

**ANEXO 27**  
**RESULTADOS DE FLUJOS DE POTENCIA**  
**CONSIDERANDO INTERCAMBIOS**  
**CON C.A. Y COLOMBIA**

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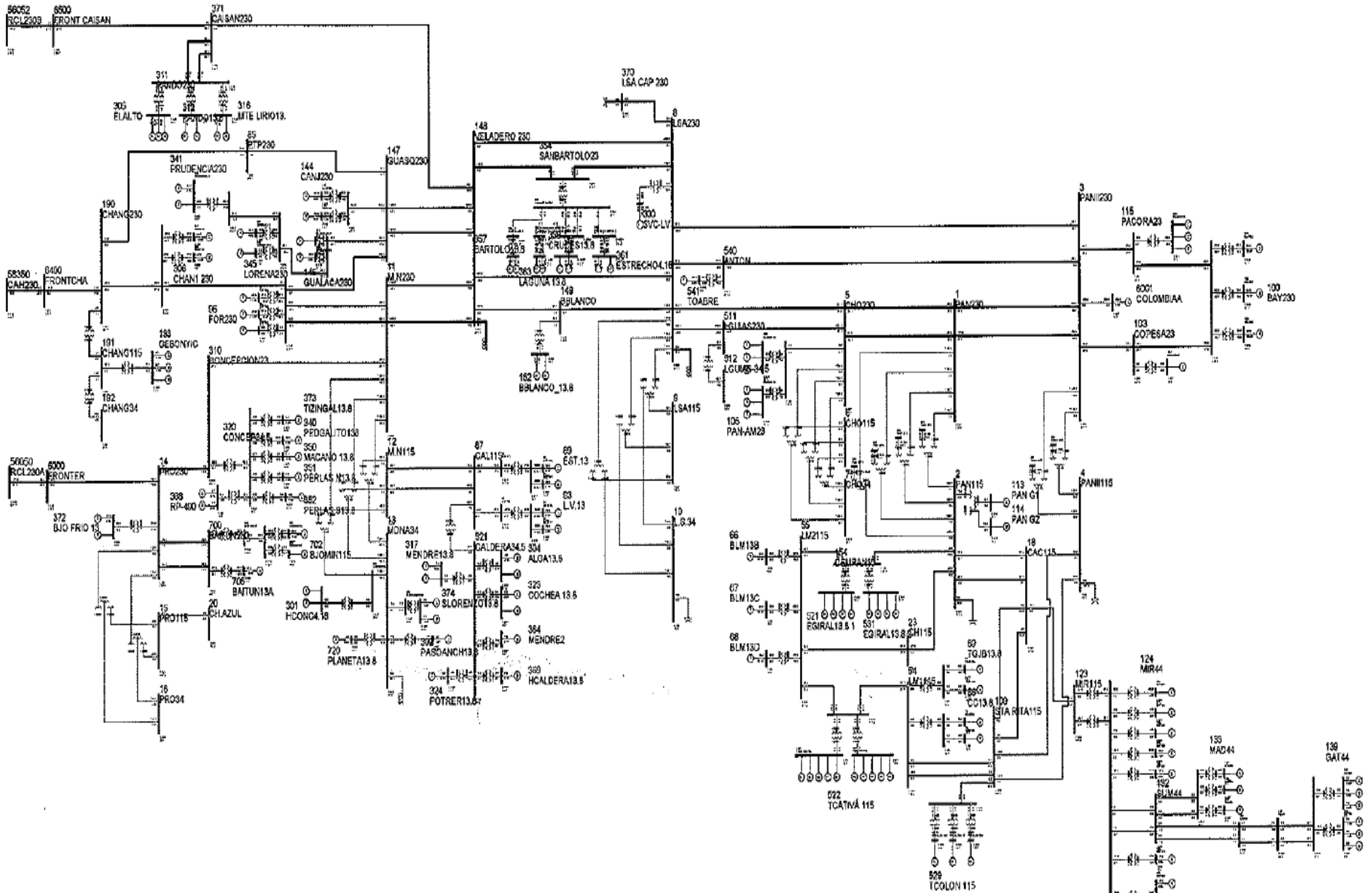
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# 1. AÑO 2014

## 1.1. Demanda Máxima de 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	19.3	25.0	0.0	1.0100	42.2	0.8921	47.0			62	6
67		BLM13C		13.800	V3	38.0	19.3	25.0	0.0	1.0100	42.2	0.8921	47.0			62	6
68		BLM13D		13.800	V4	38.0	20.1	25.0	0.0	1.0100	42.6	0.8841	47.0			62	6
90		EST-13L		13.800	E1	20.9	5.1	12.0	-5.0	0.9900	21.7	0.9717	27.0			64	6
91		EST-13T		13.800	E2	20.9	5.1	12.0	-5.0	0.9900	21.7	0.9717	27.0			64	6
94		LV-13.8L		13.800	L1	23.5	5.8	12.0	-5.0	0.9900	24.4	0.9707	27.0			64	6
95		LV-13.8T		13.800	L2	23.5	5.8	12.0	-5.0	0.9900	24.4	0.9707	27.0			64	6
97		FOR13A		13.800	F1	87.8	-11.4	50.0	-50.0	0.9900	89.4	0.9917	111.0			64	6
98		FOR13B		13.800	F2	87.8	-11.4	50.0	-50.0	0.9900	89.4	0.9917	111.0			64	6
101		BAY13A		13.800	B1	53.2	16.6	50.0	-25.0	1.0000	55.7	0.9545	96.0			61	6
102		BAY13B		13.800	B2	53.0	16.6	50.0	-25.0	1.0000	55.6	0.9543	96.0			61	6
108		BAY13C		13.800	B3	53.0	16.6	50.0	-25.0	1.0000	55.6	0.9543	100.0			61	6
142		CANJ13A		13.800	C1	52.0	14.0	29.0	-29.0	0.9900	54.4	0.9654	69.0			64	6
143		CANJ13B		13.800	C2	52.0	14.0	29.0	-29.0	0.9900	54.4	0.9654	69.0			64	6
150		GUALACA	13-213.800	G2		12.9	-4.2	7.4	-7.4	0.9900	13.7	0.9499	14.8			64	6
152		BBLANCO	13.813.800	G1		12.5	-1.3	7.0	-7.0	0.9900	12.7	0.9949	16.0			64	6
193		GEBONYIC	13.800	G1		8.7	-1.5	4.0	-4.0	0.9900	8.9	0.9862	35.3			64	6
193		GEBONYIC	13.800	G2		8.7	-1.5	4.0	-4.0	0.9900	8.9	0.9862	35.3			64	6
300		SVC-LV	13.200	1		0.0	-20.2	300.0	-225.0	0.9859	20.5	0.0000	250.0			63	6
302		PASOANCH	13.813.800	P1		4.8	2.0	2.0	-2.0	0.9565	5.4	0.9216	6.2			64	6
304		ALGA13.8	13.800	A1		4.6	-2.3	2.3	-2.3	1.0900	4.7	0.8981	5.7			64	6
305		ELALTO	13.800	G1		17.4	-5.0	12.0	-5.0	1.0290	17.6	0.9611	20.6			64	6
305		ELALTO	13.800	G2		17.4	-5.0	12.0	-5.0	1.0290	17.6	0.9611	20.6			64	6
307		CHAN1 A	13.800	G1		61.0	-16.0	50.0	-50.0	0.9900	63.7	0.9674	118.6			64	6
308		CHAN1 B	13.800	G2		61.0	-16.0	50.0	-50.0	0.9900	63.7	0.9674	118.6			64	6
312		PANDO13.8	13.800	G1		9.0	-5.0	10.0	-5.0	1.0121	10.2	0.8742	19.9			64	6
316		MTE LIRIO	13.13.800	G1		17.0	-5.0	12.0	-5.0	1.0318	17.2	0.9594	27.0			64	6
317		MENDRE13.8	13.800	M1		8.6	0.0	0.0	0.0	1.0913	7.9	1.0000	35.3			64	6
323		COCHEA	13.8 13.800	C1		5.5	0.0	0.0	0.0	1.0913	5.0	1.0000	35.3			64	6
324		POTRER13.8	13.800	P1		4.0	0.1	2.0	-2.0	0.9900	4.0	0.9997	6.2			64	6
340		PEDGALITO	13813.800	P1		20.9	6.0	12.0	-5.0	0.9900	21.9	0.9614	27.0			64	6
342		LORENA13.8	13.800	L1		12.0	-5.0	10.5	-5.0	0.9947	13.1	0.9229	19.9			64	6
343		PRUDENCIA_1	13.800	G1		24.4	-9.8	9.8	-9.8	0.9927	26.4*	0.9283	33.0			64	6
350		MACANO	13.8 13.800	G1		3.1	-1.0	1.0	-1.0	1.0774	3.0	0.9514	6.2			64	6
351		PERLAS N13.813.800	G1			9.0	5.0	5.0	-5.0	0.9813	10.5	0.8742	13.5			64	6
352		PERLAS S13.813.800	G1			9.0	5.0	5.0	-5.0	0.9813	10.5	0.8742	13.5			64	6
357		BARTOLO13.8	13.800	G1		7.2	0.6	3.7	-3.7	0.9900	7.3	0.9969	8.5			64	6
359		CRUCES13.8	13.800	G1		4.6	0.0	2.3	-2.3	0.9900	4.6	1.0000	5.6			64	6

361	ESTRECHO	4.164.1600	G1	4.9	-0.1	2.5	-2.5	0.9900	5.0	0.9996	5.6	64	6
363	LAGUNA	13.8 13.800	G1	4.7	-0.3	2.4	-2.4	0.9900	4.7	0.9975	5.8	64	6
364	MENDRE2	13.800	G1	7.6	0.1	3.9	-3.9	0.9900	7.7	0.9999	8.9	64	6
368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	0.9961	5.3	0.8906	5.5	64	6
368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	0.9961	5.3	0.8906	5.5	64	6
369	HCALDERA	13.813.800	G1	3.8	0.1	1.9	-1.9	0.9900	3.8	0.9996	4.3	64	6
372	BJO FRIO	13 13.800	G1	24.4	-9.8	9.8	-9.8	1.0046	26.1	0.9283	33.0	64	6
373	TIZINGAL	13.813.800	G1	4.4	2.2	2.2	-2.2	0.9796	5.1	0.8909	21.6	64	6
374	SLORENZO	13.813.800	G1	3.9	-1.3	2.0	-2.0	0.9900	4.1	0.9468	4.5	64	6
374	SLORENZO	13.813.800	G2	3.9	-1.3	2.0	-2.0	0.9900	4.1	0.9468	4.5	64	6
541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0152	29.6	1.0000	88.9	64	6
703	BJOMIN	13A 13.800	G1	24.4	-0.8	13.0	-13.0	0.9900	24.6	0.9994	30.5	64	6
705	BAITUN	13A 13.800	G1	37.4	-12.5	26.6	-26.6	0.9900	39.8	0.9483	50.6	64	6
720	PLANETA	13.8 13.800	G1	4.5	2.0	2.0	-2.0	0.9565	5.2	0.9145	6.2	64	6
SUBSYSTEM TOTALS				1147.9	29.0	1028.1	-736.6				2069.3		

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:02  
 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	22.2	1.0	15.0	0.0	1.0000	22.2	0.9990	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0136	16.9	1.0000	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9557	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9557	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9557	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9448	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9448	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9448	6.2			65	7
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0280	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						107.7	15.7	71.5	5.5				171.3				

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

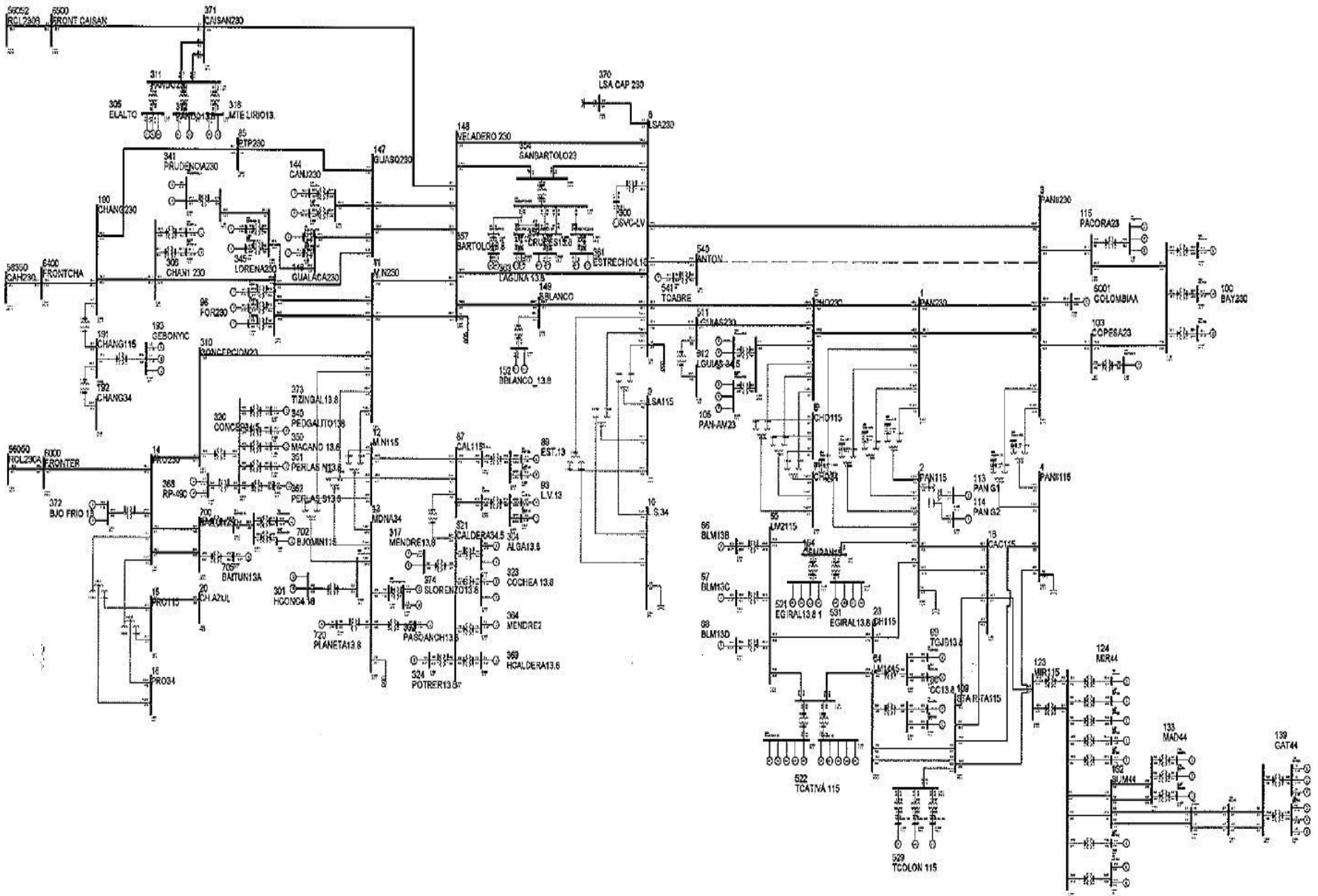
TUE, MAY 25 2010 9:02

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		1227.8	1330.8	0.0	0.0	0.0	-151.7	48.7	-153.6
GUATEMAL		251.9	275.1	-192.4	0.0	272.2	17.6	423.9	
2		871.7	855.0	0.0	0.0	0.0	-0.5	17.2	0.0
SALVADOR		97.6	224.2	-70.4	0.0	227.4	-21.4	192.7	
3		1238.5	1203.0	0.0	0.0	0.0	-0.3	35.8	0.0
HONDURAS		480.8	321.1	-47.0	0.0	292.0	53.9	444.8	
4		534.1	525.2	0.0	0.0	0.0	-0.3	9.1	0.0
NICARAGU		49.5	207.6	-57.3	0.0	180.8	-49.4	129.4	
5		1299.9	1280.2	0.0	0.0	0.0	-0.4	20.2	0.0
COSTA RI		216.6	520.4	-230.0	0.0	417.6	33.0	310.7	
6		1147.9	1311.1	0.0	0.0	0.0	-206.8	43.6	-206.4
PANAMA		29.0	266.2	-150.7	0.0	537.3	-28.6	479.4	
7		107.7	47.0	0.0	0.0	0.0	59.9	0.8	60.0
ACANAL		15.7	9.5	0.0	0.0	0.0	-5.0	11.2	
10		300.0	0.0	0.0	0.0	0.0	300.0	0.0	300.0
COLOMBIA		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS		6727.6	6552.2	0.0	0.0	0.0	0.0	175.3	0.0
		1141.1	1824.0	-747.7	0.0	1927.3	0.0	1992.0	



### 1.1.1 Contingencia Antón – Panamá II



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:27  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT ANT-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0021	230.48	14		PRO230		230.00	6	1.0191	234.40
85		PTP230		230.00	6	1.0057	231.32	96		FOR230		230.00	6	1.0033	230.77
100		BAY230		230.00	6	1.0239	235.49	103		COPESA23		230.00	6	1.0011	230.25
115		PACORA23		230.00	6	1.0037	230.86	144		CANJ230		230.00	6	1.0026	230.60
146		GUALACA230		230.00	6	1.0046	231.06	147		GUASQ230		230.00	6	1.0025	230.58
190		CHANG230		230.00	6	1.0091	232.09	306		CHAN1 230		230.00	6	1.0071	231.64
310		CONCEPCION23		230.00	6	1.0131	233.02	311		PANDO230		230.00	6	1.0396	239.11
341		PRUDENCIA230		230.00	6	1.0078	231.79	345		LORENA230		230.00	6	1.0066	231.52
371		CAISAN230		230.00	6	1.0382	238.79	540		ANTON		230.00	6	1.0061	231.40
700		BAITUN230		230.00	6	1.0185	234.26	6000		FRONTER		230.00	6	1.0222	235.10
6400		FRONTCHA		230.00	6	1.0109	232.50	6500		FRONT CAISAN		230.00	6	1.0369	238.49

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	0.9875	227.12	3		PANII230		230.00	6	0.9966	229.21
5		CHO230		230.00	6	0.9823	225.94	8		LSA230		230.00	6	0.9900	227.70
105		PAN-AM23		230.00	6	0.9823	225.94	148		VELADERO 230		230.00	6	0.9975	229.41
149		BBLANCO		230.00	6	0.9962	229.12	354		SANBARTOLO23		230.00	6	0.9947	228.78
370		LSA CAP 230		230.00	6	0.9900	227.70	511		LGUIAS230		230.00	6	0.9823	225.92



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 14:34  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT ANT-PANII

AREA 6 [PANAMA ] MACHINE SUMMARY:																
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	66	BLM13B		13.800	V2	38.0	22.2	25.0	0.0	1.0100	43.6	0.8640	47.0			62
6	67	BLM13C		13.800	V3	38.0	22.2	25.0	0.0	1.0100	43.6	0.8640	47.0			62
6	68	BLM13D		13.800	V4	38.0	23.1	25.0	0.0	1.0100	44.1	0.8542	47.0			62
6	90	EST-13L		13.800	E1	20.9	5.5	12.0	-5.0	0.9900	21.8	0.9673	27.0			64
6	91	EST-13T		13.800	E2	20.9	5.5	12.0	-5.0	0.9900	21.8	0.9673	27.0			64
6	94	LV-13.8L		13.800	L1	23.5	6.3	12.0	-5.0	0.9900	24.6	0.9664	27.0			64
6	95	LV-13.8T		13.800	L2	23.5	6.3	12.0	-5.0	0.9900	24.6	0.9664	27.0			64
6	97	FOR13A		13.800	F1	87.9	-7.7	50.0	-50.0	0.9900	89.1	0.9962	111.0			64
6	98	FOR13B		13.800	F2	87.9	-7.7	50.0	-50.0	0.9900	89.1	0.9962	111.0			64
6	101	BAY13A		13.800	B1	53.5	21.3	50.0	-25.0	1.0000	57.6	0.9289	96.0			61
SYST																
6	102	BAY13B		13.800	B2	53.1	21.3	50.0	-25.0	1.0000	57.2	0.9281	96.0			61
6	108	BAY13C		13.800	B3	53.1	21.3	50.0	-25.0	1.0000	57.2	0.9281	100.0			61
6	142	CANJ13A		13.800	C1	52.1	14.7	29.0	-29.0	0.9900	54.6	0.9623	69.0			64
6	143	CANJ13B		13.800	C2	52.1	14.7	29.0	-29.0	0.9900	54.6	0.9623	69.0			64
6	150	GUALACA	13-213	13.800	G2	12.9	-3.3	7.4	-7.4	0.9900	13.4	0.9691	14.8			64
6	152	BBLANCO_13.8	13.813	13.800	G1	12.6	-0.5	7.0	-7.0	0.9900	12.7	0.9992	16.0			64
6	193	GEBONYIC		13.800	G1	8.7	-1.3	4.0	-4.0	0.9900	8.9	0.9898	35.3			64
6	193	GEBONYIC		13.800	G2	8.7	-1.3	4.0	-4.0	0.9900	8.9	0.9898	35.3			64
6	300	SVC-LV		13.200	1	0.1	57.8	300.0	-225.0	1.0710	54.0	0.0023	250.0			63
6	302	PASOANCH13.8	13.813	13.800	P1	4.8	2.0	2.0	-2.0	0.9431	5.5	0.9218	6.2			64

6	304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0899	4.7	0.8981	5.7	64
6	305	ELALTO	13.800	G1	17.4	-5.0	12.0	-5.0	1.0249	17.7	0.9612	20.6	64
6	305	ELALTO	13.800	G2	17.4	-5.0	12.0	-5.0	1.0249	17.7	0.9612	20.6	64
6	307	CHAN1 A	13.800	G1	61.1	-14.4	50.0	-50.0	0.9900	63.4	0.9734	118.6	64
6	308	CHAN1 B	13.800	G2	61.1	-14.4	50.0	-50.0	0.9900	63.4	0.9734	118.6	64
6	312	PANDO13.8	13.800	G1	9.0	-5.0	10.0	-5.0	1.0079	10.2	0.8746	19.9	64
6	316	MTE LIRIO13.13.800	13.800	G1	17.0	-5.0	12.0	-5.0	1.0277	17.2	0.9594	27.0	64
6	317	MENDRE13.8	13.800	M1	8.6	0.0	0.0	0.0	1.0911	7.9	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	324	POTRER13.8	13.800	P1	4.0	0.3	2.0	-2.0	0.9900	4.0	0.9968	6.2	64
6	340	PEDGALITO13813.800	13.800	P1	20.9	7.1	12.0	-5.0	0.9900	22.3	0.9466	27.0	64
6	342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	0.9908	13.1	0.9231	19.9	64
6	343	PRUDENCIA_1	13.800	G1	24.4	-9.1	9.8	-9.8	0.9900	26.3	0.9364	33.0	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0747	3.0	0.9516	6.2	64
6	351	PERLAS N13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9789	10.5	0.8744	13.5	64
6	352	PERLAS S13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9789	10.5	0.8744	13.5	64
6	357	BARTOLO13.8	13.800	G1	7.3	0.8	3.7	-3.7	0.9900	7.4	0.9943	8.5	64
6	359	CRUCES13.8	13.800	G1	4.6	0.1	2.3	-2.3	0.9900	4.6	0.9997	5.6	64
6	361	ESTRECHO4.164.1600	13.800	G1	4.9	0.0	2.5	-2.5	0.9900	5.0	1.0000	5.6	64
6	363	LAGUNA 13.8	13.800	G1	4.7	-0.2	2.4	-2.4	0.9900	4.7	0.9989	5.8	64
6	364	MENDRE2	13.800	G1	7.6	0.3	3.9	-3.9	0.9900	7.7	0.9991	8.9	64
6	368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	0.9935	5.3	0.8906	5.5	64
6	368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	0.9935	5.3	0.8906	5.5	64
6	369	HCALDERA13.813.800	13.800	G1	3.8	0.3	1.9	-1.9	0.9900	3.9	0.9965	4.3	64

6	372	BJO FRIO 13	13.800	G1	24.4	-9.8	9.8	-9.8	1.0004	26.3	0.9284	33.0	64
6	373	TIZINGAL13.813	13.800	G1	4.4	2.2	2.2	-2.2	0.9772	5.1	0.8917	21.6	64
6	374	SLORENZO13.813	13.800	G1	3.9	-0.4	2.0	-2.0	0.9900	3.9	0.9933	4.5	64
6	374	SLORENZO13.813	13.800	G2	3.9	-0.4	2.0	-2.0	0.9900	3.9	0.9933	4.5	64
6	541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0074	29.8	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	24.4	-0.4	13.0	-13.0	0.9900	24.6	0.9999	30.5	64
6	705	BAITUN13A	13.800	G1	37.5	-10.8	26.6	-26.6	0.9900	39.4	0.9606	50.6	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9431	5.2	0.9145	6.2	64
6	SUBSYSTEM TOTALS				1149.7	152.6	1028.1	-736.6				2069.3	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 14:34  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT ANT-PANII

AREA 7 [ACANAL ] MACHINE SUMMARY:																
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
7	129	MIR13D		13.800	G4	22.2	3.2	15.0	0.0	1.0000	22.4	0.9899	44.1			65
7	130	MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0082	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	0.9808	4.1			65
7	140	GAT6A		6.9000	G2	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9808	4.1			65
7	140	GAT6A		6.9000	G3	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9808	4.1			65
7	141	GAT6B		6.9000	G4	3.9	-1.1	3.0	-3.0	1.0000	4.0	0.9601	5.6			65
7	141	GAT6B		6.9000	G5	3.9	-1.1	3.0	-3.0	1.0000	4.0	0.9601	6.2			65
7	141	GAT6B		6.9000	G6	3.9	-1.1	3.0	-3.0	1.0000	4.0	0.9601	6.2			65
7	170	MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0227	17.9	0.9283	23.0			65
7	171	MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0318	17.8	0.9283	23.0			65

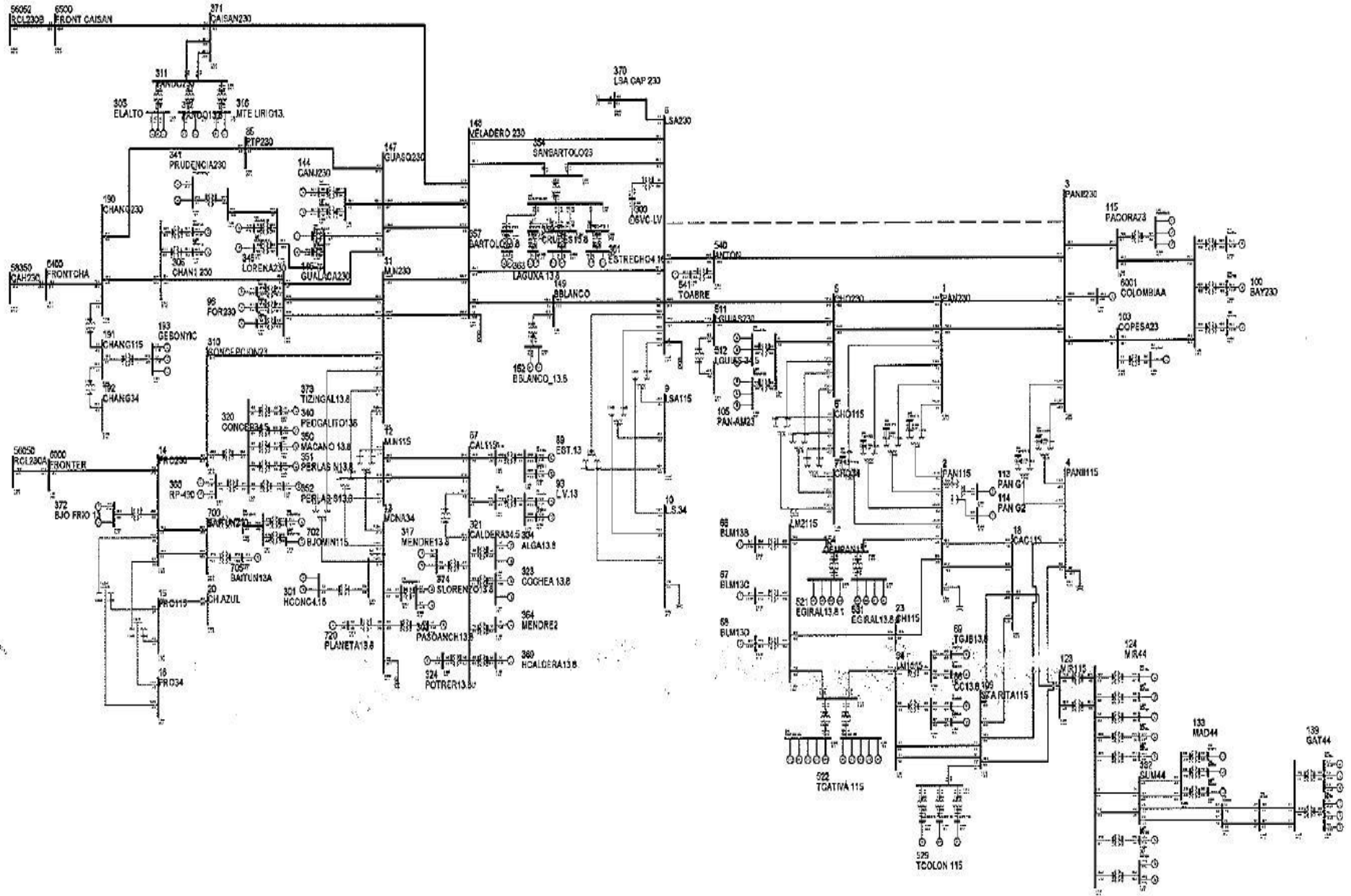
171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0318	17.8	0.9283	23.0
7									
SUBSYSTEM TOTALS		107.8	19.1	71.5	5.5				171.3

65

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:27  
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS  
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT ANT-PANII IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1229.2	1330.8	0.0	0.0	0.0	-150.4	48.7	-153.6
GUATEMAL	251.8	275.1	-192.4	0.0	272.2	17.3	424.1	
2	872.2	855.0	0.0	0.0	0.0	0.1	17.1	0.0
SALVADOR	97.3	224.2	-70.4	0.0	227.4	-21.4	192.3	
3	1238.9	1203.0	0.0	0.0	0.0	0.2	35.7	0.0
HONDURAS	480.2	321.1	-47.0	0.0	292.1	53.9	444.3	
4	534.2	525.2	0.0	0.0	0.0	0.0	9.0	0.0
NICARAGU	48.8	207.6	-57.3	0.0	180.9	-49.3	128.7	
5	1300.6	1280.2	0.0	0.0	0.0	0.5	20.0	0.0
COSTA RI	218.8	520.4	-229.9	0.0	417.2	35.6	309.9	
6	1149.7	1311.1	0.0	0.0	0.0	-210.5	49.2	-206.4
PANAMA	152.6	266.2	-88.5	0.0	506.6	-34.2	515.7	
7	107.8	47.0	0.0	0.0	0.0	60.0	0.8	60.0
ACANAL	19.1	9.5	0.0	0.0	0.0	-1.8	11.3	
10	300.0	0.0	0.0	0.0	0.0	300.0	0.0	300.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6732.7	6552.2	0.0	0.0	0.0	0.0	180.4	0.0
	1268.6	1824.0	-685.4	0.0	1896.4	0.0	2026.4	

1.1.2 Contingencia Llano Sánchez – Panamá II





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:30  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0021	230.48	14		PRO230		230.00	6	1.0191	234.40
85		PTP230		230.00	6	1.0057	231.32	96		FOR230		230.00	6	1.0033	230.77
100		BAY230		230.00	6	1.0257	235.92	103		COPESA23		230.00	6	1.0040	230.91
115		PACORA23		230.00	6	1.0064	231.48	144		CANJ230		230.00	6	1.0026	230.60
146		GUALACA230		230.00	6	1.0046	231.06	147		GUASQ230		230.00	6	1.0025	230.58
190		CHANG230		230.00	6	1.0091	232.09	306		CHAN1 230		230.00	6	1.0071	231.64
310		CONCEPCION23		230.00	6	1.0131	233.02	311		PANDO230		230.00	6	1.0396	239.11
341		PRUDENCIA230		230.00	6	1.0078	231.79	345		LORENA230		230.00	6	1.0066	231.52
371		CAISAN230		230.00	6	1.0382	238.79	540		ANTON		230.00	6	1.0078	231.79
700		BAITUN230		230.00	6	1.0185	234.26	6000		FRONTER		230.00	6	1.0222	235.10
6400		FRONTCHA		230.00	6	1.0109	232.50	6500		FRONT CAISAN		230.00	6	1.0369	238.49

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	0.9901	227.73	3		PANII230		230.00	6	0.9996	229.91
5		CHO230		230.00	6	0.9840	226.31	8		LSA230		230.00	6	0.9900	227.70
105		PAN-AM23		230.00	6	0.9840	226.31	148		VELADERO 230		230.00	6	0.9975	229.41
149		BBLANCO		230.00	6	0.9962	229.12	354		SANBARTOLO23		230.00	6	0.9947	228.78
370		LSA CAP 230		230.00	6	0.9900	227.70	511		LGUIAS230		230.00	6	0.9825	225.98



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

TUE, MAY 25 2010 9:30

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	66	BLM13B		13.800	V2	38.0	21.4	25.0	0.0	1.0100	43.2	0.8717	47.0			62
6	67	BLM13C		13.800	V3	38.0	21.4	25.0	0.0	1.0100	43.2	0.8717	47.0			62
6	68	BLM13D		13.800	V4	38.0	22.3	25.0	0.0	1.0100	43.6	0.8624	47.0			62
6	90	EST-13L		13.800	E1	20.9	5.5	12.0	-5.0	0.9900	21.8	0.9673	27.0			64
6	91	EST-13T		13.800	E2	20.9	5.5	12.0	-5.0	0.9900	21.8	0.9673	27.0			64
6	94	LV-13.8L		13.800	L1	23.5	6.3	12.0	-5.0	0.9900	24.6	0.9664	27.0			64
6	95	LV-13.8T		13.800	L2	23.5	6.3	12.0	-5.0	0.9900	24.6	0.9664	27.0			64
6	97	FOR13A		13.800	F1	87.9	-7.7	50.0	-50.0	0.9900	89.1	0.9962	111.0			64
6	98	FOR13B		13.800	F2	87.9	-7.7	50.0	-50.0	0.9900	89.1	0.9962	111.0			64
6	101	BAY13A		13.800	B1	53.5	20.0	50.0	-25.0	1.0000	57.1	0.9370	96.0			61
6	102	BAY13B		13.800	B2	53.1	19.9	50.0	-25.0	1.0000	56.7	0.9363	96.0			61
6	108	BAY13C		13.800	B3	53.1	19.9	50.0	-25.0	1.0000	56.7	0.9363	100.0			61
6	142	CANJ13A		13.800	C1	52.1	14.7	29.0	-29.0	0.9900	54.6	0.9623	69.0			64
6	143	CANJ13B		13.800	C2	52.1	14.7	29.0	-29.0	0.9900	54.6	0.9623	69.0			64
6	150	GUALACA	13-213	13.800	G2	12.9	-3.3	7.4	-7.4	0.9900	13.4	0.9691	14.8			64
6	152	BBLANCO_13.8	13.813	13.800	G1	12.6	-0.5	7.0	-7.0	0.9900	12.7	0.9992	16.0			64
6	193	GEBONYIC		13.800	G1	8.7	-1.3	4.0	-4.0	0.9900	8.9	0.9898	35.3			64
6	193	GEBONYIC		13.800	G2	8.7	-1.3	4.0	-4.0	0.9900	8.9	0.9898	35.3			64
6	300	SVC-LV		13.200	1	0.1	76.4	300.0	-225.0	1.0946	69.8	0.0017	250.0			63
6	302	PASOANCH13.8	13.813	13.800	P1	4.8	2.0	2.0	-2.0	0.9431	5.5	0.9218	6.2			64

6	304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0899	4.7	0.8981	5.7	64
6	305	ELALTO	13.800	G1	17.4	-5.0	12.0	-5.0	1.0249	17.7	0.9612	20.6	64
6	305	ELALTO	13.800	G2	17.4	-5.0	12.0	-5.0	1.0249	17.7	0.9612	20.6	64
6	307	CHAN1 A	13.800	G1	61.1	-14.4	50.0	-50.0	0.9900	63.4	0.9734	118.6	64
6	308	CHAN1 B	13.800	G2	61.1	-14.4	50.0	-50.0	0.9900	63.4	0.9734	118.6	64
6	312	PANDO13.8	13.800	G1	9.0	-5.0	10.0	-5.0	1.0079	10.2	0.8746	19.9	64
6	316	MTE LIRIO13.13.800	13.800	G1	17.0	-5.0	12.0	-5.0	1.0277	17.2	0.9594	27.0	64
6	317	MENDRE13.8	13.800	M1	8.6	0.0	0.0	0.0	1.0911	7.9	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	324	POTRER13.8	13.800	P1	4.0	0.3	2.0	-2.0	0.9900	4.0	0.9968	6.2	64
6	340	PEDGALITO13813.800	13.800	P1	20.9	7.1	12.0	-5.0	0.9900	22.3	0.9466	27.0	64
6	342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	0.9908	13.1	0.9231	19.9	64
6	343	PRUDENCIA_1	13.800	G1	24.4	-9.1	9.8	-9.8	0.9900	26.3	0.9364	33.0	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0747	3.0	0.9516	6.2	64
6	351	PERLAS N13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9789	10.5	0.8744	13.5	64
6	352	PERLAS S13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9789	10.5	0.8744	13.5	64
6	357	BARTOLO13.8	13.800	G1	7.3	0.8	3.7	-3.7	0.9900	7.4	0.9943	8.5	64
6	359	CRUCES13.8	13.800	G1	4.6	0.1	2.3	-2.3	0.9900	4.6	0.9997	5.6	64
6	361	ESTRECHO4.164.1600	13.800	G1	4.9	0.0	2.5	-2.5	0.9900	5.0	1.0000	5.6	64
6	363	LAGUNA 13.8	13.800	G1	4.7	-0.2	2.4	-2.4	0.9900	4.7	0.9989	5.8	64
6	364	MENDRE2	13.800	G1	7.6	0.3	3.9	-3.9	0.9900	7.7	0.9991	8.9	64
6	368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	0.9935	5.3	0.8906	5.5	64
6	368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	0.9935	5.3	0.8906	5.5	64
6	369	HCALDERA13.813.800	13.800	G1	3.8	0.3	1.9	-1.9	0.9900	3.9	0.9965	4.3	64

6	372	BJO FRIO 13	13.800	G1	24.4	-9.8	9.8	-9.8	1.0004	26.3	0.9284	33.0	64
6	373	TIZINGAL13.813	13.800	G1	4.4	2.2	2.2	-2.2	0.9772	5.1	0.8917	21.6	64
6	374	SLORENZO13.813	13.800	G1	3.9	-0.4	2.0	-2.0	0.9900	3.9	0.9933	4.5	64
6	374	SLORENZO13.813	13.800	G2	3.9	-0.4	2.0	-2.0	0.9900	3.9	0.9933	4.5	64
6	541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0091	29.8	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	24.4	-0.4	13.0	-13.0	0.9900	24.6	0.9999	30.5	64
6	705	BAITUN13A	13.800	G1	37.5	-10.8	26.6	-26.6	0.9900	39.4	0.9606	50.6	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9431	5.2	0.9145	6.2	64
6	SUBSYSTEM TOTALS				1149.7	164.5	1028.1	-736.6				2069.3	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:30  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

AREA 7 [ACANAL ] MACHINE SUMMARY:																
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
7	129	MIR13D		13.800	G4	22.2	2.6	15.0	0.0	1.0000	22.4	0.9932	44.1			65
7	130	MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0097	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	0.9750	4.1			65
7	140	GAT6A		6.9000	G2	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9750	4.1			65
7	140	GAT6A		6.9000	G3	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9750	4.1			65
7	141	GAT6B		6.9000	G4	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9562	5.6			65
7	141	GAT6B		6.9000	G5	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9562	6.2			65
7	141	GAT6B		6.9000	G6	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9562	6.2			65
7	170	MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0241	17.9	0.9283	23.0			65
7	171	MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0332	17.7	0.9283	23.0			65

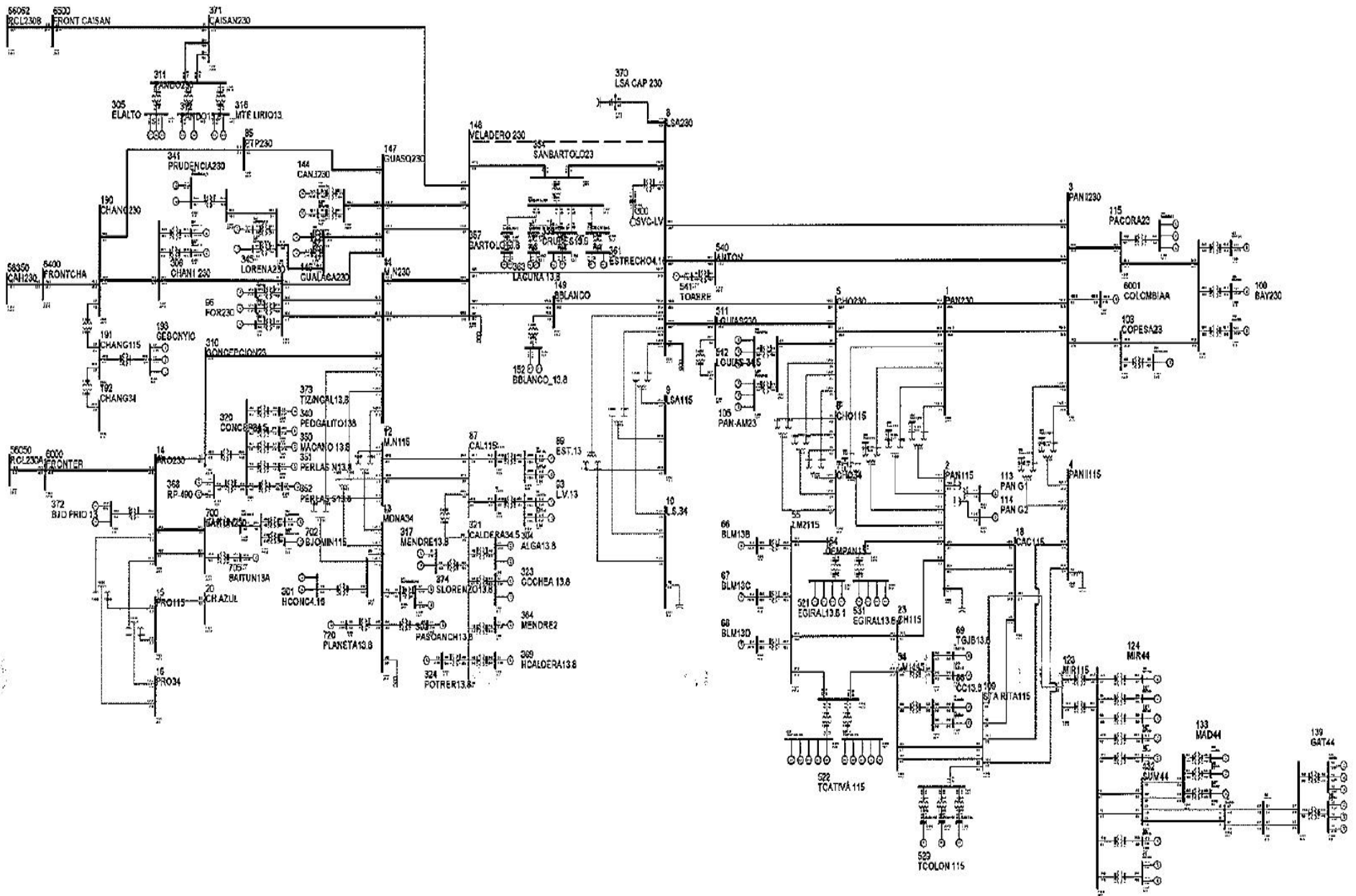
171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0332	17.7	0.9283	23.0
7									
SUBSYSTEM TOTALS		107.8	18.2	71.5	5.5				171.3

65

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:31  
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS  
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1229.1	1330.8	0.0	0.0	0.0	-150.4	48.7	-153.6
GUATEMAL	251.8	275.1	-192.4	0.0	272.2	17.3	424.1	
2	872.2	855.0	0.0	0.0	0.0	0.1	17.1	0.0
SALVADOR	97.3	224.2	-70.4	0.0	227.4	-21.4	192.3	
3	1238.9	1203.0	0.0	0.0	0.0	0.2	35.7	0.0
HONDURAS	480.2	321.1	-47.0	0.0	292.1	53.9	444.3	
4	534.2	525.2	0.0	0.0	0.0	0.0	9.0	0.0
NICARAGU	48.8	207.6	-57.3	0.0	180.9	-49.3	128.7	
5	1300.6	1280.2	0.0	0.0	0.0	0.5	20.0	0.0
COSTA RI	218.8	520.4	-229.9	0.0	417.2	35.6	309.9	
6	1149.7	1311.1	0.0	0.0	0.0	-210.5	49.2	-206.4
PANAMA	164.5	266.2	-89.6	0.0	496.7	-33.4	517.9	
7	107.8	47.0	0.0	0.0	0.0	60.0	0.8	60.0
ACANAL	18.2	9.5	0.0	0.0	0.0	-2.7	11.3	
10	300.0	0.0	0.0	0.0	0.0	300.0	0.0	300.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6732.7	6552.2	0.0	0.0	0.0	0.0	180.4	0.0
	1279.6	1824.0	-686.5	0.0	1886.4	0.0	2028.5	

### 1.1.3 Contingencia Veladero - Llano Sánchez







PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:34  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT VEL-LSA

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0299	118.43	9		LSA115		115.00	6	1.0336	118.86
12		M.N115		115.00	6	1.0037	115.43	15		PRO115		115.00	6	1.0203	117.33
19		C.V115		115.00	6	1.0120	116.38	20		CH.AZUL		115.00	6	1.0210	117.42
52		TOC115		115.00	6	1.0269	118.09	54		LM1115		115.00	6	1.0188	117.16
55		LM2115		115.00	6	1.0198	117.28	61		FFIELD		115.00	6	1.0151	116.73
87		CAL115		115.00	6	1.0195	117.24	88		EST115		115.00	6	1.0228	117.62
92		L.V115		115.00	6	1.0208	117.39	109		STA RITA115		115.00	6	1.0184	117.12
123		MIR115		115.00	7	1.0042	115.49	154		CEMPAN15		115.00	6	1.0126	116.45
522		TCATIVÁ 115		115.00	6	1.0193	117.22	529		TCOLON 115		115.00	6	1.0184	117.12
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	0.9990	114.88	6		CHO115		115.00	6	0.9932	114.22
18		CAC115		115.00	6	0.9987	114.85	21		C.BAN115		115.00	6	0.9915	114.03
23		CH115		115.00	6	0.9979	114.76	26		LOC115		115.00	6	0.9919	114.07
30		MAR115		115.00	6	0.9894	113.78	33		STM115		115.00	6	0.9969	114.64
37		SAN115		115.00	6	0.9919	114.07	48		TINAJ115		115.00	6	0.9962	114.57
50		M.O115		115.00	6	0.9964	114.58	191		CHANG115		115.00	6	0.9991	114.90

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

TUE, MAY 25 2010 9:34

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
66		BLM13B		13.800	V2	38.0	19.2	25.0	0.0	1.0100	42.2	0.8922	47.0			62
67		BLM13C		13.800	V3	38.0	19.2	25.0	0.0	1.0100	42.2	0.8922	47.0			62
68		BLM13D		13.800	V4	38.0	20.1	25.0	0.0	1.0100	42.6	0.8843	47.0			62
90		EST-13L		13.800	E1	20.9	5.6	12.0	-5.0	0.9900	21.9	0.9665	27.0			64
91		EST-13T		13.800	E2	20.9	5.6	12.0	-5.0	0.9900	21.9	0.9665	27.0			64
94		LV-13.8L		13.800	L1	23.5	6.3	12.0	-5.0	0.9900	24.6	0.9656	27.0			64
95		LV-13.8T		13.800	L2	23.5	6.3	12.0	-5.0	0.9900	24.6	0.9656	27.0			64
97		FOR13A		13.800	F1	87.9	-7.1	50.0	-50.0	0.9900	89.0	0.9968	111.0			64
98		FOR13B		13.800	F2	87.9	-7.1	50.0	-50.0	0.9900	89.0	0.9968	111.0			64
101		BAY13A		13.800	B1	53.5	16.6	50.0	-25.0	1.0000	56.0	0.9550	96.0			61
102		BAY13B		13.800	B2	53.1	16.6	50.0	-25.0	1.0000	55.7	0.9545	96.0			61
108		BAY13C		13.800	B3	53.1	16.6	50.0	-25.0	1.0000	55.7	0.9545	100.0			61
142		CANJ13A		13.800	C1	52.1	14.8	29.0	-29.0	0.9900	54.7	0.9617	69.0			64
143		CANJ13B		13.800	C2	52.1	14.8	29.0	-29.0	0.9900	54.7	0.9617	69.0			64
150		GUALACA	13-213	13.800	G2	12.9	-3.1	7.4	-7.4	0.9900	13.4	0.9726	14.8			64
152		BBLANCO_13.8	13.813	13.800	G1	12.6	-0.2	7.0	-7.0	0.9900	12.7	0.9999	16.0			64
193		GEBONYIC		13.800	G1	8.7	-1.2	4.0	-4.0	0.9900	8.9	0.9905	35.3			64
193		GEBONYIC		13.800	G2	8.7	-1.2	4.0	-4.0	0.9900	8.9	0.9905	35.3			64
300		SVC-LV		13.200	1	0.1	69.2	300.0	-225.0	1.0856	63.8	0.0022	250.0			63
302		PASOANCH13.8	13.813	13.800	P1	4.8	2.0	2.0	-2.0	0.9423	5.5	0.9218	6.2			64

6	304	ALGA13.8	13.800	A1	4.6	-2.3	2.3	-2.3	1.0899	4.7	0.8981	5.7	64
6	305	ELALTO	13.800	G1	17.4	-5.0	12.0	-5.0	1.0239	17.7	0.9612	20.6	64
6	305	ELALTO	13.800	G2	17.4	-5.0	12.0	-5.0	1.0239	17.7	0.9612	20.6	64
6	307	CHAN1 A	13.800	G1	61.1	-14.1	50.0	-50.0	0.9900	63.4	0.9745	118.6	64
6	308	CHAN1 B	13.800	G2	61.1	-14.1	50.0	-50.0	0.9900	63.4	0.9745	118.6	64
6	312	PANDO13.8	13.800	G1	9.0	-5.0	10.0	-5.0	1.0069	10.2	0.8746	19.9	64
6	316	MTE LIRIO13.13.800	13.800	G1	17.0	-5.0	12.0	-5.0	1.0268	17.3	0.9594	27.0	64
6	317	MENDRE13.8	13.800	M1	8.6	0.0	0.0	0.0	1.0911	7.9	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.5	0.0	0.0	0.0	1.0912	5.1	1.0000	35.3	64
6	324	POTRER13.8	13.800	P1	4.0	0.4	2.0	-2.0	0.9900	4.0	0.9960	6.2	64
6	340	PEDGALITO13813.800	13.800	P1	20.9	7.3	12.0	-5.0	0.9900	22.4	0.9441	27.0	64
6	342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	0.9900	13.1	0.9231	19.9	64
6	343	PRUDENCIA_1	13.800	G1	24.4	-8.7	9.8	-9.8	0.9900	26.2	0.9416	33.0	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0743	3.0	0.9516	6.2	64
6	351	PERLAS N13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9785	10.5	0.8745	13.5	64
6	352	PERLAS S13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9785	10.5	0.8745	13.5	64
6	357	BARTOLO13.8	13.800	G1	7.3	1.0	3.7	-3.7	0.9900	7.4	0.9913	8.5	64
6	359	CRUCES13.8	13.800	G1	4.6	0.2	2.3	-2.3	0.9900	4.7	0.9989	5.6	64
6	361	ESTRECHO4.164.1600	13.800	G1	4.9	0.1	2.5	-2.5	0.9900	5.0	0.9999	5.6	64
6	363	LAGUNA 13.8	13.800	G1	4.7	-0.1	2.4	-2.4	0.9900	4.7	0.9996	5.8	64
6	364	MENDRE2	13.800	G1	7.6	0.4	3.9	-3.9	0.9900	7.7	0.9988	8.9	64
6	368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	0.9931	5.3	0.8906	5.5	64
6	368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	0.9931	5.3	0.8906	5.5	64
6	369	HCALDERA13.813.800	13.800	G1	3.8	0.4	1.9	-1.9	0.9900	3.9	0.9956	4.3	64

6	372	BJO FRIO 13	13.800	G1	24.4	-9.8	9.8	-9.8	0.9997	26.3	0.9284	33.0	64
6	373	TIZINGAL13.813	13.800	G1	4.4	2.2	2.2	-2.2	0.9768	5.1	0.8918	21.6	64
6	374	SLORENZO13.813	13.800	G1	3.9	-0.4	2.0	-2.0	0.9900	3.9	0.9947	4.5	64
6	374	SLORENZO13.813	13.800	G2	3.9	-0.4	2.0	-2.0	0.9900	3.9	0.9947	4.5	64
6	541	TOABRE	0.6000	1	30.1	0.0	0.0	0.0	1.0152	29.6	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	24.4	-0.3	13.0	-13.0	0.9900	24.6	0.9999	30.5	64
6	705	BAITUN13A	13.800	G1	37.5	-10.5	26.6	-26.6	0.9900	39.3	0.9626	50.6	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9423	5.2	0.9145	6.2	64
6	SUBSYSTEM TOTALS				1149.9	145.7	1028.1	-736.6				2069.3	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:34  
PLAN DE EXPANSION DEL SIN JUNIO-2010  
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT VEL-LSA

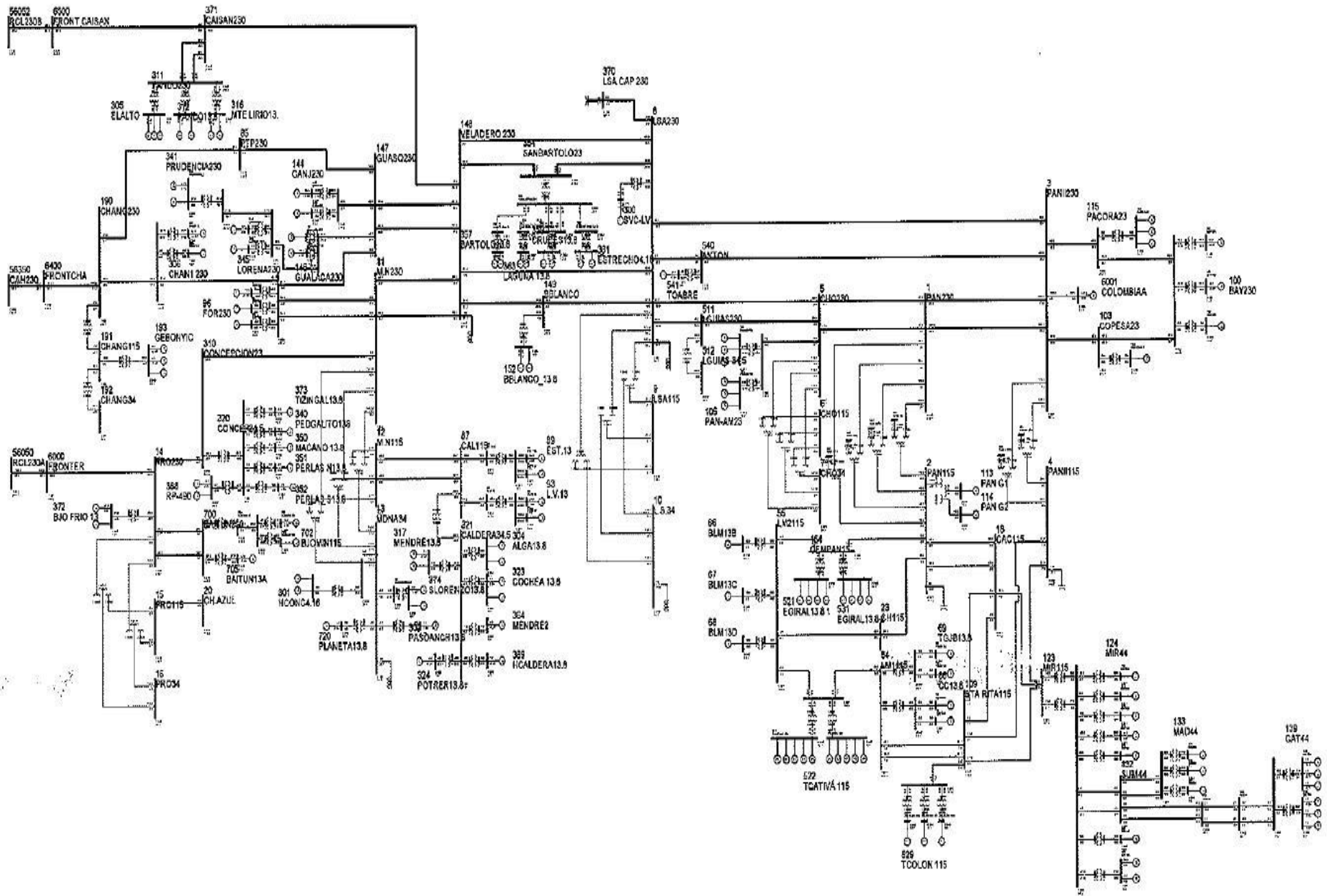
AREA 7 [ACANAL ] MACHINE SUMMARY:																	
	BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																	
7	129		MIR13D		13.800	G4	22.2	1.0	15.0	0.0	1.0000	22.2	0.9990	44.1			65
7	130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0136	16.9	1.0000	27.7			65
7	140		GAT6A		6.9000	G1	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9557	4.1			65
7	140		GAT6A		6.9000	G2	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9557	4.1			65
7	140		GAT6A		6.9000	G3	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9557	4.1			65
7	141		GAT6B		6.9000	G4	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9448	5.6			65
7	141		GAT6B		6.9000	G5	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9448	6.2			65
7	141		GAT6B		6.9000	G6	3.9	-1.3	3.0	-3.0	1.0000	4.1	0.9448	6.2			65
7	170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0280	17.8	0.9283	23.0			65
7	171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0371	17.7	0.9283	23.0			65

7	171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0371	17.7	0.9283	23.0	65
	SUBSYSTEM TOTALS		107.8	15.7	71.5	5.5				171.3	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:35  
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS  
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CONT VEL-LSA IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1229.3	1330.8	0.0	0.0	0.0	-150.2	48.7	-153.6
GUATEMAL	251.8	275.1	-192.4	0.0	272.2	17.2	424.1	
2	872.3	855.0	0.0	0.0	0.0	0.2	17.1	0.0
SALVADOR	97.2	224.2	-70.4	0.0	227.4	-21.4	192.3	
3	1239.0	1203.0	0.0	0.0	0.0	0.3	35.7	0.0
HONDURAS	480.2	321.1	-47.0	0.0	292.1	53.9	444.3	
4	534.2	525.2	0.0	0.0	0.0	0.0	9.0	0.0
NICARAGU	48.7	207.6	-57.3	0.0	180.9	-49.3	128.7	
5	1300.7	1280.2	0.0	0.0	0.0	0.6	19.9	0.0
COSTA RI	219.3	520.4	-229.8	0.0	417.1	36.1	309.8	
6	1149.9	1311.1	0.0	0.0	0.0	-211.0	49.9	-206.4
PANAMA	145.7	266.2	-92.6	0.0	514.6	-31.4	518.1	
7	107.8	47.0	0.0	0.0	0.0	60.1	0.8	60.0
ACANAL	15.7	9.5	0.0	0.0	0.0	-5.1	11.2	
10	300.0	0.0	0.0	0.0	0.0	300.0	0.0	300.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6733.3	6552.2	0.0	0.0	0.0	0.0	181.1	0.0
	1258.5	1824.0	-689.5	0.0	1904.3	0.0	2028.3	

## 1.2 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

TUE, MAY 25 2010 9:37

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)
3		PANII230		230.00	6	1.0056	231.29	11		M.N230		230.00	6	1.0096	232.21
14		PRO230		230.00	6	1.0250	235.75	85		PTP230		230.00	6	1.0107	232.46
96		FOR230		230.00	6	1.0094	232.16	100		BAY230		230.00	6	1.0215	234.95
103		COPESA23		230.00	6	1.0085	231.95	115		PACORA23		230.00	6	1.0101	232.32
144		CANJ230		230.00	6	1.0096	232.20	146		GUALACA230		230.00	6	1.0114	232.62
147		GUASQ230		230.00	6	1.0095	232.19	148		VELADERO 230		230.00	6	1.0051	231.18
149		BBLANCO		230.00	6	1.0037	230.86	190		CHANG230		230.00	6	1.0089	232.04
306		CHAN1 230		230.00	6	1.0076	231.74	310		CONCEPCION23		230.00	6	1.0195	234.48
311		PANDO230		230.00	6	1.0444	240.21	341		PRUDENCIA230		230.00	6	1.0141	233.24
345		LORENA230		230.00	6	1.0131	233.02	354		SANBARTOLO23		230.00	6	1.0012	230.27
371		CAISAN230		230.00	6	1.0428	239.84	540		ANTON		230.00	6	1.0146	233.37
700		BAITUN230		230.00	6	1.0253	235.81	6000		FRONTER		230.00	6	1.0271	236.24
6400		FRONTCHA		230.00	6	1.0091	232.10	6500		FRONT CAISAN		230.00	6	1.0411	239.45

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9989	229.75	5		CHO230		230.00	6	0.9975	229.42
8		LSA230		230.00	6	0.9900	227.70	105		PAN-AM23		230.00	6	0.9975	229.42
370		LSA CAP 230		230.00	6	0.9900	227.70	511		LGUIAS230		230.00	6	0.9944	228.71



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:37  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2014 ESC-MOD DEMANDA-MIN INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0145	116.67	9		LSA115		115.00	6	1.0359	119.13
12		M.N115		115.00	6	1.0111	116.28	15		PRO115		115.00	6	1.0269	118.09
19		C.V115		115.00	6	1.0021	115.25	20		CH.AZUL		115.00	6	1.0276	118.18
52		TOC115		115.00	6	1.0123	116.41	87		CAL115		115.00	6	1.0183	117.10
88		EST115		115.00	6	1.0195	117.24	92		L.V115		115.00	6	1.0187	117.16
701		BAITUN115		115.00	6	1.0183	117.11	702		BJOMIN115		115.00	6	1.0190	117.19

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	0.9946	114.37	6		CHO115		115.00	6	0.9983	114.80
18		CAC115		115.00	6	0.9942	114.33	21		C.BAN115		115.00	6	0.9888	113.71
23		CH115		115.00	6	0.9872	113.53	26		LOC115		115.00	6	0.9892	113.76
30		MAR115		115.00	6	0.9875	113.56	33		STM115		115.00	6	0.9930	114.20
37		SAN115		115.00	6	0.9889	113.72	48		TINAJ115		115.00	6	0.9926	114.15
50		M.O115		115.00	6	0.9927	114.16	54		LM1115		115.00	6	0.9943	114.34
55		LM2115		115.00	6	0.9942	114.33	61		FFIELD		115.00	6	0.9921	114.09
109		STA RITA115		115.00	6	0.9969	114.65	123		MIR115		115.00	7	0.9985	114.82
154		CEMPAN15		115.00	6	0.9935	114.26	191		CHANG115		115.00	6	0.9997	114.97
522		TCATIVÁ 115		115.00	6	0.9942	114.34	529		TCOLON 115		115.00	6	0.9969	114.65

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6		90	EST-13L		13.800	E1	18.0	3.4	12.0	-5.0	0.9800	18.7	0.9828		27.0	64
6		94	LV-13.8L		13.800	L1	23.2	4.0	12.0	-5.0	0.9800	24.0	0.9858		27.0	64
6		97	FOR13A		13.800	F1	75.0	-23.0	50.0	-50.0	0.9800	80.1	0.9559		111.0	64
6		101	BAY13A		13.800	B1	49.0	14.9	50.0	-25.0	0.9900	51.7	0.9569		96.0	61
6		102	BAY13B		13.800	B2	49.0	14.9	50.0	-25.0	0.9900	51.7	0.9569		96.0	61
6		142	CANJ13A		13.800	C1	45.0	11.3	29.0	-29.0	0.9900	46.9	0.9701		69.0	64
6		150	GUALACA	13-213.800	G2	14.0	-4.9	7.4	-7.4	0.9900	15.0	0.9438	14.8		64	64
6		152	BBLANCO_13.8	13.800	G1	13.0	-3.3	7.0	-7.0	0.9800	13.7	0.9694	16.0		64	64
6		193	GEBOYIC		13.800	G1	8.0	-1.4	4.0	-4.0	0.9900	8.2	0.9861		35.3	64
6		193	GEBOYIC		13.800	G2	8.0	-1.4	4.0	-4.0	0.9900	8.2	0.9861		35.3	64
6		300	SVC-LV		13.200	1	0.0	-59.0	300.0	-225.0	0.9779	60.4	0.0000		250.0	63
6		302	PASOANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9503	5.4	0.9216	6.2		64	64
6		305	ELALTO		13.800	G1	18.0	-5.0	12.0	-5.0	1.0374	18.0	0.9635		20.6	64
6		307	CHAN1 A		13.800	G1	62.0	-24.0	50.0	-50.0	0.9800	67.8	0.9327		118.6	64
6		312	PANDO13.8		13.800	G1	9.0	-5.0	10.0	-5.0	1.0128	10.2	0.8742		19.9	64
6		316	MTE LIRIO13.13.8	13.800	G1	17.0	-5.0	12.0	-5.0	1.0326	17.2	0.9594	27.0		64	64
6		317	MENDRE13.8		13.800	M1	9.4	0.0	0.0	0.0	1.0915	8.6	1.0000		35.3	64
6		323	COCHEA 13.8		13.800	C1	5.5	0.0	0.0	0.0	1.0916	5.0	1.0000		35.3	64
6		324	POTRER13.8		13.800	P1	4.0	-0.3	2.0	-2.0	0.9900	4.0	0.9980		6.2	64
6		340	PEDGALITO13813.8	13.800	P1	18.0	1.6	12.0	-5.0	0.9800	18.4	0.9959	27.0		64	64

6	342	LORENA13.8	13.800	L1	12.0	-5.0	10.5	-5.0	0.9974	13.0	0.9229	19.9	64	
6	343	PRUDENCIA_1	13.800	G1	21.0	-9.8	9.8	-9.8	0.9955	23.3	0.9068	33.0	64	
6	350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0763	3.0	0.9514	6.2	64
6	351	PERLAS N13.813.800	13.800	G1	9.0	4.5	5.0	-5.0	0.9800	10.3	0.8934	13.5	64	
6	352	PERLAS S13.813.800	13.800	G1	9.0	4.5	5.0	-5.0	0.9800	10.3	0.8934	13.5	64	
6	357	BARTOLO13.8	13.800	G1	6.9	-0.3	3.7	-3.7	0.9800	7.0	0.9989	8.5	64	
6	359	CRUCES13.8	13.800	G1	4.4	-0.5	2.3	-2.3	0.9800	4.5	0.9933	5.6	64	
6	361	ESTRECHO4.164.1600	1.600	G1	4.7	-0.6	2.5	-2.5	0.9800	4.8	0.9913	5.6	64	
6	363	LAGUNA	13.8	13.800	G1	4.4	-0.8	2.4	-2.4	0.9800	4.6	0.9855	5.8	64
6	364	MENDRE2	13.800	G1	7.6	-0.2	3.9	-3.9	0.9900	7.7	0.9995	8.9	64	
6	368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	1.0112	5.2	0.8906	5.5	64	
6	369	HCALDERA13.813.800	13.800	G1	3.8	-0.3	1.9	-1.9	0.9900	3.8	0.9978	4.3	64	
6	372	BJO FRIO 13	13.800	G1	21.0	-9.8	9.8	-9.8	1.0067	23.0	0.9068	33.0	64	
6	373	TIZINGAL13.813.800	13.800	G1	4.4	2.2	2.2	-2.2	0.9786	5.1	0.8909	21.6	64	
6	374	SLORENZO13.813.800	13.800	G1	3.9	-1.4	2.0	-2.0	0.9900	4.1	0.9413	4.5	64	
6	541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0157	24.6	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	37.0	-5.3	26.6	-26.6	1.0100	37.0	0.9900	50.6	64	
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9503	5.2	0.9145	6.2	64	
6	SUBSYSTEM TOTALS					657.0	-104.1	731.5	-561.0			1439.4		

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:37  
 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	3.9	15.0	0.0	1.0000	25.9	0.9884	44.1	65
7		AREA														
		140		GAT6A		6.9000	G1	1.8	-0.2	2.0	-2.0	1.0000	1.8	0.9920	4.1	65
7		140		GAT6A		6.9000	G2	1.8	-0.2	2.0	-2.0	1.0000	1.8	0.9920	4.1	65
7		140		GAT6A		6.9000	G3	1.8	-0.2	2.0	-2.0	1.0000	1.8	0.9920	4.1	65
7		141		GAT6B		6.9000	G4	3.6	-1.0	3.0	-3.0	1.0000	3.7	0.9648	5.6	65
7		141		GAT6B		6.9000	G5	3.6	-1.0	3.0	-3.0	1.0000	3.7	0.9648	6.2	65
7		141		GAT6B		6.9000	G6	3.6	-1.0	3.0	-3.0	1.0000	3.7	0.9648	6.2	65
7		171		MIR13H		13.800	M1	15.8	6.8	11.2	6.8	1.0293	16.7	0.9181	23.0	65
7		171		MIR13H		13.800	M2	15.8	6.8	11.2	6.8	1.0293	16.7	0.9181	23.0	65
7		SUBSYSTEM TOTALS														
						73.4		13.9		52.3	-1.4		120.6			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:37  
 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 GUATEMAL	1099.7 239.1	1330.8 275.1	0.0 -194.4	0.0 0.0	0.0 272.5	-274.0 46.7	42.9 384.3	-273.1
2 SALVADOR	880.1 139.0	855.0 224.2	0.0 -69.8	0.0 0.0	0.0 224.4	-0.3 -31.2	25.4 240.1	0.0
3 HONDURAS	1244.2 528.2	1203.0 321.1	0.0 -46.1	0.0 0.0	0.0 287.6	0.0 51.6	41.2 489.1	0.0
4 NICARAGU	542.0 99.4	525.2 207.6	0.0 -55.8	0.0 0.0	0.0 176.4	0.2 -56.0	16.6 180.2	0.0
5 COSTA RI	1314.4 288.4	1280.2 520.4	0.0 -227.2	0.0 0.0	0.0 412.5	1.3 18.2	33.0 389.5	0.0
6 PANAMA	657.0 -104.1	721.1 261.7	0.0 49.1	0.0 0.0	0.0 537.6	-74.1 -26.8	10.0 149.4	-73.9
7 ACANAL	73.4 13.9	25.8 9.4	0.0 0.0	0.0 0.0	0.0 0.0	46.9 -2.5	0.6 7.1	47.0
10 COLOMBIA	300.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	300.0 0.0	0.0 0.0	300.0
TOTALS	6110.7 1203.9	5941.1 1819.3	0.0 -544.1	0.0 0.0	0.0 1910.9	0.0 0.0	169.6 1839.6	0.0



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

TUE, MAY 25 2010 9:40

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0010	230.23	11		M.N230		230.00	6	1.0110	232.54
14		PRO230		230.00	6	1.0258	235.94	85		PTP230		230.00	6	1.0139	233.20
96		FOR230		230.00	6	1.0112	232.57	100		BAY230		230.00	6	1.0227	235.23
103		COPESA23		230.00	6	1.0047	231.09	115		PACORA23		230.00	6	1.0086	231.98
144		CANJ230		230.00	6	1.0115	232.65	146		GUALACA230		230.00	6	1.0139	233.19
147		GUASQ230		230.00	6	1.0114	232.63	148		VELADERO 230		230.00	6	1.0108	232.49
149		BBLANCO		230.00	6	1.0094	232.16	190		CHANG230		230.00	6	1.0156	233.58
306		CHAN1 230		230.00	6	1.0143	233.29	310		CONCEPCION23		230.00	6	1.0210	234.82
311		PANDO230		230.00	6	1.0477	240.96	341		PRUDENCIA230		230.00	6	1.0169	233.89
345		LORENA230		230.00	6	1.0159	233.66	354		SANBARTOLO23		230.00	6	1.0070	231.61
371		CAISAN230		230.00	6	1.0462	240.63	540		ANTON		230.00	6	1.0165	233.80
700		BAITUN230		230.00	6	1.0249	235.72	6000		FRONTER		230.00	6	1.0288	236.63
6400		FRONTCHA		230.00	6	1.0167	233.84	6500		FRONT CAISAN		230.00	6	1.0446	240.27

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9927	228.31	5		CHO230		230.00	6	0.9919	228.15
8		LSA230		230.00	6	0.9992	229.81	105		PAN-AM23		230.00	6	0.9919	228.15
370		LSA CAP 230		230.00	6	0.9992	229.81	511		LGUIAS230		230.00	6	0.9979	229.51





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:40

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
6		66 BLM13B		13.800	V2	38.0	17.4	25.0	0.0	1.0100	41.4	0.9094	47.0				62
6		67 BLM13C		13.800	V3	38.0	17.4	25.0	0.0	1.0100	41.4	0.9094	47.0				62
6		68 BLM13D		13.800	V4	38.0	18.1	25.0	0.0	1.0100	41.7	0.9026	47.0				62
6		90 EST-13L		13.800	E1	19.2	4.3	12.0	-5.0	0.9900	19.9	0.9758	27.0				64
6		91 EST-13T		13.800	E2	19.2	4.3	12.0	-5.0	0.9900	19.9	0.9758	27.0				64
6		94 LV-13.8L		13.800	L1	21.6	5.0	12.0	-5.0	0.9900	22.4	0.9747	27.0				64
6		95 LV-13.8T		13.800	L2	21.6	5.0	12.0	-5.0	0.9900	22.4	0.9747	27.0				64
6		97 FOR13A		13.800	F1	75.0	-16.0	50.0	-50.0	0.9900	77.5	0.9781	111.0				64
6		98 FOR13B		13.800	F2	75.0	-16.0	50.0	-50.0	0.9900	77.5	0.9781	111.0				64
6		101 BAY13A		13.800	B1	59.9	22.7	50.0	-25.0	1.0000	64.1	0.9352	96.0				61
6		102 BAY13B		13.800	B2	60.1	22.7	50.0	-25.0	1.0000	64.3	0.9356	96.0				61
6		116 PACORA13		13.800	P1	17.5	2.4	8.8	0.0	1.0100	17.5	0.9905	21.7				61
6		116 PACORA13		13.800	P2	17.5	2.4	8.8	0.0	1.0100	17.5	0.9905	21.7				61
6		116 PACORA13		13.800	P3	17.5	2.4	8.8	0.0	1.0100	17.5	0.9905	21.7				61
6		142 CANJ13A		13.800	C1	48.0	11.9	29.0	-29.0	0.9900	49.9	0.9707	69.0				64
6		143 CANJ13B		13.800	C2	48.0	11.9	29.0	-29.0	0.9900	49.9	0.9707	69.0				64
6		150 GUALACA	13-213.800	G2		11.8	-5.6	7.4	-7.4	0.9900	13.2	0.9032	14.8				64
6		151 GUALACA13.8	13.800	G1		11.8	-5.6	7.4	-7.4	0.9900	13.2	0.9032	14.8				64
6		152 BBLANCO_13.8	13.800	G1		11.5	-0.8	7.0	-7.0	0.9900	11.7	0.9979	16.0				64
6		152 BBLANCO_13.8	13.800	G2		11.5	-0.8	7.0	-7.0	0.9900	11.7	0.9979	16.0				64
6		193 GEBONYIC		13.800	G1	8.0	-2.0	4.0	-4.0	0.9900	8.3	0.9698	35.3				64

6	193	GEBONYIC	13.800	G2	8.0	-2.0	4.0	-4.0	0.9900	8.3	0.9698	35.3	64
6	302	PASOANCH13.813.800	13.800	P1	4.0	2.0	2.0	-2.0	0.9513	4.7	0.8944	6.2	64
6	304	ALGA13.8	13.800	A1	4.1	-2.3	2.3	-2.3	1.0905	4.3	0.8748	5.7	64
6	305	ELALTO	13.800	G1	16.0	-5.0	12.0	-5.0	1.0333	16.2	0.9545	20.6	64
6	305	ELALTO	13.800	G2	16.0	-5.0	12.0	-5.0	1.0333	16.2	0.9545	20.6	64
6	307	CHAN1 A	13.800	G1	80.0	-19.9	50.0	-50.0	0.9900	83.3	0.9705	118.6	64
6	312	PANDO13.8	13.800	G1	14.4	-5.0	10.0	-5.0	1.0140	15.0	0.9447	19.9	64
6	316	MTE LIRIO13.13.800	13.800	G1	23.2	-5.0	12.0	-5.0	1.0353	22.9	0.9776	27.0	64
6	317	MENDRE13.8	13.800	M1	7.9	0.0	0.0	0.0	1.0917	7.3	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.9	0.0	0.0	0.0	1.0918	5.4	1.0000	35.3	64
6	340	PEDGALITO13813.800	13.800	P1	21.6	3.7	12.0	-5.0	0.9900	22.1	0.9858	27.0	64
6	342	LORENA13.8	13.800	L1	15.2	-5.0	10.5	-5.0	0.9999	16.0	0.9500	19.9	64
6	343	PRUDENCIA_1	13.800	G1	22.4	-9.8	9.8	-9.8	0.9983	24.5	0.9168	33.0	64
6	350	MACANO 13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0829	3.0	0.9514	6.2	64
6	351	PERLAS N13.813.800	13.800	G1	9.5	5.0	5.0	-5.0	0.9862	10.9	0.8849	13.5	64
6	352	PERLAS S13.813.800	13.800	G1	9.5	5.0	5.0	-5.0	0.9862	10.9	0.8849	13.5	64
6	357	BARTOLO13.8	13.800	G1	7.0	0.0	3.7	-3.7	0.9900	7.1	1.0000	8.5	64
6	359	CRUCES13.8	13.800	G1	4.6	-0.4	2.3	-2.3	0.9900	4.7	0.9969	5.6	64
6	361	ESTRECHO4.164.1600	13.800	G1	4.7	-0.5	2.5	-2.5	0.9900	4.7	0.9953	5.6	64
6	363	LAGUNA 13.8	13.800	G1	4.7	-0.6	2.4	-2.4	0.9900	4.7	0.9905	5.8	64
6	364	MENDRE2	13.800	G1	6.4	-0.6	3.9	-3.9	0.9900	6.5	0.9961	8.9	64
6	368	RP-490	13.800	G1	4.0	-2.4	2.4	-2.4	1.0177	4.6	0.8554	5.5	64
6	369	HCALDERA13.813.800	13.800	G1	3.2	-0.6	1.9	-1.9	0.9900	3.3	0.9841	4.3	64
6	372	BJO FRIO 13	13.800	G1	25.2	-9.8	9.8	-9.8	1.0072	26.8	0.9325	33.0	64

6	373	TIZINGAL13.813.800	G1	3.7	2.2	2.2	-2.2	0.9846	4.4	0.8555	21.6	64
6	374	SLORENZO13.813.800	G1	3.9	-1.5	2.0	-2.0	0.9900	4.2	0.9319	4.5	64
6	523	TCATIVÁ 13A 13.800	G1	8.3	4.7	6.6	-6.6	1.0100	9.4	0.8706	10.9	62
6	523	TCATIVÁ 13A 13.800	G2	8.3	4.7	6.6	-6.6	1.0100	9.4	0.8706	10.9	62
6	523	TCATIVÁ 13A 13.800	G3	8.3	4.7	6.6	-6.6	1.0100	9.4	0.8706	10.9	62
6	523	TCATIVÁ 13A 13.800	G4	8.3	4.7	6.6	-6.6	1.0100	9.4	0.8706	10.9	62
6	523	TCATIVÁ 13A 13.800	G5	8.3	4.7	6.6	-6.6	1.0100	9.4	0.8706	10.9	62
6	524	TCATIVÁ 13B 13.800	G0	8.3	4.7	6.6	-6.6	1.0100	9.4	0.8706	10.9	62
6	524	TCATIVÁ 13B 13.800	G6	8.3	4.7	6.6	-6.6	1.0100	9.4	0.8706	10.9	62
6	524	TCATIVÁ 13B 13.800	G7	8.3	4.7	6.6	-6.6	1.0100	9.4	0.8706	10.9	62
6	524	TCATIVÁ 13B 13.800	G8	8.3	4.7	6.6	-6.6	1.0100	9.4	0.8706	10.9	62
6	524	TCATIVÁ 13B 13.800	G9	8.3	4.7	6.6	-6.6	1.0100	9.4	0.8706	10.9	62
6	541	TOABRE	0.6000 1	30.0	0.0	0.0	0.0	1.0178	29.5	1.0000	88.9	64
6	703	BJOMIN13A	13.800 G1	26.6	-0.5	13.0	-13.0	0.9900	26.9	0.9998	30.5	64
6	705	BAITUN13A	13.800 G1	40.8	-13.3	26.6	-26.6	0.9900	43.4	0.9507	50.6	64
6	720	PLANETA13.8	13.800 G1	3.8	2.0	2.0	-2.0	0.9513	4.5	0.8854	6.2	64
6	SUBSYSTEM TOTALS			1180.9	77.7	728.3	-510.3				1789.8	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:40  
 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	23.4	2.8	15.0	0.0	1.0000	23.6	0.9928	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

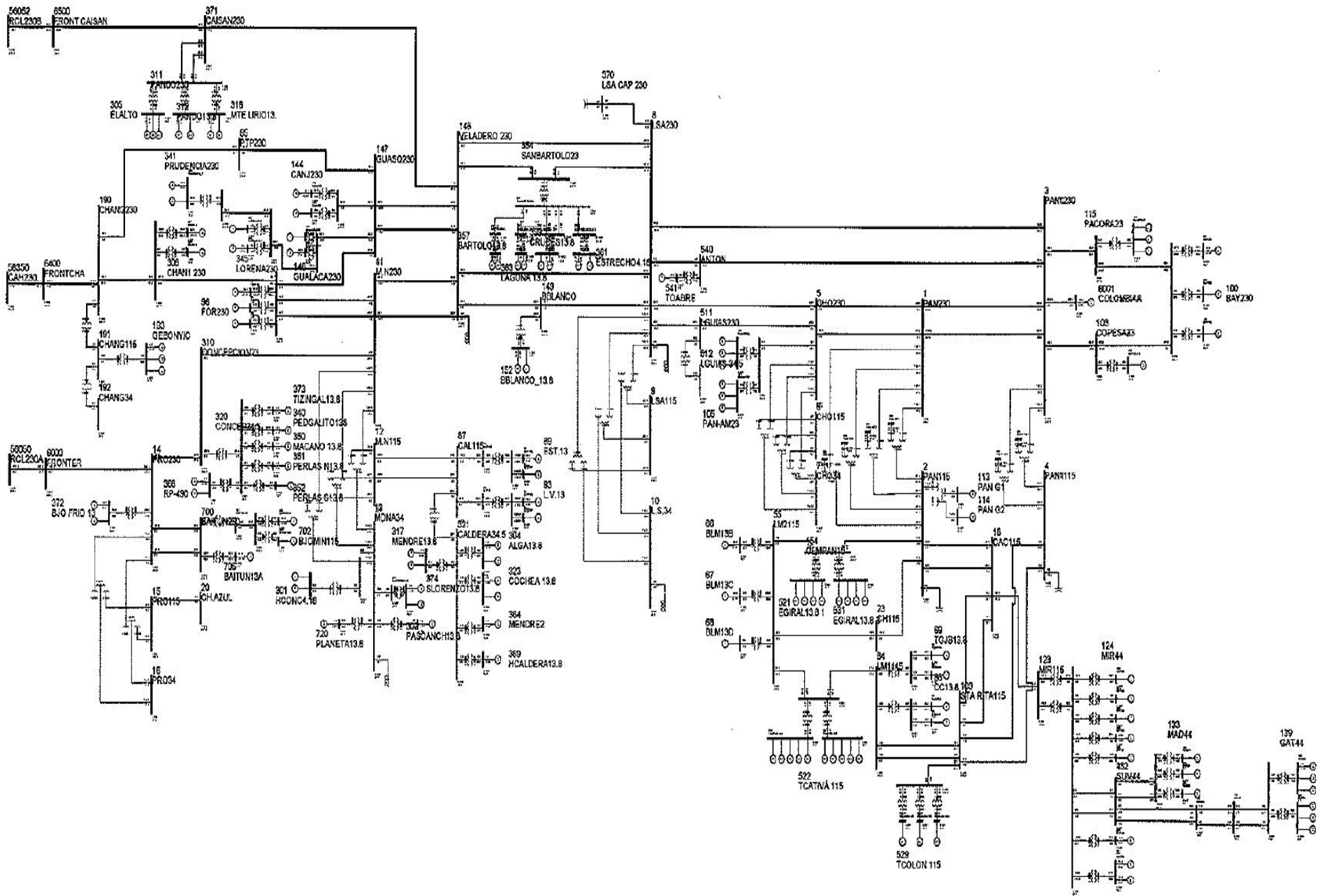
7	140	GAT6A	6.9000	G1	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9507	4.1	65
7	140	GAT6A	6.9000	G2	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9507	4.1	65
7	140	GAT6A	6.9000	G3	1.9	-0.6	2.0	-2.0	1.0000	2.0	0.9507	4.1	65
7	141	GAT6B	6.9000	G4	3.9	-1.4	3.0	-3.0	1.0000	4.1	0.9420	5.6	65
7	141	GAT6B	6.9000	G5	3.9	-1.4	3.0	-3.0	1.0000	4.1	0.9420	6.2	65
7	141	GAT6B	6.9000	G6	3.9	-1.4	3.0	-3.0	1.0000	4.1	0.9420	6.2	65
7	170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0232	17.9	0.9281	23.0	65
7	171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0323	17.7	0.9281	23.0	65
7	171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0323	17.7	0.9281	23.0	65
	SUBSYSTEM TOTALS				108.9	17.3	71.5	5.5				171.3	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:40  
 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	1192.0	1330.8	0.0	0.0	0.0	-185.9	47.1	-187.0
GUATEMAL	245.8	275.1	-191.1	0.0	271.7	25.1	408.5	
2	873.5	855.0	0.0	0.0	0.0	-0.4	18.9	0.0
SALVADOR	106.5	224.2	-70.2	0.0	226.7	-23.2	202.5	
3	1239.7	1203.0	0.0	0.0	0.0	-0.2	36.9	0.0
HONDURAS	490.5	321.1	-46.8	0.0	291.1	52.9	454.5	
4	535.7	525.2	0.0	0.0	0.0	-0.2	10.6	0.0
NICARAGU	59.8	207.6	-57.0	0.0	180.0	-50.7	139.8	
5	1302.7	1280.2	0.0	0.0	0.0	-0.2	22.8	0.0
COSTA RI	226.0	520.4	-229.5	0.0	417.1	26.7	325.6	
6	1180.9	1321.7	0.0	0.0	0.0	-173.0	32.2	-173.0
PANAMA	77.7	268.4	-14.3	0.0	540.7	-26.7	391.0	
7	108.9	48.2	0.0	0.0	0.0	59.9	0.8	60.0
ACANAL	17.3	9.8	0.0	0.0	0.0	-4.1	11.5	
10	300.0	0.0	0.0	0.0	0.0	300.0	0.0	300.0

COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6733.5	6564.1	0.0	0.0	0.0	0.0	169.4	0.0
	1223.5	1826.4	-609.0	0.0	1927.4	0.0	1933.5	

# 1.4 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

TUE, MAY 25 2010 9:44

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)
8		LSA230		230.00	6	1.0002	230.04	11		M.N230		230.00	6	1.0095	232.20
14		PRO230		230.00	6	1.0200	234.59	85		PTP230		230.00	6	1.0111	232.56
96		FOR230		230.00	6	1.0097	232.22	100		BAY230		230.00	6	1.0098	232.25
115		PACORA23		230.00	6	1.0011	230.25	144		CANJ230		230.00	6	1.0102	232.35
146		GUALACA230		230.00	6	1.0123	232.83	147		GUASQ230		230.00	6	1.0102	232.35
148		VELADERO 230		230.00	6	1.0093	232.15	149		BBLANCO		230.00	6	1.0085	231.95
190		CHANG230		230.00	6	1.0089	232.05	306		CHAN1 230		230.00	6	1.0075	231.74
310		CONCEPCION23		230.00	6	1.0167	233.84	311		PANDO230		230.00	6	1.0424	239.75
341		PRUDENCIA230		230.00	6	1.0156	233.59	345		LORENA230		230.00	6	1.0145	233.33
354		SANBARTOLO23		230.00	6	1.0074	231.70	370		LSA CAP 230		230.00	6	1.0002	230.04
371		CAISAN230		230.00	6	1.0407	239.37	540		ANTON		230.00	6	1.0157	233.61
700		BAITUN230		230.00	6	1.0187	234.30	6000		FRONTER		230.00	6	1.0226	235.19
6400		FRONTCHA		230.00	6	1.0090	232.06	6500		FRONT CAISAN		230.00	6	1.0388	238.93

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	0.9917	228.08	3		PANII230		230.00	6	0.9976	229.46
5		CHO230		230.00	6	0.9941	228.64	103		COPESA23		230.00	6	1.0000	229.99
105		PAN-AM23		230.00	6	0.9941	228.64	511		LGUIAS230		230.00	6	0.9990	229.76





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

TUE, MAY 25 2010 9:44

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	66	BLM13B		13.800	V2	38.0	22.9	25.0	0.0	1.0000	44.4	0.8560	47.0			62
6	67	BLM13C		13.800	V3	38.0	22.9	25.0	0.0	1.0000	44.4	0.8560	47.0			62
6	90	EST-13L		13.800	E1	18.0	4.1	12.0	-5.0	0.9800	18.8	0.9754	27.0			64
6	94	LV-13.8L		13.800	L1	20.3	4.5	12.0	-5.0	0.9800	21.2	0.9765	27.0			64
6	97	FOR13A		13.800	F1	62.0	-24.3	50.0	-50.0	0.9800	68.0	0.9312	111.0			64
6	101	BAY13A		13.800	B1	47.4	23.4	50.0	-25.0	0.9900	53.4	0.8964	96.0			61
6	142	CANJ13A		13.800	C1	52.2	12.0	29.0	-29.0	0.9800	54.6	0.9747	69.0			64
6	150	GUALACA	13-213.800	G2		13.0	-7.4	7.4	-7.4	0.9806	15.3	0.8682	14.8			64
6	152	BBLANCO_13.813.800		G1		12.9	-2.5	7.0	-7.0	0.9900	13.2	0.9818	16.0			64
6	193	GEBONYIC		13.800	G1	9.5	-0.8	4.0	-4.0	1.0000	9.5	0.9961	35.3			64
6	302	PASOANCH13.813.800		P1		4.8	2.0	2.0	-2.0	0.9500	5.4	0.9216	6.2			64
6	304	ALGA13.8		13.800	A1	4.6	-2.3	2.3	-2.3	1.0797	4.8	0.8981	5.7			64
6	305	ELALTO		13.800	G1	17.4	-5.0	12.0	-5.0	1.0354	17.5	0.9611	20.6			64
6	307	CHAN1 A		13.800	G1	60.0	-24.1	50.0	-50.0	0.9800	66.0	0.9280	118.6			64
6	312	PANDO13.8		13.800	G1	13.9	-5.0	10.0	-5.0	1.0087	14.7	0.9411	19.9			64
6	316	MTE LIRIO13.13.800		G1		22.4	-5.0	12.0	-5.0	1.0300	22.3	0.9761	27.0			64
6	317	MENDRE13.8		13.800	M1	9.4	0.0	0.0	0.0	1.0809	8.7	1.0000	35.3			64
6	323	COCHEA 13.8		13.800	C1	5.5	0.0	0.0	0.0	1.0810	5.1	1.0000	35.3			64
6	340	PEDGALITO13813.800		P1		20.9	4.1	12.0	-5.0	0.9800	21.7	0.9812	27.0			64
6	343	PRUDENCIA_1		13.800	G1	24.4	-9.8	9.8	-9.8	0.9969	26.3	0.9283	33.0			64

6	346	LORENA	13-2	13.800	L2	15.2	-5.0	10.5	-5.0	0.9984	16.0	0.9500	19.9	64
6	350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0707	3.0	0.9514	6.2	64
6	351	PERLAS	N13.813.800	G1	9.5	5.0	5.0	-5.0	0.9752	11.0	0.8849	13.5	64	
6	357	BARTOLO	13.8	13.800	G1	6.1	-0.8	3.7	-3.7	0.9800	6.3	0.9908	8.5	64
6	359	CRUCES	13.8	13.800	G1	3.9	-0.8	2.3	-2.3	0.9800	4.0	0.9808	5.6	64
6	361	ESTRECHO	4.164.1600	G1	4.2	-0.9	2.5	-2.5	0.9800	4.3	0.9792	5.6	64	
6	363	LAGUNA	13.8	13.800	G1	3.9	-1.0	2.4	-2.4	0.9800	4.1	0.9711	5.8	64
6	364	MENDRE2	13.800	G1	6.4	-0.9	3.9	-3.9	0.9800	6.6	0.9908	8.9	64	
6	368	RP-490	13.800	G1	4.5	-2.4	2.4	-2.4	1.0059	5.1	0.8815	5.5	64	
6	369	HCALDERA	13.813.800	G1	3.8	-0.9	1.9	-1.9	0.9800	4.0	0.9742	4.3	64	
6	372	BJO FRIO	13	13.800	G1	24.4	-9.8	9.8	-9.8	1.0013	26.2	0.9283	33.0	64
6	373	TIZINGAL	13.813.800	G1	4.4	2.2	2.2	-2.2	0.9736	5.1	0.8909	21.6	64	
6	374	SLORENZO	13.813.800	G1	3.9	-2.0	2.0	-2.0	0.9849	4.4	0.8909	4.5	64	
6	541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0168	24.6	1.0000	88.9	64	
6	703	BJOMIN	13A	13.800	G1	23.8	-1.5	13.0	-13.0	0.9800	24.3	0.9980	30.5	64
6	705	BAITUN	13A	13.800	G1	32.0	-15.5	26.6	-26.6	0.9800	36.3	0.8997	50.6	64
6	720	PLANETA	13.8	13.800	G1	3.8	2.0	2.0	-2.0	0.9500	4.5	0.8849	6.2	64
6	SUBSYSTEM TOTALS					672.2	-23.4	422.7	-302.2				1138.0	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:44  
 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
129		MIR13D		13.800	G4	20.6	3.5	15.0	0.0	1.0000	20.9	0.9862	44.1			65

7 AREA

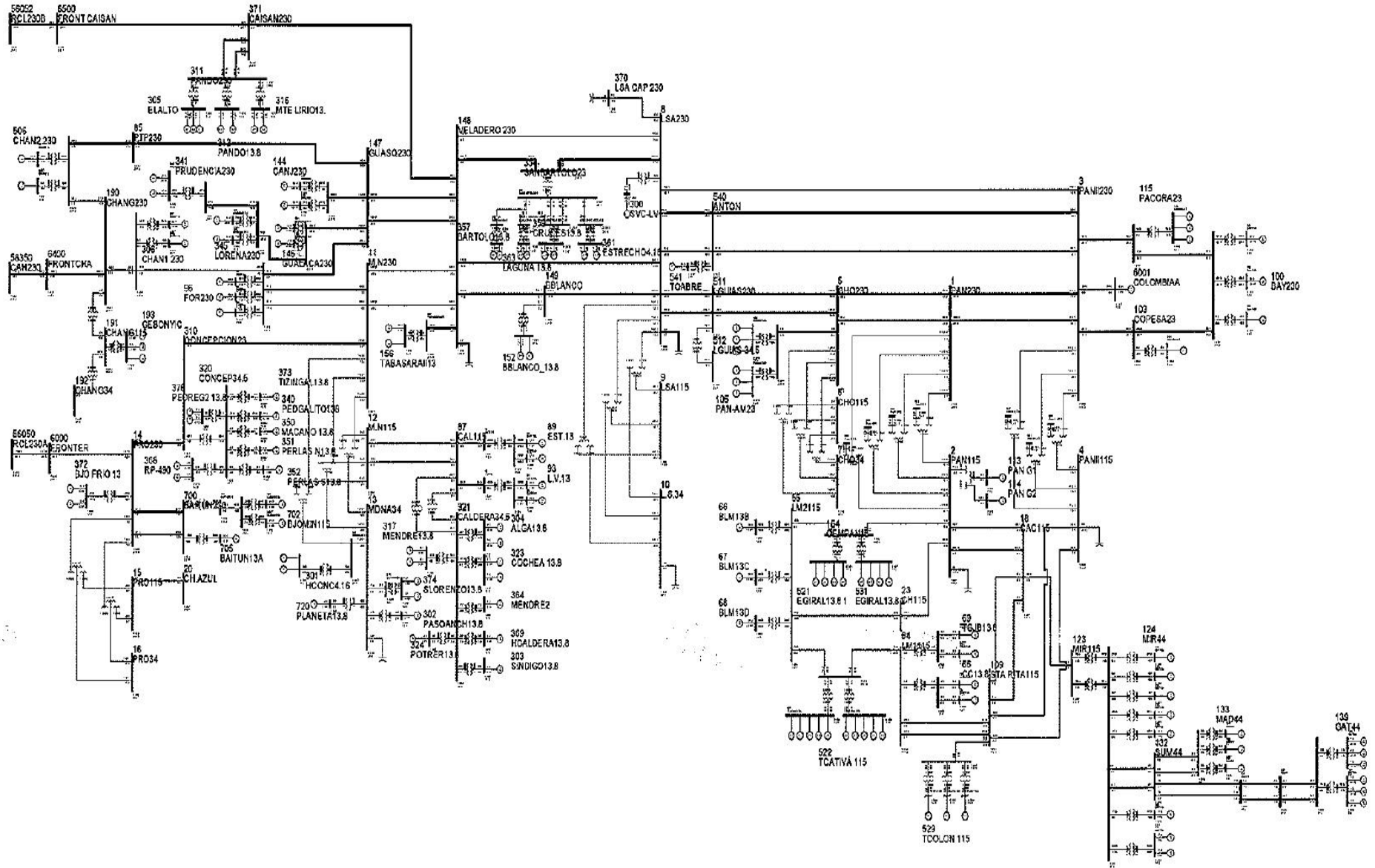
7	140 GAT6A	6.9000 G1	1.9	-1.5	2.0	-2.0	1.0000	2.4	0.7995	4.1	65
7	170 MIR13G	13.800 M1	17.0	6.8	11.2	6.8	1.0225	17.9	0.9281	23.0	65
7	171 MIR13H	13.800 M1	17.0	6.8	11.2	6.8	1.0316	17.8	0.9281	23.0	65
7	171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0316	17.8	0.9281	23.0	65
	SUBSYSTEM TOTALS		73.6	22.5	50.5	18.5				117.3	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 9:44  
 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 GUATEMAL	1089.7 217.1	1330.8 275.1	0.0 -197.0	0.0 0.0	0.0 274.6	-281.3 54.4	40.2 359.3	-282.9
2 SALVADOR	881.0 136.9	855.0 224.2	0.0 -69.8	0.0 0.0	0.0 224.5	0.1 -36.2	25.9 243.2	0.0
3 HONDURAS	1244.6 531.1	1203.0 321.1	0.0 -46.0	0.0 0.0	0.0 287.4	-0.1 50.1	41.7 493.3	0.0
4 NICARAGU	542.0 103.6	525.2 207.6	0.0 -55.7	0.0 0.0	0.0 176.1	-0.4 -56.7	17.2 184.5	0.0
5 COSTA RI	1312.9 298.0	1280.2 520.4	0.0 -226.8	0.0 0.0	0.0 411.7	-1.7 17.6	34.4 398.5	0.0
6 PANAMA	672.2 -23.4	727.4 264.0	0.0 142.2	0.0 0.0	0.0 537.6	-63.5 -34.1	8.3 142.1	-64.1
7 ACANAL	73.6 22.5	26.1 9.5	0.0 0.0	0.0 0.0	0.0 0.0	46.9 4.9	0.6 8.2	47.0
10 COLOMBIA	300.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	300.0 0.0	0.0 0.0	300.0
TOTALS	6116.1 1285.9	5947.6 1821.7	0.0 -453.0	0.0 0.0	0.0 1911.9	0.0 0.0	168.5 1829.0	0.0

## 2 Año 2017

### 2.1 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

TUE, MAY 25 2010 10:00

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)
3		PANII230		230.00	6	1.0101	232.33	11		M.N230		230.00	6	1.0129	232.97
14		PRO230		230.00	6	1.0243	235.60	85		PTP230		230.00	6	1.0172	233.95
96		FOR230		230.00	6	1.0135	233.11	100		BAY230		230.00	6	1.0341	237.85
103		COPESA23		230.00	6	1.0142	233.27	115		PACORA23		230.00	6	1.0162	233.72
144		CANJ230		230.00	6	1.0111	232.55	146		GUALACA230		230.00	6	1.0154	233.54
147		GUASQ230		230.00	6	1.0110	232.53	148		VELADERO 230		230.00	6	1.0060	231.39
149		BBLANCO		230.00	6	1.0043	230.99	155		TABASARAI 230		230.00	6	1.0066	231.52
190		CHANG230		230.00	6	1.0239	235.49	306		CHAN1 230		230.00	6	1.0235	235.41
310		CONCEPCION230		230.00	6	1.0209	234.80	311		PANDO230		230.00	6	1.0405	239.31
341		PRUDENCIA230		230.00	6	1.0222	235.12	345		LORENA230		230.00	6	1.0198	234.55
354		SANBARTOLO230		230.00	6	1.0015	230.34	371		CAISAN230		230.00	6	1.0392	239.02
506		CHAN2 230		230.00	6	1.0258	235.94	540		ANTON		230.00	6	1.0194	234.46
700		BAITUN230		230.00	6	1.0243	235.59	6000		FRONTER		230.00	6	1.0263	236.05
6400		FRONTCHA		230.00	6	1.0235	235.40	6500		FRONT CAISAN230		230.00	6	1.0380	238.73

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9994	229.87	5		CHO230		230.00	6	0.9939	228.60
8		LSA230		230.00	6	1.0000	230.00	105		PAN-AM23		230.00	6	0.9939	228.60
370		LSA CAP 230		230.00	6	1.0000	230.00	511		LGUIAS230		230.00	6	0.9947	228.78



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

TUE, MAY 25 2010 10:00

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	66	BLM13B		13.800	V2	38.0	19.9	25.0	0.0	1.0100	42.5	0.8857	47.0			62
6	67	BLM13C		13.800	V3	38.0	19.9	25.0	0.0	1.0100	42.5	0.8857	47.0			62
6	68	BLM13D		13.800	V4	38.0	20.8	25.0	0.0	1.0100	42.9	0.8773	47.0			62
6	90	EST-13L		13.800	E1	22.8	6.3	12.0	-5.0	1.0000	23.6	0.9641	27.0			64
6	91	EST-13T		13.800	E2	22.8	6.3	12.0	-5.0	1.0000	23.6	0.9641	27.0			64
6	94	LV-13.8L		13.800	L1	25.0	7.1	12.0	-5.0	1.0000	26.0	0.9620	27.0			64
6	95	LV-13.8T		13.800	L2	25.0	7.1	12.0	-5.0	1.0000	26.0	0.9620	27.0			64
6	97	FOR13A		13.800	F1	90.0	-7.9	50.0	-50.0	1.0000	90.3	0.9962	111.0			64
6	98	FOR13B		13.800	F2	90.0	-7.9	50.0	-50.0	1.0000	90.3	0.9962	111.0			64
6	101	BAY13A		13.800	B1	69.3	29.4	50.0	-25.0	1.0180	74.0	0.9204	96.0			61
6	102	BAY13B		13.800	B2	69.3	29.4	50.0	-25.0	1.0180	74.0	0.9204	96.0			61
6	142	CANJ13A		13.800	C1	57.0	16.7	29.0	-29.0	1.0000	59.4	0.9595	69.0			64
6	143	CANJ13B		13.800	C2	57.0	16.7	29.0	-29.0	1.0000	59.4	0.9595	69.0			64
6	150	GUALACA 13-213		13.800	G2	12.6	-3.5	7.4	-7.4	1.0000	13.1	0.9627	14.8			64
6	151	GUALACA13.8		13.800	G1	12.6	-3.5	7.4	-7.4	1.0000	13.1	0.9627	14.8			64
6	152	BBLANCO_13.813		13.800	G1	13.7	-0.1	7.0	-7.0	1.0000	13.7	1.0000	16.0			64
6	156	TABASARAI1313		13.800	G1	16.4	0.2	5.7	0.2	1.0065	16.3	0.9999	20.5			1
6	193	GEBONYIC		13.800	G1	9.0	-1.7	4.0	-4.0	1.0000	9.2	0.9830	35.3			64
6	193	GEBONYIC		13.800	G2	9.0	-1.7	4.0	-4.0	1.0000	9.2	0.9830	35.3			64
6	300	SVC-LV		13.200	1	0.0	44.3	300.0	-225.0	1.0088	43.9	0.0000	250.0			60



6	302	PASOANCH	13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9687	5.3	0.9216	6.2	64
6	303	SINDIGO	13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1069	8.1	1.0000	13.5	64
6	304	ALGA	13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.1043	4.8	0.9063	5.7	64
6	304	ALGA	13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.1043	4.8	0.9063	5.7	64
6	305	ELALTO	13.800		G1	18.0	-5.0	12.0	-5.0	1.0257	18.2	0.9635	20.6	64
6	305	ELALTO	13.800		G2	18.0	-5.0	12.0	-5.0	1.0257	18.2	0.9635	20.6	64
6	307	CHAN1 A	13.800		G1	92.0	-8.9	50.0	-50.0	1.0100	91.5	0.9954	118.6	64
6	312	PANDO	13.8	13.800	G1	14.4	-1.3	10.0	-5.0	1.0100	14.3	0.9959	19.9	64
6	312	PANDO	13.8	13.800	G2	14.4	-1.3	10.0	-5.0	1.0100	14.3	0.9959	19.9	64
6	316	MTE LIRIO	13.13.800		G1	21.9	-5.0	12.0	-5.0	1.0130	22.2	0.9750	27.0	64
6	316	MTE LIRIO	13.13.800		G2	21.9	-5.0	12.0	-5.0	1.0130	22.2	0.9750	27.0	64
6	317	MENDRE	13.8	13.800	M1	8.4	0.0	0.0	0.0	1.1065	7.6	1.0000	35.3	64
6	317	MENDRE	13.8	13.800	M2	8.4	0.0	0.0	0.0	1.1065	7.6	1.0000	35.3	64
6	323	COCHEA	13.8	13.800	C1	5.6	0.0	0.0	0.0	1.1068	5.1	1.0000	35.3	64
6	323	COCHEA	13.8	13.800	C2	5.6	0.0	0.0	0.0	1.1068	5.1	1.0000	35.3	64
6	324	POTRER	13.8	13.800	P1	4.0	2.0	2.0	-2.0	1.0053	4.4	0.8928	6.2	64
6	340	PEDGALITO	13.813.800		P1	21.6	12.0	12.0	-5.0	1.0035	24.6	0.8742	27.0	64
6	342	LORENA	13.8	13.800	L1	14.4	-5.0	10.5	-5.0	1.0039	15.2	0.9444	19.9	64
6	343	PRUDENCIA_1	13.800		G1	23.8	-5.1	9.8	-9.8	1.0000	24.3	0.9777	33.0	64
6	343	PRUDENCIA_1	13.800		G2	23.8	-5.1	9.8	-9.8	1.0000	24.3	0.9777	33.0	64
6	346	LORENA	13-2	13.800	L2	14.4	-5.0	10.5	-5.0	1.0039	15.2	0.9444	19.9	64
6	350	MACANO	13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0785	3.2	0.9560	6.2	64
6	351	PERLAS N	13.813.800		G1	9.5	5.0	5.0	-5.0	0.9823	10.9	0.8849	13.5	64
6	352	PERLAS S	13.813.800		G1	9.5	5.0	5.0	-5.0	0.9823	10.9	0.8849	13.5	64

6	357	BARTOLO	13.8	13.800	G1	6.9	1.2	3.7	-3.7	1.0000	7.0	0.9862	8.5	64
6	357	BARTOLO	13.8	13.800	G2	6.9	1.2	3.7	-3.7	1.0000	7.0	0.9862	8.5	64
6	359	CRUCES	13.8	13.800	G1	4.1	0.4	2.3	-2.3	1.0000	4.1	0.9959	5.6	64
6	359	CRUCES	13.8	13.800	G2	4.1	0.4	2.3	-2.3	1.0000	4.1	0.9959	5.6	64
6	361	ESTRECHO	4.164	4.1600	G1	4.4	0.3	2.5	-2.5	1.0000	4.4	0.9984	5.6	64
6	361	ESTRECHO	4.164	4.1600	G2	4.4	0.3	2.5	-2.5	1.0000	4.4	0.9984	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	7.2	3.9	3.9	-3.9	1.0064	8.1	0.8808	8.9	64
6	368	RP-490		13.800	G1	4.5	-1.4	2.4	-2.4	1.0100	4.6	0.9546	5.5	64
6	368	RP-490		13.800	G2	4.5	-1.4	2.4	-2.4	1.0100	4.6	0.9546	5.5	64
6	369	HCALDERA	13.813	13.800	G1	3.8	1.9	1.9	-1.9	1.0053	4.2	0.8909	4.3	64
6	372	BJO FRIO	13	13.800	G1	23.8	-5.7	9.8	-9.8	1.0000	24.5	0.9726	33.0	64
6	372	BJO FRIO	13	13.800	G2	23.8	-5.7	9.8	-9.8	1.0000	24.5	0.9726	33.0	64
6	373	TIZINGAL	13.813	13.800	G1	4.4	2.2	2.2	-2.2	0.9806	5.0	0.8909	21.6	64
6	374	SLORENZO	13.813	13.800	G1	3.9	-1.5	2.0	-2.0	1.0000	4.1	0.9320	4.5	64
6	374	SLORENZO	13.813	13.800	G2	3.9	-1.5	2.0	-2.0	1.0000	4.1	0.9320	4.5	64
6	376	PEDREG2	13.813	13.800	G1	6.2	-3.1	3.1	-3.1	1.0019	6.9	0.8909	7.2	64
6	376	PEDREG2	13.813	13.800	G2	6.2	-3.1	3.1	-3.1	1.0019	6.9	0.8909	7.2	64
6	507	CHAN2 A		13.800	G1	75.0	11.8	50.0	-50.0	1.0100	75.2	0.9878	118.6	64
6	541	TOABRE		0.6000	1	25.0	0.0	0.0	0.0	1.0204	24.5	1.0000	88.9	64
6	703	BJOMIN13A		13.800	G1	24.0	1.9	13.0	-13.0	1.0100	23.8	0.9968	30.5	64
6	704	BJOMIN13B		13.800	G2	24.0	1.9	13.0	-13.0	1.0100	23.8	0.9968	30.5	64
6	705	BAITUN13A		13.800	G1	38.0	-4.8	26.6	-26.6	1.0100	37.9	0.9923	50.6	64

6	706	BAITUN13B	13.800	G2	38.0	-4.8	26.6	-26.6	1.0100	37.9	0.9923	50.6	64
6	720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9687	4.2	0.8724	6.2	64
	SUBSYSTEM TOTALS				1450.6	163.1	1107.4	-812.4				2348.3	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:00  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

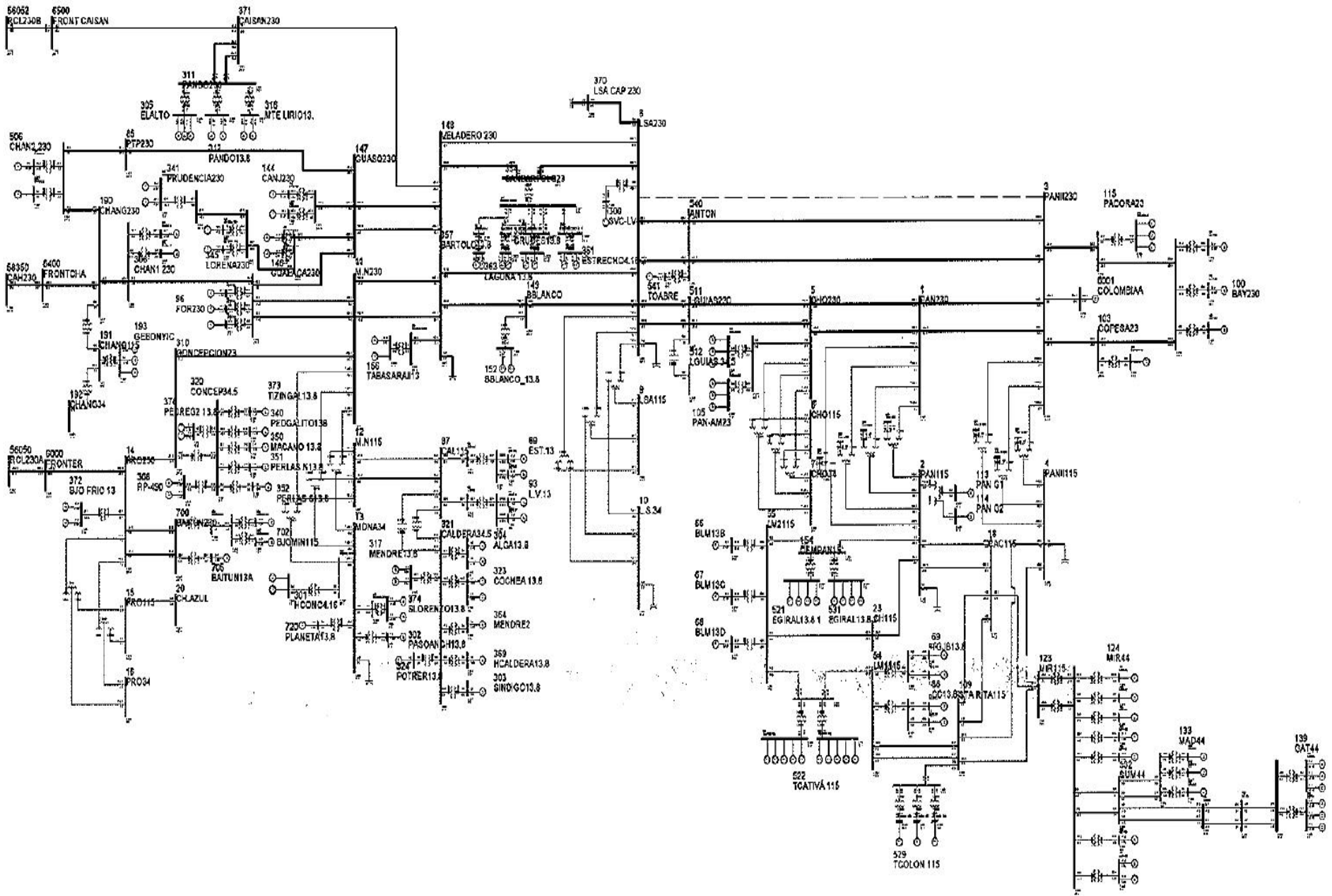
AREA 7 [ACANAL ] MACHINE SUMMARY:

	BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
	AREA SWING														
7	129	MIR13D	13.800	G4	31.1	1.2	15.0	0.0	1.0000	31.1	0.9993	44.1			65
7	130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0107	16.9	1.0000	27.7			65
7	140	GAT6A	6.9000	G1	1.9	-0.3	2.0	-2.0	1.0000	2.0	0.9860	4.1			65
7	140	GAT6A	6.9000	G2	1.9	-0.3	2.0	-2.0	1.0000	2.0	0.9860	4.1			65
7	140	GAT6A	6.9000	G3	1.9	-0.3	2.0	-2.0	1.0000	2.0	0.9860	4.1			65
7	141	GAT6B	6.9000	G4	3.9	-1.1	3.0	-3.0	1.0000	4.0	0.9639	5.6			65
7	141	GAT6B	6.9000	G5	3.9	-1.1	3.0	-3.0	1.0000	4.0	0.9639	6.2			65
7	141	GAT6B	6.9000	G6	3.9	-1.1	3.0	-3.0	1.0000	4.0	0.9639	6.2			65
7	170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0252	17.9	0.9281	23.0			65
7	171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0342	17.7	0.9281	23.0			65
7	171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0342	17.7	0.9281	23.0			65
	SUBSYSTEM TOTALS				116.6	17.5	71.5	5.5				171.3			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:00  
 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 GUATEMAL	1133.2 239.0	1330.8 275.1	0.0 -193.3	0.0 0.0	0.0 272.5	-243.1 38.3	45.5 391.5	-239.1
2 SALVADOR	878.1 126.0	855.0 224.2	0.0 -69.9	0.0 0.0	0.0 225.3	0.3 -27.7	22.7 224.8	0.0
3 HONDURAS	1242.8 511.6	1203.0 321.1	0.0 -46.7	0.0 0.0	0.0 289.2	0.4 52.0	39.4 474.4	0.0
4 NICARAGU	540.1 82.3	525.2 207.6	0.0 -56.3	0.0 0.0	0.0 178.0	0.8 -53.9	14.0 162.9	0.0
5 COSTA RI	1311.0 256.1	1280.2 520.4	0.0 -228.4	0.0 0.0	0.0 414.9	2.4 18.8	28.4 360.2	0.0
6 PANAMA	1450.6 163.1	1555.2 315.8	0.0 -270.6	0.0 0.0	0.0 604.8	-175.1 -20.6	70.4 743.3	-175.2
7 ACANAL	116.6 17.5	55.5 11.3	0.0 0.0	0.0 0.0	0.0 0.0	59.9 -6.9	1.1 13.1	60.0
10 COLOMBIA	354.3 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	354.3 0.0	0.0 0.0	354.3
TOTALS	7026.5 1395.7	6805.0 1875.3	0.0 -865.3	0.0 0.0	0.0 1984.6	0.0 0.0	221.6 2370.3	0.0

## 2.1.1 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 CONT LSA-PANII

TUE, MAY 25 2010 10:04

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
66		BLM13B		13.800	V2	38.0	23.4	25.0	0.0	1.0100	44.2	0.8515	47.0			62
67		BLM13C		13.800	V3	38.0	23.4	25.0	0.0	1.0100	44.2	0.8515	47.0			62
68		BLM13D		13.800	V4	38.0	24.5	25.0	0.0	1.0100	44.8	0.8410	47.0			62
90		EST-13L		13.800	E1	22.8	6.3	12.0	-5.0	1.0000	23.7	0.9638	27.0			64
91		EST-13T		13.800	E2	22.8	6.3	12.0	-5.0	1.0000	23.7	0.9638	27.0			64
94		LV-13.8L		13.800	L1	25.0	7.1	12.0	-5.0	1.0000	26.0	0.9616	27.0			64
95		LV-13.8T		13.800	L2	25.0	7.1	12.0	-5.0	1.0000	26.0	0.9616	27.0			64
97		FOR13A		13.800	F1	90.1	-7.7	50.0	-50.0	1.0000	90.5	0.9964	111.0			64
98		FOR13B		13.800	F2	90.1	-7.7	50.0	-50.0	1.0000	90.5	0.9964	111.0			64
101		BAY13A		13.800	B1	69.4	35.8	50.0	-25.0	1.0180	76.7	0.8887	96.0			61
102		BAY13B		13.800	B2	69.4	35.8	50.0	-25.0	1.0180	76.7	0.8887	96.0			61
142		CANJ13A		13.800	C1	57.1	16.8	29.0	-29.0	1.0000	59.5	0.9593	69.0			64
143		CANJ13B		13.800	C2	57.1	16.8	29.0	-29.0	1.0000	59.5	0.9593	69.0			64
150		GUALACA 13-213		13.800	G2	12.6	-3.5	7.4	-7.4	1.0000	13.1	0.9639	14.8			64
151		GUALACA13.8		13.800	G1	12.6	-3.5	7.4	-7.4	1.0000	13.1	0.9639	14.8			64
152		BBLANCO_13.8		13.800	G1	13.7	-0.1	7.0	-7.0	1.0000	13.7	1.0000	16.0			64
156		TABASARAI1313		13.800	G1	16.4	0.2	5.7	0.2	1.0061	16.3	0.9999	20.5			1
193		GEBONYIC		13.800	G1	9.0	-1.7	4.0	-4.0	1.0000	9.2	0.9830	35.3			64
193		GEBONYIC		13.800	G2	9.0	-1.7	4.0	-4.0	1.0000	9.2	0.9830	35.3			64
300		SVC-LV		13.200	1	0.2	142.6	300.0	-225.0	1.1810	120.7	0.0012	250.0			60



6	302	PASOANCH	13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9685	5.3	0.9218	6.2	64
6	303	SINDIGO	13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1067	8.1	1.0000	13.5	64
6	304	ALGA	13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.1041	4.8	0.9063	5.7	64
6	304	ALGA	13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.1041	4.8	0.9063	5.7	64
6	305	ELALTO	13.800		G1	18.0	-5.0	12.0	-5.0	1.0257	18.2	0.9636	20.6	64
6	305	ELALTO	13.800		G2	18.0	-5.0	12.0	-5.0	1.0257	18.2	0.9636	20.6	64
6	307	CHAN1 A	13.800		G1	92.1	-8.9	50.0	-50.0	1.0100	91.6	0.9954	118.6	64
6	312	PANDO	13.8	13.800	G1	14.4	-1.3	10.0	-5.0	1.0100	14.3	0.9960	19.9	64
6	312	PANDO	13.8	13.800	G2	14.4	-1.3	10.0	-5.0	1.0100	14.3	0.9960	19.9	64
6	316	MTE LIRIO	13.13.800		G1	21.9	-5.0	12.0	-5.0	1.0129	22.2	0.9750	27.0	64
6	316	MTE LIRIO	13.13.800		G2	21.9	-5.0	12.0	-5.0	1.0129	22.2	0.9750	27.0	64
6	317	MENDRE	13.8	13.800	M1	8.5	0.0	0.0	0.0	1.1063	7.6	1.0000	35.3	64
6	317	MENDRE	13.8	13.800	M2	8.5	0.0	0.0	0.0	1.1063	7.6	1.0000	35.3	64
6	323	COCHEA	13.8	13.800	C1	5.7	0.0	0.0	0.0	1.1066	5.1	1.0000	35.3	64
6	323	COCHEA	13.8	13.800	C2	5.7	0.0	0.0	0.0	1.1066	5.1	1.0000	35.3	64
6	324	POTRER	13.8	13.800	P1	4.0	2.0	2.0	-2.0	1.0051	4.4	0.8928	6.2	64
6	340	PEDGALITO	13.813.800		P1	21.6	12.0	12.0	-5.0	1.0034	24.7	0.8745	27.0	64
6	342	LORENA	13.8	13.800	L1	14.4	-5.0	10.5	-5.0	1.0037	15.2	0.9446	19.9	64
6	343	PRUDENCIA_1	13.800		G1	23.8	-5.0	9.8	-9.8	1.0000	24.4	0.9783	33.0	64
6	343	PRUDENCIA_1	13.800		G2	23.8	-5.0	9.8	-9.8	1.0000	24.4	0.9783	33.0	64
6	346	LORENA	13-2	13.800	L2	14.4	-5.0	10.5	-5.0	1.0037	15.2	0.9446	19.9	64
6	350	MACANO	13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0784	3.2	0.9561	6.2	64
6	351	PERLAS N	13.813.800		G1	9.5	5.0	5.0	-5.0	0.9822	10.9	0.8852	13.5	64
6	352	PERLAS S	13.813.800		G1	9.5	5.0	5.0	-5.0	0.9822	10.9	0.8852	13.5	64

6	357	BARTOLO	13.8	13.800	G1	6.9	1.2	3.7	-3.7	1.0000	7.0	0.9860	8.5	64
6	357	BARTOLO	13.8	13.800	G2	6.9	1.2	3.7	-3.7	1.0000	7.0	0.9860	8.5	64
6	359	CRUCES	13.8	13.800	G1	4.1	0.4	2.3	-2.3	1.0000	4.1	0.9957	5.6	64
6	359	CRUCES	13.8	13.800	G2	4.1	0.4	2.3	-2.3	1.0000	4.1	0.9957	5.6	64
6	361	ESTRECHO	4.164	4.1600	G1	4.4	0.3	2.5	-2.5	1.0000	4.4	0.9983	5.6	64
6	361	ESTRECHO	4.164	4.1600	G2	4.4	0.3	2.5	-2.5	1.0000	4.4	0.9983	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	7.2	3.9	3.9	-3.9	1.0062	8.1	0.8808	8.9	64
6	368	RP-490		13.800	G1	4.5	-1.4	2.4	-2.4	1.0100	4.6	0.9553	5.5	64
6	368	RP-490		13.800	G2	4.5	-1.4	2.4	-2.4	1.0100	4.6	0.9553	5.5	64
6	369	HCALDERA	13.813	13.800	G1	3.8	1.9	1.9	-1.9	1.0051	4.2	0.8909	4.3	64
6	372	BJO FRIO	13	13.800	G1	23.8	-5.7	9.8	-9.8	1.0000	24.5	0.9729	33.0	64
6	372	BJO FRIO	13	13.800	G2	23.8	-5.7	9.8	-9.8	1.0000	24.5	0.9729	33.0	64
6	373	TIZINGAL	13.813	13.800	G1	4.4	2.2	2.2	-2.2	0.9805	5.1	0.8920	21.6	64
6	374	SLORENZO	13.813	13.800	G1	3.9	-1.5	2.0	-2.0	1.0000	4.1	0.9332	4.5	64
6	374	SLORENZO	13.813	13.800	G2	3.9	-1.5	2.0	-2.0	1.0000	4.1	0.9332	4.5	64
6	376	PEDREG2	13.813	13.800	G1	6.2	-3.1	3.1	-3.1	1.0018	6.9	0.8909	7.2	64
6	376	PEDREG2	13.813	13.800	G2	6.2	-3.1	3.1	-3.1	1.0018	6.9	0.8909	7.2	64
6	507	CHAN2 A		13.800	G1	75.1	11.8	50.0	-50.0	1.0100	75.3	0.9879	118.6	64
6	541	TOABRE		0.6000	1	25.1	0.0	0.0	0.0	1.0112	24.8	1.0000	88.9	64
6	703	BJOMIN13A		13.800	G1	24.0	1.9	13.0	-13.0	1.0100	23.9	0.9968	30.5	64
6	704	BJOMIN13B		13.800	G2	24.0	1.9	13.0	-13.0	1.0100	23.9	0.9968	30.5	64
6	705	BAITUN13A		13.800	G1	38.1	-4.7	26.6	-26.6	1.0100	38.0	0.9924	50.6	64

6	706	BAITUN13B	13.800	G2	38.1	-4.7	26.6	-26.6	1.0100	38.0	0.9924	50.6	64
6	720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9685	4.2	0.8724	6.2	64
	SUBSYSTEM TOTALS				1452.8	286.0	1107.4	-812.4				2348.3	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:04  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

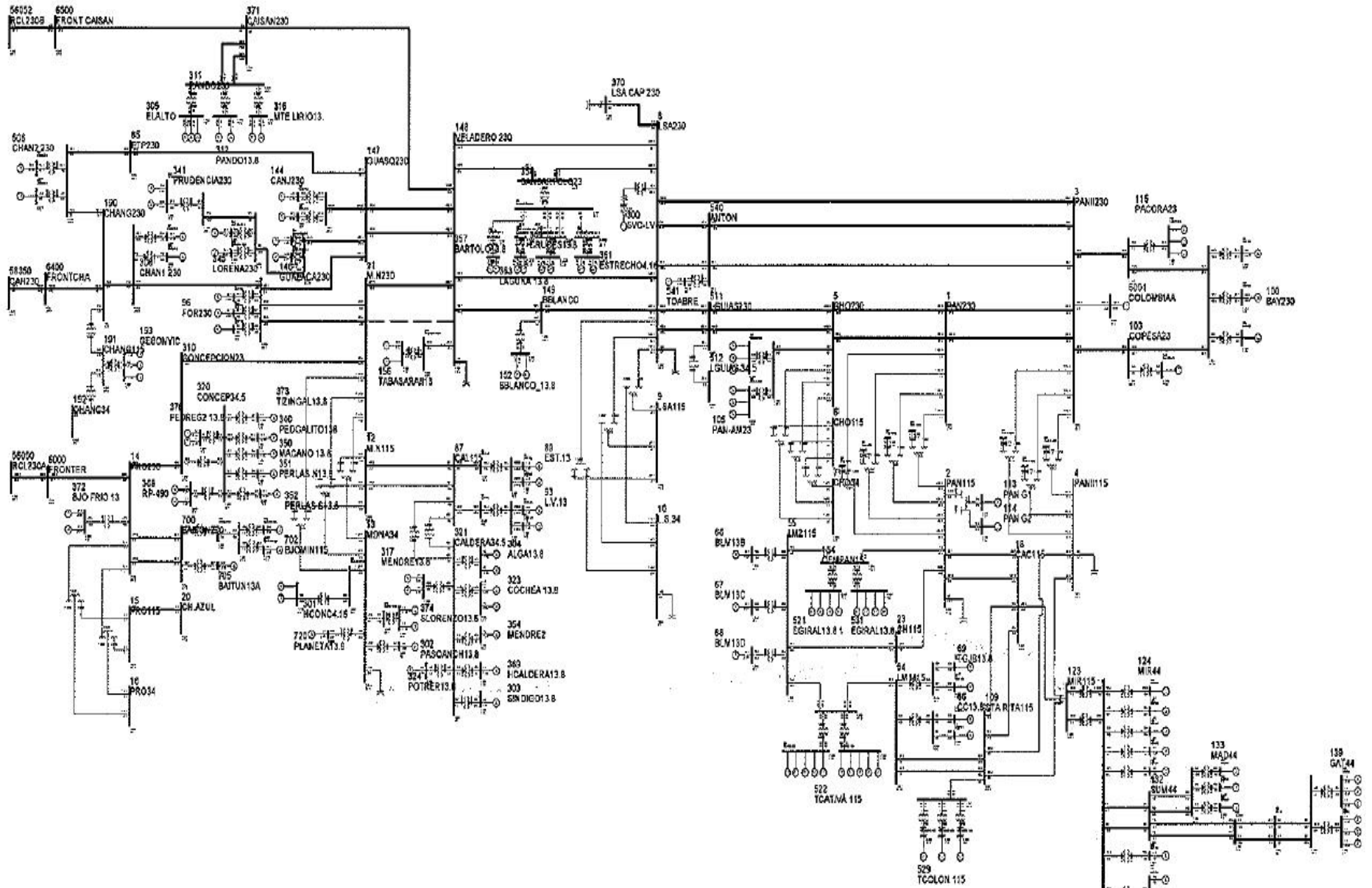
AREA 7 [ACANAL ] MACHINE SUMMARY:

	BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
	AREA SWING														
7	129	MIR13D	13.800	G4	31.1	3.8	15.0	0.0	1.0000	31.3	0.9926	44.1			65
7	130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0042	17.1	1.0000	27.7			65
7	140	GAT6A	6.9000	G1	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			65
7	140	GAT6A	6.9000	G2	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			65
7	140	GAT6A	6.9000	G3	1.9	-0.1	2.0	-2.0	1.0000	1.9	0.9993	4.1			65
7	141	GAT6B	6.9000	G4	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9789	5.6			65
7	141	GAT6B	6.9000	G5	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9789	6.2			65
7	141	GAT6B	6.9000	G6	3.9	-0.8	3.0	-3.0	1.0000	4.0	0.9789	6.2			65
7	170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0187	18.0	0.9283	23.0			65
7	171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0278	17.8	0.9283	23.0			65
7	171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0278	17.8	0.9283	23.0			65
	SUBSYSTEM TOTALS				116.7	21.6	71.5	5.5				171.3			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:05  
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS  
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1 GUATEMAL	1134.9 238.7	1330.8 275.1	0.0 -193.3	0.0 0.0	0.0 272.5	-241.5 37.9	45.5 391.6	-239.1
2 SALVADOR	878.7 125.1	855.0 224.2	0.0 -70.0	0.0 0.0	0.0 225.4	1.2 -27.7	22.6 224.0	0.0
3 HONDURAS	1243.3 510.3	1203.0 321.1	0.0 -46.7	0.0 0.0	0.0 289.3	1.1 52.0	39.2 473.2	0.0
4 NICARAGU	540.3 80.7	525.2 207.6	0.0 -56.4	0.0 0.0	0.0 178.1	1.3 -53.7	13.8 161.3	0.0
5 COSTA RI	1311.9 253.2	1280.2 520.4	0.0 -228.5	0.0 0.0	0.0 415.1	3.9 19.4	27.8 357.0	0.0
6 PANAMA	1452.8 286.0	1555.2 315.8	0.0 -264.6	0.0 0.0	0.0 554.5	-180.4 -24.8	78.0 814.2	-175.2
7 ACANAL	116.7 21.6	55.5 11.3	0.0 0.0	0.0 0.0	0.0 0.0	60.0 -3.0	1.1 13.3	60.0
10 COLOMBIA	354.3 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	354.3 0.0	0.0 0.0	354.3
TOTALS	7033.1 1515.6	6805.0 1875.3	0.0 -859.5	0.0 0.0	0.0 1934.9	0.0 0.0	228.1 2434.6	0.0

## 2.1.2 Contingencia Mata de Nance – Veladero



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:08  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CONT MDN-VEL

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0101	232.33	11		M.N230		230.00	6	1.0097	232.23
14		PRO230		230.00	6	1.0218	235.01	85		PTP230		230.00	6	1.0137	233.16
96		FOR230		230.00	6	1.0099	232.27	100		BAY230		230.00	6	1.0341	237.85
103		COPESA23		230.00	6	1.0142	233.27	115		PACORA23		230.00	6	1.0162	233.72
144		CANJ230		230.00	6	1.0067	231.55	146		GUALACA230		230.00	6	1.0112	232.57
147		GUASQ230		230.00	6	1.0066	231.53	148		VELADERO 230	230.00	6	1.0011	230.24	
155		TABASARAI23	230.00	6	1.0016	230.37	190		CHANG230		230.00	6	1.0221	235.08	
306		CHAN1 230		230.00	6	1.0217	234.98	310		CONCEPCION23	230.00	6	1.0181	234.16	
311		PANDO230		230.00	6	1.0365	238.41	341		PRUDENCIA230	230.00	6	1.0182	234.20	
345		LORENA230		230.00	6	1.0157	233.61	371		CAISAN230		230.00	6	1.0352	238.10
506		CHAN2 230		230.00	6	1.0239	235.49	540		ANTON		230.00	6	1.0194	234.46
700		BAITUN230		230.00	6	1.0220	235.06	6000		FRONTER		230.00	6	1.0235	235.41
6400		FRONTCHA		230.00	6	1.0218	235.00	6500		FRONT CAISAN	230.00	6	1.0341	237.84	

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9994	229.87	5		CHO230		230.00	6	0.9939	228.60
105		PAN-AM23		230.00	6	0.9939	228.60	149		BBLANCO		230.00	6	0.9997	229.94
354		SANBARTOLO23	230.00	6	0.9983	229.62	511		LGUIAS230		230.00	6	0.9947	228.78	



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

TUE, MAY 25 2010 10:08

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
66		BLM13B		13.800	V2	38.0	19.9	25.0	0.0	1.0100	42.5	0.8858	47.0			62
67		BLM13C		13.800	V3	38.0	19.9	25.0	0.0	1.0100	42.5	0.8858	47.0			62
68		BLM13D		13.800	V4	38.0	20.8	25.0	0.0	1.0100	42.9	0.8774	47.0			62
90		EST-13L		13.800	E1	22.8	6.6	12.0	-5.0	1.0000	23.8	0.9603	27.0			64
91		EST-13T		13.800	E2	22.8	6.6	12.0	-5.0	1.0000	23.8	0.9603	27.0			64
94		LV-13.8L		13.800	L1	25.0	7.5	12.0	-5.0	1.0000	26.1	0.9581	27.0			64
95		LV-13.8T		13.800	L2	25.0	7.5	12.0	-5.0	1.0000	26.1	0.9581	27.0			64
97		FOR13A		13.800	F1	90.1	-4.6	50.0	-50.0	1.0000	90.2	0.9987	111.0			64
98		FOR13B		13.800	F2	90.1	-4.6	50.0	-50.0	1.0000	90.2	0.9987	111.0			64
101		BAY13A		13.800	B1	69.3	29.4	50.0	-25.0	1.0180	74.0	0.9205	96.0			61
102		BAY13B		13.800	B2	69.4	29.4	50.0	-25.0	1.0180	74.0	0.9205	96.0			61
142		CANJ13A		13.800	C1	57.0	17.5	29.0	-29.0	1.0000	59.6	0.9562	69.0			64
143		CANJ13B		13.800	C2	57.0	17.5	29.0	-29.0	1.0000	59.6	0.9562	69.0			64
150		GUALACA 13-213		13.800	G2	12.6	-2.5	7.4	-7.4	1.0000	12.8	0.9811	14.8			64
151		GUALACA13.8		13.800	G1	12.6	-2.5	7.4	-7.4	1.0000	12.8	0.9811	14.8			64
152		BBLANCO_13.8		13.800	G1	13.7	0.6	7.0	-7.0	1.0000	13.7	0.9990	16.0			64
156		TABASARAI1313		13.800	G1	16.4	0.2	5.7	0.2	1.0015	16.4	0.9999	20.5			1
193		GEBONYIC		13.800	G1	9.0	-1.5	4.0	-4.0	1.0000	9.1	0.9868	35.3			64
193		GEBONYIC		13.800	G2	9.0	-1.5	4.0	-4.0	1.0000	9.1	0.9868	35.3			64
300		SVC-LV		13.200	1	0.1	69.6	300.0	-225.0	1.0953	63.6	0.0011	250.0			60



6	302	PASOANCH	13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9657	5.3	0.9217	6.2	64
6	303	SINDIGO	13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1054	8.1	1.0000	13.5	64
6	304	ALGA	13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.1029	4.8	0.9063	5.7	64
6	304	ALGA	13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.1029	4.8	0.9063	5.7	64
6	305	ELALTO	13.800		G1	18.0	-5.0	12.0	-5.0	1.0217	18.3	0.9636	20.6	64
6	305	ELALTO	13.800		G2	18.0	-5.0	12.0	-5.0	1.0217	18.3	0.9636	20.6	64
6	307	CHAN1 A	13.800		G1	92.1	-7.1	50.0	-50.0	1.0100	91.4	0.9971	118.6	64
6	312	PANDO	13.8	13.800	G1	14.4	-1.0	10.0	-5.0	1.0100	14.3	0.9977	19.9	64
6	312	PANDO	13.8	13.800	G2	14.4	-1.0	10.0	-5.0	1.0100	14.3	0.9977	19.9	64
6	316	MTE LIRIO	13.800		G1	21.9	-4.8	12.0	-5.0	1.0100	22.2	0.9772	27.0	64
6	316	MTE LIRIO	13.800		G2	21.9	-4.8	12.0	-5.0	1.0100	22.2	0.9772	27.0	64
6	317	MENDRE	13.8	13.800	M1	8.4	0.0	0.0	0.0	1.1050	7.6	1.0000	35.3	64
6	317	MENDRE	13.8	13.800	M2	8.4	0.0	0.0	0.0	1.1050	7.6	1.0000	35.3	64
6	323	COCHEA	13.8	13.800	C1	5.6	0.0	0.0	0.0	1.1053	5.1	1.0000	35.3	64
6	323	COCHEA	13.8	13.800	C2	5.6	0.0	0.0	0.0	1.1053	5.1	1.0000	35.3	64
6	324	POTRER	13.8	13.800	P1	4.0	2.0	2.0	-2.0	1.0040	4.4	0.8928	6.2	64
6	340	PEDGALITO	13.813.800		P1	21.6	12.0	12.0	-5.0	1.0016	24.7	0.8743	27.0	64
6	342	LORENA	13.8	13.800	L1	14.4	-4.9	10.5	-5.0	1.0000	15.2	0.9459	19.9	64
6	343	PRUDENCIA_1	13.800		G1	23.8	-4.0	9.8	-9.8	1.0000	24.2	0.9862	33.0	64
6	343	PRUDENCIA_1	13.800		G2	23.8	-4.0	9.8	-9.8	1.0000	24.2	0.9862	33.0	64
6	346	LORENA	13-2	13.800	L2	14.4	-4.9	10.5	-5.0	1.0000	15.2	0.9459	19.9	64
6	350	MACANO	13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0764	3.2	0.9560	6.2	64
6	351	PERLAS N	13.813.800		G1	9.5	5.0	5.0	-5.0	0.9804	11.0	0.8851	13.5	64
6	352	PERLAS S	13.813.800		G1	9.5	5.0	5.0	-5.0	0.9804	11.0	0.8851	13.5	64

6	357	BARTOLO	13.8	13.800	G1	6.9	1.3	3.7	-3.7	1.0000	7.0	0.9837	8.5	64
6	357	BARTOLO	13.8	13.800	G2	6.9	1.3	3.7	-3.7	1.0000	7.0	0.9837	8.5	64
6	359	CRUCES	13.8	13.800	G1	4.1	0.4	2.3	-2.3	1.0000	4.1	0.9945	5.6	64
6	359	CRUCES	13.8	13.800	G2	4.1	0.4	2.3	-2.3	1.0000	4.1	0.9945	5.6	64
6	361	ESTRECHO	4.164	4.1600	G1	4.4	0.3	2.5	-2.5	1.0000	4.4	0.9975	5.6	64
6	361	ESTRECHO	4.164	4.1600	G2	4.4	0.3	2.5	-2.5	1.0000	4.4	0.9975	5.6	64
6	363	LAGUNA	13.8	13.800	G1	4.2	0.1	2.4	-2.4	1.0000	4.2	0.9996	5.8	64
6	363	LAGUNA	13.8	13.800	G2	4.2	0.1	2.4	-2.4	1.0000	4.2	0.9996	5.8	64
6	364	MENDRE2		13.800	G1	7.2	3.9	3.9	-3.9	1.0051	8.1	0.8808	8.9	64
6	368	RP-490		13.800	G1	4.5	-1.2	2.4	-2.4	1.0100	4.6	0.9643	5.5	64
6	368	RP-490		13.800	G2	4.5	-1.2	2.4	-2.4	1.0100	4.6	0.9643	5.5	64
6	369	HCALDERA	13.813	13.800	G1	3.8	1.9	1.9	-1.9	1.0040	4.2	0.8909	4.3	64
6	372	BJO FRIO	13	13.800	G1	23.8	-5.0	9.8	-9.8	1.0000	24.3	0.9788	33.0	64
6	372	BJO FRIO	13	13.800	G2	23.8	-5.0	9.8	-9.8	1.0000	24.3	0.9788	33.0	64
6	373	TIZINGAL	13.813	13.800	G1	4.4	2.2	2.2	-2.2	0.9787	5.1	0.8914	21.6	64
6	374	SLORENZO	13.813	13.800	G1	3.9	-1.3	2.0	-2.0	1.0000	4.1	0.9475	4.5	64
6	374	SLORENZO	13.813	13.800	G2	3.9	-1.3	2.0	-2.0	1.0000	4.1	0.9475	4.5	64
6	376	PEDREG2	13.813	13.800	G1	6.2	-3.1	3.1	-3.1	1.0000	6.9	0.8921	7.2	64
6	376	PEDREG2	13.813	13.800	G2	6.2	-3.1	3.1	-3.1	1.0000	6.9	0.8921	7.2	64
6	507	CHAN2 A		13.800	G1	75.1	13.7	50.0	-50.0	1.0100	75.5	0.9838	118.6	64
6	541	TOABRE		0.6000	1	25.0	0.0	0.0	0.0	1.0204	24.5	1.0000	88.9	64
6	703	BJOMIN13A		13.800	G1	24.0	2.1	13.0	-13.0	1.0100	23.9	0.9961	30.5	64
6	704	BJOMIN13B		13.800	G2	24.0	2.1	13.0	-13.0	1.0100	23.9	0.9961	30.5	64
6	705	BAITUN13A		13.800	G1	38.0	-3.7	26.6	-26.6	1.0100	37.8	0.9952	50.6	64

6	706 BAITUN13B	13.800 G2	38.0	-3.7	26.6	-26.6	1.0100	37.8	0.9952	50.6	64
6	720 PLANETA13.8	13.800 G1	3.6	2.0	2.0	-2.0	0.9657	4.2	0.8724	6.2	64
	SUBSYSTEM TOTALS		1451.5	213.6	1107.4	-812.4				2348.3	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:08  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CONT MDN-VEL

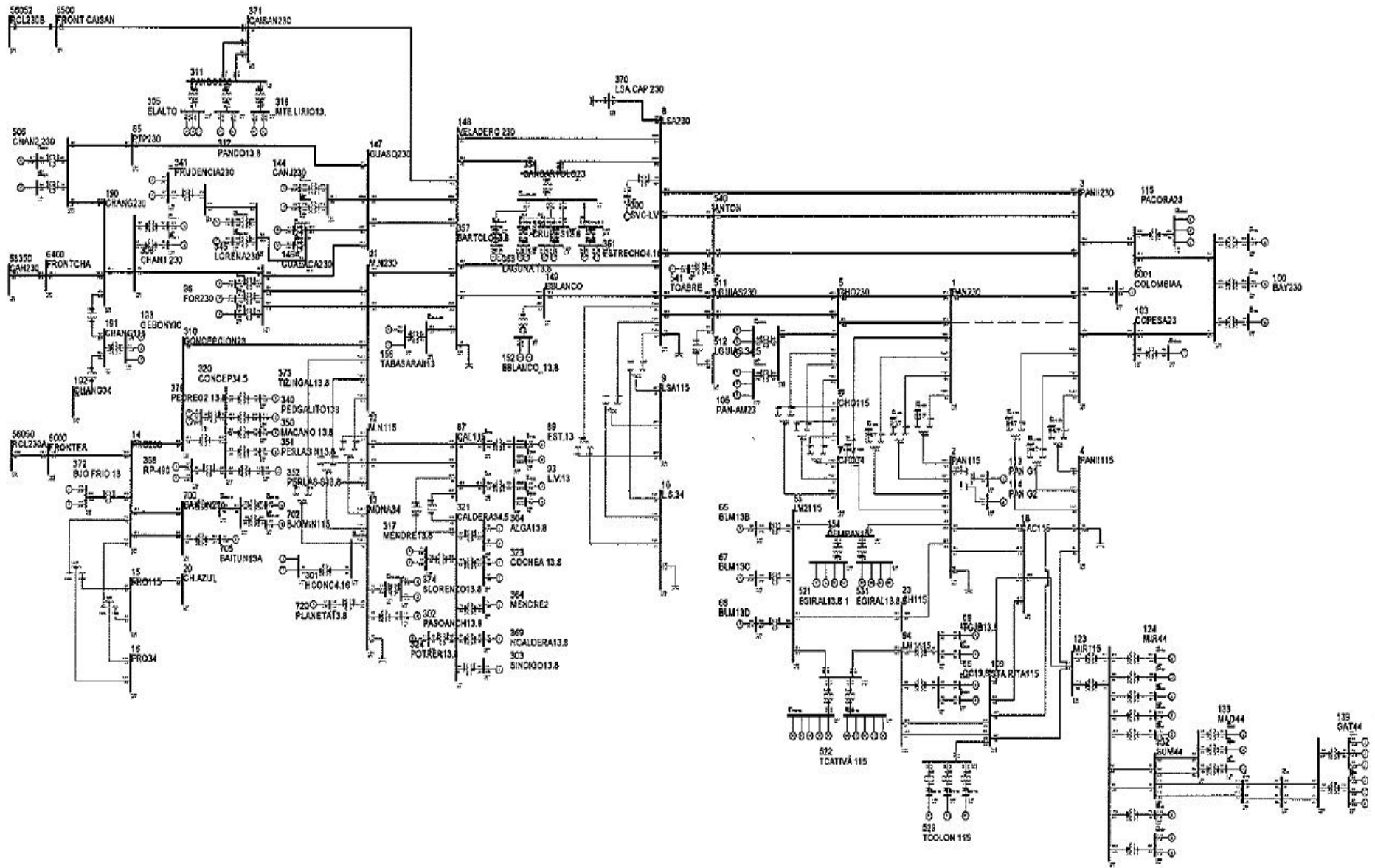
AREA 7 [ACANAL ] MACHINE SUMMARY:

	BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
	AREA SWING														
7	129	MIR13D	13.800	G4	31.1	1.2	15.0	0.0	1.0000	31.1	0.9993	44.1			65
7	130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0107	16.9	1.0000	27.7			65
7	140	GAT6A	6.9000	G1	1.9	-0.3	2.0	-2.0	1.0000	2.0	0.9860	4.1			65
7	140	GAT6A	6.9000	G2	1.9	-0.3	2.0	-2.0	1.0000	2.0	0.9860	4.1			65
7	140	GAT6A	6.9000	G3	1.9	-0.3	2.0	-2.0	1.0000	2.0	0.9860	4.1			65
7	141	GAT6B	6.9000	G4	3.9	-1.1	3.0	-3.0	1.0000	4.0	0.9639	5.6			65
7	141	GAT6B	6.9000	G5	3.9	-1.1	3.0	-3.0	1.0000	4.0	0.9639	6.2			65
7	141	GAT6B	6.9000	G6	3.9	-1.1	3.0	-3.0	1.0000	4.0	0.9639	6.2			65
7	170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0252	17.9	0.9282	23.0			65
7	171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0342	17.7	0.9282	23.0			65
7	171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0342	17.7	0.9282	23.0			65
	SUBSYSTEM TOTALS				116.6	17.5	71.5	5.5				171.3			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:09  
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS  
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CONT MDN-VEL IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1 GUATEMAL	1133.9 238.9	1330.8 275.1	0.0 -193.3	0.0 0.0	0.0 272.5	-242.4 38.1	45.5 391.5	-239.1
2 SALVADOR	878.4 125.6	855.0 224.2	0.0 -70.0	0.0 0.0	0.0 225.3	0.7 -27.7	22.7 224.4	0.0
3 HONDURAS	1243.0 511.0	1203.0 321.1	0.0 -46.7	0.0 0.0	0.0 289.3	0.7 52.0	39.3 473.9	0.0
4 NICARAGU	540.2 81.7	525.2 207.6	0.0 -56.3	0.0 0.0	0.0 178.0	1.0 -53.8	13.9 162.2	0.0
5 COSTA RI	1311.4 257.9	1280.2 520.4	0.0 -228.3	0.0 0.0	0.0 414.6	3.0 21.2	28.2 359.1	0.0
6 PANAMA	1451.5 213.6	1555.2 315.8	0.0 -270.6	0.0 0.0	0.0 585.9	-177.4 -22.9	73.6 777.2	-175.2
7 ACANAL	116.6 17.5	55.5 11.3	0.0 0.0	0.0 0.0	0.0 0.0	60.0 -6.9	1.1 13.1	60.0
10 COLOMBIA	354.3 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	354.3 0.0	0.0 0.0	354.3
TOTALS	7029.3 1446.1	6805.0 1875.3	0.0 -865.2	0.0 0.0	0.0 1965.5	0.0 0.0	224.3 2401.6	0.0

## 2.1.3 Contingencia Panamá – Panamá II



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:13  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0093	232.14	11		M.N230		230.00	6	1.0128	232.95
14		PRO230		230.00	6	1.0243	235.59	85		PTP230		230.00	6	1.0171	233.94
96		FOR230		230.00	6	1.0134	233.09	100		BAY230		230.00	6	1.0336	237.72
103		COPESA23		230.00	6	1.0134	233.09	115		PACORA23		230.00	6	1.0154	233.55
144		CANJ230		230.00	6	1.0110	232.52	146		GUALACA230		230.00	6	1.0153	233.52
147		GUASQ230		230.00	6	1.0109	232.51	148		VELADERO 230		230.00	6	1.0059	231.35
149		BBLANCO		230.00	6	1.0041	230.95	155		TABASARAI 230		230.00	6	1.0064	231.48
190		CHANG230		230.00	6	1.0239	235.50	306		CHAN1 230		230.00	6	1.0235	235.41
310		CONCEPCION230		230.00	6	1.0208	234.78	311		PANDO230		230.00	6	1.0405	239.30
341		PRUDENCIA230		230.00	6	1.0221	235.09	345		LORENA230		230.00	6	1.0197	234.53
354		SANBARTOLO230		230.00	6	1.0013	230.30	371		CAISAN230		230.00	6	1.0392	239.02
506		CHAN2 230		230.00	6	1.0259	235.95	540		ANTON		230.00	6	1.0192	234.42
700		BAITUN230		230.00	6	1.0243	235.58	6000		FRONTER		230.00	6	1.0263	236.05
6400		FRONTCHA		230.00	6	1.0235	235.41	6500		FRONT CAISAN230		230.00	6	1.0379	238.73

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9903	227.78	5		CHO230		230.00	6	0.9862	226.83
8		LSA230		230.00	6	1.0000	230.00	105		PAN-AM23		230.00	6	0.9862	226.83
370		LSA CAP 230		230.00	6	1.0000	230.00	511		LGUIAS230		230.00	6	0.9909	227.92

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:13  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0268	118.09	9		LSA115		115.00	6	1.0416	119.78
12		M.N115		115.00	6	1.0081	115.93	15		PRO115		115.00	6	1.0262	118.02
19		C.V115		115.00	6	1.0059	115.67	20		CH.AZUL		115.00	6	1.0270	118.10
52		TOC115		115.00	6	1.0233	117.68	54		LM1115		115.00	6	1.0130	116.50
55		LM2115		115.00	6	1.0140	116.61	61		FFIELD		115.00	6	1.0082	115.94
87		CAL115		115.00	6	1.0277	118.19	88		EST115		115.00	6	1.0313	118.60
92		L.V115		115.00	6	1.0291	118.35	109		STA RITA115		115.00	6	1.0130	116.50
154		CEMPAN15		115.00	6	1.0066	115.76	191		CHANG115		115.00	6	1.0120	116.38
522		TCATIVÁ 115		115.00	6	1.0135	116.55	529		TCOLON 115		115.00	6	1.0131	116.50
701		BAITUN115		115.00	6	1.0079	115.91	702		BJOMIN115		115.00	6	1.0102	116.17

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9936	114.26	6		CHO115		115.00	6	0.9873	113.54
18		CAC115		115.00	6	0.9931	114.21	21		C.BAN115		115.00	6	0.9840	113.16
23		CH115		115.00	6	0.9903	113.89	26		LOC115		115.00	6	0.9847	113.24
30		MAR115		115.00	6	0.9819	112.91	33		STM115		115.00	6	0.9911	113.98
37		SAN115		115.00	6	0.9841	113.17	48		TINAJ115		115.00	6	0.9903	113.88
50		M.O115		115.00	6	0.9904	113.90	123		MIR115		115.00	7	0.9983	114.81

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

TUE, MAY 25 2010 10:13

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	66	BLM13B		13.800	V2	38.0	21.8	25.0	0.0	1.0100	43.4	0.8679	47.0			62
6	67	BLM13C		13.800	V3	38.0	21.8	25.0	0.0	1.0100	43.4	0.8679	47.0			62
6	68	BLM13D		13.800	V4	38.0	22.7	25.0	0.0	1.0100	43.8	0.8584	47.0			62
6	90	EST-13L		13.800	E1	22.8	6.3	12.0	-5.0	1.0000	23.7	0.9640	27.0			64
6	91	EST-13T		13.800	E2	22.8	6.3	12.0	-5.0	1.0000	23.7	0.9640	27.0			64
6	94	LV-13.8L		13.800	L1	25.0	7.1	12.0	-5.0	1.0000	26.0	0.9618	27.0			64
6	95	LV-13.8T		13.800	L2	25.0	7.1	12.0	-5.0	1.0000	26.0	0.9618	27.0			64
6	97	FOR13A		13.800	F1	90.1	-7.8	50.0	-50.0	1.0000	90.4	0.9963	111.0			64
6	98	FOR13B		13.800	F2	90.1	-7.8	50.0	-50.0	1.0000	90.4	0.9963	111.0			64
6	101	BAY13A		13.800	B1	69.3	29.9	50.0	-25.0	1.0180	74.1	0.9183	96.0			61
6	102	BAY13B		13.800	B2	69.4	29.9	50.0	-25.0	1.0180	74.2	0.9184	96.0			61
6	142	CANJ13A		13.800	C1	57.0	16.8	29.0	-29.0	1.0000	59.5	0.9594	69.0			64
6	143	CANJ13B		13.800	C2	57.0	16.8	29.0	-29.0	1.0000	59.5	0.9594	69.0			64
6	150	GUALACA 13-213		13.800	G2	12.6	-3.5	7.4	-7.4	1.0000	13.1	0.9633	14.8			64
6	151	GUALACA13.8		13.800	G1	12.6	-3.5	7.4	-7.4	1.0000	13.1	0.9633	14.8			64
6	152	BBLANCO_13.813		13.800	G1	13.7	-0.1	7.0	-7.0	1.0000	13.7	1.0000	16.0			64
6	156	TABASARAI1313		13.800	G1	16.4	0.2	5.7	0.2	1.0063	16.3	0.9999	20.5			1
6	193	GEBONYIC		13.800	G1	9.0	-1.7	4.0	-4.0	1.0000	9.2	0.9830	35.3			64
6	193	GEBONYIC		13.800	G2	9.0	-1.7	4.0	-4.0	1.0000	9.2	0.9830	35.3			64
6	300	SVC-LV		13.200	1	0.1	63.1	300.0	-225.0	1.0870	58.0	0.0013	250.0			60



6	302	PASOANCH	13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9686	5.3	0.9217	6.2	64
6	303	SINDIGO	13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1068	8.1	1.0000	13.5	64
6	304	ALGA	13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.1042	4.8	0.9063	5.7	64
6	304	ALGA	13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.1042	4.8	0.9063	5.7	64
6	305	ELALTO	13.800		G1	18.0	-5.0	12.0	-5.0	1.0257	18.2	0.9636	20.6	64
6	305	ELALTO	13.800		G2	18.0	-5.0	12.0	-5.0	1.0257	18.2	0.9636	20.6	64
6	307	CHAN1 A	13.800		G1	92.1	-8.9	50.0	-50.0	1.0100	91.6	0.9954	118.6	64
6	312	PANDO	13.8	13.800	G1	14.4	-1.3	10.0	-5.0	1.0100	14.3	0.9959	19.9	64
6	312	PANDO	13.8	13.800	G2	14.4	-1.3	10.0	-5.0	1.0100	14.3	0.9959	19.9	64
6	316	MTE LIRIO	13.13.800		G1	21.9	-5.0	12.0	-5.0	1.0129	22.2	0.9750	27.0	64
6	316	MTE LIRIO	13.13.800		G2	21.9	-5.0	12.0	-5.0	1.0129	22.2	0.9750	27.0	64
6	317	MENDRE	13.8	13.800	M1	8.4	0.0	0.0	0.0	1.1064	7.6	1.0000	35.3	64
6	317	MENDRE	13.8	13.800	M2	8.4	0.0	0.0	0.0	1.1064	7.6	1.0000	35.3	64
6	323	COCHEA	13.8	13.800	C1	5.6	0.0	0.0	0.0	1.1067	5.1	1.0000	35.3	64
6	323	COCHEA	13.8	13.800	C2	5.6	0.0	0.0	0.0	1.1067	5.1	1.0000	35.3	64
6	324	POTRER	13.8	13.800	P1	4.0	2.0	2.0	-2.0	1.0052	4.4	0.8928	6.2	64
6	340	PEDGALITO	13.813.800		P1	21.6	12.0	12.0	-5.0	1.0035	24.6	0.8743	27.0	64
6	342	LORENA	13.8	13.800	L1	14.4	-5.0	10.5	-5.0	1.0038	15.2	0.9445	19.9	64
6	343	PRUDENCIA_1	13.800		G1	23.8	-5.1	9.8	-9.8	1.0000	24.4	0.9780	33.0	64
6	343	PRUDENCIA_1	13.800		G2	23.8	-5.1	9.8	-9.8	1.0000	24.4	0.9780	33.0	64
6	346	LORENA	13-2	13.800	L2	14.4	-5.0	10.5	-5.0	1.0038	15.2	0.9445	19.9	64
6	350	MACANO	13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0784	3.2	0.9560	6.2	64
6	351	PERLAS N	13.813.800		G1	9.5	5.0	5.0	-5.0	0.9822	10.9	0.8851	13.5	64
6	352	PERLAS S	13.813.800		G1	9.5	5.0	5.0	-5.0	0.9822	10.9	0.8851	13.5	64

6	357	BARTOLO	13.8	13.800	G1	6.9	1.2	3.7	-3.7	1.0000	7.0	0.9861	8.5	64
6	357	BARTOLO	13.8	13.800	G2	6.9	1.2	3.7	-3.7	1.0000	7.0	0.9861	8.5	64
6	359	CRUCES	13.8	13.800	G1	4.1	0.4	2.3	-2.3	1.0000	4.1	0.9958	5.6	64
6	359	CRUCES	13.8	13.800	G2	4.1	0.4	2.3	-2.3	1.0000	4.1	0.9958	5.6	64
6	361	ESTRECHO	4.164	4.1600	G1	4.4	0.3	2.5	-2.5	1.0000	4.4	0.9983	5.6	64
6	361	ESTRECHO	4.164	4.1600	G2	4.4	0.3	2.5	-2.5	1.0000	4.4	0.9983	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	7.2	3.9	3.9	-3.9	1.0063	8.1	0.8808	8.9	64
6	368	RP-490		13.800	G1	4.5	-1.4	2.4	-2.4	1.0100	4.6	0.9549	5.5	64
6	368	RP-490		13.800	G2	4.5	-1.4	2.4	-2.4	1.0100	4.6	0.9549	5.5	64
6	369	HCALDERA	13.813	13.800	G1	3.8	1.9	1.9	-1.9	1.0052	4.2	0.8909	4.3	64
6	372	BJO FRIO	13	13.800	G1	23.8	-5.7	9.8	-9.8	1.0000	24.5	0.9727	33.0	64
6	372	BJO FRIO	13	13.800	G2	23.8	-5.7	9.8	-9.8	1.0000	24.5	0.9727	33.0	64
6	373	TIZINGAL	13.813	13.800	G1	4.4	2.2	2.2	-2.2	0.9806	5.1	0.8914	21.6	64
6	374	SLORENZO	13.813	13.800	G1	3.9	-1.5	2.0	-2.0	1.0000	4.1	0.9326	4.5	64
6	374	SLORENZO	13.813	13.800	G2	3.9	-1.5	2.0	-2.0	1.0000	4.1	0.9326	4.5	64
6	376	PEDREG2	13.813	13.800	G1	6.2	-3.1	3.1	-3.1	1.0018	6.9	0.8909	7.2	64
6	376	PEDREG2	13.813	13.800	G2	6.2	-3.1	3.1	-3.1	1.0018	6.9	0.8909	7.2	64
6	507	CHAN2 A		13.800	G1	75.1	11.8	50.0	-50.0	1.0100	75.2	0.9878	118.6	64
6	541	TOABRE		0.6000	1	25.0	0.0	0.0	0.0	1.0203	24.5	1.0000	88.9	64
6	703	BJOMIN13A		13.800	G1	24.0	1.9	13.0	-13.0	1.0100	23.9	0.9968	30.5	64
6	704	BJOMIN13B		13.800	G2	24.0	1.9	13.0	-13.0	1.0100	23.9	0.9968	30.5	64
6	705	BAITUN13A		13.800	G1	38.0	-4.7	26.6	-26.6	1.0100	37.9	0.9923	50.6	64

6	706	BAITUN13B	13.800	G2	38.0	-4.7	26.6	-26.6	1.0100	37.9	0.9923	50.6	64
6	720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9686	4.2	0.8724	6.2	64
	SUBSYSTEM TOTALS				1451.6	189.0	1107.4	-812.4				2348.3	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E      TUE, MAY 25 2010 10:13  
PLAN DE EXPANSION DEL SIN JUNIO-2010  
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII

AREA 7 [ACANAL            ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	
		SWING																
129		MIR13D		13.800	G4	31.1	2.9	15.0	0.0	1.0000	31.2	0.9956	44.1			65	7	
		AREA																
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0064	17.0	1.0000	27.7			65	7	
140		GAT6A		6.9000	G1	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9952	4.1			65	7	
7		140		GAT6A		6.9000	G2	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9952	4.1		65	
7		140		GAT6A		6.9000	G3	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9952	4.1		65	
7		141		GAT6B		6.9000	G4	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9724	5.6		65	
7		141		GAT6B		6.9000	G5	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9724	6.2		65	
7		141		GAT6B		6.9000	G6	3.9	-0.9	3.0	-3.0	1.0000	4.0	0.9724	6.2		65	
7		170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0209	18.0	0.9282	23.0		65	
7		171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0300	17.8	0.9282	23.0		65	
7		171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0300	17.8	0.9282	23.0		65	
	SUBSYSTEM TOTALS					116.6	20.0	71.5	5.5				171.3					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E      TUE, MAY 25 2010 16:40  
 PLAN DE EXPANSION DEL SIN JUNIO-2010      AREA TOTALS  
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII      IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1 GUATEMAL	1134.0 238.9	1330.8 275.1	0.0 -193.3	0.0 0.0	0.0 272.5	-242.3 38.1	45.5 391.5	-239.1
2 SALVADOR	878.4 125.6	855.0 224.2	0.0 -70.0	0.0 0.0	0.0 225.3	0.7 -27.7	22.7 224.4	0.0
3 HONDURAS	1243.0 510.9	1203.0 321.1	0.0 -46.7	0.0 0.0	0.0 289.3	0.8 52.0	39.3 473.8	0.0
4 NICARAGU	540.2 81.5	525.2 207.6	0.0 -56.3	0.0 0.0	0.0 178.0	1.1 -53.8	13.9 162.1	0.0
5 COSTA RI	1311.4 254.6	1280.2 520.4	0.0 -228.4	0.0 0.0	0.0 415.0	3.2 19.1	28.1 358.6	0.0
6 PANAMA	1451.6 189.0	1555.2 315.8	0.0 -268.0	0.0 0.0	0.0 600.9	-177.7 -23.2	74.1 765.2	-175.2
7 ACANAL	116.6 20.0	55.5 11.3	0.0 0.0	0.0 0.0	0.0 0.0	60.0 -4.5	1.1 13.2	60.0
10 COLOMBIA	354.3 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	354.3 0.0	0.0 0.0	354.3
TOTALS	7029.6 1420.6	6805.0 1875.3	0.0 -862.7	0.0 0.0	0.0 1981.0	0.0 0.0	224.7 2388.9	0.0







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

TUE, MAY 25 2010 10:18

AREA 6 [PANAMA ] MACHINE SUMMARY:																
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	66	BLM13B		13.800	V2	38.0	20.4	25.0	0.0	0.9970	43.2	0.8815	47.0			62
6	90	EST-13L		13.800	E1	18.0	3.1	12.0	-5.0	0.9800	18.6	0.9857	27.0			64
6	94	LV-13.8L		13.800	L1	20.2	3.4	12.0	-5.0	0.9800	21.0	0.9859	27.0			64
6	101	BAY13A		13.800	B1	59.0	22.6	50.0	-25.0	1.0000	63.2	0.9336	96.0			61
6	142	CANJ13A		13.800	C1	45.0	7.8	29.0	-29.0	0.9800	46.6	0.9852	69.0			64
6	152	BBLANCO_13.8	13.800	G1	12.6	-4.3	7.0	-7.0	0.9800	13.5	0.9472	16.0				64
6	156	TABASARAI13	13.800	G1	16.4	0.2	5.7	0.2	1.0119	16.2	0.9999	20.5				1
6	193	GEBOYIC		13.800	G1	9.0	-3.6	4.0	-4.0	0.9800	9.9	0.9270	35.3			64
6	193	GEBOYIC		13.800	G2	9.0	-3.6	4.0	-4.0	0.9800	9.9	0.9270	35.3			64
6	300	SVC-LV		13.200	1	0.0	-128.9	300.0	-225.0	0.9632	133.8	0.0000	250.0			60
6	302	PASOANCH13.8	13.800	P1	3.5	2.0	2.0	-2.0	0.9563	4.2	0.8682	6.2				64
6	303	SINDIGO13.8	13.800	G1	9.0	0.0	5.0	0.0	1.0912	8.2	1.0000	13.5				64
6	304	ALGA13.8		13.800	A1	4.8	-2.3	2.3	-2.3	1.0899	4.9	0.9063	5.7			64
6	305	ELALTO		13.800	G1	18.0	-5.0	12.0	-5.0	1.0418	17.9	0.9635	20.6			64
6	316	MTE LIRIO13.13	13.800	G1	21.9	-5.0	12.0	-5.0	1.0365	21.7	0.9750	27.0				64
6	317	MENDRE13.8	13.800	M1	9.4	0.0	0.0	0.0	1.0911	8.6	1.0000	35.3				64
6	323	COCHEA 13.8	13.800	C1	5.6	0.0	0.0	0.0	1.0913	5.2	1.0000	35.3				64
6	324	POTRER13.8	13.800	P1	4.0	-2.0	2.0	-2.0	0.9886	4.5	0.8928	6.2				64
6	340	PEDGALITO138	13.800	P1	18.0	2.1	12.0	-5.0	0.9800	18.5	0.9932	27.0				64
6	350	MACANO 13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0751	3.2	0.9560	6.2				64



6	351	PERLAS N13.813.800	G1	9.5	5.0	5.0	-5.0	0.9793	11.0	0.8849	13.5	64
6	352	PERLAS S13.813.800	G1	9.5	5.0	5.0	-5.0	0.9793	11.0	0.8849	13.5	64
6	357	BARTOLO13.8	13.800 G1	6.9	0.0	3.7	-3.7	0.9900	6.9	1.0000	8.5	64
6	359	CRUCES13.8	13.800 G1	4.1	-0.3	2.3	-2.3	0.9900	4.2	0.9970	5.6	64
6	361	ESTRECHO4.164.1600	G1	4.4	-0.4	2.5	-2.5	0.9900	4.5	0.9952	5.6	64
6	363	LAGUNA 13.8	13.800 G1	4.2	-0.6	2.4	-2.4	0.9900	4.2	0.9905	5.8	64
6	364	MENDRE2	13.800 G1	7.2	0.2	3.9	-3.9	0.9900	7.3	0.9994	8.9	64
6	368	RP-490	13.800 G1	4.5	-2.4	2.4	-2.4	1.0102	5.0	0.8806	5.5	64
6	369	HCALDERA13.813.800	G1	3.8	0.2	1.9	-1.9	0.9900	3.8	0.9981	4.3	64
6	372	BJO FRIO 13	13.800 G1	26.6	-9.8	9.8	-9.8	1.0080	28.1	0.9388	33.0	64
6	373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9776	5.1	0.8909	21.6	64
6	374	SLORENZO13.813.800	G1	3.9	-2.0	2.0	-2.0	0.9915	4.4	0.8909	4.5	64
6	376	PEDREG2 13.813.800	G1	6.2	-3.1	3.1	-3.1	1.0123	6.8	0.8909	7.2	64
6	507	CHAN2 A	13.800 G1	61.0	-5.4	50.0	-50.0	0.9900	61.9	0.9961	118.6	64
6	541	TOABRE	0.6000 1	25.0	0.0	0.0	0.0	1.0171	24.6	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	-13.8	26.6	-26.6	0.9900	42.7	0.9455	50.6	64
6	720	PLANETA13.8	13.800 G1	4.5	2.0	2.0	-2.0	0.9563	5.2	0.9145	6.2	64
6	SUBSYSTEM TOTALS			576.3	-117.9	634.9	-463.9				1238.8	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:18  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2017 ESC-MOD DEMANDA-MIN-INVIERNO

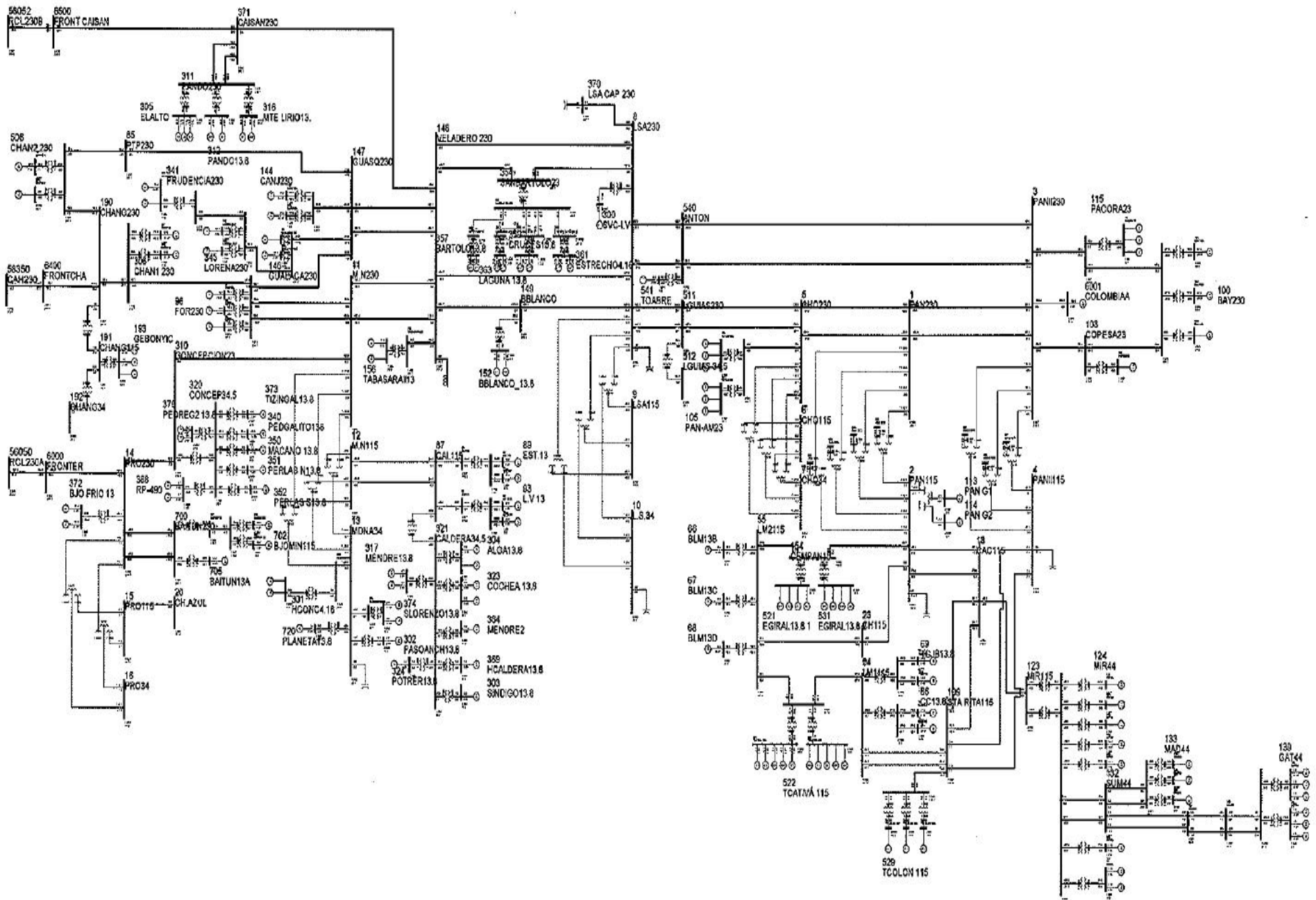
AREA 7 [ACANAL ] MACHINE SUMMARY:  
 BUS# X-- NAME --X BASKV ID MW MVAR QMAX QMIN ETERM CURRENT PF MVABASE X T R A N GENTAP ZONE  
 AREA SWING

7	129	MIR13D	13.800	G4	13.1	2.3	15.0	0.0	1.0000	13.3	0.9852	44.1	65
		AREA											
7	140	GAT6A	6.9000	G1	1.8	-0.4	2.0	-2.0	1.0000	1.8	0.9771	4.1	65
7	140	GAT6A	6.9000	G2	1.8	-0.4	2.0	-2.0	1.0000	1.8	0.9771	4.1	65
7	140	GAT6A	6.9000	G3	1.8	-0.4	2.0	-2.0	1.0000	1.8	0.9771	4.1	65
7	141	GAT6B	6.9000	G4	3.6	-1.1	3.0	-3.0	1.0000	3.8	0.9528	5.6	65
7	141	GAT6B	6.9000	G5	3.6	-1.1	3.0	-3.0	1.0000	3.8	0.9528	6.2	65
7	141	GAT6B	6.9000	G6	3.6	-1.1	3.0	-3.0	1.0000	3.8	0.9528	6.2	65
7	170	MIR13G	13.800	M1	15.8	6.8	11.2	6.8	1.0280	16.7	0.9181	23.0	65
7	171	MIR13H	13.800	M1	15.8	6.8	11.2	6.8	1.0371	16.6	0.9181	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			77.9	18.1	63.5	5.5				143.6	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:18  
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS  
 AÑO 2017 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 GUATEMAL	1080.3 252.8	1330.8 275.1	0.0 -191.8	0.0 0.0	0.0 270.3	-295.5 49.0	45.0 390.9	-295.5
2 SALVADOR	882.4 152.2	855.0 224.2	0.0 -69.6	0.0 0.0	0.0 223.4	0.1 -30.3	27.3 251.4	0.0
3 HONDURAS	1245.6 540.2	1203.0 321.1	0.0 -46.1	0.0 0.0	0.0 286.4	0.0 51.3	42.6 500.4	0.0
4 NICARAGU	543.7 112.2	525.2 207.6	0.0 -55.4	0.0 0.0	0.0 175.3	0.0 -57.8	18.5 193.2	0.0
5 COSTA RI	1316.3 299.6	1280.2 520.4	0.0 -226.7	0.0 0.0	0.0 412.1	-0.1 8.2	36.2 409.9	0.0
6 PANAMA	576.3 -117.9	855.4 310.5	0.0 50.0	0.0 0.0	0.0 605.6	-287.7 -20.5	8.6 147.8	-287.7
7 ACANAL	77.9 18.1	30.5 11.1	0.0 0.0	0.0 0.0	0.0 0.0	47.0 0.1	0.4 6.9	47.0
10 COLOMBIA	536.2 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	536.2 0.0	0.0 0.0	536.2
TOTALS	6258.7 1257.3	6080.1 1869.8	0.0 -539.6	0.0 0.0	0.0 1973.2	0.0 0.0	178.6 1900.3	0.0

## 2.3 Demanda Máxima de Verano







AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	66	BLM13B		13.800	V2	38.0	17.4	25.0	0.0	1.0100	41.4	0.9096	47.0			62
6	67	BLM13C		13.800	V3	38.0	17.4	25.0	0.0	1.0100	41.4	0.9096	47.0			62
6	68	BLM13D		13.800	V4	38.0	18.1	25.0	0.0	1.0100	41.7	0.9029	47.0			62
6	70	TGJB13A		13.800	J5	31.0	8.5	20.0	0.0	1.0000	32.2	0.9640	39.4			62
6	71	TGJB13B		13.800	J6	31.0	8.5	20.0	0.0	1.0000	32.2	0.9640	39.4			62
6	72	BLMCCA		13.800	T8	31.0	9.7	20.0	0.0	1.0000	32.5	0.9543	50.0			62
6	73	BLMCCB		13.800	V9	50.0	10.1	40.0	0.0	1.0000	51.0	0.9801	71.0			62
6	90	EST-13L		13.800	E1	18.0	5.4	12.0	-5.0	1.0000	18.8	0.9573	27.0			64
6	91	EST-13T		13.800	E2	18.0	5.4	12.0	-5.0	1.0000	18.8	0.9573	27.0			64
6	94	LV-13.8L		13.800	L1	20.0	6.1	12.0	-5.0	1.0000	20.9	0.9561	27.0			64
6	95	LV-13.8T		13.800	L2	20.0	6.1	12.0	-5.0	1.0000	20.9	0.9561	27.0			64
6	97	FOR13A		13.800	F1	75.0	-9.2	50.0	-50.0	1.0000	75.6	0.9926	111.0			64
6	98	FOR13B		13.800	F2	75.0	-9.2	50.0	-50.0	1.0000	75.6	0.9926	111.0			64
6	101	BAY13A		13.800	B1	57.0	29.0	50.0	-25.0	1.0100	63.3	0.8914	96.0			61
6	102	BAY13B		13.800	B2	57.0	29.0	50.0	-25.0	1.0100	63.3	0.8914	96.0			61
6	142	CANJ13A		13.800	C1	45.0	12.4	29.0	-29.0	1.0000	46.7	0.9641	69.0			64
6	143	CANJ13B		13.800	C2	45.0	12.4	29.0	-29.0	1.0000	46.7	0.9641	69.0			64
6	150	GUALACA	13-213.800	G2		11.0	-3.3	7.4	-7.4	1.0000	11.5	0.9582	14.8			64
6	152	BBLANCO_13.813.800		G1		10.0	0.3	7.0	-7.0	1.0000	10.0	0.9994	16.0			64
6	152	BBLANCO_13.813.800		G2		10.0	0.3	7.0	-7.0	1.0000	10.0	0.9994	16.0			64

6	156	TABASARAI	13.800	G1	13.8	0.2	5.7	0.2	1.0058	13.7	0.9998	20.5	1
6	193	GEBO	13.800	G1	7.5	-1.0	4.0	-4.0	1.0000	7.6	0.9907	35.3	64
6	193	GEBO	13.800	G2	7.5	-1.0	4.0	-4.0	1.0000	7.6	0.9907	35.3	64
6	300	SVC-LV	13.200	1	0.0	-14.3	300.0	-225.0	0.9871	14.5	0.0000	250.0	63
6	302	PASOANCH	13.813.800	P1	4.7	2.0	2.0	-2.0	0.9684	5.3	0.9202	6.2	64
6	303	SINDIGO	13.813.800	G1	7.0	0.0	5.0	0.0	1.1019	6.4	1.0000	13.5	64
6	304	ALGA	13.813.800	A1	4.8	-2.3	2.3	-2.3	1.1006	4.9	0.9063	5.7	64
6	305	ELALTO	13.813.800	G1	12.0	-5.0	12.0	-5.0	1.0149	12.8	0.9231	20.6	64
6	305	ELALTO	13.813.800	G2	12.0	-5.0	12.0	-5.0	1.0149	12.8	0.9231	20.6	64
6	305	ELALTO	13.813.800	G3	12.0	-5.0	12.0	-5.0	1.0149	12.8	0.9231	20.6	64
6	307	CHAN1 A	13.813.800	G1	70.5	-13.2	50.0	-50.0	1.0000	71.7	0.9830	118.6	64
6	308	CHAN1 B	13.813.800	G2	70.5	-13.2	50.0	-50.0	1.0000	71.7	0.9830	118.6	64
6	312	PANDO	13.813.800	G1	10.0	-2.4	10.0	-5.0	1.0000	10.3	0.9720	19.9	64
6	312	PANDO	13.813.800	G2	10.0	-2.4	10.0	-5.0	1.0000	10.3	0.9720	19.9	64
6	316	MTE LIRIO	13.13.800	G1	16.0	-5.0	12.0	-5.0	1.0114	16.6	0.9545	27.0	64
6	316	MTE LIRIO	13.13.800	G2	16.0	-5.0	12.0	-5.0	1.0114	16.6	0.9545	27.0	64
6	317	MENDRE	13.813.800	M1	6.5	0.0	0.0	0.0	1.1017	5.9	1.0000	35.3	64
6	317	MENDRE	13.813.800	M2	6.5	0.0	0.0	0.0	1.1017	5.9	1.0000	35.3	64
6	323	COCHEA	13.813.800	C1	4.5	0.0	0.0	0.0	1.1018	4.1	1.0000	35.3	64
6	323	COCHEA	13.813.800	C2	4.5	0.0	0.0	0.0	1.1018	4.1	1.0000	35.3	64
6	324	POTRER	13.813.800	P1	4.0	0.8	2.0	-2.0	1.0000	4.0	0.9822	6.2	64
6	340	PEDGALITO	13.813.800	P1	21.6	11.8	12.0	-5.0	1.0000	24.6	0.8773	27.0	64
6	342	LORENA	13.813.800	L1	12.0	-5.0	10.5	-5.0	1.0001	13.0	0.9231	19.9	64
6	343	PRUDENCIA_1	13.813.800	G1	19.0	-8.8	9.8	-9.8	1.0000	20.9	0.9074	33.0	64



6	350	MACANO	13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0750	3.2	0.9559	6.2	64
6	351	PERLAS N13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9791	11.0	0.8849	13.5	64	
6	352	PERLAS S13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9791	11.0	0.8849	13.5	64	
6	357	BARTOLO13.8	13.800	G1	5.2	0.9	3.7	-3.7	1.0000	5.3	0.9866	8.5	64	
6	357	BARTOLO13.8	13.800	G2	5.2	0.9	3.7	-3.7	1.0000	5.3	0.9866	8.5	64	
6	359	CRUCES13.8	13.800	G1	3.1	0.3	2.3	-2.3	1.0000	3.1	0.9966	5.6	64	
6	359	CRUCES13.8	13.800	G2	3.1	0.3	2.3	-2.3	1.0000	3.1	0.9966	5.6	64	
6	361	ESTRECHO4.164	1.600	G1	3.5	0.2	2.5	-2.5	1.0000	3.5	0.9989	5.6	64	
6	361	ESTRECHO4.164	1.600	G2	3.5	0.2	2.5	-2.5	1.0000	3.5	0.9989	5.6	64	
6	363	LAGUNA 13.8	13.800	G1	3.5	0.0	2.4	-2.4	1.0000	3.5	1.0000	5.8	64	
6	363	LAGUNA 13.8	13.800	G2	3.5	0.0	2.4	-2.4	1.0000	3.5	1.0000	5.8	64	
6	364	MENDRE2	13.800	G1	5.8	0.8	3.9	-3.9	1.0000	5.9	0.9914	8.9	64	
6	368	RP-490	13.800	G1	4.7	-1.9	2.4	-2.4	1.0000	5.1	0.9269	5.5	64	
6	368	RP-490	13.800	G2	4.7	-1.9	2.4	-2.4	1.0000	5.1	0.9269	5.5	64	
6	369	HCALDERA13.8	13.800	G1	3.4	0.8	1.9	-1.9	1.0000	3.5	0.9761	4.3	64	
6	372	BJO FRIO 13	13.800	G1	19.0	-5.3	9.8	-9.8	1.0000	19.7	0.9636	33.0	64	
6	372	BJO FRIO 13	13.800	G2	19.0	-5.3	9.8	-9.8	1.0000	19.7	0.9636	33.0	64	
6	373	TIZINGAL13.8	13.800	G1	4.4	2.2	2.2	-2.2	0.9774	5.1	0.8910	21.6	64	
6	374	SLORENZO13.8	13.800	G1	3.0	-1.4	2.0	-2.0	1.0000	3.3	0.9081	4.5	64	
6	374	SLORENZO13.8	13.800	G2	3.0	-1.4	2.0	-2.0	1.0000	3.3	0.9081	4.5	64	
6	376	PEDREG2 13.8	13.800	G1	6.2	-3.0	3.1	-3.1	1.0000	6.8	0.9010	7.2	64	
6	376	PEDREG2 13.8	13.800	G2	6.2	-3.0	3.1	-3.1	1.0000	6.8	0.9010	7.2	64	
6	507	CHAN2 A	13.800	G1	65.0	7.1	50.0	-50.0	1.0000	65.4	0.9942	118.6	64	
6	523	TCATIVÁ 13A	13.800	G1	8.3	3.4	6.6	-6.6	1.0000	8.9	0.9264	10.9	62	

6	523	TCATIVÁ 13A	13.800	G2	8.3	3.4	6.6	-6.6	1.0000	8.9	0.9264	10.9	62
6	523	TCATIVÁ 13A	13.800	G3	8.3	3.4	6.6	-6.6	1.0000	8.9	0.9264	10.9	62
6	523	TCATIVÁ 13A	13.800	G4	8.3	3.4	6.6	-6.6	1.0000	8.9	0.9264	10.9	62
6	523	TCATIVÁ 13A	13.800	G5	8.3	3.4	6.6	-6.6	1.0000	8.9	0.9264	10.9	62
6	541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0113	29.7	1.0000	88.9	64
6	703	BJOMIN13A	13.800	G1	19.0	0.2	13.0	-13.0	1.0000	19.0	0.9999	30.5	64
6	704	BJOMIN13B	13.800	G2	19.0	0.2	13.0	-13.0	1.0000	19.0	0.9999	30.5	64
6	705	BAITUN13A	13.800	G1	30.0	-8.1	26.6	-26.6	1.0000	31.1	0.9656	50.6	64
6	706	BAITUN13B	13.800	G2	30.0	-8.1	26.6	-26.6	1.0000	31.1	0.9656	50.6	64
6	720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9684	4.2	0.8724	6.2	64
6	SUBSYSTEM TOTALS				1441.0	103.3	1279.2	-882.8				2684.7	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:20  
 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																	
7	129		MIR13D		13.800	G4	32.5	3.4	15.0	0.0	1.0000	32.7	0.9947	44.1			65
7	130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0049	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	0.9749	4.1			65
7	140		GAT6A		6.9000	G2	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9749	4.1			65
7	140		GAT6A		6.9000	G3	1.9	-0.4	2.0	-2.0	1.0000	2.0	0.9749	4.1			65
7	141		GAT6B		6.9000	G4	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9561	5.6			65
7	141		GAT6B		6.9000	G5	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9561	6.2			65
7	141		GAT6B		6.9000	G6	3.9	-1.2	3.0	-3.0	1.0000	4.0	0.9561	6.2			65

7	170 MIR13G	13.800 M1	17.0	6.8	11.2	6.8	1.0195	18.0	0.9281	23.0	65
7	171 MIR13H	13.800 M1	17.0	6.8	11.2	6.8	1.0286	17.8	0.9281	23.0	65
7	171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0286	17.8	0.9281	23.0	65
	SUBSYSTEM TOTALS		118.0	18.9	71.5	5.5				171.3	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:20  
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS  
 AÑO 2017 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 GUATEMAL	1131.6 251.3	1330.8 275.1	0.0 -191.7	0.0 0.0	0.0 271.4	-246.2 38.3	46.9 401.1	-240.2
2 SALVADOR	878.5 127.7	855.0 224.2	0.0 -69.9	0.0 0.0	0.0 225.2	0.6 -27.1	22.9 225.8	0.0
3 HONDURAS	1243.1 513.2	1203.0 321.1	0.0 -46.6	0.0 0.0	0.0 289.0	0.6 51.9	39.5 476.0	0.0
4 NICARAGU	540.6 83.6	525.2 207.6	0.0 -56.3	0.0 0.0	0.0 177.9	1.2 -54.0	14.2 164.1	0.0
5 COSTA RI	1311.9 262.8	1280.2 520.4	0.0 -228.1	0.0 0.0	0.0 414.2	3.0 21.9	28.7 362.8	0.0
6 PANAMA	1441.0 103.3	1600.6 325.0	0.0 -198.8	0.0 0.0	0.0 553.0	-209.7 -24.7	50.1 554.7	-210.4
7 ACANAL	118.0 18.9	57.1 11.6	0.0 0.0	0.0 0.0	0.0 0.0	59.9 -6.2	1.0 13.5	60.0
10 COLOMBIA	390.6 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	390.6 0.0	0.0 0.0	390.6
TOTALS	7055.3 1360.8	6851.9 1884.9	0.0 -791.4	0.0 0.0	0.0 1930.7	0.0 0.0	203.4 2198.0	0.0







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

TUE, MAY 25 2010 10:23

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	90	EST-13L		13.800	E1	22.8	3.4	12.0	-5.0	0.9800	23.5	0.9889	27.0			64
6	94	LV-13.8L		13.800	L1	25.6	3.9	12.0	-5.0	0.9800	26.5	0.9887	27.0			64
6	97	FOR13A		13.800	F1	70.0	-24.1	50.0	-50.0	0.9800	75.6	0.9454	111.0			64
6	101	BAY13A		13.800	B1	58.5	28.8	50.0	-25.0	1.0100	64.5	0.8969	96.0			61
6	142	CANJ13A		13.800	C1	39.0	7.8	29.0	-29.0	0.9800	40.6	0.9806	69.0			64
6	150	GUALACA 13-213		13.800	G2	11.8	-5.3	7.4	-7.4	0.9900	13.1	0.9127	14.8			64
6	152	BBLANCO_13.813		13.800	G1	12.0	-0.3	7.0	-7.0	1.0000	12.0	0.9998	16.0			64
6	156	TABASARAI1313		13.800	G1	13.8	0.2	5.7	0.2	1.0060	13.7	0.9998	20.5			1
6	193	GEBONYIC		13.800	G1	9.5	-1.9	4.0	-4.0	1.0000	9.7	0.9814	35.3			64
6	300	SVC-LV		13.200	1	0.0	-69.4	300.0	-225.0	0.9758	71.2	0.0000	250.0			63
6	302	PASOANCH13.813		13.800	P1	4.1	2.0	2.0	-2.0	0.9492	4.8	0.8988	6.2			64
6	303	SINDIGO13.8		13.800	G1	7.0	0.0	5.0	0.0	1.1011	6.4	1.0000	13.5			64
6	304	ALGA13.8		13.800	A1	4.8	-2.3	2.3	-2.3	1.0998	4.9	0.9063	5.7			64
6	305	ELALTO		13.800	G1	12.0	-5.0	12.0	-5.0	1.0354	12.6	0.9231	20.6			64
6	307	CHAN1 A		13.800	G1	60.0	-20.1	50.0	-50.0	0.9900	63.9	0.9484	118.6			64
6	312	PANDO13.8		13.800	G1	10.0	-5.0	10.0	-5.0	1.0103	11.1	0.8944	19.9			64
6	316	MTE LIRIO13.13		13.800	G1	24.5	-5.0	12.0	-5.0	1.0297	24.3	0.9798	27.0			64
6	317	MENDRE13.8		13.800	M1	9.4	0.0	0.0	0.0	1.1010	8.5	1.0000	35.3			64
6	323	COCHEA 13.8		13.800	C1	4.5	0.0	0.0	0.0	1.1012	4.1	1.0000	35.3			64
6	324	POTRER13.8		13.800	P1	4.0	2.0	2.0	-2.0	1.0000	4.4	0.8955	6.2			64



6	340	PEDGALITO13813.800	P1	17.0	3.3	12.0	-5.0	0.9800	17.7	0.9816	27.0	64		
6	342	LORENA13.8	13.800	L1	12.0	-4.5	10.5	-5.0	1.0000	12.8	0.9361	19.9	64	
6	343	PRUDENCIA_1	13.800	G1	19.0	-8.0	9.8	-9.8	1.0000	20.6	0.9224	33.0	64	
6	350	MACANO	13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0722	3.2	0.9559	6.2	64
6	351	PERLAS N13.813.800	G1	9.0	5.0	5.0	-5.0	0.9766	10.5	0.8742	13.5	64		
6	352	PERLAS S13.813.800	G1	9.0	5.0	5.0	-5.0	0.9766	10.5	0.8742	13.5	64		
6	357	BARTOLO13.8	13.800	G1	5.2	0.7	3.7	-3.7	1.0000	5.3	0.9899	8.5	64	
6	359	CRUCES13.8	13.800	G1	3.1	0.2	2.3	-2.3	1.0000	3.1	0.9983	5.6	64	
6	361	ESTRECHO4.164.1600	G1	3.5	0.1	2.5	-2.5	1.0000	3.5	0.9997	5.6	64		
6	363	LAGUNA	13.8	13.800	G1	3.5	-0.1	2.4	-2.4	1.0000	3.5	0.9998	5.8	64
6	364	MENDRE2	13.800	G1	6.5	2.0	3.9	-3.9	1.0000	6.8	0.9567	8.9	64	
6	368	RP-490	13.800	G1	4.2	-2.4	2.4	-2.4	1.0074	4.8	0.8674	5.5	64	
6	369	HCALDERA13.813.800	G1	3.4	1.9	1.9	-1.9	1.0000	3.9	0.8689	4.3	64		
6	372	BJO FRIO 13	13.800	G1	26.6	-9.8	9.8	-9.8	1.0034	28.2	0.9388	33.0	64	
6	373	TIZINGAL13.813.800	G1	4.0	2.2	2.2	-2.2	0.9749	4.7	0.8719	21.6	64		
6	374	SLORENZO13.813.800	G1	3.8	0.0	2.0	-2.0	1.0000	3.8	1.0000	4.5	64		
6	376	PEDREG2	13.813.800	G1	6.0	-3.1	3.1	-3.1	1.0095	6.7	0.8855	7.2	64	
6	507	CHAN2 A	13.800	G1	60.0	9.0	50.0	-50.0	1.0000	60.7	0.9890	118.6	64	
6	541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0185	29.5	1.0000	88.9	64	
6	703	BJOMIN13A	13.800	G1	19.0	-0.9	13.0	-13.0	1.0000	19.0	0.9990	30.5	64	
6	705	BAITUN13A	13.800	G1	30.0	-8.7	26.6	-26.6	1.0000	31.2	0.9607	50.6	64	
6	720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9492	4.3	0.8724	6.2	64	
6	SUBSYSTEM TOTALS				685.0	-97.1	743.6	-587.1			1473.7			

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

TUE, MAY 25 2010 10:23

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	31.3	3.5	15.0	0.0	1.0000	31.5	0.9939	44.1			65
7		AREA														
140		GAT6A		6.9000	G1	1.8	-0.1	2.0	-2.0	1.0000	1.8	0.9980	4.1			65
7																
140		GAT6A		6.9000	G2	1.8	-0.1	2.0	-2.0	1.0000	1.8	0.9980	4.1			65
7																
140		GAT6A		6.9000	G3	1.8	-0.1	2.0	-2.0	1.0000	1.8	0.9980	4.1			65
7																
141		GAT6B		6.9000	G4	3.6	-0.9	3.0	-3.0	1.0000	3.7	0.9723	5.6			65
7																
141		GAT6B		6.9000	G5	3.6	-0.9	3.0	-3.0	1.0000	3.7	0.9723	6.2			65
7																
141		GAT6B		6.9000	G6	3.6	-0.9	3.0	-3.0	1.0000	3.7	0.9723	6.2			65
7																
171		MIR13H		13.800	M1	15.8	6.8	11.2	6.8	1.0289	16.7	0.9181	23.0			65
7																
171		MIR13H		13.800	M2	15.8	6.8	11.2	6.8	1.0289	16.7	0.9181	23.0			65
7																
SUBSYSTEM TOTALS						79.1	14.2	52.3	-1.4				120.6			

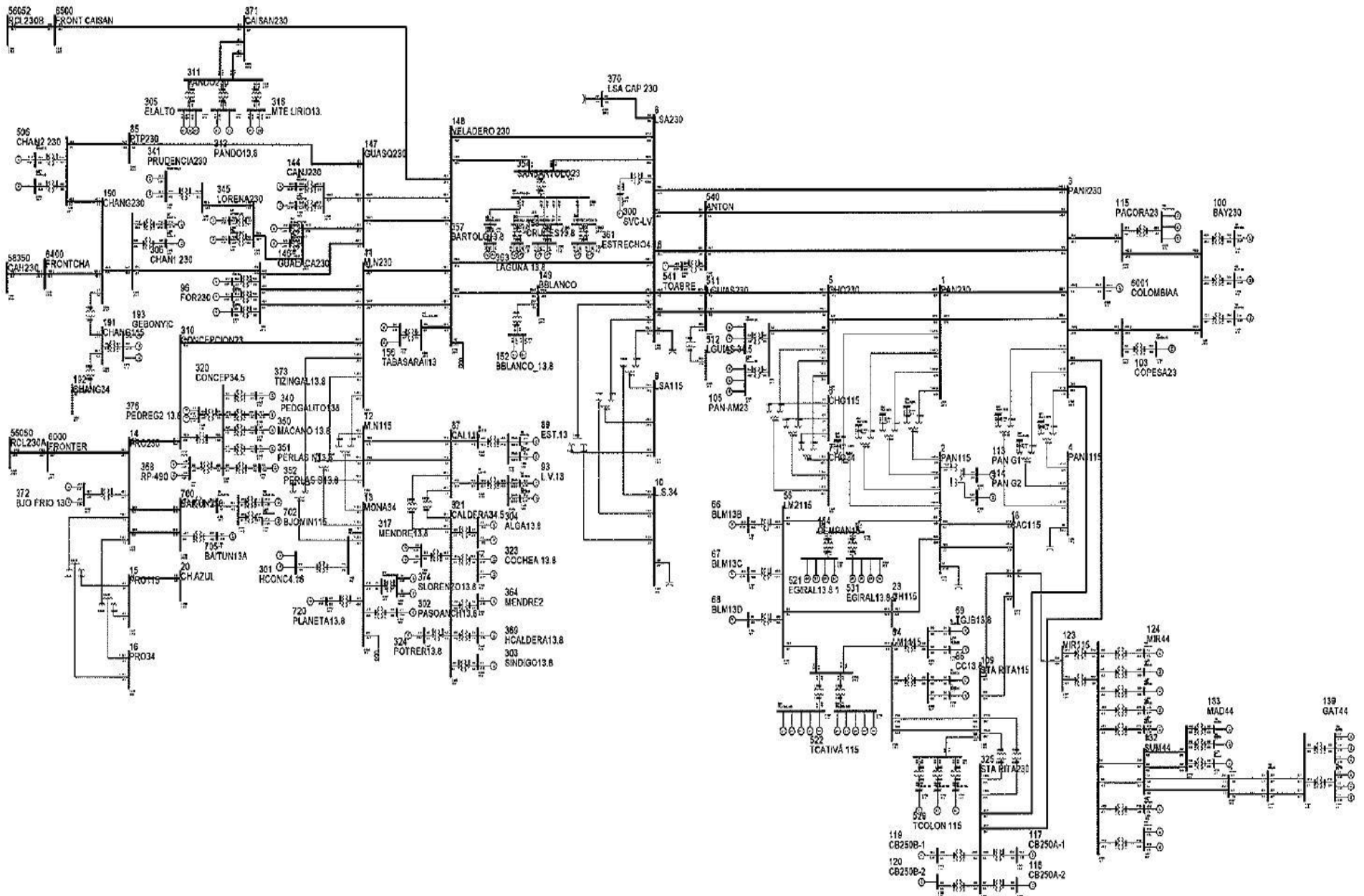
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2017 ESC-MOD DEMANDA-MIN-VERANO

TUE, MAY 25 2010 10:24  
 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	1079.7	1330.8	0.0	0.0	0.0	-295.5	44.4	-295.5
GUATEMAL	252.9	275.1	-192.5	0.0	271.2	53.3	388.2	
2	882.3	855.0	0.0	0.0	0.0	0.0	27.2	0.0
SALVADOR	148.0	224.2	-69.6	0.0	223.7	-33.6	250.8	
3	1245.6	1203.0	0.0	0.0	0.0	0.0	42.6	0.0
HONDURAS	539.9	321.1	-46.1	0.0	286.5	50.4	500.9	
4	543.7	525.2	0.0	0.0	0.0	0.1	18.5	0.0
NICARAGU	112.2	207.6	-55.4	0.0	175.3	-57.9	193.2	
5	1316.6	1280.2	0.0	0.0	0.0	0.2	36.2	0.0
COSTA RI	306.4	520.4	-226.5	0.0	411.2	13.1	410.7	
6	685.0	880.3	0.0	0.0	0.0	-207.5	12.1	-207.2
PANAMA	-97.1	319.5	-13.0	0.0	556.3	-20.0	172.7	
7	79.1	31.4	0.0	0.0	0.0	46.9	0.8	47.0
ACANAL	14.2	11.4	0.0	0.0	0.0	-5.4	8.1	
10	455.8	0.0	0.0	0.0	0.0	455.8	0.0	455.8
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6287.8	6106.0	0.0	0.0	0.0	0.0	181.8	0.0
	1276.5	1879.2	-603.1	0.0	1924.3	0.0	1924.7	

### 3. Año 2020

#### 3.1 Demanda Máxima de Invierno



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

TUE, MAY 25 2010 10:32

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)
11		M.N230		230.00	6	1.0013	230.30	14		PRO230		230.00	6	1.0154	233.54
85		PTP230		230.00	6	1.0098	232.25	96		FOR230		230.00	6	1.0056	231.29
100		BAY230		230.00	6	1.0251	235.78	144		CANJ230		230.00	6	1.0046	231.07
146		GUALACA230		230.00	6	1.0096	232.22	147		GUASQ230		230.00	6	1.0045	231.04
190		CHANG230		230.00	6	1.0163	233.74	306		CHAN1 230		230.00	6	1.0154	233.54
310		CONCEPCION23230.00		230.00	6	1.0107	232.46	311		PANDO230		230.00	6	1.0324	237.44
341		PRUDENCIA230230.00		230.00	6	1.0175	234.03	345		LORENA230		230.00	6	1.0147	233.39
371		CAISAN230		230.00	6	1.0312	237.19	506		CHAN2 230		230.00	6	1.0179	234.13
540		ANTON		230.00	6	1.0074	231.71	700		BAITUN230		230.00	6	1.0152	233.50
6000		FRONTER		230.00	6	1.0176	234.06	6400		FRONTCHA		230.00	6	1.0163	233.75
6500		FRONT CAISAN230.00		230.00	6	1.0300	236.90								

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	0.9732	223.84	3		PANII230		230.00	6	0.9854	226.64
5		CHO230		230.00	6	0.9724	223.65	8		LSA230		230.00	6	0.9990	229.77
103		COPESA23		230.00	6	0.9917	228.09	105		PAN-AM23		230.00	6	0.9724	223.65
115		PACORA23		230.00	6	0.9952	228.90	148		VELADERO 230230.00		230.00	6	0.9984	229.64
149		BBLANCO		230.00	6	0.9975	229.44	155		TABASARAI23230.00		230.00	6	0.9991	229.78
325		STA RITA230		230.00	6	0.9694	222.95	354		SANBARTOLO23230.00		230.00	6	0.9971	229.33
370		LSA CAP 230		230.00	6	0.9990	229.77	511		LGUIAS230		230.00	6	0.9854	226.64



AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	66	BLM13B		13.800	V2	38.0	15.0	25.0	0.0	0.9800	41.7	0.9304	47.0			62
6	67	BLM13C		13.800	V3	38.0	15.0	25.0	0.0	0.9800	41.7	0.9304	47.0			62
6	90	EST-13L		13.800	E1	21.6	7.3	12.0	-5.0	1.0000	22.8	0.9476	27.0			64
6	91	EST-13T		13.800	E2	21.6	7.3	12.0	-5.0	1.0000	22.8	0.9476	27.0			64
6	94	LV-13.8L		13.800	L1	24.3	8.2	12.0	-5.0	1.0000	25.6	0.9474	27.0			64
6	95	LV-13.8T		13.800	L2	24.3	8.2	12.0	-5.0	1.0000	25.6	0.9474	27.0			64
6	97	FOR13A		13.800	F1	70.0	-2.4	50.0	-50.0	1.0000	70.0	0.9994	111.0			64
6	98	FOR13B		13.800	F2	70.0	-2.4	50.0	-50.0	1.0000	70.0	0.9994	111.0			64
6	101	BAY13A		13.800	B1	73.1	36.6	50.0	-25.0	1.0180	80.3	0.8939	96.0			61
6	102	BAY13B		13.800	B2	73.1	36.6	50.0	-25.0	1.0180	80.3	0.8939	96.0			61
6	108	BAY13C		13.800	B3	73.1	36.6	50.0	-25.0	1.0180	80.3	0.8939	100.0			61
6	117	CB250A-1		13.800	C1	90.0	5.3	75.6	0.0	0.9710	92.8	0.9983	143.5			62
6	119	CB250B-1		13.800	C1	90.0	5.3	75.6	0.0	0.9710	92.8	0.9983	143.5			62
6	142	CANJ13A		13.800	C1	54.0	16.7	29.0	-29.0	1.0000	56.5	0.9555	69.0			64
6	143	CANJ13B		13.800	C2	54.0	16.7	29.0	-29.0	1.0000	56.5	0.9555	69.0			64
6	150	GUALACA	13-213	13.800	G2	14.0	-2.0	7.4	-7.4	1.0000	14.1	0.9897	14.8			64
6	151	GUALACA	13.8	13.800	G1	14.0	-2.0	7.4	-7.4	1.0000	14.1	0.9897	14.8			64
6	152	BBLANCO_13.8	13.8	13.800	G1	10.9	0.9	7.0	-7.0	1.0000	10.9	0.9964	16.0			64
6	152	BBLANCO_13.8	13.8	13.800	G2	10.9	0.9	7.0	-7.0	1.0000	10.9	0.9964	16.0			64
6	156	TABASARAI	113	13.800	G1	16.4	0.7	5.7	0.2	1.0000	16.4	0.9990	20.5			1

6	193	GEBONYIC	13.800	G1	9.0	-0.7	4.0	-4.0	1.0000	9.0	0.9970	35.3	64
6	193	GEBONYIC	13.800	G2	9.0	-0.7	4.0	-4.0	1.0000	9.0	0.9970	35.3	64
6	300	SVC-LV	13.200	1	0.0	126.0	300.0	-225.0	1.0236	123.1	0.0000	250.0	60
6	302	PASOANCH13.8	13.800	P1	4.3	2.0	2.0	-2.0	0.9402	5.0	0.9048	6.2	64
6	303	SINDIGO13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1007	8.2	1.0000	13.5	64
6	304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.0981	4.9	0.9063	5.7	64
6	304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.0981	4.9	0.9063	5.7	64
6	305	ELALTO	13.800	G1	17.0	-5.0	12.0	-5.0	1.0176	17.4	0.9594	20.6	64
6	305	ELALTO	13.800	G2	17.0	-5.0	12.0	-5.0	1.0176	17.4	0.9594	20.6	64
6	307	CHAN1 A	13.800	G1	81.2	-11.5	50.0	-50.0	1.0000	82.0	0.9902	118.6	64
6	312	PANDO13.8	13.800	G1	15.0	-4.6	10.0	-5.0	1.0000	15.7	0.9554	19.9	64
6	316	MTE LIRIO13.13	13.800	G1	24.0	-5.0	12.0	-5.0	1.0035	24.4	0.9790	27.0	64
6	316	MTE LIRIO13.13	13.800	G2	24.0	-5.0	12.0	-5.0	1.0035	24.4	0.9790	27.0	64
6	317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1002	8.2	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1002	8.2	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.3	0.0	0.0	0.0	1.1006	4.8	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C2	5.3	0.0	0.0	0.0	1.1006	4.8	1.0000	35.3	64
6	324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	0.9997	4.4	0.8928	6.2	64
6	340	PEDGALITO138	13.800	P1	22.0	12.0	12.0	-5.0	0.9961	25.2	0.8779	27.0	64
6	342	LORENA13.8	13.800	L1	16.0	-4.5	10.5	-5.0	1.0000	16.6	0.9622	19.9	64
6	343	PRUDENCIA_1	13.800	G1	26.0	-3.6	9.8	-9.8	1.0000	26.2	0.9905	33.0	64
6	343	PRUDENCIA_1	13.800	G2	26.0	-3.6	9.8	-9.8	1.0000	26.2	0.9905	33.0	64
6	346	LORENA 13-2	13.800	L2	16.0	-4.5	10.5	-5.0	1.0000	16.6	0.9622	19.9	64
6	350	MACANO 13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0702	3.2	0.9560	6.2	64



6	351	PERLAS N13.813.800	G1	9.5	5.0	5.0	-5.0	0.9748	11.0	0.8849	13.5	64
6	352	PERLAS S13.813.800	G1	9.5	5.0	5.0	-5.0	0.9748	11.0	0.8849	13.5	64
6	357	BARTOLO13.8 13.800	G1	7.0	1.4	3.7	-3.7	1.0000	7.1	0.9816	8.5	64
6	357	BARTOLO13.8 13.800	G2	7.0	1.4	3.7	-3.7	1.0000	7.1	0.9816	8.5	64
6	359	CRUCES13.8 13.800	G1	4.1	0.5	2.3	-2.3	1.0000	4.2	0.9928	5.6	64
6	359	CRUCES13.8 13.800	G2	4.1	0.5	2.3	-2.3	1.0000	4.2	0.9928	5.6	64
6	361	ESTRECHO4.164.1600	G1	4.9	0.3	2.5	-2.5	1.0000	5.0	0.9978	5.6	64
6	361	ESTRECHO4.164.1600	G2	4.9	0.3	2.5	-2.5	1.0000	5.0	0.9978	5.6	64
6	363	LAGUNA 13.8 13.800	G1	4.2	0.2	2.4	-2.4	1.0000	4.2	0.9992	5.8	64
6	363	LAGUNA 13.8 13.800	G2	4.2	0.2	2.4	-2.4	1.0000	4.2	0.9992	5.8	64
6	364	MENDRE2 13.800	G1	7.6	2.5	3.9	-3.9	1.0000	8.0	0.9488	8.9	64
6	368	RP-490 13.800	G1	4.5	-1.6	2.4	-2.4	1.0000	4.8	0.9453	5.5	64
6	368	RP-490 13.800	G2	4.5	-1.6	2.4	-2.4	1.0000	4.8	0.9453	5.5	64
6	369	HCALDERA13.813.800	G1	3.4	1.9	1.9	-1.9	0.9997	3.9	0.8689	4.3	64
6	372	BJO FRIO 13 13.800	G1	24.4	-3.2	9.8	-9.8	1.0000	24.6	0.9916	33.0	64
6	372	BJO FRIO 13 13.800	G2	24.4	-3.2	9.8	-9.8	1.0000	24.6	0.9916	33.0	64
6	373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9731	5.1	0.8909	21.6	64
6	374	SLORENZO13.813.800	G1	3.9	0.4	2.0	-2.0	1.0000	3.9	0.9957	4.5	64
6	374	SLORENZO13.813.800	G2	3.9	0.4	2.0	-2.0	1.0000	3.9	0.9957	4.5	64
6	376	PEDREG2 13.813.800	G1	6.2	-2.4	3.1	-3.1	1.0000	6.6	0.9324	7.2	64
6	376	PEDREG2 13.813.800	G2	6.2	-2.4	3.1	-3.1	1.0000	6.6	0.9324	7.2	64
6	507	CHAN2 A 13.800	G1	74.0	9.5	50.0	-50.0	1.0000	74.6	0.9919	118.6	64
6	541	TOABRE 0.6000	1	25.0	0.0	0.0	0.0	1.0085	24.8	1.0000	88.9	64
6	703	BJOMIN13A 13.800	G1	25.2	2.3	13.0	-13.0	1.0000	25.3	0.9959	30.5	64

6	704	BJOMIN13B	13.800	G2	25.2	2.3	13.0	-13.0	1.0000	25.3	0.9959	30.5	64
6	705	BAITUN13A	13.800	G1	38.7	-5.0	26.6	-26.6	1.0000	39.0	0.9917	50.6	64
6	706	BAITUN13B	13.800	G2	38.7	-5.0	26.6	-26.6	1.0000	39.0	0.9917	50.6	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9402	5.3	0.9145	6.2	64
	SUBSYSTEM TOTALS				1626.2	305.1	1280.6	-839.5				2684.5	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:32  
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
126		MIR13A		12.000	G1	7.6	0.0	5.0	0.0	1.0244	7.4	1.0000	13.5			65	7
		129		MIR13D		13.800	G4	33.9	8.1	15.0	0.0	1.0000	34.8	0.9728	44.1		65
7		130		MIR13F		13.800	G5	17.1	3.3	8.0	0.0	1.0000	17.4	0.9822	27.7		65
7		140		GAT6A		6.9000	G1	1.9	0.7	2.0	-2.0	1.0000	2.1	0.9335	4.1		65
7		140		GAT6A		6.9000	G2	1.9	0.7	2.0	-2.0	1.0000	2.1	0.9335	4.1		65
7		140		GAT6A		6.9000	G3	1.9	0.7	2.0	-2.0	1.0000	2.1	0.9335	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	17.0	6.8	11.2	6.8	1.0076	18.2	0.9281	23.0		65
7		171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0168	18.0	0.9281	23.0		65
7		171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0168	18.0	0.9281	23.0		65
	SUBSYSTEM TOTALS						127.0	34.1	76.5	5.5			184.9				



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:37  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT STA RITA-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0013	230.30	14	PRO230	230.00	6	1.0154	233.54				
85	PTP230	230.00	6	1.0098	232.25	96	FOR230	230.00	6	1.0056	231.29				
100	BAY230	230.00	6	1.0265	236.10	144	CANJ230	230.00	6	1.0046	231.07				
146	GUALACA230	230.00	6	1.0096	232.22	147	GUASQ230	230.00	6	1.0045	231.04				
190	CHANG230	230.00	6	1.0163	233.74	306	CHAN1 230	230.00	6	1.0154	233.54				
310	CONCEPCION23230.00	6	1.0107	232.46	311	PANDO230	230.00	6	1.0324	237.44					
341	PRUDENCIA230230.00	6	1.0175	234.03	345	LORENA230	230.00	6	1.0147	233.39					
371	CAISAN230	230.00	6	1.0312	237.19	506	CHAN2 230	230.00	6	1.0179	234.13				
540	ANTON	230.00	6	1.0086	231.97	700	BAITUN230	230.00	6	1.0152	233.50				
6000	FRONTER	230.00	6	1.0176	234.06	6400	FRONTCHA	230.00	6	1.0163	233.75				
6500	FRONT CAISAN230.00	6	1.0300	236.90											

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	0.9749	224.23	3	PANII230	230.00	6	0.9876	227.16				
5	CHO230	230.00	6	0.9737	223.96	8	LSA230	230.00	6	0.9990	229.77				
103	COPESA23	230.00	6	0.9938	228.58	105	PAN-AM23	230.00	6	0.9737	223.96				
115	PACORA23	230.00	6	0.9972	229.36	148	VELADERO 230230.00	6	0.9984	229.64					
149	BBLANCO	230.00	6	0.9976	229.44	155	TABASARAI23230.00	6	0.9991	229.78					
325	STA RITA230	230.00	6	0.9646	221.87	354	SANBARTOLO23230.00	6	0.9971	229.33					
370	LSA CAP 230	230.00	6	0.9990	229.77	511	LGUIAS230	230.00	6	0.9860	226.77				



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:37  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT STA RITA-PANII

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	66	BLM13B		13.800	V2	38.0	15.8	25.0	0.0	0.9800	42.0	0.9232	47.0			62
6	67	BLM13C		13.800	V3	38.0	15.8	25.0	0.0	0.9800	42.0	0.9232	47.0			62
6	90	EST-13L		13.800	E1	21.6	7.3	12.0	-5.0	1.0000	22.8	0.9476	27.0			64
6	91	EST-13T		13.800	E2	21.6	7.3	12.0	-5.0	1.0000	22.8	0.9476	27.0			64
6	94	LV-13.8L		13.800	L1	24.3	8.2	12.0	-5.0	1.0000	25.6	0.9474	27.0			64
6	95	LV-13.8T		13.800	L2	24.3	8.2	12.0	-5.0	1.0000	25.6	0.9474	27.0			64
6	97	FOR13A		13.800	F1	70.0	-2.4	50.0	-50.0	1.0000	70.0	0.9994	111.0			64
6	98	FOR13B		13.800	F2	70.0	-2.4	50.0	-50.0	1.0000	70.0	0.9994	111.0			64
6	101	BAY13A		13.800	B1	73.1	35.6	50.0	-25.0	1.0180	79.8	0.8990	96.0			61
6	102	BAY13B		13.800	B2	73.1	35.6	50.0	-25.0	1.0180	79.8	0.8990	96.0			61
6	108	BAY13C		13.800	B3	73.1	35.6	50.0	-25.0	1.0180	79.8	0.8990	100.0			61
6	117	CB250A-1		13.800	C1	90.0	12.0	75.6	0.0	0.9710	93.5	0.9912	143.5			62
6	119	CB250B-1		13.800	C1	90.0	12.0	75.6	0.0	0.9710	93.5	0.9912	143.5			62
6	142	CANJ13A		13.800	C1	54.0	16.7	29.0	-29.0	1.0000	56.5	0.9555	69.0			64
6	143	CANJ13B		13.800	C2	54.0	16.7	29.0	-29.0	1.0000	56.5	0.9555	69.0			64
6	150	GUALACA	13-213.800	G2		14.0	-2.0	7.4	-7.4	1.0000	14.1	0.9897	14.8			64
6	151	GUALACA	13.8	G1	13.800	14.0	-2.0	7.4	-7.4	1.0000	14.1	0.9897	14.8			64
6	152	BBLANCO_13.8	13.813.800	G1		10.9	0.9	7.0	-7.0	1.0000	10.9	0.9964	16.0			64
6	152	BBLANCO_13.8	13.813.800	G2		10.9	0.9	7.0	-7.0	1.0000	10.9	0.9964	16.0			64
6	156	TABASARAI	11313.800	G1		16.4	0.7	5.7	0.2	1.0000	16.4	0.9990	20.5			1

6	193	GEBONYIC	13.800	G1	9.0	-0.7	4.0	-4.0	1.0000	9.0	0.9970	35.3	64
6	193	GEBONYIC	13.800	G2	9.0	-0.7	4.0	-4.0	1.0000	9.0	0.9970	35.3	64
6	300	SVC-LV	13.200	1	0.0	137.9	300.0	-225.0	1.1750	117.4	0.0000	250.0	60
6	302	PASOANCH13.8	13.800	P1	4.2	2.0	2.0	-2.0	0.9402	5.0	0.9048	6.2	64
6	303	SINDIGO13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1007	8.2	1.0000	13.5	64
6	304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.0981	4.9	0.9063	5.7	64
6	304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.0981	4.9	0.9063	5.7	64
6	305	ELALTO	13.800	G1	17.0	-5.0	12.0	-5.0	1.0176	17.4	0.9594	20.6	64
6	305	ELALTO	13.800	G2	17.0	-5.0	12.0	-5.0	1.0176	17.4	0.9594	20.6	64
6	307	CHAN1 A	13.800	G1	81.2	-11.5	50.0	-50.0	1.0000	82.0	0.9902	118.6	64
6	312	PANDO13.8	13.800	G1	15.0	-4.6	10.0	-5.0	1.0000	15.7	0.9554	19.9	64
6	316	MTE LIRIO13.8	13.800	G1	24.0	-5.0	12.0	-5.0	1.0035	24.4	0.9790	27.0	64
6	316	MTE LIRIO13.8	13.800	G2	24.0	-5.0	12.0	-5.0	1.0035	24.4	0.9790	27.0	64
6	317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1002	8.2	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1002	8.2	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.3	0.0	0.0	0.0	1.1006	4.8	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C2	5.3	0.0	0.0	0.0	1.1006	4.8	1.0000	35.3	64
6	324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	0.9997	4.4	0.8928	6.2	64
6	340	PEDGALITO138	13.800	P1	22.0	12.0	12.0	-5.0	0.9961	25.2	0.8779	27.0	64
6	342	LORENA13.8	13.800	L1	16.0	-4.5	10.5	-5.0	1.0000	16.6	0.9622	19.9	64
6	343	PRUDENCIA_1	13.800	G1	26.0	-3.6	9.8	-9.8	1.0000	26.2	0.9905	33.0	64
6	343	PRUDENCIA_1	13.800	G2	26.0	-3.6	9.8	-9.8	1.0000	26.2	0.9905	33.0	64
6	346	LORENA 13-2	13.800	L2	16.0	-4.5	10.5	-5.0	1.0000	16.6	0.9622	19.9	64
6	350	MACANO 13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0702	3.2	0.9560	6.2	64

6	351	PERLAS N13.813.800	G1	9.5	5.0	5.0	-5.0	0.9748	11.0	0.8849	13.5	64
6	352	PERLAS S13.813.800	G1	9.5	5.0	5.0	-5.0	0.9748	11.0	0.8849	13.5	64
6	357	BARTOLO13.8 13.800	G1	7.0	1.4	3.7	-3.7	1.0000	7.1	0.9816	8.5	64
6	357	BARTOLO13.8 13.800	G2	7.0	1.4	3.7	-3.7	1.0000	7.1	0.9816	8.5	64
6	359	CRUCES13.8 13.800	G1	4.1	0.5	2.3	-2.3	1.0000	4.2	0.9928	5.6	64
6	359	CRUCES13.8 13.800	G2	4.1	0.5	2.3	-2.3	1.0000	4.2	0.9928	5.6	64
6	361	ESTRECHO4.164.1600	G1	4.9	0.3	2.5	-2.5	1.0000	5.0	0.9978	5.6	64
6	361	ESTRECHO4.164.1600	G2	4.9	0.3	2.5	-2.5	1.0000	5.0	0.9978	5.6	64
6	363	LAGUNA 13.8 13.800	G1	4.2	0.2	2.4	-2.4	1.0000	4.2	0.9992	5.8	64
6	363	LAGUNA 13.8 13.800	G2	4.2	0.2	2.4	-2.4	1.0000	4.2	0.9992	5.8	64
6	364	MENDRE2 13.800	G1	7.6	2.5	3.9	-3.9	1.0000	8.0	0.9488	8.9	64
6	368	RP-490 13.800	G1	4.5	-1.6	2.4	-2.4	1.0000	4.8	0.9452	5.5	64
6	368	RP-490 13.800	G2	4.5	-1.6	2.4	-2.4	1.0000	4.8	0.9452	5.5	64
6	369	HCALDERA13.813.800	G1	3.4	1.9	1.9	-1.9	0.9997	3.9	0.8689	4.3	64
6	372	BJO FRIO 13 13.800	G1	24.4	-3.2	9.8	-9.8	1.0000	24.6	0.9916	33.0	64
6	372	BJO FRIO 13 13.800	G2	24.4	-3.2	9.8	-9.8	1.0000	24.6	0.9916	33.0	64
6	373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9731	5.1	0.8909	21.6	64
6	374	SLORENZO13.813.800	G1	3.9	0.4	2.0	-2.0	1.0000	3.9	0.9957	4.5	64
6	374	SLORENZO13.813.800	G2	3.9	0.4	2.0	-2.0	1.0000	3.9	0.9957	4.5	64
6	376	PEDREG2 13.813.800	G1	6.2	-2.4	3.1	-3.1	1.0000	6.6	0.9324	7.2	64
6	376	PEDREG2 13.813.800	G2	6.2	-2.4	3.1	-3.1	1.0000	6.6	0.9324	7.2	64
6	507	CHAN2 A 13.800	G1	74.0	9.5	50.0	-50.0	1.0000	74.6	0.9919	118.6	64
6	541	TOABRE 0.6000	1	25.0	0.0	0.0	0.0	1.0096	24.8	1.0000	88.9	64
6	703	BJOMIN13A 13.800	G1	25.2	2.3	13.0	-13.0	1.0000	25.3	0.9959	30.5	64



6	704	BJOMIN13B	13.800	G2	25.2	2.3	13.0	-13.0	1.0000	25.3	0.9959	30.5	64
6	705	BAITUN13A	13.800	G1	38.7	-5.0	26.6	-26.6	1.0000	39.0	0.9917	50.6	64
6	706	BAITUN13B	13.800	G2	38.7	-5.0	26.6	-26.6	1.0000	39.0	0.9917	50.6	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9402	5.3	0.9145	6.2	64
	SUBSYSTEM TOTALS				1626.1	329.1	1280.6	-839.5				2684.5	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:37  
PLAN DE EXPANSION DEL SIN JUNIO-2010  
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT STA RITA-PANII

AREA 7 [ACANAL ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
7		126		MIR13A	12.000	G1	7.6	0.0	5.0	0.0	1.0247	7.4	1.0000	13.5			65
7		129		MIR13D	13.800	G4	33.9	7.9	15.0	0.0	1.0000	34.8	0.9737	44.1			65
7		130		MIR13F	13.800	G5	17.1	3.1	8.0	0.0	1.0000	17.4	0.9838	27.7			65
7		140		GAT6A	6.9000	G1	1.9	0.8	2.0	-2.0	1.0000	2.1	0.9261	4.1			65
7		140		GAT6A	6.9000	G2	1.9	0.8	2.0	-2.0	1.0000	2.1	0.9261	4.1			65
7		140		GAT6A	6.9000	G3	1.9	0.8	2.0	-2.0	1.0000	2.1	0.9261	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	17.0	6.8	11.2	6.8	1.0079	18.2	0.9281	23.0			65
7		171		MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0171	18.0	0.9281	23.0			65
7		171		MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0171	18.0	0.9281	23.0			65
	SUBSYSTEM TOTALS						127.0	34.1	76.5	5.5			184.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:39  
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS  
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT STA RITA-PANII IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1140.7	1330.8	0.0	0.0	0.0	-234.5	44.4	-238.5
GUATEMAL	235.9	275.1	-193.7	0.0	273.2	41.4	386.3	
2	876.7	855.0	0.0	0.0	0.0	-0.4	22.1	0.0
SALVADOR	118.0	224.2	-70.1	0.0	225.9	-31.0	220.7	
3	1241.6	1203.0	0.0	0.0	0.0	-0.4	39.0	0.0
HONDURAS	507.9	321.1	-46.7	0.0	289.6	51.4	471.7	
4	538.1	525.2	0.0	0.0	0.0	-0.7	13.6	0.0
NICARAGU	79.5	207.6	-56.4	0.0	178.2	-53.4	159.9	
5	1306.1	1280.2	0.0	0.0	0.0	-2.2	28.1	0.0
COSTA RI	262.4	520.4	-228.1	0.0	413.9	25.6	358.4	
6	1626.1	1844.6	0.0	0.0	0.0	-285.9	67.3	-285.7
PANAMA	329.1	374.6	-177.3	0.0	595.9	-41.0	768.7	
7	127.0	65.9	0.0	0.0	0.0	59.9	1.2	60.0
ACANAL	34.1	13.4	0.0	0.0	0.0	6.9	13.8	
10	464.2	0.0	0.0	0.0	0.0	464.2	0.0	464.2
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	7320.5	7104.7	0.0	0.0	0.0	0.0	215.8	0.0
	1566.7	1936.2	-772.3	0.0	1976.7	0.0	2379.5	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:41  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11		M.N230		230.00	6	1.0012	230.27	14		PRO230		230.00	6	1.0154	233.54
85		PTP230		230.00	6	1.0097	232.23	96		FOR230		230.00	6	1.0055	231.27
100		BAY230		230.00	6	1.0193	234.44	144		CANJ230		230.00	6	1.0045	231.04
146		GUALACA230		230.00	6	1.0095	232.19	147		GUASQ230		230.00	6	1.0044	231.01
190		CHANG230		230.00	6	1.0163	233.76	306		CHAN1 230		230.00	6	1.0155	233.56
310		CONCEPCION23230.00		230.00	6	1.0106	232.45	311		PANDO230		230.00	6	1.0324	237.45
341		PRUDENCIA230230.00		230.00	6	1.0174	234.01	345		LORENA230		230.00	6	1.0146	233.36
371		CAISAN230		230.00	6	1.0312	237.19	506		CHAN2 230		230.00	6	1.0180	234.14
540		ANTON		230.00	6	1.0007	230.17	700		BAITUN230		230.00	6	1.0152	233.50
6000		FRONTER		230.00	6	1.0177	234.06	6400		FRONTCHA		230.00	6	1.0164	233.78
6500		FRONT CAISAN230.00		230.00	6	1.0300	236.90								

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	0.9636	221.63	3		PANII230		230.00	6	0.9758	224.43
5		CHO230		230.00	6	0.9628	221.44	8		LSA230		230.00	6	0.9990	229.77
103		COPESA23		230.00	6	0.9827	226.02	105		PAN-AM23		230.00	6	0.9628	221.44
115		PACORA23		230.00	6	0.9866	226.93	148		VELADERO 230230.00		230.00	6	0.9982	229.59
149		BBLANCO		230.00	6	0.9974	229.39	155		TABASARAI23230.00		230.00	6	0.9989	229.74
325		STA RITA230		230.00	6	0.9634	221.59	354		SANBARTOLO23230.00		230.00	6	0.9969	229.29
370		LSA CAP 230		230.00	6	0.9990	229.77	511		LGUIAS230		230.00	6	0.9794	225.26

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:41  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	1.0370	119.25	12	M.N115	115.00	6	1.0026	115.30				
15	PRO115	115.00	6	1.0174	117.00	20	CH.AZUL	115.00	6	1.0181	117.09				
87	CAL115	115.00	6	1.0236	117.71	88	EST115	115.00	6	1.0276	118.17				
92	L.V115	115.00	6	1.0251	117.89	191	CHANG115	115.00	6	1.0060	115.69				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	0.9613	110.55	4	PANII115	115.00	6	0.9919	114.07				
6	CHO115	115.00	6	0.9643	110.90	18	CAC115	115.00	6	0.9608	110.50				
19	C.V115	115.00	6	0.9689	111.42	21	C.BAN115	115.00	6	0.9479	109.01				
23	CH115	115.00	6	0.9589	110.27	26	LOC115	115.00	6	0.9490	109.14				
30	MAR115	115.00	6	0.9462	108.81	33	STM115	115.00	6	0.9582	110.20				
37	SAN115	115.00	6	0.9475	108.96	48	TINAJ115	115.00	6	0.9571	110.06				
50	M.O115	115.00	6	0.9573	110.08	52	TOC115	115.00	6	0.9875	113.57				
54	LM1115	115.00	6	0.9914	114.01	55	LM2115	115.00	6	0.9912	113.99				
61	FFIELD	115.00	6	0.9851	113.28	109	STA RITA115	115.00	6	0.9977	114.74				
123	MIR115	115.00	7	0.9693	111.47	154	CEMPAN15	115.00	6	0.9804	112.75				
522	TCATIVÁ 115	115.00	6	0.9913	114.00	529	TCOLON 115	115.00	6	0.9977	114.74				
701	BAITUN115	115.00	6	0.9970	114.65	702	BJOMIN115	115.00	6	0.9994	114.93				

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

TUE, MAY 25 2010 10:41

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	66	BLM13B		13.800	V2	38.0	17.6	25.0	0.0	0.9800	42.7	0.9075	47.0			62
6	67	BLM13C		13.800	V3	38.0	17.6	25.0	0.0	0.9800	42.7	0.9075	47.0			62
6	90	EST-13L		13.800	E1	21.6	7.3	12.0	-5.0	1.0000	22.8	0.9474	27.0			64
6	91	EST-13T		13.800	E2	21.6	7.3	12.0	-5.0	1.0000	22.8	0.9474	27.0			64
6	94	LV-13.8L		13.800	L1	24.3	8.2	12.0	-5.0	1.0000	25.7	0.9473	27.0			64
6	95	LV-13.8T		13.800	L2	24.3	8.2	12.0	-5.0	1.0000	25.7	0.9473	27.0			64
6	97	FOR13A		13.800	F1	70.1	-2.3	50.0	-50.0	1.0000	70.1	0.9994	111.0			64
6	98	FOR13B		13.800	F2	70.1	-2.3	50.0	-50.0	1.0000	70.1	0.9994	111.0			64
6	101	BAY13A		13.800	B1	73.1	41.1	50.0	-25.0	1.0180	82.4	0.8719	96.0			61
6	102	BAY13B		13.800	B2	73.1	41.1	50.0	-25.0	1.0180	82.4	0.8719	96.0			61
6	108	BAY13C		13.800	B3	73.1	41.1	50.0	-25.0	1.0180	82.4	0.8719	100.0			61
6	117	CB250A-1		13.800	C1	90.0	13.8	75.6	0.0	0.9710	93.8	0.9885	143.5			62
6	119	CB250B-1		13.800	C1	90.0	13.8	75.6	0.0	0.9710	93.8	0.9885	143.5			62
6	142	CANJ13A		13.800	C1	54.1	16.7	29.0	-29.0	1.0000	56.6	0.9554	69.0			64
6	143	CANJ13B		13.800	C2	54.1	16.7	29.0	-29.0	1.0000	56.6	0.9554	69.0			64
6	150	GUALACA	13-213	13.800	G2	14.0	-2.0	7.4	-7.4	1.0000	14.1	0.9900	14.8			64
6	151	GUALACA	13.8	13.800	G1	14.0	-2.0	7.4	-7.4	1.0000	14.1	0.9900	14.8			64
6	152	BBLANCO_13.8	13.8	13.800	G1	10.9	0.9	7.0	-7.0	1.0000	11.0	0.9962	16.0			64
6	152	BBLANCO_13.8	13.8	13.800	G2	10.9	0.9	7.0	-7.0	1.0000	11.0	0.9962	16.0			64
6	156	TABASARAI	113	13.800	G1	16.4	0.8	5.7	0.2	1.0000	16.4	0.9988	20.5			1

6	193	GEBONYIC	13.800	G1	9.0	-0.7	4.0	-4.0	1.0000	9.1	0.9970	35.3	64
6	193	GEBONYIC	13.800	G2	9.0	-0.7	4.0	-4.0	1.0000	9.1	0.9970	35.3	64
6	300	SVC-LV	13.200	1	0.1	213.4	300.0	-225.0	1.2541	170.1	0.0005	250.0	60
6	302	PASOANCH13.8	13.800	P1	4.3	2.0	2.0	-2.0	0.9401	5.0	0.9050	6.2	64
6	303	SINDIGO13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1006	8.2	1.0000	13.5	64
6	304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.0981	4.9	0.9063	5.7	64
6	304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.0981	4.9	0.9063	5.7	64
6	305	ELALTO	13.800	G1	17.0	-5.0	12.0	-5.0	1.0176	17.4	0.9594	20.6	64
6	305	ELALTO	13.800	G2	17.0	-5.0	12.0	-5.0	1.0176	17.4	0.9594	20.6	64
6	307	CHAN1 A	13.800	G1	81.3	-11.5	50.0	-50.0	1.0000	82.1	0.9901	118.6	64
6	312	PANDO13.8	13.800	G1	15.0	-4.6	10.0	-5.0	1.0000	15.7	0.9555	19.9	64
6	316	MTE LIRIO13.13.8	13.800	G1	24.0	-5.0	12.0	-5.0	1.0036	24.4	0.9790	27.0	64
6	316	MTE LIRIO13.13.8	13.800	G2	24.0	-5.0	12.0	-5.0	1.0036	24.4	0.9790	27.0	64
6	317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1001	8.2	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1001	8.2	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.3	0.0	0.0	0.0	1.1006	4.9	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C2	5.3	0.0	0.0	0.0	1.1006	4.9	1.0000	35.3	64
6	324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	0.9997	4.4	0.8928	6.2	64
6	340	PEDGALITO138	13.800	P1	22.0	12.0	12.0	-5.0	0.9961	25.2	0.8781	27.0	64
6	342	LORENA13.8	13.800	L1	16.0	-4.5	10.5	-5.0	1.0000	16.6	0.9628	19.9	64
6	343	PRUDENCIA_1	13.800	G1	26.0	-3.6	9.8	-9.8	1.0000	26.3	0.9906	33.0	64
6	343	PRUDENCIA_1	13.800	G2	26.0	-3.6	9.8	-9.8	1.0000	26.3	0.9906	33.0	64
6	346	LORENA 13-2	13.800	L2	16.0	-4.5	10.5	-5.0	1.0000	16.6	0.9628	19.9	64
6	350	MACANO 13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0702	3.2	0.9561	6.2	64

6	351	PERLAS N13.813.800	G1	9.5	5.0	5.0	-5.0	0.9748	11.0	0.8851	13.5	64
6	352	PERLAS S13.813.800	G1	9.5	5.0	5.0	-5.0	0.9748	11.0	0.8851	13.5	64
6	357	BARTOLO13.8 13.800	G1	7.0	1.4	3.7	-3.7	1.0000	7.1	0.9815	8.5	64
6	357	BARTOLO13.8 13.800	G2	7.0	1.4	3.7	-3.7	1.0000	7.1	0.9815	8.5	64
6	359	CRUCES13.8 13.800	G1	4.1	0.5	2.3	-2.3	1.0000	4.2	0.9927	5.6	64
6	359	CRUCES13.8 13.800	G2	4.1	0.5	2.3	-2.3	1.0000	4.2	0.9927	5.6	64
6	361	ESTRECHO4.164.1600	G1	4.9	0.3	2.5	-2.5	1.0000	5.0	0.9978	5.6	64
6	361	ESTRECHO4.164.1600	G2	4.9	0.3	2.5	-2.5	1.0000	5.0	0.9978	5.6	64
6	363	LAGUNA 13.8 13.800	G1	4.2	0.2	2.4	-2.4	1.0000	4.2	0.9991	5.8	64
6	363	LAGUNA 13.8 13.800	G2	4.2	0.2	2.4	-2.4	1.0000	4.2	0.9991	5.8	64
6	364	MENDRE2 13.800	G1	7.6	2.6	3.9	-3.9	1.0000	8.0	0.9471	8.9	64
6	368	RP-490 13.800	G1	4.5	-1.5	2.4	-2.4	1.0000	4.8	0.9455	5.5	64
6	368	RP-490 13.800	G2	4.5	-1.5	2.4	-2.4	1.0000	4.8	0.9455	5.5	64
6	369	HCALDERA13.813.800	G1	3.4	1.9	1.9	-1.9	0.9996	3.9	0.8689	4.3	64
6	372	BJO FRIO 13 13.800	G1	24.4	-3.2	9.8	-9.8	1.0000	24.6	0.9917	33.0	64
6	372	BJO FRIO 13 13.800	G2	24.4	-3.2	9.8	-9.8	1.0000	24.6	0.9917	33.0	64
6	373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9731	5.1	0.8916	21.6	64
6	374	SLORENZO13.813.800	G1	3.9	0.4	2.0	-2.0	1.0000	3.9	0.9955	4.5	64
6	374	SLORENZO13.813.800	G2	3.9	0.4	2.0	-2.0	1.0000	3.9	0.9955	4.5	64
6	376	PEDREG2 13.813.800	G1	6.2	-2.4	3.1	-3.1	1.0000	6.6	0.9327	7.2	64
6	376	PEDREG2 13.813.800	G2	6.2	-2.4	3.1	-3.1	1.0000	6.6	0.9327	7.2	64
6	507	CHAN2 A 13.800	G1	74.1	9.5	50.0	-50.0	1.0000	74.7	0.9919	118.6	64
6	541	TOABRE 0.6000	1	25.0	0.0	0.0	0.0	1.0018	25.0	1.0000	88.9	64
6	703	BJOMIN13A 13.800	G1	25.2	2.3	13.0	-13.0	1.0000	25.3	0.9959	30.5	64



6	704	BJOMIN13B	13.800	G2	25.2	2.3	13.0	-13.0	1.0000	25.3	0.9959	30.5	64
6	705	BAITUN13A	13.800	G1	38.7	-5.0	26.6	-26.6	1.0000	39.1	0.9918	50.6	64
6	706	BAITUN13B	13.800	G2	38.7	-5.0	26.6	-26.6	1.0000	39.1	0.9918	50.6	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9401	5.3	0.9145	6.2	64
6	SUBSYSTEM TOTALS				1627.7	428.7	1280.6	-839.5				2684.5	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E      TUE, MAY 25 2010 10:41  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII

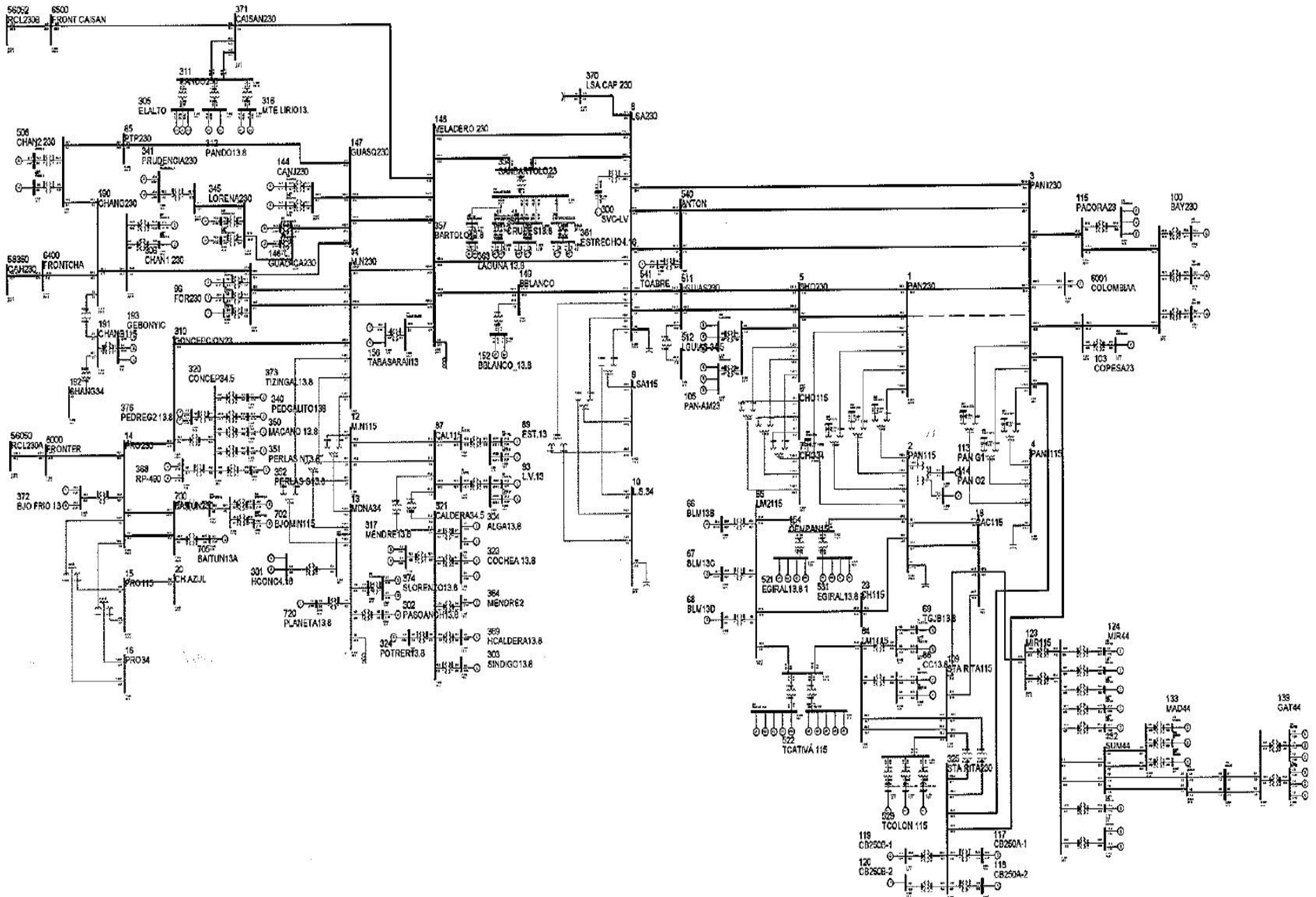
AREA 7 [ACANAL            ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
126		MIR13A		12.000	G1	7.6	0.0	5.0	0.0	1.0204	7.5	1.0000	13.5			65	7
129		MIR13D		13.800	G4	33.9	9.5	15.0	0.0	1.0000	35.2	0.9628	44.1			65	
7		130		MIR13F		13.800	G5	17.1	4.9	8.0	0.0	1.0000	17.8	0.9608	27.7	65	
7		140		GAT6A		6.9000	G1	1.9	0.9	2.0	-2.0	1.0000	2.1	0.9026	4.1	65	
7		140		GAT6A		6.9000	G2	1.9	0.9	2.0	-2.0	1.0000	2.1	0.9026	4.1	65	
7		140		GAT6A		6.9000	G3	1.9	0.9	2.0	-2.0	1.0000	2.1	0.9026	4.1	65	
7		141		GAT6B		6.9000	G4	3.9	0.2	3.0	-3.0	1.0000	3.9	0.9986	5.6	65	
7		141		GAT6B		6.9000	G5	3.9	0.2	3.0	-3.0	1.0000	3.9	0.9986	6.2	65	
7		141		GAT6B		6.9000	G6	3.9	0.2	3.0	-3.0	1.0000	3.9	0.9986	6.2	65	
7		170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0040	18.3	0.9282	23.0	65	
7		171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0132	18.1	0.9282	23.0	65	
7		171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0132	18.1	0.9282	23.0	65	
7	SUBSYSTEM TOTALS				127.1	38.3	76.5	5.5					184.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:42  
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS  
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT LSA-PANII IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1 GUATEMAL	1141.9 235.6	1330.8 275.1	0.0 -193.7	0.0 0.0	0.0 273.3	-233.3 41.1	44.4 386.4	-238.5
2 SALVADOR	877.2 117.4	855.0 224.2	0.0 -70.1	0.0 0.0	0.0 225.9	0.2 -30.9	22.0 220.1	0.0
3 HONDURAS	1242.0 507.0	1203.0 321.1	0.0 -46.8	0.0 0.0	0.0 289.7	0.1 51.4	38.9 471.0	0.0
4 NICARAGU	538.2 78.4	525.2 207.6	0.0 -56.4	0.0 0.0	0.0 178.3	-0.4 -53.2	13.4 158.7	0.0
5 COSTA RI	1306.8 260.3	1280.2 520.4	0.0 -228.2	0.0 0.0	0.0 414.0	-1.2 26.0	27.8 356.2	0.0
6 PANAMA	1627.7 428.7	1844.6 374.6	0.0 -171.9	0.0 0.0	0.0 555.4	-289.5 -45.1	72.6 826.5	-285.7
7 ACANAL	127.1 38.3	65.9 13.4	0.0 0.0	0.0 0.0	0.0 0.0	60.0 10.8	1.3 14.2	60.0
10 COLOMBIA	464.2 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	464.2 0.0	0.0 0.0	464.2
TOTALS	7325.0 1665.6	7104.7 1936.2	0.0 -767.1	0.0 0.0	0.0 1936.6	0.0 0.0	220.4 2433.0	0.0

### 3.1.3 Contingencia Panamá – Panamá II



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:45  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230			230.00	6	1.0012	230.27	14	PRO230			230.00	6	1.0154	233.54
85	PTP230			230.00	6	1.0097	232.23	96	FOR230			230.00	6	1.0055	231.27
100	BAY230			230.00	6	1.0245	235.63	144	CANJ230			230.00	6	1.0045	231.04
146	GUALACA230			230.00	6	1.0095	232.19	147	GUASQ230			230.00	6	1.0044	231.01
190	CHANG230			230.00	6	1.0163	233.76	306	CHAN1 230			230.00	6	1.0155	233.56
310	CONCEPCION23230.00			230.00	6	1.0106	232.45	311	PANDO230			230.00	6	1.0324	237.45
341	PRUDENCIA230230.00			230.00	6	1.0174	234.01	345	LORENA230			230.00	6	1.0146	233.36
371	CAISAN230			230.00	6	1.0312	237.19	506	CHAN2 230			230.00	6	1.0180	234.14
540	ANTON			230.00	6	1.0071	231.63	700	BAITUN230			230.00	6	1.0152	233.50
6000	FRONTER			230.00	6	1.0177	234.06	6400	FRONTCHA			230.00	6	1.0164	233.78
6500	FRONT CAISAN230.00			230.00	6	1.0300	236.90								

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	0.9631	221.51	3	PANII230			230.00	6	0.9843	226.39
5	CHO230			230.00	6	0.9638	221.68	8	LSA230			230.00	6	0.9990	229.77
103	COPESA23			230.00	6	0.9907	227.85	105	PAN-AM23			230.00	6	0.9638	221.68
115	PACORA23			230.00	6	0.9942	228.67	148	VELADERO 230230.00			230.00	6	0.9982	229.59
149	BBLANCO			230.00	6	0.9974	229.39	155	TABASARAI23230.00			230.00	6	0.9989	229.74
325	STA RITA230			230.00	6	0.9673	222.48	354	SANBARTOLO23230.00			230.00	6	0.9969	229.29
370	LSA CAP 230			230.00	6	0.9990	229.77	511	LGUIAS230			230.00	6	0.9813	225.69

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:45  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	1.0370	119.25	12		M.N115		115.00	6	1.0026	115.30
15		PRO115		115.00	6	1.0174	117.00	20		CH.AZUL		115.00	6	1.0181	117.09
87		CAL115		115.00	6	1.0236	117.71	88		EST115		115.00	6	1.0276	118.17
92		L.V115		115.00	6	1.0251	117.89	109		STA RITA115		115.00	6	1.0005	115.06
191		CHANG115		115.00	6	1.0060	115.69	529		TCOLON 115		115.00	6	1.0005	115.06

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9617	110.60	4		PANII115		115.00	6	0.9990	114.89
6		CHO115		115.00	6	0.9654	111.02	18		CAC115		115.00	6	0.9614	110.56
19		C.V115		115.00	6	0.9738	111.99	21		C.BAN115		115.00	6	0.9492	109.15
23		CH115		115.00	6	0.9600	110.40	26		LOC115		115.00	6	0.9502	109.27
30		MAR115		115.00	6	0.9470	108.91	33		STM115		115.00	6	0.9587	110.25
37		SAN115		115.00	6	0.9490	109.13	48		TINAJ115		115.00	6	0.9575	110.12
50		M.O115		115.00	6	0.9577	110.14	52		TOC115		115.00	6	0.9947	114.39
54		LM1115		115.00	6	0.9937	114.27	55		LM2115		115.00	6	0.9934	114.24
61		FFIELD		115.00	6	0.9874	113.55	123		MIR115		115.00	7	0.9698	111.52
154		CEMPAN15		115.00	6	0.9820	112.94	522		TCATIVÁ 115		115.00	6	0.9935	114.26
701		BAITUN115		115.00	6	0.9970	114.65	702		BJOMIN115		115.00	6	0.9994	114.93

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

TUE, MAY 25 2010 10:45

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	66	BLM13B		13.800	V2	38.0	16.7	25.0	0.0	0.9800	42.4	0.9158	47.0			62
6	67	BLM13C		13.800	V3	38.0	16.7	25.0	0.0	0.9800	42.4	0.9158	47.0			62
6	90	EST-13L		13.800	E1	21.6	7.3	12.0	-5.0	1.0000	22.8	0.9474	27.0			64
6	91	EST-13T		13.800	E2	21.6	7.3	12.0	-5.0	1.0000	22.8	0.9474	27.0			64
6	94	LV-13.8L		13.800	L1	24.3	8.2	12.0	-5.0	1.0000	25.7	0.9473	27.0			64
6	95	LV-13.8T		13.800	L2	24.3	8.2	12.0	-5.0	1.0000	25.7	0.9473	27.0			64
6	97	FOR13A		13.800	F1	70.1	-2.3	50.0	-50.0	1.0000	70.1	0.9994	111.0			64
6	98	FOR13B		13.800	F2	70.1	-2.3	50.0	-50.0	1.0000	70.1	0.9994	111.0			64
6	101	BAY13A		13.800	B1	73.2	37.1	50.0	-25.0	1.0180	80.6	0.8916	96.0			61
6	102	BAY13B		13.800	B2	73.1	37.1	50.0	-25.0	1.0180	80.6	0.8916	96.0			61
6	108	BAY13C		13.800	B3	73.1	37.1	50.0	-25.0	1.0180	80.6	0.8916	100.0			61
6	117	CB250A-1		13.800	C1	90.0	8.2	75.6	0.0	0.9710	93.1	0.9958	143.5			62
6	119	CB250B-1		13.800	C1	90.0	8.2	75.6	0.0	0.9710	93.1	0.9958	143.5			62
6	142	CANJ13A		13.800	C1	54.1	16.7	29.0	-29.0	1.0000	56.6	0.9554	69.0			64
6	143	CANJ13B		13.800	C2	54.1	16.7	29.0	-29.0	1.0000	56.6	0.9554	69.0			64
6	150	GUALACA	13-213	13.800	G2	14.0	-2.0	7.4	-7.4	1.0000	14.1	0.9900	14.8			64
6	151	GUALACA	13.8	13.800	G1	14.0	-2.0	7.4	-7.4	1.0000	14.1	0.9900	14.8			64
6	152	BBLANCO_13.8	13.8	13.800	G1	10.9	0.9	7.0	-7.0	1.0000	11.0	0.9962	16.0			64
6	152	BBLANCO_13.8	13.8	13.800	G2	10.9	0.9	7.0	-7.0	1.0000	11.0	0.9962	16.0			64
6	156	TABASARAI	113	13.800	G1	16.4	0.8	5.7	0.2	1.0000	16.4	0.9988	20.5			1

6	193	GEBONYIC	13.800	G1	9.0	-0.7	4.0	-4.0	1.0000	9.1	0.9970	35.3	64
6	193	GEBONYIC	13.800	G2	9.0	-0.7	4.0	-4.0	1.0000	9.1	0.9970	35.3	64
6	300	SVC-LV	13.200	1	0.1	168.6	300.0	-225.0	1.2082	139.5	0.0007	250.0	60
6	302	PASOANCH13.8	13.800	P1	4.3	2.0	2.0	-2.0	0.9401	5.0	0.9050	6.2	64
6	303	SINDIGO13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1006	8.2	1.0000	13.5	64
6	304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.0981	4.9	0.9063	5.7	64
6	304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.0981	4.9	0.9063	5.7	64
6	305	ELALTO	13.800	G1	17.0	-5.0	12.0	-5.0	1.0176	17.4	0.9594	20.6	64
6	305	ELALTO	13.800	G2	17.0	-5.0	12.0	-5.0	1.0176	17.4	0.9594	20.6	64
6	307	CHAN1 A	13.800	G1	81.3	-11.5	50.0	-50.0	1.0000	82.1	0.9901	118.6	64
6	312	PANDO13.8	13.800	G1	15.0	-4.6	10.0	-5.0	1.0000	15.7	0.9555	19.9	64
6	316	MTE LIRIO13.13.8	13.800	G1	24.0	-5.0	12.0	-5.0	1.0036	24.4	0.9790	27.0	64
6	316	MTE LIRIO13.13.8	13.800	G2	24.0	-5.0	12.0	-5.0	1.0036	24.4	0.9790	27.0	64
6	317	MENDRE13.8	13.800	M1	9.0	0.0	0.0	0.0	1.1001	8.2	1.0000	35.3	64
6	317	MENDRE13.8	13.800	M2	9.0	0.0	0.0	0.0	1.1001	8.2	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C1	5.3	0.0	0.0	0.0	1.1006	4.9	1.0000	35.3	64
6	323	COCHEA 13.8	13.800	C2	5.3	0.0	0.0	0.0	1.1006	4.9	1.0000	35.3	64
6	324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	0.9997	4.4	0.8928	6.2	64
6	340	PEDGALITO138	13.800	P1	22.0	12.0	12.0	-5.0	0.9961	25.2	0.8781	27.0	64
6	342	LORENA13.8	13.800	L1	16.0	-4.5	10.5	-5.0	1.0000	16.6	0.9628	19.9	64
6	343	PRUDENCIA_1	13.800	G1	26.0	-3.6	9.8	-9.8	1.0000	26.3	0.9907	33.0	64
6	343	PRUDENCIA_1	13.800	G2	26.0	-3.6	9.8	-9.8	1.0000	26.3	0.9907	33.0	64
6	346	LORENA 13-2	13.800	L2	16.0	-4.5	10.5	-5.0	1.0000	16.6	0.9628	19.9	64
6	350	MACANO 13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0702	3.2	0.9561	6.2	64

6	351	PERLAS N13.813.800	G1	9.5	5.0	5.0	-5.0	0.9748	11.0	0.8851	13.5	64
6	352	PERLAS S13.813.800	G1	9.5	5.0	5.0	-5.0	0.9748	11.0	0.8851	13.5	64
6	357	BARTOLO13.8 13.800	G1	7.0	1.4	3.7	-3.7	1.0000	7.1	0.9815	8.5	64
6	357	BARTOLO13.8 13.800	G2	7.0	1.4	3.7	-3.7	1.0000	7.1	0.9815	8.5	64
6	359	CRUCES13.8 13.800	G1	4.1	0.5	2.3	-2.3	1.0000	4.2	0.9927	5.6	64
6	359	CRUCES13.8 13.800	G2	4.1	0.5	2.3	-2.3	1.0000	4.2	0.9927	5.6	64
6	361	ESTRECHO4.164.1600	G1	4.9	0.3	2.5	-2.5	1.0000	5.0	0.9978	5.6	64
6	361	ESTRECHO4.164.1600	G2	4.9	0.3	2.5	-2.5	1.0000	5.0	0.9978	5.6	64
6	363	LAGUNA 13.8 13.800	G1	4.2	0.2	2.4	-2.4	1.0000	4.2	0.9991	5.8	64
6	363	LAGUNA 13.8 13.800	G2	4.2	0.2	2.4	-2.4	1.0000	4.2	0.9991	5.8	64
6	364	MENDRE2 13.800	G1	7.6	2.6	3.9	-3.9	1.0000	8.0	0.9471	8.9	64
6	368	RP-490 13.800	G1	4.5	-1.5	2.4	-2.4	1.0000	4.8	0.9455	5.5	64
6	368	RP-490 13.800	G2	4.5	-1.5	2.4	-2.4	1.0000	4.8	0.9455	5.5	64
6	369	HCALDERA13.813.800	G1	3.4	1.9	1.9	-1.9	0.9996	3.9	0.8689	4.3	64
6	372	BJO FRIO 13 13.800	G1	24.4	-3.2	9.8	-9.8	1.0000	24.6	0.9917	33.0	64
6	372	BJO FRIO 13 13.800	G2	24.4	-3.2	9.8	-9.8	1.0000	24.6	0.9917	33.0	64
6	373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9731	5.1	0.8916	21.6	64
6	374	SLORENZO13.813.800	G1	3.9	0.4	2.0	-2.0	1.0000	3.9	0.9955	4.5	64
6	374	SLORENZO13.813.800	G2	3.9	0.4	2.0	-2.0	1.0000	3.9	0.9955	4.5	64
6	376	PEDREG2 13.813.800	G1	6.2	-2.4	3.1	-3.1	1.0000	6.6	0.9327	7.2	64
6	376	PEDREG2 13.813.800	G2	6.2	-2.4	3.1	-3.1	1.0000	6.6	0.9327	7.2	64
6	507	CHAN2 A 13.800	G1	74.1	9.5	50.0	-50.0	1.0000	74.7	0.9919	118.6	64
6	541	TOABRE 0.6000	1	25.0	0.0	0.0	0.0	1.0082	24.8	1.0000	88.9	64
6	703	BJOMIN13A 13.800	G1	25.2	2.3	13.0	-13.0	1.0000	25.3	0.9959	30.5	64



6	704	BJOMIN13B	13.800	G2	25.2	2.3	13.0	-13.0	1.0000	25.3	0.9959	30.5	64
6	705	BAITUN13A	13.800	G1	38.7	-5.0	26.6	-26.6	1.0000	39.1	0.9918	50.6	64
6	706	BAITUN13B	13.800	G2	38.7	-5.0	26.6	-26.6	1.0000	39.1	0.9918	50.6	64
6	720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9401	5.3	0.9145	6.2	64
	SUBSYSTEM TOTALS				1627.7	359.2	1280.6	-839.5				2684.5	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E      TUE, MAY 25 2010 10:45  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII

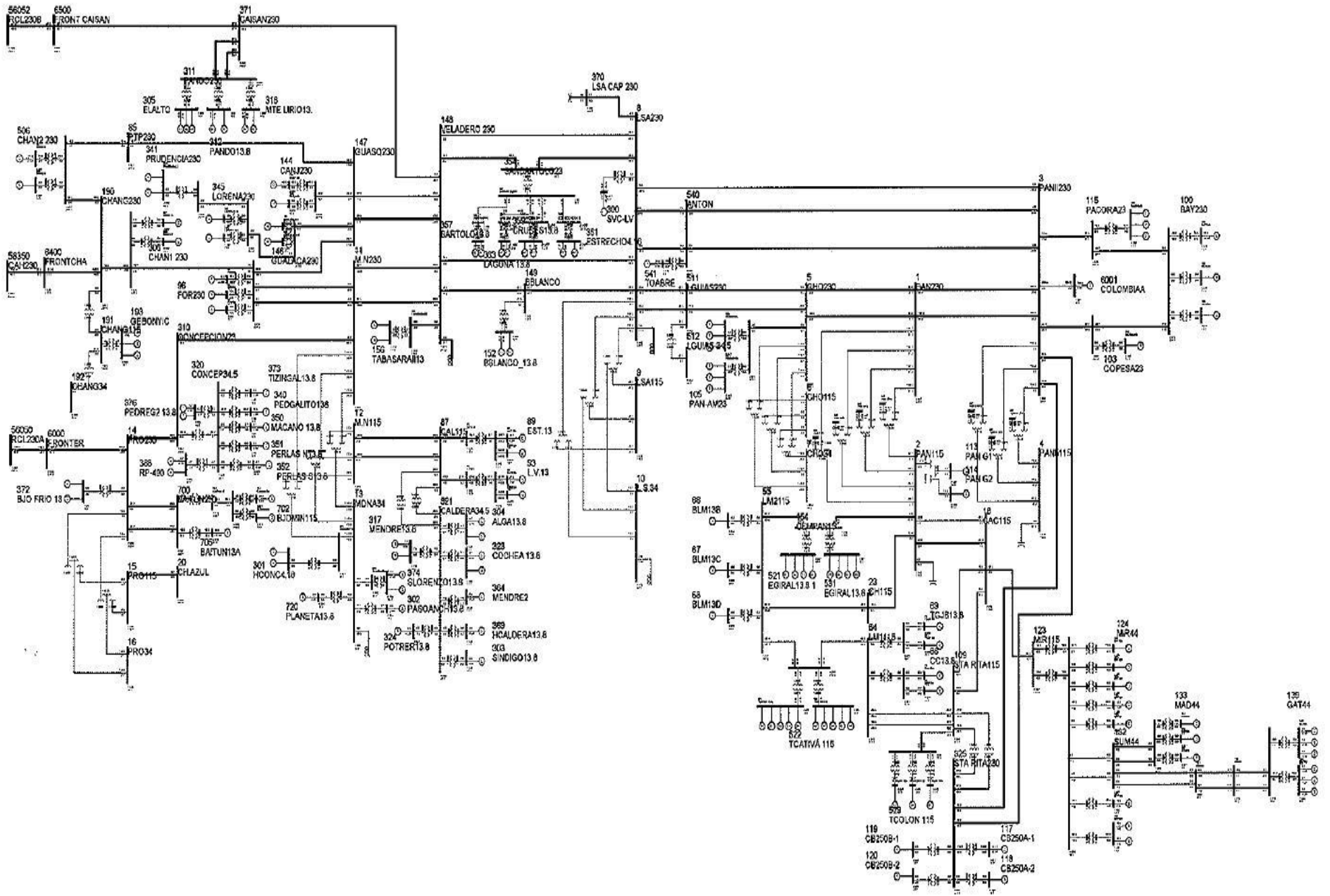
AREA 7 [ACANAL            ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
126		MIR13A		12.000	G1	7.6	0.0	5.0	0.0	1.0206	7.5	1.0000	13.5			65	7
129		MIR13D		13.800	G4	33.9	9.4	15.0	0.0	1.0000	35.2	0.9633	44.1			65	
7		130		MIR13F		13.800	G5	17.1	4.9	8.0	0.0	1.0000	17.8	0.9621	27.7	65	
7		140		GAT6A		6.9000	G1	1.9	0.9	2.0	-2.0	1.0000	2.1	0.9145	4.1	65	
7		140		GAT6A		6.9000	G2	1.9	0.9	2.0	-2.0	1.0000	2.1	0.9145	4.1	65	
7		140		GAT6A		6.9000	G3	1.9	0.9	2.0	-2.0	1.0000	2.1	0.9145	4.1	65	
7		141		GAT6B		6.9000	G4	3.9	0.1	3.0	-3.0	1.0000	3.9	0.9994	5.6	65	
7		141		GAT6B		6.9000	G5	3.9	0.1	3.0	-3.0	1.0000	3.9	0.9994	6.2	65	
7		141		GAT6B		6.9000	G6	3.9	0.1	3.0	-3.0	1.0000	3.9	0.9994	6.2	65	
7		170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0042	18.3	0.9282	23.0	65	
7		171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0134	18.1	0.9282	23.0	65	
7		171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0134	18.1	0.9282	23.0	65	
	SUBSYSTEM TOTALS						127.1	37.7	76.5	5.5			184.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, MAY 26 2010 9:32  
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS  
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT PAN-PANII IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1 GUATEMAL	1141.9 235.6	1330.8 275.1	0.0 -193.7	0.0 0.0	0.0 273.3	-233.3 41.1	44.4 386.4	-238.5
2 SALVADOR	877.2 117.3	855.0 224.2	0.0 -70.1	0.0 0.0	0.0 225.9	0.2 -30.9	22.0 220.1	0.0
3 HONDURAS	1242.0 507.0	1203.0 321.1	0.0 -46.8	0.0 0.0	0.0 289.7	0.1 51.4	38.9 470.9	0.0
4 NICARAGU	538.2 78.3	525.2 207.6	0.0 -56.4	0.0 0.0	0.0 178.3	-0.4 -53.2	13.4 158.7	0.0
5 COSTA RI	1306.8 260.3	1280.2 520.4	0.0 -228.2	0.0 0.0	0.0 414.0	-1.1 26.0	27.8 356.1	0.0
6 PANAMA	1627.7 359.2	1844.6 374.6	0.0 -173.8	0.0 0.0	0.0 599.7	-289.7 -44.6	72.8 802.7	-285.7
7 ACANAL	127.1 37.7	65.9 13.4	0.0 0.0	0.0 0.0	0.0 0.0	60.0 10.3	1.2 14.1	60.0
10 COLOMBIA	464.2 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	464.2 0.0	0.0 0.0	464.2
TOTALS	7325.2 1595.5	7104.7 1936.2	0.0 -769.0	0.0 0.0	0.0 1980.9	0.0 0.0	220.5 2409.1	0.0

### 3.2 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

TUE, MAY 25 2010 10:49

AREA 6 [PANAMA ] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE
AREA SWING																
6	90	EST-13L		13.800	E1	19.7	5.3	12.0	-5.0	0.9900	20.6	0.9650	27.0			64
6	94	LV-13.8L		13.800	L1	21.6	5.8	12.0	-5.0	0.9900	22.6	0.9660	27.0			64
6	97	FOR13A		13.800	F1	75.0	-22.6	50.0	-50.0	0.9900	79.1	0.9575	111.0			64
6	101	BAY13A		13.800	B1	75.8	34.6	50.0	-25.0	1.0100	82.5	0.9094	96.0			61
6	117	CB250A-1		13.800	C1	110.0	34.3	75.6	0.0	1.0100	114.1	0.9547	143.5			62
6	142	CANJ13A		13.800	C1	48.0	8.9	29.0	-29.0	0.9800	49.8	0.9831	69.0			64
6	152	BBLANCO_13.8		13.800	G1	11.0	-3.3	7.0	-7.0	0.9900	11.5	0.9586	16.0			64
6	193	GEBONYIC		13.800	G1	8.2	-4.0	4.0	-4.0	0.9961	9.2	0.8986	35.3			64
6	300	SVC-LV		13.200	1	0.0	-96.6	300.0	-225.0	0.9783	98.7	0.0000	250.0			60
6	302	PASOANCH13.8		13.800	P1	4.8	2.0	2.0	-2.0	0.9538	5.4	0.9216	6.2			64
6	303	SINDIGO13.8		13.800	G1	9.0	0.0	5.0	0.0	1.0921	8.2	1.0000	13.5			64
6	304	ALGA13.8		13.800	A1	4.7	-2.3	2.3	-2.3	1.0909	4.8	0.9001	5.7			64
6	305	ELALTO		13.800	G1	19.0	-5.0	12.0	-5.0	1.0413	18.9	0.9671	20.6			64
6	312	PANDO13.8		13.800	G1	15.0	-5.0	10.0	-5.0	1.0144	15.6	0.9487	19.9			64
6	316	MTE LIRIO13.8		13.800	G1	22.1	-5.0	12.0	-5.0	1.0361	21.9	0.9754	27.0			64
6	317	MENDRE13.8		13.800	M1	7.6	0.0	0.0	0.0	1.0922	7.0	1.0000	35.3			64
6	323	COCHEA 13.8		13.800	C1	5.1	0.0	0.0	0.0	1.0922	4.7	1.0000	35.3			64
6	324	POTRER13.8		13.800	P1	3.8	-1.2	2.0	-2.0	0.9900	4.0	0.9543	6.2			64
6	340	PEDGALITO138		13.800	P1	22.0	2.6	12.0	-5.0	0.9800	22.6	0.9930	27.0			64
6	350	MACANO 13.8		13.800	G1	3.1	-1.0	1.0	-1.0	1.0744	3.1	0.9528	6.2			64

6	351	PERLAS N13.813.800	G1	9.5	5.0	5.0	-5.0	0.9786	11.0	0.8849	13.5	64
6	352	PERLAS S13.813.800	G1	9.5	5.0	5.0	-5.0	0.9786	11.0	0.8849	13.5	64
6	357	BARTOLO13.8	13.800 G1	6.2	-0.9	3.7	-3.7	0.9800	6.4	0.9889	8.5	64
6	359	CRUCES13.8	13.800 G1	4.0	-0.8	2.3	-2.3	0.9800	4.1	0.9784	5.6	64
6	361	ESTRECHO4.164.1600	G1	4.3	-0.9	2.5	-2.5	0.9800	4.4	0.9770	5.6	64
6	363	LAGUNA	13.8 13.800 G1	4.0	-1.0	2.4	-2.4	0.9800	4.2	0.9686	5.8	64
6	364	MENDRE2	13.800 G1	7.0	-1.2	3.9	-3.9	0.9900	7.2	0.9860	8.9	64
6	368	RP-490	13.800 G1	4.7	-2.4	2.4	-2.4	1.0094	5.3	0.8909	5.5	64
6	369	HCALDERA13.813.800	G1	3.8	-1.2	1.9	-1.9	0.9900	4.0	0.9539	4.3	64
6	373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9769	5.1	0.8909	21.6	64
6	374	SLORENZO13.813.800	G1	4.4	-1.9	2.0	-2.0	0.9900	4.8	0.9171	4.5	64
6	376	PEDREG2	13.813.800 G1	6.2	-3.1	3.1	-3.1	1.0115	6.9	0.8909	7.2	64
6	507	CHAN2 A	13.800 G1	71.9	-4.1	50.0	-50.0	0.9900	72.8	0.9984	118.6	64
6	541	TOABRE	0.6000 1	25.0	0.0	0.0	0.0	1.0179	24.6	1.0000	88.9	64
6	703	BJOMIN13A	13.800 G1	26.0	0.1	13.0	-13.0	1.0000	26.0	1.0000	30.5	64
6	705	BAITUN13A	13.800 G1	40.0	-15.0	26.6	-26.6	0.9880	43.2	0.9363	50.6	64
6	720	PLANETA13.8	13.800 G1	4.4	2.0	2.0	-2.0	0.9538	5.0	0.9088	6.2	64
6	SUBSYSTEM TOTALS			720.7	-70.7	726.0	-505.4				1377.4	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:49  
PLAN DE EXPANSION DEL SIN JUNIO-2010  
AÑO 2020 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
129		MIR13D		13.800	G4	17.7	4.0	15.0	0.0	1.0000	18.2	0.9756	44.1				65

7	140	GAT6A	6.9000	G1	1.9	-0.5	2.0	-2.0	1.0000	1.9	0.9666	4.1	65
7	140	GAT6A	6.9000	G2	1.9	-0.5	2.0	-2.0	1.0000	1.9	0.9666	4.1	65
7	140	GAT6A	6.9000	G3	1.9	-0.5	2.0	-2.0	1.0000	1.9	0.9666	4.1	65
7	141	GAT6B	6.9000	G4	3.7	-1.2	3.0	-3.0	1.0000	3.9	0.9485	5.6	65
7	141	GAT6B	6.9000	G5	3.7	-1.2	3.0	-3.0	1.0000	3.9	0.9485	6.2	65
7	141	GAT6B	6.9000	G6	3.7	-1.2	3.0	-3.0	1.0000	3.9	0.9485	6.2	65
7	170	MIR13G	13.800	M1	16.4	6.8	11.2	6.8	1.0222	17.4	0.9232	23.0	65
7	171	MIR13H	13.800	M1	16.4	6.8	11.2	6.8	1.0314	17.2	0.9232	23.0	65
7	171	MIR13H	13.800	M2	16.4	6.8	11.2	6.8	1.0314	17.2	0.9232	23.0	65
	SUBSYSTEM TOTALS				83.6	19.2	63.5	5.5				143.6	



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:49  
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS  
 AÑO 2020 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 GUATEMAL	1085.5 278.2	1330.8 275.1	0.0 -189.9	0.0 0.0	0.0 268.4	-293.5 43.4	48.2 418.1	-295.5
2 SALVADOR	882.0 156.2	855.0 224.2	0.0 -69.5	0.0 0.0	0.0 223.2	-0.2 -26.3	27.2 251.1	0.0
3 HONDURAS	1245.1 540.3	1203.0 321.1	0.0 -46.1	0.0 0.0	0.0 286.3	-0.3 52.7	42.4 498.9	0.0
4 NICARAGU	543.0 111.6	525.2 207.6	0.0 -55.4	0.0 0.0	0.0 175.4	-0.5 -57.5	18.3 192.4	0.0
5 COSTA RI	1314.7 299.4	1280.2 520.4	0.0 -226.7	0.0 0.0	0.0 412.1	-1.7 8.0	36.3 409.9	0.0
6 PANAMA	720.7 -70.7	1014.5 368.2	0.0 11.5	0.0 0.0	0.0 618.9	-304.8 -18.5	11.0 187.0	-305.5
7 ACANAL	83.6 19.2	36.2 13.1	0.0 0.0	0.0 0.0	0.0 0.0	47.0 -1.7	0.5 7.8	47.0
10 COLOMBIA	554.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	554.0 0.0	0.0 0.0	554.0
TOTALS	6428.8 1334.3	6245.0 1929.6	0.0 -576.1	0.0 0.0	0.0 1984.2	0.0 0.0	183.8 1965.1	0.0



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

TUE, MAY 25 2010 10:51

BUSES WITH VOLTAGE 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	1.0104	232.39	11		M.N230		230.00	6	1.0075	231.73
14		PRO230		230.00	6	1.0158	233.64	85		PTP230		230.00	6	1.0100	232.31
96		FOR230		230.00	6	1.0078	231.79	100		BAY230		230.00	6	1.0312	237.18
103		COPESA23		230.00	6	1.0140	233.22	115		PACORA23		230.00	6	1.0152	233.49
144		CANJ230		230.00	6	1.0073	231.68	146		GUALACA230		230.00	6	1.0094	232.15
147		GUASQ230		230.00	6	1.0073	231.68	148		VELADERO 230		230.00	6	1.0049	231.12
149		BBLANCO		230.00	6	1.0037	230.86	155		TABASARAI 230		230.00	6	1.0054	231.24
190		CHANG230		230.00	6	1.0134	233.09	306		CHAN1 230		230.00	6	1.0126	232.90
310		CONCEPCION23		230.00	6	1.0134	233.09	311		PANDO230		230.00	6	1.0378	238.68
325		STA RITA230		230.00	6	1.0065	231.51	341		PRUDENCIA230		230.00	6	1.0125	232.86
345		LORENA230		230.00	6	1.0114	232.63	354		SANBARTOLO230		230.00	6	1.0028	230.64
371		CAISAN230		230.00	6	1.0363	238.36	506		CHAN2 230		230.00	6	1.0151	233.47
540		ANTON		230.00	6	1.0216	234.97	700		BAITUN230		230.00	6	1.0145	233.34
6000		FRONTER		230.00	6	1.0187	234.30	6400		FRONTCHA		230.00	6	1.0136	233.12
6500		FRONT CAISAN		230.00	6	1.0347	237.98								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9991	229.79	5		CHO230		230.00	6	0.9947	228.78
105		PAN-AM23		230.00	6	0.9947	228.78	511		LGUIAS230		230.00	6	0.9968	229.26



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:51  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 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
6		66		BLM13B	13.800	V2	38.0	8.4	25.0	0.0	1.0000	38.9	0.9762	47.0		62	
6		67		BLM13C	13.800	V3	38.0	8.4	25.0	0.0	1.0000	38.9	0.9762	47.0		62	
6		68		BLM13D	13.800	V4	38.0	8.7	25.0	0.0	1.0000	39.0	0.9747	47.0		62	
6		90		EST-13L	13.800	E1	20.4	6.8	12.0	-5.0	0.9900	21.7	0.9481	27.0		64	
6		94		LV-13.8L	13.800	L1	21.6	7.3	12.0	-5.0	0.9900	23.0	0.9474	27.0		64	
6		97		FOR13A	13.800	F1	88.6	-11.7	50.0	-50.0	0.9900	90.3	0.9914	111.0		64	
6		98		FOR13B	13.800	F2	88.6	-11.7	50.0	-50.0	0.9900	90.3	0.9914	111.0		64	
6		101		BAY13A	13.800	B1	59.7	24.3	50.0	-25.0	1.0100	63.8	0.9259	96.0		61	
6		102		BAY13B	13.800	B2	59.5	24.3	50.0	-25.0	1.0100	63.6	0.9256	96.0		61	
6		117		CB250A-1	13.800	C1	100.0	23.5	75.6	0.0	1.0200	100.7	0.9735	143.5		62	
6		118		CB250A-2	13.800	C2	100.0	23.5	75.6	0.0	1.0200	100.7	0.9735	143.5		62	
6		119		CB250B-1	13.800	C1	100.0	23.5	75.6	0.0	1.0200	100.7	0.9735	143.5		62	
6		120		CB250B-2	13.800	C2	100.0	23.5	75.6	0.0	1.0200	100.7	0.9735	143.5		62	
6		142		CANJ13A	13.800	C1	51.0	12.0	29.0	-29.0	0.9800	53.5	0.9734	69.0		64	
6		150		GUALACA	13-213.800	G2	12.6	-4.5	7.4	-7.4	0.9900	13.5	0.9422	14.8		64	
6		152		BBLANCO_13.8	13.800	G1	8.1	-2.0	7.0	-7.0	0.9900	8.4	0.9700	16.0		64	
6		156		TABASARAI13	13.800	G1	15.0	0.2	5.7	0.2	1.0054	14.9	0.9999	20.5		1	
6		193		GEBONYIC	13.800	G1	9.0	-0.3	4.0	-4.0	1.0000	9.0	0.9993	35.3		64	
6		193		GEBONYIC	13.800	G2	9.0	-0.3	4.0	-4.0	1.0000	9.0	0.9993	35.3		64	
6		300		SVC-LV	13.200	1	0.0	-13.5	300.0	-225.0	0.9973	13.5	0.0000	250.0		60	

6	302	PASOANCH	13.8	13.800	P1	4.3	2.0	2.0	-2.0	0.9610	4.9	0.9048	6.2	64
6	303	SINDIGO	13.8	13.800	G1	8.5	0.0	5.0	0.0	1.0906	7.8	1.0000	13.5	64
6	304	ALGA	13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.0879	4.9	0.9063	5.7	64
6	304	ALGA	13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.0879	4.9	0.9063	5.7	64
6	305	ELALTO	13.800	13.800	G1	17.0	-5.0	12.0	-5.0	1.0231	17.3	0.9594	20.6	64
6	305	ELALTO	13.800	13.800	G2	17.0	-5.0	12.0	-5.0	1.0231	17.3	0.9594	20.6	64
6	307	CHAN1 A	13.800	13.800	G1	103.6	-16.0	50.0	-50.0	0.9900	105.9	0.9884	118.6	64
6	312	PANDO	13.8	13.800	G1	13.6	-5.0	10.0	-5.0	1.0040	14.4	0.9386	19.9	64
6	316	MTE LIRIO	13.8	13.800	G1	20.6	-5.0	12.0	-5.0	1.0255	20.7	0.9719	27.0	64
6	317	MENDRE	13.8	13.800	M1	7.9	0.0	0.0	0.0	1.0902	7.3	1.0000	35.3	64
6	317	MENDRE	13.8	13.800	M2	7.9	0.0	0.0	0.0	1.0902	7.3	1.0000	35.3	64
6	323	COCHEA	13.8	13.800	C1	5.3	0.0	0.0	0.0	1.0905	4.9	1.0000	35.3	64
6	323	COCHEA	13.8	13.800	C2	5.3	0.0	0.0	0.0	1.0905	4.9	1.0000	35.3	64
6	324	POTRER	13.8	13.800	P1	4.0	1.2	2.0	-2.0	0.9900	4.2	0.9600	6.2	64
6	340	PEDGALITO	13.8	13.800	P1	20.4	7.5	12.0	-5.0	0.9800	22.2	0.9381	27.0	64
6	342	LORENA	13.8	13.800	L1	14.4	-3.5	10.5	-5.0	1.0000	14.8	0.9716	19.9	64
6	343	PRUDENCIA_1	13.800	13.800	G1	22.4	-9.8	9.8	-9.8	0.9938	24.6	0.9168	33.0	64
6	350	MACANO	13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0625	3.2	0.9560	6.2	64
6	351	PERLAS N	13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9678	11.1	0.8849	13.5	64
6	352	PERLAS S	13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9678	11.1	0.8849	13.5	64
6	357	BARTOLO	13.8	13.800	G1	6.5	0.3	3.7	-3.7	0.9900	6.6	0.9987	8.5	64
6	357	BARTOLO	13.8	13.800	G2	6.5	0.3	3.7	-3.7	0.9900	6.6	0.9987	8.5	64
6	359	CRUCES	13.8	13.800	G1	4.1	0.0	2.3	-2.3	0.9900	4.2	1.0000	5.6	64
6	359	CRUCES	13.8	13.800	G2	4.1	0.0	2.3	-2.3	0.9900	4.2	1.0000	5.6	64

6	361	ESTRECHO	4.164.1600	G1	4.4	0.0	2.5	-2.5	0.9900	4.5	0.9999	5.6	64	
6	363	LAGUNA	13.8	13.800	G1	4.2	-0.4	2.4	-2.4	0.9900	4.2	0.9958	5.8	64
6	364	MENDRE2	13.800	G1	6.8	1.2	3.9	-3.9	0.9900	7.0	0.9856	8.9	64	
6	368	RP-490	13.800	G1	4.2	-1.8	2.4	-2.4	0.9900	4.6	0.9230	5.5	64	
6	368	RP-490	13.800	G2	4.2	-1.8	2.4	-2.4	0.9900	4.6	0.9230	5.5	64	
6	369	HCALDERA	13.813.800	G1	3.4	1.2	1.9	-1.9	0.9900	3.6	0.9468	4.3	64	
6	372	BJO FRIO	13	13.800	G1	23.8	-6.0	9.8	-9.8	0.9900	24.8	0.9696	33.0	64
6	372	BJO FRIO	13	13.800	G2	23.8	-6.0	9.8	-9.8	0.9900	24.8	0.9696	33.0	64
6	373	TIZINGAL	13.813.800	G1	4.4	2.2	2.2	-2.2	0.9661	5.1	0.8909	21.6	64	
6	374	SLORENZO	13.813.800	G1	3.9	-1.6	2.0	-2.0	0.9900	4.2	0.9238	4.5	64	
6	374	SLORENZO	13.813.800	G2	3.9	-1.6	2.0	-2.0	0.9900	4.2	0.9238	4.5	64	
6	376	PEDREG2	13.813.800	G1	6.2	-2.7	3.1	-3.1	0.9900	6.8	0.9167	7.2	64	
6	376	PEDREG2	13.813.800	G2	6.2	-2.7	3.1	-3.1	0.9900	6.8	0.9167	7.2	64	
6	507	CHAN2 A	13.800	G1	101.7	5.2	50.0	-50.0	0.9900	102.8	0.9987	118.6	64	
6	541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0228	29.3	1.0000	88.9	64	
6	703	BJOMIN13A	13.800	G1	23.8	1.2	13.0	-13.0	0.9900	24.1	0.9988	30.5	64	
6	704	BJOMIN13B	13.800	G2	23.8	1.2	13.0	-13.0	0.9900	24.1	0.9988	30.5	64	
6	705	BAITUN13A	13.800	G1	36.6	-9.2	26.6	-26.6	0.9900	38.1	0.9700	50.6	64	
6	706	BAITUN13B	13.800	G2	36.6	-9.2	26.6	-26.6	0.9900	38.1	0.9700	50.6	64	
6	720	PLANETA	13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9610	5.1	0.9145	6.2	64
6	SUBSYSTEM TOTALS					1638.6	88.7	1302.2	-736.4			2673.4		

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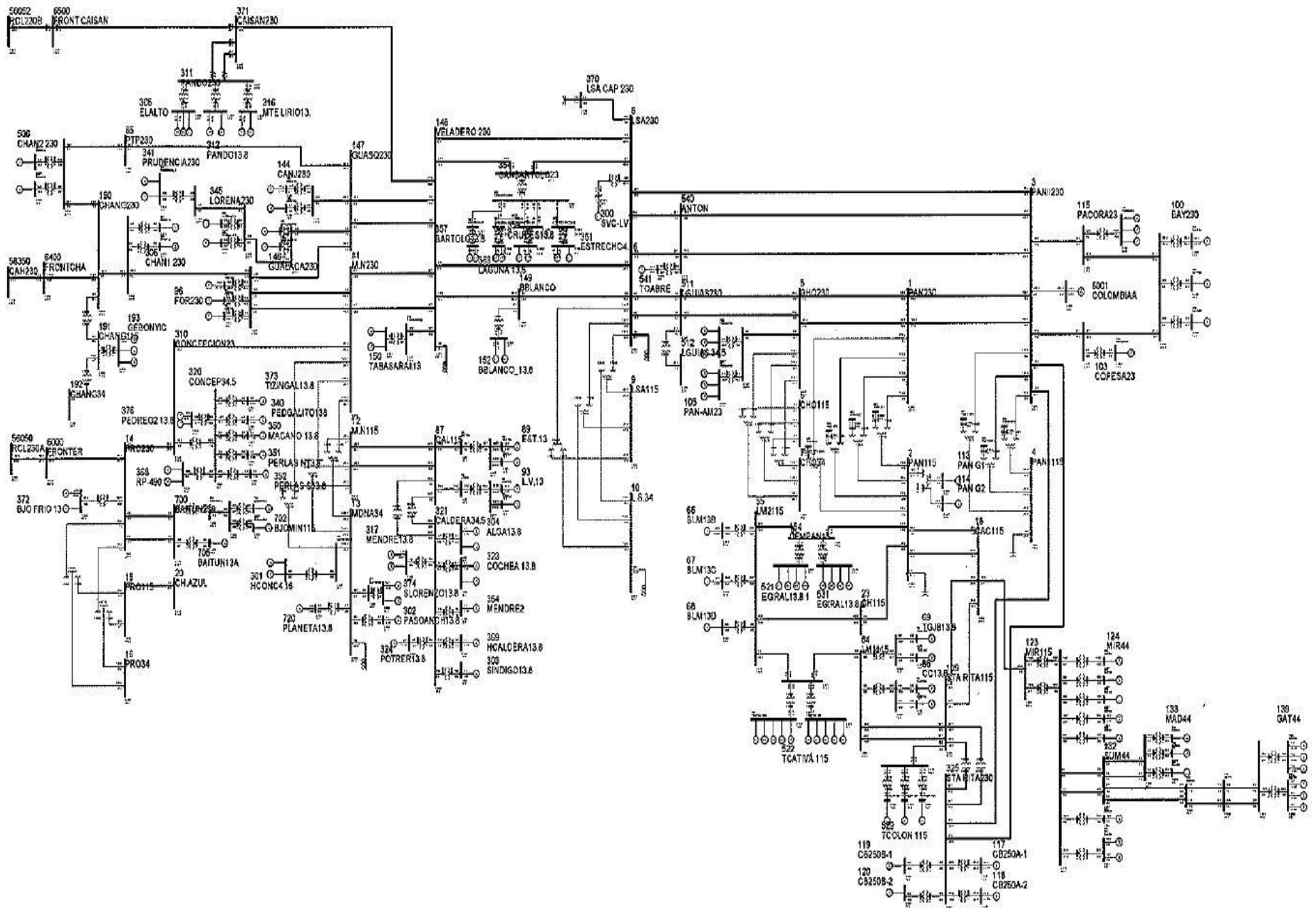
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 10:51  
 PLAN DE EXPANSION DEL SIN JUNIO-2010  
 AÑO 2020 ESC-MOD DEMANDA-MAX-VERANO

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																		
7		126		MIR13A		12.000	G1	7.6	0.0	5.0	0.0	1.0383	7.3	1.0000	13.5		65	
7		129		MIR13D		13.800	G4	34.9	2.6	15.0	0.0	1.0000	35.0	0.9972	44.1		65	
7		130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0062	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	0.9723	4.1		65	
7		140		GAT6A		6.9000	G2	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9723	4.1		65	
7		140		GAT6A		6.9000	G3	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9723	4.1		65	
7		141		GAT6B		6.9000	G4	3.9	-1.2	3.0	-3.0	1.0000	4.1	0.9545	5.6		65	
7		141		GAT6B		6.9000	G5	3.9	-1.2	3.0	-3.0	1.0000	4.1	0.9545	6.2		65	
7		141		GAT6B		6.9000	G6	3.9	-1.2	3.0	-3.0	1.0000	4.1	0.9545	6.2		65	
7		170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0208	17.9	0.9281	23.0		65	
7		171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0299	17.8	0.9281	23.0		65	
7		171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0299	17.8	0.9281	23.0		65	
7		SUBSYSTEM TOTALS					128.0		18.0		76.5	5.5		184.9				



### 3.4 Demanda Mínima de Verano







PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 11:01  
 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																
6	66	BLM13B		13.800	V2	38.0	14.5	25.0	0.0	1.0100	40.3	0.9344	47.0			62
6	67	BLM13C		13.800	V3	38.0	14.5	25.0	0.0	1.0100	40.3	0.9344	47.0			62
6	90	EST-13L		13.800	E1	19.7	5.5	12.0	-5.0	0.9900	20.6	0.9629	27.0			64
6	94	LV-13.8L		13.800	L1	21.6	6.0	12.0	-5.0	0.9900	22.6	0.9640	27.0			64
6	97	FOR13A		13.800	F1	79.0	-20.5	50.0	-50.0	0.9900	82.5	0.9679	111.0			64
6	101	BAY13A		13.800	B1	58.3	26.3	50.0	-25.0	1.0000	64.0	0.9119	96.0			61
6	117	CB250A-1		13.800	C1	85.0	22.0	75.6	0.0	1.0100	86.9	0.9682	143.5			62
6	118	CB250A-2		13.800	C2	85.0	22.0	75.6	0.0	1.0100	86.9	0.9682	143.5			62
6	142	CANJ13A		13.800	C1	46.2	8.7	29.0	-29.0	0.9800	48.0	0.9826	69.0			64
6	152	BBLANCO_13.8	13.800	G1		8.1	-2.9	7.0	-7.0	0.9900	8.7	0.9429	16.0			64
6	193	GEBONYIC		13.800	G1	9.5	-4.0	4.0	-4.0	0.9931	10.4	0.9216	35.3			64
6	300	SVC-LV		13.200	1	0.0	-85.9	300.0	-225.0	0.9744	88.1	0.0000	250.0			60
6	302	PASOANCH13.8	13.800	P1		4.1	2.0	2.0	-2.0	0.9521	4.8	0.8986	6.2			64
6	303	SINDIGO13.8	13.800	G1		9.0	0.0	5.0	0.0	1.0920	8.2	1.0000	13.5			64
6	304	ALGA13.8	13.800	A1		4.7	-2.3	2.3	-2.3	1.0908	4.8	0.9001	5.7			64
6	305	ELALTO		13.800	G1	14.5	-5.0	12.0	-5.0	1.0404	14.7	0.9450	20.6			64
6	312	PANDO13.8	13.800	G1		13.1	-5.0	10.0	-5.0	1.0142	13.8	0.9343	19.9			64
6	316	MTE LIRIO13.8	13.800	G1		20.6	-5.0	12.0	-5.0	1.0351	20.5	0.9719	27.0			64
6	317	MENDRE13.8	13.800	M1		7.6	0.0	0.0	0.0	1.0921	7.0	1.0000	35.3			64
6	323	COCHEA 13.8	13.800	C1		5.1	0.0	0.0	0.0	1.0921	4.7	1.0000	35.3			64

6	324	POTRER	13.8	13.800	P1	3.8	-1.1	2.0	-2.0	0.9900	4.0	0.9642	6.2	64
6	340	PEDGALITO	13.8	13.800	P1	19.7	0.9	12.0	-5.0	0.9800	20.1	0.9989	27.0	64
6	350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0782	3.1	0.9528	6.2	64
6	351	PERLAS N	13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9820	10.9	0.8849	13.5	64
6	352	PERLAS S	13.8	13.800	G1	9.5	5.0	5.0	-5.0	0.9820	10.9	0.8849	13.5	64
6	357	BARTOLO	13.8	13.800	G1	6.2	-0.7	3.7	-3.7	0.9800	6.4	0.9941	8.5	64
6	359	CRUCES	13.8	13.800	G1	4.0	-0.7	2.3	-2.3	0.9800	4.1	0.9853	5.6	64
6	361	ESTRECHO	4.164	4.1600	G1	4.3	-0.8	2.5	-2.5	0.9800	4.4	0.9834	5.6	64
6	363	LAGUNA	13.8	13.800	G1	4.0	-0.9	2.4	-2.4	0.9800	4.2	0.9759	5.8	64
6	364	MENDRE2		13.800	G1	7.0	-1.0	3.9	-3.9	0.9900	7.1	0.9891	8.9	64
6	369	HCALDERA	13.8	13.800	G1	3.8	-1.1	1.9	-1.9	0.9900	4.0	0.9638	4.3	64
6	372	BJO FRIO	13	13.800	G1	22.9	-9.8	9.8	-9.8	1.0101	24.7	0.9201	33.0	64
6	373	TIZINGAL	13.8	13.800	G1	4.2	2.2	2.2	-2.2	0.9803	4.9	0.8839	21.6	64
6	374	SLORENZO	13.8	13.800	G1	3.7	-1.6	2.0	-2.0	0.9900	4.1	0.9191	4.5	64
6	376	PEDREG2	13.8	13.800	G1	5.9	-3.1	3.1	-3.1	1.0152	6.6	0.8839	7.2	64
6	541	TOABRE		0.6000	1	28.9	0.0	0.0	0.0	1.0144	28.5	1.0000	88.9	64
6	720	PLANETA	13.8	13.800	G1	4.4	2.0	2.0	-2.0	0.9521	5.0	0.9088	6.2	64
	SUBSYSTEM TOTALS						712.1	-15.7	769.3	-423.1			1442.7	

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E TUE, MAY 25 2010 11:01  
PLAN DE EXPANSION DEL SIN JUNIO-2010  
AÑO 2020 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
129		MIR13D		13.800	G4	18.3	3.3	15.0	0.0	1.0000	18.6	0.9845	44.1				65

7	140 GAT6A	6.9000 G1	1.9	-0.8	2.0	-2.0	1.0000	2.0	0.9205	4.1	65
7	140 GAT6A	6.9000 G2	1.9	-0.8	2.0	-2.0	1.0000	2.0	0.9205	4.1	65
7	140 GAT6A	6.9000 G3	1.9	-0.8	2.0	-2.0	1.0000	2.0	0.9205	4.1	65
7	141 GAT6B	6.9000 G4	3.7	-1.5	3.0	-3.0	1.0000	4.0	0.9236	5.6	65
7	141 GAT6B	6.9000 G5	3.7	-1.5	3.0	-3.0	1.0000	4.0	0.9236	6.2	65
7	141 GAT6B	6.9000 G6	3.7	-1.5	3.0	-3.0	1.0000	4.0	0.9236	6.2	65
7	170 MIR13G	13.800 M1	16.4	6.8	11.2	6.8	1.0237	17.3	0.9232	23.0	65
7	171 MIR13H	13.800 M1	16.4	6.8	11.2	6.8	1.0329	17.2	0.9232	23.0	65
7	171 MIR13H	13.800 M2	16.4	6.8	11.2	6.8	1.0329	17.2	0.9232	23.0	65
	SUBSYSTEM TOTALS		84.3	16.7	63.5	5.5				143.6	

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

TUE, MAY 25 2010 11:01  
 AREA TOTALS  
 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1079.4	1330.8	0.0	0.0	0.0	-293.3	41.9	-289.3
GUATEMAL	228.4	275.1	-194.4	0.0	272.3	52.5	367.6	
2	882.5	855.0	0.0	0.0	0.0	0.4	27.0	0.0
SALVADOR	147.1	224.2	-69.6	0.0	223.8	-33.5	249.9	
3	1245.9	1203.0	0.0	0.0	0.0	0.5	42.4	0.0
HONDURAS	537.9	321.1	-46.1	0.0	286.7	50.7	499.0	
4	544.4	525.2	0.0	0.0	0.0	1.0	18.1	0.0
NICARAGU	109.8	207.6	-55.5	0.0	175.5	-57.7	190.9	
5	1318.3	1280.2	0.0	0.0	0.0	2.7	35.4	0.0
COSTA RI	296.3	520.4	-226.9	0.0	412.3	9.8	405.3	
6	712.1	1031.3	0.0	0.0	0.0	-331.7	12.5	-331.0
PANAMA	-15.7	374.3	65.3	0.0	616.7	-17.2	178.5	
7	84.3	36.8	0.0	0.0	0.0	47.0	0.4	47.0
ACANAL	16.7	13.4	0.0	0.0	0.0	-4.6	8.0	
10	573.3	0.0	0.0	0.0	0.0	573.3	0.0	573.3
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6440.2	6262.4	0.0	0.0	0.0	0.0	177.9	0.0
	1320.6	1935.9	-527.2	0.0	1987.3	0.0	1899.2	