6	1.0245	235.63
6000	FRONTER	230		230.00	6	1.0269	236.20	6400	FRONT	CHA		230.00	6	1.0213	234.91
6500	FRONT	CAISAN230.00		230.00	6	1.0373	238.58								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN	230		230.00	6	0.9979	229.52	5	CHO	230		230.00	6	0.9903	227.77
105	PAN-AM	23		230.00	6	0.9903	227.77	148	VELA	DERO		230230.00	6	0.9988	229.72
149	BBLANCO	230		230.00	6	0.9961	229.09	354	SANBARTOLO	23230.00		230.00	6	0.9922	228.22
511	LGUIAS	230		230.00	6	0.9892	227.51								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:42
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT VEL-LSA

BUSES WITH VOLTAGE 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	1.0016	115.19	4	PANII	115		115.00	6	1.0321	118.69
9	LSA	115		115.00	6	1.0443	120.10	12	M.N	115		115.00	6	1.0073	115.84
15	PRO	115		115.00	6	1.0265	118.05	18	CAC	115		115.00	6	1.0014	115.17
19	C.V	115		115.00	6	1.0144	116.66	20	CH.AZUL	115		115.00	6	1.0272	118.13
23	CH	115		115.00	6	1.0057	115.66	52	TOC	115		115.00	6	1.0291	118.35
54	LM	115		115.00	6	1.0338	118.88	55	LM2	115		115.00	6	1.0348	119.01
61	FFIELD	115		115.00	6	1.0299	118.44	87	CAL	115		115.00	6	1.0259	117.98
88	EST	115		115.00	6	1.0297	118.42	92	L.V	115		115.00	6	1.0274	118.15
109	STA RITA	115		115.00	6	1.0306	118.52	123	MIR	115		115.00	7	1.0070	115.80
154	CEMPAN	15		115.00	6	1.0240	117.76	191	CHANG	115		115.00	6	1.0099	116.14
522	TCATIVÁ	115		115.00	6	1.0346	118.98	529	TCOLON	115		115.00	6	1.0306	118.52
701	BAITUN	115		115.00	6	1.0081	115.94	702	BJOMIN	115		115.00	6	1.0104	116.20



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)
6		CHO115		115.00	6	0.9912	113.99	21		C.BAN115		115.00	6	0.9942	114.34
26		LOC115		115.00	6	0.9946	114.38	30		MAR115		115.00	6	0.9921	114.10
33		STM115		115.00	6	0.9995	114.95	37		SAN115		115.00	6	0.9946	114.38
48		TINAJ115		115.00	6	0.9989	114.88	50		M.O115		115.00	6	0.9991	114.89

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:44
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT VEL-LSA

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																
6		66		BLM13B		13.800	V2	38.1	16.4	25.0	0.0	1.0180	40.7	0.9180	47.0	62
6		67		BLM13C		13.800	V3	38.1	16.4	25.0	0.0	1.0180	40.7	0.9180	47.0	62
6		68		BLM13D		13.800	V4	38.1	17.1	25.0	0.0	1.0180	41.0	0.9118	47.0	62
6		90		EST-13L		13.800	E1	22.9	6.8	12.0	-5.0	1.0000	23.9	0.9588	27.0	64
6		91		EST-13T		13.800	E2	22.9	6.8	12.0	-5.0	1.0000	23.9	0.9588	27.0	64
6		94		LV-13.8L		13.800	L1	24.4	7.6	12.0	-5.0	1.0000	25.5	0.9550	27.0	64
6		95		LV-13.8T		13.800	L2	24.4	7.6	12.0	-5.0	1.0000	25.5	0.9550	27.0	64
6		97		FOR13A		13.800	F1	80.3	1.2	50.0	-50.0	1.0100	79.5	0.9999	111.0	64
6		98		FOR13B		13.800	F2	80.3	1.2	50.0	-50.0	1.0100	79.5	0.9999	111.0	64
6		101		BAY13A		13.800	B1	49.0	25.8	50.0	-25.0	1.0180	54.4	0.8850	96.0	61
6		102		BAY13B		13.800	B2	48.9	25.8	50.0	-25.0	1.0180	54.3	0.8846	96.0	61
6		108		BAY13C		13.800	B3	48.9	25.8	50.0	-25.0	1.0180	54.3	0.8846	100.0	61
6		142		CANJ13A		13.800	C1	45.2	14.6	29.0	-29.0	1.0100	47.0	0.9515	69.0	64



6	143	CANJ13B	13.800	C2	45.2	14.6	29.0	-29.0	1.0100	47.0	0.9515	69.0	64
6	150	GUALACA 13-213.800	G2	14.0	-0.4	7.4	-7.4	1.0100	13.9	0.9997	14.8	64	
6	152	BBLANCO_13.813.800	G1	13.0	1.2	7.0	-7.0	1.0000	13.1	0.9960	16.0	64	
6	193	GEBOYIC	13.800	G1	8.1	-1.4	4.0	-4.0	1.0000	8.2	0.9854	35.3	64
6	193	GEBOYIC	13.800	G2	8.1	-1.4	4.0	-4.0	1.0000	8.2	0.9854	35.3	64
6	300	SVC-LV	13.200	1	0.4	251.6	300.0	-225.0	1.2920	194.7	0.0016	250.0	63
6	302	PASOANCH13.813.800	P1	4.8	2.0	2.0	-2.0	0.9681	5.3	0.9221	6.2	64	
6	304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0977	4.7	0.8981	5.7	64
6	304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0977	4.7	0.8981	5.7	64
6	305	ELALTO	13.800	G1	18.1	-5.0	12.0	-5.0	1.0325	18.1	0.9637	20.6	64
6	307	CHAN1 A	13.800	G1	60.3	-16.1	50.0	-50.0	1.0000	62.4	0.9660	118.6	64
6	312	PANDO13.8	13.800	G1	9.1	-2.8	10.0	-5.0	1.0000	9.5	0.9567	19.9	64
6	312	PANDO13.8	13.800	G2	9.1	-2.8	10.0	-5.0	1.0000	9.5	0.9567	19.9	64
6	316	MTE LIRIO13.13.800	G1	17.0	-5.0	12.0	-5.0	1.0139	17.5	0.9594	27.0	64	
6	316	MTE LIRIO13.13.800	G2	17.0	-5.0	12.0	-5.0	1.0139	17.5	0.9594	27.0	64	
6	317	MENDRE13.8	13.800	M1	9.5	0.0	0.0	0.0	1.0997	8.6	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.5	0.0	0.0	0.0	1.0997	8.6	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.6	0.0	0.0	0.0	1.1002	5.1	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C2	5.6	0.0	0.0	0.0	1.1002	5.1	1.0000	35.3	64
6	324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	0.9993	4.4	0.8929	6.2	64
6	340	PEDGALITO13813.800	P1	22.1	8.2	12.0	-5.0	1.0000	23.5	0.9376	27.0	64	
6	342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	1.0015	13.0	0.9235	19.9	64
6	343	PRUDENCIA_1	13.800	G1	23.9	-4.4	9.8	-9.8	1.0000	24.3	0.9836	33.0	64



6	343	PRUDENCIA_1	13.800	G2	23.9	-4.4	9.8	-9.8	1.0000	24.3	0.9836	33.0	64	
6	346	LORENA 13-2	13.800	L2	12.0	-5.0	10.5	-5.0	1.0015	13.0	0.9235	19.9	64	
6	350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0835	3.0	0.9519	6.2	64
6	351	PERLAS N13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9868	10.5	0.8750	13.5	64	
6	352	PERLAS S13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9868	10.5	0.8750	13.5	64	
6	357	BARTOLO13.8	13.800	G1	6.9	1.9	3.7	-3.7	1.0100	7.1	0.9655	8.5	64	
6	357	BARTOLO13.8	13.800	G2	6.9	1.9	3.7	-3.7	1.0100	7.1	0.9655	8.5	64	
6	359	CRUCES13.8	13.800	G1	4.4	0.8	2.3	-2.3	1.0100	4.4	0.9850	5.6	64	
6	359	CRUCES13.8	13.800	G2	4.4	0.8	2.3	-2.3	1.0100	4.4	0.9850	5.6	64	
6	361	ESTRECHO4.164.1600	1.600	G1	4.7	0.6	2.5	-2.5	1.0100	4.7	0.9912	5.6	64	
6	361	ESTRECHO4.164.1600	1.600	G2	4.7	0.6	2.5	-2.5	1.0100	4.7	0.9912	5.6	64	
6	363	LAGUNA	13.8	13.800	G1	4.4	0.4	2.4	-2.4	1.0100	4.4	0.9960	5.8	64
6	363	LAGUNA	13.8	13.800	G2	4.4	0.4	2.4	-2.4	1.0100	4.4	0.9960	5.8	64
6	364	MENDRE2	13.800	G1	7.6	3.1	3.9	-3.9	1.0000	8.2	0.9260	8.9	64	
6	368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	1.0022	5.3	0.8906	5.5	64	
6	368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	1.0022	5.3	0.8906	5.5	64	
6	369	HCALDERA13.813.800	13.800	G1	3.8	1.9	1.9	-1.9	0.9993	4.3	0.8909	4.3	64	
6	372	BJO FRIO 13	13.800	G1	23.9	-9.8	9.8	-9.8	1.0061	25.7	0.9257	33.0	64	
6	373	TIZINGAL13.813.800	13.800	G1	4.5	2.2	2.2	-2.2	0.9851	5.1	0.8933	21.6	64	
6	374	SLORENZO13.813.800	13.800	G1	3.9	-1.5	2.0	-2.0	1.0000	4.1	0.9354	4.5	64	
6	374	SLORENZO13.813.800	13.800	G2	3.9	-1.5	2.0	-2.0	1.0000	4.1	0.9354	4.5	64	
6	523	TCATIVÁ 13A	13.800	G1	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8997	10.9	62	
6	523	TCATIVÁ 13A	13.800	G2	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8997	10.9	62	



6	523	TCATIVÁ 13A	13.800	G3	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8997	10.9	62
6	523	TCATIVÁ 13A	13.800	G4	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8997	10.9	62
6	523	TCATIVÁ 13A	13.800	G5	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8997	10.9	62
6	524	TCATIVÁ 13B	13.800	G0	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8997	10.9	62
6	524	TCATIVÁ 13B	13.800	G6	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8997	10.9	62
6	524	TCATIVÁ 13B	13.800	G7	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8997	10.9	62
6	524	TCATIVÁ 13B	13.800	G8	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8997	10.9	62
6	524	TCATIVÁ 13B	13.800	G9	8.3	4.0	6.6	-6.6	1.0150	9.1	0.8997	10.9	62
6	541	TOABRE	0.6000	1	25.1	0.0	0.0	0.0	1.0146	24.8	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	23.9	1.9	13.0	-13.0	1.0100	23.7	0.9969	30.5	64
6	704	BJOMIN13B	13.800	G2	23.9	1.9	13.0	-13.0	1.0100	23.7	0.9969	30.5	64
6	705	BAITUN13A	13.800	G1	34.5	-5.1	26.6	-26.6	1.0100	34.6	0.9892	50.6	64
6	706	BAITUN13B	13.800	G2	34.5	-5.1	26.6	-26.6	1.0100	34.6	0.9892	50.6	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9681	5.1	0.9145	6.2	64
6	SUBSYSTEM TOTALS				1270.8	431.5	1126.8	-824.8				2322.2	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:44
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT VEL-LSA

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																
7	129	MIR13D		13.800	G4	22.4	0.3	15.0	0.0	1.0000	22.4	0.9999	44.1			65
7	130	MIR13F		13.800	G5	17.2	0.0	8.0	0.0	1.0154	16.9	1.0000	27.7			65
7	140	GAT6A		6.9000	G1	1.9	-1.0	2.0	-2.0	1.0000	2.2	0.8951	4.1			65



7	140	GAT6A	6.9000	G2	1.9	-1.0	2.0	-2.0	1.0000	2.2	0.8951	4.1	65
7	140	GAT6A	6.9000	G3	1.9	-1.0	2.0	-2.0	1.0000	2.2	0.8951	4.1	65
7	141	GAT6B	6.9000	G4	3.9	-1.7	3.0	-3.0	1.0000	4.2	0.9141	5.6	65
7	141	GAT6B	6.9000	G5	3.9	-1.7	3.0	-3.0	1.0000	4.2	0.9141	6.2	65
7	141	GAT6B	6.9000	G6	3.9	-1.7	3.0	-3.0	1.0000	4.2	0.9141	6.2	65
7	170	MIR13G	13.800	M1	17.1	6.8	11.2	6.8	1.0298	17.8	0.9286	23.0	65
7	171	MIR13H	13.800	M1	17.1	6.8	11.2	6.8	1.0389	17.7	0.9286	23.0	65
7	171	MIR13H	13.800	M2	17.1	6.8	11.2	6.8	1.0389	17.7	0.9286	23.0	65
	SUBSYSTEM TOTALS				108.1	12.7	71.5	5.5				171.3	

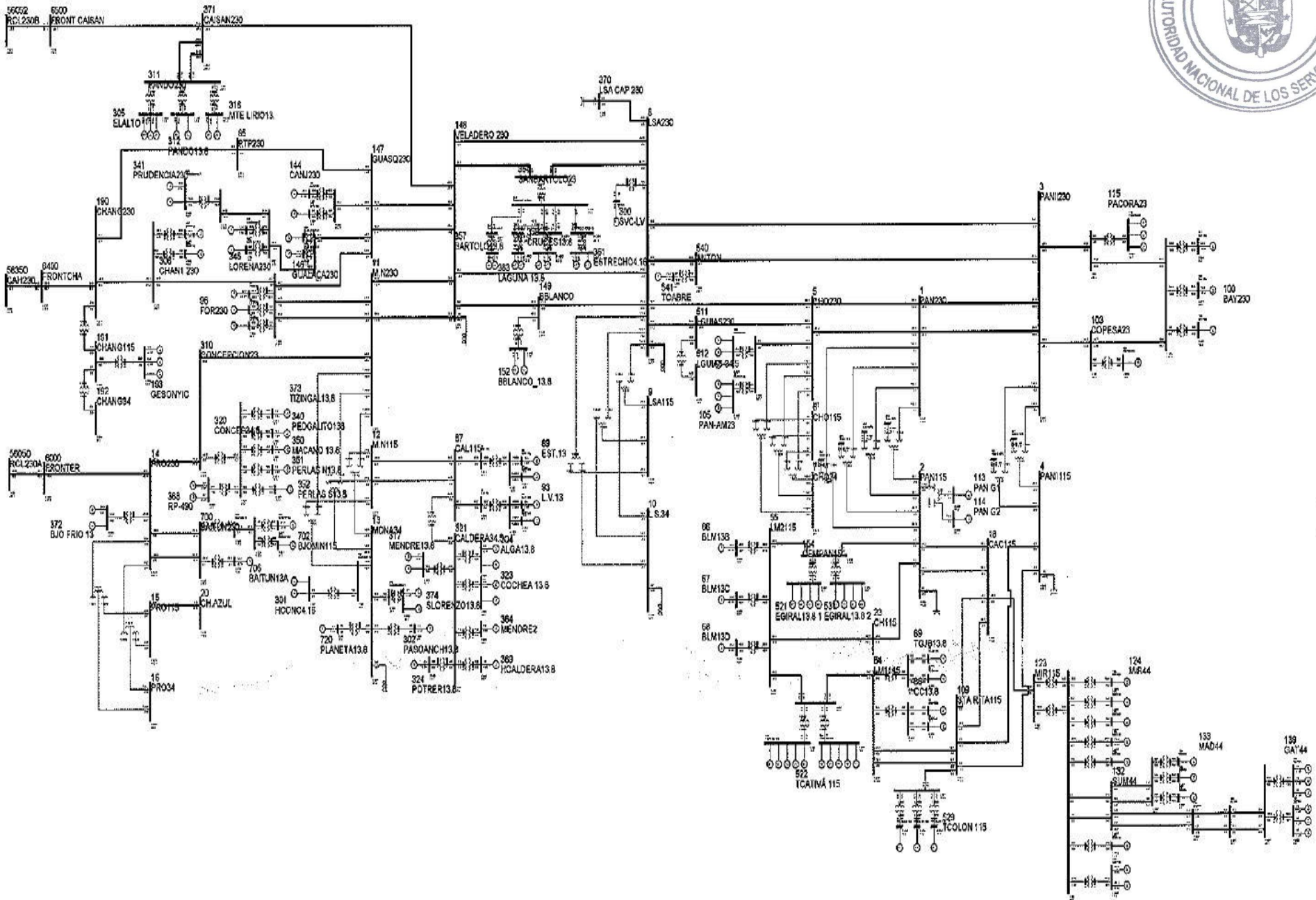
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 15:46
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT VEL-LSA IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1 GUATEMAL	1458.8 231.3	1330.8 275.1	0.0 -197.6	0.0 0.0	0.0 276.0	80.2 -14.2	47.8 444.1	70.2
2 SALVADOR	870.3 82.1	855.0 224.2	0.0 -70.6	0.0 0.0	0.0 228.5	0.6 -25.3	14.7 182.3	0.0
3 HONDURAS	1238.2 471.1	1203.0 321.1	0.0 -47.1	0.0 0.0	0.0 292.9	0.3 55.1	34.9 434.9	0.0
4 NICARAGU	532.6 44.2	525.2 207.6	0.0 -57.4	0.0 0.0	0.0 181.3	-1.1 -47.6	8.5 122.9	0.0
5 COSTA RI	1299.1 239.8	1280.2 520.4	0.0 -229.8	0.0 0.0	0.0 417.2	-1.3 28.9	20.2 337.5	0.0
6 PANAMA	1270.8 431.5	1311.1 266.2	0.0 -211.9	0.0 0.0	0.0 519.1	-139.2 11.3	98.9 885.0	-130.2
7	108.1	47.0	0.0	0.0	0.0	60.4	0.7	60.0



ACANAL	12.7	9.5	0.0	0.0	0.0	-8.2	11.3	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6777.9	6552.2	0.0	0.0	0.0	0.0	225.7	0.0
	1512.5	1824.0	-814.4	0.0	1914.9	0.0	2417.9	

4.2 Demanda Mínima de Invierno





BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115		115.00	6	0.9878	113.59	6	CHO115		115.00	6	0.9907	113.93		
18	CAC115		115.00	6	0.9876	113.57	19	C.V115		115.00	6	0.9937	114.27		
21	C.BAN115		115.00	6	0.9817	112.90	23	CH115		115.00	6	0.9883	113.66		
26	LOC115		115.00	6	0.9822	112.95	30	MAR115		115.00	6	0.9806	112.77		
33	STM115		115.00	6	0.9862	113.42	37	SAN115		115.00	6	0.9817	112.89		
48	TINAJ115		115.00	6	0.9858	113.37	50	M.O115		115.00	6	0.9859	113.38		
123	MIR115		115.00	7	0.9927	114.16									

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:13
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MIN INVIERNO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	66	BLM13B		13.800	V2	38.0	15.7	25.0	0.0	0.9900	41.5	0.9238	47.0			62
6	67	BLM13C		13.800	V3	38.0	15.7	25.0	0.0	0.9900	41.5	0.9238	47.0			62
6	68	BLM13D		13.800	V4	38.0	16.4	25.0	0.0	0.9900	41.8	0.9182	47.0			62
6	90	EST-13L		13.800	E1	18.0	3.6	12.0	-5.0	0.9800	18.7	0.9809	27.0			64
6	94	LV-13.8L		13.800	L1	20.2	3.9	12.0	-5.0	0.9800	21.1	0.9815	27.0			64
6	97	FOR13A		13.800	F1	80.0	-22.0	50.0	-50.0	0.9800	84.7	0.9643	111.0			64
6	101	BAY13A		13.800	B1	50.6	19.8	50.0	-25.0	0.9900	54.9	0.9309	96.0			61
6	102	BAY13B		13.800	B2	50.6	19.8	50.0	-25.0	0.9900	54.9	0.9310	96.0			61
6	142	CANJ13A		13.800	C1	45.0	11.4	29.0	-29.0	0.9900	46.9	0.9692	69.0			64
6	150	GUALACA	13-213.800	G2	14.0	-4.6	7.4	-7.4	0.9900	14.9	0.9493	14.8				64
6	152	BBLANCO_13.813.800	G1	13.0	-2.9	7.0	-7.0	0.9800	13.6	0.9762	16.0					64
6	193	GEBONYIC	13.800	G1	8.0	-2.0	4.0	-4.0	0.9900	8.3	0.9703	35.3				64
6	193	GEBONYIC	13.800	G2	8.0	-2.0	4.0	-4.0	0.9900	8.3	0.9703	35.3				64



6	300	SVC-LV	13.200	1	0.0	1.6	300.0	-225.0	0.9903	1.6	0.0000	250.0	
6	302	PASOANCH	13.813.800	P1	4.8	2.0	2.0	-2.0	0.9495	5.4	0.9216	6.2	
6	304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0897	4.7	0.8981	5.7	
6	305	ELALTO	13.800	G1	18.0	-5.0	12.0	-5.0	1.0329	18.1	0.9635	20.6	64
6	305	ELALTO	13.800	G2	18.0	-5.0	12.0	-5.0	1.0329	18.1	0.9635	20.6	64
6	307	CHAN1 A	13.800	G1	60.0	-28.1	50.0	-50.0	0.9800	67.6	0.9057	118.6	64
6	312	PANDO13.8	13.800	G1	9.0	-5.0	10.0	-5.0	1.0161	10.1	0.8742	19.9	64
6	316	MTE LIRIO13.13.800	13.800	G1	17.0	-5.0	12.0	-5.0	1.0358	17.1	0.9594	27.0	64
6	317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0909	8.6	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0910	5.0	1.0000	35.3	64
6	324	POTRER13.8	13.800	P1	4.0	0.6	2.0	-2.0	0.9900	4.1	0.9875	6.2	64
6	340	PEDGALITO13813.800	13.800	P1	18.0	4.5	12.0	-5.0	0.9800	18.9	0.9696	27.0	64
6	342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	0.9964	13.0	0.9229	19.9	64
6	343	PRUDENCIA_1	13.800	G1	21.0	-9.8	9.8	-9.8	0.9944	23.3	0.9068	33.0	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0694	3.0	0.9514	6.2	64
6	351	PERLAS N13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9740	10.6	0.8742	13.5	64
6	357	BARTOLO13.8	13.800	G1	6.9	-0.2	3.7	-3.7	0.9800	7.0	0.9997	8.5	64
6	359	CRUCES13.8	13.800	G1	4.4	-0.4	2.3	-2.3	0.9800	4.5	0.9953	5.6	64
6	361	ESTRECHO4.164.1600	13.800	G1	4.7	-0.5	2.5	-2.5	0.9800	4.8	0.9934	5.6	64
6	363	LAGUNA 13.8	13.800	G1	4.4	-0.7	2.4	-2.4	0.9800	4.6	0.9882	5.8	64
6	364	MENDRE2	13.800	G1	7.6	0.6	3.9	-3.9	0.9900	7.7	0.9964	8.9	64
6	368	RP-490	13.800	G1	4.7	-2.3	2.4	-2.4	0.9900	5.3	0.9012	5.5	64
6	368	RP-490	13.800	G2	4.7	-2.3	2.4	-2.4	0.9900	5.3	0.9012	5.5	64



6	369	HCALDERA13.813.800	G1	3.8	0.6	1.9	-1.9	0.9900	3.9	0.9864	4.3	64
6	372	BJO FRIO 13 13.800	G1	21.0	-9.8	9.8	-9.8	1.0093	22.9	0.9068	33.0	64
6	373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9724	5.1	0.8909	21.6	64
6	374	SLORENZO13.813.800	G1	3.9	-1.3	2.0	-2.0	0.9900	4.1	0.9497	4.5	64
6	541	TOABRE 0.6000	1	25.0	0.0	0.0	0.0	1.0102	24.7	1.0000	88.9	64
6	703	BJOMIN13A 13.800	G1	21.0	-0.1	13.0	-13.0	1.0100	20.8	1.0000	30.5	64
6	705	BAITUN13A 13.800	G1	32.2	-6.7	26.6	-26.6	1.0100	32.6	0.9792	50.6	64
6	720	PLANETA13.8 13.800	G1	4.5	2.0	2.0	-2.0	0.9495	5.2	0.9145	6.2	64
6	SUBSYSTEM TOTALS			787.9	2.0	818.2	-565.6				1598.7	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:13
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MIN INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:																	
	BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																	
7	129		MIR13D		13.800	G4	25.6	5.3	15.0	0.0	1.0000	26.2	0.9789	44.1			65
7	140		GAT6A		6.9000	G1	1.8	-0.5	2.0	-2.0	1.0000	1.9	0.9687	4.1			65
7	140		GAT6A		6.9000	G2	1.8	-0.5	2.0	-2.0	1.0000	1.9	0.9687	4.1			65
7	140		GAT6A		6.9000	G3	1.8	-0.5	2.0	-2.0	1.0000	1.9	0.9687	4.1			65
7	141		GAT6B		6.9000	G4	3.6	-1.2	3.0	-3.0	1.0000	3.8	0.9473	5.6			65
7	141		GAT6B		6.9000	G5	3.6	-1.2	3.0	-3.0	1.0000	3.8	0.9473	6.2			65
7	141		GAT6B		6.9000	G6	3.6	-1.2	3.0	-3.0	1.0000	3.8	0.9473	6.2			65
7	171		MIR13H		13.800	M1	15.8	6.8	11.2	6.8	1.0258	16.8	0.9181	23.0			65
7	171		MIR13H		13.800	M2	15.8	6.8	11.2	6.8	1.0258	16.8	0.9181	23.0			65
7	SUBSYSTEM TOTALS						73.4	13.9	52.3	-1.4				120.6			





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:15
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2014 ESC-MOD DEMANDA-MIN INVIERNO 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	1278.8	1330.8	0.0	0.0	0.0	-95.4	43.3	-93.2
GUATEMAL	218.8	275.1	-196.6	0.0	275.1	9.3	406.2	
2	870.5	855.0	0.0	0.0	0.0	0.4	15.1	0.0
SALVADOR	84.8	224.2	-70.6	0.0	228.3	-21.7	181.3	
3	1237.7	1203.0	0.0	0.0	0.0	0.3	34.4	0.0
HONDURAS	468.6	321.1	-47.2	0.0	293.2	54.3	433.6	
4	532.9	525.2	0.0	0.0	0.0	0.3	7.3	0.0
NICARAGU	37.4	207.6	-57.6	0.0	181.8	-48.1	117.4	
5	1297.7	1280.2	0.0	0.0	0.0	0.6	17.0	0.0
COSTA RI	198.9	520.4	-230.8	0.0	419.3	33.8	294.7	
6	787.9	721.1	0.0	0.0	0.0	46.8	20.0	46.2
PANAMA	2.0	261.7	79.8	0.0	535.7	-24.9	221.1	
7	73.4	25.8	0.0	0.0	0.0	47.0	0.5	47.0
ACANAL	13.9	9.4	0.0	0.0	0.0	-2.7	7.3	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6078.8	5941.1	0.0	0.0	0.0	0.0	137.7	0.0
	1024.5	1819.3	-523.0	0.0	1933.4	0.0	1661.6	



BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115		115.00	6	0.9970	114.66	6	CHO115		115.00	6	0.9901	113.86		
18	CAC115		115.00	6	0.9968	114.63	21	C.BAN115		115.00	6	0.9895	113.79		
23	CH115		115.00	6	0.9996	114.96	26	LOC115		115.00	6	0.9899	113.83		
30	MAR115		115.00	6	0.9874	113.55	33	STM115		115.00	6	0.9949	114.42		
37	SAN115		115.00	6	0.9898	113.83	48	TINAJ115		115.00	6	0.9943	114.34		
50	M.O115		115.00	6	0.9944	114.36									

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:22
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-VERANO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	66	BLM13B		13.800	V2	38.0	16.1	25.0	0.0	1.0100	40.9	0.9207	47.0			62
6	67	BLM13C		13.800	V3	38.0	16.1	25.0	0.0	1.0100	40.9	0.9207	47.0			62
6	68	BLM13D		13.800	V4	38.0	16.8	25.0	0.0	1.0100	41.1	0.9147	47.0			62
6	90	EST-13L		13.800	E1	21.6	7.8	12.0	-5.0	1.0200	22.5	0.9410	27.0			64
6	91	EST-13T		13.800	E2	21.6	7.8	12.0	-5.0	1.0200	22.5	0.9410	27.0			64
6	94	LV-13.8L		13.800	L1	24.3	8.7	12.0	-5.0	1.0200	25.3	0.9412	27.0			64
6	95	LV-13.8T		13.800	L2	24.3	8.7	12.0	-5.0	1.0200	25.3	0.9412	27.0			64
6	97	FOR13A		13.800	F1	56.4	-4.8	50.0	-50.0	1.0150	55.7	0.9964	111.0			64
6	98	FOR13B		13.800	F2	56.4	-4.8	50.0	-50.0	1.0150	55.7	0.9964	111.0			64
6	101	BAY13A		13.800	B1	47.6	17.8	50.0	-25.0	1.0000	50.8	0.9368	96.0			61
6	102	BAY13B		13.800	B2	47.5	17.8	50.0	-25.0	1.0000	50.7	0.9366	96.0			61
6	108	BAY13C		13.800	B3	47.5	17.8	50.0	-25.0	1.0000	50.7	0.9366	96.0			61
6	116	PACORA13		13.800	P1	17.5	2.8	8.8	0.0	1.0150	17.4	0.9875	21.7			61
6	116	PACORA13		13.800	P2	17.5	2.8	8.8	0.0	1.0150	17.4	0.9875	21.7			61



6	116	PACORA13	13.800	P3	17.5	2.8	8.8	0.0	1.0150	17.4	0.9875	21.7	61
6	142	CANJ13A	13.800	C1	54.0	15.9	29.0	-29.0	1.0100	55.7	0.9595	69.0	64
6	143	CANJ13B	13.800	C2	54.0	15.9	29.0	-29.0	1.0100	55.7	0.9595	69.0	64
6	150	GUALACA 13-213.800	13.800	G2	12.6	-3.0	7.4	-7.4	1.0100	12.8	0.9731	14.8	64
6	152	BBLANCO_13.813.800	13.800	G1	14.0	0.7	7.0	-7.0	1.0100	13.9	0.9988	16.0	64
6	193	GEBONYIC	13.800	G1	8.0	-1.3	4.0	-4.0	1.0100	8.0	0.9861	35.3	64
6	193	GEBONYIC	13.800	G2	8.0	-1.3	4.0	-4.0	1.0100	8.0	0.9861	35.3	64
6	302	PASOANCH13.813.800	13.800	P1	4.7	2.0	2.0	-2.0	0.9781	5.3	0.9216	6.2	64
6	304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.1097	4.6	0.8981	5.7	64
6	304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.1097	4.6	0.8981	5.7	64
6	305	ELALTO	13.800	G1	17.0	-5.0	12.0	-5.0	1.0326	17.2	0.9594	20.6	64
6	305	ELALTO	13.800	G2	17.0	-5.0	12.0	-5.0	1.0326	17.2	0.9594	20.6	64
6	307	CHAN1 A	13.800	G1	65.0	-15.6	50.0	-50.0	1.0100	66.2	0.9724	118.6	64
6	312	PANDO13.8	13.800	G1	13.0	-2.9	10.0	-5.0	1.0000	13.3	0.9765	19.9	64
6	312	PANDO13.8	13.800	G2	13.0	-2.9	10.0	-5.0	1.0000	13.3	0.9765	19.9	64
6	316	MTE LIRIO13.13.800	13.800	G1	18.8	-5.0	12.0	-5.0	1.0212	19.0	0.9663	27.0	64
6	316	MTE LIRIO13.13.800	13.800	G2	18.8	-5.0	12.0	-5.0	1.0212	19.0	0.9663	27.0	64
6	317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.1117	8.5	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.1117	8.5	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.1122	4.9	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.1122	4.9	1.0000	35.3	64
6	340	PEDGALITO13813.800	13.800	P1	19.2	5.6	12.0	-5.0	1.0000	20.0	0.9604	27.0	64
6	342	LORENA13.8	13.800	L1	15.2	-5.0	10.5	-5.0	1.0117	15.8	0.9500	19.9	64



6	343	PRUDENCIA_1	13.800	G1	23.8	-4.6	9.8	-9.8	1.0100	24.0	0.9821	33.0	64	
6	343	PRUDENCIA_1	13.800	G2	23.8	-4.6	9.8	-9.8	1.0100	24.0	0.9821	33.0	64	
6	346	LORENA 13-2	13.800	L2	15.2	-5.0	10.5	-5.0	1.0117	15.8	0.9500	19.9	64	
6	350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0893	3.0	0.9514	6.2	64
6	351	PERLAS N13.813.800	13.800	G1	9.5	5.0	5.0	-5.0	0.9921	10.8	0.8849	13.5	64	
6	352	PERLAS S13.813.800	13.800	G1	9.5	5.0	5.0	-5.0	0.9921	10.8	0.8849	13.5	64	
6	357	BARTOLO13.8	13.800	G1	6.1	0.9	3.7	-3.7	1.0000	6.2	0.9897	8.5	64	
6	357	BARTOLO13.8	13.800	G2	6.1	0.9	3.7	-3.7	1.0000	6.2	0.9897	8.5	64	
6	359	CRUCES13.8	13.800	G1	3.9	0.2	2.3	-2.3	1.0000	3.9	0.9982	5.6	64	
6	359	CRUCES13.8	13.800	G2	3.9	0.2	2.3	-2.3	1.0000	3.9	0.9982	5.6	64	
6	361	ESTRECHO4.164.1600	13.800	G1	4.2	0.1	2.5	-2.5	1.0000	4.2	0.9996	5.6	64	
6	361	ESTRECHO4.164.1600	13.800	G2	4.2	0.1	2.5	-2.5	1.0000	4.2	0.9996	5.6	64	
6	363	LAGUNA 13.8	13.800	G1	3.9	-0.1	2.4	-2.4	1.0000	3.9	0.9999	5.8	64	
6	363	LAGUNA 13.8	13.800	G2	3.9	-0.1	2.4	-2.4	1.0000	3.9	0.9999	5.8	64	
6	364	MENDRE2	13.800	G1	6.4	1.7	3.9	-3.9	1.0100	6.6	0.9658	8.9	64	
6	368	RP-490	13.800	G1	4.5	-2.3	2.4	-2.4	1.0100	5.0	0.8944	5.5	64	
6	368	RP-490	13.800	G2	4.5	-2.3	2.4	-2.4	1.0100	5.0	0.8944	5.5	64	
6	369	HCALDERA13.813.800	13.800	G1	3.8	1.7	1.9	-1.9	1.0100	4.1	0.9120	4.3	64	
6	372	BJO FRIO 13	13.800	G1	25.0	-9.8	9.8	-9.8	1.0135	26.5	0.9315	33.0	64	
6	373	TIZINGAL13.813.800	13.800	G1	4.4	2.2	2.2	-2.2	0.9904	5.0	0.8909	21.6	64	
6	374	SLORENZO13.813.800	13.800	G1	3.9	-1.5	2.0	-2.0	1.0100	4.1	0.9318	4.5	64	
6	374	SLORENZO13.813.800	13.800	G2	3.9	-1.5	2.0	-2.0	1.0100	4.1	0.9318	4.5	64	
6	523	TCATIVÁ 13A	13.800	G1	8.3	3.0	6.6	-6.6	1.0000	8.8	0.9386	10.9	62	



6	523	TCATIVÁ 13A	13.800	G2	8.3	3.0	6.6	-6.6	1.0000	8.8	0.9386	10.9	62
6	523	TCATIVÁ 13A	13.800	G3	8.3	3.0	6.6	-6.6	1.0000	8.8	0.9386	10.9	62
6	523	TCATIVÁ 13A	13.800	G4	8.3	3.0	6.6	-6.6	1.0000	8.8	0.9386	10.9	62
6	523	TCATIVÁ 13A	13.800	G5	8.3	3.0	6.6	-6.6	1.0000	8.8	0.9386	10.9	62
6	524	TCATIVÁ 13B	13.800	G0	8.3	3.0	6.6	-6.6	1.0000	8.8	0.9386	10.9	62
6	524	TCATIVÁ 13B	13.800	G6	8.3	3.0	6.6	-6.6	1.0000	8.8	0.9386	10.9	62
6	524	TCATIVÁ 13B	13.800	G7	8.3	3.0	6.6	-6.6	1.0000	8.8	0.9386	10.9	62
6	524	TCATIVÁ 13B	13.800	G8	8.3	3.0	6.6	-6.6	1.0000	8.8	0.9386	10.9	62
6	524	TCATIVÁ 13B	13.800	G9	8.3	3.0	6.6	-6.6	1.0000	8.8	0.9386	10.9	62
6	541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0157	29.5	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	23.8	1.3	13.0	-13.0	1.0100	23.6	0.9985	30.5	64
6	704	BJOMIN13B	13.800	G2	23.8	1.3	13.0	-13.0	1.0100	23.6	0.9985	30.5	64
6	705	BAITUN13A	13.800	G1	32.0	-8.2	26.6	-26.6	1.0100	32.7	0.9686	50.6	64
6	706	BAITUN13B	13.800	G2	32.0	-8.2	26.6	-26.6	1.0100	32.7	0.9686	50.6	64
6	720	PLANETA13.8	13.800	G1	3.8	2.0	2.0	-2.0	0.9781	4.4	0.8849	6.2	64
	SUBSYSTEM TOTALS				1310.2	121.7	863.3	-602.8				2147.7	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:22
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-VERANO

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
129		MIR13D		13.800	G4	22.8	1.4	15.0	0.0	1.0000	22.8	0.9981	44.1			65
7 AREA																
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0124	16.9	1.0000	27.7			65

7



7	140	GAT6A	6.9000	G1	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9312	4.1	65
7	140	GAT6A	6.9000	G2	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9312	4.1	65
7	140	GAT6A	6.9000	G3	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9312	4.1	65
7	141	GAT6B	6.9000	G4	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9318	5.6	65
7	141	GAT6B	6.9000	G5	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9318	6.2	65
7	141	GAT6B	6.9000	G6	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9318	6.2	65
7	170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0269	17.8	0.9281	23.0	65
7	171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0359	17.7	0.9281	23.0	65
7	171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0359	17.7	0.9281	23.0	65
7	SUBSYSTEM TOTALS				108.3	15.1	71.5	5.5				171.3	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:22
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2014 ESC-MOD DEMANDA-MAX-VERANO IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1405.0	1330.8	0.0	0.0	0.0	28.6	45.6	27.3
GUATEMAL	212.3	275.1	-198.8	0.0	277.3	-5.6	418.8	
2	868.7	855.0	0.0	0.0	0.0	-0.1	13.8	0.0
SALVADOR	75.3	224.2	-70.7	0.0	229.0	-25.3	176.1	
3	1236.9	1203.0	0.0	0.0	0.0	-0.2	34.0	0.0
HONDURAS	463.5	321.1	-47.3	0.0	293.7	54.6	428.8	
4	532.1	525.2	0.0	0.0	0.0	-0.3	7.1	0.0
NICARAGU	35.3	207.6	-57.7	0.0	182.1	-47.3	114.7	
5	1296.7	1280.2	0.0	0.0	0.0	-0.7	17.2	0.0
COSTA RI	206.0	520.4	-230.9	0.0	419.8	26.3	310.0	
6	1310.2	1322.5	0.0	0.0	0.0	-87.5	75.3	-87.3
PANAMA	121.7	268.5	-300.4	0.0	544.2	3.1	694.7	



7	108.3	47.4	0.0	0.0	0.0	60.2	0.7	60.0
ACANAL	15.1	9.6	0.0	0.0	0.0	-5.9	11.3	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6757.9	6564.1	0.0	0.0	0.0	0.0	193.8	0.0
	1129.2	1826.4	-905.8	0.0	1946.0	0.0	2154.5	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:28
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MIN-VERANO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0003	230.08	11		M.N230		230.00	6	1.0099	232.28
14		PRO230		230.00	6	1.0264	236.07	85		PTP230		230.00	6	1.0132	233.04
96		FOR230		230.00	6	1.0099	232.28	100		BAY230		230.00	6	1.0175	234.02
103		COPESA23		230.00	6	1.0034	230.78	115		PACORA23		230.00	6	1.0052	231.18
144		CANJ230		230.00	6	1.0098	232.24	146		GUALACA230		230.00	6	1.0118	232.71
147		GUASQ230		230.00	6	1.0097	232.24	148		VELADERO 230230.00		230.00	6	1.0058	231.33
149		BBLANCO		230.00	6	1.0047	231.07	190		CHANG230		230.00	6	1.0157	233.60
306		CHAN1 230		230.00	6	1.0127	232.91	310		CONCEPCION23230.00		230.00	6	1.0200	234.60
311		PANDO230		230.00	6	1.0498	241.44	341		PRUDENCIA230230.00		230.00	6	1.0150	233.46
345		LORENA230		230.00	6	1.0139	233.20	354		SANBARTOLO23230.00		230.00	6	1.0027	230.62
371		CAISAN230		230.00	6	1.0481	241.06	540		ANTON		230.00	6	1.0138	233.17
700		BAITUN230		230.00	6	1.0253	235.83	6000		FRONTER		230.00	6	1.0298	236.86
6400		FRONTCHA		230.00	6	1.0176	234.06	6500		FRONT CAISAN230.00		230.00	6	1.0465	240.71

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9963	229.16	5		CHO230		230.00	6	0.9952	228.89
8		LSA230		230.00	6	0.9943	228.69	105		PAN-AM23		230.00	6	0.9952	228.89
370		LSA CAP 230		230.00	6	0.9943	228.69	511		LGUIAS230		230.00	6	0.9947	228.79

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:28
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MIN-VERANO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0059	115.68	9		LSA115		115.00	6	1.0404	119.65
12		M.N115		115.00	6	1.0117	116.35	15		PRO115		115.00	6	1.0283	118.25
20		CH.AZUL		115.00	6	1.0290	118.34	52		TOC115		115.00	6	1.0036	115.41
54		LM1115		115.00	6	1.0150	116.72	55		LM2115		115.00	6	1.0160	116.84
61		FFIELD		115.00	6	1.0127	116.46	87		CAL115		115.00	6	1.0185	117.13
88		EST115		115.00	6	1.0197	117.27	92		L.V115		115.00	6	1.0190	117.18
109		STA RITA115		115.00	6	1.0122	116.40	123		MIR115		115.00	7	1.0012	115.13
154		CEMPAN15		115.00	6	1.0090	116.03	191		CHANG115		115.00	6	1.0078	115.90
522		TCATIVÁ 115		115.00	6	1.0156	116.79	529		TCOLON 115		115.00	6	1.0122	116.41
701		BAITUN115		115.00	6	1.0121	116.40	702		BJOMIN115		115.00	6	1.0123	116.41

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)
2	PAN115	115.00	6	0.9945	114.37	6	CHO115	115.00	6	0.9960	114.54
18	CAC115	115.00	6	0.9944	114.36	19	C.V115	115.00	6	0.9958	114.52
21	C.BAN115	115.00	6	0.9877	113.58	23	CH115	115.00	6	0.9962	114.57
26	LOC115	115.00	6	0.9883	113.66	30	MAR115	115.00	6	0.9871	113.51
33	STM115	115.00	6	0.9930	114.20	37	SAN115	115.00	6	0.9873	113.54
48	TINAJ115	115.00	6	0.9926	114.15	50	M.O115	115.00	6	0.9927	114.16

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:28
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MIN-VERANO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING														
6	66	BLM13B	13.800	V2	38.0	16.2	25.0	0.0	1.0000	41.3	0.9196	47.0		62
6	67	BLM13C	13.800	V3	38.0	16.2	25.0	0.0	1.0000	41.3	0.9196	47.0		62
6	68	BLM13D	13.800	V4	38.0	16.9	25.0	0.0	1.0000	41.6	0.9137	47.0		62
6	90	EST-13L	13.800	E1	18.0	3.3	12.0	-5.0	0.9800	18.7	0.9834	27.0		64
6	94	LV-13.8L	13.800	L1	20.3	3.7	12.0	-5.0	0.9800	21.0	0.9838	27.0		64
6	97	FOR13A	13.800	F1	86.0	-22.5	50.0	-50.0	0.9800	90.7	0.9674	111.0		64
6	101	BAY13A	13.800	B1	42.1	17.4	50.0	-25.0	0.9900	46.0	0.9239	96.0		61
6	102	BAY13B	13.800	B2	42.1	17.4	50.0	-25.0	0.9900	46.0	0.9239	96.0		61
6	142	CANJ13A	13.800	C1	45.0	9.6	29.0	-29.0	0.9800	47.0	0.9778	69.0		64
6	150	GUALACA	13-213.800	G2	13.0	-7.4	7.4	-7.4	0.9801	15.3	0.8682	14.8		64
6	152	BBLANCO_13.8	13.800	G1	10.8	-0.4	7.0	-7.0	1.0000	10.8	0.9993	16.0		64
6	193	GEBONYIC	13.800	G1	9.5	-2.4	4.0	-4.0	1.0000	9.8	0.9703	35.3		64
6	302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9505	5.4	0.9216	6.2		64
6	304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0897	4.7	0.8981	5.7		64
6	305	ELALTO	13.800	G1	19.0	-5.0	12.0	-5.0	1.0428	18.8	0.9671	20.6		64



6	307	CHAN1 A	13.800	G1	60.0	-28.9	50.0	-50.0	0.9800	68.0	0.9007	118.6	64
6	312	PANDO13.8	13.800	G1	12.0	-5.0	10.0	-5.0	1.0173	12.8	0.9231	19.9	64
6	316	MTE LIRIO13.13.800	13.800	G1	21.9	-5.0	12.0	-5.0	1.0375	21.7	0.9749	27.0	64
6	317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0909	8.6	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0910	5.0	1.0000	35.3	64
6	340	PEDGALITO13813.800	13.800	P1	19.2	3.2	12.0	-5.0	0.9800	19.9	0.9867	27.0	64
6	342	LORENA13.8	13.800	L1	15.2	-5.0	10.5	-5.0	0.9979	16.0	0.9500	19.9	64
6	343	PRUDENCIA_1	13.800	G1	23.8	-9.8	9.8	-9.8	0.9963	25.8	0.9252	33.0	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0727	3.0	0.9514	6.2	64
6	351	PERLAS N13.813.800	13.800	G1	9.5	5.0	5.0	-5.0	0.9771	11.0	0.8849	13.5	64
6	357	BARTOLO13.8	13.800	G1	6.1	0.4	3.7	-3.7	0.9900	6.2	0.9975	8.5	64
6	359	CRUCES13.8	13.800	G1	3.9	-0.3	2.3	-2.3	0.9900	3.9	0.9975	5.6	64
6	361	ESTRECHO4.164.1600	13.800	G1	4.2	-0.2	2.5	-2.5	0.9900	4.2	0.9993	5.6	64
6	363	LAGUNA 13.8	13.800	G1	3.9	-0.3	2.4	-2.4	0.9900	4.0	0.9967	5.8	64
6	363	LAGUNA 13.8	13.800	G2	3.9	-0.3	2.4	-2.4	0.9900	4.0	0.9967	5.8	64
6	364	MENDRE2	13.800	G1	6.4	0.6	3.9	-3.9	0.9900	6.5	0.9960	8.9	64
6	368	RP-490	13.800	G1	4.5	-2.4	2.4	-2.4	1.0079	5.1	0.8815	5.5	64
6	369	HCALDERA13.813.800	13.800	G1	3.8	0.6	1.9	-1.9	0.9900	3.9	0.9890	4.3	64
6	372	BJO FRIO 13	13.800	G1	25.0	-9.8	9.8	-9.8	1.0078	26.6	0.9315	33.0	64
6	373	TIZINGAL13.813.800	13.800	G1	4.4	2.2	2.2	-2.2	0.9754	5.1	0.8909	21.6	64
6	374	SLORENZO13.813.800	13.800	G1	3.9	-1.4	2.0	-2.0	0.9900	4.1	0.9395	4.5	64
6	523	TCATIVÁ 13A	13.800	G1	8.3	2.2	6.6	-6.6	0.9800	8.7	0.9669	10.9	62
6	523	TCATIVÁ 13A	13.800	G2	8.3	2.2	6.6	-6.6	0.9800	8.7	0.9669	10.9	62



6	523	TCATIVÁ 13A	13.800	G3	8.3	2.2	6.6	-6.6	0.9800	8.7	0.9669	10.9	62
6	523	TCATIVÁ 13A	13.800	G4	8.3	2.2	6.6	-6.6	0.9800	8.7	0.9669	10.9	62
6	541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0150	29.6	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	23.8	-1.3	13.0	-13.0	0.9900	24.1	0.9986	30.5	64
6	705	BAITUN13A	13.800	G1	32.0	-14.2	26.6	-26.6	0.9900	35.4	0.9136	50.6	64
6	720	PLANETA13.8	13.800	G1	3.8	2.0	2.0	-2.0	0.9505	4.5	0.8849	6.2	64
6	SUBSYSTEM TOTALS				801.3	0.8	526.4	-355.8				1330.6	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:28
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MIN-VERANO

AREA 7 [ACANAL] MACHINE SUMMARY:																	
	BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																	
7	129		MIR13D		13.800	G4	20.4	0.8	15.0	0.0	1.0000	20.4	0.9992	44.1			65
7	140		GAT6A		6.9000	G1	1.9	-2.0	2.0	-2.0	1.0096	2.8	0.6953	4.1			65
7	170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0291	17.8	0.9281	23.0			65
7	171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0382	17.6	0.9281	23.0			65
7	171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0382	17.6	0.9281	23.0			65
7	SUBSYSTEM TOTALS				73.3	19.3	50.5	18.5						117.3			



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 24 2010 16:28
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2014 ESC-MOD DEMANDA-MIN-VERANO IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1269.9	1330.8	0.0	0.0	0.0	-102.0	41.1	-102.0
GUATEMAL	209.6	275.1	-199.1	0.0	277.7	18.2	393.2	
2	870.2	855.0	0.0	0.0	0.0	0.0	15.2	0.0
SALVADOR	79.1	224.2	-70.7	0.0	228.7	-27.9	182.2	
3	1237.6	1203.0	0.0	0.0	0.0	0.0	34.6	0.0
HONDURAS	468.3	321.1	-47.2	0.0	293.4	52.9	434.9	
4	532.7	525.2	0.0	0.0	0.0	0.0	7.5	0.0
NICARAGU	38.4	207.6	-57.6	0.0	181.8	-48.4	118.6	
5	1297.4	1280.2	0.0	0.0	0.0	0.0	17.3	0.0
COSTA RI	199.0	520.4	-230.7	0.0	419.3	32.8	295.8	
6	801.3	727.4	0.0	0.0	0.0	55.3	18.6	55.0
PANAMA	0.8	264.0	95.5	0.0	539.1	-29.4	209.7	
7	73.3	26.1	0.0	0.0	0.0	46.7	0.5	47.0
ACANAL	19.3	9.5	0.0	0.0	0.0	1.9	7.9	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6082.5	5947.6	0.0	0.0	0.0	0.0	134.8	0.0
	1014.3	1821.7	-509.8	0.0	1939.9	0.0	1642.3	



Resultados de Estabilidad Transitoria

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1. Año 2011

- 1.1 Falla y Apertura del circuito Mata de Nance – Concepción
- 1.2 Falla y Apertura de un circuito Guasquitas - Veladero
- 1.3 Falla y Apertura de un circuito de Llano Sánchez – Panamá II

2. Año 2012

- 2.1 Falla y Apertura de un circuito Mata de Nance – Veladero
- 2.2 Falla y Apertura de un circuito de Llano Sánchez – Panamá II
- 2.3 Falla y Apertura de un circuito de Panamá – Panamá II

3. Año 2013

- 3.1 Falla y Apertura de un circuito de Panamá – Panamá II
- 3.2 Falla y Apertura de un circuito de Llano Sánchez – Panamá II
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4. Año 2014

- 4.1 Falla y Apertura del circuito Mata de Nance – Concepción
- 4.2 Falla y Apertura de un circuito de Llano Sánchez – Panamá II
- 4.3 Falla y Apertura de un circuito de Veladero – Llano Sánchez

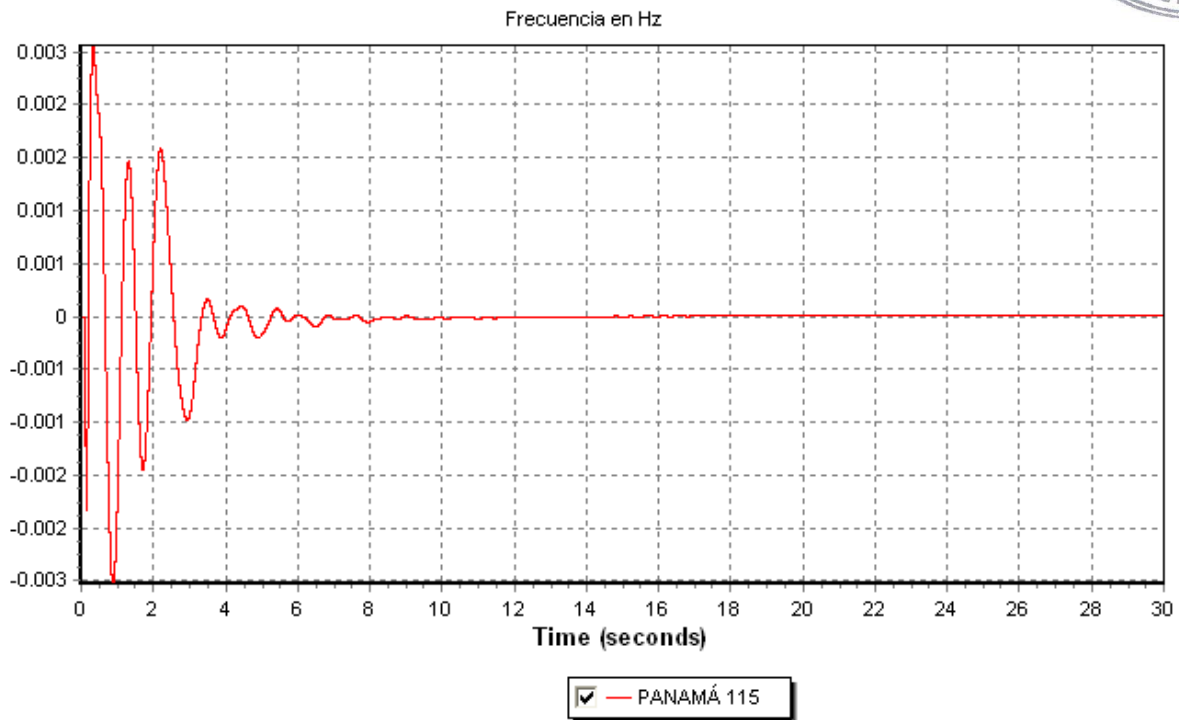


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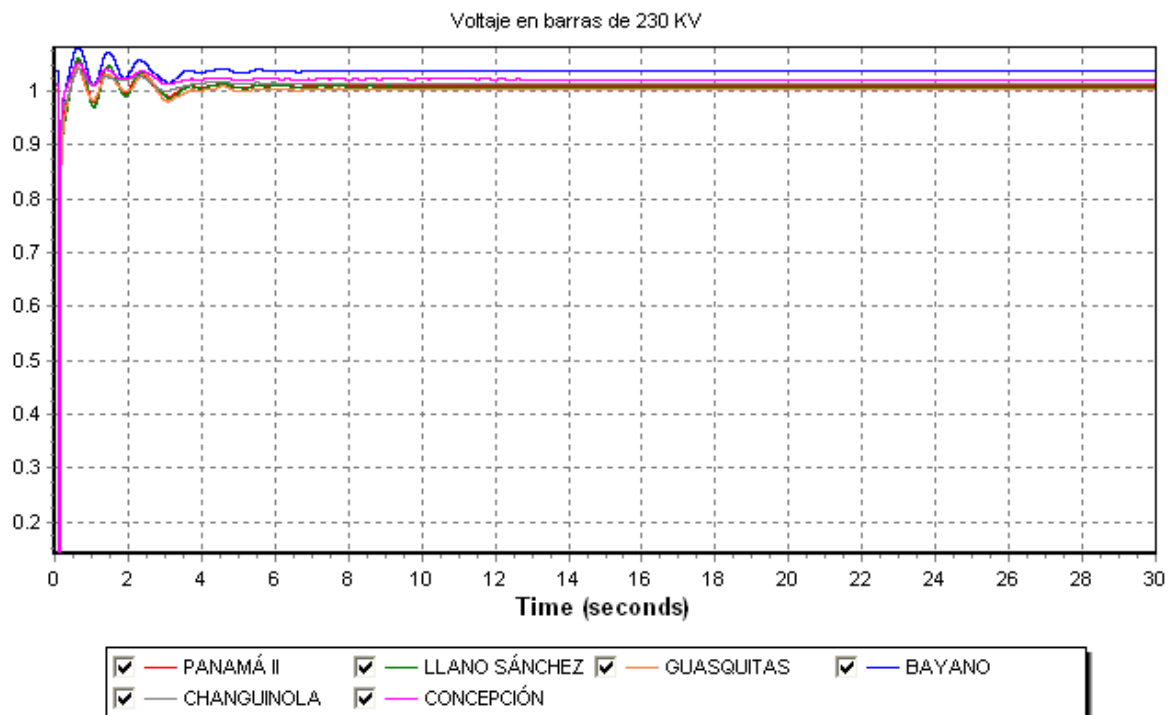
1. Año 2011

1.1 Falla y Apertura del circuito Mata de Nance – Concepción

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO**



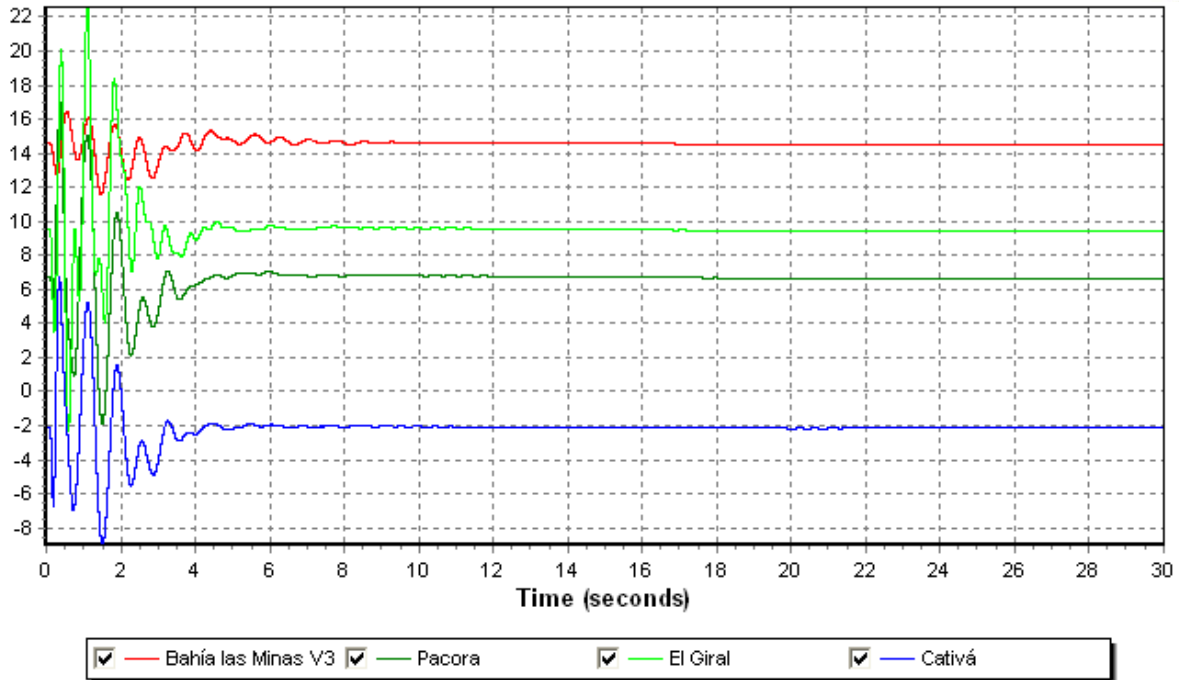
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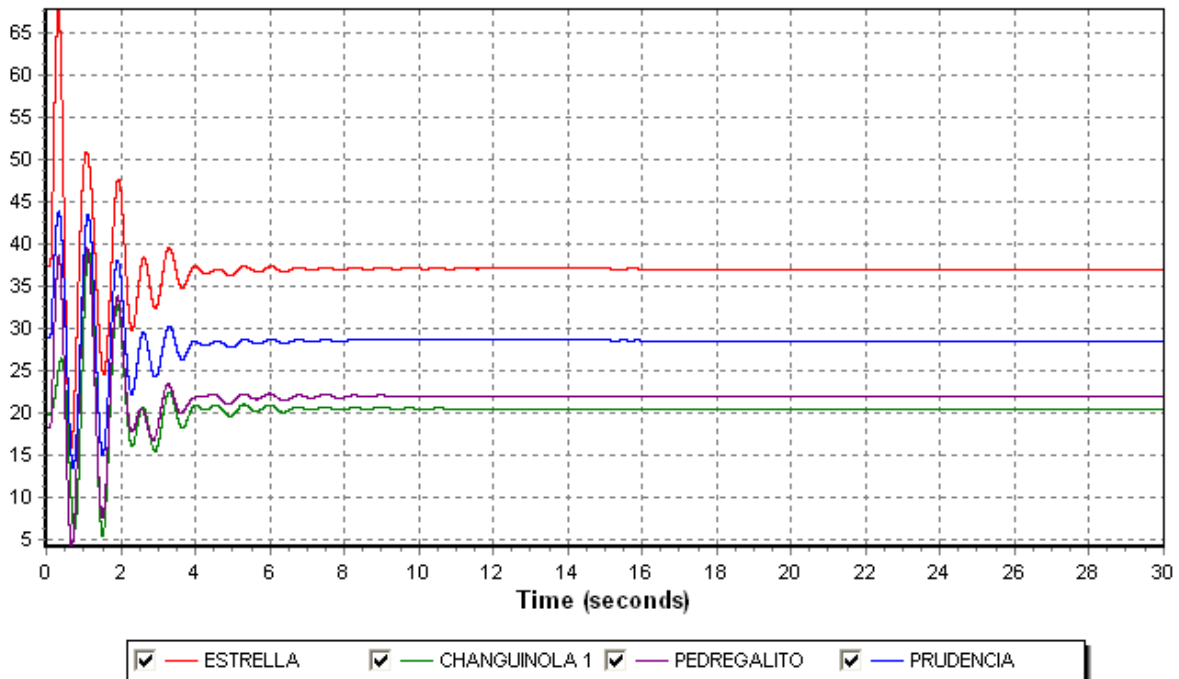
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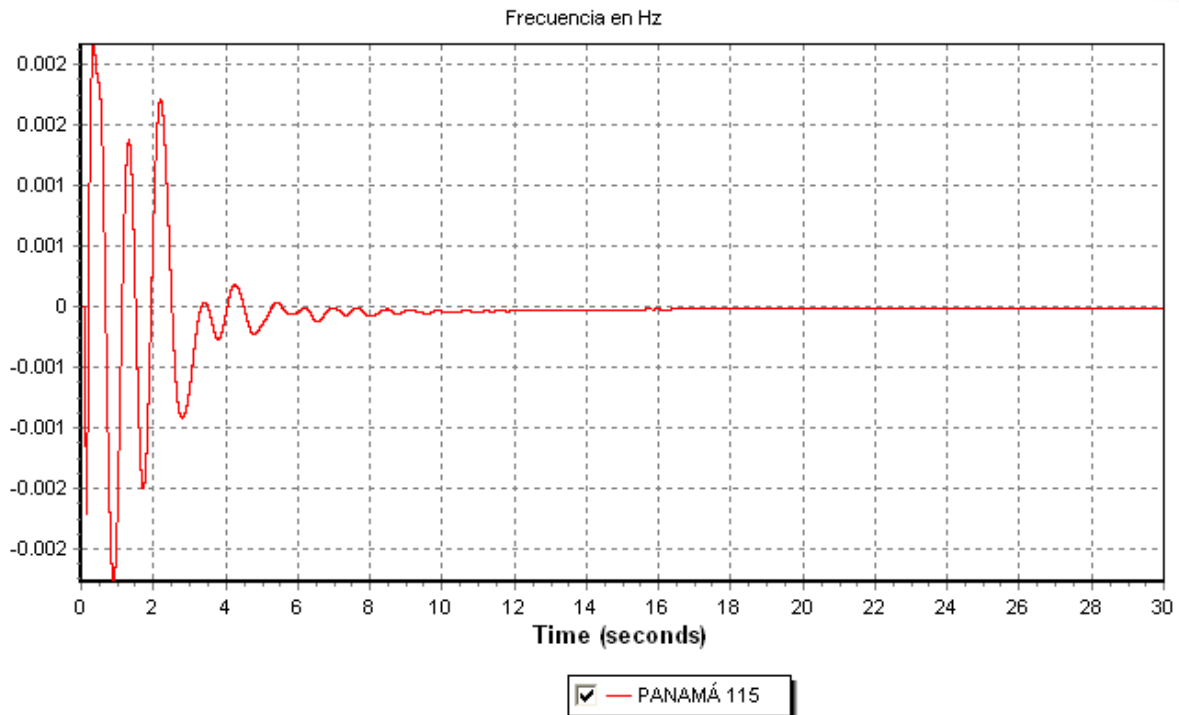
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Comportamiento hidráulico respecto a Bayano

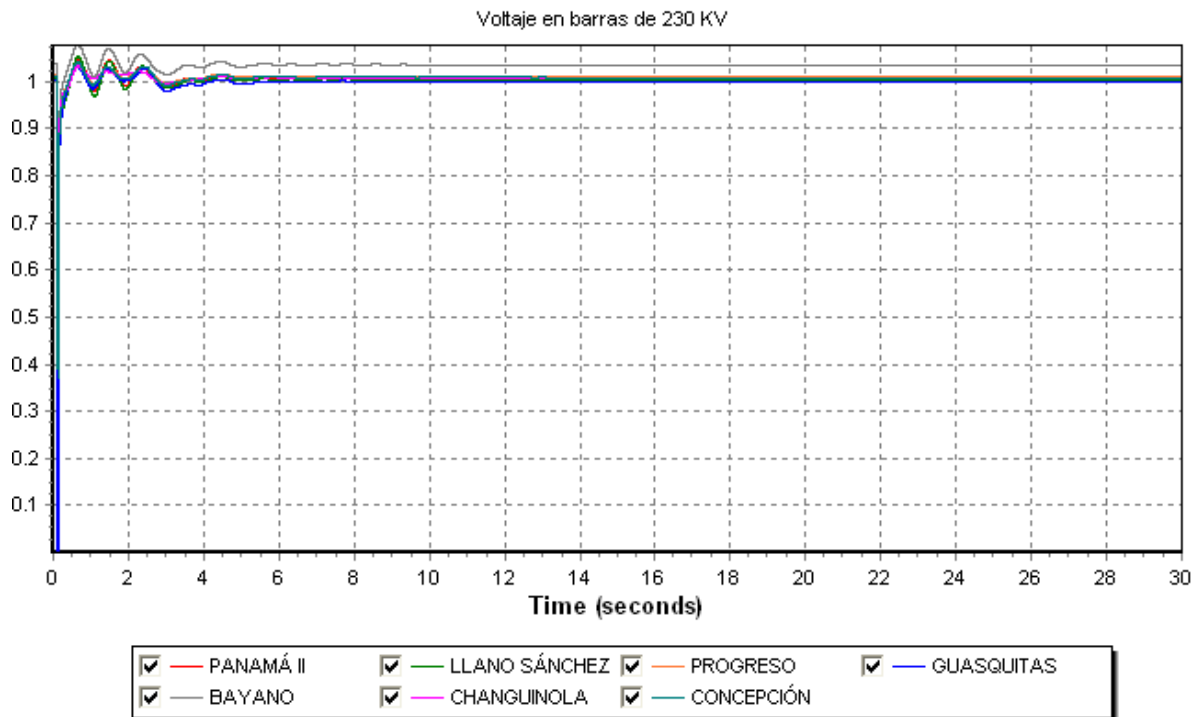


1.2 Falla y Apertura del circuito Guasquitas – Veladero

PLAN DE EXPANSION DEL SIN JUNIO-2010 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO

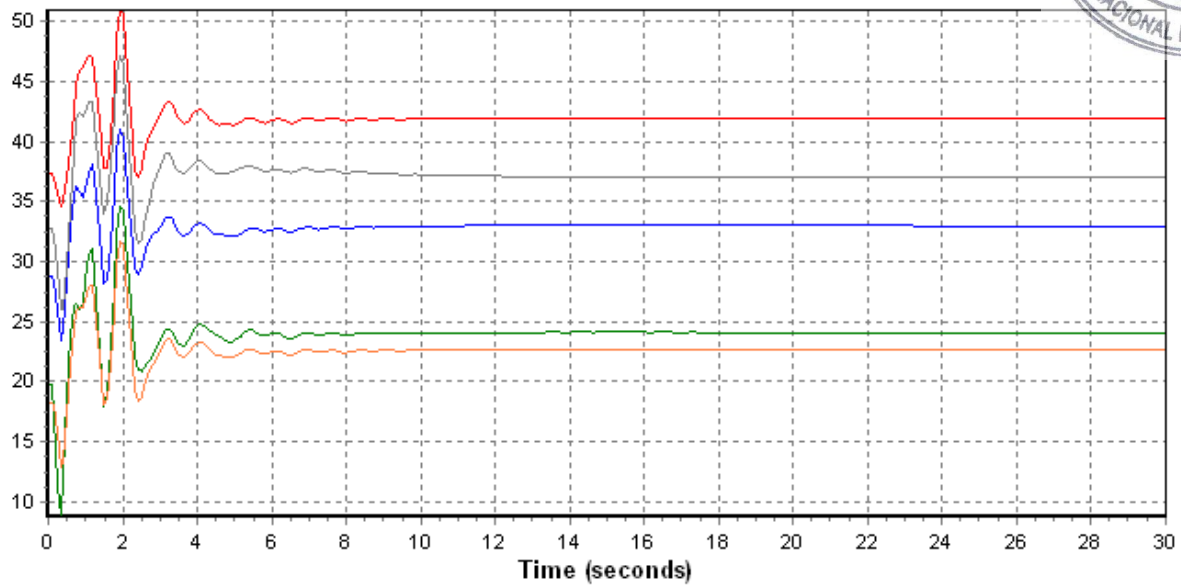


PLAN DE EXPANSION DEL SIN JUNIO-2010 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO



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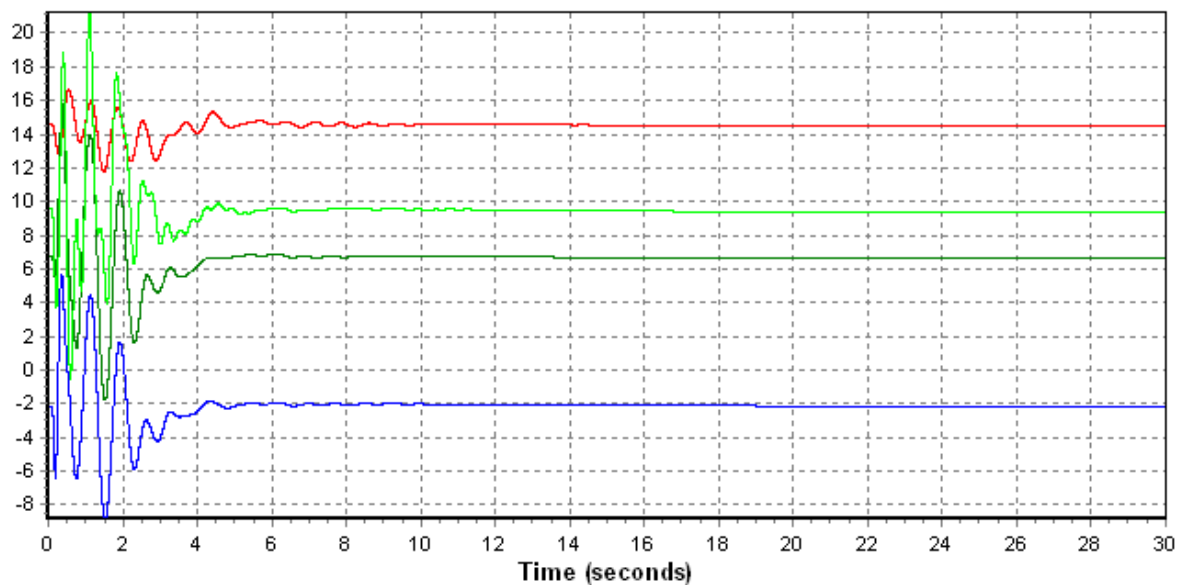
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**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO**

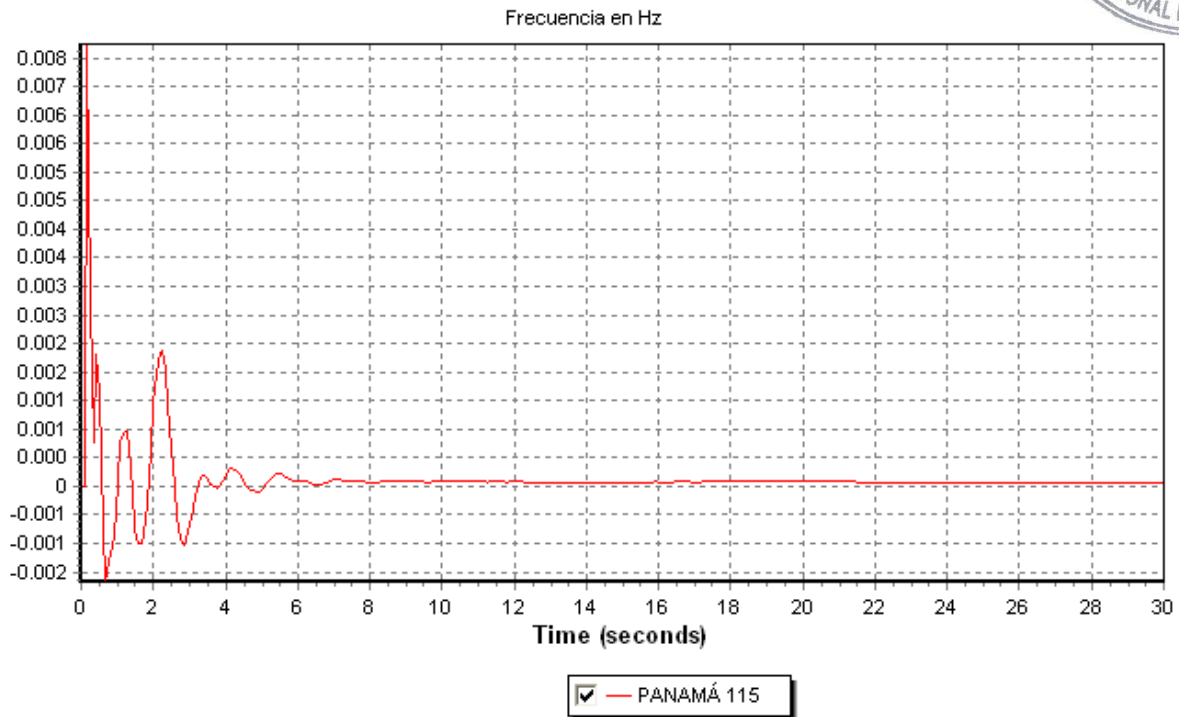
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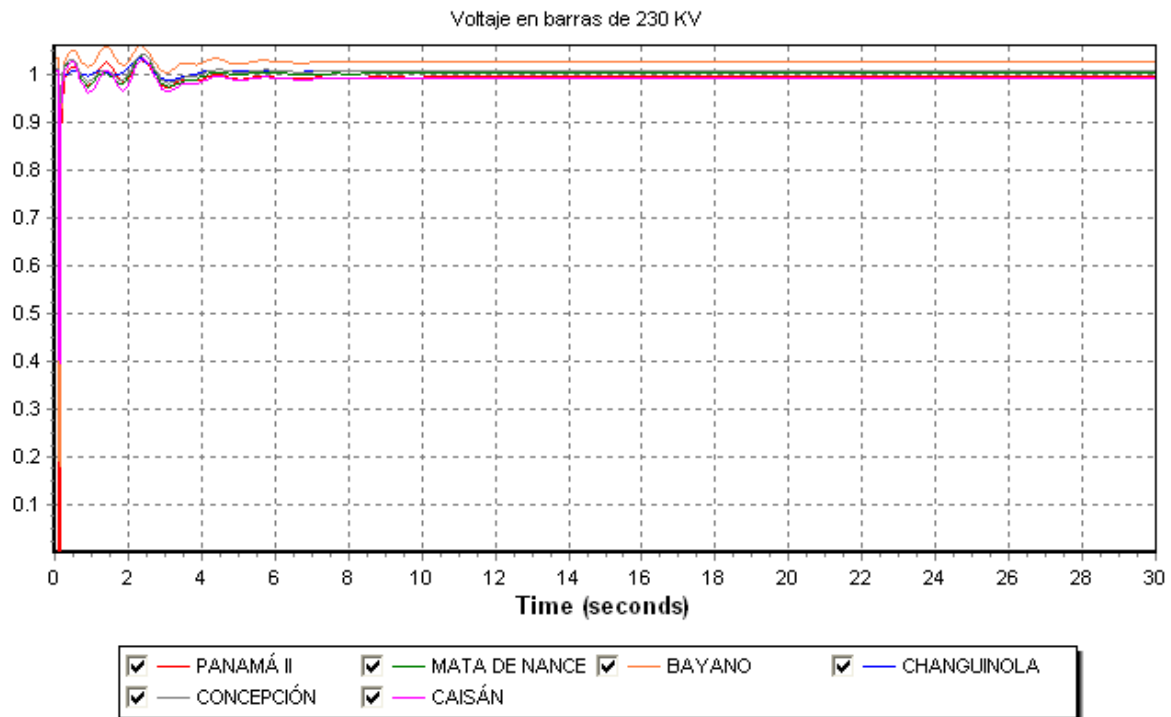
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1.3 Falla y Apertura de un circuito de Llano Sánchez – Panamá II

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO**



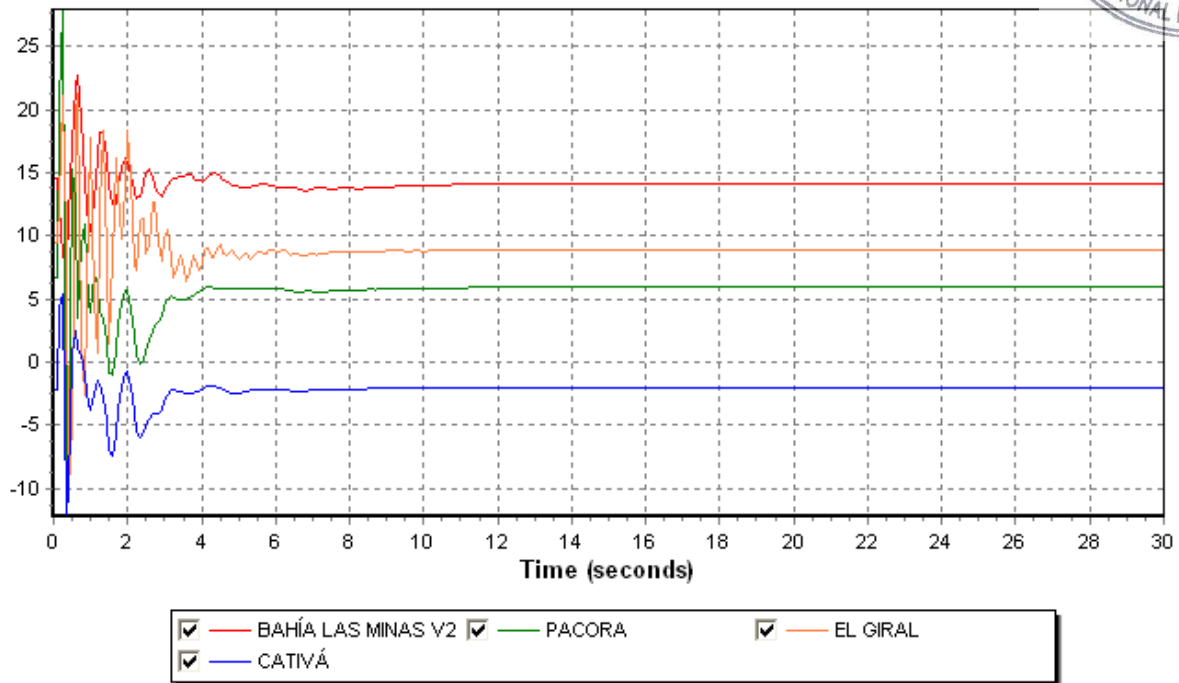
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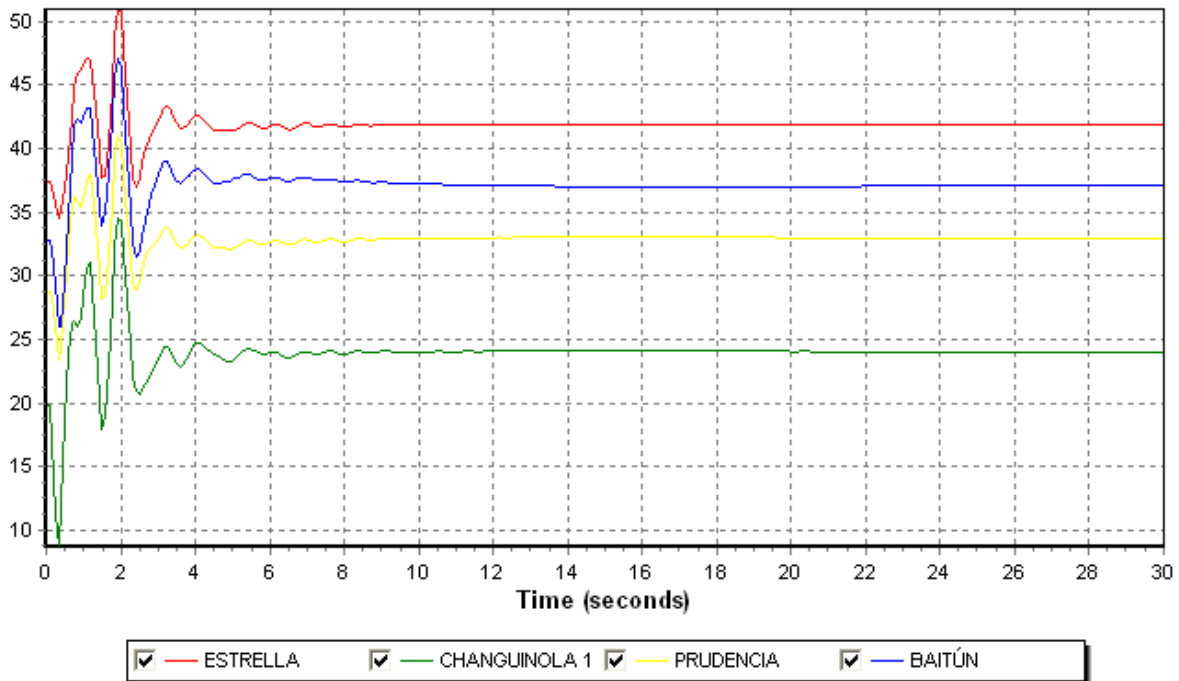
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AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO**

Comportamiento térmico respecto a Bayano



**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO**

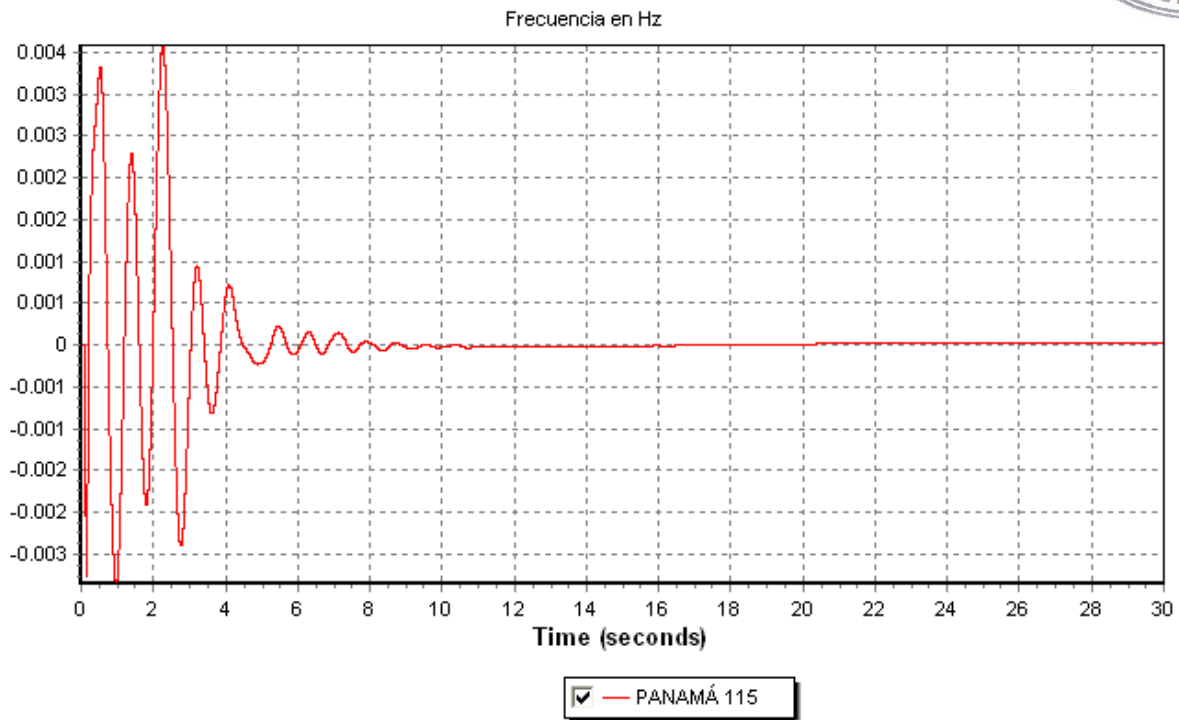
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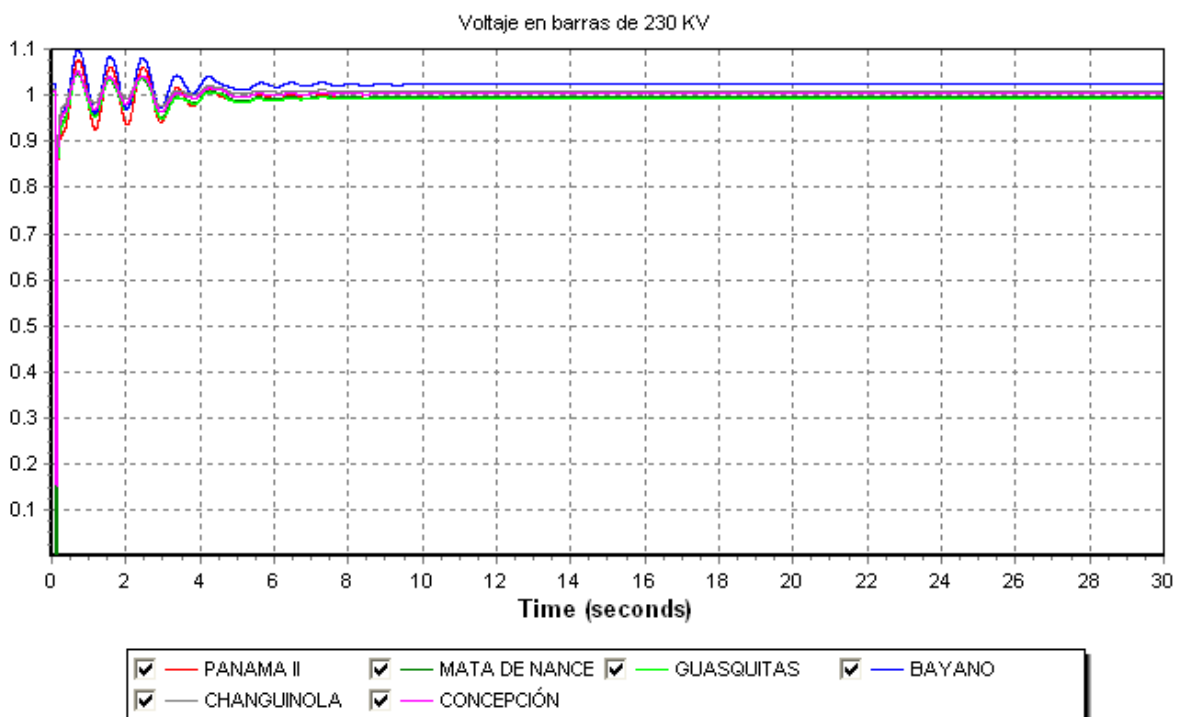
2. Año 2012

2.1 Falla y Apertura de un circuito Mata de Nance – Veladero

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO**



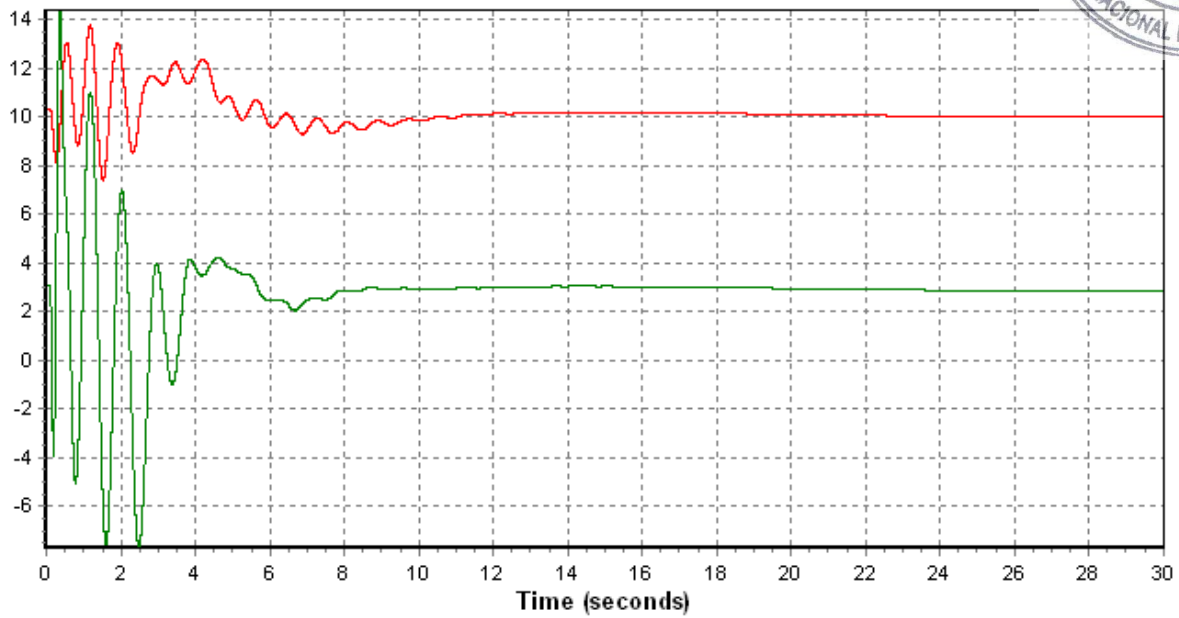
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AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO**





**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO**

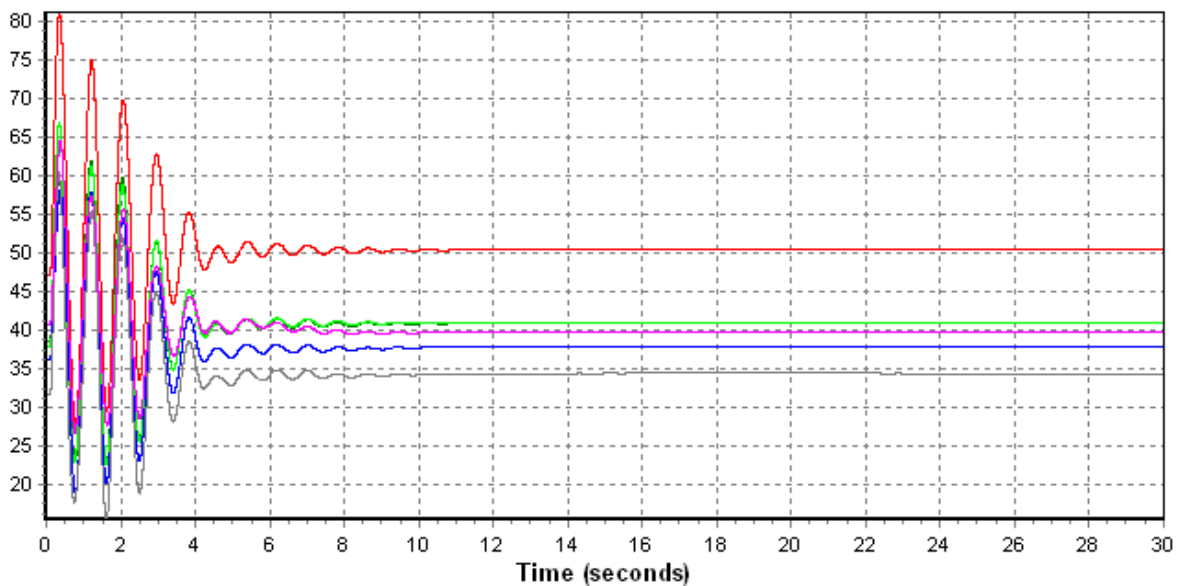
Comportamiento térmico respecto a Bayano



BAHÍA LAS MINAS V2 CATIVÁ

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO**

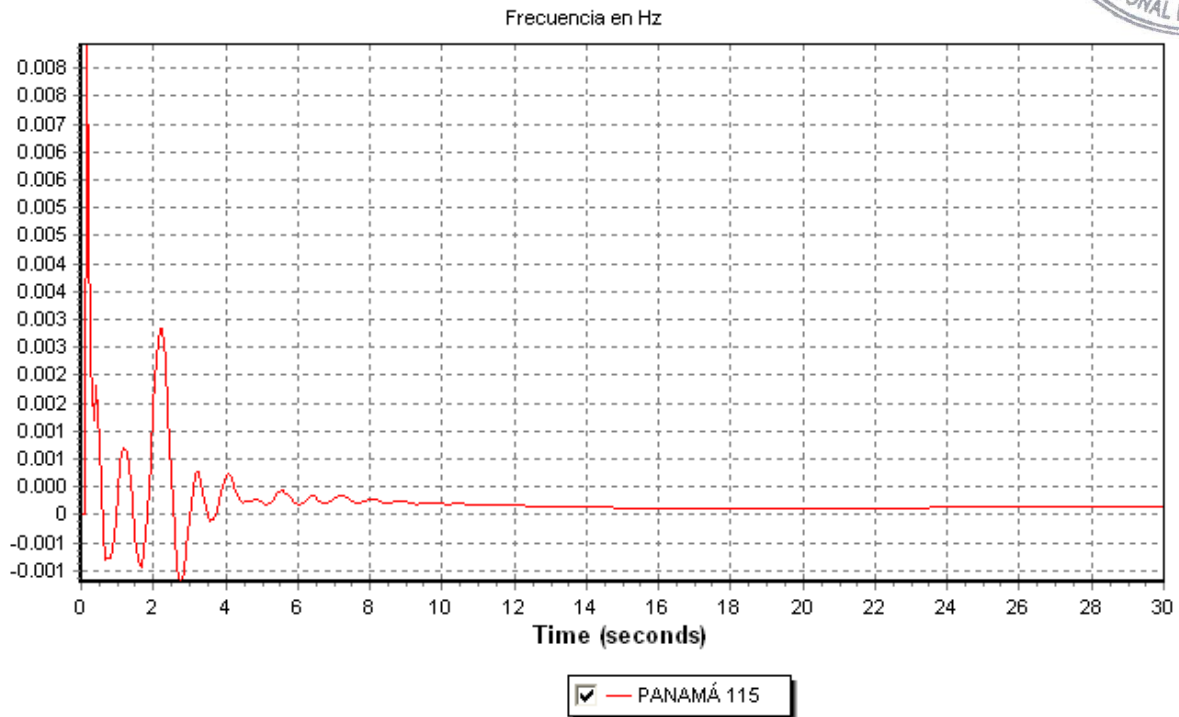
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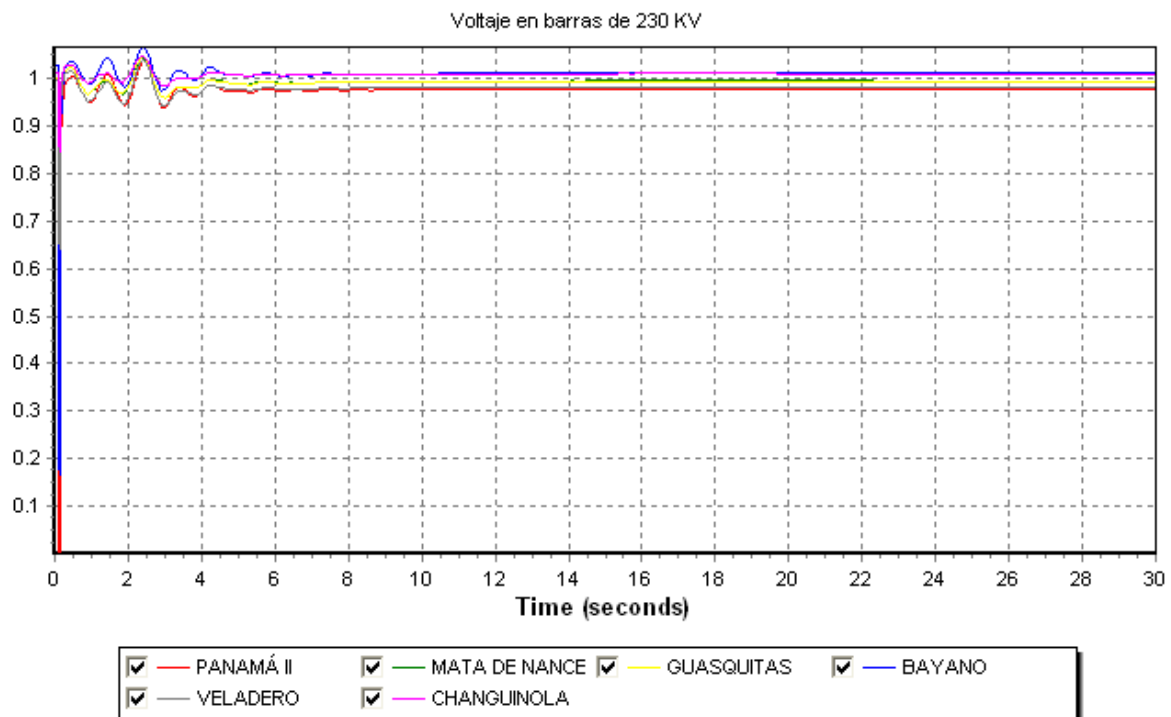
ESTRELLA CHANGUINOLA 1 PEDREGALITO PRUDENCIA
 PERLAS NORTE SAN BARTOLO

2.2 Falla y Apertura de un circuito Llano Sánchez – Panamá II

PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO

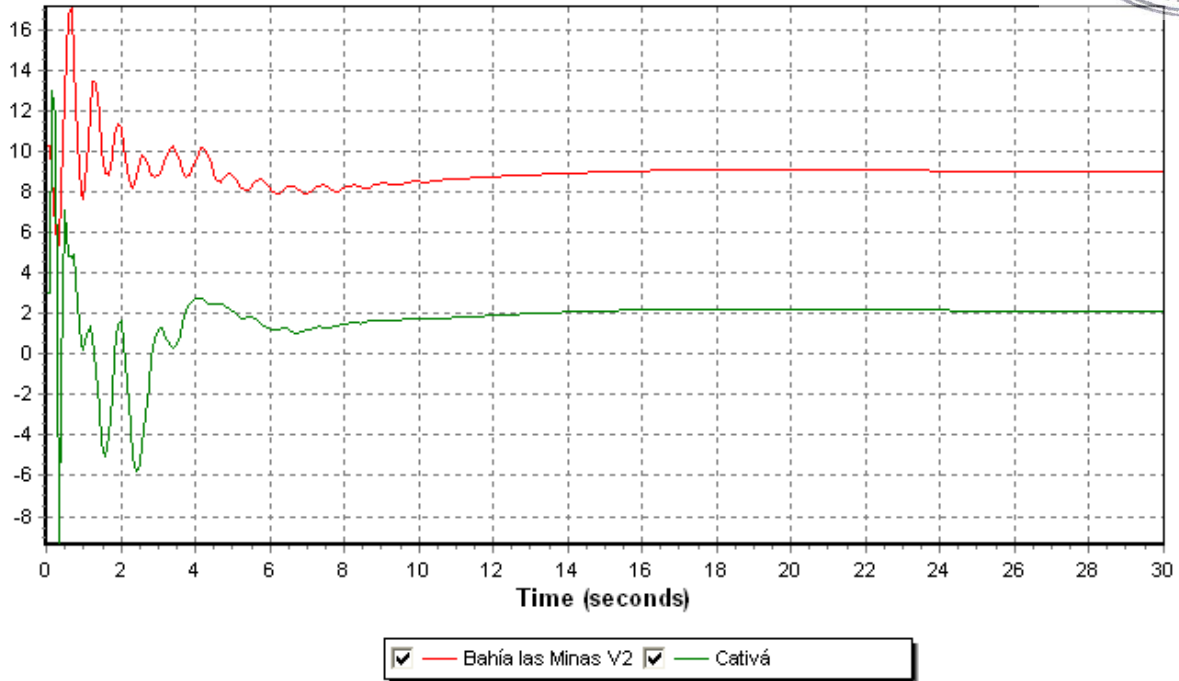


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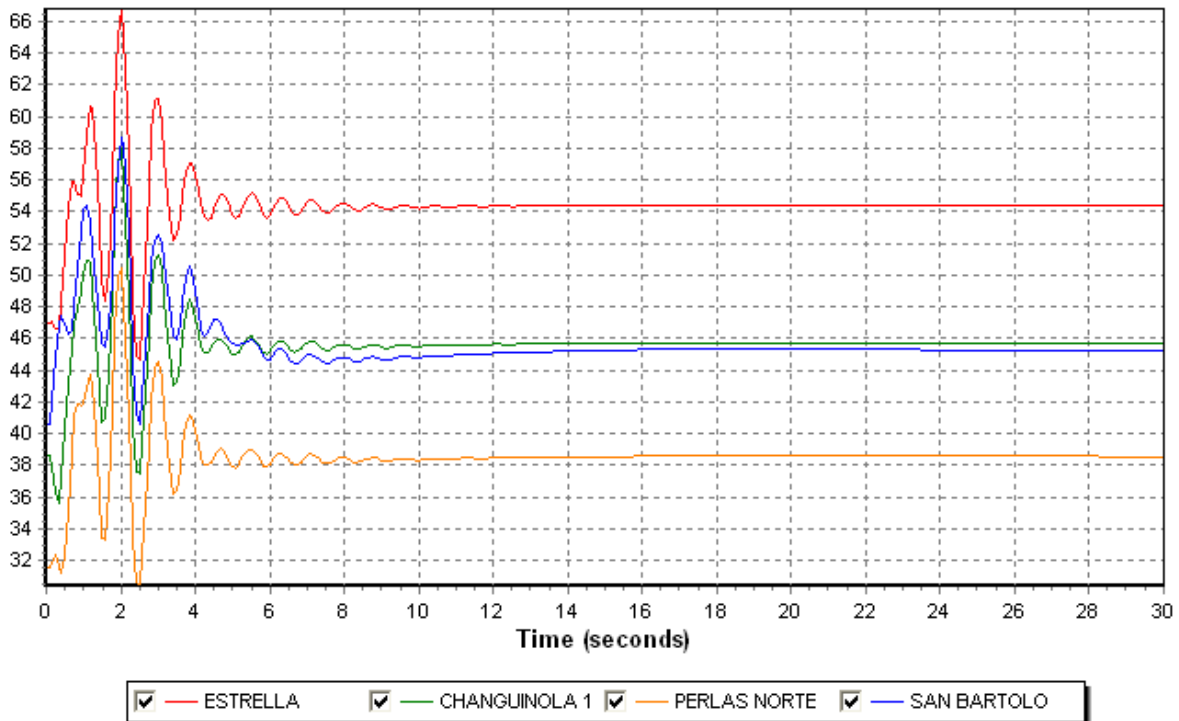


**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO**

Comportamiento térmico con respecto a Bayano

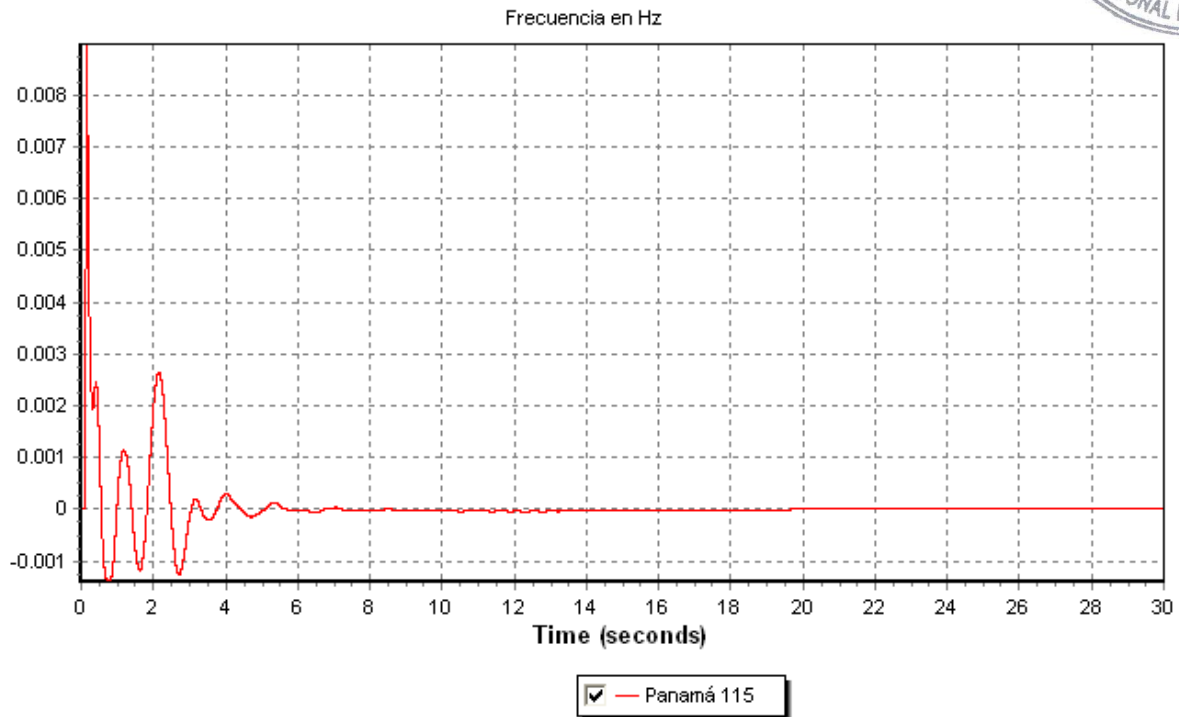


**PLAN DE EXPANSION DEL SIN JUNIO-2010
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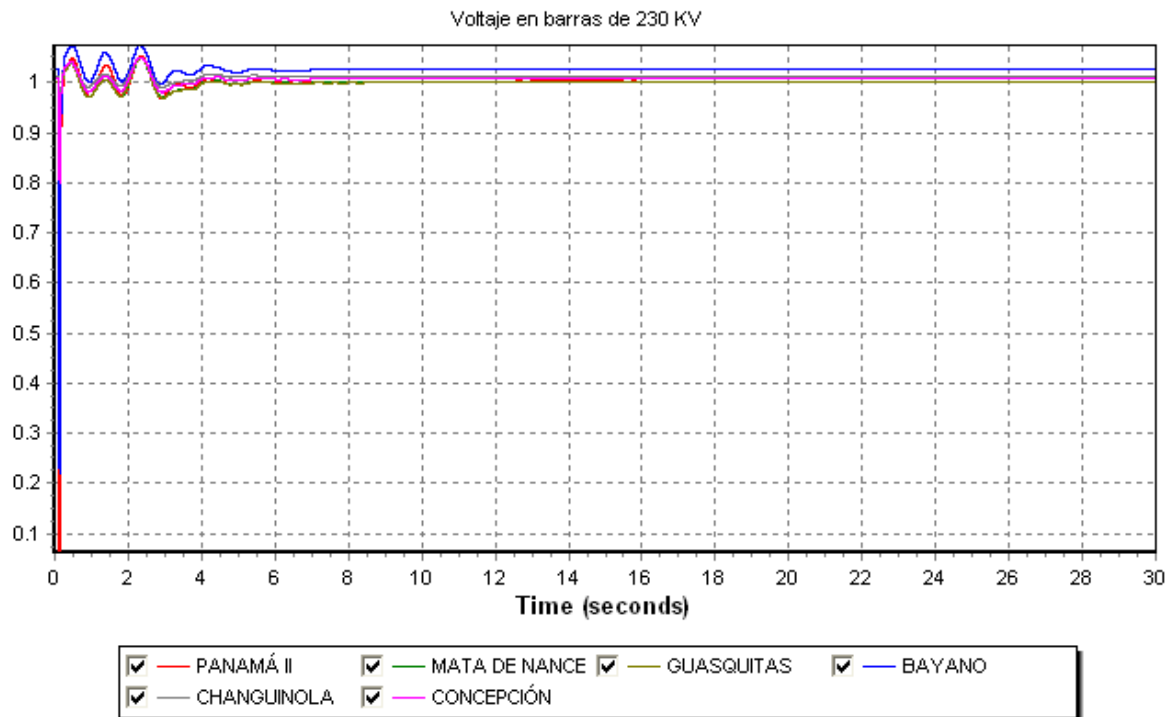


2.3 Falla y Apertura de un circuito Panamá – Panamá II

**PLAN DE EXPANSION DEL SIN JUNIO-2010
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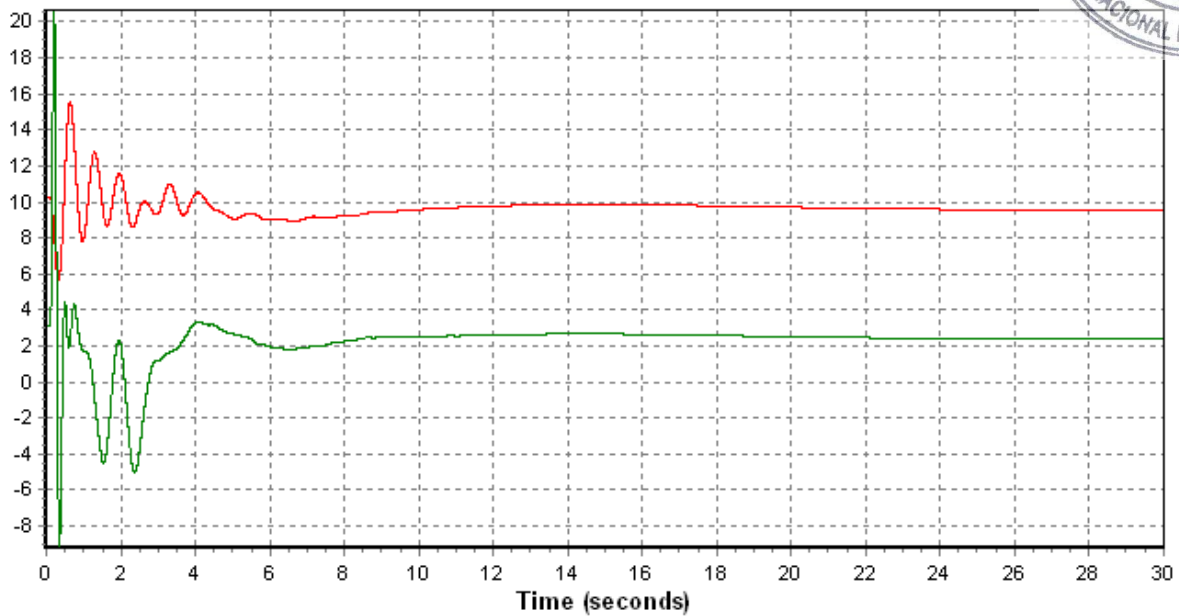


**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO**



**PLAN DE EXPANSION DEL SIN JUNIO-2010
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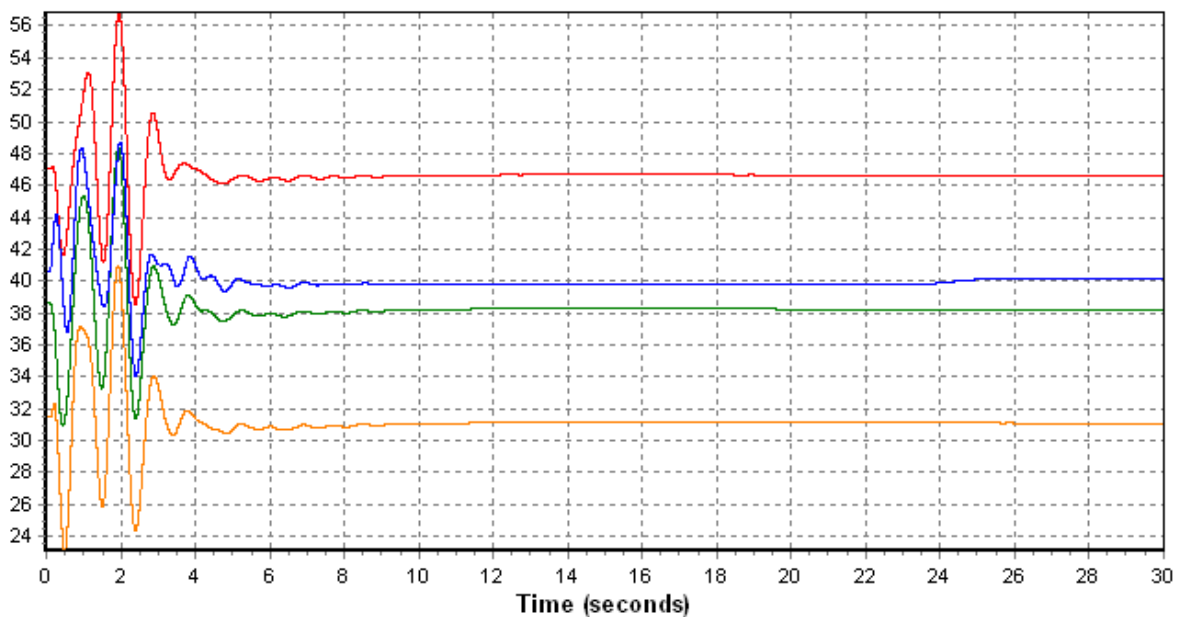
Comportamiento térmico respecto a Bayano



Bahía las Minas V2 Cativá

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO**

Comportamiento hidráulico respecto a Bayano

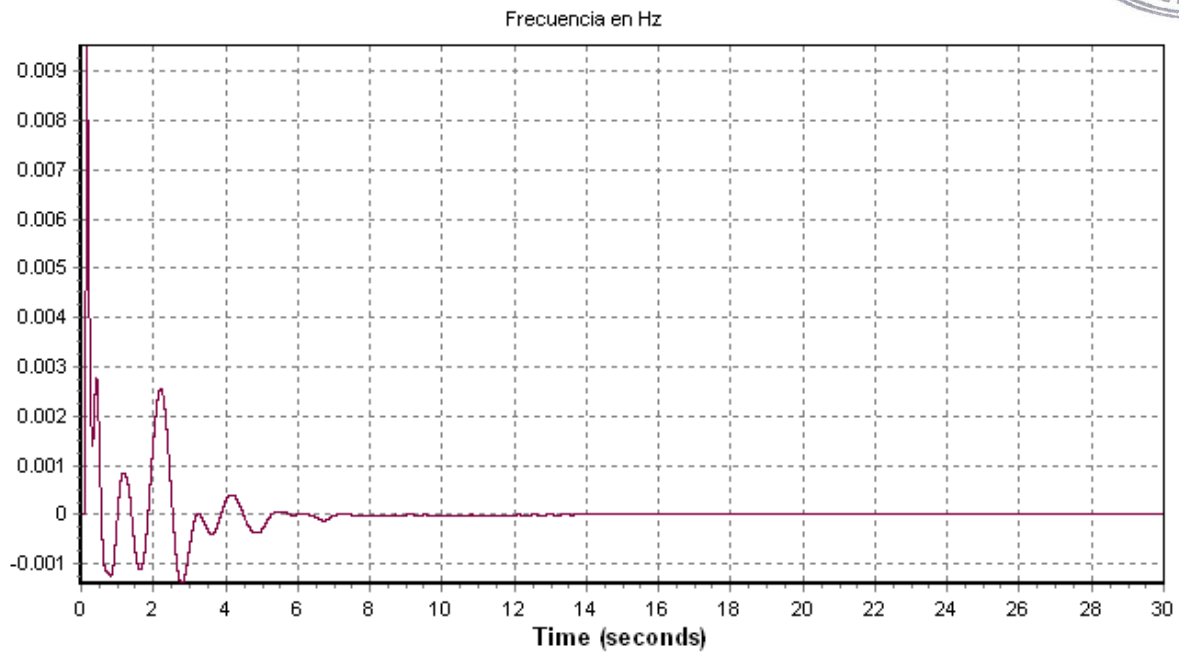


ESTRELLA CHANGUINOLA 1 PERLAS NORTE SAN BARTOLO

3. Año 2013

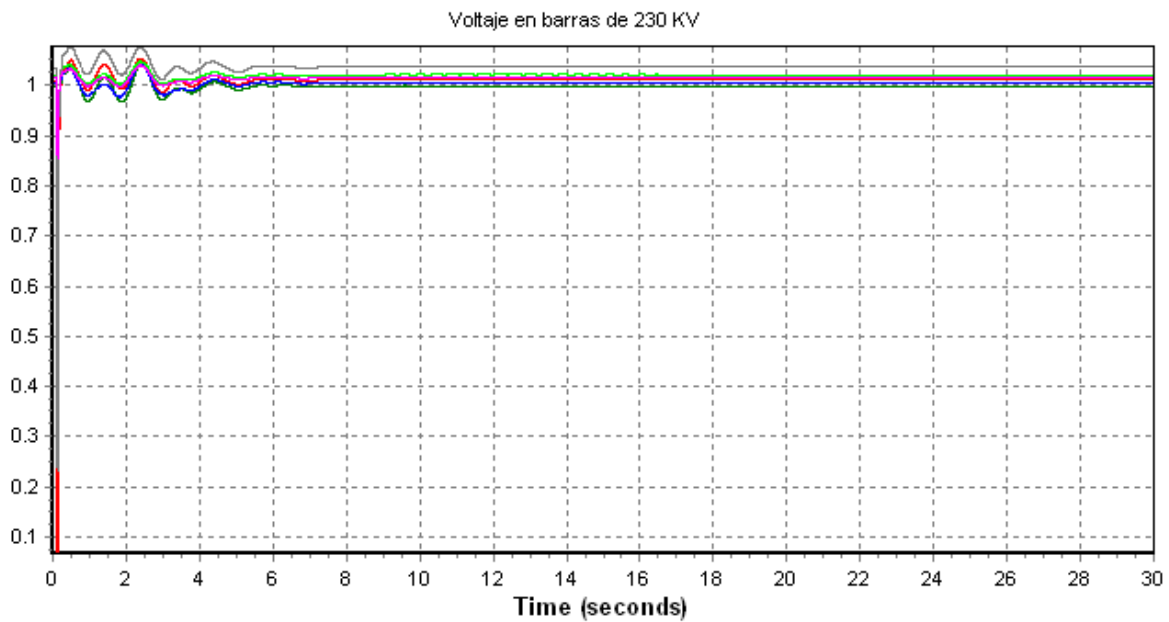
3.1 Falla y Apertura de un circuito de Panamá – Panamá II

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO**



PANAMA 115

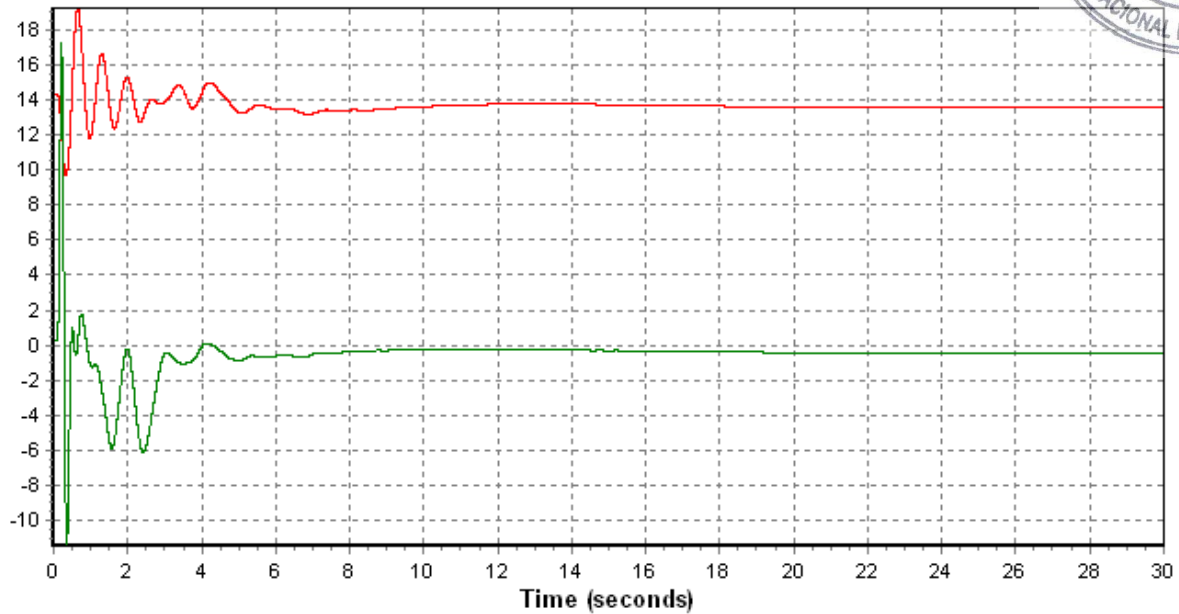
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO**



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**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO**

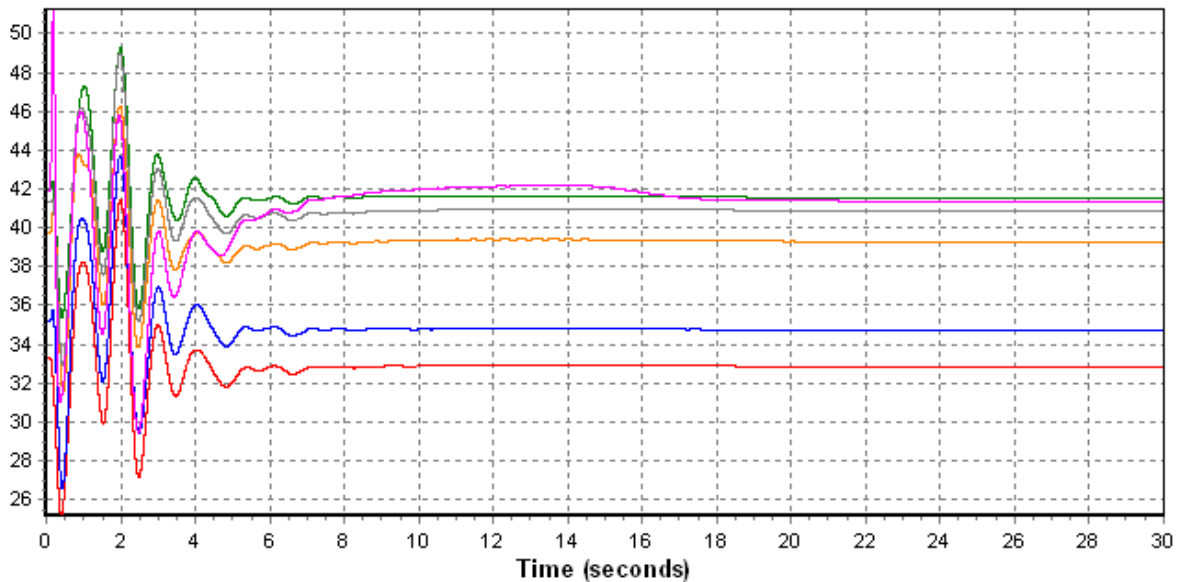
Comportamiento térmico respecto a Bayano



Bahía las Minas V2 Cativá

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO**

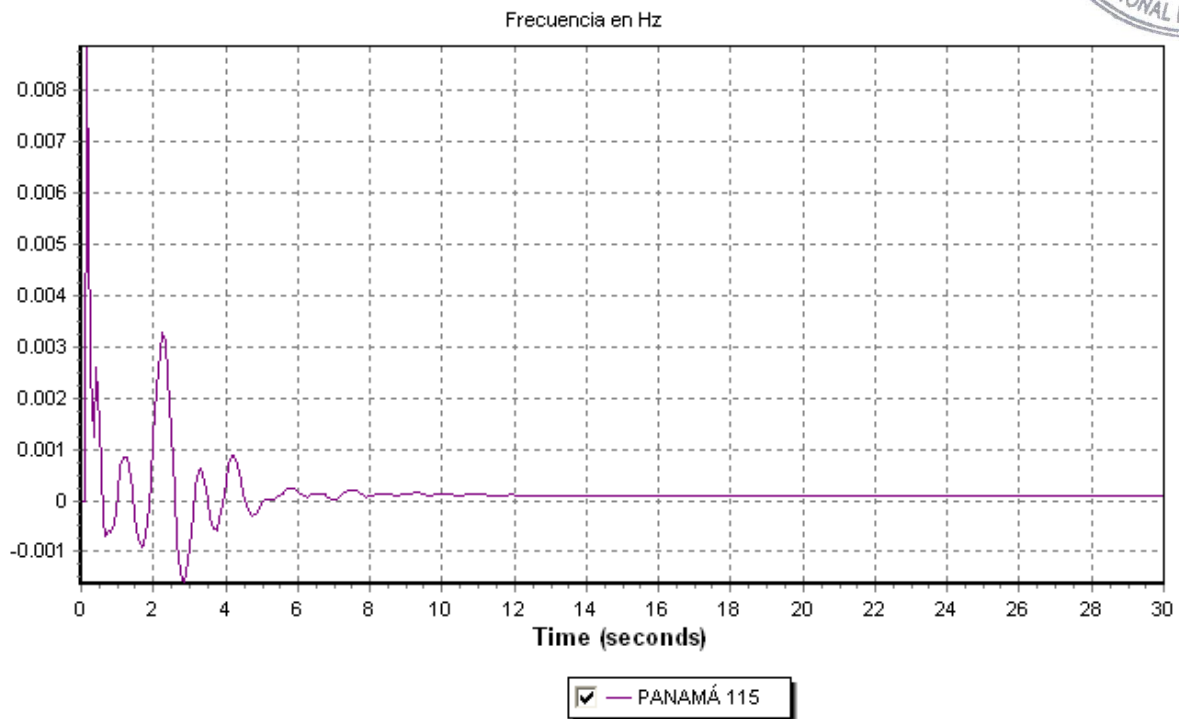
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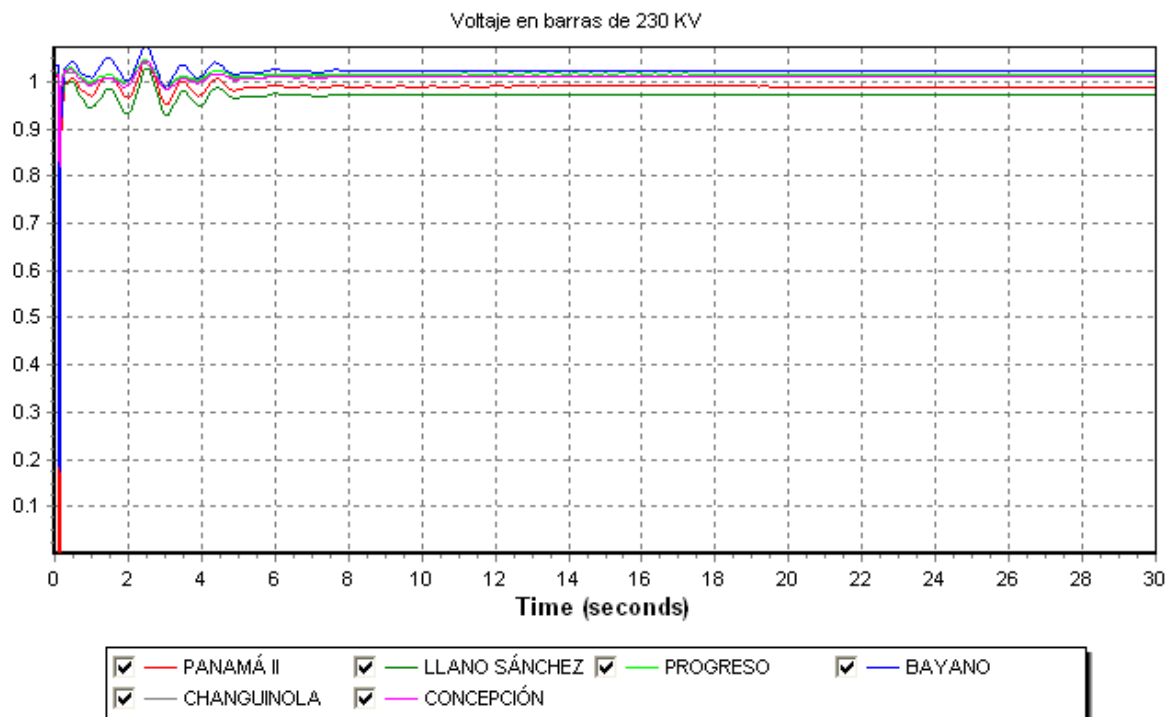
CHANGUINOLA 1 PEDREGALITO PRUDENCIA MONTE LIRIO
 BAJO FRÍO EL ALTO

3.2 Falla y Apertura de un circuito de Llano Sánchez – Panamá II

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO**



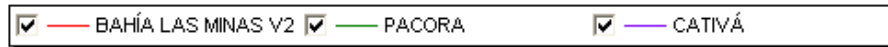
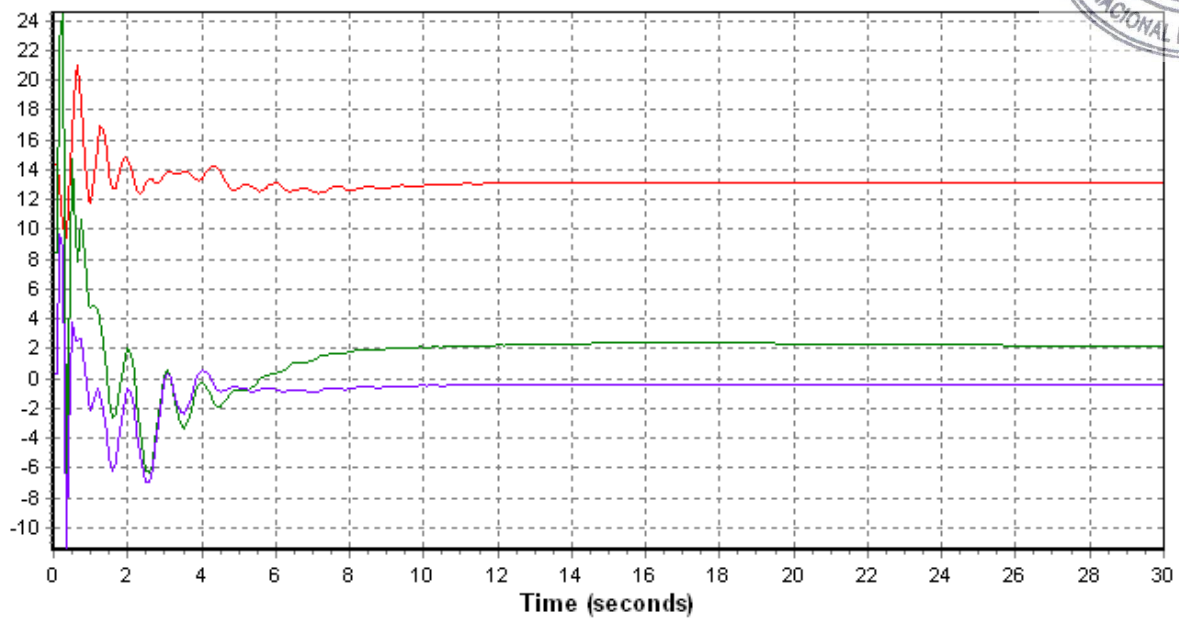
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO**





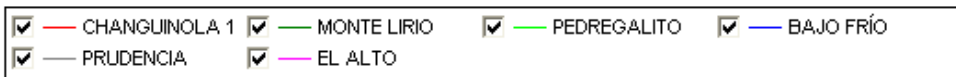
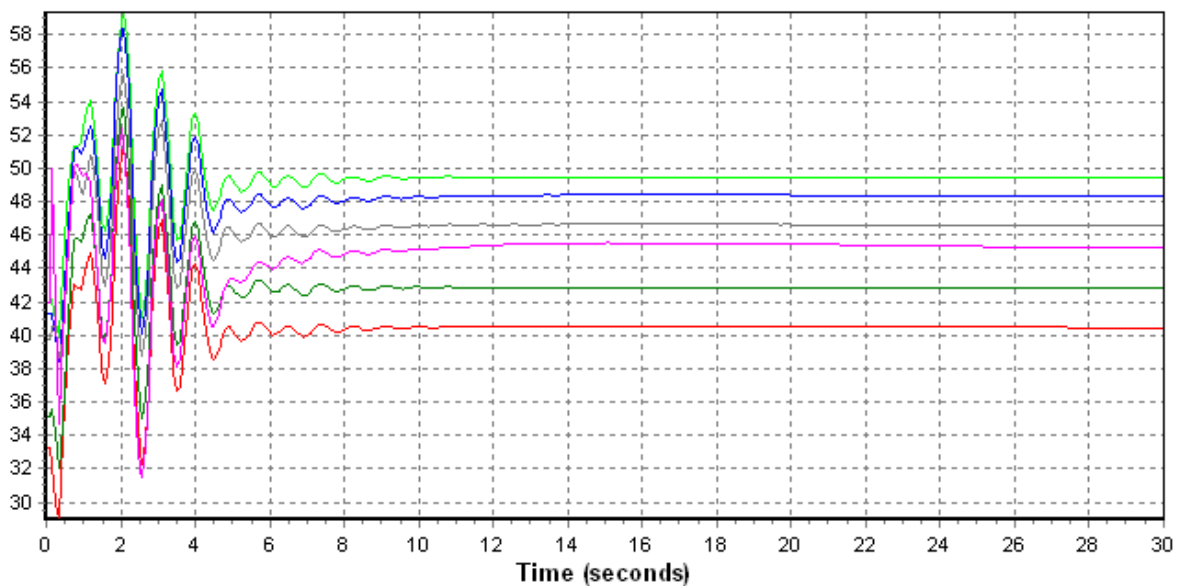
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO**

Comportamiento térmico respecto a Bayano



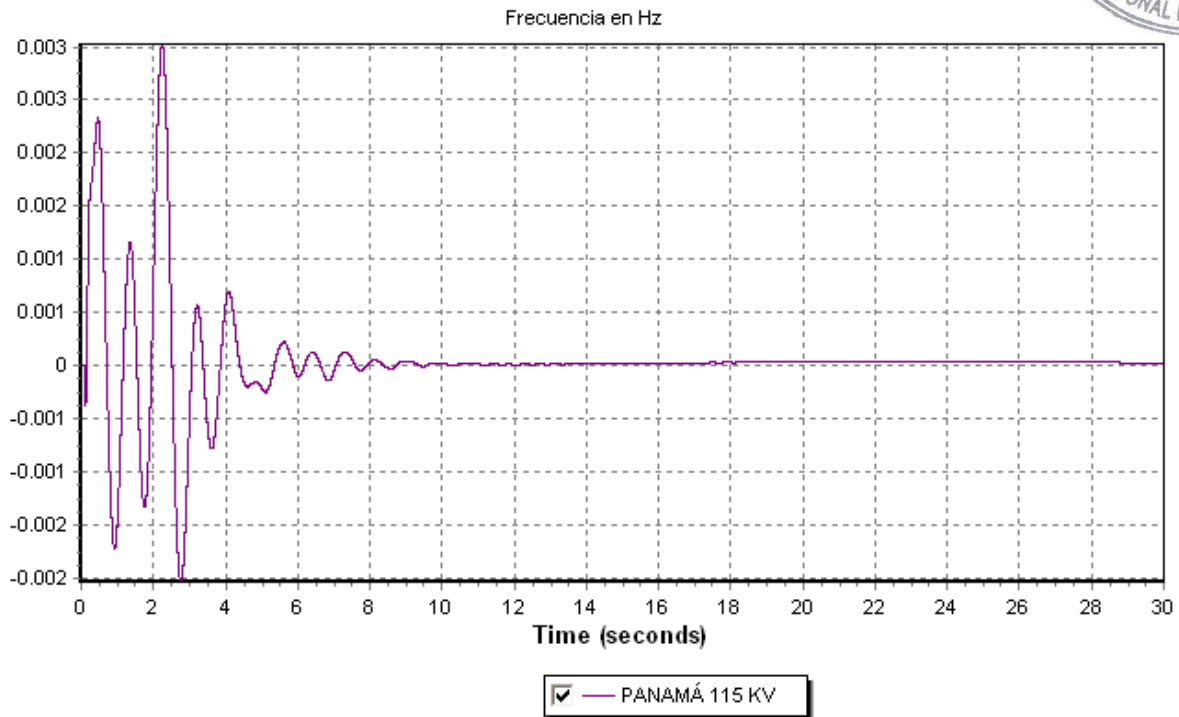
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO**

Comportamiento Hidráulico respecto a Bayano

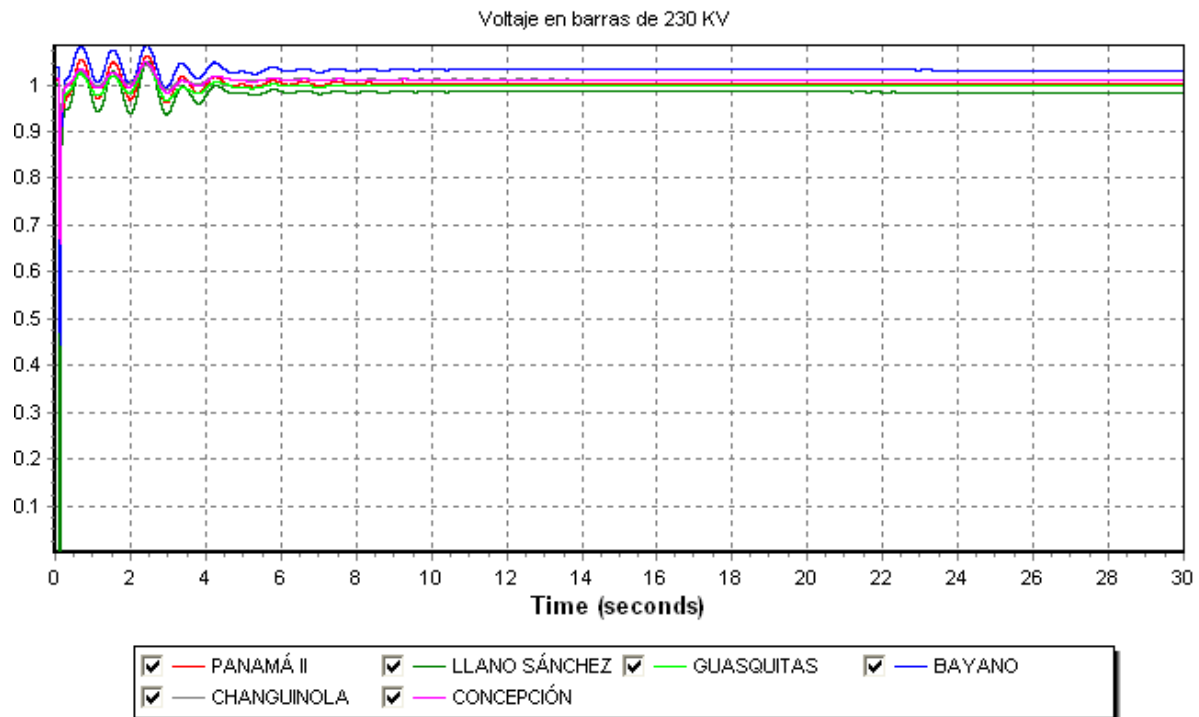


3.3 Falla y Apertura de un circuito de Llano Sánchez – Barro Blanco

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO**

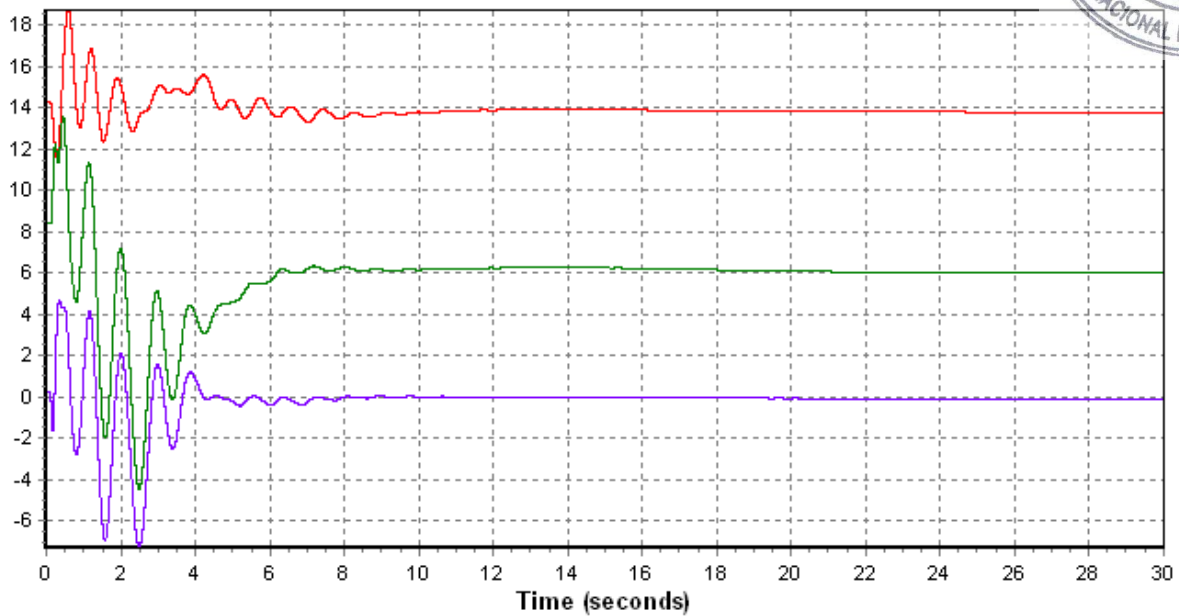


**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO**



**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO**

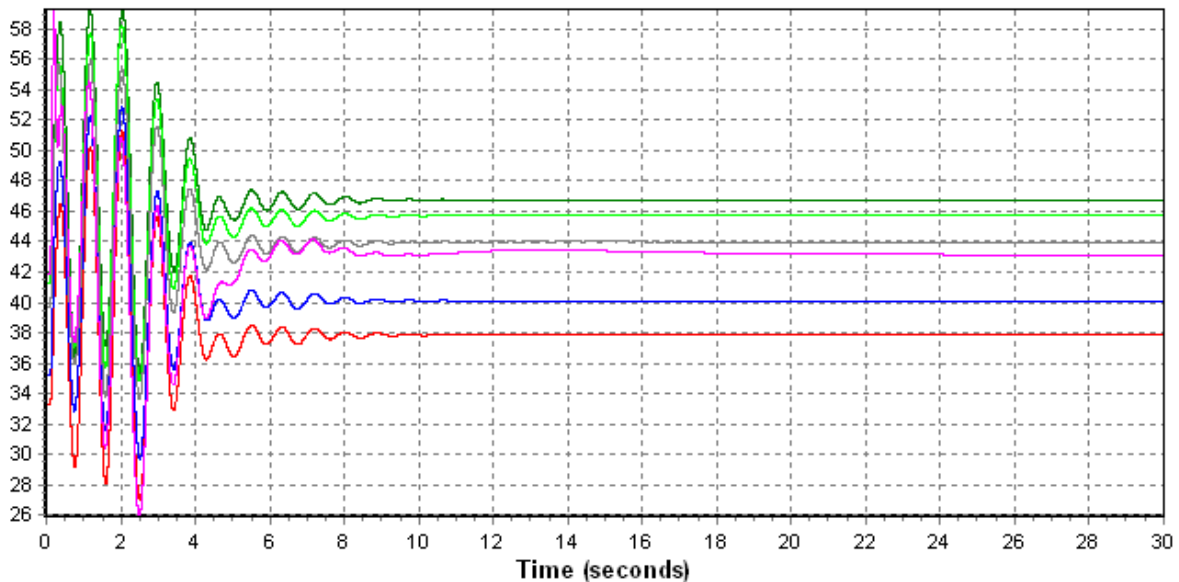
Comportamiento térmico respecto a Bayano



BAHÍA LAS MINAS V2 PACORA CATIVÁ

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO**

Comportamiento hidráulico respecto a Bayano

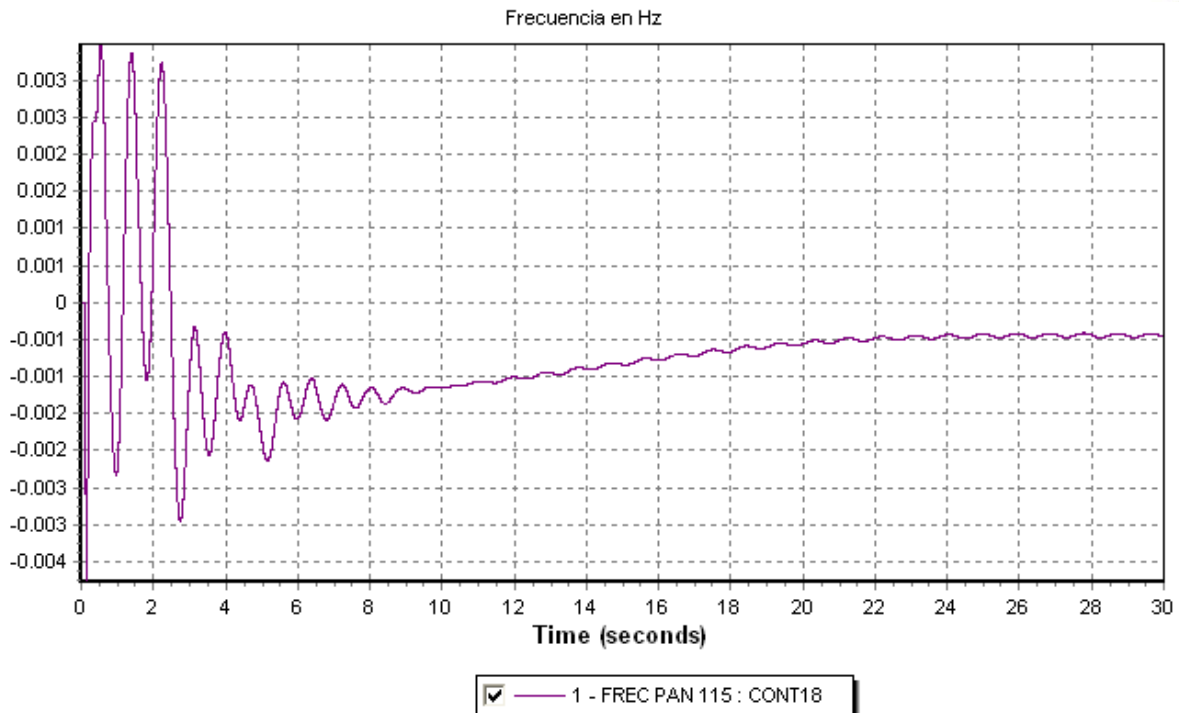


CHANGUINOLA 1 PEDREGALITO BAJO FRÍO MONTE LIRO
 PRUDENCIA EL ALTO

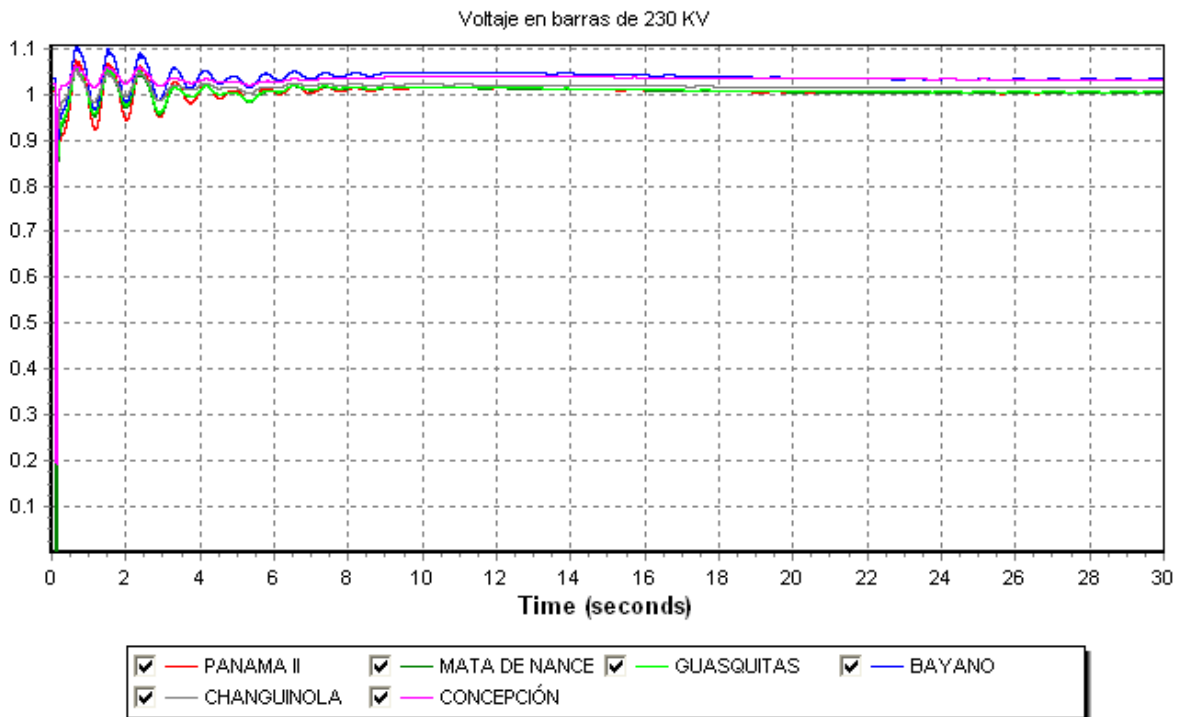
4. Año 2014

4.1 Falla y Apertura del circuito Mata de Nance – Concepción

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

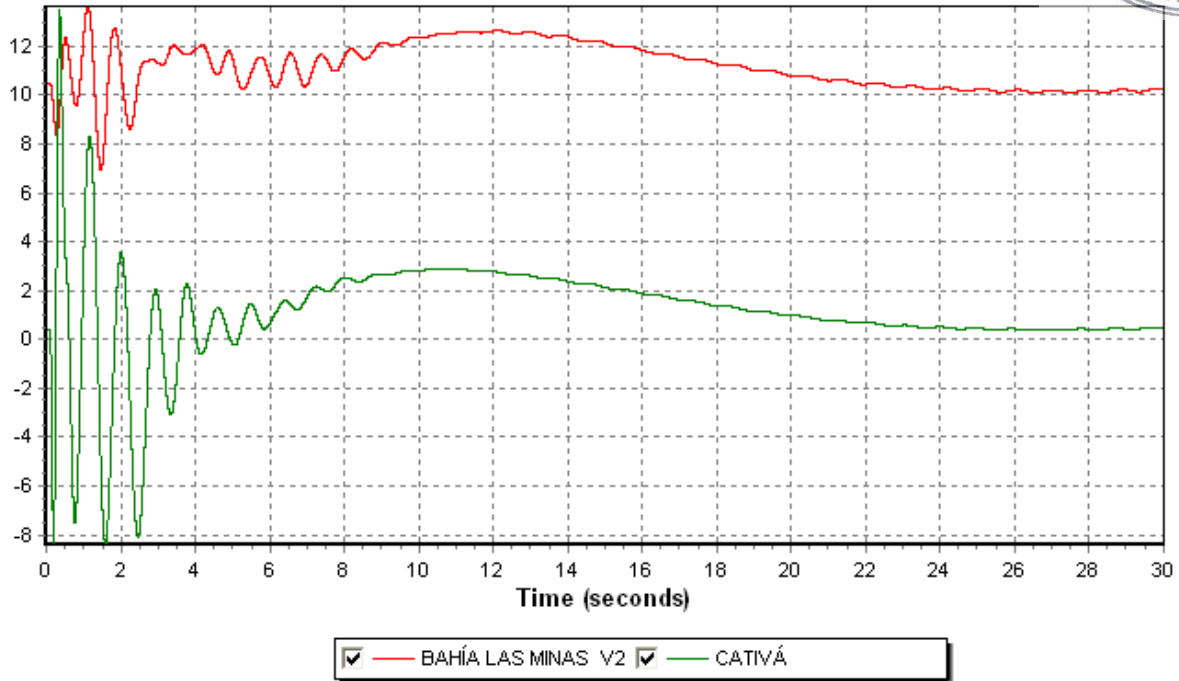


**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**



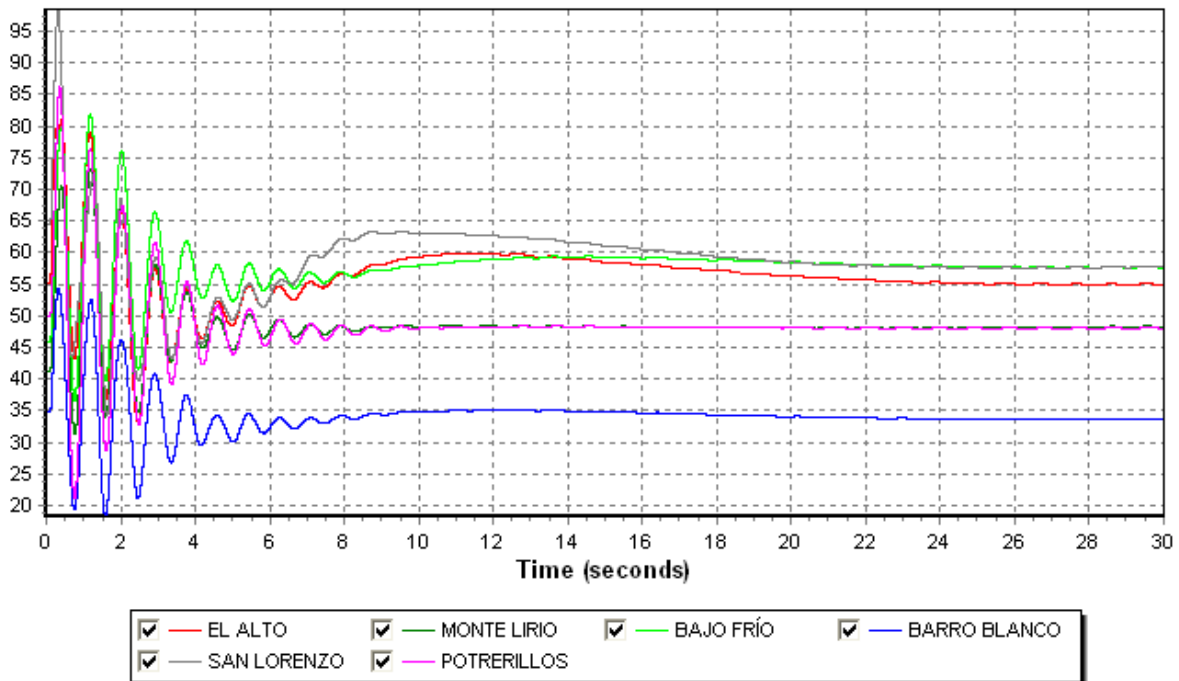
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

Comportamiento térmico respecto a Bayano



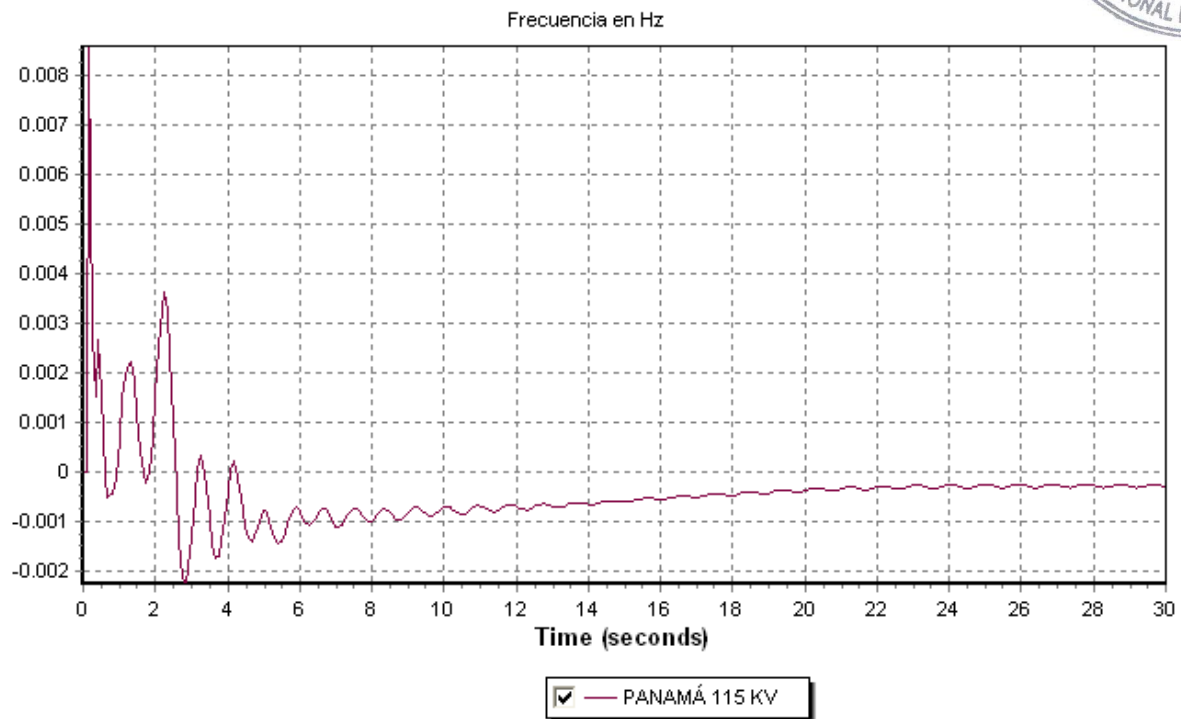
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

Comportamiento hidráulico respecto a Bayano

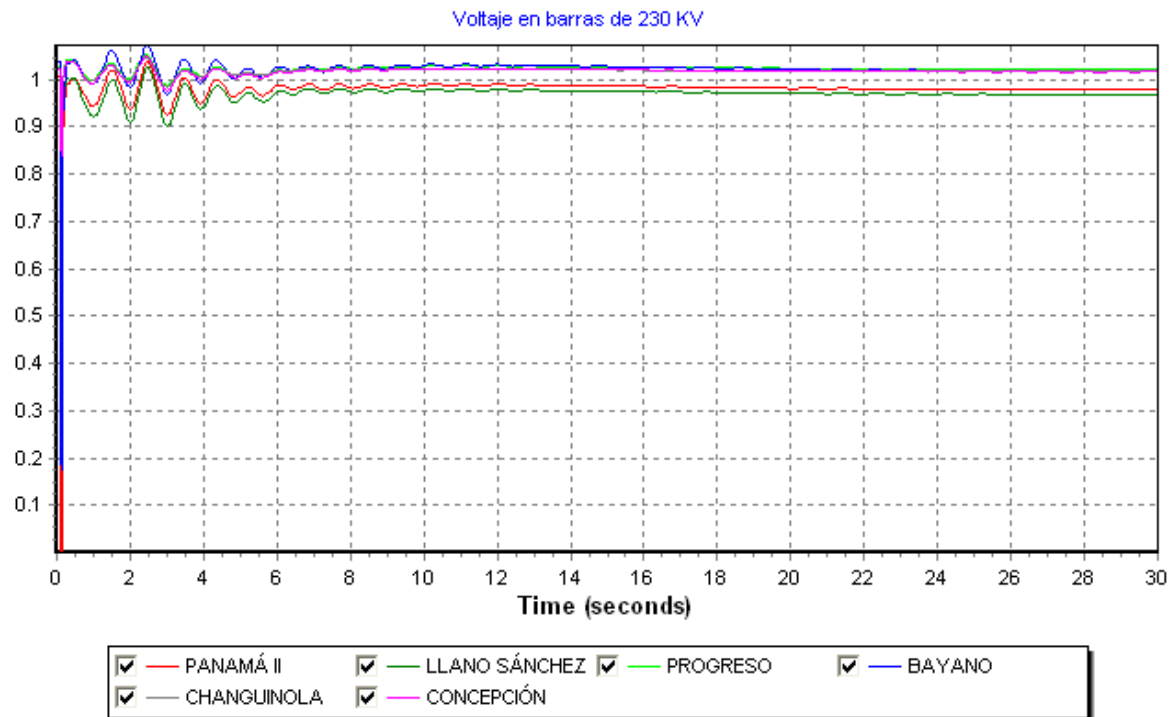


4.2 Falla y Apertura del circuito Llano Sánchez – Panamá II

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

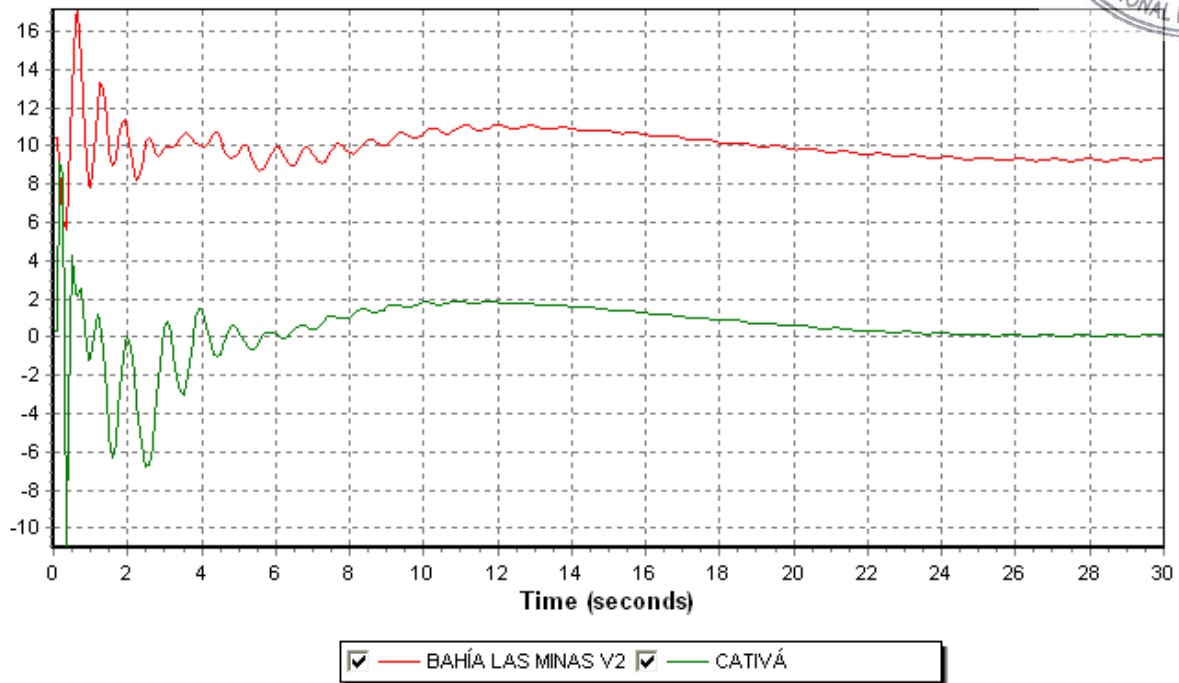


**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**



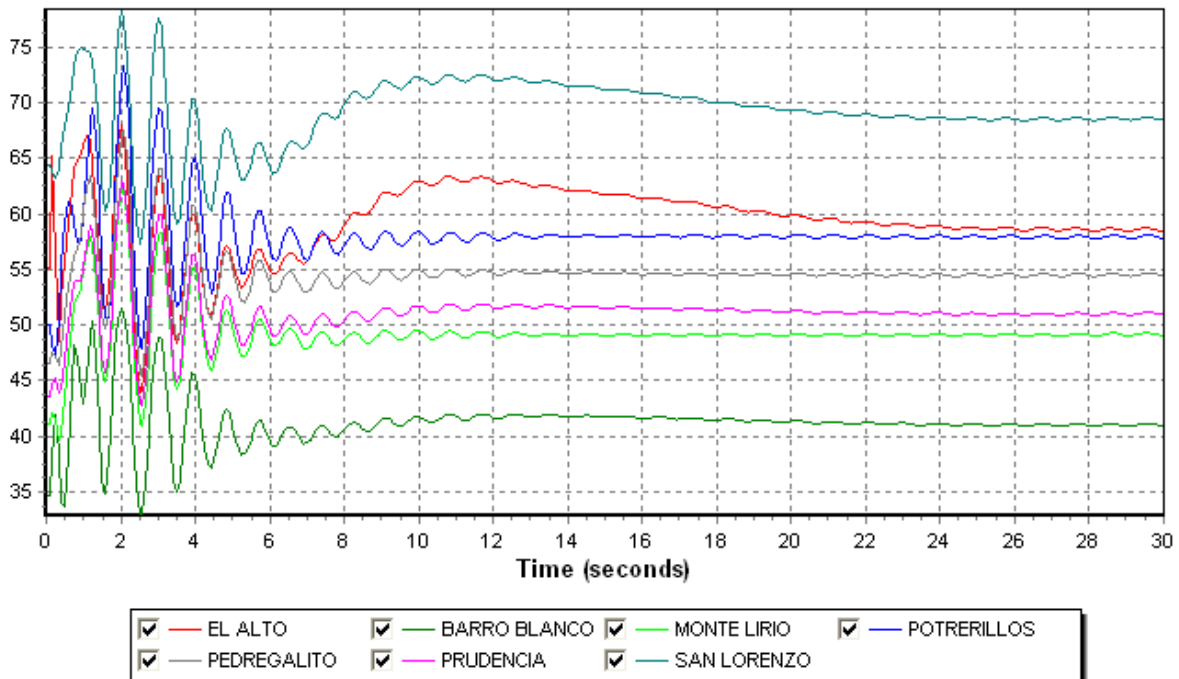
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

Comportamiento técnico respecto a Bayano



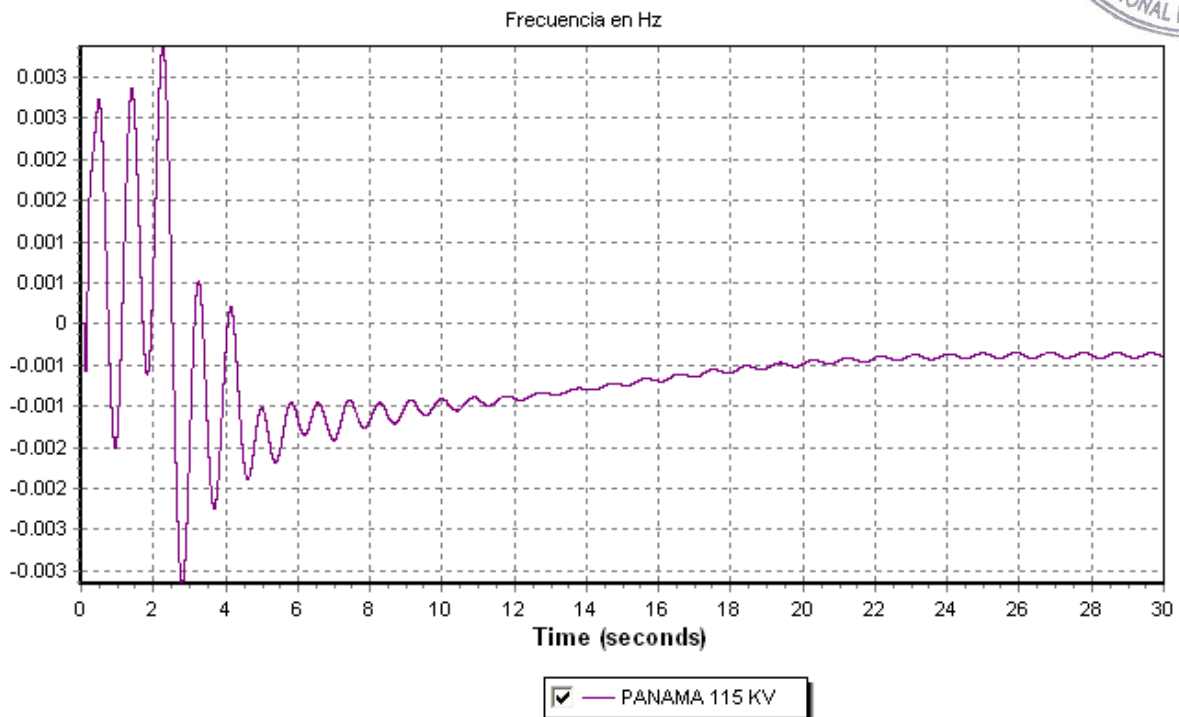
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

Comportamiento hidráulico respecto a Bayano

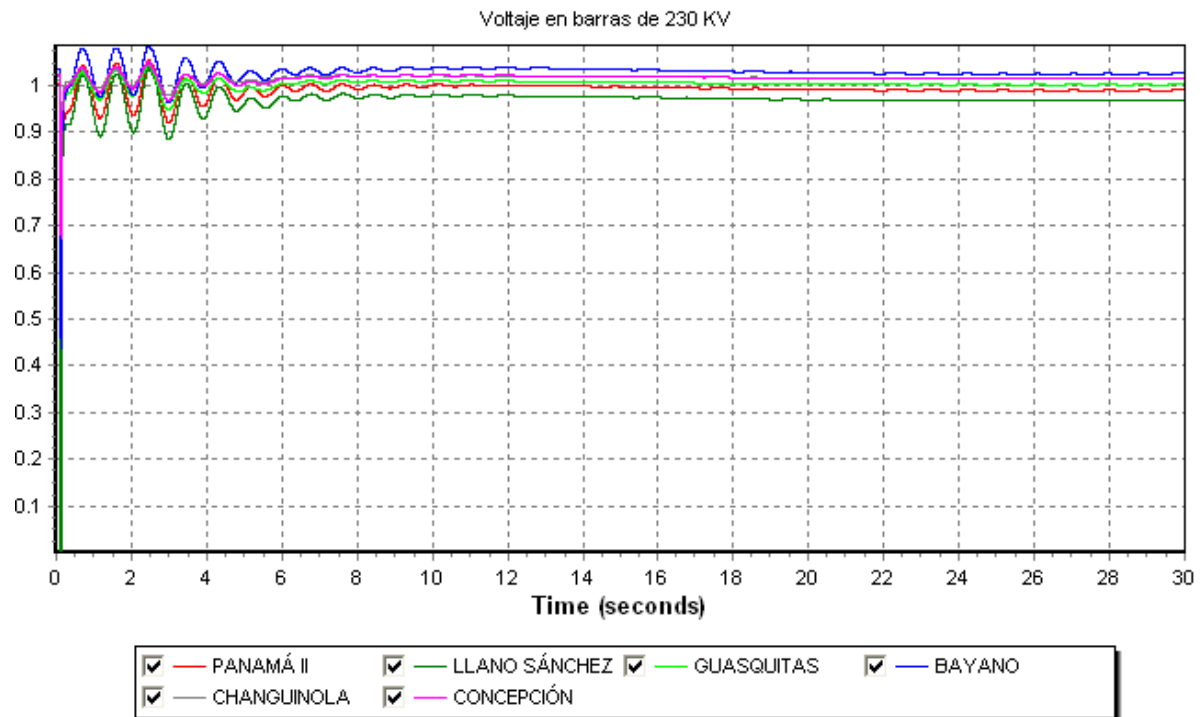


4.3 Falla y Apertura del circuito Veladero - Llano Sánchez

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

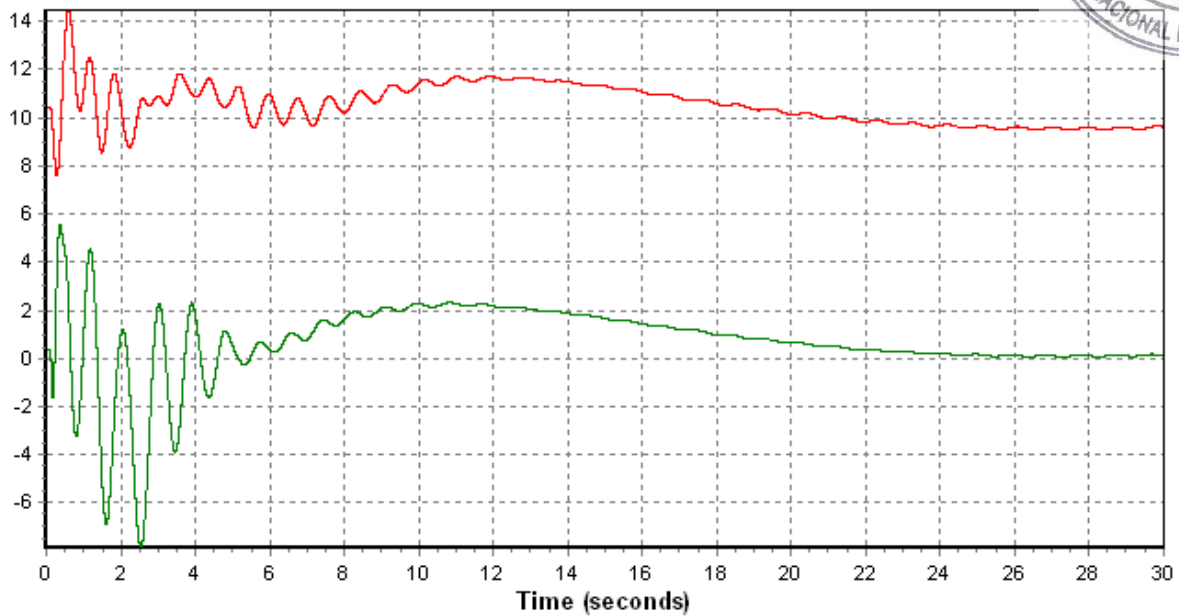


**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**



**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

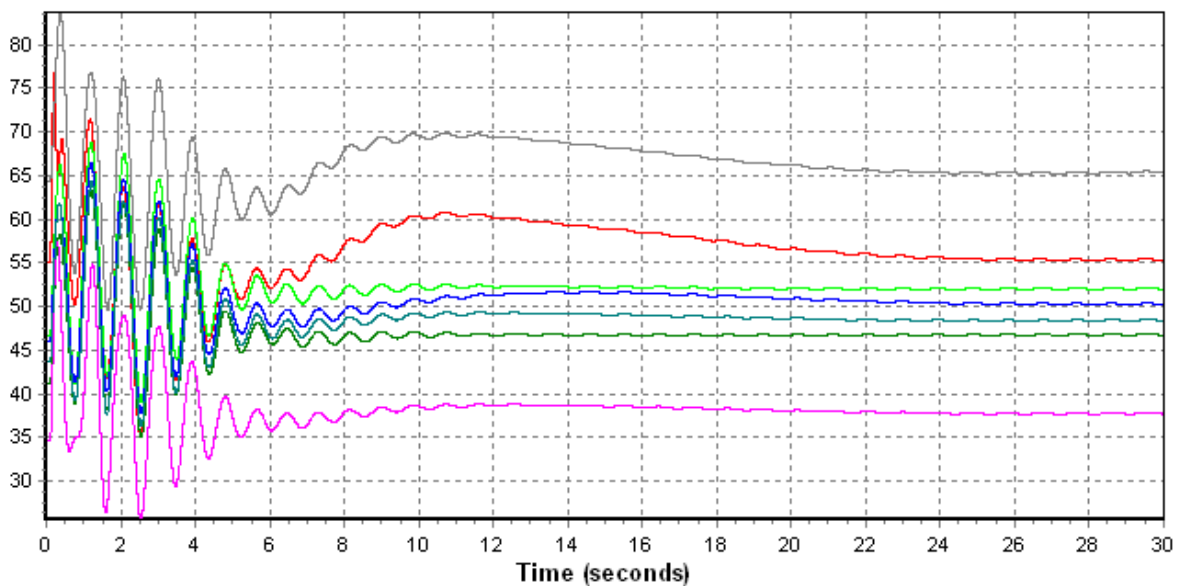
Comportamiento térmico respecto a Bayano



BAHÍA LAS MINAS V2 CATIVÁ

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

Comportamiento hidráulico respecto a Bayano



EL ALTO MONTE LIRIO PEDREGALITO BAJO FRIO
 SAN LORENZO BARRO BLANCO PRUDENCIA



RESULTADOS DE CORTOCIRCUITO

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- 1. Cortocircuito Año 2011**
- 2. Cortocircuito Año 2012**
- 3. Cortocircuito Año 2013**
- 4. Cortocircuito Año 2014**



1. Cortocircuito Año 2011

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO

TUE, MAY 25 2010 14:00
 SHORT CIRCUIT
 FAULT CURRENTS

		OUTPUT FOR AREA 6 [PANAMA]					
		THREE PHASE FAULT				ONE PHASE FAULT	
X-----	BUS -----X		/I+/ AN(I+)		/IA/ AN(IA)		
1	[PAN230	230.00]	AMPS	6271.6	-77.42	6166.8	-81.10
2	[PAN115	115.00]	AMPS	12172.5	-78.26	12633.8	-83.29
3	[PANII230	230.00]	AMPS	6284.6	-77.72	6464.5	-80.97
4	[PANII115	115.00]	AMPS	8905.7	-81.64	6678.4	-87.93
5	[CHO230	230.00]	AMPS	5136.6	-77.04	5517.1	-80.54
6	[CHO115	115.00]	AMPS	4039.0	-88.17	0.0	0.00
8	[LSA230	230.00]	AMPS	5638.6	-71.65	4979.6	-73.47
9	[LSA115	115.00]	AMPS	5489.9	-77.75	3983.3	-82.97
11	[M.N230	230.00]	AMPS	7635.2	-63.64	7753.5	-64.30
12	[M.N115	115.00]	AMPS	5872.6	-62.71	3594.9	-52.54
14	[PRO230	230.00]	AMPS	4990.1	-63.25	5282.7	-65.23
15	[PRO115	115.00]	AMPS	3061.2	-69.46	0.0	0.00
18	[CAC115	115.00]	AMPS	12078.6	-78.38	12529.2	-83.14
19	[C.V115	115.00]	AMPS	8365.8	-80.85	5895.0	-85.43
20	[CH.AZUL	115.00]	AMPS	1859.6	-65.95	0.0	0.00
21	[C.BAN115	115.00]	AMPS	10645.6	-78.42	8401.4	-81.94
23	[CH115	115.00]	AMPS	6438.3	-83.32	4517.3	-85.15
26	[LOC115	115.00]	AMPS	10954.9	-78.19	9533.6	-81.22
30	[MAR115	115.00]	AMPS	9752.2	-78.78	7796.2	-82.30
33	[STM115	115.00]	AMPS	10907.7	-78.72	10345.6	-83.29
37	[SAN115	115.00]	AMPS	10125.2	-78.91	7353.4	-83.07
48	[TINAJ115	115.00]	AMPS	9246.8	-80.46	6997.9	-84.69
50	[M.O115	115.00]	AMPS	9830.8	-80.00	7916.6	-84.53
52	[TOC115	115.00]	AMPS	7155.8	-82.53	4376.9	-85.99
54	[LM1115	115.00]	AMPS	10589.4	-85.11	12916.0	-87.11
55	[LM2115	115.00]	AMPS	10650.1	-85.40	12975.8	-87.35
61	[FFIELD	115.00]	AMPS	8132.4	-85.12	8522.4	-81.67
85	[PTP230	230.00]	AMPS	3538.3	-48.82	3231.0	-52.58
87	[CAL115	115.00]	AMPS	5818.0	-59.84	7643.9	-59.02
88	[EST115	115.00]	AMPS	5161.2	-58.49	7173.4	-58.57
92	[L.V115	115.00]	AMPS	5570.2	-59.29	7713.8	-59.34
96	[FOR230	230.00]	AMPS	8366.5	-63.66	9298.2	-64.36
100	[BAY230	230.00]	AMPS	4885.0	-81.59	5441.1	-84.09
103	[COPESA23	230.00]	AMPS	5430.3	-79.04	5525.4	-81.97
105	[PAN-AM23	230.00]	AMPS	5097.8	-77.13	5467.9	-80.61
109	[STA RITA115	115.00]	AMPS	9558.2	-85.02	8981.3	-84.66
115	[PACORA23	230.00]	AMPS	5227.2	-79.92	4813.6	-82.08
144	[CANJ230	230.00]	AMPS	6813.3	-64.86	7257.1	-64.11
146	[GUALACA230	230.00]	AMPS	6618.6	-59.63	7563.4	-61.11
147	[GUASQ230	230.00]	AMPS	7153.1	-64.85	7974.4	-64.48
148	[VELADERO 230	230.00]	AMPS	6753.1	-67.21	5147.1	-65.74
154	[CEMPAN15	115.00]	AMPS	6832.4	-84.74	6661.8	-87.31
190	[CHANG230	230.00]	AMPS	3201.4	-55.55	2347.4	-60.20
191	[CHANG115	115.00]	AMPS	2400.6	-66.20	2561.8	-67.32
306	[CHAN1 230	230.00]	AMPS	3410.6	-52.71	3902.2	-57.39
310	[CONCEPCION23	230.00]	AMPS	5611.7	-63.45	4482.4	-63.07
341	[PRUDENCIA230	230.00]	AMPS	5267.5	-48.37	5892.2	-48.44
345	[LORENA230	230.00]	AMPS	5903.8	-53.70	6712.1	-54.75
370	[LSA CAP 230	230.00]	AMPS	5638.6	-71.65	4979.6	-73.47
511	[LGUIAS230	230.00]	AMPS	3655.2	-75.42	3389.0	-77.54
522	[TCATIVÁ 115	115.00]	AMPS	10644.0	-85.36	12985.5	-87.37
529	[TCOLON 115	115.00]	AMPS	9570.8	-85.20	0.0	0.00
540	[ANTON	230.00]	AMPS	2924.6	-81.55	3801.7	-81.63
700	[BAITUN230	230.00]	AMPS	4351.0	-62.81	3999.7	-62.82
701	[BAITUN115	115.00]	AMPS	2220.9	-62.58	2739.0	-62.23



702	[BJOMIN115	115.00]	AMPS	2084.4	-60.91	2632.9	-60.94
6000	[FRONTER	230.00]	AMPS	4720.6	-63.50	4796.9	-65.11
6400	[FRONTCHA	230.00]	AMPS	3122.3	-57.25	2093.5	-60.64
6500	[FRONTVEL	230.00]	AMPS	3832.8	-65.20	0.0	0.00

OUTPUT FOR AREA 7 [ACANAL]							
				THREE PHASE FAULT		ONE PHASE FAULT	
X-----	BUS	-----X		/I+/	AN(I+)	/IA/	AN(IA)
123	[MIR115	115.00]	AMPS	7735.9	-83.24	7330.5	-85.90

2. Cortocircuito Año 2012

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 14:17
 PLAN DE EXPANSION DEL SIN JUNIO-2010 SHORT CIRCUIT
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO FAULT CURRENTS

OUTPUT FOR AREA 6 [PANAMA]							
				THREE PHASE FAULT		ONE PHASE FAULT	
X-----	BUS	-----X		/I+/	AN(I+)	/IA/	AN(IA)
1	[PAN230	230.00]	AMPS	5738.2	-72.61	5928.5	-77.44
2	[PAN115	115.00]	AMPS	11051.8	-73.59	12157.0	-79.16
3	[PANII230	230.00]	AMPS	5757.5	-73.18	6143.3	-77.40
4	[PANII115	115.00]	AMPS	9094.3	-77.34	7119.0	-84.93
5	[CHO230	230.00]	AMPS	4812.0	-72.29	5281.2	-76.48
6	[CHO115	115.00]	AMPS	3925.8	-85.21	0.0	0.00
8	[LSA230	230.00]	AMPS	5431.8	-64.66	5071.2	-67.10
9	[LSA115	115.00]	AMPS	5381.1	-71.56	3955.3	-77.52
11	[M.N230	230.00]	AMPS	7784.9	-54.34	7886.9	-54.68
12	[M.N115	115.00]	AMPS	6115.3	-52.27	3652.7	-41.95
14	[PRO230	230.00]	AMPS	5043.3	-52.83	5318.1	-54.86
15	[PRO115	115.00]	AMPS	3065.0	-59.13	0.0	0.00
18	[CAC115	115.00]	AMPS	10966.5	-73.74	12045.1	-79.03
19	[C.V115	115.00]	AMPS	8195.3	-77.12	5990.4	-82.97
20	[CH.AZUL	115.00]	AMPS	1858.9	-55.62	0.0	0.00
21	[C.BAN115	115.00]	AMPS	9806.4	-74.20	8160.6	-78.98
23	[CH115	115.00]	AMPS	6020.1	-80.50	4370.5	-83.66
26	[LOC115	115.00]	AMPS	10057.6	-73.90	9225.4	-77.96
30	[MAR115	115.00]	AMPS	9029.2	-74.78	7584.1	-79.47
33	[STM115	115.00]	AMPS	10002.6	-74.37	10015.5	-79.76
37	[SAN115	115.00]	AMPS	9384.0	-74.84	7181.7	-80.37
48	[TINAJ115	115.00]	AMPS	8596.2	-76.51	6837.0	-82.04
50	[M.O115	115.00]	AMPS	9097.6	-75.88	7717.3	-81.62
52	[TOC115	115.00]	AMPS	7303.0	-79.03	4574.9	-83.87
54	[LM1115	115.00]	AMPS	9770.4	-80.97	12122.1	-83.63
55	[LM2115	115.00]	AMPS	9786.9	-81.16	12136.9	-83.78
61	[FFIELD	115.00]	AMPS	7630.3	-82.01	8106.0	-79.71
85	[PTP230	230.00]	AMPS	4400.2	-53.90	4293.2	-47.66
87	[CAL115	115.00]	AMPS	6252.1	-49.28	8144.5	-48.38
88	[EST115	115.00]	AMPS	5475.4	-47.80	7579.6	-47.88
92	[L.V115	115.00]	AMPS	5956.1	-48.69	8208.1	-48.73
96	[FOR230	230.00]	AMPS	8644.3	-54.96	9869.1	-53.90
100	[BAY230	230.00]	AMPS	4568.8	-78.92	5173.0	-81.95
103	[COPESA23	230.00]	AMPS	5036.4	-75.14	5271.2	-78.97
105	[PAN-AM23	230.00]	AMPS	4777.9	-72.40	5235.4	-76.58
109	[STA RITA115	115.00]	AMPS	9306.1	-80.55	9284.6	-81.80
115	[PACORA23	230.00]	AMPS	4678.2	-76.15	4498.5	-79.52
144	[CANJ230	230.00]	AMPS	7370.6	-55.50	7815.9	-54.35
146	[GUALACA230	230.00]	AMPS	7107.1	-49.75	8099.4	-50.88
147	[GUASQ230	230.00]	AMPS	7747.1	-55.53	8637.2	-54.78
148	[VELADERO 230	230.00]	AMPS	6827.7	-58.66	5560.9	-57.94
154	[CEMPAN15	115.00]	AMPS	6106.6	-81.79	6167.2	-85.32
190	[CHANG230	230.00]	AMPS	4471.2	-52.49	3528.1	-50.12



191	[CHANG115	115.00]	AMPS	2663.3	-58.37	2918.6	-58.14
306	[CHAN1 230	230.00]	AMPS	4425.0	-52.35	5090.2	-49.77
310	[CONCEPCION23	230.00]	AMPS	5730.6	-53.45	4528.5	-52.99
341	[PRUDENCIA230	230.00]	AMPS	5543.4	-37.83	6165.3	-37.62
345	[LORENA230	230.00]	AMPS	6267.9	-43.36	7091.8	-44.09
354	[SANBARTOLO23	230.00]	AMPS	4354.5	-63.33	3647.2	-63.34
370	[LSA CAP 230	230.00]	AMPS	5431.8	-64.66	5071.2	-67.10
511	[LGUIAS230	230.00]	AMPS	3520.8	-70.14	3319.8	-72.81
522	[TCATIVÁ 115	115.00]	AMPS	9789.3	-81.11	12154.5	-83.79
529	[TCOLON 115	115.00]	AMPS	6804.5	-82.69	0.0	0.00
540	[ANTON	230.00]	AMPS	2837.5	-77.36	3699.6	-77.63
700	[BAITUN230	230.00]	AMPS	4388.6	-52.45	4017.1	-52.48
701	[BAITUN115	115.00]	AMPS	2227.0	-52.72	2745.6	-52.37
702	[BJOMIN115	115.00]	AMPS	2089.8	-51.11	2639.1	-51.15
6000	[FRONTER	230.00]	AMPS	4758.3	-52.93	4817.9	-54.59
6400	[FRONTCHA	230.00]	AMPS	4083.8	-52.40	2910.7	-49.37
6500	[FRONTVEL	230.00]	AMPS	3833.1	-54.58	0.0	0.00

 OUTPUT FOR AREA 7 [ACANAL]

				THREE PHASE FAULT		ONE PHASE FAULT	
X-----	BUS	-----X		/I+/ AN(I+)	/IA/ AN(IA)		
	123	[MIR115	115.00] AMPS	7339.3	-80.32	7126.7	-83.64

3. Cortocircuito Año 2013

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO

TUE, MAY 25 2010 14:20
 SHORT CIRCUIT
 FAULT CURRENTS

OUTPUT FOR AREA 6 [PANAMA]

				THREE PHASE FAULT		ONE PHASE FAULT	
X-----	BUS	-----X		/I+/ AN(I+)	/IA/ AN(IA)		
	1	[PAN230	230.00] AMPS	6160.9	-73.42	6232.9	-78.14
	2	[PAN115	115.00] AMPS	11843.1	-74.35	12795.7	-79.94
	3	[PANI230	230.00] AMPS	6194.3	-74.02	6479.8	-78.12
	4	[PANI115	115.00] AMPS	9633.1	-78.15	7372.4	-85.46
	5	[CHO230	230.00] AMPS	5090.6	-72.96	5508.7	-77.04
	6	[CHO115	115.00] AMPS	4021.1	-85.61	0.0	0.00
	8	[LSA230	230.00] AMPS	5766.9	-64.92	5373.4	-67.02
	9	[LSA115	115.00] AMPS	5542.8	-71.63	4022.1	-77.43
	11	[M.N230	230.00] AMPS	7931.4	-54.40	8047.9	-54.64
	12	[M.N115	115.00] AMPS	6118.5	-52.07	3647.5	-41.71
	14	[PRO230	230.00] AMPS	5732.8	-52.55	5851.7	-54.37
	15	[PRO115	115.00] AMPS	3202.4	-58.32	0.0	0.00
	18	[CAC115	115.00] AMPS	11744.3	-74.50	12672.3	-79.79
	19	[C.V115	115.00] AMPS	8639.8	-77.84	6177.4	-83.40
	20	[CH.AZUL	115.00] AMPS	1916.9	-54.53	0.0	0.00
	21	[C.BAN115	115.00] AMPS	10429.8	-74.92	8466.4	-79.50
	23	[CH115	115.00] AMPS	6309.2	-81.01	4488.4	-83.89
	26	[LOC115	115.00] AMPS	10712.9	-74.62	9608.9	-78.52
	30	[MAR115	115.00] AMPS	9559.2	-75.46	7849.6	-79.96
	33	[STM115	115.00] AMPS	10652.0	-75.10	10458.0	-80.41
	37	[SAN115	115.00] AMPS	9955.9	-75.56	7424.5	-80.87
	48	[TINAJ115	115.00] AMPS	9077.3	-77.22	7055.6	-82.52
	50	[M.O115	115.00] AMPS	9635.2	-76.61	7989.3	-82.16
	52	[TOC115	115.00] AMPS	7663.8	-79.72	4701.3	-84.17
	54	[LM1115	115.00] AMPS	10751.9	-81.83	13126.1	-84.45
	55	[LM2115	115.00] AMPS	10768.4	-82.01	13140.2	-84.59
	61	[FFIELD	115.00] AMPS	8223.7	-82.66	8573.8	-79.95
	85	[PTP230	230.00] AMPS	4473.0	-54.39	4367.0	-48.14
	87	[CAL115	115.00] AMPS	6237.9	-48.94	8122.6	-48.04



88	[EST115	115.00]	AMPS	5455.4	-47.46	7550.4	-47.55
92	[L.V115	115.00]	AMPS	5939.5	-48.34	8183.3	-48.39
96	[FOR230	230.00]	AMPS	8296.8	-55.02	9580.2	-54.03
100	[BAY230	230.00]	AMPS	4805.1	-79.55	5381.7	-82.47
103	[COPESA23	230.00]	AMPS	5362.8	-75.92	5516.0	-79.59
105	[PAN-AM23	230.00]	AMPS	5052.5	-73.07	5458.9	-77.13
109	[STA RITA115	115.00]	AMPS	10110.2	-81.36	9837.4	-82.28
115	[PACORA23	230.00]	AMPS	5042.6	-77.03	4729.8	-80.10
144	[CANJ230	230.00]	AMPS	7352.0	-55.73	7830.8	-54.55
146	[GUALACA230	230.00]	AMPS	7096.5	-50.01	8114.8	-51.05
147	[GUASQ230	230.00]	AMPS	7725.4	-55.77	8652.6	-54.98
148	[VELADERO 230	230.00]	AMPS	7207.5	-58.90	6119.2	-58.14
149	[BBLANCO	230.00]	AMPS	6092.5	-59.37	4797.3	-58.12
154	[CEMPAN15	115.00]	AMPS	6448.2	-82.28	6412.5	-85.66
190	[CHANG230	230.00]	AMPS	4789.9	-53.77	3856.7	-51.78
191	[CHANG115	115.00]	AMPS	3501.0	-58.01	3933.0	-57.95
306	[CHAN1 230	230.00]	AMPS	4624.6	-53.50	5276.9	-50.74
310	[CONCEPCION23	230.00]	AMPS	6179.9	-53.23	5015.3	-53.03
311	[PANDO230	230.00]	AMPS	4632.9	-55.31	3551.2	-57.26
341	[PRUDENCIA230	230.00]	AMPS	5550.2	-38.12	6186.0	-37.81
345	[LORENA230	230.00]	AMPS	6268.3	-43.65	7110.5	-44.27
354	[SANBARTOLO23	230.00]	AMPS	4604.5	-63.18	3827.9	-62.86
370	[LSA CAP 230	230.00]	AMPS	5766.9	-64.92	5373.4	-67.02
371	[CAISAN230	230.00]	AMPS	4953.0	-55.29	3419.2	-55.73
511	[LGUIAS230	230.00]	AMPS	3657.9	-70.41	3411.7	-72.84
522	[TCATIVÁ 115	115.00]	AMPS	10780.8	-82.01	13169.8	-84.64
529	[TCOLON 115	115.00]	AMPS	7242.5	-83.30	0.0	0.00
540	[ANTON	230.00]	AMPS	2919.8	-77.66	3794.9	-77.85
700	[BAITUN230	230.00]	AMPS	4871.8	-51.98	4304.0	-51.65
701	[BAITUN115	115.00]	AMPS	2284.8	-52.37	2810.5	-51.98
702	[BJOMIN115	115.00]	AMPS	2139.3	-50.81	2696.8	-50.81
6000	[FRONTER	230.00]	AMPS	5460.1	-52.74	5317.6	-54.12
6400	[FRONTCHA	230.00]	AMPS	4318.9	-53.66	3121.8	-50.86
6500	[FRONT CAISAN	230.00]	AMPS	4984.2	-55.01	3246.5	-55.14

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 14:20
 PLAN DE EXPANSION DEL SIN JUNIO-2010 SHORT CIRCUIT
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO FAULT CURRENTS
 OUTPUT FOR AREA 7 [ACANAL]

				THREE PHASE FAULT		ONE PHASE FAULT	
X-----	BUS	-----X		/I+/	AN(I+)	/IA/	AN(IA)
	123	[MIR115	115.00] AMPS	7632.2	-80.81	7324.1	-83.99

4. Cortocircuito Año 2014

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 14:22
 PLAN DE EXPANSION DEL SIN JUNIO-2010 SHORT CIRCUIT
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO FAULT CURRENTS
 OUTPUT FOR AREA 6 [PANAMA]

				THREE PHASE FAULT		ONE PHASE FAULT	
X-----	BUS	-----X		/I+/	AN(I+)	/IA/	AN(IA)
	1	[PAN230	230.00] AMPS	6213.8	-72.33	6265.9	-77.41
	2	[PAN115	115.00] AMPS	12025.1	-73.32	12942.0	-79.32
	3	[PANII230	230.00] AMPS	6217.6	-72.94	6495.0	-77.35
	4	[PANII115	115.00] AMPS	9738.8	-77.35	7410.2	-85.15
	5	[CHO230	230.00] AMPS	5145.3	-71.80	5546.3	-76.11
	6	[CHO115	115.00] AMPS	4028.6	-84.93	0.0	0.00



8	[LSA230	230.00]	AMPS	5994.5	-62.87	5504.5	-65.04
9	[LSA115	115.00]	AMPS	5655.2	-69.71	4060.9	-75.64
11	[M.N230	230.00]	AMPS	8075.6	-50.63	8165.5	-50.86
12	[M.N115	115.00]	AMPS	6206.3	-47.86	3694.0	-37.48
14	[PRO230	230.00]	AMPS	5694.0	-47.92	5835.6	-49.78
15	[PRO115	115.00]	AMPS	3209.6	-53.78	0.0	0.00
18	[CAC115	115.00]	AMPS	11924.9	-73.49	12816.1	-79.19
19	[C.V115	115.00]	AMPS	8731.4	-77.13	6200.8	-83.20
20	[CH.AZUL	115.00]	AMPS	1923.8	-50.03	0.0	0.00
21	[C.BAN115	115.00]	AMPS	10576.8	-74.00	8521.1	-79.17
23	[CH115	115.00]	AMPS	6398.7	-80.72	4518.2	-83.87
26	[LOC115	115.00]	AMPS	10867.1	-73.67	9682.8	-78.10
30	[MAR115	115.00]	AMPS	9681.8	-74.65	7895.1	-79.68
33	[STM115	115.00]	AMPS	10799.6	-74.20	10550.5	-79.95
37	[SAN115	115.00]	AMPS	10090.1	-74.69	7464.0	-80.62
48	[TINAJ115	115.00]	AMPS	9185.8	-76.51	7091.2	-82.28
50	[M.O115	115.00]	AMPS	9757.9	-75.83	8038.6	-81.87
52	[TOC115	115.00]	AMPS	7730.4	-79.10	4711.3	-84.00
54	[LM1115	115.00]	AMPS	11153.1	-81.52	13538.6	-84.29
55	[LM2115	115.00]	AMPS	11170.5	-81.71	13553.4	-84.44
61	[FFIELD	115.00]	AMPS	8465.9	-82.46	8759.1	-79.81
85	[PTP230	230.00]	AMPS	4491.2	-50.18	4389.5	-43.96
87	[CAL115	115.00]	AMPS	6351.5	-44.58	8266.9	-43.68
88	[EST115	115.00]	AMPS	5554.4	-43.08	7685.7	-43.16
92	[L.V115	115.00]	AMPS	6047.4	-43.98	8329.8	-44.03
96	[FOR230	230.00]	AMPS	8405.1	-51.33	9699.0	-50.35
100	[BAY230	230.00]	AMPS	4795.2	-78.92	5376.8	-81.99
103	[COPESA23	230.00]	AMPS	5374.3	-75.02	5522.4	-78.95
105	[PAN-AM23	230.00]	AMPS	5106.3	-71.92	5495.7	-76.21
109	[STA RITA115	115.00]	AMPS	10416.1	-80.99	10041.7	-82.08
115	[PACORA23	230.00]	AMPS	4961.2	-76.06	4679.6	-79.48
144	[CANJ230	230.00]	AMPS	7398.6	-52.21	7885.7	-51.04
146	[GUALACA230	230.00]	AMPS	7110.7	-46.25	8142.6	-47.36
147	[GUASQ230	230.00]	AMPS	7771.8	-52.23	8710.0	-51.45
148	[VELADERO 230	230.00]	AMPS	7396.6	-55.77	6214.9	-54.96
149	[BBLANCO	230.00]	AMPS	6267.7	-56.32	4873.1	-54.99
154	[CEMPAN15	115.00]	AMPS	6571.5	-82.08	6500.5	-85.60
190	[CHANG230	230.00]	AMPS	4768.6	-48.19	3858.4	-46.27
191	[CHANG115	115.00]	AMPS	3355.4	-53.03	3813.5	-53.02
306	[CHAN1 230	230.00]	AMPS	4625.6	-48.30	5286.6	-45.58
310	[CONCEPCION23	230.00]	AMPS	6211.8	-49.03	5044.5	-48.86
311	[PANDO230	230.00]	AMPS	4640.2	-49.99	3558.2	-51.96
341	[PRUDENCIA230	230.00]	AMPS	5560.2	-34.48	6205.1	-34.21
345	[LORENA230	230.00]	AMPS	6279.3	-39.96	7132.6	-40.63
354	[SANBARTOLO23	230.00]	AMPS	4697.5	-60.51	3872.2	-60.16
370	[LSA CAP 230	230.00]	AMPS	5994.5	-62.87	5504.5	-65.04
371	[CAISAN230	230.00]	AMPS	4960.1	-49.98	3425.8	-50.43
511	[LGUIAS230	230.00]	AMPS	3713.7	-68.85	3439.5	-71.39
522	[TCATIVÁ 115	115.00]	AMPS	11187.1	-81.72	13587.9	-84.50
529	[TCOLON 115	115.00]	AMPS	7406.9	-83.09	0.0	0.00
540	[ANTON	230.00]	AMPS	2939.4	-76.48	3815.3	-76.68
700	[BAITUN230	230.00]	AMPS	4853.1	-47.44	4304.8	-47.16
701	[BAITUN115	115.00]	AMPS	2297.9	-47.78	2827.4	-47.40
702	[BJOMIN115	115.00]	AMPS	2152.6	-46.22	2714.1	-46.22
6000	[FRONTER	230.00]	AMPS	5435.7	-47.85	5311.9	-49.27
6400	[FRONTCHA	230.00]	AMPS	4307.8	-47.58	3127.1	-44.85
6500	[FRONT CAISAN230.00]	AMPS	4989.8	-49.64	3252.7	-49.79	



OUTPUT FOR AREA 7 [ACANAL]

X-----	BUS	-----X	THREE PHASE FAULT		ONE PHASE FAULT	
			/I+/ AMPS	AN (I+)	/IA/ AMPS	AN (IA)
123	[MIR115	115.00]	7689.9	-80.40	7352.5	-83.81