

ANEXO 39 - ALTERNATIVA 4

ANÁLISIS DE FLUJOS DE POTENCIA, ESTABILIDAD TRANSITORIA Y CORTO CIRCUITO

RESULTADOS DE FLUJOS DE POTENCIA

1. Año 2010

- 1.1 Demanda Máxima de Invierno
 - 1.1.1. Contingencia Panamá – Panamá II
 - 1.1.2. Contingencia Llano Sánchez – Panamá II
 - 1.1.3. Contingencia Guasquitas - Veladero
- 1.2 Demanda Mínima de Invierno

2. Año 2011

- 2.1 Demanda Máxima de Invierno
 - 2.1.1. Contingencia Panamá – Panamá II
 - 2.1.2. Contingencia Veladero – Llano Sánchez
 - 2.1.3. Contingencia Llano Sánchez – Panamá II
- 2.2 Demanda Mínima de Invierno
- 2.3 Demanda Máxima de Verano
- 2.4 Demanda Mínima de Verano

3. Año 2012

- 3.1 Demanda Máxima de Invierno
 - 3.1.1. Contingencia Chorrera – Panamá
 - 3.1.2. Contingencia Llano Sánchez – Veladero
 - 3.1.3. Contingencia Llano Sánchez – Panamá II
- 3.2 Demanda Mínima de Invierno
- 3.3 Demanda Máxima de Verano
- 3.4 Demanda Mínima de Verano

4. Año 2013

- 4.1. Demanda Máxima de Invierno
 - 4.1.1. Contingencia Chorrera – Panamá
 - 4.1.2. Contingencia Veladero – Llano Sánchez
 - 4.1.3. Contingencia Llano Sánchez – Panamá II
- 4.2. Demanda Mínima de Invierno
- 4.3. Demanda Máxima de Verano
- 4.4. Demanda Mínima de Verano

5. Año 2014

- 5.1. Demanda Máxima de Invierno
 - 5.1.1. Contingencia Llano Sánchez – Veladero
 - 5.1.2. Contingencia Guasquitas - Veladero
 - 5.1.3. Contingencia Antón - Panamá
- 5.2. Demanda Mínima de Invierno
- 5.3. Demanda Máxima de Verano
- 5.4. Demanda Mínima de Verano

6. Año 2017

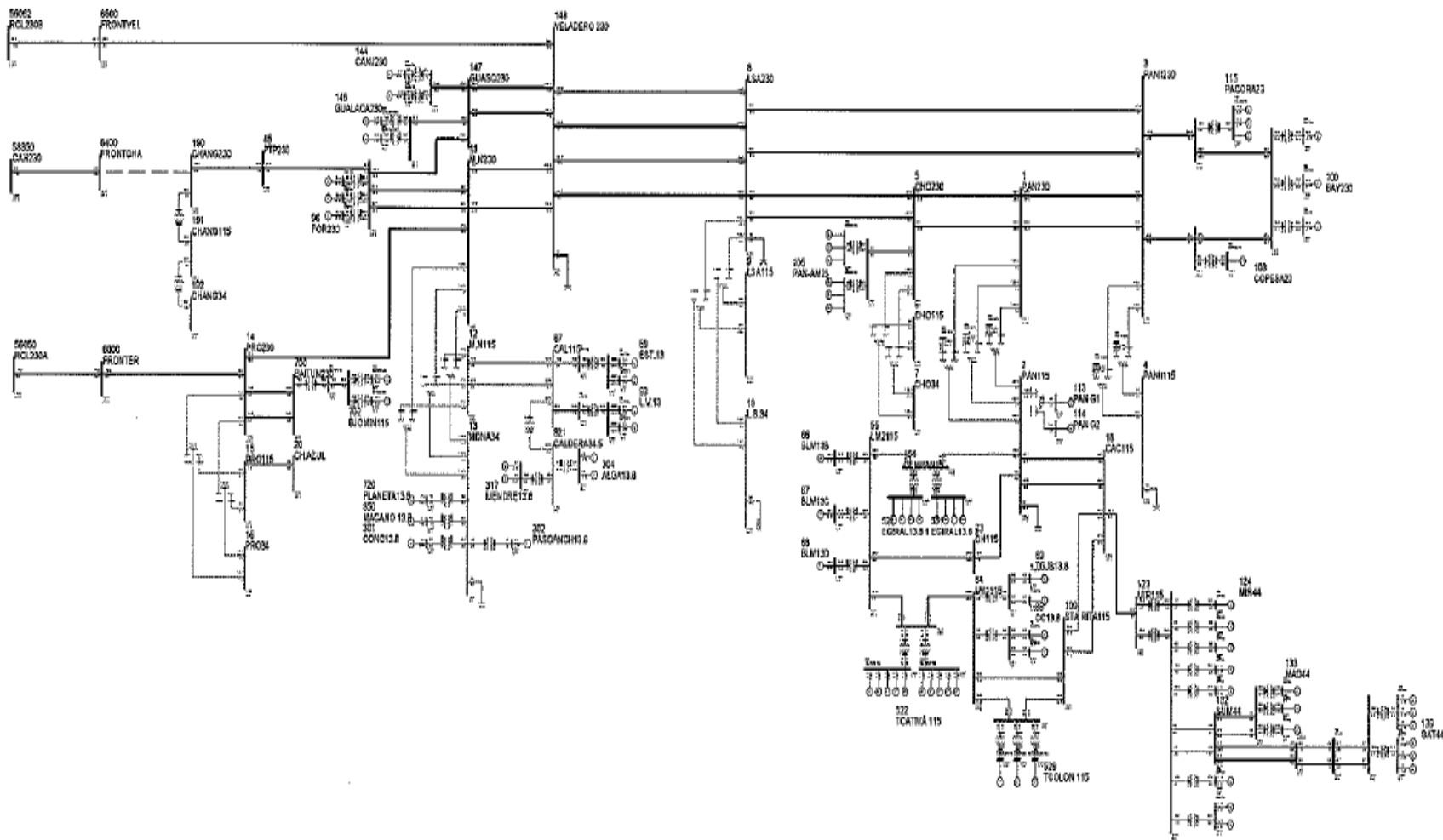
- 6.1. Demanda Máxima de Invierno
 - 6.1.1. Contingencia Chorrera – Panamá
 - 6.1.2. Contingencia Guasquitas - Veladero
 - 6.1.3. Contingencia Llano Sánchez – Panamá II
- 6.2. Demanda Mínima de Invierno
- 6.3. Demanda Máxima de Verano
- 6.4. Demanda Mínima de Verano

7. Año 2020

- 7.1. Demanda Máxima de Invierno
 - 7.1.1. Contingencia Chorrera – Panamá
 - 7.1.2. Contingencia Llano Sánchez – Panamá II
 - 7.1.3. Contingencia Guasquitas – Llano Sánchez
- 7.2. Demanda Mínima de Invierno
- 7.3. Demanda Máxima de Verano
- 7.4. Demanda Mínima de Verano

1. Año 2010

1.1. Demanda Máxima de Invierno



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

FRI, OCT 15 2010 14:05

BUSES WITH VOLTAGE 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	1.0055	231.26	14		PRO230		230.00	6	1.0154	233.53
96		FOR230		230.00	6	1.0020	230.46	100		BAY230		230.00	6	1.0287	236.61
103		COPESA23		230.00	6	1.0010	230.24	115		PACORA23		230.00	6	1.0068	231.57
144		CANJ230		230.00	6	1.0019	230.43	146		GUALACA230		230.00	6	1.0032	230.73
147		GUASQ230		230.00	6	1.0019	230.44	148		VELADERO 230		230.00	6	1.0025	230.59
700		BAITUN230		230.00	6	1.0154	233.54	6000		FRONTER		230.00	6	1.0166	233.81
6400		FRONTCHA		230.00	6	1.0382	238.80	6500		FRONTVEL		230.00	6	1.0192	234.41

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9905	227.83	3		PANII230		230.00	6	0.9957	229.01
5		CHO230		230.00	6	0.9887	227.40	8		LSA230		230.00	6	0.9927	228.32
85		PTP230		230.00	6	0.9882	227.28	105		PAN-AM23		230.00	6	0.9887	227.40
190		CHANG230		230.00	6	0.9852	226.59								

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

FRI, OCT 15 2010 14:05

BUSES WITH VOLTAGE 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	1.0343	118.95	15		PRO115		115.00	6	1.0172	116.98
20		CH.AZUL		115.00	6	1.0179	117.06	54		LM1115		115.00	6	1.0217	117.50
55		LM2115		115.00	6	1.0227	117.61	61		FFIELD		115.00	6	1.0189	117.18
87		CAL115		115.00	6	1.0109	116.25	88		EST115		115.00	6	1.0141	116.62
92		L.V115		115.00	6	1.0121	116.40	109		STA RITA115		115.00	6	1.0187	117.15
154		CEMPAN15		115.00	6	1.0131	116.51	522		TCATIVÁ 115		115.00	6	1.0224	117.58
529		TCOLON 115		115.00	6	1.0202	117.32								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9928	114.18	4		PANII115		115.00	6	0.9982	114.79
6		CHO115		115.00	6	0.9899	113.83	12		M.N115		115.00	6	0.9979	114.75
18		CAC115		115.00	6	0.9927	114.16	19		C.V115		115.00	6	0.9889	113.73
21		C.BAN115		115.00	6	0.9843	113.19	23		CH115		115.00	6	0.9972	114.68
26		LOC115		115.00	6	0.9852	113.30	30		MAR115		115.00	6	0.9840	113.16
33		STM115		115.00	6	0.9911	113.98	37		SAN115		115.00	6	0.9834	113.09
48		TINAJ115		115.00	6	0.9907	113.93	50		M.O115		115.00	6	0.9908	113.94
52		TOC115		115.00	6	0.9957	114.50	123		MIR115		115.00	7	0.9997	114.96
191		CHANG115		115.00	6	0.9809	112.81	701		BAITUN115		115.00	6	0.9932	114.22
702		BJOMIN115		115.00	6	0.9951	114.44								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 14:05
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2010 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
66		BLM13B		13.800	V2	38.0	13.3	25.0	0.0	1.0000	40.3	0.9436	47.0			62	6
67		BLM13C		13.800	V3	38.0	13.3	25.0	0.0	1.0000	40.3	0.9436	47.0			62	6
68		BLM13D		13.800	V4	38.0	13.9	25.0	0.0	1.0000	40.5	0.9394	47.0			62	6
90		EST-13L		13.800	E1	22.8	5.1	12.0	-5.0	0.9800	23.9	0.9755	27.0			64	6
91		EST-13T		13.800	E2	22.8	5.1	12.0	-5.0	0.9800	23.9	0.9755	27.0			64	6
94		LV-13.8L		13.800	L1	25.6	5.9	12.0	-5.0	0.9800	26.9	0.9742	27.0			64	6
95		LV-13.8T		13.800	L2	25.6	5.9	12.0	-5.0	0.9800	26.9	0.9742	27.0			64	6
97		FOR13A		13.800	F1	93.4	-14.7	50.0	-50.0	0.9800	96.5	0.9878	111.0			64	6
98		FOR13B		13.800	F2	93.4	-14.7	50.0	-50.0	0.9800	96.5	0.9878	111.0			64	6
99		FOR13C		13.800	F3	93.4	-14.7	50.0	-50.0	0.9800	96.5	0.9878	111.0			64	6
101		BAY13A		13.800	B1	58.5	26.1	50.0	-25.0	1.0100	63.5	0.9131	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	56.6	26.0	50.0	-25.0	1.0100	61.7	0.9089	96.0			61	6
108		BAY13C		13.800	B3	56.6	26.0	50.0	-25.0	1.0100	61.7	0.9089	100.0			61	6
116		PACORA13		13.800	P1	14.5	5.2	8.8	0.0	1.0200	15.1	0.9406	21.7			61	6
116		PACORA13		13.800	P2	17.5	6.3	8.8	0.0	1.0200	18.2	0.9406	21.7			61	6
142		CANJ13A		13.800	C1	57.0	15.1	29.0	-29.0	0.9800	60.2	0.9665	69.0			64	6
143		CANJ13B		13.800	C2	57.0	15.1	29.0	-29.0	0.9800	60.2	0.9665	69.0			64	6
150		GUALACA 13-213.800		13.800	G2	14.0	-2.9	7.4	-7.4	0.9900	14.4	0.9796	14.8			64	6
151		GUALACA13.8		13.800	G1	14.0	-2.9	7.4	-7.4	0.9900	14.4	0.9796	14.8			64	6
301		CONC13.8		13.800	G1	9.5	5.0	5.0	-5.0	0.9691	11.1	0.8849	13.5			64	6
302		PASOANCH13.813.800		13.800	P1	4.8	2.0	2.0	-2.0	0.9672	5.3	0.9216	6.2			64	6
304		ALGA13.8		13.800	A1	4.8	-2.3	2.3	-2.3	1.0705	5.0	0.9063	5.7			64	6

304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.0705	5.0	0.9063	5.7	64	6
317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0725	8.8	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.0725	8.8	1.0000	35.3	64	6
350	MACANO 13.8	13.800	G1	3.3	-1.0	2.0	-1.0	1.0638	3.2	0.9560	6.2	64	6
523	TCATIVÁ 13A	13.800	G1	6.3	3.4	6.6	-6.6	1.0000	7.1	0.8769	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	6.3	3.4	6.6	-6.6	1.0000	7.1	0.8769	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	6.3	3.4	6.6	-6.6	1.0000	7.1	0.8769	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	6.3	3.4	6.6	-6.6	1.0000	7.1	0.8769	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	6.3	3.4	6.6	-6.6	1.0000	7.1	0.8769	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	6.3	3.4	6.6	-6.6	1.0000	7.1	0.8769	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	6.3	3.4	6.6	-6.6	1.0000	7.1	0.8769	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	6.3	3.4	6.6	-6.6	1.0000	7.1	0.8769	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	6.3	3.4	6.6	-6.6	1.0000	7.1	0.8769	10.9	62	6
524	TCATIVÁ 13B	13.800	G9	6.3	3.4	6.6	-6.6	1.0000	7.1	0.8769	10.9	62	6
703	BJOMIN13A	13.800	G1	25.0	1.5	13.0	-13.0	0.9900	25.3	0.9983	30.5	64	6
704	BJOMIN13B	13.800	G2	25.0	1.5	13.0	-13.0	0.9900	25.3	0.9983	30.5	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9672	5.1	0.9138	6.2	64	6
SUBSYSTEM TOTALS				1000.0	173.5	620.6	-423.9				1369.6		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 14:05
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2010 ESC-MOD DEMANDA-MAX-INVIERNO

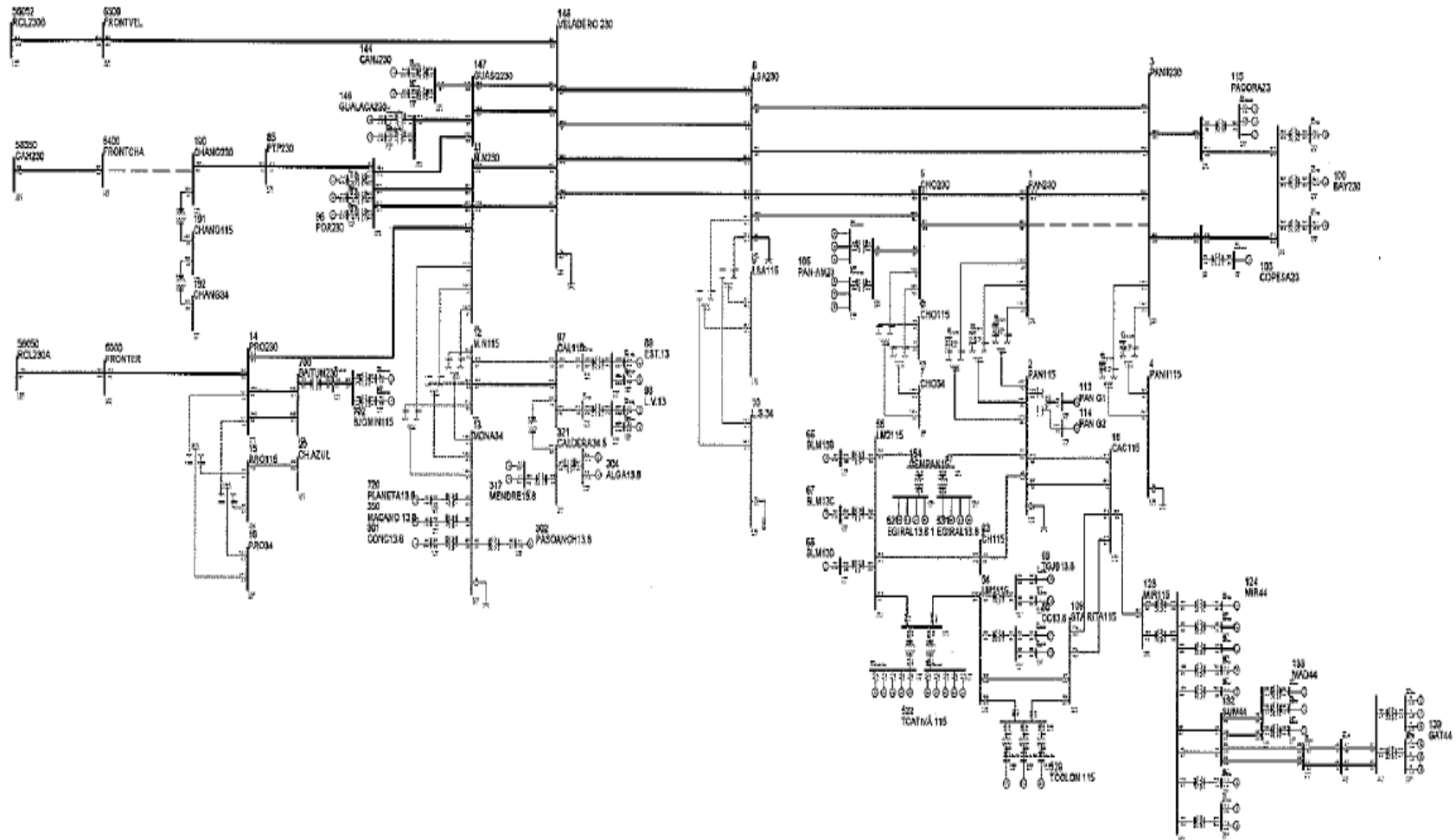
AREA 7 [ACANAL] MACHINE SUMMARY:

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	13.1	2.2	15.0	0.0	1.0000	13.3	0.9865	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0138	16.9	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-0.9	2.0	-2.0	1.0000	2.1	0.9099	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-0.9	2.0	-2.0	1.0000	2.1	0.9099	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-0.9	2.0	-2.0	1.0000	2.1	0.9099	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9213	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9213	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9213	6.2			65	7
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0282	17.8	0.9281	23.0			65	7
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0372	17.7	0.9281	23.0			65	7
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0372	17.7	0.9281	23.0			65	7
SUBSYSTEM TOTALS						98.6	15.1	71.5	5.5				171.3				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 14:05
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2010 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	1374.7	1330.8	0.0	0.0	0.0	0.0	43.9	0.0
GUATEMAL	200.7	275.1	-198.7	0.0	277.7	0.0	402.0	
2	868.7	855.0	0.0	0.0	0.0	0.0	13.7	0.0
SALVADOR	73.2	224.2	-70.8	0.0	229.1	-26.1	175.0	
3	1236.8	1203.0	0.0	0.0	0.0	0.0	33.8	0.0
HONDURAS	461.5	321.1	-47.3	0.0	294.0	54.2	427.6	
4	532.0	525.2	0.0	0.0	0.0	0.0	6.8	0.0
NICARAGU	33.0	207.6	-57.8	0.0	182.3	-47.3	112.7	
5	1348.6	1280.2	0.0	0.0	0.0	49.5	18.9	49.0
COSTA RI	218.1	520.4	-230.5	0.0	418.4	19.3	327.2	
6	1000.0	1065.9	0.0	0.0	0.0	-108.7	42.8	-109.0
PANAMA	173.5	216.4	-64.2	0.0	443.9	2.6	462.6	
7	98.6	38.9	0.0	0.0	0.0	59.2	0.5	60.0
ACANAL	15.1	7.9	0.0	0.0	0.0	-2.7	9.9	
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	6459.4	6299.0	0.0	0.0	0.0	0.0	160.4	0.0
	1175.0	1772.6	-669.2	0.0	1845.3	0.0	1917.0	

1.1.1. Contingencia Panamá – Panamá I



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

FRI, OCT 15 2010 14:59

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	1.0047	231.08	14		PRO230		230.00	6	1.0146	233.36
96		FOR230		230.00	6	1.0014	230.32	100		BAY230		230.00	6	1.0285	236.55
103		COPESA23		230.00	6	1.0007	230.15	115		PACORA23		230.00	6	1.0065	231.49
144		CANJ230		230.00	6	1.0011	230.26	146		GUALACA230		230.00	6	1.0024	230.56
147		GUASQ230		230.00	6	1.0011	230.26	148		VELADERO	230	230.00	6	1.0013	230.30
700		BAITUN230		230.00	6	1.0147	233.37	6000		FRONTER		230.00	6	1.0158	233.64
6400		FRONTCHA		230.00	6	1.0380	238.75	6500		FRONTVEL		230.00	6	1.0183	234.22

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9860	226.78	3		PANII230		230.00	6	0.9953	228.91
5		CHO230		230.00	6	0.9845	226.43	8		LSA230		230.00	6	0.9908	227.89
85		PTP230		230.00	6	0.9875	227.13	105		PAN-AM23		230.00	6	0.9845	226.43
190		CHANG230		230.00	6	0.9845	226.44								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
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BUSES WITH VOLTAGE 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	1.0323	118.72	15		PRO115		115.00	6	1.0164	116.89
20		CH.AZUL		115.00	6	1.0172	116.98	54		LM1115		115.00	6	1.0201	117.31
55		LM2115		115.00	6	1.0211	117.42	61		FFIELD		115.00	6	1.0173	116.99
87		CAL115		115.00	6	1.0106	116.22	88		EST115		115.00	6	1.0138	116.59
92		L.V115		115.00	6	1.0118	116.36	109		STA RITA115		115.00	6	1.0169	116.94
154		CEMPAN15		115.00	6	1.0109	116.26	522		TCATIVÁ	115	115.00	6	1.0208	117.39
529		TCOLON	115	115.00	6	1.0185	117.13								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9894	113.78	4		PANII115		115.00	6	0.9971	114.66
6		CHO115		115.00	6	0.9857	113.35	12		M.N115		115.00	6	0.9974	114.70
18		CAC115		115.00	6	0.9892	113.76	19		C.V115		115.00	6	0.9870	113.51
21		C.BAN115		115.00	6	0.9811	112.82	23		CH115		115.00	6	0.9945	114.37
26		LOC115		115.00	6	0.9819	112.92	30		MAR115		115.00	6	0.9807	112.78
33		STM115		115.00	6	0.9876	113.58	37		SAN115		115.00	6	0.9803	112.73
48		TINAJ115		115.00	6	0.9872	113.52	50		M.O115		115.00	6	0.9873	113.54
52		TOC115		115.00	6	0.9945	114.37	123		MIR115		115.00	7	0.9966	114.60
191		CHANG115		115.00	6	0.9803	112.73	701		BAITUN115		115.00	6	0.9928	114.17
702		BJOMIN115		115.00	6	0.9947	114.39								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 14:59
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2010 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	14.0	25.0	0.0	1.0000	40.5	0.9381	47.0			62	6
67		BLM13C		13.800	V3	38.0	14.0	25.0	0.0	1.0000	40.5	0.9381	47.0			62	6
68		BLM13D		13.800	V4	38.0	14.6	25.0	0.0	1.0000	40.7	0.9335	47.0			62	6
90		EST-13L		13.800	E1	22.8	5.2	12.0	-5.0	0.9800	23.9	0.9747	27.0			64	6
91		EST-13T		13.800	E2	22.8	5.2	12.0	-5.0	0.9800	23.9	0.9747	27.0			64	6
94		LV-13.8L		13.800	L1	25.7	6.0	12.0	-5.0	0.9800	26.9	0.9735	27.0			64	6
95		LV-13.8T		13.800	L2	25.7	6.0	12.0	-5.0	0.9800	26.9	0.9735	27.0			64	6
97		FOR13A		13.800	F1	93.5	-14.1	50.0	-50.0	0.9800	96.5	0.9888	111.0			64	6
98		FOR13B		13.800	F2	93.5	-14.1	50.0	-50.0	0.9800	96.5	0.9888	111.0			64	6
99		FOR13C		13.800	F3	93.5	-14.1	50.0	-50.0	0.9800	96.5	0.9888	111.0			64	6
101		BAY13A		13.800	B1	58.6	26.3	50.0	-25.0	1.0100	63.6	0.9121	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	56.7	26.2	50.0	-25.0	1.0100	61.8	0.9078	96.0			61	6
108		BAY13C		13.800	B3	56.7	26.2	50.0	-25.0	1.0100	61.8	0.9078	100.0			61	6
116		PACORA13		13.800	P1	14.5	5.3	8.8	0.0	1.0200	15.1	0.9388	21.7			61	6
116		PACORA13		13.800	P2	17.5	6.4	8.8	0.0	1.0200	18.3	0.9388	21.7			61	6
142		CANJ13A		13.800	C1	57.0	15.3	29.0	-29.0	0.9800	60.2	0.9659	69.0			64	6
143		CANJ13B		13.800	C2	57.0	15.3	29.0	-29.0	0.9800	60.2	0.9659	69.0			64	6
150		GUALACA 13-213.800		13.800	G2	14.0	-2.7	7.4	-7.4	0.9900	14.4	0.9821	14.8			64	6
151		GUALACA13.8		13.800	G1	14.0	-2.7	7.4	-7.4	0.9900	14.4	0.9821	14.8			64	6
301		CONC13.8		13.800	G1	9.5	5.0	5.0	-5.0	0.9683	11.1	0.8850	13.5			64	6
302		PASOANCH13.8		13.800	P1	4.8	2.0	2.0	-2.0	0.9664	5.3	0.9217	6.2			64	6
304		ALGA13.8		13.800	A1	4.8	-2.3	2.3	-2.3	1.0701	5.0	0.9063	5.7			64	6

304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.0701	5.0	0.9063	5.7	64	6
317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0722	8.8	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.0722	8.8	1.0000	35.3	64	6
350	MACANO 13.8	13.800	G1	3.3	-1.0	2.0	-1.0	1.0630	3.2	0.9560	6.2	64	6
523	TCATIVÁ 13A	13.800	G1	6.3	3.6	6.6	-6.6	1.0000	7.2	0.8655	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	6.3	3.6	6.6	-6.6	1.0000	7.2	0.8655	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	6.3	3.6	6.6	-6.6	1.0000	7.2	0.8655	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	6.3	3.6	6.6	-6.6	1.0000	7.2	0.8655	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	6.3	3.6	6.6	-6.6	1.0000	7.2	0.8655	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	6.3	3.6	6.6	-6.6	1.0000	7.2	0.8655	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	6.3	3.6	6.6	-6.6	1.0000	7.2	0.8655	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	6.3	3.6	6.6	-6.6	1.0000	7.2	0.8655	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	6.3	3.6	6.6	-6.6	1.0000	7.2	0.8655	10.9	62	6
524	TCATIVÁ 13B	13.800	G9	6.3	3.6	6.6	-6.6	1.0000	7.2	0.8655	10.9	62	6
703	BJOMIN13A	13.800	G1	25.0	1.5	13.0	-13.0	0.9900	25.3	0.9981	30.5	64	6
704	BJOMIN13B	13.800	G2	25.0	1.5	13.0	-13.0	0.9900	25.3	0.9981	30.5	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9664	5.1	0.9138	6.2	64	6
SUBSYSTEM TOTALS				1000.3	181.1	620.6	-423.9				1369.6		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 14:59
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2010 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	13.1	2.9	15.0	0.0	1.0000	13.4	0.9757	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0119	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	0.9201	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9201	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9201	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9263	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9263	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9263	6.2			65	7
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0263	17.9	0.9281	23.0			65	7
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0354	17.7	0.9281	23.0			65	7
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0354	17.7	0.9281	23.0			65	7
SUBSYSTEM TOTALS						98.6	16.2	71.5	5.5				171.3				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:05
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2010 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	1375.0	1330.8	0.0	0.0	0.0	0.3	43.9	0.0
GUATEMAL	200.7	275.1	-198.7	0.0	277.7	0.0	402.0	
2	868.8	855.0	0.0	0.0	0.0	0.1	13.7	0.0
SALVADOR	73.2	224.2	-70.8	0.0	229.1	-26.1	175.1	
3	1236.9	1203.0	0.0	0.0	0.0	0.1	33.8	0.0
HONDURAS	461.6	321.1	-47.3	0.0	294.0	54.2	427.7	
4	532.0	525.2	0.0	0.0	0.0	0.0	6.8	0.0
NICARAGU	33.0	207.6	-57.8	0.0	182.3	-47.3	112.7	
5	1348.8	1280.2	0.0	0.0	0.0	49.6	19.0	49.0
COSTA RI	218.9	520.4	-230.4	0.0	418.3	19.6	327.6	
6	1000.3	1065.9	0.0	0.0	0.0	-109.4	43.8	-109.0
PANAMA	181.1	216.4	-63.8	0.0	440.0	1.3	467.2	
7	98.6	38.9	0.0	0.0	0.0	59.2	0.5	60.0
ACANAL	16.2	7.9	0.0	0.0	0.0	-1.6	9.9	
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	6460.4	6299.0	0.0	0.0	0.0	0.0	161.4	0.0
	1184.6	1772.6	-668.8	0.0	1841.3	0.0	1922.1	

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

FRI, OCT 15 2010 15:11

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
14		PRO230		230.00	6	1.0055	231.27	100		BAY230		230.00	6	1.0165	233.81
700		BAITUN230		230.00	6	1.0057	231.31	6000		FRONTER		230.00	6	1.0067	231.54
6400		FRONTCHA		230.00	6	1.0356	238.20	6500		FRONTVEL		230.00	6	1.0082	231.90

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	0.9693	222.94	3		PANII230		230.00	6	0.9750	224.26
5		CHO230		230.00	6	0.9637	221.66	8		LSA230		230.00	6	0.9672	222.45
11		M.N230		230.00	6	0.9951	228.86	85		PTP230		230.00	6	0.9795	225.28
96		FOR230		230.00	6	0.9936	228.53	103		COPESA23		230.00	6	0.9817	225.79
105		PAN-AM23		230.00	6	0.9637	221.66	115		PACORA23		230.00	6	0.9893	227.54
144		CANJ230		230.00	6	0.9919	228.14	146		GUALACA230		230.00	6	0.9933	228.46
147		GUASQ230		230.00	6	0.9919	228.13	148		VELADERO	230	230.00	6	0.9857	226.70
190		CHANG230		230.00	6	0.9764	224.58								

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

FRI, OCT 15 2010 15:11

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	1.0067	115.77	15		PRO115		115.00	6	1.0073	115.84
20		CH.AZUL		115.00	6	1.0081	115.93	54		LM1115		115.00	6	1.0132	116.52
55		LM2115		115.00	6	1.0143	116.64	61		FFIELD		115.00	6	1.0105	116.20
87		CAL115		115.00	6	1.0067	115.77	88		EST115		115.00	6	1.0103	116.19
92		L.V115		115.00	6	1.0081	115.93	109		STA RITA115		115.00	6	1.0092	116.05
154		CEMPAN15		115.00	6	1.0019	115.21	522		TCATIVÁ	115	115.00	6	1.0140	116.61
529		TCOLON	115	115.00	6	1.0112	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	0.9748	112.10	4		PANII115		115.00	6	0.9779	112.45
6		CHO115		115.00	6	0.9649	110.97	12		M.N115		115.00	6	0.9916	114.04
18		CAC115		115.00	6	0.9747	112.09	19		C.V115		115.00	6	0.9690	111.44
21		C.BAN115		115.00	6	0.9657	111.06	23		CH115		115.00	6	0.9831	113.05
26		LOC115		115.00	6	0.9667	111.18	30		MAR115		115.00	6	0.9657	111.06
33		STM115		115.00	6	0.9730	111.89	37		SAN115		115.00	6	0.9647	110.94
48		TINAJ115		115.00	6	0.9725	111.84	50		M.O115		115.00	6	0.9726	111.85
52		TOC115		115.00	6	0.9753	112.16	123		MIR115		115.00	7	0.9834	113.09
191		CHANG115		115.00	6	0.9722	111.80	701		BAITUN115		115.00	6	0.9871	113.51
702		BJOMIN115		115.00	6	0.9895	113.79								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:11
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2010 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	17.0	25.0	0.0	1.0000	41.6	0.9133	47.0			62	6
67		BLM13C		13.800	V3	38.0	17.0	25.0	0.0	1.0000	41.6	0.9133	47.0			62	6
68		BLM13D		13.800	V4	38.0	17.7	25.0	0.0	1.0000	41.9	0.9069	47.0			62	6
90		EST-13L		13.800	E1	22.8	6.2	12.0	-5.0	0.9800	24.2	0.9648	27.0			64	6
91		EST-13T		13.800	E2	22.8	6.2	12.0	-5.0	0.9800	24.2	0.9648	27.0			64	6
94		LV-13.8L		13.800	L1	25.7	7.1	12.0	-5.0	0.9800	27.2	0.9639	27.0			64	6
95		LV-13.8T		13.800	L2	25.7	7.1	12.0	-5.0	0.9800	27.2	0.9639	27.0			64	6
97		FOR13A		13.800	F1	93.6	-7.2	50.0	-50.0	0.9800	95.8	0.9971	111.0			64	6
98		FOR13B		13.800	F2	93.6	-7.2	50.0	-50.0	0.9800	95.8	0.9971	111.0			64	6
99		FOR13C		13.800	F3	93.6	-7.2	50.0	-50.0	0.9800	95.8	0.9971	111.0			64	6
101		BAY13A		13.800	B1	58.8	35.3	50.0	-25.0	1.0100	67.9	0.8570	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	56.8	35.2	50.0	-25.0	1.0100	66.2	0.8501	96.0			61	6
108		BAY13C		13.800	B3	56.8	35.2	50.0	-25.0	1.0100	66.2	0.8501	100.0			61	6
116		PACORA13		13.800	P1	14.5	8.8	8.8	0.0	1.0137	16.8	0.8543	21.7			61	6
116		PACORA13		13.800	P2	17.5	8.8	8.8	0.0	1.0137	19.4	0.8929	21.7			61	6
142		CANJ13A		13.800	C1	57.1	16.8	29.0	-29.0	0.9800	60.8	0.9592	69.0			64	6
143		CANJ13B		13.800	C2	57.1	16.8	29.0	-29.0	0.9800	60.8	0.9592	69.0			64	6
150		GUALACA 13-213.800		G2	14.0	-0.4	7.4	-7.4	0.9900	14.1	0.9995	14.8			64	6	
151		GUALACA13.8		G1	14.0	-0.4	7.4	-7.4	0.9900	14.1	0.9995	14.8			64	6	
301		CONC13.8		G1	9.5	5.0	5.0	-5.0	0.9589	11.2	0.8854	13.5			64	6	
302		PASOANCH13.8		P1	4.8	2.0	2.0	-2.0	0.9570	5.4	0.9219	6.2			64	6	
304		ALGA13.8		A1	4.8	-2.3	2.3	-2.3	1.0658	5.0	0.9063	5.7			64	6	

304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.0658	5.0	0.9063	5.7	64	6
317	MENDRE13.8	13.800	M1	9.5	0.0	0.0	0.0	1.0679	8.9	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.5	0.0	0.0	0.0	1.0679	8.9	1.0000	35.3	64	6
350	MACANO 13.8	13.800	G1	3.3	-1.0	2.0	-1.0	1.0526	3.2	0.9562	6.2	64	6
523	TCATIVÁ 13A	13.800	G1	6.3	4.4	6.6	-6.6	1.0000	7.7	0.8168	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	6.3	4.4	6.6	-6.6	1.0000	7.7	0.8168	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	6.3	4.4	6.6	-6.6	1.0000	7.7	0.8168	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	6.3	4.4	6.6	-6.6	1.0000	7.7	0.8168	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	6.3	4.4	6.6	-6.6	1.0000	7.7	0.8168	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	6.3	4.4	6.6	-6.6	1.0000	7.7	0.8168	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	6.3	4.4	6.6	-6.6	1.0000	7.7	0.8168	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	6.3	4.4	6.6	-6.6	1.0000	7.7	0.8168	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	6.3	4.4	6.6	-6.6	1.0000	7.7	0.8168	10.9	62	6
524	TCATIVÁ 13B	13.800	G9	6.3	4.4	6.6	-6.6	1.0000	7.7	0.8168	10.9	62	6
703	BJOMIN13A	13.800	G1	25.1	2.3	13.0	-13.0	0.9900	25.4	0.9958	30.5	64	6
704	BJOMIN13B	13.800	G2	25.1	2.3	13.0	-13.0	0.9900	25.4	0.9958	30.5	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9570	5.1	0.9138	6.2	64	6
SUBSYSTEM TOTALS				1002.1	265.4	620.6	-423.9				1369.6		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:11
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2010 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	13.2	6.2	15.0	0.0	1.0000	14.5	0.9053	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0038	17.1	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9582	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9582	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9582	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9462	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9462	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9462	6.2			65	7
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0184	18.0	0.9284	23.0			65	7
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0275	17.9	0.9284	23.0			65	7
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0275	17.9	0.9284	23.0			65	7
SUBSYSTEM TOTALS						98.8	20.9	71.5	5.5				171.3				

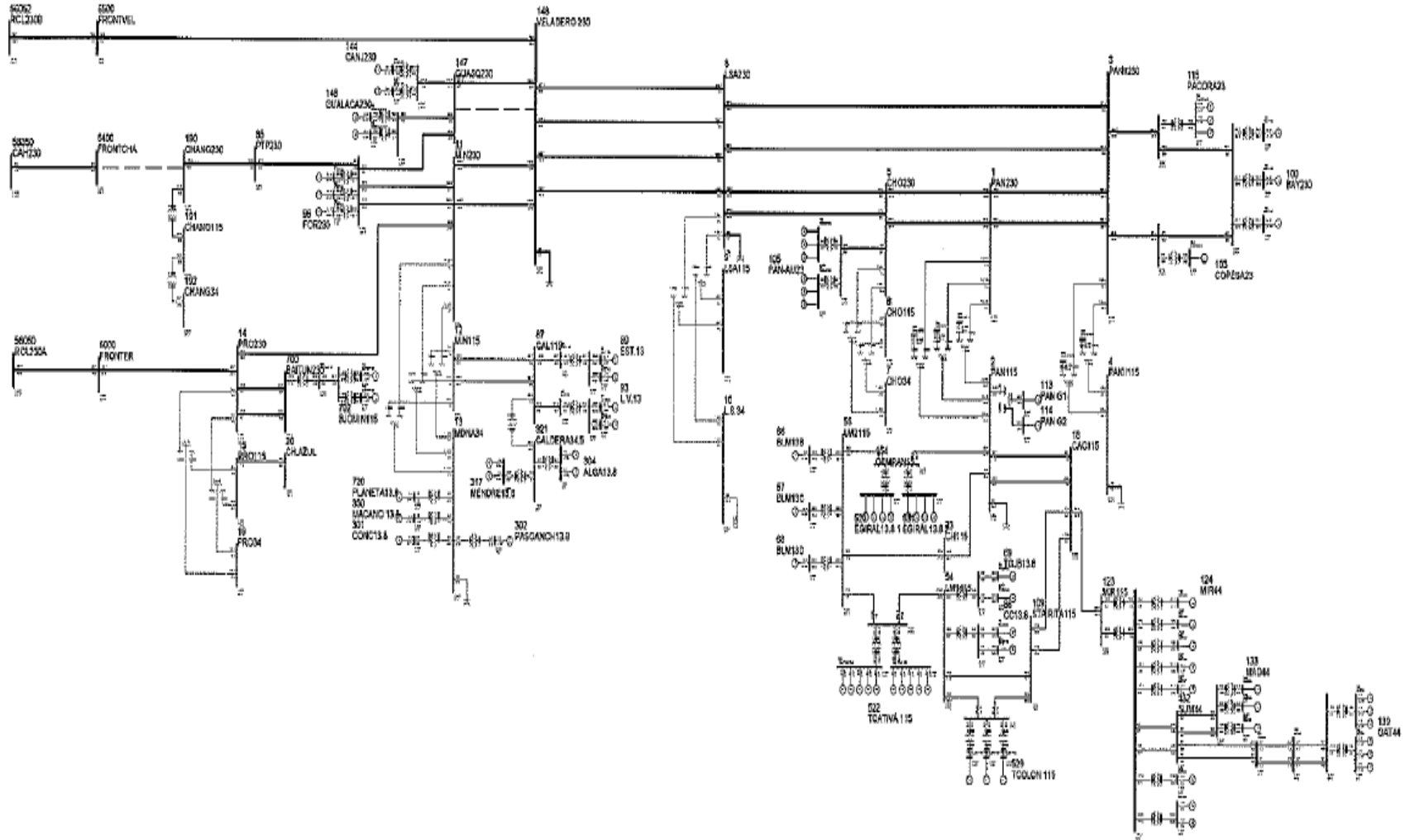
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2010 ESC-MOD DEMANDA-MAX-INVIERNO

FRI, OCT 15 2010 15:11

AREA TOTALS
 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1377.4	1330.8	0.0	0.0	0.0	2.6	44.0	0.0
GUATEMAL	201.0	275.1	-198.6	0.0	277.7	-0.4	402.6	
2	869.7	855.0	0.0	0.0	0.0	1.0	13.7	0.0
SALVADOR	73.3	224.2	-70.8	0.0	229.1	-26.3	175.3	
3	1237.6	1203.0	0.0	0.0	0.0	0.8	33.9	0.0
HONDURAS	461.7	321.1	-47.3	0.0	294.0	54.1	427.9	
4	532.3	525.2	0.0	0.0	0.0	0.2	6.8	0.0
NICARAGU	33.3	207.6	-57.7	0.0	182.2	-47.2	113.0	
5	1350.0	1280.2	0.0	0.0	0.0	50.6	19.3	49.0
COSTA RI	227.5	520.4	-230.1	0.0	417.2	23.5	330.8	
6	1002.1	1065.9	0.0	0.0	0.0	-114.6	50.8	-109.0
PANAMA	265.4	216.4	-62.6	0.0	393.8	-6.5	511.9	
7	98.8	38.9	0.0	0.0	0.0	59.4	0.5	60.0
ACANAL	20.9	7.9	0.0	0.0	0.0	2.7	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	6468.0	6299.0	0.0	0.0	0.0	0.0	169.0	0.0
	1283.1	1772.6	-667.2	0.0	1793.9	0.0	1971.7	

1.1.3. Contingencia Guasquitas – Veladero



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

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BUSES WITH VOLTAGE 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	1.0067	231.53	100		BAY230		230.00	6	1.0254	235.84
115		PACORA23		230.00	6	1.0021	230.48	700		BAITUN230		230.00	6	1.0068	231.57
6000		FRONTER		230.00	6	1.0078	231.80	6400		FRONTCHA		230.00	6	1.0360	238.28
6500		FRONTVEL		230.00	6	1.0096	232.21								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9846	226.46	3		PANII230		230.00	6	0.9900	227.69
5		CHO230		230.00	6	0.9815	225.74	8		LSA230		230.00	6	0.9817	225.80
11		M.N230		230.00	6	0.9962	229.13	85		PTP230		230.00	6	0.9811	225.66
96		FOR230		230.00	6	0.9952	228.89	103		COPESA23		230.00	6	0.9957	229.01
105		PAN-AM23		230.00	6	0.9815	225.74	144		CANJ230		230.00	6	0.9937	228.55
146		GUALACA230		230.00	6	0.9951	228.87	147		GUASQ230		230.00	6	0.9937	228.54
148		VELADERO		230230.00	6	0.9896	227.61	190		CHANG230		230.00	6	0.9781	224.96

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

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BUSES WITH VOLTAGE 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	1.0225	117.59	15		PRO115		115.00	6	1.0085	115.97
20		CH.AZUL		115.00	6	1.0092	116.06	54		LM1115		115.00	6	1.0194	117.23
55		LM2115		115.00	6	1.0203	117.34	61		FFIELD		115.00	6	1.0166	116.91
87		CAL115		115.00	6	1.0072	115.83	88		EST115		115.00	6	1.0108	116.24
92		L.V115		115.00	6	1.0086	115.99	109		STA RITA115		115.00	6	1.0160	116.84
154		CEMPAN15		115.00	6	1.0100	116.15	522		TCATIVÁ		115.00	6	1.0201	117.31
529		TCOLON		115.00	6	1.0177	117.03								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9878	113.60	4		PANII115		115.00	6	0.9926	114.15
6		CHO115		115.00	6	0.9827	113.01	12		M.N115		115.00	6	0.9923	114.12
18		CAC115		115.00	6	0.9877	113.58	19		C.V115		115.00	6	0.9834	113.09
21		C.BAN115		115.00	6	0.9791	112.60	23		CH115		115.00	6	0.9933	114.23
26		LOC115		115.00	6	0.9801	112.71	30		MAR115		115.00	6	0.9789	112.58
33		STM115		115.00	6	0.9860	113.40	37		SAN115		115.00	6	0.9782	112.49
48		TINAJ115		115.00	6	0.9856	113.34	50		M.O115		115.00	6	0.9857	113.36
52		TOC115		115.00	6	0.9900	113.85	123		MIR115		115.00	7	0.9951	114.44
191		CHANG115		115.00	6	0.9738	111.99	701		BAITUN115		115.00	6	0.9878	113.60
702		BJOMIN115		115.00	6	0.9901	113.87								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:16
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2010 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	14.4	25.0	0.0	1.0000	40.6	0.9356	47.0			62	6
67		BLM13C		13.800	V3	38.0	14.4	25.0	0.0	1.0000	40.6	0.9356	47.0			62	6
68		BLM13D		13.800	V4	38.0	14.9	25.0	0.0	1.0000	40.8	0.9308	47.0			62	6
90		EST-13L		13.800	E1	22.8	6.1	12.0	-5.0	0.9800	24.1	0.9661	27.0			64	6
91		EST-13T		13.800	E2	22.8	6.1	12.0	-5.0	0.9800	24.1	0.9661	27.0			64	6
94		LV-13.8L		13.800	L1	25.7	7.0	12.0	-5.0	0.9800	27.1	0.9651	27.0			64	6
95		LV-13.8T		13.800	L2	25.7	7.0	12.0	-5.0	0.9800	27.1	0.9651	27.0			64	6
97		FOR13A		13.800	F1	93.5	-8.6	50.0	-50.0	0.9800	95.9	0.9958	111.0			64	6
98		FOR13B		13.800	F2	93.5	-8.6	50.0	-50.0	0.9800	95.9	0.9958	111.0			64	6
99		FOR13C		13.800	F3	93.5	-8.6	50.0	-50.0	0.9800	95.9	0.9958	111.0			64	6
101		BAY13A		13.800	B1	58.7	28.7	50.0	-25.0	1.0100	64.6	0.8985	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	56.7	28.5	50.0	-25.0	1.0100	62.9	0.8936	96.0			61	6
108		BAY13C		13.800	B3	56.7	28.5	50.0	-25.0	1.0100	62.9	0.8936	100.0			61	6
116		PACORA13		13.800	P1	14.5	6.4	8.8	0.0	1.0200	15.5	0.9146	21.7			61	6
116		PACORA13		13.800	P2	17.5	7.7	8.8	0.0	1.0200	18.8	0.9146	21.7			61	6
142		CANJ13A		13.800	C1	57.1	16.5	29.0	-29.0	0.9800	60.6	0.9605	69.0			64	6
143		CANJ13B		13.800	C2	57.1	16.5	29.0	-29.0	0.9800	60.6	0.9605	69.0			64	6
150		GUALACA 13-213.800		13.800	G2	14.0	-0.9	7.4	-7.4	0.9900	14.2	0.9981	14.8			64	6
151		GUALACA13.8		13.800	G1	14.0	-0.9	7.4	-7.4	0.9900	14.2	0.9981	14.8			64	6
301		CONC13.8		13.800	G1	9.5	5.0	5.0	-5.0	0.9600	11.2	0.8852	13.5			64	6
302		PASOANCH13.8		13.800	P1	4.8	2.0	2.0	-2.0	0.9581	5.4	0.9218	6.2			64	6
304		ALGA13.8		13.800	A1	4.8	-2.3	2.3	-2.3	1.0664	5.0	0.9063	5.7			64	6

304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.0664	5.0	0.9063	5.7	64	6
317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0684	8.8	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.0684	8.8	1.0000	35.3	64	6
350	MACANO 13.8	13.800	G1	3.3	-1.0	2.0	-1.0	1.0538	3.2	0.9561	6.2	64	6
523	TCATIVÁ 13A	13.800	G1	6.3	3.7	6.6	-6.6	1.0000	7.3	0.8605	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	6.3	3.7	6.6	-6.6	1.0000	7.3	0.8605	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	6.3	3.7	6.6	-6.6	1.0000	7.3	0.8605	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	6.3	3.7	6.6	-6.6	1.0000	7.3	0.8605	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	6.3	3.7	6.6	-6.6	1.0000	7.3	0.8605	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	6.3	3.7	6.6	-6.6	1.0000	7.3	0.8605	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	6.3	3.7	6.6	-6.6	1.0000	7.3	0.8605	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	6.3	3.7	6.6	-6.6	1.0000	7.3	0.8605	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	6.3	3.7	6.6	-6.6	1.0000	7.3	0.8605	10.9	62	6
524	TCATIVÁ 13B	13.800	G9	6.3	3.7	6.6	-6.6	1.0000	7.3	0.8605	10.9	62	6
703	BJOMIN13A	13.800	G1	25.0	2.2	13.0	-13.0	0.9900	25.4	0.9962	30.5	64	6
704	BJOMIN13B	13.800	G2	25.0	2.2	13.0	-13.0	0.9900	25.4	0.9962	30.5	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9581	5.1	0.9138	6.2	64	6
SUBSYSTEM TOTALS				1001.3	220.2	620.6	-423.9				1369.6		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:16
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2010 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	13.1	3.3	15.0	0.0	1.0000	13.5	0.9700	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0110	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	0.9247	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9247	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9247	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9286	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9286	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9286	6.2			65	7
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0254	17.9	0.9283	23.0			65	7
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0345	17.7	0.9283	23.0			65	7
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0345	17.7	0.9283	23.0			65	7
SUBSYSTEM TOTALS						98.7	16.7	71.5	5.5				171.3				

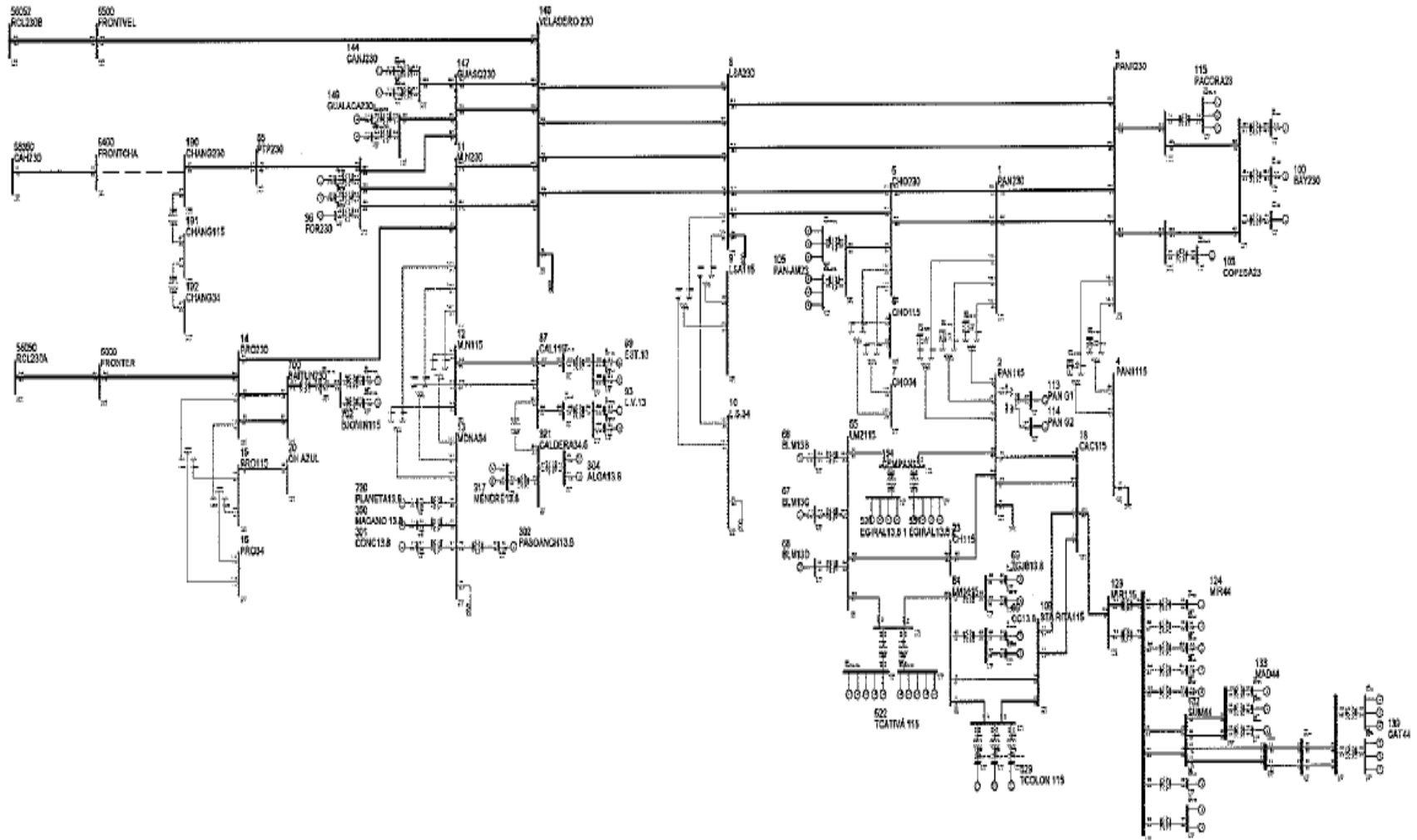
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2010 ESC-MOD DEMANDA-MAX-INVIERNO

FRI, OCT 15 2010 15:16

AREA TOTALS
 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1376.3	1330.8	0.0	0.0	0.0	1.6	43.9	0.0
GUATEMAL	200.8	275.1	-198.7	0.0	277.7	-0.2	402.3	
2	869.3	855.0	0.0	0.0	0.0	0.6	13.7	0.0
SALVADOR	73.3	224.2	-70.8	0.0	229.1	-26.2	175.2	
3	1237.3	1203.0	0.0	0.0	0.0	0.5	33.8	0.0
HONDURAS	461.7	321.1	-47.3	0.0	294.0	54.1	427.8	
4	532.2	525.2	0.0	0.0	0.0	0.1	6.8	0.0
NICARAGU	33.2	207.6	-57.8	0.0	182.3	-47.2	112.8	
5	1349.5	1280.2	0.0	0.0	0.0	50.1	19.2	49.0
COSTA RI	225.7	520.4	-230.2	0.0	417.3	23.1	329.7	
6	1001.3	1065.9	0.0	0.0	0.0	-112.2	47.5	-109.0
PANAMA	220.2	216.4	-63.9	0.0	420.9	-2.4	491.0	
7	98.7	38.9	0.0	0.0	0.0	59.4	0.5	60.0
ACANAL	16.7	7.9	0.0	0.0	0.0	-1.1	10.0	
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	
TOTALS	6464.5	6299.0	0.0	0.0	0.0	0.0	165.6	0.0

1.2. 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	0.9937	114.28	4		PANII115		115.00	6	0.9967	114.62
18		CAC115		115.00	6	0.9934	114.25	19		C.V115		115.00	6	0.9902	113.87
21		C.BAN115		115.00	6	0.9874	113.55	23		CH115		115.00	6	0.9918	114.06
26		LOC115		115.00	6	0.9881	113.63	30		MAR115		115.00	6	0.9873	113.54
33		STM115		115.00	6	0.9925	114.13	37		SAN115		115.00	6	0.9867	113.47
48		TINAJ115		115.00	6	0.9922	114.10	50		M.O115		115.00	6	0.9923	114.11
52		TOC115		115.00	6	0.9948	114.40	123		MIR115		115.00	7	0.9971	114.66
154		CEMPAN15		115.00	6	0.9998	114.98								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:27
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2010 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	31.5	12.1	25.0	0.0	0.9800	34.4	0.9336	47.0			62	6
67		BLM13C		13.800	V3	31.5	12.1	25.0	0.0	0.9800	34.4	0.9336	47.0			62	6
90		EST-13L		13.800	E1	19.9	3.4	12.0	-5.0	0.9800	20.6	0.9857	27.0			64	6
91		EST-13T		13.800	E2	19.9	3.4	12.0	-5.0	0.9800	20.6	0.9857	27.0			64	6
94		LV-13.8L		13.800	L1	21.9	4.0	12.0	-5.0	0.9800	22.8	0.9840	27.0			64	6
95		LV-13.8T		13.800	L2	22.6	4.0	12.0	-5.0	0.9800	23.4	0.9845	27.0			64	6
97		FOR13A		13.800	F1	40.5	-12.0	50.0	-50.0	1.0000	42.2	0.9590	111.0			64	6
98		FOR13B		13.800	F2	40.5	-12.0	50.0	-50.0	1.0000	42.2	0.9590	111.0			64	6
101		BAY13A		13.800	B1	52.5	10.1	50.0	-25.0	0.9800	54.6	0.9821	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	52.4	10.1	50.0	-25.0	0.9800	54.5	0.9821	96.0			61	6
142		CANJ13A		13.800	C1	52.5	11.5	29.0	-29.0	0.9800	54.8	0.9770	69.0			64	6
143		CANJ13B		13.800	C2	52.5	11.5	29.0	-29.0	0.9800	54.8	0.9770	69.0			64	6
150		GUALACA	13-213.800	G2	11.5	-3.5	7.4	-7.4	1.0000	12.0	0.9566	14.8			64	6	
151		GUALACA	13.8	G1	11.5	-3.5	7.4	-7.4	1.0000	12.0	0.9566	14.8			64	6	
301		CONC13.8		13.800	G1	9.1	5.0	5.0	-5.0	0.9600	10.8	0.8756	13.5			64	6
302		PASOANCH	13.813.800	P1	4.5	2.0	2.0	-2.0	0.9581	5.2	0.9149	6.2			64	6	
304		ALGA13.8		13.800	A1	4.6	-2.3	2.3	-2.3	1.0779	4.8	0.8984	5.7			64	6
304		ALGA13.8		13.800	A2	4.6	-2.3	2.3	-2.3	1.0779	4.8	0.8984	5.7			64	6
317		MENDRE13.8		13.800	M1	8.6	0.0	0.0	0.0	1.0800	8.0	1.0000	35.3			64	6
317		MENDRE13.8		13.800	M2	8.6	0.0	0.0	0.0	1.0800	8.0	1.0000	35.3			64	6

350 MACANO	13.8	13.800	G1	3.2	-1.0	1.0	-1.0	1.0538	3.2	0.9558	6.2	64	6
703 BJOMIN13A	13.800	G1	18.1	-1.8	13.0	-13.0	0.9800	18.6	0.9952	30.5	64	6	
704 BJOMIN13B	13.800	G2	18.1	-1.8	13.0	-13.0	0.9800	18.6	0.9952	30.5	64	6	
720 PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9581	4.9	0.9065	6.2	64	6	
SUBSYSTEM TOTALS				545.0	51.1	411.3	-283.3			958.8			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:27
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2010 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																	
127		MIR13B		12.000	G2	8.0	0.0	5.0	0.0	1.0567	7.6	1.0000	13.5			65	7
128		MIR13C		12.000	G3	20.0	4.6	11.0	0.0	1.0000	20.5	0.9741	29.4			65	7
129		MIR13D		13.800	G4	25.1	6.7	15.0	0.0	1.0000	25.9	0.9662	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	16.3	0.6	8.0	0.0	1.0000	16.3	0.9994	27.7			65	7
SUBSYSTEM TOTALS						69.4	11.9	39.0	0.0				114.7				

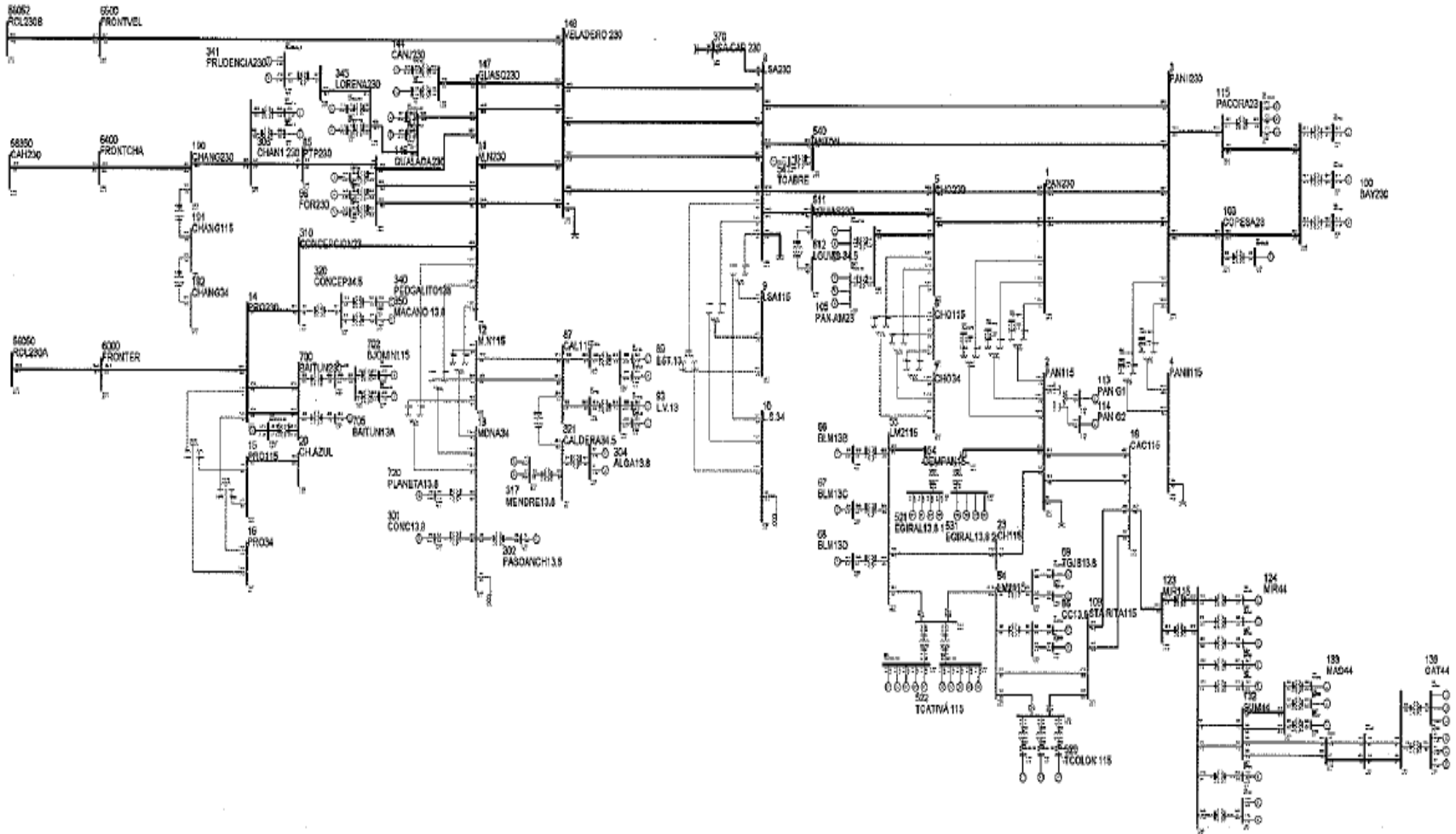
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:27
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2010 ESC-MOD DEMANDA-MIN-INVIERNO IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1			1383.7	1330.8	0.0	0.0	0.0	8.9	44.0	9.0
	GUATEMAL		199.4	275.1	-198.7	0.0	277.7	-1.1	401.9	
2			868.7	855.0	0.0	0.0	0.0	0.0	13.7	0.0
	SALVADOR		73.2	224.2	-70.8	0.0	229.1	-26.4	175.3	
3			1236.8	1203.0	0.0	0.0	0.0	0.0	33.9	0.0
	HONDURAS		461.8	321.1	-47.3	0.0	294.0	54.2	427.8	
4			532.0	525.2	0.0	0.0	0.0	-0.1	6.9	0.0
	NICARAGU		33.5	207.6	-57.7	0.0	182.2	-47.2	113.2	
5			1296.6	1280.2	0.0	0.0	0.0	-0.3	16.7	0.0

COSTA RI	201.1	520.4	-230.9	0.0	419.6	26.8	304.4	
6	545.0	585.7	0.0	0.0	0.0	-55.5	14.8	-56.0
PANAMA	51.1	212.6	99.5	0.0	451.8	-2.7	193.5	
7	69.4	21.4	0.0	0.0	0.0	47.1	0.9	47.0
ACANAL	11.9	7.8	0.0	0.0	0.0	-3.6	7.7	
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	5932.2	5801.3	0.0	0.0	0.0	0.0	131.0	0.0
	1032.0	1768.6	-506.1	0.0	1854.4	0.0	1623.8	

2. Año 2011

2.1. Demanda Máxima de Invierno



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

FRI, OCT 15 2010 15:34

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0047	231.08	11		M.N230		230.00	6	1.0049	231.13
14		PRO230		230.00	6	1.0120	232.77	85		PTP230		230.00	6	1.0054	231.25
96		FOR230		230.00	6	1.0037	230.85	100		BAY230		230.00	6	1.0341	237.84
103		COPESA23		230.00	6	1.0095	232.19	115		PACORA23		230.00	6	1.0153	233.52
144		CANJ230		230.00	6	1.0010	230.24	146		GUALACA230		230.00	6	1.0048	231.11
147		GUASQ230		230.00	6	1.0010	230.24	148		VELADERO 230		230.00	6	1.0054	231.25
190		CHANG230		230.00	6	1.0098	232.25	306		CHAN1 230		230.00	6	1.0075	231.73
310		CONCEPCION23		230.00	6	1.0101	232.31	341		PRUDENCIA230		230.00	6	1.0105	232.41
345		LORENA230		230.00	6	1.0084	231.93	540		ANTON		230.00	6	1.0176	234.04
700		BAITUN230		230.00	6	1.0111	232.55	6000		FRONTER		230.00	6	1.0134	233.07
6400		FRONTCHA		230.00	6	1.0118	232.71	6500		FRONTVEL		230.00	6	1.0178	234.10

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9995	229.89	5		CHO230		230.00	6	0.9970	229.31
8		LSA230		230.00	6	0.9998	229.95	105		PAN-AM23		230.00	6	0.9970	229.31
370		LSA CAP 230		230.00	6	0.9998	229.95	511		LGUIAS230		230.00	6	0.9969	229.29

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

FRI, OCT 15 2010 15:34

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0015	115.18	4		PANII115		115.00	6	1.0070	115.80
9		LSA115		115.00	6	1.0473	120.44	15		PRO115		115.00	6	1.0139	116.59
18		CAC115		115.00	6	1.0014	115.16	20		CH.AZUL		115.00	6	1.0146	116.68
23		CH115		115.00	6	1.0064	115.74	52		TOC115		115.00	6	1.0044	115.51
54		LM1115		115.00	6	1.0321	118.69	55		LM2115		115.00	6	1.0331	118.81
61		FFIELD		115.00	6	1.0292	118.35	87		CAL115		115.00	6	1.0115	116.33
88		EST115		115.00	6	1.0146	116.68	92		L.V115		115.00	6	1.0127	116.47
109		STA RITA115		115.00	6	1.0288	118.32	123		MIR115		115.00	7	1.0079	115.91

154 CEMPAN15	115.00	6	1.0265	118.05	191 CHANG115	115.00	6	1.0056	115.64
522 TCAVIVA 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	0.9978	114.74	12		M.N115		115.00	6	0.9988	114.87
19		C.V115		115.00	6	0.9976	114.72	21		C.BAN115		115.00	6	0.9928	114.18
26		LOC115		115.00	6	0.9938	114.28	30		MAR115		115.00	6	0.9926	114.15
33		STM115		115.00	6	0.9998	114.98	37		SAN115		115.00	6	0.9920	114.08
48		TINAJ115		115.00	6	0.9993	114.92	50		M.O115		115.00	6	0.9994	114.94
701		BAITUN115		115.00	6	0.9888	113.72	702		BJOMIN115		115.00	6	0.9911	113.98

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:34
 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																	
66		BLM13B		13.800	V2	38.0	8.9	25.0	0.0	1.0000	39.0	0.9738	47.0			62	6
67		BLM13C		13.800	V3	38.0	8.9	25.0	0.0	1.0000	39.0	0.9738	47.0			62	6
68		BLM13D		13.800	V4	38.0	9.2	25.0	0.0	1.0000	39.1	0.9721	47.0			62	6
90		EST-13L		13.800	E1	22.0	4.9	12.0	-5.0	0.9800	23.0	0.9758	27.0			64	6
91		EST-13T		13.800	E2	22.0	4.9	12.0	-5.0	0.9800	23.0	0.9758	27.0			64	6
94		LV-13.8L		13.800	L1	25.0	5.7	12.0	-5.0	0.9800	26.2	0.9748	27.0			64	6
95		LV-13.8T		13.800	L2	25.0	5.7	12.0	-5.0	0.9800	26.2	0.9748	27.0			64	6
97		FOR13A		13.800	F1	82.0	-8.6	50.0	-50.0	0.9900	83.3	0.9946	111.0			64	6
98		FOR13B		13.800	F2	82.0	-8.6	50.0	-50.0	0.9900	83.3	0.9946	111.0			64	6
99		FOR13C		13.800	F3	82.0	-8.6	50.0	-50.0	0.9900	83.3	0.9946	111.0			64	6
101		BAY13A		13.800	B1	52.9	21.7	50.0	-25.0	1.0100	56.6	0.9255	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	52.0	21.6	50.0	-25.0	1.0100	55.7	0.9234	96.0			61	6
108		BAY13C		13.800	B3	52.0	21.6	50.0	-25.0	1.0100	55.7	0.9234	100.0			61	6
116		PACORA13		13.800	P1	17.5	4.5	8.8	0.0	1.0300	17.5	0.9680	21.7			61	6
116		PACORA13		13.800	P2	17.5	4.5	8.8	0.0	1.0300	17.5	0.9680	21.7			61	6
116		PACORA13		13.800	P3	17.5	4.5	8.8	0.0	1.0300	17.5	0.9680	21.7			61	6
142		CANJ13A		13.800	C1	57.0	15.3	29.0	-29.0	0.9800	60.2	0.9659	69.0			64	6
150		GUALACA 13-213.800		13.800	G2	14.1	-5.7	7.4	-7.4	0.9800	15.5	0.9272	14.8			64	6
151		GUALACA13.8		13.800	G1	14.1	-5.7	7.4	-7.4	0.9800	15.5	0.9272	14.8			64	6
301		CONC13.8		13.800	G1	8.9	5.0	5.0	-5.0	0.9601	10.6	0.8716	13.5			64	6

302	PASOANCH13.8	13.800	P1	4.6	2.0	2.0	-2.0	0.9583	5.3	0.9180	6.2	64	6
304	ALGA13.8	13.800	A1	4.7	-2.3	2.3	-2.3	1.0712	4.9	0.9019	5.7	64	6
304	ALGA13.8	13.800	A2	4.7	-2.3	2.3	-2.3	1.0712	4.9	0.9019	5.7	64	6
307	CHAN1 A	13.800	G1	60.0	-14.8	50.0	-50.0	0.9900	62.4	0.9708	118.6	64	6
317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0733	8.8	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.0733	8.8	1.0000	35.3	64	6
340	PEDGALITO138	13.800	P1	15.0	6.8	12.0	-5.0	0.9800	16.8	0.9109	27.0	64	6
342	LORENA13.8	13.800	L1	11.3	-5.0	10.5	-5.0	0.9927	12.4	0.9138	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.8	-7.3	9.8	-9.8	0.9800	23.5	0.9479	33.0	64	6
343	PRUDENCIA_1	13.800	G2	21.8	-7.3	9.8	-9.8	0.9800	23.5	0.9479	33.0	64	6
346	LORENA 13-2	13.800	L2	11.3	-5.0	10.5	-5.0	0.9927	12.4	0.9138	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0637	3.1	0.9514	6.2	64	6
521	EGIRAL13.8	113.800	G1	3.6	1.8	2.8	1.3	1.0100	4.0	0.8893	4.8	63	6
521	EGIRAL13.8	113.800	G2	3.6	1.8	2.8	1.3	1.0100	4.0	0.8893	4.8	63	6
521	EGIRAL13.8	113.800	G3	3.6	1.8	2.8	1.3	1.0100	4.0	0.8893	4.8	63	6
521	EGIRAL13.8	113.800	G4	3.6	1.8	2.8	1.3	1.0100	4.0	0.8893	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	6
523	TCATIVÁ 13A	13.800	G3	8.3	4.6	6.6	-6.6	1.0181	9.3	0.8724	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	4.6	6.6	-6.6	1.0181	9.3	0.8724	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	4.6	6.6	-6.6	1.0181	9.3	0.8724	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	8.3	4.6	6.6	-6.6	1.0181	9.3	0.8724	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	8.3	4.6	6.6	-6.6	1.0181	9.3	0.8724	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	8.3	4.6	6.6	-6.6	1.0181	9.3	0.8724	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	8.3	4.6	6.6	-6.6	1.0181	9.3	0.8724	10.9	62	6
524	TCATIVÁ 13B	13.800	G9	8.3	4.6	6.6	-6.6	1.0181	9.3	0.8724	10.9	62	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0186	24.5	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	26.6	2.3	13.0	-13.0	0.9900	27.0	0.9961	30.5	64	6
704	BJOMIN13B	13.800	G2	26.6	2.3	13.0	-13.0	0.9900	27.0	0.9961	30.5	64	6
705	BAITUN13A	13.800	G1	40.9	-7.3	26.6	-26.6	0.9900	41.9	0.9845	50.6	64	6
706	BAITUN13B	13.800	G2	40.9	-7.3	26.6	-26.6	0.9900	41.9	0.9845	50.6	64	6
720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9583	4.3	0.8730	6.2	64	6
SUBSYSTEM TOTALS				1195.0	119.4	766.6	-527.6				1783.2		

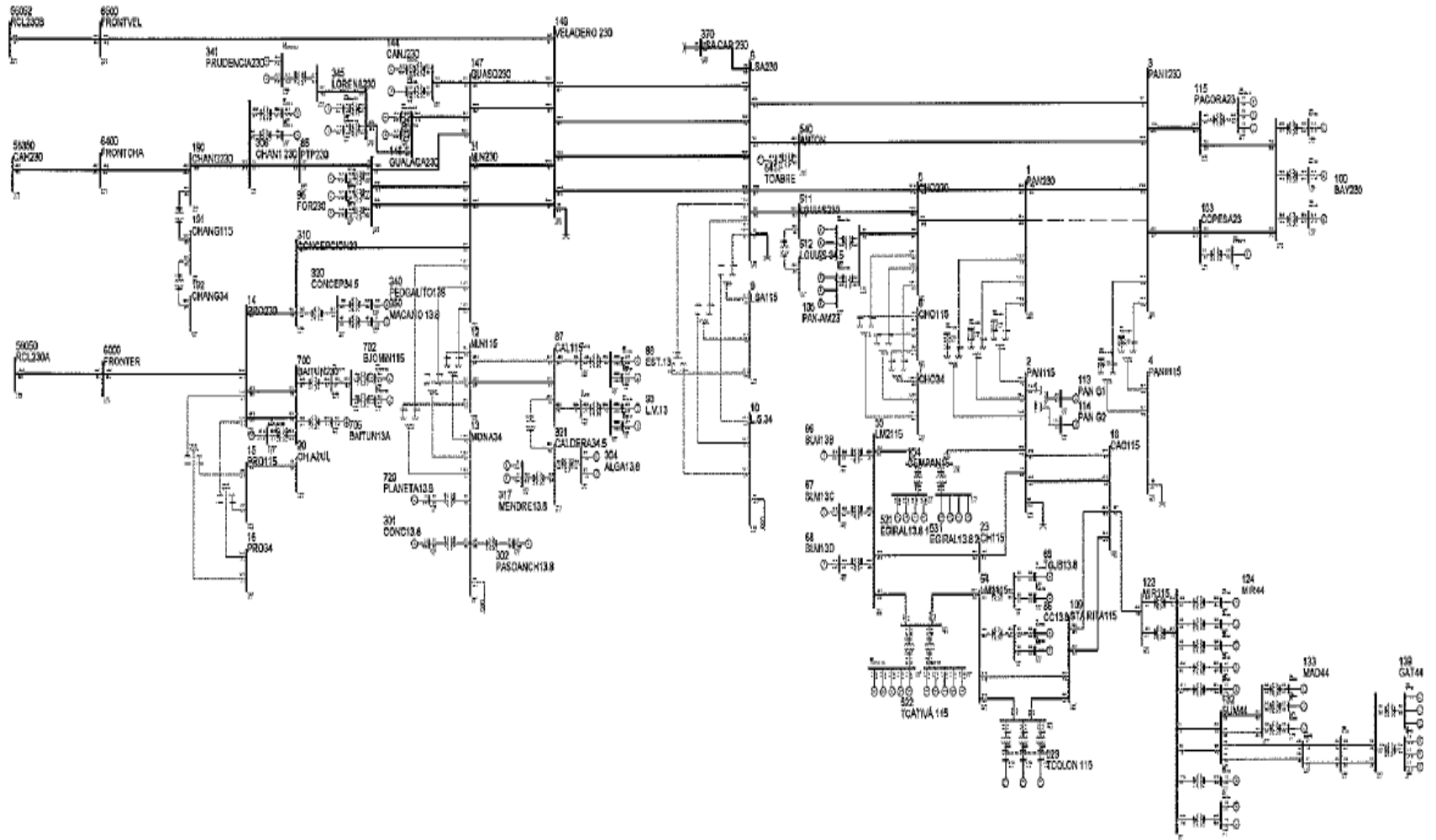
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:34
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO

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																	

TOTALS	6505.1	6346.8	0.0	0.0	0.0	0.0	158.4	0.0
	1122.8	1782.3	-649.4	0.0	1868.3	0.0	1858.2	

2.1.1. Contingencia Panamá – Panamá II



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

FRI, OCT 15 2010 15:41

BUSES WITH VOLTAGE 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	1.0044	231.00	11		M.N230		230.00	6	1.0043	231.00
14		PRO230		230.00	6	1.0116	232.67	85		PTP230		230.00	6	1.0052	231.20
96		FOR230		230.00	6	1.0032	230.74	100		BAY230		230.00	6	1.0339	237.80
103		COPESA23		230.00	6	1.0092	232.12	115		PACORA23		230.00	6	1.0150	233.46
144		CANJ230		230.00	6	1.0005	230.11	146		GUALACA230		230.00	6	1.0043	230.98
147		GUASQ230		230.00	6	1.0005	230.11	148		VELADERO 230		230.00	6	1.0044	231.01
190		CHANG230		230.00	6	1.0097	232.22	306		CHAN1 230		230.00	6	1.0074	231.69
310		CONCEPCION23		230.00	6	1.0096	232.20	341		PRUDENCIA230		230.00	6	1.0100	232.29
345		LORENA230		230.00	6	1.0079	231.81	540		ANTON		230.00	6	1.0166	233.83
700		BAITUN230		230.00	6	1.0107	232.46	6000		FRONTER		230.00	6	1.0129	232.98
6400		FRONTCHA		230.00	6	1.0116	232.68	6500		FRONTVEL		230.00	6	1.0173	233.98

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	0.9951	228.86	5		CHO230		230.00	6	0.9929	228.38
8		LSA230		230.00	6	0.9981	229.55	105		PAN-AM23		230.00	6	0.9929	228.38
370		LSA CAP 230		230.00	6	0.9981	229.55	511		LGUIAS230		230.00	6	0.9940	228.63

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

FRI, OCT 15 2010 15:41

BUSES WITH VOLTAGE 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	1.0455	120.23
15		PRO115		115.00	6	1.0134	116.55	20		CH.AZUL		115.00	6	1.0142	116.63
23		CH115		115.00	6	1.0037	115.43	52		TOC115		115.00	6	1.0033	115.38
54		LM1115		115.00	6	1.0305	118.51	55		LM2115		115.00	6	1.0315	118.62
61		FFIELD		115.00	6	1.0276	118.17	87		CAL115		115.00	6	1.0113	116.30
88		EST115		115.00	6	1.0144	116.66	92		L.V115		115.00	6	1.0125	116.44
109		STA RITA115		115.00	6	1.0270	118.11	123		MIR115		115.00	7	1.0046	115.53
154		CEMPAN15		115.00	6	1.0245	117.82	191		CHANG115		115.00	6	1.0054	115.63

522 TCATIVÁ 115 115.00 6 1.0313 118.60 529 TCOLON 115 115.00 6 1.0288 118.31

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9981	114.78	6		CHO115		115.00	6	0.9937	114.27
12		M.N115		115.00	6	0.9985	114.83	18		CAC115		115.00	6	0.9980	114.77
19		C.V115		115.00	6	0.9958	114.51	21		C.BAN115		115.00	6	0.9896	113.81
26		LOC115		115.00	6	0.9905	113.91	30		MAR115		115.00	6	0.9892	113.76
33		STM115		115.00	6	0.9963	114.58	37		SAN115		115.00	6	0.9889	113.72
48		TINAJ115		115.00	6	0.9959	114.52	50		M.O115		115.00	6	0.9960	114.54
701		BAITUN115		115.00	6	0.9886	113.69	702		BJOMIN115		115.00	6	0.9909	113.95

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:41
 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																	
66		BLM13B		13.800	V2	38.0	9.6	25.0	0.0	1.0000	39.2	0.9698	47.0			62	6
67		BLM13C		13.800	V3	38.0	9.6	25.0	0.0	1.0000	39.2	0.9698	47.0			62	6
68		BLM13D		13.800	V4	38.0	9.9	25.0	0.0	1.0000	39.3	0.9678	47.0			62	6
90		EST-13L		13.800	E1	22.0	5.0	12.0	-5.0	0.9800	23.0	0.9752	27.0			64	6
91		EST-13T		13.800	E2	22.0	5.0	12.0	-5.0	0.9800	23.0	0.9752	27.0			64	6
94		LV-13.8L		13.800	L1	25.0	5.8	12.0	-5.0	0.9800	26.2	0.9743	27.0			64	6
95		LV-13.8T		13.800	L2	25.0	5.8	12.0	-5.0	0.9800	26.2	0.9743	27.0			64	6
97		FOR13A		13.800	F1	82.0	-8.2	50.0	-50.0	0.9900	83.3	0.9951	111.0			64	6
98		FOR13B		13.800	F2	82.0	-8.2	50.0	-50.0	0.9900	83.3	0.9951	111.0			64	6
99		FOR13C		13.800	F3	82.0	-8.2	50.0	-50.0	0.9900	83.3	0.9951	111.0			64	6
101		BAY13A		13.800	B1	53.0	21.8	50.0	-25.0	1.0100	56.7	0.9248	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	52.0	21.7	50.0	-25.0	1.0100	55.8	0.9226	96.0			61	6
108		BAY13C		13.800	B3	52.0	21.7	50.0	-25.0	1.0100	55.8	0.9226	100.0			61	6
116		PACORA13		13.800	P1	17.5	4.6	8.8	0.0	1.0300	17.5	0.9674	21.7			61	6
116		PACORA13		13.800	P2	17.5	4.6	8.8	0.0	1.0300	17.5	0.9674	21.7			61	6
116		PACORA13		13.800	P3	17.5	4.6	8.8	0.0	1.0300	17.5	0.9674	21.7			61	6
142		CANJ13A		13.800	C1	57.0	15.4	29.0	-29.0	0.9800	60.3	0.9655	69.0			64	6
150		GUALACA	13-	213.800	G2	14.1	-5.5	7.4	-7.4	0.9800	15.4	0.9303	14.8			64	6
151		GUALACA	13.8	13.800	G1	14.1	-5.5	7.4	-7.4	0.9800	15.4	0.9303	14.8			64	6
301		CONC	13.8	13.800	G1	8.9	5.0	5.0	-5.0	0.9596	10.6	0.8717	13.5			64	6

302	PASOANCH13.8	13.800	P1	4.6	2.0	2.0	-2.0	0.9577	5.3	0.9180	6.2	64	6
304	ALGA13.8	13.800	A1	4.7	-2.3	2.3	-2.3	1.0710	4.9	0.9019	5.7	64	6
304	ALGA13.8	13.800	A2	4.7	-2.3	2.3	-2.3	1.0710	4.9	0.9019	5.7	64	6
307	CHAN1 A	13.800	G1	60.0	-14.7	50.0	-50.0	0.9900	62.4	0.9714	118.6	64	6
317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0730	8.8	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.0730	8.8	1.0000	35.3	64	6
340	PEDGALITO138	13.800	P1	15.0	6.9	12.0	-5.0	0.9800	16.9	0.9084	27.0	64	6
342	LORENA13.8	13.800	L1	11.3	-5.0	10.5	-5.0	0.9922	12.4	0.9139	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.8	-7.2	9.8	-9.8	0.9800	23.5	0.9498	33.0	64	6
343	PRUDENCIA_1	13.800	G2	21.8	-7.2	9.8	-9.8	0.9800	23.5	0.9498	33.0	64	6
346	LORENA 13-2	13.800	L2	11.3	-5.0	10.5	-5.0	0.9922	12.4	0.9139	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0635	3.1	0.9514	6.2	64	6
521	EGIRAL13.8	113.800	G1	3.6	1.9	2.8	1.3	1.0100	4.0	0.8791	4.8	63	6
521	EGIRAL13.8	113.800	G2	3.6	1.9	2.8	1.3	1.0100	4.0	0.8791	4.8	63	6
521	EGIRAL13.8	113.800	G3	3.6	1.9	2.8	1.3	1.0100	4.0	0.8791	4.8	63	6
521	EGIRAL13.8	113.800	G4	3.6	1.9	2.8	1.3	1.0100	4.0	0.8791	4.8	63	6
523	TCATIVÁ 13A	13.800	G1	8.3	4.8	6.6	-6.6	1.0181	9.4	0.8638	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	4.8	6.6	-6.6	1.0181	9.4	0.8638	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	4.8	6.6	-6.6	1.0181	9.4	0.8638	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	4.8	6.6	-6.6	1.0181	9.4	0.8638	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	4.8	6.6	-6.6	1.0181	9.4	0.8638	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	8.3	4.8	6.6	-6.6	1.0181	9.4	0.8638	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	8.3	4.8	6.6	-6.6	1.0181	9.4	0.8638	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	8.3	4.8	6.6	-6.6	1.0181	9.4	0.8638	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	8.3	4.8	6.6	-6.6	1.0181	9.4	0.8638	10.9	62	6
524	TCATIVÁ 13B	13.800	G9	8.3	4.8	6.6	-6.6	1.0181	9.4	0.8638	10.9	62	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0177	24.6	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	26.6	2.4	13.0	-13.0	0.9900	27.0	0.9960	30.5	64	6
704	BJOMIN13B	13.800	G2	26.6	2.4	13.0	-13.0	0.9900	27.0	0.9960	30.5	64	6
705	BAITUN13A	13.800	G1	40.9	-7.1	26.6	-26.6	0.9900	41.9	0.9851	50.6	64	6
706	BAITUN13B	13.800	G2	40.9	-7.1	26.6	-26.6	0.9900	41.9	0.9851	50.6	64	6
720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9577	4.3	0.8730	6.2	64	6
SUBSYSTEM TOTALS				1195.3	127.1	766.6	-527.6				1783.2		

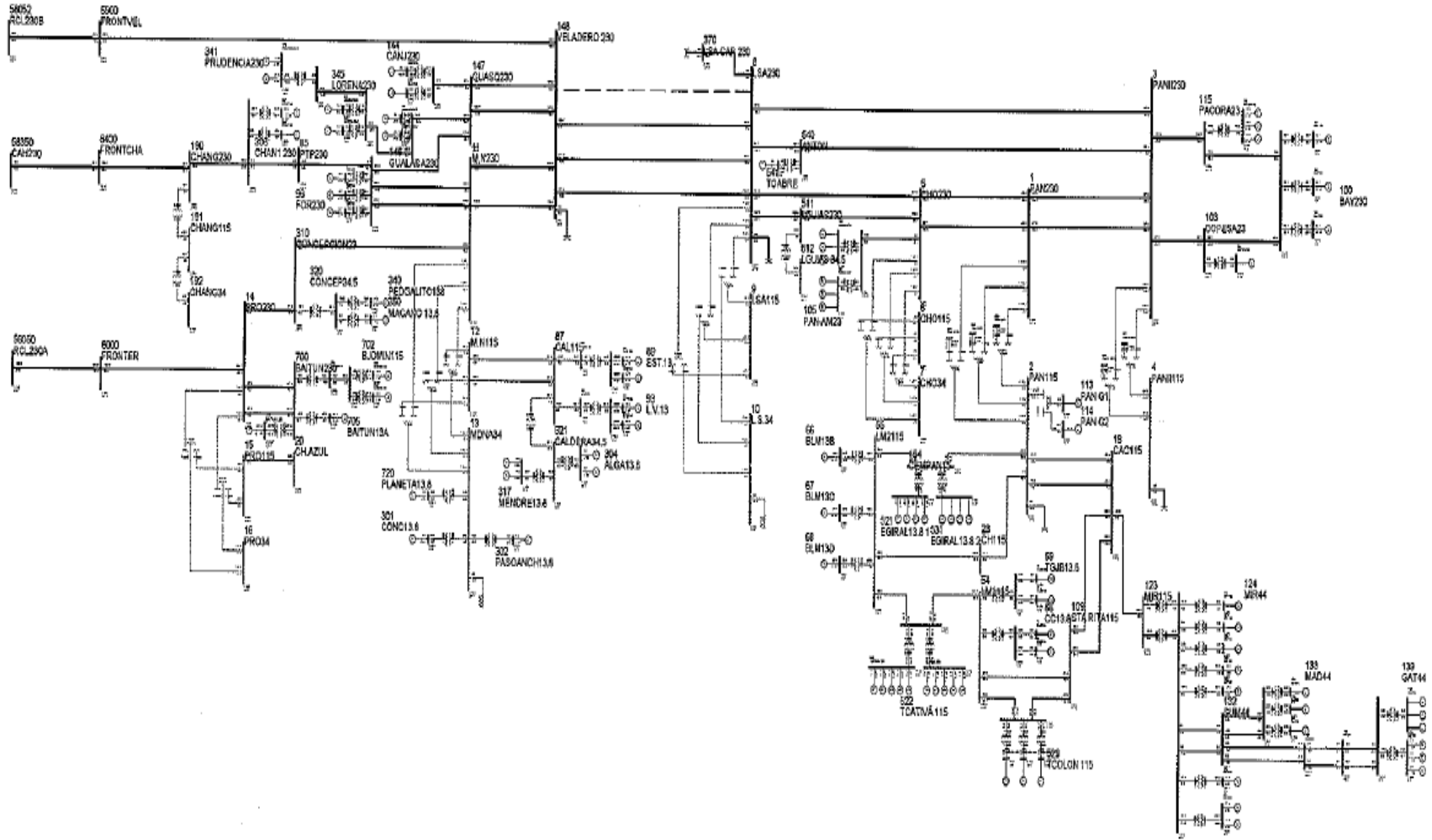
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:41
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO

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																	

TOTALS	6506.0	6346.8	0.0	0.0	0.0	0.0	159.2	0.0
	1131.0	1782.3	-649.0	0.0	1864.4	0.0	1862.1	

2.1.2. Contingencia Veladero – Llano Sánchez



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

FRI, OCT 15 2010 15:44

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
14		PRO230		230.00	6	1.0065	231.50	85		PTP230		230.00	6	1.0024	230.55
100		BAY230		230.00	6	1.0275	236.32	115		PACORA23		230.00	6	1.0059	231.35
190		CHANG230		230.00	6	1.0077	231.77	306		CHAN1 230		230.00	6	1.0053	231.22
310		CONCEPCION23		230.00	6	1.0037	230.84	341		PRUDENCIA230		230.00	6	1.0036	230.83
345		LORENA230		230.00	6	1.0014	230.31	540		ANTON		230.00	6	1.0001	230.01
700		BAITUN230		230.00	6	1.0061	231.41	6000		FRONTER		230.00	6	1.0077	231.76
6400		FRONTCHA		230.00	6	1.0098	232.25	6500		FRONTVEL		230.00	6	1.0105	232.42

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9876	227.16	3		PANII230		230.00	6	0.9933	228.45
5		CHO230		230.00	6	0.9824	225.96	8		LSA230		230.00	6	0.9772	224.75
11		M.N230		230.00	6	0.9973	229.38	96		FOR230		230.00	6	0.9977	229.46
103		COPESA23		230.00	6	0.9988	229.73	105		PAN-AM23		230.00	6	0.9824	225.96
144		CANJ230		230.00	6	0.9936	228.52	146		GUALACA230		230.00	6	0.9976	229.45
147		GUASQ230		230.00	6	0.9936	228.52	148		VELADERO 230		230.00	6	0.9912	227.97
370		LSA CAP 230		230.00	6	0.9772	224.75	511		LGUIAS230		230.00	6	0.9773	224.79

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

FRI, OCT 15 2010 15:44

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	1.0231	117.66	15		PRO115		115.00	6	1.0083	115.96
20		CH.AZUL		115.00	6	1.0091	116.04	54		LM1115		115.00	6	1.0274	118.16
55		LM2115		115.00	6	1.0285	118.27	61		FFIELD		115.00	6	1.0245	117.82
87		CAL115		115.00	6	1.0085	115.97	88		EST115		115.00	6	1.0119	116.37
92		L.V115		115.00	6	1.0098	116.13	109		STA RITA115		115.00	6	1.0236	117.71
154		CEMPAN15		115.00	6	1.0207	117.38	191		CHANG115		115.00	6	1.0035	115.40
522		TCATIVÁ 115		115.00	6	1.0283	118.25	529		TCOLON 115		115.00	6	1.0255	117.93

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9914	114.01	4		PANII115		115.00	6	0.9957	114.51
6		CHO115		115.00	6	0.9832	113.07	12		M.N115		115.00	6	0.9943	114.34
18		CAC115		115.00	6	0.9913	114.00	19		C.V115		115.00	6	0.9865	113.45
21		C.BAN115		115.00	6	0.9824	112.98	23		CH115		115.00	6	0.9985	114.83
26		LOC115		115.00	6	0.9834	113.09	30		MAR115		115.00	6	0.9823	112.97
33		STM115		115.00	6	0.9896	113.81	37		SAN115		115.00	6	0.9815	112.87
48		TINAJ115		115.00	6	0.9892	113.75	50		M.O115		115.00	6	0.9893	113.77
52		TOC115		115.00	6	0.9931	114.21	123		MIR115		115.00	7	0.9986	114.84
701		BAITUN115		115.00	6	0.9857	113.35	702		BJOMIN115		115.00	6	0.9882	113.64

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:44
 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																	
66		BLM13B		13.800	V2	38.0	10.9	25.0	0.0	1.0000	39.6	0.9616	47.0			62	6
67		BLM13C		13.800	V3	38.0	10.9	25.0	0.0	1.0000	39.6	0.9616	47.0			62	6
68		BLM13D		13.800	V4	38.0	11.3	25.0	0.0	1.0000	39.7	0.9589	47.0			62	6
90		EST-13L		13.800	E1	22.0	5.7	12.0	-5.0	0.9800	23.2	0.9679	27.0			64	6
91		EST-13T		13.800	E2	22.0	5.7	12.0	-5.0	0.9800	23.2	0.9679	27.0			64	6
94		LV-13.8L		13.800	L1	25.0	6.6	12.0	-5.0	0.9800	26.4	0.9673	27.0			64	6
95		LV-13.8T		13.800	L2	25.0	6.6	12.0	-5.0	0.9800	26.4	0.9673	27.0			64	6
97		FOR13A		13.800	F1	82.1	-3.1	50.0	-50.0	0.9900	83.0	0.9993	111.0			64	6
98		FOR13B		13.800	F2	82.1	-3.1	50.0	-50.0	0.9900	83.0	0.9993	111.0			64	6
99		FOR13C		13.800	F3	82.1	-3.1	50.0	-50.0	0.9900	83.0	0.9993	111.0			64	6
101		BAY13A		13.800	B1	53.1	26.7	50.0	-25.0	1.0100	58.9	0.8936	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	52.1	26.6	50.0	-25.0	1.0100	57.9	0.8906	96.0			61	6
108		BAY13C		13.800	B3	52.1	26.6	50.0	-25.0	1.0100	58.0	0.8906	100.0			61	6
116		PACORA13		13.800	P1	17.5	6.3	8.8	0.0	1.0300	18.1	0.9412	21.7			61	6
116		PACORA13		13.800	P2	17.5	6.3	8.8	0.0	1.0300	18.1	0.9412	21.7			61	6
116		PACORA13		13.800	P3	17.5	6.3	8.8	0.0	1.0300	18.1	0.9412	21.7			61	6
142		CANJ13A		13.800	C1	57.1	16.6	29.0	-29.0	0.9800	60.7	0.9604	69.0			64	6
150		GUALACA	13-213.800	G2	14.1	-3.9	7.4	7.4	-7.4	0.9800	14.9	0.9635	14.8			64	6
151		GUALACA13.8	13.800	G1	14.1	-3.9	7.4	7.4	-7.4	0.9800	14.9	0.9635	14.8			64	6
301		CONC13.8		13.800	G1	8.9	5.0	5.0	-5.0	0.9528	10.7	0.8720	13.5			64	6

302	PASOANCH13.8	13.800	P1	4.6	2.0	2.0	-2.0	0.9509	5.3	0.9183	6.2	64	6
304	ALGA13.8	13.800	A1	4.7	-2.3	2.3	-2.3	1.0678	4.9	0.9019	5.7	64	6
304	ALGA13.8	13.800	A2	4.7	-2.3	2.3	-2.3	1.0678	4.9	0.9019	5.7	64	6
307	CHAN1 A	13.800	G1	60.2	-12.7	50.0	-50.0	0.9900	62.1	0.9784	118.6	64	6
317	MENDRE13.8	13.800	M1	9.5	0.0	0.0	0.0	1.0698	8.8	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.5	0.0	0.0	0.0	1.0698	8.8	1.0000	35.3	64	6
340	PEDGALITO138	13.800	P1	15.0	8.3	12.0	-5.0	0.9800	17.5	0.8761	27.0	64	6
342	LORENA13.8	13.800	L1	11.3	-5.0	10.5	-5.0	0.9856	12.5	0.9142	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.9	-5.5	9.8	-9.8	0.9800	23.0	0.9701	33.0	64	6
343	PRUDENCIA_1	13.800	G2	21.9	-5.5	9.8	-9.8	0.9800	23.0	0.9701	33.0	64	6
346	LORENA 13-2	13.800	L2	11.3	-5.0	10.5	-5.0	0.9856	12.5	0.9142	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0602	3.1	0.9517	6.2	64	6
521	EGIRAL13.8	113.800	G1	3.6	2.1	2.8	1.3	1.0100	4.1	0.8592	4.8	63	6
521	EGIRAL13.8	113.800	G2	3.6	2.1	2.8	1.3	1.0100	4.1	0.8592	4.8	63	6
521	EGIRAL13.8	113.800	G3	3.6	2.1	2.8	1.3	1.0100	4.1	0.8592	4.8	63	6
521	EGIRAL13.8	113.800	G4	3.6	2.1	2.8	1.3	1.0100	4.1	0.8592	4.8	63	6
523	TCATIVÁ 13A	13.800	G1	8.3	5.2	6.6	-6.6	1.0181	9.6	0.8473	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	5.2	6.6	-6.6	1.0181	9.6	0.8473	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	5.2	6.6	-6.6	1.0181	9.6	0.8473	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	5.2	6.6	-6.6	1.0181	9.6	0.8473	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	5.2	6.6	-6.6	1.0181	9.6	0.8473	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	8.3	5.2	6.6	-6.6	1.0181	9.6	0.8473	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	8.3	5.2	6.6	-6.6	1.0181	9.6	0.8473	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	8.3	5.2	6.6	-6.6	1.0181	9.6	0.8473	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	8.3	5.2	6.6	-6.6	1.0181	9.6	0.8473	10.9	62	6
524	TCATIVÁ 13B	13.800	G9	8.3	5.2	6.6	-6.6	1.0181	9.6	0.8473	10.9	62	6
541	TOABRE	0.6000	1	25.1	0.0	0.0	0.0	1.0011	25.0	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	26.6	2.8	13.0	-13.0	0.9900	27.1	0.9946	30.5	64	6
704	BJOMIN13B	13.800	G2	26.6	2.8	13.0	-13.0	0.9900	27.1	0.9946	30.5	64	6
705	BAITUN13A	13.800	G1	40.9	-5.1	26.6	-26.6	0.9900	41.7	0.9923	50.6	64	6
706	BAITUN13B	13.800	G2	40.9	-5.1	26.6	-26.6	0.9900	41.7	0.9923	50.6	64	6
720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9509	4.3	0.8730	6.2	64	6
SUBSYSTEM TOTALS				1197.2	189.5	766.6	-527.6				1783.2		

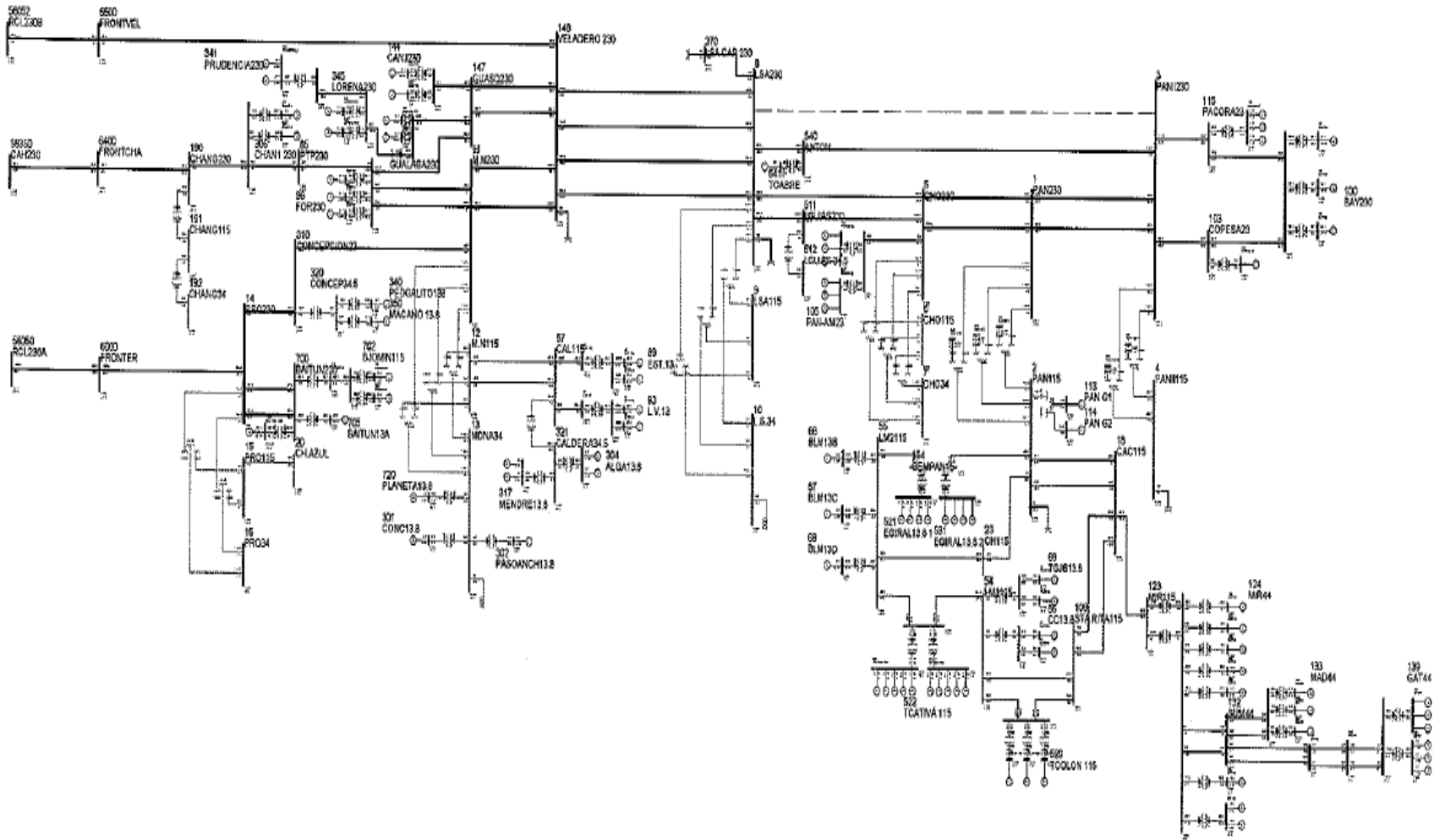
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:44
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO

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																	

TOTALS	6512.5	6346.8	0.0	0.0	0.0	0.0	165.7	0.0
	1198.1	1782.3	-649.0	0.0	1836.0	0.0	1900.9	

2.1.3. Contingencia Llano Sánchez – Panamá



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

FRI, OCT 15 2010 15:47

BUSES WITH VOLTAGE 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	1.0067	231.55	85		PTP230		230.00	6	1.0025	230.58
100		BAY230		230.00	6	1.0237	235.44	115		PACORA23		230.00	6	1.0005	230.11
190		CHANG230		230.00	6	1.0078	231.79	306		CHAN1 230		230.00	6	1.0054	231.24
310		CONCEPCION23		230.00	6	1.0039	230.90	341		PRUDENCIA230		230.00	6	1.0039	230.89
345		LORENA230		230.00	6	1.0016	230.38	700		BAITUN230		230.00	6	1.0063	231.46
6000		FRONTER		230.00	6	1.0079	231.82	6400		FRONTCHA		230.00	6	1.0098	232.26
6500		FRONTVEL		230.00	6	1.0108	232.49								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9809	225.61	3		PANII230		230.00	6	0.9867	226.95
5		CHO230		230.00	6	0.9747	224.17	8		LSA230		230.00	6	0.9772	224.76
11		M.N230		230.00	6	0.9976	229.45	96		FOR230		230.00	6	0.9979	229.52
103		COPESA23		230.00	6	0.9927	228.32	105		PAN-AM23		230.00	6	0.9747	224.17
144		CANJ230		230.00	6	0.9939	228.59	146		GUALACA230		230.00	6	0.9979	229.51
147		GUASQ230		230.00	6	0.9938	228.59	148		VELADERO 230		230.00	6	0.9917	228.10
370		LSA CAP 230		230.00	6	0.9772	224.76	511		LGUIAS230		230.00	6	0.9718	223.50
540		ANTON		230.00	6	0.9940	228.63								

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

FRI, OCT 15 2010 15:47

BUSES WITH VOLTAGE 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	1.0231	117.66	15		PRO115		115.00	6	1.0085	115.98
20		CH.AZUL		115.00	6	1.0093	116.07	54		LM1115		115.00	6	1.0248	117.86
55		LM2115		115.00	6	1.0259	117.98	61		FFIELD		115.00	6	1.0219	117.52
87		CAL115		115.00	6	1.0086	115.99	88		EST115		115.00	6	1.0120	116.38
92		L.V115		115.00	6	1.0099	116.14	109		STA RITA115		115.00	6	1.0207	117.38
154		CEMPAN15		115.00	6	1.0175	117.01	191		CHANG115		115.00	6	1.0036	115.41
522		TCATIVÁ 115		115.00	6	1.0257	117.95	529		TCOLON 115		115.00	6	1.0228	117.62

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9858	113.36	4		PANII115		115.00	6	0.9893	113.76
6		CHO115		115.00	6	0.9754	112.17	12		M.N115		115.00	6	0.9945	114.36
18		CAC115		115.00	6	0.9857	113.35	19		C.V115		115.00	6	0.9802	112.73
21		C.BAN115		115.00	6	0.9766	112.31	23		CH115		115.00	6	0.9941	114.32
26		LOC115		115.00	6	0.9776	112.43	30		MAR115		115.00	6	0.9766	112.31
33		STM115		115.00	6	0.9840	113.16	37		SAN115		115.00	6	0.9756	112.20
48		TINAJ115		115.00	6	0.9835	113.10	50		M.O115		115.00	6	0.9836	113.11
52		TOC115		115.00	6	0.9866	113.46	123		MIR115		115.00	7	0.9935	114.25
701		BAITUN115		115.00	6	0.9858	113.37	702		BJOMIN115		115.00	6	0.9883	113.66

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:47
 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																	
66		BLM13B		13.800	V2	38.0	12.0	25.0	0.0	1.0000	39.9	0.9539	47.0			62	6
67		BLM13C		13.800	V3	38.0	12.0	25.0	0.0	1.0000	39.9	0.9539	47.0			62	6
68		BLM13D		13.800	V4	38.0	12.4	25.0	0.0	1.0000	40.0	0.9506	47.0			62	6
90		EST-13L		13.800	E1	22.0	5.7	12.0	-5.0	0.9800	23.2	0.9682	27.0			64	6
91		EST-13T		13.800	E2	22.0	5.7	12.0	-5.0	0.9800	23.2	0.9682	27.0			64	6
94		LV-13.8L		13.800	L1	25.0	6.5	12.0	-5.0	0.9800	26.4	0.9676	27.0			64	6
95		LV-13.8T		13.800	L2	25.0	6.5	12.0	-5.0	0.9800	26.4	0.9676	27.0			64	6
97		FOR13A		13.800	F1	82.1	-3.4	50.0	-50.0	0.9900	83.0	0.9992	111.0			64	6
98		FOR13B		13.800	F2	82.1	-3.4	50.0	-50.0	0.9900	83.0	0.9992	111.0			64	6
99		FOR13C		13.800	F3	82.1	-3.4	50.0	-50.0	0.9900	83.0	0.9992	111.0			64	6
101		BAY13A		13.800	B1	53.1	29.6	50.0	-25.0	1.0100	60.2	0.8739	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	52.1	29.5	50.0	-25.0	1.0100	59.3	0.8704	96.0			61	6
108		BAY13C		13.800	B3	52.1	29.5	50.0	-25.0	1.0100	59.3	0.8704	100.0			61	6
116		PACORA13		13.800	P1	17.5	7.3	8.8	0.0	1.0300	18.4	0.9231	21.7			61	6
116		PACORA13		13.800	P2	17.5	7.3	8.8	0.0	1.0300	18.4	0.9231	21.7			61	6
116		PACORA13		13.800	P3	17.5	7.3	8.8	0.0	1.0300	18.4	0.9231	21.7			61	6
142		CANJ13A		13.800	C1	57.1	16.5	29.0	-29.0	0.9800	60.6	0.9607	69.0			64	6
150		GUALACA	13-213.800	G2	14.1	-4.0	7.4	7.4	-7.4	0.9800	14.9	0.9622	14.8			64	6
151		GUALACA13.8	13.800	G1	14.1	-4.0	7.4	7.4	-7.4	0.9800	14.9	0.9622	14.8			64	6

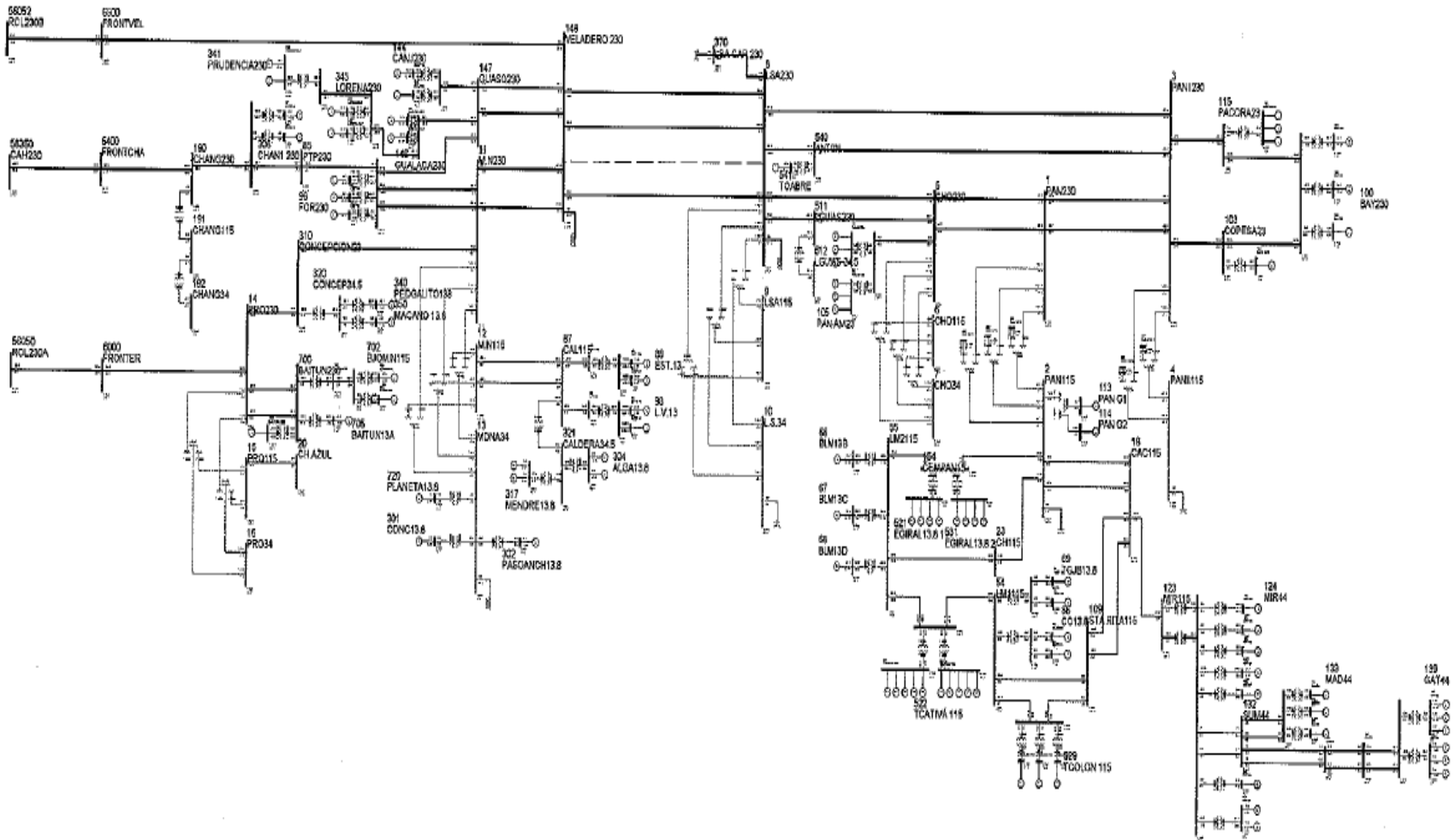
301	CONC13.8	13.800	G1	8.9	5.0	5.0	-5.0	0.9530	10.7	0.8720	13.5	64	6
302	PASOANCH13.8	13.800	P1	4.6	2.0	2.0	-2.0	0.9512	5.3	0.9183	6.2	64	6
304	ALGA13.8	13.800	A1	4.7	-2.3	2.3	-2.3	1.0680	4.9	0.9019	5.7	64	6
304	ALGA13.8	13.800	A2	4.7	-2.3	2.3	-2.3	1.0680	4.9	0.9019	5.7	64	6
307	CHAN1 A	13.800	G1	60.2	-12.8	50.0	-50.0	0.9900	62.1	0.9781	118.6	64	6
317	MENDRE13.8	13.800	M1	9.5	0.0	0.0	0.0	1.0700	8.8	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.5	0.0	0.0	0.0	1.0700	8.8	1.0000	35.3	64	6
340	PEDGALITO138	13.800	P1	15.0	8.2	12.0	-5.0	0.9800	17.5	0.8775	27.0	64	6
342	LORENA13.8	13.800	L1	11.3	-5.0	10.5	-5.0	0.9858	12.5	0.9142	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.9	-5.5	9.8	-9.8	0.9800	23.0	0.9693	33.0	64	6
343	PRUDENCIA_1	13.800	G2	21.9	-5.5	9.8	-9.8	0.9800	23.0	0.9693	33.0	64	6
346	LORENA 13-2	13.800	L2	11.3	-5.0	10.5	-5.0	0.9858	12.5	0.9142	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0603	3.1	0.9517	6.2	64	6
521	EGIRAL13.8	113.800	G1	3.6	2.3	2.8	1.3	1.0100	4.2	0.8418	4.8	63	6
521	EGIRAL13.8	113.800	G2	3.6	2.3	2.8	1.3	1.0100	4.2	0.8418	4.8	63	6
521	EGIRAL13.8	113.800	G3	3.6	2.3	2.8	1.3	1.0100	4.2	0.8418	4.8	63	6
521	EGIRAL13.8	113.800	G4	3.6	2.3	2.8	1.3	1.0100	4.2	0.8418	4.8	63	6
523	TCATIVÁ 13A	13.800	G1	8.3	5.5	6.6	-6.6	1.0181	9.8	0.8329	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	5.5	6.6	-6.6	1.0181	9.8	0.8329	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	5.5	6.6	-6.6	1.0181	9.8	0.8329	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	5.5	6.6	-6.6	1.0181	9.8	0.8329	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	5.5	6.6	-6.6	1.0181	9.8	0.8329	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	8.3	5.5	6.6	-6.6	1.0181	9.8	0.8329	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	8.3	5.5	6.6	-6.6	1.0181	9.8	0.8329	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	8.3	5.5	6.6	-6.6	1.0181	9.8	0.8329	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	8.3	5.5	6.6	-6.6	1.0181	9.8	0.8329	10.9	62	6
524	TCATIVÁ 13B	13.800	G9	8.3	5.5	6.6	-6.6	1.0181	9.8	0.8329	10.9	62	6
541	TOABRE	0.6000	1	25.1	0.0	0.0	0.0	0.9951	25.2	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	26.6	2.8	13.0	-13.0	0.9900	27.1	0.9947	30.5	64	6
704	BJOMIN13B	13.800	G2	26.6	2.8	13.0	-13.0	0.9900	27.1	0.9947	30.5	64	6
705	BAITUN13A	13.800	G1	40.9	-5.2	26.6	-26.6	0.9900	41.7	0.9920	50.6	64	6
706	BAITUN13B	13.800	G2	40.9	-5.2	26.6	-26.6	0.9900	41.7	0.9920	50.6	64	6
720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9512	4.3	0.8730	6.2	64	6
SUBSYSTEM TOTALS				1197.2	206.8	766.6	-527.6				1783.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:47
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6512.2	6346.8	0.0	0.0	0.0	0.0	165.4	0.0
	1216.9	1782.3	-648.2	0.0	1818.6	0.0	1901.4	

2.2. Demanda Mínima de Invierno



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

FRI, OCT 15 2010 15:52

BUSES WITH VOLTAGE 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	1.0129	232.97
14		PRO230		230.00	6	1.0216	234.96	85		PTP230		230.00	6	1.0086	231.99
96		FOR230		230.00	6	1.0129	232.96	100		BAY230		230.00	6	1.0163	233.75
103		COPESA23		230.00	6	1.0010	230.24	115		PACORA23		230.00	6	1.0031	230.71
144		CANJ230		230.00	6	1.0105	232.41	146		GUALACA230		230.00	6	1.0132	233.03
147		GUASQ230		230.00	6	1.0105	232.41	148		VELADERO 230		230.00	6	1.0085	231.96
190		CHANG230		230.00	6	1.0098	232.26	306		CHAN1 230		230.00	6	1.0079	231.82
310		CONCEPCION23		230.00	6	1.0189	234.35	341		PRUDENCIA230		230.00	6	1.0162	233.72
345		LORENA230		230.00	6	1.0153	233.52	370		LSA CAP 230		230.00	6	1.0013	230.29
511		LGUIAS230		230.00	6	1.0003	230.08	540		ANTON		230.00	6	1.0162	233.72
700		BAITUN230		230.00	6	1.0215	234.94	600		FRONTER		230.00	6	1.0223	235.12
6400		FRONTCHA		230.00	6	1.0114	232.63	6500		FRONTVEL		230.00	6	1.0245	235.64

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9940	228.62	3		PANII230		230.00	6	0.9978	229.49
5		CHO230		230.00	6	0.9962	229.13	105		PAN-AM23		230.00	6	0.9962	229.13

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

FRI, OCT 15 2010 15:52

BUSES WITH VOLTAGE 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	1.0488	120.61	12		M.N115		115.00	6	1.0179	117.05
15		PRO115		115.00	6	1.0234	117.69	20		CH.AZUL		115.00	6	1.0242	117.78
54		LM1115		115.00	6	1.0057	115.65	55		LM2115		115.00	6	1.0066	115.75
61		FFIELD		115.00	6	1.0041	115.47	87		CAL115		115.00	6	1.0288	118.32
88		EST115		115.00	6	1.0322	118.70	92		L.V115		115.00	6	1.0295	118.40
109		STA RITA115		115.00	6	1.0038	115.43	154		CEMPAN15		115.00	6	1.0002	115.02
191		CHANG115		115.00	6	1.0062	115.72	522		TCATIVÁ 115		115.00	6	1.0061	115.70
529		TCOLON 115		115.00	6	1.0047	115.54	701		BAITUN115		115.00	6	1.0131	116.50

702 BJOMIN115 115.00 6 1.0136 116.56

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)
2		PAN115		115.00	6	0.9866	113.46	4		PANII115		115.00	6	0.9982	114.80
6		CHO115		115.00	6	0.9969	114.64	18		CAC115		115.00	6	0.9865	113.45
19		C.V115		115.00	6	0.9892	113.76	21		C.BAN115		115.00	6	0.9812	112.84
23		CH115		115.00	6	0.9889	113.72	26		LOC115		115.00	6	0.9817	112.89
30		MAR115		115.00	6	0.9805	112.75	33		STM115		115.00	6	0.9853	113.31
37		SAN115		115.00	6	0.9810	112.81	48		TINAJ115		115.00	6	0.9850	113.28
50		M.O115		115.00	6	0.9851	113.29	52		TOC115		115.00	6	0.9963	114.57
123		MIR115		115.00	7	0.9922	114.10								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:52
 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	AREA
SWING																	
66		BLM13B		13.800	V2	38.0	15.7	25.0	0.0	0.9900	41.5	0.9246	47.0			62	6
67		BLM13C		13.800	V3	38.0	15.7	25.0	0.0	0.9900	41.5	0.9246	47.0			62	6
68		BLM13D		13.800	V4	38.0	16.3	25.0	0.0	0.9900	41.8	0.9191	47.0			62	6
90		EST-13L		13.800	E1	19.0	5.8	12.0	-5.0	1.0000	19.9	0.9566	27.0			64	6
91		EST-13T		13.800	E2	19.0	5.8	12.0	-5.0	1.0000	19.9	0.9566	27.0			64	6
94		LV-13.8L		13.800	L1	22.6	7.1	12.0	-5.0	1.0000	23.7	0.9544	27.0			64	6
97		FOR13A		13.800	F1	64.2	-9.4	50.0	-50.0	1.0000	64.9	0.9893	111.0			64	6
98		FOR13B		13.800	F2	64.2	-9.4	50.0	-50.0	1.0000	64.9	0.9893	111.0			64	6
101		BAY13A		13.800	B1	60.3	19.5	50.0	-25.0	0.9900	64.0	0.9513	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	46.5	18.6	50.0	-25.0	0.9900	50.6	0.9289	96.0			61	6
142		CANJ13A		13.800	C1	52.0	13.4	29.0	-29.0	0.9900	54.2	0.9684	69.0			64	6
150		GUALACA 13-213.800		G2	14.0	-5.3	7.4	-7.4	0.9900	15.1	0.9342	14.8			64	6	
151		GUALACA13.8		G1	14.0	-5.3	7.4	-7.4	0.9900	15.1	0.9342	14.8			64	6	
301		CONC13.8		G1	8.4	5.0	5.0	-5.0	0.9589	10.2	0.8589	13.5			64	6	
302		PASOANCH13.813.800		P1	4.3	2.0	2.0	-2.0	0.9570	5.0	0.9072	6.2			64	6	
304		ALGA13.8		A1	4.4	-2.3	2.3	-2.3	1.0909	4.5	0.8894	5.7			64	6	
304		ALGA13.8		A2	4.4	-2.3	2.3	-2.3	1.0909	4.5	0.8894	5.7			64	6	
307		CHAN1 A		G1	63.0	-15.0	50.0	-50.0	0.9900	65.4	0.9727	118.6			64	6	
317		MENDRE13.8		M1	8.8	0.0	0.0	0.0	1.0930	8.0	1.0000	35.3			64	6	

317	MENDRE	13.8	13.800	M2	8.8	0.0	0.0	0.0	1.0930	8.0	1.0000	35.3	64	6
340	PEDGALITO	13.8	13.800	P1	20.1	7.6	12.0	-5.0	0.9900	21.7	0.9351	27.0	64	6
342	LORENA	13.8	13.800	L1	10.5	-5.0	10.5	-5.0	0.9998	11.6	0.9025	19.9	64	6
343	PRUDENCIA_1	13.8	13.800	G1	20.3	-9.8	9.8	-9.8	0.9977	22.6	0.9016	33.0	64	6
346	LORENA 13-2	13.8	13.800	L2	10.5	-5.0	10.5	-5.0	0.9998	11.6	0.9025	19.9	64	6
350	MACANO	13.8	13.800	G1	2.9	-1.0	1.0	-1.0	1.0734	2.8	0.9446	6.2	64	6
541	TOABRE	0.6000	1		20.0	0.0	0.0	0.0	1.0170	19.7	1.0000	88.9	64	6
703	BJOMIN13A	13.8	13.800	G1	20.5	-0.5	13.0	-13.0	1.0000	20.5	0.9996	30.5	64	6
705	BAITUN13A	13.8	13.800	G1	38.0	-7.8	26.6	-26.6	1.0000	38.8	0.9794	50.6	64	6
720	PLANETA	13.8	13.800	G1	3.3	2.0	2.0	-2.0	0.9571	4.1	0.8576	6.2	64	6
SUBSYSTEM TOTALS					738.0	56.1	501.8	-337.8				1237.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:52
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2011 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	21.2	5.3	15.0	0.0	1.0000	21.9	0.9707	44.1			65	7
AREA																	
140		GAT6A		6.9000	G1	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9475	4.1			65	7
140		GAT6A		6.9000	G2	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9475	4.1			65	7
140		GAT6A		6.9000	G3	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9475	4.1			65	7
141		GAT6B		6.9000	G4	3.6	-1.4	3.0	-3.0	1.0000	3.9	0.9351	5.6			65	7
141		GAT6B		6.9000	G5	3.6	-1.4	3.0	-3.0	1.0000	3.9	0.9351	6.2			65	7
141		GAT6B		6.9000	G6	3.6	-1.4	3.0	-3.0	1.0000	3.9	0.9351	6.2			65	7
171		MIR13H		13.800	M1	15.8	6.8	11.2	6.8	1.0273	16.8	0.9185	23.0			65	7
171		MIR13H		13.800	M2	15.8	6.8	11.2	6.8	1.0273	16.8	0.9185	23.0			65	7
SUBSYSTEM TOTALS						69.1	13.0	52.3	-1.4				120.6				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:52
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2011 ESC-MOD DEMANDA-MIN-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			1213.4	1330.8	0.0	0.0	0.0	-158.5	41.0	-158.5
GUATEMAL			196.1	275.1	-197.8	0.0	276.6	27.4	368.1	

2	872.4	855.0	0.0	0.0	0.0	0.0	17.4	0.0
SALVADOR	91.6	224.2	-70.5	0.0	227.7	-28.4	194.0	
3	1239.0	1203.0	0.0	0.0	0.0	0.0	36.0	0.0
HONDURAS	480.8	321.1	-47.0	0.0	292.2	52.2	446.8	
4	534.6	525.2	0.0	0.0	0.0	0.0	9.3	0.0
NICARAGU	50.9	207.6	-57.2	0.0	180.7	-49.8	131.0	
5	1300.7	1280.2	0.0	0.0	0.0	0.0	20.5	0.0
COSTA RI	225.1	520.4	-229.6	0.0	416.4	38.0	312.8	
6	738.0	612.0	0.0	0.0	0.0	111.7	14.3	111.5
PANAMA	56.1	222.1	138.4	0.0	446.1	-37.7	179.4	
7	69.1	21.9	0.0	0.0	0.0	46.8	0.4	47.0
ACANAL	13.0	8.0	0.0	0.0	0.0	-1.7	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	5967.0	5828.1	0.0	0.0	0.0	0.0	138.9	0.0
	1113.7	1778.3	-463.8	0.0	1839.7	0.0	1638.8	

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

FRI, OCT 15 2010 15:57

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
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	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
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2011 ESC-MOD DEMANDA-MAX-VERANO

FRI, OCT 15 2010 15:57

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
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 FRI, OCT 15 2010 15:57
 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																	
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
SYST																	
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-	213.800	G2	14.0	-4.3	7.4	-7.4	0.9900	14.8	0.9567	14.8			64	6
151		GUALACA	13.8	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 FRI, OCT 15 2010 15:57
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																	

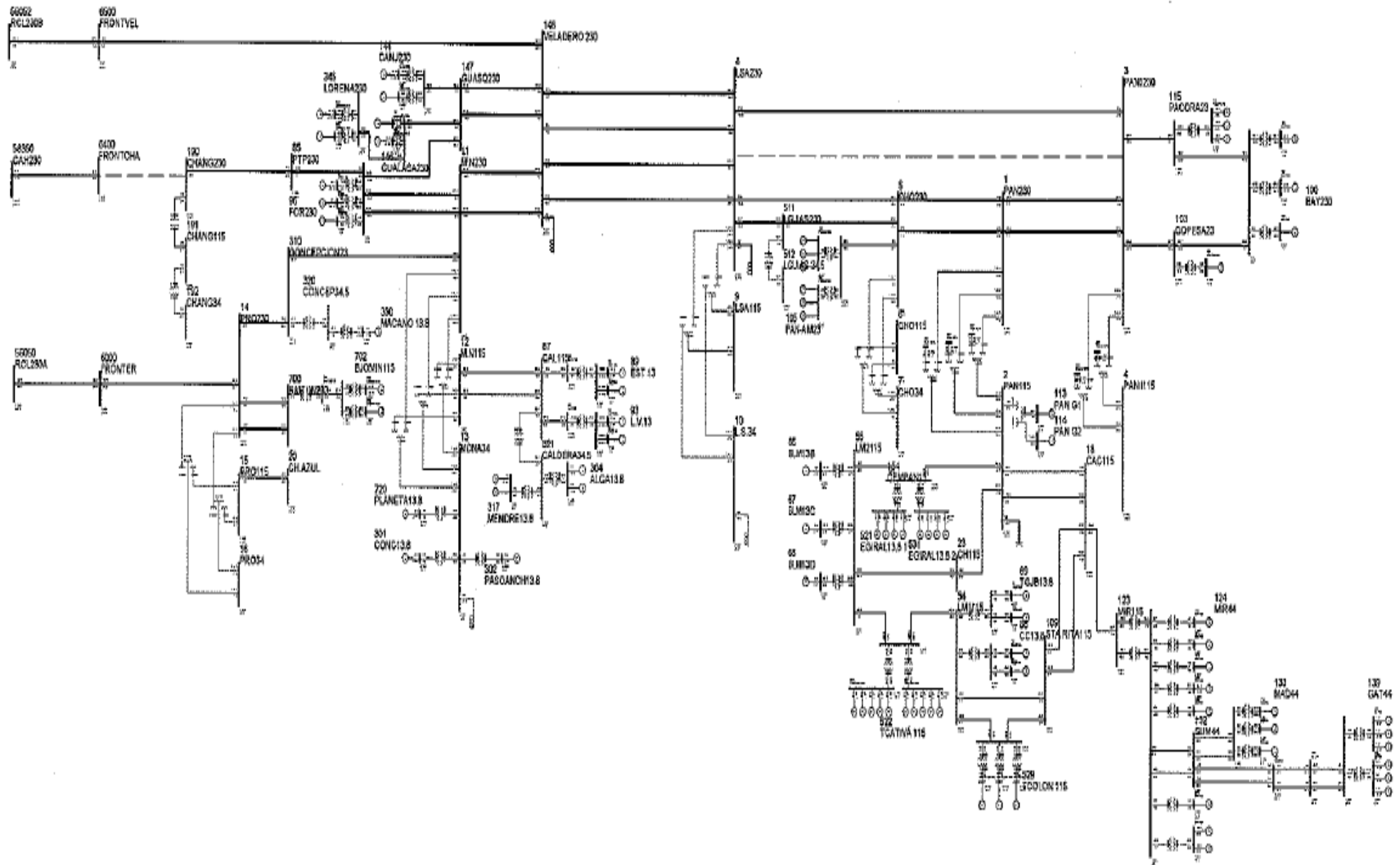
129 MIR13D	13.800 G4	16.0	1.8	15.0	0.0	1.0000	16.1	0.9937	44.1	65	7
AREA											
130 MIR13F	13.800 G5	17.1	0.0	8.0	0.0	1.0137	16.9	1.0000	27.7	65	7
140 GAT6A	6.9000 G1	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9164	4.1	65	7
140 GAT6A	6.9000 G2	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9164	4.1	65	7
140 GAT6A	6.9000 G3	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9164	4.1	65	7
141 GAT6B	6.9000 G4	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9244	5.6	65	7
141 GAT6B	6.9000 G5	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9244	6.2	65	7
141 GAT6B	6.9000 G6	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9244	6.2	65	7
170 MIR13G	13.800 M1	17.0	6.8	11.2	6.8	1.0281	17.8	0.9281	23.0	65	7
171 MIR13H	13.800 M1	17.0	6.8	11.2	6.8	1.0371	17.7	0.9281	23.0	65	7
171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0371	17.7	0.9281	23.0	65	7
SUBSYSTEM TOTALS		101.5	14.9	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 15:57
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2011 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	1371.7	1330.8	0.0	0.0	0.0	-2.9	43.8	-3.0
GUATEMAL	200.0	275.1	-198.7	0.0	277.7	0.5	400.8	
2	868.7	855.0	0.0	0.0	0.0	0.0	13.7	0.0
SALVADOR	73.1	224.2	-70.8	0.0	229.1	-26.2	175.0	
3	1236.8	1203.0	0.0	0.0	0.0	0.0	33.8	0.0
HONDURAS	461.5	321.1	-47.3	0.0	294.0	54.1	427.6	
4	532.0	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	-47.2	112.6	
5	1296.6	1280.2	0.0	0.0	0.0	0.0	16.4	0.0
COSTA RI	200.2	520.4	-230.9	0.0	419.4	29.4	300.7	
6	1110.6	1137.9	0.0	0.0	0.0	-57.5	30.2	-57.0
PANAMA	125.0	231.1	14.8	0.0	448.5	-6.9	334.5	
7	101.5	40.8	0.0	0.0	0.0	60.3	0.5	60.0
ACANAL	14.9	8.3	0.0	0.0	0.0	-3.9	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	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	

2.4. Demanda Mínima de Verano



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

FRI, OCT 15 2010 16:00

BUSES WITH VOLTAGE 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	1.0065	231.50	14		PRO230		230.00	6	1.0164	233.78
85		PTP230		230.00	6	1.0001	230.03	96		FOR230		230.00	6	1.0060	231.39
100		BAY230		230.00	6	1.0118	232.71	115		PACORA23		230.00	6	1.0011	230.25
144		CANJ230		230.00	6	1.0073	231.69	146		GUALACA230		230.00	6	1.0084	231.93
147		GUASQ230		230.00	6	1.0073	231.68	148		VELADERO 230		230.00	6	1.0070	231.61
310		CONCEPCION23		230.00	6	1.0118	232.71	345		LORENA230		230.00	6	1.0092	232.12
700		BAITUN230		230.00	6	1.0168	233.85	6000		FRONTER		230.00	6	1.0175	234.03
6400		FRONTCHA		230.00	6	1.0347	237.97	6500		FRONTVEL		230.00	6	1.0211	234.85

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9938	228.58	3		PANII230		230.00	6	0.9956	228.99
5		CHO230		230.00	6	0.9959	229.05	8		LSA230		230.00	6	0.9978	229.49
103		COPESA23		230.00	6	0.9985	229.66	105		PAN-AM23		230.00	6	0.9959	229.05
190		CHANG230		230.00	6	0.9985	229.65	511		LGUIAS230		230.00	6	0.9988	229.72

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

FRI, OCT 15 2010 16:00

BUSES WITH VOLTAGE 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	1.0410	119.71	12		M.N115		115.00	6	1.0091	116.05
15		PRO115		115.00	6	1.0183	117.10	20		CH.AZUL		115.00	6	1.0190	117.19
54		LM1115		115.00	6	1.0176	117.02	55		LM2115		115.00	6	1.0185	117.13
61		FFIELD		115.00	6	1.0160	116.84	87		CAL115		115.00	6	1.0150	116.72
88		EST115		115.00	6	1.0164	116.89	92		L.V115		115.00	6	1.0155	116.79
109		STA RITA115		115.00	6	1.0142	116.64	154		CEMPAN15		115.00	6	1.0180	117.06
522		TCATIVÁ 115		115.00	6	1.0183	117.10	529		TCOLON 115		115.00	6	1.0159	116.83
701		BAITUN115		115.00	6	1.0062	115.71	702		BJOMIN115		115.00	6	1.0066	115.76

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9881	113.63	4		PANII115		115.00	6	0.9963	114.58
6		CHO115		115.00	6	0.9969	114.65	18		CAC115		115.00	6	0.9881	113.63
19		C.V115		115.00	6	0.9881	113.64	21		C.BAN115		115.00	6	0.9821	112.94
23		CH115		115.00	6	0.9940	114.31	26		LOC115		115.00	6	0.9827	113.01
30		MAR115		115.00	6	0.9817	112.89	33		STM115		115.00	6	0.9868	113.48
37		SAN115		115.00	6	0.9817	112.89	48		TINAJ115		115.00	6	0.9865	113.44
50		M.O115		115.00	6	0.9866	113.45	52		TOC115		115.00	6	0.9943	114.34
123		MIR115		115.00	7	0.9935	114.25	191		CHANG115		115.00	6	0.9947	114.39

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:00
 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																	
66		BLM13B		13.800	V2	38.0	6.1	25.0	0.0	0.9800	39.3	0.9874	47.0			62	6
67		BLM13C		13.800	V3	38.0	6.1	25.0	0.0	0.9800	39.3	0.9874	47.0			62	6
68		BLM13D		13.800	V4	38.0	6.2	25.0	0.0	0.9800	39.3	0.9868	47.0			62	6
90		EST-13L		13.800	E1	19.2	4.4	12.0	-5.0	0.9800	20.1	0.9750	27.0			64	6
94		LV-13.8L		13.800	L1	21.6	4.8	12.0	-5.0	0.9800	22.6	0.9761	27.0			64	6
97		FOR13A		13.800	F1	74.2	-20.1	50.0	-50.0	0.9800	78.4	0.9651	111.0			64	6
98		FOR13B		13.800	F2	74.2	-20.1	50.0	-50.0	0.9800	78.4	0.9651	111.0			64	6
101		BAY13A		13.800	B1	48.7	14.2	50.0	-25.0	0.9800	51.7	0.9601	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	47.8	14.1	50.0	-25.0	0.9800	50.8	0.9590	96.0			61	6
116		PACORA13		13.800	P1	17.0	0.0	8.8	0.0	0.9918	17.1	1.0000	21.7			61	6
116		PACORA13		13.800	P2	17.0	0.0	8.8	0.0	0.9918	17.1	1.0000	21.7			61	6
116		PACORA13		13.800	P3	17.0	0.0	8.8	0.0	0.9918	17.1	1.0000	21.7			61	6
142		CANJ13A		13.800	C1	48.0	11.0	29.0	-29.0	0.9800	50.2	0.9748	69.0			64	6
150		GUALACA 13-		213.800	G2	12.0	-6.7	7.4	-7.4	0.9800	14.0	0.8743	14.8			64	6
301		CONC13.8		13.800	G1	8.0	4.0	4.0	-4.0	0.9517	9.4	0.8944	13.5			64	6
302		PASOANCH13.8		13.800	P1	4.0	2.0	2.0	-2.0	0.9504	4.7	0.8944	6.2			64	6
304		ALGA13.8		13.800	A1	4.1	-2.3	2.3	-2.3	1.0781	4.3	0.8748	5.7			64	6
304		ALGA13.8		13.800	A2	4.1	-2.3	2.3	-2.3	1.0781	4.3	0.8748	5.7			64	6
317		MENDRE13.8		13.800	M1	7.9	0.0	0.0	0.0	1.0807	7.3	1.0000	35.3			64	6
342		LORENA13.8		13.800	L1	13.5	-2.8	10.5	-5.0	1.0000	13.8	0.9792	19.9			64	6
350		MACANO 13.8		13.800	G1	3.1	-1.0	1.0	-1.0	1.0527	3.1	0.9514	6.2			64	6
521		EGIRAL13.8		113.800	G1	3.6	1.5	2.8	1.3	0.9950	3.9	0.9259	4.8			63	6

521	EGIRAL13.8	113.800	G2	3.6	1.5	2.8	1.3	0.9950	3.9	0.9259	4.8	63	6
521	EGIRAL13.8	113.800	G3	3.6	1.5	2.8	1.3	0.9950	3.9	0.9259	4.8	63	6
521	EGIRAL13.8	113.800	G4	3.6	1.5	2.8	1.3	0.9950	3.9	0.9259	4.8	63	6
523	TCATIVÁ 13A	13.800	G1	8.3	2.8	6.6	-6.6	0.9900	8.8	0.9480	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	2.8	6.6	-6.6	0.9900	8.8	0.9480	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	2.8	6.6	-6.6	0.9900	8.8	0.9480	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	2.8	6.6	-6.6	0.9900	8.8	0.9480	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	2.8	6.6	-6.6	0.9900	8.8	0.9480	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	8.3	2.8	6.6	-6.6	0.9900	8.8	0.9480	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	8.3	2.8	6.6	-6.6	0.9900	8.8	0.9480	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	8.3	2.8	6.6	-6.6	0.9900	8.8	0.9480	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	8.3	2.8	6.6	-6.6	0.9900	8.8	0.9480	10.9	62	6
524	TCATIVÁ 13B	13.800	G9	8.3	2.8	6.6	-6.6	0.9900	8.8	0.9480	10.9	62	6
531	EGIRAL13.8	213.800	G5	8.2	3.0	6.4	3.0	0.9929	8.8	0.9391	10.9	62	6
531	EGIRAL13.8	213.800	G6	8.2	3.0	6.4	3.0	0.9929	8.8	0.9391	10.9	62	6
531	EGIRAL13.8	213.800	G7	8.2	3.0	6.4	3.0	0.9929	8.8	0.9391	10.9	62	6
531	EGIRAL13.8	213.800	G8	8.2	3.0	6.4	3.0	0.9929	8.8	0.9391	10.9	62	6
703	BJOMIN13A	13.800	G1	22.4	-0.7	13.0	-13.0	0.9900	22.6	0.9996	30.5	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9504	5.2	0.9145	6.2	64	6
SUBSYSTEM TOTALS				712.0	64.6	501.4	-276.3				1059.6		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:00
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																	
129		MIR13D		13.800	G4	22.3	5.5	15.0	0.0	1.0000	22.9	0.9710	44.1			65	7
AREA																	
140		GAT6A		6.9000	G1	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9654	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9654	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9654	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9503	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9503	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9503	6.2			65	7
171		MIR13H		13.800	M1	15.0	6.8	11.2	6.8	1.0266	16.1	0.9103	23.0			65	7
171		MIR13H		13.800	M2	15.0	6.8	11.2	6.8	1.0266	16.1	0.9103	23.0			65	7
SUBSYSTEM TOTALS						69.7	13.7	52.3	-1.4				120.6				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:00
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2011 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	1249.2	1330.8	0.0	0.0	0.0	-123.5	41.9	-123.5
GUATEMAL	202.5	275.1	-198.2	0.0	277.2	21.7	381.2	
2	871.0	855.0	0.0	0.0	0.0	0.0	16.0	0.0
SALVADOR	83.4	224.2	-70.6	0.0	228.4	-28.0	186.2	
3	1238.0	1203.0	0.0	0.0	0.0	0.0	35.0	0.0
HONDURAS	472.2	321.1	-47.2	0.0	293.1	52.6	438.8	
4	533.3	525.2	0.0	0.0	0.0	0.0	8.1	0.0
NICARAGU	42.3	207.6	-57.5	0.0	181.4	-48.8	122.5	
5	1299.3	1280.2	0.0	0.0	0.0	0.0	19.1	0.0
COSTA RI	206.6	520.4	-230.3	0.0	418.1	29.0	305.6	
6	712.0	625.8	0.0	0.0	0.0	76.6	9.5	76.5
PANAMA	64.6	227.1	141.1	0.0	411.2	-25.0	132.5	
7	69.7	22.4	0.0	0.0	0.0	46.8	0.5	47.0
ACANAL	13.7	8.1	0.0	0.0	0.0	-1.4	7.0	
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	
TOTALS	5972.5	5842.4	0.0	0.0	0.0	0.0	130.0	0.0
	1085.4	1783.5	-462.6	0.0	1809.3	0.0	1573.8	

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

FRI, OCT 15 2010 16:07

BUSES WITH VOLTAGE 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	1.0018	230.41	3		PANII230		230.00	6	1.0052	231.19
8		LSA230		230.00	6	1.0018	230.42	11		M.N230		230.00	6	1.0021	230.49
14		PRO230		230.00	6	1.0116	232.68	85		PTP230		230.00	6	1.0067	231.53
96		FOR230		230.00	6	1.0031	230.72	100		BAY230		230.00	6	1.0289	236.64
103		COPESA23		230.00	6	1.0092	232.11	115		PACORA23		230.00	6	1.0115	232.65
144		CANJ230		230.00	6	1.0012	230.28	146		GUALACA230		230.00	6	1.0052	231.20
147		GUASQ230		230.00	6	1.0011	230.26	190		CHANG230		230.00	6	1.0141	233.25
306		CHAN1 230		230.00	6	1.0125	232.86	310		CONCEPCION23	230.00	6	1.0097	232.23	
341		PRUDENCIA230		230.00	6	1.0114	232.63	345		LORENA230		230.00	6	1.0091	232.10
370		LSA CAP 230		230.00	6	1.0018	230.42	540		ANTON		230.00	6	1.0112	232.59
700		BAITUN230		230.00	6	1.0110	232.53	6000		FRONTER		230.00	6	1.0127	232.93
6400		FRONTCHA		230.00	6	1.0161	233.70	6500		FRONTVEL		230.00	6	1.0149	233.43

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)
5		CHO230		230.00	6	0.9975	229.42	105		PAN-AM23		230.00	6	0.9975	229.42
148		VELADERO 230		230.00	6	0.9981	229.55	354		SANBARTOLO23	230.00	6	0.9975	229.43	
511		LGUIAS230		230.00	6	0.9967	229.24								

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

FRI, OCT 15 2010 16:07

BUSES WITH VOLTAGE 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	1.0034	115.40	4		PANII115		115.00	6	1.0254	117.93
9		LSA115		115.00	6	1.0480	120.52	12		M.N115		115.00	6	1.0008	115.10
15		PRO115		115.00	6	1.0135	116.55	18		CAC115		115.00	6	1.0032	115.37
19		C.V115		115.00	6	1.0113	116.30	20		CH.AZUL		115.00	6	1.0142	116.64
23		CH115		115.00	6	1.0026	115.30	33		STM115		115.00	6	1.0016	115.18
48		TINAJ115		115.00	6	1.0011	115.13	50		M.O115		115.00	6	1.0012	115.14
52		TOC115		115.00	6	1.0228	117.62	54		LM1115		115.00	6	1.0208	117.40

55	LM2115	115.00	6	1.0218	117.51	61	FFIELD	115.00	6	1.0178	117.04
87	CAL115	115.00	6	1.0180	117.07	88	EST115	115.00	6	1.0217	117.50
92	L.V115	115.00	6	1.0194	117.23	109	STA RITA115	115.00	6	1.0199	117.29
123	MIR115	115.00	7	1.0089	116.02	154	CEMPAN15	115.00	6	1.0155	116.78
191	CHANG115	115.00	6	1.0097	116.12	522	TCATIVÁ 115	115.00	6	1.0214	117.47
529	TCOLON 115	115.00	6	1.0199	117.29						

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)
6		CHO115		115.00	6	0.9983	114.80	21		C.BAN115		115.00	6	0.9964	114.58
26		LOC115		115.00	6	0.9968	114.64	30		MAR115		115.00	6	0.9948	114.40
37		SAN115		115.00	6	0.9965	114.59	701		BAITUN115		115.00	6	0.9913	114.00
702		BJOMIN115		115.00	6	0.9935	114.25								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:07
 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	13.7	25.0	0.0	1.0000	40.4	0.9406	47.0			62	6
67		BLM13C		13.800	V3	38.0	13.7	25.0	0.0	1.0000	40.4	0.9406	47.0			62	6
68		BLM13D		13.800	V4	38.0	14.3	25.0	0.0	1.0000	40.6	0.9362	47.0			62	6
90		EST-13L		13.800	E1	22.0	6.6	12.0	-5.0	0.9920	23.1	0.9583	27.0			64	6
91		EST-13T		13.800	E2	22.0	6.6	12.0	-5.0	0.9920	23.1	0.9583	27.0			64	6
94		LV-13.8L		13.800	L1	23.2	7.3	12.0	-5.0	0.9920	24.5	0.9537	27.0			64	6
95		LV-13.8T		13.800	L2	23.2	7.3	12.0	-5.0	0.9920	24.5	0.9537	27.0			64	6
97		FOR13A		13.800	F1	78.0	-6.7	50.0	-50.0	0.9920	78.9	0.9964	111.0			64	6
98		FOR13B		13.800	F2	78.0	-6.7	50.0	-50.0	0.9920	78.9	0.9964	111.0			64	6
99		FOR13C		13.800	F3	78.0	-6.7	50.0	-50.0	0.9920	78.9	0.9964	111.0			64	6
101		BAY13A		13.800	B1	46.9	17.2	50.0	-25.0	1.0000	49.9	0.9390	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.4	17.3	50.0	-25.0	1.0000	51.4	0.9418	96.0			61	6
108		BAY13C		13.800	B3	48.4	17.3	50.0	-25.0	1.0000	51.4	0.9418	100.0			61	6
142		CANJ13A		13.800	C1	55.0	16.3	29.0	-29.0	0.9920	57.8	0.9586	69.0			64	6
143		CANJ13B		13.800	C2	55.0	16.3	29.0	-29.0	0.9920	57.8	0.9586	69.0			64	6
150		GUALACA	13-213.800	G2		13.0	-3.4	7.4	-7.4	0.9900	13.6	0.9670	14.8			64	6
151		GUALACA13.8	13.800	G1		13.0	-3.4	7.4	-7.4	0.9900	13.6	0.9670	14.8			64	6
302		PASOANCH13.8	13.800	P1		4.7	2.0	2.0	-2.0	0.9531	5.4	0.9216	6.2			64	6

304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0837	4.7	0.8981	5.7	64	6
304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0837	4.7	0.8981	5.7	64	6
307	CHAN1 A	13.800	G1	80.0	-16.2	50.0	-50.0	0.9920	82.3	0.9801	118.6	64	6
317	MENDRE13.8	13.800	M1	9.2	0.0	0.0	0.0	1.0857	8.5	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.2	0.0	0.0	0.0	1.0857	8.5	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0862	5.0	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.0862	5.0	1.0000	35.3	64	6
340	PEDGALITO13813.800	P1	21.0	6.2	12.0	-5.0	0.9920	22.1	0.9591	27.0	64	6	
342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	0.9934	13.1	0.9228	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.8	-4.4	9.8	-9.8	0.9920	22.5	0.9800	33.0	64	6
343	PRUDENCIA_1	13.800	G2	21.8	-4.4	9.8	-9.8	0.9920	22.5	0.9800	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	-5.0	10.5	-5.0	0.9934	13.1	0.9228	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0791	3.0	0.9514	6.2	64	6
351	PERLAS N13.813.800	G1	9.0	5.0	5.0	-5.0	0.9828	10.5	0.8742	13.5	64	6	
352	PERLAS S13.813.800	G1	9.0	5.0	5.0	-5.0	0.9828	10.5	0.8742	13.5	64	6	
357	BARTOLO13.8	13.800	G1	7.2	0.2	3.7	-3.7	0.9920	7.3	0.9996	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.2	0.2	3.7	-3.7	0.9920	7.3	0.9996	8.5	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9878	8.6	0.8911	8.9	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	1.2	6.6	-6.6	0.9800	8.5	0.9902	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	1.2	6.6	-6.6	0.9800	8.5	0.9902	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	1.2	6.6	-6.6	0.9800	8.5	0.9902	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	1.2	6.6	-6.6	0.9800	8.5	0.9902	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	1.2	6.6	-6.6	0.9800	8.5	0.9902	10.9	62	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0123	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	0.9969	30.5	64	6
704	BJOMIN13B	13.800	G2	25.0	2.0	13.0	-13.0	0.9920	25.3	0.9969	30.5	64	6
705	BAITUN13A	13.800	G1	40.0	-6.5	26.6	-26.6	0.9920	40.8	0.9871	50.6	64	6
706	BAITUN13B	13.800	G2	40.0	-6.5	26.6	-26.6	0.9920	40.8	0.9871	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9531	5.2	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1174.1	107.7	741.2	-545.2				1823.0		

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

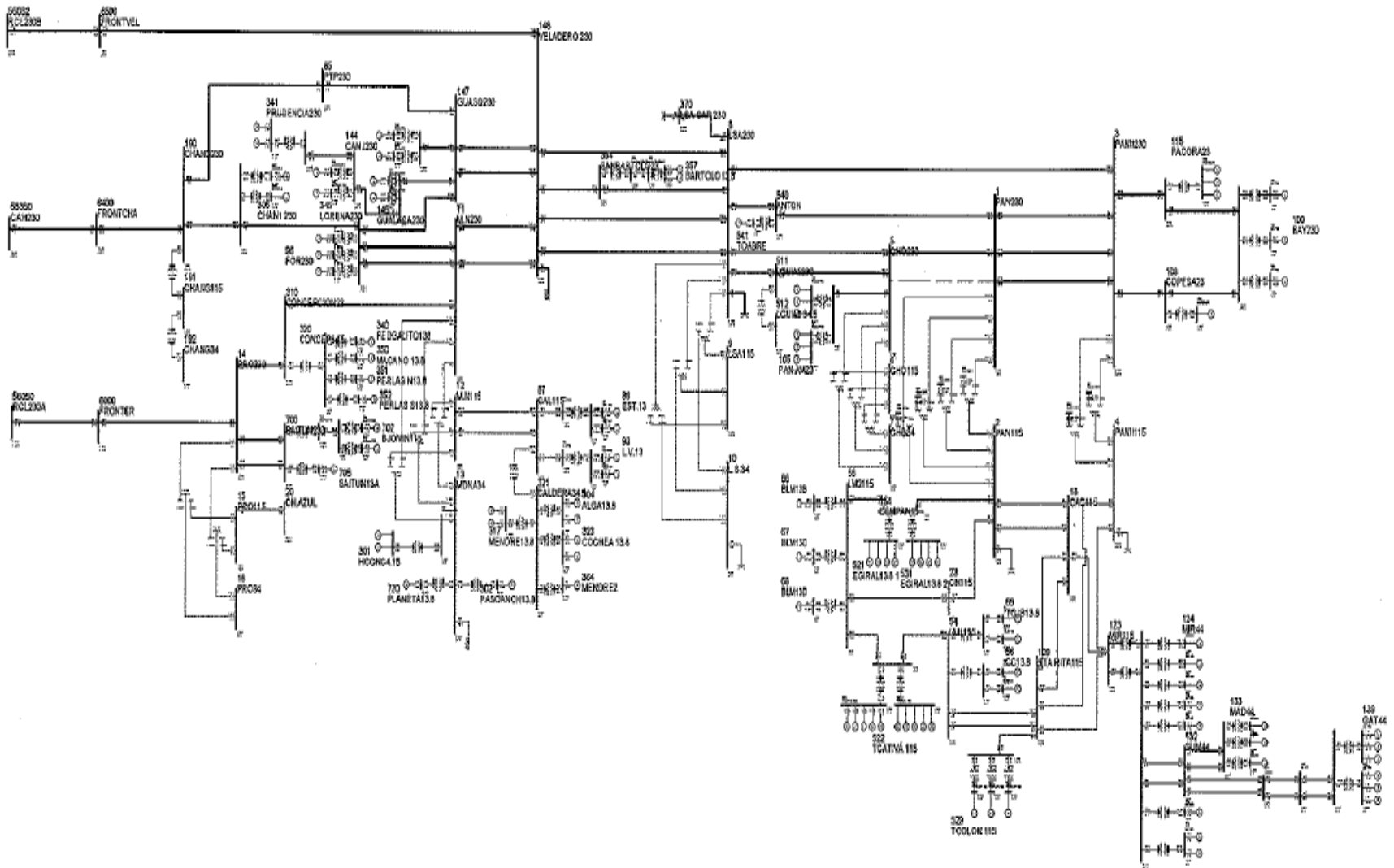
FRI, OCT 15 2010 16:07

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	0.0	15.0	0.0	1.0004	16.4	1.0000	44.1			65	7
AREA															
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0184	16.8	1.0000	27.7			65	7

TOTALS	6573.1	6395.3	0.0	0.0	0.0	0.0	177.7	0.0
	1103.2	1792.1	-834.0	0.0	1889.6	0.0	2034.7	

3.1.1 Contingencia Chorrera – Panamá



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

FRI, OCT 15 2010 16:14

BUSES WITH VOLTAGE 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	1.0100	232.30	85		PTP230		230.00	6	1.0049	231.14
96		FOR230		230.00	6	1.0015	230.34	100		BAY230		230.00	6	1.0254	235.83
103		COPESA23		230.00	6	1.0037	230.86	115		PACORA23		230.00	6	1.0064	231.46
146		GUALACA230		230.00	6	1.0033	230.76	190		CHANG230		230.00	6	1.0130	232.99
306		CHAN1 230		230.00	6	1.0114	232.62	310		CONCEPCION23230		230.00	6	1.0078	231.80
341		PRUDENCIA230		230.00	6	1.0096	232.21	345		LORENA230		230.00	6	1.0073	231.67
540		ANTON		230.00	6	1.0046	231.07	700		BAITUN230		230.00	6	1.0095	232.19
6000		FRONTER		230.00	6	1.0110	232.54	6400		FRONTCHA		230.00	6	1.0150	233.45
6500		FRONTVEL		230.00	6	1.0127	232.93								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9958	229.03	3		PANII230		230.00	6	0.9994	229.85
5		CHO230		230.00	6	0.9875	227.12	8		LSA230		230.00	6	0.9948	228.80
11		M.N230		230.00	6	0.9999	229.99	105		PAN-AM23		230.00	6	0.9875	227.12
144		CANJ230		230.00	6	0.9992	229.82	147		GUASQ230		230.00	6	0.9991	229.80
148		VELADERO 230		230.00	6	0.9939	228.59	354		SANBARTOLO23230		230.00	6	0.9924	228.24
370		LSA CAP 230		230.00	6	0.9948	228.80	511		LGUIAS230		230.00	6	0.9889	227.44

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

FRI, OCT 15 2010 16:14

BUSES WITH VOLTAGE 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	1.0199	117.29	9		LSA115		115.00	6	1.0404	119.65
15		PRO115		115.00	6	1.0119	116.36	19		C.V115		115.00	6	1.0057	115.66
20		CH.AZUL		115.00	6	1.0126	116.45	52		TOC115		115.00	6	1.0173	116.99
54		LM1115		115.00	6	1.0175	117.01	55		LM2115		115.00	6	1.0185	117.13
61		FFIELD		115.00	6	1.0144	116.66	87		CAL115		115.00	6	1.0171	116.97
88		EST115		115.00	6	1.0209	117.40	92		L.V115		115.00	6	1.0185	117.13
109		STA RITA115		115.00	6	1.0161	116.85	123		MIR115		115.00	7	1.0039	115.45

154 CEMPAN15	115.00	6	1.0116	116.33	191 CHANG115	115.00	6	1.0086	115.99
522 TCAIVÁ 115	115.00	6	1.0181	117.08	529 TCOLON 115	115.00	6	1.0161	116.85

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9980	114.77	6		CHO115		115.00	6	0.9883	113.65
12		M.N115		115.00	6	0.9995	114.94	18		CAC115		115.00	6	0.9977	114.74
21		C.BAN115		115.00	6	0.9909	113.95	23		CH115		115.00	6	0.9980	114.77
26		LOC115		115.00	6	0.9913	114.00	30		MAR115		115.00	6	0.9893	113.77
33		STM115		115.00	6	0.9961	114.56	37		SAN115		115.00	6	0.9909	113.96
48		TINAJ115		115.00	6	0.9956	114.50	50		M.O115		115.00	6	0.9958	114.51
701		BAITUN115		115.00	6	0.9904	113.89	702		BJOMIN115		115.00	6	0.9926	114.15

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:14
 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	15.1	25.0	0.0	1.0000	40.9	0.9290	47.0			62	6
67		BLM13C		13.800	V3	38.0	15.1	25.0	0.0	1.0000	40.9	0.9290	47.0			62	6
68		BLM13D		13.800	V4	38.0	15.8	25.0	0.0	1.0000	41.1	0.9237	47.0			62	6
90		EST-13L		13.800	E1	22.0	6.8	12.0	-5.0	0.9920	23.2	0.9556	27.0			64	6
91		EST-13T		13.800	E2	22.0	6.8	12.0	-5.0	0.9920	23.2	0.9556	27.0			64	6
94		LV-13.8L		13.800	L1	23.2	7.6	12.0	-5.0	0.9920	24.6	0.9507	27.0			64	6
95		LV-13.8T		13.800	L2	23.2	7.6	12.0	-5.0	0.9920	24.6	0.9507	27.0			64	6
97		FOR13A		13.800	F1	78.0	-5.2	50.0	-50.0	0.9920	78.8	0.9978	111.0			64	6
98		FOR13B		13.800	F2	78.0	-5.2	50.0	-50.0	0.9920	78.8	0.9978	111.0			64	6
99		FOR13C		13.800	F3	78.0	-5.2	50.0	-50.0	0.9920	78.8	0.9978	111.0			64	6
101		BAY13A		13.800	B1	47.0	19.8	50.0	-25.0	1.0000	51.0	0.9214	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.4	19.9	50.0	-25.0	1.0000	52.3	0.9250	96.0			61	6
108		BAY13C		13.800	B3	48.4	19.9	50.0	-25.0	1.0000	52.3	0.9250	100.0			61	6
142		CANJ13A		13.800	C1	55.0	16.7	29.0	-29.0	0.9920	58.0	0.9570	69.0			64	6
143		CANJ13B		13.800	C2	55.0	16.7	29.0	-29.0	0.9920	58.0	0.9570	69.0			64	6
150		GUALACA 13-213.800		13.800	G2	13.0	-2.9	7.4	-7.4	0.9900	13.5	0.9753	14.8			64	6
151		GUALACA13.8		13.800	G1	13.0	-2.9	7.4	-7.4	0.9900	13.5	0.9753	14.8			64	6
302		PASOANCH13.813.800		13.800	P1	4.8	2.0	2.0	-2.0	0.9510	5.4	0.9217	6.2			64	6
304		ALGA13.8		13.800	A1	4.6	-2.3	2.3	-2.3	1.0827	4.7	0.8981	5.7			64	6

304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0827	4.7	0.8981	5.7	64	6
307	CHAN1 A	13.800	G1	80.0	-15.2	50.0	-50.0	0.9920	82.1	0.9825	118.6	64	6
317	MENDRE13.8	13.800	M1	9.2	0.0	0.0	0.0	1.0847	8.5	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.2	0.0	0.0	0.0	1.0847	8.5	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0852	5.1	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.0852	5.1	1.0000	35.3	64	6
340	PEDGALITO138	13.800	P1	21.0	6.6	12.0	-5.0	0.9920	22.2	0.9535	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-4.8	10.5	-5.0	0.9920	13.0	0.9275	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.8	-3.9	9.8	-9.8	0.9920	22.4	0.9842	33.0	64	6
343	PRUDENCIA_1	13.800	G2	21.8	-3.9	9.8	-9.8	0.9920	22.4	0.9842	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	-4.8	10.5	-5.0	0.9920	13.0	0.9275	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0781	3.0	0.9515	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9819	10.5	0.8742	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9819	10.5	0.8742	13.5	64	6
357	BARTOLO13.8	13.800	G1	7.2	0.5	3.7	-3.7	0.9920	7.3	0.9975	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.2	0.5	3.7	-3.7	0.9920	7.3	0.9975	8.5	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9869	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	0.9828	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	1.6	6.6	-6.6	0.9800	8.6	0.9828	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	1.6	6.6	-6.6	0.9800	8.6	0.9828	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	1.6	6.6	-6.6	0.9800	8.6	0.9828	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	1.6	6.6	-6.6	0.9800	8.6	0.9828	10.9	62	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0057	24.9	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	25.0	2.1	13.0	-13.0	0.9920	25.3	0.9965	30.5	64	6
704	BJOMIN13B	13.800	G2	25.0	2.1	13.0	-13.0	0.9920	25.3	0.9965	30.5	64	6
705	BAITUN13A	13.800	G1	40.0	-5.8	26.6	-26.6	0.9920	40.8	0.9895	50.6	64	6
706	BAITUN13B	13.800	G2	40.0	-5.8	26.6	-26.6	0.9920	40.8	0.9895	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9510	5.2	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1174.5	133.9	741.2	-545.2				1823.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:14
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																	
129		MIR13D		13.800	G4	16.4	1.1	15.0	0.0	1.0000	16.4	0.9977	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0152	16.9	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-0.7	2.0	-2.0	1.0000	2.1	0.9343	4.1			65	7

140	GAT6A	6.9000	G2	1.9	-0.7	2.0	-2.0	1.0000	2.1	0.9343	4.1	65	7
140	GAT6A	6.9000	G3	1.9	-0.7	2.0	-2.0	1.0000	2.1	0.9343	4.1	65	7
141	GAT6B	6.9000	G4	3.9	-1.5	3.0	-3.0	1.0000	4.1	0.9334	5.6	65	7
141	GAT6B	6.9000	G5	3.9	-1.5	3.0	-3.0	1.0000	4.1	0.9334	6.2	65	7
141	GAT6B	6.9000	G6	3.9	-1.5	3.0	-3.0	1.0000	4.1	0.9334	6.2	65	7
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0296	17.8	0.9281	23.0	65	7
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0387	17.6	0.9281	23.0	65	7
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0387	17.6	0.9281	23.0	65	7
SUBSYSTEM TOTALS				101.9	14.9	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:14
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2012 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	1363.8	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	397.8	
2	868.9	855.0	0.0	0.0	0.0	0.2	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	532.0	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	219.0	520.4	-230.2	0.0	416.8	45.0	300.8	
6	1174.5	1159.6	0.0	0.0	0.0	-49.5	64.4	-49.2
PANAMA	133.9	235.5	-226.2	0.0	477.6	-23.9	626.2	
7	101.9	41.6	0.0	0.0	0.0	59.8	0.6	60.0
ACANAL	14.9	8.4	0.0	0.0	0.0	-3.7	10.2	
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	6574.5	6395.3	0.0	0.0	0.0	0.0	179.2	0.0
	1133.2	1792.1	-831.1	0.0	1877.7	0.0	2049.8	

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

FRI, OCT 15 2010 16:18

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)
14		PRO230		230.00	6	1.0026	230.60	100		BAY230		230.00	6	1.0187	234.30
190		CHANG230		230.00	6	1.0079	231.83	306		CHAN1 230		230.00	6	1.0066	231.53
341		PRUDENCIA230		230.00	6	1.0019	230.44	700		BAITUN230		230.00	6	1.0029	230.67
6000		FRONTER		230.00	6	1.0033	230.77	6400		FRONTCHA		230.00	6	1.0102	232.34
6500		FRONTVEL		230.00	6	1.0027	230.63								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9843	226.40	3		PANII230		230.00	6	0.9884	227.32
5		CHO230		230.00	6	0.9771	224.73	8		LSA230		230.00	6	0.9736	223.93
11		M.N230		230.00	6	0.9900	227.70	85		PTP230		230.00	6	0.9974	229.40
96		FOR230		230.00	6	0.9940	228.62	103		COPESA23		230.00	6	0.9934	228.48
105		PAN-AM23		230.00	6	0.9771	224.73	115		PACORA23		230.00	6	0.9966	229.21
144		CANJ230		230.00	6	0.9905	227.81	146		GUALACA230		230.00	6	0.9950	228.84
147		GUASQ230		230.00	6	0.9903	227.78	148		VELADERO 230		230.00	6	0.9746	224.16
310		CONCEPCION23		230.00	6	0.9994	229.86	345		LORENA230		230.00	6	0.9994	229.86
354		SANBARTOLO23		230.00	6	0.9694	222.95	370		LSA CAP 230		230.00	6	0.9736	223.93
511		LGUIAS230		230.00	6	0.9712	223.37	540		ANTON		230.00	6	0.9909	227.91

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

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BUSES WITH VOLTAGE 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	1.0095	116.09	9		LSA115		115.00	6	1.0177	117.04
15		PRO115		115.00	6	1.0044	115.51	20		CH.AZUL		115.00	6	1.0052	115.59
52		TOC115		115.00	6	1.0068	115.78	54		LM1115		115.00	6	1.0111	116.28
55		LM2115		115.00	6	1.0122	116.40	61		FFIELD		115.00	6	1.0081	115.93
87		CAL115		115.00	6	1.0131	116.50	88		EST115		115.00	6	1.0173	116.99
92		L.V115		115.00	6	1.0147	116.69	109		STA RITA115		115.00	6	1.0089	116.02
154		CEMPAN15		115.00	6	1.0041	115.47	191		CHANG115		115.00	6	1.0035	115.40

522 TCATIVÁ 115 115.00 6 1.0118 116.35 529 TCOLON 115 115.00 6 1.0089 116.03

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9876	113.57	6		CHO115		115.00	6	0.9779	112.46
12		M.N115		115.00	6	0.9935	114.25	18		CAC115		115.00	6	0.9874	113.55
19		C.V115		115.00	6	0.9952	114.45	21		C.BAN115		115.00	6	0.9803	112.74
23		CH115		115.00	6	0.9892	113.76	26		LOC115		115.00	6	0.9808	112.80
30		MAR115		115.00	6	0.9788	112.57	33		STM115		115.00	6	0.9857	113.36
37		SAN115		115.00	6	0.9804	112.75	48		TINAJ115		115.00	6	0.9852	113.30
50		M.O115		115.00	6	0.9853	113.31	123		MIR115		115.00	7	0.9946	114.37
701		BAITUN115		115.00	6	0.9861	113.41	702		BJOMIN115		115.00	6	0.9888	113.71

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:18
 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	17.9	25.0	0.0	1.0000	42.0	0.9052	47.0			62	6
67		BLM13C		13.800	V3	38.0	17.9	25.0	0.0	1.0000	42.0	0.9052	47.0			62	6
68		BLM13D		13.800	V4	38.0	18.6	25.0	0.0	1.0000	42.3	0.8981	47.0			62	6
90		EST-13L		13.800	E1	22.0	7.8	12.0	-5.0	0.9920	23.6	0.9422	27.0			64	6
91		EST-13T		13.800	E2	22.0	7.8	12.0	-5.0	0.9920	23.6	0.9422	27.0			64	6
94		LV-13.8L		13.800	L1	23.2	8.7	12.0	-5.0	0.9920	25.0	0.9366	27.0			64	6
95		LV-13.8T		13.800	L2	23.2	8.7	12.0	-5.0	0.9920	25.0	0.9366	27.0			64	6
97		FOR13A		13.800	F1	78.2	1.6	50.0	-50.0	0.9920	78.8	0.9998	111.0			64	6
98		FOR13B		13.800	F2	78.2	1.6	50.0	-50.0	0.9920	78.8	0.9998	111.0			64	6
99		FOR13C		13.800	F3	78.2	1.6	50.0	-50.0	0.9920	78.8	0.9998	111.0			64	6
101		BAY13A		13.800	B1	47.1	24.8	50.0	-25.0	1.0000	53.2	0.8850	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.5	24.9	50.0	-25.0	1.0000	54.5	0.8899	96.0			61	6
108		BAY13C		13.800	B3	48.5	24.9	50.0	-25.0	1.0000	54.5	0.8899	100.0			61	6
142		CANJ13A		13.800	C1	55.1	18.2	29.0	-29.0	0.9920	58.5	0.9498	69.0			64	6
143		CANJ13B		13.800	C2	55.1	18.2	29.0	-29.0	0.9920	58.5	0.9498	69.0			64	6
150		GUALACA 13-213.800		13.800	G2	13.0	-0.9	7.4	-7.4	0.9900	13.2	0.9977	14.8			64	6
151		GUALACA13.8		13.800	G1	13.0	-0.9	7.4	-7.4	0.9900	13.2	0.9977	14.8			64	6
302		PASOANCH13.813.800		13.800	P1	4.8	2.0	2.0	-2.0	0.9413	5.5	0.9219	6.2			64	6
304		ALGA13.8		13.800	A1	4.6	-2.3	2.3	-2.3	1.0781	4.8	0.8981	5.7			64	6

304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0781	4.8	0.8981	5.7	64	6
307	CHAN1 A	13.800	G1	80.2	-10.6	50.0	-50.0	0.9920	81.5	0.9913	118.6	64	6
317	MENDRE13.8	13.800	M1	9.3	0.0	0.0	0.0	1.0802	8.6	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.3	0.0	0.0	0.0	1.0802	8.6	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0807	5.1	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.0807	5.1	1.0000	35.3	64	6
340	PEDGALITO138	13.800	P1	21.0	8.6	12.0	-5.0	0.9920	22.9	0.9254	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-2.2	10.5	-5.0	0.9920	12.3	0.9833	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.9	-1.8	9.8	-9.8	0.9920	22.1	0.9965	33.0	64	6
343	PRUDENCIA_1	13.800	G2	21.9	-1.8	9.8	-9.8	0.9920	22.1	0.9965	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	-2.2	10.5	-5.0	0.9920	12.3	0.9833	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0734	3.0	0.9517	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9777	10.5	0.8746	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9777	10.5	0.8746	13.5	64	6
357	BARTOLO13.8	13.800	G1	7.3	1.8	3.7	-3.7	0.9920	7.5	0.9694	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.3	1.8	3.7	-3.7	0.9920	7.5	0.9694	8.5	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9828	8.7	0.8911	8.9	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	2.3	6.6	-6.6	0.9800	8.8	0.9638	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	2.3	6.6	-6.6	0.9800	8.8	0.9638	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	2.3	6.6	-6.6	0.9800	8.8	0.9638	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	2.3	6.6	-6.6	0.9800	8.8	0.9638	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	2.3	6.6	-6.6	0.9800	8.8	0.9638	10.9	62	6
541	TOABRE	0.6000	1	25.1	0.0	0.0	0.0	0.9920	25.3	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	25.0	2.7	13.0	-13.0	0.9920	25.4	0.9943	30.5	64	6
704	BJOMIN13B	13.800	G2	25.0	2.7	13.0	-13.0	0.9920	25.4	0.9943	30.5	64	6
705	BAITUN13A	13.800	G1	40.1	-2.9	26.6	-26.6	0.9920	40.5	0.9974	50.6	64	6
706	BAITUN13B	13.800	G2	40.1	-2.9	26.6	-26.6	0.9920	40.5	0.9974	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9413	5.3	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1176.5	218.2	741.2	-545.2				1823.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:18
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																	
129		MIR13D		13.800	G4	16.4	3.4	15.0	0.0	1.0000	16.8	0.9787	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0094	17.0	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9643	4.1			65	7

140	GAT6A	6.9000	G2	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9643	4.1	65	7
140	GAT6A	6.9000	G3	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9643	4.1	65	7
141	GAT6B	6.9000	G4	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9496	5.6	65	7
141	GAT6B	6.9000	G5	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9496	6.2	65	7
141	GAT6B	6.9000	G6	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9496	6.2	65	7
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0239	17.9	0.9283	23.0	65	7
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0330	17.8	0.9283	23.0	65	7
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0330	17.8	0.9283	23.0	65	7
SUBSYSTEM TOTALS				102.1	18.5	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:18
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2012 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	1365.6	1330.8	0.0	0.0	0.0	-8.7	43.5	-10.8
GUATEMAL	198.4	275.1	-198.7	0.0	277.8	1.6	398.2	
2	869.5	855.0	0.0	0.0	0.0	0.8	13.7	0.0
SALVADOR	73.0	224.2	-70.8	0.0	229.1	-26.4	175.1	
3	1237.5	1203.0	0.0	0.0	0.0	0.7	33.8	0.0
HONDURAS	461.4	321.1	-47.3	0.0	294.0	54.0	427.7	
4	532.1	525.2	0.0	0.0	0.0	0.2	6.7	0.0
NICARAGU	33.1	207.6	-57.7	0.0	182.3	-46.9	112.5	
5	1297.5	1280.2	0.0	0.0	0.0	0.7	16.6	0.0
COSTA RI	227.4	520.4	-229.9	0.0	415.7	50.4	302.3	
6	1176.5	1159.6	0.0	0.0	0.0	-53.7	70.5	-49.2
PANAMA	218.2	235.5	-220.2	0.0	449.4	-32.3	684.6	
7	102.1	41.6	0.0	0.0	0.0	59.9	0.6	60.0
ACANAL	18.5	8.4	0.0	0.0	0.0	-0.3	10.4	
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	6580.8	6395.3	0.0	0.0	0.0	0.0	185.5	0.0
	1229.9	1792.1	-824.7	0.0	1848.3	0.0	2110.7	

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

FRI, OCT 15 2010 16:20

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
14		PRO230		230.00	6	1.0027	230.61	100		BAY230		230.00	6	1.0091	232.10
190		CHANG230		230.00	6	1.0080	231.84	306		CHAN1 230		230.00	6	1.0067	231.54
341		PRUDENCIA230		230.00	6	1.0020	230.46	700		BAITUN230		230.00	6	1.0030	230.68
6000		FRONTER		230.00	6	1.0034	230.78	6400		FRONTCHA		230.00	6	1.0103	232.36
6500		FRONTVEL		230.00	6	1.0028	230.65								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9676	222.55	3		PANII230		230.00	6	0.9726	223.69
5		CHO230		230.00	6	0.9576	220.26	8		LSA230		230.00	6	0.9634	221.58
11		M.N230		230.00	6	0.9901	227.73	85		PTP230		230.00	6	0.9974	229.41
96		FOR230		230.00	6	0.9941	228.64	103		COPESA23		230.00	6	0.9785	225.06
105		PAN-AM23		230.00	6	0.9576	220.26	115		PACORA23		230.00	6	0.9825	225.97
144		CANJ230		230.00	6	0.9906	227.83	146		GUALACA230		230.00	6	0.9951	228.87
147		GUASQ230		230.00	6	0.9904	227.80	148		VELADERO 230		230.00	6	0.9751	224.26
310		CONCEPCION23		230.00	6	0.9995	229.88	345		LORENA230		230.00	6	0.9995	229.88
354		SANBARTOLO23		230.00	6	0.9691	222.90	370		LSA CAP 230		230.00	6	0.9634	221.58
511		LGUIAS230		230.00	6	0.9532	219.24	540		ANTON		230.00	6	0.9738	223.98

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

FRI, OCT 15 2010 16:20

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	1.0067	115.77	15		PRO115		115.00	6	1.0045	115.52
20		CH.AZUL		115.00	6	1.0052	115.60	54		LM1115		115.00	6	1.0018	115.21
55		LM2115		115.00	6	1.0030	115.34	87		CAL115		115.00	6	1.0130	116.50
88		EST115		115.00	6	1.0173	116.99	92		L.V115		115.00	6	1.0146	116.68
191		CHANG115		115.00	6	1.0036	115.41	522		TCATIVÁ 115		115.00	6	1.0025	115.29

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	0.9725	111.84	4		PANII115		115.00	6	0.9942	114.34
6		CHO115		115.00	6	0.9585	110.22	12		M.N115		115.00	6	0.9935	114.25
18		CAC115		115.00	6	0.9724	111.82	19		C.V115		115.00	6	0.9799	112.69
21		C.BAN115		115.00	6	0.9651	110.98	23		CH115		115.00	6	0.9764	112.29
26		LOC115		115.00	6	0.9656	111.04	30		MAR115		115.00	6	0.9636	110.81
33		STM115		115.00	6	0.9706	111.62	37		SAN115		115.00	6	0.9651	110.99
48		TINAJ115		115.00	6	0.9701	111.56	50		M.O115		115.00	6	0.9702	111.57
52		TOC115		115.00	6	0.9915	114.02	61		FFIELD		115.00	6	0.9988	114.86
109		STA RITA115		115.00	6	0.9984	114.81	123		MIR115		115.00	7	0.9809	112.81
154		CEMPAN15		115.00	6	0.9931	114.21	529		TCOLON 115		115.00	6	0.9984	114.82
701		BAITUN115		115.00	6	0.9861	113.41	702		BJOMIN115		115.00	6	0.9888	113.71

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:20
 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	38.1	21.8	25.0	0.0	1.0000	43.9	0.8676	47.0			62	6
67		BLM13C		13.800	V3	38.1	21.8	25.0	0.0	1.0000	43.9	0.8676	47.0			62	6
68		BLM13D		13.800	V4	38.1	22.8	25.0	0.0	1.0000	44.4	0.8580	47.0			62	6
90		EST-13L		13.800	E1	22.1	7.8	12.0	-5.0	0.9920	23.6	0.9422	27.0			64	6
91		EST-13T		13.800	E2	22.1	7.8	12.0	-5.0	0.9920	23.6	0.9422	27.0			64	6
94		LV-13.8L		13.800	L1	23.3	8.7	12.0	-5.0	0.9920	25.0	0.9366	27.0			64	6
95		LV-13.8T		13.800	L2	23.3	8.7	12.0	-5.0	0.9920	25.0	0.9366	27.0			64	6
97		FOR13A		13.800	F1	78.3	1.6	50.0	-50.0	0.9920	78.9	0.9998	111.0			64	6
98		FOR13B		13.800	F2	78.3	1.6	50.0	-50.0	0.9920	78.9	0.9998	111.0			64	6
99		FOR13C		13.800	F3	78.3	1.6	50.0	-50.0	0.9920	78.9	0.9998	111.0			64	6
101		BAY13A		13.800	B1	47.2	31.9	50.0	-25.0	1.0000	57.0	0.8282	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.6	32.0	50.0	-25.0	1.0000	58.2	0.8352	96.0			61	6
108		BAY13C		13.800	B3	48.6	32.0	50.0	-25.0	1.0000	58.2	0.8353	100.0			61	6
142		CANJ13A		13.800	C1	55.2	18.2	29.0	-29.0	0.9920	58.6	0.9498	69.0			64	6
143		CANJ13B		13.800	C2	55.2	18.2	29.0	-29.0	0.9920	58.6	0.9498	69.0			64	6
150		GUALACA 13-213.800		13.800	G2	13.0	-0.9	7.4	-7.4	0.9900	13.2	0.9976	14.8			64	6
151		GUALACA13.8		13.800	G1	13.0	-0.9	7.4	-7.4	0.9900	13.2	0.9976	14.8			64	6
302		PASOANCH13.8		13.800	P1	4.8	2.0	2.0	-2.0	0.9414	5.5	0.9221	6.2			64	6
304		ALGA13.8		13.800	A1	4.6	-2.3	2.3	-2.3	1.0780	4.8	0.8981	5.7			64	6

304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0780	4.8	0.8981	5.7	64	6
307	CHAN1 A	13.800	G1	80.3	-10.7	50.0	-50.0	0.9920	81.7	0.9913	118.6	64	6
317	MENDRE13.8	13.800	M1	9.3	0.0	0.0	0.0	1.0801	8.6	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.3	0.0	0.0	0.0	1.0801	8.6	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.6	0.0	0.0	0.0	1.0806	5.2	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.6	0.0	0.0	0.0	1.0806	5.2	1.0000	35.3	64	6
340	PEDGALITO138	13.800	P1	21.1	8.6	12.0	-5.0	0.9920	22.9	0.9258	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-2.3	10.5	-5.0	0.9920	12.3	0.9828	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.9	-1.9	9.8	-9.8	0.9920	22.2	0.9965	33.0	64	6
343	PRUDENCIA_1	13.800	G2	21.9	-1.9	9.8	-9.8	0.9920	22.2	0.9965	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	-2.3	10.5	-5.0	0.9920	12.3	0.9828	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0735	3.0	0.9519	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9777	10.6	0.8750	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9777	10.6	0.8750	13.5	64	6
357	BARTOLO13.8	13.800	G1	7.3	1.9	3.7	-3.7	0.9920	7.6	0.9690	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.3	1.9	3.7	-3.7	0.9920	7.6	0.9690	8.5	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9827	8.7	0.8911	8.9	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	3.4	6.6	-6.6	0.9800	9.1	0.9266	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	3.4	6.6	-6.6	0.9800	9.1	0.9266	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	3.4	6.6	-6.6	0.9800	9.1	0.9266	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	3.4	6.6	-6.6	0.9800	9.1	0.9266	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	3.4	6.6	-6.6	0.9800	9.1	0.9266	10.9	62	6
541	TOABRE	0.6000	1	25.1	0.0	0.0	0.0	0.9749	25.8	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	25.1	2.7	13.0	-13.0	0.9920	25.4	0.9943	30.5	64	6
704	BJOMIN13B	13.800	G2	25.1	2.7	13.0	-13.0	0.9920	25.4	0.9943	30.5	64	6
705	BAITUN13A	13.800	G1	40.1	-2.9	26.6	-26.6	0.9920	40.6	0.9973	50.6	64	6
706	BAITUN13B	13.800	G2	40.1	-2.9	26.6	-26.6	0.9920	40.6	0.9973	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9414	5.3	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1178.5	256.8	741.2	-545.2				1823.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:20
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

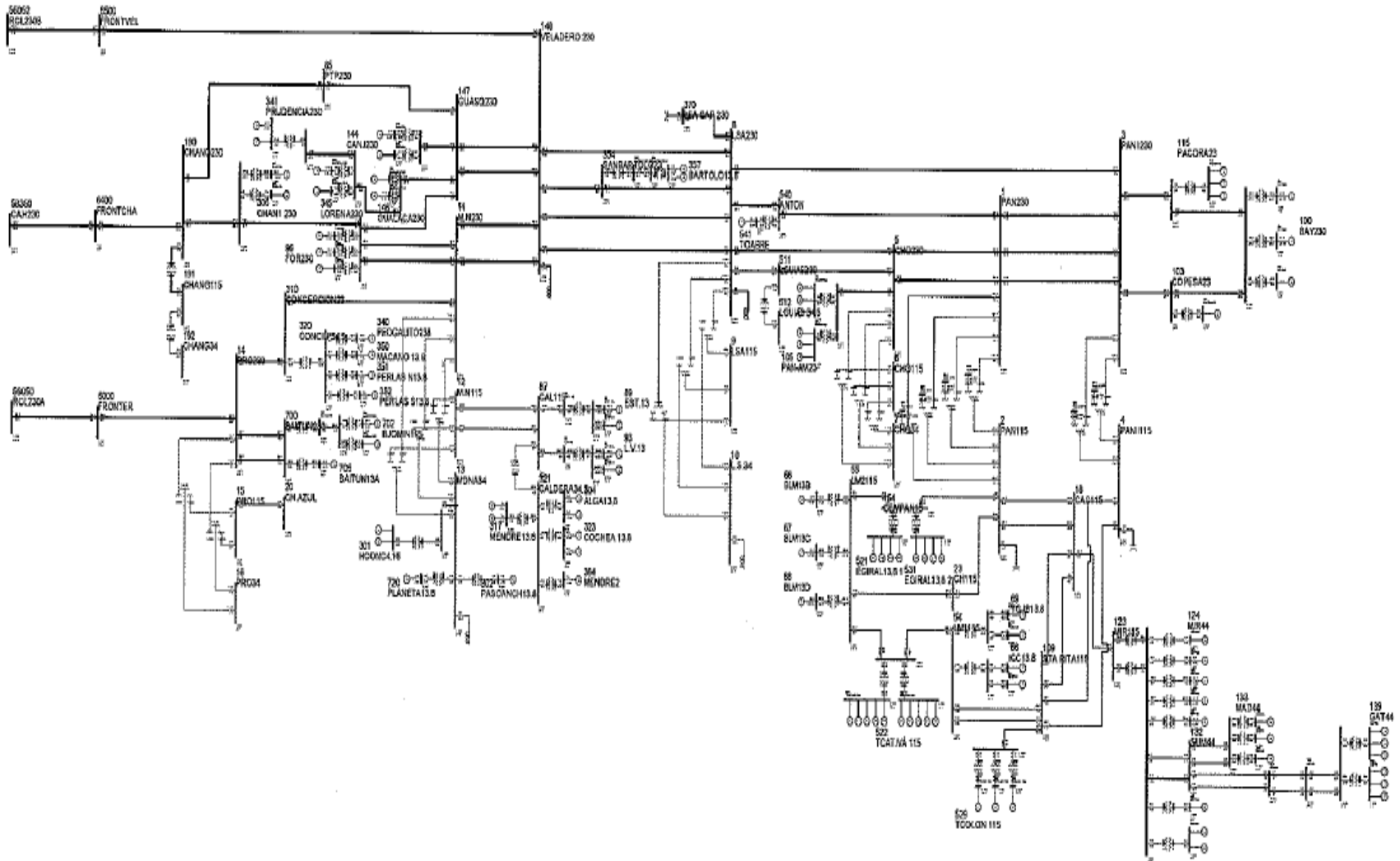
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
129		MIR13D		13.800	G4	16.5	6.8	15.0	0.0	1.0000	17.8	0.9237	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.2	0.0	8.0	0.0	1.0010	17.2	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9930	4.1			65	7

140	GAT6A	6.9000	G2	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9930	4.1	65	7
140	GAT6A	6.9000	G3	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9930	4.1	65	7
141	GAT6B	6.9000	G4	3.9	-1.0	3.0	-3.0	1.0000	4.0	0.9700	5.6	65	7
141	GAT6B	6.9000	G5	3.9	-1.0	3.0	-3.0	1.0000	4.0	0.9700	6.2	65	7
141	GAT6B	6.9000	G6	3.9	-1.0	3.0	-3.0	1.0000	4.0	0.9700	6.2	65	7
170	MIR13G	13.800	M1	17.1	6.8	11.2	6.8	1.0156	18.1	0.9285	23.0	65	7
171	MIR13H	13.800	M1	17.1	6.8	11.2	6.8	1.0247	17.9	0.9285	23.0	65	7
171	MIR13H	13.800	M2	17.1	6.8	11.2	6.8	1.0247	17.9	0.9285	23.0	65	7
SUBSYSTEM TOTALS				102.3	23.7	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:20
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2012 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	1367.7	1330.8	0.0	0.0	0.0	-6.7	43.5	-10.8
GUATEMAL	198.6	275.1	-198.7	0.0	277.8	1.3	398.6	
2	870.3	855.0	0.0	0.0	0.0	1.5	13.7	0.0
SALVADOR	73.1	224.2	-70.7	0.0	229.1	-26.5	175.3	
3	1238.1	1203.0	0.0	0.0	0.0	1.3	33.8	0.0
HONDURAS	461.5	321.1	-47.3	0.0	294.0	54.0	427.8	
4	532.4	525.2	0.0	0.0	0.0	0.4	6.7	0.0
NICARAGU	33.3	207.6	-57.7	0.0	182.2	-47.0	112.6	
5	1298.5	1280.2	0.0	0.0	0.0	1.7	16.7	0.0
COSTA RI	228.3	520.4	-229.9	0.0	415.7	50.0	303.5	
6	1178.5	1159.6	0.0	0.0	0.0	-58.2	77.1	-49.2
PANAMA	256.8	235.5	-213.4	0.0	430.8	-36.2	701.7	
7	102.3	41.6	0.0	0.0	0.0	60.0	0.7	60.0
ACANAL	23.7	8.4	0.0	0.0	0.0	4.5	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	6587.6	6395.3	0.0	0.0	0.0	0.0	192.3	0.0
	1275.2	1792.1	-817.8	0.0	1829.5	0.0	2130.3	

3.2. Demanda Mínima de Invierno



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

FRI, OCT 15 2010 16:25

BUSES WITH VOLTAGE 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	1.0118	232.72	14		PRO230		230.00	6	1.0228	235.25
85		PTP230		230.00	6	1.0171	233.94	96		FOR230		230.00	6	1.0123	232.82
100		BAY230		230.00	6	1.0193	234.44	103		COPESA23		230.00	6	1.0019	230.44
115		PACORA23		230.00	6	1.0043	230.98	144		CANJ230		230.00	6	1.0126	232.89
146		GUALACA230		230.00	6	1.0143	233.28	147		GUASQ230		230.00	6	1.0125	232.88
148		VELADERO		230.00	6	1.0079	231.82	190		CHANG230		230.00	6	1.0212	234.87
306		CHAN1		230.00	6	1.0199	234.58	310		CONCEPCION23		230.00	6	1.0202	234.64
341		PRUDENCIA230		230.00	6	1.0170	233.91	345		LORENA230		230.00	6	1.0160	233.68
354		SANBARTOLO23		230.00	6	1.0056	231.28	540		ANTON		230.00	6	1.0061	231.41
700		BAITUN230		230.00	6	1.0226	235.21	6000		FRONTER		230.00	6	1.0236	235.43
6400		FRONTCHA		230.00	6	1.0221	235.08	6500		FRONTVEL		230.00	6	1.0258	235.93

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9965	229.19	3		PANII230		230.00	6	0.9983	229.60
5		CHO230		230.00	6	0.9969	229.29	8		LSA230		230.00	6	0.9974	229.40
105		PAN-AM23		230.00	6	0.9969	229.29	370		LSA CAP		230.00	6	0.9974	229.40
511		LGUIAS230		230.00	6	0.9980	229.55								

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

FRI, OCT 15 2010 16:25

BUSES WITH VOLTAGE 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	115.10	9		LSA115		115.00	6	1.0453	120.21
12		M.N115		115.00	6	1.0125	116.44	15		PRO115		115.00	6	1.0247	117.84
20		CH.AZUL		115.00	6	1.0254	117.92	54		LM1115		115.00	6	1.0070	115.81
55		LM2115		115.00	6	1.0078	115.90	61		FFIELD		115.00	6	1.0053	115.61
87		CAL115		115.00	6	1.0211	117.43	88		EST115		115.00	6	1.0228	117.62
92		L.V115		115.00	6	1.0218	117.50	109		STA RITA115		115.00	6	1.0052	115.60
154		CEMPAN15		115.00	6	1.0025	115.28	191		CHANG115		115.00	6	1.0175	117.01

522 TCATIVÁ 115	115.00	6	1.0074	115.86	529 TCOLON 115	115.00	6	1.0052	115.60
701 BAITUN115	115.00	6	1.0114	116.31	702 BJOMIN115	115.00	6	1.0121	116.39

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9914	114.01	6		CHO115		115.00	6	0.9976	114.73
18		CAC115		115.00	6	0.9912	113.98	19		C.V115		115.00	6	0.9922	114.10
21		C.BAN115		115.00	6	0.9853	113.31	23		CH115		115.00	6	0.9920	114.08
26		LOC115		115.00	6	0.9859	113.38	30		MAR115		115.00	6	0.9848	113.25
33		STM115		115.00	6	0.9900	113.85	37		SAN115		115.00	6	0.9850	113.27
48		TINAJ115		115.00	6	0.9897	113.82	50		M.O115		115.00	6	0.9898	113.83
52		TOC115		115.00	6	0.9989	114.87	123		MIR115		115.00	7	0.9955	114.48

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:25
 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																	
66		BLM13B		13.800	V2	30.0	14.5	25.0	0.0	0.9900	33.6	0.9007	47.0			62	6
67		BLM13C		13.800	V3	30.0	14.5	25.0	0.0	0.9900	33.6	0.9007	47.0			62	6
68		BLM13D		13.800	V4	30.0	15.1	25.0	0.0	0.9900	33.9	0.8931	47.0			62	6
90		EST-13L		13.800	E1	18.0	5.6	12.0	-5.0	0.9900	19.0	0.9550	27.0			64	6
94		LV-13.8L		13.800	L1	20.0	6.0	12.0	-5.0	0.9900	21.1	0.9575	27.0			64	6
97		FOR13A		13.800	F1	74.4	-17.0	50.0	-50.0	0.9900	77.1	0.9749	111.0			64	6
98		FOR13B		13.800	F2	74.4	-17.0	50.0	-50.0	0.9900	77.1	0.9749	111.0			64	6
101		BAY13A		13.800	B1	42.4	24.1	50.0	-25.0	1.0000	48.7	0.8696	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	43.1	24.1	50.0	-25.0	1.0000	49.4	0.8729	96.0			61	6
142		CANJ13A		13.800	C1	57.0	16.5	29.0	-29.0	1.0000	59.3	0.9606	69.0			64	6
150		GUALACA 13-213.800		G2	11.0	-5.8	7.4	-7.4	0.9900	12.5	0.8858	14.8			64	6	
302		PASOANCH13.813.800		P1	4.7	2.0	2.0	-2.0	0.9539	5.4	0.9216	6.2			64	6	
304		ALGA13.8		A1	4.6	-2.3	2.3	-2.3	1.0872	4.7	0.8981	5.7			64	6	
304		ALGA13.8		A2	4.6	-2.3	2.3	-2.3	1.0872	4.7	0.8981	5.7			64	6	
307		CHAN1 A		G1	85.0	-15.5	50.0	-50.0	1.0000	86.4	0.9838	118.6			64	6	
317		MENDRE13.8		M1	9.2	0.0	0.0	0.0	1.0892	8.5	1.0000	35.3			64	6	
317		MENDRE13.8		M2	9.2	0.0	0.0	0.0	1.0892	8.5	1.0000	35.3			64	6	
323		COCHEA 13.8		C1	5.5	0.0	0.0	0.0	1.0897	5.0	1.0000	35.3			64	6	
323		COCHEA 13.8		C2	5.5	0.0	0.0	0.0	1.0897	5.0	1.0000	35.3			64	6	

340	PEDGALITO138	13.800	P1	18.0	5.5	12.0	-5.0	1.0000	18.8	0.9568	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	1.0004	13.0	0.9228	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.0	-9.0	9.8	-9.8	1.0000	22.8	0.9199	33.0	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0894	3.0	0.9514	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9922	10.4	0.8742	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9922	10.4	0.8742	13.5	64	6
357	BARTOLO13.8	13.800	G1	6.0	0.1	3.7	-3.7	1.0000	6.0	0.9998	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.0	0.1	3.7	-3.7	1.0000	6.0	0.9998	8.5	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9909	8.6	0.8911	8.9	64	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0072	24.8	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	26.6	0.7	13.0	-13.0	1.0000	26.6	0.9997	30.5	64	6
705	BAITUN13A	13.800	G1	40.9	-8.1	26.6	-26.6	1.0000	41.6	0.9809	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9539	5.2	0.9145	6.2	64	6
SUBSYSTEM TOTALS				747.3	61.7	488.1	-336.6				1285.5		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:25
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2012 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																						
127		MIR13B		12.000	G2	8.0	0.0	5.0	0.0	1.0575	7.6	1.0000	13.5							65	7	
128		MIR13C		12.000	G3	20.0	4.4	11.0	0.0	1.0000	20.5	0.9761	29.4							65	7	
129		MIR13D		13.800	G4	26.0	6.3	15.0	0.0	1.0000	26.8	0.9722	44.1							65	7	
AREA																						
130		MIR13F		13.800	G5	16.3	0.2	8.0	0.0	1.0000	16.3	0.9999	27.7							65	7	
SUBSYSTEM TOTALS						70.3	11.0	39.0	0.0				114.7									

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:25
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2012 ESC-MOD DEMANDA-MIN-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			1231.8	1330.8	0.0	0.0	0.0	-142.1	43.1	-141.0
GUATEMAL			206.8	275.1	-197.6	0.0	276.6	23.9	382.2	
2			872.0	855.0	0.0	0.0	0.0	0.3	16.7	0.0

SALVADOR	87.9	224.2	-70.5	0.0	228.0	-27.9	190.1	
3	1238.6	1203.0	0.0	0.0	0.0	0.2	35.5	0.0
HONDURAS	476.3	321.1	-47.1	0.0	292.6	52.8	442.2	
4	534.2	525.2	0.0	0.0	0.0	0.3	8.7	0.0
NICARAGU	46.3	207.6	-57.4	0.0	181.1	-49.3	126.6	
5	1301.1	1280.2	0.0	0.0	0.0	1.7	19.3	0.0
COSTA RI	212.8	520.4	-230.1	0.0	417.6	34.0	306.1	
6	747.3	637.8	0.0	0.0	0.0	93.1	16.4	94.0
PANAMA	61.7	231.5	141.8	0.0	490.9	-28.0	207.4	
7	70.3	22.9	0.0	0.0	0.0	46.5	1.0	47.0
ACANAL	11.0	8.3	0.0	0.0	0.0	-5.4	8.0	
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	
TOTALS	5995.3	5854.8	0.0	0.0	0.0	0.0	140.5	0.0
	1102.8	1788.0	-460.9	0.0	1886.9	0.0	1662.6	

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

FRI, OCT 15 2010 16:28

BUSES WITH VOLTAGE 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	1.0040	230.92	11		M.N230		230.00	6	1.0042	230.97
14		PRO230		230.00	6	1.0138	233.18	85		PTP230		230.00	6	1.0071	231.64
96		FOR230		230.00	6	1.0031	230.72	100		BAY230		230.00	6	1.0282	236.49
103		COPESA23		230.00	6	1.0081	231.86	115		PACORA23		230.00	6	1.0115	232.65
144		CANJ230		230.00	6	1.0020	230.46	146		GUALACA230		230.00	6	1.0071	231.63
147		GUASQ230		230.00	6	1.0020	230.46	190		CHANG230		230.00	6	1.0137	233.14
306		CHAN1 230		230.00	6	1.0116	232.67	310		CONCEPCION23		230.00	6	1.0106	232.44
341		PRUDENCIA230		230.00	6	1.0153	233.52	345		LORENA230		230.00	6	1.0124	232.85
540		ANTON		230.00	6	1.0111	232.56	700		BAITUN230		230.00	6	1.0138	233.16
6000		FRONTER		230.00	6	1.0149	233.42	6400		FRONTCHA		230.00	6	1.0157	233.62
6500		FRONTVEL		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		PAN230		230.00	6	0.9977	229.47	5		CHO230		230.00	6	0.9919	228.13
8		LSA230		230.00	6	0.9898	227.66	105		PAN-AM23		230.00	6	0.9919	228.13
148		VELADERO 230		230.00	6	0.9994	229.85	370		LSA CAP 230		230.00	6	0.9898	227.66
511		LGUIAS230		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

FRI, OCT 15 2010 16:28

BUSES WITH VOLTAGE 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	1.0004	115.05	4		PANII115		115.00	6	1.0220	117.53
9		LSA115		115.00	6	1.0359	119.13	15		PRO115		115.00	6	1.0157	116.80
18		CAC115		115.00	6	1.0002	115.03	19		C.V115		115.00	6	1.0077	115.88
20		CH.AZUL		115.00	6	1.0164	116.89	23		CH115		115.00	6	1.0030	115.35
52		TOC115		115.00	6	1.0193	117.21	54		LM1115		115.00	6	1.0267	118.07
55		LM2115		115.00	6	1.0279	118.21	61		FFIELD		115.00	6	1.0235	117.70
87		CAL115		115.00	6	1.0088	116.01	88		EST115		115.00	6	1.0121	116.40

92 L.V115	115.00	6	1.0101	116.16	109 STA RITA115	115.00	6	1.0238	117.74	
123 MIR115	115.00	7	1.0062	115.72	154 CEMPAN15	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						

BUSES WITH VOLTAGE 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 FRI, OCT 15 2010 16:28
 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																	
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
SYST																	
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	13-213	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	6
SUBSYSTEM TOTALS				1185.8	109.8	754.8	-494.8				1822.5		

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AÑO 2012 ESC-MOD DEMANDA-MAX-VERANO

AREA 7 [ACANAL] MACHINE SUMMARY:

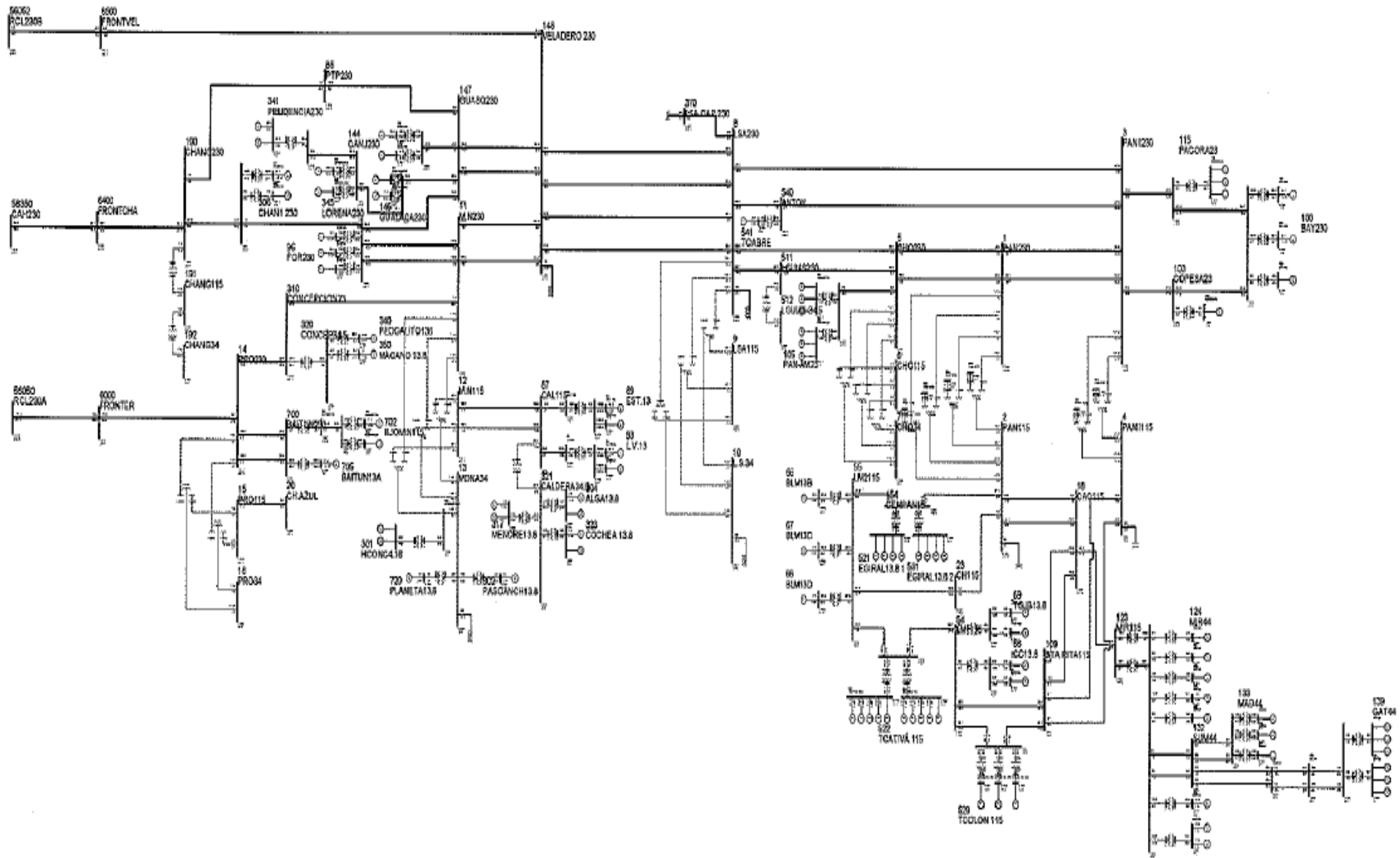
BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING															
129	MIR13D	13.800	G4	18.2	0.5	15.0	0.0	1.0000	18.2	0.9996	44.1			65	7
AREA															
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0161	16.8	1.0000	27.7			65	7
140	GAT6A	6.9000	G1	1.9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

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:28
 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	

3.4. Demanda Mínima de Verano



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

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BUSES WITH VOLTAGE 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	232.05	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	600		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

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AÑO 2012 ESC-MOD DEMANDA-MIN-VERANO

FRI, OCT 15 2010 16:30

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0022	115.25	9		LSA115		115.00	6	1.0492	120.66
12		M.N115		115.00	6	1.0111	116.28	15		PRO115		115.00	6	1.0192	117.21
20		CH.AZUL		115.00	6	1.0200	117.30	52		TOC115		115.00	6	1.0001	115.01
54		LM1115		115.00	6	1.0143	116.65	55		LM2115		115.00	6	1.0152	116.75
61		FFIELD		115.00	6	1.0126	116.45	87		CAL115		115.00	6	1.0174	117.00
88		EST115		115.00	6	1.0187	117.15	92		L.V115		115.00	6	1.0179	117.06
109		STA RITA115		115.00	6	1.0110	116.27	154		CEMPAN15		115.00	6	1.0074	115.85
191		CHANG115		115.00	6	1.0098	116.12	522		TCATIVÁ 115		115.00	6	1.0150	116.72

529	TCOLON	115	115.00	6	1.0127	116.46	701	BAITUN115	115.00	6	1.0069	115.79
702	BJOMIN115		115.00	6	1.0072	115.83						

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)
2		PAN115		115.00	6	0.9907	113.93	6		CHO115		115.00	6	0.9982	114.79
18		CAC115		115.00	6	0.9907	113.93	19		C.V115		115.00	6	0.9929	114.18
21		C.BAN115		115.00	6	0.9848	113.25	23		CH115		115.00	6	0.9944	114.36
26		LOC115		115.00	6	0.9854	113.32	30		MAR115		115.00	6	0.9842	113.18
33		STM115		115.00	6	0.9893	113.77	37		SAN115		115.00	6	0.9845	113.22
48		TINAJ115		115.00	6	0.9890	113.73	50		M.O115		115.00	6	0.9891	113.74
123		MIR115		115.00	7	0.9983	114.80								

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AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
66		BLM13B		13.800	V2	31.0	9.2	25.0	0.0	0.9850	32.8	0.9590	47.0			62	6
67		BLM13C		13.800	V3	31.0	9.2	25.0	0.0	0.9850	32.8	0.9590	47.0			62	6
68		BLM13D		13.800	V4	31.0	9.5	25.0	0.0	0.9850	32.9	0.9559	47.0			62	6
90		EST-13L		13.800	E1	18.0	3.6	12.0	-5.0	0.9800	18.7	0.9803	27.0			64	6
94		LV-13.8L		13.800	L1	20.0	4.0	12.0	-5.0	0.9800	20.8	0.9807	27.0			64	6
97		FOR13A		13.800	F1	75.0	-21.2	50.0	-50.0	0.9800	79.5	0.9622	111.0			64	6
98		FOR13B		13.800	F2	75.0	-21.2	50.0	-50.0	0.9800	79.5	0.9622	111.0			64	6
101		BAY13A		13.800	B1	53.2	12.7	50.0	-25.0	0.9800	55.8	0.9727	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	53.1	12.7	50.0	-25.0	0.9800	55.7	0.9726	96.0			61	6
142		CANJ13A		13.800	C1	45.0	9.8	29.0	-29.0	0.9800	47.0	0.9772	69.0			64	6
150		GUALACA	13-213.800	G2		11.0	-5.0	7.4	-7.4	0.9900	12.2	0.9111	14.8			64	6
302		PASOANCH13.8	13.800	P1		4.6	2.0	2.0	-2.0	0.9495	5.3	0.9180	6.2			64	6
304		ALGA13.8	13.800	A1		4.7	-2.3	2.3	-2.3	1.0871	4.8	0.9019	5.7			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		PEDGALITO138	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 FRI, OCT 15 2010 16:30
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 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																						
129		MIR13D		13.800	G4	19.1	0.9	15.0	0.0	1.0000	19.1	0.9988	44.1							65	7	
AREA																						
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0292	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						70.1	21.4	48.5	20.5				113.2									

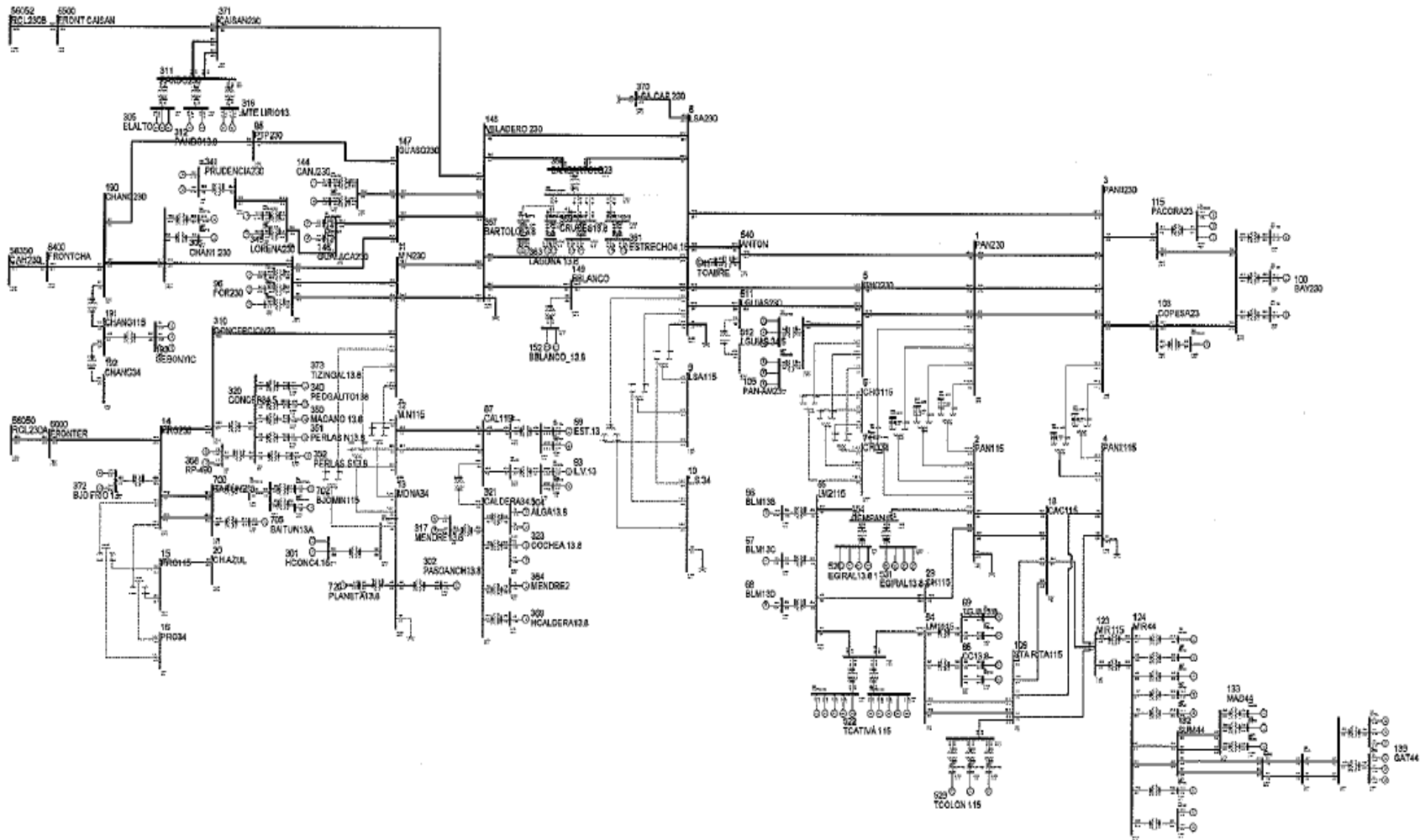
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:30
PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
AÑO 2012 ESC-MOD DEMANDA-MIN-VERANO IN MW/MVAR

X--	AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1			1252.6	1330.8	0.0	0.0	0.0	-122.6	44.4	-122.6
GUATEMAL			219.7	275.1	-196.3	0.0	274.5	9.6	405.9	
2			870.9	855.0	0.0	0.0	0.0	0.0	15.9	0.0

SALVADOR	93.2	224.2	-70.5	0.0	227.6	-18.4	185.6	
3	1237.9	1203.0	0.0	0.0	0.0	0.0	34.9	0.0
HONDURAS	474.0	321.1	-47.1	0.0	292.7	54.7	438.0	
4	533.3	525.2	0.0	0.0	0.0	0.0	8.0	0.0
NICARAGU	42.5	207.6	-57.5	0.0	181.4	-48.5	122.3	
5	1298.4	1280.2	0.0	0.0	0.0	0.0	18.3	0.0
COSTA RI	214.2	520.4	-230.1	0.0	417.2	40.1	300.9	
6	739.6	651.1	0.0	0.0	0.0	76.4	12.1	75.6
PANAMA	7.3	236.3	156.4	0.0	497.8	-42.5	154.9	
7	70.1	23.3	0.0	0.0	0.0	46.2	0.5	47.0
ACANAL	21.4	8.5	0.0	0.0	0.0	5.0	7.9	
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	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	

4. Año 2013

4.1. 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

FRI, OCT 15 2010 16:34

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0001	230.02	3		PANII230		230.00	6	1.0044	231.02
11		M.N230		230.00	6	1.0034	230.79	14		PRO230		230.00	6	1.0191	234.40
85		PTP230		230.00	6	1.0060	231.39	96		FOR230		230.00	6	1.0021	230.48
100		BAY230		230.00	6	1.0327	237.52	103		COPESA23		230.00	6	1.0091	232.10
115		PACORA23		230.00	6	1.0125	232.87	144		CANJ230		230.00	6	1.0006	230.14
146		GUALACA230		230.00	6	1.0053	231.22	147		GUASQ230		230.00	6	1.0006	230.13
190		CHANG230		230.00	6	1.0135	233.11	306		CHAN1 230		230.00	6	1.0114	232.61
310		CONCEPCION23		230.00	6	1.0133	233.07	311		PANDO230		230.00	6	1.0372	238.55
341		PRUDENCIA230		230.00	6	1.0128	232.94	345		LORENA230		230.00	6	1.0100	232.29
371		CAISAN230		230.00	6	1.0359	238.25	540		ANTON		230.00	6	1.0082	231.88
700		BAITUN230		230.00	6	1.0186	234.27	6000		FRONTER		230.00	6	1.0219	235.05
6400		FRONTCHA		230.00	6	1.0157	233.60	6500		FRONT CAISAN		230.00	6	1.0348	238.01

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
5		CHO230		230.00	6	0.9924	228.26	8		LSA230		230.00	6	0.9878	227.20
105		PAN-AM23		230.00	6	0.9924	228.26	148		VELADERO 230		230.00	6	0.9954	228.95
149		BBLANCO		230.00	6	0.9935	228.51	354		SANBARTOLO23		230.00	6	0.9907	227.87
370		LSA CAP 230		230.00	6	0.9878	227.20	511		LGUIAS230		230.00	6	0.9858	226.73

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

FRI, OCT 15 2010 16:34

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0018	115.21	4		PANII115		115.00	6	1.0248	117.85
9		LSA115		115.00	6	1.0322	118.70	15		PRO115		115.00	6	1.0210	117.41
18		CAC115		115.00	6	1.0016	115.18	19		C.V115		115.00	6	1.0098	116.13
20		CH.AZUL		115.00	6	1.0217	117.50	23		CH115		115.00	6	1.0029	115.34
52		TOC115		115.00	6	1.0220	117.53	54		LM1115		115.00	6	1.0253	117.91
55		LM2115		115.00	6	1.0263	118.03	61		FFIELD		115.00	6	1.0219	117.52

87 CAL115	115.00	6	1.0107	116.23	88 EST115	115.00	6	1.0138	116.59
92 L.V115	115.00	6	1.0119	116.37	109 STA RITA115	115.00	6	1.0232	117.67
123 MIR115	115.00	7	1.0072	115.83	154 CEMPAN15	115.00	6	1.0181	117.09
191 CHANG115	115.00	6	1.0053	115.61	522 TCATIVÁ 115	115.00	6	1.0261	118.00
529 TCOLON 115	115.00	6	1.0232	117.67	701 BAITUN115	115.00	6	1.0012	115.14
702 BJOMIN115	115.00	6	1.0032	115.37					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6		CHO115		115.00	6	0.9933	114.23	12		M.N115		115.00	6	0.9955	114.48
21		C.BAN115		115.00	6	0.9942	114.33	26		LOC115		115.00	6	0.9947	114.39
30		MAR115		115.00	6	0.9926	114.15	33		STM115		115.00	6	0.9999	114.98
37		SAN115		115.00	6	0.9943	114.34	48		TINAJ115		115.00	6	0.9993	114.92
50		M.O115		115.00	6	0.9994	114.93								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:34
 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	11.8	25.0	0.0	1.0000	39.8	0.9552	47.0						62	6	
67		BLM13C		13.800	V3	38.0	11.8	25.0	0.0	1.0000	39.8	0.9552	47.0						62	6	
68		BLM13D		13.800	V4	38.0	12.2	25.0	0.0	1.0000	39.9	0.9520	47.0						62	6	
90		EST-13L		13.800	E1	21.0	5.1	12.0	-5.0	0.9800	22.0	0.9719	27.0						64	6	
91		EST-13T		13.800	E2	21.0	5.1	12.0	-5.0	0.9800	22.0	0.9719	27.0						64	6	
94		LV-13.8L		13.800	L1	23.2	5.8	12.0	-5.0	0.9800	24.4	0.9701	27.0						64	6	
95		LV-13.8T		13.800	L2	23.2	5.8	12.0	-5.0	0.9800	24.4	0.9701	27.0						64	6	
97		FOR13A		13.800	F1	86.5	-15.5	50.0	-50.0	0.9800	89.7	0.9843	111.0						64	6	
98		FOR13B		13.800	F2	86.5	-15.5	50.0	-50.0	0.9800	89.7	0.9843	111.0						64	6	
101		BAY13A		13.800	B1	44.5	22.2	50.0	-25.0	1.0100	49.3	0.8949	96.0						61	6	
SYST																					
102		BAY13B		13.800	B2	48.3	22.4	50.0	-25.0	1.0100	52.7	0.9070	96.0						61	6	
108		BAY13C		13.800	B3	48.3	22.4	50.0	-25.0	1.0100	52.7	0.9070	100.0						61	6	
116		PACORA13		13.800	P1	17.1	0.0	8.8	0.0	1.0037	17.0	1.0000	21.7						61	6	
142		CANJ13A		13.800	C1	52.0	13.4	29.0	-29.0	0.9800	54.8	0.9682	69.0						64	6	
143		CANJ13B		13.800	C2	52.0	13.4	29.0	-29.0	0.9800	54.8	0.9682	69.0						64	6	
150		GUALACA 13-213		13.800	G2	14.0	-3.4	7.4	-7.4	0.9900	14.6	0.9718	14.8						64	6	
151		GUALACA13.8		13.800	G1	14.0	-3.4	7.4	-7.4	0.9900	14.6	0.9718	14.8						64	6	

193	GEBONYIC	13.800	G1	8.0	-0.3	4.0	-4.0	1.0000	8.0	0.9994	35.3	64	6
193	GEBONYIC	13.800	G2	8.0	-0.3	4.0	-4.0	1.0000	8.0	0.9994	35.3	64	6
193	GEBONYIC	13.800	G3	8.0	-0.3	4.0	-4.0	1.0000	8.0	0.9994	35.3	64	6
302	PASOANCHI	13.813.800	P1	4.8	2.0	2.0	-2.0	0.9628	5.4	0.9216	6.2	64	6
304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0794	4.8	0.8981	5.7	64	6
304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0794	4.8	0.8981	5.7	64	6
305	ELALTO	13.800	G1	14.0	-5.0	12.0	-5.0	1.0302	14.4	0.9417	20.6	64	6
307	CHAN1 A	13.800	G1	62.0	-18.4	50.0	-50.0	0.9900	65.3	0.9588	118.6	64	6
312	PANDO13.8	13.800	G1	9.0	-2.6	10.0	-5.0	1.0000	9.4	0.9617	19.9	64	6
312	PANDO13.8	13.800	G2	9.0	-2.6	10.0	-5.0	1.0000	9.4	0.9617	19.9	64	6
316	MTE LIRIO	13.13.800	G1	17.0	-5.0	12.0	-5.0	1.0115	17.5	0.9594	27.0	64	6
316	MTE LIRIO	13.13.800	G2	17.0	-5.0	12.0	-5.0	1.0115	17.5	0.9594	27.0	64	6
317	MENDRE13.8	13.800	M1	9.2	0.0	0.0	0.0	1.0814	8.5	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.2	0.0	0.0	0.0	1.0814	8.5	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0819	5.1	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.0819	5.1	1.0000	35.3	64	6
340	PEDGALITO	13.813.800	P1	20.0	3.7	12.0	-5.0	0.9800	20.8	0.9833	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-3.1	10.5	-5.0	1.0000	12.4	0.9680	19.9	64	6
343	PRUDENCIA_1	13.800	G1	25.0	-2.4	9.8	-9.8	1.0000	25.1	0.9955	33.0	64	6
343	PRUDENCIA_1	13.800	G2	25.0	-2.4	9.8	-9.8	1.0000	25.1	0.9955	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	-3.1	10.5	-5.0	1.0000	12.4	0.9680	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0716	3.0	0.9514	6.2	64	6
351	PERLAS N13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9760	10.5	0.8742	13.5	64	6
352	PERLAS S13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9760	10.5	0.8742	13.5	64	6
357	BARTOLO13.8	13.800	G1	7.2	1.7	3.7	-3.7	1.0000	7.4	0.9736	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.2	1.7	3.7	-3.7	1.0000	7.4	0.9736	8.5	64	6
359	CRUCES13.8	13.800	G1	4.6	0.7	2.3	-2.3	1.0000	4.6	0.9898	5.6	64	6
359	CRUCES13.8	13.800	G2	4.6	0.7	2.3	-2.3	1.0000	4.6	0.9898	5.6	64	6
361	ESTRECHO4.164.1600	13.800	G1	4.9	0.5	2.5	-2.5	1.0000	5.0	0.9946	5.6	64	6
361	ESTRECHO4.164.1600	13.800	G2	4.9	0.5	2.5	-2.5	1.0000	5.0	0.9946	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.7	0.3	2.4	-2.4	1.0000	4.7	0.9981	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.7	0.3	2.4	-2.4	1.0000	4.7	0.9981	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9839	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	0.9443	5.5	64	6
368	RP-490	13.800	G2	4.7	-1.6	2.4	-2.4	1.0000	5.0	0.9443	5.5	64	6
369	HCALDERA13.813.800	13.800	G1	3.8	1.9	1.9	-1.9	0.9827	4.3	0.8909	4.3	64	6
372	BJO FRIO 13	13.800	G1	24.0	-4.2	9.8	-9.8	1.0000	24.4	0.9848	33.0	64	6
372	BJO FRIO 13	13.800	G2	24.0	-4.2	9.8	-9.8	1.0000	24.4	0.9848	33.0	64	6
373	TIZINGAL13.813.800	13.800	G1	4.4	2.2	2.2	-2.2	0.9743	5.1	0.8909	21.6	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	3.8	6.6	-6.6	1.0000	9.1	0.9099	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	3.8	6.6	-6.6	1.0000	9.1	0.9099	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	3.8	6.6	-6.6	1.0000	9.1	0.9099	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	3.8	6.6	-6.6	1.0000	9.1	0.9099	10.9	62	6

524	TCATIVÁ 13B	13.800	G0	8.3	3.8	6.6	-6.6	1.0000	9.1	0.9099	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	8.3	3.8	6.6	-6.6	1.0000	9.1	0.9099	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	8.3	3.8	6.6	-6.6	1.0000	9.1	0.9099	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	8.3	3.8	6.6	-6.6	1.0000	9.1	0.9099	10.9	62	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0092	24.8	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	23.0	1.4	13.0	-13.0	1.0000	23.0	0.9983	30.5	64	6
704	BJOMIN13B	13.800	G2	23.0	1.4	13.0	-13.0	1.0000	23.0	0.9983	30.5	64	6
705	BAITUN13A	13.800	G1	38.0	-6.6	26.6	-26.6	1.0000	38.6	0.9854	50.6	64	6
706	BAITUN13B	13.800	G2	38.0	-6.6	26.6	-26.6	1.0000	38.6	0.9854	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9628	5.1	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1309.8	98.0	830.8	-594.9				2123.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:34
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIerno

AREA 7 [ACANAL] MACHINE SUMMARY:

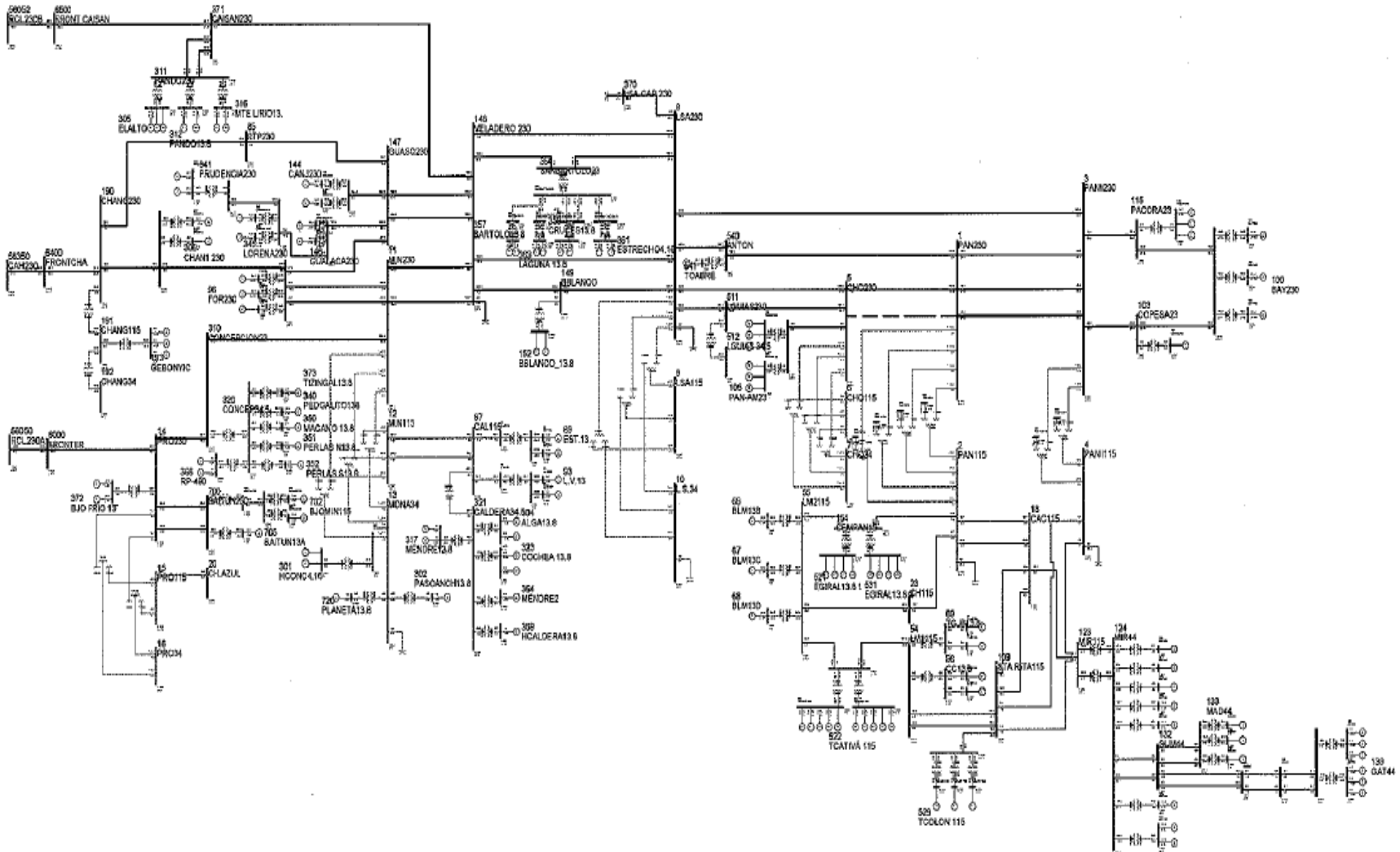
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
129		MIR13D		13.800	G4	19.8	0.2	15.0	0.0	1.0000	19.8	0.9999	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0163	16.8	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-0.9	2.0	-2.0	1.0000	2.1	0.9132	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-0.9	2.0	-2.0	1.0000	2.1	0.9132	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-0.9	2.0	-2.0	1.0000	2.1	0.9132	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9229	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9229	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9229	6.2			65	7
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0307	17.8	0.9281	23.0			65	7
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0397	17.6	0.9281	23.0			65	7
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0397	17.6	0.9281	23.0			65	7
SUBSYSTEM TOTALS				105.3	13.2	71.5	5.5				171.3						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:34
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIerno IN MW/MVAR

FROM	TO	TO BUS	TO LINE	FROM	TO	DESIRED
X-- AREA	--X GENERATION	LOAD	SHUNT	CHARGING	NET INT	LOSSES 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	-47.7	114.8	
5	1296.5	1280.2	0.0	0.0	0.0	-0.1	16.4	0.0
COSTA RI	203.3	520.4	-230.6	0.0	418.5	38.9	293.2	
6	1309.8	1230.4	0.0	0.0	0.0	13.5	65.9	13.7
PANAMA	98.0	249.8	-222.3	0.0	551.8	-23.8	646.0	
7	105.3	44.1	0.0	0.0	0.0	60.6	0.7	60.0
ACANAL	13.2	9.0	0.0	0.0	0.0	-6.5	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	6648.8	6468.7	0.0	0.0	0.0	0.0	180.1	0.0
	1080.4	1807.0	-827.6	0.0	1953.3	0.0	2054.2	

4.1.1. Contingencia Chorrera – Panamá



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

FRI, OCT 15 2010 16:37

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0011	230.25	14		PRO230		230.00	6	1.0177	234.06
85		PTP230		230.00	6	1.0043	230.98	96		FOR230		230.00	6	1.0002	230.05
100		BAY230		230.00	6	1.0296	236.80	103		COPESA23		230.00	6	1.0042	230.98
115		PACORA23		230.00	6	1.0079	231.81	146		GUALACA230		230.00	6	1.0033	230.76
190		CHANG230		230.00	6	1.0124	232.85	306		CHAN1 230		230.00	6	1.0103	232.36
310		CONCEPCION23		230.00	6	1.0115	232.64	311		PANDO230		230.00	6	1.0350	238.06
341		PRUDENCIA230		230.00	6	1.0109	232.51	345		LORENA230		230.00	6	1.0081	231.86
371		CAISAN230		230.00	6	1.0337	237.76	540		ANTON		230.00	6	1.0020	230.47
700		BAITUN230		230.00	6	1.0173	233.97	6000		FRONTER		230.00	6	1.0204	234.69
6400		FRONTCHA		230.00	6	1.0146	233.36	6500		FRONT CAISAN		230.00	6	1.0327	237.53

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9947	228.79	3		PANII230		230.00	6	0.9992	229.82
5		CHO230		230.00	6	0.9806	225.53	8		LSA230		230.00	6	0.9803	225.48
105		PAN-AM23		230.00	6	0.9806	225.53	144		CANJ230		230.00	6	0.9985	229.66
147		GUASQ230		230.00	6	0.9985	229.65	148		VELADERO 230		230.00	6	0.9910	227.92
149		BBLANCO		230.00	6	0.9888	227.43	354		SANBARTOLO23		230.00	6	0.9853	226.62
370		LSA CAP 230		230.00	6	0.9803	225.48	511		LGUIAS230		230.00	6	0.9770	224.70

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

FRI, OCT 15 2010 16:37

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0200	117.29	9		LSA115		115.00	6	1.0241	117.77
15		PRO115		115.00	6	1.0195	117.24	19		C.V115		115.00	6	1.0049	115.57
20		CH.AZUL		115.00	6	1.0203	117.33	52		TOC115		115.00	6	1.0171	116.97
54		LM1115		115.00	6	1.0227	117.61	55		LM2115		115.00	6	1.0237	117.73
61		FFIELD		115.00	6	1.0193	117.22	87		CAL115		115.00	6	1.0097	116.12
88		EST115		115.00	6	1.0130	116.49	92		L.V115		115.00	6	1.0110	116.26

109 STA RITA115	115.00	6	1.0201	117.31	123 MIR115	115.00	7	1.0029	115.34
154 CEMPAN15	115.00	6	1.0149	116.71	191 CHANG115	115.00	6	1.0045	115.52
522 TCATIVÁ 115	115.00	6	1.0235	117.70	529 TCOLON 115	115.00	6	1.0201	117.32
701 BAITUN115	115.00	6	1.0004	115.04	702 BJOMIN115	115.00	6	1.0024	115.28

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9970	114.66	6		CHO115		115.00	6	0.9814	112.86
12		M.N115		115.00	6	0.9941	114.32	18		CAC115		115.00	6	0.9968	114.63
21		C.BAN115		115.00	6	0.9894	113.78	23		CH115		115.00	6	0.9990	114.89
26		LOC115		115.00	6	0.9899	113.84	30		MAR115		115.00	6	0.9878	113.60
33		STM115		115.00	6	0.9951	114.43	37		SAN115		115.00	6	0.9894	113.78
48		TINAJ115		115.00	6	0.9945	114.37	50		M.O115		115.00	6	0.9946	114.38

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:37
 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	12.9	25.0	0.0	1.0000	40.1	0.9470	47.0			62	6
67		BLM13C		13.800	V3	38.0	12.9	25.0	0.0	1.0000	40.1	0.9470	47.0			62	6
68		BLM13D		13.800	V4	38.0	13.4	25.0	0.0	1.0000	40.3	0.9431	47.0			62	6
90		EST-13L		13.800	E1	21.0	5.3	12.0	-5.0	0.9800	22.1	0.9693	27.0			64	6
91		EST-13T		13.800	E2	21.0	5.3	12.0	-5.0	0.9800	22.1	0.9693	27.0			64	6
94		LV-13.8L		13.800	L1	23.2	6.1	12.0	-5.0	0.9800	24.5	0.9675	27.0			64	6
95		LV-13.8T		13.800	L2	23.2	6.1	12.0	-5.0	0.9800	24.5	0.9675	27.0			64	6
97		FOR13A		13.800	F1	86.5	-13.8	50.0	-50.0	0.9800	89.4	0.9875	111.0			64	6
98		FOR13B		13.800	F2	86.5	-13.8	50.0	-50.0	0.9800	89.4	0.9875	111.0			64	6
101		BAY13A		13.800	B1	44.6	24.6	50.0	-25.0	1.0100	50.4	0.8757	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.3	24.8	50.0	-25.0	1.0100	53.8	0.8898	96.0			61	6
108		BAY13C		13.800	B3	48.3	24.8	50.0	-25.0	1.0100	53.8	0.8898	100.0			61	6
116		PACORA13		13.800	P1	17.1	0.0	8.8	0.0	0.9990	17.1	1.0000	21.7			61	6
142		CANJ13A		13.800	C1	52.0	13.8	29.0	-29.0	0.9800	54.9	0.9666	69.0			64	6
143		CANJ13B		13.800	C2	52.0	13.8	29.0	-29.0	0.9800	54.9	0.9666	69.0			64	6
150		GUALACA 13-213.800		13.800	G2	14.0	-2.9	7.4	-7.4	0.9900	14.4	0.9792	14.8			64	6
151		GUALACA13.8		13.800	G1	14.0	-2.9	7.4	-7.4	0.9900	14.4	0.9792	14.8			64	6
193		GEBONYIC		13.800	G1	8.0	-0.2	4.0	-4.0	1.0000	8.0	0.9997	35.3			64	6

193	GEBONYIC	13.800	G2	8.0	-0.2	4.0	-4.0	1.0000	8.0	0.9997	35.3	64	6
193	GEBONYIC	13.800	G3	8.0	-0.2	4.0	-4.0	1.0000	8.0	0.9997	35.3	64	6
302	PASOANCH13.813.800	P1	4.8	2.0	2.0	-2.0	0.9605	5.4	0.9217	6.2	64	6	
304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0783	4.8	0.8981	5.7	64	6
304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0783	4.8	0.8981	5.7	64	6
305	ELALTO	13.800	G1	14.0	-5.0	12.0	-5.0	1.0281	14.5	0.9418	20.6	64	6
307	CHAN1 A	13.800	G1	62.0	-17.3	50.0	-50.0	0.9900	65.1	0.9631	118.6	64	6
312	PANDO13.8	13.800	G1	9.0	-2.4	10.0	-5.0	1.0000	9.3	0.9666	19.9	64	6
312	PANDO13.8	13.800	G2	9.0	-2.4	10.0	-5.0	1.0000	9.3	0.9666	19.9	64	6
316	MTE LIRIO13.13.800	G1	17.0	-5.0	12.0	-5.0	1.0093	17.6	0.9594	27.0	64	6	
316	MTE LIRIO13.13.800	G2	17.0	-5.0	12.0	-5.0	1.0093	17.6	0.9594	27.0	64	6	
317	MENDRE13.8	13.800	M1	9.2	0.0	0.0	0.0	1.0804	8.5	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.2	0.0	0.0	0.0	1.0804	8.5	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0808	5.1	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.0808	5.1	1.0000	35.3	64	6
340	PEDGALITO13813.800	P1	20.0	4.1	12.0	-5.0	0.9800	20.8	0.9800	27.0	64	6	
342	LORENA13.8	13.800	L1	12.0	-2.5	10.5	-5.0	1.0000	12.2	0.9793	19.9	64	6
343	PRUDENCIA_1	13.800	G1	25.0	-1.9	9.8	-9.8	1.0000	25.1	0.9972	33.0	64	6
343	PRUDENCIA_1	13.800	G2	25.0	-1.9	9.8	-9.8	1.0000	25.1	0.9972	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	-2.5	10.5	-5.0	1.0000	12.2	0.9793	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0707	3.0	0.9515	6.2	64	6
351	PERLAS N13.813.800	G1	9.0	5.0	5.0	-5.0	0.9752	10.6	0.8742	13.5	64	6	
352	PERLAS S13.813.800	G1	9.0	5.0	5.0	-5.0	0.9752	10.6	0.8742	13.5	64	6	
357	BARTOLO13.8	13.800	G1	7.2	1.9	3.7	-3.7	1.0000	7.5	0.9680	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.2	1.9	3.7	-3.7	1.0000	7.5	0.9680	8.5	64	6
359	CRUCES13.8	13.800	G1	4.6	0.8	2.3	-2.3	1.0000	4.7	0.9865	5.6	64	6
359	CRUCES13.8	13.800	G2	4.6	0.8	2.3	-2.3	1.0000	4.7	0.9865	5.6	64	6
361	ESTRECHO4.164.1600	G1	4.9	0.6	2.5	-2.5	1.0000	5.0	0.9923	5.6	64	6	
361	ESTRECHO4.164.1600	G2	4.9	0.6	2.5	-2.5	1.0000	5.0	0.9923	5.6	64	6	
363	LAGUNA 13.8	13.800	G1	4.7	0.4	2.4	-2.4	1.0000	4.7	0.9967	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.7	0.4	2.4	-2.4	1.0000	4.7	0.9967	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9829	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	0.9484	5.5	64	6
368	RP-490	13.800	G2	4.7	-1.6	2.4	-2.4	1.0000	5.0	0.9484	5.5	64	6
369	HCALDERA13.813.800	G1	3.8	1.9	1.9	-1.9	0.9818	4.3	0.8909	4.3	64	6	
372	BJO FRIO 13	13.800	G1	24.0	-3.8	9.8	-9.8	1.0000	24.3	0.9875	33.0	64	6
372	BJO FRIO 13	13.800	G2	24.0	-3.8	9.8	-9.8	1.0000	24.3	0.9875	33.0	64	6
373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9736	5.1	0.8911	21.6	64	6	
523	TCATIVÁ 13A	13.800	G1	8.3	4.2	6.6	-6.6	1.0000	9.3	0.8935	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	4.2	6.6	-6.6	1.0000	9.3	0.8935	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	4.2	6.6	-6.6	1.0000	9.3	0.8935	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	4.2	6.6	-6.6	1.0000	9.3	0.8935	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	8.3	4.2	6.6	-6.6	1.0000	9.3	0.8935	10.9	62	6

524	TCATIVÁ 13B	13.800	G6	8.3	4.2	6.6	-6.6	1.0000	9.3	0.8935	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	8.3	4.2	6.6	-6.6	1.0000	9.3	0.8935	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	8.3	4.2	6.6	-6.6	1.0000	9.3	0.8935	10.9	62	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0031	24.9	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	23.0	1.5	13.0	-13.0	1.0000	23.1	0.9980	30.5	64	6
704	BJOMIN13B	13.800	G2	23.0	1.5	13.0	-13.0	1.0000	23.1	0.9980	30.5	64	6
705	BAITUN13A	13.800	G1	38.0	-6.0	26.6	-26.6	1.0000	38.5	0.9878	50.6	64	6
706	BAITUN13B	13.800	G2	38.0	-6.0	26.6	-26.6	1.0000	38.5	0.9878	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9605	5.1	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1310.3	125.2	830.8	-594.9				2123.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:37
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

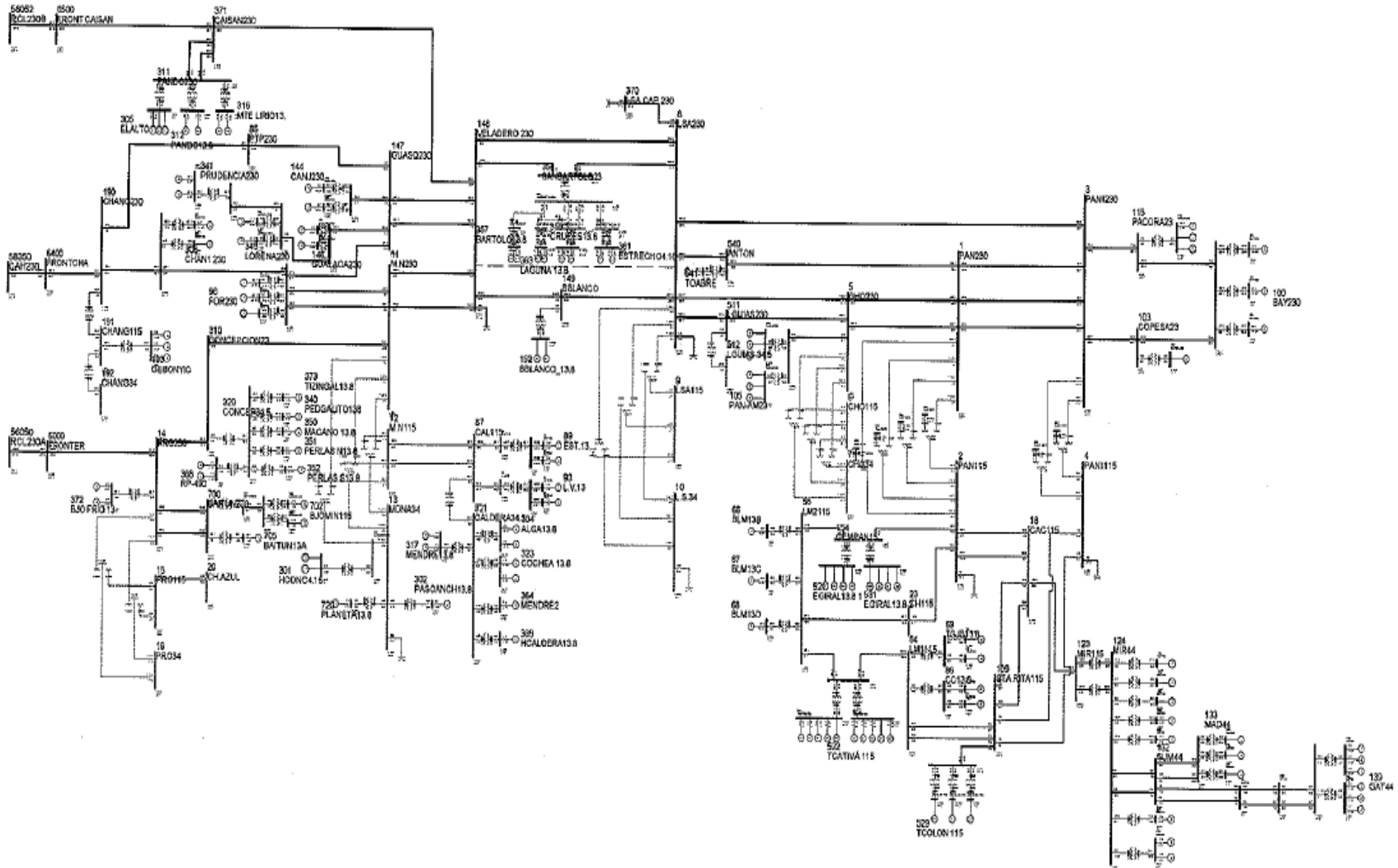
BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING															
129	MIR13D		13.800 G4	19.8	1.3	15.0	0.0	1.0000	19.9	0.9979	44.1			65	7
AREA															
130	MIR13F		13.800 G5	17.1	0.0	8.0	0.0	1.0137	16.9	1.0000	27.7			65	7
140	GAT6A		6.9000 G1	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9284	4.1			65	7
140	GAT6A		6.9000 G2	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9284	4.1			65	7
140	GAT6A		6.9000 G3	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9284	4.1			65	7
141	GAT6B		6.9000 G4	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9304	5.6			65	7
141	GAT6B		6.9000 G5	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9304	6.2			65	7
141	GAT6B		6.9000 G6	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9304	6.2			65	7
170	MIR13G		13.800 M1	17.0	6.8	11.2	6.8	1.0281	17.8	0.9281	23.0			65	7
171	MIR13H		13.800 M1	17.0	6.8	11.2	6.8	1.0371	17.7	0.9281	23.0			65	7
171	MIR13H		13.800 M2	17.0	6.8	11.2	6.8	1.0371	17.7	0.9281	23.0			65	7
SUBSYSTEM TOTALS				105.4	14.8	71.5	5.5				171.3				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E FRI, OCT 15 2010 16:37
PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
AÑO 2013 ESC-MOD DEMANDA-MAX-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		1299.8 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	-0.3	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	34.9	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	204.8	520.4	-230.6	0.0	418.3	40.1	293.2	
6	1310.3	1230.4	0.0	0.0	0.0	12.6	67.3	13.7
PANAMA	125.2	249.8	-220.1	0.0	539.8	-26.5	661.7	
7	105.4	44.1	0.0	0.0	0.0	60.6	0.7	60.0
ACANAL	14.8	9.0	0.0	0.0	0.0	-4.9	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	6650.2	6468.7	0.0	0.0	0.0	0.0	181.5	0.0
	1110.7	1807.0	-825.3	0.0	1941.0	0.0	2070.0	

4.1.2. Contingencia Veladero – Llano Sánchez



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

MON, OCT 18 2010 8:11

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
14		PRO230		230.00	6	1.0118	232.71	100		BAY230		230.00	6	1.0224	235.14
190		CHANG230		230.00	6	1.0079	231.82	306		CHAN1 230		230.00	6	1.0059	231.37
310		CONCEPCION230		230.00	6	1.0041	230.94	311		PANDO230		230.00	6	1.0265	236.08
341		PRUDENCIA230		230.00	6	1.0035	230.81	345		LORENA230		230.00	6	1.0005	230.11
371		CAISAN230		230.00	6	1.0251	235.77	700		BAITUN230		230.00	6	1.0120	232.76
6000		FRONTER		230.00	6	1.0142	233.28	6400		FRONTCHA		230.00	6	1.0103	232.38
6500		FRONT CAISAN230		230.00	6	1.0244	235.61								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9823	225.93	3		PANII230		230.00	6	0.9873	227.07
5		CHO230		230.00	6	0.9715	223.44	8		LSA230		230.00	6	0.9584	220.43
11		M.N230		230.00	6	0.9917	228.09	85		PTP230		230.00	6	0.9971	229.33
96		FOR230		230.00	6	0.9927	228.32	103		COPESA23		230.00	6	0.9930	228.39
105		PAN-AM23		230.00	6	0.9715	223.44	115		PACORA23		230.00	6	0.9973	229.39
144		CANJ230		230.00	6	0.9901	227.73	146		GUALACA230		230.00	6	0.9953	228.92
147		GUASQ230		230.00	6	0.9900	227.70	148		VELADERO 230		230.00	6	0.9732	223.83
149		BBLANCO		230.00	6	0.9697	223.02	354		SANBARTOLO230		230.00	6	0.9633	221.57
370		LSA CAP 230		230.00	6	0.9584	220.43	511		LGUIAS230		230.00	6	0.9593	220.63
540		ANTON		230.00	6	0.9879	227.21								

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

MON, OCT 18 2010 8:11

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0087	116.00	9		LSA115		115.00	6	1.0006	115.06
15		PRO115		115.00	6	1.0136	116.57	20		CH.AZUL		115.00	6	1.0144	116.65
52		TOC115		115.00	6	1.0059	115.67	54		LM1115		115.00	6	1.0166	116.91
55		LM2115		115.00	6	1.0177	117.03	61		FFIELD		115.00	6	1.0132	116.52
87		CAL115		115.00	6	1.0059	115.68	88		EST115		115.00	6	1.0095	116.10

92 L.V115	115.00	6	1.0073	115.84	109 STA RITA115	115.00	6	1.0130	116.49
154 CEMPAN15	115.00	6	1.0074	115.85	191 CHANG115	115.00	6	1.0014	115.16
522 TCATIVÁ 115	115.00	6	1.0174	117.00	529 TCOLON 115	115.00	6	1.0130	116.49

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9859	113.38	6		CHO115		115.00	6	0.9723	111.82
12		M.N115		115.00	6	0.9884	113.67	18		CAC115		115.00	6	0.9857	113.36
19		C.V115		115.00	6	0.9936	114.27	21		C.BAN115		115.00	6	0.9781	112.48
23		CH115		115.00	6	0.9899	113.84	26		LOC115		115.00	6	0.9786	112.54
30		MAR115		115.00	6	0.9766	112.30	33		STM115		115.00	6	0.9839	113.15
37		SAN115		115.00	6	0.9781	112.48	48		TINAJ115		115.00	6	0.9833	113.08
50		M.O115		115.00	6	0.9835	113.10	123		MIR115		115.00	7	0.9929	114.18
701		BAITUN115		115.00	6	0.9970	114.66	702		BJOMIN115		115.00	6	0.9994	114.93

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:11
 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	15.5	25.0	0.0	1.0000	41.1	0.9261	47.0			62	6
67		BLM13C		13.800	V3	38.0	15.5	25.0	0.0	1.0000	41.1	0.9261	47.0			62	6
68		BLM13D		13.800	V4	38.0	16.1	25.0	0.0	1.0000	41.3	0.9206	47.0			62	6
90		EST-13L		13.800	E1	21.0	6.3	12.0	-5.0	0.9800	22.4	0.9578	27.0			64	6
91		EST-13T		13.800	E2	21.0	6.3	12.0	-5.0	0.9800	22.4	0.9578	27.0			64	6
94		LV-13.8L		13.800	L1	23.2	7.1	12.0	-5.0	0.9800	24.8	0.9561	27.0			64	6
95		LV-13.8T		13.800	L2	23.2	7.1	12.0	-5.0	0.9800	24.8	0.9561	27.0			64	6
97		FOR13A		13.800	F1	86.7	-7.1	50.0	-50.0	0.9800	88.7	0.9967	111.0			64	6
98		FOR13B		13.800	F2	86.7	-7.1	50.0	-50.0	0.9800	88.7	0.9967	111.0			64	6
101		BAY13A		13.800	B1	44.7	30.0	50.0	-25.0	1.0100	53.3	0.8303	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.5	30.2	50.0	-25.0	1.0100	56.5	0.8484	96.0			61	6
108		BAY13C		13.800	B3	48.5	30.2	50.0	-25.0	1.0100	56.6	0.8485	100.0			61	6
116		PACORA13		13.800	P1	17.1	0.9	8.8	0.0	0.9900	17.3	0.9987	21.7			61	6
142		CANJ13A		13.800	C1	52.1	15.2	29.0	-29.0	0.9800	55.4	0.9600	69.0			64	6
143		CANJ13B		13.800	C2	52.1	15.2	29.0	-29.0	0.9800	55.4	0.9600	69.0			64	6
150		GUALACA 13-213		13.800	G2	14.0	-0.9	7.4	-7.4	0.9900	14.2	0.9979	14.8			64	6
151		GUALACA13.8		13.800	G1	14.0	-0.9	7.4	-7.4	0.9900	14.2	0.9979	14.8			64	6

193	GEBONYIC	13.800	G1	8.0	0.2	4.0	-4.0	1.0000	8.1	0.9998	35.3	64	6	
193	GEBONYIC	13.800	G2	8.0	0.2	4.0	-4.0	1.0000	8.1	0.9998	35.3	64	6	
193	GEBONYIC	13.800	G3	8.0	0.2	4.0	-4.0	1.0000	8.1	0.9998	35.3	64	6	
302	PASOANCHI	13.813.800	P1	4.8	2.0	2.0	-2.0	0.9512	5.4	0.9219	6.2	64	6	
304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0740	4.8	0.8981	5.7	64	6	
304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0740	4.8	0.8981	5.7	64	6	
305	ELALTO	13.800	G1	14.0	-5.0	12.0	-5.0	1.0194	14.6	0.9420	20.6	64	6	
307	CHAN1 A	13.800	G1	62.2	-13.2	50.0	-50.0	0.9900	64.2	0.9783	118.6	64	6	
312	PANDO13.8	13.800	G1	9.0	-1.7	10.0	-5.0	1.0000	9.2	0.9831	19.9	64	6	
312	PANDO13.8	13.800	G2	9.0	-1.7	10.0	-5.0	1.0000	9.2	0.9831	19.9	64	6	
316	MTE LIRIO	13.13.800	G1	17.0	-5.0	12.0	-5.0	1.0005	17.7	0.9594	27.0	64	6	
316	MTE LIRIO	13.13.800	G2	17.0	-5.0	12.0	-5.0	1.0005	17.7	0.9594	27.0	64	6	
317	MENDRE13.8	13.800	M1	9.3	0.0	0.0	0.0	1.0761	8.6	1.0000	35.3	64	6	
317	MENDRE13.8	13.800	M2	9.3	0.0	0.0	0.0	1.0761	8.6	1.0000	35.3	64	6	
323	COCHEA	13.8	13.800	C1	5.5	0.0	0.0	1.0765	5.1	1.0000	35.3	64	6	
323	COCHEA	13.8	13.800	C2	5.5	0.0	0.0	1.0765	5.1	1.0000	35.3	64	6	
340	PEDGALITO	13.813.800	P1	20.0	5.5	12.0	-5.0	0.9800	21.2	0.9640	27.0	64	6	
342	LORENA13.8	13.800	L1	12.0	0.1	10.5	-5.0	1.0000	12.0	1.0000	19.9	64	6	
343	PRUDENCIA_1	13.800	G1	25.0	0.2	9.8	-9.8	1.0000	25.0	1.0000	33.0	64	6	
343	PRUDENCIA_1	13.800	G2	25.0	0.2	9.8	-9.8	1.0000	25.0	1.0000	33.0	64	6	
346	LORENA 13-2	13.800	L2	12.0	0.1	10.5	-5.0	1.0000	12.0	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	0.9517	6.2	64	6
351	PERLAS N1	13.813.800	G1	9.0	5.0	5.0	-5.0	0.9721	10.6	0.8746	13.5	64	6	
352	PERLAS S1	13.813.800	G1	9.0	5.0	5.0	-5.0	0.9721	10.6	0.8746	13.5	64	6	
357	BARTOLO13.8	13.800	G1	7.3	2.6	3.7	-3.7	1.0000	7.7	0.9412	8.5	64	6	
357	BARTOLO13.8	13.800	G2	7.3	2.6	3.7	-3.7	1.0000	7.7	0.9412	8.5	64	6	
359	CRUCES13.8	13.800	G1	4.6	1.2	2.3	-2.3	1.0000	4.7	0.9685	5.6	64	6	
359	CRUCES13.8	13.800	G2	4.6	1.2	2.3	-2.3	1.0000	4.7	0.9685	5.6	64	6	
361	ESTRECHO	4.164.1600	G1	4.9	1.0	2.5	-2.5	1.0000	5.0	0.9793	5.6	64	6	
361	ESTRECHO	4.164.1600	G2	4.9	1.0	2.5	-2.5	1.0000	5.0	0.9793	5.6	64	6	
363	LAGUNA	13.8	13.800	G1	4.7	0.8	2.4	-2.4	1.0000	4.7	0.9871	5.8	64	6
363	LAGUNA	13.8	13.800	G2	4.7	0.8	2.4	-2.4	1.0000	4.7	0.9871	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9791	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	0.9638	5.5	64	6	
368	RP-490	13.800	G2	4.7	-1.3	2.4	-2.4	1.0000	4.9	0.9638	5.5	64	6	
369	HCALDERA	13.813.800	G1	3.8	1.9	1.9	-1.9	0.9779	4.4	0.8909	4.3	64	6	
372	BJO FRIO	13	13.800	G1	24.0	-2.2	9.8	-9.8	1.0000	24.1	0.9959	33.0	64	6
372	BJO FRIO	13	13.800	G2	24.0	-2.2	9.8	-9.8	1.0000	24.1	0.9959	33.0	64	6
373	TIZINGAL	13.813.800	G1	4.4	2.2	2.2	-2.2	0.9704	5.1	0.8922	21.6	64	6	
523	TCATIVÁ	13A	13.800	G1	8.3	5.1	6.6	-6.6	1.0000	9.7	0.8534	10.9	62	6
523	TCATIVÁ	13A	13.800	G2	8.3	5.1	6.6	-6.6	1.0000	9.7	0.8534	10.9	62	6
523	TCATIVÁ	13A	13.800	G3	8.3	5.1	6.6	-6.6	1.0000	9.7	0.8534	10.9	62	6
523	TCATIVÁ	13A	13.800	G4	8.3	5.1	6.6	-6.6	1.0000	9.7	0.8534	10.9	62	6

524	TCATIVÁ	13B	13.800	G0	8.3	5.1	6.6	-6.6	1.0000	9.7	0.8534	10.9	62	6
524	TCATIVÁ	13B	13.800	G6	8.3	5.1	6.6	-6.6	1.0000	9.7	0.8534	10.9	62	6
524	TCATIVÁ	13B	13.800	G7	8.3	5.1	6.6	-6.6	1.0000	9.7	0.8534	10.9	62	6
524	TCATIVÁ	13B	13.800	G8	8.3	5.1	6.6	-6.6	1.0000	9.7	0.8534	10.9	62	6
541	TOABRE		0.6000	1	25.1	0.0	0.0	0.0	0.9889	25.4	1.0000	88.9	64	6
703	BJOMIN13A		13.800	G1	23.0	1.9	13.0	-13.0	1.0000	23.1	0.9965	30.5	64	6
704	BJOMIN13B		13.800	G2	23.0	1.9	13.0	-13.0	1.0000	23.1	0.9965	30.5	64	6
705	BAITUN13A		13.800	G1	38.1	-3.6	26.6	-26.6	1.0000	38.2	0.9954	50.6	64	6
706	BAITUN13B		13.800	G2	38.1	-3.6	26.6	-26.6	1.0000	38.2	0.9954	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					1312.5	212.3	830.8	-594.9				2123.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:11
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

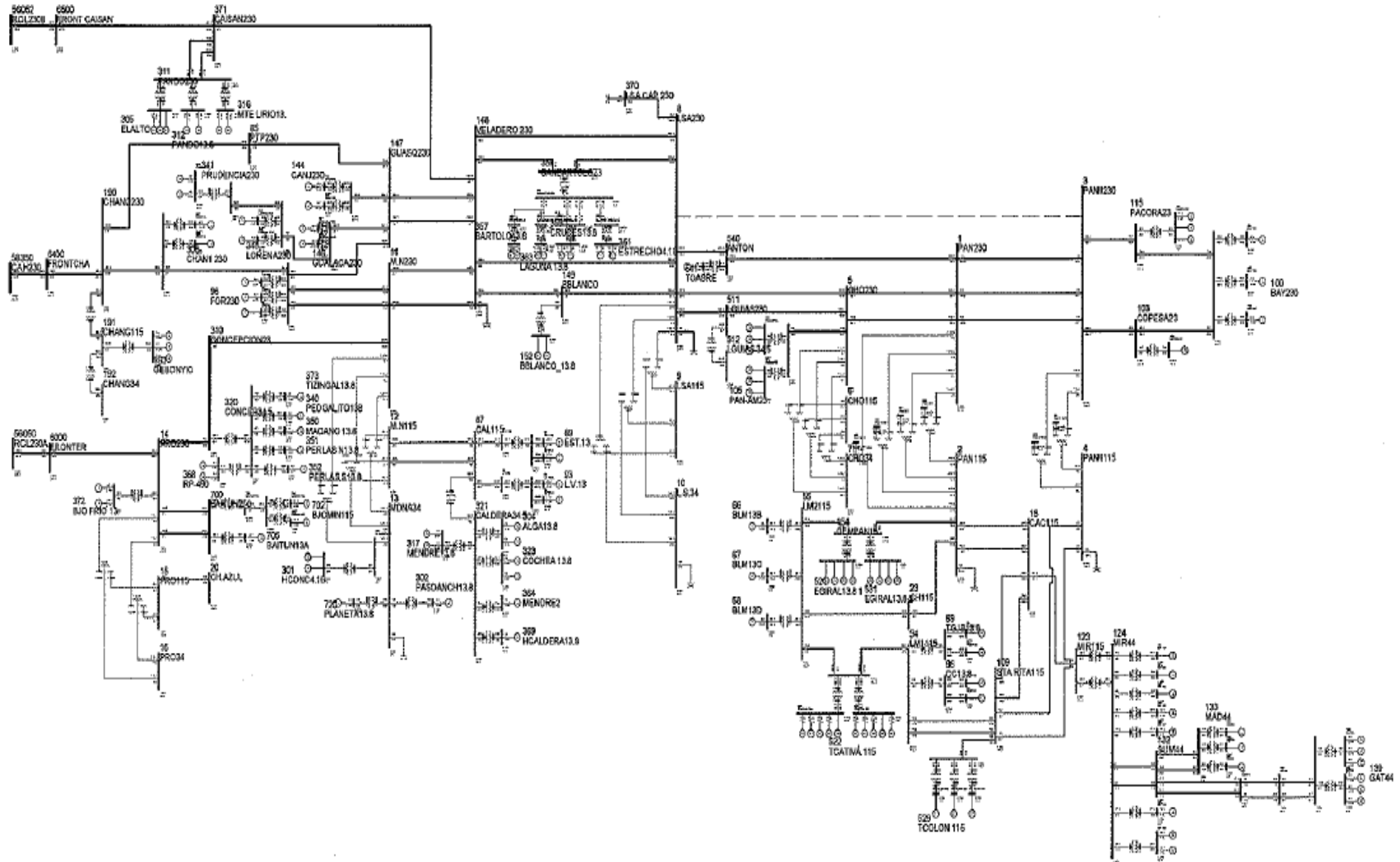
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
129		MIR13D		13.800	G4	19.9	3.8	15.0	0.0	1.0000	20.2	0.9825	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0075	17.0	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9596	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9596	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9596	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9469	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9469	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9469	6.2			65	7
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0220	18.0	0.9283	23.0			65	7
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0311	17.8	0.9283	23.0			65	7
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0311	17.8	0.9283	23.0			65	7
SUBSYSTEM TOTALS						105.5	18.6	71.5	5.5				171.3				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:11
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO IN MW/MVAR

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

1	1301.7	1330.8	0.0	0.0	0.0	-70.7	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	0.4	14.4	0.0
SALVADOR	74.9	224.2	-70.7	0.0	228.9	-27.7	178.1	
3	1237.6	1203.0	0.0	0.0	0.0	0.5	34.1	0.0
HONDURAS	463.8	321.1	-47.3	0.0	293.9	53.1	430.8	
4	532.2	525.2	0.0	0.0	0.0	0.0	6.9	0.0
NICARAGU	34.7	207.6	-57.7	0.0	182.1	-47.6	114.5	
5	1297.7	1280.2	0.0	0.0	0.0	1.2	16.4	0.0
COSTA RI	211.2	520.4	-230.3	0.0	417.4	45.0	293.6	
6	1312.5	1230.4	0.0	0.0	0.0	7.9	74.1	13.7
PANAMA	212.3	249.8	-214.5	0.0	511.4	-34.5	722.9	
7	105.5	44.1	0.0	0.0	0.0	60.8	0.7	60.0
ACANAL	18.6	9.0	0.0	0.0	0.0	-1.4	11.0	
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	
TOTALS	6656.9	6468.7	0.0	0.0	0.0	0.0	188.2	0.0
	1207.3	1807.0	-819.5	0.0	1911.7	0.0	2131.4	

4.1.3. Contingencia Llano Sánchez – Panamá II



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

MON, OCT 18 2010 8:15

BUSES WITH VOLTAGE 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	1.0115	232.64	100		BAY230		230.00	6	1.0160	233.68
190		CHANG230		230.00	6	1.0077	231.77	306		CHAN1 230		230.00	6	1.0057	231.32
310		CONCEPCION230		230.00	6	1.0037	230.85	311		PANDO230		230.00	6	1.0260	235.98
341		PRUDENCIA230		230.00	6	1.0031	230.72	345		LORENA230		230.00	6	1.0001	230.02
371		CAISAN230		230.00	6	1.0246	235.66	700		BAITUN230		230.00	6	1.0117	232.69
6000		FRONTER		230.00	6	1.0139	233.20	6400		FRONTCHA		230.00	6	1.0101	232.33
6500		FRONT CAISAN230		230.00	6	1.0239	235.51								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9703	223.16	3		PANII230		230.00	6	0.9763	224.55
5		CHO230		230.00	6	0.9560	219.88	8		LSA230		230.00	6	0.9497	218.43
11		M.N230		230.00	6	0.9912	227.97	85		PTP230		230.00	6	0.9967	229.24
96		FOR230		230.00	6	0.9923	228.22	103		COPESA23		230.00	6	0.9827	226.03
105		PAN-AM23		230.00	6	0.9560	219.88	115		PACORA23		230.00	6	0.9883	227.30
144		CANJ230		230.00	6	0.9897	227.62	146		GUALACA230		230.00	6	0.9949	228.82
147		GUASQ230		230.00	6	0.9895	227.60	148		VELADERO 230		230.00	6	0.9724	223.64
149		BBLANCO		230.00	6	0.9692	222.91	354		SANBARTOLO23		230.00	6	0.9627	221.43
370		LSA CAP 230		230.00	6	0.9497	218.43	511		LGUIAS230		230.00	6	0.9438	217.08
540		ANTON		230.00	6	0.9745	224.14								

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

MON, OCT 18 2010 8:15

BUSES WITH VOLTAGE 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	1.0133	116.53	20		CH.AZUL		115.00	6	1.0141	116.62
54		LM1115		115.00	6	1.0108	116.24	55		LM2115		115.00	6	1.0119	116.37
61		FFIELD		115.00	6	1.0073	115.84	87		CAL115		115.00	6	1.0057	115.65
88		EST115		115.00	6	1.0093	116.07	92		L.V115		115.00	6	1.0071	115.81
109		STA RITA115		115.00	6	1.0061	115.70	154		CEMPAN15		115.00	6	1.0001	115.02

191	CHANG115	115.00	6	1.0012	115.14	522	TCATIVÁ	115	115.00	6	1.0116	116.33
529	TCOLON	115	115.00	6	1.0061	115.71						

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)
2		PAN115		115.00	6	0.9752	112.15	4		PANII115		115.00	6	0.9982	114.79
6		CHO115		115.00	6	0.9569	110.04	9		LSA115		115.00	6	0.9912	113.99
12		M.N115		115.00	6	0.9880	113.62	18		CAC115		115.00	6	0.9751	112.14
19		C.V115		115.00	6	0.9830	113.04	21		C.BAN115		115.00	6	0.9673	111.24
23		CH115		115.00	6	0.9812	112.84	26		LOC115		115.00	6	0.9679	111.31
30		MAR115		115.00	6	0.9658	111.07	33		STM115		115.00	6	0.9732	111.92
37		SAN115		115.00	6	0.9673	111.25	48		TINAJ115		115.00	6	0.9726	111.85
50		M.O115		115.00	6	0.9728	111.87	52		TOC115		115.00	6	0.9953	114.46
123		MIR115		115.00	7	0.9833	113.08	701		BAITUN115		115.00	6	0.9968	114.64
702		BJOMIN115		115.00	6	0.9992	114.91								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:15
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO

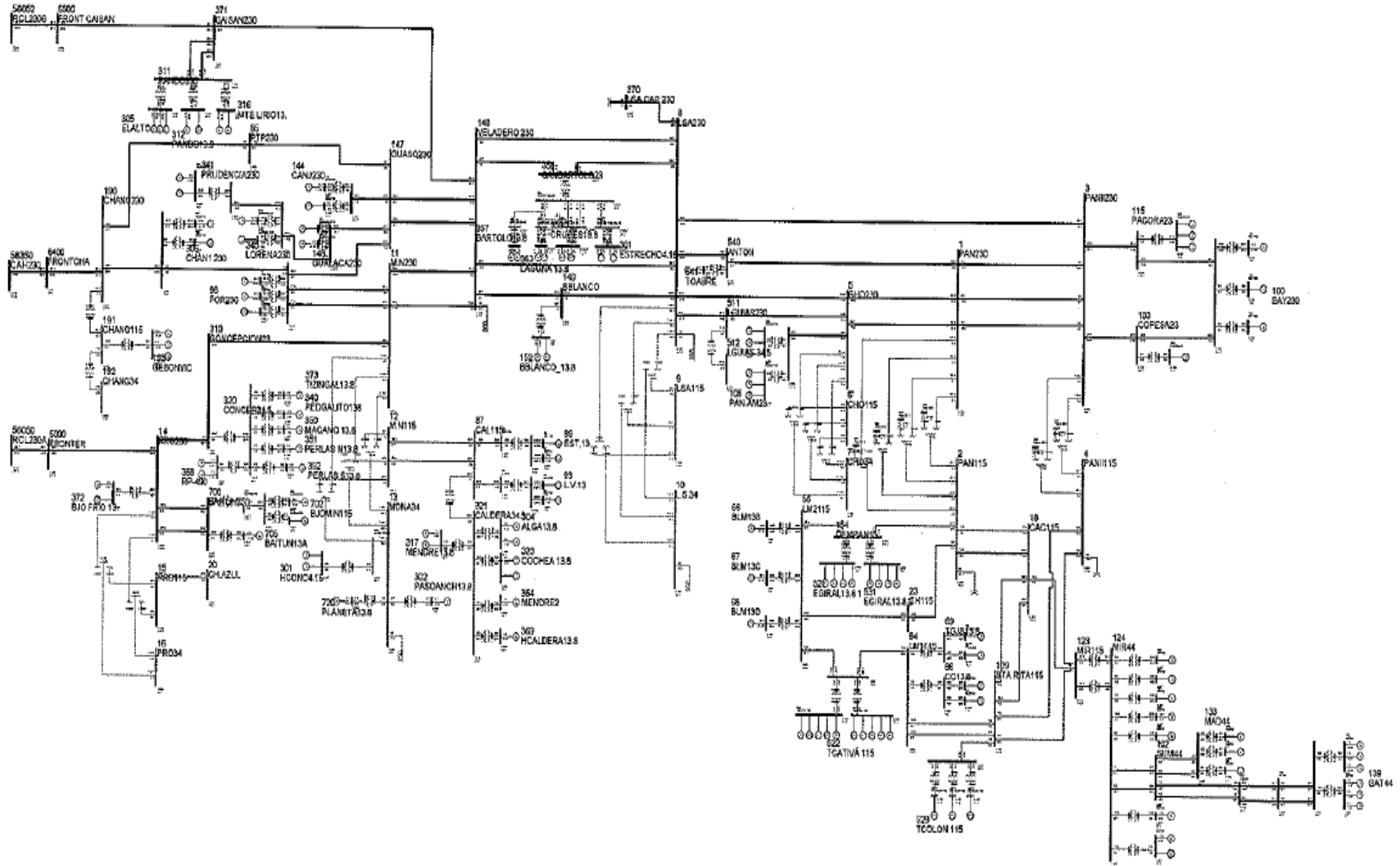
AREA 6 [PANAMA] MACHINE SUMMARY:

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	38.1	18.0	25.0	0.0	1.0000	42.1	0.9041	47.0			62	6
67		BLM13C		13.800	V3	38.1	18.0	25.0	0.0	1.0000	42.1	0.9041	47.0			62	6
68		BLM13D		13.800	V4	38.1	18.8	25.0	0.0	1.0000	42.4	0.8970	47.0			62	6
90		EST-13L		13.800	E1	21.1	6.4	12.0	-5.0	0.9800	22.5	0.9571	27.0			64	6
91		EST-13T		13.800	E2	21.1	6.4	12.0	-5.0	0.9800	22.5	0.9571	27.0			64	6
94		LV-13.8L		13.800	L1	23.3	7.2	12.0	-5.0	0.9800	24.8	0.9553	27.0			64	6
95		LV-13.8T		13.800	L2	23.3	7.2	12.0	-5.0	0.9800	24.8	0.9553	27.0			64	6
97		FOR13A		13.800	F1	86.8	-6.7	50.0	-50.0	0.9800	88.8	0.9971	111.0			64	6
98		FOR13B		13.800	F2	86.8	-6.7	50.0	-50.0	0.9800	88.8	0.9971	111.0			64	6
101		BAY13A		13.800	B1	44.8	34.8	50.0	-25.0	1.0100	56.2	0.7895	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.6	35.0	50.0	-25.0	1.0100	59.3	0.8109	96.0			61	6
108		BAY13C		13.800	B3	48.6	35.0	50.0	-25.0	1.0100	59.3	0.8109	100.0			61	6
116		PACORA13		13.800	P1	17.2	5.7	8.8	0.0	0.9900	18.3	0.9486	21.7			61	6
142		CANJ13A		13.800	C1	52.2	15.3	29.0	-29.0	0.9800	55.5	0.9596	69.0			64	6
143		CANJ13B		13.800	C2	52.2	15.3	29.0	-29.0	0.9800	55.5	0.9596	69.0			64	6
150		GUALACA	13-	213.800	G2	14.0	-0.8	7.4	-7.4	0.9900	14.2	0.9983	14.8			64	6

151	GUALACA13.8	13.800	G1	14.0	-0.8	7.4	-7.4	0.9900	14.2	0.9983	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	0.9508	5.4	0.9221	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	1.0190	14.6	0.9421	20.6	64	6
307	CHAN1 A	13.800	G1	62.3	-13.0	50.0	-50.0	0.9900	64.3	0.9790	118.6	64	6
312	PANDO13.8	13.800	G1	9.0	-1.6	10.0	-5.0	1.0000	9.2	0.9840	19.9	64	6
312	PANDO13.8	13.800	G2	9.0	-1.6	10.0	-5.0	1.0000	9.2	0.9840	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	17.0	-5.0	12.0	-5.0	1.0000	17.7	0.9594	27.0	64	6
316	MTE LIRIO13.8	13.800	G2	17.0	-5.0	12.0	-5.0	1.0000	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	PEDGALITO13.8	13.800	P1	20.1	5.6	12.0	-5.0	0.9800	21.3	0.9631	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	0.2	10.5	-5.0	1.0000	12.0	0.9999	19.9	64	6
343	PRUDENCIA_1	13.800	G1	25.1	0.3	9.8	-9.8	1.0000	25.1	0.9999	33.0	64	6
343	PRUDENCIA_1	13.800	G2	25.1	0.3	9.8	-9.8	1.0000	25.1	0.9999	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	0.2	10.5	-5.0	1.0000	12.0	0.9999	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0670	3.1	0.9519	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9719	10.6	0.8749	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9719	10.6	0.8749	13.5	64	6
357	BARTOLO13.8	13.800	G1	7.3	2.6	3.7	-3.7	1.0000	7.7	0.9405	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.3	2.6	3.7	-3.7	1.0000	7.7	0.9405	8.5	64	6
359	CRUCES13.8	13.800	G1	4.6	1.2	2.3	-2.3	1.0000	4.8	0.9680	5.6	64	6
359	CRUCES13.8	13.800	G2	4.6	1.2	2.3	-2.3	1.0000	4.8	0.9680	5.6	64	6
361	ESTRECHO4.164	1.600	G1	4.9	1.0	2.5	-2.5	1.0000	5.0	0.9788	5.6	64	6
361	ESTRECHO4.164	1.600	G2	4.9	1.0	2.5	-2.5	1.0000	5.0	0.9788	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.7	0.8	2.4	-2.4	1.0000	4.7	0.9868	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.7	0.8	2.4	-2.4	1.0000	4.7	0.9868	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9787	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	0.9646	5.5	64	6
368	RP-490	13.800	G2	4.7	-1.3	2.4	-2.4	1.0000	4.9	0.9646	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	-2.1	9.8	-9.8	1.0000	24.2	0.9962	33.0	64	6
372	BJO FRIO 13	13.800	G2	24.1	-2.1	9.8	-9.8	1.0000	24.2	0.9962	33.0	64	6
373	TIZINGAL13.8	13.800	G1	4.5	2.2	2.2	-2.2	0.9702	5.1	0.8931	21.6	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	5.9	6.6	-6.6	1.0000	10.2	0.8140	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	5.9	6.6	-6.6	1.0000	10.2	0.8140	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	5.9	6.6	-6.6	1.0000	10.2	0.8140	10.9	62	6

1	1303.4	1330.8	0.0	0.0	0.0	-69.0	41.6	-73.7
GUATEMAL	191.8	275.1	-198.9	0.0	278.0	12.8	380.9	
2	870.4	855.0	0.0	0.0	0.0	1.0	14.4	0.0
SALVADOR	74.7	224.2	-70.7	0.0	229.0	-27.8	178.0	
3	1238.1	1203.0	0.0	0.0	0.0	1.0	34.1	0.0
HONDURAS	463.6	321.1	-47.3	0.0	293.9	53.1	430.6	
4	532.3	525.2	0.0	0.0	0.0	0.2	6.9	0.0
NICARAGU	34.4	207.6	-57.7	0.0	182.1	-47.6	114.2	
5	1298.6	1280.2	0.0	0.0	0.0	2.1	16.3	0.0
COSTA RI	211.6	520.4	-230.3	0.0	417.4	45.2	293.7	
6	1314.4	1230.4	0.0	0.0	0.0	3.8	80.2	13.7
PANAMA	249.1	249.8	-210.3	0.0	493.6	-37.6	740.8	
7	105.7	44.1	0.0	0.0	0.0	60.9	0.7	60.0
ACANAL	22.2	9.0	0.0	0.0	0.0	1.9	11.3	
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	6662.9	6468.7	0.0	0.0	0.0	0.0	194.2	0.0
	1247.4	1807.0	-815.2	0.0	1893.9	0.0	2149.5	

4.2. Demanda Mínima de Invierno



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

MON, OCT 18 2010 8:19

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)
11		M.N230		230.00	6	1.0124	232.86	14		PRO230		230.00	6	1.0261	236.01
85		PTP230		230.00	6	1.0158	233.64	96		FOR230		230.00	6	1.0133	233.07
100		BAY230		230.00	6	1.0063	231.45	144		CANJ230		230.00	6	1.0127	232.92
146		GUALACA230		230.00	6	1.0146	233.35	147		GUASQ230		230.00	6	1.0126	232.90
148		VELADERO 230		230.00	6	1.0048	231.11	149		BBLANCO		230.00	6	1.0034	230.78
190		CHANG230		230.00	6	1.0174	234.00	306		CHAN1 230		230.00	6	1.0157	233.61
310		CONCEPCION232		230.00	6	1.0219	235.04	311		PANDO230		230.00	6	1.0457	240.52
341		PRUDENCIA230		230.00	6	1.0175	234.02	345		LORENA230		230.00	6	1.0164	233.78
371		CAISAN230		230.00	6	1.0443	240.20	700		BAITUN230		230.00	6	1.0252	235.78
6000		FRONTER		230.00	6	1.0288	236.61	6400		FRONTCHA		230.00	6	1.0182	234.20
6500		FRONT CAISAN		230.00	6	1.0429	239.86								

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)
1		PAN230		230.00	6	0.9902	227.76	3		PANII230		230.00	6	0.9917	228.09
5		CHO230		230.00	6	0.9897	227.63	8		LSA230		230.00	6	0.9893	227.54
103		COPESA23		230.00	6	0.9944	228.71	105		PAN-AM23		230.00	6	0.9897	227.63
115		PACORA23		230.00	6	0.9959	229.05	354		SANBARTOLO23		230.00	6	0.9997	229.94
370		LSA CAP 230		230.00	6	0.9893	227.54	511		LGUIAS230		230.00	6	0.9898	227.65
540		ANTON		230.00	6	0.9993	229.85								

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

MON, OCT 18 2010 8:19

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)
9		LSA115		115.00	6	1.0360	119.14	12		M.N115		115.00	6	1.0169	116.94
15		PRO115		115.00	6	1.0280	118.22	20		CH.AZUL		115.00	6	1.0287	118.31
54		LM1115		115.00	6	1.0075	115.86	55		LM2115		115.00	6	1.0085	115.97
61		FFIELD		115.00	6	1.0055	115.63	87		CAL115		115.00	6	1.0261	118.00
88		EST115		115.00	6	1.0281	118.23	92		L.V115		115.00	6	1.0268	118.08

109 STA RITA115	115.00	6	1.0048	115.55	154 CEMPAN15	115.00	6	1.0017	115.20
191 CHANG115	115.00	6	1.0088	116.02	522 TCATIVÁ 115	115.00	6	1.0080	115.92
529 TCOLON 115	115.00	6	1.0048	115.55	701 BAITUN115	115.00	6	1.0110	116.27
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	0.9876	113.58	4		PANII115		115.00	6	0.9981	114.79
6		CHO115		115.00	6	0.9904	113.90	18		CAC115		115.00	6	0.9875	113.56
19		C.V115		115.00	6	0.9888	113.71	21		C.BAN115		115.00	6	0.9812	112.84
23		CH115		115.00	6	0.9896	113.81	26		LOC115		115.00	6	0.9818	112.91
30		MAR115		115.00	6	0.9806	112.77	33		STM115		115.00	6	0.9862	113.41
37		SAN115		115.00	6	0.9809	112.80	48		TINAJ115		115.00	6	0.9858	113.37
50		M.O115		115.00	6	0.9859	113.38	52		TOC115		115.00	6	0.9960	114.54
123		MIR115		115.00	7	0.9930	114.20								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:19
 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	19.5	25.0	0.0	1.0000	42.7	0.8901	47.0			62	6
67		BLM13C		13.800	V3	38.0	19.5	25.0	0.0	1.0000	42.7	0.8901	47.0			62	6
68		BLM13D		13.800	V4	38.0	20.3	25.0	0.0	1.0000	43.1	0.8821	47.0			62	6
91		EST-13T		13.800	E2	20.0	7.3	12.0	-5.0	1.0000	21.3	0.9387	27.0			64	6
95		LV-13.8T		13.800	L2	22.0	7.9	12.0	-5.0	1.0000	23.4	0.9416	27.0			64	6
97		FOR13A		13.800	F1	65.0	-9.8	50.0	-50.0	1.0000	65.7	0.9888	111.0			64	6
98		FOR13B		13.800	F2	65.0	-9.8	50.0	-50.0	1.0000	65.7	0.9888	111.0			64	6
101		BAY13A		13.800	B1	60.6	31.0	50.0	-25.0	0.9950	68.4	0.8905	96.0			61	6
SYST																	
142		CANJ13A		13.800	C1	48.0	13.3	29.0	-29.0	1.0000	49.8	0.9638	69.0			64	6
150		GUALACA	13-213.800	G2	12.0	-3.4	7.4	-7.4	1.0000	12.5	0.9630	14.8			64	6	
152		BBLANCO	13.813.800	G1	13.7	0.0	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	1.0000	9.1	0.9917	35.3			64	6	
193		GEBONYIC	13.800	G2	9.0	-1.2	4.0	-4.0	1.0000	9.1	0.9917	35.3			64	6	
302		PASOANCH	13.813.800	P1	4.7	2.0	2.0	-2.0	0.9539	5.4	0.9216	6.2			64	6	
304		ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0885	4.7	0.8981	5.7			64	6	
304		ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0885	4.7	0.8981	5.7			64	6	

305	ELALTO	13.800	G1	18.0	-5.0	12.0	-5.0	1.0311	18.1	0.9635	20.6	64	6
305	ELALTO	13.800	G2	18.0	-5.0	12.0	-5.0	1.0311	18.1	0.9635	20.6	64	6
307	CHAN1 A	13.800	G1	61.0	-22.6	50.0	-50.0	0.9900	65.7	0.9379	118.6	64	6
312	PANDO13.8	13.800	G1	9.0	-5.0	10.0	-5.0	1.0142	10.2	0.8742	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	17.0	-5.0	12.0	-5.0	1.0339	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	1.0912	5.0	1.0000	35.3	64	6
340	PEDGALITO138	13.800	P1	19.0	7.4	12.0	-5.0	1.0000	20.4	0.9317	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	1.0008	13.0	0.9228	19.9	64	6
343	PRUDENCIA_1	13.800	G1	23.0	-9.8	9.8	-9.8	0.9989	25.0	0.9205	33.0	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0850	3.0	0.9514	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9882	10.9	0.8849	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9882	10.9	0.8849	13.5	64	6
357	BARTOLO13.8	13.800	G1	6.7	1.1	3.7	-3.7	0.9900	6.9	0.9880	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.8	1.1	3.7	-3.7	0.9900	6.9	0.9880	8.5	64	6
359	CRUCES13.8	13.800	G1	4.6	0.3	2.3	-2.3	0.9900	4.7	0.9981	5.6	64	6
359	CRUCES13.8	13.800	G2	4.6	0.3	2.3	-2.3	0.9900	4.7	0.9981	5.6	64	6
361	ESTRECHO4.164	1.600	G1	4.9	0.2	2.5	-2.5	0.9900	5.0	0.9995	5.6	64	6
361	ESTRECHO4.164	1.600	G2	4.9	0.2	2.5	-2.5	0.9900	5.0	0.9995	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.7	0.0	2.4	-2.4	0.9900	4.7	1.0000	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.7	0.0	2.4	-2.4	0.9900	4.7	1.0000	5.8	64	6
364	MENDRE2	13.800	G1	7.6	0.3	3.9	-3.9	0.9900	7.7	0.9993	8.9	64	6
368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	1.0036	5.3	0.8906	5.5	64	6
368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	1.0036	5.3	0.8906	5.5	64	6
369	HCALDERA13.8	13.800	G1	3.8	0.3	1.9	-1.9	0.9900	3.8	0.9974	4.3	64	6
372	BJO FRIO 13	13.800	G1	23.0	-9.8	9.8	-9.8	1.0077	24.8	0.9205	33.0	64	6
373	TIZINGAL13.8	13.800	G1	4.4	2.2	2.2	-2.2	0.9865	5.0	0.8909	21.6	64	6
541	TOABRE	0.6000	1	20.0	0.0	0.0	0.0	1.0002	20.0	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	26.0	-0.7	13.0	-13.0	0.9900	26.3	0.9996	30.5	64	6
705	BAITUN13A	13.800	G1	40.0	-13.5	26.6	-26.6	0.9900	42.6	0.9474	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9539	5.2	0.9145	6.2	64	6
SUBSYSTEM TOTALS				846.8	28.8	532.4	-379.9				1397.7		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:19
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																	

TOTALS	6049.4	5894.6	0.0	0.0	0.0	0.0	154.8	0.0
	1153.2	1802.5	-487.5	0.0	1917.3	0.0	1755.4	

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

MON, OCT 18 2010 8:21

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0020	230.47	3		PANII230		230.00	6	1.0060	231.37
11		M.N230		230.00	6	1.0075	231.73	14		PRO230		230.00	6	1.0233	235.37
85		PTP230		230.00	6	1.0090	232.06	96		FOR230		230.00	6	1.0053	231.21
100		BAY230		230.00	6	1.0294	236.76	103		COPESA23		230.00	6	1.0099	232.29
115		PACORA23		230.00	6	1.0127	232.91	144		CANJ230		230.00	6	1.0041	230.95
146		GUALACA230		230.00	6	1.0085	231.96	147		GUASQ230		230.00	6	1.0041	230.94
148		VELADERO	230	230.00	6	1.0023	230.53	190		CHANG230		230.00	6	1.0155	233.57
306		CHAN1	230	230.00	6	1.0133	233.06	310		CONCEPCION23	230	230.00	6	1.0173	233.98
311		PANDO230		230.00	6	1.0419	239.63	341		PRUDENCIA230	230	230.00	6	1.0157	233.62
345		LORENA230		230.00	6	1.0130	232.99	371		CAISAN230		230.00	6	1.0406	239.35
540		ANTON		230.00	6	1.0114	232.63	700		BAITUN230		230.00	6	1.0222	235.11
6000		FRONTER		230.00	6	1.0263	236.04	6400		FRONTCHA		230.00	6	1.0177	234.08
6500		FRONT CAISAN	230	230.00	6	1.0395	239.09								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
5		CHO230		230.00	6	0.9959	229.06	8		LSA230		230.00	6	0.9956	228.98
105		PAN-AM23		230.00	6	0.9959	229.06	354		SANBARTOLO23	230	230.00	6	0.9976	229.45
370		LSA CAP	230	230.00	6	0.9956	228.98	511		LGUIAS230		230.00	6	0.9920	228.16

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

MON, OCT 18 2010 8:21

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0032	115.37	4		PANII115		115.00	6	1.0262	118.01
9		LSA115		115.00	6	1.0404	119.64	15		PRO115		115.00	6	1.0252	117.90
18		CAC115		115.00	6	1.0030	115.34	19		C.V115		115.00	6	1.0111	116.28
20		CH.AZUL		115.00	6	1.0260	117.98	23		CH115		115.00	6	1.0041	115.47
33		STM115		115.00	6	1.0013	115.15	48		TINAJ115		115.00	6	1.0007	115.08
50		M.O115		115.00	6	1.0008	115.10	52		TOC115		115.00	6	1.0233	117.68

54	LM1115	115.00	6	1.0263	118.02	55	LM2115	115.00	6	1.0273	118.14
61	FFIELD	115.00	6	1.0228	117.62	87	CAL115	115.00	6	1.0120	116.38
88	EST115	115.00	6	1.0151	116.73	92	L.V115	115.00	6	1.0132	116.52
109	STA RITA115	115.00	6	1.0242	117.78	123	MIR115	115.00	7	1.0085	115.98
154	CEMPAN15	115.00	6	1.0192	117.21	191	CHANG115	115.00	6	1.0072	115.83
522	TCATIVÁ 115	115.00	6	1.0271	118.11	529	TCOLON 115	115.00	6	1.0242	117.78
701	BAITUN115	115.00	6	1.0006	115.07	702	BJOMIN115	115.00	6	1.0027	115.31

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6		CHO115		115.00	6	0.9968	114.63	12		M.N115		115.00	6	0.9974	114.71
21		C.BAN115		115.00	6	0.9955	114.49	26		LOC115		115.00	6	0.9961	114.55
30		MAR115		115.00	6	0.9939	114.30	37		SAN115		115.00	6	0.9956	114.49

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:21
 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																	
66		BLM13B		13.800	V2	38.0	11.4	25.0	0.0	1.0000	39.7	0.9581	47.0			62	6
67		BLM13C		13.800	V3	38.0	11.4	25.0	0.0	1.0000	39.7	0.9581	47.0			62	6
68		BLM13D		13.800	V4	38.0	11.8	25.0	0.0	1.0000	39.8	0.9552	47.0			62	6
90		EST-13L		13.800	E1	22.0	4.8	12.0	-5.0	0.9800	23.0	0.9770	27.0			64	6
91		EST-13T		13.800	E2	22.0	4.8	12.0	-5.0	0.9800	23.0	0.9770	27.0			64	6
94		LV-13.8L		13.800	L1	23.2	5.4	12.0	-5.0	0.9800	24.3	0.9736	27.0			64	6
95		LV-13.8T		13.800	L2	23.2	5.4	12.0	-5.0	0.9800	24.3	0.9736	27.0			64	6
97		FOR13A		13.800	F1	80.7	-18.9	50.0	-50.0	0.9800	84.5	0.9737	111.0			64	6
98		FOR13B		13.800	F2	80.7	-18.9	50.0	-50.0	0.9800	84.5	0.9737	111.0			64	6
101		BAY13A		13.800	B1	42.4	16.5	50.0	-25.0	1.0000	45.5	0.9317	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	47.2	16.8	50.0	-25.0	1.0000	50.1	0.9421	96.0			61	6
108		BAY13C		13.800	B3	47.2	16.8	50.0	-25.0	1.0000	50.1	0.9421	100.0			61	6
116		PACORA13		13.800	P1	17.1	0.0	8.8	0.0	1.0038	17.0	1.0000	21.7			61	6
142		CANJ13A		13.800	C1	50.0	12.2	29.0	-29.0	0.9800	52.5	0.9716	69.0			64	6
143		CANJ13B		13.800	C2	50.0	12.2	29.0	-29.0	0.9800	52.5	0.9716	69.0			64	6
150		GUALACA 13-213.800		13.800	G2	13.0	-4.2	7.4	-7.4	0.9900	13.8	0.9506	14.8			64	6
151		GUALACA13.8		13.800	G1	13.0	-4.2	7.4	-7.4	0.9900	13.8	0.9506	14.8			64	6
193		GEBONYIC		13.800	G1	8.0	-1.0	4.0	-4.0	1.0000	8.1	0.9928	35.3			64	6

193	GEBONYIC	13.800	G2	8.0	-1.0	4.0	-4.0	1.0000	8.1	0.9928	35.3	64	6
302	PASOANCH13.813.800	P1	4.8	2.0	2.0	-2.0	0.9668	5.3	0.9216	6.2	64	6	
304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0808	4.8	0.8981	5.7	64	6
304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0808	4.8	0.8981	5.7	64	6
305	ELALTO	13.800	G1	14.0	-5.0	12.0	-5.0	1.0350	14.4	0.9417	20.6	64	6
307	CHAN1 A	13.800	G1	62.0	-20.2	50.0	-50.0	0.9900	65.9	0.9508	118.6	64	6
312	PANDO13.8	13.800	G1	9.0	-3.0	10.0	-5.0	1.0000	9.5	0.9501	19.9	64	6
312	PANDO13.8	13.800	G2	9.0	-3.0	10.0	-5.0	1.0000	9.5	0.9501	19.9	64	6
316	MTE LIRIO13.13.800	G1	17.0	-5.0	12.0	-5.0	1.0164	17.4	0.9594	27.0	64	6	
316	MTE LIRIO13.13.800	G2	17.0	-5.0	12.0	-5.0	1.0164	17.4	0.9594	27.0	64	6	
317	MENDRE13.8	13.800	M1	9.2	0.0	0.0	0.0	1.0829	8.5	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.2	0.0	0.0	0.0	1.0829	8.5	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0834	5.1	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.0834	5.1	1.0000	35.3	64	6
340	PEDGALITO13813.800	P1	22.0	3.9	12.0	-5.0	0.9800	22.8	0.9850	27.0	64	6	
342	LORENA13.8	13.800	L1	12.0	-4.1	10.5	-5.0	1.0000	12.7	0.9456	19.9	64	6
343	PRUDENCIA_1	13.800	G1	25.0	-3.2	9.8	-9.8	1.0000	25.2	0.9919	33.0	64	6
343	PRUDENCIA_1	13.800	G2	25.0	-3.2	9.8	-9.8	1.0000	25.2	0.9919	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	-4.1	10.5	-5.0	1.0000	12.7	0.9456	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0714	3.0	0.9514	6.2	64	6
351	PERLAS N13.813.800	G1	9.0	5.0	5.0	-5.0	0.9759	10.5	0.8742	13.5	64	6	
352	PERLAS S13.813.800	G1	9.0	5.0	5.0	-5.0	0.9759	10.5	0.8742	13.5	64	6	
357	BARTOLO13.8	13.800	G1	7.2	1.5	3.7	-3.7	1.0000	7.4	0.9799	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.2	1.5	3.7	-3.7	1.0000	7.4	0.9799	8.5	64	6
359	CRUCES13.8	13.800	G1	4.6	0.5	2.3	-2.3	1.0000	4.6	0.9934	5.6	64	6
359	CRUCES13.8	13.800	G2	4.6	0.5	2.3	-2.3	1.0000	4.6	0.9934	5.6	64	6
361	ESTRECHO4.164.1600	G1	4.9	0.4	2.5	-2.5	1.0000	5.0	0.9969	5.6	64	6	
361	ESTRECHO4.164.1600	G2	4.9	0.4	2.5	-2.5	1.0000	5.0	0.9969	5.6	64	6	
363	LAGUNA 13.8	13.800	G1	4.7	0.2	2.4	-2.4	1.0000	4.7	0.9993	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.7	0.2	2.4	-2.4	1.0000	4.7	0.9993	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	0.9852	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	0.9449	5.5	64	6
368	RP-490	13.800	G2	4.7	-1.6	2.4	-2.4	1.0000	5.0	0.9449	5.5	64	6
369	HCALDERA13.813.800	G1	3.8	1.9	1.9	-1.9	0.9841	4.3	0.8909	4.3	64	6	
523	TCATIVÁ 13A	13.800	G1	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9392	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9392	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9392	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9392	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9392	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9392	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9392	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9392	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9392	10.9	62	6

524	TCATIVÁ 13B	13.800	G9	8.2	3.0	6.6	-6.6	1.0000	8.7	0.9392	10.9	62	6
541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0127	29.6	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	26.0	1.9	13.0	-13.0	1.0000	26.1	0.9972	30.5	64	6
704	BJOMIN13B	13.800	G2	26.0	1.9	13.0	-13.0	1.0000	26.1	0.9972	30.5	64	6
705	BAITUN13A	13.800	G1	37.0	-8.3	26.6	-26.6	1.0000	37.9	0.9760	50.6	64	6
706	BAITUN13B	13.800	G2	37.0	-8.3	26.6	-26.6	1.0000	37.9	0.9760	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9668	5.1	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1256.2	62.8	818.1	-582.3				2022.7		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:21
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-VERANO

AREA 7 [ACANAL] MACHINE SUMMARY:

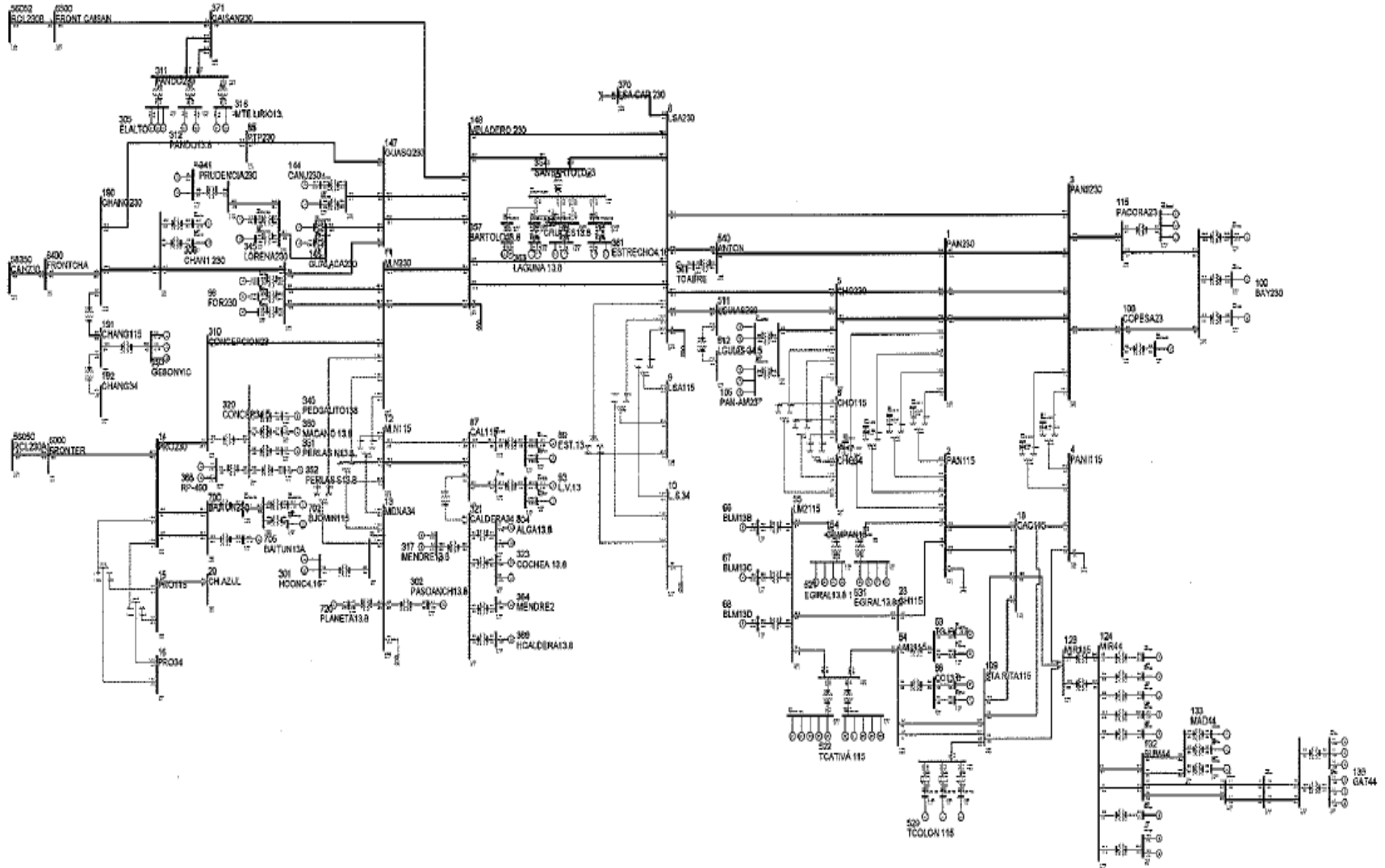
BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING															
129	MIR13D	13.800	G4	19.8	0.0	15.0	0.0	1.0001	19.8	1.0000	44.1			65	7
AREA															
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0170	16.8	1.0000	27.7			65	7
140	GAT6A	6.9000	G1	1.9	-0.9	2.0	-2.0	1.0000	2.1	0.9078	4.1			65	7
140	GAT6A	6.9000	G2	1.9	-0.9	2.0	-2.0	1.0000	2.1	0.9078	4.1			65	7
140	GAT6A	6.9000	G3	1.9	-0.9	2.0	-2.0	1.0000	2.1	0.9078	4.1			65	7
141	GAT6B	6.9000	G4	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9203	5.6			65	7
141	GAT6B	6.9000	G5	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9203	6.2			65	7
141	GAT6B	6.9000	G6	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9203	6.2			65	7
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0314	17.8	0.9281	23.0			65	7
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0404	17.6	0.9281	23.0			65	7
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0404	17.6	0.9281	23.0			65	7
SUBSYSTEM TOTALS				105.3	12.8	71.5	5.5				171.3				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:21
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2013 ESC-MOD DEMANDA-MAX-VERANO

X-- AREA	--X GENERATION	FROM TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1359.8	1330.8	0.0	0.0	0.0	-14.3	43.3	-12.7
GUATEMAL	197.5	275.1	-198.8	0.0	277.8	2.6	396.5	

2	868.7	855.0	0.0	0.0	0.0	0.0	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	-47.4	0.0	294.0	54.0	427.6	
4	532.1	525.2	0.0	0.0	0.0	0.2	6.7	0.0
NICARAGU	32.6	207.6	-57.8	0.0	182.3	-47.2	112.3	
5	1297.2	1280.2	0.0	0.0	0.0	0.9	16.2	0.0
COSTA RI	204.8	520.4	-230.8	0.0	419.0	35.9	298.3	
6	1256.2	1239.4	0.0	0.0	0.0	-47.1	63.9	-47.3
PANAMA	62.8	251.7	-223.5	0.0	579.8	-12.0	626.4	
7	105.3	44.4	0.0	0.0	0.0	60.3	0.7	60.0
ACANAL	12.8	9.0	0.0	0.0	0.0	-6.9	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	6656.3	6478.0	0.0	0.0	0.0	0.0	178.3	0.0
	1044.7	1808.9	-828.9	0.0	1982.0	0.0	2046.7	

4.4. 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, OCT 18 2010 8:24

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0071	231.64	14		PRO230		230.00	6	1.0243	235.59
85		PTP230		230.00	6	1.0109	232.52	96		FOR230		230.00	6	1.0060	231.38
100		BAY230		230.00	6	1.0093	232.14	115		PACORA23		230.00	6	1.0002	230.04
144		CANJ230		230.00	6	1.0064	231.48	146		GUALACA230		230.00	6	1.0084	231.93
147		GUASQ230		230.00	6	1.0064	231.47	148		VELADERO 230		230.00	6	1.0032	230.74
190		CHANG230		230.00	6	1.0153	233.51	306		CHAN1 230		230.00	6	1.0132	233.03
310		CONCEPCION23		230.00	6	1.0180	234.13	311		PANDO230		230.00	6	1.0450	240.34
341		PRUDENCIA230		230.00	6	1.0115	232.65	345		LORENA230		230.00	6	1.0104	232.39
371		CAISAN230		230.00	6	1.0437	240.05	540		ANTON		230.00	6	1.0035	230.81
700		BAITUN230		230.00	6	1.0228	235.25	6000		FRONTER		230.00	6	1.0275	236.32
6400		FRONTCHA		230.00	6	1.0171	233.94	6500		FRONT CAISAN		230.00	6	1.0424	239.74

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9951	228.87	3		PANII230		230.00	6	0.9965	229.20
5		CHO230		230.00	6	0.9939	228.59	8		LSA230		230.00	6	0.9915	228.03
103		COPESA23		230.00	6	0.9989	229.76	105		PAN-AM23		230.00	6	0.9939	228.59
354		SANBARTOLO23		230.00	6	0.9996	229.90	370		LSA CAP 230		230.00	6	0.9915	228.03
511		LGUIAS230		230.00	6	0.9928	228.33								

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

MON, OCT 18 2010 8:24

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0052	115.60	9		LSA115		115.00	6	1.0382	119.39
12		M.N115		115.00	6	1.0093	116.07	15		PRO115		115.00	6	1.0262	118.01
20		CH.AZUL		115.00	6	1.0269	118.10	52		TOC115		115.00	6	1.0030	115.35
54		LM1115		115.00	6	1.0085	115.98	55		LM2115		115.00	6	1.0094	116.08
61		FFIELD		115.00	6	1.0064	115.74	87		CAL115		115.00	6	1.0190	117.19
88		EST115		115.00	6	1.0209	117.40	92		L.V115		115.00	6	1.0197	117.27

109 STA RITA115	115.00	6	1.0069	115.79	154 CEMPAN15	115.00	6	1.0040	115.46
191 CHANG115	115.00	6	1.0044	115.51	522 TCATIVÁ	115.00	6	1.0089	116.03
529 TCOLON 115	115.00	6	1.0069	115.79	701 BAITUN115	115.00	6	1.0077	115.89
702 BJOMIN115	115.00	6	1.0076	115.88					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9932	114.22	6		CHO115		115.00	6	0.9946	114.38
18		CAC115		115.00	6	0.9930	114.20	19		C.V115		115.00	6	0.9954	114.47
21		C.BAN115		115.00	6	0.9870	113.50	23		CH115		115.00	6	0.9932	114.22
26		LOC115		115.00	6	0.9875	113.57	30		MAR115		115.00	6	0.9862	113.42
33		STM115		115.00	6	0.9918	114.05	37		SAN115		115.00	6	0.9867	113.47
48		TINAJ115		115.00	6	0.9914	114.01	50		M.O115		115.00	6	0.9915	114.02
123		MIR115		115.00	7	0.9977	114.74								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:24
 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																					
66		BLM13B		13.800	V2	38.0	14.4	25.0	0.0	0.9900	41.1	0.9347	47.0						62	6	
67		BLM13C		13.800	V3	38.0	14.4	25.0	0.0	0.9900	41.1	0.9347	47.0						62	6	
68		BLM13D		13.800	V4	38.0	15.0	25.0	0.0	0.9900	41.3	0.9299	47.0						62	6	
90		EST-13L		13.800	E1	20.1	6.3	12.0	-5.0	0.9900	21.2	0.9540	27.0						64	6	
94		LV-13.8L		13.800	L1	21.1	6.7	12.0	-5.0	0.9900	22.4	0.9530	27.0						64	6	
97		FOR13A		13.800	F1	62.0	-21.0	50.0	-50.0	0.9800	66.8	0.9470	111.0						64	6	
98		FOR13B		13.800	F2	62.0	-21.0	50.0	-50.0	0.9800	66.8	0.9470	111.0						64	6	
101		BAY13A		13.800	B1	60.0	24.7	50.0	-25.0	0.9900	65.5	0.9247	96.0						61	6	
SYST																					
142		CANJ13A		13.800	C1	47.4	10.9	29.0	-29.0	0.9800	49.6	0.9744	69.0						64	6	
150		GUALACA	13-213.800	G2	13.4	-6.6	7.4	-7.4	0.9800	15.3	0.8978	14.8							64	6	
193		GEBONYIC		13.800	G1	8.0	-2.1	4.0	-4.0	0.9900	8.4	0.9675	35.3						64	6	
193		GEBONYIC		13.800	G2	8.0	-2.1	4.0	-4.0	0.9900	8.4	0.9675	35.3						64	6	
302		PASOANCHI	13.813.800	P1	4.3	2.0	2.0	-2.0	0.9490	5.0	0.9078	6.2							64	6	
304		ALGA13.8		13.800	A1	4.2	-2.3	2.3	-2.3	1.0870	4.4	0.8809	5.7						64	6	
304		ALGA13.8		13.800	A2	4.2	-2.3	2.3	-2.3	1.0870	4.4	0.8809	5.7						64	6	
305		ELALTO		13.800	G1	18.0	-5.0	12.0	-5.0	1.0380	18.0	0.9635	20.6						64	6	
307		CHAN1 A		13.800	G1	62.0	-20.1	50.0	-50.0	0.9900	65.8	0.9513	118.6						64	6	

312	PANDO13.8	13.800	G1	8.2	-4.8	10.0	-5.0	0.9800	9.7	0.8626	19.9	64	6
312	PANDO13.8	13.800	G2	8.2	-4.8	10.0	-5.0	0.9800	9.7	0.8626	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	15.5	-5.0	12.0	-5.0	1.0332	15.8	0.9517	27.0	64	6
317	MENDRE13.8	13.800	M1	8.4	0.0	0.0	0.0	1.0892	7.7	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	8.4	0.0	0.0	0.0	1.0892	7.7	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.0	0.0	0.0	0.0	1.0896	4.6	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.0	0.0	0.0	0.0	1.0896	4.6	1.0000	35.3	64	6
340	PEDGALITO138	13.800	P1	20.1	6.6	12.0	-5.0	0.9900	21.3	0.9495	27.0	64	6
342	LORENA13.8	13.800	L1	12.8	-5.0	10.5	-5.0	0.9946	13.8	0.9311	19.9	64	6
343	PRUDENCIA_1	13.800	G1	24.0	-9.8	9.8	-9.8	0.9927	26.1*	0.9263	33.0	64	6
350	MACANO 13.8	13.800	G1	2.8	-1.0	1.0	-1.0	1.0758	2.8	0.9424	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9798	10.5	0.8742	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9798	10.5	0.8742	13.5	64	6
357	BARTOLO13.8	13.800	G1	6.6	-0.3	3.7	-3.7	0.9800	6.7	0.9992	8.5	64	6
359	CRUCES13.8	13.800	G1	4.2	-0.5	2.3	-2.3	0.9800	4.3	0.9940	5.6	64	6
361	ESTRECHO4.164	1.600	G1	4.5	-0.6	2.5	-2.5	0.9800	4.6	0.9920	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.2	-0.7	2.4	-2.4	0.9800	4.4	0.9863	5.8	64	6
364	MENDRE2	13.800	G1	6.9	2.6	3.9	-3.9	0.9900	7.5	0.9374	8.9	64	6
368	RP-490	13.800	G1	4.3	-2.4	2.4	-2.4	0.9948	5.0	0.8724	5.5	64	6
368	RP-490	13.800	G2	4.3	-2.4	2.4	-2.4	0.9948	5.0	0.8724	5.5	64	6
369	HCALDERA13.8	13.800	G1	3.5	1.9	1.9	-1.9	0.9896	4.0	0.8727	4.3	64	6
541	TOABRE	0.6000	1	19.0	0.0	0.0	0.0	1.0043	18.9	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	23.7	-2.0	13.0	-13.0	0.9800	24.3	0.9966	30.5	64	6
705	BAITUN13A	13.800	G1	36.5	-17.0	26.6	-26.6	0.9800	41.0	0.9066	50.6	64	6
720	PLANETA13.8	13.800	G1	4.1	2.0	2.0	-2.0	0.9490	4.8	0.8997	6.2	64	6
SUBSYSTEM TOTALS				766.8	-20.9	500.4	-349.9				1371.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:24
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																	
129		MIR13D		13.800	G4	24.8	3.9	15.0	0.0	1.0000	25.1	0.9876	44.1			65	7
AREA																	
140		GAT6A		6.9000	G1	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9451	4.1			65	7
140		GAT6A		6.9000	G2	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9451	4.1			65	7
140		GAT6A		6.9000	G3	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9451	4.1			65	7
141		GAT6B		6.9000	G4	3.5	-1.4	3.0	-3.0	1.0000	3.8	0.9320	5.6			65	7
141		GAT6B		6.9000	G5	3.5	-1.4	3.0	-3.0	1.0000	3.8	0.9320	6.2			65	7

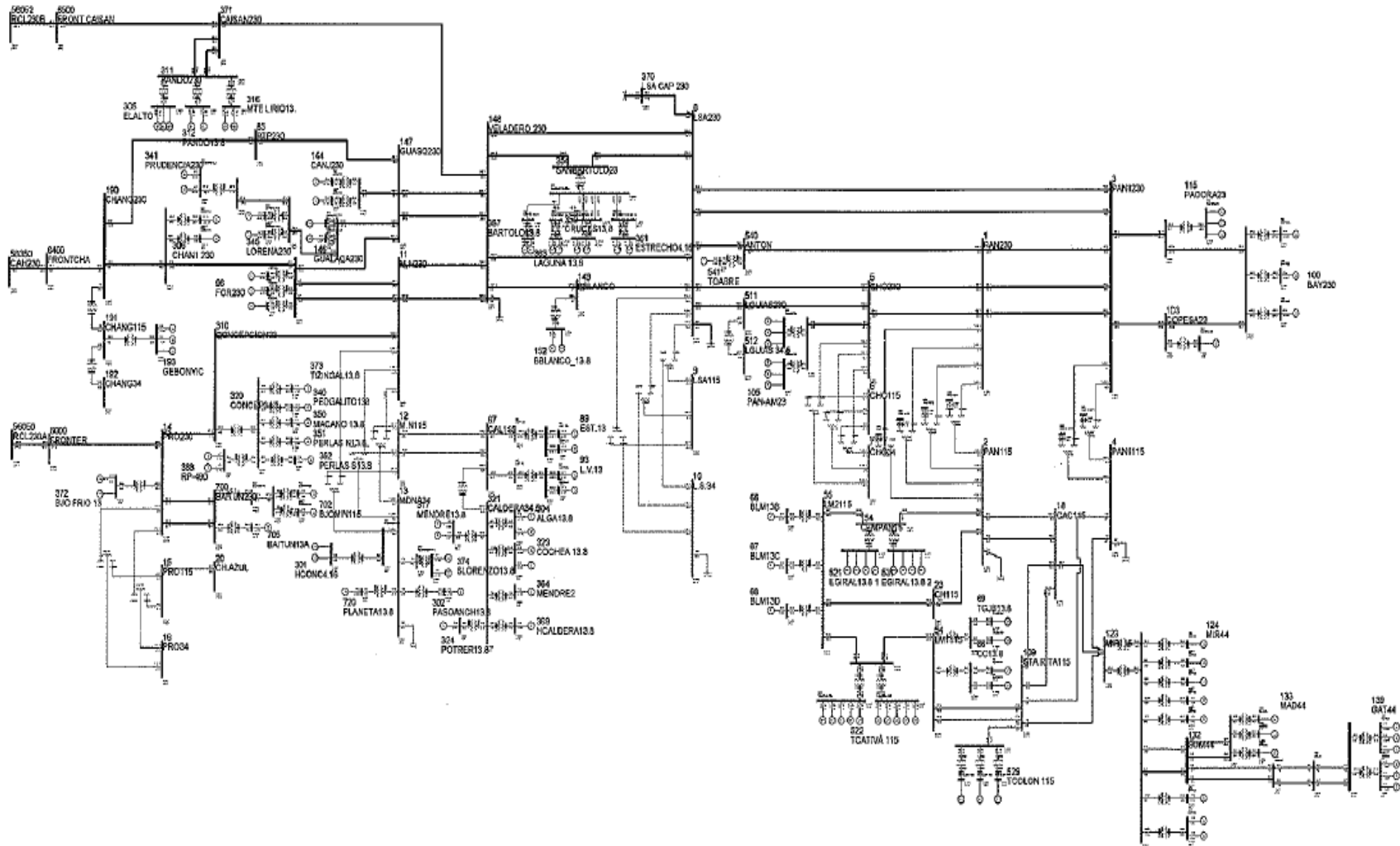
141 GAT6B	6.9000 G6	3.5	-1.4	3.0	-3.0	1.0000	3.8	0.9320	6.2	65	7
171 MIR13H	13.800 M1	15.5	6.8	11.2	6.8	1.0295	16.4	0.9153	23.0	65	7
171 MIR13H	13.800 M2	15.5	6.8	11.2	6.8	1.0295	16.4	0.9153	23.0	65	7
SUBSYSTEM TOTALS		71.6	11.6	52.3	-1.4				120.6		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:24
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2013 ESC-MOD DEMANDA-MIN-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	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	202.7	520.4	-230.6	0.0	418.8	33.8	297.9	
6	766.8	681.7	0.0	0.0	0.0	65.3	19.9	65.0
PANAMA	-20.9	247.4	80.0	0.0	551.6	-25.7	229.0	
7	71.6	24.4	0.0	0.0	0.0	46.7	0.5	47.0
ACANAL	11.6	8.9	0.0	0.0	0.0	-4.2	6.9	
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	6038.2	5900.3	0.0	0.0	0.0	0.0	137.9	0.0
	981.4	1804.5	-524.0	0.0	1951.1	0.0	1652.0	

5. Año 2014

5.1. Demanda Máxima de Invierno



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

MON, OCT 18 2010 8:32

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0005	230.13	11		M.N230		230.00	6	1.0188	234.34
14		PRO230		230.00	6	1.0305	237.01	85		PTP230		230.00	6	1.0207	234.76
96		FOR230		230.00	6	1.0192	234.42	100		BAY230		230.00	6	1.0332	237.64
103		COPESA23		230.00	6	1.0059	231.37	115		PACORA23		230.00	6	1.0093	232.14
144		CANJ230		230.00	6	1.0184	234.23	146		GUALACA230		230.00	6	1.0218	235.01
147		GUASQ230		230.00	6	1.0182	234.18	148		VELADERO 230		230.00	6	1.0092	232.13
149		BBLANCO		230.00	6	1.0074	231.69	190		CHANG230		230.00	6	1.0240	235.53
306		CHAN1 230		230.00	6	1.0228	235.24	310		CONCEPCION23		230.00	6	1.0266	236.13
311		PANDO230		230.00	6	1.0473	240.87	341		PRUDENCIA230		230.00	6	1.0280	236.44
345		LORENA230		230.00	6	1.0257	235.91	354		SANBARTOLO23		230.00	6	1.0029	230.66
371		CAISAN230		230.00	6	1.0460	240.58	540		ANTON		230.00	6	1.0052	231.19
700		BAITUN230		230.00	6	1.0297	236.84	6000		FRONTER		230.00	6	1.0330	237.60
6400		FRONTCHA		230.00	6	1.0255	235.85	6500		FRONT CAISAN		230.00	6	1.0449	240.33

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	0.9964	229.17	5		CHO230		230.00	6	0.9914	228.02
8		LSA230		230.00	6	0.9932	228.43	105		PAN-AM23		230.00	6	0.9914	228.02
370		LSA CAP 230		230.00	6	0.9932	228.43	511		LGUIAS230		230.00	6	0.9892	227.52

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

MON, OCT 18 2010 8:32

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0162	116.86	9		LSA115		115.00	6	1.0370	119.25
12		M.N115		115.00	6	1.0118	116.36	15		PRO115		115.00	6	1.0324	118.72
19		C.V115		115.00	6	1.0017	115.19	20		CH.AZUL		115.00	6	1.0331	118.81
23		CH115		115.00	6	1.0016	115.19	52		TOC115		115.00	6	1.0131	116.51
54		LM1115		115.00	6	1.0295	118.39	55		LM2115		115.00	6	1.0307	118.53
61		FFIELD		115.00	6	1.0257	117.95	87		CAL115		115.00	6	1.0286	118.29

88 EST115	115.00	6	1.0321	118.70	92 L.V115	115.00	6	1.0300	118.45
109 STA RITA115	115.00	6	1.0252	117.90	123 MIR115	115.00	7	1.0032	115.37
154 CEMPAN15	115.00	6	1.0199	117.29	191 CHANG115	115.00	6	1.0130	116.49
522 TCATIVÁ 115	115.00	6	1.0304	118.50	529 TCOLON 115	115.00	6	1.0252	117.90
701 BAITUN115	115.00	6	1.0115	116.32	702 BJOMIN115	115.00	6	1.0135	116.55

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	0.9976	114.73	6		CHO115		115.00	6	0.9923	114.12
18		CAC115		115.00	6	0.9974	114.70	21		C.BAN115		115.00	6	0.9886	113.69
26		LOC115		115.00	6	0.9894	113.78	30		MAR115		115.00	6	0.9874	113.56
33		STM115		115.00	6	0.9955	114.49	37		SAN115		115.00	6	0.9883	113.66
48		TINAJ115		115.00	6	0.9949	114.41	50		M.O115		115.00	6	0.9950	114.43

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:32
 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																	
66		BLM13B		13.800	V2	38.0	18.3	25.0	0.0	1.0180	41.4	0.9013	47.0			62	6
67		BLM13C		13.800	V3	38.0	18.3	25.0	0.0	1.0180	41.4	0.9013	47.0			62	6
68		BLM13D		13.800	V4	38.0	19.0	25.0	0.0	1.0180	41.8	0.8940	47.0			62	6
90		EST-13L		13.800	E1	22.8	6.1	12.0	-5.0	1.0000	23.6	0.9665	27.0			64	6
91		EST-13T		13.800	E2	22.8	6.1	12.0	-5.0	1.0000	23.6	0.9665	27.0			64	6
94		LV-13.8L		13.800	L1	24.3	6.8	12.0	-5.0	1.0000	25.3	0.9630	27.0			64	6
95		LV-13.8T		13.800	L2	24.3	6.8	12.0	-5.0	1.0000	25.3	0.9630	27.0			64	6
97		FOR13A		13.800	F1	80.0	-5.0	50.0	-50.0	1.0100	79.4	0.9980	111.0			64	6
98		FOR13B		13.800	F2	80.0	-5.0	50.0	-50.0	1.0100	79.4	0.9980	111.0			64	6
101		BAY13A		13.800	B1	35.0	27.8	50.0	-25.0	1.0180	43.9	0.7825	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.6	28.6	50.0	-25.0	1.0180	55.4	0.8622	96.0			61	6
108		BAY13C		13.800	B3	48.6	28.6	50.0	-25.0	1.0180	55.4	0.8622	100.0			61	6
142		CANJ13A		13.800	C1	45.0	13.1	29.0	-29.0	1.0100	46.4	0.9603	69.0			64	6
143		CANJ13B		13.800	C2	45.0	13.1	29.0	-29.0	1.0100	46.4	0.9603	69.0			64	6
150		GUALACA	13-213.800	G2		14.0	-2.6	7.4	-7.4	1.0100	14.1	0.9833	14.8			64	6
152		BBLANCO_13.8	13.800	G1		13.0	-0.7	7.0	-7.0	1.0000	13.0	0.9986	16.0			64	6
193		GEBONYIC		13.800	G1	8.0	-1.9	4.0	-4.0	1.0000	8.2	0.9732	35.3			64	6
193		GEBONYIC		13.800	G2	8.0	-1.9	4.0	-4.0	1.0000	8.2	0.9732	35.3			64	6

302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9755	5.3	0.9216	6.2	64	6
304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0984	4.7	0.8981	5.7	64	6
304	ALGA13.8	13.800	A2	4.6	-2.3	2.3	-2.3	1.0984	4.7	0.8981	5.7	64	6
305	ELALTO	13.800	G1	18.0	-5.0	12.0	-5.0	1.0403	18.0	0.9635	20.6	64	6
307	CHAN1 A	13.800	G1	60.0	-20.1	50.0	-50.0	1.0000	63.3	0.9481	118.6	64	6
312	PANDO13.8	13.800	G1	9.0	-3.4	10.0	-5.0	1.0000	9.6	0.9356	19.9	64	6
312	PANDO13.8	13.800	G2	9.0	-3.4	10.0	-5.0	1.0000	9.6	0.9356	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	17.0	-5.0	12.0	-5.0	1.0219	17.3	0.9594	27.0	64	6
316	MTE LIRIO13.8	13.800	G2	17.0	-5.0	12.0	-5.0	1.0219	17.3	0.9594	27.0	64	6
317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.1004	8.5	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.4	0.0	0.0	0.0	1.1004	8.5	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.1009	5.0	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.1009	5.0	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	1.0000	4.4	0.8929	6.2	64	6
340	PEDGALITO13.8	13.800	P1	22.0	6.6	12.0	-5.0	1.0000	23.0	0.9581	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	1.0102	12.9	0.9229	19.9	64	6
343	PRUDENCIA_1	13.800	G1	23.8	-6.7	9.8	-9.8	1.0000	24.7	0.9626	33.0	64	6
343	PRUDENCIA_1	13.800	G2	23.8	-6.7	9.8	-9.8	1.0000	24.7	0.9626	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	-5.0	10.5	-5.0	1.0102	12.9	0.9229	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0872	3.0	0.9514	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9902	10.4	0.8742	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9902	10.4	0.8742	13.5	64	6
357	BARTOLO13.8	13.800	G1	6.9	1.5	3.7	-3.7	1.0100	7.0	0.9768	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.9	1.5	3.7	-3.7	1.0100	7.0	0.9768	8.5	64	6
359	CRUCES13.8	13.800	G1	4.4	0.6	2.3	-2.3	1.0100	4.4	0.9918	5.6	64	6
359	CRUCES13.8	13.800	G2	4.4	0.6	2.3	-2.3	1.0100	4.4	0.9918	5.6	64	6
361	ESTRECHO4.164	1.600	G1	4.7	0.4	2.5	-2.5	1.0100	4.7	0.9959	5.6	64	6
361	ESTRECHO4.164	1.600	G2	4.7	0.4	2.5	-2.5	1.0100	4.7	0.9959	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.4	0.2	2.4	-2.4	1.0100	4.4	0.9988	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.4	0.2	2.4	-2.4	1.0100	4.4	0.9988	5.8	64	6
364	MENDRE2	13.800	G1	7.6	2.1	3.9	-3.9	1.0000	7.9	0.9646	8.9	64	6
368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	1.0058	5.3	0.8906	5.5	64	6
368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	1.0058	5.3	0.8906	5.5	64	6
369	HCALDERA13.8	13.800	G1	3.8	1.9	1.9	-1.9	0.9999	4.3	0.8909	4.3	64	6
372	BJO FRIO 13	13.800	G1	23.8	-9.8	9.8	-9.8	1.0121	25.4	0.9252	33.0	64	6
373	TIZINGAL13.8	13.800	G1	4.4	2.2	2.2	-2.2	0.9885	5.0	0.8909	21.6	64	6
374	SLORENZO13.8	13.800	G1	3.9	-1.9	2.0	-2.0	1.0000	4.3	0.8935	4.5	64	6
374	SLORENZO13.8	13.800	G2	3.9	-1.9	2.0	-2.0	1.0000	4.3	0.8935	4.5	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	4.5	6.6	-6.6	1.0150	9.3	0.8771	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	4.5	6.6	-6.6	1.0150	9.3	0.8771	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	4.5	6.6	-6.6	1.0150	9.3	0.8771	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	4.5	6.6	-6.6	1.0150	9.3	0.8771	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	4.5	6.6	-6.6	1.0150	9.3	0.8771	10.9	62	6

524	TCATIVÁ	13B	13.800	G0	8.3	4.5	6.6	-6.6	1.0150	9.3	0.8771	10.9	62	6
524	TCATIVÁ	13B	13.800	G6	8.3	4.5	6.6	-6.6	1.0150	9.3	0.8771	10.9	62	6
524	TCATIVÁ	13B	13.800	G7	8.3	4.5	6.6	-6.6	1.0150	9.3	0.8771	10.9	62	6
524	TCATIVÁ	13B	13.800	G8	8.3	4.5	6.6	-6.6	1.0150	9.3	0.8771	10.9	62	6
524	TCATIVÁ	13B	13.800	G9	8.3	4.5	6.6	-6.6	1.0150	9.3	0.8771	10.9	62	6
541	TOABRE		0.6000	1	25.0	0.0	0.0	0.0	1.0063	24.8	1.0000	88.9	64	6
703	BJOMIN13A		13.800	G1	23.8	1.4	13.0	-13.0	1.0100	23.6	0.9983	30.5	64	6
704	BJOMIN13B		13.800	G2	23.8	1.4	13.0	-13.0	1.0100	23.6	0.9983	30.5	64	6
705	BAITUN13A		13.800	G1	34.4	-7.5	26.6	-26.6	1.0100	34.9	0.9772	50.6	64	6
706	BAITUN13B		13.800	G2	34.4	-7.5	26.6	-26.6	1.0100	34.9	0.9772	50.6	64	6
720	PLANETA13.8		13.800	G1	4.5	2.0	2.0	-2.0	0.9755	5.1	0.9145	6.2	64	6
SUBSYSTEM TOTALS					1251.8	153.4	826.8	-599.8				2072.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:32
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

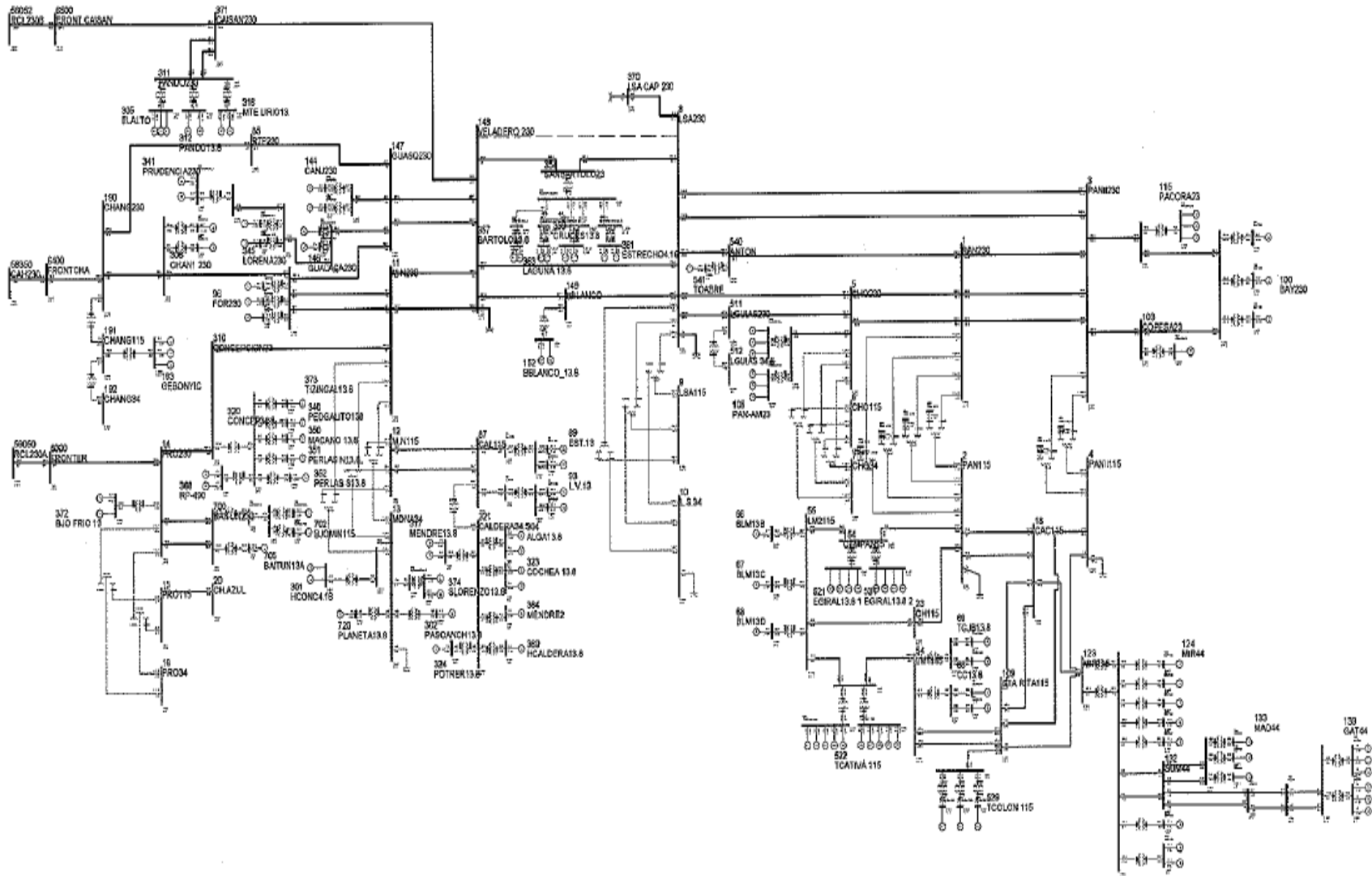
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
129		MIR13D		13.800	G4	22.3	1.2	15.0	0.0	1.0000	22.3	0.9985	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0131	16.9	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9162	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9162	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9162	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9244	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9244	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-1.6	3.0	-3.0	1.0000	4.2	0.9244	6.2			65	7
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0275	17.8	0.9281	23.0			65	7
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0366	17.7	0.9281	23.0			65	7
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0366	17.7	0.9281	23.0			65	7
SUBSYSTEM TOTALS						107.8	14.3	71.5	5.5				171.3				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:32
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO IN MW/MVAR

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

1	1455.1	1330.8	0.0	0.0	0.0	76.6	47.7	70.2
GUATEMAL	230.8	275.1	-197.7	0.0	276.0	-13.8	443.2	
2	868.7	855.0	0.0	0.0	0.0	-0.8	14.5	0.0
SALVADOR	81.3	224.2	-70.7	0.0	228.5	-24.9	181.3	
3	1236.9	1203.0	0.0	0.0	0.0	-0.9	34.8	0.0
HONDURAS	470.0	321.1	-47.2	0.0	293.0	55.3	433.8	
4	532.1	525.2	0.0	0.0	0.0	-1.4	8.3	0.0
NICARAGU	42.7	207.6	-57.5	0.0	181.5	-47.5	121.6	
5	1296.9	1280.2	0.0	0.0	0.0	-2.9	19.6	0.0
COSTA RI	229.5	520.4	-230.2	0.0	418.3	25.6	332.1	
6	1251.8	1311.1	0.0	0.0	0.0	-130.7	71.4	-130.2
PANAMA	153.4	266.2	-160.3	0.0	579.2	11.9	614.8	
7	107.8	47.0	0.0	0.0	0.0	60.1	0.7	60.0
ACANAL	14.3	9.5	0.0	0.0	0.0	-6.5	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	6749.3	6552.2	0.0	0.0	0.0	0.0	197.0	0.0
	1222.0	1824.0	-763.4	0.0	1976.6	0.0	2138.0	

5.1.1. Contingencia Llano Sánchez – Veladero



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

MON, OCT 18 2010 8:35

BUSES WITH VOLTAGE 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	1.0054	231.25	14		PRO230		230.00	6	1.0208	234.79
85		PTP230		230.00	6	1.0083	231.91	96		FOR230		230.00	6	1.0073	231.67
100		BAY230		230.00	6	1.0189	234.34	144		CANJ230		230.00	6	1.0039	230.89
146		GUALACA230		230.00	6	1.0076	231.76	147		GUASQ230		230.00	6	1.0036	230.82
190		CHANG230		230.00	6	1.0163	233.75	306		CHAN1 230		230.00	6	1.0155	233.55
310		CONCEPCION23230.00		230.00	6	1.0154	233.54	311		PANDO230		230.00	6	1.0349	238.02
341		PRUDENCIA230230.00		230.00	6	1.0147	233.38	345		LORENA230		230.00	6	1.0121	232.77
371		CAISAN230		230.00	6	1.0335	237.71	700		BAITUN230		230.00	6	1.0211	234.85
6000		FRONTER		230.00	6	1.0231	235.32	6400		FRONTCHA		230.00	6	1.0180	234.15
6500		FRONT CAISAN230.00		230.00	6	1.0328	237.54								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9720	223.57	3		PANII230		230.00	6	0.9768	224.66
5		CHO230		230.00	6	0.9636	221.63	8		LSA230		230.00	6	0.9564	219.98
103		COPESA23		230.00	6	0.9836	226.23	105		PAN-AM23		230.00	6	0.9636	221.63
115		PACORA23		230.00	6	0.9882	227.28	148		VELADERO 230230.00		230.00	6	0.9868	226.97
149		BBLANCO		230.00	6	0.9831	226.11	354		SANBARTOLO23230.00		230.00	6	0.9724	223.65
370		LSA CAP 230		230.00	6	0.9564	219.98	511		LGUIAS230		230.00	6	0.9555	219.77
540		ANTON		230.00	6	0.9775	224.83								

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

MON, OCT 18 2010 8:35

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
12		M.N115		115.00	6	1.0042	115.48	15		PRO115		115.00	6	1.0227	117.61
20		CH.AZUL		115.00	6	1.0235	117.70	54		LM1115		115.00	6	1.0175	117.01
55		LM2115		115.00	6	1.0188	117.16	61		FFIELD		115.00	6	1.0137	116.57
87		CAL115		115.00	6	1.0240	117.76	88		EST115		115.00	6	1.0280	118.22
92		L.V115		115.00	6	1.0256	117.94	109		STA RITA115		115.00	6	1.0111	116.28

154 CEMPAN15	115.00	6	1.0050	115.58	191 CHANG115	115.00	6	1.0075	115.87
522 TCAIVÁ 115	115.00	6	1.0184	117.12	529 TCOLON 115	115.00	6	1.0111	116.28
701 BAITUN115	115.00	6	1.0060	115.69	702 BJOMIN115	115.00	6	1.0085	115.97

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9757	112.21	4		PANII115		115.00	6	0.9940	114.31
6		CHO115		115.00	6	0.9646	110.92	9		LSA115		115.00	6	0.9975	114.71
18		CAC115		115.00	6	0.9756	112.19	19		C.V115		115.00	6	0.9794	112.63
21		C.BAN115		115.00	6	0.9664	111.14	23		CH115		115.00	6	0.9837	113.12
26		LOC115		115.00	6	0.9672	111.23	30		MAR115		115.00	6	0.9653	111.01
33		STM115		115.00	6	0.9736	111.96	37		SAN115		115.00	6	0.9661	111.10
48		TINAJ115		115.00	6	0.9729	111.88	50		M.O115		115.00	6	0.9730	111.90
52		TOC115		115.00	6	0.9909	113.96	123		MIR115		115.00	7	0.9835	113.10

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:35
 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																	
66		BLM13B		13.800	V2	38.1	23.5	25.0	0.0	1.0180	44.0	0.8511	47.0			62	6
67		BLM13C		13.800	V3	38.1	23.5	25.0	0.0	1.0180	44.0	0.8511	47.0			62	6
68		BLM13D		13.800	V4	38.1	24.5	25.0	0.0	1.0180	44.5	0.8406	47.0			62	6
90		EST-13L		13.800	E1	22.9	7.3	12.0	-5.0	1.0000	24.0	0.9532	27.0			64	6
91		EST-13T		13.800	E2	22.9	7.3	12.0	-5.0	1.0000	24.0	0.9532	27.0			64	6
94		LV-13.8L		13.800	L1	24.4	8.1	12.0	-5.0	1.0000	25.7	0.9491	27.0			64	6
95		LV-13.8T		13.800	L2	24.4	8.1	12.0	-5.0	1.0000	25.7	0.9491	27.0			64	6
97		FOR13A		13.800	F1	80.4	6.0	50.0	-50.0	1.0100	79.8	0.9972	111.0			64	6
98		FOR13B		13.800	F2	80.4	6.0	50.0	-50.0	1.0100	79.8	0.9972	111.0			64	6
101		BAY13A		13.800	B1	35.4	38.8	50.0	-25.0	1.0180	51.6	0.6744	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	49.0	39.5	50.0	-25.0	1.0180	61.8	0.7783	96.0			61	6
108		BAY13C		13.800	B3	49.0	39.5	50.0	-25.0	1.0180	61.8	0.7783	100.0			61	6
142		CANJ13A		13.800	C1	45.2	15.5	29.0	-29.0	1.0100	47.4	0.9458	69.0			64	6
143		CANJ13B		13.800	C2	45.2	15.5	29.0	-29.0	1.0100	47.4	0.9458	69.0			64	6
150		GUALACA	13-213.800	G2		14.0	1.0	7.4	-7.4	1.0100	13.9	0.9976	14.8			64	6
152		BBLANCO	13.813.800	G1		13.0	3.3	7.0	-7.0	1.0000	13.4	0.9694	16.0			64	6
193		GEBONYIC		G1		8.1	-1.0	4.0	-4.0	1.0000	8.2	0.9924	35.3			64	6

193	GEBONYIC	13.800	G2	8.1	-1.0	4.0	-4.0	1.0000	8.2	0.9924	35.3	64	6
302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9630	5.4	0.9223	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	18.1	-5.0	12.0	-5.0	1.0278	18.2	0.9638	20.6	64	6
307	CHAN1 A	13.800	G1	60.4	-13.0	50.0	-50.0	1.0000	61.8	0.9776	118.6	64	6
312	PANDO13.8	13.800	G1	9.1	-2.4	10.0	-5.0	1.0000	9.4	0.9676	19.9	64	6
312	PANDO13.8	13.800	G2	9.1	-2.4	10.0	-5.0	1.0000	9.4	0.9676	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	17.0	-5.0	12.0	-5.0	1.0092	17.6	0.9594	27.0	64	6
316	MTE LIRIO13.8	13.800	G2	17.0	-5.0	12.0	-5.0	1.0092	17.6	0.9594	27.0	64	6
317	MENDRE13.8	13.800	M1	9.5	0.0	0.0	0.0	1.0993	8.7	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.5	0.0	0.0	0.0	1.0993	8.7	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.6	0.0	0.0	0.0	1.0998	5.1	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.6	0.0	0.0	0.0	1.0998	5.1	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	0.9989	4.4	0.8929	6.2	64	6
340	PEDGALITO13.8	13.800	P1	22.1	9.3	12.0	-5.0	1.0000	24.0	0.9223	27.0	64	6
342	LORENA13.8	13.800	L1	12.1	-3.8	10.5	-5.0	1.0000	12.6	0.9537	19.9	64	6
343	PRUDENCIA_1	13.800	G1	23.9	-3.0	9.8	-9.8	1.0000	24.1	0.9922	33.0	64	6
343	PRUDENCIA_1	13.800	G2	23.9	-3.0	9.8	-9.8	1.0000	24.1	0.9922	33.0	64	6
346	LORENA 13-2	13.800	L2	12.1	-3.8	10.5	-5.0	1.0000	12.6	0.9537	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0810	3.0	0.9521	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9846	10.5	0.8753	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9846	10.5	0.8753	13.5	64	6
357	BARTOLO13.8	13.800	G1	6.9	2.5	3.7	-3.7	1.0100	7.3	0.9394	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.9	2.5	3.7	-3.7	1.0100	7.3	0.9394	8.5	64	6
359	CRUCES13.8	13.800	G1	4.4	1.1	2.3	-2.3	1.0100	4.5	0.9672	5.6	64	6
359	CRUCES13.8	13.800	G2	4.4	1.1	2.3	-2.3	1.0100	4.5	0.9672	5.6	64	6
361	ESTRECHO4.164	1.600	G1	4.7	1.0	2.5	-2.5	1.0100	4.7	0.9783	5.6	64	6
361	ESTRECHO4.164	1.600	G2	4.7	1.0	2.5	-2.5	1.0100	4.7	0.9783	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.4	0.7	2.4	-2.4	1.0100	4.4	0.9864	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.4	0.7	2.4	-2.4	1.0100	4.4	0.9864	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.8	3.9	-3.9	1.0000	8.5	0.8954	8.9	64	6
368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	1.0000	5.3	0.8924	5.5	64	6
368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	1.0000	5.3	0.8924	5.5	64	6
369	HCALDERA13.8	13.800	G1	3.8	1.9	1.9	-1.9	0.9989	4.3	0.8909	4.3	64	6
372	BJO FRIO 13	13.800	G1	23.9	-9.8	9.8	-9.8	1.0022	25.8	0.9259	33.0	64	6
373	TIZINGAL13.8	13.800	G1	4.5	2.2	2.2	-2.2	0.9829	5.1	0.8941	21.6	64	6
374	SLORENZO13.8	13.800	G1	3.9	-1.1	2.0	-2.0	1.0000	4.0	0.9600	4.5	64	6
374	SLORENZO13.8	13.800	G2	3.9	-1.1	2.0	-2.0	1.0000	4.0	0.9600	4.5	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	6.0	6.6	-6.6	1.0150	10.1	0.8119	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	6.0	6.6	-6.6	1.0150	10.1	0.8119	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	6.0	6.6	-6.6	1.0150	10.1	0.8119	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	6.0	6.6	-6.6	1.0150	10.1	0.8119	10.9	62	6

523	TCATIVÁ 13A	13.800	G5	8.3	6.0	6.6	-6.6	1.0150	10.1	0.8119	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	8.3	6.0	6.6	-6.6	1.0150	10.1	0.8119	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	8.3	6.0	6.6	-6.6	1.0150	10.1	0.8119	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	8.3	6.0	6.6	-6.6	1.0150	10.1	0.8119	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	8.3	6.0	6.6	-6.6	1.0150	10.1	0.8119	10.9	62	6
524	TCATIVÁ 13B	13.800	G9	8.3	6.0	6.6	-6.6	1.0150	10.1	0.8119	10.9	62	6
541	TOABRE	0.6000	1	25.2	0.0	0.0	0.0	0.9786	25.7	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	23.9	2.2	13.0	-13.0	1.0100	23.8	0.9959	30.5	64	6
704	BJOMIN13B	13.800	G2	23.9	2.2	13.0	-13.0	1.0100	23.8	0.9959	30.5	64	6
705	BAITUN13A	13.800	G1	34.6	-3.6	26.6	-26.6	1.0100	34.4	0.9946	50.6	64	6
706	BAITUN13B	13.800	G2	34.6	-3.6	26.6	-26.6	1.0100	34.4	0.9946	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				1258.4	297.6	826.8	-599.8				2072.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:35
 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																	
129		MIR13D		13.800	G4	22.4	6.1	15.0	0.0	1.0000	23.2	0.9649	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.2	0.0	8.0	0.0	1.0009	17.2	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9754	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9754	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9754	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9564	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9564	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9564	6.2			65	7
170		MIR13G		13.800	M1	17.1	6.8	11.2	6.8	1.0155	18.1	0.9287	23.0			65	7
171		MIR13H		13.800	M1	17.1	6.8	11.2	6.8	1.0246	18.0	0.9287	23.0			65	7
171		MIR13H		13.800	M2	17.1	6.8	11.2	6.8	1.0246	18.0	0.9287	23.0			65	7
SUBSYSTEM TOTALS						108.3	21.7	71.5	5.5				171.3				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:35
 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		1460.0	1330.8	0.0	0.0	0.0	81.4	47.8	70.2
GUATEMAL		231.5	275.1	-197.5	0.0	276.0	-14.4	444.3	
2		870.8	855.0	0.0	0.0	0.0	1.1	14.7	0.0
SALVADOR		82.3	224.2	-70.6	0.0	228.4	-25.4	182.7	
3		1238.7	1203.0	0.0	0.0	0.0	0.7	35.0	0.0
HONDURAS		471.5	321.1	-47.1	0.0	292.8	55.1	435.3	
4		532.7	525.2	0.0	0.0	0.0	-1.1	8.6	0.0
NICARAGU		44.7	207.6	-57.4	0.0	181.3	-47.6	123.4	
5		1299.8	1280.2	0.0	0.0	0.0	-0.6	20.3	0.0
COSTA RI		245.3	520.4	-229.6	0.0	416.6	32.2	338.9	
6		1258.4	1311.1	0.0	0.0	0.0	-142.2	89.5	-130.2
PANAMA		297.6	266.2	-153.4	0.0	535.7	-0.2	720.7	
7		108.3	47.0	0.0	0.0	0.0	60.5	0.8	60.0
ACANAL		21.7	9.5	0.0	0.0	0.0	0.4	11.8	
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		6768.8	6552.2	0.0	0.0	0.0	0.0	216.6	0.0
		1394.6	1824.0	-755.6	0.0	1930.8	0.0	2257.0	

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

MON, OCT 18 2010 8:39

BUSES WITH VOLTAGE 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	1.0103	232.38	14		PRO230		230.00	6	1.0240	235.51
85		PTP230		230.00	6	1.0150	233.46	96		FOR230		230.00	6	1.0132	233.03
100		BAY230		230.00	6	1.0280	236.45	115		PACORA23		230.00	6	1.0016	230.38
144		CANJ230		230.00	6	1.0115	232.65	146		GUALACA230		230.00	6	1.0150	233.46
147		GUASQ230		230.00	6	1.0113	232.59	190		CHANG230		230.00	6	1.0205	234.72
306		CHAN1 230		230.00	6	1.0194	234.46	310		CONCEPCION23230.00		230.00	6	1.0194	234.45
311		PANDO230		230.00	6	1.0381	238.77	341		PRUDENCIA230230.00		230.00	6	1.0216	234.97
345		LORENA230		230.00	6	1.0191	234.40	371		CAISAN230		230.00	6	1.0368	238.47
700		BAITUN230		230.00	6	1.0239	235.49	6000		FRONTER		230.00	6	1.0262	236.03
6400		FRONTCHA		230.00	6	1.0221	235.08	6500		FRONT CAISAN230.00		230.00	6	1.0360	238.28

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9876	227.14	3		PANII230		230.00	6	0.9919	228.14
5		CHO230		230.00	6	0.9813	225.70	8		LSA230		230.00	6	0.9798	225.34
103		COPESA23		230.00	6	0.9978	229.50	105		PAN-AM23		230.00	6	0.9813	225.70
148		VELADERO 230230.00		230.00	6	0.9948	228.79	149		BBLANCO		230.00	6	0.9931	228.41
354		SANBARTOLO23230.00		230.00	6	0.9889	227.45	370		LSA CAP 230		230.00	6	0.9798	225.34
511		LGUIAS230		230.00	6	0.9769	224.70	540		ANTON		230.00	6	0.9951	228.88

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

MON, OCT 18 2010 8:39

BUSES WITH VOLTAGE 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	1.0081	115.94	9		LSA115		115.00	6	1.0226	117.60
12		M.N115		115.00	6	1.0070	115.81	15		PRO115		115.00	6	1.0258	117.97
20		CH.AZUL		115.00	6	1.0266	118.06	52		TOC115		115.00	6	1.0051	115.58
54		LM1115		115.00	6	1.0251	117.89	55		LM2115		115.00	6	1.0264	118.03
61		FFIELD		115.00	6	1.0213	117.45	87		CAL115		115.00	6	1.0257	117.96
88		EST115		115.00	6	1.0296	118.40	92		L.V115		115.00	6	1.0272	118.13

109 STA RITA115	115.00	6	1.0201	117.31	154 CEMPAN15	115.00	6	1.0145	116.67
191 CHANG115	115.00	6	1.0105	116.21	522 TCATIVÁ	115.00	6	1.0261	118.00
529 TCOLON 115	115.00	6	1.0201	117.31	701 BAITUN115	115.00	6	1.0078	115.90
702 BJOMIN115	115.00	6	1.0101	116.16					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9897	113.81	6		CHO115		115.00	6	0.9822	112.96
18		CAC115		115.00	6	0.9895	113.79	19		C.V115		115.00	6	0.9936	114.26
21		C.BAN115		115.00	6	0.9806	112.77	23		CH115		115.00	6	0.9951	114.44
26		LOC115		115.00	6	0.9813	112.85	30		MAR115		115.00	6	0.9794	112.63
33		STM115		115.00	6	0.9876	113.57	37		SAN115		115.00	6	0.9803	112.73
48		TINAJ115		115.00	6	0.9869	113.50	50		M.O115		115.00	6	0.9871	113.51
123		MIR115		115.00	7	0.9961	114.55								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:39
 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																	
66		BLM13B		13.800	V2	38.0	20.2	25.0	0.0	1.0180	42.3	0.8836	47.0			62	6
67		BLM13C		13.800	V3	38.0	20.2	25.0	0.0	1.0180	42.3	0.8836	47.0			62	6
68		BLM13D		13.800	V4	38.0	21.0	25.0	0.0	1.0180	42.7	0.8750	47.0			62	6
90		EST-13L		13.800	E1	22.8	6.8	12.0	-5.0	1.0000	23.8	0.9583	27.0			64	6
91		EST-13T		13.800	E2	22.8	6.8	12.0	-5.0	1.0000	23.8	0.9583	27.0			64	6
94		LV-13.8L		13.800	L1	24.4	7.6	12.0	-5.0	1.0000	25.5	0.9544	27.0			64	6
95		LV-13.8T		13.800	L2	24.4	7.6	12.0	-5.0	1.0000	25.5	0.9544	27.0			64	6
97		FOR13A		13.800	F1	80.2	0.5	50.0	-50.0	1.0100	79.4	1.0000	111.0			64	6
98		FOR13B		13.800	F2	80.2	0.5	50.0	-50.0	1.0100	79.4	1.0000	111.0			64	6
101		BAY13A		13.800	B1	35.2	31.8	50.0	-25.0	1.0180	46.6	0.7421	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.8	32.5	50.0	-25.0	1.0180	57.6	0.8319	96.0			61	6
108		BAY13C		13.800	B3	48.8	32.5	50.0	-25.0	1.0180	57.6	0.8319	100.0			61	6
142		CANJ13A		13.800	C1	45.1	14.2	29.0	-29.0	1.0100	46.8	0.9536	69.0			64	6
143		CANJ13B		13.800	C2	45.1	14.2	29.0	-29.0	1.0100	46.8	0.9536	69.0			64	6
150		GUALACA	13-213.800	G2		14.0	-0.9	7.4	-7.4	1.0100	13.9	0.9980	14.8			64	6
152		BBLANCO	13.813.800	G1		13.0	1.7	7.0	-7.0	1.0000	13.1	0.9920	16.0			64	6
193		GEBONYIC		G1		8.1	-1.5	4.0	-4.0	1.0000	8.2	0.9833	35.3			64	6

193	GEBONYIC	13.800	G2	8.1	-1.5	4.0	-4.0	1.0000	8.2	0.9833	35.3	64	6
302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9675	5.3	0.9219	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	18.0	-5.0	12.0	-5.0	1.0311	18.1	0.9636	20.6	64	6
307	CHAN1 A	13.800	G1	60.2	-16.8	50.0	-50.0	1.0000	62.5	0.9631	118.6	64	6
312	PANDO13.8	13.800	G1	9.0	-2.6	10.0	-5.0	1.0000	9.4	0.9598	19.9	64	6
312	PANDO13.8	13.800	G2	9.0	-2.6	10.0	-5.0	1.0000	9.4	0.9598	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	17.0	-5.0	12.0	-5.0	1.0125	17.5	0.9594	27.0	64	6
316	MTE LIRIO13.8	13.800	G2	17.0	-5.0	12.0	-5.0	1.0125	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	5.5	0.0	0.0	0.0	1.1002	5.0	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.1002	5.0	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	PEDGALITO13.8	13.800	P1	22.0	8.3	12.0	-5.0	1.0000	23.6	0.9355	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	1.0036	13.0	0.9232	19.9	64	6
343	PRUDENCIA_1	13.800	G1	23.9	-4.9	9.8	-9.8	1.0000	24.4	0.9793	33.0	64	6
343	PRUDENCIA_1	13.800	G2	23.9	-4.9	9.8	-9.8	1.0000	24.4	0.9793	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	-5.0	10.5	-5.0	1.0036	13.0	0.9232	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0832	3.0	0.9517	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9865	10.5	0.8746	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9865	10.5	0.8746	13.5	64	6
357	BARTOLO13.8	13.800	G1	6.9	2.0	3.7	-3.7	1.0100	7.1	0.9615	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.9	2.0	3.7	-3.7	1.0100	7.1	0.9615	8.5	64	6
359	CRUCES13.8	13.800	G1	4.4	0.8	2.3	-2.3	1.0100	4.4	0.9825	5.6	64	6
359	CRUCES13.8	13.800	G2	4.4	0.8	2.3	-2.3	1.0100	4.4	0.9825	5.6	64	6
361	ESTRECHO4.164	1.600	G1	4.7	0.7	2.5	-2.5	1.0100	4.7	0.9895	5.6	64	6
361	ESTRECHO4.164	1.600	G2	4.7	0.7	2.5	-2.5	1.0100	4.7	0.9895	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.4	0.5	2.4	-2.4	1.0100	4.4	0.9948	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.4	0.5	2.4	-2.4	1.0100	4.4	0.9948	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.1	3.9	-3.9	1.0000	8.2	0.9246	8.9	64	6
368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	1.0018	5.3	0.8906	5.5	64	6
368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	1.0018	5.3	0.8906	5.5	64	6
369	HCALDERA13.8	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	1.0054	25.6	0.9255	33.0	64	6
373	TIZINGAL13.8	13.800	G1	4.4	2.2	2.2	-2.2	0.9849	5.1	0.8923	21.6	64	6
374	SLORENZO13.8	13.800	G1	3.9	-1.4	2.0	-2.0	1.0000	4.1	0.9383	4.5	64	6
374	SLORENZO13.8	13.800	G2	3.9	-1.4	2.0	-2.0	1.0000	4.1	0.9383	4.5	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8538	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8538	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8538	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8538	10.9	62	6

523	TCATIVÁ	13A	13.800	G5	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8538	10.9	62	6
524	TCATIVÁ	13B	13.800	G0	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8538	10.9	62	6
524	TCATIVÁ	13B	13.800	G6	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8538	10.9	62	6
524	TCATIVÁ	13B	13.800	G7	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8538	10.9	62	6
524	TCATIVÁ	13B	13.800	G8	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8538	10.9	62	6
524	TCATIVÁ	13B	13.800	G9	8.3	5.1	6.6	-6.6	1.0150	9.6	0.8538	10.9	62	6
541	TOABRE		0.6000	1	25.1	0.0	0.0	0.0	0.9962	25.2	1.0000	88.9	64	6
703	BJOMIN13A		13.800	G1	23.8	1.9	13.0	-13.0	1.0100	23.7	0.9968	30.5	64	6
704	BJOMIN13B		13.800	G2	23.8	1.9	13.0	-13.0	1.0100	23.7	0.9968	30.5	64	6
705	BAITUN13A		13.800	G1	34.5	-4.9	26.6	-26.6	1.0100	34.5	0.9902	50.6	64	6
706	BAITUN13B		13.800	G2	34.5	-4.9	26.6	-26.6	1.0100	34.5	0.9902	50.6	64	6
720	PLANETA13.8		13.800	G1	4.5	2.0	2.0	-2.0	0.9675	5.1	0.9145	6.2	64	6
SUBSYSTEM TOTALS					1254.6	218.6	826.8	-599.8				2072.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:39
 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																					
129		MIR13D		13.800	G4	22.3	3.0	15.0	0.0	1.0000	22.5	0.9912	44.1						65	7	
AREA																					
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0087	17.0	1.0000	27.7						65	7	
140		GAT6A		6.9000	G1	1.9	-0.7	2.0	-2.0	1.0000	2.1	0.9407	4.1						65	7	
140		GAT6A		6.9000	G2	1.9	-0.7	2.0	-2.0	1.0000	2.1	0.9407	4.1						65	7	
140		GAT6A		6.9000	G3	1.9	-0.7	2.0	-2.0	1.0000	2.1	0.9407	4.1						65	7	
141		GAT6B		6.9000	G4	3.9	-1.4	3.0	-3.0	1.0000	4.1	0.9367	5.6						65	7	
141		GAT6B		6.9000	G5	3.9	-1.4	3.0	-3.0	1.0000	4.1	0.9367	6.2						65	7	
141		GAT6B		6.9000	G6	3.9	-1.4	3.0	-3.0	1.0000	4.1	0.9367	6.2						65	7	
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0232	17.9	0.9284	23.0						65	7	
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0322	17.8	0.9284	23.0						65	7	
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0322	17.8	0.9284	23.0						65	7	
SUBSYSTEM TOTALS						108.0	17.0	71.5	5.5				171.3								

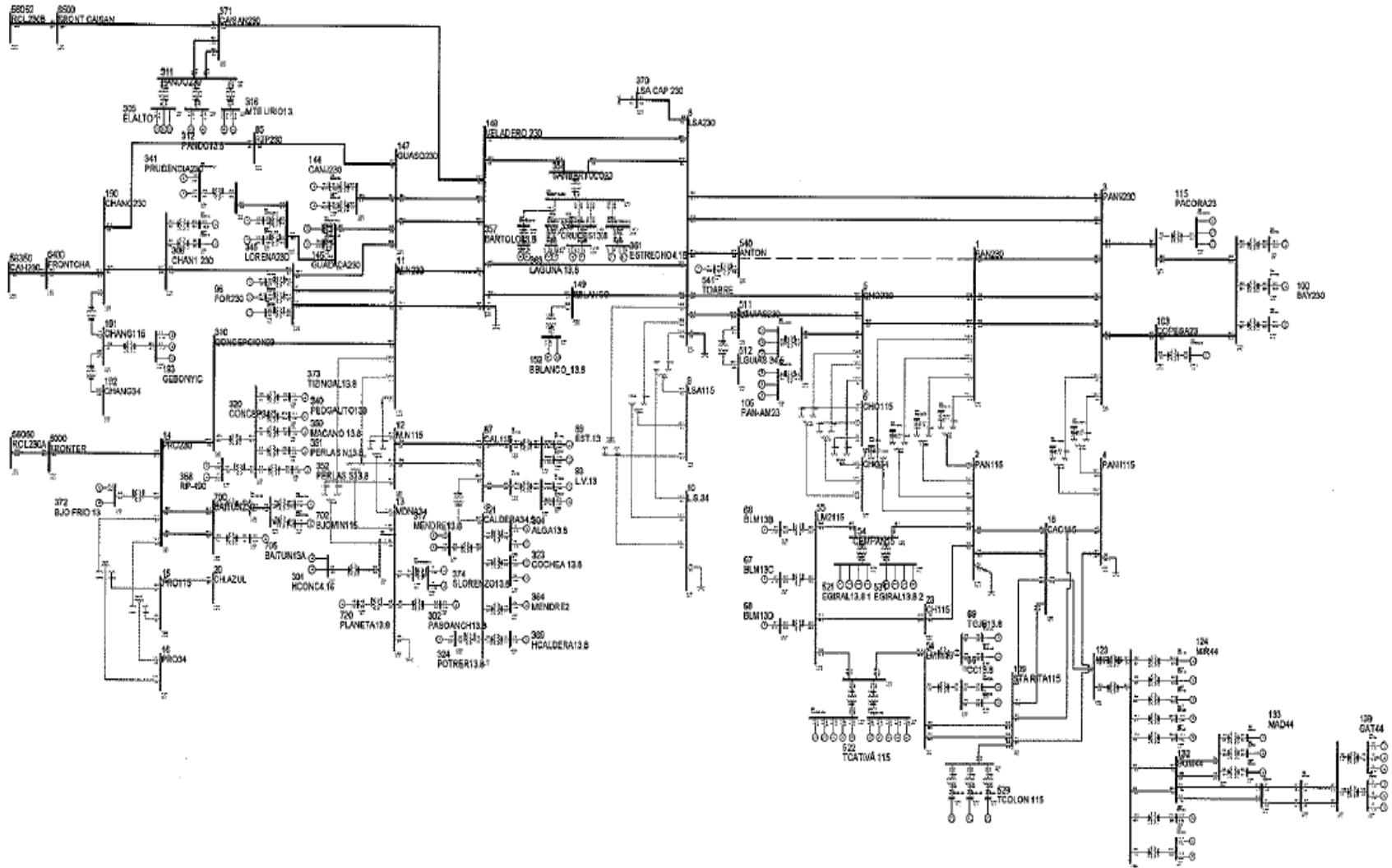
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:39
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

AREA TOTALS
 IN MW/MVAR

FROM TO TO BUS TO LINE FROM TO DESIRED

X-- AREA	--X GENERATION	LOAD	SHUNT	SHUNT CHARGING	NET INT	LOSSES	NET INT	
1	1457.2	1330.8	0.0	0.0	0.0	78.6	47.7	70.2
GUATEMAL	231.1	275.1	-197.6	0.0	276.0	-14.1	443.7	
2	869.6	855.0	0.0	0.0	0.0	0.0	14.6	0.0
SALVADOR	81.7	224.2	-70.7	0.0	228.5	-25.1	181.9	
3	1237.7	1203.0	0.0	0.0	0.0	-0.2	34.9	0.0
HONDURAS	470.6	321.1	-47.1	0.0	292.9	55.2	434.4	
4	532.4	525.2	0.0	0.0	0.0	-1.2	8.4	0.0
NICARAGU	43.5	207.6	-57.4	0.0	181.4	-47.5	122.3	
5	1298.1	1280.2	0.0	0.0	0.0	-2.0	20.0	0.0
COSTA RI	238.1	520.4	-229.9	0.0	417.3	29.5	335.3	
6	1254.6	1311.1	0.0	0.0	0.0	-135.5	79.0	-130.2
PANAMA	218.6	266.2	-157.7	0.0	552.7	5.9	656.9	
7	108.0	47.0	0.0	0.0	0.0	60.2	0.8	60.0
ACANAL	17.0	9.5	0.0	0.0	0.0	-4.0	11.4	
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	6757.5	6552.2	0.0	0.0	0.0	0.0	205.3	0.0
	1300.6	1824.0	-760.5	0.0	1948.8	0.0	2185.8	

5.1.3. Contingencia Antón – Panamá



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

MON, OCT 18 2010 8:41

BUSES WITH VOLTAGE 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	1.0106	232.43	14		PRO230		230.00	6	1.0245	235.64
85		PTP230		230.00	6	1.0130	232.98	96		FOR230		230.00	6	1.0118	232.71
100		BAY230		230.00	6	1.0182	234.19	144		CANJ230		230.00	6	1.0093	232.15
146		GUALACA230		230.00	6	1.0129	232.98	147		GUASQ230		230.00	6	1.0091	232.09
190		CHANG230		230.00	6	1.0192	234.42	306		CHAN1 230		230.00	6	1.0182	234.19
310		CONCEPCION23230.00		230.00	6	1.0197	234.53	311		PANDO230		230.00	6	1.0396	239.11
341		PRUDENCIA230230.00		230.00	6	1.0196	234.51	345		LORENA230		230.00	6	1.0171	233.93
371		CAISAN230		230.00	6	1.0383	238.81	700		BAITUN230		230.00	6	1.0244	235.61
6000		FRONTER		230.00	6	1.0269	236.19	6400		FRONTCHA		230.00	6	1.0208	234.78
6500		FRONT CAISAN230.00		230.00	6	1.0374	238.61								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9707	223.26	3		PANII230		230.00	6	0.9758	224.43
5		CHO230		230.00	6	0.9634	221.58	8		LSA230		230.00	6	0.9727	223.72
103		COPESA23		230.00	6	0.9826	226.01	105		PAN-AM23		230.00	6	0.9634	221.58
115		PACORA23		230.00	6	0.9872	227.07	148		VELADERO 230230.00		230.00	6	0.9956	228.98
149		BBLANCO		230.00	6	0.9933	228.46	354		SANBARTOLO23230.00		230.00	6	0.9869	226.98
370		LSA CAP 230		230.00	6	0.9727	223.72	511		LGUIAS230		230.00	6	0.9623	221.33
540		ANTON		230.00	6	0.9885	227.35								

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

MON, OCT 18 2010 8:41

BUSES WITH VOLTAGE 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	1.0150	116.72	12		M.N115		115.00	6	1.0071	115.81
15		PRO115		115.00	6	1.0264	118.04	20		CH.AZUL		115.00	6	1.0271	118.12
54		LM115		115.00	6	1.0169	116.94	55		LM2115		115.00	6	1.0181	117.09
61		FFIELD		115.00	6	1.0130	116.50	87		CAL115		115.00	6	1.0258	117.96
88		EST115		115.00	6	1.0296	118.40	92		L.V115		115.00	6	1.0272	118.13

109 STA RITA115	115.00	6	1.0104	116.20	154 CEMPAN15	115.00	6	1.0043	115.49
191 CHANG115	115.00	6	1.0096	116.10	522 TCATIVÁ 115	115.00	6	1.0178	117.05
529 TCOLON 115	115.00	6	1.0104	116.20	701 BAITUN115	115.00	6	1.0081	115.93
702 BJOMIN115	115.00	6	1.0104	116.19					

BUSES WITH VOLTAGE 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	0.9745	112.07	4		PANII115		115.00	6	0.9930	114.20
6		CHO115		115.00	6	0.9643	110.90	18		CAC115		115.00	6	0.9744	112.05
19		C.V115		115.00	6	0.9783	112.50	21		C.BAN115		115.00	6	0.9652	111.00
23		CH115		115.00	6	0.9827	113.01	26		LOC115		115.00	6	0.9660	111.09
30		MAR115		115.00	6	0.9641	110.87	33		STM115		115.00	6	0.9724	111.82
37		SAN115		115.00	6	0.9649	110.96	48		TINAJ115		115.00	6	0.9717	111.75
50		M.O115		115.00	6	0.9718	111.76	52		TOC115		115.00	6	0.9899	113.84
123		MIR115		115.00	7	0.9824	112.97								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:41
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

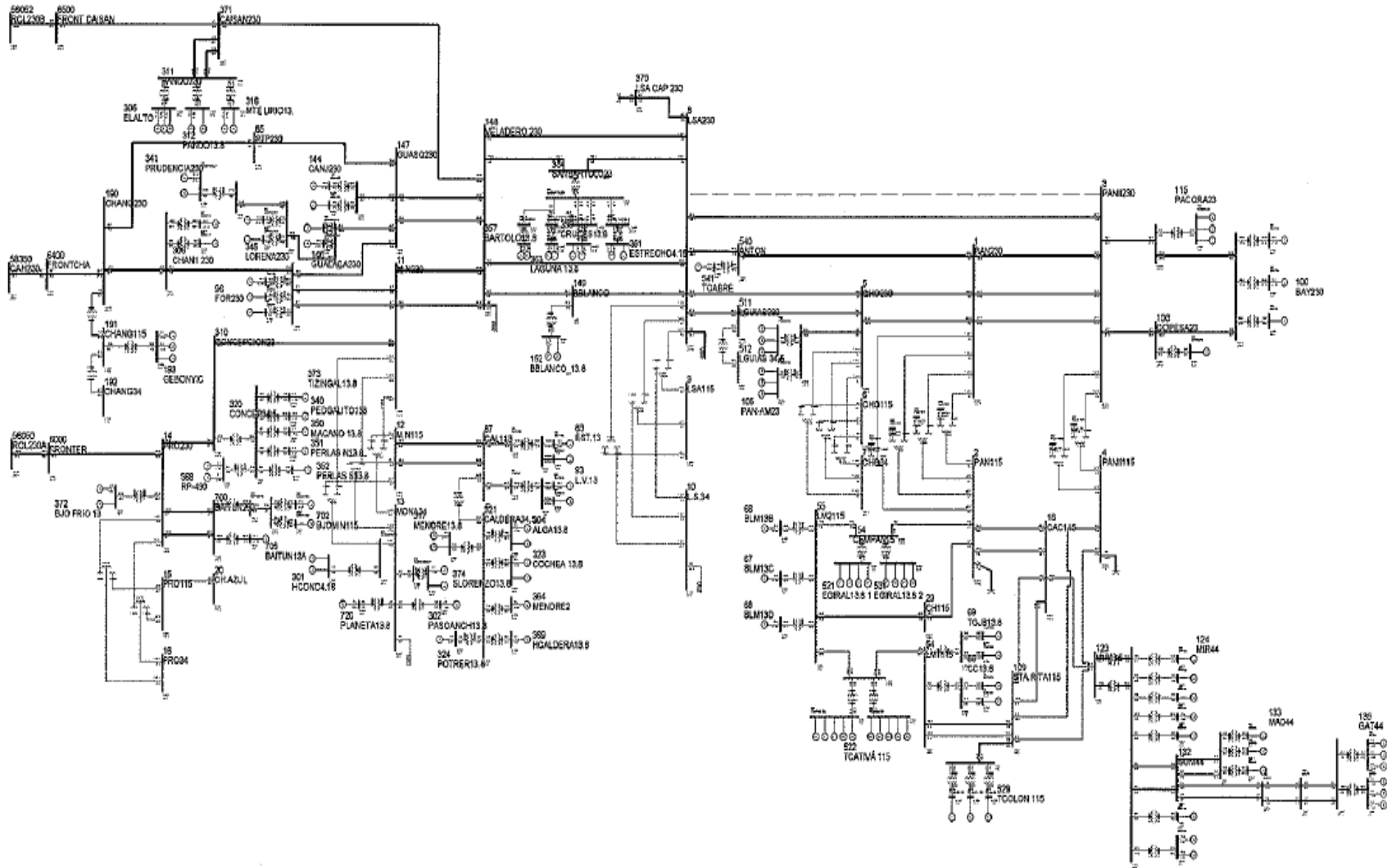
AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
66		BLM13B		13.800	V2	38.1	23.8	25.0	0.0	1.0180	44.1	0.8484	47.0			62	6
67		BLM13C		13.800	V3	38.1	23.8	25.0	0.0	1.0180	44.1	0.8484	47.0			62	6
68		BLM13D		13.800	V4	38.1	24.8	25.0	0.0	1.0180	44.6	0.8376	47.0			62	6
90		EST-13L		13.800	E1	22.9	6.8	12.0	-5.0	1.0000	23.9	0.9585	27.0			64	6
91		EST-13T		13.800	E2	22.9	6.8	12.0	-5.0	1.0000	23.9	0.9585	27.0			64	6
94		LV-13.8L		13.800	L1	24.4	7.6	12.0	-5.0	1.0000	25.6	0.9546	27.0			64	6
95		LV-13.8T		13.800	L2	24.4	7.6	12.0	-5.0	1.0000	25.6	0.9546	27.0			64	6
97		FOR13A		13.800	F1	80.3	1.8	50.0	-50.0	1.0100	79.5	0.9997	111.0			64	6
98		FOR13B		13.800	F2	80.3	1.8	50.0	-50.0	1.0100	79.5	0.9997	111.0			64	6
101		BAY13A		13.800	B1	35.3	39.2	50.0	-25.0	1.0180	51.8	0.6687	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.9	40.0	50.0	-25.0	1.0180	62.0	0.7741	96.0			61	6
108		BAY13C		13.800	B3	48.9	40.0	50.0	-25.0	1.0180	62.0	0.7741	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	1.6	7.0	-7.0	1.0000	13.1	0.9923	16.0			64	6

193	GEBONYIC	13.800	G1	8.1	-1.3	4.0	-4.0	1.0000	8.2	0.9866	35.3	64	6
193	GEBONYIC	13.800	G2	8.1	-1.3	4.0	-4.0	1.0000	8.2	0.9866	35.3	64	6
302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9678	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	1.0326	18.1	0.9637	20.6	64	6
307	CHAN1 A	13.800	G1	60.3	-15.7	50.0	-50.0	1.0000	62.3	0.9678	118.6	64	6
312	PANDO13.8	13.800	G1	9.1	-2.8	10.0	-5.0	1.0000	9.5	0.9565	19.9	64	6
312	PANDO13.8	13.800	G2	9.1	-2.8	10.0	-5.0	1.0000	9.5	0.9565	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	17.0	-5.0	12.0	-5.0	1.0140	17.5	0.9594	27.0	64	6
316	MTE LIRIO13.8	13.800	G2	17.0	-5.0	12.0	-5.0	1.0140	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	PEDGALITO13.8	13.800	P1	22.1	8.3	12.0	-5.0	1.0000	23.6	0.9367	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	1.0833	3.0	0.9519	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9867	10.5	0.8750	13.5	64	6
352	PERLAS S13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9867	10.5	0.8750	13.5	64	6
357	BARTOLO13.8	13.800	G1	6.9	2.0	3.7	-3.7	1.0100	7.1	0.9590	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.9	2.0	3.7	-3.7	1.0100	7.1	0.9590	8.5	64	6
359	CRUCES13.8	13.800	G1	4.4	0.9	2.3	-2.3	1.0100	4.4	0.9808	5.6	64	6
359	CRUCES13.8	13.800	G2	4.4	0.9	2.3	-2.3	1.0100	4.4	0.9808	5.6	64	6
361	ESTRECHO4.164	1.600	G1	4.7	0.7	2.5	-2.5	1.0100	4.7	0.9883	5.6	64	6
361	ESTRECHO4.164	1.600	G2	4.7	0.7	2.5	-2.5	1.0100	4.7	0.9883	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.4	0.5	2.4	-2.4	1.0100	4.4	0.9940	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.4	0.5	2.4	-2.4	1.0100	4.4	0.9940	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.1	3.9	-3.9	1.0000	8.2	0.9241	8.9	64	6
368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	1.0020	5.3	0.8906	5.5	64	6
368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	1.0020	5.3	0.8906	5.5	64	6
369	HCALDERA13.8	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	1.0060	25.7	0.9257	33.0	64	6
373	TIZINGAL13.8	13.800	G1	4.5	2.2	2.2	-2.2	0.9850	5.1	0.8933	21.6	64	6
374	SLORENZO13.8	13.800	G1	3.9	-1.4	2.0	-2.0	1.0000	4.1	0.9371	4.5	64	6
374	SLORENZO13.8	13.800	G2	3.9	-1.4	2.0	-2.0	1.0000	4.1	0.9371	4.5	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	6.0	6.6	-6.6	1.0150	10.1	0.8083	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	6.0	6.6	-6.6	1.0150	10.1	0.8083	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	6.0	6.6	-6.6	1.0150	10.1	0.8083	10.9	62	6

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1458.8	1330.8	0.0	0.0	0.0	80.3	47.8	70.2
GUATEMAL	231.3	275.1	-197.6	0.0	276.0	-14.2	444.1	
2	870.3	855.0	0.0	0.0	0.0	0.7	14.7	0.0
SALVADOR	82.1	224.2	-70.6	0.0	228.5	-25.3	182.3	
3	1238.3	1203.0	0.0	0.0	0.0	0.3	34.9	0.0
HONDURAS	471.1	321.1	-47.1	0.0	292.9	55.1	434.9	
4	532.6	525.2	0.0	0.0	0.0	-1.1	8.5	0.0
NICARAGU	44.2	207.6	-57.4	0.0	181.3	-47.6	123.0	
5	1299.1	1280.2	0.0	0.0	0.0	-1.2	20.1	0.0
COSTA RI	240.1	520.4	-229.8	0.0	417.2	29.5	337.1	
6	1256.7	1311.1	0.0	0.0	0.0	-139.3	85.0	-130.2
PANAMA	267.7	266.2	-153.6	0.0	546.4	1.8	699.7	
7	108.2	47.0	0.0	0.0	0.0	60.4	0.8	60.0
ACANAL	22.1	9.5	0.0	0.0	0.0	0.8	11.8	
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	6764.0	6552.2	0.0	0.0	0.0	0.0	211.8	0.0
	1358.6	1824.0	-756.1	0.0	1942.2	0.0	2232.9	

5.2. Demanda Mínima de Invierno



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MIN INVIERNO

MON, OCT 18 2010 8:43

BUSES WITH VOLTAGE 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	1.0098	232.26	14		PRO230		230.00	6	1.0285	236.55
85		PTP230		230.00	6	1.0132	233.05	96		FOR230		230.00	6	1.0097	232.23
100		BAY230		230.00	6	1.0129	232.96	144		CANJ230		230.00	6	1.0100	232.31
146		GUALACA230		230.00	6	1.0119	232.73	147		GUASQ230		230.00	6	1.0100	232.29
148		VELADERO 230		230.00	6	1.0039	230.90	149		BBLANCO		230.00	6	1.0026	230.60
190		CHANG230		230.00	6	1.0154	233.54	306		CHAN1 230		230.00	6	1.0125	232.87
310		CONCEPCION230		230.00	6	1.0208	234.78	311		PANDO230		230.00	6	1.0487	241.20
341		PRUDENCIA230		230.00	6	1.0145	233.34	345		LORENA230		230.00	6	1.0136	233.13
371		CAISAN230		230.00	6	1.0473	240.87	540		ANTON		230.00	6	1.0005	230.11
700		BAITUN230		230.00	6	1.0285	236.55	6000		FRONTER		230.00	6	1.0315	237.25
6400		FRONTCHA		230.00	6	1.0175	234.02	6500		FRONT CAISAN230		230.00	6	1.0460	240.57

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9911	227.94	3		PANII230		230.00	6	0.9932	228.43
5		CHO230		230.00	6	0.9904	227.80	8		LSA230		230.00	6	0.9905	227.82
103		COPESA23		230.00	6	0.9966	229.22	105		PAN-AM23		230.00	6	0.9904	227.80
115		PACORA23		230.00	6	0.9987	229.69	354		SANBARTOLO230		230.00	6	0.9998	229.94
370		LSA CAP 230		230.00	6	0.9905	227.82	511		LGUIAS230		230.00	6	0.9907	227.87

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MIN INVIERNO

MON, OCT 18 2010 8:43

BUSES WITH VOLTAGE 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	1.0005	115.06	9		LSA115		115.00	6	1.0365	119.20
12		M.N115		115.00	6	1.0109	116.25	15		PRO115		115.00	6	1.0304	118.49
20		CH.AZUL		115.00	6	1.0311	118.58	54		LM1115		115.00	6	1.0039	115.45
55		LM2115		115.00	6	1.0049	115.56	61		FFIELD		115.00	6	1.0017	115.19
87		CAL115		115.00	6	1.0181	117.08	88		EST115		115.00	6	1.0193	117.22
92		L.V115		115.00	6	1.0186	117.13	109		STA RITA115		115.00	6	1.0021	115.25

307	CHAN1 A	13.800	G1	60.0	-28.7	50.0	-50.0	0.9800	67.9	0.9018	118.6	64	6
312	PANDO13.8	13.800	G1	9.0	-5.0	10.0	-5.0	1.0173	10.1	0.8742	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	17.0	-5.0	12.0	-5.0	1.0369	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	4.0	0.9899	6.2	64	6
340	PEDGALITO138	13.800	P1	18.0	4.3	12.0	-5.0	0.9800	18.9	0.9721	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	0.9979	13.0	0.9229	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.0	-9.8	9.8	-9.8	0.9960	23.3	0.9068	33.0	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0698	3.0	0.9514	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9745	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	0.9994	8.5	64	6
359	CRUCES13.8	13.800	G1	4.4	-0.5	2.3	-2.3	0.9800	4.5	0.9946	5.6	64	6
361	ESTRECHO4.164	1.600	G1	4.7	-0.6	2.5	-2.5	0.9800	4.8	0.9926	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.4	-0.7	2.4	-2.4	0.9800	4.6	0.9871	5.8	64	6
364	MENDRE2	13.800	G1	7.6	0.6	3.9	-3.9	0.9900	7.7	0.9971	8.9	64	6
368	RP-490	13.800	G1	4.7	-2.3	2.4	-2.4	0.9900	5.3	0.8985	5.5	64	6
368	RP-490	13.800	G2	4.7	-2.3	2.4	-2.4	0.9900	5.3	0.8985	5.5	64	6
369	HCALDERA13.8	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	21.0	-9.8	9.8	-9.8	1.0102	22.9	0.9068	33.0	64	6
373	TIZINGAL13.8	13.800	G1	4.4	2.2	2.2	-2.2	0.9728	5.1	0.8909	21.6	64	6
374	SLORENZO13.8	13.800	G1	3.9	-1.4	2.0	-2.0	0.9900	4.1	0.9392	4.5	64	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0015	25.0	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	21.0	-0.2	13.0	-13.0	1.0100	20.8	1.0000	30.5	64	6
705	BAITUN13A	13.800	G1	32.2	-7.1	26.6	-26.6	1.0100	32.7	0.9768	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9505	5.2	0.9145	6.2	64	6
SUBSYSTEM TOTALS				786.0	1.2	518.2	-340.6				1348.7		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:43
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MIN INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

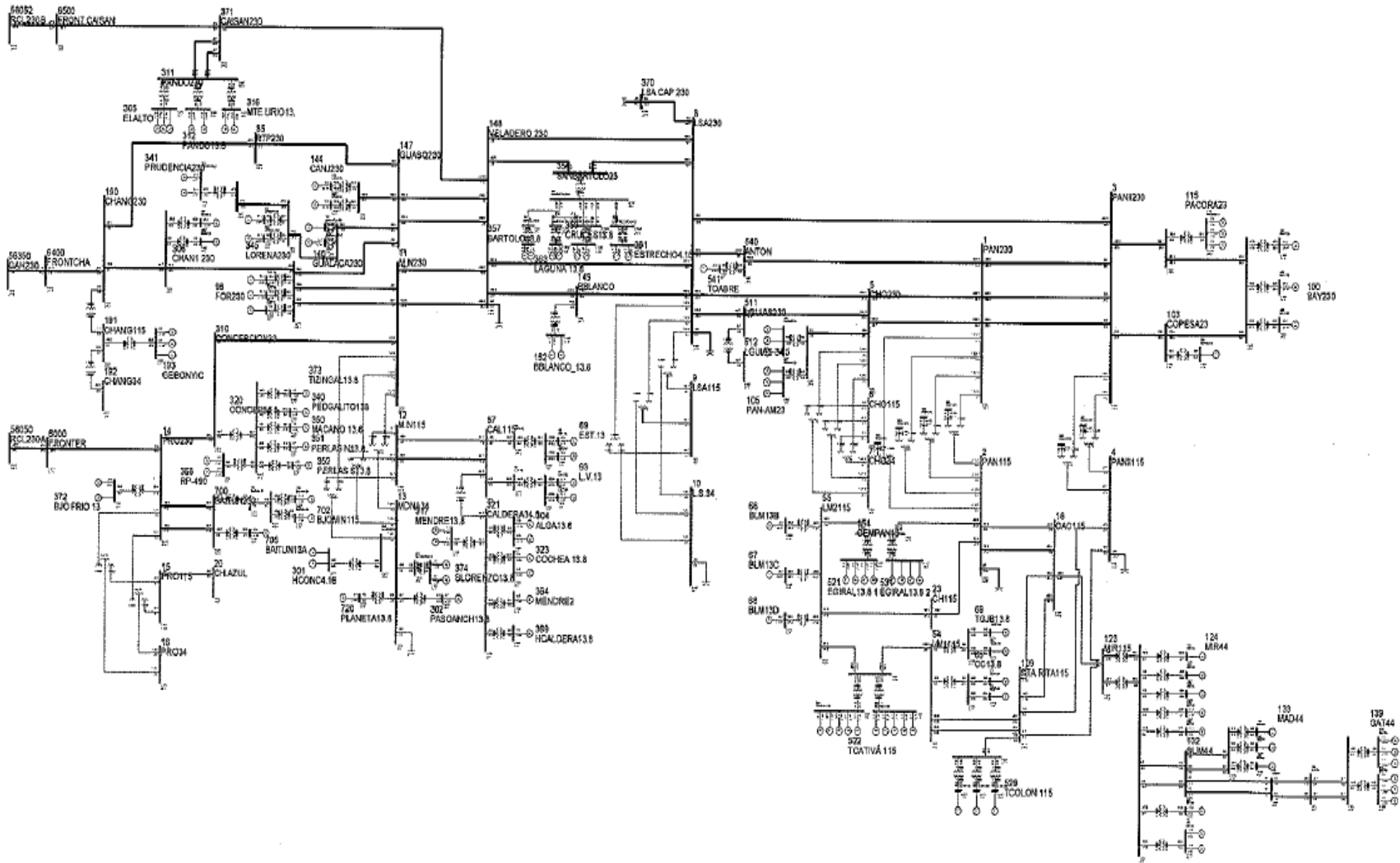
BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING															
129	MIR13D	13.800	G4	25.6	5.6	15.0	0.0	1.0000	26.2	0.9772	44.1			65	7
AREA															
140	GAT6A	6.9000	G1	1.8	-0.4	2.0	-2.0	1.0000	1.8	0.9735	4.1			65	7
140	GAT6A	6.9000	G2	1.8	-0.4	2.0	-2.0	1.0000	1.8	0.9735	4.1			65	7
140	GAT6A	6.9000	G3	1.8	-0.4	2.0	-2.0	1.0000	1.8	0.9735	4.1			65	7
141	GAT6B	6.9000	G4	3.6	-1.2	3.0	-3.0	1.0000	3.8	0.9504	5.6			65	7

141 GAT6B	6.9000 G5	3.6	-1.2	3.0	-3.0	1.0000	3.8	0.9504	6.2	65	7
141 GAT6B	6.9000 G6	3.6	-1.2	3.0	-3.0	1.0000	3.8	0.9504	6.2	65	7
171 MIR13H	13.800 M1	15.8	6.8	11.2	6.8	1.0253	16.8	0.9181	23.0	65	7
171 MIR13H	13.800 M2	15.8	6.8	11.2	6.8	1.0253	16.8	0.9181	23.0	65	7
SUBSYSTEM TOTALS		73.4	14.4	52.3	-1.4				120.6		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:43
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2014 ESC-MOD DEMANDA-MIN 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	1278.8	1330.8	0.0	0.0	0.0	-95.3	43.3	-93.2
GUATEMAL	217.8	275.1	-197.0	0.0	275.2	9.5	405.4	
2	870.5	855.0	0.0	0.0	0.0	0.4	15.1	0.0
SALVADOR	84.6	224.2	-70.6	0.0	228.3	-22.0	181.3	
3	1237.7	1203.0	0.0	0.0	0.0	0.3	34.4	0.0
HONDURAS	468.1	321.1	-47.5	0.0	293.3	54.4	433.4	
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	181.9	-48.1	117.4	
5	1297.7	1280.2	0.0	0.0	0.0	0.6	17.0	0.0
COSTA RI	197.9	520.4	-230.8	0.0	419.4	33.1	294.6	
6	786.0	721.1	0.0	0.0	0.0	46.7	18.2	46.2
PANAMA	1.2	261.7	95.7	0.0	528.5	-24.6	196.9	
7	73.4	25.8	0.0	0.0	0.0	47.0	0.5	47.0
ACANAL	14.4	9.4	0.0	0.0	0.0	-2.3	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	6076.9	5941.1	0.0	0.0	0.0	0.0	135.7	0.0
	1021.2	1819.3	-507.8	0.0	1926.6	0.0	1636.3	

5.3. Demanda Máxima de Verano



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-VERANO

MON, OCT 18 2010 8:46

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0178	234.09	14		PRO230		230.00	6	1.0292	236.71
85		PTP230		230.00	6	1.0202	234.65	96		FOR230		230.00	6	1.0189	234.34
100		BAY230		230.00	6	1.0246	235.65	103		COPESA23		230.00	6	1.0013	230.30
115		PACORA23		230.00	6	1.0065	231.48	144		CANJ230		230.00	6	1.0156	233.59
146		GUALACA230		230.00	6	1.0196	234.50	147		GUASQ230		230.00	6	1.0155	233.56
148		VELADERO	230	230.00	6	1.0040	230.93	149		BBLANCO		230.00	6	1.0018	230.40
190		CHANG230		230.00	6	1.0271	236.24	306		CHAN1 230		230.00	6	1.0264	236.07
310		CONCEPCION23	230	230.00	6	1.0256	235.88	311		PANDO230		230.00	6	1.0435	240.01
341		PRUDENCIA230	230	230.00	6	1.0268	236.15	345		LORENA230		230.00	6	1.0242	235.57
371		CAISAN230		230.00	6	1.0424	239.76	540		ANTON		230.00	6	1.0010	230.22
700		BAITUN230		230.00	6	1.0285	236.56	6000		FRONTER		230.00	6	1.0315	237.25
6400		FRONTCHA		230.00	6	1.0285	236.55	6500		FRONT CAISAN	230	230.00	6	1.0416	239.58

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		PAN230		230.00	6	0.9925	228.28	3		PANII230		230.00	6	0.9967	229.23
5		CHO230		230.00	6	0.9860	226.77	8		LSA230		230.00	6	0.9886	227.38
105		PAN-AM23		230.00	6	0.9860	226.77	354		SANBARTOLO23	230	230.00	6	0.9965	229.19
370		LSA CAP	230	230.00	6	0.9886	227.38	511		LGUIAS230		230.00	6	0.9830	226.09

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-VERANO

MON, OCT 18 2010 8:46

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0177	117.04	9		LSA115		115.00	6	1.0320	118.68
12		M.N115		115.00	6	1.0207	117.38	15		PRO115		115.00	6	1.0311	118.57
19		C.V115		115.00	6	1.0022	115.25	20		CH.AZUL		115.00	6	1.0318	118.66
52		TOC115		115.00	6	1.0147	116.69	54		LM1115		115.00	6	1.0249	117.87
55		LM2115		115.00	6	1.0262	118.01	61		FFIELD		115.00	6	1.0211	117.42
87		CAL115		115.00	6	1.0380	119.37	88		EST115		115.00	6	1.0415	119.77

92 L.V115	115.00	6	1.0393	119.52	109 STA RITA115	115.00	6	1.0215	117.47
123 MIR115	115.00	7	1.0014	115.16	154 CEMPAN15	115.00	6	1.0202	117.32
191 CHANG115	115.00	6	1.0182	117.09	522 TCATIVÁ	115	6	1.0258	117.97
529 TCOLON	115	6	1.0215	117.47	701 BAITUN115	115.00	6	1.0107	116.24
702 BJOMIN115	115.00	6	1.0128	116.47					

BUSES WITH VOLTAGE 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	0.9957	114.51	6		CHO115		115.00	6	0.9869	113.49
18		CAC115		115.00	6	0.9954	114.48	21		C.BAN115		115.00	6	0.9870	113.51
23		CH115		115.00	6	0.9985	114.83	26		LOC115		115.00	6	0.9877	113.58
30		MAR115		115.00	6	0.9856	113.34	33		STM115		115.00	6	0.9936	114.27
37		SAN115		115.00	6	0.9869	113.50	48		TINAJ115		115.00	6	0.9930	114.19
50		M.O115		115.00	6	0.9931	114.21								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:46
 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																	
66		BLM13B		13.800	V2	38.0	16.5	25.0	0.0	1.0100	41.0	0.9175	47.0			62	6
67		BLM13C		13.800	V3	38.0	16.5	25.0	0.0	1.0100	41.0	0.9175	47.0			62	6
68		BLM13D		13.800	V4	38.0	17.2	25.0	0.0	1.0100	41.3	0.9113	47.0			62	6
90		EST-13L		13.800	E1	19.6	6.2	12.0	-5.0	1.0100	20.4	0.9532	27.0			64	6
91		EST-13T		13.800	E2	19.6	6.2	12.0	-5.0	1.0100	20.4	0.9532	27.0			64	6
94		LV-13.8L		13.800	L1	22.3	7.0	12.0	-5.0	1.0100	23.2	0.9537	27.0			64	6
95		LV-13.8T		13.800	L2	22.3	7.0	12.0	-5.0	1.0100	23.2	0.9537	27.0			64	6
97		FOR13A		13.800	F1	56.4	-1.9	50.0	-50.0	1.0150	55.6	0.9994	111.0			64	6
98		FOR13B		13.800	F2	56.4	-1.9	50.0	-50.0	1.0150	55.6	0.9994	111.0			64	6
101		BAY13A		13.800	B1	47.0	20.4	50.0	-25.0	1.0000	51.2	0.9173	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	45.9	20.3	50.0	-25.0	1.0000	50.2	0.9143	96.0			61	6
108		BAY13C		13.800	B3	45.9	20.3	50.0	-25.0	1.0000	50.2	0.9143	96.0			61	6
116		PACORA13		13.800	P1	17.5	3.7	8.8	0.0	1.0150	17.6	0.9784	21.7			61	6
116		PACORA13		13.800	P2	17.5	3.7	8.8	0.0	1.0150	17.6	0.9784	21.7			61	6
116		PACORA13		13.800	P3	17.5	3.7	8.8	0.0	1.0150	17.6	0.9784	21.7			61	6
142		CANJ13A		13.800	C1	54.0	16.5	29.0	-29.0	1.0100	55.9	0.9566	69.0			64	6
143		CANJ13B		13.800	C2	54.0	16.5	29.0	-29.0	1.0100	55.9	0.9566	69.0			64	6

150	GUALACA	13-213.800	G2	12.6	-2.1	7.4	-7.4	1.0100	12.6	0.9863	14.8	64	6
152	BBLANCO	13.813.800	G1	14.0	2.0	7.0	-7.0	1.0100	14.0	0.9904	16.0	64	6
193	GEBONYIC	13.800	G1	8.0	-1.1	4.0	-4.0	1.0100	8.0	0.9902	35.3	64	6
193	GEBONYIC	13.800	G2	8.0	-1.1	4.0	-4.0	1.0100	8.0	0.9902	35.3	64	6
302	PASOANCHI	13.813.800	P1	4.7	2.0	2.0	-2.0	0.9745	5.3	0.9216	6.2	64	6
304	ALGA	13.8	A1	4.6	-2.3	2.3	-2.3	1.1090	4.6	0.8981	5.7	64	6
304	ALGA	13.8	A2	4.6	-2.3	2.3	-2.3	1.1090	4.6	0.8981	5.7	64	6
305	ELALTO	13.800	G1	17.0	-5.0	12.0	-5.0	1.0290	17.2	0.9594	20.6	64	6
305	ELALTO	13.800	G2	17.0	-5.0	12.0	-5.0	1.0290	17.2	0.9594	20.6	64	6
307	CHAN1 A	13.800	G1	65.0	-13.8	50.0	-50.0	1.0100	65.8	0.9782	118.6	64	6
312	PANDO	13.8	G1	13.0	-2.6	10.0	-5.0	1.0000	13.3	0.9810	19.9	64	6
312	PANDO	13.8	G2	13.0	-2.6	10.0	-5.0	1.0000	13.3	0.9810	19.9	64	6
316	MTE LIRIO	13.13.800	G1	18.8	-5.0	12.0	-5.0	1.0175	19.1	0.9663	27.0	64	6
316	MTE LIRIO	13.13.800	G2	18.8	-5.0	12.0	-5.0	1.0175	19.1	0.9663	27.0	64	6
317	MENDRE	13.8	M1	7.1	0.0	0.0	0.0	1.1113	6.3	1.0000	35.3	64	6
317	MENDRE	13.8	M2	7.1	0.0	0.0	0.0	1.1113	6.3	1.0000	35.3	64	6
323	COCHEA	13.8	C1	5.5	0.0	0.0	0.0	1.1115	4.9	1.0000	35.3	64	6
323	COCHEA	13.8	C2	5.5	0.0	0.0	0.0	1.1115	4.9	1.0000	35.3	64	6
340	PEDGALITO	13813.800	P1	19.2	6.1	12.0	-5.0	1.0000	20.1	0.9536	27.0	64	6
342	LORENA	13.8	L1	15.2	-4.4	10.5	-5.0	1.0100	15.7	0.9598	19.9	64	6
343	PRUDENCIA	1	G1	23.8	-3.7	9.8	-9.8	1.0100	23.8	0.9884	33.0	64	6
343	PRUDENCIA	1	G2	23.8	-3.7	9.8	-9.8	1.0100	23.8	0.9884	33.0	64	6
346	LORENA	13-2	L2	15.2	-4.4	10.5	-5.0	1.0100	15.7	0.9598	19.9	64	6
350	MACANO	13.8	G1	3.1	-1.0	1.0	-1.0	1.0882	3.0	0.9514	6.2	64	6
351	PERLAS N	13.813.800	G1	8.5	5.0	5.0	-5.0	0.9910	10.0	0.8619	13.5	64	6
352	PERLAS S	13.813.800	G1	8.5	5.0	5.0	-5.0	0.9910	10.0	0.8619	13.5	64	6
357	BARTOLO	13.8	G1	6.1	1.2	3.7	-3.7	1.0000	6.2	0.9816	8.5	64	6
357	BARTOLO	13.8	G2	6.1	1.2	3.7	-3.7	1.0000	6.2	0.9816	8.5	64	6
359	CRUCES	13.8	G1	3.9	0.4	2.3	-2.3	1.0000	3.9	0.9945	5.6	64	6
359	CRUCES	13.8	G2	3.9	0.4	2.3	-2.3	1.0000	3.9	0.9945	5.6	64	6
361	ESTRECHO	4.164.1600	G1	4.2	0.3	2.5	-2.5	1.0000	4.2	0.9976	5.6	64	6
361	ESTRECHO	4.164.1600	G2	4.2	0.3	2.5	-2.5	1.0000	4.2	0.9976	5.6	64	6
363	LAGUNA	13.8	G1	3.9	0.1	2.4	-2.4	1.0000	3.9	0.9996	5.8	64	6
363	LAGUNA	13.8	G2	3.9	0.1	2.4	-2.4	1.0000	3.9	0.9996	5.8	64	6
364	MENDRE2	13.800	G1	6.4	2.8	3.9	-3.9	1.0100	6.9	0.9153	8.9	64	6
368	RP-490	13.800	G1	4.0	-2.2	2.4	-2.4	1.0100	4.5	0.8777	5.5	64	6
368	RP-490	13.800	G2	4.0	-2.2	2.4	-2.4	1.0100	4.5	0.8777	5.5	64	6
369	HCALDERA	13.813.800	G1	3.8	1.9	1.9	-1.9	1.0095	4.2	0.8909	4.3	64	6
372	BJO FRIO	13	G1	25.0	-9.8	9.8	-9.8	1.0106	26.6	0.9315	33.0	64	6
373	TIZINGAL	13.813.800	G1	4.4	2.2	2.2	-2.2	0.9894	5.0	0.8909	21.6	64	6
374	SLORENZO	13.813.800	G1	3.0	-1.1	2.0	-2.0	1.0100	3.2	0.9428	4.5	64	6
374	SLORENZO	13.813.800	G2	3.9	-1.4	2.0	-2.0	1.0100	4.1	0.9428	4.5	64	6
521	EGIRAL	13.8	G1	3.6	2.2	2.8	1.3	1.0100	4.1	0.8560	4.8	63	6

521	EGIRAL13.8	113.800	G2	3.6	2.2	2.8	1.3	1.0100	4.1	0.8560	4.8	63	6
521	EGIRAL13.8	113.800	G3	3.6	2.2	2.8	1.3	1.0100	4.1	0.8560	4.8	63	6
521	EGIRAL13.8	113.800	G4	3.6	2.2	2.8	1.3	1.0100	4.1	0.8560	4.8	63	6
523	TCATIVÁ 13A	13.800	G1	8.3	3.1	6.6	-6.6	1.0000	8.8	0.9346	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	3.1	6.6	-6.6	1.0000	8.8	0.9346	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	3.1	6.6	-6.6	1.0000	8.8	0.9346	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	3.1	6.6	-6.6	1.0000	8.8	0.9346	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	3.1	6.6	-6.6	1.0000	8.8	0.9346	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	8.3	3.1	6.6	-6.6	1.0000	8.8	0.9346	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	8.3	3.1	6.6	-6.6	1.0000	8.8	0.9346	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	8.3	3.1	6.6	-6.6	1.0000	8.8	0.9346	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	8.3	3.1	6.6	-6.6	1.0000	8.8	0.9346	10.9	62	6
524	TCATIVÁ 13B	13.800	G9	8.3	3.1	6.6	-6.6	1.0000	8.8	0.9346	10.9	62	6
541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0022	29.9	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	23.8	1.5	13.0	-13.0	1.0100	23.6	0.9980	30.5	64	6
704	BJOMIN13B	13.800	G2	23.8	1.5	13.0	-13.0	1.0100	23.6	0.9980	30.5	64	6
705	BAITUN13A	13.800	G1	32.0	-7.1	26.6	-26.6	1.0100	32.5	0.9763	50.6	64	6
706	BAITUN13B	13.800	G2	32.0	-7.1	26.6	-26.6	1.0100	32.5	0.9763	50.6	64	6
720	PLANETA13.8	13.800	G1	3.8	2.0	2.0	-2.0	0.9745	4.4	0.8849	6.2	64	6
SUBSYSTEM TOTALS				1304.3	158.3	874.6	-597.6				2167.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:46
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-VERANO

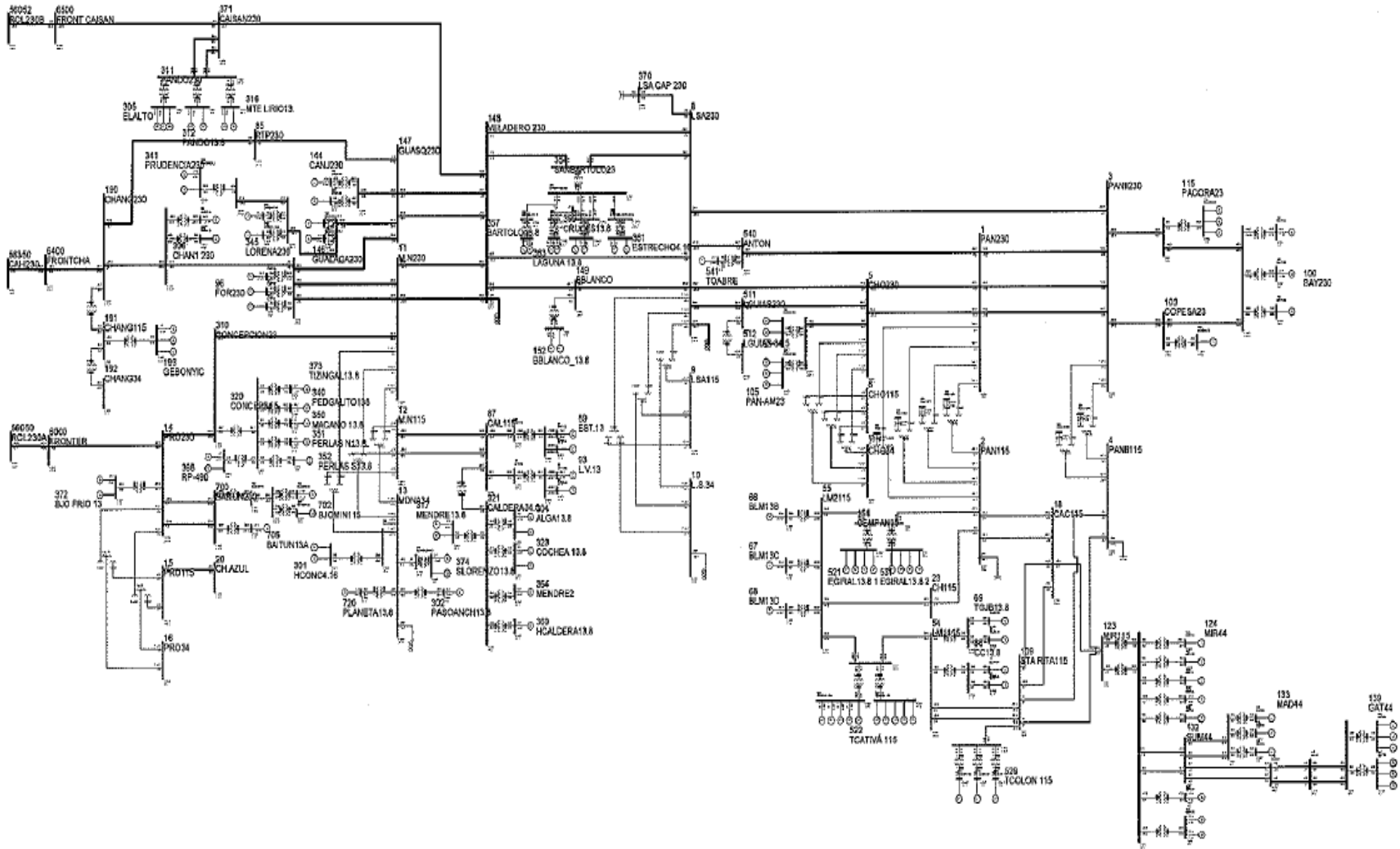
AREA 7 [ACANAL] MACHINE SUMMARY:

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	1.7	15.0	0.0	1.0000	22.9	0.9971	44.1		65	7
AREA															
130	MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0116	16.9	1.0000	27.7		65	7
140	GAT6A		6.9000	G1	1.9	-0.7	2.0	-2.0	1.0000	2.1	0.9357	4.1		65	7
140	GAT6A		6.9000	G2	1.9	-0.7	2.0	-2.0	1.0000	2.1	0.9357	4.1		65	7
140	GAT6A		6.9000	G3	1.9	-0.7	2.0	-2.0	1.0000	2.1	0.9357	4.1		65	7
141	GAT6B		6.9000	G4	3.9	-1.5	3.0	-3.0	1.0000	4.1	0.9341	5.6		65	7
141	GAT6B		6.9000	G5	3.9	-1.5	3.0	-3.0	1.0000	4.1	0.9341	6.2		65	7
141	GAT6B		6.9000	G6	3.9	-1.5	3.0	-3.0	1.0000	4.1	0.9341	6.2		65	7
170	MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0261	17.9	0.9281	23.0		65	7
171	MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0351	17.7	0.9281	23.0		65	7
171	MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0351	17.7	0.9281	23.0		65	7
SUBSYSTEM TOTALS					108.3	15.6	71.5	5.5				171.3			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:46
 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	54.7	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	-47.2	114.7	
5	1296.7	1280.2	0.0	0.0	0.0	-0.7	17.2	0.0
COSTA RI	208.7	520.4	-230.8	0.0	419.4	28.5	310.0	
6	1304.3	1322.5	0.0	0.0	0.0	-87.5	69.3	-87.3
PANAMA	158.3	268.5	-235.2	0.0	530.4	0.3	654.9	
7	108.3	47.4	0.0	0.0	0.0	60.2	0.7	60.0
ACANAL	15.6	9.6	0.0	0.0	0.0	-5.4	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	6751.9	6564.1	0.0	0.0	0.0	0.0	187.8	0.0
	1169.0	1826.4	-840.4	0.0	1931.9	0.0	2114.8	

5.4. Demanda Mínima de Verano



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MIN-VERANO

MON, OCT 18 2010 8:48

BUSES WITH VOLTAGE 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	1.0095	232.18
14		PRO230		230.00	6	1.0260	235.99	85		PTP230		230.00	6	1.0128	232.95
96		FOR230		230.00	6	1.0095	232.19	100		BAY230		230.00	6	1.0174	234.00
103		COPESA23		230.00	6	1.0033	230.77	115		PACORA23		230.00	6	1.0051	231.17
144		CANJ230		230.00	6	1.0093	232.15	146		GUALACA230		230.00	6	1.0114	232.61
147		GUASQ230		230.00	6	1.0093	232.14	148		VELADERO	230	230.00	6	1.0051	231.18
149		BBLANCO		230.00	6	1.0040	230.91	190		CHANG230		230.00	6	1.0154	233.55
306		CHAN1	230	230.00	6	1.0124	232.86	310		CONCEPCION23	230	230.00	6	1.0196	234.51
311		PANDO230		230.00	6	1.0493	241.35	341		PRUDENCIA230	230	230.00	6	1.0146	233.36
345		LORENA230		230.00	6	1.0135	233.11	354		SANBARTOLO23	230	230.00	6	1.0019	230.45
371		CAISAN230		230.00	6	1.0477	240.96	540		ANTON		230.00	6	1.0071	231.63
700		BAITUN230		230.00	6	1.0250	235.75	6000		FRONTER		230.00	6	1.0295	236.78
6400		FRONTCHA		230.00	6	1.0174	234.01	6500		FRONT CAISAN	230	230.00	6	1.0461	240.61

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9987	229.69	5		CHO230		230.00	6	0.9971	229.34
8		LSA230		230.00	6	0.9932	228.45	105		PAN-AM23		230.00	6	0.9971	229.34
370		LSA CAP	230	230.00	6	0.9932	228.45	511		LGUIAS230		230.00	6	0.9953	228.92

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MIN-VERANO

MON, OCT 18 2010 8:48

BUSES WITH VOLTAGE 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	1.0064	115.74	9		LSA115		115.00	6	1.0393	119.52
12		M.N115		115.00	6	1.0115	116.32	15		PRO115		115.00	6	1.0279	118.21
20		CH.AZUL		115.00	6	1.0287	118.30	52		TOC115		115.00	6	1.0041	115.47
54		LM1115		115.00	6	1.0161	116.85	55		LM2115		115.00	6	1.0171	116.96
61		FFIELD		115.00	6	1.0139	116.60	87		CAL115		115.00	6	1.0183	117.11
88		EST115		115.00	6	1.0196	117.25	92		L.V115		115.00	6	1.0188	117.16

109 STA RITA115	115.00	6	1.0133	116.53	123 MIR115	115.00	7	1.0031	115.36
154 CEMPAN15	115.00	6	1.0103	116.19	191 CHANG115	115.00	6	1.0076	115.88
522 TCATIVÁ 115	115.00	6	1.0167	116.92	529 TCOLON 115	115.00	6	1.0134	116.54
701 BAITUN115	115.00	6	1.0119	116.37	702 BJOMIN115	115.00	6	1.0121	116.39

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	0.9965	114.60	6	CHO115	115.00	6	0.9979	114.76
18	CAC115	115.00	6	0.9964	114.58	19	C.V115	115.00	6	0.9967	114.63
21	C.BAN115	115.00	6	0.9895	113.79	23	CH115	115.00	6	0.9979	114.76
26	LOC115	115.00	6	0.9902	113.87	30	MAR115	115.00	6	0.9890	113.73
33	STM115	115.00	6	0.9950	114.42	37	SAN115	115.00	6	0.9890	113.73
48	TINAJ115	115.00	6	0.9946	114.37	50	M.O115	115.00	6	0.9947	114.39

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:48
 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															
66	BLM13B	13.800	V2	38.0	15.7	25.0	0.0	1.0000	41.1	0.9238	47.0			62	6
67	BLM13C	13.800	V3	38.0	15.7	25.0	0.0	1.0000	41.1	0.9238	47.0			62	6
68	BLM13D	13.800	V4	38.0	16.4	25.0	0.0	1.0000	41.4	0.9181	47.0			62	6
90	EST-13L	13.800	E1	18.0	3.4	12.0	-5.0	0.9800	18.7	0.9830	27.0			64	6
94	LV-13.8L	13.800	L1	20.3	3.7	12.0	-5.0	0.9800	21.0	0.9834	27.0			64	6
97	FOR13A	13.800	F1	86.0	-22.2	50.0	-50.0	0.9800	90.6	0.9683	111.0			64	6
101	BAY13A	13.800	B1	40.7	17.4	50.0	-25.0	0.9900	44.8	0.9195	96.0			61	6
SYST															
102	BAY13B	13.800	B2	42.1	17.5	50.0	-25.0	0.9900	46.0	0.9234	96.0			61	6
142	CANJ13A	13.800	C1	45.0	9.7	29.0	-29.0	0.9800	47.0	0.9775	69.0			64	6
150	GUALACA 13-213.800	G2	13.0	-7.3	7.4	-7.4	0.9800	15.2	0.8707	14.8			64	6	
152	BBLANCO 13.813.800	G1	10.8	-0.3	7.0	-7.0	1.0000	10.8	0.9996	16.0			64	6	
193	GEBONYIC 13.800	G1	9.5	-2.3	4.0	-4.0	1.0000	9.8	0.9716	35.3			64	6	
302	PASOANCH13.813.800	P1	4.8	2.0	2.0	-2.0	0.9501	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	1.0423	18.8	0.9671	20.6			64	6	
307	CHAN1 A 13.800	G1	60.0	-28.7	50.0	-50.0	0.9800	67.9	0.9019	118.6			64	6	
312	PANDO13.8	13.800	G1	12.0	-5.0	10.0	-5.0	1.0168	12.8	0.9231	19.9			64	6
316	MTE LIRIO13.13.800	G1	21.9	-5.0	12.0	-5.0	1.0371	21.7	0.9749	27.0			64	6	

317	MENDRE	13.8	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	PEDGALITO	13.8	13.800	P1	19.2	3.3	12.0	-5.0	0.9800	19.9	0.9860	27.0	64	6
342	LORENA	13.8	13.800	L1	15.2	-5.0	10.5	-5.0	0.9974	16.1	0.9500	19.9	64	6
343	PRUDENCIA_1	13.8	13.800	G1	23.8	-9.8	9.8	-9.8	0.9959	25.8	0.9252	33.0	64	6
350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0725	3.0	0.9514	6.2	64	6
351	PERLAS N1	13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9769	11.0	0.8849	13.5	64	6
357	BARTOLO	13.8	13.800	G1	6.1	0.5	3.7	-3.7	0.9900	6.2	0.9969	8.5	64	6
359	CRUCES	13.8	13.800	G1	3.9	-0.2	2.3	-2.3	0.9900	3.9	0.9980	5.6	64	6
361	ESTRECHO	4.164	4.1600	G1	4.2	-0.1	2.5	-2.5	0.9900	4.2	0.9995	5.6	64	6
363	LAGUNA	13.8	13.800	G1	3.9	-0.3	2.4	-2.4	0.9900	4.0	0.9969	5.8	64	6
363	LAGUNA	13.8	13.800	G2	3.9	-0.3	2.4	-2.4	0.9900	4.0	0.9969	5.8	64	6
364	MENDRE2		13.800	G1	6.4	0.6	3.9	-3.9	0.9900	6.5	0.9955	8.9	64	6
368	RP-490		13.800	G1	4.5	-2.4	2.4	-2.4	1.0077	5.1	0.8815	5.5	64	6
369	HCALDERA	13.8	13.800	G1	3.8	0.6	1.9	-1.9	0.9900	3.9	0.9877	4.3	64	6
372	BJO FRIO	13	13.800	G1	25.0	-9.8	9.8	-9.8	1.0074	26.6	0.9315	33.0	64	6
373	TIZINGAL	13.8	13.800	G1	4.4	2.2	2.2	-2.2	0.9752	5.1	0.8909	21.6	64	6
374	SLORENZO	13.8	13.800	G1	3.9	-1.4	2.0	-2.0	0.9900	4.1	0.9433	4.5	64	6
523	TCATIVÁ	13A	13.800	G1	8.3	2.0	6.6	-6.6	0.9800	8.7	0.9714	10.9	62	6
523	TCATIVÁ	13A	13.800	G2	8.3	2.0	6.6	-6.6	0.9800	8.7	0.9714	10.9	62	6
523	TCATIVÁ	13A	13.800	G3	8.3	2.0	6.6	-6.6	0.9800	8.7	0.9714	10.9	62	6
523	TCATIVÁ	13A	13.800	G4	8.3	2.0	6.6	-6.6	0.9800	8.7	0.9714	10.9	62	6
541	TOABRE	0.6	0.6000	1	30.0	0.0	0.0	0.0	1.0084	29.8	1.0000	88.9	64	6
703	BJOMIN	13A	13.800	G1	23.8	-1.2	13.0	-13.0	0.9900	24.1	0.9987	30.5	64	6
705	BAITUN	13A	13.800	G1	32.0	-14.1	26.6	-26.6	0.9900	35.3	0.9151	50.6	64	6
720	PLANETA	13.8	13.800	G1	3.8	2.0	2.0	-2.0	0.9501	4.5	0.8849	6.2	64	6
SUBSYSTEM TOTALS					799.9	0.2	526.4	-355.8				1330.6		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:48
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MIN-VERANO

AREA 7 [ACANAL] MACHINE SUMMARY:

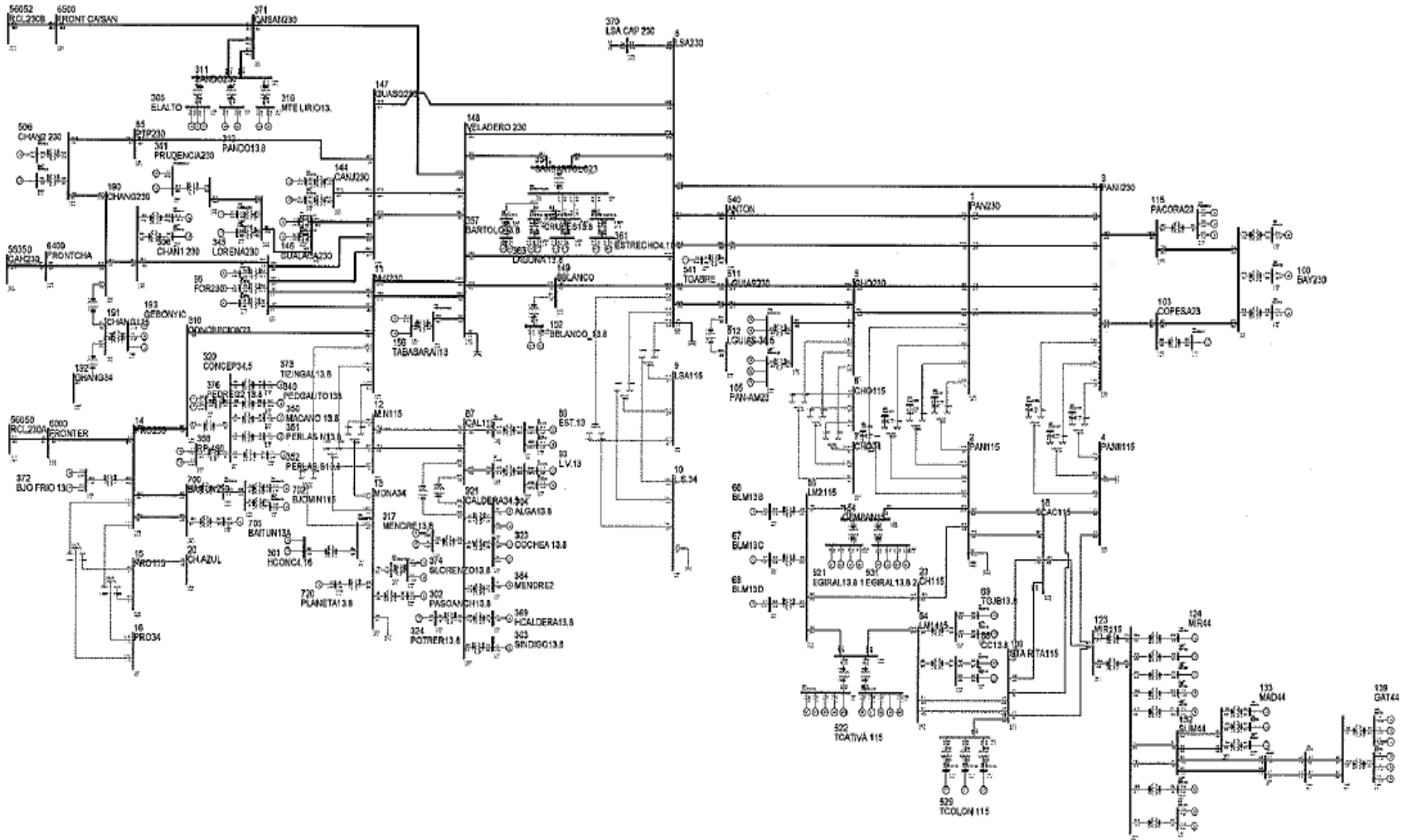
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
129		MIR13D		13.800	G4	22.6	0.0	15.0	0.0	1.0004	22.6	1.0000	44.1			65	7
AREA																	
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0307	17.8	0.9281	23.0			65	7
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0398	17.6	0.9281	23.0			65	7
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0398	17.6	0.9281	23.0			65	7
SUBSYSTEM TOTALS						73.6	20.5	48.5	20.5				113.2				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:48
 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	1297.5	1280.2	0.0	0.0	0.0	0.0	17.3	0.0
COSTA RI	199.3	520.4	-230.7	0.0	419.2	33.0	295.8	
6	799.9	727.4	0.0	0.0	0.0	55.0	17.6	55.0
PANAMA	0.2	264.0	95.0	0.0	531.5	-30.5	203.1	
7	73.6	26.1	0.0	0.0	0.0	46.9	0.6	47.0
ACANAL	20.5	9.5	0.0	0.0	0.0	2.6	8.4	
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	6081.5	5947.6	0.0	0.0	0.0	0.0	133.9	0.0
	1015.3	1821.7	-510.3	0.0	1932.3	0.0	1636.1	

6. Año 2017

6.1. Demanda Máxima de Invierno



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

MON, OCT 18 2010 8:56

BUSES WITH VOLTAGE 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	1.0187	234.30	14		PRO230		230.00	6	1.0277	236.37
85		PTP230		230.00	6	1.0226	235.21	96		FOR230		230.00	6	1.0193	234.45
100		BAY230		230.00	6	1.0258	235.93	103		COPESA23		230.00	6	1.0030	230.68
115		PACORA23		230.00	6	1.0076	231.74	144		CANJ230		230.00	6	1.0194	234.47
146		GUALACA230		230.00	6	1.0218	235.02	147		GUASQ230		230.00	6	1.0193	234.44
148		VELADERO	230	230.00	6	1.0123	232.83	149		BBLANCO		230.00	6	1.0108	232.47
155		TABASARAI	23230	230.00	6	1.0129	232.96	190		CHANG230		230.00	6	1.0291	236.69
306		CHAN1	230	230.00	6	1.0276	236.35	310		CONCEPCION	23230	230.00	6	1.0243	235.59
311		PANDO230		230.00	6	1.0443	240.18	341		PRUDENCIA	230230	230.00	6	1.0250	235.75
345		LORENA230		230.00	6	1.0239	235.50	354		SANBARTOLO	23230	230.00	6	1.0065	231.49
371		CAISAN230		230.00	6	1.0431	239.91	506		CHAN2	230	230.00	6	1.0301	236.92
540		ANTON		230.00	6	1.0153	233.52	700		BAITUN230		230.00	6	1.0273	236.28
6000		FRONTER		230.00	6	1.0303	236.96	6400		FRONTCHA		230.00	6	1.0299	236.87
6500		FRONT CAISAN	230	230.00	6	1.0420	239.67								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9959	229.06	3		PANII230		230.00	6	0.9984	229.64
5		CHO230		230.00	6	0.9908	227.88	8		LSA230		230.00	6	0.9983	229.60
105		PAN-AM23		230.00	6	0.9908	227.88	370		LSA CAP	230	230.00	6	0.9983	229.60
511		LGUIAS230		230.00	6	0.9924	228.25								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

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BUSES WITH VOLTAGE 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	1.0150	116.73	9		LSA115		115.00	6	1.0397	119.56
12		M.N115		115.00	6	1.0169	116.94	15		PRO115		115.00	6	1.0296	118.41
20		CH.AZUL		115.00	6	1.0304	118.49	52		TOC115		115.00	6	1.0114	116.31
54		LM1115		115.00	6	1.0250	117.87	55		LM2115		115.00	6	1.0263	118.03

61	FFIELD	115.00	6	1.0201	117.31	87	CAL115	115.00	6	1.0361	119.15
88	EST115	115.00	6	1.0399	119.58	92	L.V115	115.00	6	1.0376	119.32
109	STA RITA115	115.00	6	1.0217	117.49	123	MIR115	115.00	7	1.0029	115.33
154	CEMPAN15	115.00	6	1.0260	117.99	191	CHANG115	115.00	6	1.0187	117.15
522	TCATIVÁ 115	115.00	6	1.0259	117.98	529	TCOLON 115	115.00	6	1.0217	117.49
701	BAITUN115	115.00	6	1.0124	116.42	702	BJOMIN115	115.00	6	1.0142	116.63

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	0.9985	114.83	6	CHO115	115.00	6	0.9919	114.07
18	CAC115	115.00	6	0.9980	114.77	19	C.V115	115.00	6	0.9991	114.89
21	C.BAN115	115.00	6	0.9869	113.49	23	CH115	115.00	6	0.9984	114.82
26	LOC115	115.00	6	0.9880	113.62	30	MAR115	115.00	6	0.9860	113.39
33	STM115	115.00	6	0.9961	114.55	37	SAN115	115.00	6	0.9862	113.41
48	TINAJ115	115.00	6	0.9952	114.45	50	M.O115	115.00	6	0.9954	114.47

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:56
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 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	36.0	17.2	25.0	0.0	1.0120	39.4	0.9027	47.0		62	6	
67	BLM13C	13.800	V3	36.0	17.2	25.0	0.0	1.0120	39.4	0.9027	47.0		62	6	
68	BLM13D	13.800	V4	36.0	17.9	25.0	0.0	1.0120	39.7	0.8954	47.0		62	6	
90	EST-13L	13.800	E1	20.9	6.8	12.0	-5.0	1.0100	21.7	0.9512	27.0		64	6	
91	EST-13T	13.800	E2	20.9	6.8	12.0	-5.0	1.0100	21.7	0.9512	27.0		64	6	
94	LV-13.8L	13.800	L1	23.5	7.6	12.0	-5.0	1.0100	24.5	0.9510	27.0		64	6	
95	LV-13.8T	13.800	L2	23.5	7.6	12.0	-5.0	1.0100	24.5	0.9510	27.0		64	6	
97	FOR13A	13.800	F1	75.0	-5.6	50.0	-50.0	1.0100	74.5	0.9973	111.0		64	6	
98	FOR13B	13.800	F2	75.0	-5.6	50.0	-50.0	1.0100	74.5	0.9973	111.0		64	6	
101	BAY13A	13.800	B1	51.6	19.8	50.0	-25.0	1.0000	55.3	0.9338	96.0		61	6	
SYST															
102	BAY13B	13.800	B2	54.8	20.0	50.0	-25.0	1.0000	58.3	0.9394	96.0		61	6	
108	BAY13C	13.800	B3	51.0	19.7	50.0	-25.0	1.0000	54.7	0.9325	100.0		61	6	
116	PACORA13	13.800	P1	17.5	3.0	8.8	0.0	1.0100	17.6	0.9859	21.7		61	6	
116	PACORA13	13.800	P2	17.5	3.0	8.8	0.0	1.0100	17.6	0.9859	21.7		61	6	
116	PACORA13	13.800	P3	17.5	3.0	8.8	0.0	1.0100	17.6	0.9859	21.7		61	6	
142	CANJ13A	13.800	C1	52.2	15.2	29.0	-29.0	1.0100	53.8	0.9602	69.0		64	6	

143	CANJ13B	13.800	C2	52.2	15.2	29.0	-29.0	1.0100	53.8	0.9602	69.0	64	6
150	GUALACA	13-213.800	G2	12.6	-2.7	7.4	-7.4	1.0100	12.7	0.9780	14.8	64	6
151	GUALACA	13.8 13.800	G1	9.9	-2.8	7.4	-7.4	1.0100	10.2	0.9623	14.8	64	6
152	BBLANCO_13.813.800	G1	12.5	0.9	7.0	-7.0	1.0100	12.5	0.9975	16.0	64	6	
152	BBLANCO_13.813.800	G2	12.5	0.9	7.0	-7.0	1.0100	12.5	0.9975	16.0	64	6	
156	TABASARAI1313.800	G1	15.0	0.2	5.7	0.2	1.0129	14.8	0.9999	20.5	1	6	
193	GEBONYIC	13.800	G1	9.0	-1.2	4.0	-4.0	1.0100	9.0	0.9916	35.3	64	6
193	GEBONYIC	13.800	G2	9.0	-1.2	4.0	-4.0	1.0100	9.0	0.9916	35.3	64	6
302	PASOANCH13.813.800	P1	3.5	2.0	2.0	-2.0	0.9738	4.1	0.8682	6.2	64	6	
303	SINDIGO13.8 13.800	G1	9.0	0.0	5.0	0.0	1.1123	8.1	1.0000	13.5	64	6	
304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.1098	4.8	0.9063	5.7	64	6
304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.1098	4.8	0.9063	5.7	64	6
305	ELALTO	13.800	G1	17.4	-5.0	12.0	-5.0	1.0297	17.6	0.9611	20.6	64	6
305	ELALTO	13.800	G2	17.4	-5.0	12.0	-5.0	1.0297	17.6	0.9611	20.6	64	6
307	CHAN1 A	13.800	G1	62.0	-15.2	50.0	-50.0	1.0100	63.2	0.9713	118.6	64	6
312	PANDO13.8	13.800	G1	13.9	-1.7	10.0	-5.0	1.0100	13.9	0.9926	19.9	64	6
312	PANDO13.8	13.800	G2	13.9	-1.7	10.0	-5.0	1.0100	13.9	0.9926	19.9	64	6
316	MTE LIRIO13.13.800	G1	21.9	-5.0	12.0	-5.0	1.0169	22.1	0.9750	27.0	64	6	
316	MTE LIRIO13.13.800	G2	21.9	-5.0	12.0	-5.0	1.0169	22.1	0.9750	27.0	64	6	
317	MENDRE13.8 13.800	M1	8.4	0.0	0.0	0.0	1.1119	7.6	1.0000	35.3	64	6	
317	MENDRE13.8 13.800	M2	8.4	0.0	0.0	0.0	1.1119	7.6	1.0000	35.3	64	6	
323	COCHEA 13.8 13.800	C1	5.6	0.0	0.0	0.0	1.1122	5.1	1.0000	35.3	64	6	
323	COCHEA 13.8 13.800	C2	5.6	0.0	0.0	0.0	1.1122	5.1	1.0000	35.3	64	6	
324	POTRER13.8 13.800	P1	4.0	1.6	2.0	-2.0	1.0100	4.2	0.9281	6.2	64	6	
340	PEDGALITO13813.800	P1	18.0	10.5	12.0	-5.0	1.0000	20.8	0.8641	27.0	64	6	
342	LORENA13.8 13.800	L1	14.4	-5.0	10.5	-5.0	1.0081	15.1	0.9444	19.9	64	6	
343	PRUDENCIA_1 13.800	G1	23.8	-9.8	9.8	-9.8	1.0065	25.6	0.9252	33.0	64	6	
350	MACANO 13.8 13.800	G1	2.6	-1.0	1.0	-1.0	1.0777	2.6	0.9320	6.2	64	6	
351	PERLAS N13.813.800	G1	7.5	2.4	5.0	-5.0	0.9800	8.0	0.9528	13.5	64	6	
352	PERLAS S13.813.800	G1	7.5	2.4	5.0	-5.0	0.9800	8.0	0.9528	13.5	64	6	
357	BARTOLO13.8 13.800	G1	7.2	1.1	3.7	-3.7	1.0000	7.3	0.9890	8.5	64	6	
357	BARTOLO13.8 13.800	G2	5.9	0.9	3.7	-3.7	1.0000	5.9	0.9890	8.5	64	6	
359	CRUCES13.8 13.800	G1	3.1	0.3	2.3	-2.3	1.0000	3.1	0.9963	5.6	64	6	
359	CRUCES13.8 13.800	G2	3.1	0.3	2.3	-2.3	1.0000	3.1	0.9963	5.6	64	6	
361	ESTRECHO4.164.1600	G1	4.9	0.1	2.5	-2.5	1.0000	4.9	0.9997	5.6	64	6	
361	ESTRECHO4.164.1600	G2	4.9	0.1	2.5	-2.5	1.0000	4.9	0.9997	5.6	64	6	
363	LAGUNA 13.8 13.800	G1	4.7	0.0	2.4	-2.4	1.0000	4.7	1.0000	5.8	64	6	
363	LAGUNA 13.8 13.800	G2	4.7	0.0	2.4	-2.4	1.0000	4.7	1.0000	5.8	64	6	
364	MENDRE2	13.800	G1	7.2	1.6	3.9	-3.9	1.0100	7.3	0.9761	8.9	64	6
368	RP-490	13.800	G1	3.7	-1.4	2.4	-2.4	1.0100	3.9	0.9387	5.5	64	6
368	RP-490	13.800	G2	3.7	-1.4	2.4	-2.4	1.0100	3.9	0.9387	5.5	64	6
369	HCALDERA13.813.800	G1	3.8	1.6	1.9	-1.9	1.0100	4.1	0.9224	4.3	64	6	
372	BJO FRIO 13 13.800	G1	21.0	-6.8	9.8	-9.8	1.0000	22.1	0.9510	33.0	64	6	

372	BJO FRIO 13	13.800	G2	21.0	-6.8	9.8	-9.8	1.0000	22.1	0.9510	33.0	64	6
373	TIZINGAL13.8	13.800	G1	3.6	2.2	2.2	-2.2	0.9799	4.4	0.8516	21.6	64	6
374	SLORENZO13.8	13.800	G1	3.9	-1.8	2.0	-2.0	1.0000	4.3	0.9034	4.5	64	6
374	SLORENZO13.8	13.800	G2	3.9	-1.8	2.0	-2.0	1.0000	4.3	0.9034	4.5	64	6
376	PEDREG2 13.8	13.800	G1	5.0	-2.1	3.1	-3.1	1.0100	5.4	0.9213	7.2	64	6
376	PEDREG2 13.8	13.800	G2	5.0	-2.1	3.1	-3.1	1.0100	5.4	0.9213	7.2	64	6
507	CHAN2 A	13.800	G1	76.0	7.9	50.0	-50.0	1.0100	75.6	0.9947	118.6	64	6
521	EGIRAL13.8	113.800	G1	3.6	1.3	2.8	1.3	0.9995	3.8	0.9400	4.8	63	6
521	EGIRAL13.8	113.800	G2	3.6	1.3	2.8	1.3	0.9995	3.8	0.9400	4.8	63	6
521	EGIRAL13.8	113.800	G3	3.6	1.3	2.8	1.3	0.9995	3.8	0.9400	4.8	63	6
521	EGIRAL13.8	113.800	G4	3.6	1.3	2.8	1.3	0.9995	3.8	0.9400	4.8	63	6
523	TCATIVÁ 13A	13.800	G1	7.3	3.7	6.6	-6.6	1.0000	8.2	0.8888	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	7.3	3.7	6.6	-6.6	1.0000	8.2	0.8888	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	7.3	3.7	6.6	-6.6	1.0000	8.2	0.8888	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	7.3	3.7	6.6	-6.6	1.0000	8.2	0.8888	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	7.3	3.7	6.6	-6.6	1.0000	8.2	0.8888	10.9	62	6
524	TCATIVÁ 13B	13.800	G6	7.3	3.7	6.6	-6.6	1.0000	8.2	0.8888	10.9	62	6
524	TCATIVÁ 13B	13.800	G7	7.3	3.7	6.6	-6.6	1.0000	8.2	0.8888	10.9	62	6
524	TCATIVÁ 13B	13.800	G8	7.3	3.7	6.6	-6.6	1.0000	8.2	0.8888	10.9	62	6
531	EGIRAL13.8	213.800	G5	8.1	3.0	6.4	3.0	1.0004	8.6	0.9377	10.9	62	6
531	EGIRAL13.8	213.800	G6	8.1	3.0	6.4	3.0	1.0004	8.6	0.9377	10.9	62	6
531	EGIRAL13.8	213.800	G7	8.1	3.0	6.4	3.0	1.0004	8.6	0.9377	10.9	62	6
531	EGIRAL13.8	213.800	G8	8.1	3.0	6.4	3.0	1.0004	8.6	0.9377	10.9	62	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0163	24.6	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	21.0	0.9	13.0	-13.0	1.0100	20.8	0.9991	30.5	64	6
704	BJOMIN13B	13.800	G2	21.0	0.9	13.0	-13.0	1.0100	20.8	0.9991	30.5	64	6
705	BAITUN13A	13.800	G1	34.4	-6.4	26.6	-26.6	1.0100	34.6	0.9832	50.6	64	6
706	BAITUN13B	13.800	G2	34.4	-6.4	26.6	-26.6	1.0100	34.6	0.9832	50.6	64	6
720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9738	4.2	0.8724	6.2	64	6
SUBSYSTEM TOTALS				1478.6	152.8	960.0	-640.0				2377.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:56
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 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	31.0	1.8	15.0	0.0	1.0000	31.1	0.9984	44.1			65	7
AREA															
130	MIR13F		13.800 G5	17.1	0.0	8.0	0.0	1.0093	16.9	1.0000	27.7			65	7

TOTALS	7019.2	6805.0	0.0	0.0	0.0	0.0	214.2	0.0
	1248.8	1875.3	-868.6	0.0	2049.7	0.0	2291.7	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

MON, OCT 18 2010 8:59

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	1.0170	233.92	14		PRO230		230.00	6	1.0267	236.14
85		PTP230		230.00	6	1.0212	234.87	96		FOR230		230.00	6	1.0177	234.08
100		BAY230		230.00	6	1.0238	235.49	115		PACORA23		230.00	6	1.0048	231.10
144		CANJ230		230.00	6	1.0176	234.04	146		GUALACA230		230.00	6	1.0200	234.60
147		GUASQ230		230.00	6	1.0174	234.00	148		VELADERO 230		230.00	6	1.0096	232.21
149		BBLANCO		230.00	6	1.0080	231.84	155		TABASARAI 230		230.00	6	1.0102	232.34
190		CHANG230		230.00	6	1.0283	236.51	306		CHAN1 230		230.00	6	1.0268	236.16
310		CONCEPCION230		230.00	6	1.0230	235.30	311		PANDO230		230.00	6	1.0429	239.87
341		PRUDENCIA230		230.00	6	1.0232	235.33	345		LORENA230		230.00	6	1.0221	235.08
354		SANBARTOLO230		230.00	6	1.0034	230.77	371		CAISAN230		230.00	6	1.0417	239.59
506		CHAN2 230		230.00	6	1.0292	236.73	540		ANTON		230.00	6	1.0124	232.86
700		BAITUN230		230.00	6	1.0264	236.07	6000		FRONTER		230.00	6	1.0292	236.72
6400		FRONTCHA		230.00	6	1.0291	236.70	6500		FRONT CAISAN		230.00	6	1.0407	239.36

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9924	228.26	3		PANII230		230.00	6	0.9951	228.87
5		CHO230		230.00	6	0.9833	226.17	8		LSA230		230.00	6	0.9942	228.67
103		COPESA23		230.00	6	0.9998	229.96	105		PAN-AM23		230.00	6	0.9833	226.17
370		LSA CAP 230		230.00	6	0.9942	228.67	511		LGUIAS230		230.00	6	0.9875	227.12

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BUSES WITH VOLTAGE 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	1.0118	116.36	9		LSA115		115.00	6	1.0353	119.06
12		M.N115		115.00	6	1.0160	116.84	15		PRO115		115.00	6	1.0286	118.29
20		CH.AZUL		115.00	6	1.0294	118.38	52		TOC115		115.00	6	1.0082	115.94
54		LM1115		115.00	6	1.0233	117.68	55		LM2115		115.00	6	1.0247	117.84
61		FFIELD		115.00	6	1.0184	117.12	87		CAL115		115.00	6	1.0357	119.10

88	EST115	115.00	6	1.0394	119.54	92	L.V115	115.00	6	1.0371	119.27
109	STA RITA115	115.00	6	1.0197	117.26	123	MIR115	115.00	7	1.0000	115.00
154	CEMPAN15	115.00	6	1.0241	117.77	191	CHANG115	115.00	6	1.0182	117.09
522	TCATIVÁ 115	115.00	6	1.0242	117.79	529	TCOLON 115	115.00	6	1.0197	117.27
701	BAITUN115	115.00	6	1.0118	116.36	702	BJOMIN115	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	0.9954	114.47	6		CHO115		115.00	6	0.9844	113.21
18		CAC115		115.00	6	0.9949	114.41	19		C.V115		115.00	6	0.9958	114.52
21		C.BAN115		115.00	6	0.9837	113.13	23		CH115		115.00	6	0.9958	114.52
26		LOC115		115.00	6	0.9848	113.25	30		MAR115		115.00	6	0.9828	113.02
33		STM115		115.00	6	0.9929	114.18	37		SAN115		115.00	6	0.9830	113.04
48		TINAJ115		115.00	6	0.9921	114.09	50		M.O115		115.00	6	0.9922	114.11

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 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 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	36.0	17.9	25.0	0.0	1.0120	39.7	0.8957	47.0			62	6
67		BLM13C		13.800	V3	36.0	17.9	25.0	0.0	1.0120	39.7	0.8957	47.0			62	6
68		BLM13D		13.800	V4	36.0	18.7	25.0	0.0	1.0120	40.1	0.8879	47.0			62	6
90		EST-13L		13.800	E1	20.9	6.9	12.0	-5.0	1.0100	21.8	0.9496	27.0			64	6
91		EST-13T		13.800	E2	20.9	6.9	12.0	-5.0	1.0100	21.8	0.9496	27.0			64	6
94		LV-13.8L		13.800	L1	23.5	7.8	12.0	-5.0	1.0100	24.5	0.9494	27.0			64	6
95		LV-13.8T		13.800	L2	23.5	7.8	12.0	-5.0	1.0100	24.5	0.9494	27.0			64	6
97		FOR13A		13.800	F1	75.0	-4.1	50.0	-50.0	1.0100	74.4	0.9985	111.0			64	6
98		FOR13B		13.800	F2	75.0	-4.1	50.0	-50.0	1.0100	74.4	0.9985	111.0			64	6
101		BAY13A		13.800	B1	51.7	21.2	50.0	-25.0	1.0000	55.9	0.9250	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	54.8	21.5	50.0	-25.0	1.0000	58.9	0.9312	96.0			61	6
108		BAY13C		13.800	B3	51.0	21.2	50.0	-25.0	1.0000	55.2	0.9234	100.0			61	6
116		PACORA13		13.800	P1	17.5	3.5	8.8	0.0	1.0100	17.6	0.9808	21.7			61	6
116		PACORA13		13.800	P2	17.5	3.5	8.8	0.0	1.0100	17.6	0.9808	21.7			61	6
116		PACORA13		13.800	P3	17.5	3.5	8.8	0.0	1.0100	17.6	0.9808	21.7			61	6
142		CANJ13A		13.800	C1	52.2	15.5	29.0	-29.0	1.0100	53.9	0.9586	69.0			64	6
143		CANJ13B		13.800	C2	52.2	15.5	29.0	-29.0	1.0100	53.9	0.9586	69.0			64	6

150	GUALACA	13-213.800	G2	12.6	-2.2	7.4	-7.4	1.0100	12.7	0.9848	14.8	64	6
151	GUALACA	13.8 13.800	G1	9.9	-2.3	7.4	-7.4	1.0100	10.1	0.9734	14.8	64	6
152	BBLANCO	13.813.800	G1	12.5	1.1	7.0	-7.0	1.0100	12.5	0.9961	16.0	64	6
152	BBLANCO	13.813.800	G2	12.5	1.1	7.0	-7.0	1.0100	12.5	0.9961	16.0	64	6
156	TABASARAI	11313.800	G1	15.0	0.2	5.7	0.2	1.0102	14.9	0.9999	20.5	1	6
193	GEBONYIC	13.800	G1	9.0	-1.1	4.0	-4.0	1.0100	9.0	0.9929	35.3	64	6
193	GEBONYIC	13.800	G2	9.0	-1.1	4.0	-4.0	1.0100	9.0	0.9929	35.3	64	6
302	PASOANCH	13.813.800	P1	3.5	2.0	2.0	-2.0	0.9723	4.1	0.8683	6.2	64	6
303	SINDIGO	13.8 13.800	G1	9.0	0.0	5.0	0.0	1.1122	8.1	1.0000	13.5	64	6
304	ALGA	13.8 13.800	A1	4.8	-2.3	2.3	-2.3	1.1097	4.8	0.9063	5.7	64	6
304	ALGA	13.8 13.800	A2	4.8	-2.3	2.3	-2.3	1.1097	4.8	0.9063	5.7	64	6
305	ELALTO	13.800	G1	17.4	-5.0	12.0	-5.0	1.0283	17.6	0.9611	20.6	64	6
305	ELALTO	13.800	G2	17.4	-5.0	12.0	-5.0	1.0283	17.6	0.9611	20.6	64	6
307	CHAN1	A 13.800	G1	62.0	-14.4	50.0	-50.0	1.0100	63.0	0.9741	118.6	64	6
312	PANDO	13.8 13.800	G1	13.9	-1.6	10.0	-5.0	1.0100	13.9	0.9935	19.9	64	6
312	PANDO	13.8 13.800	G2	13.9	-1.6	10.0	-5.0	1.0100	13.9	0.9935	19.9	64	6
316	MTE LIRIO	13.13.800	G1	21.9	-5.0	12.0	-5.0	1.0155	22.1	0.9750	27.0	64	6
316	MTE LIRIO	13.13.800	G2	21.9	-5.0	12.0	-5.0	1.0155	22.1	0.9750	27.0	64	6
317	MENDRE	13.8 13.800	M1	8.4	0.0	0.0	0.0	1.1118	7.6	1.0000	35.3	64	6
317	MENDRE	13.8 13.800	M2	8.4	0.0	0.0	0.0	1.1118	7.6	1.0000	35.3	64	6
323	COCHEA	13.8 13.800	C1	5.6	0.0	0.0	0.0	1.1122	5.1	1.0000	35.3	64	6
323	COCHEA	13.8 13.800	C2	5.6	0.0	0.0	0.0	1.1122	5.1	1.0000	35.3	64	6
324	POTRER	13.8 13.800	P1	4.0	1.7	2.0	-2.0	1.0100	4.3	0.9182	6.2	64	6
340	PEDGALITO	13813.800	P1	18.0	10.5	12.0	-5.0	1.0000	20.9	0.8628	27.0	64	6
342	LORENA	13.8 13.800	L1	14.4	-5.0	10.5	-5.0	1.0063	15.1	0.9445	19.9	64	6
343	PRUDENCIA	1 13.800	G1	23.8	-9.8	9.8	-9.8	1.0046	25.6	0.9253	33.0	64	6
350	MACANO	13.8 13.800	G1	2.6	-1.0	1.0	-1.0	1.0776	2.6	0.9320	6.2	64	6
351	PERLAS	N13.813.800	G1	7.5	2.6	5.0	-5.0	0.9800	8.1	0.9446	13.5	64	6
352	PERLAS	S13.813.800	G1	7.5	2.6	5.0	-5.0	0.9800	8.1	0.9446	13.5	64	6
357	BARTOLO	13.8 13.800	G1	7.2	1.2	3.7	-3.7	1.0000	7.3	0.9866	8.5	64	6
357	BARTOLO	13.8 13.800	G2	5.9	1.0	3.7	-3.7	1.0000	5.9	0.9866	8.5	64	6
359	CRUCES	13.8 13.800	G1	3.1	0.3	2.3	-2.3	1.0000	3.1	0.9945	5.6	64	6
359	CRUCES	13.8 13.800	G2	3.1	0.3	2.3	-2.3	1.0000	3.1	0.9945	5.6	64	6
361	ESTRECHO	4.164.1600	G1	4.9	0.2	2.5	-2.5	1.0000	4.9	0.9994	5.6	64	6
361	ESTRECHO	4.164.1600	G2	4.9	0.2	2.5	-2.5	1.0000	4.9	0.9994	5.6	64	6
363	LAGUNA	13.8 13.800	G1	4.7	0.1	2.4	-2.4	1.0000	4.7	0.9999	5.8	64	6
363	LAGUNA	13.8 13.800	G2	4.7	0.1	2.4	-2.4	1.0000	4.7	0.9999	5.8	64	6
364	MENDRE2	13.800	G1	7.2	1.7	3.9	-3.9	1.0100	7.3	0.9726	8.9	64	6
368	RP-490	13.800	G1	3.7	-1.4	2.4	-2.4	1.0100	3.9	0.9396	5.5	64	6
368	RP-490	13.800	G2	3.7	-1.4	2.4	-2.4	1.0100	3.9	0.9396	5.5	64	6
369	HCALDERA	13.813.800	G1	3.8	1.7	1.9	-1.9	1.0100	4.1	0.9119	4.3	64	6
372	BJO FRIO	13 13.800	G1	21.0	-6.6	9.8	-9.8	1.0000	22.0	0.9546	33.0	64	6
372	BJO FRIO	13 13.800	G2	21.0	-6.6	9.8	-9.8	1.0000	22.0	0.9546	33.0	64	6

373	TIZINGAL	13.813.800	G1	3.7	2.2	2.2	-2.2	0.9798	4.4	0.8518	21.6	64	6
374	SLORENZO	13.813.800	G1	3.9	-1.7	2.0	-2.0	1.0000	4.2	0.9125	4.5	64	6
374	SLORENZO	13.813.800	G2	3.9	-1.7	2.0	-2.0	1.0000	4.2	0.9125	4.5	64	6
376	PEDREG2	13.813.800	G1	5.0	-2.1	3.1	-3.1	1.0100	5.4	0.9225	7.2	64	6
376	PEDREG2	13.813.800	G2	5.0	-2.1	3.1	-3.1	1.0100	5.4	0.9225	7.2	64	6
507	CHAN2 A	13.800	G1	76.0	8.7	50.0	-50.0	1.0100	75.8	0.9936	118.6	64	6
521	EGIRAL	13.8 113.800	G1	3.6	1.3	2.8	1.3	0.9977	3.8	0.9400	4.8	63	6
521	EGIRAL	13.8 113.800	G2	3.6	1.3	2.8	1.3	0.9977	3.8	0.9400	4.8	63	6
521	EGIRAL	13.8 113.800	G3	3.6	1.3	2.8	1.3	0.9977	3.8	0.9400	4.8	63	6
521	EGIRAL	13.8 113.800	G4	3.6	1.3	2.8	1.3	0.9977	3.8	0.9400	4.8	63	6
523	TCATIVÁ	13A 13.800	G1	7.3	4.0	6.6	-6.6	1.0000	8.3	0.8766	10.9	62	6
523	TCATIVÁ	13A 13.800	G2	7.3	4.0	6.6	-6.6	1.0000	8.3	0.8766	10.9	62	6
523	TCATIVÁ	13A 13.800	G3	7.3	4.0	6.6	-6.6	1.0000	8.3	0.8766	10.9	62	6
523	TCATIVÁ	13A 13.800	G4	7.3	4.0	6.6	-6.6	1.0000	8.3	0.8766	10.9	62	6
524	TCATIVÁ	13B 13.800	G0	7.3	4.0	6.6	-6.6	1.0000	8.3	0.8766	10.9	62	6
524	TCATIVÁ	13B 13.800	G6	7.3	4.0	6.6	-6.6	1.0000	8.3	0.8766	10.9	62	6
524	TCATIVÁ	13B 13.800	G7	7.3	4.0	6.6	-6.6	1.0000	8.3	0.8766	10.9	62	6
524	TCATIVÁ	13B 13.800	G8	7.3	4.0	6.6	-6.6	1.0000	8.3	0.8766	10.9	62	6
531	EGIRAL	13.8 213.800	G5	8.1	3.2	6.4	3.0	1.0000	8.7	0.9318	10.9	62	6
531	EGIRAL	13.8 213.800	G6	8.1	3.2	6.4	3.0	1.0000	8.7	0.9318	10.9	62	6
531	EGIRAL	13.8 213.800	G7	8.1	3.2	6.4	3.0	1.0000	8.7	0.9318	10.9	62	6
531	EGIRAL	13.8 213.800	G8	8.1	3.2	6.4	3.0	1.0000	8.7	0.9318	10.9	62	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0135	24.7	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	21.0	0.9	13.0	-13.0	1.0100	20.8	0.9990	30.5	64	6
704	BJOMIN13B	13.800	G2	21.0	0.9	13.0	-13.0	1.0100	20.8	0.9990	30.5	64	6
705	BAITUN13A	13.800	G1	34.4	-6.0	26.6	-26.6	1.0100	34.6	0.9852	50.6	64	6
706	BAITUN13B	13.800	G2	34.4	-6.0	26.6	-26.6	1.0100	34.6	0.9852	50.6	64	6
720	PLANETA	13.8 13.800	G1	3.6	2.0	2.0	-2.0	0.9723	4.2	0.8724	6.2	64	6
SUBSYSTEM TOTALS				1479.1	174.1	960.0	-640.0				2377.0		

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AÑO 2017 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	31.0	2.5	15.0	0.0	1.0000	31.1	0.9969	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0076	17.0	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9742	4.1			65	7

140 GAT6A	6.9000 G2	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9742	4.1	65	7
140 GAT6A	6.9000 G3	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9742	4.1	65	7
141 GAT6B	6.9000 G4	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9557	5.6	65	7
141 GAT6B	6.9000 G5	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9557	6.2	65	7
141 GAT6B	6.9000 G6	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9557	6.2	65	7
170 MIR13G	13.800 M1	17.0	6.8	11.2	6.8	1.0221	17.9	0.9281	23.0	65	7
171 MIR13H	13.800 M1	17.0	6.8	11.2	6.8	1.0312	17.8	0.9281	23.0	65	7
171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0312	17.8	0.9281	23.0	65	7
SUBSYSTEM TOTALS		116.6	18.0	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 8:59
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2017 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	1485.8	1330.8	0.0	0.0	0.0	107.9	47.1	100.7
GUATEMAL	222.1	275.1	-198.5	0.0	276.6	-15.6	437.7	
2	869.4	855.0	0.0	0.0	0.0	-1.0	15.4	0.0
SALVADOR	84.7	224.2	-70.6	0.0	228.3	-27.8	187.3	
3	1237.5	1203.0	0.0	0.0	0.0	-1.0	35.5	0.0
HONDURAS	475.3	321.1	-47.3	0.0	292.5	55.2	438.8	
4	533.1	525.2	0.0	0.0	0.0	-1.6	9.4	0.0
NICARAGU	50.0	207.6	-57.3	0.0	180.9	-48.1	128.6	
5	1299.0	1280.2	0.0	0.0	0.0	-3.1	21.9	0.0
COSTA RI	248.7	520.4	-229.6	0.0	417.1	22.5	352.5	
6	1479.1	1555.2	0.0	0.0	0.0	-161.2	85.0	-160.7
PANAMA	174.1	315.8	-263.5	0.0	643.5	20.2	745.1	
7	116.6	55.5	0.0	0.0	0.0	60.0	1.0	60.0
ACANAL	18.0	11.3	0.0	0.0	0.0	-6.4	13.2	
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	7020.4	6805.0	0.0	0.0	0.0	0.0	215.4	0.0

1272.9 1875.3 -866.8 0.0 2038.9 0.0 2303.3

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

MON, OCT 18 2010 9:02

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0128	232.94	14		PRO230		230.00	6	1.0238	235.48
85		PTP230		230.00	6	1.0185	234.25	96		FOR230		230.00	6	1.0146	233.35
100		BAY230		230.00	6	1.0227	235.22	115		PACORA23		230.00	6	1.0032	230.73
144		CANJ230		230.00	6	1.0139	233.19	146		GUALACA230		230.00	6	1.0164	233.76
147		GUASQ230		230.00	6	1.0137	233.15	148		VELADERO 230		230.00	6	1.0028	230.63
149		BBLANCO		230.00	6	1.0014	230.33	155		TABASARAI I23		230.00	6	1.0037	230.84
190		CHANG230		230.00	6	1.0269	236.19	306		CHAN1 230		230.00	6	1.0253	235.83
310		CONCEPCION23		230.00	6	1.0197	234.54	311		PANDO230		230.00	6	1.0382	238.79
341		PRUDENCIA230		230.00	6	1.0196	234.50	345		LORENA230		230.00	6	1.0184	234.24
371		CAISAN230		230.00	6	1.0370	238.50	506		CHAN2 230		230.00	6	1.0278	236.39
540		ANTON		230.00	6	1.0096	232.20	700		BAITUN230		230.00	6	1.0239	235.49
6000		FRONTER		230.00	6	1.0261	236.01	6400		FRONTCHA		230.00	6	1.0278	236.40
6500		FRONT CAISAN		230.00	6	1.0361	238.31								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9904	227.78	3		PANII230		230.00	6	0.9931	228.42
5		CHO230		230.00	6	0.9844	226.41	8		LSA230		230.00	6	0.9898	227.65
103		COPESA23		230.00	6	0.9980	229.53	105		PAN-AM23		230.00	6	0.9844	226.41
354		SANBARTOLO2		230.00	6	0.9976	229.44	370		LSA CAP 230		230.00	6	0.9898	227.65

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

MON, OCT 18 2010 9:02

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0099	116.14	9		LSA115		115.00	6	1.0305	118.51
12		M.N115		115.00	6	1.0138	116.59	15		PRO115		115.00	6	1.0258	117.96
20		CH.AZUL		115.00	6	1.0265	118.05	52		TOC115		115.00	6	1.0063	115.73
54		LM1115		115.00	6	1.0224	117.57	55		LM2115		115.00	6	1.0238	117.73
61		FFIELD		115.00	6	1.0175	117.01	87		CAL115		115.00	6	1.0345	118.96

88 EST115	115.00	6	1.0384	119.41	92 L.V115	115.00	6	1.0360	119.14
109 STA RITA115	115.00	6	1.0185	117.13	154 CEMPAN15	115.00	6	1.0231	117.65
191 CHANG115	115.00	6	1.0172	116.98	522 TCATIVÁ 115	115.00	6	1.0233	117.68
529 TCOLON 115	115.00	6	1.0186	117.13	701 BAITUN115	115.00	6	1.0102	116.18
702 BJOMIN115	115.00	6	1.0122	116.40					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9935	114.25	6		CHO115		115.00	6	0.9855	113.33
18		CAC115		115.00	6	0.9930	114.20	19		C.V115		115.00	6	0.9939	114.30
21		C.BAN115		115.00	6	0.9818	112.91	23		CH115		115.00	6	0.9943	114.35
26		LOC115		115.00	6	0.9829	113.04	30		MAR115		115.00	6	0.9809	112.80
33		STM115		115.00	6	0.9910	113.97	37		SAN115		115.00	6	0.9811	112.82
48		TINAJ115		115.00	6	0.9902	113.87	50		M.O115		115.00	6	0.9904	113.89
123		MIR115		115.00	7	0.9984	114.81								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:02
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 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	36.0	18.3	25.0	0.0	1.0120	39.9	0.8916	47.0			62	6
67		BLM13C		13.800	V3	36.0	18.3	25.0	0.0	1.0120	39.9	0.8916	47.0			62	6
68		BLM13D		13.800	V4	36.0	19.1	25.0	0.0	1.0120	40.3	0.8835	47.0			62	6
90		EST-13L		13.800	E1	20.9	7.2	12.0	-5.0	1.0100	21.9	0.9453	27.0			64	6
91		EST-13T		13.800	E2	20.9	7.2	12.0	-5.0	1.0100	21.9	0.9453	27.0			64	6
94		LV-13.8L		13.800	L1	23.5	8.1	12.0	-5.0	1.0100	24.6	0.9453	27.0			64	6
95		LV-13.8T		13.800	L2	23.5	8.1	12.0	-5.0	1.0100	24.6	0.9453	27.0			64	6
97		FOR13A		13.800	F1	75.1	-1.2	50.0	-50.0	1.0100	74.4	0.9999	111.0			64	6
98		FOR13B		13.800	F2	75.1	-1.2	50.0	-50.0	1.0100	74.4	0.9999	111.0			64	6
101		BAY13A		13.800	B1	51.8	22.1	50.0	-25.0	1.0000	56.3	0.9197	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	54.9	22.3	50.0	-25.0	1.0000	59.3	0.9263	96.0			61	6
108		BAY13C		13.800	B3	51.1	22.1	50.0	-25.0	1.0000	55.6	0.9181	100.0			61	6
116		PACORA13		13.800	P1	17.5	3.8	8.8	0.0	1.0100	17.7	0.9775	21.7			61	6
116		PACORA13		13.800	P2	17.5	3.8	8.8	0.0	1.0100	17.7	0.9775	21.7			61	6
116		PACORA13		13.800	P3	17.5	3.8	8.8	0.0	1.0100	17.7	0.9775	21.7			61	6
142		CANJ13A		13.800	C1	52.3	16.1	29.0	-29.0	1.0100	54.2	0.9555	69.0			64	6

143	CANJ13B	13.800	C2	52.3	16.1	29.0	-29.0	1.0100	54.2	0.9555	69.0	64	6
150	GUALACA	13-213.800	G2	12.6	-1.3	7.4	-7.4	1.0100	12.5	0.9947	14.8	64	6
151	GUALACA	13.8 13.800	G1	9.9	-1.4	7.4	-7.4	1.0100	9.9	0.9900	14.8	64	6
152	BBLANCO_13.813.800	G1	12.6	1.7	7.0	-7.0	1.0100	12.5	0.9913	16.0	64	6	
152	BBLANCO_13.813.800	G2	12.6	1.7	7.0	-7.0	1.0100	12.5	0.9913	16.0	64	6	
156	TABASARAI1313.800	G1	15.0	3.1	5.7	0.2	1.0100	15.2	0.9793	20.5	1	6	
193	GEBONYIC	13.800	G1	9.0	-0.9	4.0	-4.0	1.0100	9.0	0.9948	35.3	64	6
193	GEBONYIC	13.800	G2	9.0	-0.9	4.0	-4.0	1.0100	9.0	0.9948	35.3	64	6
302	PASOANCH13.813.800	P1	3.5	2.0	2.0	-2.0	0.9683	4.2	0.8686	6.2	64	6	
303	SINDIGO13.8 13.800	G1	9.0	0.0	5.0	0.0	1.1120	8.1	1.0000	13.5	64	6	
304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.1094	4.8	0.9063	5.7	64	6
304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.1094	4.8	0.9063	5.7	64	6
305	ELALTO	13.800	G1	17.4	-5.0	12.0	-5.0	1.0235	17.7	0.9612	20.6	64	6
305	ELALTO	13.800	G2	17.4	-5.0	12.0	-5.0	1.0235	17.7	0.9612	20.6	64	6
307	CHAN1 A	13.800	G1	62.1	-13.0	50.0	-50.0	1.0100	62.8	0.9789	118.6	64	6
312	PANDO13.8	13.800	G1	13.9	-1.2	10.0	-5.0	1.0100	13.9	0.9963	19.9	64	6
312	PANDO13.8	13.800	G2	13.9	-1.2	10.0	-5.0	1.0100	13.9	0.9963	19.9	64	6
316	MTE LIRIO13.13.800	G1	21.9	-5.0	12.0	-5.0	1.0106	22.3	0.9750	27.0	64	6	
316	MTE LIRIO13.13.800	G2	21.9	-5.0	12.0	-5.0	1.0106	22.3	0.9750	27.0	64	6	
317	MENDRE13.8 13.800	M1	8.4	0.0	0.0	0.0	1.1116	7.6	1.0000	35.3	64	6	
317	MENDRE13.8 13.800	M2	8.4	0.0	0.0	0.0	1.1116	7.6	1.0000	35.3	64	6	
323	COCHEA 13.8 13.800	C1	5.7	0.0	0.0	0.0	1.1119	5.1	1.0000	35.3	64	6	
323	COCHEA 13.8 13.800	C2	5.7	0.0	0.0	0.0	1.1119	5.1	1.0000	35.3	64	6	
324	POTRER13.8 13.800	P1	4.0	2.0	2.0	-2.0	1.0099	4.4	0.8928	6.2	64	6	
340	PEDGALITO13813.800	P1	18.0	10.7	12.0	-5.0	1.0000	21.0	0.8596	27.0	64	6	
342	LORENA13.8 13.800	L1	14.4	-5.0	10.5	-5.0	1.0026	15.2	0.9445	19.9	64	6	
343	PRUDENCIA_1 13.800	G1	23.8	-9.8	9.8	-9.8	1.0009	25.7	0.9254	33.0	64	6	
350	MACANO 13.8 13.800	G1	2.6	-1.0	1.0	-1.0	1.0772	2.6	0.9322	6.2	64	6	
351	PERLAS N13.813.800	G1	7.5	3.2	5.0	-5.0	0.9800	8.3	0.9210	13.5	64	6	
352	PERLAS S13.813.800	G1	7.5	3.2	5.0	-5.0	0.9800	8.3	0.9210	13.5	64	6	
357	BARTOLO13.8 13.800	G1	7.3	1.4	3.7	-3.7	1.0000	7.4	0.9817	8.5	64	6	
357	BARTOLO13.8 13.800	G2	5.9	1.1	3.7	-3.7	1.0000	6.0	0.9817	8.5	64	6	
359	CRUCES13.8 13.800	G1	3.1	0.4	2.3	-2.3	1.0000	3.2	0.9903	5.6	64	6	
359	CRUCES13.8 13.800	G2	3.1	0.4	2.3	-2.3	1.0000	3.2	0.9903	5.6	64	6	
361	ESTRECHO4.164.1600	G1	4.9	0.3	2.5	-2.5	1.0000	4.9	0.9984	5.6	64	6	
361	ESTRECHO4.164.1600	G2	4.9	0.3	2.5	-2.5	1.0000	4.9	0.9984	5.6	64	6	
363	LAGUNA 13.8 13.800	G1	4.7	0.2	2.4	-2.4	1.0000	4.7	0.9995	5.8	64	6	
363	LAGUNA 13.8 13.800	G2	4.7	0.2	2.4	-2.4	1.0000	4.7	0.9995	5.8	64	6	
364	MENDRE2	13.800	G1	7.2	2.1	3.9	-3.9	1.0100	7.4	0.9599	8.9	64	6
368	RP-490	13.800	G1	3.7	-1.3	2.4	-2.4	1.0100	3.9	0.9421	5.5	64	6
368	RP-490	13.800	G2	3.7	-1.3	2.4	-2.4	1.0100	3.9	0.9421	5.5	64	6
369	HCALDERA13.813.800	G1	3.8	1.9	1.9	-1.9	1.0099	4.2	0.8909	4.3	64	6	
372	BJO FRIO 13 13.800	G1	21.0	-5.8	9.8	-9.8	1.0000	21.8	0.9644	33.0	64	6	

372	BJO	FRIO	13	13.800	G2	21.0	-5.8	9.8	-9.8	1.0000	21.8	0.9644	33.0	64	6	
373	TIZINGAL	13.813.800	G1	3.7	2.2	2.2	-2.2	0.9794	4.4	0.8528	21.6			64	6	
374	SLORENZO	13.813.800	G1	3.9	-1.5	2.0	-2.0	1.0000	4.1	0.9345	4.5			64	6	
374	SLORENZO	13.813.800	G2	3.9	-1.5	2.0	-2.0	1.0000	4.1	0.9345	4.5			64	6	
376	PEDREG2	13.813.800	G1	5.0	-2.0	3.1	-3.1	1.0100	5.3	0.9255	7.2			64	6	
376	PEDREG2	13.813.800	G2	5.0	-2.0	3.1	-3.1	1.0100	5.3	0.9255	7.2			64	6	
507	CHAN2	A	13.800	G1	76.1	10.1	50.0	-50.0	1.0100	76.0	0.9914	118.6		64	6	
521	EGIRAL	13.8	113.800	G1	3.6	1.3	2.8	1.3	0.9968	3.8	0.9401	4.8		63	6	
521	EGIRAL	13.8	113.800	G2	3.6	1.3	2.8	1.3	0.9968	3.8	0.9401	4.8		63	6	
521	EGIRAL	13.8	113.800	G3	3.6	1.3	2.8	1.3	0.9968	3.8	0.9401	4.8		63	6	
521	EGIRAL	13.8	113.800	G4	3.6	1.3	2.8	1.3	0.9968	3.8	0.9401	4.8		63	6	
523	TCATIVÁ	13A	13.800	G1	7.3	4.1	6.6	-6.6	1.0000	8.4	0.8695	10.9		62	6	
523	TCATIVÁ	13A	13.800	G2	7.3	4.1	6.6	-6.6	1.0000	8.4	0.8695	10.9		62	6	
523	TCATIVÁ	13A	13.800	G3	7.3	4.1	6.6	-6.6	1.0000	8.4	0.8695	10.9		62	6	
523	TCATIVÁ	13A	13.800	G4	7.3	4.1	6.6	-6.6	1.0000	8.4	0.8695	10.9		62	6	
524	TCATIVÁ	13B	13.800	G0	7.3	4.1	6.6	-6.6	1.0000	8.4	0.8695	10.9		62	6	
524	TCATIVÁ	13B	13.800	G6	7.3	4.1	6.6	-6.6	1.0000	8.4	0.8695	10.9		62	6	
524	TCATIVÁ	13B	13.800	G7	7.3	4.1	6.6	-6.6	1.0000	8.4	0.8695	10.9		62	6	
524	TCATIVÁ	13B	13.800	G8	7.3	4.1	6.6	-6.6	1.0000	8.4	0.8695	10.9		62	6	
531	EGIRAL	13.8	213.800	G5	8.1	3.3	6.4	3.0	1.0000	8.7	0.9273	10.9		62	6	
531	EGIRAL	13.8	213.800	G6	8.1	3.3	6.4	3.0	1.0000	8.7	0.9273	10.9		62	6	
531	EGIRAL	13.8	213.800	G7	8.1	3.3	6.4	3.0	1.0000	8.7	0.9273	10.9		62	6	
531	EGIRAL	13.8	213.800	G8	8.1	3.3	6.4	3.0	1.0000	8.7	0.9273	10.9		62	6	
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0106	24.8	1.0000	88.9		64	6		
703	BJOMIN	13A	13.800	G1	21.0	1.2	13.0	-13.0	1.0100	20.9	0.9985	30.5		64	6	
704	BJOMIN	13B	13.800	G2	21.0	1.2	13.0	-13.0	1.0100	20.9	0.9985	30.5		64	6	
705	BAITUN	13A	13.800	G1	34.4	-4.9	26.6	-26.6	1.0100	34.4	0.9902	50.6		64	6	
706	BAITUN	13B	13.800	G2	34.4	-4.9	26.6	-26.6	1.0100	34.4	0.9902	50.6		64	6	
720	PLANETA	13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9683	4.2	0.8724	6.2		64	6	
SUBSYSTEM TOTALS						1480.5	206.7	960.0	-640.0			2377.0				

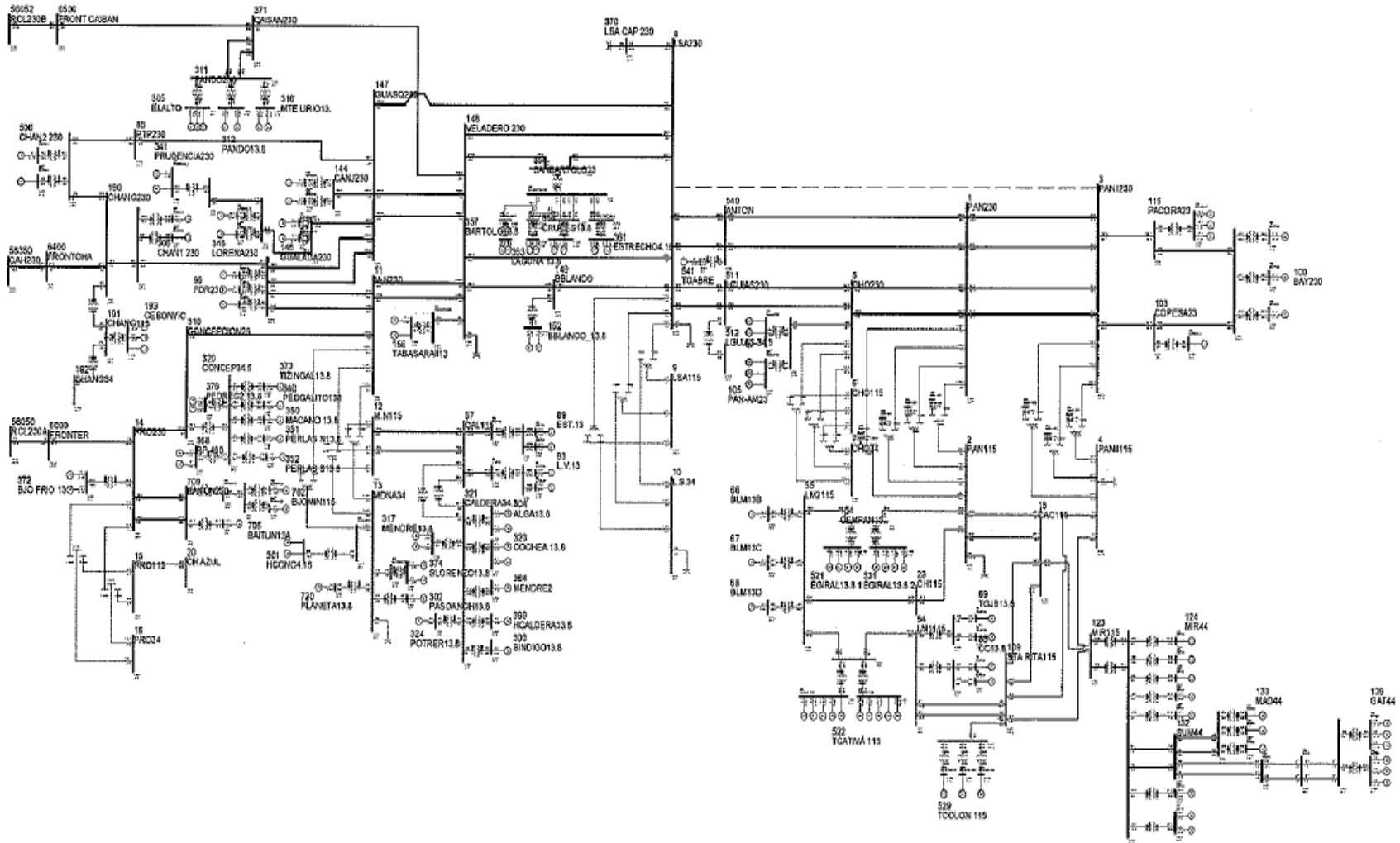
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:02
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

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	31.1	2.9	15.0	0.0	1.0000	31.2	0.9958	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0065	17.0	1.0000	27.7			65	7

140 GAT6A	6.9000 G1	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9778	4.1	65	7
140 GAT6A	6.9000 G2	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9778	4.1	65	7
140 GAT6A	6.9000 G3	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9778	4.1	65	7
141 GAT6B	6.9000 G4	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9580	5.6	65	7
141 GAT6B	6.9000 G5	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9580	6.2	65	7
141 GAT6B	6.9000 G6	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9580	6.2	65	7
170 MIR13G	13.800 M1	17.0	6.8	11.2	6.8	1.0210	18.0	0.9283	23.0	65	7
171 MIR13H	13.800 M1	17.0	6.8	11.2	6.8	1.0301	17.8	0.9283	23.0	65	7
171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0301	17.8	0.9283	23.0	65	7
SUBSYSTEM TOTALS		116.7	18.6	71.5	5.5				171.3		

6.1.3. Contingencia Llano Sánchez – Panamá II



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

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BUSES WITH VOLTAGE 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	1.0083	231.91	14		PRO230		230.00	6	1.0215	234.93
85		PTP230		230.00	6	1.0135	233.10	96		FOR230		230.00	6	1.0093	232.14
100		BAY230		230.00	6	1.0109	232.52	144		CANJ230		230.00	6	1.0079	231.82
146		GUALACA230		230.00	6	1.0106	232.44	147		GUASQ230		230.00	6	1.0077	231.77
190		CHANG230		230.00	6	1.0241	235.54	306		CHAN1 230		230.00	6	1.0225	235.18
310		CONCEPCION23230.00		230.00	6	1.0164	233.77	311		PANDO230		230.00	6	1.0358	238.23
341		PRUDENCIA230230.00		230.00	6	1.0140	233.23	345		LORENA230		230.00	6	1.0128	232.95
371		CAISAN230		230.00	6	1.0345	237.93	506		CHAN2 230		230.00	6	1.0248	235.70
700		BAITUN230		230.00	6	1.0217	234.99	6000		FRONTER		230.00	6	1.0238	235.47
6400		FRONTCHA		230.00	6	1.0251	235.76	6500		FRONT CAISAN230.00		230.00	6	1.0337	237.74

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9692	222.92	3		PANII230		230.00	6	0.9729	223.76
5		CHO230		230.00	6	0.9608	220.99	8		LSA230		230.00	6	0.9722	223.60
103		COPESA23		230.00	6	0.9790	225.17	105		PAN-AM23		230.00	6	0.9608	220.99
115		PACORA23		230.00	6	0.9864	226.88	148		VELADERO 230230.00		230.00	6	0.9954	228.95
149		BBLANCO		230.00	6	0.9933	228.47	155		TABASARAI23230.00		230.00	6	0.9967	229.24
354		SANBARTOLO23230.00		230.00	6	0.9865	226.90	370		LSA CAP 230 230.00		230.00	6	0.9722	223.60
511		LGUIAS230		230.00	6	0.9615	221.15	540		ANTON		230.00	6	0.9924	228.25

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
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AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

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BUSES WITH VOLTAGE 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	1.0115	116.33	12		M.N115		115.00	6	1.0114	116.31
15		PRO115		115.00	6	1.0234	117.69	20		CH.AZUL		115.00	6	1.0241	117.77
54		LM1115		115.00	6	1.0126	116.44	55		LM2115		115.00	6	1.0141	116.62
61		FFIELD		115.00	6	1.0077	115.88	87		CAL115		115.00	6	1.0331	118.80
88		EST115		115.00	6	1.0371	119.27	92		L.V115		115.00	6	1.0346	118.98

109 STA RITA115	115.00	6	1.0068	115.78	154 CEMPAN15	115.00	6	1.0127	116.46
191 CHANG115	115.00	6	1.0152	116.75	522 TCATIVÁ	115.00	6	1.0136	116.56
529 TCOLON 115	115.00	6	1.0068	115.79	701 BAITUN115	115.00	6	1.0088	116.02
702 BJOMIN115	115.00	6	1.0110	116.26					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9747	112.09	4		PANII115		115.00	6	0.9906	113.92
6		CHO115		115.00	6	0.9620	110.63	18		CAC115		115.00	6	0.9743	112.04
19		C.V115		115.00	6	0.9745	112.07	21		C.BAN115		115.00	6	0.9626	110.70
23		CH115		115.00	6	0.9791	112.60	26		LOC115		115.00	6	0.9638	110.83
30		MAR115		115.00	6	0.9618	110.61	33		STM115		115.00	6	0.9721	111.80
37		SAN115		115.00	6	0.9618	110.61	48		TINAJ115		115.00	6	0.9713	111.69
50		M.O115		115.00	6	0.9714	111.71	52		TOC115		115.00	6	0.9869	113.49
123		MIR115		115.00	7	0.9816	112.88								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:04
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 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	36.1	22.5	25.0	0.0	1.0120	42.0	0.8484	47.0			62	6
67		BLM13C		13.800	V3	36.1	22.5	25.0	0.0	1.0120	42.0	0.8484	47.0			62	6
68		BLM13D		13.800	V4	36.1	23.5	25.0	0.0	1.0120	42.6	0.8376	47.0			62	6
90		EST-13L		13.800	E1	21.0	7.6	12.0	-5.0	1.0100	22.1	0.9403	27.0			64	6
91		EST-13T		13.800	E2	21.0	7.6	12.0	-5.0	1.0100	22.1	0.9403	27.0			64	6
94		LV-13.8L		13.800	L1	23.6	8.5	12.0	-5.0	1.0100	24.8	0.9406	27.0			64	6
95		LV-13.8T		13.800	L2	23.6	8.5	12.0	-5.0	1.0100	24.8	0.9406	27.0			64	6
97		FOR13A		13.800	F1	75.3	3.7	50.0	-50.0	1.0100	74.7	0.9988	111.0			64	6
98		FOR13B		13.800	F2	75.3	3.7	50.0	-50.0	1.0100	74.7	0.9988	111.0			64	6
101		BAY13A		13.800	B1	52.0	30.9	50.0	-25.0	1.0000	60.5	0.8596	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	55.1	31.1	50.0	-25.0	1.0000	63.3	0.8707	96.0			61	6
108		BAY13C		13.800	B3	51.3	30.8	50.0	-25.0	1.0000	59.8	0.8569	100.0			61	6
116		PACORA13		13.800	P1	17.5	6.8	8.8	0.0	1.0100	18.6	0.9319	21.7			61	6
116		PACORA13		13.800	P2	17.5	6.8	8.8	0.0	1.0100	18.6	0.9319	21.7			61	6
116		PACORA13		13.800	P3	17.5	6.8	8.8	0.0	1.0100	18.6	0.9319	21.7			61	6
142		CANJ13A		13.800	C1	52.4	17.2	29.0	-29.0	1.0100	54.6	0.9502	69.0			64	6

143	CANJ13B	13.800	C2	52.4	17.2	29.0	-29.0	1.0100	54.6	0.9502	69.0	64	6
150	GUALACA	13-213.800	G2	12.6	0.2	7.4	-7.4	1.0100	12.5	0.9999	14.8	64	6
151	GUALACA	13.8 13.800	G1	10.0	0.0	7.4	-7.4	1.0100	9.9	1.0000	14.8	64	6
152	BBLANCO_13.813.800	G1	12.6	2.3	7.0	-7.0	1.0100	12.7	0.9830	16.0	64	6	
152	BBLANCO_13.813.800	G2	12.6	2.3	7.0	-7.0	1.0100	12.7	0.9830	16.0	64	6	
156	TABASARAII1313.800	G1	15.1	5.7	5.7	0.2	1.0087	16.0	0.9360	20.5	1	6	
193	GEBONYIC	13.800	G1	9.1	-0.6	4.0	-4.0	1.0100	9.0	0.9979	35.3	64	6
193	GEBONYIC	13.800	G2	9.1	-0.6	4.0	-4.0	1.0100	9.0	0.9979	35.3	64	6
302	PASOANCH13.813.800	P1	3.5	2.0	2.0	-2.0	0.9641	4.2	0.8694	6.2	64	6	
303	SINDIGO13.8 13.800	G1	9.0	0.0	5.0	0.0	1.1114	8.1	1.0000	13.5	64	6	
304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.1089	4.8	0.9063	5.7	64	6
304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.1089	4.8	0.9063	5.7	64	6
305	ELALTO	13.800	G1	17.5	-5.0	12.0	-5.0	1.0210	17.8	0.9614	20.6	64	6
305	ELALTO	13.800	G2	17.5	-5.0	12.0	-5.0	1.0210	17.8	0.9614	20.6	64	6
307	CHAN1 A	13.800	G1	62.3	-10.2	50.0	-50.0	1.0100	62.6	0.9869	118.6	64	6
312	PANDO13.8	13.800	G1	14.0	-1.0	10.0	-5.0	1.0100	13.9	0.9975	19.9	64	6
312	PANDO13.8	13.800	G2	14.0	-1.0	10.0	-5.0	1.0100	13.9	0.9975	19.9	64	6
316	MTE LIRIO13.13.800	G1	21.9	-4.6	12.0	-5.0	1.0100	22.2	0.9787	27.0	64	6	
316	MTE LIRIO13.13.800	G2	21.9	-4.6	12.0	-5.0	1.0100	22.2	0.9787	27.0	64	6	
317	MENDRE13.8 13.800	M1	8.5	0.0	0.0	0.0	1.1110	7.7	1.0000	35.3	64	6	
317	MENDRE13.8 13.800	M2	8.5	0.0	0.0	0.0	1.1110	7.7	1.0000	35.3	64	6	
323	COCHEA 13.8 13.800	C1	5.7	0.0	0.0	0.0	1.1113	5.2	1.0000	35.3	64	6	
323	COCHEA 13.8 13.800	C2	5.7	0.0	0.0	0.0	1.1113	5.2	1.0000	35.3	64	6	
324	POTRER13.8 13.800	P1	4.0	2.0	2.0	-2.0	1.0094	4.4	0.8928	6.2	64	6	
340	PEDGALITO13813.800	P1	18.1	10.9	12.0	-5.0	1.0000	21.1	0.8567	27.0	64	6	
342	LORENA13.8 13.800	L1	14.4	-4.0	10.5	-5.0	1.0000	15.0	0.9641	19.9	64	6	
343	PRUDENCIA_1 13.800	G1	23.9	-7.2	9.8	-9.8	1.0000	25.0	0.9573	33.0	64	6	
350	MACANO 13.8 13.800	G1	2.6	-1.0	1.0	-1.0	1.0768	2.6	0.9328	6.2	64	6	
351	PERLAS N13.813.800	G1	7.5	3.8	5.0	-5.0	0.9800	8.6	0.8951	13.5	64	6	
352	PERLAS S13.813.800	G1	7.5	3.8	5.0	-5.0	0.9800	8.6	0.8951	13.5	64	6	
357	BARTOLO13.8 13.800	G1	7.3	1.8	3.7	-3.7	1.0000	7.5	0.9705	8.5	64	6	
357	BARTOLO13.8 13.800	G2	5.9	1.5	3.7	-3.7	1.0000	6.1	0.9705	8.5	64	6	
359	CRUCES13.8 13.800	G1	3.1	0.6	2.3	-2.3	1.0000	3.2	0.9791	5.6	64	6	
359	CRUCES13.8 13.800	G2	3.1	0.6	2.3	-2.3	1.0000	3.2	0.9791	5.6	64	6	
361	ESTRECHO4.164.1600	G1	4.9	0.5	2.5	-2.5	1.0000	5.0	0.9953	5.6	64	6	
361	ESTRECHO4.164.1600	G2	4.9	0.5	2.5	-2.5	1.0000	5.0	0.9953	5.6	64	6	
363	LAGUNA 13.8 13.800	G1	4.7	0.3	2.4	-2.4	1.0000	4.7	0.9973	5.8	64	6	
363	LAGUNA 13.8 13.800	G2	4.7	0.3	2.4	-2.4	1.0000	4.7	0.9973	5.8	64	6	
364	MENDRE2	13.800	G1	7.2	2.9	3.9	-3.9	1.0100	7.7	0.9255	8.9	64	6
368	RP-490	13.800	G1	3.7	-1.3	2.4	-2.4	1.0100	3.9	0.9445	5.5	64	6
368	RP-490	13.800	G2	3.7	-1.3	2.4	-2.4	1.0100	3.9	0.9445	5.5	64	6
369	HCALDERA13.813.800	G1	3.8	1.9	1.9	-1.9	1.0094	4.2	0.8909	4.3	64	6	
372	BJO FRIO 13 13.800	G1	21.1	-5.1	9.8	-9.8	1.0000	21.7	0.9719	33.0	64	6	

372	BJO	FRIO	13	13.800	G2	21.1	-5.1	9.8	-9.8	1.0000	21.7	0.9719	33.0	64	6	
373	TIZINGAL	13.813.800	G1	3.7	2.2	2.2	-2.2	0.9791	4.4	0.8556	21.6			64	6	
374	SLORENZO	13.813.800	G1	3.9	-1.2	2.0	-2.0	1.0000	4.0	0.9551	4.5			64	6	
374	SLORENZO	13.813.800	G2	3.9	-1.2	2.0	-2.0	1.0000	4.0	0.9551	4.5			64	6	
376	PEDREG2	13.813.800	G1	5.0	-2.0	3.1	-3.1	1.0100	5.3	0.9285	7.2			64	6	
376	PEDREG2	13.813.800	G2	5.0	-2.0	3.1	-3.1	1.0100	5.3	0.9285	7.2			64	6	
507	CHAN2	A	13.800	G1	76.3	12.9	50.0	-50.0	1.0100	76.7	0.9859	118.6		64	6	
521	EGIRAL	13.8	113.800	G1	3.6	1.5	2.8	1.3	0.9900	3.9	0.9266	4.8		63	6	
521	EGIRAL	13.8	113.800	G2	3.6	1.5	2.8	1.3	0.9900	3.9	0.9266	4.8		63	6	
521	EGIRAL	13.8	113.800	G3	3.6	1.5	2.8	1.3	0.9900	3.9	0.9266	4.8		63	6	
521	EGIRAL	13.8	113.800	G4	3.6	1.5	2.8	1.3	0.9900	3.9	0.9266	4.8		63	6	
523	TCATIVÁ	13A	13.800	G1	7.3	5.6	6.6	-6.6	1.0000	9.2	0.7946	10.9		62	6	
523	TCATIVÁ	13A	13.800	G2	7.3	5.6	6.6	-6.6	1.0000	9.2	0.7946	10.9		62	6	
523	TCATIVÁ	13A	13.800	G3	7.3	5.6	6.6	-6.6	1.0000	9.2	0.7946	10.9		62	6	
523	TCATIVÁ	13A	13.800	G4	7.3	5.6	6.6	-6.6	1.0000	9.2	0.7946	10.9		62	6	
524	TCATIVÁ	13B	13.800	G0	7.3	5.6	6.6	-6.6	1.0000	9.2	0.7946	10.9		62	6	
524	TCATIVÁ	13B	13.800	G6	7.3	5.6	6.6	-6.6	1.0000	9.2	0.7946	10.9		62	6	
524	TCATIVÁ	13B	13.800	G7	7.3	5.6	6.6	-6.6	1.0000	9.2	0.7946	10.9		62	6	
524	TCATIVÁ	13B	13.800	G8	7.3	5.6	6.6	-6.6	1.0000	9.2	0.7946	10.9		62	6	
531	EGIRAL	13.8	213.800	G5	8.1	4.4	6.4	3.0	1.0000	9.2	0.8781	10.9		62	6	
531	EGIRAL	13.8	213.800	G6	8.1	4.4	6.4	3.0	1.0000	9.2	0.8781	10.9		62	6	
531	EGIRAL	13.8	213.800	G7	8.1	4.4	6.4	3.0	1.0000	9.2	0.8781	10.9		62	6	
531	EGIRAL	13.8	213.800	G8	8.1	4.4	6.4	3.0	1.0000	9.2	0.8781	10.9		62	6	
541	TOABRE	0.6000	1	25.2	0.0	0.0	0.0	0.9935	25.3	1.0000	88.9			64	6	
703	BJOMIN	13A	13.800	G1	21.1	1.4	13.0	-13.0	1.0100	20.9	0.9979	30.5		64	6	
704	BJOMIN	13B	13.800	G2	21.1	1.4	13.0	-13.0	1.0100	20.9	0.9979	30.5		64	6	
705	BAITUN	13A	13.800	G1	34.5	-3.9	26.6	-26.6	1.0100	34.4	0.9937	50.6		64	6	
706	BAITUN	13B	13.800	G2	34.5	-3.9	26.6	-26.6	1.0100	34.4	0.9937	50.6		64	6	
720	PLANETA	13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9641	4.2	0.8724	6.2		64	6	
SUBSYSTEM TOTALS						1484.8	311.7	960.0	-640.0			2377.0				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:04
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 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	31.2	6.6	15.0	0.0	1.0000	31.8	0.9782	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.2	1.3	8.0	0.0	1.0000	17.2	0.9972	27.7			65	7

TOTALS	7035.9	6805.0	0.0	0.0	0.0	0.0	230.9	0.0
	1433.8	1875.3	-855.6	0.0	1981.3	0.0	2395.4	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MIN-INVIERNO

MON, OCT 18 2010 9:06

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
8		LSA230		230.00	6	1.0007	230.16	11		M.N230		230.00	6	1.0120	232.76
14		PRO230		230.00	6	1.0272	236.25	85		PTP230		230.00	6	1.0164	233.77
96		FOR230		230.00	6	1.0129	232.97	100		BAY230		230.00	6	1.0086	231.97
144		CANJ230		230.00	6	1.0142	233.27	146		GUALACA230		230.00	6	1.0159	233.65
147		GUASQ230		230.00	6	1.0142	233.26	148		VELADERO 230		230.00	6	1.0104	232.40
149		BBLANCO		230.00	6	1.0094	232.17	155		TABASARAI 230		230.00	6	1.0110	232.52
190		CHANG230		230.00	6	1.0173	233.99	306		CHAN1 230		230.00	6	1.0144	233.30
310		CONCEPCION230		230.00	6	1.0210	234.83	311		PANDO230		230.00	6	1.0499	241.48
341		PRUDENCIA230		230.00	6	1.0186	234.28	345		LORENA230		230.00	6	1.0176	234.06
354		SANBARTOLO230		230.00	6	1.0076	231.75	370		LSA CAP 230		230.00	6	1.0007	230.16
371		CAISAN230		230.00	6	1.0485	241.15	506		CHAN2 230		230.00	6	1.0181	234.16
511		LGUIAS230		230.00	6	1.0002	230.05	540		ANTON		230.00	6	1.0090	232.06
700		BAITUN230		230.00	6	1.0261	236.01	6000		FRONTER		230.00	6	1.0306	237.04
6400		FRONTCHA		230.00	6	1.0194	234.45	6500		FRONT CAISAN		230.00	6	1.0470	240.81

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)
1		PAN230		230.00	6	0.9965	229.20	3		PANII230		230.00	6	0.9968	229.26
5		CHO230		230.00	6	0.9966	229.21	103		COPESA23		230.00	6	0.9991	229.79
105		PAN-AM23		230.00	6	0.9966	229.21	115		PACORA23		230.00	6	1.0000	230.00

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MIN-INVIERNO

MON, OCT 18 2010 9:06

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0009	115.11	9		LSA115		115.00	6	1.0451	120.19
12		M.N115		115.00	6	1.0051	115.58	15		PRO115		115.00	6	1.0291	118.35
20		CH.AZUL		115.00	6	1.0298	118.43	54		LM1115		115.00	6	1.0072	115.83
55		LM2115		115.00	6	1.0083	115.95	61		FFIELD		115.00	6	1.0042	115.49
87		CAL115		115.00	6	1.0171	116.96	88		EST115		115.00	6	1.0194	117.23

92 L.V115	115.00	6	1.0180	117.07	109 STA RITA115	115.00	6	1.0053	115.61
154 CEMPAN15	115.00	6	1.0022	115.26	191 CHANG115	115.00	6	1.0050	115.57
522 TCATIVÁ 115	115.00	6	1.0078	115.89	529 TCOLON 115	115.00	6	1.0053	115.61
701 BAITUN115	115.00	6	1.0118	116.35	702 BJOMIN115	115.00	6	1.0120	116.38

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9908	113.94	6		CHO115		115.00	6	0.9975	114.72
18		CAC115		115.00	6	0.9908	113.94	19		C.V115		115.00	6	0.9904	113.89
21		C.BAN115		115.00	6	0.9837	113.12	23		CH115		115.00	6	0.9895	113.79
26		LOC115		115.00	6	0.9846	113.23	30		MAR115		115.00	6	0.9877	113.59
33		STM115		115.00	6	0.9890	113.74	37		SAN115		115.00	6	0.9829	113.04
48		TINAJ115		115.00	6	0.9884	113.67	50		M.O115		115.00	6	0.9885	113.68
52		TOC115		115.00	6	0.9982	114.79	123		MIR115		115.00	7	0.9968	114.63

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:06
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 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	19.5	25.0	0.0	1.0000	42.7	0.8894	47.0			62	6
67		BLM13C		13.800	V3	38.0	19.5	25.0	0.0	1.0000	42.7	0.8894	47.0			62	6
68		BLM13D		13.800	V4	38.0	20.4	25.0	0.0	1.0000	43.1	0.8813	47.0			62	6
90		EST-13L		13.800	E1	18.0	3.3	12.0	-5.0	0.9800	18.7	0.9837	27.0			64	6
91		EST-13T		13.800	E2	18.0	3.3	12.0	-5.0	0.9800	18.7	0.9837	27.0			64	6
94		LV-13.8L		13.800	L1	20.2	3.8	12.0	-5.0	0.9800	21.0	0.9824	27.0			64	6
95		LV-13.8T		13.800	L2	20.2	3.8	12.0	-5.0	0.9800	21.0	0.9824	27.0			64	6
97		FOR13A		13.800	F1	75.0	-26.2	50.0	-50.0	0.9800	81.1	0.9441	111.0			64	6
101		BAY13A		13.800	B1	44.9	22.6	50.0	-25.0	0.9880	50.8	0.8932	96.0			61	6
SYST																	
142		CANJ13A		13.800	C1	45.0	8.9	29.0	-29.0	0.9800	46.8	0.9808	69.0			64	6
150		GUALACA	13-213.800	G2	11.1	-7.4	7.4	-7.4	0.9847	13.6	0.8310	14.8			64	6	
152		BBLANCO	13.813.800	G1	12.6	-2.7	7.0	-7.0	0.9900	13.0	0.9782	16.0			64	6	
156		TABASARAI	11313.800	G1	14.7	0.2	5.7	0.2	1.0110	14.5	0.9999	20.5			1	6	
193		GEBONYIC	13.800	G1	9.0	-2.1	4.0	-4.0	0.9900	9.3	0.9731	35.3			64	6	
193		GEBONYIC	13.800	G2	9.0	-2.1	4.0	-4.0	0.9900	9.3	0.9731	35.3			64	6	
302		PASOANCH	13.813.800	P1	3.5	2.0	2.0	-2.0	0.9519	4.2	0.8682	6.2			64	6	
303		SINDIGO	13.813.800	G1	9.0	0.0	5.0	0.0	1.0907	8.3	1.0000	13.5			64	6	

304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.0881	4.9	0.9063	5.7	64	6
304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.0881	4.9	0.9063	5.7	64	6
305	ELALTO	13.800	G1	18.0	-5.0	12.0	-5.0	1.0353	18.0	0.9635	20.6	64	6
305	ELALTO	13.800	G2	18.0	-5.0	12.0	-5.0	1.0353	18.0	0.9635	20.6	64	6
307	CHAN1 A	13.800	G1	61.0	-30.5	50.0	-50.0	0.9800	69.6	0.8945	118.6	64	6
312	PANDO13.8	13.800	G1	14.4	-5.0	10.0	-5.0	1.0163	15.0	0.9447	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	20.0	-5.0	12.0	-5.0	1.0379	19.9	0.9701	27.0	64	6
317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0907	8.6	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.6	0.0	0.0	0.0	1.0908	5.2	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	4.0	0.9	2.0	-2.0	0.9900	4.1	0.9752	6.2	64	6
340	PEDGALITO13.8	13.800	P1	18.0	5.9	12.0	-5.0	0.9800	19.3	0.9506	27.0	64	6
342	LORENA13.8	13.800	L1	12.7	-5.0	10.5	-5.0	1.0020	13.6	0.9302	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.0	-9.8	9.8	-9.8	1.0001	23.2	0.9068	33.0	64	6
350	MACANO 13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0662	3.2	0.9560	6.2	64	6
351	PERLAS N13.8	13.800	G1	9.0	5.0	5.0	-5.0	0.9712	10.6	0.8742	13.5	64	6
357	BARTOLO13.8	13.800	G1	6.9	0.2	3.7	-3.7	0.9900	6.9	0.9995	8.5	64	6
359	CRUCES13.8	13.800	G1	4.1	-0.4	2.3	-2.3	0.9900	4.2	0.9947	5.6	64	6
361	ESTRECHO4.164	1.600	G1	4.4	-0.3	2.5	-2.5	0.9900	4.5	0.9978	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.2	-0.4	2.4	-2.4	0.9900	4.2	0.9956	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.2	-0.4	2.4	-2.4	0.9900	4.2	0.9956	5.8	64	6
364	MENDRE2	13.800	G1	7.2	0.9	3.9	-3.9	0.9900	7.3	0.9921	8.9	64	6
368	RP-490	13.800	G1	4.5	-2.0	2.4	-2.4	0.9900	5.0	0.9103	5.5	64	6
368	RP-490	13.800	G2	4.5	-2.0	2.4	-2.4	0.9900	5.0	0.9103	5.5	64	6
369	HCALDERA13.8	13.800	G1	3.8	0.9	1.9	-1.9	0.9900	3.9	0.9731	4.3	64	6
372	BJO FRIO 13	13.800	G1	26.6	-9.8	9.8	-9.8	1.0085	28.1	0.9388	33.0	64	6
373	TIZINGAL13.8	13.800	G1	4.4	2.2	2.2	-2.2	0.9695	5.1	0.8909	21.6	64	6
374	SLORENZO13.8	13.800	G1	3.9	-1.6	2.0	-2.0	0.9900	4.2	0.9244	4.5	64	6
376	PEDREG2 13.8	13.800	G1	6.2	-3.1	3.1	-3.1	1.0036	6.9	0.8909	7.2	64	6
541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0102	29.7	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	26.0	-0.8	13.0	-13.0	0.9900	26.3	0.9995	30.5	64	6
705	BAITUN13A	13.800	G1	40.0	-13.9	26.6	-26.6	0.9900	42.8	0.9443	50.6	64	6
720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9519	4.3	0.8724	6.2	64	6
SUBSYSTEM TOTALS				832.5	-20.6	510.6	-333.2				1359.5		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:06
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 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																	

COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6135.0	5999.5	0.0	0.0	0.0	0.0	135.5	0.0
	1008.0	1840.5	-461.9	0.0	2052.8	0.0	1682.2	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-VERANO

MON, OCT 18 2010 9:08

BUSES WITH VOLTAGE 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	1.0120	232.76	14		PRO230		230.00	6	1.0215	234.95
85		PTP230		230.00	6	1.0144	233.32	96		FOR230		230.00	6	1.0120	232.76
100		BAY230		230.00	6	1.0192	234.42	115		PACORA23		230.00	6	1.0042	230.97
144		CANJ230		230.00	6	1.0123	232.84	146		GUALACA230		230.00	6	1.0156	233.59
147		GUASQ230		230.00	6	1.0122	232.81	148		VELADERO 230		230.00	6	1.0085	231.95
149		BBLANCO		230.00	6	1.0071	231.64	155		TABASARAI 230		230.00	6	1.0090	232.08
190		CHANG230		230.00	6	1.0193	234.43	306		CHAN1 230		230.00	6	1.0169	233.88
310		CONCEPCION230		230.00	6	1.0180	234.14	311		PANDO230		230.00	6	1.0384	238.82
341		PRUDENCIA230		230.00	6	1.0210	234.82	345		LORENA230		230.00	6	1.0191	234.38
354		SANBARTOLO230		230.00	6	1.0040	230.92	371		CAISAN230		230.00	6	1.0375	238.62
506		CHAN2 230		230.00	6	1.0204	234.70	540		ANTON		230.00	6	1.0111	232.56
700		BAITUN230		230.00	6	1.0207	234.76	6000		FRONTER		230.00	6	1.0242	235.57
6400		FRONTCHA		230.00	6	1.0207	234.76	6500		FRONT CAISAN		230.00	6	1.0364	238.37

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9932	228.44	3		PANII230		230.00	6	0.9959	229.07
5		CHO230		230.00	6	0.9893	227.53	8		LSA230		230.00	6	0.9971	229.33
103		COPESA23		230.00	6	0.9999	229.98	105		PAN-AM23		230.00	6	0.9893	227.53
370		LSA CAP 230		230.00	6	0.9971	229.33	511		LGUIAS230		230.00	6	0.9920	228.15

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-VERANO

MON, OCT 18 2010 9:08

BUSES WITH VOLTAGE 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	1.0126	116.44	9		LSA115		115.00	6	1.0379	119.36
12		M.N115		115.00	6	1.0056	115.65	15		PRO115		115.00	6	1.0235	117.70
20		CH.AZUL		115.00	6	1.0242	117.78	52		TOC115		115.00	6	1.0089	116.02
54		LM1115		115.00	6	1.0251	117.89	55		LM2115		115.00	6	1.0260	117.99
61		FFIELD		115.00	6	1.0200	117.30	87		CAL115		115.00	6	1.0186	117.14

88 EST115	115.00	6	1.0208	117.39	92 L.V115	115.00	6	1.0195	117.24
109 STA RITA115	115.00	6	1.0199	117.29	154 CEMPAN15	115.00	6	1.0225	117.59
191 CHANG115	115.00	6	1.0088	116.01	522 TCATIVÁ 115	115.00	6	1.0258	117.96
529 TCOLON 115	115.00	6	1.0199	117.29	701 BAITUN115	115.00	6	1.0058	115.67
702 BJOMIN115	115.00	6	1.0072	115.83					

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)
2		PAN115		115.00	6	0.9895	113.80	6		CHO115		115.00	6	0.9904	113.90
18		CAC115		115.00	6	0.9891	113.75	19		C.V115		115.00	6	0.9944	114.36
21		C.BAN115		115.00	6	0.9782	112.49	23		CH115		115.00	6	0.9919	114.07
26		LOC115		115.00	6	0.9792	112.60	30		MAR115		115.00	6	0.9768	112.34
33		STM115		115.00	6	0.9870	113.50	37		SAN115		115.00	6	0.9778	112.45
48		TINAJ115		115.00	6	0.9861	113.40	50		M.O115		115.00	6	0.9862	113.42
123		MIR115		115.00	7	0.9948	114.40								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:08
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 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																	
66		BLM13B		13.800	V2	38.0	16.6	25.0	0.0	1.0100	41.0	0.9168	47.0			62	6
67		BLM13C		13.800	V3	38.0	16.6	25.0	0.0	1.0100	41.0	0.9168	47.0			62	6
68		BLM13D		13.800	V4	38.0	17.3	25.0	0.0	1.0100	41.3	0.9106	47.0			62	6
70		TGJB13A		13.800	J5	31.0	8.2	20.0	0.0	1.0000	32.1	0.9670	39.4			62	6
71		TGJB13B		13.800	J6	31.0	8.2	20.0	0.0	1.0000	32.1	0.9670	39.4			62	6
72		BLMCCA		13.800	T8	31.0	9.3	20.0	0.0	1.0000	32.4	0.9576	50.0			62	6
73		BLMCCB		13.800	V9	50.0	9.7	40.0	0.0	1.0000	50.9	0.9815	71.0			62	6
90		EST-13L		13.800	E1	18.0	2.9	12.0	-5.0	0.9800	18.6	0.9873	27.0			64	6
91		EST-13T		13.800	E2	18.0	2.9	12.0	-5.0	0.9800	18.6	0.9873	27.0			64	6
94		LV-13.8L		13.800	L1	20.0	3.4	12.0	-5.0	0.9800	20.7	0.9858	27.0			64	6
95		LV-13.8T		13.800	L2	20.0	3.4	12.0	-5.0	0.9800	20.7	0.9858	27.0			64	6
97		FOR13A		13.800	F1	75.0	-7.9	50.0	-50.0	1.0000	75.4	0.9945	111.0			64	6
98		FOR13B		13.800	F2	75.0	-7.9	50.0	-50.0	1.0000	75.4	0.9945	111.0			64	6
101		BAY13A		13.800	B1	46.4	24.4	50.0	-25.0	1.0000	52.4	0.8853	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	70.0	26.2	50.0	-25.0	1.0000	74.8	0.9367	96.0			61	6
116		PACORA13		13.800	P1	17.5	3.7	8.8	0.0	1.0100	17.7	0.9788	21.7			61	6

116	PACORA13	13.800	P2	17.5	3.7	8.8	0.0	1.0100	17.7	0.9788	21.7	61	6
116	PACORA13	13.800	P3	17.5	3.7	8.8	0.0	1.0100	17.7	0.9788	21.7	61	6
142	CANJ13A	13.800	C1	33.8	6.3	29.0	-29.0	0.9800	35.0	0.9832	69.0	64	6
143	CANJ13B	13.800	C2	33.8	6.3	29.0	-29.0	0.9800	35.0	0.9832	69.0	64	6
150	GUALACA	13-213.800	G2	11.0	-6.1	7.4	-7.4	0.9900	12.7	0.8748	14.8	64	6
151	GUALACA13.8	13.800	G1	11.0	-6.1	7.4	-7.4	0.9900	12.7	0.8748	14.8	64	6
152	BBLANCO_13.8	13.800	G1	10.0	0.0	7.0	-7.0	1.0000	10.0	1.0000	16.0	64	6
152	BBLANCO_13.8	13.800	G2	10.0	0.0	7.0	-7.0	1.0000	10.0	1.0000	16.0	64	6
156	TABASARAI	11313.800	G1	15.0	0.2	5.7	0.2	1.0090	14.9	0.9999	20.5	1	6
193	GEBONYIC	13.800	G1	7.5	-1.2	4.0	-4.0	1.0000	7.6	0.9867	35.3	64	6
193	GEBONYIC	13.800	G2	7.5	-1.2	4.0	-4.0	1.0000	7.6	0.9867	35.3	64	6
302	PASOANCH	13.813.800	P1	4.0	2.0	2.0	-2.0	0.9676	4.6	0.8944	6.2	64	6
303	SINDIGO13.8	13.800	G1	7.0	0.0	5.0	0.0	1.1004	6.4	1.0000	13.5	64	6
304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.0991	4.9	0.9063	5.7	64	6
305	ELALTO	13.800	G1	12.0	-5.0	12.0	-5.0	1.0242	12.7	0.9231	20.6	64	6
305	ELALTO	13.800	G2	12.0	-5.0	12.0	-5.0	1.0242	12.7	0.9231	20.6	64	6
307	CHAN1 A	13.800	G1	65.0	-23.4	50.0	-50.0	0.9900	69.8	0.9407	118.6	64	6
312	PANDO13.8	13.800	G1	10.0	-3.3	10.0	-5.0	0.9900	10.6	0.9489	19.9	64	6
312	PANDO13.8	13.800	G2	10.0	-3.3	10.0	-5.0	0.9900	10.6	0.9489	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	16.0	-5.0	12.0	-5.0	1.0131	16.5	0.9545	27.0	64	6
316	MTE LIRIO13.8	13.800	G2	16.0	-5.0	12.0	-5.0	1.0131	16.5	0.9545	27.0	64	6
317	MENDRE13.8	13.800	M1	6.5	0.0	0.0	0.0	1.1001	5.9	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	6.5	0.0	0.0	0.0	1.1001	5.9	1.0000	35.3	64	6
323	COCHEA	13.813.800	C1	4.5	0.0	0.0	0.0	1.1003	4.1	1.0000	35.3	64	6
323	COCHEA	13.813.800	C2	4.5	0.0	0.0	0.0	1.1003	4.1	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	0.9994	4.4	0.8928	6.2	64	6
340	PEDGALITO	13813.800	P1	17.0	4.6	12.0	-5.0	0.9800	18.0	0.9646	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	1.0035	13.0	0.9231	19.9	64	6
343	PRUDENCIA_1	13.800	G1	19.0	-5.1	9.8	-9.8	1.0000	19.7	0.9655	33.0	64	6
343	PRUDENCIA_1	13.800	G2	19.0	-5.1	9.8	-9.8	1.0000	19.7	0.9655	33.0	64	6
346	LORENA	13-213.800	L2	12.0	-5.0	10.5	-5.0	1.0035	13.0	0.9231	19.9	64	6
350	MACANO	13.813.800	G1	2.0	-1.0	1.0	-1.0	1.0690	2.1	0.8944	6.2	64	6
351	PERLAS	N13.813.800	G1	9.0	5.0	5.0	-5.0	0.9737	10.6	0.8742	13.5	64	6
352	PERLAS	S13.813.800	G1	9.0	5.0	5.0	-5.0	0.9737	10.6	0.8742	13.5	64	6
357	BARTOLO13.8	13.800	G1	5.2	0.7	3.7	-3.7	1.0000	5.2	0.9907	8.5	64	6
357	BARTOLO13.8	13.800	G2	5.2	0.7	3.7	-3.7	1.0000	5.2	0.9907	8.5	64	6
359	CRUCES13.8	13.800	G1	3.1	0.2	2.3	-2.3	1.0000	3.1	0.9985	5.6	64	6
359	CRUCES13.8	13.800	G2	3.1	0.2	2.3	-2.3	1.0000	3.1	0.9985	5.6	64	6
361	ESTRECHO	4.164.1600	G1	3.5	0.1	2.5	-2.5	1.0000	3.5	0.9997	5.6	64	6
361	ESTRECHO	4.164.1600	G2	3.5	0.1	2.5	-2.5	1.0000	3.5	0.9997	5.6	64	6
363	LAGUNA	13.813.800	G1	3.5	-0.1	2.4	-2.4	1.0000	3.5	0.9998	5.8	64	6
363	LAGUNA	13.813.800	G2	3.5	-0.1	2.4	-2.4	1.0000	3.5	0.9998	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.1	3.9	-3.9	1.0000	8.2	0.9261	8.9	64	6

368	RP-490	13.800	G1	3.2	-1.5	2.4	-2.4	1.0000	3.5	0.9035	5.5	64	6
368	RP-490	13.800	G2	3.2	-1.5	2.4	-2.4	1.0000	3.5	0.9035	5.5	64	6
369	HCALDERA13.813.800	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	19.0	-5.3	9.8	-9.8	1.0000	19.7	0.9635	33.0	64	6	
372	BJO FRIO 13 13.800	G2	19.0	-5.3	9.8	-9.8	1.0000	19.7	0.9635	33.0	64	6	
373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9720	5.1	0.8909	21.6	64	6	
374	SLORENZO13.813.800	G1	3.0	-1.3	2.0	-2.0	1.0000	3.3	0.9136	4.5	64	6	
374	SLORENZO13.813.800	G2	3.0	-1.3	2.0	-2.0	1.0000	3.3	0.9136	4.5	64	6	
376	PEDREG2 13.813.800	G1	4.2	-2.3	3.1	-3.1	1.0000	4.8	0.8744	7.2	64	6	
376	PEDREG2 13.813.800	G2	4.2	-2.3	3.1	-3.1	1.0000	4.8	0.8744	7.2	64	6	
507	CHAN2 A	13.800	G1	65.0	6.5	50.0	-50.0	1.0000	65.3	0.9950	118.6	64	6
521	EGIRAL13.8 113.800	G1	3.6	1.3	2.8	1.3	0.9962	3.8	0.9400	4.8	63	6	
521	EGIRAL13.8 113.800	G2	3.6	1.3	2.8	1.3	0.9962	3.8	0.9400	4.8	63	6	
521	EGIRAL13.8 113.800	G3	3.6	1.3	2.8	1.3	0.9962	3.8	0.9400	4.8	63	6	
521	EGIRAL13.8 113.800	G4	3.6	1.3	2.8	1.3	0.9962	3.8	0.9400	4.8	63	6	
523	TCATIVÁ 13A 13.800	G1	8.3	1.9	6.6	-6.6	0.9900	8.6	0.9747	10.9	62	6	
523	TCATIVÁ 13A 13.800	G2	8.3	1.9	6.6	-6.6	0.9900	8.6	0.9747	10.9	62	6	
523	TCATIVÁ 13A 13.800	G3	8.3	1.9	6.6	-6.6	0.9900	8.6	0.9747	10.9	62	6	
523	TCATIVÁ 13A 13.800	G4	8.3	1.9	6.6	-6.6	0.9900	8.6	0.9747	10.9	62	6	
523	TCATIVÁ 13A 13.800	G5	8.3	1.9	6.6	-6.6	0.9900	8.6	0.9747	10.9	62	6	
524	TCATIVÁ 13B 13.800	G0	8.3	1.9	6.6	-6.6	0.9900	8.6	0.9747	10.9	62	6	
524	TCATIVÁ 13B 13.800	G6	8.3	1.9	6.6	-6.6	0.9900	8.6	0.9747	10.9	62	6	
524	TCATIVÁ 13B 13.800	G7	8.3	1.9	6.6	-6.6	0.9900	8.6	0.9747	10.9	62	6	
524	TCATIVÁ 13B 13.800	G8	8.3	1.9	6.6	-6.6	0.9900	8.6	0.9747	10.9	62	6	
524	TCATIVÁ 13B 13.800	G9	8.3	1.9	6.6	-6.6	0.9900	8.6	0.9747	10.9	62	6	
531	EGIRAL13.8 213.800	G5	8.1	3.0	6.4	3.0	0.9972	8.7	0.9377	10.9	62	6	
531	EGIRAL13.8 213.800	G6	8.1	3.0	6.4	3.0	0.9972	8.7	0.9377	10.9	62	6	
531	EGIRAL13.8 213.800	G7	8.1	3.0	6.4	3.0	0.9972	8.7	0.9377	10.9	62	6	
531	EGIRAL13.8 213.800	G8	8.1	3.0	6.4	3.0	0.9972	8.7	0.9377	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	19.0	0.2	13.0	-13.0	1.0000	19.0	1.0000	30.5	64	6
704	BJOMIN13B	13.800	G2	19.0	0.2	13.0	-13.0	1.0000	19.0	1.0000	30.5	64	6
705	BAITUN13A	13.800	G1	30.0	-8.1	26.6	-26.6	1.0000	31.1	0.9655	50.6	64	6
706	BAITUN13B	13.800	G2	30.0	-8.1	26.6	-26.6	1.0000	31.1	0.9655	50.6	64	6
720	PLANETA13.8 13.800	G1	3.6	2.0	2.0	-2.0	0.9676	4.2	0.8724	6.2	64	6	
SUBSYSTEM TOTALS				1504.4	104.4	1041.1	-640.6				2546.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:08
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 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	32.8	4.2	15.0	0.0	1.0000	33.1	0.9921	44.1			65	7
AREA															
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0029	17.1	1.0000	27.7			65	7
140	GAT6A	6.9000	G1	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9712	4.1			65	7
140	GAT6A	6.9000	G2	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9712	4.1			65	7
140	GAT6A	6.9000	G3	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9712	4.1			65	7
141	GAT6B	6.9000	G4	3.9	-1.2	3.0	-3.0	1.0000	4.1	0.9538	5.6			65	7
141	GAT6B	6.9000	G5	3.9	-1.2	3.0	-3.0	1.0000	4.1	0.9538	6.2			65	7
141	GAT6B	6.9000	G6	3.9	-1.2	3.0	-3.0	1.0000	4.1	0.9538	6.2			65	7
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0174	18.0	0.9281	23.0			65	7
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0266	17.8	0.9281	23.0			65	7
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0266	17.8	0.9281	23.0			65	7
SUBSYSTEM TOTALS				118.3	19.5	71.5	5.5				171.3				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:08

PLAN DE EXPANSION DEL SIN JUNIO-2010

AREA TOTALS

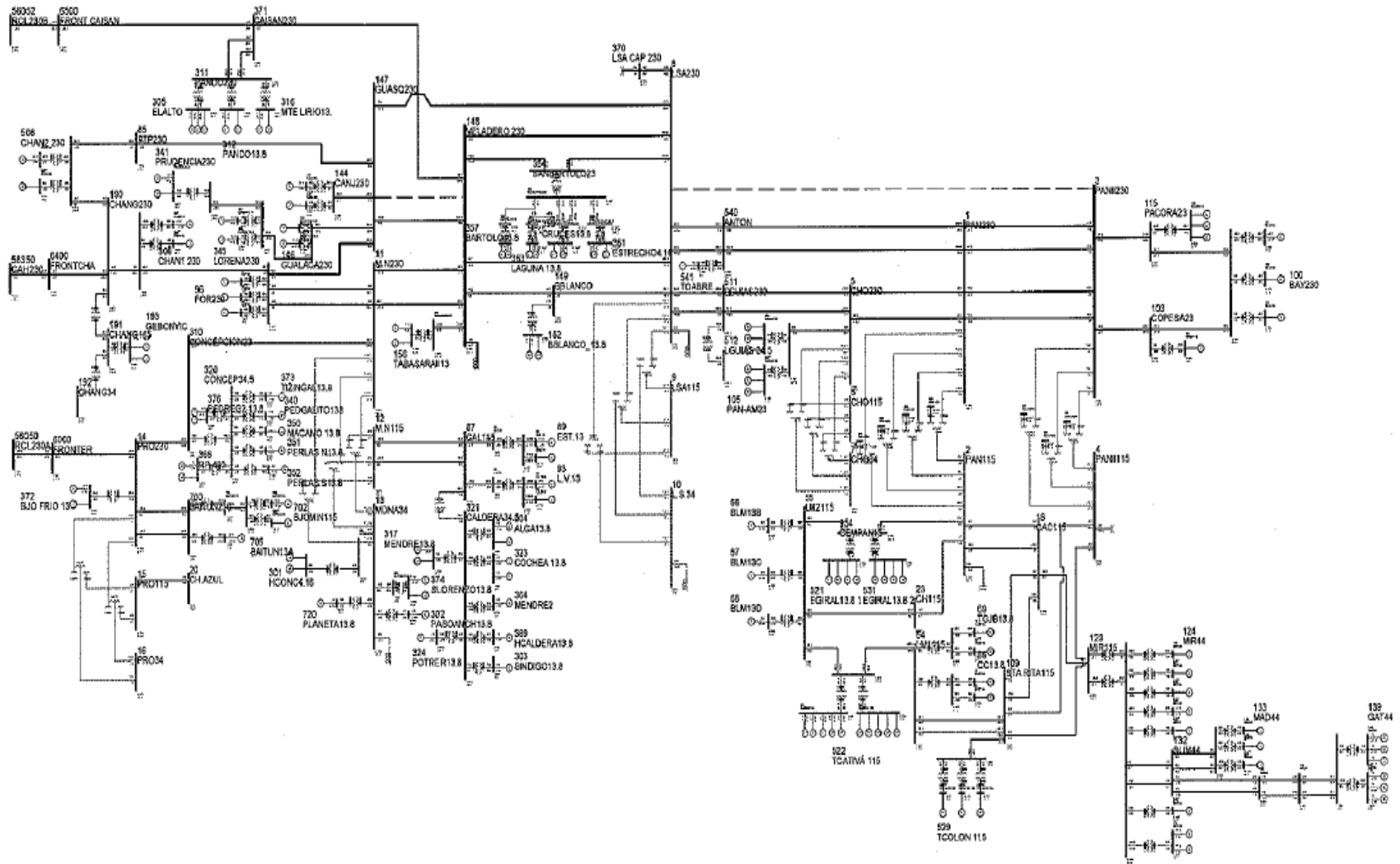
AÑO 2017 ESC-MOD DEMANDA-MAX-VERANO

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	1486.3	1330.8	0.0	0.0	0.0	108.7	46.8	107.5
GUATEMAL	215.6	275.1	-197.8	0.0	276.5	-15.1	430.0	
2	870.4	855.0	0.0	0.0	0.0	-0.1	15.5	0.0
SALVADOR	84.8	224.2	-70.6	0.0	228.3	-28.5	188.1	
3	1238.3	1203.0	0.0	0.0	0.0	-0.2	35.5	0.0
HONDURAS	475.5	321.1	-47.3	0.0	292.6	55.0	439.3	
4	534.5	525.2	0.0	0.0	0.0	-0.3	9.6	0.0
NICARAGU	50.9	207.6	-57.2	0.0	180.8	-48.2	129.6	
5	1301.7	1280.2	0.0	0.0	0.0	-1.0	22.5	0.0
COSTA RI	259.6	520.4	-229.2	0.0	416.0	26.8	357.8	
6	1504.4	1600.6	0.0	0.0	0.0	-167.4	71.2	-167.5
PANAMA	104.4	325.0	-219.0	0.0	645.6	15.9	628.1	

7	118.3	57.1	0.0	0.0	0.0	60.2	0.9	60.0
ACANAL	19.5	11.6	0.0	0.0	0.0	-5.8	13.7	
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	7054.0	6851.9	0.0	0.0	0.0	0.0	202.1	0.0
	1210.4	1884.9	-821.2	0.0	2039.8	0.0	2186.5	

6.4. Demanda Mínima de Verano



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MIN-VERANO

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BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0126	232.89	14		PRO230		230.00	6	1.0292	236.71
85		PTP230		230.00	6	1.0182	234.19	96		FOR230		230.00	6	1.0147	233.39
100		BAY230		230.00	6	1.0001	230.01	144		CANJ230		230.00	6	1.0140	233.23
146		GUALACA230		230.00	6	1.0161	233.70	147		GUASQ230		230.00	6	1.0140	233.22
148		VELADERO 230		230.00	6	1.0056	231.29	149		BBLANCO		230.00	6	1.0045	231.03
155		TABASARAI230		230.00	6	1.0061	231.41	190		CHANG230		230.00	6	1.0228	235.24
306		CHAN1 230		230.00	6	1.0198	234.56	310		CONCEPCION230		230.00	6	1.0228	235.24
311		PANDO230		230.00	6	1.0496	241.41	341		PRUDENCIA230		230.00	6	1.0192	234.40
345		LORENA230		230.00	6	1.0183	234.22	354		SANBARTOLO230		230.00	6	1.0023	230.52
371		CAISAN230		230.00	6	1.0482	241.09	506		CHAN2 230		230.00	6	1.0239	235.49
700		BAITUN230		230.00	6	1.0286	236.57	6000		FRONTER		230.00	6	1.0324	237.44
6400		FRONTCHA		230.00	6	1.0246	235.65	6500		FRONT CAISAN		230.00	6	1.0469	240.80

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	0.9858	226.73	3		PANII230		230.00	6	0.9859	226.76
5		CHO230		230.00	6	0.9859	226.76	8		LSA230		230.00	6	0.9927	228.32
103		COPESA23		230.00	6	0.9885	227.36	105		PAN-AM23		230.00	6	0.9859	226.76
115		PACORA23		230.00	6	0.9897	227.63	370		LSA CAP 230		230.00	6	0.9927	228.32
511		LGUIAS230		230.00	6	0.9907	227.86	540		ANTON		230.00	6	0.9995	229.88

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BUSES WITH VOLTAGE 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	1.0361	119.15	12		M.N115		115.00	6	1.0098	116.13
15		PRO115		115.00	6	1.0311	118.58	20		CH.AZUL		115.00	6	1.0319	118.67
54		LM115		115.00	6	1.0028	115.32	55		LM2115		115.00	6	1.0039	115.44
87		CAL115		115.00	6	1.0181	117.08	88		EST115		115.00	6	1.0195	117.24
92		L.V115		115.00	6	1.0186	117.14	191		CHANG115		115.00	6	1.0118	116.35

522 TCATIVÁ 115	115.00	6	1.0035	115.40	701 BAITUN115	115.00	6	1.0190	117.18
702 BJOMIN115	115.00	6	1.0192	117.20					

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)
2		PAN115		115.00	6	0.9802	112.73	4		PANII115		115.00	6	0.9923	114.11
6		CHO115		115.00	6	0.9869	113.50	18		CAC115		115.00	6	0.9803	112.73
19		C.V115		115.00	6	0.9809	112.80	21		C.BAN115		115.00	6	0.9730	111.89
23		CH115		115.00	6	0.9811	112.83	26		LOC115		115.00	6	0.9739	112.00
30		MAR115		115.00	6	0.9771	112.37	33		STM115		115.00	6	0.9784	112.51
37		SAN115		115.00	6	0.9723	111.81	48		TINAJ115		115.00	6	0.9777	112.44
50		M.O115		115.00	6	0.9779	112.45	52		TOC115		115.00	6	0.9894	113.79
61		FFIELD		115.00	6	0.9996	114.95	109		STA RITA115		115.00	6	0.9997	114.96
123		MIR115		115.00	7	0.9853	113.32	154		CEMPAN15		115.00	6	0.9959	114.53
529		TCOLON 115		115.00	6	0.9997	114.97								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:10
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 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																	
66		BLM13B		13.800	V2	38.0	16.8	25.0	0.0	0.9900	42.0	0.9146	47.0			62	6
67		BLM13C		13.800	V3	38.0	16.8	25.0	0.0	0.9900	42.0	0.9146	47.0			62	6
68		BLM13D		13.800	V4	38.0	17.5	25.0	0.0	0.9900	42.3	0.9083	47.0			62	6
90		EST-13L		13.800	E1	22.8	3.7	12.0	-5.0	0.9800	23.6	0.9870	27.0			64	6
94		LV-13.8L		13.800	L1	25.6	4.2	12.0	-5.0	0.9800	26.5	0.9869	27.0			64	6
101		BAY13A		13.800	B1	60.2	30.0	50.0	-25.0	0.9880	68.0	0.8952	96.0			61	6
SYST																	
142		CANJ13A		13.800	C1	39.0	7.3	29.0	-29.0	0.9800	40.5	0.9831	69.0			64	6
150		GUALACA 13-213.800		13.800	G2	11.8	-6.2	7.4	-7.4	0.9900	13.5	0.8857	14.8			64	6
152		BBLANCO_13.813.800		13.800	G1	12.0	-1.9	7.0	-7.0	0.9900	12.3	0.9877	16.0			64	6
156		TABASARAI1313.800		13.800	G1	13.8	0.2	5.7	0.2	1.0062	13.7	0.9998	20.5			1	6
193		GEBONYIC 13.800		13.800	G1	9.5	-4.0	4.0	-4.0	0.9989	10.3	0.9216	35.3			64	6
302		PASOANCH13.813.800		13.800	P1	4.1	2.0	2.0	-2.0	0.9524	4.8	0.8988	6.2			64	6
303		SINDIGO13.8		13.800	G1	7.0	0.0	5.0	0.0	1.0937	6.4	1.0000	13.5			64	6
304		ALGA13.8		13.800	A1	4.8	-2.3	2.3	-2.3	1.0924	4.9	0.9063	5.7			64	6
305		ELALTO 13.800		13.800	G1	12.0	-5.0	12.0	-5.0	1.0356	12.6	0.9231	20.6			64	6
305		ELALTO 13.800		13.800	G2	12.0	-5.0	12.0	-5.0	1.0356	12.6	0.9231	20.6			64	6

307	CHAN1 A	13.800	G1	60.0	-26.6	50.0	-50.0	0.9900	66.3	0.9142	118.6	64	6
312	PANDO13.8	13.800	G1	10.0	-5.0	10.0	-5.0	1.0179	11.0	0.8944	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	24.5	-5.0	12.0	-5.0	1.0371	24.1	0.9798	27.0	64	6
317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0936	8.6	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	4.5	0.0	0.0	0.0	1.0936	4.1	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	4.5	0.0	0.0	0.0	1.0936	4.1	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	4.0	-2.0	2.0	-2.0	0.9909	4.5	0.8928	6.2	64	6
340	PEDGALITO13813.800	13.800	P1	17.0	1.5	12.0	-5.0	0.9800	17.4	0.9961	27.0	64	6
342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	1.0027	13.0	0.9231	19.9	64	6
343	PRUDENCIA_1	13.800	G1	19.0	-9.8	9.8	-9.8	1.0008	21.3	0.8895	33.0	64	6
346	LORENA 13-2	13.800	L2	12.0	-5.0	10.5	-5.0	1.0027	13.0	0.9231	19.9	64	6
351	PERLAS N13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9805	10.5	0.8742	13.5	64	6
352	PERLAS S13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9805	10.5	0.8742	13.5	64	6
357	BARTOLO13.8	13.800	G1	5.2	0.0	3.7	-3.7	0.9900	5.3	1.0000	8.5	64	6
359	CRUCES13.8	13.800	G1	3.1	-0.3	2.3	-2.3	0.9900	3.1	0.9965	5.6	64	6
361	ESTRECHO4.164.1600	13.800	G1	3.5	-0.3	2.5	-2.5	0.9900	3.6	0.9952	5.6	64	6
363	LAGUNA 13.8	13.800	G1	3.5	-0.5	2.4	-2.4	0.9900	3.6	0.9911	5.8	64	6
364	MENDRE2	13.800	G1	6.5	3.9	3.9	-3.9	0.9944	7.6	0.8592	8.9	64	6
368	RP-490	13.800	G1	4.2	-2.4	2.4	-2.4	1.0115	4.8	0.8674	5.5	64	6
369	HCALDERA13.813.800	13.800	G1	3.4	1.9	1.9	-1.9	0.9932	3.9	0.8689	4.3	64	6
372	BJO FRIO 13	13.800	G1	26.6	-9.8	9.8	-9.8	1.0105	28.0	0.9388	33.0	64	6
373	TIZINGAL13.813.800	13.800	G1	4.0	2.2	2.2	-2.2	0.9788	4.7	0.8719	21.6	64	6
374	SLORENZO13.813.800	13.800	G1	3.8	-0.4	2.0	-2.0	1.0000	3.8	0.9942	4.5	64	6
376	PEDREG2 13.813.800	13.800	G1	6.0	-3.1	3.1	-3.1	1.0136	6.7	0.8855	7.2	64	6
507	CHAN2 A	13.800	G1	60.0	2.9	50.0	-50.0	1.0000	60.1	0.9988	118.6	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	4.5	6.6	-6.6	0.9900	9.5	0.8776	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	4.5	6.6	-6.6	0.9900	9.5	0.8776	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	4.5	6.6	-6.6	0.9900	9.5	0.8776	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	4.5	6.6	-6.6	0.9900	9.5	0.8776	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	4.5	6.6	-6.6	0.9900	9.5	0.8776	10.9	62	6
541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0008	30.0	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	19.0	-1.6	13.0	-13.0	1.0000	19.1	0.9966	30.5	64	6
705	BAITUN13A	13.800	G1	30.0	-11.6	26.6	-26.6	1.0000	32.2	0.9330	50.6	64	6
720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9524	4.3	0.8724	6.2	64	6
SUBSYSTEM TOTALS				797.3	32.9	522.9	-353.9				1377.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:10
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 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																	
129		MIR13D		13.800	G4	31.5	7.7	15.0	0.0	1.0000	32.4	0.9715	44.1			65	7
AREA																	
140		GAT6A		6.9000	G1	1.8	-0.2	2.0	-2.0	1.0000	1.8	0.9961	4.1			65	7
140		GAT6A		6.9000	G2	1.8	-0.2	2.0	-2.0	1.0000	1.8	0.9961	4.1			65	7
140		GAT6A		6.9000	G3	1.8	-0.2	2.0	-2.0	1.0000	1.8	0.9961	4.1			65	7
141		GAT6B		6.9000	G4	3.6	-0.9	3.0	-3.0	1.0000	3.7	0.9695	5.6			65	7
141		GAT6B		6.9000	G5	3.6	-0.9	3.0	-3.0	1.0000	3.7	0.9695	6.2			65	7
141		GAT6B		6.9000	G6	3.6	-0.9	3.0	-3.0	1.0000	3.7	0.9695	6.2			65	7
171		MIR13H		13.800	M1	15.8	6.8	11.2	6.8	1.0185	16.9	0.9181	23.0			65	7
171		MIR13H		13.800	M2	15.8	6.8	11.2	6.8	1.0185	16.9	0.9181	23.0			65	7
SUBSYSTEM TOTALS						79.3	18.1	52.3	-1.4				120.6				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:10
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2017 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	GUATEMAL		1350.3	1330.8	0.0	0.0	0.0	-25.5	45.0	-24.6
			219.0	275.1	-197.4	0.0	276.1	-0.7	418.1	
2	SALVADOR		869.0	855.0	0.0	0.0	0.0	0.2	13.8	0.0
			77.3	224.2	-70.7	0.0	228.8	-22.4	175.0	
3	HONDURAS		1236.8	1203.0	0.0	0.0	0.0	0.1	33.7	0.0
			462.0	321.1	-47.6	0.0	293.9	54.8	427.6	
4	NICARAGU		531.9	525.2	0.0	0.0	0.0	0.1	6.6	0.0
			32.5	207.6	-57.8	0.0	182.3	-47.2	112.2	
5	COSTA RI		1296.2	1280.2	0.0	0.0	0.0	0.0	16.0	0.0
			195.1	520.4	-231.1	0.0	420.1	30.4	295.5	
6	PANAMA		797.3	797.4	0.0	0.0	0.0	-22.0	21.9	-22.4
			32.9	289.4	126.7	0.0	582.5	-13.2	212.5	
7	ACANAL		79.3	31.4	0.0	0.0	0.0	47.2	0.7	47.0
			18.1	11.4	0.0	0.0	0.0	-1.8	8.5	

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	6160.8	6023.0	0.0	0.0	0.0	0.0	137.8	0.0
	1036.9	1849.1	-477.9	0.0	1983.7	0.0	1649.4	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

MON, OCT 18 2010 9:13

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)
11		M.N230		230.00	6	1.0185	234.25	14		PRO230		230.00	6	1.0320	237.36
85		PTP230		230.00	6	1.0232	235.34	96		FOR230		230.00	6	1.0194	234.45
100		BAY230		230.00	6	1.0330	237.59	103		COPESA23		230.00	6	1.0036	230.83
115		PACORA23		230.00	6	1.0065	231.49	144		CANJ230		230.00	6	1.0171	233.94
146		GUALACA230		230.00	6	1.0215	234.95	147		GUASQ230		230.00	6	1.0170	233.91
148		VELADERO	230	230.00	6	1.0099	232.29	149		BBLANCO		230.00	6	1.0080	231.84
155		TABASARAI	23230	230.00	6	1.0113	232.60	190		CHANG230		230.00	6	1.0346	237.96
306		CHAN1	230	230.00	6	1.0333	237.66	310		CONCEPCION	23230	230.00	6	1.0268	236.16
311		PANDO230		230.00	6	1.0452	240.40	325		STA RITA	230	230.00	6	1.0099	232.27
341		PRUDENCIA	230230	230.00	6	1.0286	236.57	345		LORENA	230	230.00	6	1.0260	235.99
354		SANBARTOLO	23230	230.00	6	1.0040	230.92	371		CAISAN	230	230.00	6	1.0442	240.17
506		CHAN2	230	230.00	6	1.0351	238.07	540		ANTON		230.00	6	1.0129	232.96
700		BAITUN	230	230.00	6	1.0322	237.41	6000		FRONTER		230.00	6	1.0342	237.87
6400		FRONTCHA		230.00	6	1.0355	238.17	6500		FRONT CAISAN	230	230.00	6	1.0435	240.01

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9933	228.47	3		PANII230		230.00	6	0.9980	229.55
5		CHO230		230.00	6	0.9873	227.08	8		LSA230		230.00	6	0.9984	229.64
105		PAN-AM23		230.00	6	0.9873	227.08	370		LSA CAP	230	230.00	6	0.9984	229.64
511		LGUIAS	230	230.00	6	0.9906	227.83								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

MON, OCT 18 2010 9:13

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)
4		PANII115		115.00	6	1.0160	116.84	9		LSA115		115.00	6	1.0364	119.18
12		M.N115		115.00	6	1.0201	117.31	15		PRO115		115.00	6	1.0340	118.91
20		CH.AZUL		115.00	6	1.0348	119.00	52		TOC115		115.00	6	1.0117	116.34
54		LM1115		115.00	6	1.0107	116.23	55		LM2115		115.00	6	1.0113	116.30

61 FFIELD	115.00	6	1.0044	115.50	87 CAL115	115.00	6	1.0417	119.79
88 EST115	115.00	6	1.0460	120.29	92 L.V115	115.00	6	1.0433	119.98
109 STA RITA115	115.00	6	1.0106	116.22	154 CEMPAN15	115.00	6	1.0023	115.27
191 CHANG115	115.00	6	1.0243	117.80	522 TCATIVÁ 115	115.00	6	1.0112	116.28
529 TCOLON 115	115.00	6	1.0106	116.22	701 BAITUN115	115.00	6	1.0171	116.97
702 BJOMIN115	115.00	6	1.0195	117.24					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9878	113.60	6		CHO115		115.00	6	0.9888	113.72
18		CAC115		115.00	6	0.9872	113.52	19		C.V115		115.00	6	0.9944	114.35
21		C.BAN115		115.00	6	0.9746	112.08	23		CH115		115.00	6	0.9830	113.04
26		LOC115		115.00	6	0.9757	112.21	30		MAR115		115.00	6	0.9729	111.89
33		STM115		115.00	6	0.9849	113.26	37		SAN115		115.00	6	0.9742	112.04
48		TINAJ115		115.00	6	0.9837	113.13	50		M.O115		115.00	6	0.9839	113.15
123		MIR115		115.00	7	0.9924	114.12								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:13
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 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
66		BLM13B		13.800	V2	38.0	18.2	25.0	0.0	1.0000	42.1	0.9017	47.0			62	6
67		BLM13C		13.800	V3	38.0	18.2	25.0	0.0	1.0000	42.1	0.9017	47.0			62	6
68		BLM13D		13.800	V4	38.0	19.0	25.0	0.0	1.0000	42.5	0.8944	47.0			62	6
90		EST-13L		13.800	E1	22.0	8.2	12.0	-5.0	1.0200	23.0	0.9370	27.0			64	6
91		EST-13T		13.800	E2	22.0	8.2	12.0	-5.0	1.0200	23.0	0.9370	27.0			64	6
94		LV-13.8L		13.800	L1	25.0	9.2	12.0	-5.0	1.0200	26.1	0.9384	27.0			64	6
95		LV-13.8T		13.800	L2	25.0	9.2	12.0	-5.0	1.0200	26.1	0.9384	27.0			64	6
97		FOR13A		13.800	F1	75.0	3.6	50.0	-50.0	1.0200	73.6	0.9989	111.0			64	6
98		FOR13B		13.800	F2	75.0	3.6	50.0	-50.0	1.0200	73.6	0.9989	111.0			64	6
101		BAY13A		13.800	B1	79.5	31.3	50.0	-25.0	1.0180	83.9	0.9306	96.0			61	6
SWING																	
102		BAY13B		13.800	B2	81.2	31.4	50.0	-25.0	1.0180	85.6	0.9326	96.0			61	6
108		BAY13C		13.800	B3	81.2	31.4	50.0	-25.0	1.0180	85.6	0.9326	100.0			61	6
117		CB250A-1		13.800	C1	91.9	18.0	75.6	0.0	1.0200	91.8	0.9814	143.5			62	6
118		CB250A-2		13.800	C2	91.9	18.0	75.6	0.0	1.0200	91.8	0.9814	143.5			62	6
119		CB250B-1		13.800	C1	91.9	18.0	75.6	0.0	1.0200	91.8	0.9814	143.5			62	6
SYST																	

142	CANJ13A	13.800	C1	56.0	16.9	29.0	-29.0	1.0100	57.9	0.9572	69.0	64	6	
143	CANJ13B	13.800	C2	56.0	16.9	29.0	-29.0	1.0100	57.9	0.9572	69.0	64	6	
150	GUALACA	13-213.800	G2	12.6	-2.6	7.4	-7.4	1.0100	12.7	0.9792	14.8	64	6	
151	GUALACA	13.8	G1	12.6	-2.6	7.4	-7.4	1.0100	12.7	0.9792	14.8	64	6	
152	BBLANCO	13.813.800	G1	9.8	2.3	7.0	-7.0	1.0200	9.9	0.9737	16.0	64	6	
156	TABASARAI	11313.800	G1	14.7	2.5	5.7	0.2	1.0200	14.6	0.9863	20.5	1	6	
156	TABASARAI	11313.800	G2	14.7	2.5	5.7	0.2	1.0200	14.6	0.9863	20.5	1	6	
193	GEBONYIC	13.800	G1	9.0	-0.1	4.0	-4.0	1.0200	8.8	0.9999	35.3	64	6	
193	GEBONYIC	13.800	G2	9.0	-0.1	4.0	-4.0	1.0200	8.8	0.9999	35.3	64	6	
193	GEBONYIC	13.800	G3	9.0	-0.1	4.0	-4.0	1.0200	8.8	0.9999	35.3	64	6	
302	PASOANCH	13.813.800	P1	4.3	2.0	2.0	-2.0	0.9727	4.8	0.9048	6.2	64	6	
303	SINDIGO	13.8	G1	9.0	0.0	5.0	0.0	1.1179	8.1	1.0000	13.5	64	6	
304	ALGA	13.8	A1	4.8	-2.3	2.3	-2.3	1.1154	4.8	0.9063	5.7	64	6	
304	ALGA	13.8	A2	4.8	-2.3	2.3	-2.3	1.1154	4.8	0.9063	5.7	64	6	
305	ELALTO	13.800	G1	17.0	-5.0	12.0	-5.0	1.0224	17.3	0.9594	20.6	64	6	
305	ELALTO	13.800	G2	17.0	-5.0	12.0	-5.0	1.0224	17.3	0.9594	20.6	64	6	
305	ELALTO	13.800	G3	17.0	-5.0	12.0	-5.0	1.0224	17.3	0.9594	20.6	64	6	
307	CHAN1	A	13.800	G1	90.0	-9.1	50.0	-50.0	1.0200	88.7	0.9950	118.6	64	6
312	PANDO	13.8	G1	15.0	-1.2	10.0	-5.0	1.0150	14.8	0.9968	19.9	64	6	
312	PANDO	13.8	G2	15.0	-1.2	10.0	-5.0	1.0150	14.8	0.9968	19.9	64	6	
316	MTE LIRIO	13.13.800	G1	24.0	-5.0	12.0	-5.0	1.0169	24.1	0.9790	27.0	64	6	
316	MTE LIRIO	13.13.800	G2	24.0	-5.0	12.0	-5.0	1.0169	24.1	0.9790	27.0	64	6	
317	MENDRE	13.8	M1	9.0	0.0	0.0	0.0	1.1174	8.1	1.0000	35.3	64	6	
317	MENDRE	13.8	M2	9.0	0.0	0.0	0.0	1.1174	8.1	1.0000	35.3	64	6	
323	COCHEA	13.8	C1	5.3	0.0	0.0	0.0	1.1178	4.8	1.0000	35.3	64	6	
323	COCHEA	13.8	C2	5.3	0.0	0.0	0.0	1.1178	4.8	1.0000	35.3	64	6	
324	POTRER	13.8	P1	4.0	1.5	2.0	-2.0	1.0150	4.2	0.9362	6.2	64	6	
340	PEDGALITO	13813.800	P1	18.0	7.9	12.0	-5.0	1.0000	19.6	0.9162	27.0	64	6	
342	LORENA	13.8	L1	14.4	-5.0	10.5	-5.0	1.0103	15.1	0.9444	19.9	64	6	
343	PRUDENCIA	_1	13.800	G1	23.8	-4.2	9.8	-9.8	1.0100	23.9	0.9851	33.0	64	6
343	PRUDENCIA	_1	13.800	G2	23.8	-4.2	9.8	-9.8	1.0100	23.9	0.9851	33.0	64	6
346	LORENA	13-2	13.800	L2	14.4	-3.4	10.5	-5.0	1.0150	14.6	0.9725	19.9	64	6
350	MACANO	13.8	G1	2.9	-1.0	1.0	-1.0	1.0838	2.8	0.9458	6.2	64	6	
351	PERLAS	N13.813.800	G1	8.5	5.0	5.0	-5.0	0.9871	10.0	0.8619	13.5	64	6	
352	PERLAS	S13.813.800	G1	8.5	5.0	5.0	-5.0	0.9871	10.0	0.8619	13.5	64	6	
357	BARTOLO	13.8	G1	7.0	1.6	3.7	-3.7	1.0150	7.1	0.9745	8.5	64	6	
357	BARTOLO	13.8	G2	7.0	1.6	3.7	-3.7	1.0150	7.1	0.9745	8.5	64	6	
359	CRUCES	13.8	G1	4.1	0.6	2.3	-2.3	1.0150	4.1	0.9881	5.6	64	6	
359	CRUCES	13.8	G2	4.1	0.6	2.3	-2.3	1.0150	4.1	0.9881	5.6	64	6	
361	ESTRECHO	4.164.1600	G1	4.9	0.5	2.5	-2.5	1.0150	4.9	0.9956	5.6	64	6	
361	ESTRECHO	4.164.1600	G2	4.9	0.5	2.5	-2.5	1.0150	4.9	0.9956	5.6	64	6	
363	LAGUNA	13.8	G1	4.2	0.3	2.4	-2.4	1.0150	4.1	0.9974	5.8	64	6	
363	LAGUNA	13.8	G2	4.2	0.3	2.4	-2.4	1.0150	4.1	0.9974	5.8	64	6	

364	MENDRE2	13.800	G1	7.6	1.5	3.9	-3.9	1.0150	7.6	0.9810	8.9	64	6
368	RP-490	13.800	G1	4.2	-1.4	2.4	-2.4	1.0150	4.4	0.9478	5.5	64	6
368	RP-490	13.800	G2	4.2	-1.4	2.4	-2.4	1.0150	4.4	0.9478	5.5	64	6
369	HCALDERA13.813.800	G1	3.4	1.5	1.9	-1.9	1.0150	3.7	0.9161	4.3	64	6	
372	BJO FRIO 13	13.800	G1	23.8	-3.8	9.8	-9.8	1.0150	23.7	0.9877	33.0	64	6
372	BJO FRIO 13	13.800	G2	23.8	-3.8	9.8	-9.8	1.0150	23.7	0.9877	33.0	64	6
373	TIZINGAL13.813.800	G1	3.9	2.2	2.2	-2.2	0.9854	4.6	0.8689	21.6	64	6	
374	SLORENZO13.813.800	G1	3.9	-0.8	2.0	-2.0	1.0150	3.9	0.9772	4.5	64	6	
374	SLORENZO13.813.800	G2	3.9	-0.8	2.0	-2.0	1.0150	3.9	0.9772	4.5	64	6	
376	PEDREG2 13.813.800	G1	5.5	-2.2	3.1	-3.1	1.0150	5.9	0.9289	7.2	64	6	
376	PEDREG2 13.813.800	G2	5.5	-2.2	3.1	-3.1	1.0150	5.9	0.9289	7.2	64	6	
507	CHAN2 A	13.800	G1	86.0	11.7	50.0	-50.0	1.0180	85.3	0.9908	118.6	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	4.9	6.6	-6.6	1.0000	9.6	0.8609	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	4.9	6.6	-6.6	1.0000	9.6	0.8609	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	4.9	6.6	-6.6	1.0000	9.6	0.8609	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	4.9	6.6	-6.6	1.0000	9.6	0.8609	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	4.9	6.6	-6.6	1.0000	9.6	0.8609	10.9	62	6
541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0141	29.6	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	23.8	2.0	13.0	-13.0	1.0200	23.4	0.9966	30.5	64	6
704	BJOMIN13B	13.800	G2	23.8	2.0	13.0	-13.0	1.0200	23.4	0.9966	30.5	64	6
705	BAITUN13A	13.800	G1	36.5	-4.0	26.6	-26.6	1.0200	36.1	0.9940	50.6	64	6
706	BAITUN13B	13.800	G2	36.5	-4.0	26.6	-26.6	1.0200	36.1	0.9940	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9727	5.1	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1880.5	272.5	1138.6	-654.0				2760.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:13
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 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																	
126		MIR13A		12.000	G1	7.6	0.0	5.0	0.0	1.0317	7.4	1.0000	13.5			65	7
129		MIR13D		13.800	G4	34.2	5.3	15.0	0.0	1.0000	34.6	0.9881	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.2	8.0	0.0	1.0000	17.1	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	0.4	2.0	-2.0	1.0000	2.0	0.9835	4.1			65	7
140		GAT6A		6.9000	G2	1.9	0.4	2.0	-2.0	1.0000	2.0	0.9835	4.1			65	7
140		GAT6A		6.9000	G3	1.9	0.4	2.0	-2.0	1.0000	2.0	0.9835	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-0.4	3.0	-3.0	1.0000	3.9	0.9954	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-0.4	3.0	-3.0	1.0000	3.9	0.9954	6.2			65	7

141 GAT6B	6.9000 G6	3.9	-0.4	3.0	-3.0	1.0000	3.9	0.9954	6.2	65	7
170 MIR13G	13.800 M1	17.0	6.8	11.2	6.8	1.0143	18.1	0.9281	23.0	65	7
171 MIR13H	13.800 M1	17.0	6.8	11.2	6.8	1.0234	17.9	0.9281	23.0	65	7
171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0234	17.9	0.9281	23.0	65	7
SUBSYSTEM TOTALS		127.3	25.9	76.5	5.5				184.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:13
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2020 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	1370.1	1330.8	0.0	0.0	0.0	-5.2	44.4	-5.2
GUATEMAL	212.8	275.1	-198.3	0.0	277.2	-0.3	413.6	
2	868.7	855.0	0.0	0.0	0.0	0.0	13.7	0.0
SALVADOR	73.9	224.2	-70.8	0.0	229.0	-25.2	174.8	
3	1236.7	1203.0	0.0	0.0	0.0	0.0	33.7	0.0
HONDURAS	461.2	321.1	-47.6	0.0	294.0	54.4	427.4	
4	532.0	525.2	0.0	0.0	0.0	0.0	6.7	0.0
NICARAGU	32.7	207.6	-57.8	0.0	182.3	-47.3	112.5	
5	1296.5	1280.2	0.0	0.0	0.0	0.1	16.2	0.0
COSTA RI	193.7	520.4	-231.2	0.0	420.5	25.7	299.3	
6	1880.5	1844.6	0.0	0.0	0.0	-55.2	91.1	-54.8
PANAMA	272.5	374.6	-353.2	0.0	665.8	-6.4	923.3	
7	127.3	65.9	0.0	0.0	0.0	60.3	1.1	60.0
ACANAL	25.9	13.4	0.0	0.0	0.0	-0.9	13.4	
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	7311.7	7104.7	0.0	0.0	0.0	0.0	207.1	0.0
	1272.7	1936.2	-958.9	0.0	2068.9	0.0	2364.3	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

MON, OCT 18 2010 9:15

BUSES WITH VOLTAGE 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	1.0173	233.98	14		PRO230		230.00	6	1.0313	237.20
85		PTP230		230.00	6	1.0223	235.13	96		FOR230		230.00	6	1.0183	234.21
100		BAY230		230.00	6	1.0316	237.28	103		COPESA23		230.00	6	1.0015	230.34
115		PACORA23		230.00	6	1.0045	231.03	144		CANJ230		230.00	6	1.0160	233.67
146		GUALACA230		230.00	6	1.0204	234.70	147		GUASQ230		230.00	6	1.0158	233.64
148		VELADERO		230230.00	6	1.0079	231.81	149		BBLANCO		230.00	6	1.0058	231.34
155		TABASARAI		23230.00	6	1.0093	232.15	190		CHANG230		230.00	6	1.0341	237.85
306		CHAN1		230	6	1.0328	237.54	310		CONCEPCION		23230.00	6	1.0259	235.95
311		PANDO230		230.00	6	1.0442	240.16	325		STA RITA		230	6	1.0087	232.00
341		PRUDENCIA		230230.00	6	1.0275	236.33	345		LORENA		230	6	1.0250	235.75
354		SANBARTOLO		23230.00	6	1.0014	230.33	371		CAISAN		230	6	1.0432	239.93
506		CHAN2		230	6	1.0346	237.95	540		ANTON		230.00	6	1.0110	232.53
700		BAITUN		230	6	1.0316	237.26	6000		FRONTER		230.00	6	1.0335	237.70
6400		FRONTCHA		230.00	6	1.0350	238.06	6500		FRONT CAISAN		230.00	6	1.0425	239.77

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9910	227.92	3		PANII230		230.00	6	0.9958	229.03
5		CHO230		230.00	6	0.9801	225.43	8		LSA230		230.00	6	0.9948	228.81
105		PAN-AM23		230.00	6	0.9801	225.43	370		LSA CAP		230	6	0.9948	228.81
511		LGUIAS		230	6	0.9859	226.77								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

MON, OCT 18 2010 9:15

BUSES WITH VOLTAGE 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	1.0136	116.57	9		LSA115		115.00	6	1.0325	118.73
12		M.N115		115.00	6	1.0195	117.24	15		PRO115		115.00	6	1.0333	118.83
20		CH.AZUL		115.00	6	1.0340	118.92	52		TOC115		115.00	6	1.0093	116.07
54		LM1115		115.00	6	1.0096	116.10	55		LM2115		115.00	6	1.0102	116.17

61 FFIELD	115.00	6	1.0033	115.38	87 CAL115	115.00	6	1.0414	119.76
88 EST115	115.00	6	1.0457	120.25	92 L.V115	115.00	6	1.0430	119.95
109 STA RITA115	115.00	6	1.0094	116.08	154 CEMPAN15	115.00	6	1.0009	115.10
191 CHANG115	115.00	6	1.0240	117.76	522 TCATIVÁ 115	115.00	6	1.0101	116.16
529 TCOLON 115	115.00	6	1.0094	116.08	701 BAITUN115	115.00	6	1.0167	116.92
702 BJOMIN115	115.00	6	1.0191	117.20					

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)
2		PAN115		115.00	6	0.9856	113.35	6		CHO115		115.00	6	0.9816	112.89
18		CAC115		115.00	6	0.9850	113.28	19		C.V115		115.00	6	0.9920	114.08
21		C.BAN115		115.00	6	0.9724	111.83	23		CH115		115.00	6	0.9812	112.84
26		LOC115		115.00	6	0.9735	111.95	30		MAR115		115.00	6	0.9707	111.63
33		STM115		115.00	6	0.9827	113.01	37		SAN115		115.00	6	0.9720	111.78
48		TINAJ115		115.00	6	0.9815	112.88	50		M.O115		115.00	6	0.9817	112.90
123		MIR115		115.00	7	0.9905	113.91								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:15
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 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
66		BLM13B		13.800	V2	38.0	18.7	25.0	0.0	1.0000	42.4	0.8972	47.0			62	6
67		BLM13C		13.800	V3	38.0	18.7	25.0	0.0	1.0000	42.4	0.8972	47.0			62	6
68		BLM13D		13.800	V4	38.0	19.5	25.0	0.0	1.0000	42.7	0.8896	47.0			62	6
90		EST-13L		13.800	E1	22.0	8.3	12.0	-5.0	1.0200	23.1	0.9358	27.0			64	6
91		EST-13T		13.800	E2	22.0	8.3	12.0	-5.0	1.0200	23.1	0.9358	27.0			64	6
94		LV-13.8L		13.800	L1	25.0	9.3	12.0	-5.0	1.0200	26.2	0.9372	27.0			64	6
95		LV-13.8T		13.800	L2	25.0	9.3	12.0	-5.0	1.0200	26.2	0.9372	27.0			64	6
97		FOR13A		13.800	F1	75.0	4.5	50.0	-50.0	1.0200	73.7	0.9982	111.0			64	6
98		FOR13B		13.800	F2	75.0	4.5	50.0	-50.0	1.0200	73.7	0.9982	111.0			64	6
101		BAY13A		13.800	B1	79.6	32.3	50.0	-25.0	1.0180	84.3	0.9265	96.0			61	6
SWING																	
102		BAY13B		13.800	B2	81.3	32.5	50.0	-25.0	1.0180	86.0	0.9285	96.0			61	6
108		BAY13C		13.800	B3	81.3	32.5	50.0	-25.0	1.0180	86.0	0.9285	100.0			61	6
117		CB250A-1		13.800	C1	91.9	19.7	75.6	0.0	1.0200	92.1	0.9777	143.5			62	6
118		CB250A-2		13.800	C2	91.9	19.7	75.6	0.0	1.0200	92.1	0.9777	143.5			62	6
119		CB250B-1		13.800	C1	91.9	19.7	75.6	0.0	1.0200	92.1	0.9777	143.5			62	6
SYST																	

142	CANJ13A	13.800	C1	56.0	17.1	29.0	-29.0	1.0100	58.0	0.9562	69.0	64	6
143	CANJ13B	13.800	C2	56.0	17.1	29.0	-29.0	1.0100	58.0	0.9562	69.0	64	6
150	GUALACA 13-213.800	G2	12.6	-2.3	7.4	-7.4	1.0100	12.7	0.9834	14.8	64	6	
151	GUALACA13.8	13.800	G1	12.6	-2.3	7.4	-7.4	1.0100	12.7	0.9834	14.8	64	6
152	BBLANCO_13.813.800	G1	9.8	2.7	7.0	-7.0	1.0200	10.0	0.9652	16.0	64	6	
156	TABASARAI1313.800	G1	14.7	2.9	5.7	0.2	1.0200	14.7	0.9810	20.5	1	6	
156	TABASARAI1313.800	G2	14.7	2.9	5.7	0.2	1.0200	14.7	0.9810	20.5	1	6	
193	GEBONYIC	13.800	G1	9.0	-0.1	4.0	-4.0	1.0200	8.8	1.0000	35.3	64	6
193	GEBONYIC	13.800	G2	9.0	-0.1	4.0	-4.0	1.0200	8.8	1.0000	35.3	64	6
193	GEBONYIC	13.800	G3	9.0	-0.1	4.0	-4.0	1.0200	8.8	1.0000	35.3	64	6
302	PASOANCH13.813.800	P1	4.3	2.0	2.0	-2.0	0.9716	4.8	0.9049	6.2	64	6	
303	SINDIGO13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1179	8.1	1.0000	13.5	64	6
304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.1153	4.8	0.9063	5.7	64	6
304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.1153	4.8	0.9063	5.7	64	6
305	ELALTO	13.800	G1	17.0	-5.0	12.0	-5.0	1.0213	17.4	0.9594	20.6	64	6
305	ELALTO	13.800	G2	17.0	-5.0	12.0	-5.0	1.0213	17.4	0.9594	20.6	64	6
305	ELALTO	13.800	G3	17.0	-5.0	12.0	-5.0	1.0213	17.4	0.9594	20.6	64	6
307	CHAN1 A	13.800	G1	90.0	-8.6	50.0	-50.0	1.0200	88.7	0.9955	118.6	64	6
312	PANDO13.8	13.800	G1	15.0	-1.1	10.0	-5.0	1.0150	14.8	0.9972	19.9	64	6
312	PANDO13.8	13.800	G2	15.0	-1.1	10.0	-5.0	1.0150	14.8	0.9972	19.9	64	6
316	MTE LIRIO13.13.800	G1	24.0	-5.0	12.0	-5.0	1.0158	24.1	0.9790	27.0	64	6	
316	MTE LIRIO13.13.800	G2	24.0	-5.0	12.0	-5.0	1.0158	24.1	0.9790	27.0	64	6	
317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1174	8.1	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1174	8.1	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.3	0.0	0.0	0.0	1.1178	4.8	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.3	0.0	0.0	0.0	1.1178	4.8	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	4.0	1.6	2.0	-2.0	1.0150	4.2	0.9294	6.2	64	6
340	PEDGALITO13813.800	P1	18.0	8.0	12.0	-5.0	1.0000	19.7	0.9134	27.0	64	6	
342	LORENA13.8	13.800	L1	14.4	-4.7	10.5	-5.0	1.0100	15.0	0.9495	19.9	64	6
343	PRUDENCIA_1	13.800	G1	23.8	-3.9	9.8	-9.8	1.0100	23.9	0.9870	33.0	64	6
343	PRUDENCIA_1	13.800	G2	23.8	-3.9	9.8	-9.8	1.0100	23.9	0.9870	33.0	64	6
346	LORENA 13-2	13.800	L2	14.4	-3.1	10.5	-5.0	1.0150	14.5	0.9778	19.9	64	6
350	MACANO 13.8	13.800	G1	2.9	-1.0	1.0	-1.0	1.0835	2.8	0.9459	6.2	64	6
351	PERLAS N13.813.800	G1	8.5	5.0	5.0	-5.0	0.9868	10.0	0.8620	13.5	64	6	
352	PERLAS S13.813.800	G1	8.5	5.0	5.0	-5.0	0.9868	10.0	0.8620	13.5	64	6	
357	BARTOLO13.8	13.800	G1	7.0	1.7	3.7	-3.7	1.0150	7.1	0.9719	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.0	1.7	3.7	-3.7	1.0150	7.1	0.9719	8.5	64	6
359	CRUCES13.8	13.800	G1	4.1	0.7	2.3	-2.3	1.0150	4.1	0.9862	5.6	64	6
359	CRUCES13.8	13.800	G2	4.1	0.7	2.3	-2.3	1.0150	4.1	0.9862	5.6	64	6
361	ESTRECHO4.164.1600	G1	4.9	0.5	2.5	-2.5	1.0150	4.9	0.9947	5.6	64	6	
361	ESTRECHO4.164.1600	G2	4.9	0.5	2.5	-2.5	1.0150	4.9	0.9947	5.6	64	6	
363	LAGUNA 13.8	13.800	G1	4.2	0.3	2.4	-2.4	1.0150	4.1	0.9966	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.2	0.3	2.4	-2.4	1.0150	4.1	0.9966	5.8	64	6

364	MENDRE2	13.800	G1	7.6	1.6	3.9	-3.9	1.0150	7.6	0.9789	8.9	64	6
368	RP-490	13.800	G1	4.2	-1.4	2.4	-2.4	1.0150	4.4	0.9496	5.5	64	6
368	RP-490	13.800	G2	4.2	-1.4	2.4	-2.4	1.0150	4.4	0.9496	5.5	64	6
369	HCALDERA13.813.800	G1	3.4	1.6	1.9	-1.9	1.0150	3.7	0.9076	4.3	64	6	
372	BJO FRIO 13	13.800	G1	23.8	-3.6	9.8	-9.8	1.0150	23.7	0.9890	33.0	64	6
372	BJO FRIO 13	13.800	G2	23.8	-3.6	9.8	-9.8	1.0150	23.7	0.9890	33.0	64	6
373	TIZINGAL13.813.800	G1	3.9	2.2	2.2	-2.2	0.9851	4.6	0.8691	21.6	64	6	
374	SLORENZO13.813.800	G1	3.9	-0.8	2.0	-2.0	1.0150	3.9	0.9809	4.5	64	6	
374	SLORENZO13.813.800	G2	3.9	-0.8	2.0	-2.0	1.0150	3.9	0.9809	4.5	64	6	
376	PEDREG2 13.813.800	G1	5.5	-2.2	3.1	-3.1	1.0150	5.8	0.9313	7.2	64	6	
376	PEDREG2 13.813.800	G2	5.5	-2.2	3.1	-3.1	1.0150	5.8	0.9313	7.2	64	6	
507	CHAN2 A	13.800	G1	86.0	12.3	50.0	-50.0	1.0180	85.4	0.9900	118.6	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	5.0	6.6	-6.6	1.0000	9.7	0.8549	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	5.0	6.6	-6.6	1.0000	9.7	0.8549	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	5.0	6.6	-6.6	1.0000	9.7	0.8549	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	5.0	6.6	-6.6	1.0000	9.7	0.8549	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	5.0	6.6	-6.6	1.0000	9.7	0.8549	10.9	62	6
541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0122	29.6	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	23.8	2.0	13.0	-13.0	1.0200	23.4	0.9964	30.5	64	6
704	BJOMIN13B	13.800	G2	23.8	2.0	13.0	-13.0	1.0200	23.4	0.9964	30.5	64	6
705	BAITUN13A	13.800	G1	36.6	-3.7	26.6	-26.6	1.0200	36.0	0.9948	50.6	64	6
706	BAITUN13B	13.800	G2	36.6	-3.7	26.6	-26.6	1.0200	36.0	0.9948	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9716	5.1	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1880.8	292.3	1138.6	-654.0				2760.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:15
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 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															
126	MIR13A	12.000	G1	7.6	0.0	5.0	0.0	1.0308	7.4	1.0000	13.5			65	7
129	MIR13D	13.800	G4	34.2	5.7	15.0	0.0	1.0000	34.7	0.9866	44.1			65	7
AREA															
130	MIR13F	13.800	G5	17.1	0.6	8.0	0.0	1.0000	17.1	0.9995	27.7			65	7
140	GAT6A	6.9000	G1	1.9	0.4	2.0	-2.0	1.0000	2.0	0.9803	4.1			65	7
140	GAT6A	6.9000	G2	1.9	0.4	2.0	-2.0	1.0000	2.0	0.9803	4.1			65	7
140	GAT6A	6.9000	G3	1.9	0.4	2.0	-2.0	1.0000	2.0	0.9803	4.1			65	7
141	GAT6B	6.9000	G4	3.9	-0.3	3.0	-3.0	1.0000	3.9	0.9962	5.6			65	7
141	GAT6B	6.9000	G5	3.9	-0.3	3.0	-3.0	1.0000	3.9	0.9962	6.2			65	7

141 GAT6B	6.9000 G6	3.9	-0.3	3.0	-3.0	1.0000	3.9	0.9962	6.2	65	7
170 MIR13G	13.800 M1	17.0	6.8	11.2	6.8	1.0134	18.1	0.9281	23.0	65	7
171 MIR13H	13.800 M1	17.0	6.8	11.2	6.8	1.0226	17.9	0.9281	23.0	65	7
171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0226	17.9	0.9281	23.0	65	7
SUBSYSTEM TOTALS		127.3	26.8	76.5	5.5				184.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:15
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2020 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	1370.3	1330.8	0.0	0.0	0.0	-5.0	44.5	-5.2
GUATEMAL	212.8	275.1	-198.3	0.0	277.2	-0.4	413.7	
2	868.8	855.0	0.0	0.0	0.0	0.1	13.7	0.0
SALVADOR	73.9	224.2	-70.8	0.0	229.0	-25.2	174.8	
3	1236.8	1203.0	0.0	0.0	0.0	0.1	33.7	0.0
HONDURAS	461.3	321.1	-47.6	0.0	294.0	54.4	427.4	
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	-47.3	112.5	
5	1296.6	1280.2	0.0	0.0	0.0	0.2	16.3	0.0
COSTA RI	194.5	520.4	-231.2	0.0	420.4	26.2	299.4	
6	1880.8	1844.6	0.0	0.0	0.0	-55.8	92.0	-54.8
PANAMA	292.3	374.6	-351.4	0.0	656.0	-7.8	932.9	
7	127.3	65.9	0.0	0.0	0.0	60.3	1.1	60.0
ACANAL	26.8	13.4	0.0	0.0	0.0	0.0	13.4	
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	7312.7	7104.7	0.0	0.0	0.0	0.0	208.0	0.0
	1294.4	1936.2	-957.0	0.0	2058.9	0.0	2374.1	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

MON, OCT 18 2010 9:17

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0102	232.35	14		PRO230		230.00	6	1.0271	236.23
85		PTP230		230.00	6	1.0167	233.83	96		FOR230		230.00	6	1.0120	232.76
100		BAY230		230.00	6	1.0211	234.85	144		CANJ230		230.00	6	1.0089	232.04
146		GUALACA230		230.00	6	1.0137	233.15	147		GUASQ230		230.00	6	1.0087	232.01
190		CHANG230		230.00	6	1.0311	237.16	306		CHAN1 230		230.00	6	1.0297	236.82
310		CONCEPCION23230.00		230.00	6	1.0204	234.70	311		PANDO230		230.00	6	1.0388	238.93
341		PRUDENCIA230230.00		230.00	6	1.0213	234.90	345		LORENA230		230.00	6	1.0186	234.29
371		CAISAN230		230.00	6	1.0376	238.65	506		CHAN2 230		230.00	6	1.0313	237.20
700		BAITUN230		230.00	6	1.0278	236.39	6000		FRONTER		230.00	6	1.0292	236.71
6400		FRONTCHA		230.00	6	1.0322	237.40	6500		FRONT CAISAN230.00		230.00	6	1.0371	238.53

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9721	223.59	3		PANII230		230.00	6	0.9784	225.02
5		CHO230		230.00	6	0.9621	221.28	8		LSA230		230.00	6	0.9734	223.88
103		COPESA23		230.00	6	0.9851	226.57	105		PAN-AM23		230.00	6	0.9621	221.28
115		PACORA23		230.00	6	0.9889	227.45	148		VELADERO 230230.00		230.00	6	0.9954	228.94
149		BBLANCO		230.00	6	0.9927	228.32	155		TABASARAI23230.00		230.00	6	0.9975	229.44
325		STA RITA230		230.00	6	0.9997	229.93	354		SANBARTOLO23230.00		230.00	6	0.9860	226.78
370		LSA CAP 230		230.00	6	0.9734	223.88	511		LGUIAS230		230.00	6	0.9625	221.37
540		ANTON		230.00	6	0.9950	228.84								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

MON, OCT 18 2010 9:17

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	1.0092	116.06	12		M.N115		115.00	6	1.0157	116.80
15		PRO115		115.00	6	1.0291	118.35	20		CH.AZUL		115.00	6	1.0299	118.43
54		LM1115		115.00	6	1.0009	115.10	55		LM2115		115.00	6	1.0015	115.18
87		CAL115		115.00	6	1.0393	119.52	88		EST115		115.00	6	1.0438	120.04

92 L.V115	115.00	6	1.0410	119.72	191 CHANG115	115.00	6	1.0219	117.51
522 TCATIVÁ 115	115.00	6	1.0014	115.16	701 BAITUN115	115.00	6	1.0143	116.64
702 BJOMIN115	115.00	6	1.0169	116.95					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9687	111.40	4		PANII115		115.00	6	0.9955	114.48
6		CHO115		115.00	6	0.9637	110.82	18		CAC115		115.00	6	0.9681	111.34
19		C.V115		115.00	6	0.9740	112.01	21		C.BAN115		115.00	6	0.9550	109.82
23		CH115		115.00	6	0.9675	111.26	26		LOC115		115.00	6	0.9561	109.96
30		MAR115		115.00	6	0.9534	109.65	33		STM115		115.00	6	0.9657	111.05
37		SAN115		115.00	6	0.9545	109.76	48		TINAJ115		115.00	6	0.9645	110.92
50		M.O115		115.00	6	0.9647	110.94	52		TOC115		115.00	6	0.9911	113.98
61		FFIELD		115.00	6	0.9945	114.37	109		STA RITA115		115.00	6	0.9999	114.99
123		MIR115		115.00	7	0.9758	112.21	154		CEMPAN15		115.00	6	0.9898	113.83
529		TCOLON 115		115.00	6	0.9999	114.99								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:17
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 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
66		BLM13B		13.800	V2	38.1	22.4	25.0	0.0	1.0000	44.2	0.8614	47.0			62	6
67		BLM13C		13.800	V3	38.1	22.4	25.0	0.0	1.0000	44.2	0.8614	47.0			62	6
68		BLM13D		13.800	V4	38.1	23.4	25.0	0.0	1.0000	44.7	0.8515	47.0			62	6
90		EST-13L		13.800	E1	22.1	8.8	12.0	-5.0	1.0200	23.3	0.9283	27.0			64	6
91		EST-13T		13.800	E2	22.1	8.8	12.0	-5.0	1.0200	23.3	0.9283	27.0			64	6
94		LV-13.8L		13.800	L1	25.1	9.9	12.0	-5.0	1.0200	26.4	0.9301	27.0			64	6
95		LV-13.8T		13.800	L2	25.1	9.9	12.0	-5.0	1.0200	26.4	0.9301	27.0			64	6
97		FOR13A		13.800	F1	75.3	10.5	50.0	-50.0	1.0200	74.5	0.9905	111.0			64	6
98		FOR13B		13.800	F2	75.3	10.5	50.0	-50.0	1.0200	74.5	0.9905	111.0			64	6
101		BAY13A		13.800	B1	79.8	40.4	50.0	-25.0	1.0180	87.8	0.8921	96.0			61	6
SWING																	
102		BAY13B		13.800	B2	81.5	40.6	50.0	-25.0	1.0180	89.4	0.8951	96.0			61	6
108		BAY13C		13.800	B3	81.5	40.6	50.0	-25.0	1.0180	89.4	0.8951	100.0			61	6
117		CB250A-1		13.800	C1	91.9	33.3	75.6	0.0	1.0200	95.8	0.9402	143.5			62	6
118		CB250A-2		13.800	C2	91.9	33.3	75.6	0.0	1.0200	95.8	0.9402	143.5			62	6
119		CB250B-1		13.800	C1	91.9	33.3	75.6	0.0	1.0200	95.8	0.9402	143.5			62	6
SYST																	

142	CANJ13A	13.800	C1	56.2	18.4	29.0	-29.0	1.0100	58.5	0.9504	69.0	64	6
143	CANJ13B	13.800	C2	56.2	18.4	29.0	-29.0	1.0100	58.5	0.9504	69.0	64	6
150	GUALACA 13-213.800	G2	12.6	-0.6	7.4	-7.4	1.0100	12.5	0.9988	14.8	64	6	
151	GUALACA13.8	13.800	G1	12.6	-0.6	7.4	-7.4	1.0100	12.5	0.9988	14.8	64	6
152	BBLANCO_13.813.800	G1	9.8	4.9	7.0	-7.0	1.0200	10.8	0.8969	16.0	64	6	
156	TABASARAI1313.800	G1	14.7	5.6	5.7	0.2	1.0200	15.4	0.9347	20.5	1	6	
156	TABASARAI1313.800	G2	14.7	5.6	5.7	0.2	1.0200	15.4	0.9347	20.5	1	6	
193	GEBONYIC	13.800	G1	9.1	0.2	4.0	-4.0	1.0200	8.9	0.9998	35.3	64	6
193	GEBONYIC	13.800	G2	9.1	0.2	4.0	-4.0	1.0200	8.9	0.9998	35.3	64	6
193	GEBONYIC	13.800	G3	9.1	0.2	4.0	-4.0	1.0200	8.9	0.9998	35.3	64	6
302	PASOANCH13.813.800	P1	4.3	2.0	2.0	-2.0	0.9650	4.9	0.9054	6.2	64	6	
303	SINDIGO13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1174	8.1	1.0000	13.5	64	6
304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.1148	4.8	0.9063	5.7	64	6
304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.1148	4.8	0.9063	5.7	64	6
305	ELALTO	13.800	G1	17.1	-5.0	12.0	-5.0	1.0158	17.5	0.9596	20.6	64	6
305	ELALTO	13.800	G2	17.1	-5.0	12.0	-5.0	1.0158	17.5	0.9596	20.6	64	6
305	ELALTO	13.800	G3	17.1	-5.0	12.0	-5.0	1.0158	17.5	0.9596	20.6	64	6
307	CHAN1 A	13.800	G1	90.3	-5.5	50.0	-50.0	1.0200	88.7	0.9982	118.6	64	6
312	PANDO13.8	13.800	G1	15.1	-0.7	10.0	-5.0	1.0150	14.8	0.9990	19.9	64	6
312	PANDO13.8	13.800	G2	15.1	-0.7	10.0	-5.0	1.0150	14.8	0.9990	19.9	64	6
316	MTE LIRIO13.13.800	G1	24.0	-4.0	12.0	-5.0	1.0150	24.0	0.9865	27.0	64	6	
316	MTE LIRIO13.13.800	G2	24.0	-4.0	12.0	-5.0	1.0150	24.0	0.9865	27.0	64	6	
317	MENDRE13.8	13.800	M1	9.1	0.0	0.0	0.0	1.1169	8.1	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.1	0.0	0.0	0.0	1.1169	8.1	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.4	0.0	0.0	0.0	1.1173	4.8	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.4	0.0	0.0	0.0	1.1173	4.8	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	1.0148	4.4	0.8928	6.2	64	6
340	PEDGALITO13813.800	P1	18.1	8.9	12.0	-5.0	1.0000	20.2	0.8966	27.0	64	6	
342	LORENA13.8	13.800	L1	14.4	-2.6	10.5	-5.0	1.0100	14.5	0.9841	19.9	64	6
343	PRUDENCIA_1	13.800	G1	23.9	-2.1	9.8	-9.8	1.0100	23.7	0.9960	33.0	64	6
343	PRUDENCIA_1	13.800	G2	23.9	-2.1	9.8	-9.8	1.0100	23.7	0.9960	33.0	64	6
346	LORENA 13-2	13.800	L2	14.4	-0.9	10.5	-5.0	1.0150	14.2	0.9979	19.9	64	6
350	MACANO 13.8	13.800	G1	2.9	-1.0	1.0	-1.0	1.0814	2.9	0.9464	6.2	64	6
351	PERLAS N13.813.800	G1	8.5	5.0	5.0	-5.0	0.9849	10.0	0.8628	13.5	64	6	
352	PERLAS S13.813.800	G1	8.5	5.0	5.0	-5.0	0.9849	10.0	0.8628	13.5	64	6	
357	BARTOLO13.8	13.800	G1	7.0	2.2	3.7	-3.7	1.0150	7.3	0.9538	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.0	2.2	3.7	-3.7	1.0150	7.3	0.9538	8.5	64	6
359	CRUCES13.8	13.800	G1	4.1	1.0	2.3	-2.3	1.0150	4.2	0.9724	5.6	64	6
359	CRUCES13.8	13.800	G2	4.1	1.0	2.3	-2.3	1.0150	4.2	0.9724	5.6	64	6
361	ESTRECHO4.164.1600	G1	4.9	0.8	2.5	-2.5	1.0150	4.9	0.9871	5.6	64	6	
361	ESTRECHO4.164.1600	G2	4.9	0.8	2.5	-2.5	1.0150	4.9	0.9871	5.6	64	6	
363	LAGUNA 13.8	13.800	G1	4.2	0.6	2.4	-2.4	1.0150	4.1	0.9895	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.2	0.6	2.4	-2.4	1.0150	4.1	0.9895	5.8	64	6

364	MENDRE2	13.800	G1	7.6	2.3	3.9	-3.9	1.0150	7.8	0.9563	8.9	64	6
368	RP-490	13.800	G1	4.2	-1.2	2.4	-2.4	1.0150	4.3	0.9603	5.5	64	6
368	RP-490	13.800	G2	4.2	-1.2	2.4	-2.4	1.0150	4.3	0.9603	5.5	64	6
369	HCALDERA13.813.800	G1	3.4	1.9	1.9	-1.9	1.0148	3.9	0.8689	4.3	64	6	
372	BJO FRIO 13	13.800	G1	23.9	-2.4	9.8	-9.8	1.0150	23.6	0.9951	33.0	64	6
372	BJO FRIO 13	13.800	G2	23.9	-2.4	9.8	-9.8	1.0150	23.6	0.9951	33.0	64	6
373	TIZINGAL13.813.800	G1	4.0	2.2	2.2	-2.2	0.9832	4.7	0.8718	21.6	64	6	
374	SLORENZO13.813.800	G1	3.9	-0.3	2.0	-2.0	1.0150	3.8	0.9965	4.5	64	6	
374	SLORENZO13.813.800	G2	3.9	-0.3	2.0	-2.0	1.0150	3.8	0.9965	4.5	64	6	
376	PEDREG2 13.813.800	G1	5.5	-1.9	3.1	-3.1	1.0150	5.8	0.9452	7.2	64	6	
376	PEDREG2 13.813.800	G2	5.5	-1.9	3.1	-3.1	1.0150	5.8	0.9452	7.2	64	6	
507	CHAN2 A	13.800	G1	86.3	15.4	50.0	-50.0	1.0180	86.1	0.9845	118.6	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	6.1	6.6	-6.6	1.0000	10.3*	0.8078	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	6.1	6.6	-6.6	1.0000	10.3*	0.8078	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	6.1	6.6	-6.6	1.0000	10.3*	0.8078	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	6.1	6.6	-6.6	1.0000	10.3*	0.8078	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	6.1	6.6	-6.6	1.0000	10.3*	0.8078	10.9	62	6
541	TOABRE	0.6000	1	30.1	0.0	0.0	0.0	0.9962	30.2	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	23.9	2.4	13.0	-13.0	1.0200	23.5	0.9952	30.5	64	6
704	BJOMIN13B	13.800	G2	23.9	2.4	13.0	-13.0	1.0200	23.5	0.9952	30.5	64	6
705	BAITUN13A	13.800	G1	36.7	-2.0	26.6	-26.6	1.0200	36.0	0.9985	50.6	64	6
706	BAITUN13B	13.800	G2	36.7	-2.0	26.6	-26.6	1.0200	36.0	0.9985	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9650	5.1	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1885.7	432.4	1138.6	-654.0				2760.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:17
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 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															
126	MIR13A	12.000	G1	7.6	0.0	5.0	0.0	1.0235	7.5	1.0000	13.5			65	7
129	MIR13D	13.800	G4	34.3	8.3	15.0	0.0	1.0000	35.3	0.9718	44.1			65	7
AREA															
130	MIR13F	13.800	G5	17.2	3.6	8.0	0.0	1.0000	17.6	0.9784	27.7			65	7
140	GAT6A	6.9000	G1	1.9	0.7	2.0	-2.0	1.0000	2.0	0.9461	4.1			65	7
140	GAT6A	6.9000	G2	1.9	0.7	2.0	-2.0	1.0000	2.0	0.9461	4.1			65	7
140	GAT6A	6.9000	G3	1.9	0.7	2.0	-2.0	1.0000	2.0	0.9461	4.1			65	7
141	GAT6B	6.9000	G4	3.9	-0.1	3.0	-3.0	1.0000	3.9	0.9999	5.6			65	7
141	GAT6B	6.9000	G5	3.9	-0.1	3.0	-3.0	1.0000	3.9	0.9999	6.2			65	7

141 GAT6B	6.9000 G6	3.9	-0.1	3.0	-3.0	1.0000	3.9	0.9999	6.2	65	7
170 MIR13G	13.800 M1	17.1	6.8	11.2	6.8	1.0068	18.2	0.9285	23.0	65	7
171 MIR13H	13.800 M1	17.1	6.8	11.2	6.8	1.0160	18.1	0.9285	23.0	65	7
171 MIR13H	13.800 M2	17.1	6.8	11.2	6.8	1.0160	18.1	0.9285	23.0	65	7
SUBSYSTEM TOTALS		127.7	34.2	76.5	5.5				184.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:17
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2020 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	1374.0	1330.8	0.0	0.0	0.0	-1.4	44.5	-5.2
GUATEMAL	213.2	275.1	-198.3	0.0	277.2	-0.9	414.5	
2	870.1	855.0	0.0	0.0	0.0	1.5	13.7	0.0
SALVADOR	74.1	224.2	-70.7	0.0	229.0	-25.5	175.1	
3	1238.0	1203.0	0.0	0.0	0.0	1.2	33.8	0.0
HONDURAS	461.5	321.1	-47.6	0.0	294.0	54.3	427.7	
4	532.4	525.2	0.0	0.0	0.0	0.4	6.8	0.0
NICARAGU	33.1	207.6	-57.7	0.0	182.3	-47.3	112.8	
5	1298.5	1280.2	0.0	0.0	0.0	2.0	16.4	0.0
COSTA RI	200.7	520.4	-230.9	0.0	419.7	29.1	301.8	
6	1885.7	1844.6	0.0	0.0	0.0	-64.3	105.4	-54.8
PANAMA	432.4	374.6	-338.8	0.0	602.2	-16.6	1015.4	
7	127.7	65.9	0.0	0.0	0.0	60.7	1.2	60.0
ACANAL	34.2	13.4	0.0	0.0	0.0	6.9	14.0	
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	7326.5	7104.7	0.0	0.0	0.0	0.0	221.8	0.0
	1449.2	1936.2	-944.0	0.0	2004.3	0.0	2461.3	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

MON, OCT 18 2010 9:20

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
14		PRO230		230.00	6	1.0191	234.40	85		PTP230		230.00	6	1.0098	232.25
96		FOR230		230.00	6	1.0033	230.76	100		BAY230		230.00	6	1.0180	234.14
144		CANJ230		230.00	6	1.0000	230.00	146		GUALACA230		230.00	6	1.0053	231.21
190		CHANG230		230.00	6	1.0272	236.26	306		CHAN1 230		230.00	6	1.0256	235.88
310		CONCEPCION230		230.00	6	1.0104	232.40	311		PANDO230		230.00	6	1.0277	236.36
341		PRUDENCIA230		230.00	6	1.0135	233.11	345		LORENA230		230.00	6	1.0107	232.45
371		CAISAN230		230.00	6	1.0261	235.99	506		CHAN2 230		230.00	6	1.0273	236.27
700		BAITUN230		230.00	6	1.0207	234.76	6000		FRONTER		230.00	6	1.0208	234.79
6400		FRONTCHA		230.00	6	1.0284	236.53	6500		FRONT CAISAN230		230.00	6	1.0259	235.96

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9668	222.36	3		PANII230		230.00	6	0.9733	223.85
5		CHO230		230.00	6	0.9550	219.65	8		LSA230		230.00	6	0.9504	218.60
11		M.N230		230.00	6	0.9973	229.39	103		COPESA23		230.00	6	0.9803	225.46
105		PAN-AM23		230.00	6	0.9550	219.65	115		PACORA23		230.00	6	0.9843	226.40
147		GUASQ230		230.00	6	0.9998	229.96	148		VELADERO 230		230.00	6	0.9704	223.19
149		BBLANCO		230.00	6	0.9669	222.38	155		TABASARAI23		230.00	6	0.9726	223.70
325		STA RITA230		230.00	6	0.9970	229.31	354		SANBARTOLO23		230.00	6	0.9590	220.56
370		LSA CAP 230		230.00	6	0.9504	218.60	511		LGUIAS230		230.00	6	0.9482	218.08
540		ANTON		230.00	6	0.9848	226.50								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

MON, OCT 18 2010 9:20

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
12		M.N115		115.00	6	1.0084	115.97	15		PRO115		115.00	6	1.0211	117.43
20		CH.AZUL		115.00	6	1.0219	117.52	87		CAL115		115.00	6	1.0349	119.02
88		EST115		115.00	6	1.0399	119.59	92		L.V115		115.00	6	1.0368	119.24
191		CHANG115		115.00	6	1.0191	117.20	701		BAITUN115		115.00	6	1.0098	116.12

702 BJOMIN115 115.00 6 1.0128 116.47

BUSES WITH VOLTAGE 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	0.9637	110.82	4		PANII115		115.00	6	0.9902	113.87
6		CHO115		115.00	6	0.9566	110.00	9		LSA115		115.00	6	0.9843	113.19
18		CAC115		115.00	6	0.9632	110.76	19		C.V115		115.00	6	0.9686	111.39
21		C.BAN115		115.00	6	0.9498	109.23	23		CH115		115.00	6	0.9634	110.79
26		LOC115		115.00	6	0.9510	109.37	30		MAR115		115.00	6	0.9484	109.06
33		STM115		115.00	6	0.9606	110.47	37		SAN115		115.00	6	0.9493	109.17
48		TINAJ115		115.00	6	0.9595	110.34	50		M.O115		115.00	6	0.9597	110.36
52		TOC115		115.00	6	0.9858	113.37	54		LM1115		115.00	6	0.9983	114.81
55		LM2115		115.00	6	0.9990	114.88	61		FFIELD		115.00	6	0.9920	114.08
109		STA RITA115		115.00	6	0.9971	114.67	123		MIR115		115.00	7	0.9714	111.71
154		CEMPAN15		115.00	6	0.9865	113.45	522		TCATIVÁ	115	115.00	6	0.9988	114.87
529		TCOLON	115	115.00	6	0.9971	114.67								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:20
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 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
66		BLM13B		13.800	V2	38.1	23.5	25.0	0.0	1.0000	44.8	0.8508	47.0			62	6
67		BLM13C		13.800	V3	38.1	23.5	25.0	0.0	1.0000	44.8	0.8508	47.0			62	6
68		BLM13D		13.800	V4	38.1	24.6	25.0	0.0	1.0000	45.4	0.8403	47.0			62	6
90		EST-13L		13.800	E1	22.1	10.0	12.0	-5.0	1.0200	23.8	0.9110	27.0			64	6
91		EST-13T		13.800	E2	22.1	10.0	12.0	-5.0	1.0200	23.8	0.9110	27.0			64	6
94		LV-13.8L		13.800	L1	25.1	11.2	12.0	-5.0	1.0200	27.0	0.9139	27.0			64	6
95		LV-13.8T		13.800	L2	25.1	11.2	12.0	-5.0	1.0200	27.0	0.9139	27.0			64	6
97		FOR13A		13.800	F1	75.5	18.6	50.0	-50.0	1.0200	76.2	0.9711	111.0			64	6
98		FOR13B		13.800	F2	75.5	18.6	50.0	-50.0	1.0200	76.2	0.9711	111.0			64	6
101		BAY13A		13.800	B1	80.0	42.8	50.0	-25.0	1.0180	89.2	0.8819	96.0			61	6
SWING																	
102		BAY13B		13.800	B2	81.7	43.0	50.0	-25.0	1.0180	90.7	0.8851	96.0			61	6
108		BAY13C		13.800	B3	81.7	43.0	50.0	-25.0	1.0180	90.7	0.8851	100.0			61	6
117		CB250A-1		13.800	C1	91.9	37.3	75.6	0.0	1.0200	97.2	0.9265	143.5			62	6
118		CB250A-2		13.800	C2	91.9	37.3	75.6	0.0	1.0200	97.2	0.9265	143.5			62	6
119		CB250B-1		13.800	C1	91.9	37.3	75.6	0.0	1.0200	97.2	0.9265	143.5			62	6
SYST																	

142	CANJ13A	13.800	C1	56.3	19.9	29.0	-29.0	1.0100	59.2	0.9427	69.0	64	6
143	CANJ13B	13.800	C2	56.3	19.9	29.0	-29.0	1.0100	59.2	0.9427	69.0	64	6
150	GUALACA 13-213.800	G2	12.6	1.5	7.4	-7.4	1.0100	12.6	0.9930	14.8	64	6	
151	GUALACA13.8	13.800	G1	12.6	1.5	7.4	-7.4	1.0100	12.6	0.9930	14.8	64	6
152	BBLANCO_13.813.800	G1	9.9	7.0	7.0	-7.0	1.0076	12.0	0.8147	16.0	64	6	
156	TABASARAI11313.800	G1	14.8	5.7	5.7	0.2	0.9958	15.9	0.9336	20.5	1	6	
156	TABASARAI11313.800	G2	14.8	5.7	5.7	0.2	0.9958	15.9	0.9336	20.5	1	6	
193	GEBONYIC	13.800	G1	9.2	0.5	4.0	-4.0	1.0200	9.0	0.9987	35.3	64	6
193	GEBONYIC	13.800	G2	9.2	0.5	4.0	-4.0	1.0200	9.0	0.9987	35.3	64	6
193	GEBONYIC	13.800	G3	9.2	0.5	4.0	-4.0	1.0200	9.0	0.9987	35.3	64	6
302	PASOANCH13.813.800	P1	4.3	2.0	2.0	-2.0	0.9529	5.0	0.9059	6.2	64	6	
303	SINDIGO13.8	13.800	G1	9.1	0.0	5.0	0.0	1.1144	8.1	1.0000	13.5	64	6
304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.1119	4.8	0.9063	5.7	64	6
304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.1119	4.8	0.9063	5.7	64	6
305	ELALTO	13.800	G1	17.1	-5.0	12.0	-5.0	1.0044	17.7	0.9598	20.6	64	6
305	ELALTO	13.800	G2	17.1	-5.0	12.0	-5.0	1.0044	17.7	0.9598	20.6	64	6
305	ELALTO	13.800	G3	17.1	-5.0	12.0	-5.0	1.0044	17.7	0.9598	20.6	64	6
307	CHAN1 A	13.800	G1	90.5	-1.4	50.0	-50.0	1.0200	88.8	0.9999	118.6	64	6
312	PANDO13.8	13.800	G1	15.1	0.3	10.0	-5.0	1.0150	14.9	0.9998	19.9	64	6
312	PANDO13.8	13.800	G2	15.1	0.3	10.0	-5.0	1.0150	14.9	0.9998	19.9	64	6
316	MTE LIRIO13.13.800	G1	24.0	-1.5	12.0	-5.0	1.0150	23.7	0.9980	27.0	64	6	
316	MTE LIRIO13.13.800	G2	24.0	-1.5	12.0	-5.0	1.0150	23.7	0.9980	27.0	64	6	
317	MENDRE13.8	13.800	M1	9.2	0.0	0.0	0.0	1.1139	8.2	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.2	0.0	0.0	0.0	1.1139	8.2	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.1143	4.9	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.5	0.0	0.0	0.0	1.1143	4.9	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	1.0121	4.4	0.8928	6.2	64	6
340	PEDGALITO13813.800	P1	18.1	10.6	12.0	-5.0	1.0000	21.0	0.8641	27.0	64	6	
342	LORENA13.8	13.800	L1	14.5	0.1	10.5	-5.0	1.0100	14.3	1.0000	19.9	64	6
343	PRUDENCIA_1	13.800	G1	24.0	0.0	9.8	-9.8	1.0100	23.7	1.0000	33.0	64	6
343	PRUDENCIA_1	13.800	G2	24.0	0.0	9.8	-9.8	1.0100	23.7	1.0000	33.0	64	6
346	LORENA 13-2	13.800	L2	14.5	1.8	10.5	-5.0	1.0150	14.3	0.9926	19.9	64	6
350	MACANO 13.8	13.800	G1	2.9	-1.0	1.0	-1.0	1.0776	2.9	0.9468	6.2	64	6
351	PERLAS N13.813.800	G1	8.6	5.0	5.0	-5.0	0.9815	10.1	0.8635	13.5	64	6	
352	PERLAS S13.813.800	G1	8.6	5.0	5.0	-5.0	0.9815	10.1	0.8635	13.5	64	6	
357	BARTOLO13.8	13.800	G1	7.0	3.1	3.7	-3.7	1.0150	7.6	0.9145	8.5	64	6
357	BARTOLO13.8	13.800	G2	7.0	3.1	3.7	-3.7	1.0150	7.6	0.9145	8.5	64	6
359	CRUCES13.8	13.800	G1	4.1	1.5	2.3	-2.3	1.0150	4.3	0.9391	5.6	64	6
359	CRUCES13.8	13.800	G2	4.1	1.5	2.3	-2.3	1.0150	4.3	0.9391	5.6	64	6
361	ESTRECHO4.164.1600	G1	4.9	1.3	2.5	-2.5	1.0150	5.0	0.9669	5.6	64	6	
361	ESTRECHO4.164.1600	G2	4.9	1.3	2.5	-2.5	1.0150	5.0	0.9669	5.6	64	6	
363	LAGUNA 13.8	13.800	G1	4.2	1.1	2.4	-2.4	1.0150	4.2	0.9682	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.2	1.1	2.4	-2.4	1.0150	4.2	0.9682	5.8	64	6

364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	1.0132	8.4	0.8911	8.9	64	6
368	RP-490	13.800	G1	4.2	-0.9	2.4	-2.4	1.0150	4.3	0.9769	5.5	64	6
368	RP-490	13.800	G2	4.2	-0.9	2.4	-2.4	1.0150	4.3	0.9769	5.5	64	6
369	HCALDERA13.813.800	G1	3.4	1.9	1.9	-1.9	1.0121	3.9	0.8689	4.3	64	6	
372	BJO FRIO 13	13.800	G1	24.0	-0.1	9.8	-9.8	1.0150	23.6	1.0000	33.0	64	6
372	BJO FRIO 13	13.800	G2	24.0	-0.1	9.8	-9.8	1.0150	23.6	1.0000	33.0	64	6
373	TIZINGAL13.813.800	G1	4.0	2.2	2.2	-2.2	0.9798	4.7	0.8741	21.6	64	6	
374	SLORENZO13.813.800	G1	3.9	0.5	2.0	-2.0	1.0150	3.8	0.9926	4.5	64	6	
374	SLORENZO13.813.800	G2	3.9	0.5	2.0	-2.0	1.0150	3.8	0.9926	4.5	64	6	
376	PEDREG2 13.813.800	G1	5.5	-1.4	3.1	-3.1	1.0150	5.6	0.9673	7.2	64	6	
376	PEDREG2 13.813.800	G2	5.5	-1.4	3.1	-3.1	1.0150	5.6	0.9673	7.2	64	6	
507	CHAN2 A	13.800	G1	86.5	19.3	50.0	-50.0	1.0180	87.1	0.9760	118.6	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	6.4	6.6	-6.6	1.0000	10.5*	0.7945	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	6.4	6.6	-6.6	1.0000	10.5*	0.7945	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	6.4	6.6	-6.6	1.0000	10.5*	0.7945	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	6.4	6.6	-6.6	1.0000	10.5*	0.7945	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	6.4	6.6	-6.6	1.0000	10.5*	0.7945	10.9	62	6
541	TOABRE	0.6000	1	30.2	0.0	0.0	0.0	0.9861	30.7	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	23.9	3.0	13.0	-13.0	1.0200	23.7	0.9923	30.5	64	6
704	BJOMIN13B	13.800	G2	23.9	3.0	13.0	-13.0	1.0200	23.7	0.9923	30.5	64	6
705	BAITUN13A	13.800	G1	36.8	1.2	26.6	-26.6	1.0200	36.1	0.9995	50.6	64	6
706	BAITUN13B	13.800	G2	36.8	1.2	26.6	-26.6	1.0200	36.1	0.9995	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9529	5.2	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1890.0	535.9	1138.6	-654.0				2760.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:20
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

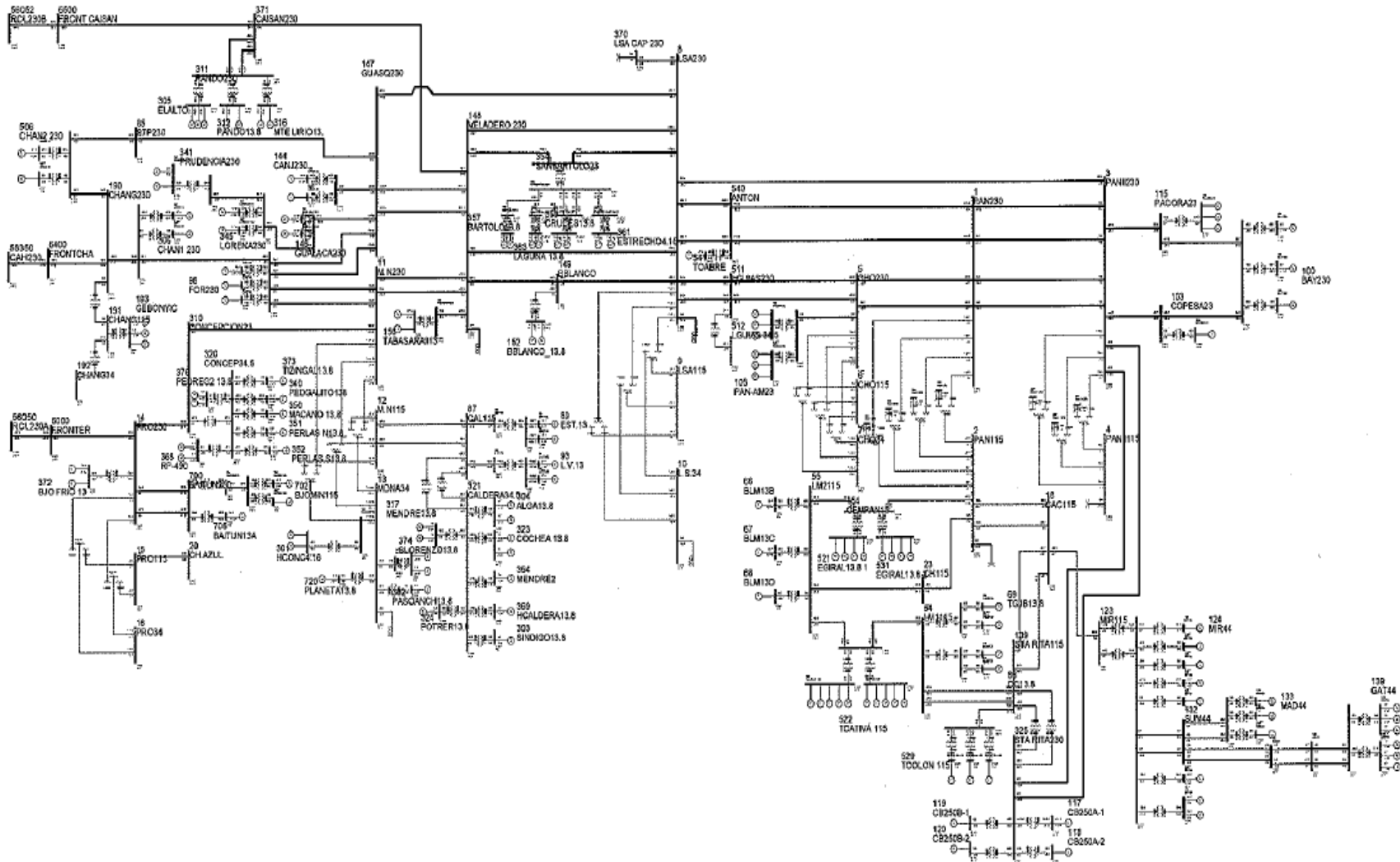
BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING															
126	MIR13A	12.000	G1	7.7	0.0	5.0	0.0	1.0214	7.5	1.0000	13.5			65	7
129	MIR13D	13.800	G4	34.4	9.1	15.0	0.0	1.0000	35.6	0.9666	44.1			65	7
AREA															
130	MIR13F	13.800	G5	17.2	4.6	8.0	0.0	1.0000	17.8	0.9668	27.7			65	7
140	GAT6A	6.9000	G1	1.9	0.7	2.0	-2.0	1.0000	2.1	0.9341	4.1			65	7
140	GAT6A	6.9000	G2	1.9	0.7	2.0	-2.0	1.0000	2.1	0.9341	4.1			65	7
140	GAT6A	6.9000	G3	1.9	0.7	2.0	-2.0	1.0000	2.1	0.9341	4.1			65	7
141	GAT6B	6.9000	G4	3.9	0.0	3.0	-3.0	1.0000	3.9	1.0000	5.6			65	7
141	GAT6B	6.9000	G5	3.9	0.0	3.0	-3.0	1.0000	3.9	1.0000	6.2			65	7

141 GAT6B	6.9000 G6	3.9	0.0	3.0	-3.0	1.0000	3.9	1.0000	6.2	65	7
170 MIR13G	13.800 M1	17.1	6.8	11.2	6.8	1.0049	18.3	0.9289	23.0	65	7
171 MIR13H	13.800 M1	17.1	6.8	11.2	6.8	1.0140	18.2	0.9289	23.0	65	7
171 MIR13H	13.800 M2	17.1	6.8	11.2	6.8	1.0140	18.2	0.9289	23.0	65	7
SUBSYSTEM TOTALS		128.0	36.4	76.5	5.5				184.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:20
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2020 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	1377.2	1330.8	0.0	0.0	0.0	1.8	44.6	-5.2
GUATEMAL	213.5	275.1	-198.2	0.0	277.2	-1.4	415.2	
2	871.4	855.0	0.0	0.0	0.0	2.6	13.7	0.0
SALVADOR	74.2	224.2	-70.7	0.0	229.0	-25.7	175.5	
3	1239.1	1203.0	0.0	0.0	0.0	2.3	33.8	0.0
HONDURAS	461.7	321.1	-47.6	0.0	293.9	54.2	428.0	
4	532.8	525.2	0.0	0.0	0.0	0.7	6.8	0.0
NICARAGU	33.6	207.6	-57.7	0.0	182.2	-47.3	113.2	
5	1300.2	1280.2	0.0	0.0	0.0	3.4	16.7	0.0
COSTA RI	210.1	520.4	-230.5	0.0	418.4	34.0	304.7	
6	1890.0	1844.6	0.0	0.0	0.0	-71.7	117.1	-54.8
PANAMA	535.9	374.6	-332.2	0.0	585.7	-22.7	1102.0	
7	128.0	65.9	0.0	0.0	0.0	61.0	1.2	60.0
ACANAL	36.4	13.4	0.0	0.0	0.0	8.8	14.2	
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	7338.6	7104.7	0.0	0.0	0.0	0.0	234.0	0.0
	1565.5	1936.2	-937.0	0.0	1986.4	0.0	2552.7	

7.2. Demanda Mínima de Invierno



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MIN-INVIERNO

MON, OCT 18 2010 9:23

BUSES WITH VOLTAGE 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	1.0247	235.69
85		PTP230		230.00	6	1.0155	233.56	96		FOR230		230.00	6	1.0107	232.45
100		BAY230		230.00	6	1.0203	234.67	103		COPESA23		230.00	6	1.0033	230.77
115		PACORA23		230.00	6	1.0052	231.19	144		CANJ230		230.00	6	1.0109	232.50
146		GUALACA230		230.00	6	1.0139	233.21	147		GUASQ230		230.00	6	1.0109	232.50
148		VELADERO	230230.00		6	1.0054	231.23	149		BBLANCO		230.00	6	1.0044	231.00
155		TABASARAI	23230.00		6	1.0059	231.36	190		CHANG230		230.00	6	1.0207	234.75
306		CHAN1	230	230.00	6	1.0178	234.10	310		CONCEPCION	23230.00		6	1.0188	234.33
311		PANDO230		230.00	6	1.0465	240.70	341		PRUDENCIA	230230.00		6	1.0181	234.17
345		LORENA230		230.00	6	1.0169	233.88	354		SANBARTOLO	23230.00		6	1.0016	230.38
371		CAISAN230		230.00	6	1.0451	240.37	506		CHAN2	230	230.00	6	1.0220	235.06
540		ANTON		230.00	6	1.0119	232.73	700		BAITUN230		230.00	6	1.0239	235.49
6000		FRONTER		230.00	6	1.0280	236.45	6400		FRONTCHA		230.00	6	1.0221	235.08
6500		FRONT CAISAN	230.00		6	1.0437	240.05								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9985	229.65	3		PANII230		230.00	6	0.9998	229.94
5		CHO230		230.00	6	0.9952	228.90	8		LSA230		230.00	6	0.9942	228.67
105		PAN-AM23		230.00	6	0.9952	228.90	325		STA RITA	230	230.00	6	0.9917	228.08
370		LSA CAP	230	230.00	6	0.9942	228.67	511		LGUIAS	230	230.00	6	0.9949	228.83

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MIN-INVIERNO

MON, OCT 18 2010 9:23

BUSES WITH VOLTAGE 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	1.0135	116.56	9		LSA115		115.00	6	1.0354	119.07
12		M.N115		115.00	6	1.0096	116.10	15		PRO115		115.00	6	1.0267	118.07
20		CH.AZUL		115.00	6	1.0275	118.16	52		TOC115		115.00	6	1.0103	116.19
54		LM1115		115.00	6	1.0297	118.41	55		LM2115		115.00	6	1.0298	118.42

61 FFIELD	115.00	6	1.0256	117.94	87 CAL115	115.00	6	1.0273	118.14
88 EST115	115.00	6	1.0308	118.54	92 L.V115	115.00	6	1.0286	118.29
109 STA RITA115	115.00	6	1.0339	118.90	123 MIR115	115.00	7	1.0009	115.11
154 CEMPAN15	115.00	6	1.0187	117.15	191 CHANG115	115.00	6	1.0097	116.12
522 TCATIVÁ 115	115.00	6	1.0297	118.42	529 TCOLON 115	115.00	6	1.0340	118.91
701 BAITUN115	115.00	6	1.0126	116.45	702 BJOMIN115	115.00	6	1.0132	116.52

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9960	114.54	6		CHO115		115.00	6	0.9964	114.58
18		CAC115		115.00	6	0.9958	114.52	19		C.V115		115.00	6	0.9989	114.87
21		C.BAN115		115.00	6	0.9864	113.43	23		CH115		115.00	6	0.9999	114.99
26		LOC115		115.00	6	0.9873	113.54	30		MAR115		115.00	6	0.9856	113.34
33		STM115		115.00	6	0.9939	114.30	37		SAN115		115.00	6	0.9859	113.38
48		TINAJ115		115.00	6	0.9931	114.21	50		M.O115		115.00	6	0.9933	114.23

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:23
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 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	18.7	25.0	0.0	1.0180	41.6	0.8976	47.0			62	6
67		BLM13C		13.800	V3	38.0	18.7	25.0	0.0	1.0180	41.6	0.8976	47.0			62	6
90		EST-13L		13.800	E1	19.7	6.2	12.0	-5.0	1.0000	20.6	0.9533	27.0			64	6
91		EST-13T		13.800	E2	19.7	6.2	12.0	-5.0	1.0000	20.6	0.9533	27.0			64	6
94		LV-13.8L		13.800	L1	21.6	7.0	12.0	-5.0	1.0000	22.7	0.9514	27.0			64	6
95		LV-13.8T		13.800	L2	21.6	7.0	12.0	-5.0	1.0000	22.7	0.9514	27.0			64	6
97		FOR13A		13.800	F1	79.0	-15.2	50.0	-50.0	0.9900	81.3	0.9821	111.0			64	6
101		BAY13A		13.800	B1	46.1	23.5	50.0	-25.0	1.0000	51.7	0.8906	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	46.1	23.5	50.0	-25.0	1.0000	51.7	0.8906	96.0			61	6
117		CB250A-1		13.800	C1	113.4	31.6	75.6	0.0	1.0100	116.5	0.9633	143.5			62	6
142		CANJ13A		13.800	C1	48.0	10.4	29.0	-29.0	0.9800	50.1	0.9773	69.0			64	6
150		GUALACA 13-213.800		G2	12.0	-6.1	7.4	7.4	-7.4	0.9880	13.6	0.8908	14.8			64	6
151		GUALACA13.8		G1	12.0	-6.1	7.4	7.4	-7.4	0.9880	13.6	0.8908	14.8			64	6
152		BBLANCO_13.813.800		G1	7.8	0.0	7.0	7.0	-7.0	1.0000	7.8	1.0000	16.0			64	6
152		BBLANCO_13.813.800		G2	8.1	0.0	7.0	7.0	-7.0	1.0000	8.1	1.0000	16.0			64	6
156		TABASARAI11313.800		G1	15.8	0.2	5.7	5.7	0.2	1.0058	15.7	0.9999	20.5			1	6

193	GEBONYIC	13.800	G1	8.2	-1.4	4.0	-4.0	1.0000	8.3	0.9865	35.3	64	6
193	GEBONYIC	13.800	G2	8.2	-1.4	4.0	-4.0	1.0000	8.3	0.9865	35.3	64	6
302	PASOANCH13.8	13.800	P1	4.1	2.0	2.0	-2.0	0.9482	4.8	0.8986	6.2	64	6
303	SINDIGO13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1016	8.2	1.0000	13.5	64	6
304	ALGA13.8	13.800	A1	4.7	-2.3	2.3	-2.3	1.0990	4.7	0.9001	5.7	64	6
304	ALGA13.8	13.800	A2	4.7	-2.3	2.3	-2.3	1.0990	4.7	0.9001	5.7	64	6
305	ELALTO	13.800	G1	16.0	-5.0	12.0	-5.0	1.0321	16.2	0.9545	20.6	64	6
305	ELALTO	13.800	G2	16.0	-5.0	12.0	-5.0	1.0321	16.2	0.9545	20.6	64	6
307	CHAN1 A	13.800	G1	67.4	-24.2	50.0	-50.0	0.9900	72.4	0.9413	118.6	64	6
312	PANDO13.8	13.800	G1	15.0	-5.0	10.0	-5.0	1.0125	15.6	0.9487	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	24.0	-5.0	12.0	-5.0	1.0340	23.7	0.9790	27.0	64	6
317	MENDRE13.8	13.800	M1	7.6	0.0	0.0	0.0	1.1013	6.9	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	7.6	0.0	0.0	0.0	1.1013	6.9	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.1	0.0	0.0	0.0	1.1015	4.6	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.1	0.0	0.0	0.0	1.1015	4.6	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	3.8	1.2	2.0	-2.0	1.0000	4.0	0.9569	6.2	64	6
340	PEDGALITO13.8	13.800	P1	22.0	5.3	12.0	-5.0	0.9800	23.1	0.9719	27.0	64	6
342	LORENA13.8	13.800	L1	13.8	-5.0	10.5	-5.0	1.0011	14.7	0.9405	19.9	64	6
343	PRUDENCIA_1	13.800	G1	26.0	-9.8	9.8	-9.8	0.9993	27.8	0.9362	33.0	64	6
346	LORENA 13-2	13.800	L2	13.8	-5.0	10.5	-5.0	1.0011	14.7	0.9405	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0679	3.1	0.9528	6.2	64	6
351	PERLAS N13.8	13.800	G1	8.9	5.0	5.0	-5.0	0.9727	10.5	0.8721	13.5	64	6
352	PERLAS S13.8	13.800	G1	8.9	5.0	5.0	-5.0	0.9727	10.5	0.8721	13.5	64	6
357	BARTOLO13.8	13.800	G1	6.2	0.4	3.7	-3.7	0.9800	6.4	0.9975	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.2	0.4	3.7	-3.7	0.9800	6.4	0.9975	8.5	64	6
359	CRUCES13.8	13.800	G1	4.0	0.0	2.3	-2.3	0.9800	4.1	1.0000	5.6	64	6
359	CRUCES13.8	13.800	G2	4.0	0.0	2.3	-2.3	0.9800	4.1	1.0000	5.6	64	6
361	ESTRECHO4.164	1.600	G1	4.3	-0.1	2.5	-2.5	0.9800	4.3	0.9995	5.6	64	6
361	ESTRECHO4.164	1.600	G2	4.3	-0.1	2.5	-2.5	0.9800	4.3	0.9995	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.0	-0.3	2.4	-2.4	0.9800	4.1	0.9974	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.0	-0.3	2.4	-2.4	0.9800	4.1	0.9974	5.8	64	6
364	MENDRE2	13.800	G1	7.0	1.2	3.9	-3.9	1.0000	7.1	0.9863	8.9	64	6
368	RP-490	13.800	G1	4.1	-1.4	2.4	-2.4	1.0000	4.3	0.9462	5.5	64	6
368	RP-490	13.800	G2	4.1	-1.4	2.4	-2.4	1.0000	4.3	0.9462	5.5	64	6
369	HCALDERA13.8	13.800	G1	3.8	1.2	1.9	-1.9	1.0000	4.0	0.9565	4.3	64	6
372	BJO FRIO 13	13.800	G1	26.0	-9.8	9.8	-9.8	1.0060	27.6	0.9362	33.0	64	6
373	TIZINGAL13.8	13.800	G1	4.2	2.2	2.2	-2.2	0.9710	4.9	0.8839	21.6	64	6
374	SLORENZO13.8	13.800	G1	3.7	-0.1	2.0	-2.0	1.0000	3.7	0.9992	4.5	64	6
374	SLORENZO13.8	13.800	G2	3.7	-0.1	2.0	-2.0	1.0000	3.7	0.9992	4.5	64	6
376	PEDREG2 13.8	13.800	G1	5.9	-2.1	3.1	-3.1	1.0000	6.3	0.9416	7.2	64	6
376	PEDREG2 13.8	13.800	G2	5.9	-2.1	3.1	-3.1	1.0000	6.3	0.9416	7.2	64	6
507	CHAN2 A	13.800	G1	67.4	5.2	50.0	-50.0	1.0000	67.6	0.9970	118.6	64	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0129	24.7	1.0000	88.9	64	6

4	532.9	525.2	0.0	0.0	0.0	-0.2	7.9	0.0
NICARAGU	40.9	207.6	-57.5	0.0	181.5	-48.7	121.1	
5	1297.6	1280.2	0.0	0.0	0.0	-0.5	17.9	0.0
COSTA RI	200.2	520.4	-230.6	0.0	419.1	31.0	298.5	
6	1118.3	1014.5	0.0	0.0	0.0	69.9	33.8	69.1
PANAMA	53.3	368.2	18.2	0.0	662.9	-22.9	352.6	
7	83.6	36.2	0.0	0.0	0.0	46.9	0.4	47.0
ACANAL	16.3	13.1	0.0	0.0	0.0	-4.6	7.8	
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	6397.0	6245.0	0.0	0.0	0.0	0.0	152.0	0.0
	1067.4	1929.6	-585.9	0.0	2061.7	0.0	1785.4	

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BUSES WITH VOLTAGE 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	1.0014	230.32	8		LSA230		230.00	6	1.0028	230.65
11		M.N230		230.00	6	1.0123	232.83	14		PRO230		230.00	6	1.0230	235.28
85		PTP230		230.00	6	1.0157	233.61	96		FOR230		230.00	6	1.0119	232.75
100		BAY230		230.00	6	1.0309	237.12	103		COPESA23		230.00	6	1.0062	231.44
115		PACORA23		230.00	6	1.0085	231.95	144		CANJ230		230.00	6	1.0129	232.97
146		GUALACA230		230.00	6	1.0169	233.90	147		GUASQ230		230.00	6	1.0129	232.97
148		VELADERO	230	230.00	6	1.0111	232.55	149		BBLANCO		230.00	6	1.0099	232.27
155		TABASARAI	23230.00	6	1.0119	232.73	190		CHANG230		230.00	6	1.0213	234.90	
306		CHAN1	230	230.00	6	1.0188	234.31	310		CONCEPCION	23230.00	6	1.0189	234.34	
311		PANDO230		230.00	6	1.0419	239.64	325		STA RITA	230	230.00	6	1.0037	230.85
341		PRUDENCIA	230230.00	6	1.0234	235.38	345		LORENA230		230.00	6	1.0211	234.86	
354		SANBARTOLO	23230.00	6	1.0075	231.72	370		LSA CAP	230	230.00	6	1.0028	230.65	
371		CAISAN230		230.00	6	1.0409	239.41	506		CHAN2	230	230.00	6	1.0224	235.15
540		ANTON		230.00	6	1.0166	233.82	700		BAITUN230		230.00	6	1.0220	235.06
6000		FRONTER		230.00	6	1.0261	236.00	6400		FRONTCHA		230.00	6	1.0231	235.31
6500		FRONT CAISAN	230.00	6	1.0398	239.16									

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9980	229.54	5		CHO230		230.00	6	0.9928	228.34
105		PAN-AM23		230.00	6	0.9928	228.34	511		LGUIAS230		230.00	6	0.9959	229.06

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BUSES WITH VOLTAGE 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	1.0205	117.35	9		LSA115		115.00	6	1.0407	119.69
12		M.N115		115.00	6	1.0064	115.74	15		PRO115		115.00	6	1.0250	117.87
20		CH.AZUL		115.00	6	1.0257	117.96	52		TOC115		115.00	6	1.0161	116.86
54		LM1115		115.00	6	1.0348	119.00	55		LM2115		115.00	6	1.0347	118.99

61	FFIELD	115.00	6	1.0284	118.26	87	CAL115	115.00	6	1.0227	117.61
88	EST115	115.00	6	1.0257	117.95	92	L.V115	115.00	6	1.0239	117.74
109	STA RITA115	115.00	6	1.0421	119.84	123	MIR115	115.00	7	1.0007	115.08
154	CEMPAN15	115.00	6	1.0214	117.46	191	CHANG115	115.00	6	1.0091	116.05
522	TCATIVÁ 115	115.00	6	1.0347	119.00	529	TCOLON 115	115.00	6	1.0421	119.84
701	BAITUN115	115.00	6	1.0026	115.30	702	BJOMIN115	115.00	6	1.0045	115.52

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9966	114.61	6		CHO115		115.00	6	0.9941	114.33
18		CAC115		115.00	6	0.9961	114.56	19		C.V115		115.00	6	1.0000	114.99
21		C.BAN115		115.00	6	0.9828	113.02	23		CH115		115.00	6	0.9977	114.74
26		LOC115		115.00	6	0.9840	113.16	30		MAR115		115.00	6	0.9815	112.87
33		STM115		115.00	6	0.9936	114.27	37		SAN115		115.00	6	0.9822	112.95
48		TINAJ115		115.00	6	0.9925	114.14	50		M.O115		115.00	6	0.9927	114.16

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 AÑO 2020 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																	
66		BLM13B		13.800	V2	38.0	12.8	25.0	0.0	1.0100	39.7	0.9478	47.0			62	6
67		BLM13C		13.800	V3	38.0	12.8	25.0	0.0	1.0100	39.7	0.9478	47.0			62	6
68		BLM13D		13.800	V4	38.0	13.3	25.0	0.0	1.0100	39.9	0.9440	47.0			62	6
90		EST-13L		13.800	E1	20.4	4.7	12.0	-5.0	0.9900	21.1	0.9746	27.0			64	6
91		EST-13T		13.800	E2	20.4	4.7	12.0	-5.0	0.9900	21.1	0.9746	27.0			64	6
94		LV-13.8L		13.800	L1	21.6	5.3	12.0	-5.0	0.9900	22.5	0.9712	27.0			64	6
95		LV-13.8T		13.800	L2	21.6	5.3	12.0	-5.0	0.9900	22.5	0.9712	27.0			64	6
97		FOR13A		13.800	F1	88.6	-15.4	50.0	-50.0	0.9900	90.8	0.9852	111.0			64	6
98		FOR13B		13.800	F2	88.6	-15.4	50.0	-50.0	0.9900	90.8	0.9852	111.0			64	6
101		BAY13A		13.800	B1	58.6	24.5	50.0	-25.0	1.0100	62.9	0.9229	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	58.6	24.5	50.0	-25.0	1.0100	62.9	0.9229	96.0			61	6
108		BAY13C		13.800	B3	58.6	24.5	50.0	-25.0	1.0100	62.9	0.9229	100.0			61	6
117		CB250A-1		13.800	C1	113.4	28.7	75.6	0.0	1.0200	114.7	0.9693	143.5			62	6
118		CB250A-2		13.800	C2	113.4	28.7	75.6	0.0	1.0200	114.7	0.9693	143.5			62	6
119		CB250B-1		13.800	C1	113.4	28.7	75.6	0.0	1.0200	114.7	0.9693	143.5			62	6
120		CB250B-2		13.800	C2	113.4	28.7	75.6	0.0	1.0200	114.7	0.9693	143.5			62	6

142	CANJ13A	13.800	C1	51.0	11.1	29.0	-29.0	0.9800	53.3	0.9771	69.0	64	6
143	CANJ13B	13.800	C2	51.0	11.1	29.0	-29.0	0.9800	53.3	0.9771	69.0	64	6
150	GUALACA 13-213.800	G2	12.6	-6.4	7.4	-7.4	0.9900	14.2	0.8927	14.8	64	6	
151	GUALACA13.8	13.800	G1	12.6	-6.4	7.4	-7.4	0.9900	14.2	0.8927	14.8	64	6
152	BBLANCO_13.813.800	G1	8.1	-0.4	7.0	-7.0	1.0000	8.1	0.9987	16.0	64	6	
152	BBLANCO_13.813.800	G2	8.1	-0.4	7.0	-7.0	1.0000	8.1	0.9987	16.0	64	6	
156	TABASARAI11313.800	G1	16.4	0.2	5.7	0.2	1.0104	16.2	0.9999	20.5	1	6	
156	TABASARAI11313.800	G2	16.4	0.2	5.7	0.2	1.0104	16.2	0.9999	20.5	1	6	
193	GEBONYIC	13.800	G1	9.0	-1.2	4.0	-4.0	1.0000	9.1	0.9910	35.3	64	6
193	GEBONYIC	13.800	G2	9.0	-1.2	4.0	-4.0	1.0000	9.1	0.9910	35.3	64	6
302	PASOANCH13.813.800	P1	4.3	2.0	2.0	-2.0	0.9663	4.9	0.9048	6.2	64	6	
303	SINDIGO13.8	13.800	G1	8.5	0.0	5.0	0.0	1.1005	7.7	1.0000	13.5	64	6
304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.0979	4.9	0.9063	5.7	64	6
304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.0979	4.9	0.9063	5.7	64	6
305	ELALTO	13.800	G1	17.0	-5.0	12.0	-5.0	1.0273	17.2	0.9594	20.6	64	6
305	ELALTO	13.800	G2	17.0	-5.0	12.0	-5.0	1.0273	17.2	0.9594	20.6	64	6
307	CHAN1 A	13.800	G1	103.6	-21.9	50.0	-50.0	0.9900	107.0	0.9785	118.6	64	6
312	PANDO13.8	13.800	G1	13.6	-3.1	10.0	-5.0	0.9900	14.1	0.9749	19.9	64	6
312	PANDO13.8	13.800	G2	13.6	-3.1	10.0	-5.0	0.9900	14.1	0.9749	19.9	64	6
316	MTE LIRIO13.13.800	G1	20.6	-5.0	12.0	-5.0	1.0150	20.9	0.9719	27.0	64	6	
316	MTE LIRIO13.13.800	G2	20.6	-5.0	12.0	-5.0	1.0150	20.9	0.9719	27.0	64	6	
317	MENDRE13.8	13.800	M1	7.9	0.0	0.0	0.0	1.1001	7.2	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	7.9	0.0	0.0	0.0	1.1001	7.2	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.3	0.0	0.0	0.0	1.1004	4.8	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.3	0.0	0.0	0.0	1.1004	4.8	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	0.9995	4.4	0.8928	6.2	64	6
340	PEDGALITO13813.800	P1	20.4	5.2	12.0	-5.0	0.9800	21.5	0.9685	27.0	64	6	
342	LORENA13.8	13.800	L1	14.4	-5.0	10.5	-5.0	1.0053	15.1	0.9444	19.9	64	6
343	PRUDENCIA_1	13.800	G1	22.4	-5.5	9.8	-9.8	1.0000	23.1	0.9708	33.0	64	6
343	PRUDENCIA_1	13.800	G2	22.4	-5.5	9.8	-9.8	1.0000	23.1	0.9708	33.0	64	6
346	LORENA 13-2	13.800	L2	14.4	-5.0	10.5	-5.0	1.0053	15.1	0.9444	19.9	64	6
350	MACANO 13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0679	3.2	0.9560	6.2	64	6
351	PERLAS N13.813.800	G1	9.3	5.0	5.0	-5.0	0.9727	10.8	0.8797	13.5	64	6	
352	PERLAS S13.813.800	G1	9.3	5.0	5.0	-5.0	0.9727	10.8	0.8797	13.5	64	6	
357	BARTOLO13.8	13.800	G1	6.5	0.9	3.7	-3.7	1.0000	6.5	0.9899	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.5	0.9	3.7	-3.7	1.0000	6.5	0.9899	8.5	64	6
359	CRUCES13.8	13.800	G1	4.1	0.2	2.3	-2.3	1.0000	4.1	0.9982	5.6	64	6
359	CRUCES13.8	13.800	G2	4.1	0.2	2.3	-2.3	1.0000	4.1	0.9982	5.6	64	6
361	ESTRECHO4.164.1600	G1	4.4	0.1	2.5	-2.5	1.0000	4.4	0.9996	5.6	64	6	
361	ESTRECHO4.164.1600	G2	4.4	0.1	2.5	-2.5	1.0000	4.4	0.9996	5.6	64	6	
363	LAGUNA 13.8	13.800	G1	4.2	-0.1	2.4	-2.4	1.0000	4.2	0.9999	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.2	-0.1	2.4	-2.4	1.0000	4.2	0.9999	5.8	64	6
364	MENDRE2	13.800	G1	6.8	2.8	3.9	-3.9	1.0000	7.4	0.9241	8.9	64	6

368	RP-490	13.800	G1	4.2	-1.4	2.4	-2.4	1.0000	4.5	0.9502	5.5	64	6
368	RP-490	13.800	G2	4.2	-1.4	2.4	-2.4	1.0000	4.5	0.9502	5.5	64	6
369	HCALDERA13.813.800	G1	3.4	1.9	1.9	-1.9	0.9995	3.9	0.8689	4.3	64	6	
372	BJO FRIO 13 13.800	G1	23.8	-5.3	9.8	-9.8	1.0000	24.4	0.9760	33.0	64	6	
372	BJO FRIO 13 13.800	G2	23.8	-5.3	9.8	-9.8	1.0000	24.4	0.9760	33.0	64	6	
373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9711	5.1	0.8909	21.6	64	6	
374	SLORENZO13.813.800	G1	3.9	-1.3	2.0	-2.0	1.0000	4.1	0.9444	4.5	64	6	
374	SLORENZO13.813.800	G2	3.9	-1.3	2.0	-2.0	1.0000	4.1	0.9444	4.5	64	6	
376	PEDREG2 13.813.800	G1	6.2	-2.1	3.1	-3.1	1.0000	6.5	0.9458	7.2	64	6	
376	PEDREG2 13.813.800	G2	6.2	-2.1	3.1	-3.1	1.0000	6.5	0.9458	7.2	64	6	
507	CHAN2 A	13.800	G1	79.1	5.7	50.0	-50.0	1.0000	79.3	0.9974	118.6	64	6
541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0179	29.5	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	23.8	1.3	13.0	-13.0	1.0000	23.8	0.9985	30.5	64	6
704	BJOMIN13B	13.800	G2	23.8	1.3	13.0	-13.0	1.0000	23.8	0.9985	30.5	64	6
705	BAITUN13A	13.800	G1	36.6	-8.2	26.6	-26.6	1.0000	37.5	0.9758	50.6	64	6
706	BAITUN13B	13.800	G2	36.6	-8.2	26.6	-26.6	1.0000	37.5	0.9758	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9663	5.1	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1936.6	150.7	1172.4	-619.2				2808.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:25
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 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																	
126		MIR13A		12.000	G1	7.6	0.0	5.0	0.0	1.0375	7.3	1.0000	13.5			65	7
129		MIR13D		13.800	G4	35.5	2.9	15.0	0.0	1.0000	35.6	0.9968	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0055	17.0	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9735	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9735	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9735	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-1.2	3.0	-3.0	1.0000	4.1	0.9552	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-1.2	3.0	-3.0	1.0000	4.1	0.9552	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-1.2	3.0	-3.0	1.0000	4.1	0.9552	6.2			65	7
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0200	18.0	0.9281	23.0			65	7
171		MIR13H		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	M2	17.0	6.8	11.2	6.8	1.0291	17.8	0.9281	23.0			65	7
SUBSYSTEM TOTALS						128.6	18.4	76.5	5.5				184.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:25
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2020 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	1334.1	1330.8	0.0	0.0	0.0	-40.1	43.3	-39.5
GUATEMAL	210.7	275.1	-198.4	0.0	277.2	5.1	406.1	
2	868.7	855.0	0.0	0.0	0.0	-0.2	13.9	0.0
SALVADOR	74.6	224.2	-70.7	0.0	229.0	-25.2	175.3	
3	1236.7	1203.0	0.0	0.0	0.0	0.0	33.8	0.0
HONDURAS	461.7	321.1	-47.6	0.0	294.0	54.2	428.1	
4	532.0	525.2	0.0	0.0	0.0	0.1	6.7	0.0
NICARAGU	32.7	207.6	-57.8	0.0	182.3	-47.4	112.5	
5	1296.5	1280.2	0.0	0.0	0.0	0.4	16.0	0.0
COSTA RI	197.7	520.4	-230.9	0.0	419.5	34.2	293.5	
6	1936.6	1875.2	0.0	0.0	0.0	-20.7	82.2	-20.5
PANAMA	150.7	380.8	-358.3	0.0	666.4	-12.0	806.6	
7	128.6	67.0	0.0	0.0	0.0	60.5	1.2	60.0
ACANAL	18.4	13.6	0.0	0.0	0.0	-8.9	13.7	
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	7333.3	7136.3	0.0	0.0	0.0	0.0	197.0	0.0
	1146.4	1942.6	-963.7	0.0	2068.4	0.0	2235.9	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MIN-VERANO

MON, OCT 18 2010 9:27

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0004	230.09	3		PANII230		230.00	6	1.0014	230.32
8		LSA230		230.00	6	1.0030	230.69	11		M.N230		230.00	6	1.0139	233.19
14		PRO230		230.00	6	1.0266	236.13	85		PTP230		230.00	6	1.0185	234.26
96		FOR230		230.00	6	1.0154	233.53	100		BAY230		230.00	6	1.0215	234.95
103		COPESA23		230.00	6	1.0049	231.13	115		PACORA23		230.00	6	1.0067	231.54
144		CANJ230		230.00	6	1.0160	233.68	146		GUALACA230		230.00	6	1.0187	234.31
147		GUASQ230		230.00	6	1.0160	233.67	148		VELADERO 230		230.00	6	1.0124	232.85
149		BBLANCO		230.00	6	1.0114	232.63	155		TABASARAI 230		230.00	6	1.0129	232.98
190		CHANG230		230.00	6	1.0198	234.56	306		CHAN1 230		230.00	6	1.0179	234.13
310		CONCEPCION230		230.00	6	1.0219	235.03	311		PANDO230		230.00	6	1.0488	241.23
341		PRUDENCIA230		230.00	6	1.0224	235.14	345		LORENA230		230.00	6	1.0214	234.92
354		SANBARTOLO230		230.00	6	1.0095	232.19	370		LSA CAP 230		230.00	6	1.0030	230.69
371		CAISAN230		230.00	6	1.0474	240.91	506		CHAN2 230		230.00	6	1.0215	234.95
511		LGUIAS230		230.00	6	1.0026	230.59	540		ANTON		230.00	6	1.0116	232.66
700		BAITUN230		230.00	6	1.0256	235.88	6000		FRONTER		230.00	6	1.0297	236.83
6400		FRONTCHA		230.00	6	1.0206	234.73	6500		FRONT CAISAN230		230.00	6	1.0458	240.54

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
5		CHO230		230.00	6	0.9994	229.86	105		PAN-AM23		230.00	6	0.9994	229.86
325		STA RITA230		230.00	6	0.9961	229.11								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MIN-VERANO

MON, OCT 18 2010 9:27

BUSES WITH VOLTAGE 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	1.0095	116.09	6		CHO115		115.00	6	1.0006	115.06
9		LSA115		115.00	6	1.0445	120.12	12		M.N115		115.00	6	1.0134	116.54
15		PRO115		115.00	6	1.0286	118.29	20		CH.AZUL		115.00	6	1.0294	118.38
52		TOC115		115.00	6	1.0062	115.71	54		LM1115		115.00	6	1.0329	118.78

55	LM2115	115.00	6	1.0331	118.81	61	FFIELD	115.00	6	1.0286	118.29
87	CAL115	115.00	6	1.0237	117.73	88	EST115	115.00	6	1.0255	117.94
92	L.V115	115.00	6	1.0244	117.80	109	STA RITA115	115.00	6	1.0372	119.27
154	CEMPAN15	115.00	6	1.0202	117.32	191	CHANG115	115.00	6	1.0076	115.87
522	TCATIVÁ 115	115.00	6	1.0330	118.79	529	TCOLON 115	115.00	6	1.0372	119.28
701	BAITUN115	115.00	6	1.0140	116.61	702	BJOMIN115	115.00	6	1.0142	116.64

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9936	114.26	18		CAC115		115.00	6	0.9935	114.25
19		C.V115		115.00	6	0.9950	114.43	21		C.BAN115		115.00	6	0.9835	113.10
23		CH115		115.00	6	0.9995	114.94	26		LOC115		115.00	6	0.9845	113.22
30		MAR115		115.00	6	0.9829	113.03	33		STM115		115.00	6	0.9914	114.02
37		SAN115		115.00	6	0.9829	113.03	48		TINAJ115		115.00	6	0.9906	113.92
50		M.O115		115.00	6	0.9908	113.94	123		MIR115		115.00	7	0.9988	114.86

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 18 2010 9:27
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 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																	
66		BLM13B		13.800	V2	38.0	13.5	25.0	0.0	1.0100	39.9	0.9426	47.0			62	6
67		BLM13C		13.800	V3	38.0	13.5	25.0	0.0	1.0100	39.9	0.9426	47.0			62	6
68		BLM13D		13.800	V4	38.0	14.0	25.0	0.0	1.0100	40.1	0.9383	47.0			62	6
90		EST-13L		13.800	E1	19.7	6.5	12.0	-5.0	0.9950	20.8	0.9499	27.0			64	6
94		LV-13.8L		13.800	L1	21.6	7.0	12.0	-5.0	0.9950	22.8	0.9519	27.0			64	6
97		FOR13A		13.800	F1	79.0	-19.4	50.0	-50.0	0.9900	82.2	0.9711	111.0			64	6
101		BAY13A		13.800	B1	46.3	22.6	50.0	-25.0	1.0000	51.5	0.8982	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	48.3	22.8	50.0	-25.0	1.0000	53.4	0.9047	96.0			61	6
117		CB250A-1		13.800	C1	113.4	24.9	75.6	0.0	1.0100	114.9	0.9766	143.5			62	6
118		CB250A-2		13.800	C2	113.4	24.9	75.6	0.0	1.0100	114.9	0.9766	143.5			62	6
142		CANJ13A		13.800	C1	46.2	9.0	29.0	-29.0	0.9800	48.1	0.9814	69.0			64	6
150		GUALACA 13-213.800		G2		12.0	-7.3	7.4	-7.4	0.9880	14.2	0.8541	14.8			64	6
151		GUALACA13.8		G1		12.0	-7.3	7.4	-7.4	0.9880	14.2	0.8541	14.8			64	6
152		BBLANCO_13.813.800		G1		7.8	-2.5	7.0	-7.0	0.9950	8.2	0.9523	16.0			64	6
156		TABASARAI1313.800		G1		15.8	0.2	5.7	0.2	1.0129	15.6	0.9999	20.5			1	6
193		GEBONYIC		G1		8.2	-1.8	4.0	-4.0	0.9950	8.4	0.9767	35.3			64	6

193	GEBONYIC	13.800	G2	8.2	-1.8	4.0	-4.0	0.9950	8.4	0.9767	35.3	64	6
302	PASOANCH13.8	13.800	P1	4.1	2.0	2.0	-2.0	0.9516	4.8	0.8986	6.2	64	6
303	SINDIGO13.8	13.800	G1	9.0	0.0	5.0	0.0	1.0966	8.2	1.0000	13.5	64	6
304	ALGA13.8	13.800	A1	4.7	-2.3	2.3	-2.3	1.0940	4.7	0.9001	5.7	64	6
304	ALGA13.8	13.800	A2	4.7	-2.3	2.3	-2.3	1.0940	4.7	0.9001	5.7	64	6
305	ELALTO	13.800	G1	14.5	-5.0	12.0	-5.0	1.0346	14.8	0.9450	20.6	64	6
305	ELALTO	13.800	G2	14.5	-5.0	12.0	-5.0	1.0346	14.8	0.9450	20.6	64	6
307	CHAN1 A	13.800	G1	67.4	-24.3	50.0	-50.0	0.9900	72.4	0.9408	118.6	64	6
312	PANDO13.8	13.800	G1	13.1	-5.0	10.0	-5.0	1.0158	13.8	0.9343	19.9	64	6
316	MTE LIRIO13.8	13.800	G1	19.9	-5.0	12.0	-5.0	1.0368	19.8	0.9698	27.0	64	6
317	MENDRE13.8	13.800	M1	7.6	0.0	0.0	0.0	1.0963	7.0	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	7.6	0.0	0.0	0.0	1.0963	7.0	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.1	0.0	0.0	0.0	1.0966	4.7	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.1	0.0	0.0	0.0	1.0966	4.7	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	3.8	2.0	2.0	-2.0	0.9960	4.3	0.8859	6.2	64	6
340	PEDGALITO138	13.800	P1	19.7	5.3	12.0	-5.0	0.9800	20.8	0.9657	27.0	64	6
342	LORENA13.8	13.800	L1	13.8	-5.0	10.5	-5.0	1.0056	14.6	0.9405	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.6	-9.8	9.8	-9.8	1.0039	23.6	0.9112	33.0	64	6
346	LORENA 13-2	13.800	L2	13.8	-5.0	10.5	-5.0	1.0056	14.6	0.9405	19.9	64	6
350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0677	3.1	0.9528	6.2	64	6
351	PERLAS N13.8	13.800	G1	8.9	5.0	5.0	-5.0	0.9726	10.5	0.8721	13.5	64	6
352	PERLAS S13.8	13.800	G1	8.9	5.0	5.0	-5.0	0.9726	10.5	0.8721	13.5	64	6
357	BARTOLO13.8	13.800	G1	6.2	0.2	3.7	-3.7	0.9800	6.4	0.9996	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.2	0.2	3.7	-3.7	0.9800	6.4	0.9996	8.5	64	6
359	CRUCES13.8	13.800	G1	4.0	-0.2	2.3	-2.3	0.9800	4.1	0.9991	5.6	64	6
359	CRUCES13.8	13.800	G2	4.0	-0.2	2.3	-2.3	0.9800	4.1	0.9991	5.6	64	6
361	ESTRECHO4.164	1.600	G1	4.3	-0.3	2.5	-2.5	0.9800	4.4	0.9979	5.6	64	6
361	ESTRECHO4.164	1.600	G2	4.3	-0.3	2.5	-2.5	0.9800	4.4	0.9979	5.6	64	6
363	LAGUNA 13.8	13.800	G1	4.0	-0.4	2.4	-2.4	0.9800	4.1	0.9946	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.0	-0.4	2.4	-2.4	0.9800	4.1	0.9946	5.8	64	6
364	MENDRE2	13.800	G1	7.0	0.3	3.9	-3.9	0.9950	7.0	0.9990	8.9	64	6
368	RP-490	13.800	G1	4.1	-1.8	2.4	-2.4	0.9950	4.5	0.9162	5.5	64	6
368	RP-490	13.800	G2	4.1	-1.8	2.4	-2.4	0.9950	4.5	0.9162	5.5	64	6
369	HCALDERA13.8	13.800	G1	3.8	0.3	1.9	-1.9	0.9950	3.8	0.9968	4.3	64	6
372	BJO FRIO 13	13.800	G1	22.9	-9.8	9.8	-9.8	1.0082	24.7	0.9201	33.0	64	6
373	TIZINGAL13.8	13.800	G1	4.2	2.2	2.2	-2.2	0.9709	4.9	0.8839	21.6	64	6
374	SLORENZO13.8	13.800	G1	3.7	-0.7	2.0	-2.0	0.9950	3.8	0.9838	4.5	64	6
374	SLORENZO13.8	13.800	G2	3.7	-0.7	2.0	-2.0	0.9950	3.8	0.9838	4.5	64	6
376	PEDREG2 13.8	13.800	G1	5.9	-2.7	3.1	-3.1	0.9950	6.6	0.9095	7.2	64	6
376	PEDREG2 13.8	13.800	G2	5.9	-2.7	3.1	-3.1	0.9950	6.6	0.9095	7.2	64	6
507	CHAN2 A	13.800	G1	67.4	0.8	50.0	-50.0	0.9950	67.8	0.9999	118.6	64	6
541	TOABRE	0.6000	1	28.9	0.0	0.0	0.0	1.0128	28.5	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	22.9	-1.0	13.0	-13.0	0.9950	23.1	0.9991	30.5	64	6

4	536.1	525.2	0.0	0.0	0.0	0.0	10.9	0.0
NICARAGU	61.3	207.6	-56.9	0.0	179.8	-51.2	141.7	
5	1303.4	1280.2	0.0	0.0	0.0	0.0	23.2	0.0
COSTA RI	225.5	520.4	-229.5	0.0	417.3	23.8	328.1	
6	1198.1	1031.3	0.0	0.0	0.0	145.0	21.8	144.8
PANAMA	36.8	374.3	81.7	0.0	668.2	-23.7	272.8	
7	84.0	36.8	0.0	0.0	0.0	46.8	0.4	47.0
ACANAL	16.7	13.4	0.0	0.0	0.0	-4.7	8.0	
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	6414.9	6262.4	0.0	0.0	0.0	0.0	152.5	0.0
	1133.4	1935.9	-520.0	0.0	2060.2	0.0	1777.7	

RESULTADOS DE ESTABILIDAD TRANSITORIA

1. Año 2010

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

2. Año 2011

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

3. Año 2012

- 3.1 Falla y Apertura de un circuito de Chorrera - Panamá
- 3.2 Falla y Apertura de un circuito de Llano Sánchez - Veladero
- 3.3 Falla y Apertura de un circuito de Llano Sánchez - Panamá II

4. Año 2013

- 4.1 Falla y Apertura de un circuito de Chorrera - Panamá
- 4.2 Falla y Apertura de un circuito de Veladero – Llano Sánchez
- 4.3 Falla y Apertura de un circuito de Llano Sánchez – Panamá II

5. Año 2014

- 5.1 Falla y Apertura de un circuito de Llano Sánchez - Veladero
- 5.2 Falla y Apertura de un circuito de Guasquitas - Veladero
- 5.3 Falla y Apertura de un circuito de Antón - Panamá

6. Año 2017

- 6.1 Falla y Apertura de un circuito de Chorrera - Panamá
- 6.2 Falla y Apertura de un circuito Guasquitas - Veladero
- 6.3 Falla y Apertura del circuito Llano Sánchez – Panamá II

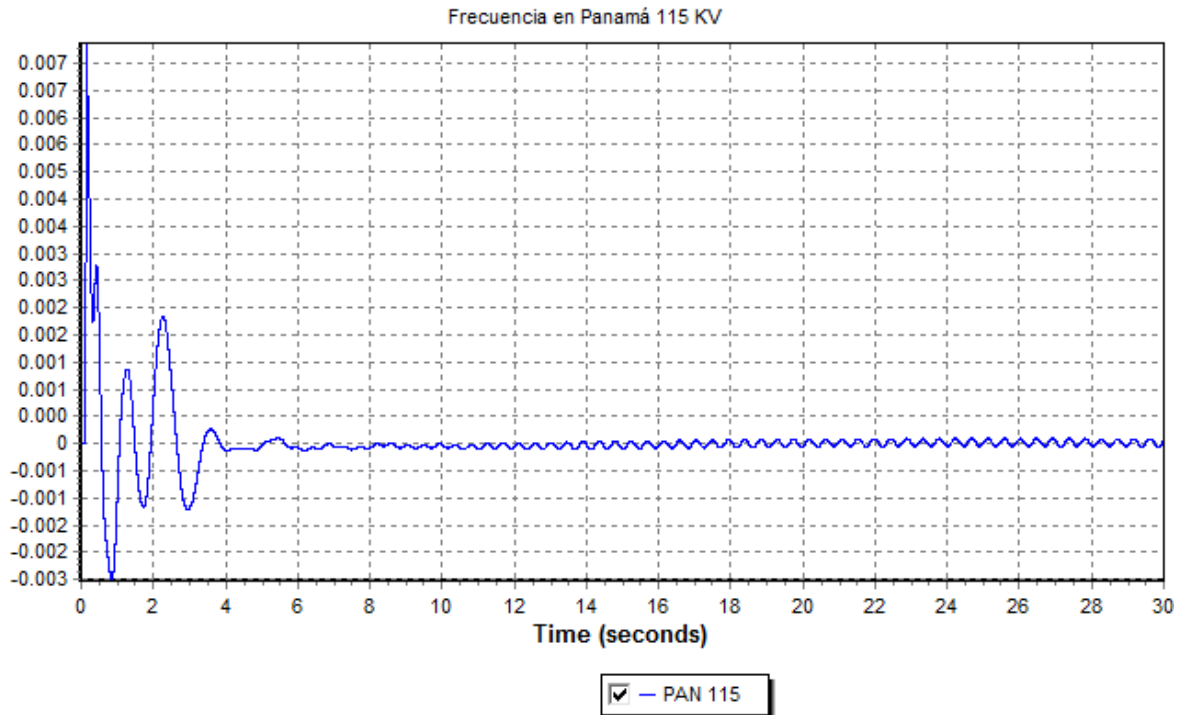
7. Año 2020

- 7.1 Falla y Apertura de un circuito de Chorrera - Panamá
- 7.2 Falla y Apertura del circuito Llano Sánchez – Panamá II
- 7.3 Falla y Apertura del circuito Guasquitas – Llano Sánchez

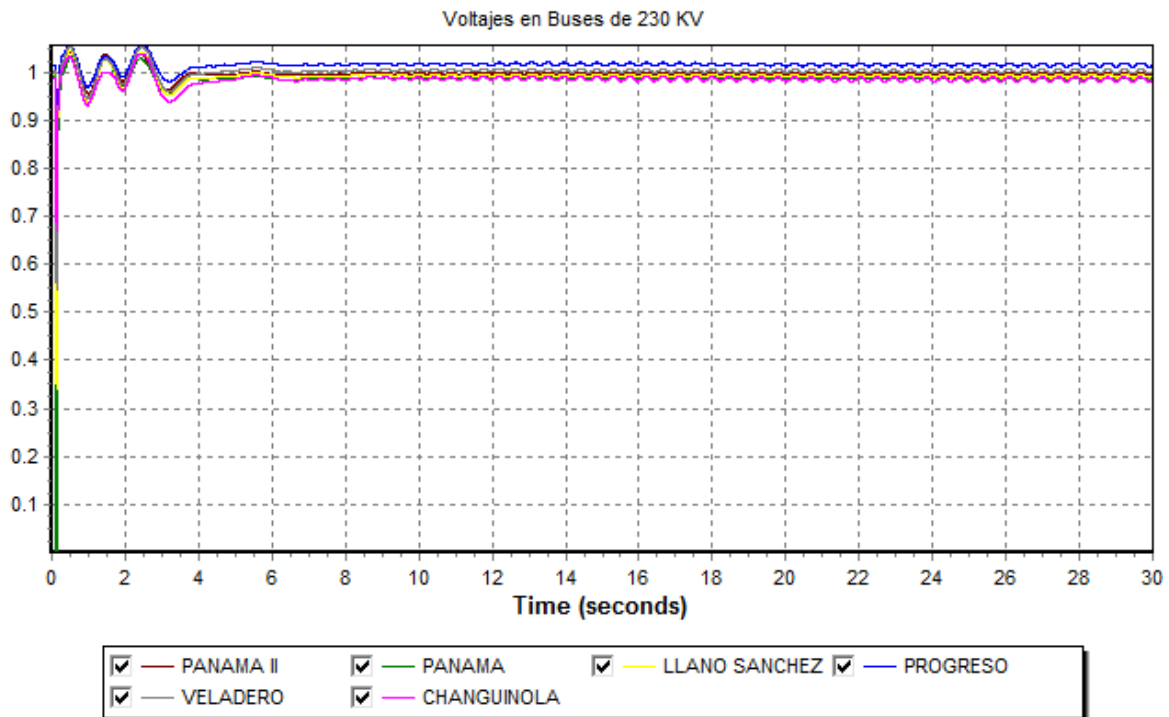
1. Año 2010

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

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

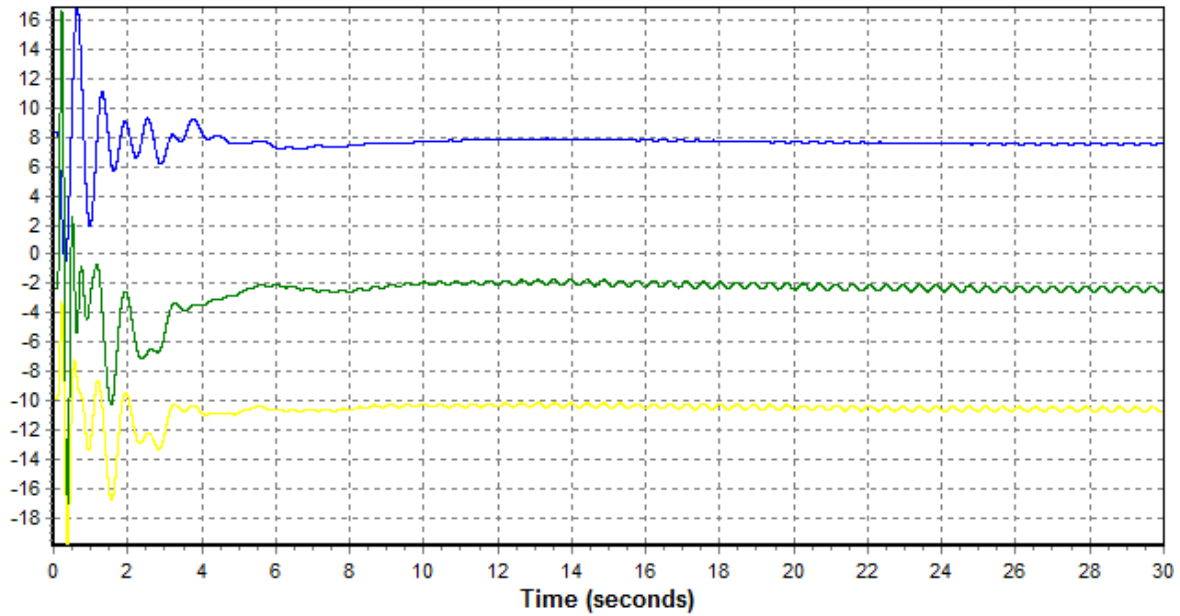


PLAN DE EXPANSION DEL SIN JUNIO-2010 AÑO 2010 ESC-MOD DEMANDA-MAX-INVIERNO



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

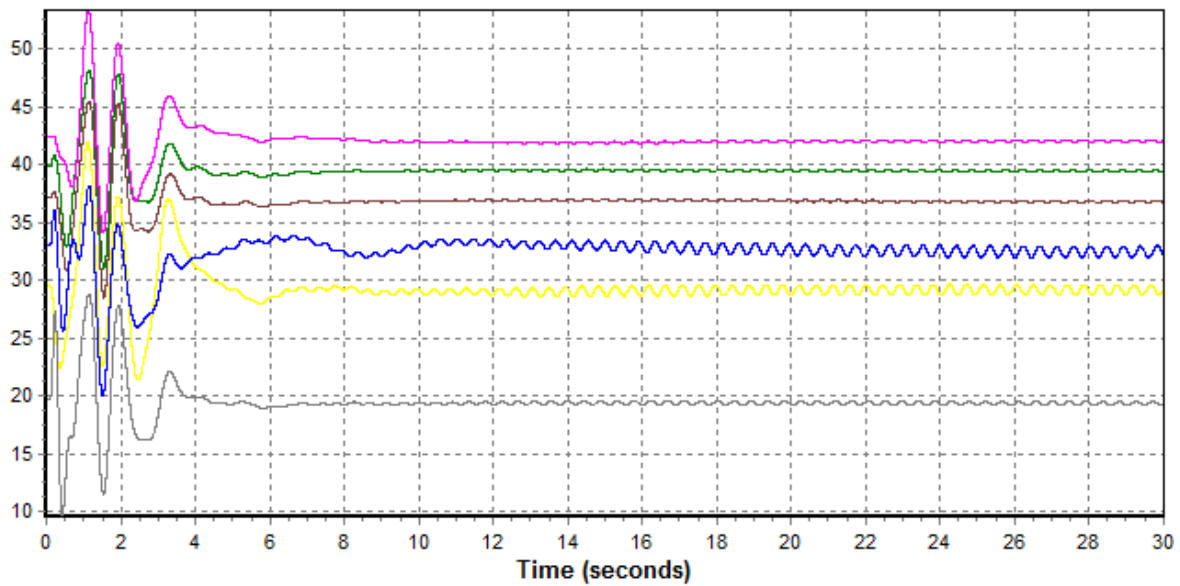
Angulos de Rotación de Unidades Térmicas Respecto a Bayano



BLM
 PACORA
 T CATVA

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

Angulo de Rotación de Unidades Hidro Respecto a Bayano

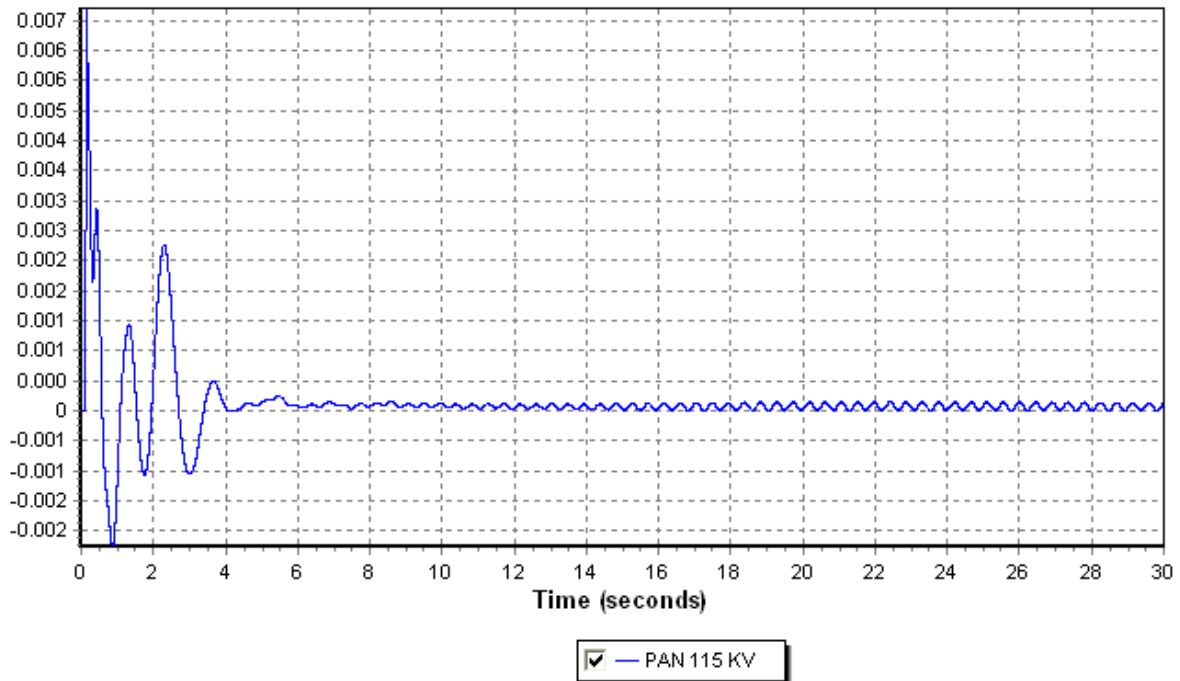


LA ESTRELLA
 LOS VALLES
 FORTUNA
 GUALACA
 MENDRE
 ESTI

1.2. Falla y Apertura de un circuito de Llano Sánchez – Panamá II

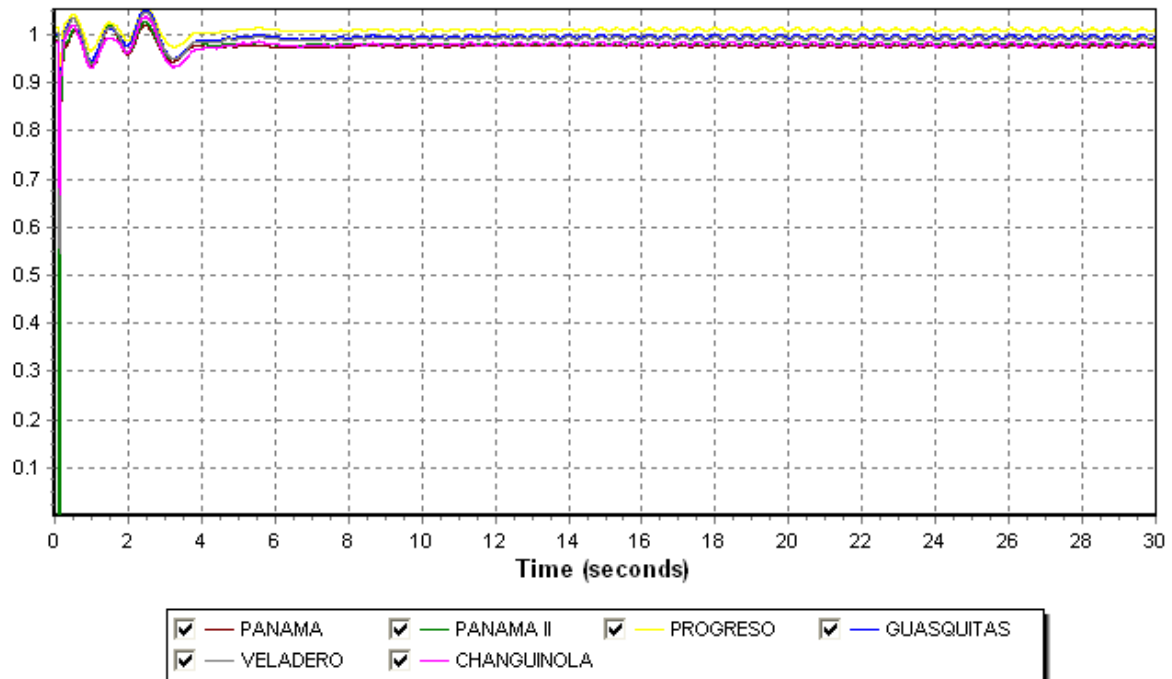
PLAN DE EXPANSION DEL SIN JUNIO-2010 AÑO 2010 ESC-MOD DEMANDA-MAX-INVIERNO

Frecuencia 115 KV



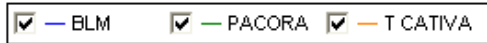
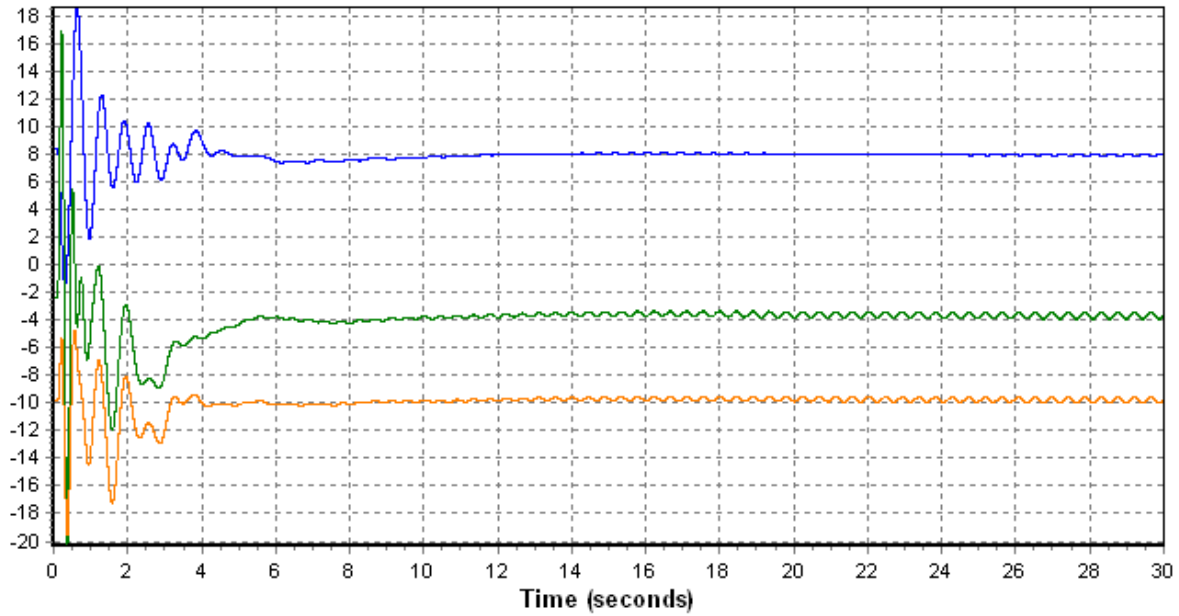
PLAN DE EXPANSION DEL SIN JUNIO-2010 AÑO 2010 ESC-MOD DEMANDA-MAX-INVIERNO

Voltajes en Buses 230 KV



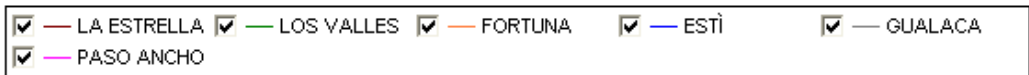
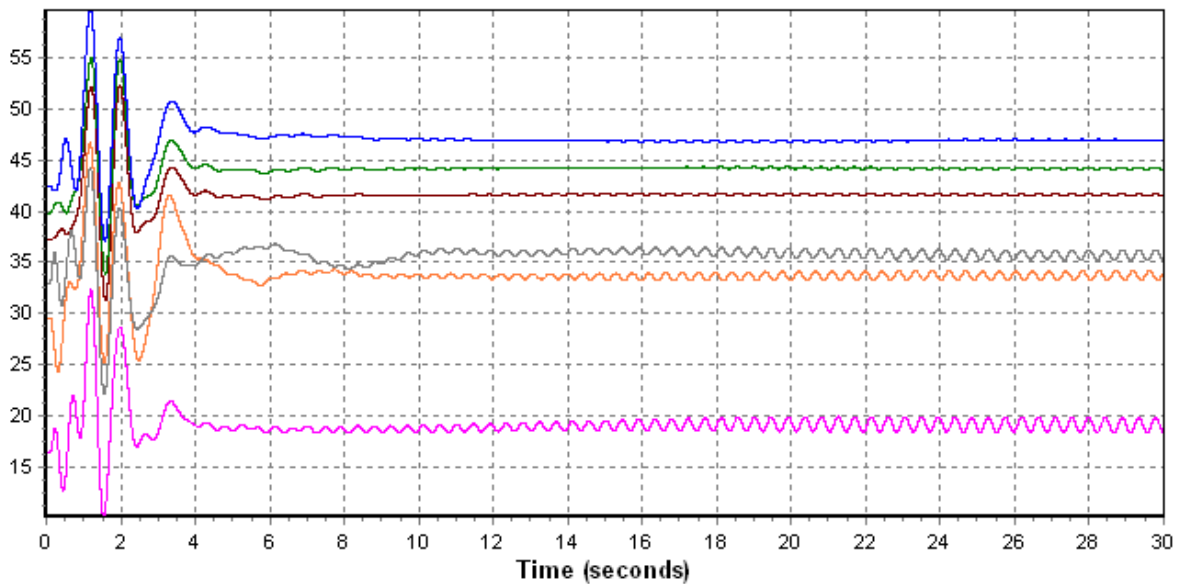
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2010 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotación de Unidades Térmicas con Respecto a Bayano



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

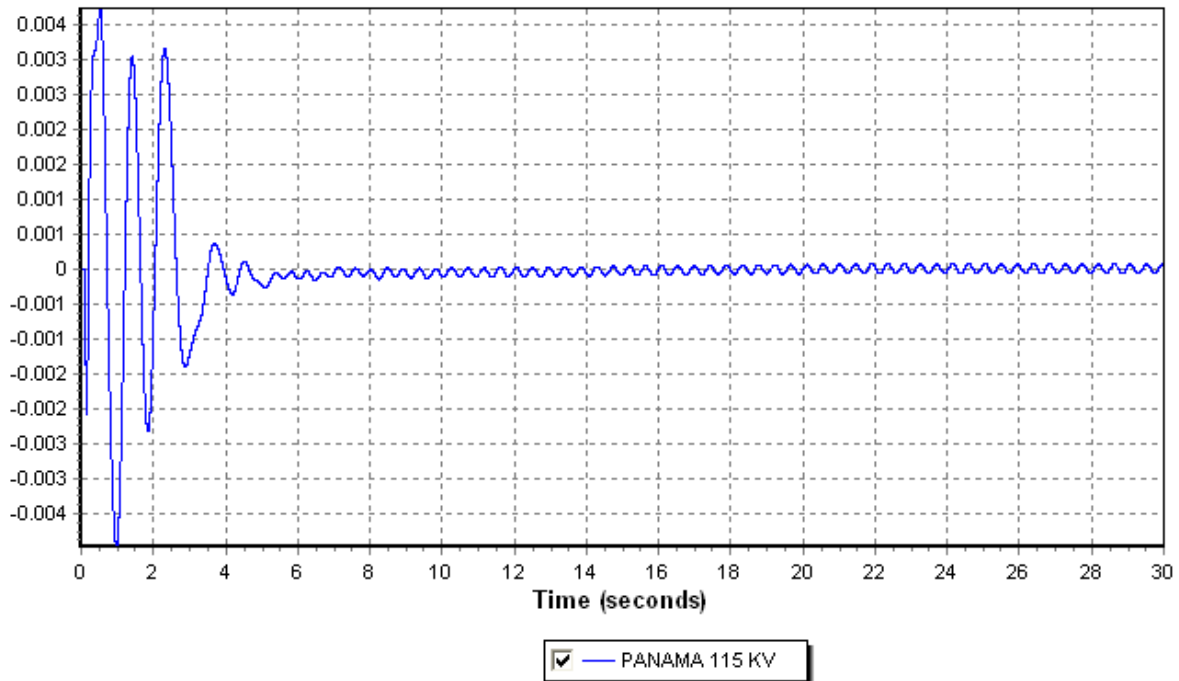
Angulo de Rotación de Unidades Hidro Respecto a Bayano



1.3 Falla y Apertura de un circuito de Guasquitas - Veladero

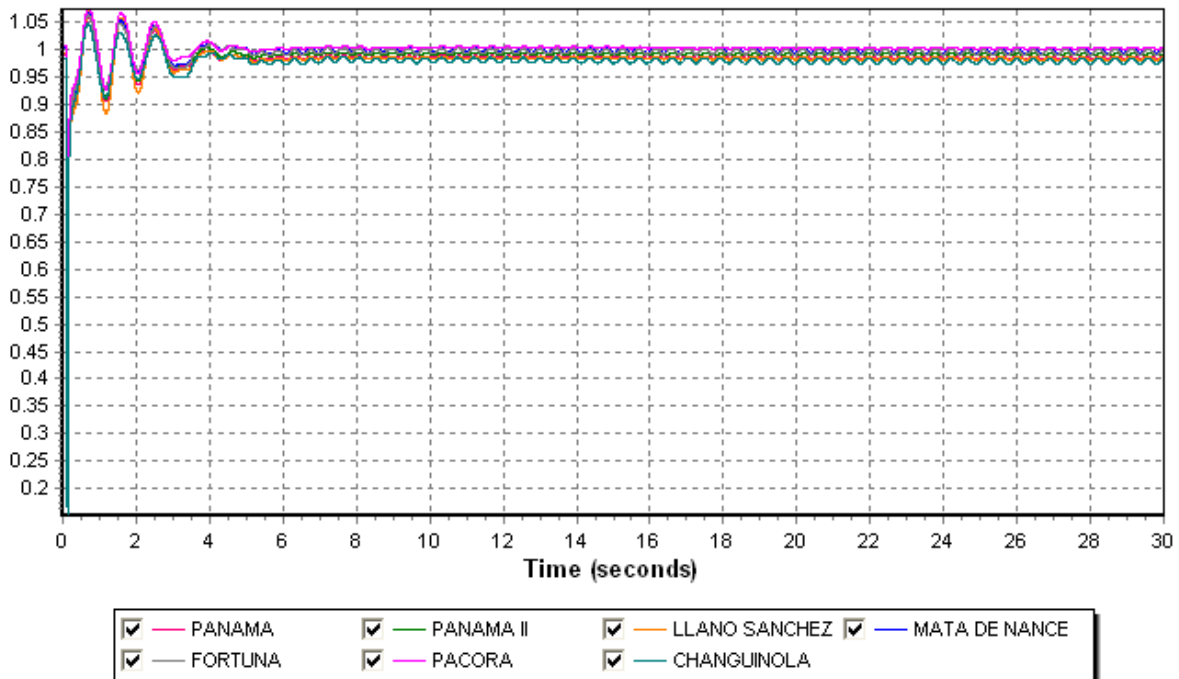
PLAN DE EXPANSION DEL SIN JUNIO-2010 AÑO 2010 ESC-MOD DEMANDA-MAX-INVIERNO

Frecuencia 115 KV



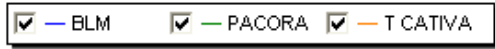
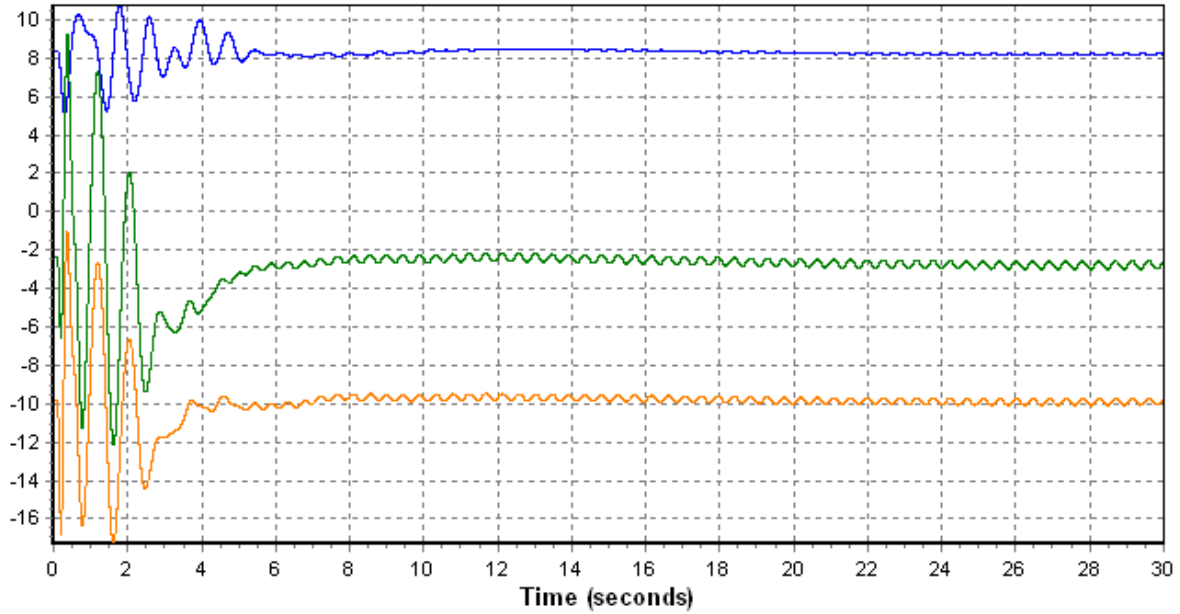
PLAN DE EXPANSION DEL SIN JUNIO-2010 AÑO 2010 ESC-MOD DEMANDA-MAX-INVIERNO

Volajes en Buses de 230 KV



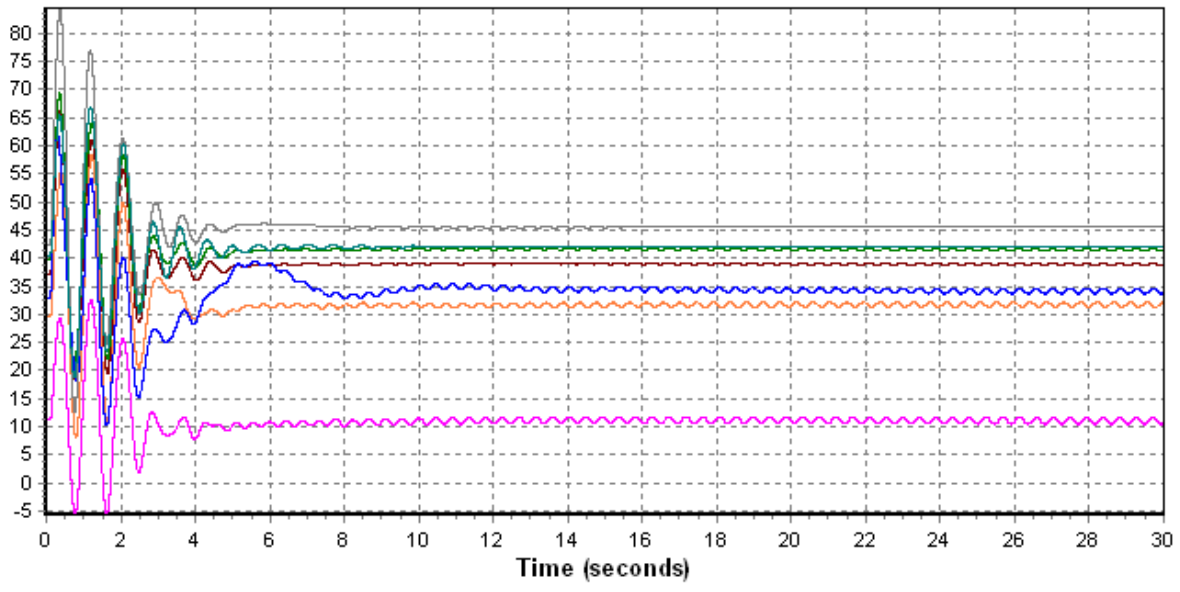
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2010 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotación de Unidades Térmicas Respecto a Bayano



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

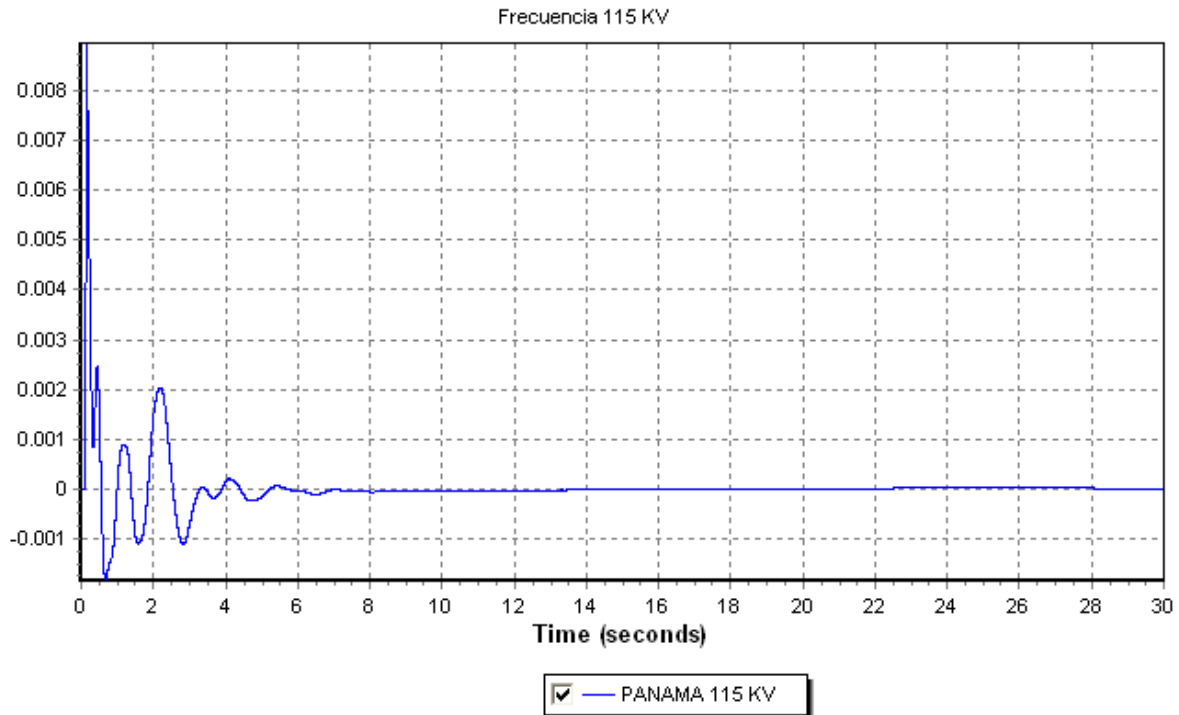
Angulo de Rotación de Unidades Hidro Respecto a Bayano



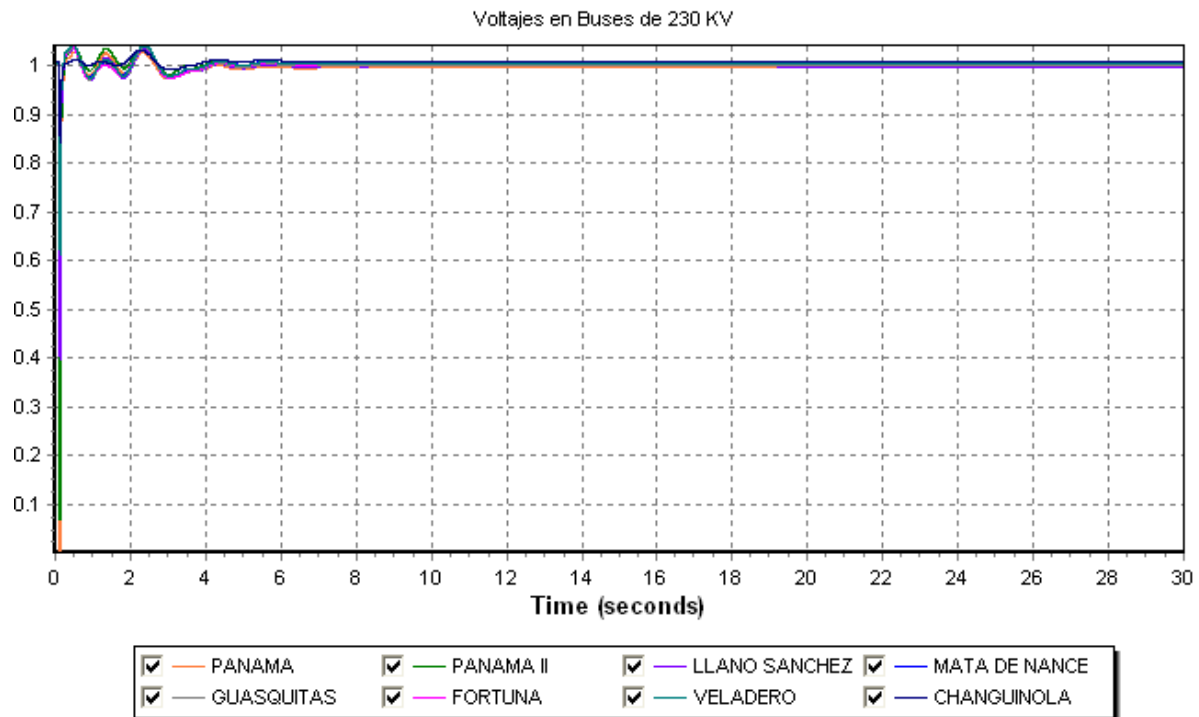
2. Año 2011

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

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

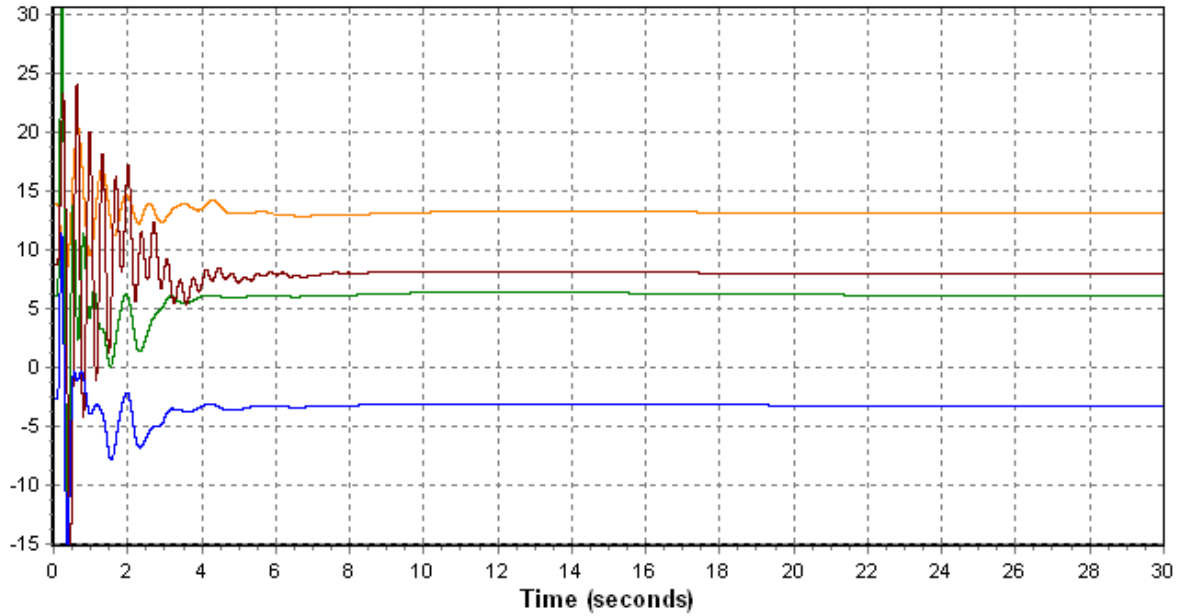


PLAN DE EXPANSION DEL SIN JUNIO-2010 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO



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

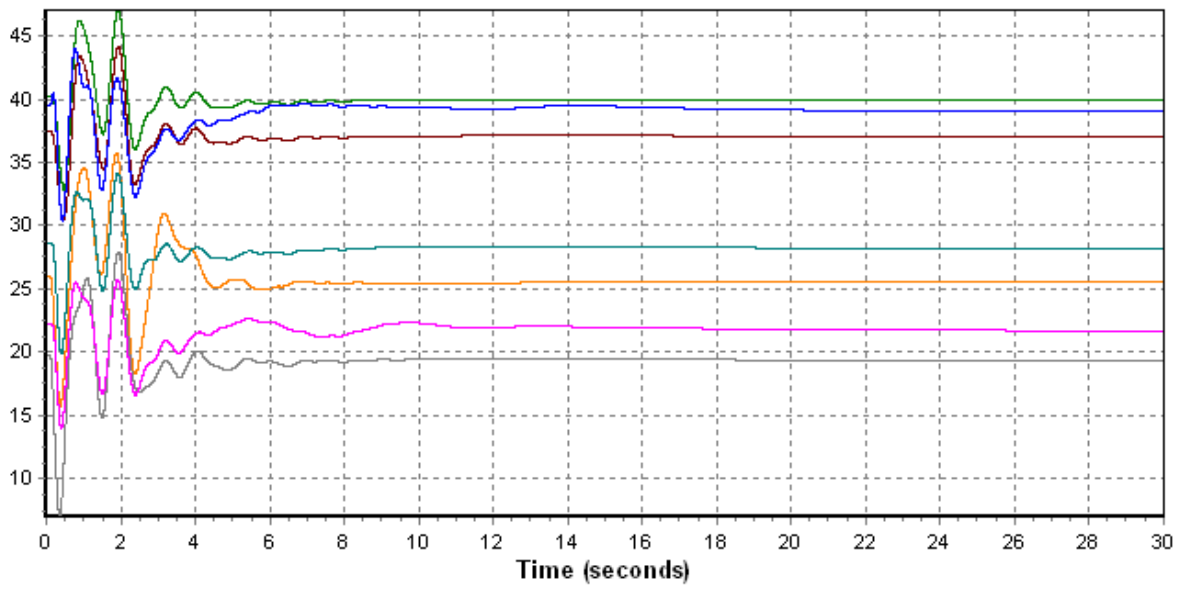
Angulo de Rotación de Unidades Térmicas Respecto a Bayano



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|---|--|--|--|

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

Angulo de Rotación de Unidades Hidro Respecto a Bayano

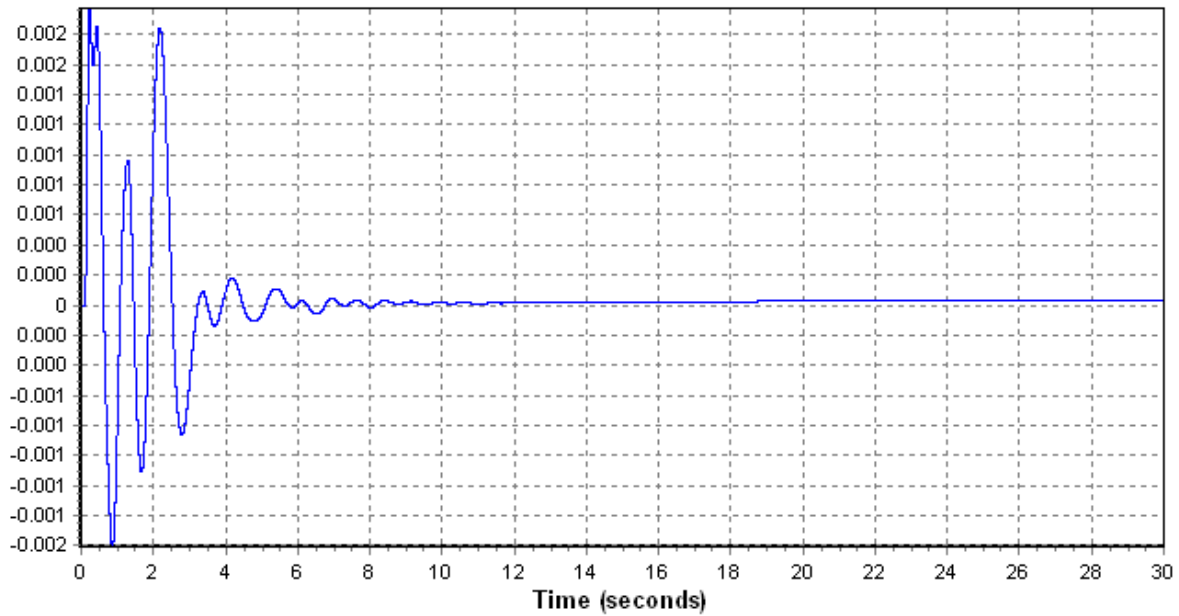


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| <input checked="" type="checkbox"/> CHANGUINOLA I | <input checked="" type="checkbox"/> LORENA | <input checked="" type="checkbox"/> PRUDENCIA | |

2.2. Falla y Apertura de un circuito de Veladero – Llano Sánchez

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

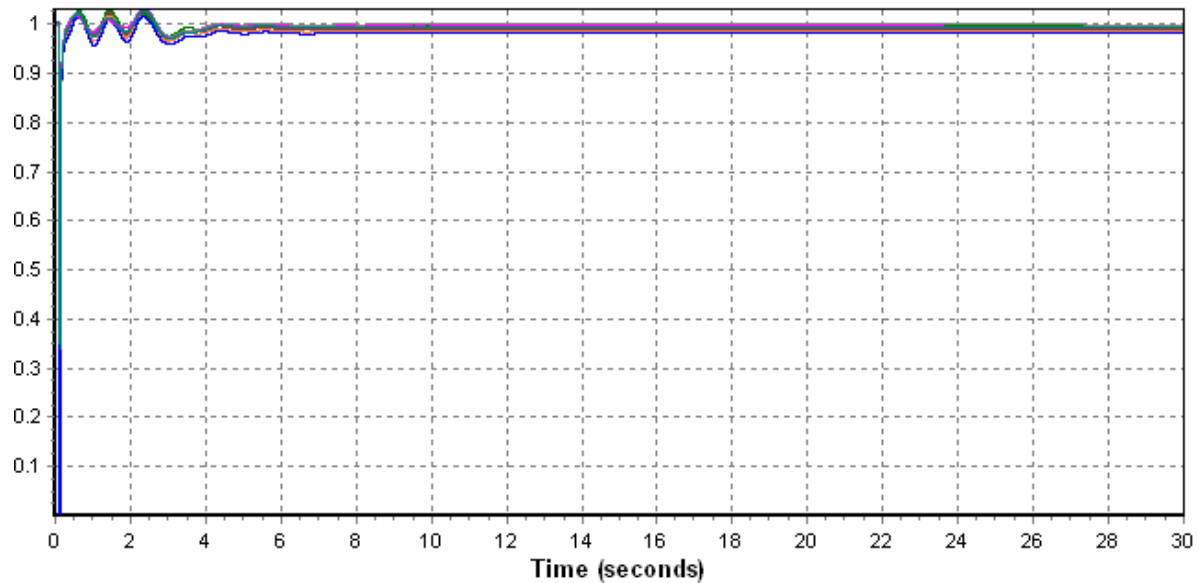
Frecuencia 115 KV



PANAMA 115 KV

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

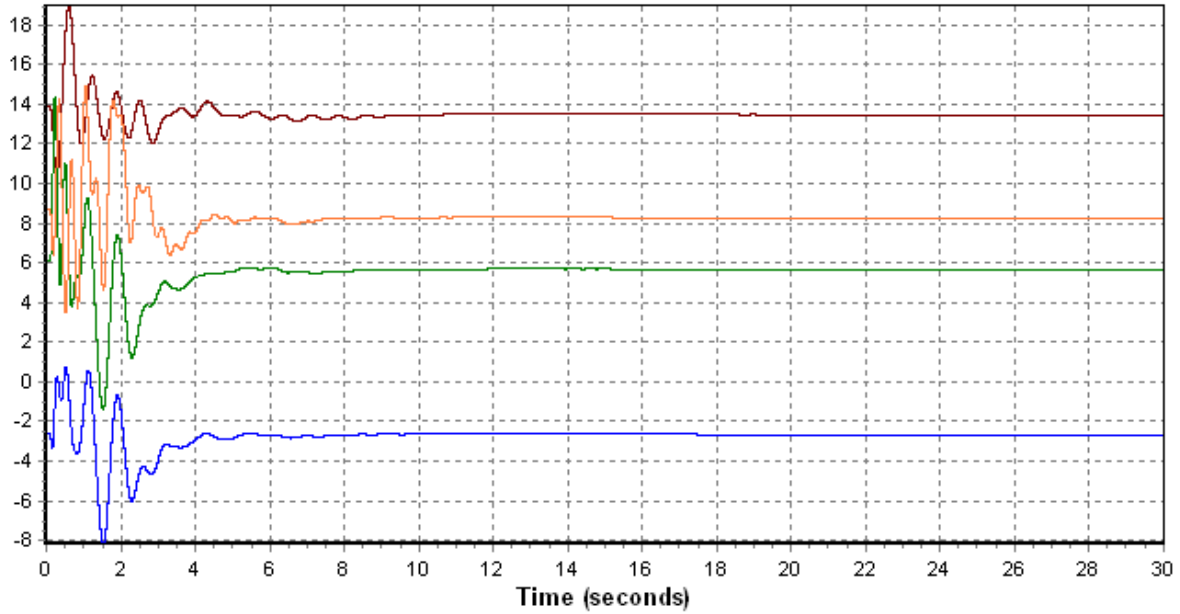
Voltajes en Buses de 230 KV



PANAMA PANAMA II CHORRERA LLANO SANCHEZ
 MATA DE NANCE GUASQUITAS VELADERO

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

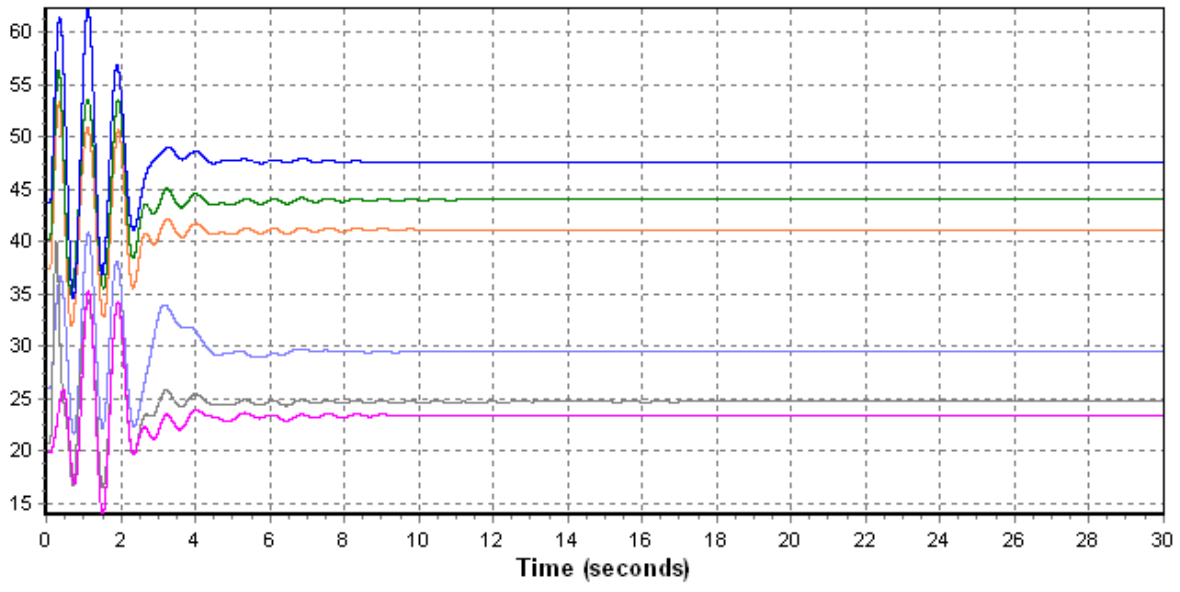
Angulo de Rotación de Unidades Térmicas Respecto a Bayano



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

Angulo de Rotación de Unidades Hidro Respecto a Bayano

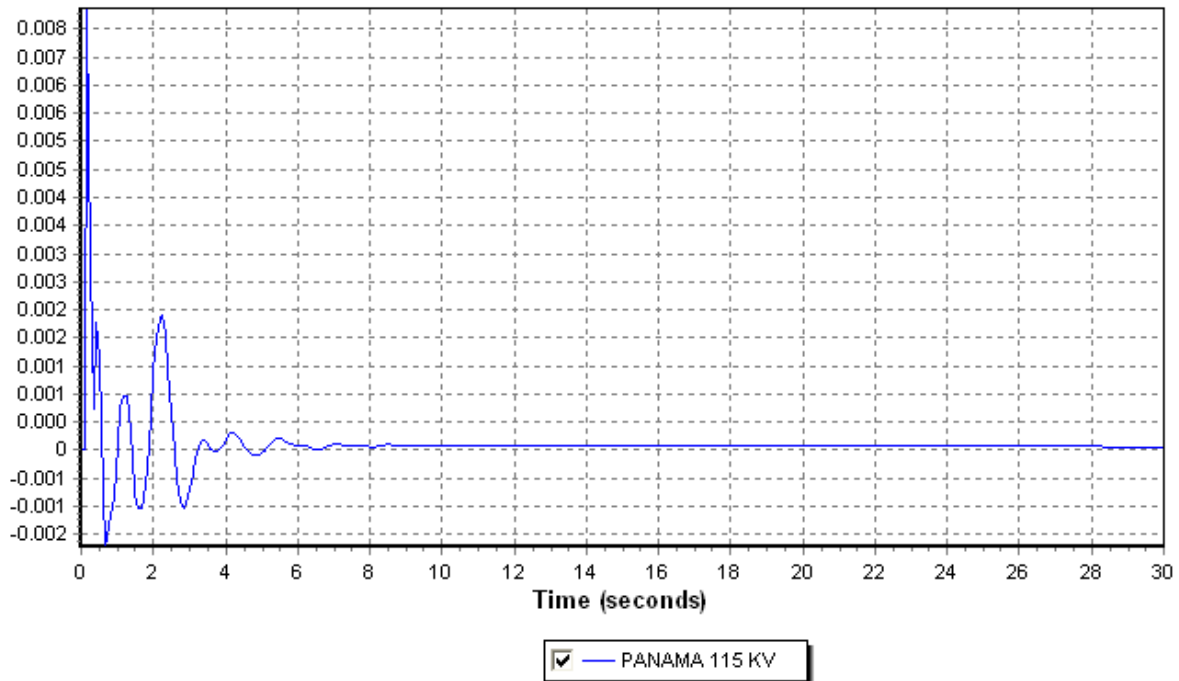


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2.3 Falla y Apertura de un circuito de Llano Sánchez – Panamá II

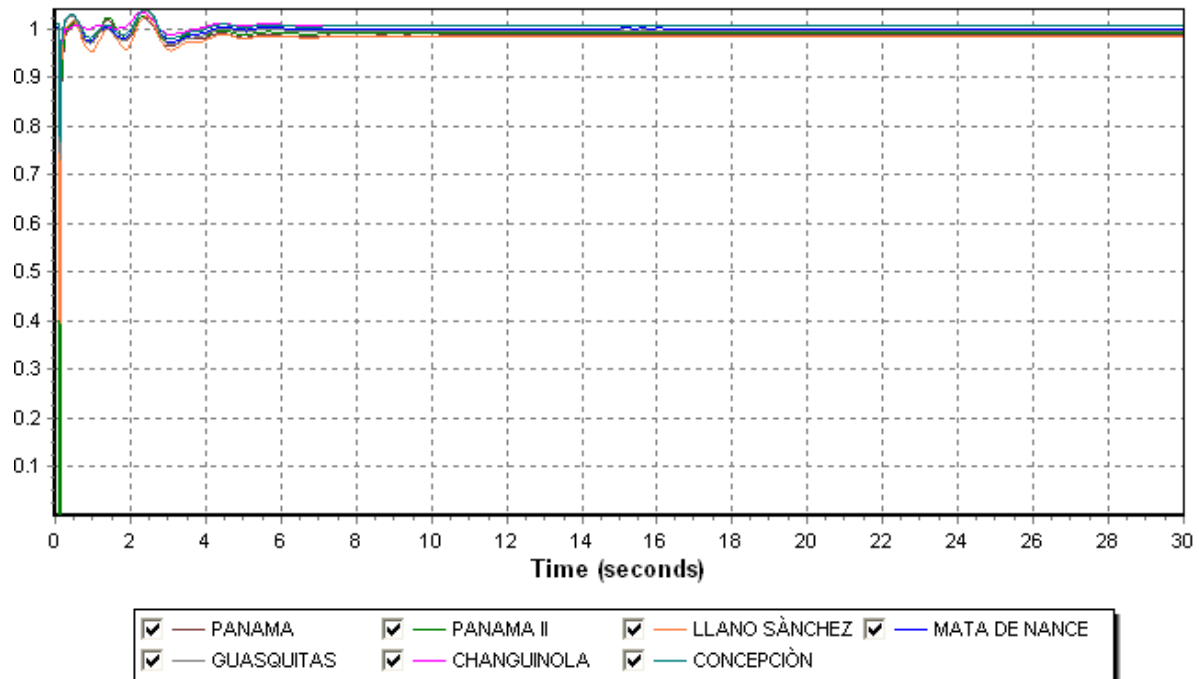
PLAN DE EXPANSION DEL SIN JUNIO-2010 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO

Frecuencia 115 KV



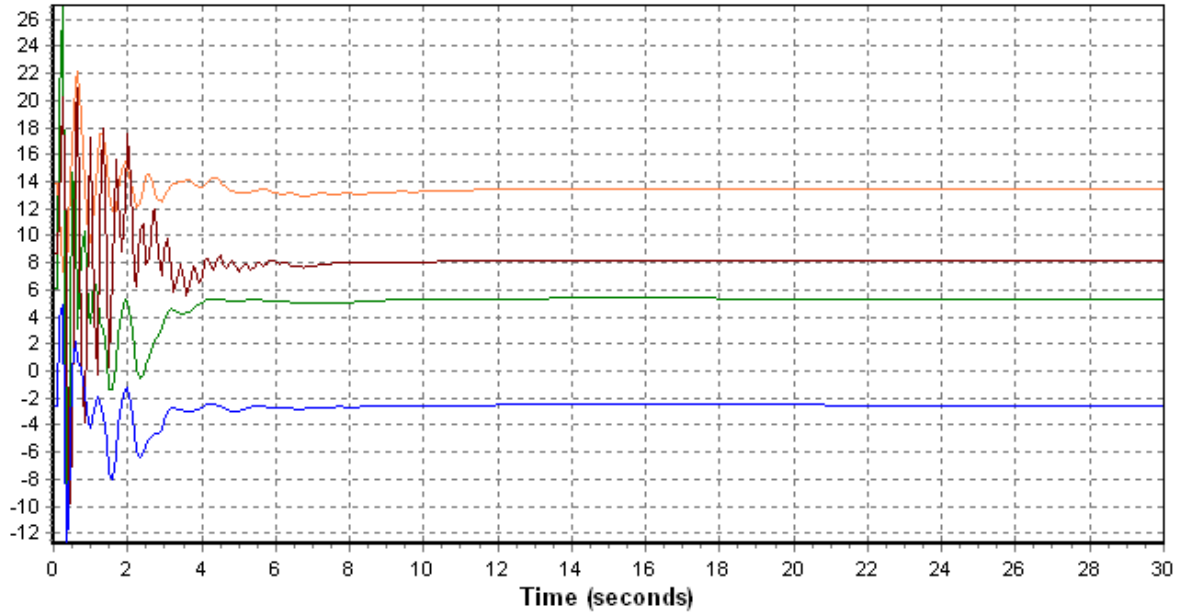
PLAN DE EXPANSION DEL SIN JUNIO-2010 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO

Voltajes en Buses 230 KV



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

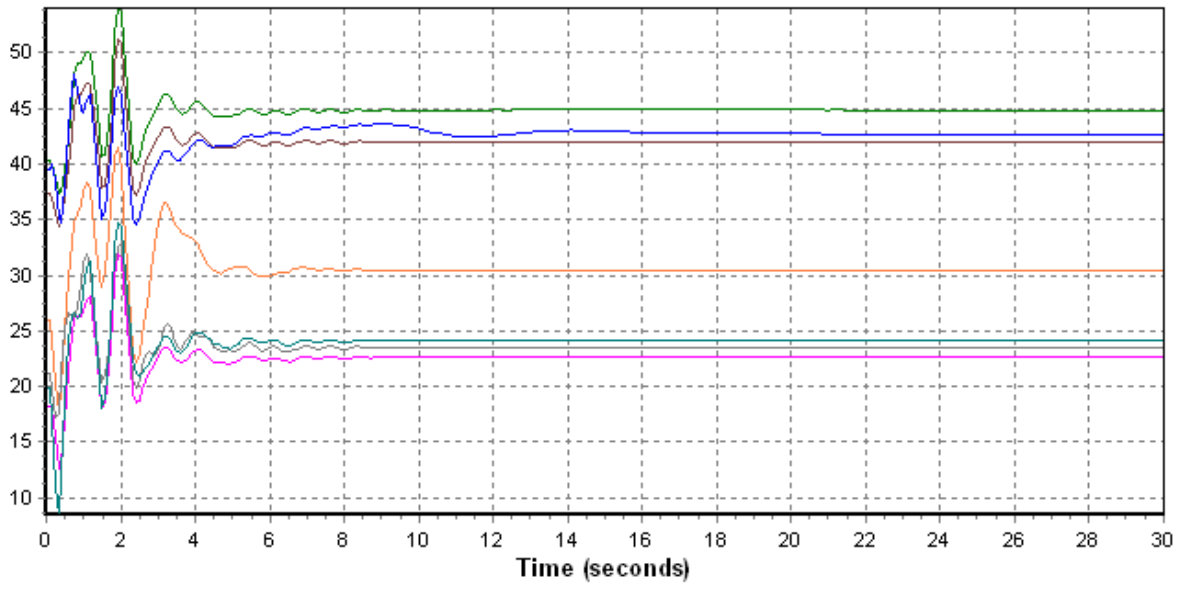
Angulo de Rotación de Unidades Térmicas respecto a Bayano



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

Angulo de Rotación de Unidades Hidro Respecto a Bayano

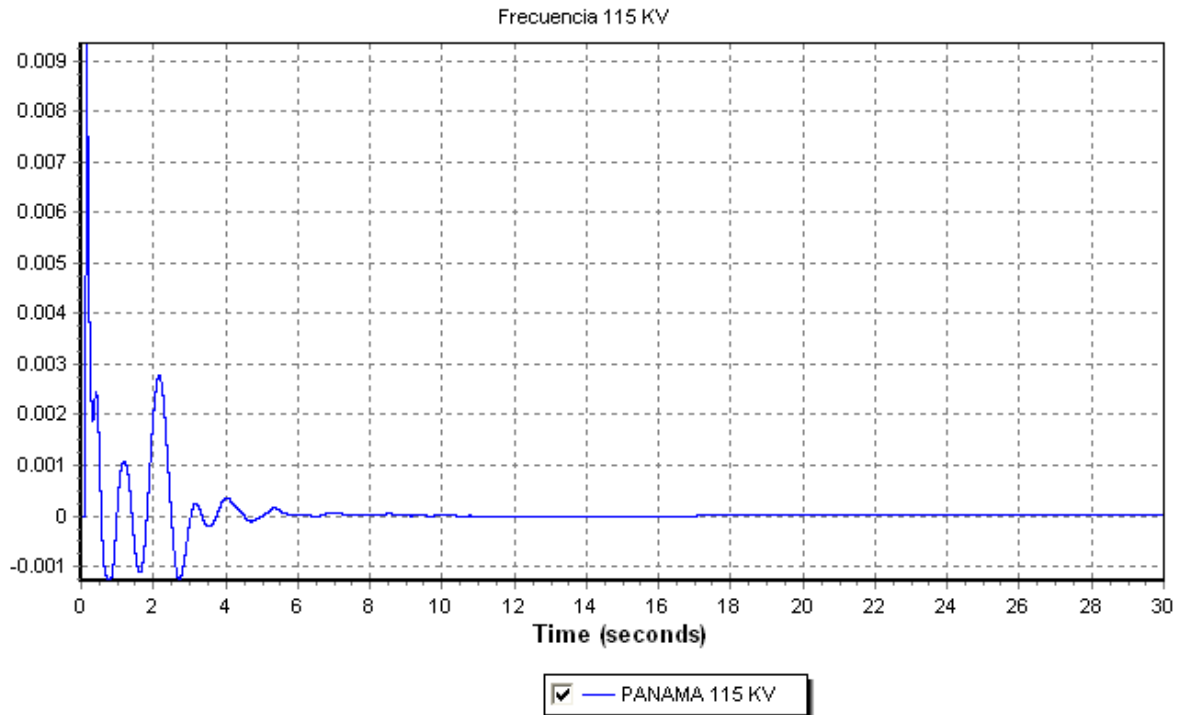


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| <input checked="" type="checkbox"/> CONCEPCIÓN | <input checked="" type="checkbox"/> PEDREGALITO | <input checked="" type="checkbox"/> CHANGUINOLA I | |

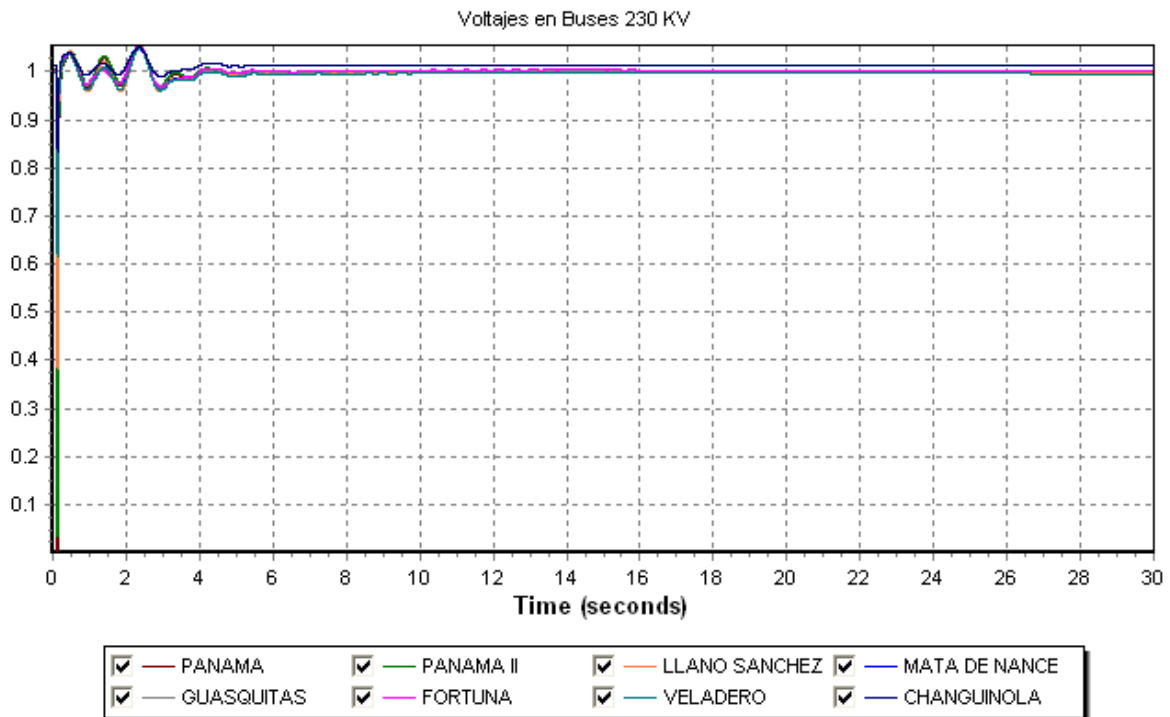
3. Año 2012

3.1. Falla y Apertura de un circuito de Chorrera - Panamá

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

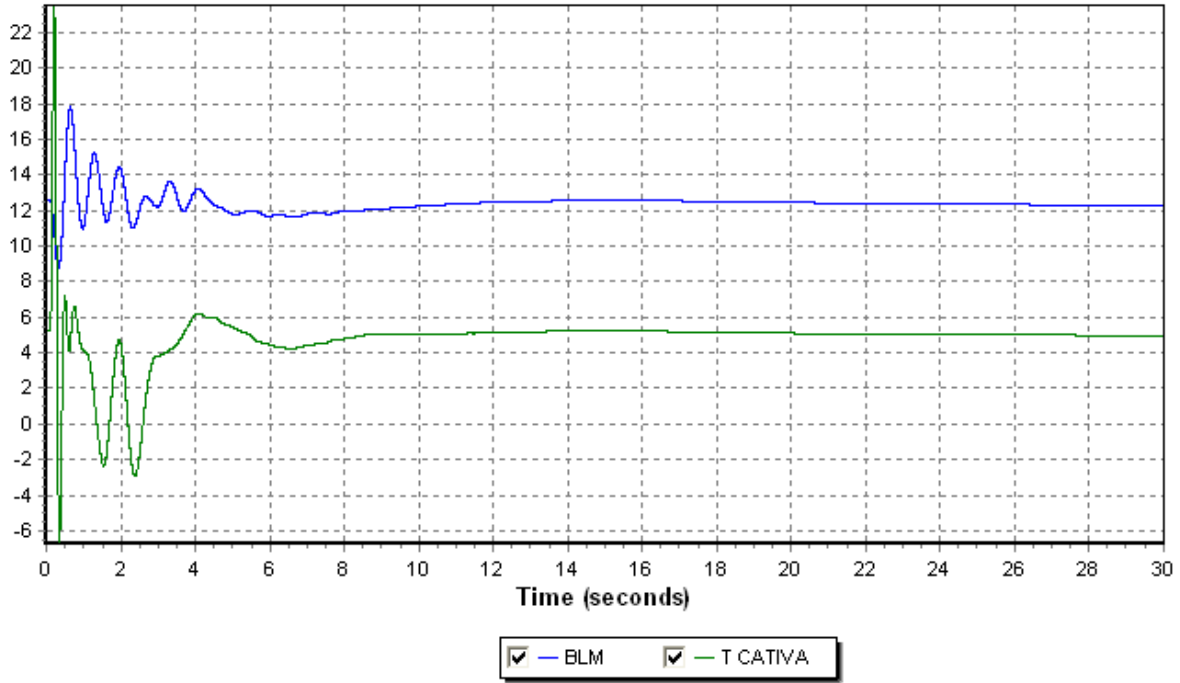


PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO



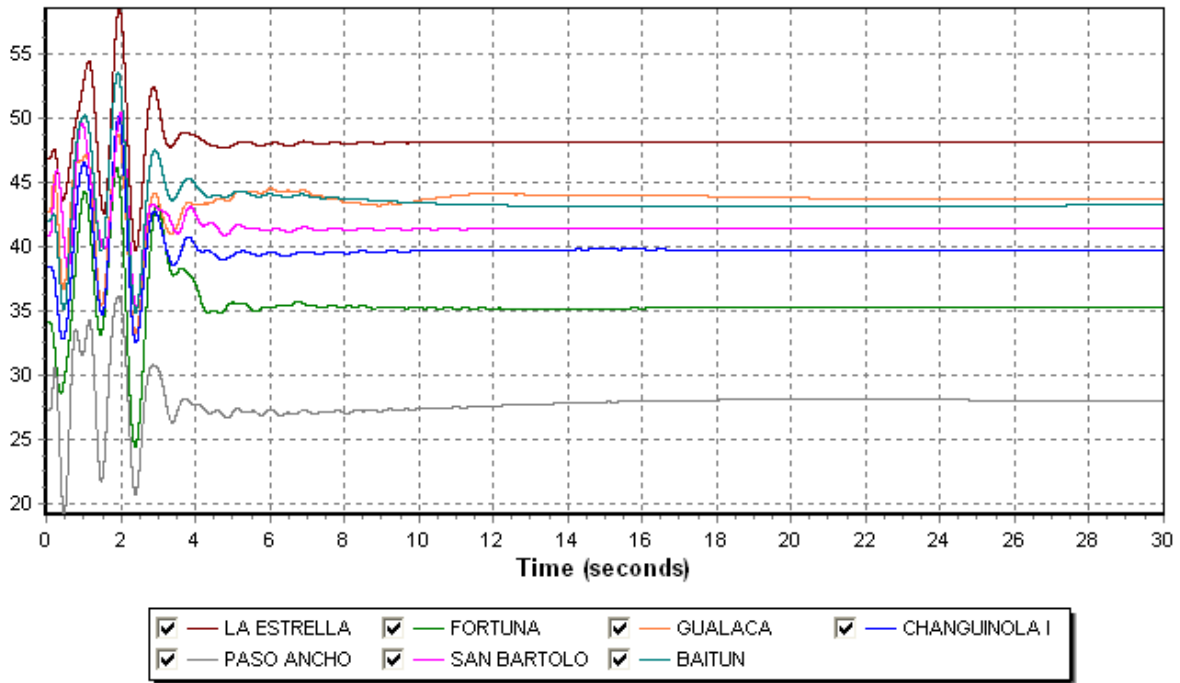
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotaci3n de Unidades Tèrmicas Respecto a Bayano



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

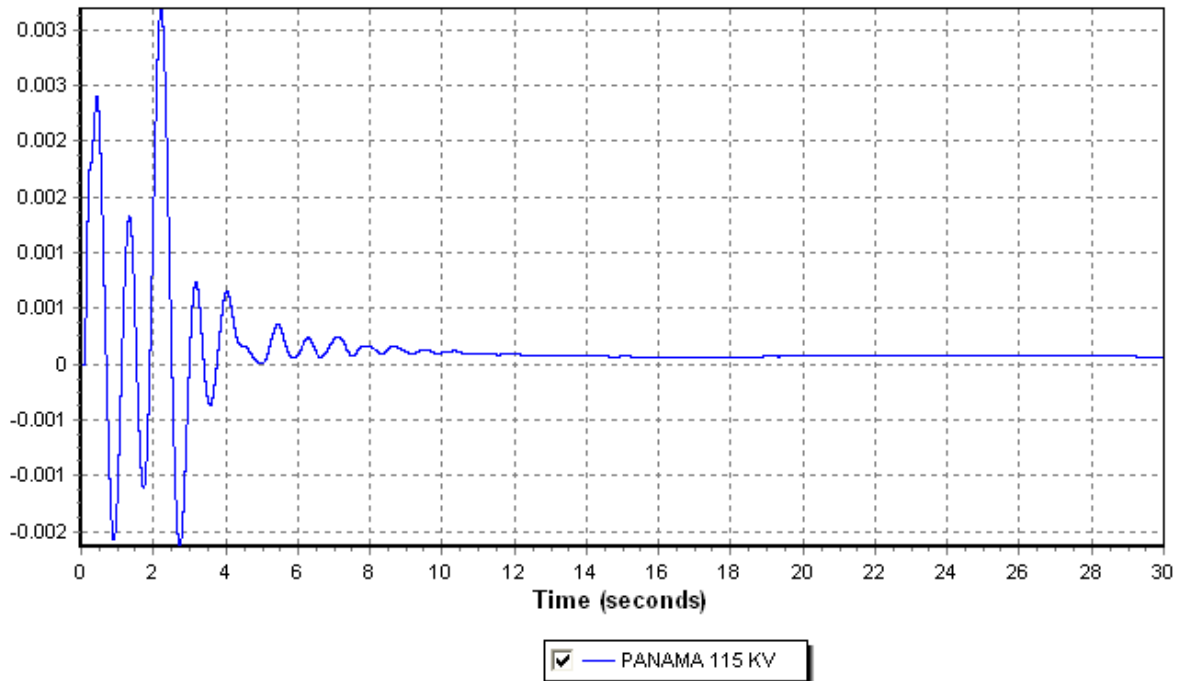
Angulo de Rotaci3n de Unidades hidro Respecto a Bayano



3.2. Falla y Apertura de un circuito de Llano Sánchez - Veladero

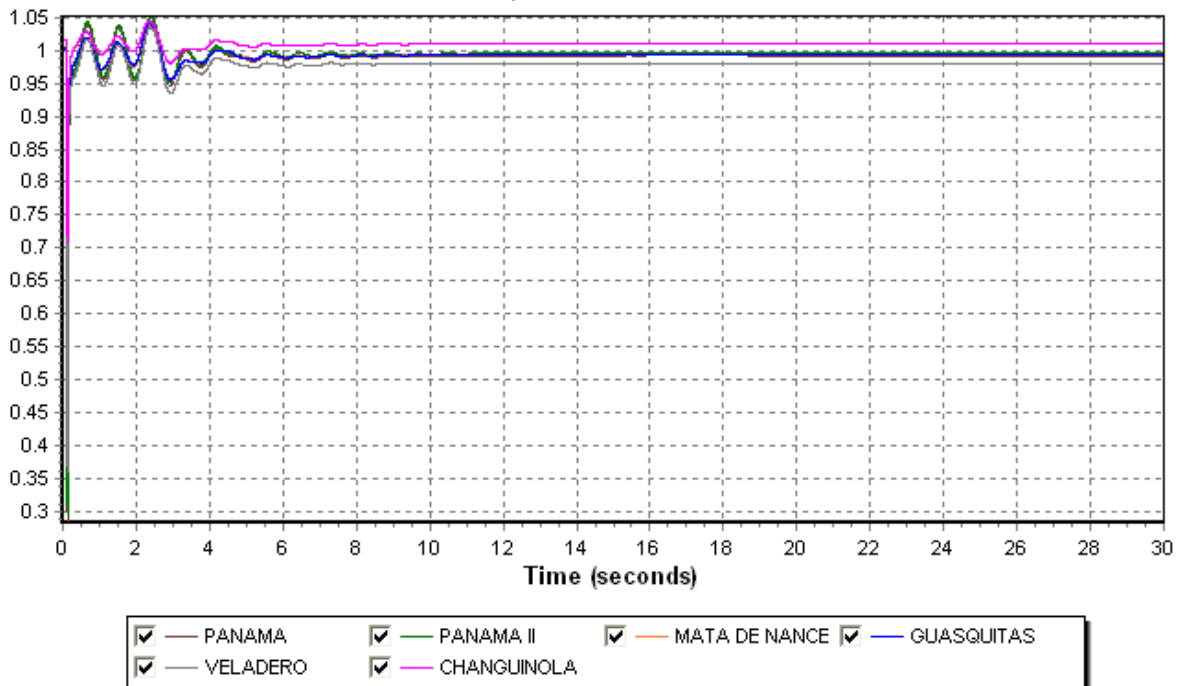
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Frecuencia 115 KV



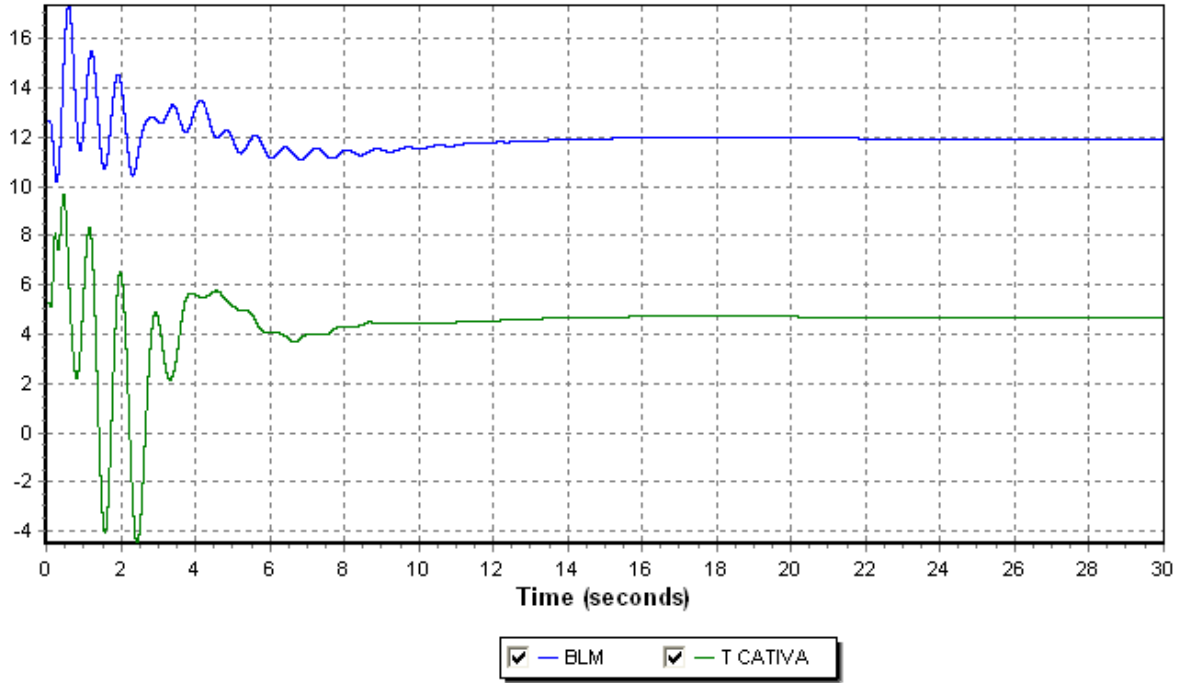
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Voltajes en Buses 230 KV



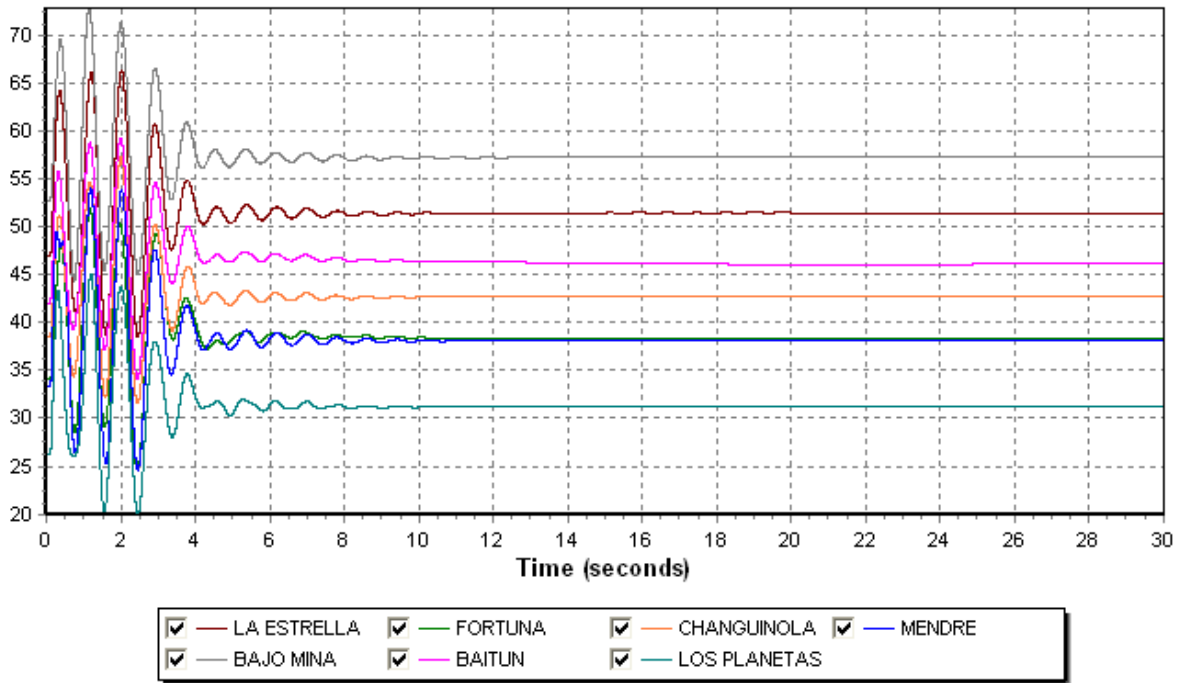
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotaciones de unidades Térmicas Respecto a Bayano



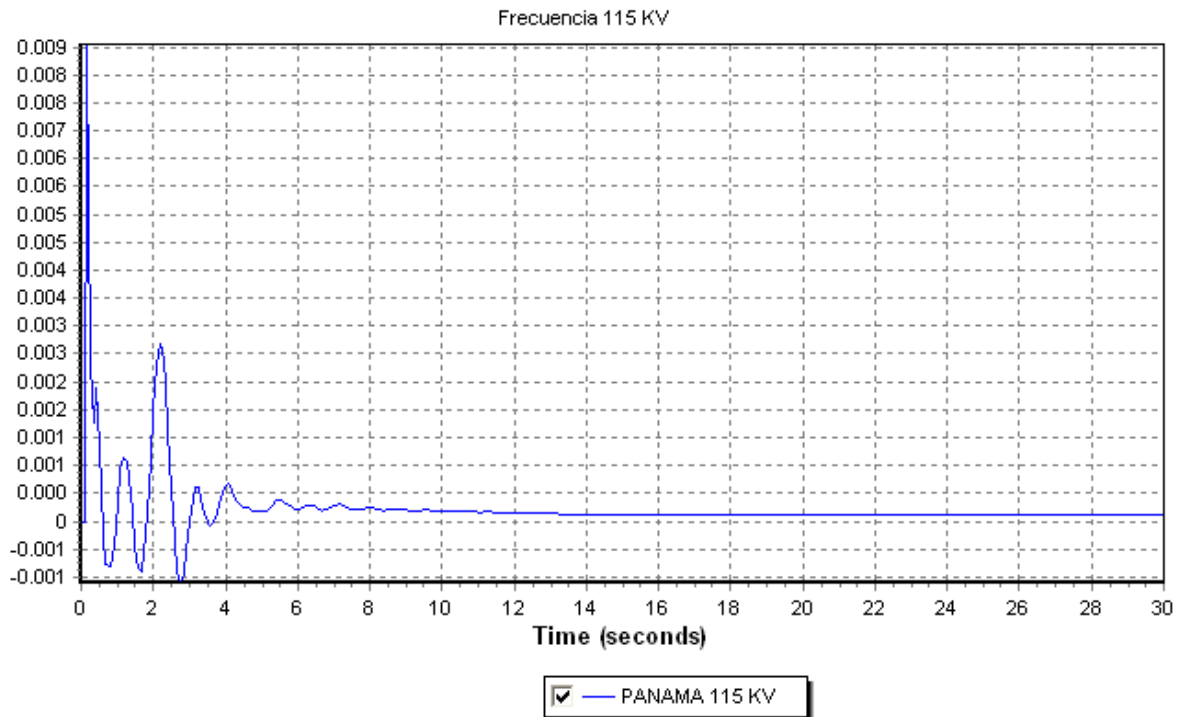
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotación de Unidades Hidro Respecto a Bayano

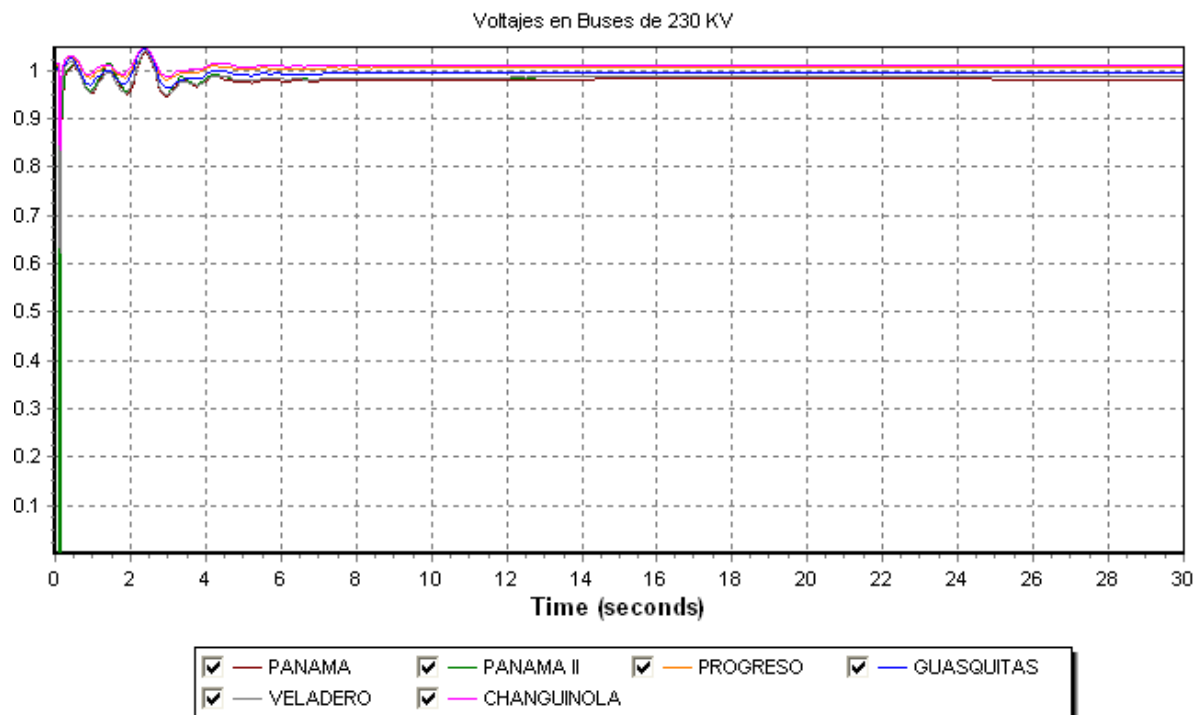


3.3 Falla y Apertura de un circuito de Llano Sánchez - Panamá II

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

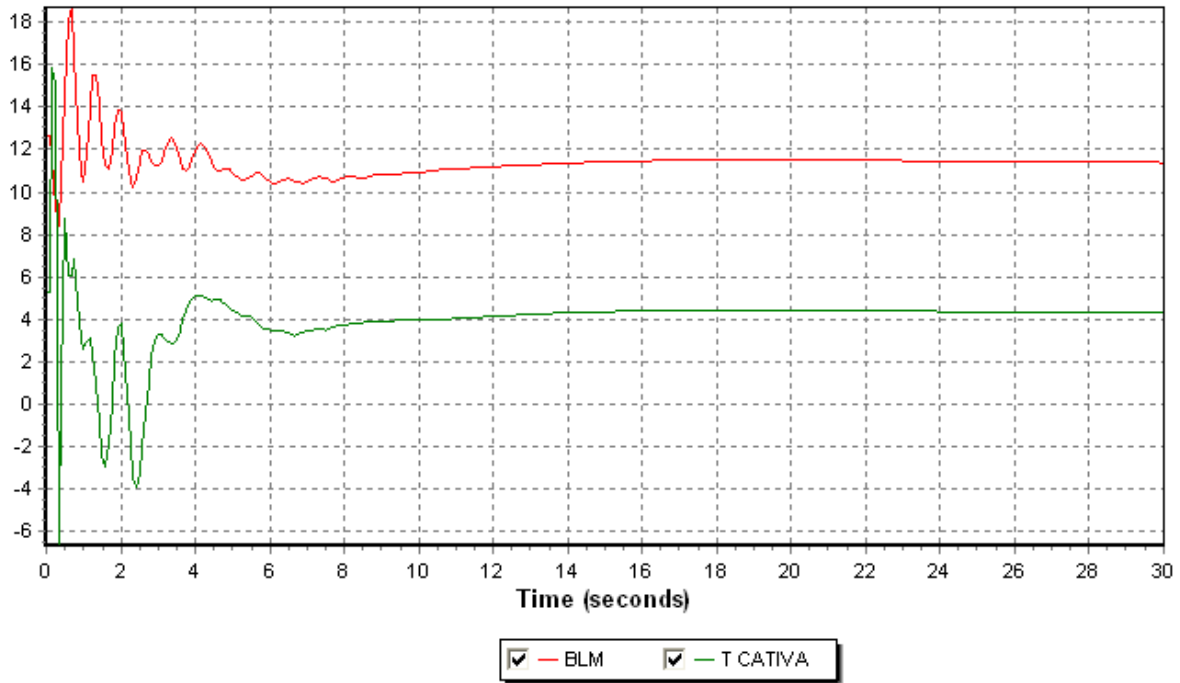


PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO



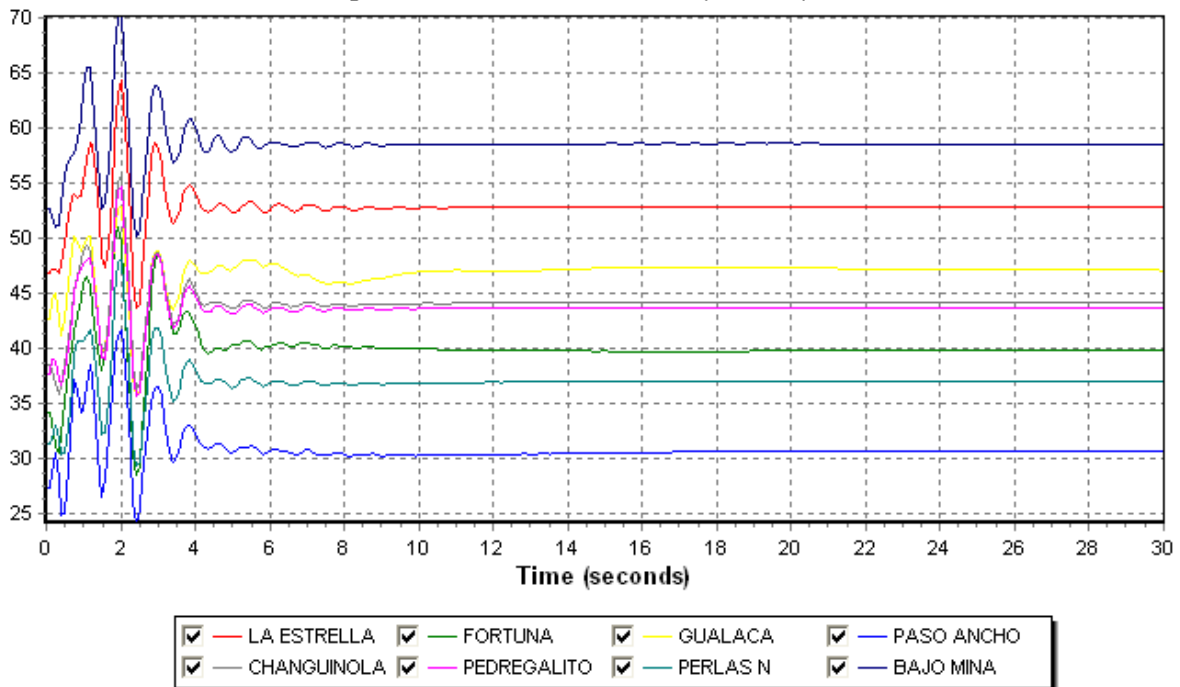
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotaci3n de Unidades Termicas Respecto a Bayano



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

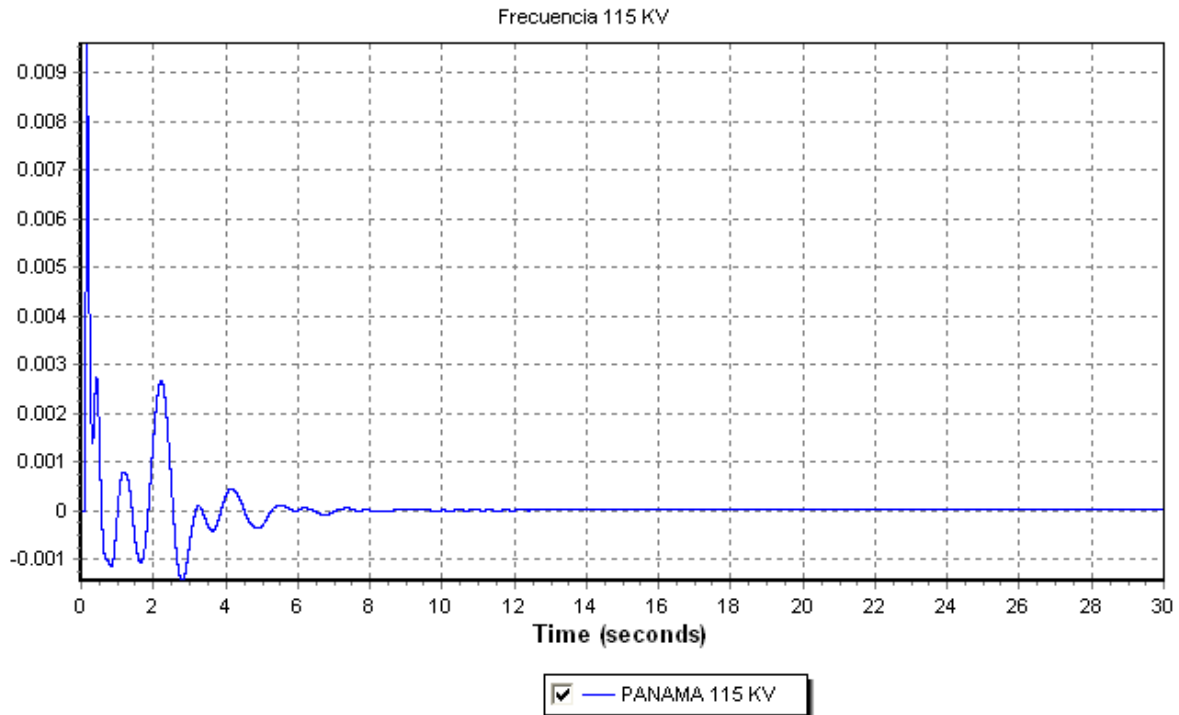
Angulo de Rotaci3n de Unidades Hidro Respecto a Bayano



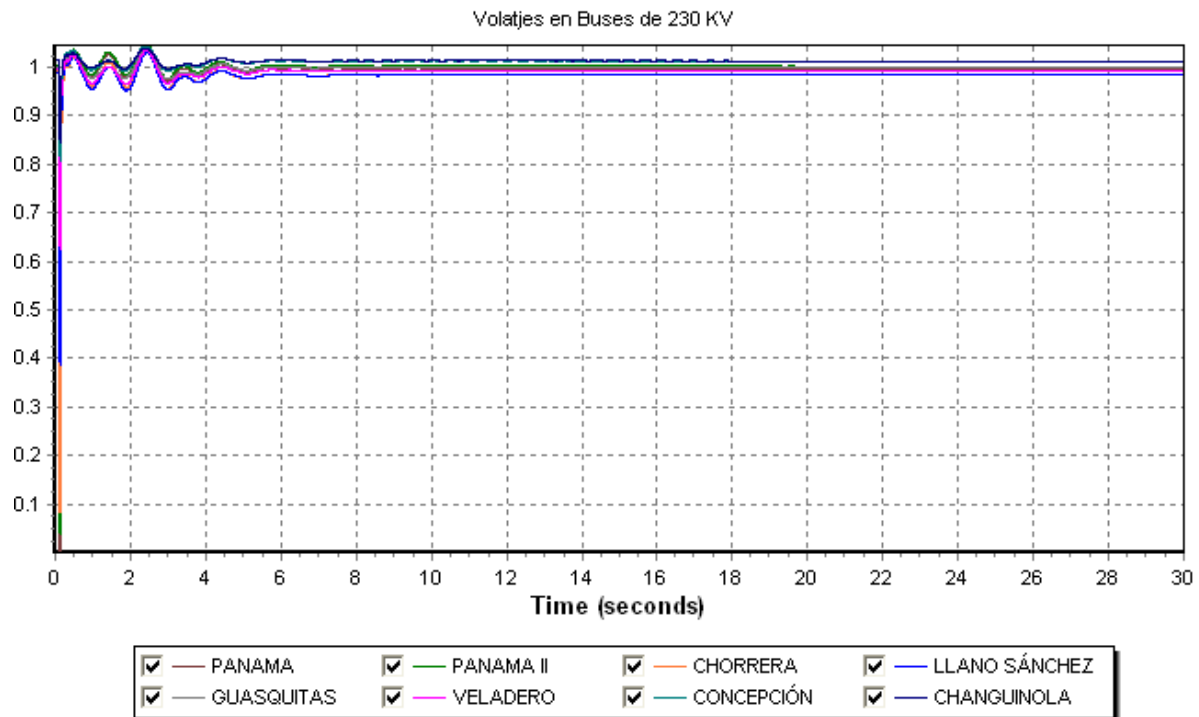
4. Año 2013

4.1 Falla y Apertura de un circuito de Chorrera - Panamá

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

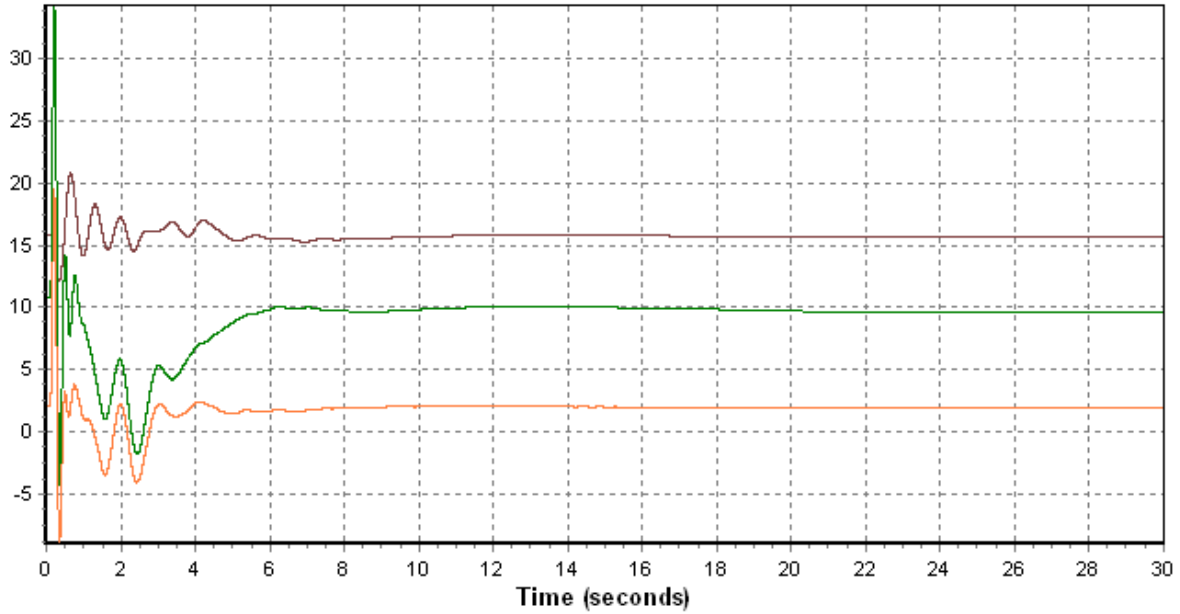


PLAN DE EXPANSION DEL SIN JUNIO-2010 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO



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

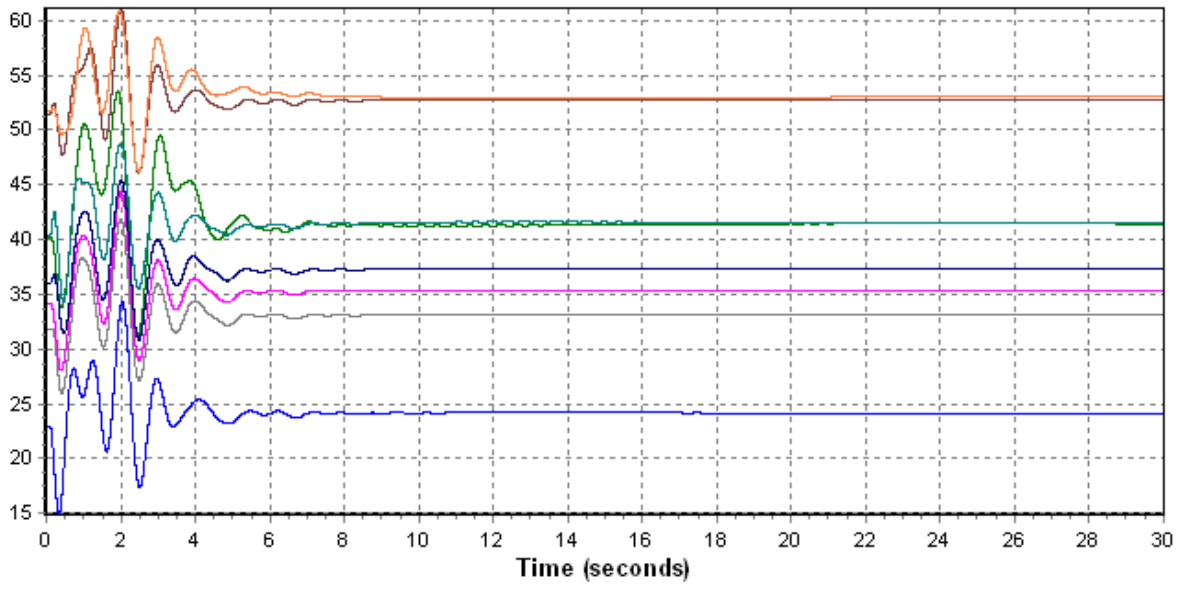
Angulo de Rotación de Unidades Térmicas Respecto a Bayano



BLM
 PACORA
 T CATIVA

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

Angulo de Rotación de Unidades Hidro Respecto a Bayano

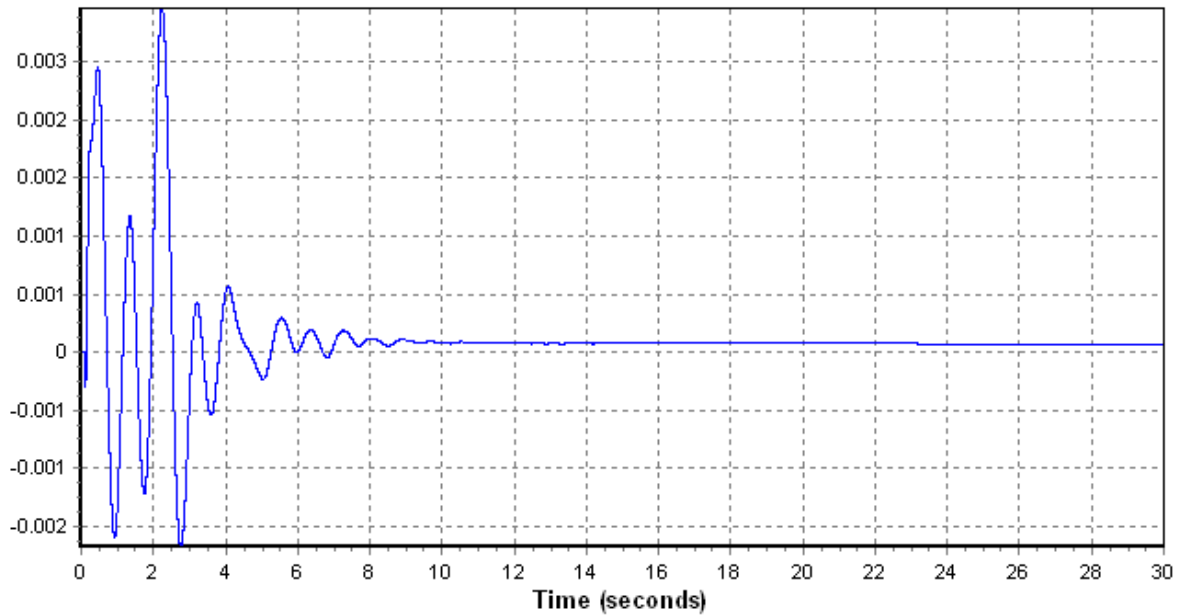


LOS VALLES
 FORTUNA
 ESTÍ
 BONYIC
 PANDO
 CHANGUINOLA I
 PRUDENCIA
 PERLAS S

4.2 Falla y Apertura de un circuito de Veladero – Llano Sánchez

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

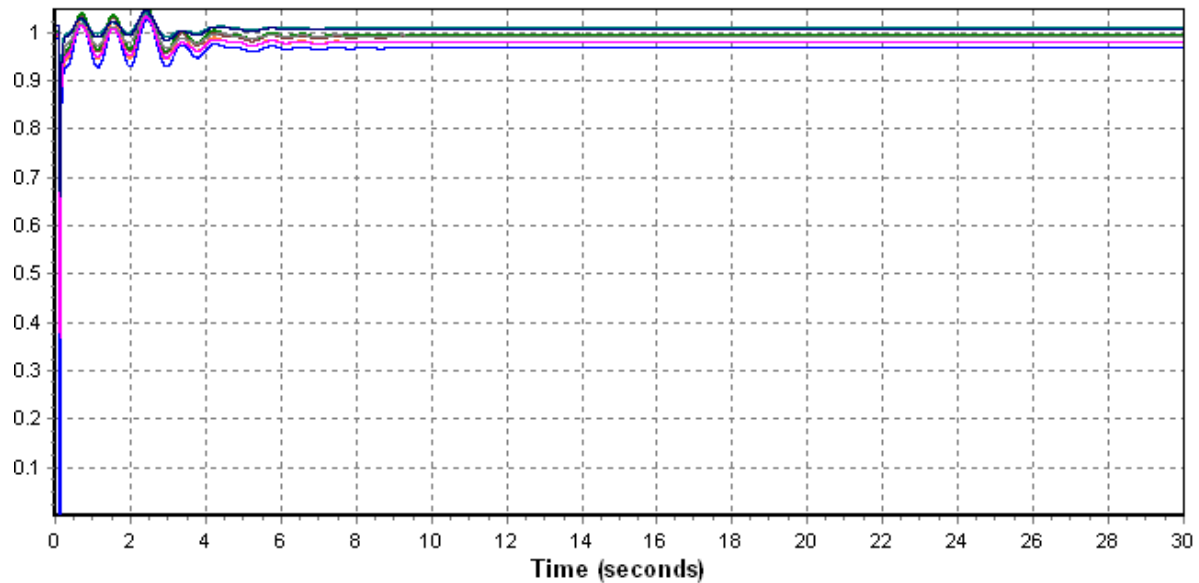
Frecuencia 115 KV



FRECUENCIA 115 KV

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

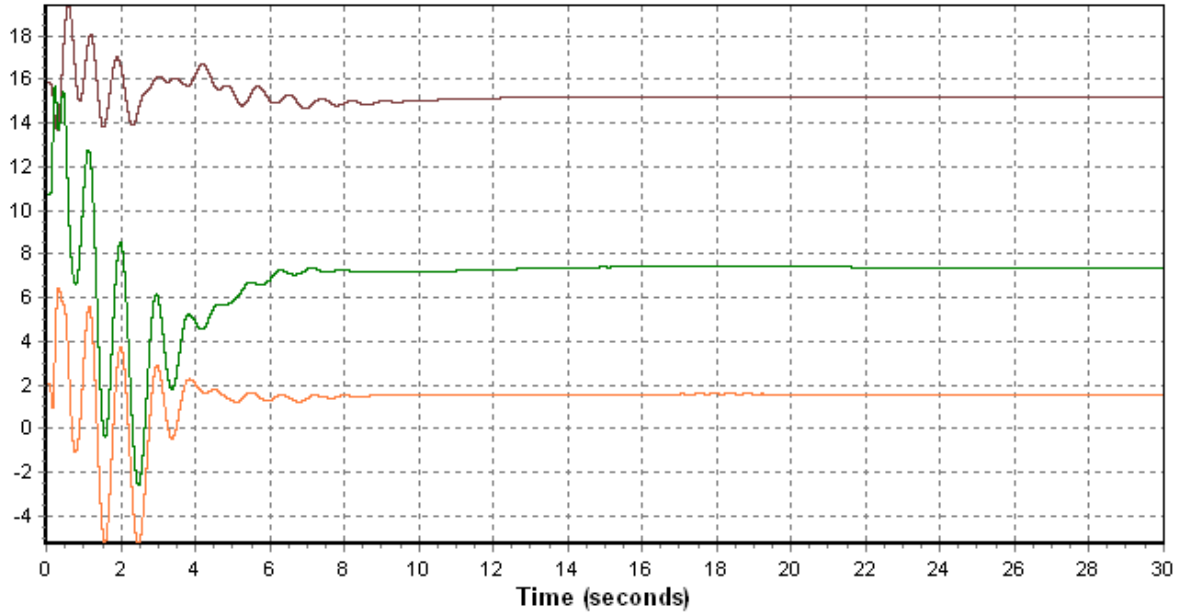
Voltejes en Buses de 230 KV



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<input checked="" type="checkbox"/> GUASQUITAS	<input checked="" type="checkbox"/> VELADERO	<input checked="" type="checkbox"/> CHANGUINOLA	<input checked="" type="checkbox"/> CONCEPCIÓN

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

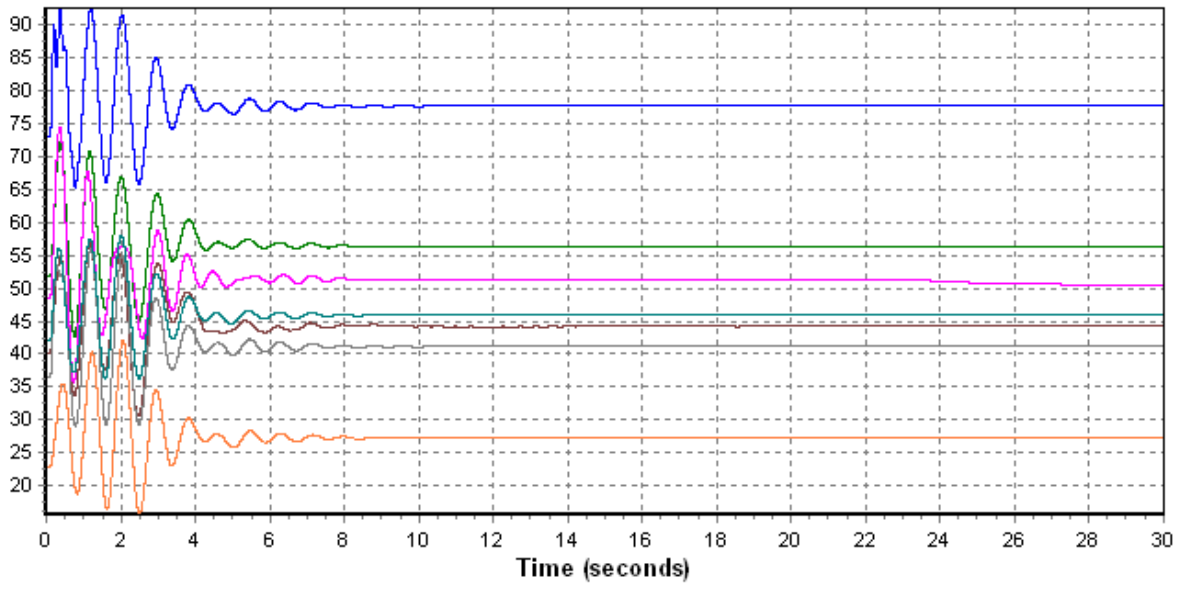
Angulo de Rotación de Unidades Térmicas Respecto a Bayano



- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> BLM | <input checked="" type="checkbox"/> PACORA | <input checked="" type="checkbox"/> T CATIVA |
|---|--|--|

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

Angulo de Rotación de Unidades Hidro Respecto a Bayano

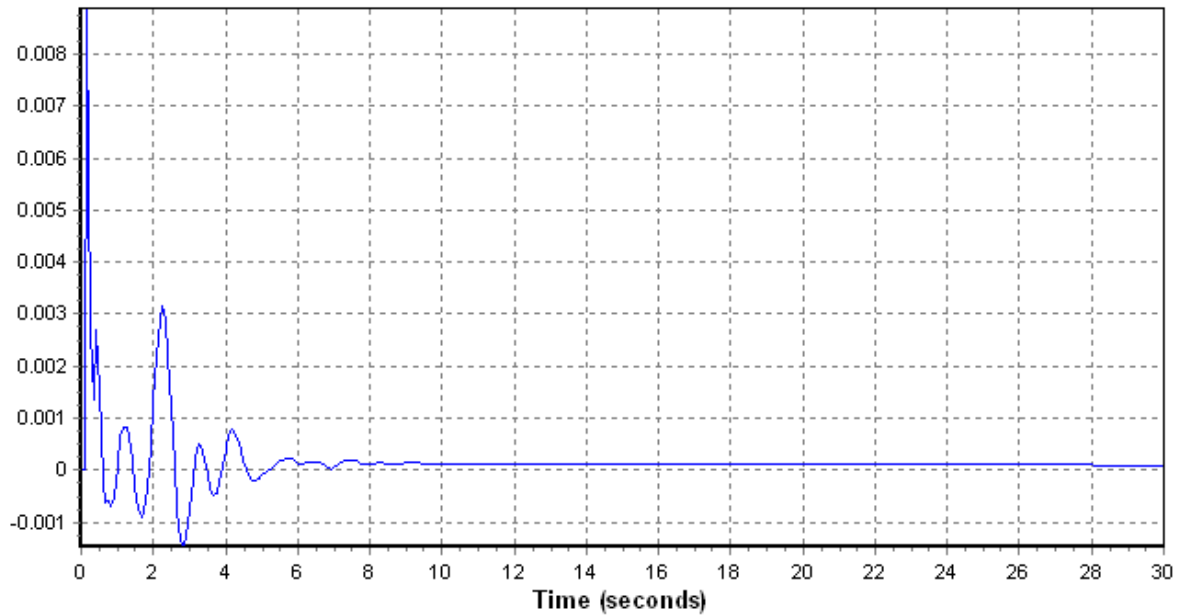


- | | | | |
|---|---|---|--|
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| <input checked="" type="checkbox"/> MENDRE | <input checked="" type="checkbox"/> LA LAGUNA | <input checked="" type="checkbox"/> BAJO FRÍO | |

4.3 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

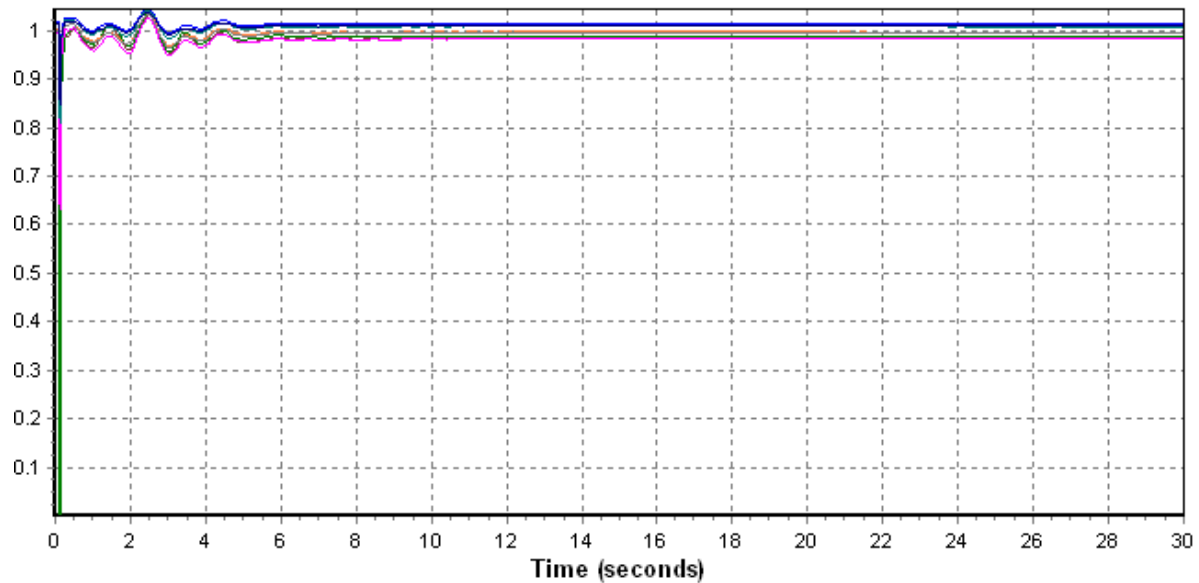
Frecuencia 115 KV



1 - FREQ PAN 115 : CONT20

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

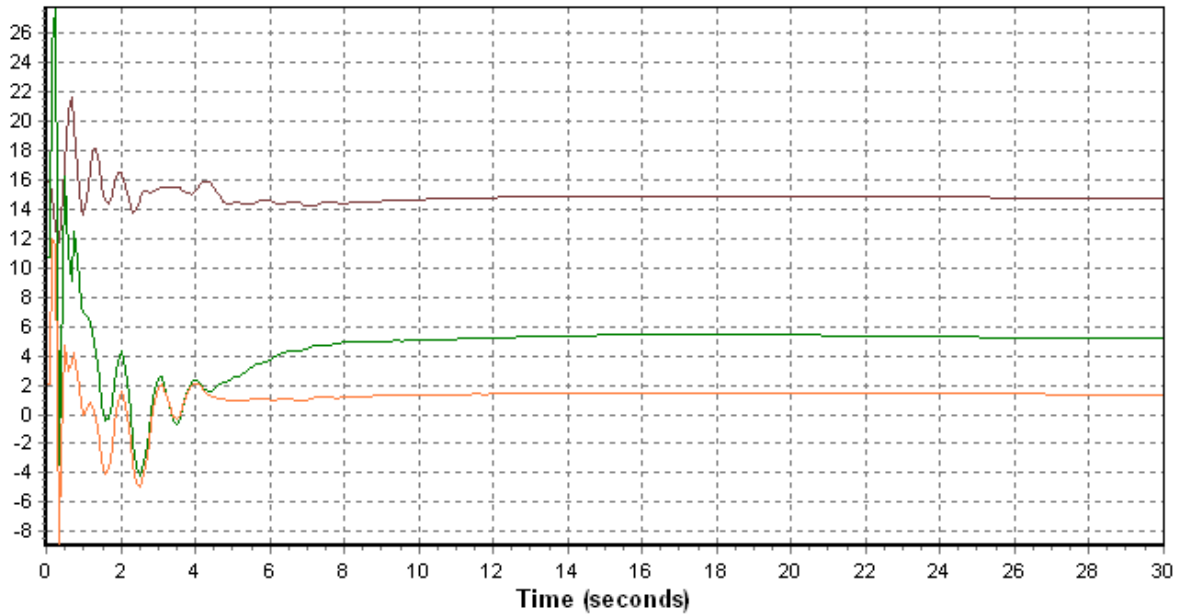
Voltajes en Buses de 230 KV



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

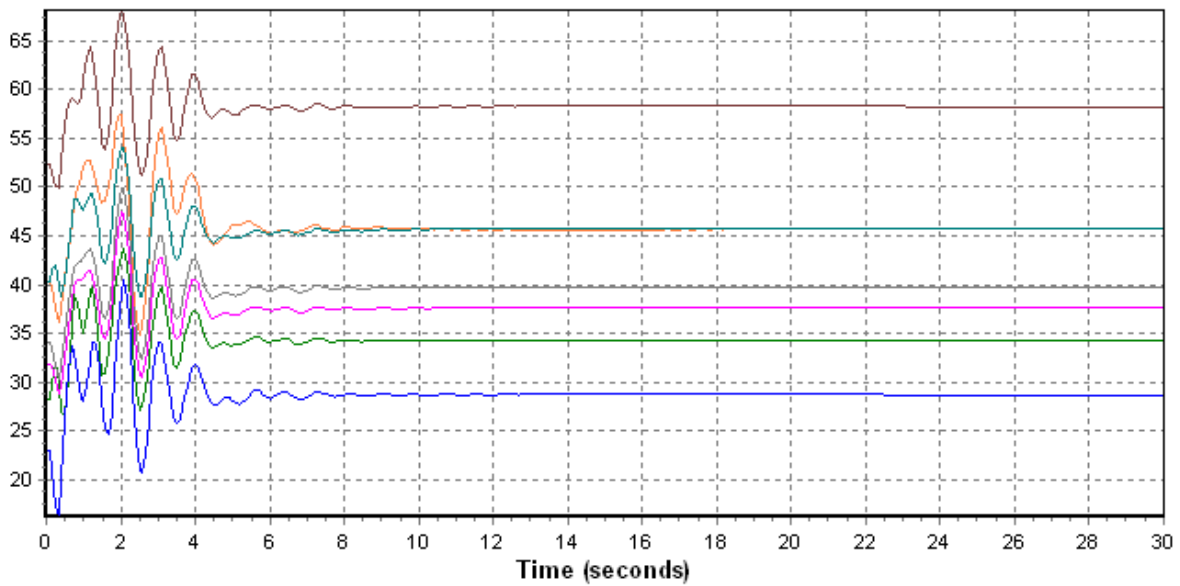
Angulo de Rotación de Unidades Térmicas Respecto a Bayano



BLM
 PACORA
 T CATIVA

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

Angulo de Rotación de Unidades Hidro Respecto a Bayano

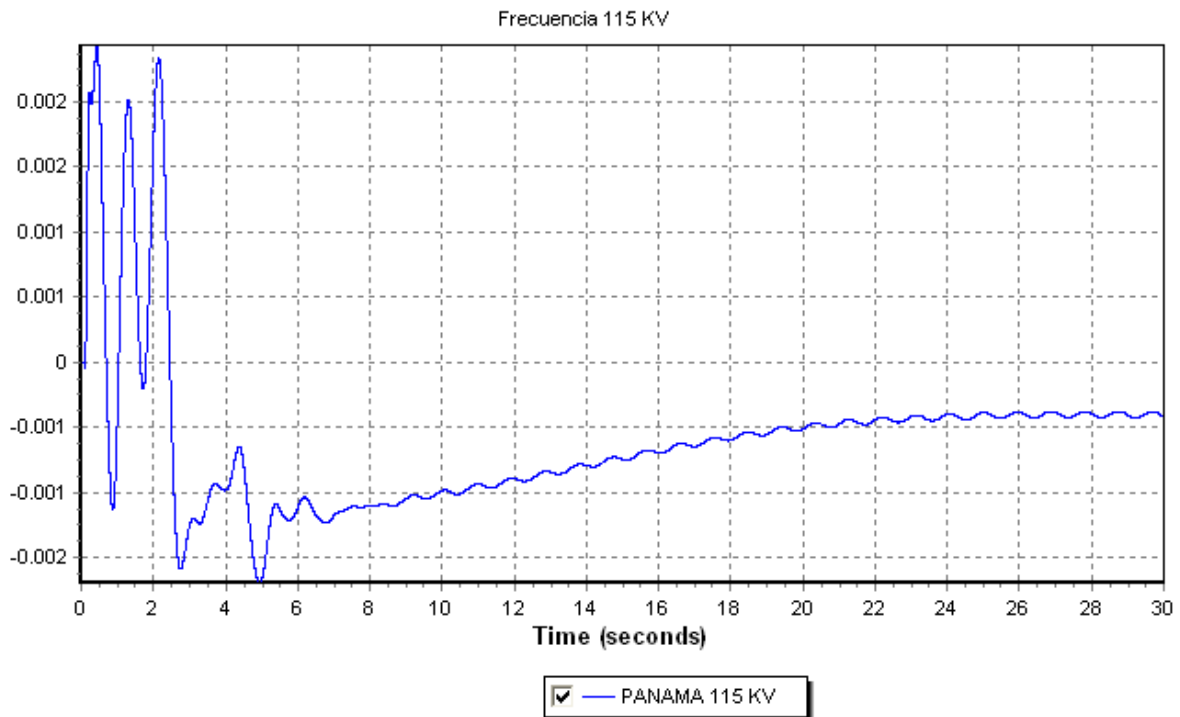


BAJO MINA
 LOS PLANETAS
 FORTUNA
 BONYIC
 CHANGUINOLA I
 PANDO
 PRUDENCIA

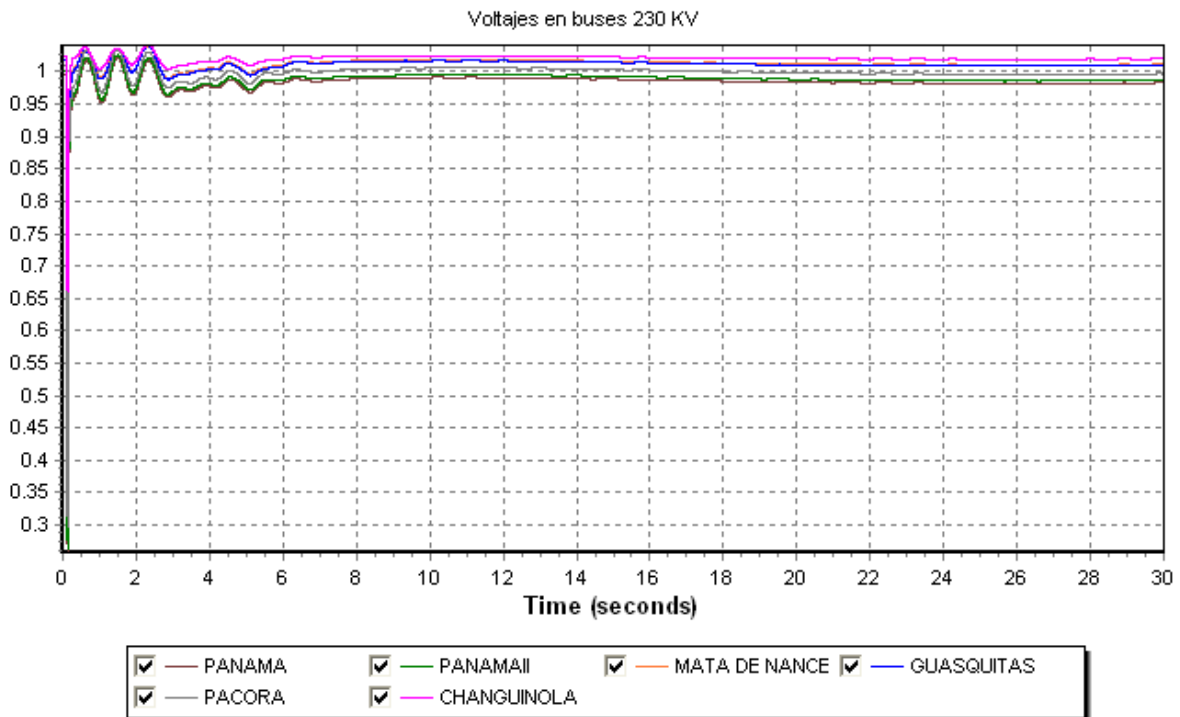
5. Año 2014

5.1 Falla y Apertura de un circuito de Llano Sánchez - Veladero

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

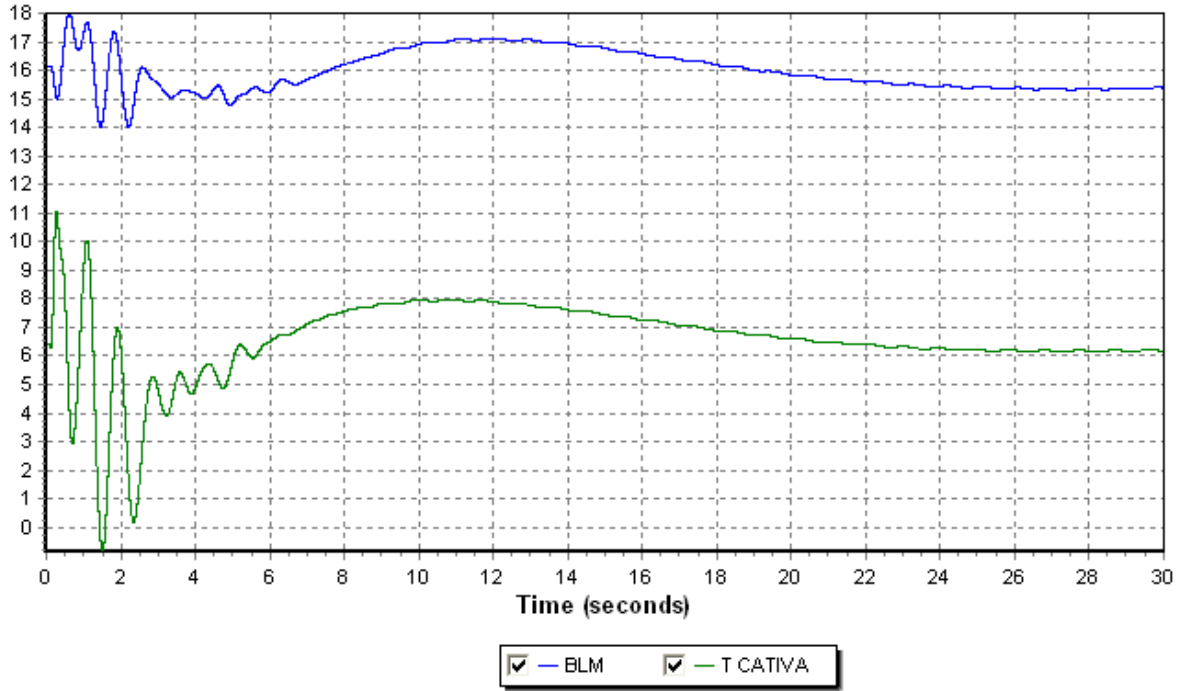


PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO



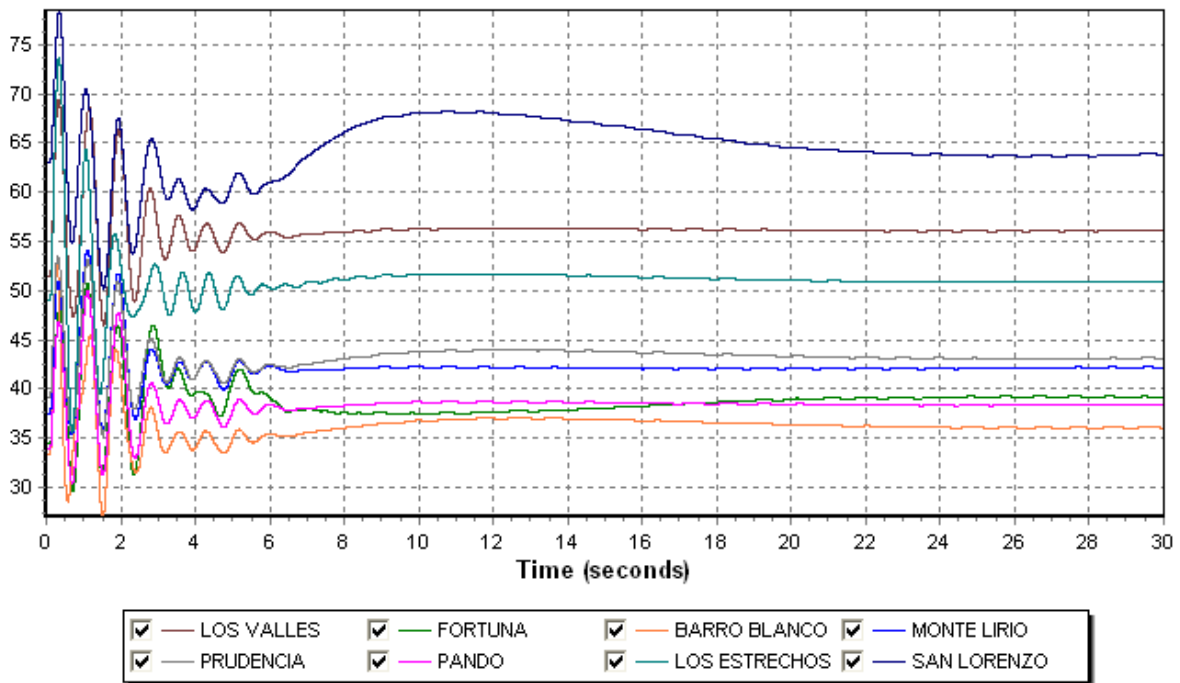
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotacion de Unidades Térmicas Respecto a Bayano



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

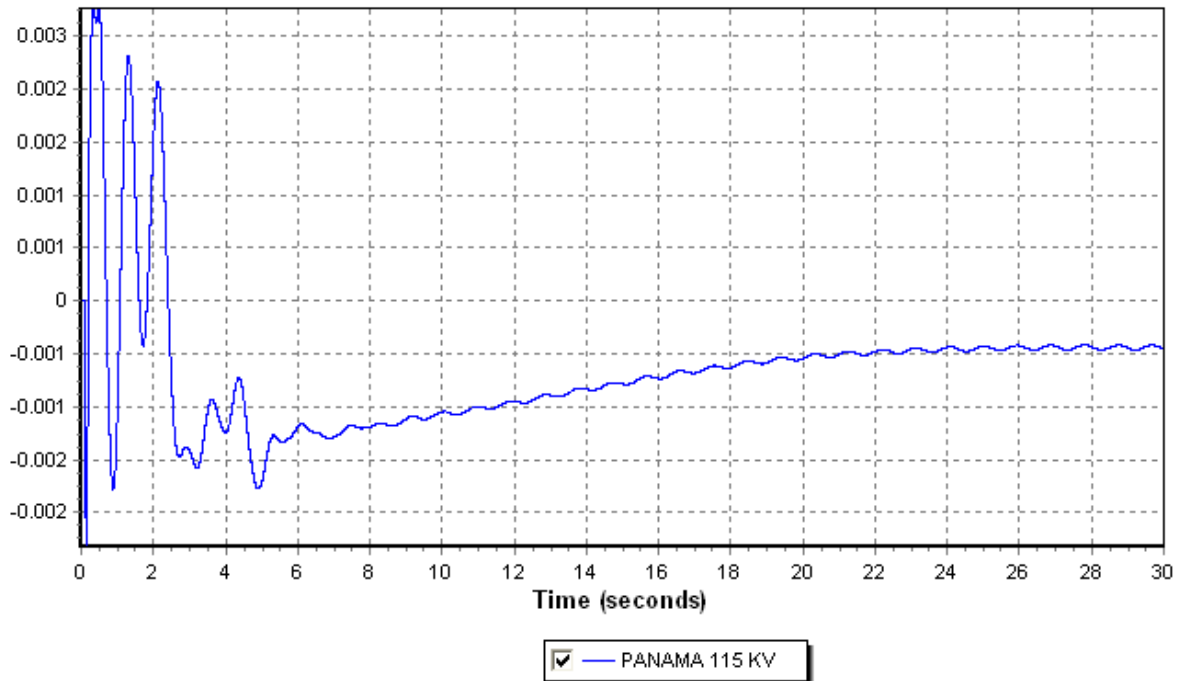
Angulo de Rotación de Unidades hidro Respecto a Bayano



5.2 Falla y Apertura de un circuito de Guasquitas - Veladero

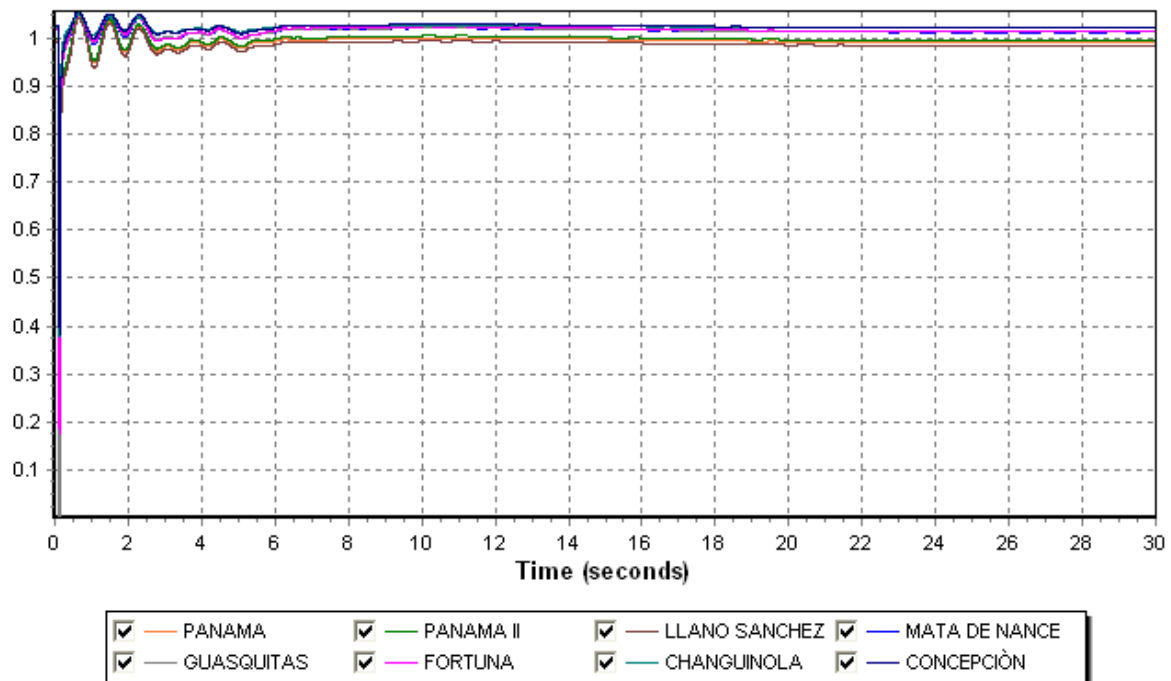
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

Frecuencia 115 KV



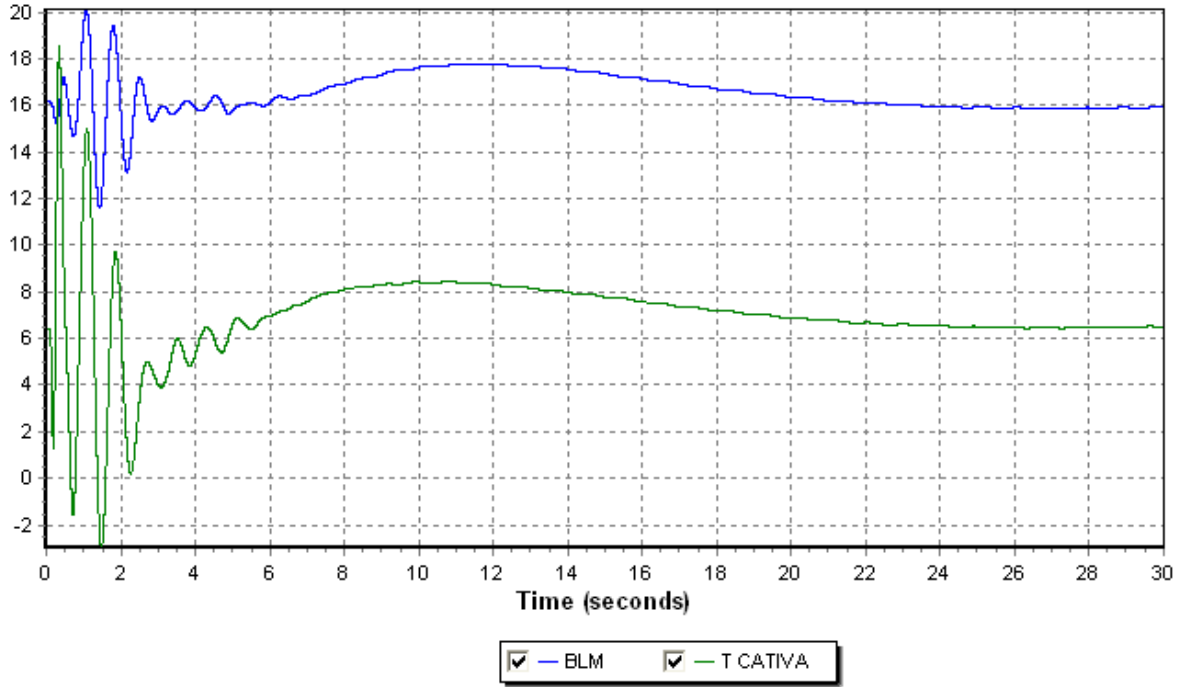
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

Volajes en Buses 230 KV



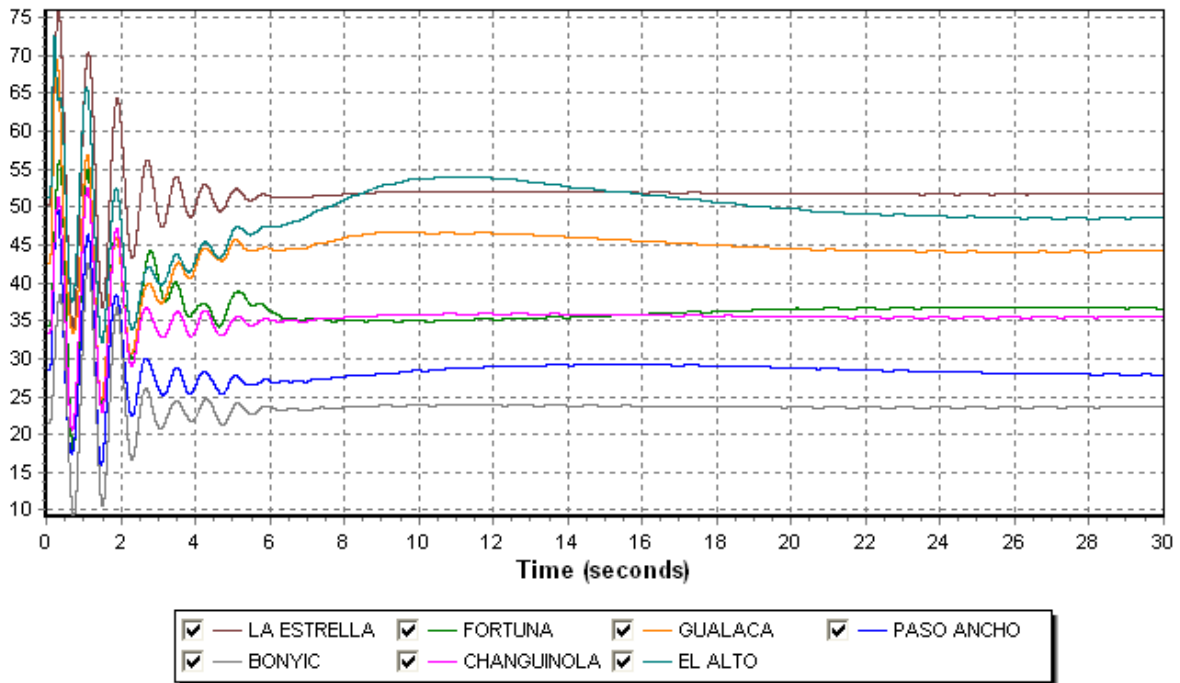
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotación de Unidades Térmicas Respecto a Bayano



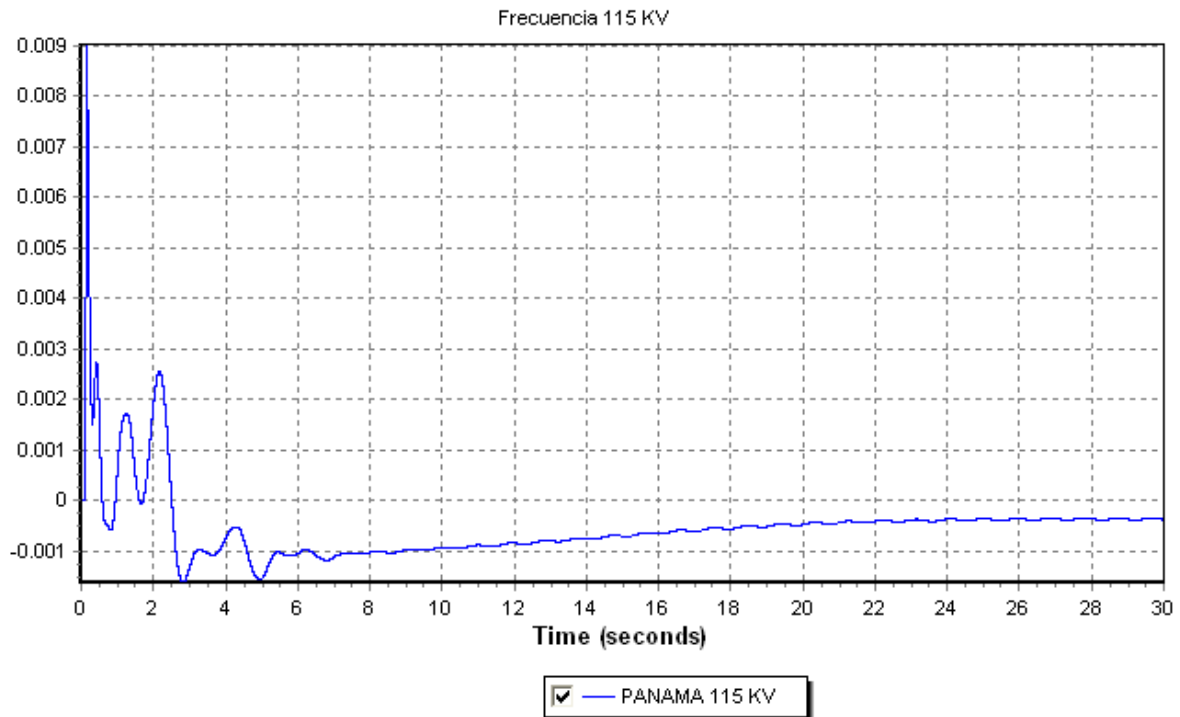
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotación de Unidades Hidro Respecto a Bayano

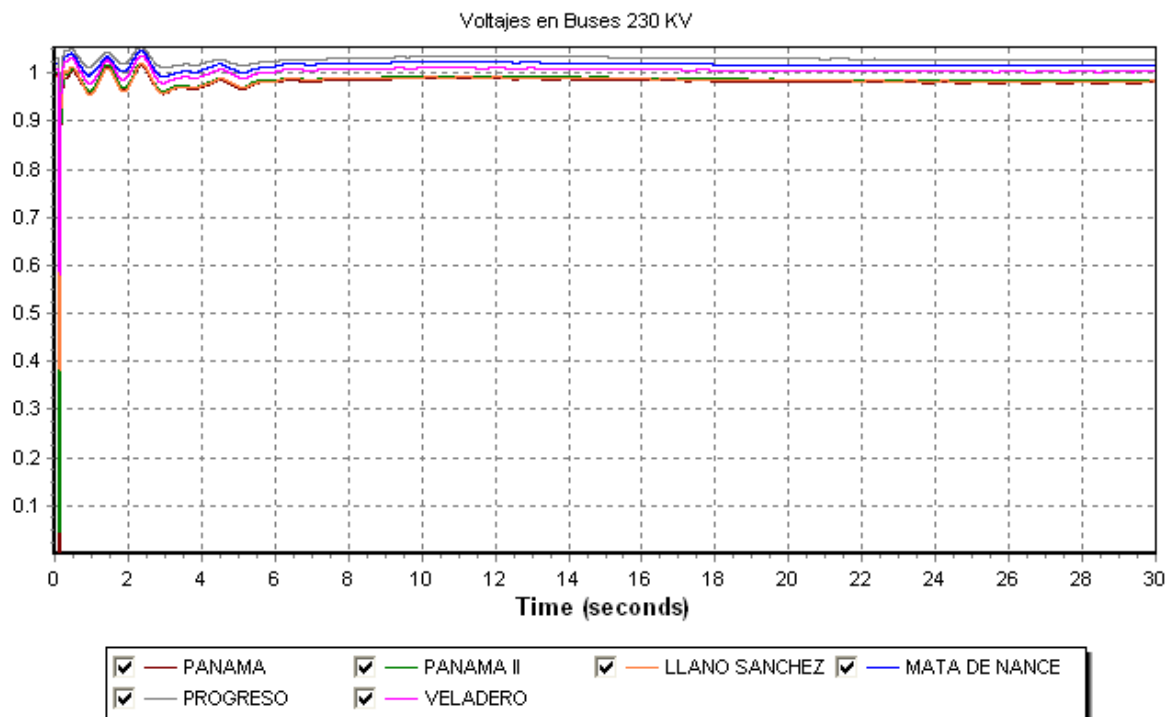


5.3 Falla y Apertura de un circuito de Antón - Panamá

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

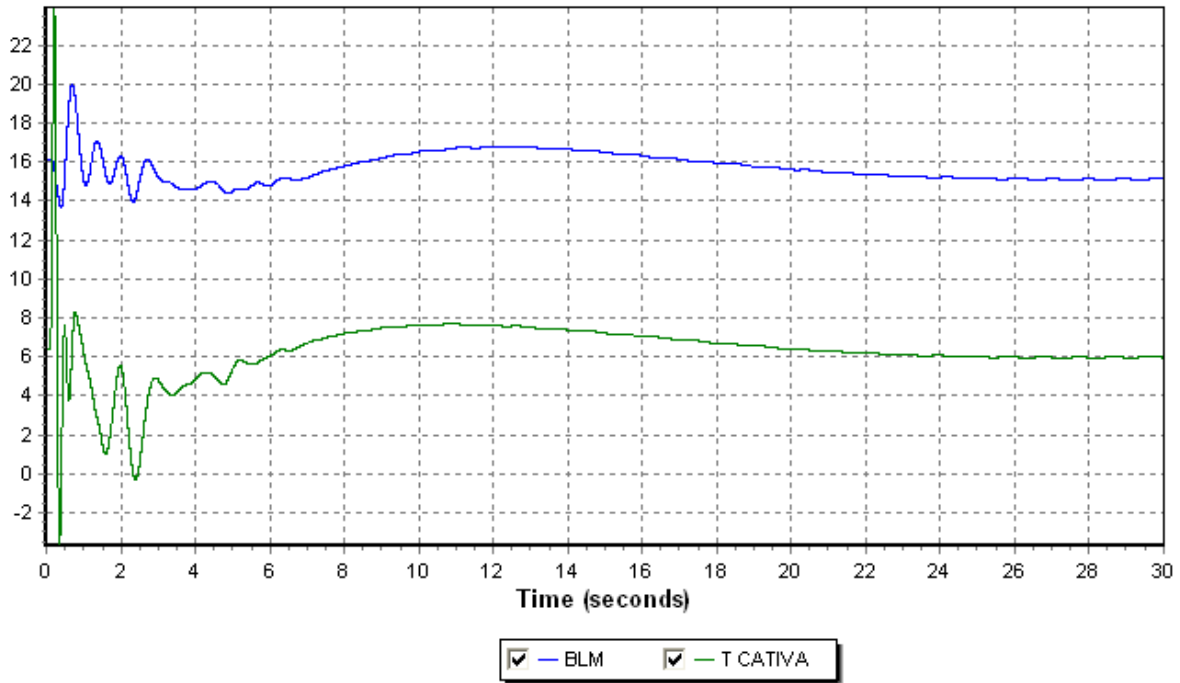


PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO



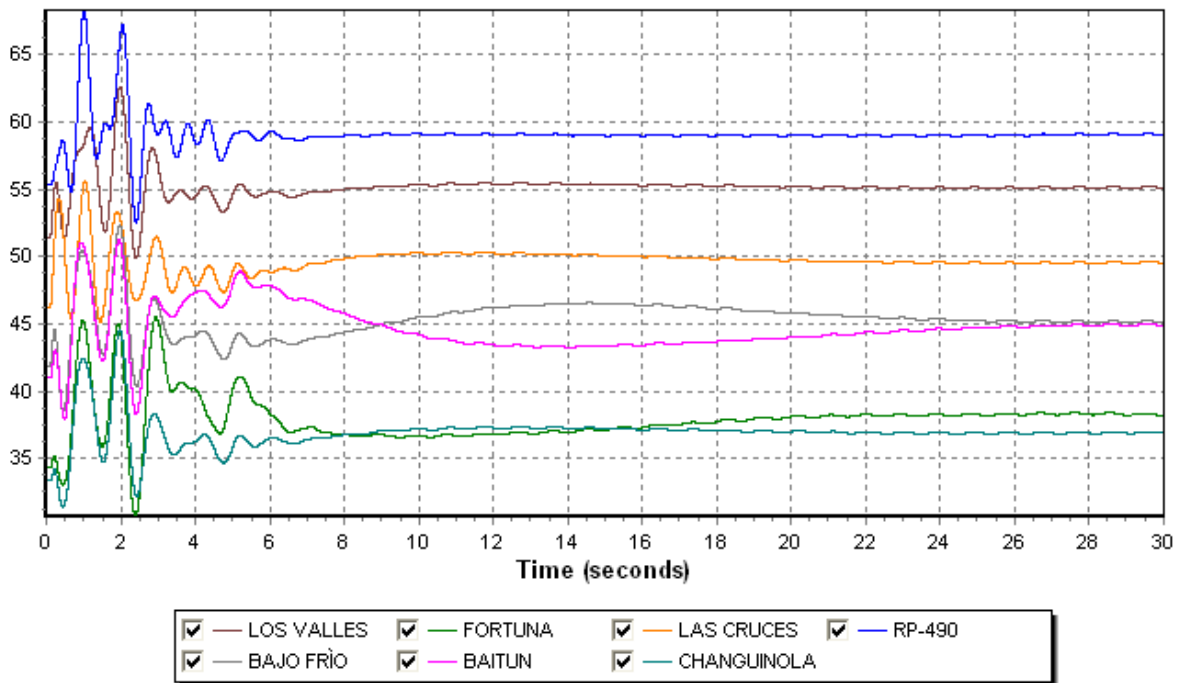
**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotación de Unidades Térmicas Respecto a Bayano



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

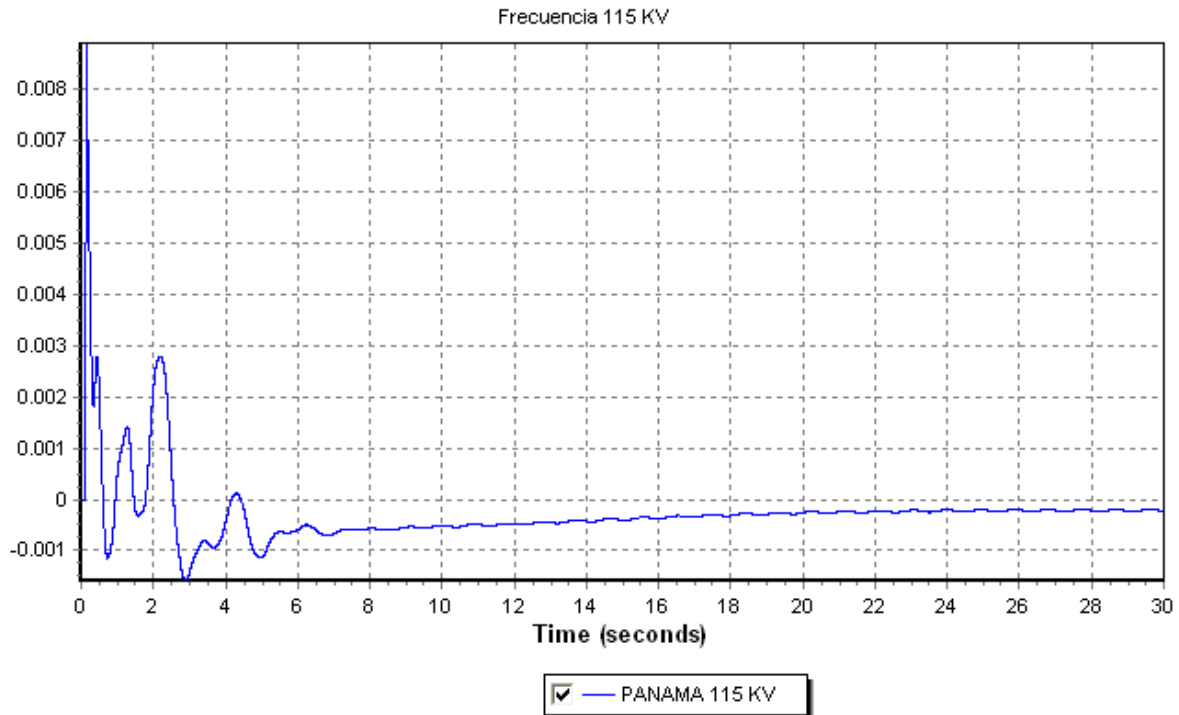
Angulo de Rotación de Unidades Hidro Respecto a Bayano



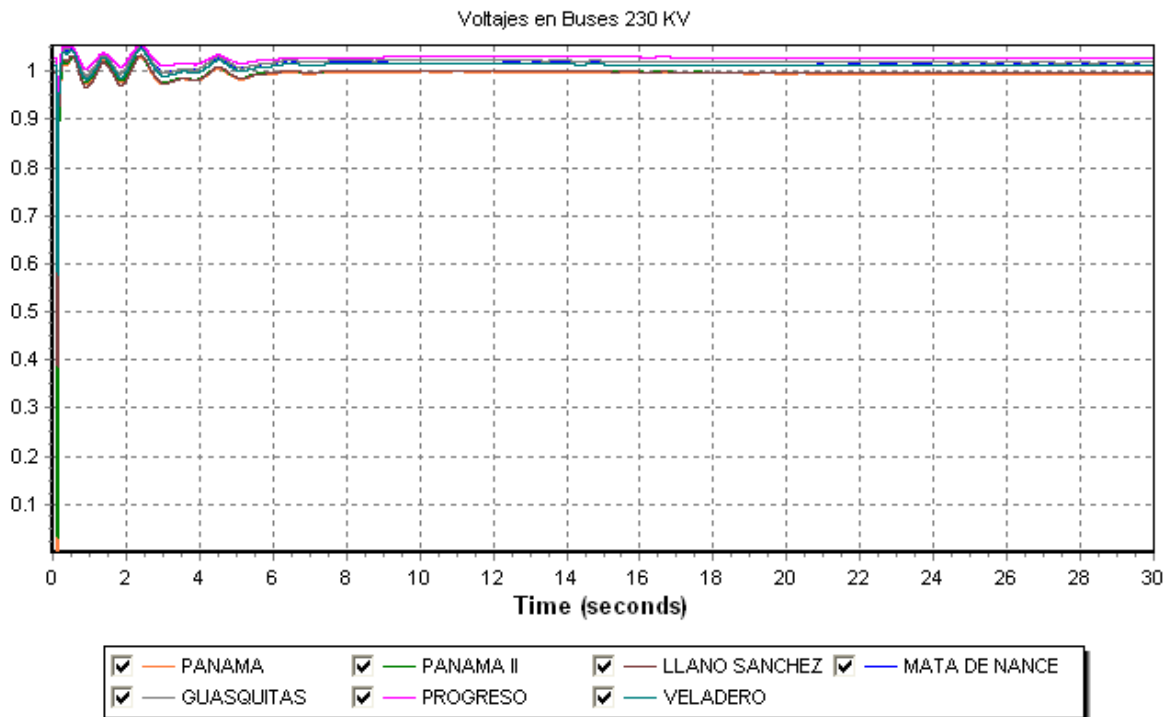
6. Año 2017

6.1 Falla y Apertura de un circuito de Chorrera - Panamá

PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

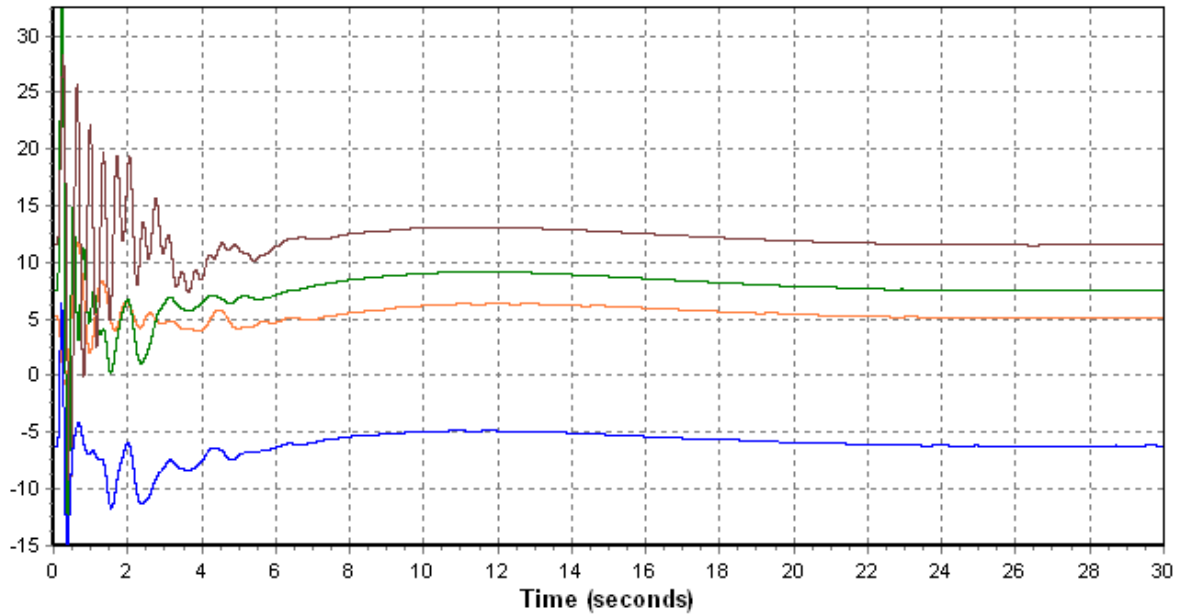


PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO



**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO**

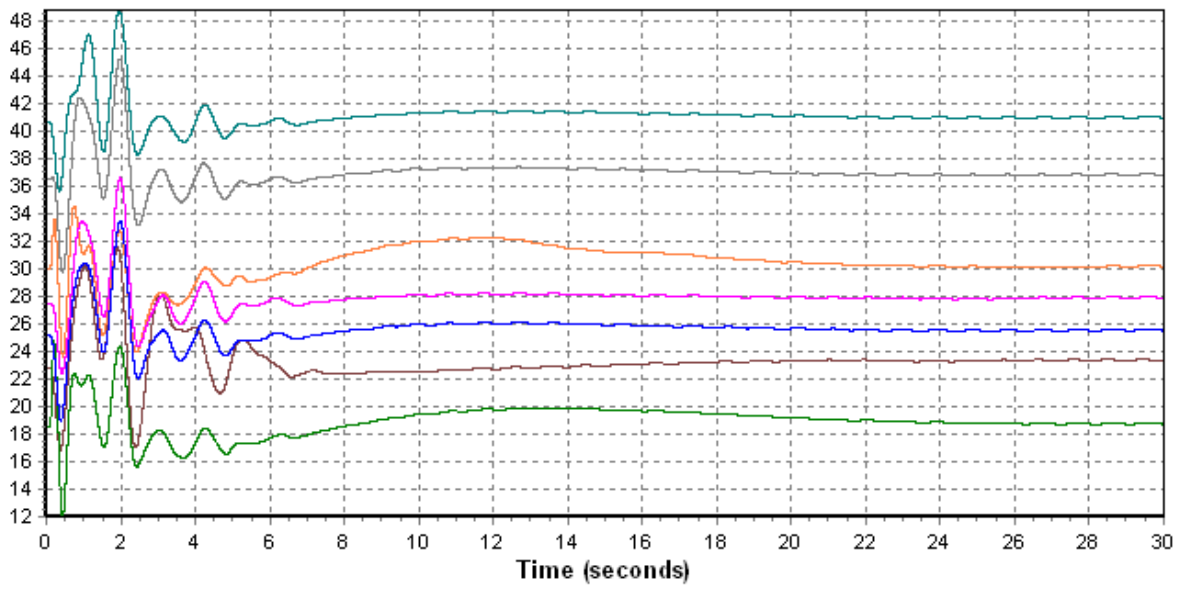
Angulo de Rotación de Unidades Térmicas Respecto a Bayano



- | | | | |
|---|--|--|--|
| <input checked="" type="checkbox"/> BLM | <input checked="" type="checkbox"/> PACORA | <input checked="" type="checkbox"/> EL GIRAL | <input checked="" type="checkbox"/> T CATIVA |
|---|--|--|--|

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotación de Unidades Hidro Respecto a Bayano

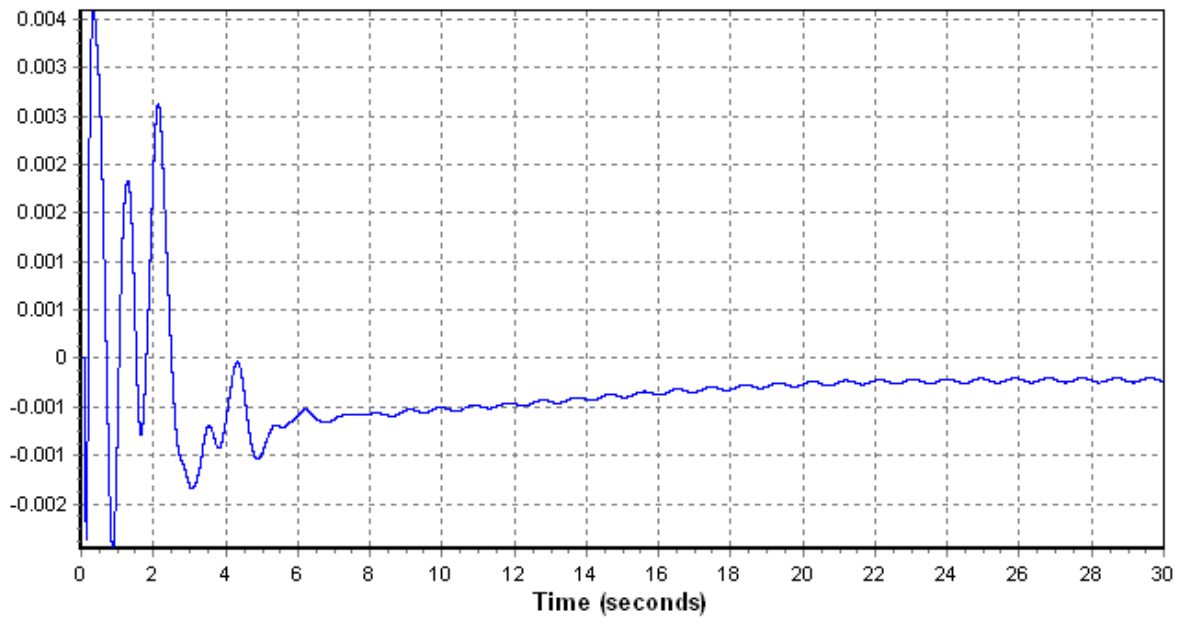


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|---|--|---|---|
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| <input checked="" type="checkbox"/> PANDO | <input checked="" type="checkbox"/> CHANGUINOLA II | <input checked="" type="checkbox"/> BAJO MINA | |

6.2 Falla y Apertura de un circuito de Guasquitas - Veladero

PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

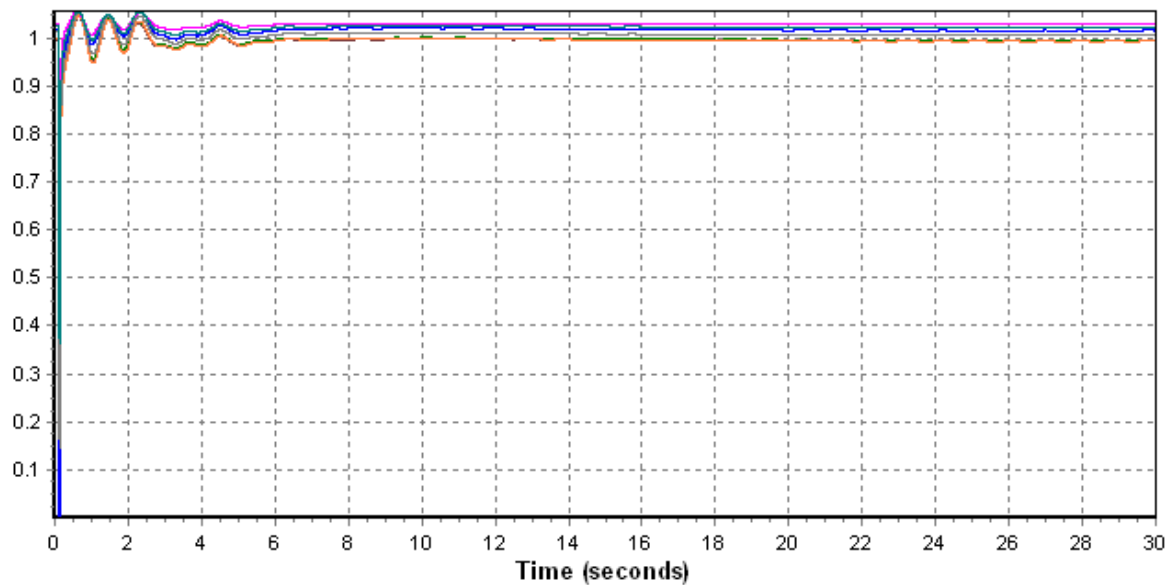
Frecuencia 115 KV



PANAMA 115 KV

PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

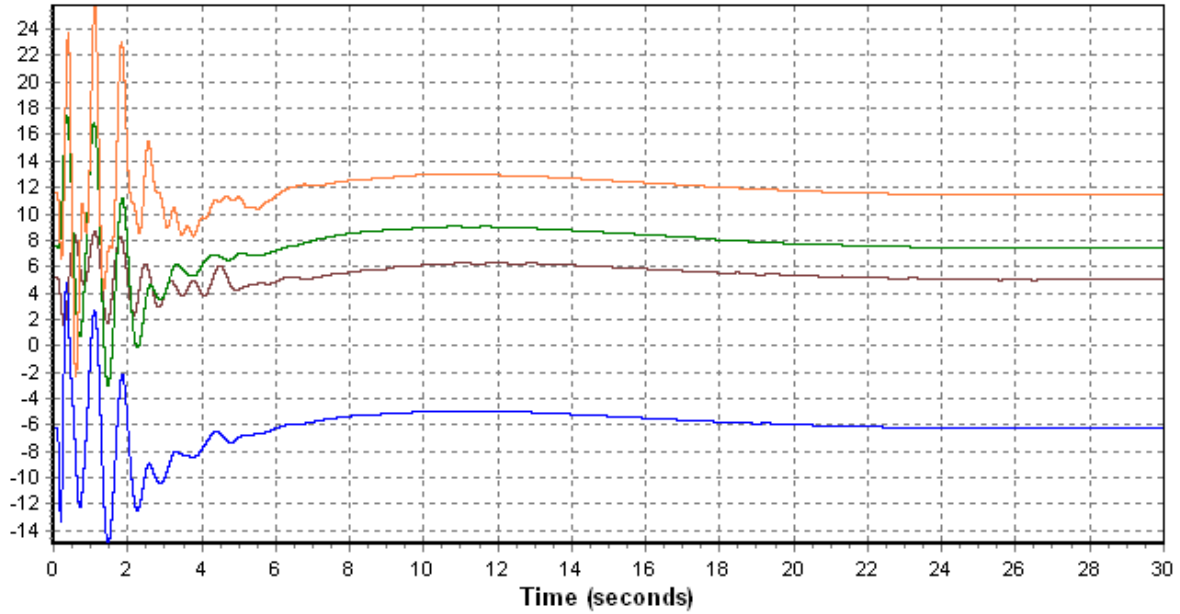
Voltajes de Buses 230 KV



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**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO**

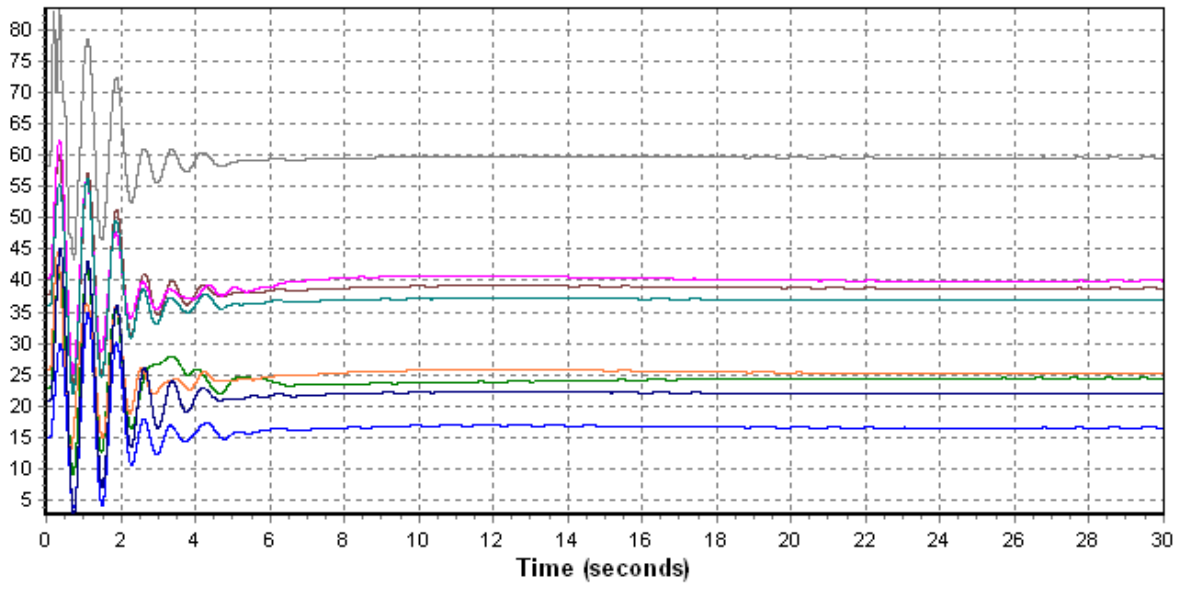
Angulo de Rotación de Unidades Térmicas Respecto a Bayano



- | | | | |
|---|--|--|--|
| <input checked="" type="checkbox"/> — BLM | <input checked="" type="checkbox"/> — PACORA | <input checked="" type="checkbox"/> — EL GIRAL | <input checked="" type="checkbox"/> — T CATIVA |
|---|--|--|--|

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotación de Unidades Hidro Respecto a Bayano

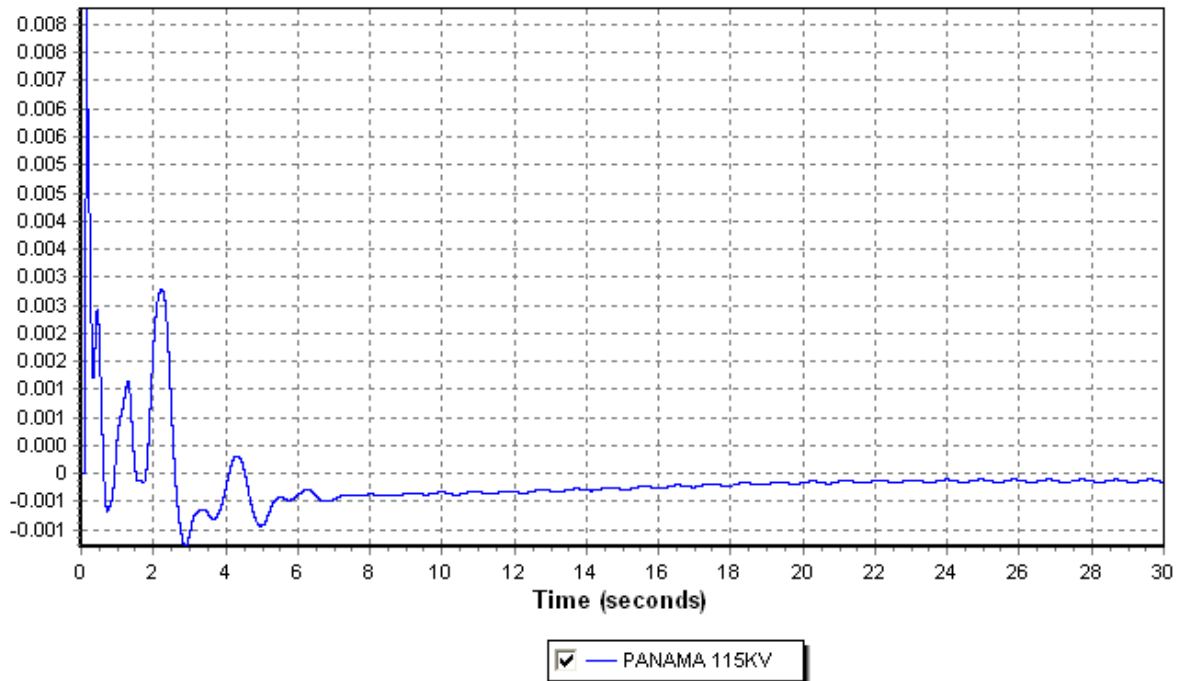


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| <input checked="" type="checkbox"/> — ALGARROBOS | <input checked="" type="checkbox"/> — LA LAGUNA | <input checked="" type="checkbox"/> — RP-490 | <input checked="" type="checkbox"/> — COCHEA |

6.3 Falla y Apertura del circuito Llano Sánchez – Panamá II

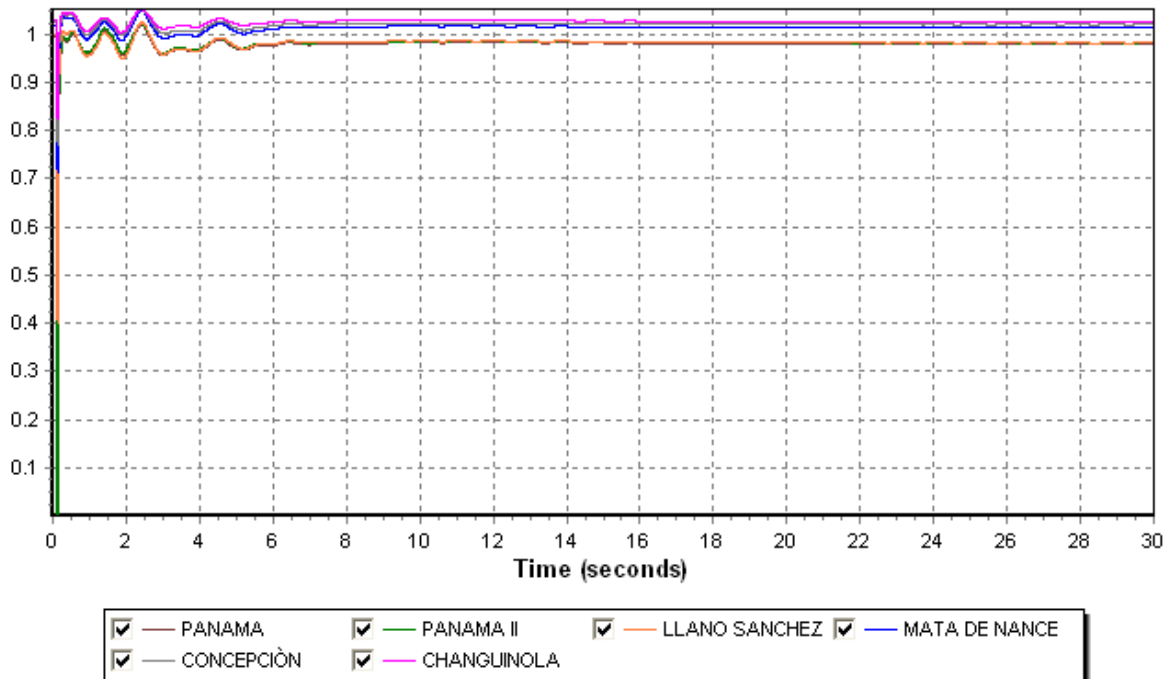
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

Frecuencia 115 KV



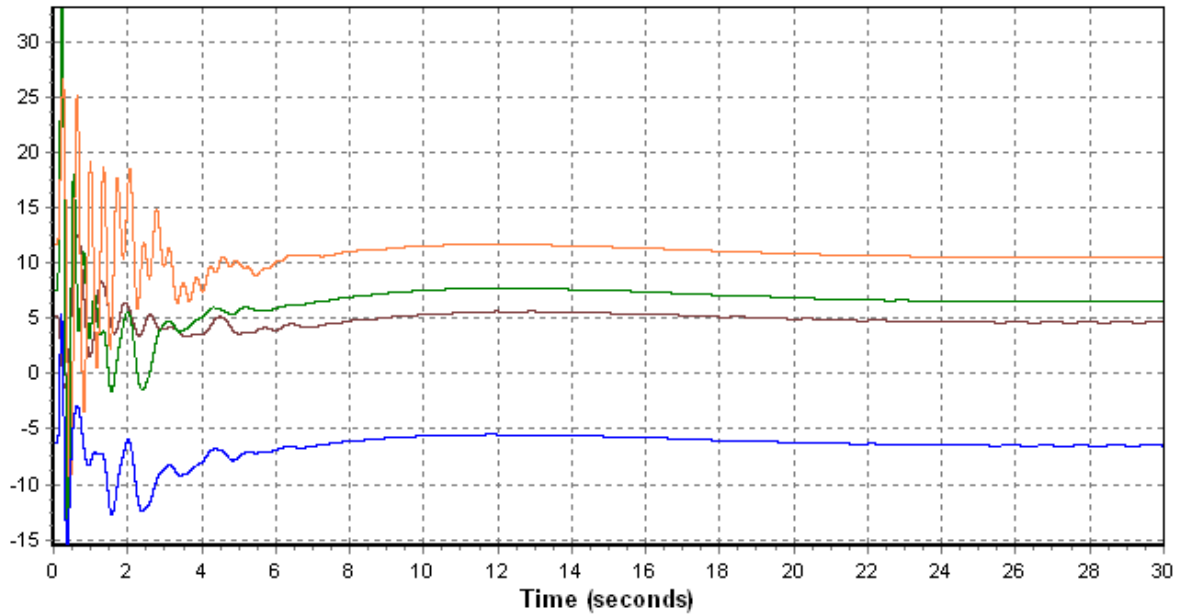
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

Volajes en Buses 230 KV



**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO**

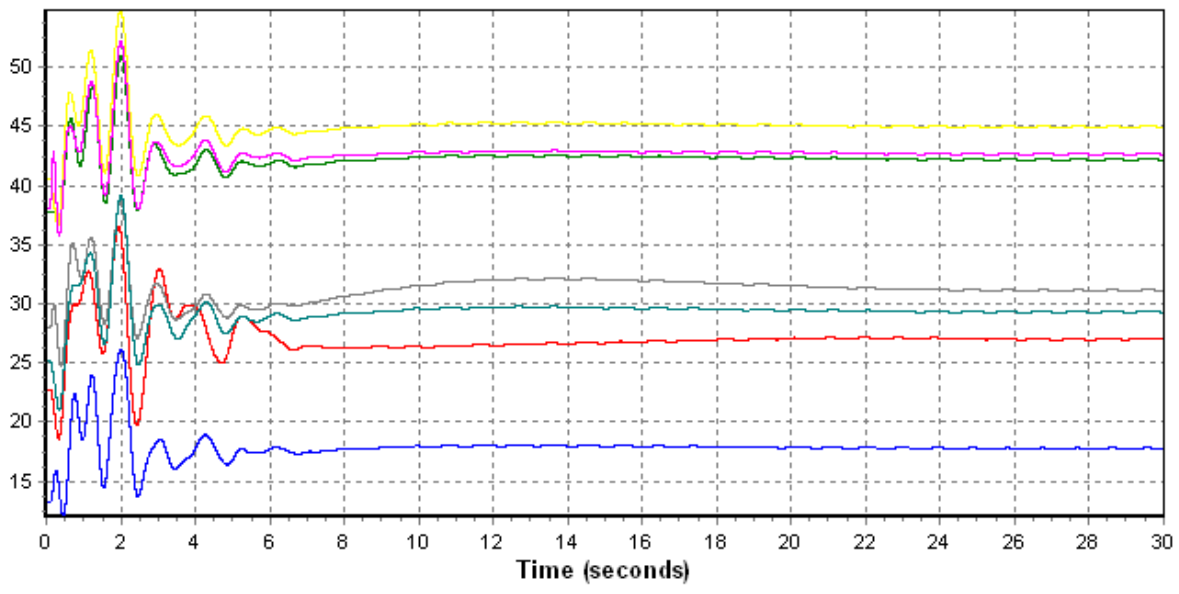
Angulo de Rotación de Unidades Térmicas Respecto a Bayano



— BLM
 — PACORA
 — EL GIRAL
 — T CATIVA

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotación de Unidades Hidro Respecto a Bayano

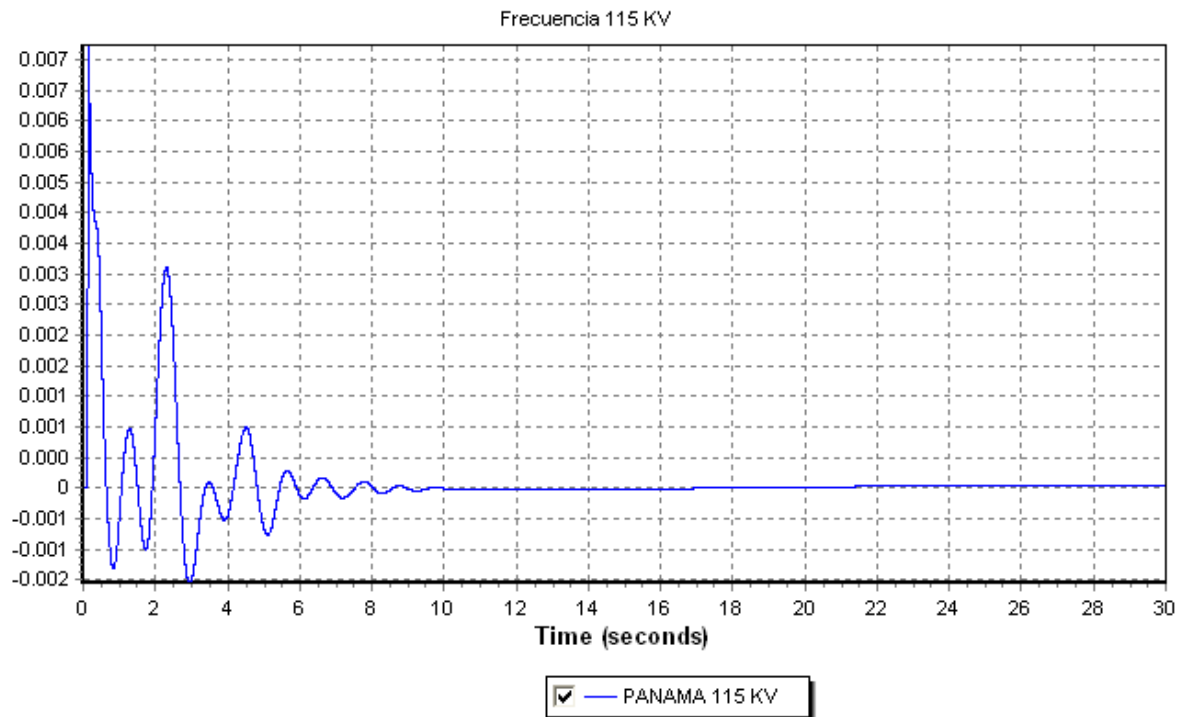


— FORTUNA
 — LA ESTRELLA
 — BAJO DE MINA
 — LOS PLANETAS
 — PRUDENCIA
 — MENDRE II
 — CHANGUINOLA I

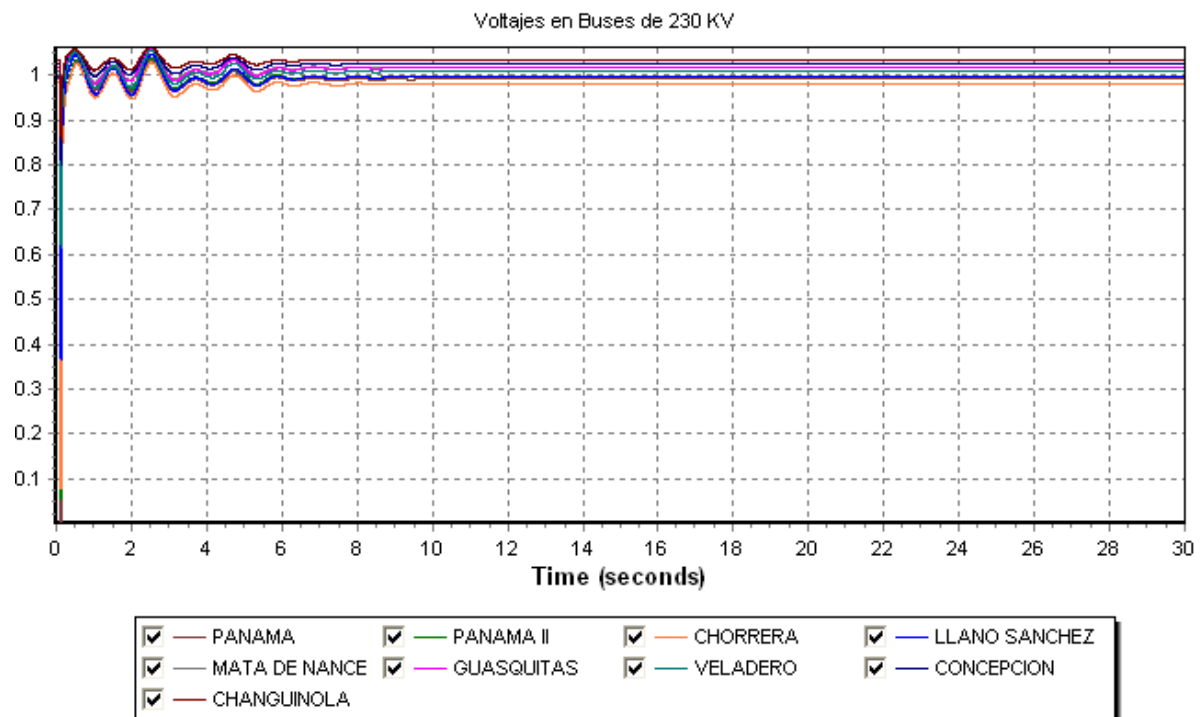
7. Año 2020

7.1 Falla y Apertura de un circuito de Chorrera - Panamá

PLAN DE EXPANSION DEL SIN JUNIO-2010 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

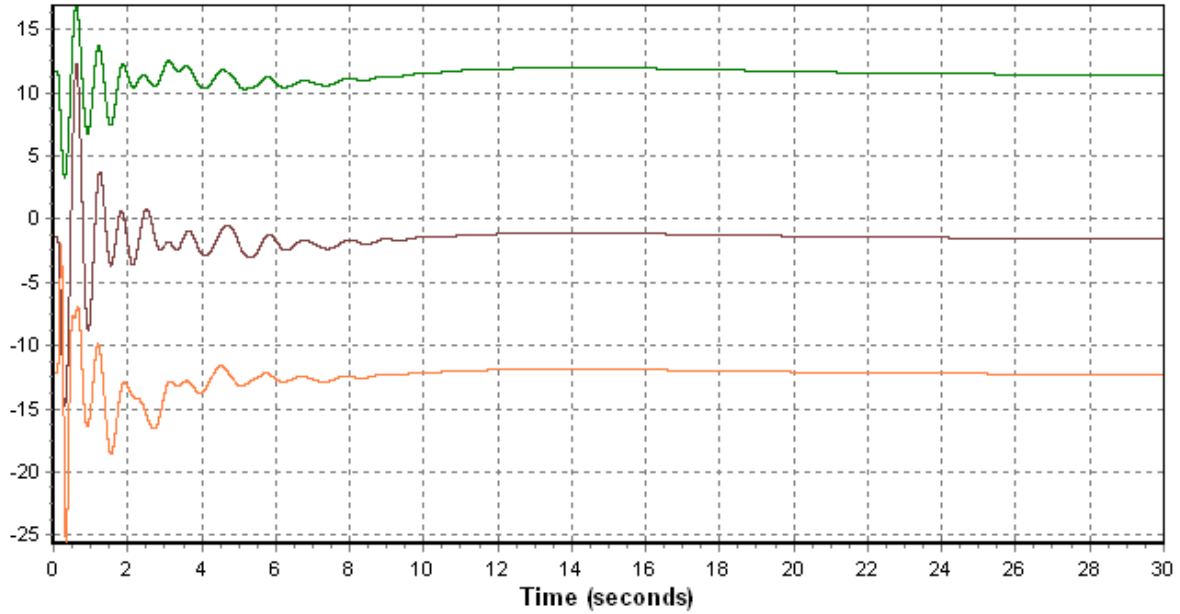


PLAN DE EXPANSION DEL SIN JUNIO-2010 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO



**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO**

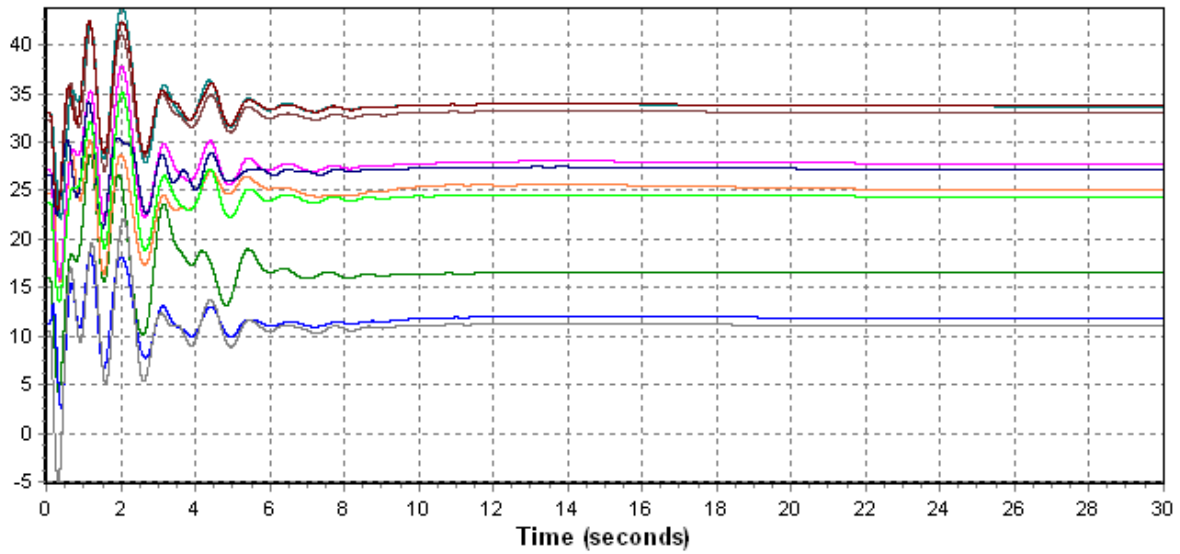
Angulo de Rotación de Unidades Térmicas Respecto a Bayano



- | | | |
|---|--|--|
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|---|--|--|

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotación de Unidades Hidro Respecto a Bayano

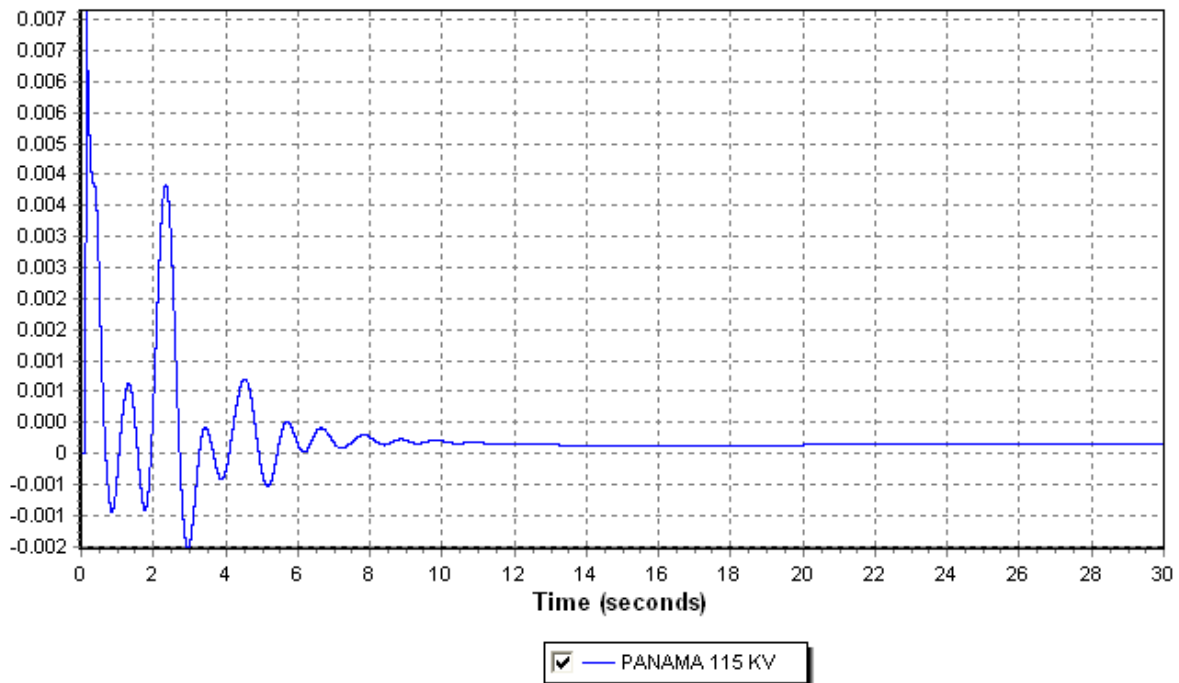


- | | | | |
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| <input checked="" type="checkbox"/> — RP-490 | <input checked="" type="checkbox"/> — CHANGUINOLA II | | |

7.2 Falla y Apertura del circuito Llano Sánchez – Panamá II

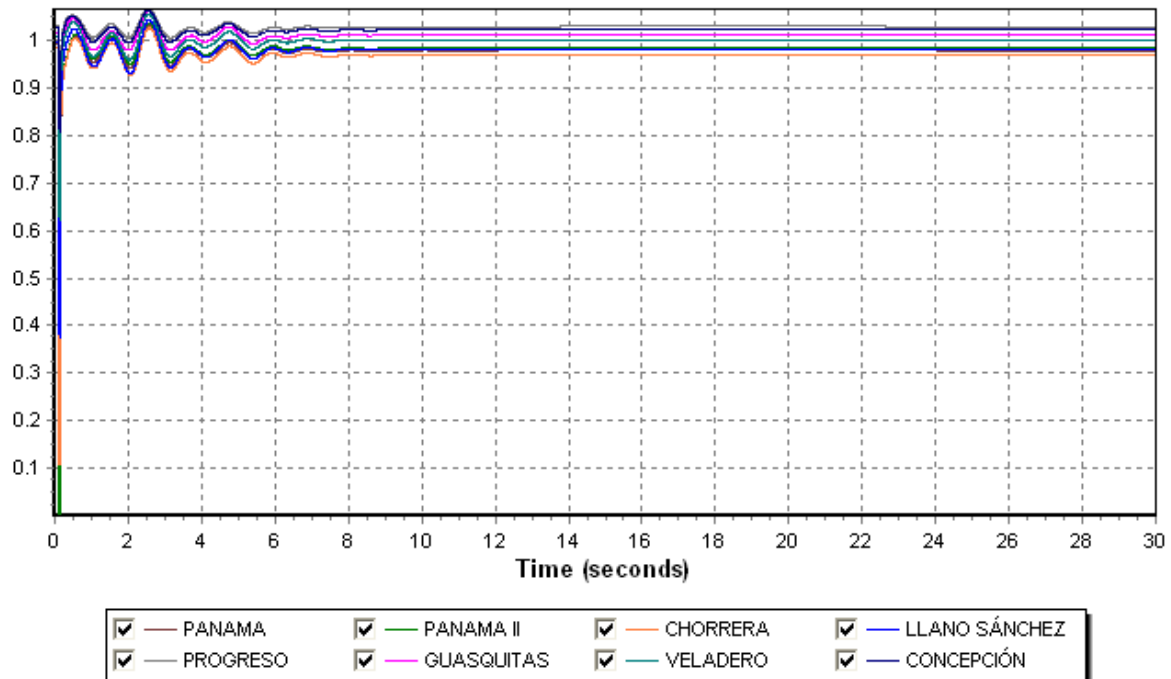
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

Frecuencia 115 KV



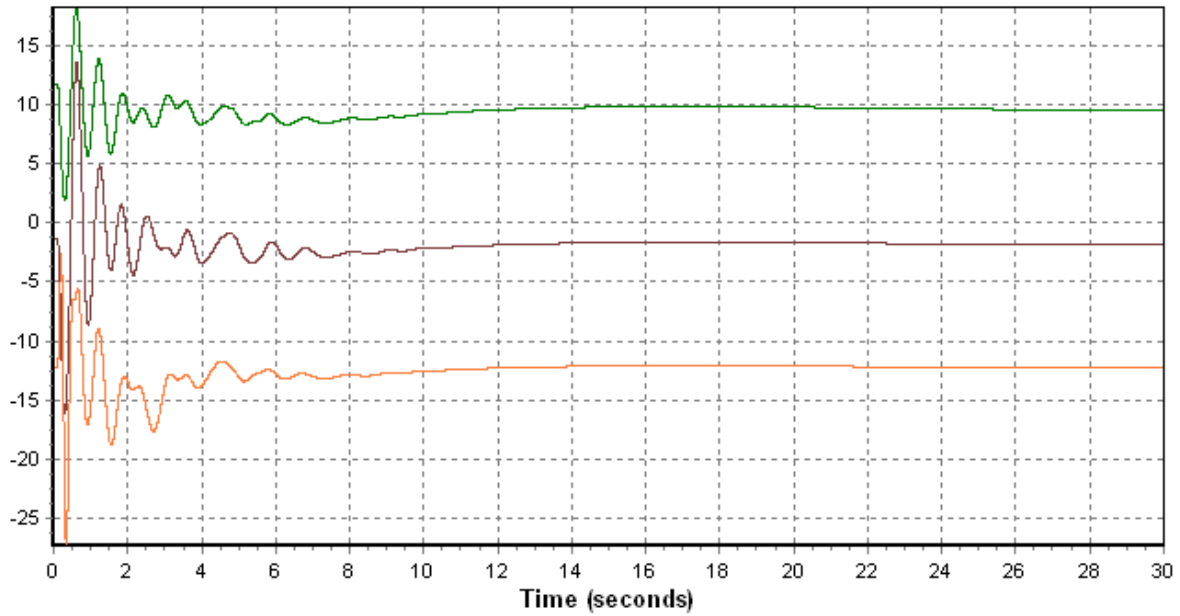
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

Voltajes en Buses de 230 KV



**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO**

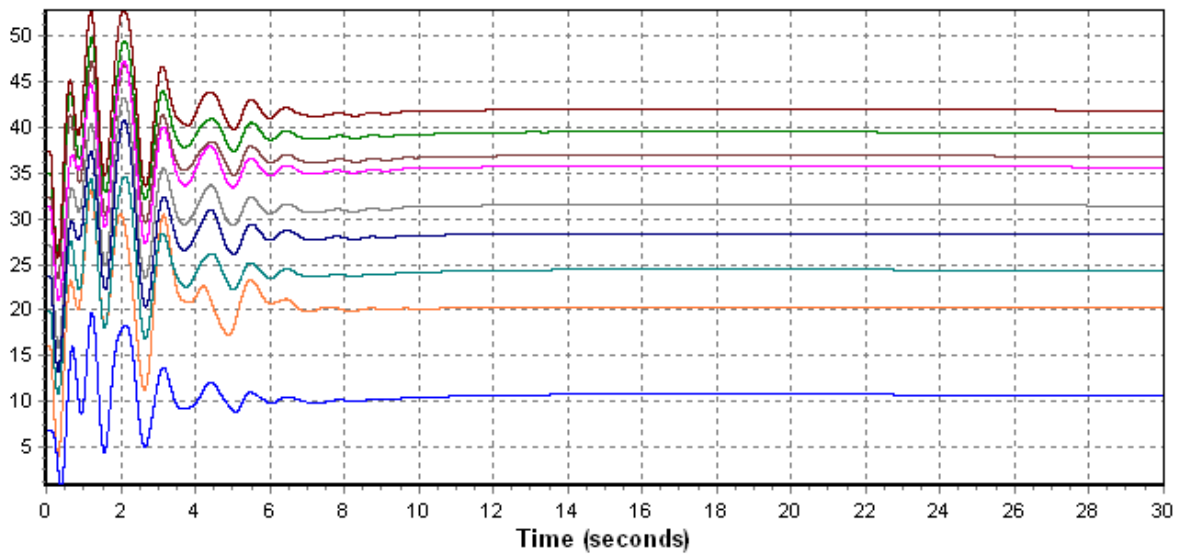
Angulo de Rotación de Unidades Térmicas Respecto a Bayano



BLM
 CB250A
 T CATIVA

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO**

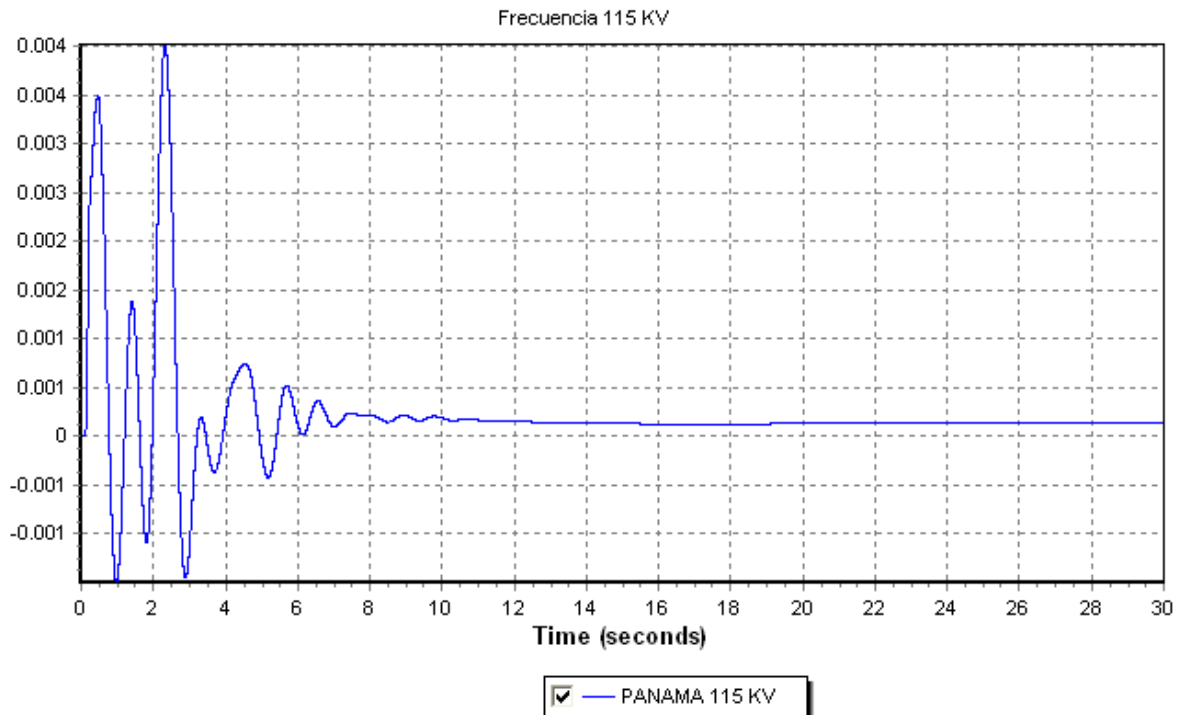
Angulo de Rotación de Unidades Hidro Respecto a Bayano



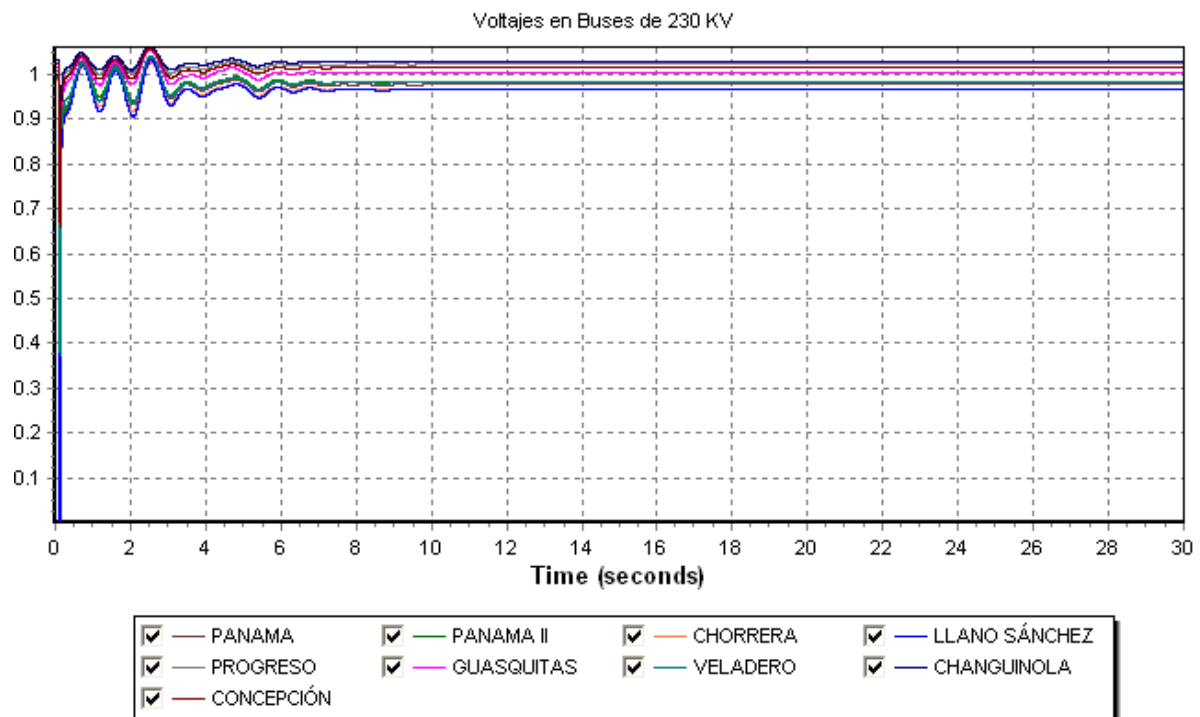
LAS ESTRELLA
 LOS VALLES
 FORTUNA
 BARRO BLANCO
 CHANGUINOLA
 PANDO
 PERLAS N
 CHANGUINOLA II
 BJO MINA

7.3 Falla y Apertura del circuito Guasquitas - Llano Sánchez

PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

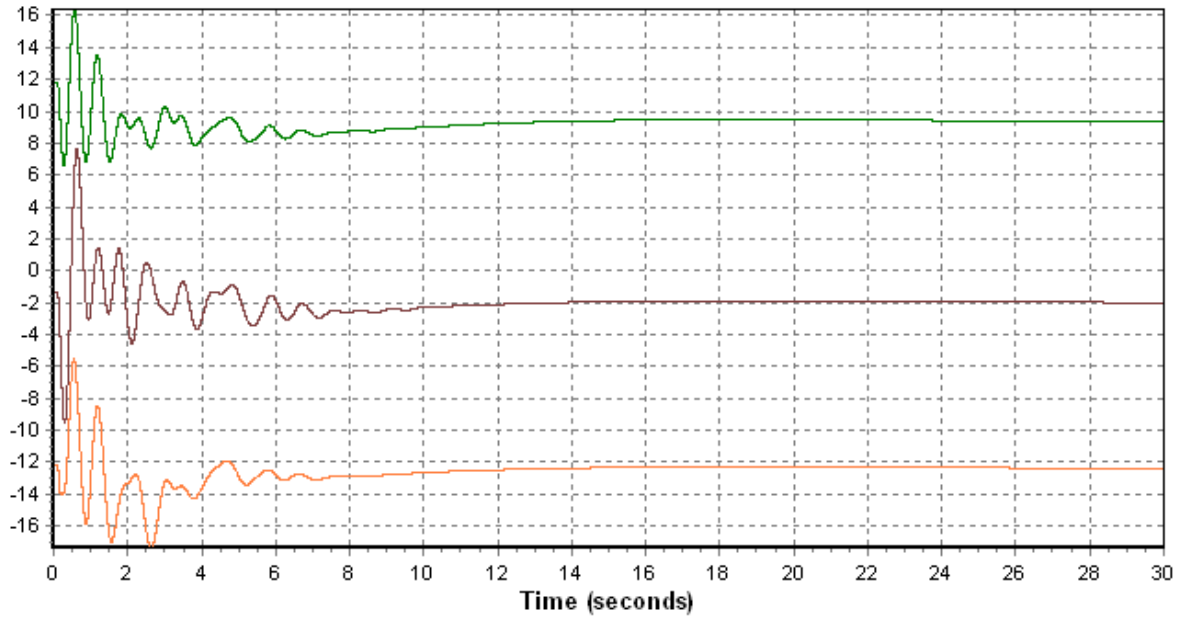


PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO



**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO**

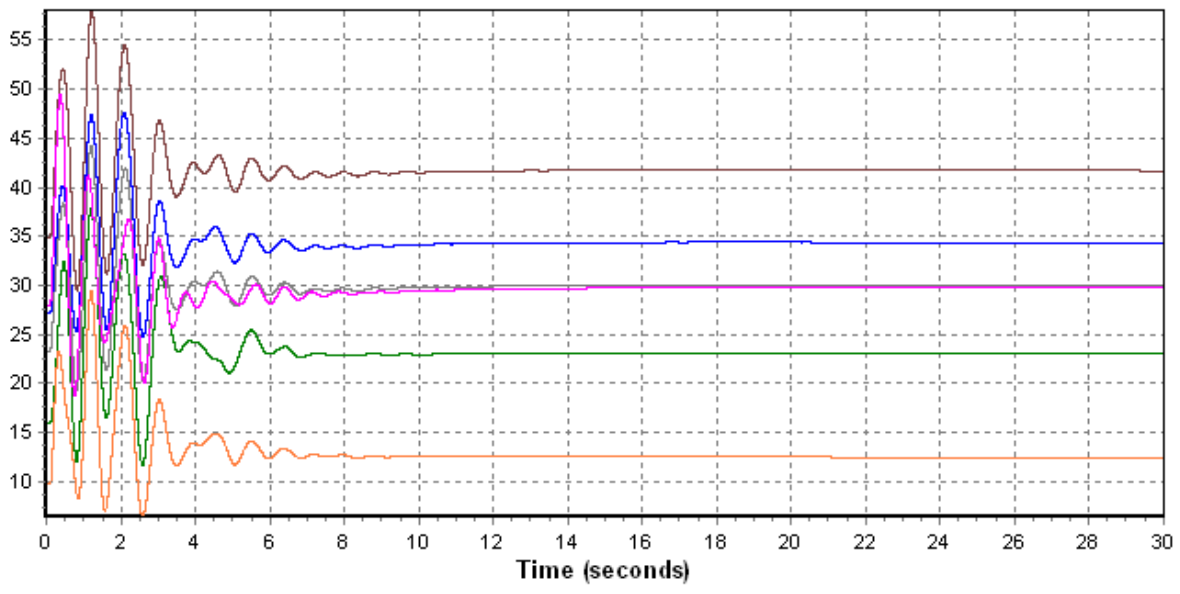
Angulo de Rotación de Unidades Térmicas Respecto a Bayano



- BLM
- CB250A
- T CATIVA

**PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO**

Angulo de Rotación de Unidades Hidro Respecto a Bayano



- LOS VALLES
- FORTUNA
- PASO ANCHO
- CHANGUINOLA I
- PEDREGALITO
- SAN BARTOLO

RESULTADOS DE CORTOCIRCUITO

- 1. Cortocircuito Año 2010**
- 2. Cortocircuito Año 2011**
- 3. Cortocircuito Año 2012**
- 4. Cortocircuito Año 2013**
- 5. Cortocircuito Año 2014**
- 6. Cortocircuito Año 2017**
- 7. Cortocircuito Año 2020**

1. Cortocircuito Año 2010

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, OCT 19 2010 10:41
 PLAN DE EXPANSION DEL SIN JUNIO-2010 SHORT CIRCUIT
 AÑO 2010 ESC-MOD DEMANDA-MAX-INVIERNO FAULT CURRENTS
 OUTPUT FOR AREA 6 [PANAMA]

X----- BUS -----X				THREE PHASE FAULT		ONE PHASE FAULT	
				/I+/ AN(I+)	/IA/ AN(IA)		
1	[PAN230	230.00]	AMPS	5784.0	-76.99	5593.3	-81.61
2	[PAN115	115.00]	AMPS	11374.8	-78.01	11988.1	-83.25
3	[PANII230	230.00]	AMPS	5799.7	-77.19	5668.5	-81.52
4	[PANII115	115.00]	AMPS	8413.1	-81.26	6406.0	-87.99
5	[CHO230	230.00]	AMPS	4747.4	-76.73	5033.5	-80.89
6	[CHO115	115.00]	AMPS	2991.0	-89.83	0.0	0.00
8	[LSA230	230.00]	AMPS	5071.6	-71.08	3957.6	-73.27
9	[LSA115	115.00]	AMPS	4194.7	-78.55	3355.1	-83.41
11	[M.N230	230.00]	AMPS	6258.2	-63.10	6819.6	-63.77
12	[M.N115	115.00]	AMPS	5653.8	-61.94	3532.8	-52.12
14	[PRO230	230.00]	AMPS	4060.2	-61.60	4633.7	-63.38
15	[PRO115	115.00]	AMPS	2866.5	-68.44	0.0	0.00
18	[CAC115	115.00]	AMPS	11297.6	-78.15	11896.5	-83.13
19	[C.V115	115.00]	AMPS	7937.5	-80.62	5688.7	-85.69
20	[CH.AZUL	115.00]	AMPS	1785.8	-65.45	0.0	0.00
21	[C.BAN115	115.00]	AMPS	10020.5	-78.23	8070.1	-82.22
23	[CH115	115.00]	AMPS	6202.0	-83.92	4409.7	-86.08
26	[LOC115	115.00]	AMPS	10297.2	-78.00	9127.5	-81.45
30	[MAR115	115.00]	AMPS	9220.8	-78.70	7510.5	-82.65
33	[STM115	115.00]	AMPS	10253.6	-78.56	9888.5	-83.43
37	[SAN115	115.00]	AMPS	9552.2	-78.72	7084.1	-83.39
48	[TINAJ115	115.00]	AMPS	8762.0	-80.40	6761.4	-85.06
50	[M.O115	115.00]	AMPS	9290.0	-79.89	7626.9	-84.83
52	[TOC115	115.00]	AMPS	6820.9	-82.33	4239.1	-86.32
54	[LM1115	115.00]	AMPS	10067.6	-85.96	12372.7	-88.04
55	[LM2115	115.00]	AMPS	10121.1	-86.23	12426.2	-88.27
61	[FFIELD	115.00]	AMPS	7806.0	-86.14	8249.3	-82.95
85	[PTP230	230.00]	AMPS	1980.2	-39.42	2269.8	-44.44
87	[CAL115	115.00]	AMPS	5688.6	-59.22	7492.8	-58.42
88	[EST115	115.00]	AMPS	5067.9	-57.91	7052.3	-57.99
92	[L.V115	115.00]	AMPS	5455.0	-58.69	7565.5	-58.75
96	[FOR230	230.00]	AMPS	6627.6	-63.68	7766.9	-64.34
100	[BAY230	230.00]	AMPS	4663.7	-81.32	5234.2	-84.04
103	[COPESA23	230.00]	AMPS	5074.4	-78.62	5065.5	-82.34
105	[PAN-AM23	230.00]	AMPS	4713.8	-76.82	4995.5	-80.96
109	[STA RITA115	115.00]	AMPS	9119.1	-85.82	8679.2	-85.76
115	[PACORA23	230.00]	AMPS	4871.5	-79.57	4448.7	-82.50
144	[CANJ230	230.00]	AMPS	5576.2	-64.44	6023.4	-64.10
146	[GUALACA230	230.00]	AMPS	5331.2	-59.02	6092.2	-60.46
147	[GUASQ230	230.00]	AMPS	5779.6	-64.47	6491.3	-64.48
148	[VELADERO 230	230.00]	AMPS	5770.5	-66.45	4540.3	-65.44
154	[CEMPAN15	115.00]	AMPS	6303.1	-85.32	6289.2	-88.17
190	[CHANG230	230.00]	AMPS	1558.0	-37.65	1541.7	-46.79
191	[CHANG115	115.00]	AMPS	1775.1	-53.30	2039.3	-57.15
522	[TCATIVÁ 115	115.00]	AMPS	10116.8	-86.20	12436.4	-88.29
529	[TCOLON 115	115.00]	AMPS	9132.2	-86.06	0.0	0.00
700	[BAITUN230	230.00]	AMPS	3496.8	-61.53	3515.8	-61.89
701	[BAITUN115	115.00]	AMPS	2145.4	-62.95	2666.6	-62.70
702	[BJOMIN115	115.00]	AMPS	2022.4	-61.48	2569.8	-61.57
6000	[FRONTER	230.00]	AMPS	3952.5	-61.55	4312.4	-63.07
6400	[FRONTCHA	230.00]	AMPS	1446.5	-57.35	0.0	0.00
6500	[FRONTVEL	230.00]	AMPS	3457.0	-62.60	0.0	0.00

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2010 ESC-MOD DEMANDA-MAX-INVIERNO
OUTPUT FOR AREA 7 [ACANAL

TUE, OCT 19 2010 10:41
SHORT CIRCUIT
FAULT CURRENTS
]

X----- BUS -----X		THREE PHASE FAULT	ONE PHASE FAULT
		/I+/ AN(I+)	/IA/ AN(IA)
123 [MIR115	115.00] AMPS	7438.8 -83.55	7118.8 -86.44

2. Cortocircuito Año 2011

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, OCT 19 2010 10:48
 PLAN DE EXPANSION DEL SIN JUNIO-2010 SHORT CIRCUIT
 AÑO 2011 ESC-MOD DEMANDA-MAX-INVIERNO FAULT CURRENTS
 OUTPUT FOR AREA 6 [PANAMA]

X----- BUS -----X				THREE PHASE FAULT		ONE PHASE FAULT	
				/I+/	AN(I+)	/IA/	AN(IA)
1	[PAN230	230.00]	AMPS	6256.8	-77.42	6148.4	-81.14
2	[PAN115	115.00]	AMPS	12129.7	-78.27	12590.9	-83.34
3	[PANII230	230.00]	AMPS	6271.5	-77.72	6447.1	-81.00
4	[PANII115	115.00]	AMPS	8881.2	-81.67	6656.0	-88.01
5	[CHO230	230.00]	AMPS	5123.6	-77.04	5498.7	-80.57
6	[CHO115	115.00]	AMPS	4021.8	-88.23	0.0	0.00
8	[LSA230	230.00]	AMPS	5639.3	-71.58	4962.0	-73.40
9	[LSA115	115.00]	AMPS	5467.5	-77.68	3959.3	-82.92
11	[M.N230	230.00]	AMPS	7631.6	-63.44	7744.2	-64.10
12	[M.N115	115.00]	AMPS	5865.2	-62.47	3589.6	-52.29
14	[PRO230	230.00]	AMPS	4985.5	-63.04	5276.2	-65.02
15	[PRO115	115.00]	AMPS	3056.2	-69.25	0.0	0.00
18	[CAC115	115.00]	AMPS	12035.5	-78.38	12486.2	-83.19
19	[C.V115	115.00]	AMPS	8341.1	-80.89	5874.6	-85.52
20	[CH.AZUL	115.00]	AMPS	1856.3	-65.75	0.0	0.00
21	[C.BAN115	115.00]	AMPS	10610.4	-78.43	8372.5	-82.02
23	[CH115	115.00]	AMPS	6414.8	-83.42	4503.2	-85.30
26	[LOC115	115.00]	AMPS	10918.2	-78.21	9501.0	-81.29
30	[MAR115	115.00]	AMPS	9718.9	-78.81	7769.2	-82.39
33	[STM115	115.00]	AMPS	10869.6	-78.74	10310.2	-83.36
37	[SAN115	115.00]	AMPS	10092.3	-78.93	7328.2	-83.16
48	[TINAJ115	115.00]	AMPS	9215.0	-80.50	6973.7	-84.78
50	[M.O115	115.00]	AMPS	9796.9	-80.03	7889.3	-84.61
52	[TOC115	115.00]	AMPS	7134.5	-82.58	4361.1	-86.08
54	[LM1115	115.00]	AMPS	10525.5	-85.18	12850.2	-87.21
55	[LM2115	115.00]	AMPS	10587.0	-85.48	12910.9	-87.45
61	[FFIELD	115.00]	AMPS	8082.3	-85.21	8481.2	-81.83
85	[PTP230	230.00]	AMPS	3535.5	-48.62	3228.0	-52.38
87	[CAL115	115.00]	AMPS	5813.0	-59.59	7637.1	-58.77
88	[EST115	115.00]	AMPS	5157.2	-58.24	7167.7	-58.33
92	[L.V115	115.00]	AMPS	5565.6	-59.05	7707.3	-59.10
96	[FOR230	230.00]	AMPS	8365.3	-63.45	9292.1	-64.15
100	[BAY230	230.00]	AMPS	4879.0	-81.63	5432.9	-84.14
103	[COPESA23	230.00]	AMPS	5418.6	-79.06	5510.5	-82.02
105	[PAN-AM23	230.00]	AMPS	5084.7	-77.14	5449.6	-80.65
109	[STA RITA115	115.00]	AMPS	9507.4	-85.11	8945.7	-84.80
115	[PACORA23	230.00]	AMPS	5217.2	-79.95	4801.7	-82.14
144	[CANJ230	230.00]	AMPS	6809.3	-64.66	7248.4	-63.91
146	[GUALACA230	230.00]	AMPS	6614.6	-59.42	7555.3	-60.91
147	[GUASQ230	230.00]	AMPS	7149.6	-64.65	7966.0	-64.28
148	[VELADERO 230	230.00]	AMPS	6749.3	-67.05	5132.7	-65.57
154	[CEMPAN15	115.00]	AMPS	6806.7	-84.86	6641.5	-87.46
190	[CHANG230	230.00]	AMPS	3199.4	-55.36	2345.6	-60.01
191	[CHANG115	115.00]	AMPS	2398.7	-66.01	2559.7	-67.14
306	[CHAN1 230	230.00]	AMPS	3408.4	-52.52	3899.5	-57.20
310	[CONCEPCION23	230.00]	AMPS	5606.6	-63.24	4475.4	-62.86
341	[PRUDENCIA230	230.00]	AMPS	5262.2	-48.14	5884.1	-48.22
345	[LORENA230	230.00]	AMPS	5899.0	-53.48	6703.8	-54.54
370	[LSA CAP 230	230.00]	AMPS	5639.3	-71.58	4962.0	-73.40
511	[LGUIAS230	230.00]	AMPS	3642.9	-75.40	3372.2	-77.53
522	[TCATIVÁ 115	115.00]	AMPS	10580.4	-85.44	12920.0	-87.47
529	[TCOLON 115	115.00]	AMPS	9518.6	-85.28	0.0	0.00
540	[ANTON	230.00]	AMPS	2912.2	-81.55	3784.4	-81.63
700	[BAITUN230	230.00]	AMPS	4347.0	-62.60	3994.7	-62.61
701	[BAITUN115	115.00]	AMPS	2218.6	-62.34	2736.1	-62.00

3. Cortocircuito Año 2012

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, OCT 19 2010 10:50
 PLAN DE EXPANSION DEL SIN JUNIO-2010 SHORT CIRCUIT
 AÑO 2012 ESC-MOD DEMANDA-MAX-INVIERNO FAULT CURRENTS
 OUTPUT FOR AREA 6 [PANAMA]

X----- BUS -----X				THREE PHASE FAULT		ONE PHASE FAULT	
				/I+/ AN(I+)	/IA/ AN(IA)		
1	[PAN230	230.00]	AMPS	5968.5	-72.38	6386.2	-76.75
2	[PAN115	115.00]	AMPS	11325.0	-73.49	11681.3	-79.39
3	[PANII230	230.00]	AMPS	5885.9	-73.03	6189.5	-77.52
4	[PANII115	115.00]	AMPS	9210.4	-77.21	7133.0	-84.76
5	[CHO230	230.00]	AMPS	4904.2	-72.33	5390.2	-76.29
6	[CHO115	115.00]	AMPS	3970.9	-85.05	0.0	0.00
8	[LSA230	230.00]	AMPS	5503.1	-65.49	5116.9	-68.01
9	[LSA115	115.00]	AMPS	5425.1	-72.54	3976.5	-78.52
11	[M.N230	230.00]	AMPS	7811.3	-55.36	7937.6	-55.71
12	[M.N115	115.00]	AMPS	6120.8	-53.34	3655.0	-43.02
14	[PRO230	230.00]	AMPS	5052.3	-53.88	5350.1	-55.86
15	[PRO115	115.00]	AMPS	3067.9	-60.19	0.0	0.00
18	[CAC115	115.00]	AMPS	11231.0	-73.63	11588.5	-79.31
19	[C.V115	115.00]	AMPS	8293.9	-76.95	5976.0	-82.74
20	[CH.AZUL	115.00]	AMPS	1860.4	-56.68	0.0	0.00
21	[C.BAN115	115.00]	AMPS	9999.3	-74.06	8015.2	-79.01
23	[CH115	115.00]	AMPS	6088.7	-80.11	4366.8	-83.18
26	[LOC115	115.00]	AMPS	10265.1	-73.76	9004.2	-78.13
30	[MAR115	115.00]	AMPS	9206.3	-74.60	7432.4	-79.44
33	[STM115	115.00]	AMPS	10229.6	-74.23	9698.2	-79.82
37	[SAN115	115.00]	AMPS	9553.6	-74.69	7095.5	-80.27
48	[TINAJ115	115.00]	AMPS	8767.7	-76.31	6696.4	-81.79
50	[M.O115	115.00]	AMPS	9287.6	-75.71	7534.0	-81.45
52	[TOC115	115.00]	AMPS	7382.4	-78.85	4587.8	-83.60
54	[LM115	115.00]	AMPS	9863.8	-80.64	12210.0	-83.29
55	[LM2115	115.00]	AMPS	9880.3	-80.83	12225.0	-83.44
61	[FFIELD	115.00]	AMPS	7690.9	-81.61	8155.5	-79.25
85	[PTP230	230.00]	AMPS	4408.2	-54.95	4299.3	-48.70
87	[CAL115	115.00]	AMPS	6255.6	-50.34	8148.7	-49.45
88	[EST115	115.00]	AMPS	5478.0	-48.87	7583.0	-48.95
92	[L.V115	115.00]	AMPS	5959.2	-49.75	8212.2	-49.80
96	[FOR230	230.00]	AMPS	8669.7	-55.99	9894.8	-54.94
100	[BAY230	230.00]	AMPS	4623.6	-78.80	5220.6	-81.84
103	[COPESA23	230.00]	AMPS	5131.0	-75.01	5320.9	-78.98
105	[PAN-AM23	230.00]	AMPS	4869.0	-72.44	5342.2	-76.39
109	[STA RITA115	115.00]	AMPS	9400.8	-80.25	9313.6	-81.47
115	[PACORA23	230.00]	AMPS	4756.6	-76.02	4534.8	-79.48
144	[CANJ230	230.00]	AMPS	7394.0	-56.53	7835.6	-55.38
146	[GUALACA230	230.00]	AMPS	7127.8	-50.76	8119.2	-51.90
147	[GUASQ230	230.00]	AMPS	7772.8	-56.56	8660.7	-55.81
148	[VELADERO 230	230.00]	AMPS	6876.1	-59.64	5587.4	-58.94
154	[CEMPAN15	115.00]	AMPS	6162.8	-81.37	6205.1	-84.85
190	[CHANG230	230.00]	AMPS	4476.4	-53.53	3531.0	-51.17
191	[CHANG115	115.00]	AMPS	2665.0	-59.43	2920.3	-59.20
306	[CHAN1 230	230.00]	AMPS	4430.0	-53.39	5094.9	-50.82
310	[CONCEPCION23	230.00]	AMPS	5743.4	-54.49	4832.6	-54.64
341	[PRUDENCIA230	230.00]	AMPS	5555.2	-38.83	6176.3	-38.63
345	[LORENA230	230.00]	AMPS	6283.3	-44.36	7106.4	-45.10
354	[SANBARTOLO23	230.00]	AMPS	4384.8	-64.31	3664.5	-64.34
370	[LSA CAP 230	230.00]	AMPS	5503.1	-65.49	5116.9	-68.01
511	[LGUIAS230	230.00]	AMPS	3542.6	-70.64	3340.5	-73.27
522	[TCATIVÁ 115	115.00]	AMPS	9882.7	-80.78	12242.8	-83.45
529	[TCOLON 115	115.00]	AMPS	6860.6	-82.30	0.0	0.00
540	[ANTON	230.00]	AMPS	3992.7	-75.42	4949.8	-76.87
700	[BAITUN230	230.00]	AMPS	4395.1	-53.49	4031.6	-53.49

701	[BAITUN115	115.00]	AMPS	2228.1	-53.78	2747.7	-53.44
702	[BJOMIN115	115.00]	AMPS	2090.7	-52.18	2640.6	-52.21
6000	[FRONTER	230.00]	AMPS	4766.6	-53.97	4844.5	-55.60
6400	[FRONTCHA	230.00]	AMPS	4087.9	-53.45	2912.7	-50.42
6500	[FRONTVEL	230.00]	AMPS	3840.5	-55.63	0.0	0.00

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, OCT 19 2010 10:50
 PLAN DE EXPANSION DEL SIN JUNIO-2010 SHORT CIRCUIT
 AÑO 2012 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)	/IA/ AN(IA)	/IA/ AN(IA)	
123	[MIR115	115.00]	AMPS	7446.2	-79.97	7100.6	-83.34

4. Cortocircuito Año 2013

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, OCT 19 2010 10:54
 PLAN DE EXPANSION DEL SIN JUNIO-2010 SHORT CIRCUIT
 AÑO 2013 ESC-MOD DEMANDA-MAX-INVIERNO FAULT CURRENTS
 OUTPUT FOR AREA 6 [PANAMA]

X----- BUS -----X				THREE PHASE FAULT		ONE PHASE FAULT	
				/I+/ AN(I+)	/IA/ AN(IA)		
1	[PAN230	230.00]	AMPS	6426.0	-73.20	6857.3	-77.22
2	[PAN115	115.00]	AMPS	12161.4	-74.25	12268.9	-80.18
3	[PANII230	230.00]	AMPS	6376.2	-73.81	6822.6	-77.67
4	[PANII115	115.00]	AMPS	9805.1	-78.08	7382.6	-85.38
5	[CHO230	230.00]	AMPS	5181.6	-72.99	5614.3	-76.79
6	[CHO115	115.00]	AMPS	4038.8	-85.48	0.0	0.00
8	[LSA230	230.00]	AMPS	5862.5	-65.73	5403.7	-67.90
9	[LSA115	115.00]	AMPS	5557.1	-72.59	4002.1	-78.45
11	[M.N230	230.00]	AMPS	7956.3	-55.10	8061.5	-55.34
12	[M.N115	115.00]	AMPS	6112.0	-52.74	3641.4	-42.37
14	[PRO230	230.00]	AMPS	5736.0	-53.25	5855.2	-55.07
15	[PRO115	115.00]	AMPS	3197.9	-59.03	0.0	0.00
18	[CAC115	115.00]	AMPS	12051.3	-74.39	12165.6	-80.09
19	[C.V115	115.00]	AMPS	8755.9	-77.71	6138.6	-83.23
20	[CH.AZUL	115.00]	AMPS	1913.7	-55.24	0.0	0.00
21	[C.BAN115	115.00]	AMPS	10646.7	-74.79	8287.8	-79.58
23	[CH115	115.00]	AMPS	6361.7	-80.68	4459.4	-83.47
26	[LOC115	115.00]	AMPS	10948.2	-74.48	9350.7	-78.72
30	[MAR115	115.00]	AMPS	9745.4	-75.29	7660.5	-79.98
33	[STM115	115.00]	AMPS	10903.0	-74.96	10095.4	-80.49
37	[SAN115	115.00]	AMPS	10143.6	-75.42	7308.1	-80.81
48	[TINAJ115	115.00]	AMPS	9251.2	-77.06	6877.5	-82.32
50	[M.O115	115.00]	AMPS	9834.3	-76.47	7766.3	-82.03
52	[TOC115	115.00]	AMPS	7754.8	-79.60	4689.0	-83.94
54	[LM1115	115.00]	AMPS	10863.4	-81.56	13213.1	-84.19
55	[LM2115	115.00]	AMPS	10880.1	-81.74	13227.6	-84.33
61	[FFIELD	115.00]	AMPS	8281.4	-82.32	8603.8	-79.55
85	[PTP230	230.00]	AMPS	4474.5	-55.10	4363.9	-48.84
87	[CAL115	115.00]	AMPS	6232.9	-49.60	8115.4	-48.70
88	[EST115	115.00]	AMPS	5451.2	-48.12	7544.2	-48.20
92	[L.V115	115.00]	AMPS	5934.8	-49.00	8176.4	-49.05
96	[FOR230	230.00]	AMPS	8322.8	-55.73	9597.5	-54.73
100	[BAY230	230.00]	AMPS	4875.0	-79.42	5441.2	-82.30
103	[COPESA23	230.00]	AMPS	5487.1	-75.75	5686.1	-79.24
105	[PAN-AM23	230.00]	AMPS	5142.0	-73.10	5561.4	-76.89
109	[STA RITA115	115.00]	AMPS	10218.4	-81.12	9845.1	-82.01
115	[PACORA23	230.00]	AMPS	5142.9	-76.87	4843.6	-79.79
144	[CANJ230	230.00]	AMPS	7374.4	-56.45	7840.6	-55.26
146	[GUALACA230	230.00]	AMPS	7116.3	-50.69	8126.5	-51.75
147	[GUASQ230	230.00]	AMPS	7751.6	-56.48	8667.6	-55.68
148	[VELADERO 230	230.00]	AMPS	7262.9	-59.64	6127.7	-58.88
149	[BBLANCO	230.00]	AMPS	6129.8	-60.12	4796.2	-58.86
154	[CEMPAN15	115.00]	AMPS	6491.0	-81.92	6425.3	-85.26
190	[CHANG230	230.00]	AMPS	4790.7	-54.48	3854.0	-52.49
191	[CHANG115	115.00]	AMPS	3498.5	-58.73	3929.7	-58.67
306	[CHAN1 230	230.00]	AMPS	4625.6	-54.21	5275.7	-51.45
310	[CONCEPCION23	230.00]	AMPS	6186.3	-53.92	5074.2	-53.84
311	[PANDO230	230.00]	AMPS	4628.8	-56.01	3544.3	-57.97
341	[PRUDENCIA230	230.00]	AMPS	5557.3	-38.76	6187.5	-38.48
345	[LORENA230	230.00]	AMPS	6280.6	-44.30	7116.2	-44.95
354	[SANBARTOLO23	230.00]	AMPS	4624.9	-63.98	3822.9	-63.66
370	[LSA CAP 230	230.00]	AMPS	5862.5	-65.73	5403.7	-67.90
371	[CAISAN230	230.00]	AMPS	4950.0	-55.99	3412.5	-56.43
511	[LGUIAS230	230.00]	AMPS	3663.8	-70.89	3407.5	-73.28
522	[TCATIVÁ 115	115.00]	AMPS	10892.7	-81.74	13257.5	-84.38

529	[TCOLON 115	115.00]	AMPS	7289.0	-82.97	0.0	0.00
540	[ANTON	230.00]	AMPS	4504.8	-76.07	5549.7	-77.50
700	[BAITUN230	230.00]	AMPS	4872.8	-52.68	4303.1	-52.35
701	[BAITUN115	115.00]	AMPS	2282.7	-53.06	2807.9	-52.67
702	[BJOMIN115	115.00]	AMPS	2137.5	-51.50	2694.5	-51.50
6000	[FRONTER	230.00]	AMPS	5461.5	-53.44	5318.6	-54.82
6400	[FRONTCHA	230.00]	AMPS	4318.5	-54.37	3119.1	-51.58
6500	[FRONT CAISAN	230.00]	AMPS	4981.5	-55.71	3240.2	-55.85

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, OCT 19 2010 10:54
 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	7720.3	-80.50	7261.6	-83.74

5. Cortocircuito Año 2014

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, OCT 19 2010 10:56
 PLAN DE EXPANSION DEL SIN JUNIO-2010 SHORT CIRCUIT
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO FAULT CURRENTS
 OUTPUT FOR AREA 6 [PANAMA]

X----- BUS -----X				THREE PHASE FAULT		ONE PHASE FAULT	
				/I+/	AN(I+)	/IA/	AN(IA)
1	[PAN230	230.00]	AMPS	6944.8	-72.20	7128.4	-76.76
2	[PAN115	115.00]	AMPS	13014.7	-73.46	12793.8	-79.75
3	[PANII230	230.00]	AMPS	6897.0	-72.68	6975.6	-77.34
4	[PANII115	115.00]	AMPS	10418.3	-77.47	7547.2	-84.95
5	[CHO230	230.00]	AMPS	5502.0	-72.48	5843.4	-76.52
6	[CHO115	115.00]	AMPS	4127.5	-85.23	0.0	0.00
8	[LSA230	230.00]	AMPS	6969.0	-65.77	6173.4	-68.59
9	[LSA115	115.00]	AMPS	6050.0	-73.70	4188.6	-79.67
11	[M.N230	230.00]	AMPS	8276.9	-59.20	8322.4	-59.62
12	[M.N115	115.00]	AMPS	6242.7	-57.01	3707.8	-46.66
14	[PRO230	230.00]	AMPS	5761.2	-56.69	5894.3	-58.62
15	[PRO115	115.00]	AMPS	3228.1	-62.72	0.0	0.00
18	[CAC115	115.00]	AMPS	12883.4	-73.61	12678.3	-79.66
19	[C.V115	115.00]	AMPS	9214.7	-77.11	6244.1	-82.77
20	[CH.AZUL	115.00]	AMPS	1932.9	-58.98	0.0	0.00
21	[C.BAN115	115.00]	AMPS	11298.6	-74.06	8507.4	-79.12
23	[CH115	115.00]	AMPS	6578.5	-80.18	4524.7	-82.97
26	[LOC115	115.00]	AMPS	11637.6	-73.73	9639.8	-78.24
30	[MAR115	115.00]	AMPS	10278.3	-74.60	7845.2	-79.52
33	[STM115	115.00]	AMPS	11579.0	-74.24	10439.5	-80.05
37	[SAN115	115.00]	AMPS	10735.2	-74.74	7471.5	-80.39
48	[TINAJ115	115.00]	AMPS	9727.3	-76.47	7025.0	-81.88
50	[M.O115	115.00]	AMPS	10377.1	-75.84	7959.5	-81.60
52	[TOC115	115.00]	AMPS	8117.7	-79.04	4739.8	-83.37
54	[LM1115	115.00]	AMPS	11548.4	-81.15	13887.9	-83.84
55	[LM2115	115.00]	AMPS	11564.8	-81.32	13902.2	-83.98
61	[FFIELD	115.00]	AMPS	8677.1	-81.87	8895.4	-78.94
85	[PTP230	230.00]	AMPS	4652.4	-59.68	4493.9	-53.60
87	[CAL115	115.00]	AMPS	6372.5	-53.76	8292.0	-52.86
88	[EST115	115.00]	AMPS	5569.5	-52.26	7705.9	-52.35
92	[L.V115	115.00]	AMPS	6066.0	-53.16	8354.4	-53.21
96	[FOR230	230.00]	AMPS	8724.4	-60.26	9988.5	-59.46
100	[BAY230	230.00]	AMPS	5048.2	-78.66	5578.8	-81.67
103	[COPESA23	230.00]	AMPS	5838.2	-74.78	5834.9	-78.74
105	[PAN-AM23	230.00]	AMPS	5457.3	-72.60	5786.4	-76.62
109	[STA RITA115	115.00]	AMPS	10813.7	-80.70	10210.7	-81.51
115	[PACORA23	230.00]	AMPS	5330.3	-75.81	4886.7	-79.12
144	[CANJ230	230.00]	AMPS	8000.4	-60.97	8344.3	-60.24
146	[GUALACA230	230.00]	AMPS	7617.9	-54.56	8597.7	-56.23
147	[GUASQ230	230.00]	AMPS	8440.3	-60.87	9272.0	-60.52
148	[VELADERO 230	230.00]	AMPS	8296.4	-62.21	6682.1	-61.94
149	[BBLANCO	230.00]	AMPS	6850.5	-62.80	5144.6	-61.86
154	[CEMPAN15	115.00]	AMPS	6726.2	-81.43	6579.8	-84.78
190	[CHANG230	230.00]	AMPS	4843.4	-57.71	3894.7	-55.95
191	[CHANG115	115.00]	AMPS	3372.7	-62.86	3830.0	-62.87
306	[CHAN1 230	230.00]	AMPS	4694.2	-57.83	5347.9	-55.16
310	[CONCEPCION23	230.00]	AMPS	6306.1	-57.78	5158.2	-57.87
311	[PANDO230	230.00]	AMPS	4704.2	-58.51	3591.7	-60.56
341	[PRUDENCIA230	230.00]	AMPS	5809.4	-42.67	6419.3	-42.97
345	[LORENA230	230.00]	AMPS	6626.9	-48.12	7442.4	-49.38
354	[SANBARTOLO23	230.00]	AMPS	6274.3	-63.72	4533.0	-65.00
370	[LSA CAP 230	230.00]	AMPS	6969.0	-65.77	6173.4	-68.59
371	[CAISAN230	230.00]	AMPS	5035.7	-58.49	3459.0	-59.03
511	[LGUIAS230	230.00]	AMPS	3916.1	-71.02	3563.2	-73.52
522	[TCATIVÁ 115	115.00]	AMPS	11582.9	-81.34	13938.5	-84.05

529	[TCOLON 115	115.00]	AMPS	7590.3	-82.53	0.0	0.00
540	[ANTON	230.00]	AMPS	4342.0	-75.62	5295.1	-76.99
700	[BAITUN230	230.00]	AMPS	4900.0	-56.25	4336.5	-56.03
701	[BAITUN115	115.00]	AMPS	2304.6	-56.78	2835.2	-56.40
702	[BJOMIN115	115.00]	AMPS	2158.2	-55.22	2720.8	-55.23
6000	[FRONTER	230.00]	AMPS	5498.5	-56.61	5362.7	-58.09
6400	[FRONTCHA	230.00]	AMPS	4361.8	-57.13	3149.3	-54.53
6500	[FRONT CAISAN	230.00]	AMPS	5062.5	-58.18	3282.2	-58.42

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E	TUE, OCT 19 2010 10:56
PLAN DE EXPANSION DEL SIN JUNIO-2010	SHORT CIRCUIT
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO	FAULT CURRENTS
OUTPUT FOR AREA 7 [ACANAL]

X----- BUS -----X	THREE PHASE FAULT	ONE PHASE FAULT
	/I+/ AN(I+)	/IA/ AN(IA)
123 [MIR115 115.00] AMPS	7974.2 -79.95	7394.6 -83.25

6. Cortocircuito Año 2017

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, OCT 19 2010 10:58
 PLAN DE EXPANSION DEL SIN JUNIO-2010 SHORT CIRCUIT
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO FAULT CURRENTS
 OUTPUT FOR AREA 6 [PANAMA]

X----- BUS -----X				THREE PHASE FAULT		ONE PHASE FAULT	
				/I+/	AN(I+)	/IA/	AN(IA)
1	[PAN230	230.00]	AMPS	7981.9	-73.69	8100.6	-78.26
2	[PAN115	115.00]	AMPS	14585.7	-75.37	13859.1	-82.27
3	[PANII230	230.00]	AMPS	7872.0	-74.34	7681.4	-79.23
4	[PANII115	115.00]	AMPS	12220.5	-78.81	9328.1	-86.65
5	[CHO230	230.00]	AMPS	6056.6	-74.38	6200.5	-78.64
6	[CHO115	115.00]	AMPS	4268.5	-87.55	0.0	0.00
8	[LSA230	230.00]	AMPS	7927.1	-67.33	6983.5	-69.50
9	[LSA115	115.00]	AMPS	6423.8	-75.62	4335.9	-81.75
11	[M.N230	230.00]	AMPS	8864.1	-60.93	8723.1	-61.46
12	[M.N115	115.00]	AMPS	6621.1	-58.91	3826.9	-48.42
14	[PRO230	230.00]	AMPS	6061.7	-57.58	6095.1	-59.56
15	[PRO115	115.00]	AMPS	3266.8	-63.66	0.0	0.00
18	[CAC115	115.00]	AMPS	14409.8	-75.54	13716.0	-82.17
19	[C.V115	115.00]	AMPS	10296.8	-78.87	6938.8	-84.59
20	[CH.AZUL	115.00]	AMPS	1944.7	-59.84	0.0	0.00
21	[C.BAN115	115.00]	AMPS	12490.8	-76.02	9056.3	-81.62
23	[CH115	115.00]	AMPS	6918.7	-82.87	4625.1	-85.80
26	[LOC115	115.00]	AMPS	12897.7	-75.66	10289.1	-80.70
30	[MAR115	115.00]	AMPS	11243.2	-76.72	8252.6	-82.12
33	[STM115	115.00]	AMPS	12811.5	-76.30	11140.1	-82.61
37	[SAN115	115.00]	AMPS	11821.9	-76.76	7958.7	-82.88
48	[TINAJ115	115.00]	AMPS	10587.9	-78.81	7336.7	-84.54
50	[M.O115	115.00]	AMPS	11361.0	-78.11	8361.7	-84.26
52	[TOC115	115.00]	AMPS	9170.9	-80.68	5382.2	-84.88
54	[LM115	115.00]	AMPS	12521.3	-83.95	14798.1	-86.80
55	[LM2115	115.00]	AMPS	12548.5	-84.18	14821.7	-86.98
61	[FFIELD	115.00]	AMPS	9202.4	-84.66	9240.4	-81.61
85	[PTP230	230.00]	AMPS	5081.6	-60.97	5050.2	-55.29
87	[CAL115	115.00]	AMPS	7000.7	-55.94	9127.1	-55.14
88	[EST115	115.00]	AMPS	6005.4	-54.31	8268.7	-54.40
92	[L.V115	115.00]	AMPS	6616.1	-55.27	9076.1	-55.30
96	[FOR230	230.00]	AMPS	9682.5	-62.25	11100.8	-61.52
100	[BAY230	230.00]	AMPS	5428.7	-80.32	5870.4	-83.39
103	[COPESA23	230.00]	AMPS	6493.6	-76.67	6277.2	-80.77
105	[PAN-AM23	230.00]	AMPS	6002.5	-74.51	6137.2	-78.75
109	[STA RITA115	115.00]	AMPS	11721.4	-83.45	10736.0	-84.22
115	[PACORA23	230.00]	AMPS	6089.7	-78.01	5303.1	-81.17
144	[CANJ230	230.00]	AMPS	8990.6	-62.80	9511.9	-61.95
146	[GUALACA230	230.00]	AMPS	8403.8	-55.00	9637.0	-56.30
147	[GUASQ230	230.00]	AMPS	9557.9	-62.68	10743.0	-62.22
148	[VELADERO 230	230.00]	AMPS	9110.0	-63.90	7089.1	-63.40
149	[BBLANCO	230.00]	AMPS	7427.7	-64.48	5404.3	-63.28
154	[CEMPAN15	115.00]	AMPS	8009.6	-84.97	7355.7	-88.01
155	[TABASARAI23	230.00]	AMPS	6328.0	-64.31	5240.8	-63.76
190	[CHANG230	230.00]	AMPS	5446.6	-58.26	5162.8	-57.57
191	[CHANG115	115.00]	AMPS	3486.4	-63.01	4036.5	-63.33
306	[CHAN1 230	230.00]	AMPS	5123.2	-58.55	5759.4	-55.52
310	[CONCEPCION23	230.00]	AMPS	6636.9	-59.17	5300.1	-59.30
311	[PANDO230	230.00]	AMPS	5029.1	-58.73	3708.8	-60.65
341	[PRUDENCIA230	230.00]	AMPS	6068.2	-41.63	6765.8	-41.73
345	[LORENA230	230.00]	AMPS	7049.3	-47.14	8012.6	-48.14
354	[SANBARTOLO23	230.00]	AMPS	6772.0	-65.40	4752.0	-66.47
370	[LSA CAP 230	230.00]	AMPS	7927.1	-67.33	6983.5	-69.50
371	[CAISAN230	230.00]	AMPS	5361.5	-58.78	3553.7	-59.15
506	[CHAN2 230	230.00]	AMPS	5054.8	-58.78	5619.2	-59.44

511	[LGUIAS230	230.00]	AMPS	5620.0	-71.42	4676.6	-73.86
522	[TCATIVÁ 115	115.00]	AMPS	12558.8	-84.16	14852.6	-87.02
529	[TCOLON 115	115.00]	AMPS	8017.1	-85.35	0.0	0.00
540	[ANTON	230.00]	AMPS	7067.1	-70.83	8026.7	-74.71
700	[BAITUN230	230.00]	AMPS	5098.8	-57.15	4434.3	-56.91
701	[BAITUN115	115.00]	AMPS	2320.5	-58.43	2851.8	-58.04
702	[BJOMIN115	115.00]	AMPS	2171.0	-56.96	2734.7	-56.96
6000	[FRONTER	230.00]	AMPS	5765.9	-57.34	5524.1	-58.85
6400	[FRONTCHA	230.00]	AMPS	4779.8	-57.43	3904.1	-55.39
6500	[FRONT CAISAN230.00]		AMPS	5371.5	-58.47	3361.6	-58.55

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, OCT 19 2010 10:58
 PLAN DE EXPANSION DEL SIN JUNIO-2010 SHORT CIRCUIT
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO FAULT CURRENTS
 OUTPUT FOR AREA 7 [ACANAL]

		THREE PHASE FAULT		ONE PHASE FAULT	
X-----	BUS -----X	/I+/ AN(I+)	AN(I+)	/IA/ AN(IA)	AN(IA)
123	[MIR115 115.00]	AMPS	8423.0 -82.44	7656.5 -85.86	

7. Cortocircuito Año 2020

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, OCT 19 2010 11:01
 PLAN DE EXPANSION DEL SIN JUNIO-2010 SHORT CIRCUIT
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO FAULT CURRENTS
 OUTPUT FOR AREA 6 [PANAMA]

X----- BUS -----X				THREE PHASE FAULT		ONE PHASE FAULT	
				/I+/ AN(I+)	/IA/ AN(IA)		
1	[PAN230	230.00]	AMPS	9029.3	-75.59	8935.1	-80.67
2	[PAN115	115.00]	AMPS	15836.7	-77.40	14805.7	-84.88
3	[PANII230	230.00]	AMPS	9096.8	-76.14	8726.0	-81.40
4	[PANII115	115.00]	AMPS	12168.2	-82.02	9061.5	-90.47
5	[CHO230	230.00]	AMPS	6507.8	-77.04	6516.1	-81.69
6	[CHO115	115.00]	AMPS	4366.8	-91.00	0.0	0.00
8	[LSA230	230.00]	AMPS	7902.9	-70.31	6978.0	-72.68
9	[LSA115	115.00]	AMPS	6437.6	-78.62	4337.5	-85.43
11	[M.N230	230.00]	AMPS	9221.3	-60.46	8949.8	-60.93
12	[M.N115	115.00]	AMPS	6676.7	-57.95	3846.9	-47.38
14	[PRO230	230.00]	AMPS	6211.3	-57.44	6203.8	-59.44
15	[PRO115	115.00]	AMPS	3298.3	-63.51	0.0	0.00
18	[CAC115	115.00]	AMPS	15630.5	-77.59	14649.3	-84.79
19	[C.V115	115.00]	AMPS	10543.0	-81.77	6946.8	-88.23
20	[CH.AZUL	115.00]	AMPS	1959.3	-59.66	0.0	0.00
21	[C.BAN115	115.00]	AMPS	13376.6	-78.22	9377.7	-84.75
23	[CH115	115.00]	AMPS	7132.3	-85.24	4680.6	-88.49
26	[LOC115	115.00]	AMPS	13853.7	-77.79	10743.8	-83.61
30	[MAR115	115.00]	AMPS	11962.9	-79.16	8530.4	-85.30
33	[STM115	115.00]	AMPS	13759.0	-78.60	11719.7	-85.46
37	[SAN115	115.00]	AMPS	12591.0	-79.11	8172.4	-86.25
48	[TINAJ115	115.00]	AMPS	11216.9	-81.53	7556.7	-87.80
50	[M.O115	115.00]	AMPS	12095.5	-80.70	8662.4	-87.43
52	[TOC115	115.00]	AMPS	9149.7	-83.86	5294.5	-88.60
54	[LM1115	115.00]	AMPS	13878.3	-85.18	16546.5	-87.76
55	[LM2115	115.00]	AMPS	13797.9	-85.10	16437.4	-87.64
61	[FFIELD	115.00]	AMPS	9871.4	-86.05	9818.0	-82.46
85	[PTP230	230.00]	AMPS	5151.0	-60.06	5099.2	-54.20
87	[CAL115	115.00]	AMPS	7058.6	-54.83	9199.1	-54.03
88	[EST115	115.00]	AMPS	6054.3	-53.17	8334.5	-53.26
92	[L.V115	115.00]	AMPS	6670.4	-54.14	9148.6	-54.18
96	[FOR230	230.00]	AMPS	10007.4	-61.71	11385.2	-60.78
100	[BAY230	230.00]	AMPS	5748.1	-81.75	6136.0	-85.05
103	[COPESA23	230.00]	AMPS	7244.5	-78.82	6841.2	-83.18
105	[PAN-AM23	230.00]	AMPS	6445.3	-77.19	6445.7	-81.80
109	[STA RITA115	115.00]	AMPS	14379.8	-84.84	16033.9	-87.39
115	[PACORA23	230.00]	AMPS	6416.1	-79.89	5534.9	-83.46
144	[CANJ230	230.00]	AMPS	9164.5	-62.39	9637.3	-61.16
146	[GUALACA230	230.00]	AMPS	8686.1	-55.03	9877.5	-55.94
147	[GUASQ230	230.00]	AMPS	9758.4	-62.36	10907.1	-61.56
148	[VELADERO 230	230.00]	AMPS	8894.0	-65.20	6995.3	-64.21
149	[BBLANCO	230.00]	AMPS	7343.2	-65.68	5368.3	-64.15
154	[CEMPAN15	115.00]	AMPS	7305.4	-86.07	6917.0	-89.65
155	[TABASARAI23	230.00]	AMPS	6324.2	-65.35	5236.7	-64.40
190	[CHANG230	230.00]	AMPS	5576.2	-57.77	5271.6	-57.03
191	[CHANG115	115.00]	AMPS	3682.1	-61.84	4277.1	-62.19
306	[CHAN1 230	230.00]	AMPS	5229.0	-57.70	5857.8	-54.58
310	[CONCEPCION23	230.00]	AMPS	6811.6	-58.79	5379.6	-58.88
311	[PANDO230	230.00]	AMPS	5236.1	-59.05	3783.7	-60.86
325	[STA RITA230	230.00]	AMPS	8368.0	-82.84	10285.2	-85.28
341	[PRUDENCIA230	230.00]	AMPS	6366.3	-41.74	7016.8	-41.32
345	[LORENA230	230.00]	AMPS	7386.5	-47.60	8301.0	-48.06
354	[SANBARTOLO23	230.00]	AMPS	5344.7	-69.84	4219.7	-69.23
370	[LSA CAP 230	230.00]	AMPS	7902.9	-70.31	6978.0	-72.68
371	[CAISAN230	230.00]	AMPS	5561.0	-59.15	3613.2	-59.39

