

ANEXO 38 – ALTERNATIVA 3

ANÁLISIS DE FLUJOS DE POTENCIA, ESTABILIDAD TRANSITORIA Y CORTO CIRCUITO

RESULTADOS DE FLUJOS DE POTENCIA

INDICE GENERAL

Año 2014

Demanda Máxima de Inverno

Contingencia Llano Sánchez – Panamá II

Contingencia Guasquitas – Llano Sánchez

Demanda Mínima de Invierno

Año 2017

Demanda Máxima de Inverno

Contingencia Llano Sánchez – Panamá II

Contingencia Guasquitas – Llano Sánchez

Demanda Máxima de Verano

Demanda Mínima de Invierno

Demanda Mínima de Verano

Año 2020

Demanda Máxima de Inverno

Contingencia Panamá – Panamá II

Contingencia Llano Sánchez – Panamá II

Contingencia Santa Rita – Panamá II

Demanda Máxima de Verano

Demanda Mínima de Invierno

Demanda Mínima de Verano

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 11 2010 15:28
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0142	233.28	14	PRO230	230.00	6	1.0272	236.26				
85	PTP230	230.00	6	1.0129	232.96	96	FOR230	230.00	6	1.0135	233.11				
100	BAY230	230.00	6	1.0212	234.87	115	PACORA23	230.00	6	1.0005	230.12				
144	CANJ230	230.00	6	1.0109	232.52	146	GUALACA230	230.00	6	1.0145	233.33				
147	GUASQ230	230.00	6	1.0107	232.46	148	VELADERO 230	230.00	6	1.0071	231.62				
149	BBLANCO	230.00	6	1.0054	231.24	190	CHANG230	230.00	6	1.0179	234.12				
306	CHAN1 230	230.00	6	1.0166	233.81	310	CONCEPCION232	230.00	6	1.0228	235.24				
311	PANDO230	230.00	6	1.0436	240.03	341	PRUDENCIA230	230.00	6	1.0211	234.85				
345	LORENA230	230.00	6	1.0186	234.28	354	SANBARTOLO232	230.00	6	1.0030	230.69				
371	CAISAN230	230.00	6	1.0424	239.74	540	ANTON	230.00	6	1.0089	232.04				
700	BAITUN230	230.00	6	1.0268	236.17	6000	FRONTER	230.00	6	1.0297	236.83				
6400	FRONTCHA	230.00	6	1.0199	234.57	6500	FRONT CAISAN230	230.00	6	1.0413	239.50				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9843	226.39	3	PANII230	230.00	6	0.9931	228.41				
5	CHO230	230.00	6	0.9810	225.64	8	LSA230	230.00	6	1.0000	230.00				
103	COPESA23	230.00	6	0.9978	229.49	105	PAN-AM23	230.00	6	0.9810	225.64				
370	LSA CAP 230	230.00	6	1.0000	230.00	511	LGUIAS230	230.00	6	0.9866	226.93				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 11 2010 15:28
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0157	116.81	9		LSA115		115.00	6	1.0443	120.10
12		M.N115		115.00	6	1.0092	116.06	15		PRO115		115.00	6	1.0291	118.35
20		CH.AZUL		115.00	6	1.0299	118.43	52		TOC115		115.00	6	1.0127	116.46
54		LM1115		115.00	6	1.0063	115.73	55		LM2115		115.00	6	1.0073	115.84
61		FFIELD		115.00	6	1.0026	115.30	87		CAL115		115.00	6	1.0271	118.12
88		EST115		115.00	6	1.0308	118.54	92		L.V115		115.00	6	1.0285	118.28
109		STA RITA115		115.00	6	1.0056	115.65	191		CHANG115		115.00	6	1.0087	116.00
522		TCATIVÁ	115	115.00	6	1.0068	115.78	529		TCOLON	115	115.00	6	1.0057	115.65
701		BAITUN115		115.00	6	1.0097	116.11	702		BJOMIN115		115.00	6	1.0118	116.36

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9856	113.34	6		CHO115		115.00	6	0.9820	112.93
18		CAC115		115.00	6	0.9853	113.31	19		C.V115		115.00	6	0.9979	114.76
21		C.BAN115		115.00	6	0.9779	112.46	23		CH115		115.00	6	0.9847	113.24
26		LOC115		115.00	6	0.9783	112.51	30		MAR115		115.00	6	0.9758	112.22
33		STM115		115.00	6	0.9835	113.10	37		SAN115		115.00	6	0.9782	112.50
48		TINAJ115		115.00	6	0.9828	113.02	50		M.O115		115.00	6	0.9830	113.04
123		MIR115		115.00	7	0.9921	114.09	154		CEMPAN15		115.00	6	0.9998	114.98

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 11 2010 15:28
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	38.0	20.0	25.0	0.0	1.0000	42.9	0.8853	47.0			62	6	
67		BLM13C		13.800	V3	38.0	20.0	25.0	0.0	1.0000	42.9	0.8853	47.0			62	6	
68		BLM13D		13.800	V4	38.0	20.8	25.0	0.0	1.0000	43.3	0.8770	47.0			62	6	
90		EST-13L		13.800	E1	22.8	6.5	12.0	-5.0	1.0000	23.7	0.9621	27.0			64	6	
91		EST-13T		13.800	E2	22.8	6.5	12.0	-5.0	1.0000	23.7	0.9621	27.0			64	6	
94		LV-13.8L		13.800	L1	24.3	7.2	12.0	-5.0	1.0000	25.4	0.9584	27.0			64	6	
95		LV-13.8T		13.800	L2	24.3	7.2	12.0	-5.0	1.0000	25.4	0.9584	27.0			64	6	
97		FOR13A		13.800	F1	85.0	0.7	50.0	-50.0	1.0100	84.2	1.0000	111.0			64	6	
98		FOR13B		13.800	F2	85.0	0.7	50.0	-50.0	1.0100	84.2	1.0000	111.0			64	6	
101		BAY13A		13.800	B1	42.3	22.7	50.0	-25.0	1.0000	48.0	0.8815	96.0			61	6	
102		BAY13B		13.800	B2	42.3	22.7	50.0	-25.0	1.0000	48.0	0.8815	96.0			61	6	
108		BAY13C		13.800	B3	42.3	22.7	50.0	-25.0	1.0000	48.0	0.8815	100.0			61	6	
142		CANJ13A		13.800	C1	45.0	14.3	29.0	-29.0	1.0100	46.7	0.9531	69.0			64	6	
143		CANJ13B		13.800	C2	45.0	14.3	29.0	-29.0	1.0100	46.7	0.9531	69.0			64	6	
150		GUALACA	13-213.800	G2		14.0	-0.8	7.4	-7.4	1.0100	13.9	0.9986	14.8			64	6	
152		BBLANCO	13.813.800	G1		13.0	-0.4	7.0	-7.0	1.0000	13.0	0.9996	16.0			64	6	
193		GEBONYIC	13.800	G1		8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9889	35.3			64	6	
193		GEBONYIC	13.800	G2		8.0	-1.2	4.0	-4.0	1.0000	8.1	0.9889	35.3			64	6	
300		SVC-LV	13.200	1		0.0	99.7	300.0	-225.0	1.0196	97.8	0.0000	250.0			63	6	
302		PASOANCH	13.813.800	P1		4.8	2.0	2.0	-2.0	0.9712	5.3	0.9216	6.2			64	6	
304		ALGA13.8	13.800	A1		4.6	-2.3	2.3	-2.3	1.0980	4.7	0.8981	5.7			64	6	
304		ALGA13.8	13.800	A2		4.6	-2.3	2.3	-2.3	1.0980	4.7	0.8981	5.7			64	6	
305		ELALTO	13.800	G1		18.0	-5.0	12.0	-5.0	1.0366	18.0	0.9635	20.6			64	6	
307		CHAN1 A	13.800	G1		75.0	-13.1	50.0	-50.0	1.0000	76.1	0.9851	118.6			64	6	
308		CHAN1 B	13.800	G2		75.0	-13.1	50.0	-50.0	1.0000	76.1	0.9851	118.6			64	6	
312		PANDO13.8	13.800	G1		9.0	-3.1	10.0	-5.0	1.0000	9.5	0.9456	19.9			64	6	
312		PANDO13.8	13.800	G2		9.0	-3.1	10.0	-5.0	1.0000	9.5	0.9456	19.9			64	6	
316		MTE LIRIO13.13.800	G1			17.0	-5.0	12.0	-5.0	1.0182	17.4	0.9594	27.0			64	6	
316		MTE LIRIO13.13.800	G2			17.0	-5.0	12.0	-5.0	1.0182	17.4	0.9594	27.0			64	6	
317		MENDRE13.8	13.800	M1		9.4	0.0	0.0	0.0	1.1001	8.5	1.0000	35.3			64	6	
317		MENDRE13.8	13.800	M2		9.4	0.0	0.0	0.0	1.1001	8.5	1.0000	35.3			64	6	
323		COCHEA 13.8	13.800	C1		5.5	0.0	0.0	0.0	1.1005	5.0	1.0000	35.3			64	6	
323		COCHEA 13.8	13.800	C2		5.5	0.0	0.0	0.0	1.1005	5.0	1.0000	35.3			64	6	
324		POTRER13.8	13.800	P1		4.0	2.0	2.0	-2.0	0.9996	4.4	0.8929	6.2			64	6	
340		PEDGALITO13813.800	P1			22.0	7.5	12.0	-5.0	1.0000	23.2	0.9466	27.0			64	6	
342		LORENA13.8	13.800	L1		12.0	-5.0	10.5	-5.0	1.0030	12.9	0.9229	19.9			64	6	
343		PRUDENCIA_1	13.800	G1		23.8	-4.8	9.8	-9.8	1.0000	24.3	0.9804	33.0			64	6	

343	PRUDENCIA_1	13.800	G2	23.8	-4.8	9.8	-9.8	1.0000	24.3	0.9804	33.0	64	6	
346	LORENA 13-2	13.800	L2	12.0	-5.0	10.5	-5.0	1.0030	12.9	0.9229	19.9	64	6	
350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0851	3.0	0.9514	6.2	64	6
351	PERLAS N13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9883	10.4	0.8742	13.5	64	6	
352	PERLAS S13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9883	10.4	0.8742	13.5	64	6	
357	BARTOLO13.8	13.800	G1	6.9	1.5	3.7	-3.7	1.0100	7.0	0.9770	8.5	64	6	
357	BARTOLO13.8	13.800	G2	6.9	1.5	3.7	-3.7	1.0100	7.0	0.9770	8.5	64	6	
359	CRUCES13.8	13.800	G1	4.4	0.6	2.3	-2.3	1.0100	4.4	0.9919	5.6	64	6	
359	CRUCES13.8	13.800	G2	4.4	0.6	2.3	-2.3	1.0100	4.4	0.9919	5.6	64	6	
361	ESTRECHO4.164.1600	1.600	G1	4.7	0.4	2.5	-2.5	1.0100	4.7	0.9959	5.6	64	6	
361	ESTRECHO4.164.1600	1.600	G2	4.7	0.4	2.5	-2.5	1.0100	4.7	0.9959	5.6	64	6	
363	LAGUNA 13.8	13.800	G1	4.4	0.2	2.4	-2.4	1.0100	4.4	0.9989	5.8	64	6	
363	LAGUNA 13.8	13.800	G2	4.4	0.2	2.4	-2.4	1.0100	4.4	0.9989	5.8	64	6	
364	MENDRE2	13.800	G1	7.6	2.6	3.9	-3.9	1.0000	8.0	0.9453	8.9	64	6	
368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	1.0037	5.3	0.8906	5.5	64	6	
368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	1.0037	5.3	0.8906	5.5	64	6	
369	HCALDERA13.813.800	1.600	G1	3.8	1.9	1.9	-1.9	0.9996	4.3	0.8909	4.3	64	6	
372	BJO FRIO 13	13.800	G1	23.8	-9.8	9.8	-9.8	1.0087	25.5	0.9252	33.0	64	6	
373	TIZINGAL13.813.800	1.600	G1	4.4	2.2	2.2	-2.2	0.9866	5.0	0.9909	21.6	64	6	
374	SLORENZO13.813.800	1.600	G1	3.9	-1.7	2.0	-2.0	1.0000	4.2	0.9187	4.5	64	6	
374	SLORENZO13.813.800	1.600	G2	3.9	-1.7	2.0	-2.0	1.0000	4.2	0.9187	4.5	64	6	
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0099	24.8	1.0000	88.9	64	6	
703	BJOMIN13A	13.800	G1	23.8	1.6	13.0	-13.0	1.0100	23.6	0.9976	30.5	64	6	
704	BJOMIN13B	13.800	G2	23.8	1.6	13.0	-13.0	1.0100	23.6	0.9976	30.5	64	6	
705	BAITUN13A	13.800	G1	34.4	-6.2	26.6	-26.6	1.0100	34.6	0.9843	50.6	64	6	
706	BAITUN13B	13.800	G2	34.4	-6.2	26.6	-26.6	1.0100	34.6	0.9843	50.6	64	6	
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9712	5.1	0.9145	6.2	64	6	
SUBSYSTEM TOTALS				1263.9	218.6	1111.2	-809.2				2331.4			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, OCT 11 2010 15:28

PLAN DE EXPANSION DEL SIN JUNIO-2010

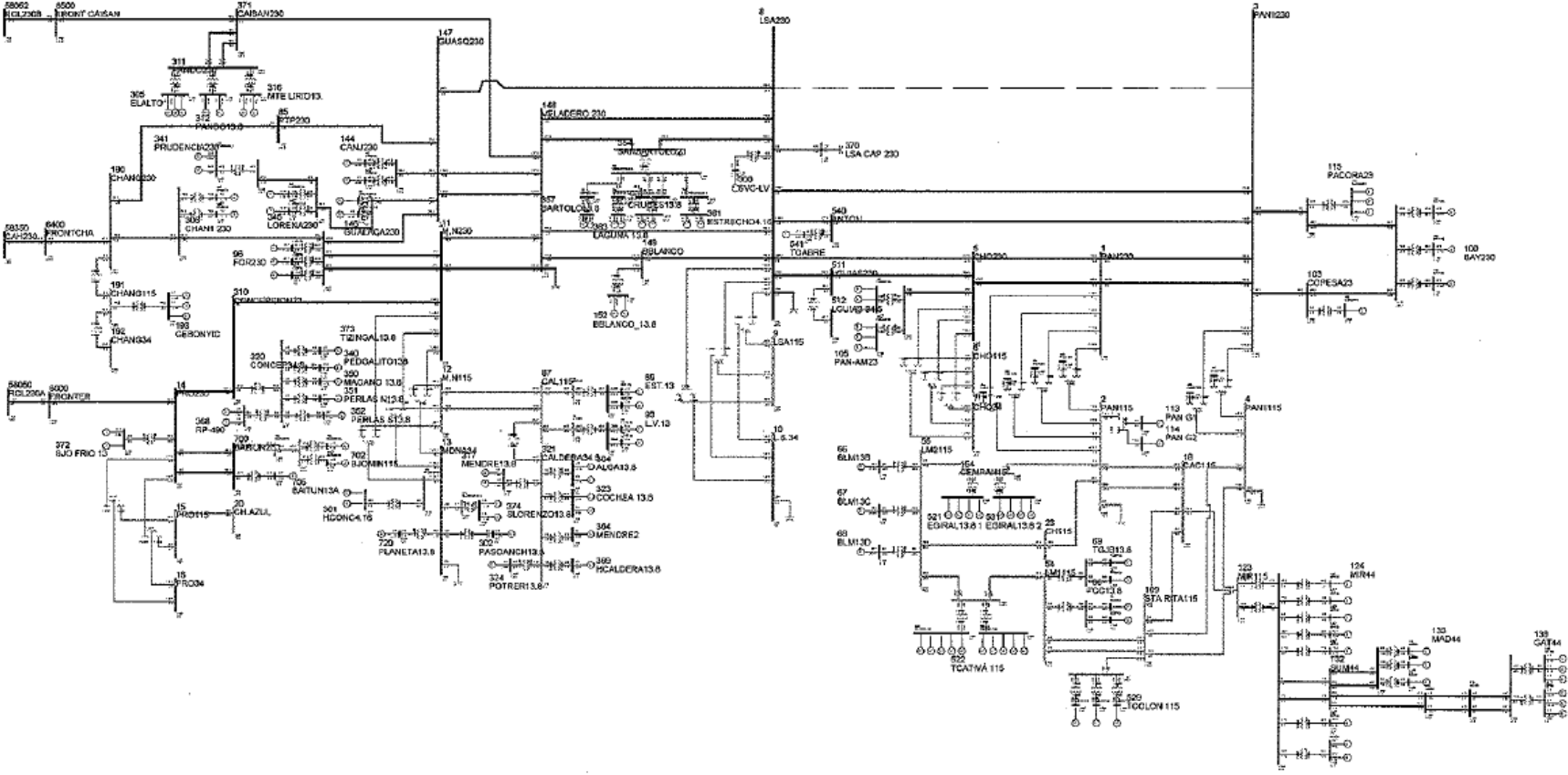
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
129	MIR13D	13.800	G4	22.3	4.1	15.0	0.0	1.0000	22.6	0.9834	44.1						65	7 AREA
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0059	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	0.9925	4.1						65	7
140	GAT6A	6.9000	G2	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9925	4.1						65	7
140	GAT6A	6.9000	G3	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9925	4.1						65	7
141	GAT6B	6.9000	G4	3.9	-1.0	3.0	-3.0	1.0000	4.0	0.9695	5.6						65	7
141	GAT6B	6.9000	G5	3.9	-1.0	3.0	-3.0	1.0000	4.0	0.9695	6.2						65	7
141	GAT6B	6.9000	G6	3.9	-1.0	3.0	-3.0	1.0000	4.0	0.9695	6.2						65	7

170 MIR13G	13.800 M1	17.0	6.8	11.2	6.8	1.0204	18.0	0.9281	23.0	65	7
171 MIR13H	13.800 M1	17.0	6.8	11.2	6.8	1.0295	17.8	0.9281	23.0	65	7
171 MIR13H	13.800 M2	17.0	6.8	11.2	6.8	1.0295	17.8	0.9281	23.0	65	7
SUBSYSTEM TOTALS		107.8	20.9	71.5	5.5				171.3		

Contingencia Llano Sánchez – Panamá II



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:22
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CNT LLSCH-PMA II

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9	LSA115	115.00	6	1.0443	120.10	12	M.N115	115.00	6	1.0087	116.00				
15	PRO115	115.00	6	1.0285	118.27	20	CH.AZUL	115.00	6	1.0292	118.36				
87	CAL115	115.00	6	1.0268	118.08	88	EST115	115.00	6	1.0305	118.51				
92	L.V115	115.00	6	1.0282	118.24	191	CHANG115	115.00	6	1.0084	115.97				
701	BAITUN115	115.00	6	1.0093	116.06	702	BJOMIN115	115.00	6	1.0114	116.32				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	0.9677	111.28	4	PANII115	115.00	6	0.9972	114.68				
6	CHO115	115.00	6	0.9622	110.65	18	CAC115	115.00	6	0.9675	111.26				
19	C.V115	115.00	6	0.9794	112.63	21	C.BAN115	115.00	6	0.9597	110.36				
23	CH115	115.00	6	0.9686	111.39	26	LOC115	115.00	6	0.9602	110.42				
30	MAR115	115.00	6	0.9577	110.13	33	STM115	115.00	6	0.9655	111.04				
37	SAN115	115.00	6	0.9600	110.40	48	TINAJ115	115.00	6	0.9648	110.96				
50	M.O115	115.00	6	0.9650	110.97	52	TOC115	115.00	6	0.9941	114.32				
54	LM1115	115.00	6	0.9931	114.21	55	LM2115	115.00	6	0.9942	114.33				
61	FFIELD	115.00	6	0.9894	113.78	109	STA RITA115	115.00	6	0.9914	114.01				
123	MIR115	115.00	7	0.9761	112.25	154	CEMPAN15	115.00	6	0.9853	113.31				
522	TCATIVÁ	115	115.00	6	0.9936	114.27	529	TCOLON	115	115.00	6	0.9914	114.01		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:22
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CNT LLSCH-PMA II

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0136	233.12	14	PRO230	230.00	6	1.0266	236.11				
85	PTP230	230.00	6	1.0122	232.81	96	FOR230	230.00	6	1.0129	232.97				
100	BAY230	230.00	6	1.0098	232.25	144	CANJ230	230.00	6	1.0103	232.36				
146	GUALACA230	230.00	6	1.0139	233.19	147	GUASQ230	230.00	6	1.0100	232.31				
148	VELADERO	230230.00	6	1.0063	231.46	149	BBLANCO	230.00	6	1.0047	231.08				
190	CHANG230	230.00	6	1.0175	234.02	306	CHAN1 230	230.00	6	1.0162	233.72				
310	CONCEPCION23230.00	6	1.0221	235.09	311	PANDO230	230.00	6	1.0428	239.84					
341	PRUDENCIA230230.00	6	1.0205	234.71	345	LORENA230	230.00	6	1.0180	234.14					
354	SANBARTOLO23230.00	6	1.0024	230.56	371	CAISAN230	230.00	6	1.0415	239.54					
700	BAITUN230	230.00	6	1.0262	236.03	6000	FRONTER	230.00	6	1.0290	236.68				
6400	FRONTCHA	230.00	6	1.0194	234.45	6500	FRONT CAISAN230.00	6	1.0404	239.30					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9652	222.00	3	PANII230	230.00	6	0.9743	224.10				
5	CHO230	230.00	6	0.9612	221.08	103	COPESA23	230.00	6	0.9801	225.43				
105	PAN-AM23	230.00	6	0.9612	221.08	115	PACORA23	230.00	6	0.9838	226.28				
511	LGUIAS230	230.00	6	0.9740	224.03	540	ANTON	230.00	6	0.9938	228.57				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:22
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CNT LLSCH-PMA II

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
66		BLM13B		13.800	V2	38.1	25.0	25.0	0.0	0.9987	45.6	0.8358	47.0			62	6
67		BLM13C		13.800	V3	38.1	25.0	25.0	0.0	0.9987	45.6	0.8358	47.0			62	6
68		BLM13D		13.800	V4	38.1	25.0	25.0	0.0	0.9965	45.7	0.8358	47.0			62	6
90		EST-13L		13.800	E1	22.9	6.5	12.0	-5.0	1.0000	23.8	0.9614	27.0			64	6
91		EST-13T		13.800	E2	22.9	6.5	12.0	-5.0	1.0000	23.8	0.9614	27.0			64	6
94		LV-13.8L		13.800	L1	24.4	7.3	12.0	-5.0	1.0000	25.5	0.9576	27.0			64	6
95		LV-13.8T		13.800	L2	24.4	7.3	12.0	-5.0	1.0000	25.5	0.9576	27.0			64	6
97		FOR13A		13.800	F1	85.3	1.2	50.0	-50.0	1.0100	84.5	0.9999	111.0			64	6
98		FOR13B		13.800	F2	85.3	1.2	50.0	-50.0	1.0100	84.5	0.9999	111.0			64	6
101		BAY13A		13.800	B1	42.6	31.2	50.0	-25.0	1.0000	52.8	0.8073	96.0			61	6
102		BAY13B		13.800	B2	42.6	31.2	50.0	-25.0	1.0000	52.8	0.8070	96.0			61	6
108		BAY13C		13.800	B3	42.6	31.2	50.0	-25.0	1.0000	52.8	0.8070	100.0			61	6
142		CANJ13A		13.800	C1	45.2	14.5	29.0	-29.0	1.0100	47.0	0.9524	69.0			64	6
143		CANJ13B		13.800	C2	45.2	14.5	29.0	-29.0	1.0100	47.0	0.9524	69.0			64	6
150		GUALACA	13-213.800	G2		14.0	-0.6	7.4	-7.4	1.0100	13.9	0.9991	14.8			64	6
152		BBLANCO	13.813.800	G1		13.0	-0.3	7.0	-7.0	1.0000	13.0	0.9998	16.0			64	6
193		GEBONYIC	13.800	G1		8.1	-1.2	4.0	-4.0	1.0000	8.2	0.9901	35.3			64	6
193		GEBONYIC	13.800	G2		8.1	-1.2	4.0	-4.0	1.0000	8.2	0.9901	35.3			64	6
300		SVC-LV	13.200	1		0.4	202.4	300.0	-225.0	1.0390	194.9	0.0020	250.0			63	6
302		PASOANCH	13.813.800	P1		4.8	2.0	2.0	-2.0	0.9706	5.3	0.9221	6.2			64	6
304		ALGA13.8	13.800	A1		4.6	-2.3	2.3	-2.3	1.0979	4.7	0.8981	5.7			64	6
304		ALGA13.8	13.800	A2		4.6	-2.3	2.3	-2.3	1.0979	4.7	0.8981	5.7			64	6
305		ELALTO	13.800	G1		18.1	-5.0	12.0	-5.0	1.0357	18.1	0.9637	20.6			64	6
307		CHAN1 A	13.800	G1		75.3	-12.7	50.0	-50.0	1.0000	76.4	0.9861	118.6			64	6
308		CHAN1 B	13.800	G2		75.3	-12.7	50.0	-50.0	1.0000	76.4	0.9861	118.6			64	6
312		PANDO13.8	13.800	G1		9.1	-3.0	10.0	-5.0	1.0000	9.5	0.9486	19.9			64	6
312		PANDO13.8	13.800	G2		9.1	-3.0	10.0	-5.0	1.0000	9.5	0.9486	19.9			64	6
316		MTE LIRIO13.13.800	G1			17.1	-5.0	12.0	-5.0	1.0173	17.5	0.9597	27.0			64	6
316		MTE LIRIO13.13.800	G2			17.1	-5.0	12.0	-5.0	1.0173	17.5	0.9597	27.0			64	6
317		MENDRE13.8	13.800	M1		9.5	0.0	0.0	0.0	1.0999	8.6	1.0000	35.3			64	6
317		MENDRE13.8	13.800	M2		9.5	0.0	0.0	0.0	1.0999	8.6	1.0000	35.3			64	6
323		COCHEA 13.8	13.800	C1		5.6	0.0	0.0	0.0	1.1004	5.1	1.0000	35.3			64	6
323		COCHEA 13.8	13.800	C2		5.6	0.0	0.0	0.0	1.1004	5.1	1.0000	35.3			64	6
324		POTRER13.8	13.800	P1		4.0	2.0	2.0	-2.0	0.9995	4.4	0.8929	6.2			64	6
340		PEDGALITO13813.800	P1			22.1	7.7	12.0	-5.0	1.0000	23.4	0.9446	27.0			64	6
342		LORENA13.8	13.800	L1		12.0	-5.0	10.5	-5.0	1.0024	13.0	0.9235	19.9			64	6
343		PRUDENCIA_1	13.800	G1		23.9	-4.6	9.8	-9.8	1.0000	24.3	0.9818	33.0			64	6

343	PRUDENCIA_1	13.800	G2	23.9	-4.6	9.8	-9.8	1.0000	24.3	0.9818	33.0	64	6	
346	LORENA 13-2	13.800	L2	12.0	-5.0	10.5	-5.0	1.0024	13.0	0.9235	19.9	64	6	
350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0847	3.0	0.9519	6.2	64	6
351	PERLAS N13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9879	10.5	0.8750	13.5	64	6	
352	PERLAS S13.813.800	13.800	G1	9.0	5.0	5.0	-5.0	0.9879	10.5	0.8750	13.5	64	6	
357	BARTOLO13.8	13.800	G1	6.9	1.5	3.7	-3.7	1.0100	7.0	0.9765	8.5	64	6	
357	BARTOLO13.8	13.800	G2	6.9	1.5	3.7	-3.7	1.0100	7.0	0.9765	8.5	64	6	
359	CRUCES13.8	13.800	G1	4.4	0.6	2.3	-2.3	1.0100	4.4	0.9916	5.6	64	6	
359	CRUCES13.8	13.800	G2	4.4	0.6	2.3	-2.3	1.0100	4.4	0.9916	5.6	64	6	
361	ESTRECHO4.164.1600	1.600	G1	4.7	0.4	2.5	-2.5	1.0100	4.7	0.9957	5.6	64	6	
361	ESTRECHO4.164.1600	1.600	G2	4.7	0.4	2.5	-2.5	1.0100	4.7	0.9957	5.6	64	6	
363	LAGUNA 13.8	13.800	G1	4.4	0.2	2.4	-2.4	1.0100	4.4	0.9988	5.8	64	6	
363	LAGUNA 13.8	13.800	G2	4.4	0.2	2.4	-2.4	1.0100	4.4	0.9988	5.8	64	6	
364	MENDRE2	13.800	G1	7.6	2.8	3.9	-3.9	1.0000	8.1	0.9388	8.9	64	6	
368	RP-490	13.800	G1	4.7	-2.4	2.4	-2.4	1.0033	5.3	0.8906	5.5	64	6	
368	RP-490	13.800	G2	4.7	-2.4	2.4	-2.4	1.0033	5.3	0.8906	5.5	64	6	
369	HCALDERA13.813.800	1.600	G1	3.8	1.9	1.9	-1.9	0.9995	4.3	0.8909	4.3	64	6	
372	BJO FRIO 13	13.800	G1	23.9	-9.8	9.8	-9.8	1.0081	25.6	0.9257	33.0	64	6	
373	TIZINGAL13.813.800	1.600	G1	4.5	2.2	2.2	-2.2	0.9862	5.1	0.8933	21.6	64	6	
374	SLORENZO13.813.800	1.600	G1	3.9	-1.6	2.0	-2.0	1.0000	4.2	0.9221	4.5	64	6	
374	SLORENZO13.813.800	1.600	G2	3.9	-1.6	2.0	-2.0	1.0000	4.2	0.9221	4.5	64	6	
541	TOABRE	0.6000	1	25.1	0.0	0.0	0.0	0.9949	25.3	1.0000	88.9	64	6	
703	BJOMIN13A	13.800	G1	23.9	1.7	13.0	-13.0	1.0100	23.7	0.9974	30.5	64	6	
704	BJOMIN13B	13.800	G2	23.9	1.7	13.0	-13.0	1.0100	23.7	0.9974	30.5	64	6	
705	BAITUN13A	13.800	G1	34.5	-5.9	26.6	-26.6	1.0100	34.7	0.9857	50.6	64	6	
706	BAITUN13B	13.800	G2	34.5	-5.9	26.6	-26.6	1.0100	34.7	0.9857	50.6	64	6	
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9706	5.1	0.9145	6.2	64	6	
SUBSYSTEM TOTALS				1269.4	365.8	1111.2	-809.2				2331.4			

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PLAN DE EXPANSION DEL SIN JUNIO-2010

AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CNT LLSCH-PMA II

AREA 7 [ACANAL] MACHINE SUMMARY:

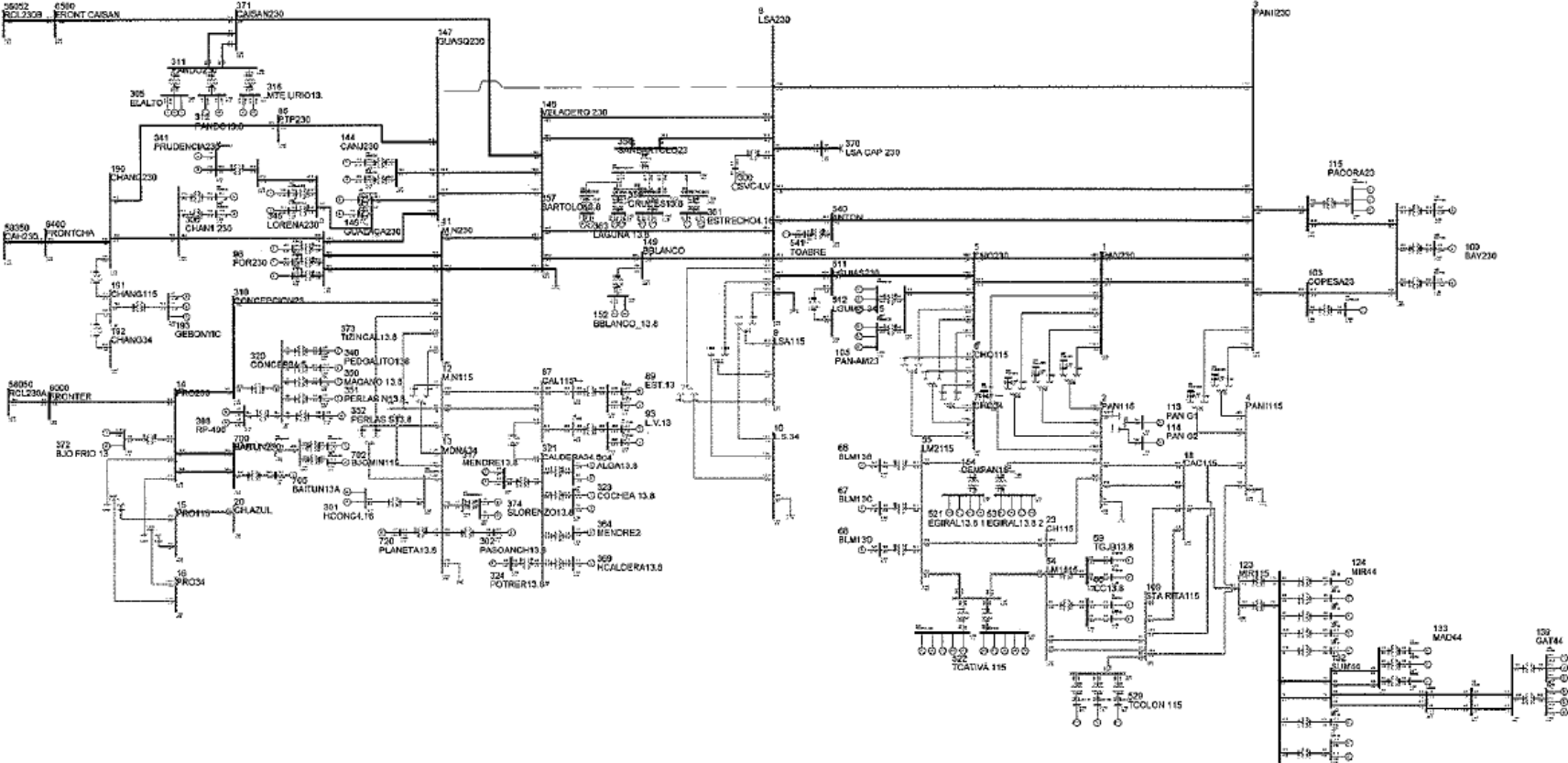
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
129	MIR13D	13.800	G4	22.4	7.7	15.0	0.0	1.0000	23.7	0.9459	44.1	65	7				
130	MIR13F	13.800	G5	17.2	1.4	8.0	0.0	1.0000	17.2	0.9968	27.7	65	7				
140	GAT6A	6.9000	G1	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9969	4.1	65	7				
140	GAT6A	6.9000	G2	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9969	4.1	65	7				
140	GAT6A	6.9000	G3	1.9	0.2	2.0	-2.0	1.0000	1.9	0.9969	4.1	65	7				
141	GAT6B	6.9000	G4	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9889	5.6	65	7				
141	GAT6B	6.9000	G5	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9889	6.2	65	7				
141	GAT6B	6.9000	G6	3.9	-0.6	3.0	-3.0	1.0000	3.9	0.9889	6.2	65	7				

170 MIR13G	13.800 M1	17.1	6.8	11.2	6.8	1.0116	18.2	0.9286	23.0	65	7
171 MIR13H	13.800 M1	17.1	6.8	11.2	6.8	1.0208	18.0	0.9286	23.0	65	7
171 MIR13H	13.800 M2	17.1	6.8	11.2	6.8	1.0208	18.0	0.9286	23.0	65	7
SUBSYSTEM TOTALS		108.1	28.2	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:27
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CNT LLSCH-PMA II IN MW/MVAR

FROM X-- AREA	TO --X GENERATION	TO BUS TO LINE	TO LINE LOAD	FROM SHUNT	TO SHUNT	CHARGING	DESIRED NET INT	LOSSES	NET INT
1 GUATEMAL	1458.8 231.3	1330.8 275.1	0.0 -197.6	0.0 0.0	0.0 276.0	80.2 -14.2	47.8 444.1	70.2	
2 SALVADOR	870.3 82.0	855.0 224.2	0.0 -70.6	0.0 0.0	0.0 228.5	0.6 -25.4	14.7 182.3	0.0	
3 HONDURAS	1238.2 470.6	1203.0 321.1	0.0 -47.4	0.0 0.0	0.0 292.9	0.4 55.2	34.9 434.7	0.0	
4 NICARAGU	532.6 44.1	525.2 207.6	0.0 -57.4	0.0 0.0	0.0 181.3	-1.1 -47.6	8.5 123.0	0.0	
5 COSTA RI	1299.1 239.5	1280.2 520.4	0.0 -229.8	0.0 0.0	0.0 417.3	-1.4 28.3	20.3 337.9	0.0	
6 PANAMA	1269.4 365.8	1311.1 266.2	0.0 -197.8	0.0 0.0	0.0 577.1	-139.0 -3.1	97.3 877.5	-130.2	
7 ACANAL	108.1 28.2	47.0 9.5	0.0 0.0	0.0 0.0	0.0 0.0	60.3 6.7	0.9 12.0	60.0	
10 COLOMBIA	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0	
TOTALS	6776.5	6552.2	0.0	0.0	0.0	0.0	224.3	0.0	
1461.6	1824.0	-800.6	0.0	1973.1	0.0	2411.4			

Contingencia Guasquitas – Llano Sánchez



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:33
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CNT GUASQ-LLSCH

BUSES WITH VOLTAGE 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	1.0072	231.65	14	PRO230	230.00	6	1.0218	235.01				
85	PTP230	230.00	6	1.0085	231.96	96	FOR230	230.00	6	1.0086	231.99				
100	BAY230	230.00	6	1.0215	234.95	115	PACORA23	230.00	6	1.0009	230.21				
144	CANJ230	230.00	6	1.0053	231.22	146	GUALACA230	230.00	6	1.0090	232.08				
147	GUASQ230	230.00	6	1.0050	231.16	190	CHANG230	230.00	6	1.0157	233.60				
306	CHAN1 230	230.00	6	1.0145	233.33	310	CONCEPCION232	230.00	6	1.0167	233.85				
311	PANDO230	230.00	6	1.0360	238.29	341	PRUDENCIA2302	230.00	6	1.0160	233.67				
345	LORENA230	230.00	6	1.0134	233.07	371	CAISAN230	230.00	6	1.0347	237.98				
540	ANTON	230.00	6	1.0092	232.12	700	BAITUN230	230.00	6	1.0219	235.05				
6000	FRONTER	230.00	6	1.0240	235.52	6400	FRONTCHA	230.00	6	1.0177	234.06				
6500	FRONT CAISAN	230.00	6	1.0338	237.78										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9847	226.48	3	PANII230	230.00	6	0.9935	228.50				
5	CHO230	230.00	6	0.9815	225.74	8	LSA230	230.00	6	1.0000	230.00				
103	COPESA23	230.00	6	0.9982	229.58	105	PAN-AM23	230.00	6	0.9815	225.74				
148	VELADERO	230230.00	6	0.9959	229.06	149	BBLANCO	230.00	6	0.9944	228.71				
354	SANBARTOLO	23230.00	6	0.9935	228.50	370	LSA CAP 230	230.00	6	1.0000	230.00				
511	LGUIAS230	230.00	6	0.9869	227.00										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:33
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CNT GUASQ-LLSCH

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4	PANII115	115.00	6	1.0161	116.85	9	LSA115	115.00	6	1.0443	120.10				
12	M.N115	115.00	6	1.0052	115.60	15	PRO115	115.00	6	1.0237	117.72				
20	CH.AZUL	115.00	6	1.0244	117.81	52	TOC115	115.00	6	1.0131	116.50				
54	LM1115	115.00	6	1.0066	115.76	55	LM2115	115.00	6	1.0076	115.87				
61	FFIELD	115.00	6	1.0029	115.33	87	CAL115	115.00	6	1.0246	117.83				
88	EST115	115.00	6	1.0286	118.29	92	L.V115	115.00	6	1.0261	118.01				
109	STA RITA115	115.00	6	1.0059	115.68	154	CEMPAN15	115.00	6	1.0001	115.01				
191	CHANG115	115.00	6	1.0071	115.82	522	TCATIVÁ 115	115.00	6	1.0071	115.81				
529	TCOLON 115	115.00	6	1.0059	115.68	701	BAITUN115	115.00	6	1.0066	115.75				
702	BJOMIN115	115.00	6	1.0090	116.03										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2	PAN115	115.00	6	0.9860	113.38	6	CHO115	115.00	6	0.9824	112.98				
18	CAC115	115.00	6	0.9857	113.35	19	C.V115	115.00	6	0.9983	114.80				
21	C.BAN115	115.00	6	0.9783	112.50	23	CH115	115.00	6	0.9851	113.28				
26	LOC115	115.00	6	0.9787	112.55	30	MAR115	115.00	6	0.9762	112.26				
33	STM115	115.00	6	0.9838	113.14	37	SAN115	115.00	6	0.9786	112.54				
48	TINAJ115	115.00	6	0.9832	113.07	50	M.O115	115.00	6	0.9833	113.08				
123	MIR115	115.00	7	0.9924	114.13										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:33

PLAN DE EXPANSION DEL SIN JUNIO-2010

AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CNT GUASQ-LLSCH

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
66		BLM13B		13.800	V2	38.1	19.9	25.0	0.0	1.0000	42.9	0.8867	47.0			62	6
67		BLM13C		13.800	V3	38.1	19.9	25.0	0.0	1.0000	42.9	0.8867	47.0			62	6
68		BLM13D		13.800	V4	38.1	20.7	25.0	0.0	1.0000	43.3	0.8784	47.0			62	6
90		EST-13L		13.800	E1	22.9	7.1	12.0	-5.0	1.0000	24.0	0.9550	27.0			64	6
91		EST-13T		13.800	E2	22.9	7.1	12.0	-5.0	1.0000	24.0	0.9550	27.0			64	6
94		LV-13.8L		13.800	L1	24.4	7.9	12.0	-5.0	1.0000	25.7	0.9510	27.0			64	6
95		LV-13.8T		13.800	L2	24.4	7.9	12.0	-5.0	1.0000	25.7	0.9510	27.0			64	6
97		FOR13A		13.800	F1	85.3	5.2	50.0	-50.0	1.0100	84.6	0.9982	111.0			64	6
98		FOR13B		13.800	F2	85.3	5.2	50.0	-50.0	1.0100	84.6	0.9982	111.0			64	6
101		BAY13A		13.800	B1	48.9	22.8	50.0	-25.0	1.0000	53.9	0.9064	96.0			61	6
102		BAY13B		13.800	B2	42.6	22.4	50.0	-25.0	1.0000	48.1	0.8851	96.0			61	6
108		BAY13C		13.800	B3	42.6	22.4	50.0	-25.0	1.0000	48.2	0.8852	100.0			61	6
142		CANJ13A		13.800	C1	45.2	15.3	29.0	-29.0	1.0100	47.2	0.9473	69.0			64	6
143		CANJ13B		13.800	C2	45.2	15.3	29.0	-29.0	1.0100	47.2	0.9473	69.0			64	6
150		GUALACA	13-213.800	G2		14.0	0.6	7.4	-7.4	1.0100	13.9	0.9990	14.8			64	6
152		BBLANCO	13.813.800	G1		13.0	1.4	7.0	-7.0	1.0000	13.1	0.9939	16.0			64	6
193		GEBONYIC		13.800	G1	8.1	-0.9	4.0	-4.0	1.0000	8.2	0.9934	35.3			64	6
193		GEBONYIC		13.800	G2	8.1	-0.9	4.0	-4.0	1.0000	8.2	0.9934	35.3			64	6
300		SVC-LV		13.200	1	0.4	198.9	300.0	-225.0	1.0383	191.6	0.0022	250.0			63	6
302		PASOANCH	13.813.800	P1		4.8	2.0	2.0	-2.0	0.9646	5.4	0.9222	6.2			64	6
304		ALGA13.8		13.800	A1	4.6	-2.3	2.3	-2.3	1.0974	4.7	0.8981	5.7			64	6
304		ALGA13.8		13.800	A2	4.6	-2.3	2.3	-2.3	1.0974	4.7	0.8981	5.7			64	6
305		ELALTO		13.800	G1	18.1	-5.0	12.0	-5.0	1.0290	18.2	0.9638	20.6			64	6
307		CHAN1 A		13.800	G1	75.4	-11.0	50.0	-50.0	1.0000	76.2	0.9894	118.6			64	6
308		CHAN1 B		13.800	G2	75.4	-11.0	50.0	-50.0	1.0000	76.2	0.9894	118.6			64	6
312		PANDO13.8		13.800	G1	9.1	-2.5	10.0	-5.0	1.0000	9.4	0.9649	19.9			64	6
312		PANDO13.8		13.800	G2	9.1	-2.5	10.0	-5.0	1.0000	9.4	0.9649	19.9			64	6
316		MTE LIRIO13.8		13.800	G1	17.1	-5.0	12.0	-5.0	1.0103	17.6	0.9597	27.0			64	6
316		MTE LIRIO13.8		13.800	G2	17.1	-5.0	12.0	-5.0	1.0103	17.6	0.9597	27.0			64	6
317		MENDRE13.8		13.800	M1	9.5	0.0	0.0	0.0	1.0994	8.6	1.0000	35.3			64	6
317		MENDRE13.8		13.800	M2	9.5	0.0	0.0	0.0	1.0994	8.6	1.0000	35.3			64	6
323		COCHEA 13.8		13.800	C1	5.6	0.0	0.0	0.0	1.0999	5.1	1.0000	35.3			64	6
323		COCHEA 13.8		13.800	C2	5.6	0.0	0.0	0.0	1.0999	5.1	1.0000	35.3			64	6
324		POTRER13.8		13.800	P1	4.0	2.0	2.0	-2.0	0.9991	4.4	0.8929	6.2			64	6
340		PEDGALITO13813.800		13.800	P1	22.1	9.0	12.0	-5.0	1.0000	23.8	0.9267	27.0			64	6
342		LORENA13.8		13.800	L1	12.0	-4.2	10.5	-5.0	1.0000	12.8	0.9433	19.9			64	6
343		PRUDENCIA_1		13.800	G1	23.9	-3.4	9.8	-9.8	1.0000	24.1	0.9902	33.0			64	6
343		PRUDENCIA_1		13.800	G2	23.9	-3.4	9.8	-9.8	1.0000	24.1	0.9902	33.0			64	6

346	LORENA	13-2	13.800	L2	12.0	-4.2	10.5	-5.0	1.0000	12.8	0.9433	19.9	64	6
350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0817	3.0	0.9520	6.2	64	6
351	PERLAS	N13.813	13.800	G1	9.0	5.0	5.0	-5.0	0.9852	10.5	0.8751	13.5	64	6
352	PERLAS	S13.813	13.800	G1	9.0	5.0	5.0	-5.0	0.9852	10.5	0.8751	13.5	64	6
357	BARTOLO	13.8	13.800	G1	6.9	1.8	3.7	-3.7	1.0100	7.1	0.9670	8.5	64	6
357	BARTOLO	13.8	13.800	G2	6.9	1.8	3.7	-3.7	1.0100	7.1	0.9670	8.5	64	6
359	CRUCES	13.8	13.800	G1	4.4	0.7	2.3	-2.3	1.0100	4.4	0.9858	5.6	64	6
359	CRUCES	13.8	13.800	G2	4.4	0.7	2.3	-2.3	1.0100	4.4	0.9858	5.6	64	6
361	ESTRECHO	4.164	1.600	G1	4.7	0.6	2.5	-2.5	1.0100	4.7	0.9918	5.6	64	6
361	ESTRECHO	4.164	1.600	G2	4.7	0.6	2.5	-2.5	1.0100	4.7	0.9918	5.6	64	6
363	LAGUNA	13.8	13.800	G1	4.4	0.4	2.4	-2.4	1.0100	4.4	0.9964	5.8	64	6
363	LAGUNA	13.8	13.800	G2	4.4	0.4	2.4	-2.4	1.0100	4.4	0.9964	5.8	64	6
364	MENDRE2	13.800	13.800	G1	7.6	3.6	3.9	-3.9	1.0000	8.4	0.9059	8.9	64	6
368	RP-490	13.800	13.800	G1	4.7	-2.4	2.4	-2.4	1.0004	5.3	0.8906	5.5	64	6
368	RP-490	13.800	13.800	G2	4.7	-2.4	2.4	-2.4	1.0004	5.3	0.8906	5.5	64	6
369	HCALDERA	13.813	13.800	G1	3.8	1.9	1.9	-1.9	0.9990	4.3	0.8909	4.3	64	6
372	BJO FRIO	13	13.800	G1	23.9	-9.8	9.8	-9.8	1.0032	25.7	0.9258	33.0	64	6
373	TIZINGAL	13.813	13.800	G1	4.5	2.2	2.2	-2.2	0.9835	5.1	0.8936	21.6	64	6
374	SLORENZO	13.813	13.800	G1	3.9	-1.2	2.0	-2.0	1.0000	4.0	0.9528	4.5	64	6
374	SLORENZO	13.813	13.800	G2	3.9	-1.2	2.0	-2.0	1.0000	4.0	0.9528	4.5	64	6
541	TOABRE	0.6000	1	1	25.2	0.0	0.0	0.0	1.0103	24.9	1.0000	88.9	64	6
703	BJOMIN13A	13.800	13.800	G1	23.9	2.1	13.0	-13.0	1.0100	23.7	0.9962	30.5	64	6
704	BJOMIN13B	13.800	13.800	G2	23.9	2.1	13.0	-13.0	1.0100	23.7	0.9962	30.5	64	6
705	BAITUN13A	13.800	13.800	G1	34.6	-4.0	26.6	-26.6	1.0100	34.4	0.9934	50.6	64	6
706	BAITUN13B	13.800	13.800	G2	34.6	-4.0	26.6	-26.6	1.0100	34.4	0.9934	50.6	64	6
720	PLANETA	13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9646	5.1	0.9145	6.2	64	6
SUBSYSTEM TOTALS					1276.2	354.3	1111.2	-809.2				2331.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:33
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CNT GUASQ-LLSCH

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	MIR	13D	13.800	G4	22.0	4.0	15.0	0.0	1.0000	22.4	0.9836	44.1				65	7
130	MIR	13F	13.800	G5	17.2	0.0	8.0	0.0	1.0061	17.1	1.0000	27.7				65	7
140	GAT	6A	6.9000	G1	1.9	-0.2	2.0	-2.0	1.0000	2.0	0.9920	4.1				65	7
140	GAT	6A	6.9000	G2	1.9	-0.2	2.0	-2.0	1.0000	2.0	0.9920	4.1				65	7
140	GAT	6A	6.9000	G3	1.9	-0.2	2.0	-2.0	1.0000	2.0	0.9920	4.1				65	7
141	GAT	6B	6.9000	G4	3.9	-1.0	3.0	-3.0	1.0000	4.0	0.9690	5.6				65	7
141	GAT	6B	6.9000	G5	3.9	-1.0	3.0	-3.0	1.0000	4.0	0.9690	6.2				65	7
141	GAT	6B	6.9000	G6	3.9	-1.0	3.0	-3.0	1.0000	4.0	0.9690	6.2				65	7

170 MIR13G	13.800 M1	17.1	6.8	11.2	6.8	1.0207	18.0	0.9286	23.0	65	7
171 MIR13H	13.800 M1	17.1	6.8	11.2	6.8	1.0298	17.8	0.9286	23.0	65	7
171 MIR13H	13.800 M2	17.1	6.8	11.2	6.8	1.0298	17.8	0.9286	23.0	65	7
SUBSYSTEM TOTALS		107.8	20.8	71.5	5.5				171.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:33
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO CNT GUASQ-LLSCH IN MW/MVAR

FROM X-- AREA	TO --X GENERATION	TO BUS TO LINE	TO LINE LOAD	FROM SHUNT	TO SHUNT	CHARGING	DESIRED NET INT	LOSSES	NET INT
1 GUATEMAL	1448.8 225.6	1330.8 275.1	0.0 -197.7	0.0 0.0	0.0 0.0	0.0 276.2	70.8 -12.6	47.2 437.1	70.2
2 SALVADOR	869.7 80.4	855.0 224.2	0.0 -70.7	0.0 0.0	0.0 0.0	0.0 228.6	0.2 -25.3	14.5 180.8	0.0
3 HONDURAS	1237.9 468.8	1203.0 321.1	0.0 -47.5	0.0 0.0	0.0 0.0	0.0 293.1	0.2 55.2	34.6 433.1	0.0
4 NICARAGU	533.8 42.1	525.2 207.6	0.0 -57.5	0.0 0.0	0.0 0.0	0.0 181.5	0.3 -47.7	8.2 121.2	0.0
5 COSTA RI	1300.7 239.7	1280.2 520.4	0.0 -229.7	0.0 0.0	0.0 0.0	0.0 416.9	0.6 31.2	20.0 334.8	0.0
6 PANAMA	1276.2 354.3	1311.1 266.2	0.0 -205.0	0.0 0.0	0.0 0.0	0.0 578.4	-132.2 -0.6	97.3 872.1	-130.2
7 ACANAL	107.8 20.8	47.0 9.5	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	60.0 -0.1	0.8 11.4	60.0
10 COLOMBIA	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
TOTALS	6774.8	6552.2	0.0	0.0	0.0	0.0	0.0	222.5	0.0
1431.8	1824.0	-808.0	0.0	1974.7	0.0	2390.6			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:39
 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)
3		PANII230		230.00	6	1.0017	230.40	11		M.N230		230.00	6	1.0102	232.34
14		PRO230		230.00	6	1.0288	236.62	85		PTP230		230.00	6	1.0137	233.16
96		FOR230		230.00	6	1.0101	232.33	100		BAY230		230.00	6	1.0188	234.32
103		COPESA23		230.00	6	1.0048	231.10	115		PACORA23		230.00	6	1.0065	231.50
144		CANJ230		230.00	6	1.0106	232.44	146		GUALACA230		230.00	6	1.0124	232.86
147		GUASQ230		230.00	6	1.0106	232.43	148		VELADERO 230	230.00	6	1.0048	231.10	
149		BBLANCO		230.00	6	1.0033	230.76	190		CHANG230		230.00	6	1.0157	233.61
306		CHAN1 230		230.00	6	1.0127	232.93	310		CONCEPCION232	230.00	6	1.0211	234.85	
311		PANDO230		230.00	6	1.0491	241.30	341		PRUDENCIA230	230.00	6	1.0151	233.48	
345		LORENA230		230.00	6	1.0142	233.26	354		SANBARTOLO232	230.00	6	1.0005	230.13	
371		CAISAN230		230.00	6	1.0477	240.97	540		ANTON		230.00	6	1.0125	232.87
700		BAITUN230		230.00	6	1.0288	236.62	6000		FRONTER		230.00	6	1.0318	237.32
6400		FRONTCHA		230.00	6	1.0178	234.08	6500		FRONT CAISAN230	230.00	6	1.0464	240.67	

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9964	229.18	5		CHO230		230.00	6	0.9948	228.81
8		LSA230		230.00	6	0.9900	227.70	105		PAN-AM23		230.00	6	0.9948	228.81
370		LSA CAP 230		230.00	6	0.9900	227.70	511		LGUIAS230		230.00	6	0.9925	228.28

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:39

PLAN DE EXPANSION DEL SIN JUNIO-2010

AÑO 2014 ESC-MOD DEMANDA-MIN INVIERNO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
66		BLM13B		13.800	V2	38.0	14.3	25.0	0.0	0.9900	41.0	0.9363	47.0			62	6
67		BLM13C		13.800	V3	38.0	14.3	25.0	0.0	0.9900	41.0	0.9363	47.0			62	6
68		BLM13D		13.800	V4	38.0	14.8	25.0	0.0	0.9900	41.2	0.9316	47.0			62	6
90		EST-13L		13.800	E1	18.0	3.4	12.0	-5.0	0.9800	18.7	0.9827	27.0			64	6
94		LV-13.8L		13.800	L1	20.2	3.8	12.0	-5.0	0.9800	21.0	0.9832	27.0			64	6
97		FOR13A		13.800	F1	80.0	-23.3	50.0	-50.0	0.9800	85.0	0.9601	111.0			64	6
101		BAY13A		13.800	B1	46.6	16.7	50.0	-25.0	0.9900	50.0	0.9412	96.0			61	6
102		BAY13B		13.800	B2	50.6	17.0	50.0	-25.0	0.9900	53.9	0.9480	96.0			61	6
142		CANJ13A		13.800	C1	45.0	11.1	29.0	-29.0	0.9900	46.8	0.9710	69.0			64	6
150		GUALACA	13-213.800	G2		14.0	-5.2	7.4	-7.4	0.9900	15.1	0.9382	14.8			64	6
152		BBLANCO_13.813.800		G1		13.0	-3.2	7.0	-7.0	0.9800	13.6	0.9707	16.0			64	6
193		GEBONYIC		13.800	G1	8.0	-2.1	4.0	-4.0	0.9900	8.4	0.9669	35.3			64	6
193		GEBONYIC		13.800	G2	8.0	-2.1	4.0	-4.0	0.9900	8.4	0.9669	35.3			64	6
300		SVC-LV		13.200	1	0.0	-92.4	300.0	-225.0	0.9710	95.2	0.0000	250.0			63	6
302		PASOANCH13.813.800		P1		4.8	2.0	2.0	-2.0	0.9613	5.4	0.9216	6.2			64	6
304		ALGA13.8		13.800	A1	4.6	-2.3	2.3	-2.3	1.0897	4.7	0.8981	5.7			64	6
305		ELALTO		13.800	G1	18.0	-5.0	12.0	-5.0	1.0345	18.1	0.9635	20.6			64	6
305		ELALTO		13.800	G2	18.0	-5.0	12.0	-5.0	1.0345	18.1	0.9635	20.6			64	6
307		CHAN1 A		13.800	G1	60.0	-29.0	50.0	-50.0	0.9800	68.0	0.9003	118.6			64	6
312		PANDO13.8		13.800	G1	9.0	-5.0	10.0	-5.0	1.0177	10.1	0.8742	19.9			64	6
316		MTE LIRIO13.13.800		G1		17.0	-5.0	12.0	-5.0	1.0374	17.1	0.9594	27.0			64	6
317		MENDRE13.8		13.800	M1	9.4	0.0	0.0	0.0	1.0909	8.6	1.0000	35.3			64	6
323		COCHEA 13.8		13.800	C1	5.5	0.0	0.0	0.0	1.0911	5.0	1.0000	35.3			64	6
324		POTRER13.8		13.800	P1	4.0	0.5	2.0	-2.0	0.9900	4.0	0.9906	6.2			64	6
340		PEDGALITO13813.800		P1		18.0	4.3	12.0	-5.0	0.9800	18.9	0.9728	27.0			64	6
342		LORENA13.8		13.800	L1	12.0	-5.0	10.5	-5.0	0.9985	13.0	0.9229	19.9			64	6
343		PRUDENCIA_1		13.800	G1	21.0	-9.8	9.8	-9.8	0.9966	23.2	0.9068	33.0			64	6
350		MACANO 13.8		13.800	G1	3.1	-1.0	1.0	-1.0	1.0700	3.0	0.9514	6.2			64	6
351		PERLAS N13.813.800		G1		9.0	5.0	5.0	-5.0	0.9746	10.6	0.8742	13.5			64	6
357		BARTOLO13.8		13.800	G1	6.9	-0.3	3.7	-3.7	0.9800	7.0	0.9992	8.5			64	6
359		CRUCES13.8		13.800	G1	4.4	-0.5	2.3	-2.3	0.9800	4.5	0.9939	5.6			64	6
361		ESTRECHO4.164.1600		G1		4.7	-0.6	2.5	-2.5	0.9800	4.8	0.9919	5.6			64	6
363		LAGUNA 13.8		13.800	G1	4.4	-0.7	2.4	-2.4	0.9800	4.6	0.9862	5.8			64	6
364		MENDRE2		13.800	G1	7.6	0.6	3.9	-3.9	0.9900	7.7	0.9973	8.9			64	6
368		RP-490		13.800	G1	4.7	-2.3	2.4	-2.4	0.9900	5.3	0.8976	5.5			64	6
368		RP-490		13.800	G2	4.7	-2.3	2.4	-2.4	0.9900	5.3	0.8976	5.5			64	6
369		HCALDERA13.813.800		G1		3.8	0.5	1.9	-1.9	0.9900	3.9	0.9898	4.3			64	6
372		BJO FRIO 13		13.800	G1	21.0	-9.8	9.8	-9.8	1.0105	22.9	0.9068	33.0			64	6

373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9729	5.1	0.8909	21.6	64	6
374	SLORENZO13.813.800	G1	3.9	-2.0	2.0	-2.0	0.9969	4.3	0.8909	4.5	64	6
541	TOABRE	0.6000 1	25.0	0.0	0.0	0.0	1.0135	24.7	1.0000	88.9	64	6
703	BJOMIN13A	13.800 G1	21.0	-0.2	13.0	-13.0	1.0100	20.8	0.9999	30.5	64	6
705	BAITUN13A	13.800 G1	32.2	-7.2	26.6	-26.6	1.0100	32.7	0.9759	50.6	64	6
720	PLANETA13.8	13.800 G1	4.5	2.0	2.0	-2.0	0.9613	5.1	0.9145	6.2	64	6
SUBSYSTEM TOTALS			783.9	-108.8	818.2	-565.6				1598.7		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:39
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2014 ESC-MOD DEMANDA-MIN INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

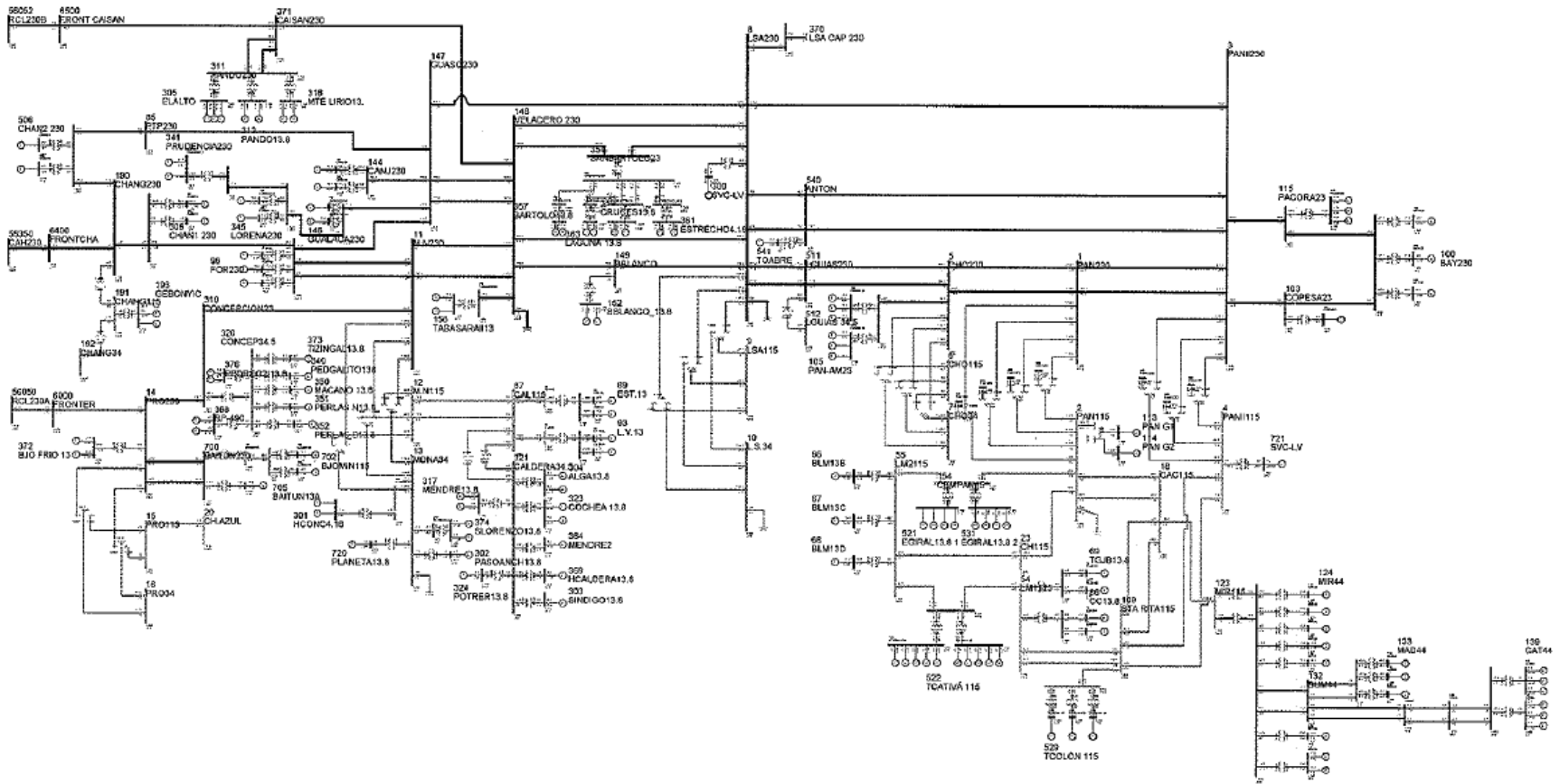
BUS#	X-- NAME	--X BASKV ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
129	MIR13D	13.800 G4	25.6	4.2	15.0	0.0	1.0000	25.9	0.9867	44.1			65	7
140	GAT6A	6.9000 G1	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9534	4.1			65	7
140	GAT6A	6.9000 G2	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9534	4.1			65	7
140	GAT6A	6.9000 G3	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9534	4.1			65	7
141	GAT6B	6.9000 G4	3.6	-1.3	3.0	-3.0	1.0000	3.8	0.9382	5.6			65	7
141	GAT6B	6.9000 G5	3.6	-1.3	3.0	-3.0	1.0000	3.8	0.9382	6.2			65	7
141	GAT6B	6.9000 G6	3.6	-1.3	3.0	-3.0	1.0000	3.8	0.9382	6.2			65	7
171	MIR13H	13.800 M1	15.8	6.8	11.2	6.8	1.0285	16.7	0.9181	23.0			65	7
171	MIR13H	13.800 M2	15.8	6.8	11.2	6.8	1.0285	16.7	0.9181	23.0			65	7
SUBSYSTEM TOTALS			73.4	12.2	52.3	-1.4				120.6				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:39
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2014 ESC-MOD DEMANDA-MIN INVIERNO IN MW/MVAR

FROM X-- AREA	TO --X GENERATION	TO BUS TO LINE	TO LINE LOAD	FROM SHUNT	TO SHUNT	CHARGING	DESIRED NET INT	LOSSES	NET INT
1 GUATEMAL	1278.8 217.8	1330.8 275.1	0.0 -197.0	0.0 0.0	0.0 0.0	0.0 275.2	-95.3 9.5	43.3 405.4	-93.2
2 SALVADOR	870.5 84.6	855.0 224.2	0.0 -70.6	0.0 0.0	0.0 0.0	0.0 228.3	0.4 -22.0	15.1 181.3	0.0
3 HONDURAS	1237.7 468.1	1203.0 321.1	0.0 -47.5	0.0 0.0	0.0 0.0	0.0 293.3	0.3 54.4	34.4 433.4	0.0
4 NICARAGU	532.9 37.4	525.2 207.6	0.0 -57.6	0.0 0.0	0.0 0.0	0.0 181.9	0.3 -48.1	7.3 117.4	0.0
5 COSTA RI	1297.7 197.5	1280.2 520.4	0.0 -230.8	0.0 0.0	0.0 0.0	0.0 419.5	0.6 32.8	17.0 294.6	0.0
6 PANAMA	783.9 -108.8	721.1 261.7	0.0 80.2	0.0 0.0	0.0 0.0	0.0 629.1	46.6 -22.2	16.1 200.6	46.2
7 ACANAL	73.4 12.2	25.8 9.4	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	47.0 -4.4	0.5 7.2	47.0
10 COLOMBIA	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
TOTALS	6074.8	5941.1	0.0	0.0	0.0	0.0	0.0	133.7	0.0
908.7	1819.3	-523.4	0.0	2027.2	0.0	1639.9			

Año 2017

Demanda Máxima de Inverno



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:54
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0053	231.23	3		PANII230		230.00	6	1.0150	233.45
5		CHO230		230.00	6	1.0022	230.50	8		LSA230		230.00	6	1.0070	231.61
11		M.N230		230.00	6	1.0175	234.02	14		PRO230		230.00	6	1.0269	236.18
85		PTP230		230.00	6	1.0193	234.45	96		FOR230		230.00	6	1.0179	234.13
100		BAY230		230.00	6	1.0351	238.08	103		COPESA23		230.00	6	1.0185	234.24
105		PAN-AM23		230.00	6	1.0022	230.52	115		PACORA23		230.00	6	1.0212	234.89
144		CANJ230		230.00	6	1.0168	233.87	146		GUALACA230		230.00	6	1.0188	234.33
147		GUASQ230		230.00	6	1.0167	233.83	148		VELADERO 230		230.00	6	1.0131	233.01
149		BBLANCO		230.00	6	1.0117	232.69	155		TABASARAI23		230.00	6	1.0136	233.14
190		CHANG230		230.00	6	1.0247	235.67	306		CHAN1 230		230.00	6	1.0244	235.61
310		CONCEPCION23		230.00	6	1.0232	235.33	311		PANDO230		230.00	6	1.0434	239.98
341		PRUDENCIA230		230.00	6	1.0220	235.06	345		LORENA230		230.00	6	1.0209	234.81
354		SANBARTOLO23		230.00	6	1.0092	232.13	370		LSA CAP 230		230.00	6	1.0070	231.61
371		CAISAN230		230.00	6	1.0422	239.70	506		CHAN2 230		230.00	6	1.0241	235.53
511		LGUIAS230		230.00	6	1.0010	230.24	540		ANTON		230.00	6	1.0232	235.35
700		BAITUN230		230.00	6	1.0266	236.11	6000		FRONTER		230.00	6	1.0295	236.77
6400		FRONTCHA		230.00	6	1.0256	235.90	6500		FRONT CAISAN230		230.00	6	1.0411	239.46

BUSES WITH VOLTAGE LESS THAN 1.0000:

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

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:54
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0048	115.55	4		PANII115		115.00	6	1.0442	120.08
6		CHO115		115.00	6	1.0033	115.37	9		LSA115		115.00	6	1.0491	120.65
12		M.N115		115.00	6	1.0163	116.87	15		PRO115		115.00	6	1.0288	118.31
18		CAC115		115.00	6	1.0044	115.51	19		C.V115		115.00	6	1.0221	117.54
20		CH.AZUL		115.00	6	1.0296	118.40	23		CH115		115.00	6	1.0059	115.68
33		STM115		115.00	6	1.0023	115.27	48		TINAJ115		115.00	6	1.0015	115.17
50		M.O115		115.00	6	1.0017	115.19	52		TOC115		115.00	6	1.0407	119.68
54		LM1115		115.00	6	1.0343	118.95	55		LM2115		115.00	6	1.0355	119.08
61		FFIELD		115.00	6	1.0294	118.38	87		CAL115		115.00	6	1.0358	119.12
88		EST115		115.00	6	1.0396	119.55	92		L.V115		115.00	6	1.0372	119.28
109		STA RITA115		115.00	6	1.0327	118.76	123		MIR115		115.00	7	1.0088	116.01
154		CEMPAN15		115.00	6	1.0315	118.62	191		CHANG115		115.00	6	1.0156	116.80
522		TCATIVÁ 115		115.00	6	1.0352	119.05	529		TCOLON 115		115.00	6	1.0327	118.76
701		BAITUN115		115.00	6	1.0093	116.07	702		BJOMIN115		115.00	6	1.0115	116.33

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9963	114.57	26		LOC115		115.00	6	0.9967	114.62
30		MAR115		115.00	6	0.9936	114.26	37		SAN115		115.00	6	0.9968	114.63

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:54
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
66		BLM13B		13.800	V2	38.0	13.3	25.0	0.0	1.0120	39.8	0.9435	47.0			62	6
67		BLM13C		13.800	V3	38.0	13.3	25.0	0.0	1.0120	39.8	0.9435	47.0			62	6
68		BLM13D		13.800	V4	38.0	13.9	25.0	0.0	1.0120	40.0	0.9393	47.0			62	6
90		EST-13L		13.800	E1	20.9	6.9	12.0	-5.0	1.0100	21.8	0.9500	27.0			64	6
91		EST-13T		13.800	E2	20.9	6.9	12.0	-5.0	1.0100	21.8	0.9500	27.0			64	6
94		LV-13.8L		13.800	L1	23.5	7.7	12.0	-5.0	1.0100	24.5	0.9499	27.0			64	6
95		LV-13.8T		13.800	L2	23.5	7.7	12.0	-5.0	1.0100	24.5	0.9499	27.0			64	6
97		FOR13A		13.800	F1	75.0	-4.3	50.0	-50.0	1.0100	74.4	0.9984	111.0			64	6
98		FOR13B		13.800	F2	75.0	-4.3	50.0	-50.0	1.0100	74.4	0.9984	111.0			64	6
101		BAY13A		13.800	B1	47.1	12.5	50.0	-25.0	1.0000	48.8	0.9665	96.0			61	6
102		BAY13B		13.800	B2	47.1	12.5	50.0	-25.0	1.0000	48.8	0.9665	96.0			61	6
106		PANAM13A		13.800	M1	15.2	4.0	9.0	0.0	1.0000	15.7	0.9666	20.7			63	6
106		PANAM13A		13.800	M2	15.2	4.0	9.0	0.0	1.0000	15.7	0.9666	20.7			63	6
106		PANAM13A		13.800	M3	15.2	4.0	9.0	0.0	1.0000	15.7	0.9666	20.7			63	6
107		PANAM13B		13.800	M4	15.2	9.0	9.0	0.0	0.9979	17.7	0.8605	20.7			63	6
108		BAY13C		13.800	B3	47.1	12.5	50.0	-25.0	1.0000	48.8	0.9665	100.0			61	6
116		PACORA13		13.800	P1	17.5	0.5	8.8	0.0	1.0100	17.3	0.9996	21.7			61	6
116		PACORA13		13.800	P2	17.5	0.5	8.8	0.0	1.0100	17.3	0.9996	21.7			61	6
116		PACORA13		13.800	P3	17.5	0.5	8.8	0.0	1.0100	17.3	0.9996	21.7			61	6
142		CANJ13A		13.800	C1	52.2	15.6	29.0	-29.0	1.0100	53.9	0.9580	69.0			64	6
143		CANJ13B		13.800	C2	52.2	15.6	29.0	-29.0	1.0100	53.9	0.9580	69.0			64	6
150		GUALACA	13-213.800	G2		12.6	-1.9	7.4	-7.4	1.0100	12.6	0.9885	14.8			64	6
152		BBLANCO_13.813.800		G1		12.5	0.8	7.0	-7.0	1.0100	12.4	0.9979	16.0			64	6
152		BBLANCO_13.813.800		G2		12.5	0.8	7.0	-7.0	1.0100	12.4	0.9979	16.0			64	6
156		TABASARAI1313.800		G1		15.0	0.2	5.7	0.2	1.0137	14.8	0.9999	20.5			1	6
193		GEBONYIC		13.800	G1	9.0	-0.7	4.0	-4.0	1.0100	8.9	0.9973	35.3			64	6
193		GEBONYIC		13.800	G2	9.0	-0.7	4.0	-4.0	1.0100	8.9	0.9973	35.3			64	6
300		SVC-LV		13.200	1	0.0	48.9	300.0	-225.0	1.0166	48.1	0.0000	250.0			60	6
302		PASOANCH13.813.800		P1		3.5	2.0	2.0	-2.0	0.9727	4.1	0.8682	6.2			64	6
303		SINDIGO13.8		G1		9.0	0.0	5.0	0.0	1.1123	8.1	1.0000	13.5			64	6
304		ALGA13.8		A1		4.8	-2.3	2.3	-2.3	1.1097	4.8	0.9063	5.7			64	6
304		ALGA13.8		A2		4.8	-2.3	2.3	-2.3	1.1097	4.8	0.9063	5.7			64	6
305		ELALTO		G1		17.4	-5.0	12.0	-5.0	1.0287	17.6	0.9611	20.6			64	6
305		ELALTO		G2		17.4	-5.0	12.0	-5.0	1.0287	17.6	0.9611	20.6			64	6
307		CHAN1 A		G1		62.0	-12.1	50.0	-50.0	1.0100	62.5	0.9815	118.6			64	6
312		PANDO13.8		G1		13.9	-1.6	10.0	-5.0	1.0100	13.9	0.9932	19.9			64	6
312		PANDO13.8		G2		13.9	-1.6	10.0	-5.0	1.0100	13.9	0.9932	19.9			64	6

316	MTE LIRIO13.13.800	G1	21.9	-5.0	12.0	-5.0	1.0160	22.1	0.9750	27.0	64	6
316	MTE LIRIO13.13.800	G2	21.9	-5.0	12.0	-5.0	1.0160	22.1	0.9750	27.0	64	6
317	MENDRE13.8	13.800 M1	8.4	0.0	0.0	0.0	1.1119	7.6	1.0000	35.3	64	6
317	MENDRE13.8	13.800 M2	8.4	0.0	0.0	0.0	1.1119	7.6	1.0000	35.3	64	6
323	COCHEA 13.8	13.800 C1	5.6	0.0	0.0	0.0	1.1122	5.1	1.0000	35.3	64	6
323	COCHEA 13.8	13.800 C2	5.6	0.0	0.0	0.0	1.1122	5.1	1.0000	35.3	64	6
324	POTRER13.8	13.800 P1	4.0	1.7	2.0	-2.0	1.0100	4.3	0.9210	6.2	64	6
340	PEDGALITO13813.800	P1	20.9	7.2	12.0	-5.0	0.9900	22.3	0.9447	27.0	64	6
342	LORENA13.8	13.800 L1	14.4	-5.0	10.5	-5.0	1.0051	15.1	0.9444	19.9	64	6
343	PRUDENCIA_1	13.800 G1	23.8	-9.8	9.8	-9.8	1.0034	25.6	0.9252	33.0	64	6
350	MACANO 13.8	13.800 G1	3.3	-1.0	1.0	-1.0	1.0744	3.2	0.9560	6.2	64	6
351	PERLAS N13.813.800	G1	9.0	5.0	5.0	-5.0	0.9786	10.5	0.8742	13.5	64	6
352	PERLAS S13.813.800	G1	9.0	5.0	5.0	-5.0	0.9786	10.5	0.8742	13.5	64	6
357	BARTOLO13.8	13.800 G1	5.9	0.5	3.7	-3.7	1.0000	5.9	0.9959	8.5	64	6
357	BARTOLO13.8	13.800 G2	5.9	0.5	3.7	-3.7	1.0000	5.9	0.9959	8.5	64	6
359	CRUCES13.8	13.800 G1	3.1	0.1	2.3	-2.3	1.0000	3.1	0.9995	5.6	64	6
359	CRUCES13.8	13.800 G2	3.1	0.1	2.3	-2.3	1.0000	3.1	0.9995	5.6	64	6
361	ESTRECHO4.164.1600	G1	3.4	0.0	2.5	-2.5	1.0000	3.4	1.0000	5.6	64	6
361	ESTRECHO4.164.1600	G2	3.4	0.0	2.5	-2.5	1.0000	3.4	1.0000	5.6	64	6
363	LAGUNA 13.8	13.800 G1	3.2	-0.1	2.4	-2.4	1.0000	3.2	0.9992	5.8	64	6
363	LAGUNA 13.8	13.800 G2	3.2	-0.1	2.4	-2.4	1.0000	3.2	0.9992	5.8	64	6
364	MENDRE2	13.800 G1	7.2	1.7	3.9	-3.9	1.0100	7.3	0.9736	8.9	64	6
368	RP-490	13.800 G1	4.5	-1.1	2.4	-2.4	1.0100	4.6	0.9726	5.5	64	6
368	RP-490	13.800 G2	4.5	-1.1	2.4	-2.4	1.0100	4.6	0.9726	5.5	64	6
369	HCALDERA13.813.800	G1	3.8	1.7	1.9	-1.9	1.0100	4.1	0.9149	4.3	64	6
372	BJO FRIO 13	13.800 G1	23.8	-6.4	9.8	-9.8	1.0000	24.6	0.9658	33.0	64	6
372	BJO FRIO 13	13.800 G2	23.8	-6.4	9.8	-9.8	1.0000	24.6	0.9658	33.0	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	3.9	-1.8	2.0	-2.0	1.0000	4.2	0.9101	4.5	64	6
374	SLORENZO13.813.800	G2	3.9	-1.8	2.0	-2.0	1.0000	4.2	0.9101	4.5	64	6
376	PEDREG2 13.813.800	G1	6.2	-2.9	3.1	-3.1	1.0000	6.8	0.9058	7.2	64	6
376	PEDREG2 13.813.800	G2	6.2	-2.9	3.1	-3.1	1.0000	6.8	0.9058	7.2	64	6
523	TCATIVÁ 13A	13.800 G1	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9286	10.9	62	6
523	TCATIVÁ 13A	13.800 G2	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9286	10.9	62	6
523	TCATIVÁ 13A	13.800 G3	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9286	10.9	62	6
523	TCATIVÁ 13A	13.800 G4	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9286	10.9	62	6
523	TCATIVÁ 13A	13.800 G5	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9286	10.9	62	6
524	TCATIVÁ 13B	13.800 G0	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9286	10.9	62	6
524	TCATIVÁ 13B	13.800 G6	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9286	10.9	62	6
524	TCATIVÁ 13B	13.800 G7	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9286	10.9	62	6
524	TCATIVÁ 13B	13.800 G8	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9286	10.9	62	6
524	TCATIVÁ 13B	13.800 G9	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9286	10.9	62	6
531	EGIRAL13.8	213.800 G5	8.1	3.0	6.4	3.0	1.0056	8.6	0.9377	10.9	62	6

531	EGIRAL13.8	213.800	G6	8.1	3.0	6.4	3.0	1.0056	8.6	0.9377	10.9	62	6
531	EGIRAL13.8	213.800	G7	8.1	3.0	6.4	3.0	1.0056	8.6	0.9377	10.9	62	6
531	EGIRAL13.8	213.800	G8	8.1	3.0	6.4	3.0	1.0056	8.6	0.9377	10.9	62	6
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0243	24.4	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	24.0	1.7	13.0	-13.0	1.0100	23.8	0.9974	30.5	64	6
704	BJOMIN13B	13.800	G2	24.0	1.7	13.0	-13.0	1.0100	23.8	0.9974	30.5	64	6
705	BAITUN13A	13.800	G1	37.4	-5.8	26.6	-26.6	1.0100	37.5	0.9881	50.6	64	6
706	BAITUN13B	13.800	G2	37.4	-5.8	26.6	-26.6	1.0100	37.5	0.9881	50.6	64	6
720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9727	4.2	0.8724	6.2	64	6
721	SVC-LV	13.200	1	0.0	206.5	300.0	-225.0	1.0824	190.8	0.0000	250.0	60	6
SUBSYSTEM TOTALS				1475.1	393.1	1540.3	-1050.9				2828.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:54
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
129	MIR13D	13.800	G4	31.0	0.2	15.0	0.0	1.0000	31.0	1.0000	44.1			65	7	AREA
130	MIR13F	13.800	G5	17.1	0.0	8.0	0.0	1.0131	16.9	1.0000	27.7			65	7	
140	GAT6A	6.9000	G1	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9303	4.1			65	7	
140	GAT6A	6.9000	G2	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9303	4.1			65	7	
140	GAT6A	6.9000	G3	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9303	4.1			65	7	
141	GAT6B	6.9000	G4	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9314	5.6			65	7	
141	GAT6B	6.9000	G5	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9314	6.2			65	7	
141	GAT6B	6.9000	G6	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9314	6.2			65	7	
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0275	17.8	0.9281	23.0			65	7	
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0366	17.7	0.9281	23.0			65	7	
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0366	17.7	0.9281	23.0			65	7	
SUBSYSTEM TOTALS				116.5	13.9	71.5	5.5				171.3					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 11:54
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO IN MW/MVAR

FROM X-- AREA	TO --X GENERATION	TO BUS LOAD	TO LINE LOAD	FROM SHUNT	TO SHUNT	CHARGING	DESIRED NET INT	LOSSES	NET INT
1	1485.5	1330.8	0.0	0.0	0.0	0.0	107.6	47.1	100.7
GUATEMAL	222.1	275.1	-198.5	0.0	0.0	276.6	-15.6	437.7	
2	869.3	855.0	0.0	0.0	0.0	0.0	-1.1	15.4	0.0
SALVADOR	84.7	224.2	-70.6	0.0	0.0	228.3	-27.8	187.2	
3	1237.4	1203.0	0.0	0.0	0.0	0.0	-1.1	35.4	0.0
HONDURAS	475.2	321.1	-47.3	0.0	0.0	292.5	55.2	438.7	
4	533.0	525.2	0.0	0.0	0.0	0.0	-1.6	9.4	0.0
NICARAGU	49.9	207.6	-57.3	0.0	0.0	180.9	-48.0	128.5	
5	1298.8	1280.2	0.0	0.0	0.0	0.0	-3.2	21.9	0.0
COSTA RI	250.2	520.4	-229.6	0.0	0.0	417.0	23.9	352.5	
6	1475.1	1555.2	0.0	0.0	0.0	0.0	-160.6	80.4	-160.7
PANAMA	393.1	315.8	-84.4	0.0	0.0	657.7	22.8	796.7	
7	116.5	55.5	0.0	0.0	0.0	0.0	60.0	1.0	60.0
ACANAL	13.9	11.3	0.0	0.0	0.0	0.0	-10.4	13.0	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	7015.6	6805.0	0.0	0.0	0.0	0.0	0.0	210.6	0.0
1489.0	1875.3	-687.7	0.0	2053.0	0.0	2354.3			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 13:13
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CNT LLSCH-PMA II

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.1	12.7	25.0	0.0	1.0120	39.6	0.9486	47.0			62	6	
67	BLM13C	13.800	V3	38.1	12.7	25.0	0.0	1.0120	39.6	0.9486	47.0			62	6	
68	BLM13D	13.800	V4	38.1	13.2	25.0	0.0	1.0120	39.8	0.9448	47.0			62	6	
90	EST-13L	13.800	E1	20.9	6.9	12.0	-5.0	1.0100	21.8	0.9495	27.0			64	6	
91	EST-13T	13.800	E2	20.9	6.9	12.0	-5.0	1.0100	21.8	0.9495	27.0			64	6	
94	LV-13.8L	13.800	L1	23.5	7.8	12.0	-5.0	1.0100	24.6	0.9493	27.0			64	6	
95	LV-13.8T	13.800	L2	23.5	7.8	12.0	-5.0	1.0100	24.6	0.9493	27.0			64	6	
97	FOR13A	13.800	F1	75.2	-3.8	50.0	-50.0	1.0100	74.6	0.9987	111.0			64	6	
98	FOR13B	13.800	F2	75.2	-3.8	50.0	-50.0	1.0100	74.6	0.9987	111.0			64	6	
101	BAY13A	13.800	B1	47.4	12.5	50.0	-25.0	1.0000	49.0	0.9668	96.0			61	6	
102	BAY13B	13.800	B2	47.3	12.5	50.0	-25.0	1.0000	49.0	0.9668	96.0			61	6	
106	PANAM13A	13.800	M1	15.2	4.8	9.0	0.0	1.0000	16.0	0.9547	20.7			63	6	
106	PANAM13A	13.800	M2	15.2	4.8	9.0	0.0	1.0000	16.0	0.9547	20.7			63	6	
106	PANAM13A	13.800	M3	15.2	4.8	9.0	0.0	1.0000	16.0	0.9547	20.7			63	6	
107	PANAM13B	13.800	M4	15.2	9.0	9.0	0.0	0.9931	17.8	0.8611	20.7			63	6	
108	BAY13C	13.800	B3	47.3	12.5	50.0	-25.0	1.0000	49.0	0.9668	100.0			61	6	
116	PACORA13	13.800	P1	17.5	0.5	8.8	0.0	1.0100	17.4	0.9996	21.7			61	6	
116	PACORA13	13.800	P2	17.5	0.5	8.8	0.0	1.0100	17.4	0.9996	21.7			61	6	
116	PACORA13	13.800	P3	17.5	0.5	8.8	0.0	1.0100	17.4	0.9996	21.7			61	6	
142	CANJ13A	13.800	C1	52.4	15.8	29.0	-29.0	1.0100	54.1	0.9575	69.0			64	6	
143	CANJ13B	13.800	C2	52.4	15.8	29.0	-29.0	1.0100	54.1	0.9575	69.0			64	6	
150	GUALACA	13-213.800	G2	12.6	-1.8	7.4	-7.4	1.0100	12.6	0.9902	14.8			64	6	
152	BBLANCO_13.813.800	13.800	G1	12.6	0.9	7.0	-7.0	1.0100	12.5	0.9977	16.0			64	6	
152	BBLANCO_13.813.800	13.800	G2	12.6	0.9	7.0	-7.0	1.0100	12.5	0.9977	16.0			64	6	
156	TABASARAI1313.800	13.800	G1	15.1	0.2	5.7	0.2	1.0131	14.9	0.9999	20.5			1	6	
193	GEBONYIC	13.800	G1	9.1	-0.6	4.0	-4.0	1.0100	9.0	0.9978	35.3			64	6	
193	GEBONYIC	13.800	G2	9.1	-0.6	4.0	-4.0	1.0100	9.0	0.9978	35.3			64	6	
300	SVC-LV	13.200	1	0.3	114.4	300.0	-225.0	1.0292	111.2	0.0028	250.0			60	6	
302	PASOANCH13.813.800	13.800	P1	3.5	2.0	2.0	-2.0	0.9722	4.2	0.8691	6.2			64	6	
303	SINDIGO13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1122	8.1	1.0000	13.5			64	6	
304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.1097	4.8	0.9063	5.7			64	6	
304	ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.1097	4.8	0.9063	5.7			64	6	
305	ELALTO	13.800	G1	17.4	-5.0	12.0	-5.0	1.0280	17.7	0.9613	20.6			64	6	
305	ELALTO	13.800	G2	17.4	-5.0	12.0	-5.0	1.0280	17.7	0.9613	20.6			64	6	
307	CHAN1 A	13.800	G1	62.3	-11.6	50.0	-50.0	1.0100	62.7	0.9830	118.6			64	6	
312	PANDO13.8	13.800	G1	14.0	-1.6	10.0	-5.0	1.0100	13.9	0.9938	19.9			64	6	
312	PANDO13.8	13.800	G2	14.0	-1.6	10.0	-5.0	1.0100	13.9	0.9938	19.9			64	6	

316	MTE LIRIO	13.13.800	G1	22.0	-5.0	12.0	-5.0	1.0152	22.2	0.9751	27.0	64	6
316	MTE LIRIO	13.13.800	G2	22.0	-5.0	12.0	-5.0	1.0152	22.2	0.9751	27.0	64	6
317	MENDRE	13.8	M1	8.5	0.0	0.0	0.0	1.1118	7.6	1.0000	35.3	64	6
317	MENDRE	13.8	M2	8.5	0.0	0.0	0.0	1.1118	7.6	1.0000	35.3	64	6
323	COCHEA	13.8	C1	5.7	0.0	0.0	0.0	1.1121	5.1	1.0000	35.3	64	6
323	COCHEA	13.8	C2	5.7	0.0	0.0	0.0	1.1121	5.1	1.0000	35.3	64	6
324	POTRER	13.8	P1	4.0	1.7	2.0	-2.0	1.0100	4.3	0.9156	6.2	64	6
340	PEDGALITO	13813.800	P1	20.9	7.3	12.0	-5.0	0.9900	22.4	0.9436	27.0	64	6
342	LORENA	13.8	L1	14.4	-5.0	10.5	-5.0	1.0045	15.2	0.9447	19.9	64	6
343	PRUDENCIA_1	13.800	G1	23.9	-9.8	9.8	-9.8	1.0029	25.7	0.9256	33.0	64	6
350	MACANO	13.8	G1	3.3	-1.0	1.0	-1.0	1.0742	3.2	0.9563	6.2	64	6
351	PERLAS N13	813.800	G1	9.0	5.0	5.0	-5.0	0.9784	10.5	0.8748	13.5	64	6
352	PERLAS S13	813.800	G1	9.0	5.0	5.0	-5.0	0.9784	10.5	0.8748	13.5	64	6
357	BARTOLO	13.8	G1	5.9	0.6	3.7	-3.7	1.0000	5.9	0.9957	8.5	64	6
357	BARTOLO	13.8	G2	5.9	0.6	3.7	-3.7	1.0000	5.9	0.9957	8.5	64	6
359	CRUCES	13.8	G1	3.1	0.1	2.3	-2.3	1.0000	3.1	0.9994	5.6	64	6
359	CRUCES	13.8	G2	3.1	0.1	2.3	-2.3	1.0000	3.1	0.9994	5.6	64	6
361	ESTRECHO	4.164.1600	G1	3.4	0.0	2.5	-2.5	1.0000	3.4	1.0000	5.6	64	6
361	ESTRECHO	4.164.1600	G2	3.4	0.0	2.5	-2.5	1.0000	3.4	1.0000	5.6	64	6
363	LAGUNA	13.8	G1	3.2	-0.1	2.4	-2.4	1.0000	3.2	0.9993	5.8	64	6
363	LAGUNA	13.8	G2	3.2	-0.1	2.4	-2.4	1.0000	3.2	0.9993	5.8	64	6
364	MENDRE2	13.800	G1	7.2	1.8	3.9	-3.9	1.0100	7.3	0.9717	8.9	64	6
368	RP-490	13.800	G1	4.5	-1.1	2.4	-2.4	1.0100	4.6	0.9734	5.5	64	6
368	RP-490	13.800	G2	4.5	-1.1	2.4	-2.4	1.0100	4.6	0.9734	5.5	64	6
369	HCALDERA	13.813.800	G1	3.8	1.7	1.9	-1.9	1.0100	4.1	0.9091	4.3	64	6
372	BJO FRIO	13	G1	23.9	-6.3	9.8	-9.8	1.0000	24.7	0.9674	33.0	64	6
372	BJO FRIO	13	G2	23.9	-6.3	9.8	-9.8	1.0000	24.7	0.9674	33.0	64	6
373	TIZINGAL	13.813.800	G1	4.5	2.2	2.2	-2.2	0.9767	5.1	0.8929	21.6	64	6
374	SLORENZO	13.813.800	G1	3.9	-1.7	2.0	-2.0	1.0000	4.2	0.9130	4.5	64	6
374	SLORENZO	13.813.800	G2	3.9	-1.7	2.0	-2.0	1.0000	4.2	0.9130	4.5	64	6
376	PEDREG2	13.813.800	G1	6.2	-2.9	3.1	-3.1	1.0000	6.8	0.9072	7.2	64	6
376	PEDREG2	13.813.800	G2	6.2	-2.9	3.1	-3.1	1.0000	6.8	0.9072	7.2	64	6
523	TCATIVÁ	13A	G1	8.3	3.1	6.6	-6.6	1.0100	8.8	0.9357	10.9	62	6
523	TCATIVÁ	13A	G2	8.3	3.1	6.6	-6.6	1.0100	8.8	0.9357	10.9	62	6
523	TCATIVÁ	13A	G3	8.3	3.1	6.6	-6.6	1.0100	8.8	0.9357	10.9	62	6
523	TCATIVÁ	13A	G4	8.3	3.1	6.6	-6.6	1.0100	8.8	0.9357	10.9	62	6
523	TCATIVÁ	13A	G5	8.3	3.1	6.6	-6.6	1.0100	8.8	0.9357	10.9	62	6
524	TCATIVÁ	13B	G0	8.3	3.1	6.6	-6.6	1.0100	8.8	0.9357	10.9	62	6
524	TCATIVÁ	13B	G6	8.3	3.1	6.6	-6.6	1.0100	8.8	0.9357	10.9	62	6
524	TCATIVÁ	13B	G7	8.3	3.1	6.6	-6.6	1.0100	8.8	0.9357	10.9	62	6
524	TCATIVÁ	13B	G8	8.3	3.1	6.6	-6.6	1.0100	8.8	0.9357	10.9	62	6
524	TCATIVÁ	13B	G9	8.3	3.1	6.6	-6.6	1.0100	8.8	0.9357	10.9	62	6
531	EGIRAL	13.8	G5	8.1	3.0	6.4	3.0	1.0068	8.6	0.9379	10.9	62	6

531	EGIRAL13.8	213.800	G6	8.1	3.0	6.4	3.0	1.0068	8.6	0.9379	10.9	62	6
531	EGIRAL13.8	213.800	G7	8.1	3.0	6.4	3.0	1.0068	8.6	0.9379	10.9	62	6
531	EGIRAL13.8	213.800	G8	8.1	3.0	6.4	3.0	1.0068	8.6	0.9379	10.9	62	6
541	TOABRE	0.6000	1	25.1	0.0	0.0	0.0	1.0187	24.7	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	24.1	1.8	13.0	-13.0	1.0100	23.9	0.9973	30.5	64	6
704	BJOMIN13B	13.800	G2	24.1	1.8	13.0	-13.0	1.0100	23.9	0.9973	30.5	64	6
705	BAITUN13A	13.800	G1	37.5	-5.6	26.6	-26.6	1.0100	37.6	0.9890	50.6	64	6
706	BAITUN13B	13.800	G2	37.5	-5.6	26.6	-26.6	1.0100	37.6	0.9890	50.6	64	6
720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9722	4.2	0.8724	6.2	64	6
721	SVC-LV	13.200	1	0.3	269.5	300.0	-225.0	1.1006	244.9	0.0012	250.0	60	6
SUBSYSTEM TOTALS				1480.3	523.8	1540.3	-1050.9				2828.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 13:13
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CNT LLSCH-PMA II

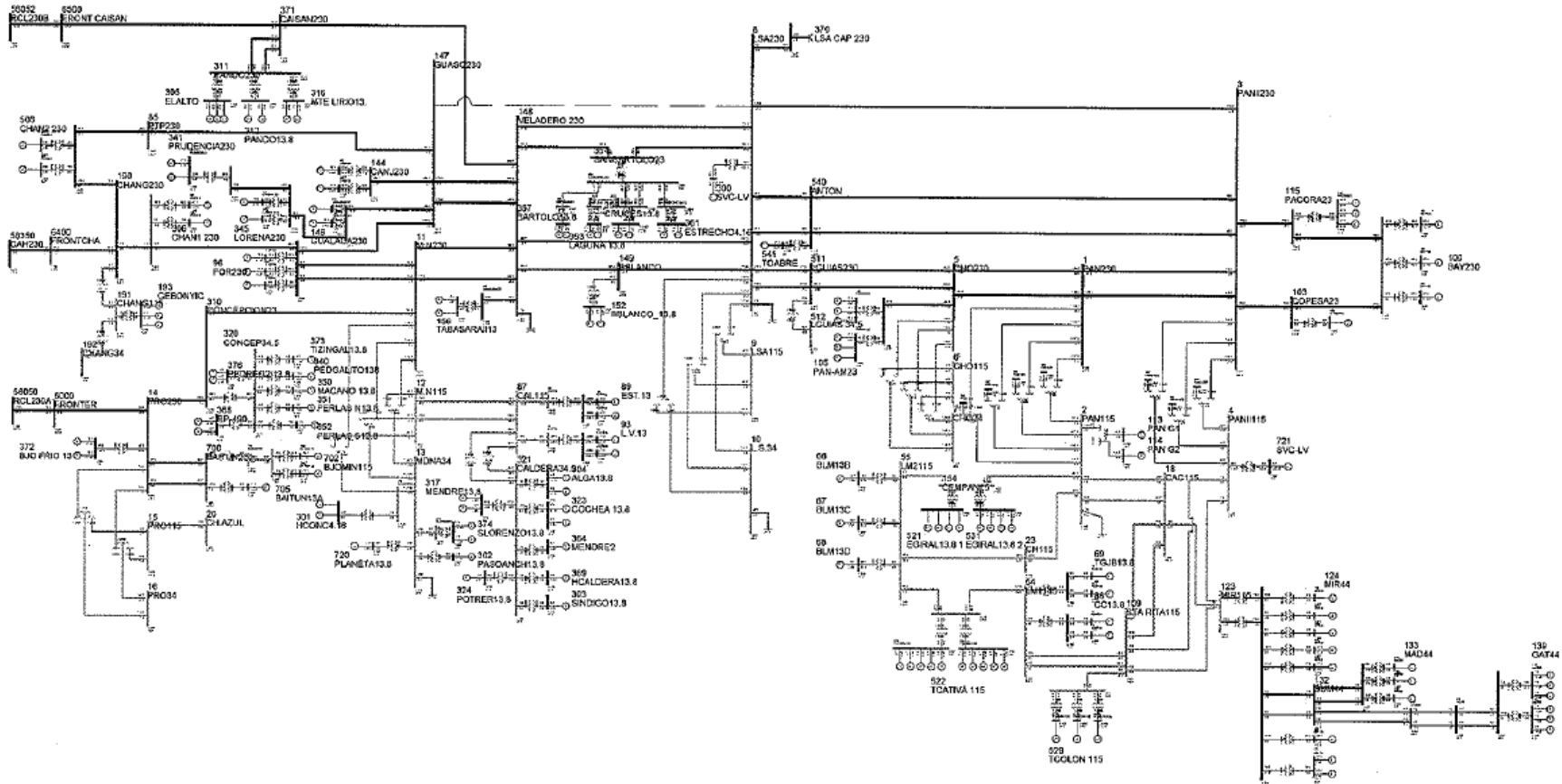
AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
129	MIR13D	13.800	G4	31.1	0.0	15.0	0.0	1.0000	31.1	1.0000	44.1			65	7	AREA
130	MIR13F	13.800	G5	17.2	0.0	8.0	0.0	1.0136	16.9	1.0000	27.7			65	7	
140	GAT6A	6.9000	G1	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9244	4.1			65	7	
140	GAT6A	6.9000	G2	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9244	4.1			65	7	
140	GAT6A	6.9000	G3	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9244	4.1			65	7	
141	GAT6B	6.9000	G4	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9284	5.6			65	7	
141	GAT6B	6.9000	G5	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9284	6.2			65	7	
141	GAT6B	6.9000	G6	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9284	6.2			65	7	
170	MIR13G	13.800	M1	17.0	6.8	11.2	6.8	1.0280	17.9	0.9285	23.0			65	7	
171	MIR13H	13.800	M1	17.0	6.8	11.2	6.8	1.0370	17.7	0.9285	23.0			65	7	
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0370	17.7	0.9285	23.0			65	7	
SUBSYSTEM TOTALS				116.8	13.5	71.5	5.5				171.3					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 13:13
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CNT LLSCH-PMA II IN MW/MVAR

FROM X-- AREA	TO --X GENERATION	TO BUS TO LINE	TO LINE LOAD	FROM SHUNT	TO SHUNT	TO CHARGING	DESIRED NET INT	LOSSES	NET INT
1 GUATEMAL	1488.5 222.6	1330.8 275.1	0.0 -198.4	0.0 0.0	0.0 0.0	0.0 276.5	110.5 -15.9	47.2 438.4	100.7
2 SALVADOR	870.6 85.5	855.0 224.2	0.0 -70.6	0.0 0.0	0.0 0.0	0.0 228.2	0.0 -28.2	15.6 188.3	0.0
3 HONDURAS	1238.5 476.3	1203.0 321.1	0.0 -47.3	0.0 0.0	0.0 0.0	0.0 292.4	-0.1 55.1	35.6 439.9	0.0
4 NICARAGU	533.4 51.4	525.2 207.6	0.0 -57.2	0.0 0.0	0.0 0.0	0.0 180.8	-1.5 -48.2	9.6 129.9	0.0
5 COSTA RI	1300.6 254.8	1280.2 520.4	0.0 -229.4	0.0 0.0	0.0 0.0	0.0 416.7	-1.9 23.3	22.4 357.2	0.0
6 PANAMA	1480.3 523.8	1555.2 315.8	0.0 -84.5	0.0 0.0	0.0 0.0	0.0 609.8	-167.3 24.8	92.4 877.5	-160.7
7 ACANAL	116.8 13.5	55.5 11.3	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	60.3 -10.9	1.0 13.1	60.0
10 COLOMBIA	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
TOTALS	7028.8	6805.0	0.0	0.0	0.0	0.0	0.0	223.8	0.0
1627.8	1875.3	-687.4	0.0	2004.4	0.0	2444.3			

Contingencia Guasquitas – Llano Sánchez



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 13:21
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CNT GUASQ - LLSCH

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	1.0054	231.23	3		PANII230		230.00	6	1.0150	233.45
5		CHO230		230.00	6	1.0023	230.53	8		LSA230		230.00	6	1.0070	231.61
11		M.N230		230.00	6	1.0114	232.62	14		PRO230		230.00	6	1.0228	235.26
85		PTP230		230.00	6	1.0149	233.44	96		FOR230		230.00	6	1.0135	233.11
100		BAY230		230.00	6	1.0352	238.11	103		COPESA23		230.00	6	1.0185	234.25
105		PAN-AM23		230.00	6	1.0024	230.54	115		PACORA23		230.00	6	1.0213	234.89
144		CANJ230		230.00	6	1.0113	232.60	146		GUALACA230		230.00	6	1.0134	233.08
147		GUASQ230		230.00	6	1.0111	232.56	148		VELADERO 230		230.00	6	1.0034	230.79
149		BBLANCO		230.00	6	1.0021	230.48	155		TABASARAI23		230.00	6	1.0043	230.99
190		CHANG230		230.00	6	1.0221	235.09	306		CHAN1 230		230.00	6	1.0219	235.05
310		CONCEPCION23		230.00	6	1.0184	234.22	311		PANDO230		230.00	6	1.0371	238.52
341		PRUDENCIA230		230.00	6	1.0167	233.84	345		LORENA230		230.00	6	1.0155	233.57
354		SANBARTOLO23		230.00	6	1.0009	230.20	370		LSA CAP 230		230.00	6	1.0070	231.61
371		CAISAN230		230.00	6	1.0358	238.22	506		CHAN2 230		230.00	6	1.0211	234.86
511		LGUIAS230		230.00	6	1.0012	230.27	540		ANTON		230.00	6	1.0234	235.37
700		BAITUN230		230.00	6	1.0229	235.28	6000		FRONTER		230.00	6	1.0251	235.78
6400		FRONTCHA		230.00	6	1.0233	235.36	6500		FRONT CAISAN230		230.00	6	1.0349	238.04

BUSES WITH VOLTAGE LESS THAN 1.0000:

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

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 13:21
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CNT GUASQ - LLSCH

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	1.0047	115.55	4		PANII115		115.00	6	1.0440	120.06
6		CHO115		115.00	6	1.0034	115.39	9		LSA115		115.00	6	1.0491	120.65
12		M.N115		115.00	6	1.0130	116.50	15		PRO115		115.00	6	1.0248	117.85
18		CAC115		115.00	6	1.0044	115.51	19		C.V115		115.00	6	1.0220	117.52
20		CH.AZUL		115.00	6	1.0255	117.94	23		CH115		115.00	6	1.0059	115.68
33		STM115		115.00	6	1.0023	115.26	48		TINAJ115		115.00	6	1.0015	115.17
50		M.O115		115.00	6	1.0016	115.19	52		TOC115		115.00	6	1.0405	119.66
54		LM1115		115.00	6	1.0343	118.95	55		LM2115		115.00	6	1.0355	119.08
61		FFIELD		115.00	6	1.0294	118.38	87		CAL115		115.00	6	1.0340	118.91
88		EST115		115.00	6	1.0380	119.37	92		L.V115		115.00	6	1.0355	119.09
109		STA RITA115		115.00	6	1.0326	118.75	123		MIR115		115.00	7	1.0088	116.01
154		CEMPAN15		115.00	6	1.0314	118.61	191		CHANG115		115.00	6	1.0138	116.59
522		TCATIVÁ 115		115.00	6	1.0352	119.04	529		TCOLON 115		115.00	6	1.0327	118.76
701		BAITUN115		115.00	6	1.0070	115.81	702		BJOMIN115		115.00	6	1.0094	116.08

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
21		C.BAN115		115.00	6	0.9962	114.56	26		LOC115		115.00	6	0.9966	114.61
30		MAR115		115.00	6	0.9935	114.26	37		SAN115		115.00	6	0.9968	114.63

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 13:21
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CNT GUASQ - LLSCH

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	38.1	13.4	25.0	0.0	1.0120	39.9	0.9435	47.0			62	6	
67		BLM13C		13.800	V3	38.1	13.4	25.0	0.0	1.0120	39.9	0.9435	47.0			62	6	
68		BLM13D		13.800	V4	38.1	13.9	25.0	0.0	1.0120	40.0	0.9393	47.0			62	6	
90		EST-13L		13.800	E1	20.9	7.3	12.0	-5.0	1.0100	22.0	0.9438	27.0			64	6	
91		EST-13T		13.800	E2	20.9	7.3	12.0	-5.0	1.0100	22.0	0.9438	27.0			64	6	
94		LV-13.8L		13.800	L1	23.6	8.2	12.0	-5.0	1.0100	24.7	0.9439	27.0			64	6	
95		LV-13.8T		13.800	L2	23.6	8.2	12.0	-5.0	1.0100	24.7	0.9439	27.0			64	6	
97		FOR13A		13.800	F1	75.3	-0.2	50.0	-50.0	1.0100	74.5	1.0000	111.0			64	6	
98		FOR13B		13.800	F2	75.3	-0.2	50.0	-50.0	1.0100	74.5	1.0000	111.0			64	6	
101		BAY13A		13.800	B1	51.8	12.7	50.0	-25.0	1.0000	53.4	0.9711	96.0			61	6	
102		BAY13B		13.800	B2	47.4	12.5	50.0	-25.0	1.0000	49.0	0.9671	96.0			61	6	
106		PANAM13A		13.800	M1	15.3	4.0	9.0	0.0	1.0000	15.8	0.9669	20.7			63	6	
106		PANAM13A		13.800	M2	15.3	4.0	9.0	0.0	1.0000	15.8	0.9669	20.7			63	6	
106		PANAM13A		13.800	M3	15.3	4.0	9.0	0.0	1.0000	15.8	0.9669	20.7			63	6	
107		PANAM13B		13.800	M4	15.3	9.0	9.0	0.0	0.9980	17.7	0.8612	20.7			63	6	
108		BAY13C		13.800	B3	47.4	12.5	50.0	-25.0	1.0000	49.0	0.9671	100.0			61	6	
116		PACORA13		13.800	P1	17.5	0.5	8.8	0.0	1.0100	17.4	0.9996	21.7			61	6	
116		PACORA13		13.800	P2	17.5	0.5	8.8	0.0	1.0100	17.4	0.9996	21.7			61	6	
116		PACORA13		13.800	P3	17.5	0.5	8.8	0.0	1.0100	17.4	0.9996	21.7			61	6	
142		CANJ13A		13.800	C1	52.4	16.6	29.0	-29.0	1.0100	54.4	0.9532	69.0			64	6	
143		CANJ13B		13.800	C2	52.4	16.6	29.0	-29.0	1.0100	54.4	0.9532	69.0			64	6	
150		GUALACA	13-213.800	G2		12.6	-0.5	7.4	-7.4	1.0100	12.5	0.9991	14.8			64	6	
152		BBLANCO_13.813.800		G1		12.6	1.6	7.0	-7.0	1.0100	12.6	0.9919	16.0			64	6	
152		BBLANCO_13.813.800		G2		12.6	1.6	7.0	-7.0	1.0100	12.6	0.9919	16.0			64	6	
156		TABASARAI1313.800		G1		15.1	2.8	5.7	0.2	1.0100	15.2	0.9829	20.5			1	6	
193		GEBONYIC		13.800	G1	9.1	-0.4	4.0	-4.0	1.0100	9.0	0.9992	35.3			64	6	
193		GEBONYIC		13.800	G2	9.1	-0.4	4.0	-4.0	1.0100	9.0	0.9992	35.3			64	6	
300		SVC-LV		13.200	1	0.4	140.8	300.0	-225.0	1.0342	136.1	0.0026	250.0			60	6	
302		PASOANCH13.813.800		P1		3.5	2.0	2.0	-2.0	0.9670	4.2	0.8692	6.2			64	6	
303		SINDIGO13.8		13.800	G1	9.0	0.0	5.0	0.0	1.1118	8.1	1.0000	13.5			64	6	
304		ALGA13.8		13.800	A1	4.8	-2.3	2.3	-2.3	1.1093	4.8	0.9063	5.7			64	6	
304		ALGA13.8		13.800	A2	4.8	-2.3	2.3	-2.3	1.1093	4.8	0.9063	5.7			64	6	
305		ELALTO		13.800	G1	17.4	-5.0	12.0	-5.0	1.0223	17.8	0.9613	20.6			64	6	
305		ELALTO		13.800	G2	17.4	-5.0	12.0	-5.0	1.0223	17.8	0.9613	20.6			64	6	
307		CHAN1 A		13.800	G1	62.3	-9.7	50.0	-50.0	1.0100	62.4	0.9882	118.6			64	6	
312		PANDO13.8		13.800	G1	14.0	-1.1	10.0	-5.0	1.0100	13.9	0.9970	19.9			64	6	
312		PANDO13.8		13.800	G2	14.0	-1.1	10.0	-5.0	1.0100	13.9	0.9970	19.9			64	6	

316	MTE LIRIO13.13.800	G1	22.0	-4.9	12.0	-5.0	1.0100	22.3	0.9764	27.0	64	6
316	MTE LIRIO13.13.800	G2	22.0	-4.9	12.0	-5.0	1.0100	22.3	0.9764	27.0	64	6
317	MENDRE13.8	13.800 M1	8.5	0.0	0.0	0.0	1.1114	7.6	1.0000	35.3	64	6
317	MENDRE13.8	13.800 M2	8.5	0.0	0.0	0.0	1.1114	7.6	1.0000	35.3	64	6
323	COCHEA 13.8	13.800 C1	5.7	0.0	0.0	0.0	1.1117	5.1	1.0000	35.3	64	6
323	COCHEA 13.8	13.800 C2	5.7	0.0	0.0	0.0	1.1117	5.1	1.0000	35.3	64	6
324	POTRER13.8	13.800 P1	4.0	2.0	2.0	-2.0	1.0098	4.4	0.8928	6.2	64	6
340	PEDGALITO13813.800	P1	20.9	8.0	12.0	-5.0	0.9900	22.7	0.9336	27.0	64	6
342	LORENA13.8	13.800 L1	14.4	-4.9	10.5	-5.0	1.0000	15.2	0.9474	19.9	64	6
343	PRUDENCIA_1	13.800 G1	23.9	-8.7	9.8	-9.8	1.0000	25.4	0.9400	33.0	64	6
350	MACANO 13.8	13.800 G1	3.3	-1.0	1.0	-1.0	1.0725	3.2	0.9563	6.2	64	6
351	PERLAS N13.813.800	G1	9.0	5.0	5.0	-5.0	0.9769	10.6	0.8749	13.5	64	6
352	PERLAS S13.813.800	G1	9.0	5.0	5.0	-5.0	0.9769	10.6	0.8749	13.5	64	6
357	BARTOLO13.8	13.800 G1	5.9	0.8	3.7	-3.7	1.0000	5.9	0.9907	8.5	64	6
357	BARTOLO13.8	13.800 G2	5.9	0.8	3.7	-3.7	1.0000	5.9	0.9907	8.5	64	6
359	CRUCES13.8	13.800 G1	3.1	0.3	2.3	-2.3	1.0000	3.1	0.9968	5.6	64	6
359	CRUCES13.8	13.800 G2	3.1	0.3	2.3	-2.3	1.0000	3.1	0.9968	5.6	64	6
361	ESTRECHO4.164.1600	G1	3.4	0.1	2.5	-2.5	1.0000	3.4	0.9991	5.6	64	6
361	ESTRECHO4.164.1600	G2	3.4	0.1	2.5	-2.5	1.0000	3.4	0.9991	5.6	64	6
363	LAGUNA 13.8	13.800 G1	3.2	0.0	2.4	-2.4	1.0000	3.2	1.0000	5.8	64	6
363	LAGUNA 13.8	13.800 G2	3.2	0.0	2.4	-2.4	1.0000	3.2	1.0000	5.8	64	6
364	MENDRE2	13.800 G1	7.2	2.4	3.9	-3.9	1.0100	7.5	0.9492	8.9	64	6
368	RP-490	13.800 G1	4.5	-0.9	2.4	-2.4	1.0100	4.5	0.9794	5.5	64	6
368	RP-490	13.800 G2	4.5	-0.9	2.4	-2.4	1.0100	4.5	0.9794	5.5	64	6
369	HCALDERA13.813.800	G1	3.8	1.9	1.9	-1.9	1.0097	4.2	0.8909	4.3	64	6
372	BJO FRIO 13	13.800 G1	23.9	-5.3	9.8	-9.8	1.0000	24.5	0.9765	33.0	64	6
372	BJO FRIO 13	13.800 G2	23.9	-5.3	9.8	-9.8	1.0000	24.5	0.9765	33.0	64	6
373	TIZINGAL13.813.800	G1	4.5	2.2	2.2	-2.2	0.9752	5.1	0.8931	21.6	64	6
374	SLORENZO13.813.800	G1	3.9	-1.4	2.0	-2.0	1.0000	4.1	0.9410	4.5	64	6
374	SLORENZO13.813.800	G2	3.9	-1.4	2.0	-2.0	1.0000	4.1	0.9410	4.5	64	6
376	PEDREG2 13.813.800	G1	6.2	-2.7	3.1	-3.1	1.0000	6.7	0.9180	7.2	64	6
376	PEDREG2 13.813.800	G2	6.2	-2.7	3.1	-3.1	1.0000	6.7	0.9180	7.2	64	6
523	TCATIVÁ 13A	13.800 G1	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9287	10.9	62	6
523	TCATIVÁ 13A	13.800 G2	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9287	10.9	62	6
523	TCATIVÁ 13A	13.800 G3	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9287	10.9	62	6
523	TCATIVÁ 13A	13.800 G4	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9287	10.9	62	6
523	TCATIVÁ 13A	13.800 G5	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9287	10.9	62	6
524	TCATIVÁ 13B	13.800 G0	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9287	10.9	62	6
524	TCATIVÁ 13B	13.800 G6	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9287	10.9	62	6
524	TCATIVÁ 13B	13.800 G7	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9287	10.9	62	6
524	TCATIVÁ 13B	13.800 G8	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9287	10.9	62	6
524	TCATIVÁ 13B	13.800 G9	8.3	3.3	6.6	-6.6	1.0100	8.8	0.9287	10.9	62	6
531	EGIRAL13.8	213.800 G5	8.1	3.0	6.4	3.0	1.0055	8.6	0.9379	10.9	62	6

531	EGIRAL13.8	213.800	G6	8.1	3.0	6.4	3.0	1.0055	8.6	0.9379	10.9	62	6
531	EGIRAL13.8	213.800	G7	8.1	3.0	6.4	3.0	1.0055	8.6	0.9379	10.9	62	6
531	EGIRAL13.8	213.800	G8	8.1	3.0	6.4	3.0	1.0055	8.6	0.9379	10.9	62	6
541	TOABRE	0.6000	1	25.1	0.0	0.0	0.0	1.0244	24.5	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	24.1	2.1	13.0	-13.0	1.0100	23.9	0.9964	30.5	64	6
704	BJOMIN13B	13.800	G2	24.1	2.1	13.0	-13.0	1.0100	23.9	0.9964	30.5	64	6
705	BAITUN13A	13.800	G1	37.5	-4.2	26.6	-26.6	1.0100	37.4	0.9938	50.6	64	6
706	BAITUN13B	13.800	G2	37.5	-4.2	26.6	-26.6	1.0100	37.4	0.9938	50.6	64	6
720	PLANETA13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9670	4.2	0.8724	6.2	64	6
721	SVC-LV	13.200	1	0.4	204.8	300.0	-225.0	1.0819	189.3	0.0018	250.0	60	6
SUBSYSTEM TOTALS				1485.4	517.9	1540.3	-1050.9				2828.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 13:21
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CNT GUASQ - LLSCH

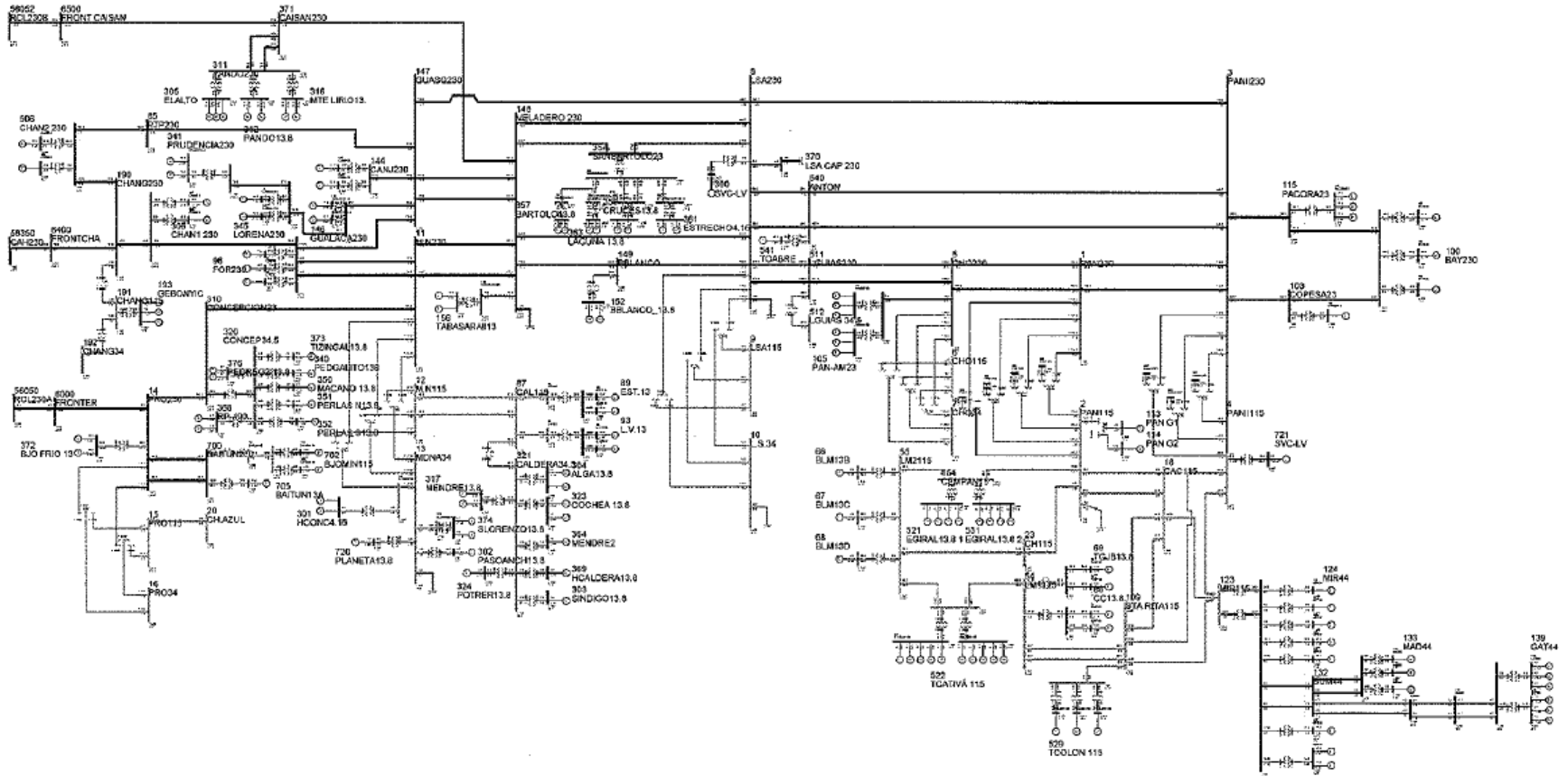
AREA 7 [ACANAL] MACHINE SUMMARY:

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	30.8	0.3	15.0	0.0	1.0000	30.8	1.0000	44.1			65	7	AREA
130		MIR13F		13.800	G5	17.2	0.0	8.0	0.0	1.0131	16.9	1.0000	27.7			65	7	
140		GAT6A		6.9000	G1	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9303	4.1			65	7	
140		GAT6A		6.9000	G2	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9303	4.1			65	7	
140		GAT6A		6.9000	G3	1.9	-0.8	2.0	-2.0	1.0000	2.1	0.9303	4.1			65	7	
141		GAT6B		6.9000	G4	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9314	5.6			65	7	
141		GAT6B		6.9000	G5	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9314	6.2			65	7	
141		GAT6B		6.9000	G6	3.9	-1.5	3.0	-3.0	1.0000	4.2	0.9314	6.2			65	7	
170		MIR13G		13.800	M1	17.1	6.8	11.2	6.8	1.0275	17.9	0.9285	23.0			65	7	
171		MIR13H		13.800	M1	17.1	6.8	11.2	6.8	1.0366	17.7	0.9285	23.0			65	7	
171		MIR13H		13.800	M2	17.1	6.8	11.2	6.8	1.0366	17.7	0.9285	23.0			65	7	
SUBSYSTEM TOTALS						116.5	13.9	71.5	5.5				171.3					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 13:28
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO CNT GUASQ - LLSCH IN MW/MVAR

FROM X-- AREA	TO --X GENERATION	TO BUS LOAD	TO LINE LOAD	FROM SHUNT	TO SHUNT	CHARGING	DESIRED NET INT	LOSSES	NET INT
1	1478.7	1330.8	0.0	0.0	0.0	0.0	101.3	46.6	100.7
GUATEMAL	217.4	275.1	-198.5	0.0	0.0	276.8	-14.4	432.0	
2	870.6	855.0	0.0	0.0	0.0	0.0	0.3	15.3	0.0
SALVADOR	83.6	224.2	-70.6	0.0	0.0	228.3	-28.1	186.5	
3	1238.6	1203.0	0.0	0.0	0.0	0.0	0.3	35.4	0.0
HONDURAS	474.2	321.1	-47.3	0.0	0.0	292.6	55.0	438.2	
4	534.9	525.2	0.0	0.0	0.0	0.0	0.4	9.3	0.0
NICARAGU	49.2	207.6	-57.3	0.0	0.0	180.9	-48.2	128.0	
5	1302.7	1280.2	0.0	0.0	0.0	0.0	0.5	22.0	0.0
COSTA RI	254.7	520.4	-229.3	0.0	0.0	416.4	26.1	353.9	
6	1485.4	1555.2	0.0	0.0	0.0	0.0	-162.7	92.9	-160.7
PANAMA	517.9	315.8	-84.4	0.0	0.0	607.3	20.1	873.7	
7	116.5	55.5	0.0	0.0	0.0	0.0	60.0	1.0	60.0
ACANAL	13.9	11.3	0.0	0.0	0.0	0.0	-10.4	13.0	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	7027.4	6805.0	0.0	0.0	0.0	0.0	0.0	222.4	0.0
1610.8	1875.3	-687.5	0.0	2002.4	0.0	2425.3			

Demanda Máxima de Verano



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 13:31
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-VERANO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0010	230.23	8		LSA230		230.00	6	1.0070	231.61
11		M.N230		230.00	6	1.0116	232.68	14		PRO230		230.00	6	1.0214	234.91
85		PTP230		230.00	6	1.0129	232.97	96		FOR230		230.00	6	1.0111	232.56
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	231.97	144		CANJ230		230.00	6	1.0100	232.31
146		GUALACA230		230.00	6	1.0134	233.07	147		GUASQ230		230.00	6	1.0099	232.28
148		VELADERO		230.00	6	1.0105	232.41	149		BBLANCO		230.00	6	1.0092	232.13
155		TABASARAI		230.00	6	1.0110	232.53	190		CHANG230		230.00	6	1.0188	234.32
306		CHAN1		230.00	6	1.0164	233.77	310		CONCEPCION		230.00	6	1.0178	234.08
311		PANDO230		230.00	6	1.0383	238.80	341		PRUDENCIA		230.00	6	1.0188	234.33
345		LORENA230		230.00	6	1.0169	233.88	354		SANBARTOLO		230.00	6	1.0080	231.84
370		LSA CAP		230.00	6	1.0070	231.61	371		CAISAN230		230.00	6	1.0373	238.59
506		CHAN2		230.00	6	1.0198	234.56	540		ANTON		230.00	6	1.0171	233.94
700		BAITUN230		230.00	6	1.0205	234.72	6000		FRONTER		230.00	6	1.0240	235.53
6400		FRONTCHA		230.00	6	1.0203	234.66	6500		FRONT CAISAN		230.00	6	1.0363	238.34

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9913	228.00	5		CHO230		230.00	6	0.9879	227.22
105		PAN-AM23		230.00	6	0.9879	227.22	511		LGUIAS230		230.00	6	0.9953	228.91

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 13:31
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-VERANO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0213	117.45	9		LSA115		115.00	6	1.0486	120.59
12		M.N115		115.00	6	1.0054	115.62	15		PRO115		115.00	6	1.0233	117.68
19		C.V115		115.00	6	1.0003	115.03	20		CH.AZUL		115.00	6	1.0240	117.76
52		TOC115		115.00	6	1.0176	117.03	54		LM1115		115.00	6	1.0259	117.98
55		LM2115		115.00	6	1.0267	118.07	61		FFIELD		115.00	6	1.0208	117.39
87		CAL115		115.00	6	1.0185	117.13	88		EST115		115.00	6	1.0207	117.38
92		L.V115		115.00	6	1.0194	117.23	109		STA RITA115		115.00	6	1.0213	117.45
154		CEMPAN15		115.00	6	1.0226	117.59	191		CHANG115		115.00	6	1.0084	115.97
522		TCATIVÁ 115		115.00	6	1.0266	118.06	529		TCOLON 115		115.00	6	1.0214	117.46
701		BAITUN115		115.00	6	1.0057	115.66	702		BJOMIN115		115.00	6	1.0071	115.82

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9880	113.62	6		CHO115		115.00	6	0.9890	113.74
18		CAC115		115.00	6	0.9877	113.58	21		C.BAN115		115.00	6	0.9780	112.47
23		CH115		115.00	6	0.9913	113.99	26		LOC115		115.00	6	0.9786	112.54
30		MAR115		115.00	6	0.9758	112.22	33		STM115		115.00	6	0.9854	113.32
37		SAN115		115.00	6	0.9781	112.49	48		TINAJ115		115.00	6	0.9845	113.22
50		M.O115		115.00	6	0.9847	113.24	123		MIR115		115.00	7	0.9935	114.25

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 13:31
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-VERANO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66	BLM13B	13.800	V2	38.0	16.2	25.0	0.0	1.0100	40.9	0.9197	47.0			62	6	
67	BLM13C	13.800	V3	38.0	16.2	25.0	0.0	1.0100	40.9	0.9197	47.0			62	6	
68	BLM13D	13.800	V4	38.0	16.9	25.0	0.0	1.0100	41.2	0.9137	47.0			62	6	
70	TGJB13A	13.800	J5	31.0	8.0	20.0	0.0	1.0000	32.0	0.9686	39.4			62	6	
71	TGJB13B	13.800	J6	31.0	8.0	20.0	0.0	1.0000	32.0	0.9686	39.4			62	6	
72	BLMCCA	13.800	T8	31.0	9.1	20.0	0.0	1.0000	32.3	0.9594	50.0			62	6	
73	BLMCCB	13.800	V9	50.0	9.5	40.0	0.0	1.0000	50.9	0.9823	71.0			62	6	
90	EST-13L	13.800	E1	18.0	2.9	12.0	-5.0	0.9800	18.6	0.9870	27.0			64	6	
91	EST-13T	13.800	E2	18.0	2.9	12.0	-5.0	0.9800	18.6	0.9870	27.0			64	6	
94	LV-13.8L	13.800	L1	20.0	3.4	12.0	-5.0	0.9800	20.7	0.9855	27.0			64	6	
95	LV-13.8T	13.800	L2	20.0	3.4	12.0	-5.0	0.9800	20.7	0.9855	27.0			64	6	
97	FOR13A	13.800	F1	75.0	-7.0	50.0	-50.0	1.0000	75.3	0.9956	111.0			64	6	
98	FOR13B	13.800	F2	75.0	-7.0	50.0	-50.0	1.0000	75.3	0.9956	111.0			64	6	
101	BAY13A	13.800	B1	60.6	22.7	50.0	-25.0	1.0000	64.7	0.9362	96.0			61	6	
102	BAY13B	13.800	B2	60.6	22.7	50.0	-25.0	1.0000	64.7	0.9362	96.0			61	6	
116	PACORA13	13.800	P1	17.5	2.9	8.8	0.0	1.0100	17.5	0.9868	21.7			61	6	
116	PACORA13	13.800	P2	17.5	2.9	8.8	0.0	1.0100	17.5	0.9868	21.7			61	6	
116	PACORA13	13.800	P3	17.5	2.9	8.8	0.0	1.0100	17.5	0.9868	21.7			61	6	
142	CANJ13A	13.800	C1	33.8	6.6	29.0	-29.0	0.9800	35.1	0.9812	69.0			64	6	
143	CANJ13B	13.800	C2	33.8	6.6	29.0	-29.0	0.9800	35.1	0.9812	69.0			64	6	
150	GUALACA 13-2	13.800	G2	11.0	-5.5	7.4	-7.4	0.9900	12.4	0.8931	14.8			64	6	
151	GUALACA13.8	13.800	G1	11.0	-5.5	7.4	-7.4	0.9900	12.4	0.8931	14.8			64	6	
152	BBLANCO_13.8	13.800	G1	10.0	-0.1	7.0	-7.0	1.0000	10.0	0.9999	16.0			64	6	
152	BBLANCO_13.8	13.800	G2	10.0	-0.1	7.0	-7.0	1.0000	10.0	0.9999	16.0			64	6	
156	TABASARAI13	13.800	G1	15.0	0.2	5.7	0.2	1.0110	14.8	0.9999	20.5			1	6	
193	GEBONYIC	13.800	G1	7.5	-1.2	4.0	-4.0	1.0000	7.6	0.9878	35.3			64	6	
193	GEBONYIC	13.800	G2	7.5	-1.2	4.0	-4.0	1.0000	7.6	0.9878	35.3			64	6	
300	SVC-LV	13.200	1	0.0	93.2	300.0	-225.0	1.0252	90.9	0.0000	250.0			63	6	
302	PASOANCH13.8	13.800	P1	4.0	2.0	2.0	-2.0	0.9673	4.6	0.8944	6.2			64	6	
303	SINDIGO13.8	13.800	G1	7.0	0.0	5.0	0.0	1.1003	6.4	1.0000	13.5			64	6	
304	ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.0991	4.9	0.9063	5.7			64	6	
305	ELALTO	13.800	G1	12.0	-5.0	12.0	-5.0	1.0241	12.7	0.9231	20.6			64	6	
305	ELALTO	13.800	G2	12.0	-5.0	12.0	-5.0	1.0241	12.7	0.9231	20.6			64	6	
307	CHAN1 A	13.800	G1	65.0	-23.0	50.0	-50.0	0.9900	69.6	0.9429	118.6			64	6	
312	PANDO13.8	13.800	G1	10.0	-3.3	10.0	-5.0	0.9900	10.6	0.9492	19.9			64	6	
312	PANDO13.8	13.800	G2	10.0	-3.3	10.0	-5.0	0.9900	10.6	0.9492	19.9			64	6	
316	MTE LIRIO13.1	13.800	G1	16.0	-5.0	12.0	-5.0	1.0130	16.5	0.9545	27.0			64	6	

316	MTE LIRIO	13.13.800	G2	16.0	-5.0	12.0	-5.0	1.0130	16.5	0.9545	27.0	64	6
317	MENDRE	13.8	M1	6.5	0.0	0.0	0.0	1.1001	5.9	1.0000	35.3	64	6
317	MENDRE	13.8	M2	6.5	0.0	0.0	0.0	1.1001	5.9	1.0000	35.3	64	6
323	COCHEA	13.8	C1	4.5	0.0	0.0	0.0	1.1003	4.1	1.0000	35.3	64	6
323	COCHEA	13.8	C2	4.5	0.0	0.0	0.0	1.1003	4.1	1.0000	35.3	64	6
324	POTRER	13.8	P1	4.0	2.0	2.0	-2.0	0.9993	4.4	0.8928	6.2	64	6
340	PEDGALITO	13813.800	P1	17.0	4.7	12.0	-5.0	0.9800	18.0	0.9641	27.0	64	6
342	LORENA	13.8	L1	12.0	-5.0	10.5	-5.0	1.0013	13.0	0.9231	19.9	64	6
343	PRUDENCIA	13.800	G1	19.0	-4.5	9.8	-9.8	1.0000	19.5	0.9727	33.0	64	6
343	PRUDENCIA	13.800	G2	19.0	-4.5	9.8	-9.8	1.0000	19.5	0.9727	33.0	64	6
346	LORENA	13-2	L2	12.0	-5.0	10.5	-5.0	1.0013	13.0	0.9231	19.9	64	6
350	MACANO	13.8	G1	2.0	-1.0	1.0	-1.0	1.0689	2.1	0.8944	6.2	64	6
351	PERLAS	N13.813.800	G1	9.0	5.0	5.0	-5.0	0.9736	10.6	0.8742	13.5	64	6
352	PERLAS	S13.813.800	G1	9.0	5.0	5.0	-5.0	0.9736	10.6	0.8742	13.5	64	6
357	BARTOLO	13.8	G1	5.2	0.6	3.7	-3.7	1.0000	5.2	0.9937	8.5	64	6
357	BARTOLO	13.8	G2	5.2	0.6	3.7	-3.7	1.0000	5.2	0.9937	8.5	64	6
359	CRUCES	13.8	G1	3.1	0.1	2.3	-2.3	1.0000	3.1	0.9995	5.6	64	6
359	CRUCES	13.8	G2	3.1	0.1	2.3	-2.3	1.0000	3.1	0.9995	5.6	64	6
361	ESTRECHO	4.164.1600	G1	3.5	0.0	2.5	-2.5	1.0000	3.5	1.0000	5.6	64	6
361	ESTRECHO	4.164.1600	G2	3.5	0.0	2.5	-2.5	1.0000	3.5	1.0000	5.6	64	6
363	LAGUNA	13.8	G1	3.5	-0.1	2.4	-2.4	1.0000	3.5	0.9993	5.8	64	6
363	LAGUNA	13.8	G2	3.5	-0.1	2.4	-2.4	1.0000	3.5	0.9993	5.8	64	6
364	MENDRE	2	G1	7.6	3.1	3.9	-3.9	1.0000	8.2	0.9242	8.9	64	6
368	RP-490	13.800	G1	3.2	-1.5	2.4	-2.4	1.0000	3.5	0.9042	5.5	64	6
368	RP-490	13.800	G2	3.2	-1.5	2.4	-2.4	1.0000	3.5	0.9042	5.5	64	6
369	HICALDERA	13.813.800	G1	3.8	1.9	1.9	-1.9	0.9993	4.3	0.8909	4.3	64	6
372	BJO FRIO	13	G1	19.0	-5.2	9.8	-9.8	1.0000	19.7	0.9642	33.0	64	6
372	BJO FRIO	13	G2	19.0	-5.2	9.8	-9.8	1.0000	19.7	0.9642	33.0	64	6
373	TIZINGAL	13.813.800	G1	4.4	2.2	2.2	-2.2	0.9720	5.1	0.8909	21.6	64	6
374	SLORENZO	13.813.800	G1	3.0	-1.3	2.0	-2.0	1.0000	3.3	0.9162	4.5	64	6
374	SLORENZO	13.813.800	G2	3.0	-1.3	2.0	-2.0	1.0000	3.3	0.9162	4.5	64	6
376	PEDREG2	13.813.800	G1	4.2	-2.3	3.1	-3.1	1.0000	4.8	0.8754	7.2	64	6
376	PEDREG2	13.813.800	G2	4.2	-2.3	3.1	-3.1	1.0000	4.8	0.8754	7.2	64	6
507	CHAN2	A	G1	65.0	7.1	50.0	-50.0	1.0000	65.4	0.9941	118.6	64	6
521	EGIRAL	13.8	G1	3.6	1.3	2.8	1.3	0.9963	3.8	0.9400	4.8	63	6
521	EGIRAL	13.8	G2	3.6	1.3	2.8	1.3	0.9963	3.8	0.9400	4.8	63	6
521	EGIRAL	13.8	G3	3.6	1.3	2.8	1.3	0.9963	3.8	0.9400	4.8	63	6
521	EGIRAL	13.8	G4	3.6	1.3	2.8	1.3	0.9963	3.8	0.9400	4.8	63	6
523	TCATIVÁ	13A	G1	8.3	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	62	6
523	TCATIVÁ	13A	G2	8.3	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	62	6
523	TCATIVÁ	13A	G3	8.3	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	62	6
523	TCATIVÁ	13A	G4	8.3	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	62	6
523	TCATIVÁ	13A	G5	8.3	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	62	6

524	TCATIVÁ	13B	13.800	G0	8.3	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	62	6
524	TCATIVÁ	13B	13.800	G6	8.3	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	62	6
524	TCATIVÁ	13B	13.800	G7	8.3	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	62	6
524	TCATIVÁ	13B	13.800	G8	8.3	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	62	6
524	TCATIVÁ	13B	13.800	G9	8.3	1.8	6.6	-6.6	0.9900	8.5	0.9771	10.9	62	6
531	EGIRAL	13.8	213.800	G5	8.1	3.0	6.4	3.0	0.9973	8.7	0.9377	10.9	62	6
531	EGIRAL	13.8	213.800	G6	8.1	3.0	6.4	3.0	0.9973	8.7	0.9377	10.9	62	6
531	EGIRAL	13.8	213.800	G7	8.1	3.0	6.4	3.0	0.9973	8.7	0.9377	10.9	62	6
531	EGIRAL	13.8	213.800	G8	8.1	3.0	6.4	3.0	0.9973	8.7	0.9377	10.9	62	6
541	TOABRE		0.6000	1	30.0	0.0	0.0	0.0	1.0184	29.5	1.0000	88.9	64	6
703	BJOMIN	13A	13.800	G1	19.0	0.2	13.0	-13.0	1.0000	19.0	0.9999	30.5	64	6
704	BJOMIN	13B	13.800	G2	19.0	0.2	13.0	-13.0	1.0000	19.0	0.9999	30.5	64	6
705	BAITUN	13A	13.800	G1	30.0	-8.0	26.6	-26.6	1.0000	31.1	0.9660	50.6	64	6
706	BAITUN	13B	13.800	G2	30.0	-8.0	26.6	-26.6	1.0000	31.1	0.9660	50.6	64	6
720	PLANETA	13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9673	4.2	0.8724	6.2	64	6
721	SVC-LV		13.200	1	0.0	136.9	300.0	-225.0	1.0475	130.7	0.0000	250.0	60	6
SUBSYSTEM TOTALS					1509.0	329.7	1641.1	-1090.6				3046.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 13:31
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-VERANO

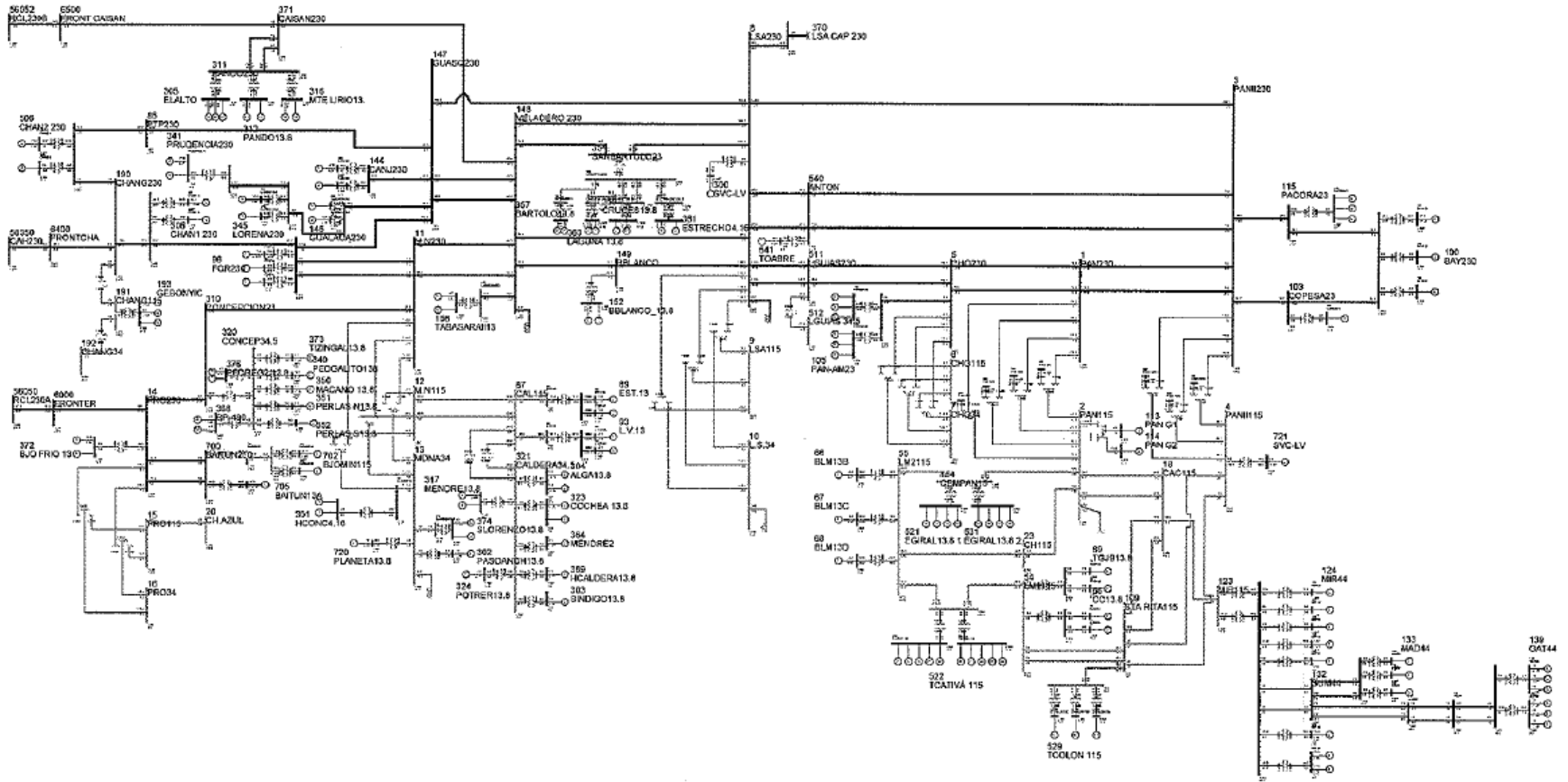
AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
129		MIR13D		13.800	G4	32.8	4.5	15.0	0.0	1.0000	33.1	0.9908	44.1			65	7	AREA
130		MIR13F		13.800	G5	17.1	0.0	8.0	0.0	1.0021	17.1	1.0000	27.7			65	7	
140		GAT6A		6.9000	G1	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9701	4.1			65	7	
140		GAT6A		6.9000	G2	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9701	4.1			65	7	
140		GAT6A		6.9000	G3	1.9	-0.5	2.0	-2.0	1.0000	2.0	0.9701	4.1			65	7	
141		GAT6B		6.9000	G4	3.9	-1.2	3.0	-3.0	1.0000	4.1	0.9531	5.6			65	7	
141		GAT6B		6.9000	G5	3.9	-1.2	3.0	-3.0	1.0000	4.1	0.9531	6.2			65	7	
141		GAT6B		6.9000	G6	3.9	-1.2	3.0	-3.0	1.0000	4.1	0.9531	6.2			65	7	
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0167	18.0	0.9281	23.0			65	7	
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0258	17.9	0.9281	23.0			65	7	
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0258	17.9	0.9281	23.0			65	7	
SUBSYSTEM TOTALS						118.3	19.8	71.5	5.5				171.3					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 13:31
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2017 ESC-MOD DEMANDA-MAX-VERANO IN MW/MVAR

FROM X-- AREA	TO --X GENERATION	TO BUS LOAD	TO LINE LOAD	FROM SHUNT	TO SHUNT	CHARGING	DESIRED NET INT	LOSSES	NET INT
1	1486.3	1330.8		0.0	0.0	0.0	108.7	46.8	107.5
GUATEMAL	215.6	275.1		-197.8	0.0	276.5	-15.1	430.0	
2	870.4	855.0		0.0	0.0	0.0	-0.1	15.5	0.0
SALVADOR	84.8	224.2		-70.6	0.0	228.3	-28.5	188.1	
3	1238.3	1203.0		0.0	0.0	0.0	-0.2	35.5	0.0
HONDURAS	475.5	321.1		-47.3	0.0	292.6	55.0	439.3	
4	534.5	525.2		0.0	0.0	0.0	-0.3	9.6	0.0
NICARAGU	50.9	207.6		-57.2	0.0	180.8	-48.2	129.6	
5	1301.7	1280.2		0.0	0.0	0.0	-1.1	22.6	0.0
COSTA RI	260.0	520.4		-229.2	0.0	416.0	26.8	358.1	
6	1509.0	1600.6		0.0	0.0	0.0	-167.3	75.8	-167.5
PANAMA	329.7	325.0		-82.0	0.0	649.5	15.7	720.5	
7	118.3	57.1		0.0	0.0	0.0	60.2	0.9	60.0
ACANAL	19.8	11.6		0.0	0.0	0.0	-5.6	13.8	
10	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
TOTALS	7058.7	6851.9		0.0	0.0	0.0	0.0	206.8	0.0
1436.3	1884.9	-684.2		0.0	2043.6	0.0	2279.2		

Demanda Mínima de Invierno



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 14:01
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 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)
3		PANII230		230.00	6	1.0010	230.23	11		M.N230		230.00	6	1.0107	232.45
14		PRO230		230.00	6	1.0278	236.40	85		PTP230		230.00	6	1.0169	233.90
96		FOR230		230.00	6	1.0113	232.60	100		BAY230		230.00	6	1.0127	232.92
103		COPESA23		230.00	6	1.0033	230.75	115		PACORA23		230.00	6	1.0042	230.96
144		CANJ230		230.00	6	1.0124	232.84	146		GUALACA230		230.00	6	1.0144	233.31
147		GUASQ230		230.00	6	1.0123	232.84	148		VELADERO 230		230.00	6	1.0084	231.93
149		BBLANCO		230.00	6	1.0074	231.70	155		TABASARAI23		230.00	6	1.0089	232.05
190		CHANG230		230.00	6	1.0217	235.00	306		CHAN1 230		230.00	6	1.0186	234.29
310		CONCEPCION23		230.00	6	1.0208	234.78	311		PANDO230		230.00	6	1.0495	241.39
341		PRUDENCIA230		230.00	6	1.0176	234.06	345		LORENA230		230.00	6	1.0165	233.80
354		SANBARTOLO23		230.00	6	1.0063	231.46	371		CAISAN230		230.00	6	1.0481	241.06
506		CHAN2 230		230.00	6	1.0229	235.27	540		ANTON		230.00	6	1.0159	233.67
700		BAITUN230		230.00	6	1.0274	236.29	6000		FRONTER		230.00	6	1.0311	237.16
6400		FRONTCHA		230.00	6	1.0234	235.38	6500		FRONT CAISAN230		230.00	6	1.0467	240.74

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9956	228.98	5		CHO230		230.00	6	0.9943	228.70
105		PAN-AM23		230.00	6	0.9943	228.70	511		LGUIAS230		230.00	6	0.9976	229.44

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 14:01
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MIN-INVIERNO

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
66		BLM13B		13.800	V2	38.0	18.0	25.0	0.0	1.0000	42.1	0.9034	47.0			62	6	
67		BLM13C		13.800	V3	38.0	18.0	25.0	0.0	1.0000	42.1	0.9034	47.0			62	6	
68		BLM13D		13.800	V4	38.0	18.8	25.0	0.0	1.0000	42.4	0.8963	47.0			62	6	
90		EST-13L		13.800	E1	18.0	2.6	12.0	-5.0	0.9800	18.6	0.9895	27.0			64	6	
91		EST-13T		13.800	E2	18.0	2.6	12.0	-5.0	0.9800	18.6	0.9895	27.0			64	6	
94		LV-13.8L		13.800	L1	20.2	3.1	12.0	-5.0	0.9800	20.9	0.9882	27.0			64	6	
95		LV-13.8T		13.800	L2	20.2	3.1	12.0	-5.0	0.9800	20.9	0.9882	27.0			64	6	
97		FOR13A		13.800	F1	75.0	-24.8	50.0	-50.0	0.9800	80.6	0.9496	111.0			64	6	
101		BAY13A		13.800	B1	67.1	21.2	50.0	-25.0	0.9880	71.2	0.9535	96.0			61	6	
142		CANJ13A		13.800	C1	45.0	9.2	29.0	-29.0	0.9800	46.9	0.9796	69.0			64	6	
150		GUALACA	13-213.800	G2		12.6	-5.7	7.4	-7.4	0.9900	14.0	0.9102	14.8			64	6	
152		BBLANCO	13.813.800	G1		12.6	-0.7	7.0	-7.0	1.0000	12.6	0.9983	16.0			64	6	
156		TABASARAI	1313.800	G1		14.7	0.2	5.7	0.2	1.0089	14.5	0.9999	20.5			1	6	
193		GEBONYIC	13.800	G1		9.0	-1.5	4.0	-4.0	1.0000	9.1	0.9857	35.3			64	6	
193		GEBONYIC	13.800	G2		9.0	-1.5	4.0	-4.0	1.0000	9.1	0.9857	35.3			64	6	
300		SVC-LV	13.200	1		0.0	-15.8	300.0	-225.0	0.9968	15.9	0.0000	250.0			60	6	
302		PASOANCH	13.813.800	P1		3.5	2.0	2.0	-2.0	0.9612	4.2	0.8682	6.2			64	6	
303		SINDIGO	13.813.800	G1		9.0	0.0	5.0	0.0	1.0997	8.2	1.0000	13.5			64	6	
304		ALGA	13.813.800	A1		4.8	-2.3	2.3	-2.3	1.0971	4.9	0.9063	5.7			64	6	
304		ALGA	13.813.800	A2		4.8	-2.3	2.3	-2.3	1.0971	4.9	0.9063	5.7			64	6	
305		ELALTO	13.800	G1		18.0	-5.0	12.0	-5.0	1.0349	18.1	0.9635	20.6			64	6	
305		ELALTO	13.800	G2		18.0	-5.0	12.0	-5.0	1.0349	18.1	0.9635	20.6			64	6	
307		CHAN1	13.800	G1		61.0	-25.4	50.0	-50.0	0.9900	66.7	0.9233	118.6			64	6	
312		PANDO	13.813.800	G1		14.4	-5.0	10.0	-5.0	1.0159	15.0	0.9447	19.9			64	6	
316		MTE LIRIO	13.813.800	G1		20.0	-5.0	12.0	-5.0	1.0375	19.9	0.9701	27.0			64	6	
317		MENDRE	13.813.800	M1		9.4	0.0	0.0	0.0	1.0996	8.6	1.0000	35.3			64	6	
323		COCHEA	13.813.800	C1		5.6	0.0	0.0	0.0	1.0998	5.1	1.0000	35.3			64	6	
324		POTRER	13.813.800	P1		4.0	2.0	2.0	-2.0	0.9988	4.4	0.8928	6.2			64	6	
340		PEDGALITO	13813.800	P1		18.0	5.2	12.0	-5.0	0.9800	19.1	0.9602	27.0			64	6	
342		LORENA	13.813.800	L1		14.4	-5.0	10.5	-5.0	1.0006	15.2	0.9444	19.9			64	6	
343		PRUDENCIA	13.813.800	G1		23.8	-9.2	9.8	-9.8	1.0000	25.5	0.9328	33.0			64	6	
350		MACANO	13.813.800	G1		3.3	-1.0	1.0	-1.0	1.0677	3.2	0.9560	6.2			64	6	
351		PERLAS	13.813.800	G1		9.0	5.0	5.0	-5.0	0.9725	10.6	0.8742	13.5			64	6	
357		BARTOLO	13.813.800	G1		6.9	0.9	3.7	-3.7	1.0000	6.9	0.9911	8.5			64	6	
359		CRUCES	13.813.800	G1		4.1	0.0	2.3	-2.3	1.0000	4.1	1.0000	5.6			64	6	
361		ESTRECHO	4.164.1600	G1		4.4	0.1	2.5	-2.5	1.0000	4.4	0.9997	5.6			64	6	
363		LAGUNA	13.813.800	G1		4.2	-0.2	2.4	-2.4	1.0000	4.2	0.9987	5.8			64	6	

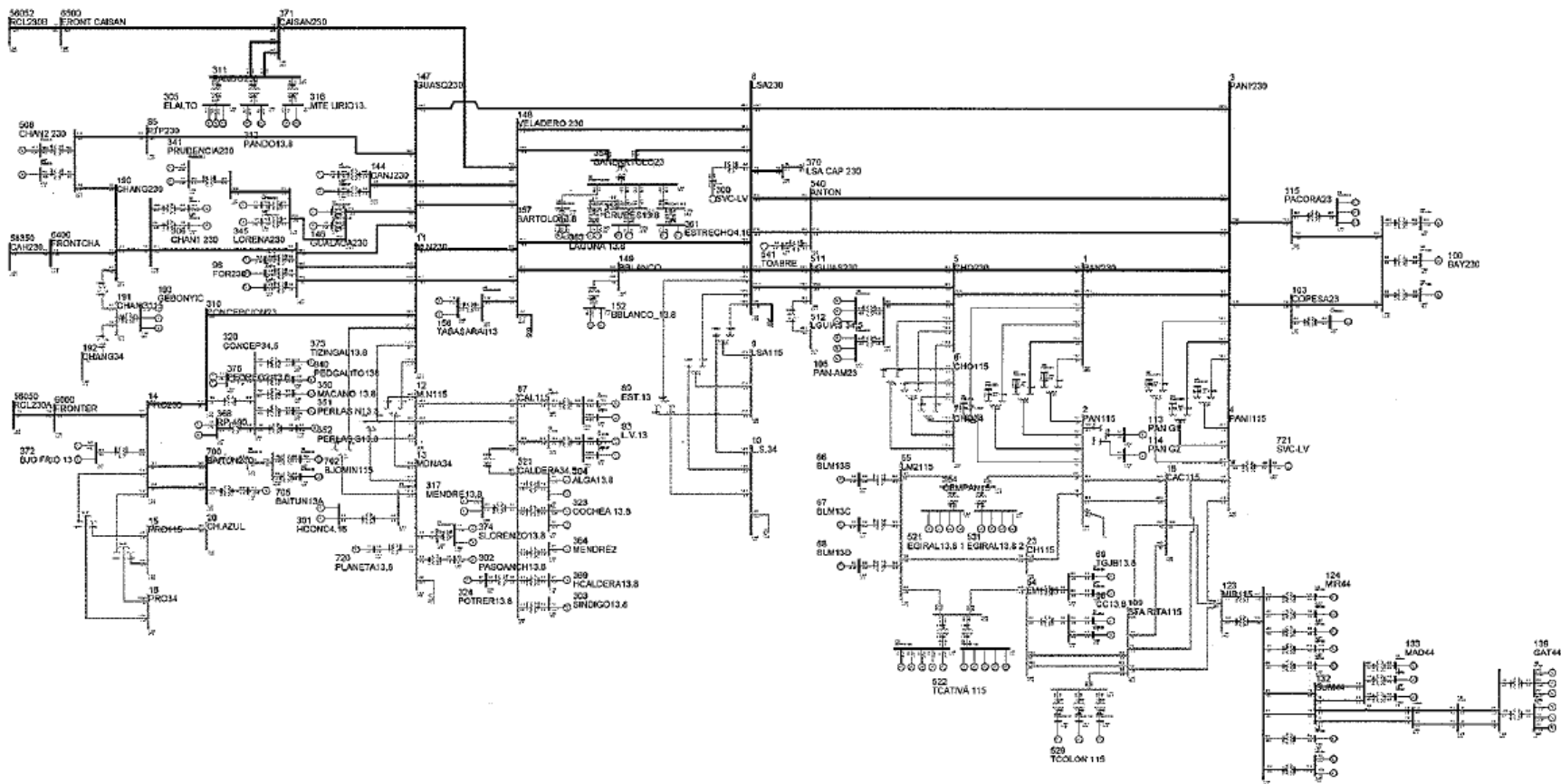
363	LAGUNA	13.8	13.800	G2	4.2	-0.2	2.4	-2.4	1.0000	4.2	0.9987	5.8	64	6
364	MENDRE2	13.800	G1	7.2	3.9	3.9	-3.9	0.9999	8.2	0.8808	8.9	64	6	
368	RP-490	13.800	G1	4.5	-1.4	2.4	-2.4	1.0000	4.7	0.9571	5.5	64	6	
368	RP-490	13.800	G2	4.5	-1.4	2.4	-2.4	1.0000	4.7	0.9571	5.5	64	6	
369	HICALDERA	13.813.800	G1	3.8	1.9	1.9	-1.9	0.9987	4.3	0.8909	4.3	64	6	
372	BJO FRIO	13	13.800	G1	26.6	-9.8	9.8	-9.8	1.0091	28.1	0.9388	33.0	64	6
373	TIZINGAL	13.813.800	G1	4.4	2.2	2.2	-2.2	0.9709	5.1	0.8909	21.6	64	6	
374	SLORENZO	13.813.800	G1	3.9	-1.6	2.0	-2.0	1.0000	4.2	0.9262	4.5	64	6	
376	PEDREG2	13.813.800	G1	6.2	-3.1	3.1	-3.1	1.0051	6.9	0.8909	7.2	64	6	
507	CHAN2 A	13.800	G1	61.0	3.9	50.0	-50.0	1.0000	61.1	0.9980	118.6	64	6	
541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0172	29.5	1.0000	88.9	64	6	
703	BJOMIN13A	13.800	G1	26.0	0.0	13.0	-13.0	1.0000	26.0	1.0000	30.5	64	6	
705	BAITUN13A	13.800	G1	40.0	-10.3	26.6	-26.6	1.0000	41.3	0.9686	50.6	64	6	
720	PLANETA	13.8	13.800	G1	3.6	2.0	2.0	-2.0	0.9612	4.3	0.8724	6.2	64	6
721	SVC-LV	13.200	1	0.0	55.6	300.0	-225.0	1.0229	54.4	0.0000	250.0	60	6	
SUBSYSTEM TOTALS					921.7	38.9	1160.6	-833.2				1978.1		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, OCT 20 2010 14:01
 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
129	MIR13D	13.800	G4	13.0	3.2	15.0	0.0	1.0000	13.4	0.9708	44.1	65	7	AREA				
140	GAT6A	6.9000	G1	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9556	4.1	65	7					
140	GAT6A	6.9000	G2	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9556	4.1	65	7					
140	GAT6A	6.9000	G3	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9556	4.1	65	7					
141	GAT6B	6.9000	G4	3.6	-1.3	3.0	-3.0	1.0000	3.8	0.9395	5.6	65	7					
141	GAT6B	6.9000	G5	3.6	-1.3	3.0	-3.0	1.0000	3.8	0.9395	6.2	65	7					
141	GAT6B	6.9000	G6	3.6	-1.3	3.0	-3.0	1.0000	3.8	0.9395	6.2	65	7					
170	MIR13G	13.800	M1	15.8	6.8	11.2	6.8	1.0257	16.8	0.9181	23.0	65	7					
171	MIR13H	13.800	M1	15.8	6.8	11.2	6.8	1.0348	16.6	0.9181	23.0	65	7					
171	MIR13H	13.800	M2	17.0	6.8	11.2	6.8	1.0348	17.7	0.9281	23.0	65	7					
SUBSYSTEM TOTALS						77.8	18.1	63.5	5.5			143.6						

Demanda Mnima de Verano



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 8:51
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MIN-VERANO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
3		PANII230		230.00	6	1.0050	231.15	11		M.N230		230.00	6	1.0106	232.43
14		PRO230		230.00	6	1.0276	236.34	85		PTP230		230.00	6	1.0163	233.74
96		FOR230		230.00	6	1.0110	232.53	100		BAY230		230.00	6	1.0154	233.53
103		COPESA23		230.00	6	1.0071	231.63	115		PACORA23		230.00	6	1.0078	231.79
144		CANJ230		230.00	6	1.0117	232.69	146		GUALACA230		230.00	6	1.0147	233.38
147		GUASQ230		230.00	6	1.0117	232.68	148		VELADERO	230	230.00	6	1.0082	231.89
149		BBLANCO		230.00	6	1.0073	231.68	155		TABASARAI	232	230.00	6	1.0087	232.01
190		CHANG230		230.00	6	1.0215	234.94	306		CHAN1	230	230.00	6	1.0184	234.23
310		CONCEPCION	23	230.00	6	1.0210	234.83	311		PANDO230		230.00	6	1.0474	240.89
341		PRUDENCIA	230	230.00	6	1.0201	234.63	345		LORENA230		230.00	6	1.0182	234.18
354		SANBARTOLO	23	230.00	6	1.0072	231.66	371		CAISAN230		230.00	6	1.0462	240.63
506		CHAN2	230	230.00	6	1.0226	235.19	540		ANTON		230.00	6	1.0180	234.13
700		BAITUN230		230.00	6	1.0270	236.22	6000		FRONTER		230.00	6	1.0307	237.06
6400		FRONTCHA		230.00	6	1.0233	235.37	6500		FRONT CAISAN	230	230.00	6	1.0450	240.35

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1		PAN230		230.00	6	0.9993	229.83	5		CHO230		230.00	6	0.9971	229.34
8		LSA230		230.00	6	1.0000	230.00	105		PAN-AM23		230.00	6	0.9971	229.34
370		LSA CAP	230	230.00	6	1.0000	230.00	511		LGUIAS230		230.00	6	0.9987	229.71

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 8:51
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MIN-VERANO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0185	117.13	9		LSA115		115.00	6	1.0440	120.05
12		M.N115		115.00	6	1.0096	116.11	15		PRO115		115.00	6	1.0295	118.39
19		C.V115		115.00	6	1.0039	115.45	20		CH.AZUL		115.00	6	1.0303	118.48
52		TOC115		115.00	6	1.0158	116.81	54		LM1115		115.00	6	1.0170	116.96
55		LM2115		115.00	6	1.0180	117.07	61		FFIELD		115.00	6	1.0137	116.58
87		CAL115		115.00	6	1.0187	117.15	88		EST115		115.00	6	1.0200	117.30
92		L.V115		115.00	6	1.0192	117.21	109		STA RITA115		115.00	6	1.0153	116.76
154		CEMPAN15		115.00	6	1.0106	116.22	191		CHANG115		115.00	6	1.0112	116.29
522		TCATIVÁ 115		115.00	6	1.0176	117.03	529		TCOLON 115		115.00	6	1.0153	116.77
701		BAITUN115		115.00	6	1.0178	117.05	702		BJOMIN115		115.00	6	1.0181	117.08

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9963	114.57	6		CHO115		115.00	6	0.9981	114.78
18		CAC115		115.00	6	0.9960	114.54	21		C.BAN115		115.00	6	0.9889	113.72
23		CH115		115.00	6	0.9965	114.59	26		LOC115		115.00	6	0.9895	113.79
30		MAR115		115.00	6	0.9876	113.57	33		STM115		115.00	6	0.9944	114.36
37		SAN115		115.00	6	0.9889	113.72	48		TINAJ115		115.00	6	0.9938	114.29
50		M.O115		115.00	6	0.9939	114.30	123		MIR115		115.00	7	0.9997	114.96

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

THU, OCT 21 2010 8:51

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
66		BLM13B		13.800	V2	38.0	14.9	25.0	0.0	0.9990	40.9	0.9309	47.0			62	6
67		BLM13C		13.800	V3	38.0	14.9	25.0	0.0	0.9990	40.9	0.9309	47.0			62	6
68		BLM13D		13.800	V4	38.0	15.5	25.0	0.0	0.9990	41.1	0.9258	47.0			62	6
90		EST-13L		13.800	E1	22.8	3.5	12.0	-5.0	0.9800	23.5	0.9881	27.0			64	6
94		LV-13.8L		13.800	L1	25.6	4.0	12.0	-5.0	0.9800	26.5	0.9880	27.0			64	6
97		FOR13A		13.800	F1	70.0	-24.9	50.0	-50.0	0.9800	75.8	0.9422	111.0			64	6
101		BAY13A		13.800	B1	46.6	17.7	50.0	-25.0	0.9880	50.4	0.9350	96.0			61	6
142		CANJ13A		13.800	C1	39.0	7.6	29.0	-29.0	0.9800	40.6	0.9813	69.0			64	6
150		GUALACA_13-2		13.800	G2	11.8	-5.8	7.4	-7.4	0.9900	13.3	0.8963	14.8			64	6
152		BBLANCO_13.8		13.800	G1	12.0	-0.8	7.0	-7.0	1.0000	12.0	0.9980	16.0			64	6
156		TABASARAI_13.8		13.800	G1	13.8	0.2	5.7	0.2	1.0088	13.7	0.9998	20.5			1	6
193		GEBONYIC		13.800	G1	9.5	-3.5	4.0	-4.0	1.0000	10.1	0.9394	35.3			64	6
300		SVC-LV		13.200	1	0.0	-6.4	300.0	-225.0	0.9987	6.4	0.0000	250.0			63	6
302		PASOANCHI_13.8		13.800	P1	4.1	2.0	2.0	-2.0	0.9606	4.7	0.8988	6.2			64	6
303		SINDIGO_13.8		13.800	G1	7.0	0.0	5.0	0.0	1.0990	6.4	1.0000	13.5			64	6
304		ALGA_13.8		13.800	A1	4.8	-2.3	2.3	-2.3	1.0977	4.9	0.9063	5.7			64	6
305		ELALTO		13.800	G1	12.0	-5.0	12.0	-5.0	1.0334	12.6	0.9231	20.6			64	6
305		ELALTO		13.800	G2	12.0	-5.0	12.0	-5.0	1.0334	12.6	0.9231	20.6			64	6
307		CHAN1_A		13.800	G1	60.0	-25.2	50.0	-50.0	0.9900	65.7	0.9220	118.6			64	6
312		PANDO_13.8		13.800	G1	10.0	-4.1	10.0	-5.0	0.9900	10.9	0.9266	19.9			64	6
312		PANDO_13.8		13.800	G2	10.0	-4.1	10.0	-5.0	0.9900	10.9	0.9266	19.9			64	6
316		MTE_LIRIO_13.8		13.800	G1	24.5	-5.0	12.0	-5.0	1.0348	24.2	0.9798	27.0			64	6
317		MENDRE_13.8		13.800	M1	9.4	0.0	0.0	0.0	1.0989	8.6	1.0000	35.3			64	6
323		COCHEA_13.8		13.800	C1	4.5	0.0	0.0	0.0	1.0989	4.1	1.0000	35.3			64	6
323		COCHEA_13.8		13.800	C2	4.5	0.0	0.0	0.0	1.0989	4.1	1.0000	35.3			64	6
324		POTRER_13.8		13.800	P1	4.0	2.0	2.0	-2.0	0.9981	4.4	0.8928	6.2			64	6
340		PEDGALITO_13.8		13.800	P1	17.0	1.9	12.0	-5.0	0.9800	17.5	0.9937	27.0			64	6
342		LORENA_13.8		13.800	L1	12.0	-5.0	10.5	-5.0	1.0026	13.0	0.9231	19.9			64	6
343		PRUDENCIA_1		13.800	G1	19.0	-4.9	9.8	-9.8	1.0000	19.6	0.9685	33.0			64	6
343		PRUDENCIA_1		13.800	G2	19.0	-4.9	9.8	-9.8	1.0000	19.6	0.9685	33.0			64	6
346		LORENA_13-2		13.800	L2	12.0	-5.0	10.5	-5.0	1.0026	13.0	0.9231	19.9			64	6
351		PERLAS_N13.8		13.800	G1	9.0	5.0	5.0	-5.0	0.9796	10.5	0.8742	13.5			64	6
352		PERLAS_S13.8		13.800	G1	9.0	5.0	5.0	-5.0	0.9796	10.5	0.8742	13.5			64	6
357		BARTOLO_13.8		13.800	G1	5.2	0.2	3.7	-3.7	1.0000	5.2	0.9994	8.5			64	6
357		BARTOLO_13.8		13.800	G2	5.2	0.2	3.7	-3.7	1.0000	5.2	0.9994	8.5			64	6
359		CRUCES_13.8		13.800	G1	3.1	0.1	2.3	-2.3	1.0000	3.1	0.9998	5.6			64	6

361	ESTRECHO	4.164.1600	G1	3.5	0.0	2.5	-2.5	1.0000	3.5	1.0000	5.6	64	6
363	LAGUNA	13.8 13.800	G1	3.5	-0.2	2.4	-2.4	1.0000	3.5	0.9987	5.8	64	6
364	MENDRE2	13.800	G1	6.5	1.9	3.9	-3.9	0.9980	6.8	0.9613	8.9	64	6
368	RP-490	13.800	G1	4.2	-2.4	2.4	-2.4	1.0106	4.8	0.8674	5.5	64	6
369	HCALDERA	13.813.800	G1	3.4	1.9	1.9	-1.9	0.9980	3.9	0.8779	4.3	64	6
372	BJO FRIO	13 13.800	G1	26.6	-9.8	9.8	-9.8	1.0089	28.1	0.9388	33.0	64	6
373	TIZINGAL	13.813.800	G1	4.0	2.2	2.2	-2.2	0.9779	4.7	0.8719	21.6	64	6
374	SLORENZO	13.813.800	G1	3.8	-1.5	2.0	-2.0	1.0000	4.1	0.9317	4.5	64	6
376	PEDREG2	13.813.800	G1	6.0	-3.1	3.1	-3.1	1.0127	6.7	0.8855	7.2	64	6
507	CHAN2 A	13.800	G1	60.0	4.2	50.0	-50.0	1.0000	60.1	0.9976	118.6	64	6
523	TCATIVÁ	13A 13.800	G1	8.3	2.9	6.6	-6.6	0.9900	8.8	0.9453	10.9	62	6
523	TCATIVÁ	13A 13.800	G2	8.3	2.9	6.6	-6.6	0.9900	8.8	0.9453	10.9	62	6
523	TCATIVÁ	13A 13.800	G3	8.3	2.9	6.6	-6.6	0.9900	8.8	0.9453	10.9	62	6
523	TCATIVÁ	13A 13.800	G4	8.3	2.9	6.6	-6.6	0.9900	8.8	0.9453	10.9	62	6
523	TCATIVÁ	13A 13.800	G5	8.3	2.9	6.6	-6.6	0.9900	8.8	0.9453	10.9	62	6
541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0192	29.4	1.0000	88.9	64	6
703	BJOMIN	13A 13.800	G1	19.0	-1.4	13.0	-13.0	1.0000	19.1	0.9973	30.5	64	6
705	BAITUN	13A 13.800	G1	30.0	-10.9	26.6	-26.6	1.0000	31.9	0.9399	50.6	64	6
720	PLANETA	13.8 13.800	G1	3.6	2.0	2.0	-2.0	0.9606	4.3	0.8724	6.2	64	6
721	SVC-LV	13.200	1	0.0	77.2	300.0	-225.0	1.0335	74.7	0.0000	250.0	60	6
SUBSYSTEM TOTALS				887.9	57.4	1196.3	-872.4				2050.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 8:51
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2017 ESC-MOD DEMANDA-MIN-VERANO

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
129		MIR13D		13.800	G4	31.5	4.1	15.0	0.0	1.0000	31.8	0.9917	44.1			65	7
AREA																	
140		GAT6A		6.9000	G1	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9534	4.1			65	7
140		GAT6A		6.9000	G2	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9534	4.1			65	7
140		GAT6A		6.9000	G3	1.8	-0.6	2.0	-2.0	1.0000	1.9	0.9534	4.1			65	7
141		GAT6B		6.9000	G4	3.6	-1.3	3.0	-3.0	1.0000	3.8	0.9382	5.6			65	7
141		GAT6B		6.9000	G5	3.6	-1.3	3.0	-3.0	1.0000	3.8	0.9382	6.2			65	7
141		GAT6B		6.9000	G6	3.6	-1.3	3.0	-3.0	1.0000	3.8	0.9382	6.2			65	7
171		MIR13H		13.800	M1	15.8	6.8	11.2	6.8	1.0273	16.8	0.9181	23.0			65	7
171		MIR13H		13.800	M2	15.8	6.8	11.2	6.8	1.0273	16.8	0.9181	23.0			65	7
SUBSYSTEM TOTALS						79.3	12.0	52.3	-1.4				120.6				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 8:51
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2017 ESC-MOD DEMANDA-MIN-VERANO IN MW/MVAR

X-- AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1		1350.3	1330.8	0.0	0.0	0.0	-25.5	45.0	-24.6
GUATEMAL		219.0	275.1	-197.4	0.0	276.1	-0.7	418.1	
2		869.0	855.0	0.0	0.0	0.0	0.2	13.8	0.0
SALVADOR		77.3	224.2	-70.7	0.0	228.8	-22.4	175.0	
3		1236.8	1203.0	0.0	0.0	0.0	0.1	33.7	0.0
HONDURAS		462.0	321.1	-47.6	0.0	293.9	54.8	427.6	
4		531.9	525.2	0.0	0.0	0.0	0.1	6.6	0.0
NICARAGU		32.5	207.6	-57.8	0.0	182.3	-47.2	112.2	
5		1296.2	1280.2	0.0	0.0	0.0	0.0	16.0	0.0
COSTA RI		196.8	520.4	-231.0	0.0	419.9	31.8	295.6	
6		887.9	880.3	0.0	0.0	0.0	-22.0	29.6	-22.4
PANAMA		57.4	319.5	97.9	0.0	651.0	-8.6	299.6	
7		79.3	31.4	0.0	0.0	0.0	47.2	0.7	47.0
ACANAL		12.0	11.4	0.0	0.0	0.0	-7.7	8.3	
10		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS		6251.4	6106.0	0.0	0.0	0.0	0.0	145.5	0.0
		1057.0	1879.2	-506.6	0.0	2051.9	0.0	1736.3	

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

THU, OCT 21 2010 9:39

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0149	233.42	14	PRO230	230.00	6	1.0285	236.55				
85	PTP230	230.00	6	1.0145	233.34	96	FOR230	230.00	6	1.0130	233.00				
100	BAY230	230.00	6	1.0244	235.62	144	CANJ230	230.00	6	1.0120	232.77				
146	GUALACA230	230.00	6	1.0163	233.75	147	GUASQ230	230.00	6	1.0118	232.70				
148	VELADERO	230230.00	6	1.0086	231.98	149	BBLANCO	230.00	6	1.0070	231.61				
155	TABASARAI	23230.00	6	1.0100	232.29	190	CHANG230	230.00	6	1.0273	236.28				
306	CHAN1	230	6	1.0243	235.60	310	CONCEPCION	23230.00	6	1.0209	234.81				
311	PANDO230	230.00	6	1.0437	240.04	341	PRUDENCIA	230230.00	6	1.0231	235.31				
345	LORENA230	230.00	6	1.0207	234.76	354	SANBAROLO	23230.00	6	1.0041	230.94				
371	CAISAN230	230.00	6	1.0426	239.79	506	CHAN2	230	6	1.0284	236.53				
700	BAITUN230	230.00	6	1.0292	236.73	6000	FRONTER	230.00	6	1.0309	237.11				
6400	FRONTCHA	230.00	6	1.0286	236.58	6500	FRONT CAISAN	230.00	6	1.0417	239.59				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9783	225.00	3	PANII230	230.00	6	0.9828	226.04				
5	CHO230	230.00	6	0.9737	223.96	103	COPESA23	230.00	6	0.9895	227.57				
105	PAN-AM23	230.00	6	0.9737	223.96	115	PACORA23	230.00	6	0.9962	229.14				
325	STA RITA	230	6	0.9808	225.58	511	LGUIAS230	230.00	6	0.9838	226.28				
540	ANTON	230.00	6	0.9984	229.63										

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BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	1.0381	119.38	12		M.N115		115.00	6	1.0096	116.10
15		PRO115		115.00	6	1.0305	118.51	20		CH.AZUL		115.00	6	1.0312	118.59
54		LM1115		115.00	6	1.0214	117.46	55		LM2115		115.00	6	1.0220	117.53
61		FFIELD		115.00	6	1.0123	116.41	87		CAL115		115.00	6	1.0287	118.30
88		EST115		115.00	6	1.0322	118.70	92		L.V115		115.00	6	1.0300	118.45
109		STA RITA115		115.00	6	1.0238	117.73	154		CEMPAN15		115.00	6	1.0056	115.65
191		CHANG115		115.00	6	1.0194	117.23	522		TCATIVÁ 115		115.00	6	1.0220	117.53
529		TCOLON 115		115.00	6	1.0238	117.74	701		BAITUN115		115.00	6	1.0182	117.09
702		BJOMIN115		115.00	6	1.0185	117.13								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9728	111.87	6		CHO115		115.00	6	0.9753	112.16
18		CAC115		115.00	6	0.9724	111.83	19		C.V115		115.00	6	0.9784	112.52
21		C.BAN115		115.00	6	0.9593	110.32	23		CH115		115.00	6	0.9786	112.54
26		LOC115		115.00	6	0.9604	110.45	30		MAR115		115.00	6	0.9578	110.15
33		STM115		115.00	6	0.9698	111.52	37		SAN115		115.00	6	0.9588	110.26
48		TINAJ115		115.00	6	0.9686	111.39	50		M.O115		115.00	6	0.9688	111.41
52		TOC115		115.00	6	0.9957	114.50	123		MIR115		115.00	7	0.9795	112.64

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AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
66		BLM13B		13.800	V2	38.0	22.1	25.0	0.0	1.0181	43.2	0.8647	47.0			62	6
67		BLM13C		13.800	V3	38.0	22.1	25.0	0.0	1.0181	43.2	0.8647	47.0			62	6
68		BLM13D		13.800	V4	38.0	23.1	25.0	0.0	1.0181	43.7	0.8550	47.0			62	6
90		EST-13L		13.800	E1	22.0	6.0	12.0	-5.0	1.0000	22.9	0.9650	27.0			64	6
91		EST-13T		13.800	E2	22.0	6.0	12.0	-5.0	1.0000	22.9	0.9650	27.0			64	6
94		LV-13.8L		13.800	L1	25.0	6.9	12.0	-5.0	1.0000	26.0	0.9646	27.0			64	6
95		LV-13.8T		13.800	L2	25.0	6.9	12.0	-5.0	1.0000	26.0	0.9646	27.0			64	6
97		FOR13A		13.800	F1	85.2	1.1	50.0	-50.0	1.0100	84.4	0.9999	111.0			64	6
98		FOR13B		13.800	F2	85.2	1.1	50.0	-50.0	1.0100	84.4	0.9999	111.0			64	6
101		BAY13A		13.800	B1	54.2	35.7	50.0	-25.0	1.0181	63.8	0.8351	96.0			61	6
102		BAY13B		13.800	B2	65.1	36.5	50.0	-25.0	1.0181	73.3	0.8721	96.0			61	6
108		BAY13C		13.800	B3	65.1	36.5	50.0	-25.0	1.0181	73.4	0.8721	100.0			61	6
116		PACORA13		13.800	P1	17.5	8.1	8.8	0.0	1.0100	19.1	0.9086	21.7			61	6
116		PACORA13		13.800	P2	17.5	8.1	8.8	0.0	1.0100	19.1	0.9086	21.7			61	6
117		CB250A-1		13.800	C1	91.9	58.7	75.6	0.0	1.0181	107.1	0.8425	143.5			62	6
142		CANJ13A		13.800	C1	45.1	15.5	29.0	-29.0	1.0180	46.9	0.9458	69.0			64	6
143		CANJ13B		13.800	C2	45.1	15.5	29.0	-29.0	1.0180	46.9	0.9458	69.0			64	6
150		GUALACA	13-213.800	G2	11.1	1.2	7.4	-7.4	1.0200	11.0	0.9944	14.8			64	6	
151		GUALACA	13.8	G1	11.1	1.2	7.4	-7.4	1.0200	11.0	0.9944	14.8			64	6	
152		BBLANCO_13.8	13.800	G1	8.7	1.5	7.0	-7.0	1.0200	8.6	0.9847	16.0			64	6	
152		BBLANCO_13.8	13.800	G2	8.7	1.5	7.0	-7.0	1.0200	8.6	0.9847	16.0			64	6	
156		TABASARAI	11313.800	G1	13.0	2.7	5.7	0.2	1.0200	13.0	0.9797	20.5			1	6	
156		TABASARAI	11313.800	G2	13.0	2.7	5.7	0.2	1.0200	13.0	0.9797	20.5			1	6	
193		GEBONYIC	13.800	G1	9.1	0.4	4.0	-4.0	1.0200	8.9	0.9988	35.3			64	6	
193		GEBONYIC	13.800	G2	9.1	0.4	4.0	-4.0	1.0200	8.9	0.9988	35.3			64	6	
193		GEBONYIC	13.800	G3	9.1	0.4	4.0	-4.0	1.0200	8.9	0.9988	35.3			64	6	
300		SVC-LV	13.200	1	0.3	168.8	300.0	-225.0	1.0327	163.4	0.0016	250.0			60	6	
302		PASOANCH	13.813.800	P1	4.3	2.0	2.0	-2.0	0.9697	4.9	0.9053	6.2			64	6	
303		SINDIGO	13.8	G1	9.0	0.0	5.0	0.0	1.1077	8.1	1.0000	13.5			64	6	
304		ALGA	13.8	A1	4.8	-2.3	2.3	-2.3	1.1051	4.8	0.9063	5.7			64	6	
304		ALGA	13.8	A2	4.8	-2.3	2.3	-2.3	1.1051	4.8	0.9063	5.7			64	6	
305		ELALTO	13.800	G1	17.0	-5.0	12.0	-5.0	1.0291	17.3	0.9595	20.6			64	6	
305		ELALTO	13.800	G2	17.0	-5.0	12.0	-5.0	1.0291	17.3	0.9595	20.6			64	6	
307		CHAN1 A	13.800	G1	95.0	0.2	50.0	-50.0	1.0200	93.1	1.0000	118.6			64	6	
308		CHAN1 B	13.800	G2	95.0	-18.8	50.0	-50.0	1.0000	96.8	0.9809	118.6			64	6	
312		PANDO	13.8	G1	12.0	-2.7	10.0	-5.0	1.0000	12.3	0.9753	19.9			64	6	

312	PANDO13.8	13.800	G2	12.0	-2.7	10.0	-5.0	1.0000	12.3	0.9753	19.9	64	6
316	MTE LIRIO13.13.800	G1	19.4	-5.0	12.0	-5.0	1.0174	19.6	0.9682	27.0	64	6	
316	MTE LIRIO13.13.800	G2	19.4	-5.0	12.0	-5.0	1.0174	19.6	0.9682	27.0	64	6	
317	MENDRE13.8	13.800	M1	9.1	0.0	0.0	0.0	1.1072	8.2	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.1	0.0	0.0	0.0	1.1072	8.2	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.4	0.0	0.0	0.0	1.1076	4.9	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.4	0.0	0.0	0.0	1.1076	4.9	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	1.0061	4.4	0.8928	6.2	64	6
340	PEDGALITO13813.800	P1	22.0	12.0	12.0	-5.0	1.0077	24.9	0.8783	27.0	64	6	
342	LORENA13.8	13.800	L1	12.7	-1.7	10.5	-5.0	1.0150	12.6	0.9913	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.1	-1.5	9.8	-9.8	1.0150	20.8	0.9975	33.0	64	6
343	PRUDENCIA_1	13.800	G2	21.1	-1.5	9.8	-9.8	1.0150	20.8	0.9975	33.0	64	6
346	LORENA 13-2	13.800	L2	12.7	-1.7	10.5	-5.0	1.0150	12.6	0.9913	19.9	64	6
350	MACANO 13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0833	3.2	0.9562	6.2	64	6
351	PERLAS N13.813.800	G1	9.3	5.0	5.0	-5.0	0.9866	10.7	0.8802	13.5	64	6	
352	PERLAS S13.813.800	G1	9.3	5.0	5.0	-5.0	0.9866	10.7	0.8802	13.5	64	6	
357	BARTOLO13.8	13.800	G1	6.5	1.4	3.7	-3.7	1.0150	6.5	0.9787	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.5	1.4	3.7	-3.7	1.0150	6.5	0.9787	8.5	64	6
359	CRUCES13.8	13.800	G1	3.6	0.5	2.3	-2.3	1.0150	3.6	0.9894	5.6	64	6
359	CRUCES13.8	13.800	G2	3.6	0.5	2.3	-2.3	1.0150	3.6	0.9894	5.6	64	6
361	ESTRECHO4.164.1600	G1	3.9	0.4	2.5	-2.5	1.0150	3.9	0.9944	5.6	64	6	
361	ESTRECHO4.164.1600	G2	3.9	0.4	2.5	-2.5	1.0150	3.9	0.9944	5.6	64	6	
363	LAGUNA 13.8	13.800	G1	3.7	0.2	2.4	-2.4	1.0150	3.6	0.9980	5.8	64	6
363	LAGUNA 13.8	13.800	G2	3.7	0.2	2.4	-2.4	1.0150	3.6	0.9980	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	1.0072	8.5	0.8911	8.9	64	6
368	RP-490	13.800	G1	4.5	-1.4	2.4	-2.4	1.0150	4.6	0.9568	5.5	64	6
368	RP-490	13.800	G2	4.5	-1.4	2.4	-2.4	1.0150	4.6	0.9568	5.5	64	6
369	HCALDERA13.813.800	G1	3.4	1.9	1.9	-1.9	1.0060	3.9	0.8689	4.3	64	6	
372	BJO FRIO 13	13.800	G1	26.7	-2.5	9.8	-9.8	1.0150	26.4	0.9955	33.0	64	6
372	BJO FRIO 13	13.800	G2	26.7	-2.5	9.8	-9.8	1.0150	26.4	0.9955	33.0	64	6
373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9850	5.1	0.8925	21.6	64	6	
374	SLORENZO13.813.800	G1	3.9	-0.6	2.0	-2.0	1.0150	3.9	0.9866	4.5	64	6	
374	SLORENZO13.813.800	G2	3.9	-0.6	2.0	-2.0	1.0150	3.9	0.9866	4.5	64	6	
376	PEDREG2 13.813.800	G1	6.2	-2.1	3.1	-3.1	1.0150	6.4	0.9462	7.2	64	6	
376	PEDREG2 13.813.800	G2	6.2	-2.1	3.1	-3.1	1.0150	6.4	0.9462	7.2	64	6	
507	CHAN2 A	13.800	G1	91.2	18.6	50.0	-50.0	1.0180	91.4	0.9798	118.6	64	6
508	CHAN2 B	13.800	G2	91.2	1.1	50.0	-50.0	1.0000	91.2	0.9999	118.6	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9171	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9171	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9171	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9171	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9171	10.9	62	6
524	TCATIVÁ 13B	13.800	G0	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9171	10.9	62	6

524	TCATIVÁ	13B	13.800	G6	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9171	10.9	62	6
524	TCATIVÁ	13B	13.800	G7	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9171	10.9	62	6
524	TCATIVÁ	13B	13.800	G8	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9171	10.9	62	6
524	TCATIVÁ	13B	13.800	G9	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9171	10.9	62	6
541	TOABRE		0.6000	1	30.1	0.0	0.0	0.0	0.9997	30.1	1.0000	88.9	64	6
703	BJOMIN13A		13.800	G1	26.1	2.5	13.0	-13.0	1.0200	25.7	0.9955	30.5	64	6
704	BJOMIN13B		13.800	G2	26.1	2.5	13.0	-13.0	1.0200	25.7	0.9955	30.5	64	6
705	BAITUN13A		13.800	G1	40.1	-2.4	26.6	-26.6	1.0200	39.4	0.9982	50.6	64	6
706	BAITUN13B		13.800	G2	40.1	-2.4	26.6	-26.6	1.0200	39.4	0.9982	50.6	64	6
720	PLANETA13.8		13.800	G1	4.5	2.0	2.0	-2.0	0.9697	5.1	0.9145	6.2	64	6
721	SVC-LV		13.200	1	0.3	122.1	300.0	-225.0	1.0238	119.2	0.0022	250.0	60	6
SUBSYSTEM TOTALS					1893.1	640.6	1732.9	-1238.8				3303.6		

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AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
126		MIR13A		12.000	G1	7.6	0.0	5.0	0.0	1.0254	7.4	1.0000	13.5			65	7
129		MIR13D		13.800	G4	34.3	7.6	15.0	0.0	1.0000	35.1	0.9760	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.2	2.8	8.0	0.0	1.0000	17.4	0.9866	27.7			65	7
140		GAT6A		6.9000	G1	1.9	0.6	2.0	-2.0	1.0000	2.0	0.9574	4.1			65	7
140		GAT6A		6.9000	G2	1.9	0.6	2.0	-2.0	1.0000	2.0	0.9574	4.1			65	7
140		GAT6A		6.9000	G3	1.9	0.6	2.0	-2.0	1.0000	2.0	0.9574	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-0.1	3.0	-3.0	1.0000	3.9	0.9993	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-0.1	3.0	-3.0	1.0000	3.9	0.9993	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-0.1	3.0	-3.0	1.0000	3.9	0.9993	6.2			65	7
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0085	18.2	0.9284	23.0			65	7
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0177	18.0	0.9284	23.0			65	7
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0177	18.0	0.9284	23.0			65	7
SUBSYSTEM TOTALS						127.6	32.3	76.5	5.5				184.9				

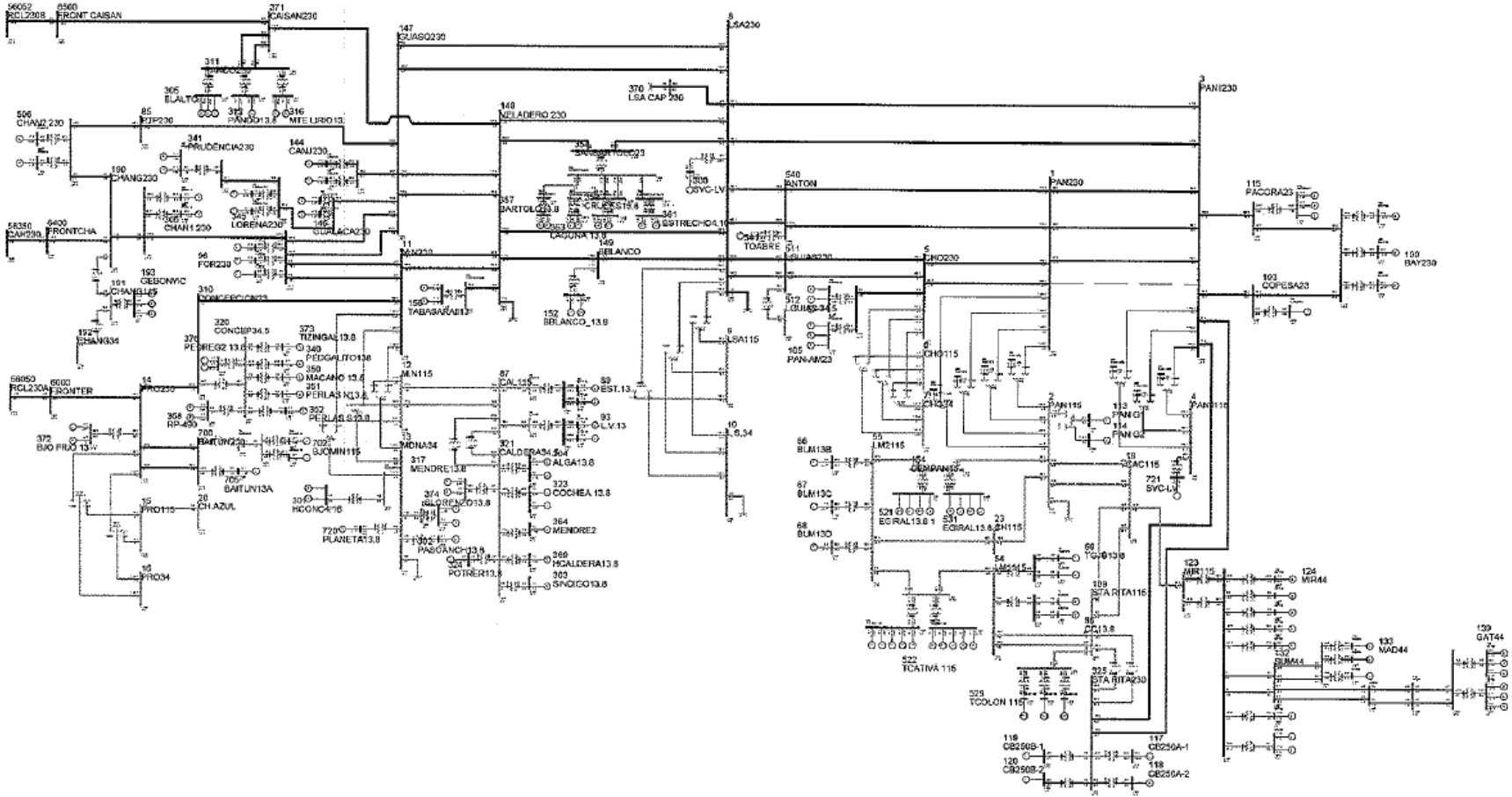
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO

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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	1372.9	1330.8	0.0	0.0	0.0	-2.5	44.5	-5.2
GUATEMAL	213.0	275.1	-198.3	0.0	277.2	-0.8	414.2	
2	869.7	855.0	0.0	0.0	0.0	1.0	13.7	0.0
SALVADOR	74.0	224.2	-70.7	0.0	229.0	-25.4	175.0	
3	1237.7	1203.0	0.0	0.0	0.0	0.9	33.8	0.0
HONDURAS	461.4	321.1	-47.6	0.0	294.0	54.3	427.6	
4	532.3	525.2	0.0	0.0	0.0	0.3	6.8	0.0
NICARAGU	33.1	207.6	-57.8	0.0	182.3	-47.2	112.7	
5	1298.0	1280.2	0.0	0.0	0.0	0.8	17.0	0.0
COSTA RI	201.3	520.4	-230.9	0.0	419.7	26.8	304.7	
6	1893.1	1844.6	0.0	0.0	0.0	-61.2	109.6	-54.8
PANAMA	640.6	374.6	-56.8	0.0	755.8	-12.8	1091.4	
7	127.6	65.9	0.0	0.0	0.0	60.6	1.2	60.0
ACANAL	32.3	13.4	0.0	0.0	0.0	5.1	13.8	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	7331.2	7104.7	0.0	0.0	0.0	0.0	226.5	0.0
	1655.7	1936.2	-662.1	0.0	2157.9	0.0	2539.5	

Contingencia Panamá - Panamá II



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:47
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CNT PANAMÁ - PMA II

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0149	233.42	14	PRO230	230.00	6	1.0285	236.55				
85	PTP230	230.00	6	1.0145	233.34	96	FOR230	230.00	6	1.0130	233.00				
100	BAY230	230.00	6	1.0245	235.63	144	CANJ230	230.00	6	1.0120	232.77				
146	GUALACA230	230.00	6	1.0163	233.74	147	GUASQ230	230.00	6	1.0117	232.70				
148	VELADERO	230230.00	6	1.0086	231.98	149	BBLANCO	230.00	6	1.0070	231.61				
155	TABASARAI	23230.00	6	1.0100	232.29	190	CHANG230	230.00	6	1.0273	236.28				
306	CHAN1	230	6	1.0243	235.60	310	CONCEPCION	23230.00	6	1.0209	234.81				
311	PANDO230	230.00	6	1.0437	240.04	341	PRUDENCIA	230230.00	6	1.0231	235.31				
345	LORENA230	230.00	6	1.0207	234.75	354	SANBARTOLO	23230.00	6	1.0041	230.94				
371	CAISAN230	230.00	6	1.0426	239.79	506	CHAN2	230	6	1.0284	236.53				
700	BAITUN230	230.00	6	1.0292	236.72	6000	FRONTER	230.00	6	1.0309	237.11				
6400	FRONTCHA	230.00	6	1.0286	236.58	6500	FRONT CAISAN	230.00	6	1.0417	239.58				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9772	224.75	3	PANII230	230.00	6	0.9829	226.06				
5	CHO230	230.00	6	0.9728	223.75	103	COPESA23	230.00	6	0.9895	227.59				
105	PAN-AM23	230.00	6	0.9728	223.75	115	PACORA23	230.00	6	0.9963	229.15				
325	STA RITA	230	6	0.9807	225.56	511	LGUIAS230	230.00	6	0.9834	226.18				
540	ANTON	230.00	6	0.9978	229.49										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:47
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CNT PANAMÁ - PMA II

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	1.0381	119.38	12		M.N115		115.00	6	1.0096	116.10
15		PRO115		115.00	6	1.0305	118.50	20		CH.AZUL		115.00	6	1.0312	118.59
54		LM1115		115.00	6	1.0211	117.43	55		LM2115		115.00	6	1.0218	117.51
61		FFIELD		115.00	6	1.0120	116.38	87		CAL115		115.00	6	1.0287	118.30
88		EST115		115.00	6	1.0322	118.70	92		L.V115		115.00	6	1.0300	118.45
109		STA RITA115		115.00	6	1.0235	117.71	154		CEMPAN15		115.00	6	1.0052	115.60
191		CHANG115		115.00	6	1.0194	117.23	522		TCATIVÁ 115		115.00	6	1.0217	117.50
529		TCOLON 115		115.00	6	1.0236	117.71	701		BAITUN115		115.00	6	1.0181	117.09
702		BJOMIN115		115.00	6	1.0185	117.13								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9719	111.77	6		CHO115		115.00	6	0.9744	112.05
18		CAC115		115.00	6	0.9716	111.74	19		C.V115		115.00	6	0.9782	112.49
21		C.BAN115		115.00	6	0.9585	110.23	23		CH115		115.00	6	0.9780	112.47
26		LOC115		115.00	6	0.9597	110.36	30		MAR115		115.00	6	0.9570	110.05
33		STM115		115.00	6	0.9689	111.43	37		SAN115		115.00	6	0.9581	110.18
48		TINAJ115		115.00	6	0.9678	111.29	50		M.O115		115.00	6	0.9680	111.32
52		TOC115		115.00	6	0.9957	114.50	123		MIR115		115.00	7	0.9788	112.56

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:47
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CNT PANAMÁ - PMA II

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
66		BLM13B		13.800	V2	38.0	22.2	25.0	0.0	1.0181	43.3	0.8637	47.0			62	6
67		BLM13C		13.800	V3	38.0	22.2	25.0	0.0	1.0181	43.3	0.8637	47.0			62	6
68		BLM13D		13.800	V4	38.0	23.2	25.0	0.0	1.0181	43.8	0.8539	47.0			62	6
90		EST-13L		13.800	E1	22.0	6.0	12.0	-5.0	1.0000	22.9	0.9649	27.0			64	6
91		EST-13T		13.800	E2	22.0	6.0	12.0	-5.0	1.0000	22.9	0.9649	27.0			64	6
94		LV-13.8L		13.800	L1	25.0	6.9	12.0	-5.0	1.0000	26.0	0.9646	27.0			64	6
95		LV-13.8T		13.800	L2	25.0	6.9	12.0	-5.0	1.0000	26.0	0.9646	27.0			64	6
97		FOR13A		13.800	F1	85.2	1.1	50.0	-50.0	1.0100	84.4	0.9999	111.0			64	6
98		FOR13B		13.800	F2	85.2	1.1	50.0	-50.0	1.0100	84.4	0.9999	111.0			64	6
101		BAY13A		13.800	B1	54.2	35.7	50.0	-25.0	1.0181	63.8	0.8355	96.0			61	6
102		BAY13B		13.800	B2	65.1	36.5	50.0	-25.0	1.0181	73.3	0.8723	96.0			61	6
108		BAY13C		13.800	B3	65.1	36.5	50.0	-25.0	1.0181	73.3	0.8723	100.0			61	6
116		PACORA13		13.800	P1	17.5	8.0	8.8	0.0	1.0100	19.1	0.9090	21.7			61	6
116		PACORA13		13.800	P2	17.5	8.0	8.8	0.0	1.0100	19.1	0.9090	21.7			61	6
117		CB250A-1		13.800	C1	91.9	58.9	75.6	0.0	1.0181	107.2	0.8420	143.5			62	6
142		CANJ13A		13.800	C1	45.1	15.5	29.0	-29.0	1.0180	46.9	0.9458	69.0			64	6
143		CANJ13B		13.800	C2	45.1	15.5	29.0	-29.0	1.0180	46.9	0.9458	69.0			64	6
150		GUALACA	13-213.800	G2	11.1	1.2	7.4	-7.4	1.0200	11.0	0.9944	14.8			64	6	
151		GUALACA	13.8	G1	11.1	1.2	7.4	-7.4	1.0200	11.0	0.9944	14.8			64	6	
152		BBLANCO_13.8	13.800	G1	8.7	1.5	7.0	-7.0	1.0200	8.6	0.9847	16.0			64	6	
152		BBLANCO_13.8	13.800	G2	8.7	1.5	7.0	-7.0	1.0200	8.6	0.9847	16.0			64	6	
156		TABASARAI	11313.800	G1	13.0	2.7	5.7	0.2	1.0200	13.0	0.9797	20.5			1	6	
156		TABASARAI	11313.800	G2	13.0	2.7	5.7	0.2	1.0200	13.0	0.9797	20.5			1	6	
193		GEBONYIC	13.800	G1	9.1	0.4	4.0	-4.0	1.0200	8.9	0.9988	35.3			64	6	
193		GEBONYIC	13.800	G2	9.1	0.4	4.0	-4.0	1.0200	8.9	0.9988	35.3			64	6	
193		GEBONYIC	13.800	G3	9.1	0.4	4.0	-4.0	1.0200	8.9	0.9988	35.3			64	6	
300		SVC-LV	13.200	1	0.3	171.2	300.0	-225.0	1.0331	165.8	0.0016	250.0			60	6	
302		PASOANCH	13.813.800	P1	4.3	2.0	2.0	-2.0	0.9697	4.9	0.9053	6.2			64	6	
303		SINDIGO	13.8	G1	9.0	0.0	5.0	0.0	1.1077	8.1	1.0000	13.5			64	6	
304		ALGA	13.8	A1	4.8	-2.3	2.3	-2.3	1.1051	4.8	0.9063	5.7			64	6	
304		ALGA	13.8	A2	4.8	-2.3	2.3	-2.3	1.1051	4.8	0.9063	5.7			64	6	
305		ELALTO	13.800	G1	17.0	-5.0	12.0	-5.0	1.0291	17.3	0.9595	20.6			64	6	
305		ELALTO	13.800	G2	17.0	-5.0	12.0	-5.0	1.0291	17.3	0.9595	20.6			64	6	
307		CHAN1 A	13.800	G1	95.0	0.2	50.0	-50.0	1.0200	93.1	1.0000	118.6			64	6	
308		CHAN1 B	13.800	G2	95.0	-18.8	50.0	-50.0	1.0000	96.8	0.9809	118.6			64	6	
312		PANDO	13.8	G1	12.0	-2.7	10.0	-5.0	1.0000	12.3	0.9753	19.9			64	6	

312	PANDO	13.8	13.800	G2	12.0	-2.7	10.0	-5.0	1.0000	12.3	0.9753	19.9	64	6
316	MTE LIRIO	13.13.800	G1	19.4	-5.0	12.0	-5.0	1.0174	19.6	0.9682	27.0	64	6	
316	MTE LIRIO	13.13.800	G2	19.4	-5.0	12.0	-5.0	1.0174	19.6	0.9682	27.0	64	6	
317	MENDRE	13.8	13.800	M1	9.1	0.0	0.0	0.0	1.1072	8.2	1.0000	35.3	64	6
317	MENDRE	13.8	13.800	M2	9.1	0.0	0.0	0.0	1.1072	8.2	1.0000	35.3	64	6
323	COCHEA	13.8	13.800	C1	5.4	0.0	0.0	0.0	1.1076	4.9	1.0000	35.3	64	6
323	COCHEA	13.8	13.800	C2	5.4	0.0	0.0	0.0	1.1076	4.9	1.0000	35.3	64	6
324	POTRER	13.8	13.800	P1	4.0	2.0	2.0	-2.0	1.0061	4.4	0.8928	6.2	64	6
340	PEDGALITO	13813.800	P1	22.0	12.0	12.0	-5.0	1.0077	24.9	0.8784	27.0	64	6	
342	LORENA	13.8	13.800	L1	12.7	-1.7	10.5	-5.0	1.0150	12.6	0.9913	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.1	-1.5	9.8	-9.8	1.0150	20.8	0.9975	33.0	64	6	
343	PRUDENCIA_1	13.800	G2	21.1	-1.5	9.8	-9.8	1.0150	20.8	0.9975	33.0	64	6	
346	LORENA	13-2	13.800	L2	12.7	-1.7	10.5	-5.0	1.0150	12.6	0.9913	19.9	64	6
350	MACANO	13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0833	3.2	0.9562	6.2	64	6
351	PERLAS N1	3.813.800	G1	9.3	5.0	5.0	-5.0	0.9866	10.7	0.8802	13.5	64	6	
352	PERLAS S1	3.813.800	G1	9.3	5.0	5.0	-5.0	0.9866	10.7	0.8802	13.5	64	6	
357	BARTOLO	13.8	13.800	G1	6.5	1.4	3.7	-3.7	1.0150	6.5	0.9787	8.5	64	6
357	BARTOLO	13.8	13.800	G2	6.5	1.4	3.7	-3.7	1.0150	6.5	0.9787	8.5	64	6
359	CRUCES	13.8	13.800	G1	3.6	0.5	2.3	-2.3	1.0150	3.6	0.9894	5.6	64	6
359	CRUCES	13.8	13.800	G2	3.6	0.5	2.3	-2.3	1.0150	3.6	0.9894	5.6	64	6
361	ESTRECHO	4.164.1600	G1	3.9	0.4	2.5	-2.5	1.0150	3.9	0.9944	5.6	64	6	
361	ESTRECHO	4.164.1600	G2	3.9	0.4	2.5	-2.5	1.0150	3.9	0.9944	5.6	64	6	
363	LAGUNA	13.8	13.800	G1	3.7	0.2	2.4	-2.4	1.0150	3.6	0.9980	5.8	64	6
363	LAGUNA	13.8	13.800	G2	3.7	0.2	2.4	-2.4	1.0150	3.6	0.9980	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	1.0072	8.5	0.8911	8.9	64	6	
368	RP-490	13.800	G1	4.5	-1.4	2.4	-2.4	1.0150	4.6	0.9568	5.5	64	6	
368	RP-490	13.800	G2	4.5	-1.4	2.4	-2.4	1.0150	4.6	0.9568	5.5	64	6	
369	HCALDERA	13.813.800	G1	3.4	1.9	1.9	-1.9	1.0060	3.9	0.8689	4.3	64	6	
372	BJO FRIO	13	13.800	G1	26.7	-2.5	9.8	-9.8	1.0150	26.4	0.9956	33.0	64	6
372	BJO FRIO	13	13.800	G2	26.7	-2.5	9.8	-9.8	1.0150	26.4	0.9956	33.0	64	6
373	TIZINGAL	13.813.800	G1	4.4	2.2	2.2	-2.2	0.9850	5.1	0.8926	21.6	64	6	
374	SLORENZO	13.813.800	G1	3.9	-0.6	2.0	-2.0	1.0150	3.9	0.9866	4.5	64	6	
374	SLORENZO	13.813.800	G2	3.9	-0.6	2.0	-2.0	1.0150	3.9	0.9866	4.5	64	6	
376	PEDREG2	13.813.800	G1	6.2	-2.1	3.1	-3.1	1.0150	6.4	0.9463	7.2	64	6	
376	PEDREG2	13.813.800	G2	6.2	-2.1	3.1	-3.1	1.0150	6.4	0.9463	7.2	64	6	
507	CHAN2 A	13.800	G1	91.2	18.6	50.0	-50.0	1.0180	91.4	0.9798	118.6	64	6	
508	CHAN2 B	13.800	G2	91.2	1.1	50.0	-50.0	1.0000	91.2	0.9999	118.6	64	6	
523	TCATIVÁ	13A	13.800	G1	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9159	10.9	62	6
523	TCATIVÁ	13A	13.800	G2	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9159	10.9	62	6
523	TCATIVÁ	13A	13.800	G3	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9159	10.9	62	6
523	TCATIVÁ	13A	13.800	G4	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9159	10.9	62	6
523	TCATIVÁ	13A	13.800	G5	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9159	10.9	62	6
524	TCATIVÁ	13B	13.800	G0	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9159	10.9	62	6

524	TCATIVÁ	13B	13.800	G6	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9159	10.9	62	6
524	TCATIVÁ	13B	13.800	G7	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9159	10.9	62	6
524	TCATIVÁ	13B	13.800	G8	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9159	10.9	62	6
524	TCATIVÁ	13B	13.800	G9	8.3	3.6	6.6	-6.6	1.0000	9.0	0.9159	10.9	62	6
541	TOABRE		0.6000	1	30.1	0.0	0.0	0.0	0.9990	30.1	1.0000	88.9	64	6
703	BJOMIN13A		13.800	G1	26.1	2.5	13.0	-13.0	1.0200	25.7	0.9955	30.5	64	6
704	BJOMIN13B		13.800	G2	26.1	2.5	13.0	-13.0	1.0200	25.7	0.9955	30.5	64	6
705	BAITUN13A		13.800	G1	40.1	-2.4	26.6	-26.6	1.0200	39.4	0.9982	50.6	64	6
706	BAITUN13B		13.800	G2	40.1	-2.4	26.6	-26.6	1.0200	39.4	0.9982	50.6	64	6
720	PLANETA13.8		13.800	G1	4.5	2.0	2.0	-2.0	0.9697	5.1	0.9145	6.2	64	6
721	SVC-LV		13.200	1	0.3	122.8	300.0	-225.0	1.0240	119.9	0.0022	250.0	60	6
SUBSYSTEM TOTALS					1893.2	644.4	1732.9	-1238.8				3303.6		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:47
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CNT PANAMÁ - PMA II

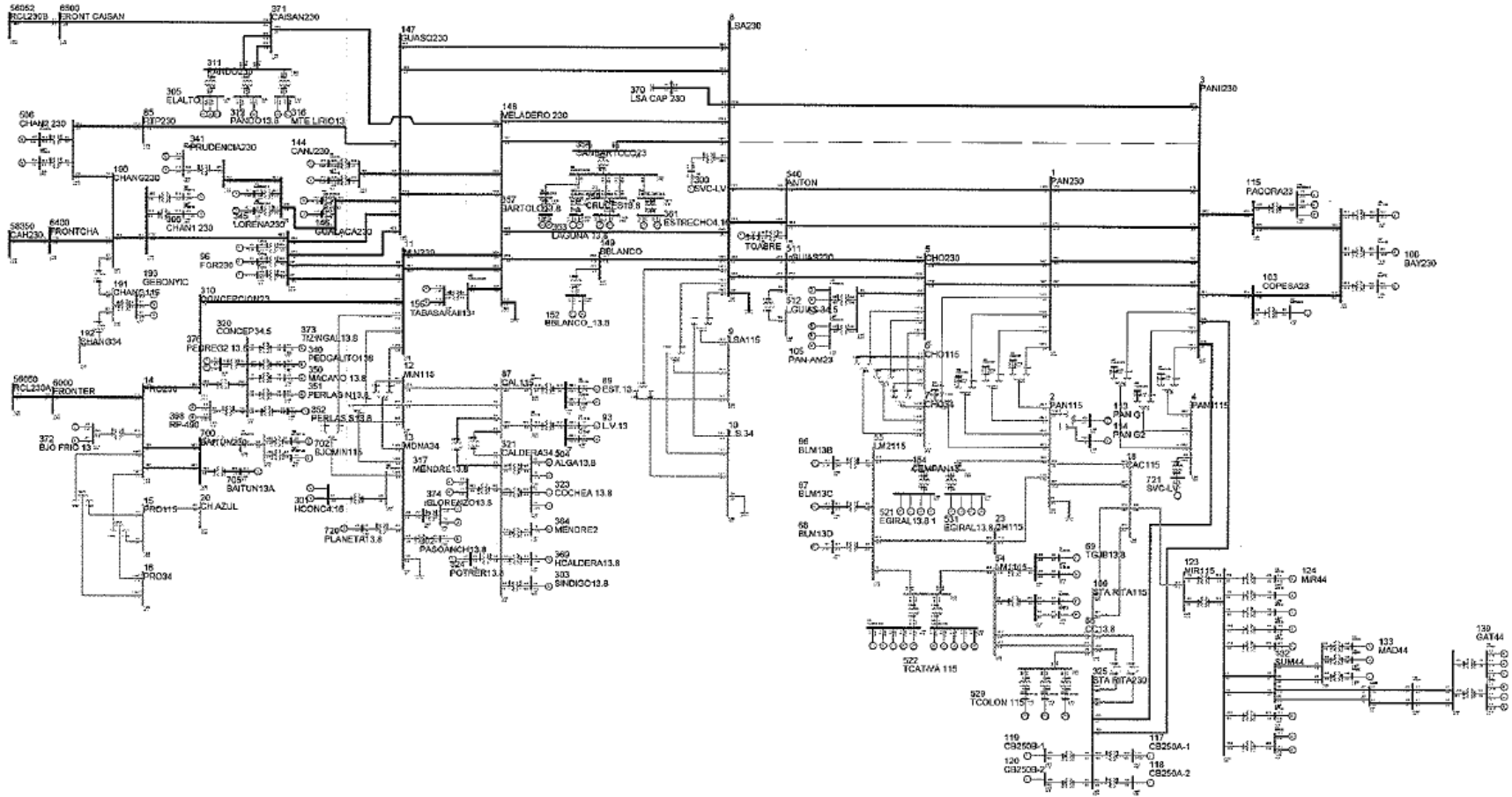
AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
126		MIR13A		12.000	G1	7.6	0.0	5.0	0.0	1.0250	7.4	1.0000	13.5			65	7
129		MIR13D		13.800	G4	34.3	7.8	15.0	0.0	1.0000	35.2	0.9752	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.2	3.0	8.0	0.0	1.0000	17.4	0.9852	27.7			65	7
140		GAT6A		6.9000	G1	1.9	0.6	2.0	-2.0	1.0000	2.0	0.9563	4.1			65	7
140		GAT6A		6.9000	G2	1.9	0.6	2.0	-2.0	1.0000	2.0	0.9563	4.1			65	7
140		GAT6A		6.9000	G3	1.9	0.6	2.0	-2.0	1.0000	2.0	0.9563	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	1.0082	18.2	0.9284	23.0			65	7
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0174	18.0	0.9284	23.0			65	7
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0174	18.0	0.9284	23.0			65	7
SUBSYSTEM TOTALS						127.6	32.6	76.5	5.5				184.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:48
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CNT PANAMÁ - PMA II IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1372.9	1330.8	0.0	0.0	0.0	-2.4	44.5	-5.2
GUATEMAL	213.0	275.1	-198.3	0.0	277.2	-0.8	414.2	
2	869.8	855.0	0.0	0.0	0.0	1.1	13.7	0.0
SALVADOR	74.0	224.2	-70.7	0.0	229.0	-25.4	175.0	
3	1237.7	1203.0	0.0	0.0	0.0	0.9	33.8	0.0
HONDURAS	461.4	321.1	-47.6	0.0	294.0	54.3	427.6	
4	532.3	525.2	0.0	0.0	0.0	0.3	6.8	0.0
NICARAGU	33.1	207.6	-57.8	0.0	182.3	-47.2	112.7	
5	1298.0	1280.2	0.0	0.0	0.0	0.8	17.0	0.0
COSTA RI	201.3	520.4	-230.9	0.0	419.7	26.8	304.7	
6	1893.2	1844.6	0.0	0.0	0.0	-61.3	109.8	-54.8
PANAMA	644.4	374.6	-56.7	0.0	753.1	-13.1	1092.7	
7	127.6	65.9	0.0	0.0	0.0	60.6	1.2	60.0
ACANAL	32.6	13.4	0.0	0.0	0.0	5.4	13.8	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	7331.4	7104.7	0.0	0.0	0.0	0.0	226.8	0.0
	1659.8	1936.2	-662.0	0.0	2155.3	0.0	2540.9	

Contingencia Llano Sánchez – Panamá II



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:49
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT. LLANO SÁNCHEZ - PANAMÁ II

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
66		BLM13B		13.800	V2	38.1	23.3	25.0	0.0	1.0181	43.9	0.8530	47.0			62	6
67		BLM13C		13.800	V3	38.1	23.3	25.0	0.0	1.0181	43.9	0.8530	47.0			62	6
68		BLM13D		13.800	V4	38.1	24.4	25.0	0.0	1.0181	44.4	0.8425	47.0			62	6
90		EST-13L		13.800	E1	22.1	6.1	12.0	-5.0	1.0000	22.9	0.9643	27.0			64	6
91		EST-13T		13.800	E2	22.1	6.1	12.0	-5.0	1.0000	22.9	0.9643	27.0			64	6
94		LV-13.8L		13.800	L1	25.1	6.9	12.0	-5.0	1.0000	26.0	0.9639	27.0			64	6
95		LV-13.8T		13.800	L2	25.1	6.9	12.0	-5.0	1.0000	26.0	0.9639	27.0			64	6
97		FOR13A		13.800	F1	85.4	1.5	50.0	-50.0	1.0100	84.6	0.9998	111.0			64	6
98		FOR13B		13.800	F2	85.4	1.5	50.0	-50.0	1.0100	84.6	0.9998	111.0			64	6
101		BAY13A		13.800	B1	54.4	38.3	50.0	-25.0	1.0181	65.4	0.8181	96.0			61	6
SWING																	
SYST																	
102		BAY13B		13.800	B2	65.3	39.1	50.0	-25.0	1.0181	74.8	0.8579	96.0			61	6
108		BAY13C		13.800	B3	65.3	39.1	50.0	-25.0	1.0181	74.8	0.8580	100.0			61	6
116		PACORA13		13.800	P1	17.6	8.8	8.8	0.0	1.0080	19.5	0.8934	21.7			61	6
116		PACORA13		13.800	P2	17.6	8.8	8.8	0.0	1.0080	19.5	0.8934	21.7			61	6
117		CB250A-1		13.800	C1	91.9	64.4	75.6	0.0	1.0181	110.2	0.8190	143.5			62	6
142		CANJ13A		13.800	C1	45.3	15.6	29.0	-29.0	1.0180	47.0	0.9454	69.0			64	6
143		CANJ13B		13.800	C2	45.3	15.6	29.0	-29.0	1.0180	47.0	0.9454	69.0			64	6
150		GUALACA	13-213.800	G2	11.2	1.3	7.4	-7.4	1.0200	11.0	0.9934	14.8			64	6	
151		GUALACA13.8	13.800	G1	11.2	1.3	7.4	-7.4	1.0200	11.0	0.9934	14.8			64	6	
152		BBLANCO_13.813.800	G1	8.7	1.6	7.0	-7.0	1.0200	8.7	0.9840	8.7	0.9840	16.0			64	6
152		BBLANCO_13.813.800	G2	8.7	1.6	7.0	-7.0	1.0200	8.7	0.9840	8.7	0.9840	16.0			64	6
156		TABASARAI1313.800	G1	13.0	2.8	5.7	0.2	1.0200	13.1	0.9783	13.1	0.9783	20.5			1	6
156		TABASARAI1313.800	G2	13.0	2.8	5.7	0.2	1.0200	13.1	0.9783	13.1	0.9783	20.5			1	6
193		GEBONYIC	13.800	G1	9.1	0.5	4.0	-4.0	1.0200	9.0	0.9987	35.3			64	6	
193		GEBONYIC	13.800	G2	9.1	0.5	4.0	-4.0	1.0200	9.0	0.9987	35.3			64	6	
193		GEBONYIC	13.800	G3	9.1	0.5	4.0	-4.0	1.0200	9.0	0.9987	35.3			64	6	
300		SVC-LV	13.200	1	0.5	237.1	300.0	-225.0	1.0454	226.8	0.0023	250.0			60	6	
302		PASOANCH13.813.800	P1	4.3	2.0	2.0	-2.0	0.9693	4.9	0.9057	4.9	0.9057	6.2			64	6
303		SINDIGO13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1074	8.2	1.0000	13.5			64	6	
304		ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.1048	4.8	0.9063	5.7			64	6	
304		ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.1048	4.8	0.9063	5.7			64	6	
305		ELALTO	13.800	G1	17.1	-5.0	12.0	-5.0	1.0286	17.3	0.9597	20.6			64	6	
305		ELALTO	13.800	G2	17.1	-5.0	12.0	-5.0	1.0286	17.3	0.9597	20.6			64	6	
307		CHAN1 A	13.800	G1	95.2	0.5	50.0	-50.0	1.0200	93.3	1.0000	118.6			64	6	
308		CHAN1 B	13.800	G2	95.2	-18.6	50.0	-50.0	1.0000	97.0	0.9814	118.6			64	6	

312	PANDO13.8	13.800	G1	12.1	-2.7	10.0	-5.0	1.0000	12.4	0.9763	19.9	64	6
312	PANDO13.8	13.800	G2	12.1	-2.7	10.0	-5.0	1.0000	12.4	0.9763	19.9	64	6
316	MTE LIRIO13.13.800	G1	19.4	-5.0	12.0	-5.0	1.0168	19.7	0.9684	27.0	64	6	
316	MTE LIRIO13.13.800	G2	19.4	-5.0	12.0	-5.0	1.0168	19.7	0.9684	27.0	64	6	
317	MENDRE13.8	13.800	M1	9.1	0.0	0.0	0.0	1.1069	8.2	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.1	0.0	0.0	0.0	1.1069	8.2	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.4	0.0	0.0	0.0	1.1073	4.9	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.4	0.0	0.0	0.0	1.1073	4.9	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	1.0058	4.4	0.8928	6.2	64	6
340	PEDGALITO13813.800	P1	22.1	12.0	12.0	-5.0	1.0075	25.0	0.8788	27.0	64	6	
342	LORENA13.8	13.800	L1	12.7	-1.6	10.5	-5.0	1.0150	12.7	0.9926	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.1	-1.4	9.8	-9.8	1.0150	20.9	0.9979	33.0	64	6
343	PRUDENCIA_1	13.800	G2	21.1	-1.4	9.8	-9.8	1.0150	20.9	0.9979	33.0	64	6
346	LORENA 13-2	13.800	L2	12.7	-1.6	10.5	-5.0	1.0150	12.7	0.9926	19.9	64	6
350	MACANO 13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0830	3.2	0.9565	6.2	64	6
351	PERLAS N13.813.800	G1	9.3	5.0	5.0	-5.0	0.9864	10.7	0.8808	13.5	64	6	
352	PERLAS S13.813.800	G1	9.3	5.0	5.0	-5.0	0.9864	10.7	0.8808	13.5	64	6	
357	BARTOLO13.8	13.800	G1	6.5	1.4	3.7	-3.7	1.0150	6.6	0.9784	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.5	1.4	3.7	-3.7	1.0150	6.6	0.9784	8.5	64	6
359	CRUCES13.8	13.800	G1	3.6	0.5	2.3	-2.3	1.0150	3.6	0.9891	5.6	64	6
359	CRUCES13.8	13.800	G2	3.6	0.5	2.3	-2.3	1.0150	3.6	0.9891	5.6	64	6
361	ESTRECHO4.164.1600	G1	3.9	0.4	2.5	-2.5	1.0150	3.9	0.9942	5.6	64	6	
361	ESTRECHO4.164.1600	G2	3.9	0.4	2.5	-2.5	1.0150	3.9	0.9942	5.6	64	6	
363	LAGUNA 13.8	13.800	G1	3.7	0.2	2.4	-2.4	1.0150	3.6	0.9979	5.8	64	6
363	LAGUNA 13.8	13.800	G2	3.7	0.2	2.4	-2.4	1.0150	3.6	0.9979	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	1.0069	8.5	0.8911	8.9	64	6
368	RP-490	13.800	G1	4.5	-1.3	2.4	-2.4	1.0150	4.6	0.9580	5.5	64	6
368	RP-490	13.800	G2	4.5	-1.3	2.4	-2.4	1.0150	4.6	0.9580	5.5	64	6
369	HCALDERA13.813.800	G1	3.4	1.9	1.9	-1.9	1.0057	3.9	0.8689	4.3	64	6	
372	BJO FRIO 13	13.800	G1	26.7	-2.4	9.8	-9.8	1.0150	26.4	0.9959	33.0	64	6
372	BJO FRIO 13	13.800	G2	26.7	-2.4	9.8	-9.8	1.0150	26.4	0.9959	33.0	64	6
373	TIZINGAL13.813.800	G1	4.5	2.2	2.2	-2.2	0.9847	5.1	0.8941	21.6	64	6	
374	SLORENZO13.813.800	G1	3.9	-0.6	2.0	-2.0	1.0150	3.8	0.9876	4.5	64	6	
374	SLORENZO13.813.800	G2	3.9	-0.6	2.0	-2.0	1.0150	3.8	0.9876	4.5	64	6	
376	PEDREG2 13.813.800	G1	6.2	-2.1	3.1	-3.1	1.0150	6.4	0.9477	7.2	64	6	
376	PEDREG2 13.813.800	G2	6.2	-2.1	3.1	-3.1	1.0150	6.4	0.9477	7.2	64	6	
507	CHAN2 A	13.800	G1	91.4	18.8	50.0	-50.0	1.0180	91.7	0.9794	118.6	64	6
508	CHAN2 B	13.800	G2	91.4	1.3	50.0	-50.0	1.0000	91.4	0.9999	118.6	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	3.9	6.6	-6.6	1.0000	9.2	0.9038	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	3.9	6.6	-6.6	1.0000	9.2	0.9038	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	3.9	6.6	-6.6	1.0000	9.2	0.9038	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	3.9	6.6	-6.6	1.0000	9.2	0.9038	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	3.9	6.6	-6.6	1.0000	9.2	0.9038	10.9	62	6

524	TCATIVÁ	13B	13.800	G0	8.3	3.9	6.6	-6.6	1.0000	9.2	0.9038	10.9	62	6
524	TCATIVÁ	13B	13.800	G6	8.3	3.9	6.6	-6.6	1.0000	9.2	0.9038	10.9	62	6
524	TCATIVÁ	13B	13.800	G7	8.3	3.9	6.6	-6.6	1.0000	9.2	0.9038	10.9	62	6
524	TCATIVÁ	13B	13.800	G8	8.3	3.9	6.6	-6.6	1.0000	9.2	0.9038	10.9	62	6
524	TCATIVÁ	13B	13.800	G9	8.3	3.9	6.6	-6.6	1.0000	9.2	0.9038	10.9	62	6
541	TOABRE		0.6000	1	30.2	0.0	0.0	0.0	0.9922	30.4	1.0000	88.9	64	6
703	BJOMIN13A		13.800	G1	26.1	2.5	13.0	-13.0	1.0200	25.7	0.9954	30.5	64	6
704	BJOMIN13B		13.800	G2	26.1	2.5	13.0	-13.0	1.0200	25.7	0.9954	30.5	64	6
705	BAITUN13A		13.800	G1	40.2	-2.2	26.6	-26.6	1.0200	39.5	0.9984	50.6	64	6
706	BAITUN13B		13.800	G2	40.2	-2.2	26.6	-26.6	1.0200	39.5	0.9984	50.6	64	6
720	PLANETA13.8		13.800	G1	4.5	2.0	2.0	-2.0	0.9693	5.1	0.9145	6.2	64	6
721	SVC-LV		13.200	1	0.5	161.0	300.0	-225.0	1.0312	156.2	0.0033	250.0	60	6
SUBSYSTEM TOTALS					1898.1	773.9	1732.9	-1238.8				3303.6		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:49
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT. LLANO SÁNCHEZ - PANAMÁ II

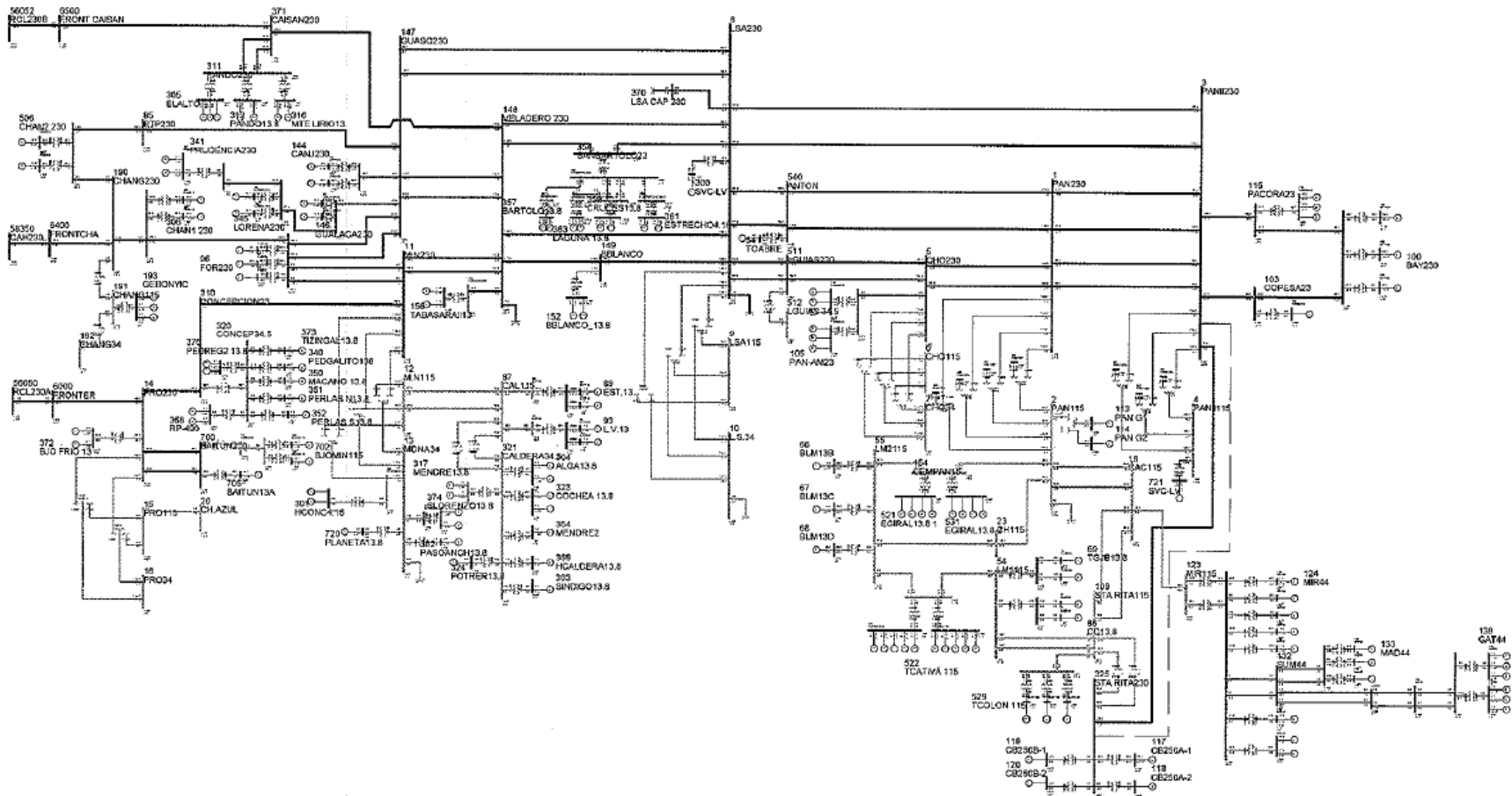
AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
126		MIR13A		12.000	G1	7.6	0.0	5.0	0.0	1.0233	7.5	1.0000	13.5			65	7
129		MIR13D		13.800	G4	34.4	8.4	15.0	0.0	1.0000	35.4	0.9714	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.2	3.7	8.0	0.0	1.0000	17.6	0.9775	27.7			65	7
140		GAT6A		6.9000	G1	1.9	0.7	2.0	-2.0	1.0000	2.0	0.9451	4.1			65	7
140		GAT6A		6.9000	G2	1.9	0.7	2.0	-2.0	1.0000	2.0	0.9451	4.1			65	7
140		GAT6A		6.9000	G3	1.9	0.7	2.0	-2.0	1.0000	2.0	0.9451	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-0.1	3.0	-3.0	1.0000	3.9	0.9999	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-0.1	3.0	-3.0	1.0000	3.9	0.9999	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-0.1	3.0	-3.0	1.0000	3.9	0.9999	6.2			65	7
170		MIR13G		13.800	M1	17.1	6.8	11.2	6.8	1.0067	18.3	0.9287	23.0			65	7
171		MIR13H		13.800	M1	17.1	6.8	11.2	6.8	1.0158	18.1	0.9287	23.0			65	7
171		MIR13H		13.800	M2	17.1	6.8	11.2	6.8	1.0158	18.1	0.9287	23.0			65	7
SUBSYSTEM TOTALS						127.9	34.4	76.5	5.5				184.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:50
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CONT. LLANO SÁNCHEZ - PANAMÁ II

X-- AREA	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1375.7	1330.8	0.0	0.0	0.0	0.3	44.6	-5.2
GUATEMAL	213.3	275.1	-198.3	0.0	277.2	-1.2	414.9	
2	870.8	855.0	0.0	0.0	0.0	2.1	13.7	0.0
SALVADOR	74.1	224.2	-70.7	0.0	229.0	-25.6	175.3	
3	1238.6	1203.0	0.0	0.0	0.0	1.8	33.8	0.0
HONDURAS	461.6	321.1	-47.6	0.0	293.9	54.2	427.8	
4	532.6	525.2	0.0	0.0	0.0	0.6	6.8	0.0
NICARAGU	33.3	207.6	-57.7	0.0	182.2	-47.3	113.0	
5	1299.5	1280.2	0.0	0.0	0.0	2.1	17.2	0.0
COSTA RI	203.2	520.4	-230.8	0.0	419.5	26.6	306.6	
6	1898.1	1844.6	0.0	0.0	0.0	-67.7	121.2	-54.8
PANAMA	773.9	374.6	-56.2	0.0	707.9	-13.7	1177.1	
7	127.9	65.9	0.0	0.0	0.0	60.8	1.2	60.0
ACANAL	34.4	13.4	0.0	0.0	0.0	7.0	14.0	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	7343.1	7104.7	0.0	0.0	0.0	0.0	238.5	0.0
	1793.9	1936.2	-661.3	0.0	2109.8	0.0	2628.8	

Contingencia Santa Rita – Panamá II



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:54
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CNT STA RITA-PMA II

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
9		LSA115		115.00	6	1.0381	119.38	12		M.N115		115.00	6	1.0096	116.10
15		PRO115		115.00	6	1.0305	118.51	20		CH.AZUL		115.00	6	1.0312	118.59
54		LM1115		115.00	6	1.0206	117.36	55		LM2115		115.00	6	1.0213	117.45
61		FFIELD		115.00	6	1.0114	116.32	87		CAL115		115.00	6	1.0287	118.30
88		EST115		115.00	6	1.0322	118.70	92		L.V115		115.00	6	1.0300	118.45
109		STA RITA115		115.00	6	1.0227	117.61	154		CEMPAN15		115.00	6	1.0050	115.57
191		CHANG115		115.00	6	1.0194	117.23	522		TCATIVÁ 115		115.00	6	1.0212	117.44
529		TCOLON 115		115.00	6	1.0227	117.61	701		BAITUN115		115.00	6	1.0182	117.09
702		BJOMIN115		115.00	6	1.0185	117.13								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9724	111.82	6		CHO115		115.00	6	0.9749	112.12
18		CAC115		115.00	6	0.9721	111.79	19		C.V115		115.00	6	0.9783	112.50
21		C.BAN115		115.00	6	0.9589	110.28	23		CH115		115.00	6	0.9781	112.48
26		LOC115		115.00	6	0.9601	110.41	30		MAR115		115.00	6	0.9574	110.10
33		STM115		115.00	6	0.9694	111.48	37		SAN115		115.00	6	0.9585	110.22
48		TINAJ115		115.00	6	0.9682	111.35	50		M.O115		115.00	6	0.9684	111.37
52		TOC115		115.00	6	0.9957	114.50	123		MIR115		115.00	7	0.9792	112.60

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:54
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CNT STA RITA-PMA II

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
66		BLM13B		13.800	V2	38.0	22.4	25.0	0.0	1.0181	43.4	0.8614	47.0			62	6
67		BLM13C		13.800	V3	38.0	22.4	25.0	0.0	1.0181	43.4	0.8614	47.0			62	6
68		BLM13D		13.800	V4	38.0	23.4	25.0	0.0	1.0181	43.9	0.8514	47.0			62	6
90		EST-13L		13.800	E1	22.0	6.0	12.0	-5.0	1.0000	22.9	0.9650	27.0			64	6
91		EST-13T		13.800	E2	22.0	6.0	12.0	-5.0	1.0000	22.9	0.9650	27.0			64	6
94		LV-13.8L		13.800	L1	25.0	6.9	12.0	-5.0	1.0000	26.0	0.9646	27.0			64	6
95		LV-13.8T		13.800	L2	25.0	6.9	12.0	-5.0	1.0000	26.0	0.9646	27.0			64	6
97		FOR13A		13.800	F1	85.2	1.1	50.0	-50.0	1.0100	84.4	0.9999	111.0			64	6
98		FOR13B		13.800	F2	85.2	1.1	50.0	-50.0	1.0100	84.4	0.9999	111.0			64	6
101		BAY13A		13.800	B1	54.1	35.9	50.0	-25.0	1.0181	63.8	0.8335	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	65.1	36.7	50.0	-25.0	1.0181	73.4	0.8711	96.0			61	6
108		BAY13C		13.800	B3	65.1	36.7	50.0	-25.0	1.0181	73.4	0.8711	100.0			61	6
116		PACORA13		13.800	P1	17.5	8.1	8.8	0.0	1.0100	19.1	0.9068	21.7			61	6
116		PACORA13		13.800	P2	17.5	8.1	8.8	0.0	1.0100	19.1	0.9068	21.7			61	6
117		CB250A-1		13.800	C1	91.9	61.2	75.6	0.0	1.0181	108.4	0.8323	143.5			62	6
142		CANJ13A		13.800	C1	45.1	15.5	29.0	-29.0	1.0180	46.9	0.9458	69.0			64	6
143		CANJ13B		13.800	C2	45.1	15.5	29.0	-29.0	1.0180	46.9	0.9458	69.0			64	6
150		GUALACA	13-213.800	G2	11.1	1.2	7.4	-7.4	1.0200	11.0	0.9944	14.8			64	6	
151		GUALACA13.8	13.800	G1	11.1	1.2	7.4	-7.4	1.0200	11.0	0.9944	14.8			64	6	
152		BBLANCO_13.813.800	G1	8.7	1.5	7.0	-7.0	1.0200	8.6	0.9847	16.0			64	6		
152		BBLANCO_13.813.800	G2	8.7	1.5	7.0	-7.0	1.0200	8.6	0.9847	16.0			64	6		
156		TABASARAI1313.800	G1	13.0	2.7	5.7	0.2	1.0200	13.0	0.9797	20.5					1	6
156		TABASARAI1313.800	G2	13.0	2.7	5.7	0.2	1.0200	13.0	0.9797	20.5					1	6
193		GEBONYIC	13.800	G1	9.1	0.4	4.0	-4.0	1.0200	8.9	0.9988	35.3			64	6	
193		GEBONYIC	13.800	G2	9.1	0.4	4.0	-4.0	1.0200	8.9	0.9988	35.3			64	6	
193		GEBONYIC	13.800	G3	9.1	0.4	4.0	-4.0	1.0200	8.9	0.9988	35.3			64	6	
300		SVC-LV	13.200	1	0.3	170.3	300.0	-225.0	1.0330	164.9	0.0016	250.0			60	6	
302		PASOANCH13.813.800	P1	4.3	2.0	2.0	-2.0	0.9697	4.9	0.9053	6.2			64	6		
303		SINDIGO13.8	13.800	G1	9.0	0.0	5.0	0.0	1.1077	8.1	1.0000	13.5			64	6	
304		ALGA13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.1051	4.8	0.9063	5.7			64	6	
304		ALGA13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.1051	4.8	0.9063	5.7			64	6	
305		ELALTO	13.800	G1	17.0	-5.0	12.0	-5.0	1.0291	17.3	0.9595	20.6			64	6	
305		ELALTO	13.800	G2	17.0	-5.0	12.0	-5.0	1.0291	17.3	0.9595	20.6			64	6	
307		CHAN1 A	13.800	G1	95.0	0.2	50.0	-50.0	1.0200	93.1	1.0000	118.6			64	6	
308		CHAN1 B	13.800	G2	95.0	-18.8	50.0	-50.0	1.0000	96.8	0.9809	118.6			64	6	

312	PANDO13.8	13.800	G1	12.0	-2.7	10.0	-5.0	1.0000	12.3	0.9753	19.9	64	6
312	PANDO13.8	13.800	G2	12.0	-2.7	10.0	-5.0	1.0000	12.3	0.9753	19.9	64	6
316	MTE LIRIO13.13.800	G1	19.4	-5.0	12.0	-5.0	1.0174	19.6	0.9682	27.0	64	6	
316	MTE LIRIO13.13.800	G2	19.4	-5.0	12.0	-5.0	1.0174	19.6	0.9682	27.0	64	6	
317	MENDRE13.8	13.800	M1	9.1	0.0	0.0	0.0	1.1072	8.2	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	9.1	0.0	0.0	0.0	1.1072	8.2	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.4	0.0	0.0	0.0	1.1076	4.9	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.4	0.0	0.0	0.0	1.1076	4.9	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	1.0061	4.4	0.8928	6.2	64	6
340	PEDGALITO13813.800	P1	22.0	12.0	12.0	-5.0	1.0077	24.9	0.8783	27.0	64	6	
342	LORENA13.8	13.800	L1	12.7	-1.7	10.5	-5.0	1.0150	12.6	0.9913	19.9	64	6
343	PRUDENCIA_1	13.800	G1	21.1	-1.5	9.8	-9.8	1.0150	20.8	0.9975	33.0	64	6
343	PRUDENCIA_1	13.800	G2	21.1	-1.5	9.8	-9.8	1.0150	20.8	0.9975	33.0	64	6
346	LORENA 13-2	13.800	L2	12.7	-1.7	10.5	-5.0	1.0150	12.6	0.9913	19.9	64	6
350	MACANO 13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0833	3.2	0.9562	6.2	64	6
351	PERLAS N13.813.800	G1	9.3	5.0	5.0	-5.0	0.9866	10.7	0.8802	13.5	64	6	
352	PERLAS S13.813.800	G1	9.3	5.0	5.0	-5.0	0.9866	10.7	0.8802	13.5	64	6	
357	BARTOLO13.8	13.800	G1	6.5	1.4	3.7	-3.7	1.0150	6.5	0.9787	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.5	1.4	3.7	-3.7	1.0150	6.5	0.9787	8.5	64	6
359	CRUCES13.8	13.800	G1	3.6	0.5	2.3	-2.3	1.0150	3.6	0.9894	5.6	64	6
359	CRUCES13.8	13.800	G2	3.6	0.5	2.3	-2.3	1.0150	3.6	0.9894	5.6	64	6
361	ESTRECHO4.164.1600	G1	3.9	0.4	2.5	-2.5	1.0150	3.9	0.9944	5.6	64	6	
361	ESTRECHO4.164.1600	G2	3.9	0.4	2.5	-2.5	1.0150	3.9	0.9944	5.6	64	6	
363	LAGUNA 13.8	13.800	G1	3.7	0.2	2.4	-2.4	1.0150	3.6	0.9980	5.8	64	6
363	LAGUNA 13.8	13.800	G2	3.7	0.2	2.4	-2.4	1.0150	3.6	0.9980	5.8	64	6
364	MENDRE2	13.800	G1	7.6	3.9	3.9	-3.9	1.0072	8.5	0.8911	8.9	64	6
368	RP-490	13.800	G1	4.5	-1.4	2.4	-2.4	1.0150	4.6	0.9568	5.5	64	6
368	RP-490	13.800	G2	4.5	-1.4	2.4	-2.4	1.0150	4.6	0.9568	5.5	64	6
369	HCALDERA13.813.800	G1	3.4	1.9	1.9	-1.9	1.0060	3.9	0.8689	4.3	64	6	
372	BJO FRIO 13	13.800	G1	26.7	-2.5	9.8	-9.8	1.0150	26.4	0.9955	33.0	64	6
372	BJO FRIO 13	13.800	G2	26.7	-2.5	9.8	-9.8	1.0150	26.4	0.9955	33.0	64	6
373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9850	5.1	0.8925	21.6	64	6	
374	SLORENZO13.813.800	G1	3.9	-0.6	2.0	-2.0	1.0150	3.9	0.9866	4.5	64	6	
374	SLORENZO13.813.800	G2	3.9	-0.6	2.0	-2.0	1.0150	3.9	0.9866	4.5	64	6	
376	PEDREG2 13.813.800	G1	6.2	-2.1	3.1	-3.1	1.0150	6.4	0.9462	7.2	64	6	
376	PEDREG2 13.813.800	G2	6.2	-2.1	3.1	-3.1	1.0150	6.4	0.9462	7.2	64	6	
507	CHAN2 A	13.800	G1	91.2	18.6	50.0	-50.0	1.0180	91.4	0.9798	118.6	64	6
508	CHAN2 B	13.800	G2	91.2	1.1	50.0	-50.0	1.0000	91.2	0.9999	118.6	64	6
523	TCATIVÁ 13A	13.800	G1	8.3	3.7	6.6	-6.6	1.0000	9.1	0.9132	10.9	62	6
523	TCATIVÁ 13A	13.800	G2	8.3	3.7	6.6	-6.6	1.0000	9.1	0.9132	10.9	62	6
523	TCATIVÁ 13A	13.800	G3	8.3	3.7	6.6	-6.6	1.0000	9.1	0.9132	10.9	62	6
523	TCATIVÁ 13A	13.800	G4	8.3	3.7	6.6	-6.6	1.0000	9.1	0.9132	10.9	62	6
523	TCATIVÁ 13A	13.800	G5	8.3	3.7	6.6	-6.6	1.0000	9.1	0.9132	10.9	62	6

524	TCATIVÁ	13B	13.800	G0	8.3	3.7	6.6	-6.6	1.0000	9.1	0.9132	10.9	62	6
524	TCATIVÁ	13B	13.800	G6	8.3	3.7	6.6	-6.6	1.0000	9.1	0.9132	10.9	62	6
524	TCATIVÁ	13B	13.800	G7	8.3	3.7	6.6	-6.6	1.0000	9.1	0.9132	10.9	62	6
524	TCATIVÁ	13B	13.800	G8	8.3	3.7	6.6	-6.6	1.0000	9.1	0.9132	10.9	62	6
524	TCATIVÁ	13B	13.800	G9	8.3	3.7	6.6	-6.6	1.0000	9.1	0.9132	10.9	62	6
541	TOABRE		0.6000	1	30.1	0.0	0.0	0.0	0.9994	30.1	1.0000	88.9	64	6
703	BJOMIN13A		13.800	G1	26.1	2.5	13.0	-13.0	1.0200	25.7	0.9955	30.5	64	6
704	BJOMIN13B		13.800	G2	26.1	2.5	13.0	-13.0	1.0200	25.7	0.9955	30.5	64	6
705	BAITUN13A		13.800	G1	40.1	-2.4	26.6	-26.6	1.0200	39.4	0.9982	50.6	64	6
706	BAITUN13B		13.800	G2	40.1	-2.4	26.6	-26.6	1.0200	39.4	0.9982	50.6	64	6
720	PLANETA13.8		13.800	G1	4.5	2.0	2.0	-2.0	0.9697	5.1	0.9145	6.2	64	6
721	SVC-LV		13.200	1	0.3	124.8	300.0	-225.0	1.0244	121.8	0.0022	250.0	60	6
SUBSYSTEM TOTALS					1893.0	650.0	1732.9	-1238.8				3303.6		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:54
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CNT STA RITA-PMA II

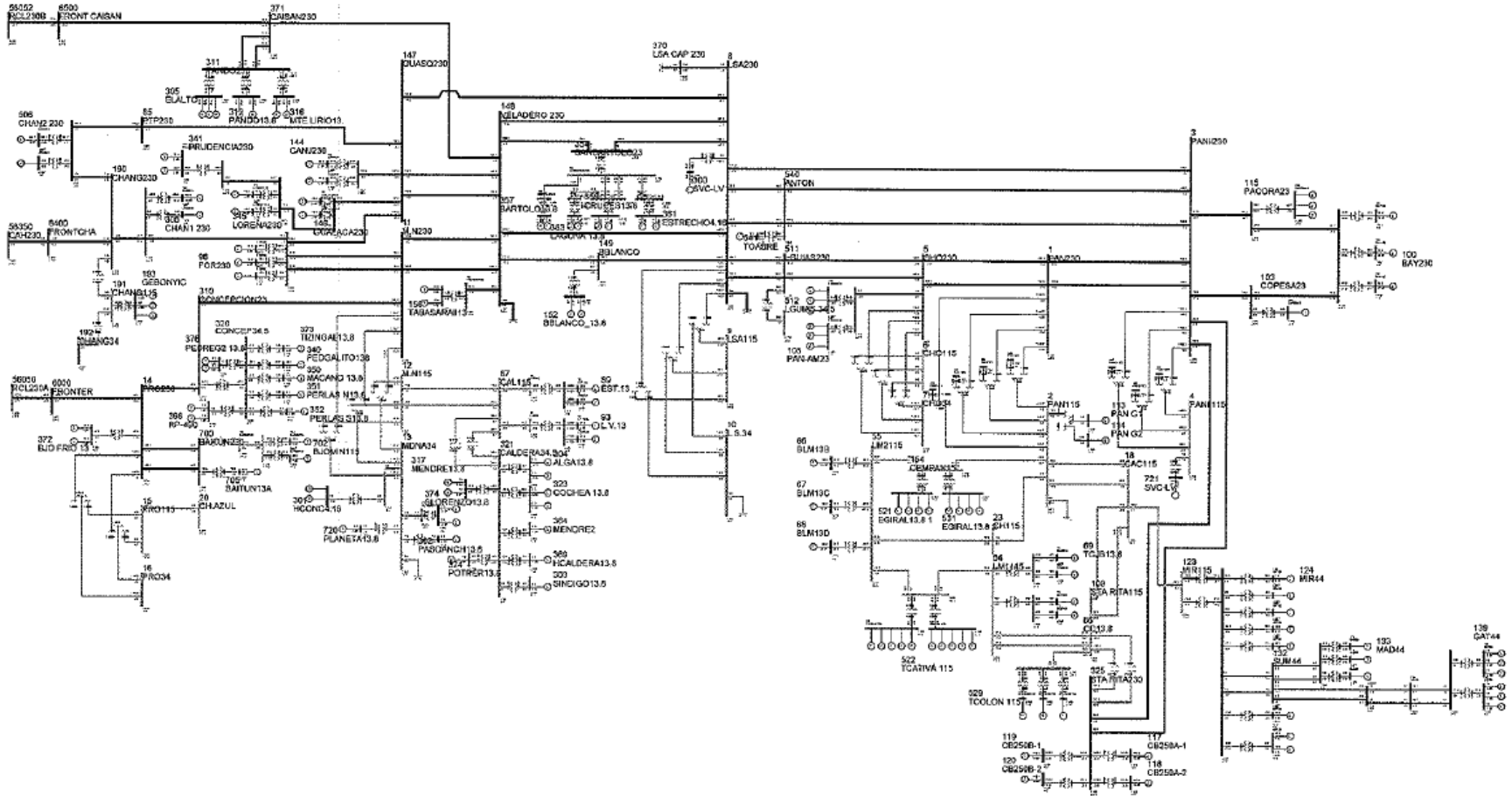
AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
126		MIR13A		12.000	G1	7.6	0.0	5.0	0.0	1.0252	7.4	1.0000	13.5			65	7
129		MIR13D		13.800	G4	34.3	7.7	15.0	0.0	1.0000	35.1	0.9757	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.2	2.9	8.0	0.0	1.0000	17.4	0.9859	27.7			65	7
140		GAT6A		6.9000	G1	1.9	0.6	2.0	-2.0	1.0000	2.0	0.9541	4.1			65	7
140		GAT6A		6.9000	G2	1.9	0.6	2.0	-2.0	1.0000	2.0	0.9541	4.1			65	7
140		GAT6A		6.9000	G3	1.9	0.6	2.0	-2.0	1.0000	2.0	0.9541	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-0.1	3.0	-3.0	1.0000	3.9	0.9995	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-0.1	3.0	-3.0	1.0000	3.9	0.9995	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-0.1	3.0	-3.0	1.0000	3.9	0.9995	6.2			65	7
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0084	18.2	0.9284	23.0			65	7
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0176	18.0	0.9284	23.0			65	7
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0176	18.0	0.9284	23.0			65	7
SUBSYSTEM TOTALS						127.6	32.5	76.5	5.5			184.9					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:56
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO CNT STA RITA-PMA II IN MW/MVAR

X-- AREA	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1372.9	1330.8	0.0	0.0	0.0	-2.5	44.5	-5.2
GUATEMAL	213.0	275.1	-198.3	0.0	277.2	-0.8	414.2	
2	869.7	855.0	0.0	0.0	0.0	1.0	13.7	0.0
SALVADOR	74.0	224.2	-70.7	0.0	229.0	-25.4	175.0	
3	1237.7	1203.0	0.0	0.0	0.0	0.9	33.8	0.0
HONDURAS	461.4	321.1	-47.6	0.0	294.0	54.3	427.6	
4	532.3	525.2	0.0	0.0	0.0	0.3	6.8	0.0
NICARAGU	33.1	207.6	-57.8	0.0	182.3	-47.2	112.7	
5	1298.0	1280.2	0.0	0.0	0.0	0.8	17.0	0.0
COSTA RI	201.3	520.4	-230.9	0.0	419.7	26.8	304.7	
6	1893.0	1844.6	0.0	0.0	0.0	-61.2	109.5	-54.8
PANAMA	650.0	374.6	-56.7	0.0	747.2	-13.0	1092.4	
7	127.6	65.9	0.0	0.0	0.0	60.5	1.2	60.0
ACANAL	32.5	13.4	0.0	0.0	0.0	5.3	13.8	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	7331.1	7104.7	0.0	0.0	0.0	0.0	226.4	0.0
	1665.3	1936.2	-662.0	0.0	2149.4	0.0	2540.5	

Demanda Máxima de Verano



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:58
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-VERANO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0045	231.03	14	PRO230	230.00	6	1.0184	234.22				
85	PTP230	230.00	6	1.0074	231.69	96	FOR230	230.00	6	1.0040	230.92				
100	BAY230	230.00	6	1.0272	236.26	115	PACORA23	230.00	6	1.0026	230.59				
144	CANJ230	230.00	6	1.0025	230.57	146	GUALACA230	230.00	6	1.0069	231.59				
147	GUASQ230	230.00	6	1.0024	230.56	148	VELADERO 230	230.00	6	1.0019	230.44				
149	BBLANCO	230.00	6	1.0006	230.15	155	TABASARAI230	230.00	6	1.0027	230.63				
190	CHANG230	230.00	6	1.0173	233.99	306	CHAN1 230	230.00	6	1.0147	233.38				
310	CONCEPCION230	230.00	6	1.0129	232.98	311	PANDO230	230.00	6	1.0357	238.21				
341	PRUDENCIA230	230.00	6	1.0140	233.21	345	LORENA230	230.00	6	1.0115	232.64				
371	CAISAN230	230.00	6	1.0347	237.98	506	CHAN2 230	230.00	6	1.0180	234.15				
540	ANTON	230.00	6	1.0095	232.18	700	BAITUN230	230.00	6	1.0179	234.11				
6000	FRONTER	230.00	6	1.0213	234.90	6400	FRONTCHA	230.00	6	1.0193	234.43				
6500	FRONT CAISAN230	230.00	6	1.0337	237.76										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9817	225.78	3	PANII230	230.00	6	0.9946	228.77				
5	CHO230	230.00	6	0.9764	224.57	103	COPESA23	230.00	6	1.0000	229.99				
105	PAN-AM23	230.00	6	0.9764	224.57	325	STA RITA230	230.00	6	0.9996	229.92				
354	SANBARTOLO230	230.00	6	0.9992	229.82	511	LGUIAS230	230.00	6	0.9846	226.45				

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

THU, OCT 21 2010 9:58

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
66		BLM13B		13.800	V2	38.0	19.2	25.0	0.0	1.0180	41.8	0.8926	47.0			62	6
67		BLM13C		13.800	V3	38.0	19.2	25.0	0.0	1.0180	41.8	0.8926	47.0			62	6
68		BLM13D		13.800	V4	38.0	20.0	25.0	0.0	1.0180	42.2	0.8847	47.0			62	6
90		EST-13L		13.800	E1	20.4	5.3	12.0	-5.0	0.9900	21.3	0.9675	27.0			64	6
91		EST-13T		13.800	E2	20.4	5.3	12.0	-5.0	0.9900	21.3	0.9675	27.0			64	6
94		LV-13.8L		13.800	L1	21.6	6.0	12.0	-5.0	0.9900	22.6	0.9637	27.0			64	6
95		LV-13.8T		13.800	L2	21.6	6.0	12.0	-5.0	0.9900	22.6	0.9637	27.0			64	6
97		FOR13A		13.800	F1	88.6	-8.2	50.0	-50.0	0.9900	89.9	0.9957	111.0			64	6
98		FOR13B		13.800	F2	88.6	-8.2	50.0	-50.0	0.9900	89.9	0.9957	111.0			64	6
101		BAY13A		13.800	B1	46.0	28.0	50.0	-25.0	1.0120	53.2	0.8536	96.0			61	6
SYST																	
102		BAY13B		13.800	B2	59.8	29.0	50.0	-25.0	1.0120	65.7	0.9000	96.0			61	6
108		BAY13C		13.800	B3	59.8	27.4	50.0	-25.0	1.0100	65.1	0.9095	100.0			61	6
117		CB250A-1		13.800	C1	113.4	34.8	75.6	0.0	1.0200	116.3	0.9559	143.5			62	6
118		CB250A-2		13.800	C2	113.4	34.8	75.6	0.0	1.0200	116.3	0.9559	143.5			62	6
119		CB250B-1		13.800	C1	113.4	34.8	75.6	0.0	1.0200	116.3	0.9559	143.5			62	6
120		CB250B-2		13.800	C2	113.4	34.8	75.6	0.0	1.0200	116.3	0.9559	143.5			62	6
142		CANJ13A		13.800	C1	51.0	12.8	29.0	-29.0	0.9800	53.7	0.9700	69.0			64	6
143		CANJ13B		13.800	C2	51.0	12.8	29.0	-29.0	0.9800	53.7	0.9700	69.0			64	6
150		GUALACA	13-2	13.800	G2	12.6	-3.9	7.4	-7.4	0.9900	13.3	0.9557	14.8			64	6
151		GUALACA	13.8	13.800	G1	12.6	-3.9	7.4	-7.4	0.9900	13.3	0.9557	14.8			64	6
152		BBLANCO	13.8	13.800	G1	8.1	0.3	7.0	-7.0	1.0000	8.1	0.9991	16.0			64	6
152		BBLANCO	13.8	13.800	G2	8.1	0.3	7.0	-7.0	1.0000	8.1	0.9991	16.0			64	6
156		TABASARAI	13	13.800	G1	16.4	0.2	5.7	0.2	1.0012	16.4	0.9999	20.5			1	6
156		TABASARAI	13	13.800	G2	16.4	0.2	5.7	0.2	1.0012	16.4	0.9999	20.5			1	6
193		GEBONYIC		13.800	G1	9.0	-0.8	4.0	-4.0	1.0000	9.0	0.9964	35.3			64	6
193		GEBONYIC		13.800	G2	9.0	-0.8	4.0	-4.0	1.0000	9.0	0.9964	35.3			64	6
300		SVC-LV		13.200	1	0.0	159.2	300.0	-225.0	1.0309	154.4	0.0000	250.0			60	6
302		PASOANCH	13.8	13.800	P1	4.3	2.0	2.0	-2.0	0.9590	4.9	0.9048	6.2			64	6
303		SINDIGO	13.8	13.800	G1	8.5	0.0	5.0	0.0	1.0991	7.7	1.0000	13.5			64	6
304		ALGA	13.8	13.800	A1	4.8	-2.3	2.3	-2.3	1.0965	4.9	0.9063	5.7			64	6
304		ALGA	13.8	13.800	A2	4.8	-2.3	2.3	-2.3	1.0965	4.9	0.9063	5.7			64	6
305		ELALTO		13.800	G1	17.0	-5.0	12.0	-5.0	1.0210	17.4	0.9594	20.6			64	6
305		ELALTO		13.800	G2	17.0	-5.0	12.0	-5.0	1.0210	17.4	0.9594	20.6			64	6
307		CHAN1	A	13.800	G1	103.6	-18.0	50.0	-50.0	0.9900	106.3	0.9853	118.6			64	6
312		PANDO	13.8	13.800	G1	13.6	-2.6	10.0	-5.0	0.9900	14.0	0.9822	19.9			64	6

312	PANDO13.8	13.800	G2	13.6	-2.6	10.0	-5.0	0.9900	14.0	0.9822	19.9	64	6
316	MTE LIRIO13.13.800	G1	20.6	-5.0	12.0	-5.0	1.0086	21.1	0.9719	27.0	64	6	
316	MTE LIRIO13.13.800	G2	20.6	-5.0	12.0	-5.0	1.0086	21.1	0.9719	27.0	64	6	
317	MENDRE13.8	13.800	M1	7.9	0.0	0.0	0.0	1.0987	7.2	1.0000	35.3	64	6
317	MENDRE13.8	13.800	M2	7.9	0.0	0.0	0.0	1.0987	7.2	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C1	5.3	0.0	0.0	0.0	1.0990	4.8	1.0000	35.3	64	6
323	COCHEA 13.8	13.800	C2	5.3	0.0	0.0	0.0	1.0990	4.8	1.0000	35.3	64	6
324	POTRER13.8	13.800	P1	4.0	2.0	2.0	-2.0	0.9982	4.4	0.8928	6.2	64	6
340	PEDGALITO13813.800	P1	20.4	6.2	12.0	-5.0	0.9800	21.8	0.9569	27.0	64	6	
342	LORENA13.8	13.800	L1	14.4	-3.5	10.5	-5.0	1.0000	14.8	0.9712	19.9	64	6
343	PRUDENCIA_1	13.800	G1	22.4	-2.9	9.8	-9.8	1.0000	22.6	0.9915	33.0	64	6
343	PRUDENCIA_1	13.800	G2	22.4	-2.9	9.8	-9.8	1.0000	22.6	0.9915	33.0	64	6
346	LORENA 13-2	13.800	L2	14.4	-3.5	10.5	-5.0	1.0000	14.8	0.9712	19.9	64	6
350	MACANO 13.8	13.800	G1	3.3	-1.0	1.0	-1.0	1.0657	3.2	0.9560	6.2	64	6
351	PERLAS N13.813.800	G1	9.3	5.0	5.0	-5.0	0.9707	10.8	0.8797	13.5	64	6	
352	PERLAS S13.813.800	G1	9.3	5.0	5.0	-5.0	0.9707	10.8	0.8797	13.5	64	6	
357	BARTOLO13.8	13.800	G1	6.5	1.2	3.7	-3.7	1.0000	6.6	0.9833	8.5	64	6
357	BARTOLO13.8	13.800	G2	6.5	1.2	3.7	-3.7	1.0000	6.6	0.9833	8.5	64	6
359	CRUCES13.8	13.800	G1	4.1	0.4	2.3	-2.3	1.0000	4.1	0.9953	5.6	64	6
359	CRUCES13.8	13.800	G2	4.1	0.4	2.3	-2.3	1.0000	4.1	0.9953	5.6	64	6
361	ESTRECHO4.164.1600	G1	4.4	0.3	2.5	-2.5	1.0000	4.4	0.9980	5.6	64	6	
361	ESTRECHO4.164.1600	G2	4.4	0.3	2.5	-2.5	1.0000	4.4	0.9980	5.6	64	6	
363	LAGUNA 13.8	13.800	G1	4.2	0.1	2.4	-2.4	1.0000	4.2	0.9998	5.8	64	6
363	LAGUNA 13.8	13.800	G2	4.2	0.1	2.4	-2.4	1.0000	4.2	0.9998	5.8	64	6
364	MENDRE2	13.800	G1	6.8	3.9	3.9	-3.9	0.9993	7.8	0.8691	8.9	64	6
368	RP-490	13.800	G1	4.2	-1.2	2.4	-2.4	1.0000	4.4	0.9614	5.5	64	6
368	RP-490	13.800	G2	4.2	-1.2	2.4	-2.4	1.0000	4.4	0.9614	5.5	64	6
369	HCALDERA13.813.800	G1	3.4	1.9	1.9	-1.9	0.9982	3.9	0.8689	4.3	64	6	
372	BJO FRIO 13	13.800	G1	23.8	-4.0	9.8	-9.8	1.0000	24.1	0.9859	33.0	64	6
372	BJO FRIO 13	13.800	G2	23.8	-4.0	9.8	-9.8	1.0000	24.1	0.9859	33.0	64	6
373	TIZINGAL13.813.800	G1	4.4	2.2	2.2	-2.2	0.9690	5.1	0.8909	21.6	64	6	
374	SLORENZO13.813.800	G1	3.9	-0.9	2.0	-2.0	1.0000	4.0	0.9758	4.5	64	6	
374	SLORENZO13.813.800	G2	3.9	-0.9	2.0	-2.0	1.0000	4.0	0.9758	4.5	64	6	
376	PEDREG2 13.813.800	G1	6.2	-1.9	3.1	-3.1	1.0000	6.4	0.9579	7.2	64	6	
376	PEDREG2 13.813.800	G2	6.2	-1.9	3.1	-3.1	1.0000	6.4	0.9579	7.2	64	6	
507	CHAN2 A	13.800	G1	101.7	12.0	50.0	-50.0	1.0000	102.4	0.9931	118.6	64	6
541	TOABRE	0.6000	1	30.0	0.0	0.0	0.0	1.0107	29.7	1.0000	88.9	64	6
703	BJOMIN13A	13.800	G1	23.8	1.6	13.0	-13.0	1.0000	23.9	0.9976	30.5	64	6
704	BJOMIN13B	13.800	G2	23.8	1.6	13.0	-13.0	1.0000	23.9	0.9976	30.5	64	6
705	BAITUN13A	13.800	G1	36.6	-6.4	26.6	-26.6	1.0000	37.1	0.9852	50.6	64	6
706	BAITUN13B	13.800	G2	36.6	-6.4	26.6	-26.6	1.0000	37.1	0.9852	50.6	64	6
720	PLANETA13.8	13.800	G1	4.5	2.0	2.0	-2.0	0.9590	5.2	0.9145	6.2	64	6
721	SVC-LV	13.200	1	0.0	176.6	300.0	-225.0	1.0516	167.9	0.0000	250.0	60	6

SUBSYSTEM TOTALS 1949.1 600.8 1772.4 -1069.2 3308.9

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:58
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-VERANO

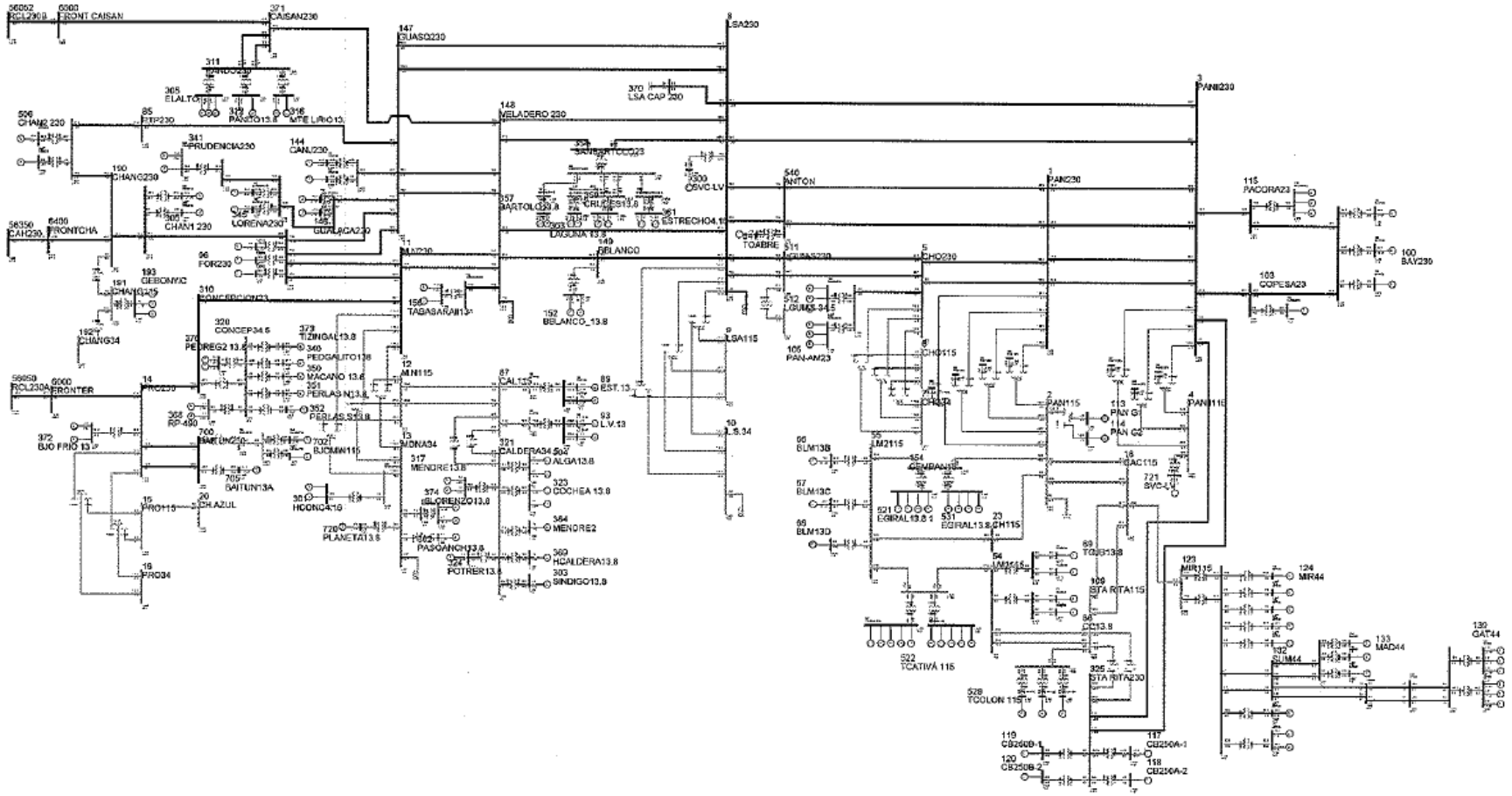
AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
SWING																	
126		MIR13A		12.000	G1	7.6	0.0	5.0	0.0	1.0279	7.4	1.0000	13.5			65	7
129		MIR13D		13.800	G4	35.5	6.4	15.0	0.0	1.0000	36.1	0.9841	44.1			65	7
AREA																	
130		MIR13F		13.800	G5	17.1	1.5	8.0	0.0	1.0000	17.2	0.9960	27.7			65	7
140		GAT6A		6.9000	G1	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9936	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9936	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-0.2	2.0	-2.0	1.0000	1.9	0.9936	4.1			65	7
141		GAT6B		6.9000	G4	3.9	-1.0	3.0	-3.0	1.0000	4.0	0.9706	5.6			65	7
141		GAT6B		6.9000	G5	3.9	-1.0	3.0	-3.0	1.0000	4.0	0.9706	6.2			65	7
141		GAT6B		6.9000	G6	3.9	-1.0	3.0	-3.0	1.0000	4.0	0.9706	6.2			65	7
170		MIR13G		13.800	M1	17.0	6.8	11.2	6.8	1.0113	18.1	0.9281	23.0			65	7
171		MIR13H		13.800	M1	17.0	6.8	11.2	6.8	1.0205	18.0	0.9281	23.0			65	7
171		MIR13H		13.800	M2	17.0	6.8	11.2	6.8	1.0205	18.0	0.9281	23.0			65	7
SUBSYSTEM TOTALS						128.6	24.9	76.5	5.5				184.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 9:58
 PLAN DE EXPANSION DEL SIN JUNIO-2010 AREA TOTALS
 AÑO 2020 ESC-MOD DEMANDA-MAX-VERANO IN MW/MVAR

X-- AREA	--X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1		1334.1	1330.8	0.0	0.0	0.0	-40.1	43.3	-39.5
GUATEMAL		210.7	275.1	-198.4	0.0	277.2	5.1	406.1	
2		868.7	855.0	0.0	0.0	0.0	-0.2	13.9	0.0
SALVADOR		74.6	224.2	-70.7	0.0	229.0	-25.2	175.3	
3		1236.7	1203.0	0.0	0.0	0.0	0.0	33.8	0.0
HONDURAS		461.7	321.1	-47.6	0.0	294.0	54.2	428.1	
4		532.0	525.2	0.0	0.0	0.0	0.1	6.7	0.0
NICARAGU		32.7	207.6	-57.8	0.0	182.3	-47.3	112.5	
5		1296.5	1280.2	0.0	0.0	0.0	0.3	16.0	0.0
COSTA RI		202.8	520.4	-230.8	0.0	418.7	37.9	294.1	
6		1949.1	1875.2	0.0	0.0	0.0	-20.6	94.6	-20.5
PANAMA		600.8	380.8	-80.8	0.0	654.0	-21.9	976.7	
7		128.6	67.0	0.0	0.0	0.0	60.5	1.2	60.0
ACANAL		24.9	13.6	0.0	0.0	0.0	-2.8	14.0	
10		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS		7345.7	7136.3	0.0	0.0	0.0	0.0	209.4	0.0
		1608.3	1942.6	-686.0	0.0	2055.2	0.0	2406.9	

Demanda Mínima de Invierno



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 10:02
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MIN-INVIERNO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
11	M.N230	230.00	6	1.0119	232.73	14	PRO230	230.00	6	1.0267	236.15				
85	PTP230	230.00	6	1.0174	233.99	96	FOR230	230.00	6	1.0129	232.97				
100	BAY230	230.00	6	1.0174	233.99	115	PACORA23	230.00	6	1.0015	230.33				
144	CANJ230	230.00	6	1.0133	233.06	146	GUALACA230	230.00	6	1.0163	233.75				
147	GUASQ230	230.00	6	1.0133	233.05	148	VELADERO 230	230.00	6	1.0094	232.16				
149	BBLANCO	230.00	6	1.0084	231.94	155	TABASARAI230	230.00	6	1.0100	232.29				
190	CHANG230	230.00	6	1.0217	234.99	306	CHAN1 230	230.00	6	1.0189	234.36				
310	CONCEPCION230	230.00	6	1.0210	234.83	311	PANDO230	230.00	6	1.0490	241.28				
341	PRUDENCIA230	230.00	6	1.0205	234.71	345	LORENA230	230.00	6	1.0193	234.43				
354	SANBARTOLO230	230.00	6	1.0061	231.40	371	CAISAN230	230.00	6	1.0476	240.94				
506	CHAN2 230	230.00	6	1.0231	235.31	540	ANTON	230.00	6	1.0114	232.62				
700	BAITUN230	230.00	6	1.0257	235.92	6000	FRONTER	230.00	6	1.0301	236.91				
6400	FRONTCHA	230.00	6	1.0231	235.32	6500	FRONT CAISAN	230.00	6	1.0461	240.61				

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
1	PAN230	230.00	6	0.9946	228.76	3	PANII230	230.00	6	0.9957	229.01				
5	CHO230	230.00	6	0.9934	228.49	103	COPESA23	230.00	6	0.9995	229.88				
105	PAN-AM23	230.00	6	0.9934	228.49	325	STA RITA230	230.00	6	0.9885	227.35				
511	LGUIAS230	230.00	6	0.9975	229.43										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 10:02
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BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
4		PANII115		115.00	6	1.0010	115.12	9		LSA115		115.00	6	1.0416	119.78
12		M.N115		115.00	6	1.0108	116.25	15		PRO115		115.00	6	1.0287	118.30
20		CH.AZUL		115.00	6	1.0295	118.39	54		LM1115		115.00	6	1.0263	118.03
55		LM2115		115.00	6	1.0264	118.04	61		FFIELD		115.00	6	1.0222	117.56
87		CAL115		115.00	6	1.0280	118.22	88		EST115		115.00	6	1.0314	118.61
92		L.V115		115.00	6	1.0293	118.37	109		STA RITA115		115.00	6	1.0305	118.51
154		CEMPAN15		115.00	6	1.0149	116.71	191		CHANG115		115.00	6	1.0105	116.21
522		TCATIVÁ 115		115.00	6	1.0264	118.03	529		TCOLON 115		115.00	6	1.0305	118.51
701		BAITUN115		115.00	6	1.0140	116.61	702		BJOMIN115		115.00	6	1.0146	116.68

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
2		PAN115		115.00	6	0.9910	113.97	6		CHO115		115.00	6	0.9946	114.38
18		CAC115		115.00	6	0.9908	113.95	19		C.V115		115.00	6	0.9883	113.65
21		C.BAN115		115.00	6	0.9803	112.74	23		CH115		115.00	6	0.9955	114.48
26		LOC115		115.00	6	0.9815	112.87	30		MAR115		115.00	6	0.9801	112.72
33		STM115		115.00	6	0.9889	113.72	37		SAN115		115.00	6	0.9794	112.63
48		TINAJ115		115.00	6	0.9881	113.63	50		M.O115		115.00	6	0.9882	113.65
52		TOC115		115.00	6	0.9977	114.74	123		MIR115		115.00	7	0.9964	114.58

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	20.1	25.0	0.0	1.0180	42.2	0.8838	47.0			62	6
67		BLM13C		13.800	V3	38.0	20.1	25.0	0.0	1.0180	42.2	0.8838	47.0			62	6
90		EST-13L		13.800	E1	19.7	6.0	12.0	-5.0	1.0000	20.6	0.9558	27.0			64	6
91		EST-13T		13.800	E2	19.7	6.0	12.0	-5.0	1.0000	20.6	0.9558	27.0			64	6
94		LV-13.8L		13.800	L1	21.6	6.8	12.0	-5.0	1.0000	22.6	0.9538	27.0			64	6
95		LV-13.8T		13.800	L2	21.6	6.8	12.0	-5.0	1.0000	22.6	0.9538	27.0			64	6
97		FOR13A		13.800	F1	79.0	-17.2	50.0	-50.0	0.9900	81.7	0.9771	111.0			64	6
101		BAY13A		13.800	B1	44.0	25.6	50.0	-25.0	1.0000	50.9	0.8645	96.0			61	6
102		BAY13B		13.800	B2	44.0	25.6	50.0	-25.0	1.0000	50.9	0.8645	96.0			61	6
117		CB250A-1		13.800	C1	113.4	36.3	75.6	0.0	1.0100	117.9	0.9523	143.5			62	6
142		CANJ13A		13.800	C1	48.0	10.0	29.0	-29.0	0.9800	50.0	0.9789	69.0			64	6
150		GUALACA	13-213.800	G2		12.0	-6.7	7.4	-7.4	0.9880	13.9	0.8729	14.8			64	6
151		GUALACA	13.8	G1		12.0	-6.7	7.4	-7.4	0.9880	13.9	0.8729	14.8			64	6
152		BBLANCO	13.813.800	G1		7.8	-0.3	7.0	-7.0	1.0000	7.8	0.9992	16.0			64	6
152		BBLANCO	13.813.800	G2		8.1	-0.3	7.0	-7.0	1.0000	8.1	0.9992	16.0			64	6
156		TABASARAII	1313.800	G1		15.8	0.2	5.7	0.2	1.0099	15.7	0.9999	20.5			1	6
193		GEBONYIC	13.800	G1		8.2	-1.5	4.0	-4.0	1.0000	8.3	0.9841	35.3			64	6
193		GEBONYIC	13.800	G2		8.2	-1.5	4.0	-4.0	1.0000	8.3	0.9841	35.3			64	6
300		SVC-LV	13.200	1		0.0	-66.8	300.0	-225.0	0.9864	67.8	0.0000	250.0			60	6
302		PASOANCH	13.813.800	P1		4.1	2.0	2.0	-2.0	0.9505	4.8	0.8986	6.2			64	6
303		SINDIGO	13.8	G1		9.0	0.0	5.0	0.0	1.1017	8.2	1.0000	13.5			64	6
304		ALGA	13.8	A1		4.7	-2.3	2.3	-2.3	1.0991	4.7	0.9001	5.7			64	6
304		ALGA	13.8	A2		4.7	-2.3	2.3	-2.3	1.0991	4.7	0.9001	5.7			64	6
305		ELALTO	13.800	G1		16.0	-5.0	12.0	-5.0	1.0347	16.2	0.9545	20.6			64	6
305		ELALTO	13.800	G2		16.0	-5.0	12.0	-5.0	1.0347	16.2	0.9545	20.6			64	6
307		CHAN1 A	13.800	G1		67.4	-25.2	50.0	-50.0	0.9900	72.7	0.9366	118.6			64	6
312		PANDO	13.8	G1		15.0	-5.0	10.0	-5.0	1.0151	15.6	0.9487	19.9			64	6
316		MTE LIRIO	13.13.800	G1		24.0	-5.0	12.0	-5.0	1.0366	23.7	0.9790	27.0			64	6
317		MENDRE	13.8	M1		7.6	0.0	0.0	0.0	1.1014	6.9	1.0000	35.3			64	6
317		MENDRE	13.8	M2		7.6	0.0	0.0	0.0	1.1014	6.9	1.0000	35.3			64	6
323		COCHEA	13.8	C1		5.1	0.0	0.0	0.0	1.1016	4.6	1.0000	35.3			64	6
323		COCHEA	13.8	C2		5.1	0.0	0.0	0.0	1.1016	4.6	1.0000	35.3			64	6
324		POTRER	13.8	P1		3.8	1.0	2.0	-2.0	1.0000	3.9	0.9683	6.2			64	6
340		PEDGALITO	13813.800	P1		22.0	5.0	12.0	-5.0	0.9800	23.0	0.9753	27.0			64	6
342		LORENA	13.8	L1		13.8	-5.0	10.5	-5.0	1.0035	14.7	0.9405	19.9			64	6
343		PRUDENCIA	_1	G1		26.0	-9.8	9.8	-9.8	1.0017	27.7	0.9362	33.0			64	6
346		LORENA	13-2	L2		13.8	-5.0	10.5	-5.0	1.0035	14.7	0.9405	19.9			64	6

350	MACANO	13.8	13.800	G1	3.1	-1.0	1.0	-1.0	1.0687	3.1	0.9528	6.2	64	6
351	PERLAS N13.8	13.800	G1	8.9	5.0	5.0	-5.0	0.9735	10.5	0.8721	13.5	64	6	
352	PERLAS S13.8	13.800	G1	8.9	5.0	5.0	-5.0	0.9735	10.5	0.8721	13.5	64	6	
357	BARTOLO13.8	13.800	G1	6.2	0.3	3.7	-3.7	0.9800	6.4	0.9989	8.5	64	6	
357	BARTOLO13.8	13.800	G2	6.2	0.3	3.7	-3.7	0.9800	6.4	0.9989	8.5	64	6	
359	CRUCES13.8	13.800	G1	4.0	-0.1	2.3	-2.3	0.9800	4.1	0.9996	5.6	64	6	
359	CRUCES13.8	13.800	G2	4.0	-0.1	2.3	-2.3	0.9800	4.1	0.9996	5.6	64	6	
361	ESTRECHO4.164	1.600	G1	4.3	-0.2	2.5	-2.5	0.9800	4.4	0.9988	5.6	64	6	
361	ESTRECHO4.164	1.600	G2	4.3	-0.2	2.5	-2.5	0.9800	4.4	0.9988	5.6	64	6	
363	LAGUNA	13.8	13.800	G1	4.0	-0.4	2.4	-2.4	0.9800	4.1	0.9959	5.8	64	6
363	LAGUNA	13.8	13.800	G2	4.0	-0.4	2.4	-2.4	0.9800	4.1	0.9959	5.8	64	6
364	MENDRE2	13.800	G1	7.0	1.0	3.9	-3.9	1.0000	7.1	0.9900	8.9	64	6	
368	RP-490	13.800	G1	4.1	-1.5	2.4	-2.4	1.0000	4.3	0.9416	5.5	64	6	
368	RP-490	13.800	G2	4.1	-1.5	2.4	-2.4	1.0000	4.3	0.9416	5.5	64	6	
369	HCALDERA13.8	13.800	G1	3.8	1.0	1.9	-1.9	1.0000	3.9	0.9679	4.3	64	6	
372	BJO FRIO	13	13.800	G1	26.0	-9.8	9.8	-9.8	1.0080	27.5	0.9362	33.0	64	6
373	TIZINGAL13.8	13.800	G1	4.2	2.2	2.2	-2.2	0.9718	4.9	0.8839	21.6	64	6	
374	SLORENZO13.8	13.800	G1	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9968	4.5	64	6	
374	SLORENZO13.8	13.800	G2	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9968	4.5	64	6	
376	PEDREG2	13.8	13.800	G1	5.9	-2.2	3.1	-3.1	1.0000	6.4	0.9366	7.2	64	6
376	PEDREG2	13.8	13.800	G2	5.9	-2.2	3.1	-3.1	1.0000	6.4	0.9366	7.2	64	6
507	CHAN2 A	13.800	G1	67.4	4.2	50.0	-50.0	1.0000	67.6	0.9981	118.6	64	6	
541	TOABRE	0.6000	1	25.0	0.0	0.0	0.0	1.0124	24.7	1.0000	88.9	64	6	
703	BJOMIN13A	13.800	G1	26.0	0.2	13.0	-13.0	1.0000	26.0	1.0000	30.5	64	6	
705	BAITUN13A	13.800	G1	40.0	-14.6	26.6	-26.6	0.9880	43.1	0.9394	50.6	64	6	
720	PLANETA13.8	13.800	G1	4.4	2.0	2.0	-2.0	0.9505	5.0	0.9088	6.2	64	6	
721	SVC-LV	13.200	1	0.0	22.0	300.0	-225.0	1.0054	21.9	0.0000	250.0	60	6	
SUBSYSTEM TOTALS				1114.1	9.7	1304.8	-896.3				2336.9			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 10:02
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MIN-INVIERNO

AREA 7 [ACANAL] MACHINE SUMMARY:

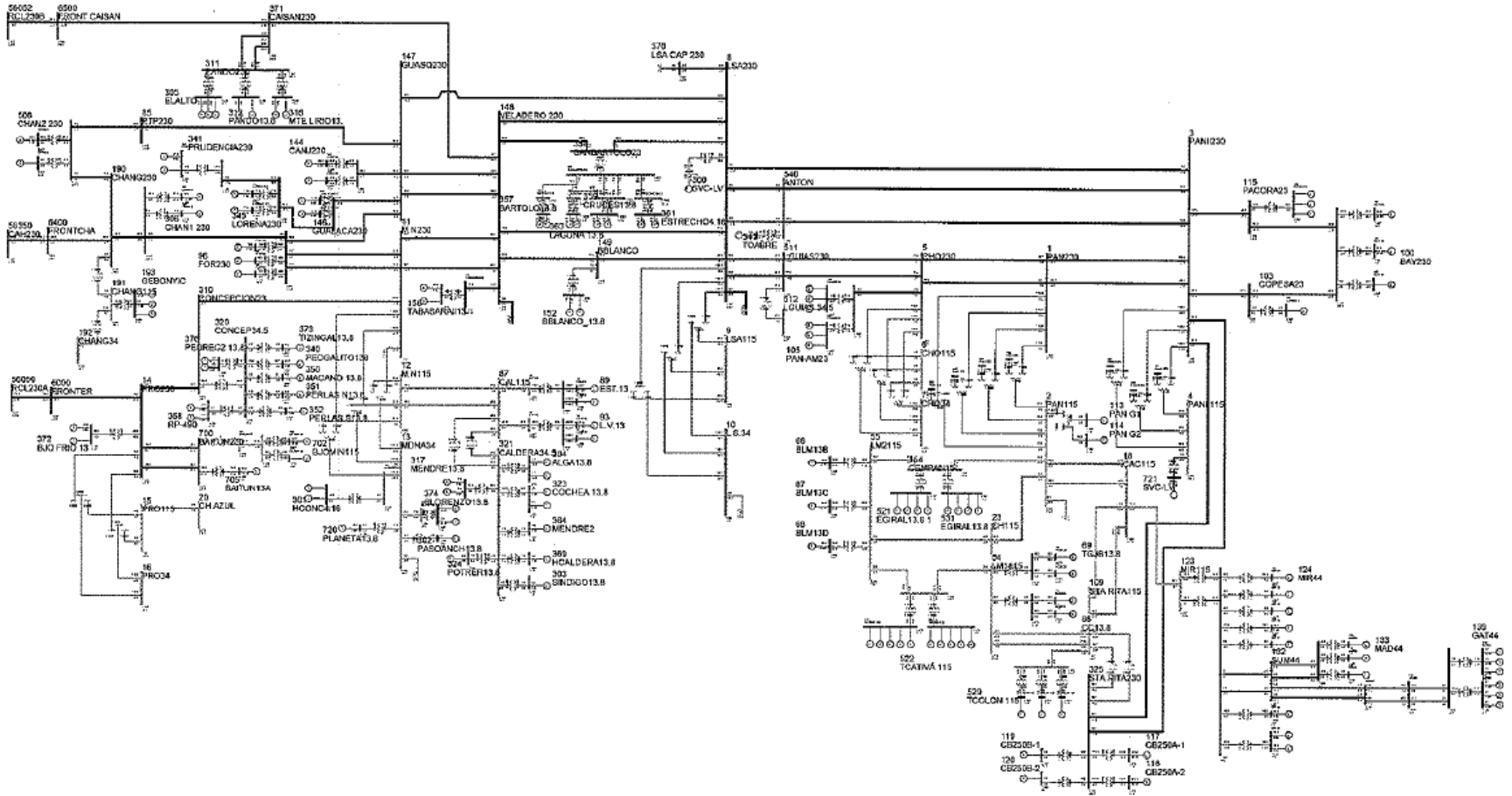
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
129		MIR13D		13.800	G4	17.7	4.0	15.0	0.0	1.0000	18.1	0.9755	44.1			65	7
140		GAT6A		6.9000	G1	1.9	-0.7	2.0	-2.0	1.0000	2.0	0.9397	4.1			65	7
140		GAT6A		6.9000	G2	1.9	-0.7	2.0	-2.0	1.0000	2.0	0.9397	4.1			65	7
140		GAT6A		6.9000	G3	1.9	-0.7	2.0	-2.0	1.0000	2.0	0.9397	4.1			65	7
141		GAT6B		6.9000	G4	3.7	-1.4	3.0	-3.0	1.0000	4.0	0.9335	5.6			65	7
141		GAT6B		6.9000	G5	3.7	-1.4	3.0	-3.0	1.0000	4.0	0.9335	6.2			65	7
141		GAT6B		6.9000	G6	3.7	-1.4	3.0	-3.0	1.0000	4.0	0.9335	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	7
SUBSYSTEM TOTALS		83.6	18.1	63.5	5.5				143.6		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, OCT 21 2010 10:02
 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	1256.3	1330.8	0.0	0.0	0.0	-116.1	41.6	-116.1
GUATEMAL	201.2	275.1	-198.0	0.0	276.7	16.5	384.3	
2	870.6	855.0	0.0	0.0	0.0	0.0	15.6	0.0
SALVADOR	84.8	224.2	-70.6	0.0	228.2	-24.8	184.3	
3	1237.7	1203.0	0.0	0.0	0.0	0.0	34.8	0.0
HONDURAS	470.7	321.1	-47.5	0.0	293.2	53.4	436.8	
4	532.9	525.2	0.0	0.0	0.0	-0.2	7.9	0.0
NICARAGU	40.9	207.6	-57.5	0.0	181.6	-48.7	121.1	
5	1297.6	1280.2	0.0	0.0	0.0	-0.5	17.9	0.0
COSTA RI	198.4	520.4	-230.7	0.0	419.4	29.6	298.5	
6	1114.1	1014.5	0.0	0.0	0.0	69.9	29.7	69.1
PANAMA	9.7	368.2	57.6	0.0	756.3	-23.2	363.3	
7	83.6	36.2	0.0	0.0	0.0	46.9	0.4	47.0
ACANAL	18.1	13.1	0.0	0.0	0.0	-2.9	7.9	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLOMBIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTALS	6392.8	6245.0	0.0	0.0	0.0	0.0	147.9	0.0
	1023.7	1929.6	-546.6	0.0	2155.3	0.0	1796.0	

Demanda Mínima de Verano



Resultados de Cortocircuito

ÍNDICE GENERAL

Cortocircuito Año 2014

Cortocircuito Año 2017

Cortocircuito Año 2020

Cortocircuito Año 2014

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO
 OUTPUT FOR AREA 6 [PANAMA]

THU, OCT 21 2010 13:57
 SHORT CIRCUIT
 FAULT CURRENTS

X-----	BUS	-----X	THREE PHASE FAULT			ONE PHASE FAULT	
			/I+/ AMPS	AN(I+)	/IA/ AMPS	AN(IA)	
1	[PAN230	230.00]	6065.7	-69.94	6186.5	-75.62	
3	[PANI230	230.00]	6175.0	-70.32	6540.4	-75.28	
5	[CHO230	230.00]	5050.0	-70.34	5474.3	-75.00	
8	[LSA230	230.00]	6582.1	-62.93	6282.7	-65.52	
11	[M.N230	230.00]	8274.2	-53.59	8308.3	-54.08	
14	[PRO230	230.00]	5745.4	-51.11	5877.5	-53.06	
85	[PTP230	230.00]	4704.4	-53.67	4534.3	-47.35	
96	[FOR230	230.00]	8796.5	-54.51	10053.8	-53.69	
100	[BAY230	230.00]	4745.1	-77.52	5320.9	-80.85	
103	[COPESA23	230.00]	5335.5	-72.81	5517.6	-77.23	
105	[PAN-AM23	230.00]	5012.4	-70.47	5424.5	-75.11	
115	[PACORA23	230.00]	4922.9	-74.09	4663.7	-78.02	
144	[CANJ230	230.00]	7855.5	-55.79	8307.9	-54.93	
146	[GUALACA230	230.00]	7495.1	-49.44	8549.6	-50.82	
147	[GUASQ230	230.00]	8281.7	-55.72	9233.5	-55.24	
148	[VELADERO 230	230.00]	7568.2	-57.86	6393.7	-57.46	
149	[BBLANCO	230.00]	6406.7	-58.43	5003.4	-57.47	
190	[CHANG230	230.00]	5270.9	-50.70	4063.7	-48.50	
306	[CHAN1 230	230.00]	5341.8	-50.71	5884.8	-47.46	
310	[CONCEPCION23	230.00]	6293.1	-52.21	5143.6	-52.34	
311	[PANDO230	230.00]	4668.1	-53.08	3572.4	-55.13	
341	[PRUDENCIA230	230.00]	5741.8	-37.55	6383.8	-37.50	
345	[LORENA230	230.00]	6538.2	-43.01	7399.2	-43.92	
354	[SANBARTOLO23	230.00]	4824.8	-62.42	3993.8	-62.29	
370	[LSA CAP 230	230.00]	6582.1	-62.93	6282.7	-65.52	
371	[CAISAN230	230.00]	4993.9	-53.04	3440.6	-53.60	
511	[LGUIAS230	230.00]	3768.7	-68.83	3501.2	-71.61	
540	[ANTON	230.00]	2937.5	-76.32	3812.1	-76.60	
700	[BAITUN230	230.00]	4887.6	-50.68	4325.0	-50.49	
6000	[FRONTER	230.00]	5481.0	-51.02	5345.7	-52.52	
6400	[FRONTCHA	230.00]	4652.6	-50.05	3239.8	-47.07	
6500	[FRONT CAISAN230	230.00]	5024.1	-52.71	3266.0	-52.96	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO
 OUTPUT FOR AREA 6 [PANAMA]

THU, OCT 21 2010 13:57
 SHORT CIRCUIT
 FAULT CURRENTS

X----- BUS -----X			THREE PHASE FAULT		ONE PHASE FAULT	
			/I+/ AN(I+)		/IA/ AN(IA)	
2 [PAN115	115.00]	AMPS	11409.9	-71.38	12450.7	-77.83
4 [PANII115	115.00]	AMPS	9371.8	-75.45	7237.5	-84.11
6 [CHO115	115.00]	AMPS	3987.0	-84.39	0.0	0.00
9 [LSA115	115.00]	AMPS	5924.6	-71.02	4193.3	-77.25
12 [M.N115	115.00]	AMPS	6231.5	-51.51	3699.4	-41.16
15 [PRO115	115.00]	AMPS	3218.4	-57.19	0.0	0.00
18 [CAC115	115.00]	AMPS	11309.1	-71.56	12322.9	-77.73
19 [C.V115	115.00]	AMPS	8418.3	-75.46	6057.2	-82.42
20 [CH.AZUL	115.00]	AMPS	1926.9	-53.46	0.0	0.00
21 [C.BAN115	115.00]	AMPS	10103.1	-72.20	8270.4	-78.24
23 [CH115	115.00]	AMPS	5980.4	-79.84	4331.6	-83.85
26 [LOC115	115.00]	AMPS	10366.1	-71.84	9373.7	-77.03
30 [MAR115	115.00]	AMPS	9268.1	-73.03	7667.9	-78.85
33 [STM115	115.00]	AMPS	10293.4	-72.43	10197.5	-78.76
37 [SAN115	115.00]	AMPS	9659.8	-72.94	7262.3	-79.81
48 [TINAJ115	115.00]	AMPS	8809.3	-74.97	6900.0	-81.54
50 [M.O115	115.00]	AMPS	9339.1	-74.20	7808.8	-81.00
52 [TOC115	115.00]	AMPS	7482.6	-77.55	4614.0	-83.36
54 [LM115	115.00]	AMPS	9181.8	-79.78	11511.9	-82.75
55 [LM2115	115.00]	AMPS	9193.8	-79.97	11522.3	-82.90
61 [FFIELD	115.00]	AMPS	7269.4	-81.25	7797.8	-79.64
87 [CAL115	115.00]	AMPS	6365.4	-48.26	8282.4	-47.36
88 [EST115	115.00]	AMPS	5563.8	-46.76	7697.7	-46.85
92 [L.V115	115.00]	AMPS	6059.5	-47.66	8345.1	-47.71
109 [STA RITA115	115.00]	AMPS	8940.9	-79.39	9015.7	-81.36
154 [CEMPAN15	115.00]	AMPS	5958.7	-81.33	6050.9	-85.33
191 [CHANG115	115.00]	AMPS	3430.9	-55.46	3876.2	-55.39
522 [TCATIVÁ 115	115.00]	AMPS	9187.4	-79.87	11530.1	-82.86
529 [TCOLON 115	115.00]	AMPS	6597.3	-82.08	0.0	0.00
701 [BAITUN115	115.00]	AMPS	2300.6	-51.24	2830.3	-50.86
702 [BJOMIN115	115.00]	AMPS	2154.7	-49.67	2716.4	-49.68

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO
 OUTPUT FOR AREA 7 [ACANAL]

THU, OCT 21 2010 13:57
 SHORT CIRCUIT
 FAULT CURRENTS

X----- BUS -----X			THREE PHASE FAULT		ONE PHASE FAULT	
			/I+/ AN(I+)		/IA/ AN(IA)	
123 [MIR115	115.00]	AMPS	7439.8	-79.43	7168.0	-83.26

Cortocircuito Año 2017

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

THU, OCT 21 2010 14:00
 SHORT CIRCUIT
 FAULT CURRENTS

OUTPUT FOR AREA 6 [PANAMA]

X----- BUS -----X			THREE PHASE FAULT		ONE PHASE FAULT	
			/I+/ AN(I+)		/IA/ AN(IA)	
1 [PAN230	230.00]	AMPS	7863.3	-75.51	7297.9	-80.32
3 [PANI230	230.00]	AMPS	7991.5	-75.95	7722.3	-80.01
5 [CHO230	230.00]	AMPS	6384.3	-75.31	6367.2	-79.42
8 [LSA230	230.00]	AMPS	7356.4	-67.04	6688.4	-68.31
11 [M.N230	230.00]	AMPS	8518.3	-56.11	8480.8	-56.33
14 [PRO230	230.00]	AMPS	5979.9	-52.01	6037.4	-53.87
85 [PTP230	230.00]	AMPS	4615.9	-56.55	4688.2	-51.24
96 [FOR230	230.00]	AMPS	8797.9	-57.44	10087.7	-56.34
100 [BAY230	230.00]	AMPS	5468.2	-80.96	5910.5	-83.75
103 [COPESA23	230.00]	AMPS	6580.0	-77.83	6331.8	-81.29
105 [PAN-AM23	230.00]	AMPS	6335.1	-75.42	6309.8	-79.51
115 [PACORA23	230.00]	AMPS	6158.8	-78.93	5347.0	-81.46
144 [CANJ230	230.00]	AMPS	7808.2	-58.82	8353.5	-57.58
146 [GUALACA230	230.00]	AMPS	7380.6	-51.77	8506.5	-52.88
147 [GUASQ230	230.00]	AMPS	8226.7	-58.81	9283.6	-57.96
148 [VELADERO 230	230.00]	AMPS	8177.4	-61.13	6684.4	-59.75
149 [BBLANCO	230.00]	AMPS	6880.1	-61.46	5199.9	-59.54
155 [TABASARAI23	230.00]	AMPS	5880.1	-60.93	5024.5	-59.81
190 [CHANG230	230.00]	AMPS	4854.0	-53.79	4785.4	-53.28
306 [CHAN1 230	230.00]	AMPS	4710.5	-54.02	5401.5	-51.29
310 [CONCEPCION23	230.00]	AMPS	6502.0	-53.75	5238.7	-53.66
311 [PANDO230	230.00]	AMPS	4974.1	-53.56	3686.7	-55.36
341 [PRUDENCIA230	230.00]	AMPS	5574.6	-39.06	6262.9	-39.03
345 [LORENA230	230.00]	AMPS	6359.5	-44.46	7277.0	-45.33
354 [SANBARTOLO23	230.00]	AMPS	5102.9	-65.43	4123.3	-64.50
370 [LSA CAP 230	230.00]	AMPS	7356.4	-67.04	6688.4	-68.31
371 [CAISAN230	230.00]	AMPS	5294.3	-53.64	3531.8	-53.87
506 [CHAN2 230	230.00]	AMPS	4290.9	-54.36	4956.4	-55.13
511 [LGUIAS230	230.00]	AMPS	5644.2	-71.17	4700.6	-72.99
540 [ANTON	230.00]	AMPS	4699.7	-77.25	5689.3	-77.64
700 [BAITUN230	230.00]	AMPS	5044.4	-51.44	4405.5	-51.10
6000 [FRONTER	230.00]	AMPS	5694.2	-51.84	5478.0	-53.23
6400 [FRONTCHA	230.00]	AMPS	4370.8	-53.00	3707.7	-51.18
6500 [FRONT CAISAN230.00]		AMPS	5305.9	-53.31	3342.4	-53.24

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO
 OUTPUT FOR AREA 6 [PANAMA]

THU, OCT 21 2010 14:00
 SHORT CIRCUIT
 FAULT CURRENTS

X----- BUS -----X			THREE PHASE FAULT		ONE PHASE FAULT	
			/I+/ AN(I+)		/IA/ AN(IA)	
2 [PAN115	115.00]	AMPS	14691.2	-76.55	14864.0	-82.60
4 [PANI115	115.00]	AMPS	12835.7	-79.95	9702.6	-86.95
6 [CHO115	115.00]	AMPS	4368.4	-87.48	0.0	0.00
9 [LSA115	115.00]	AMPS	6235.1	-73.78	4296.4	-79.51
12 [M.N115	115.00]	AMPS	6578.7	-53.23	3816.5	-42.72
15 [PRO115	115.00]	AMPS	3252.5	-57.83	0.0	0.00
18 [CAC115	115.00]	AMPS	14520.2	-76.69	14687.7	-82.40
19 [C.V115	115.00]	AMPS	10685.9	-79.74	7192.1	-84.64
20 [CH.AZUL	115.00]	AMPS	1939.2	-53.99	0.0	0.00
21 [C.BAN115	115.00]	AMPS	12662.0	-77.04	9438.0	-81.59
23 [CH115	115.00]	AMPS	6977.2	-83.01	4701.1	-85.57
26 [LOC115	115.00]	AMPS	13056.9	-76.72	10812.6	-80.66
30 [MAR115	115.00]	AMPS	11344.2	-77.59	8600.5	-82.08
33 [STM115	115.00]	AMPS	12897.0	-77.31	11795.5	-82.83
37 [SAN115	115.00]	AMPS	12014.0	-77.72	8237.8	-82.88
48 [TINAJ115	115.00]	AMPS	10649.2	-79.61	7632.9	-84.67
50 [M.O115	115.00]	AMPS	11429.0	-78.98	8740.0	-84.43
52 [TOC115	115.00]	AMPS	9572.3	-81.44	5573.5	-84.80
54 [LM115	115.00]	AMPS	12746.1	-84.08	15044.0	-86.74
55 [LM2115	115.00]	AMPS	12766.7	-84.27	15060.8	-86.87
61 [FFIELD	115.00]	AMPS	9340.7	-84.58	9370.8	-81.28
87 [CAL115	115.00]	AMPS	6977.2	-50.24	9100.2	-49.44
88 [EST115	115.00]	AMPS	5989.7	-48.60	8248.8	-48.69
92 [L.V115	115.00]	AMPS	6595.8	-49.56	9050.5	-49.60
109 [STA RITA115	115.00]	AMPS	11945.9	-83.71	10959.1	-84.06
154 [CEMPAN15	115.00]	AMPS	7782.2	-84.69	7250.7	-87.64
191 [CHANG115	115.00]	AMPS	3386.6	-58.65	3944.1	-59.03
522 [TCATIVÁ 115	115.00]	AMPS	12785.0	-84.28	15099.7	-86.94
529 [TCOLON 115	115.00]	AMPS	8146.7	-85.34	0.0	0.00
701 [BAITUN115	115.00]	AMPS	2310.1	-51.67	2839.7	-51.28
702 [BJOMIN115	115.00]	AMPS	2162.5	-50.09	2724.6	-50.08

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO
 OUTPUT FOR AREA 7 [ACANAL]

THU, OCT 21 2010 14:00
 SHORT CIRCUIT
 FAULT CURRENTS

X----- BUS -----X			THREE PHASE FAULT		ONE PHASE FAULT	
			/I+/ AN(I+)		/IA/ AN(IA)	
123 [MIR115	115.00]	AMPS	8469.7	-82.86	7811.8	-85.87

Cortocircuito Año 2020

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO
 OUTPUT FOR AREA 6 [PANAMA]

THU, OCT 21 2010 14:03
 SHORT CIRCUIT
 FAULT CURRENTS

X----- BUS -----X			THREE PHASE FAULT		ONE PHASE FAULT	
			/I+/ AN(I+)		/IA/ AN(IA)	
1 [PAN230	230.00]	AMPS	9010.9	-73.54	8953.6	-78.51
3 [PANI230	230.00]	AMPS	9169.9	-73.95	8862.3	-79.09
5 [CHO230	230.00]	AMPS	6558.6	-74.23	6520.4	-78.80
8 [LSA230	230.00]	AMPS	8690.7	-65.95	7564.1	-68.16
11 [M.N230	230.00]	AMPS	9715.6	-55.02	9245.1	-55.47
14 [PRO230	230.00]	AMPS	6650.6	-52.36	6481.9	-54.53
85 [PTP230	230.00]	AMPS	5526.8	-53.45	5323.4	-47.22
96 [FOR230	230.00]	AMPS	10718.4	-56.30	11971.8	-55.33
100 [BAY230	230.00]	AMPS	5816.2	-80.40	6173.6	-83.59
103 [COPESA23	230.00]	AMPS	7282.8	-76.72	6877.2	-80.94
105 [PAN-AM23	230.00]	AMPS	6494.1	-74.37	6448.9	-78.92
115 [PACORA23	230.00]	AMPS	6645.9	-78.16	5652.3	-81.41
144 [CANJ230	230.00]	AMPS	9853.9	-57.41	10122.6	-56.18
146 [GUALACA230	230.00]	AMPS	9265.4	-49.41	10361.7	-50.60
147 [GUASQ230	230.00]	AMPS	10551.7	-57.33	11544.1	-56.55
148 [VELADERO 230	230.00]	AMPS	9218.2	-60.42	7168.8	-59.23
149 [BBLANCO	230.00]	AMPS	7595.0	-60.86	5485.6	-59.11
155 [TABASARAI23	230.00]	AMPS	6475.2	-60.45	5327.6	-59.38
190 [CHANG230	230.00]	AMPS	6533.9	-49.10	5819.5	-47.96
306 [CHAN1 230	230.00]	AMPS	6230.4	-49.01	6645.2	-45.13
310 [CONCEPCION23	230.00]	AMPS	7991.0	-54.02	5816.0	-54.27
311 [PANDO230	230.00]	AMPS	5131.9	-54.22	3745.4	-56.15
325 [STA RITA230	230.00]	AMPS	7388.7	-81.11	9270.1	-83.42
341 [PRUDENCIA230	230.00]	AMPS	6612.9	-35.73	7204.9	-35.67
345 [LORENA230	230.00]	AMPS	7754.7	-41.65	8599.3	-42.46
354 [SANBARTOLO23	230.00]	AMPS	5495.3	-65.13	4304.8	-64.28
370 [LSA CAP 230	230.00]	AMPS	8690.7	-65.95	7564.1	-68.16
371 [CAISAN230	230.00]	AMPS	5489.6	-54.25	3591.0	-54.61
506 [CHAN2 230	230.00]	AMPS	6141.9	-49.44	6478.9	-49.83
511 [LGUIAS230	230.00]	AMPS	5995.0	-70.47	4842.3	-72.92
540 [ANTON	230.00]	AMPS	5052.6	-77.26	6121.4	-77.89
700 [BAITUN230	230.00]	AMPS	5485.3	-51.82	4627.0	-51.65
6000 [FRONTER	230.00]	AMPS	6206.0	-52.26	5787.8	-53.90
6400 [FRONTCHA	230.00]	AMPS	5474.2	-48.55	4220.3	-46.04
6500 [FRONT CAISAN230	230.00]	AMPS	5512.4	-53.92	3398.2	-53.98

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO
 OUTPUT FOR AREA 6 [PANAMA]

THU, OCT 21 2010 14:03
 SHORT CIRCUIT
 FAULT CURRENTS

X-----	BUS	-----X	THREE PHASE FAULT		ONE PHASE FAULT	
			/I+/ AN(I+)	/IA/ AN(IA)		
2	[PAN115	115.00] AMPS	15834.6	-75.29	15799.1	-82.37
4	[PANII115	115.00] AMPS	12518.2	-80.03	9153.6	-88.34
6	[CHO115	115.00] AMPS	4334.7	-88.00	0.0	0.00
9	[LSA115	115.00] AMPS	6682.2	-74.07	4422.4	-80.51
12	[M.N115	115.00] AMPS	6656.6	-52.33	3818.2	-41.69
15	[PRO115	115.00] AMPS	3348.9	-58.72	0.0	0.00
18	[CAC115	115.00] AMPS	15620.0	-75.48	15592.1	-82.18
19	[C.V115	115.00] AMPS	10679.7	-79.69	6984.0	-85.95
20	[CH.AZUL	115.00] AMPS	1974.3	-54.80	0.0	0.00
21	[C.BAN115	115.00] AMPS	13386.9	-76.08	9613.5	-82.18
23	[CH115	115.00] AMPS	7115.5	-83.06	4702.5	-86.25
26	[LOC115	115.00] AMPS	13860.9	-75.65	11132.3	-80.91
30	[MAR115	115.00] AMPS	11927.9	-77.00	8756.7	-82.75
33	[STM115	115.00] AMPS	13728.7	-76.47	12293.8	-83.01
37	[SAN115	115.00] AMPS	12607.0	-76.98	8298.8	-83.80
48	[TINAJ115	115.00] AMPS	11163.0	-79.38	7749.6	-85.47
50	[M.O115	115.00] AMPS	12048.1	-78.56	8936.8	-85.09
52	[TOC115	115.00] AMPS	9305.3	-81.80	5290.7	-86.28
54	[LM1115	115.00] AMPS	14024.1	-83.02	16717.1	-85.62
55	[LM2115	115.00] AMPS	13969.8	-83.04	16632.1	-85.57
61	[FFIELD	115.00] AMPS	9992.1	-83.96	9921.8	-80.35
87	[CAL115	115.00] AMPS	6998.1	-49.03	9115.6	-48.22
88	[EST115	115.00] AMPS	5992.8	-47.33	8247.8	-47.42
92	[L.V115	115.00] AMPS	6609.2	-48.33	9061.9	-48.36
109	[STA RITA115	115.00] AMPS	13866.6	-82.37	15578.9	-84.97
154	[CEMPAN15	115.00] AMPS	7334.2	-83.94	6949.3	-87.48
191	[CHANG115	115.00] AMPS	3788.0	-52.64	4437.5	-52.92
522	[TCATIVÁ 115	115.00] AMPS	14028.3	-83.13	16726.4	-85.73
529	[TCOLON 115	115.00] AMPS	8972.8	-84.57	0.0	0.00
701	[BAITUN115	115.00] AMPS	2357.3	-52.12	2891.7	-51.70
702	[BJOMIN115	115.00] AMPS	2280.7	-51.56	2851.9	-51.44

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E
 PLAN DE EXPANSION DEL SIN JUNIO-2010
 AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO
 OUTPUT FOR AREA 7 [ACANAL]

THU, OCT 21 2010 14:03
 SHORT CIRCUIT
 FAULT CURRENTS

X-----	BUS	-----X	THREE PHASE FAULT		ONE PHASE FAULT	
			/I+/ AN(I+)	/IA/ AN(IA)		
123	[MIR115	115.00] AMPS	8719.7	-83.57	7904.4	-86.90

Resultados de Estabilidad Transitoria

RESUMEN GENERAL

Año 2014

Falla y apertura de un circuito de Mata de Nance - Concepción
Falla y apertura de un circuito de Llano Sánchez – Panamá II
Falla y Apertura de la línea Guasquitas – Llano Sánchez

Año 2017

Falla y apertura de un circuito de Mata de Nance - Concepción
Falla y apertura de un circuito de Llano Sánchez – Panamá II
Falla y Apertura de la línea Guasquitas – Llano Sánchez

Año 2020

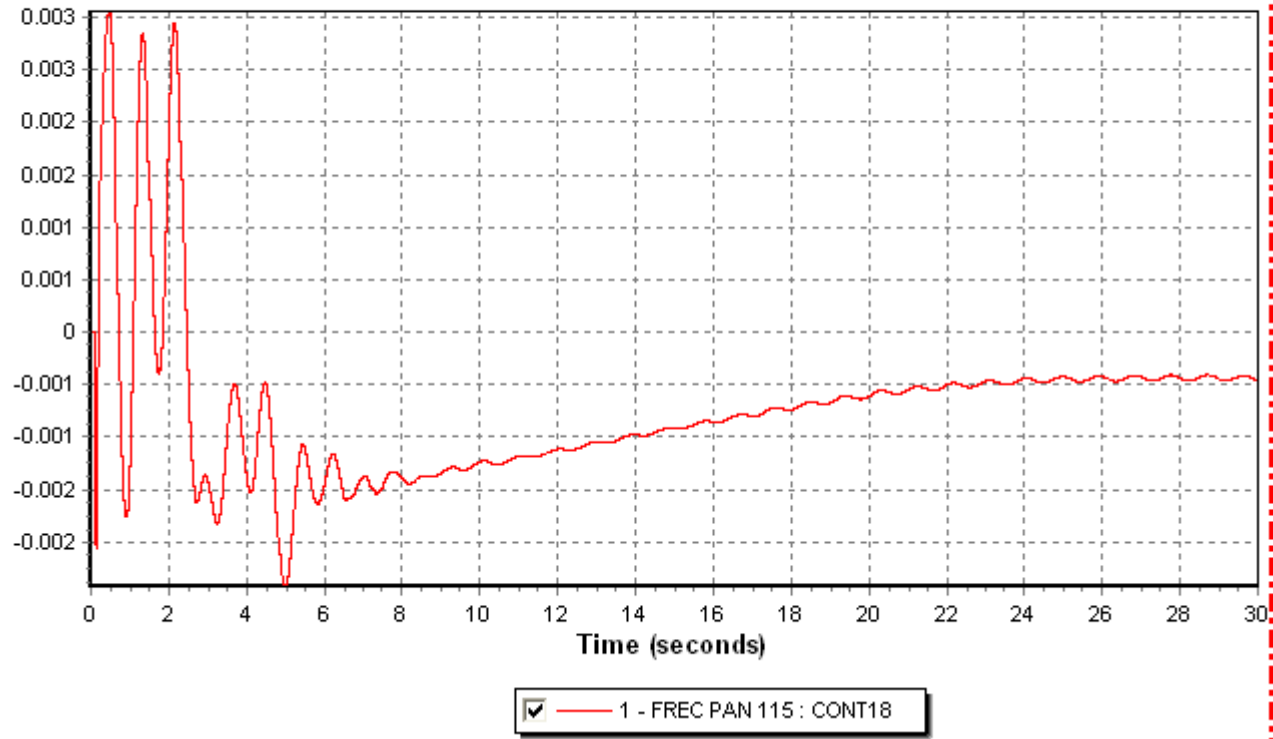
Falla y apertura de un circuito de Panamá - Panamá II
Falla y apertura de un circuito de Llano Sánchez – Panamá II
Falla y Apertura de la línea Santa Rita – Panamá II

Año 2014

Falla y apertura de un circuito de Mata de Nance - Concepción

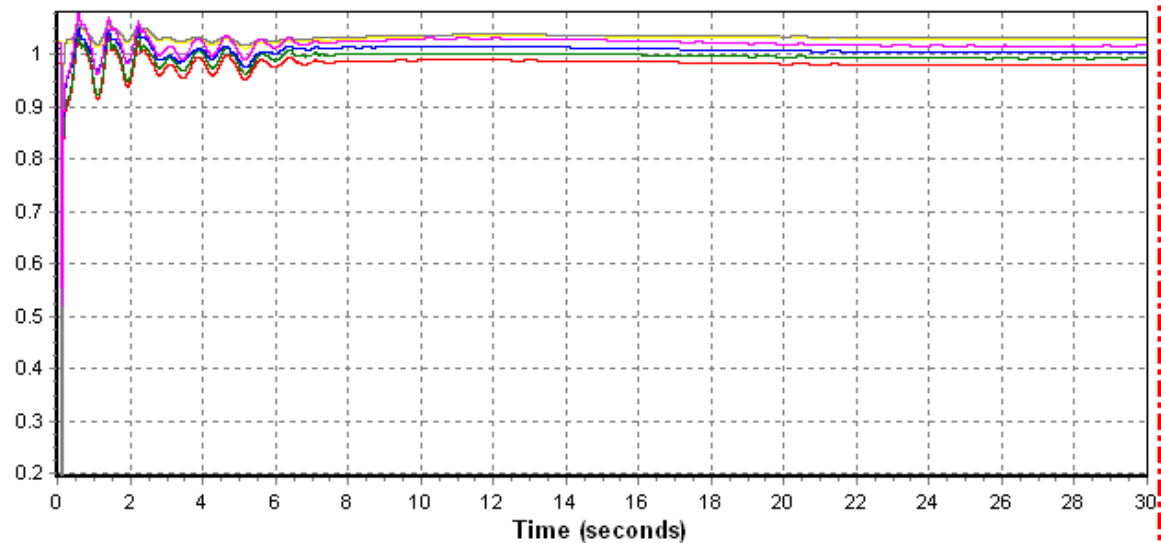
**PLAN DE EXPANSION DEL SIN JUNIO-2010 - ALTERNATIVA 3
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO**

Frecuencia en Panamá 115 kv



PLAN DE EXPANSION DEL SIN JUNIO-2010 - ALTERNATIVA 3
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

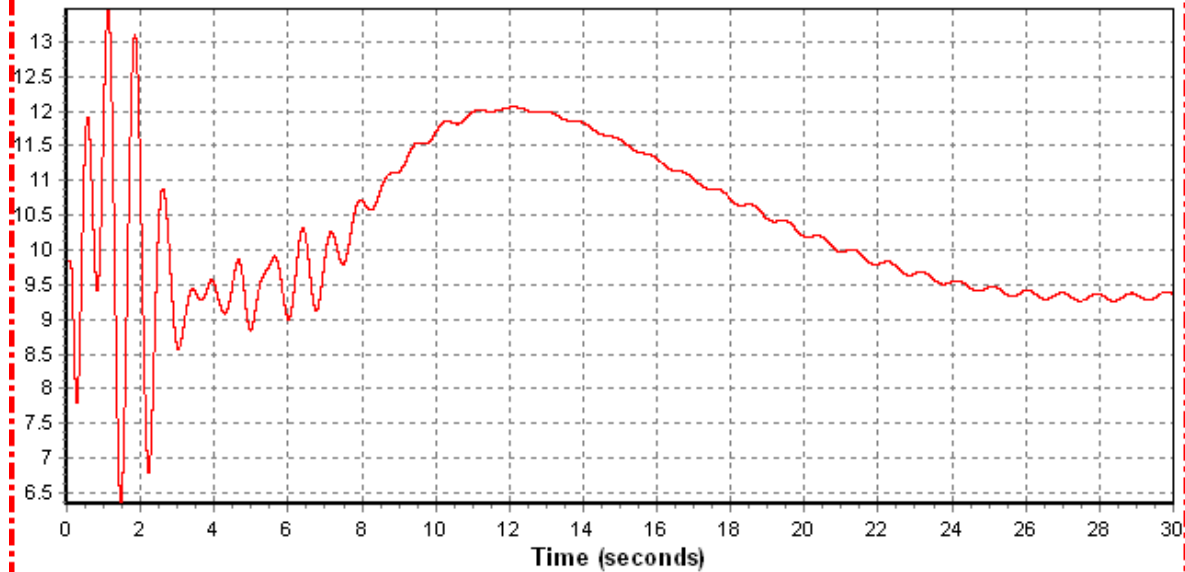
Voltaje en barras de 230 kv



- | | |
|--|--|
| <input checked="" type="checkbox"/> 2 - PAN 230 : CONT18 | <input checked="" type="checkbox"/> 5 - LLSCH 230 : CONT18 |
| <input checked="" type="checkbox"/> 7 - PRO 230 : CONT18 | <input checked="" type="checkbox"/> 9 - FORT 230 : CONT18 |
| <input checked="" type="checkbox"/> 14 - CONCEPCION 230 : CONT18 | <input checked="" type="checkbox"/> 10 - BAY 230 : CONT18 |

PLAN DE EXPANSION DEL SIN JUNIO-2010 - ALTERNATIVA 3
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

Comportamiento Térmico

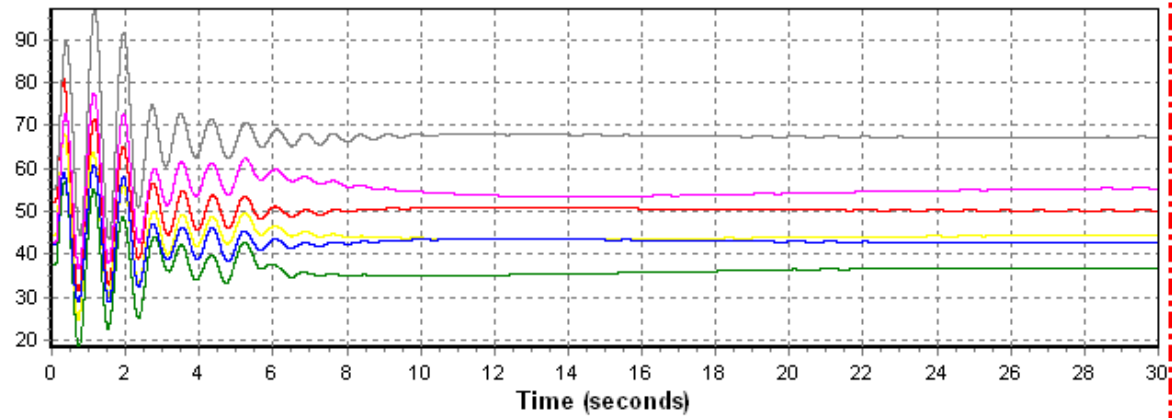


17 - ANGL 66[BLM13B 13.800]V2 : CONT18

Ángulo respecto a Bayano

PLAN DE EXPANSION DEL SIN JUNIO-2010 - ALTERNATIVA 3
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

Comportamiento Hidráulico



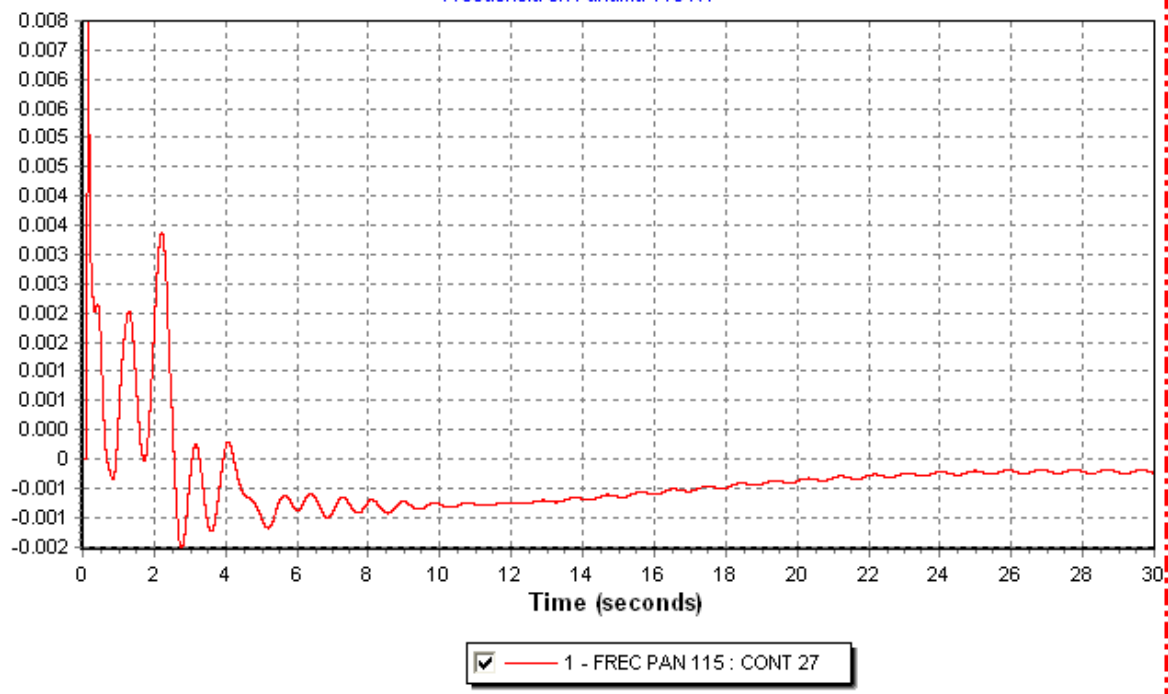
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<input checked="" type="checkbox"/>	24 - ANGL	97[FOR13A	13.800]F1 : CONT18
<input checked="" type="checkbox"/>	37 - ANGL	142[CANJ13A	13.800]C1 : CONT18
<input checked="" type="checkbox"/>	51 - ANGL	307[CHAN1 A	13.800]G1 : CONT18
<input checked="" type="checkbox"/>	87 - ANGL	703[BJOMIN13A	13.800]G1 : CONT18
<input checked="" type="checkbox"/>	89 - ANGL	705[BAITUN13A	13.800]G1 : CONT18

Ángulos respecto a Bayano

Falla y apertura de un circuito de Llano Sánchez – Panamá II

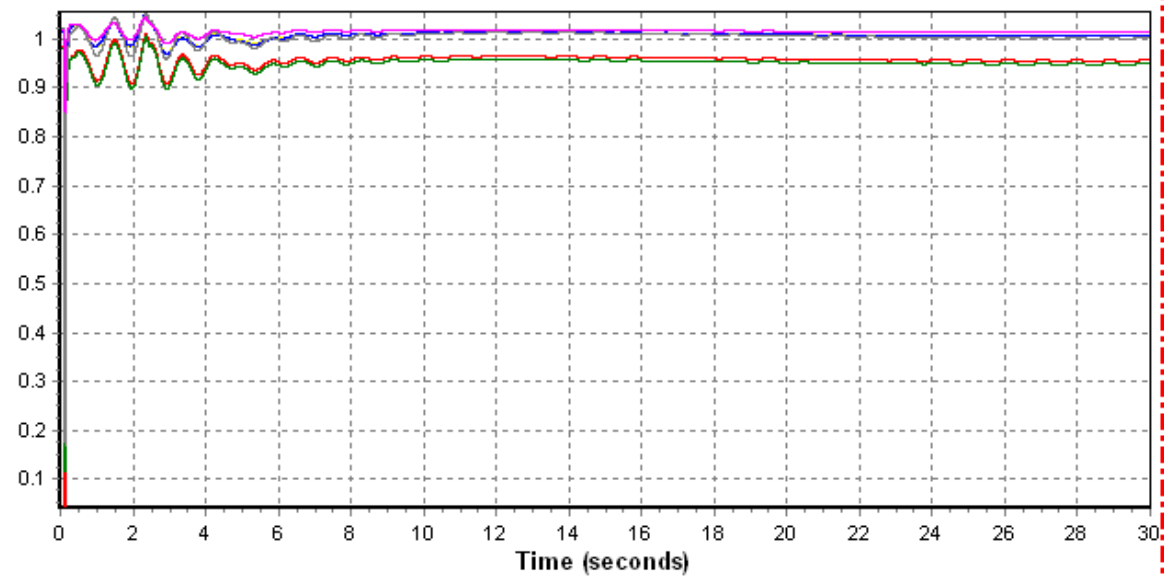
PLAN DE EXPANSION DEL SIN JUNIO-2010 ALTERNATIVA 3
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

Frecuencia en Panamá 115 KV



PLAN DE EXPANSION DEL SIN JUNIO-2010 ALTERNATIVA 3
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

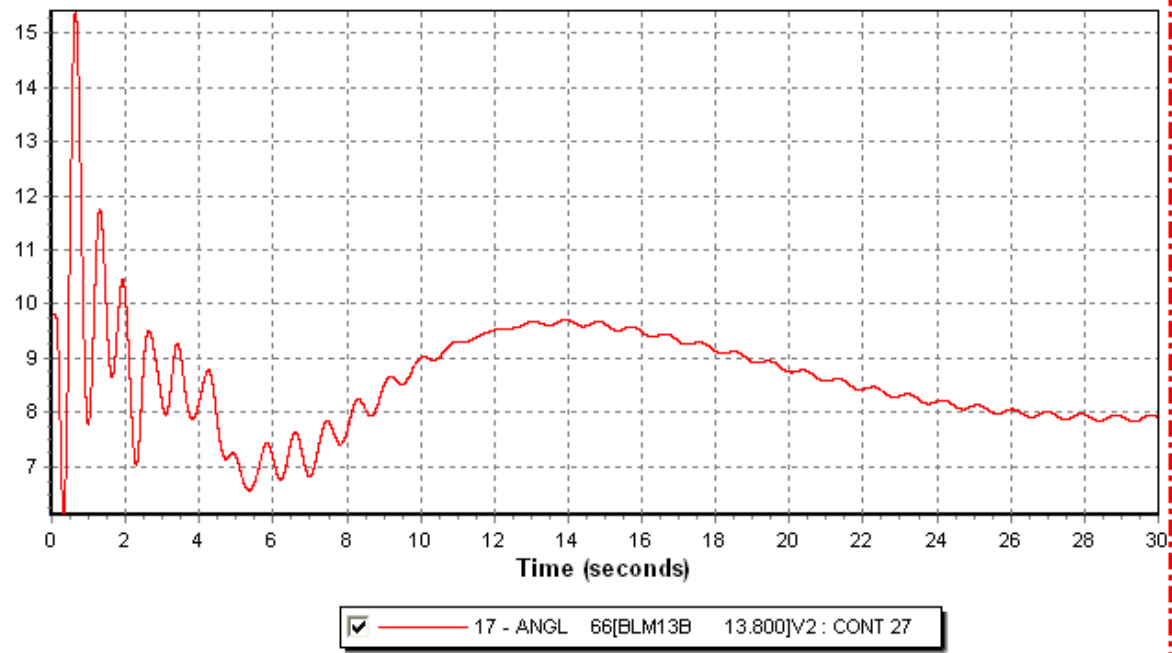
Voltaje en barras de 230 KV



- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> 2 - PAN 230 : CONT 27 | <input checked="" type="checkbox"/> 4 - CHO 230 : CONT 27 | <input checked="" type="checkbox"/> 6 - MNANCE 230 : CONT 27 |
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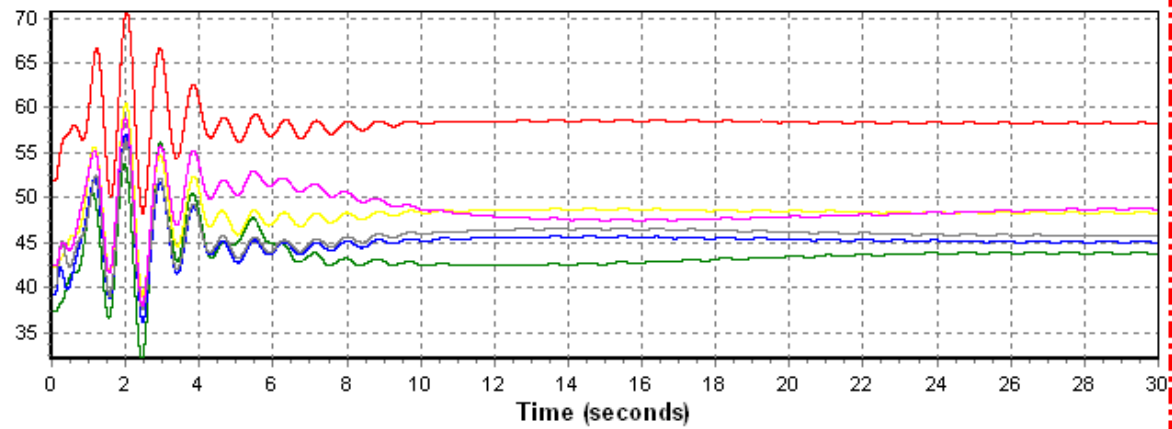
PLAN DE EXPANSION DEL SIN JUNIO-2010 ALTERNATIVA 3
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

Comportamiento Térmico
Ángulo respecto a Bayano



PLAN DE EXPANSION DEL SIN JUNIO-2010 ALTERNATIVA 3
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

Comportamiento Hidráulico
Ángulos respecto a Bayano

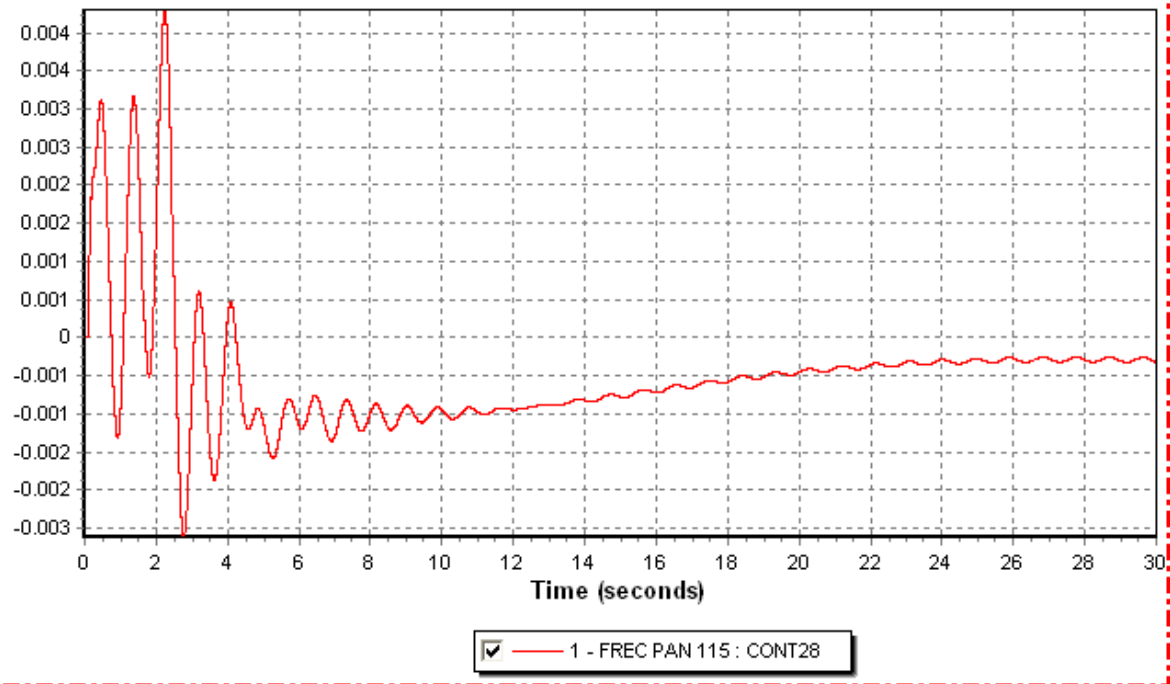


- 20 - ANGL 90[EST-13L 13.800]E1 : CONT 27
- 24 - ANGL 97[FOR13A 13.800]F1 : CONT 27
- 51 - ANGL 307[CHAN1 A 13.800]G1 : CONT 27
- 55 - ANGL 316[MTE LIRIO13.13.800]G1 : CONT 27
- 64 - ANGL 343[PRUDENCIA_1 13.800]G1 : CONT 27
- 89 - ANGL 705[BAITUN13A 13.800]G1 : CONT 27

Falla y Apertura de la línea Guasquitas – Llano Sánchez

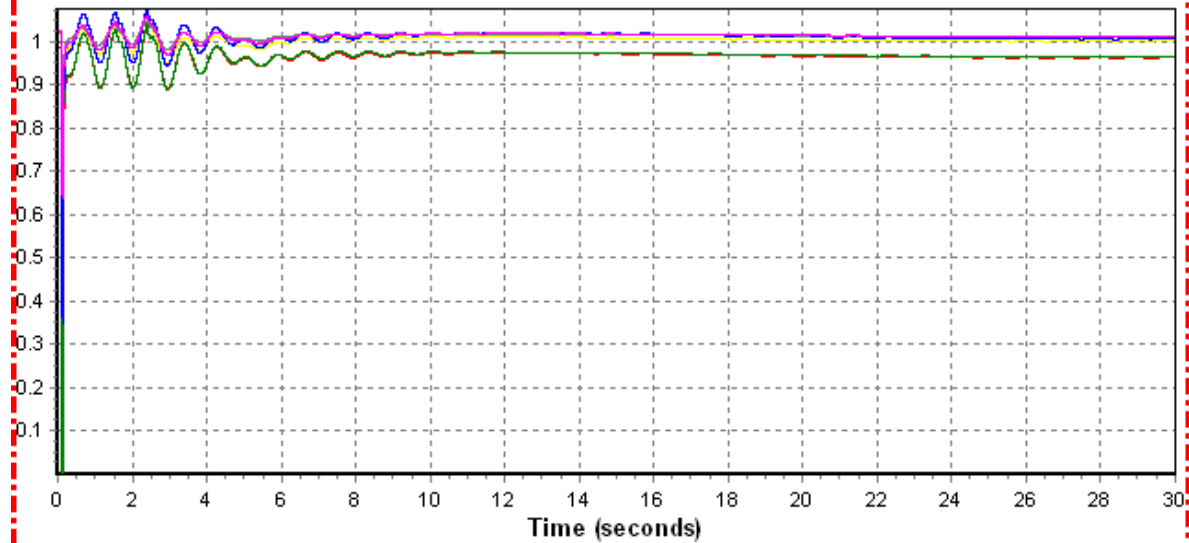
PLAN DE EXPANSION DEL SIN JUNIO-2010 ALTERNATIVA 3
AÑO 2014 ESC-MOD DEMANDA-MAX-INVIERNO

Frecuencia en Panamá 115 KV



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

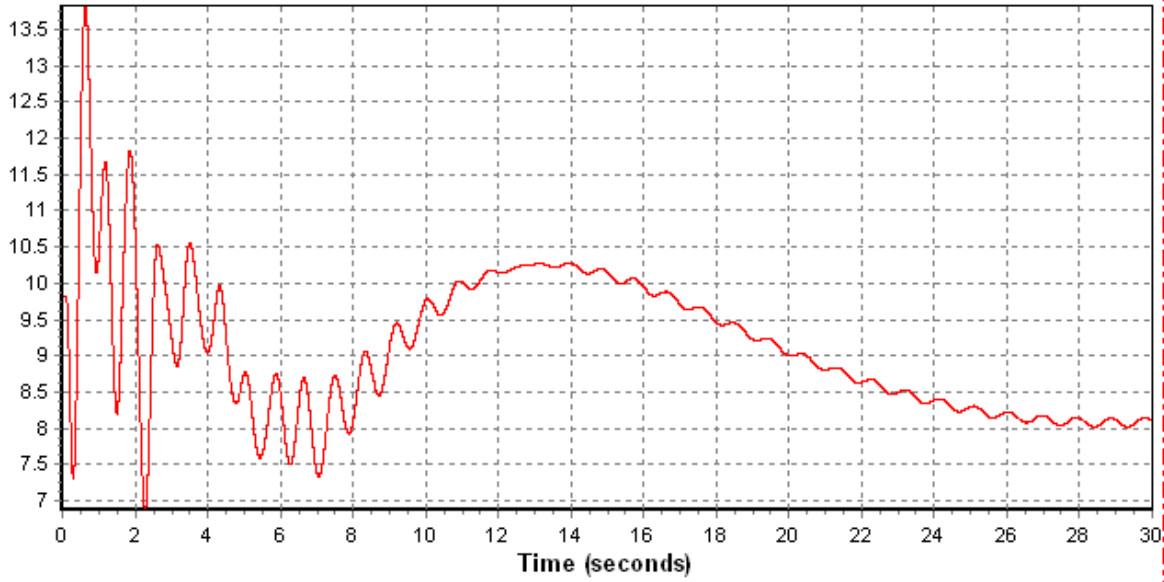
Voltaje en barras de 230 KV



- | | |
|---|--|
| <input checked="" type="checkbox"/> 2 - PAN 230 : CONT28 | <input checked="" type="checkbox"/> 5 - LLSCH 230 : CONT28 |
| <input checked="" type="checkbox"/> 9 - FORT 230 : CONT28 | <input checked="" type="checkbox"/> 10 - BAY 230 : CONT28 |
| <input checked="" type="checkbox"/> 13 - CHANG 230 : CONT28 | <input checked="" type="checkbox"/> 14 - CONCEPCION 230 : CONT28 |

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

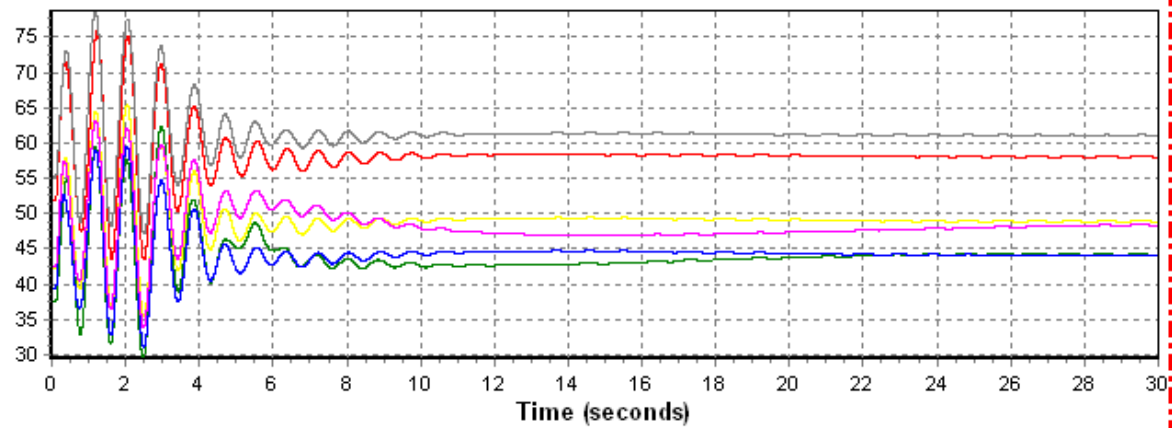
Comportamiento Térmico
Ángulo respecto a Bayano



17 - ANGL 66[BLM13B 13.800]V2: CONT28

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

Comportamiento Hidráulico
Ángulos respecto a Bayano



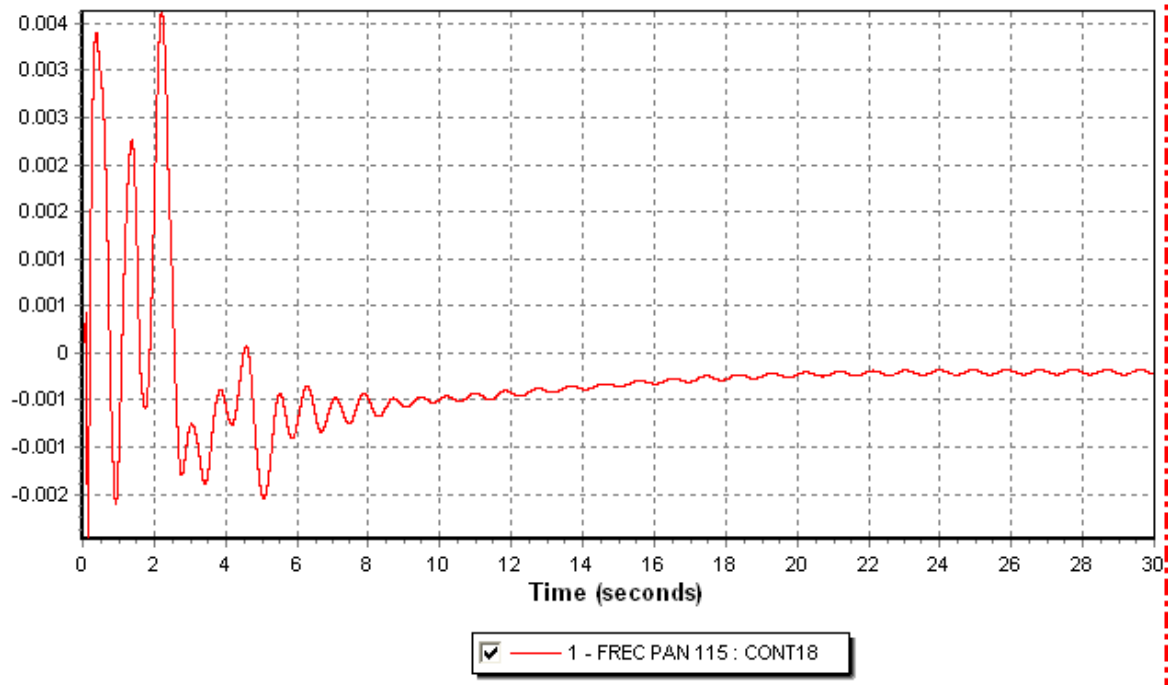
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<input checked="" type="checkbox"/>	87 - ANGL	703[BJOMIN13A	13.800]G1 : CONT28
<input checked="" type="checkbox"/>	89 - ANGL	705[BAITUN13A	13.800]G1 : CONT28

Año 2017

Falla y apertura de un circuito de Mata de Nance - Concepción

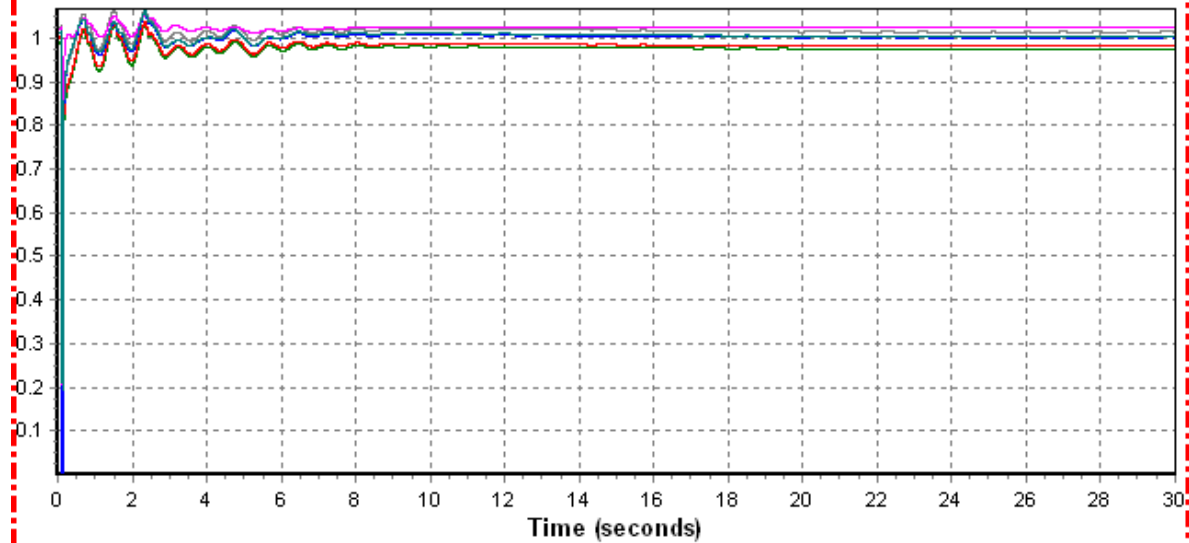
PLAN DE EXPANSION DEL SIN JUNIO-2010 ALTERNATIVA 3
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

Frecuencia en Panamá 115 KV



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

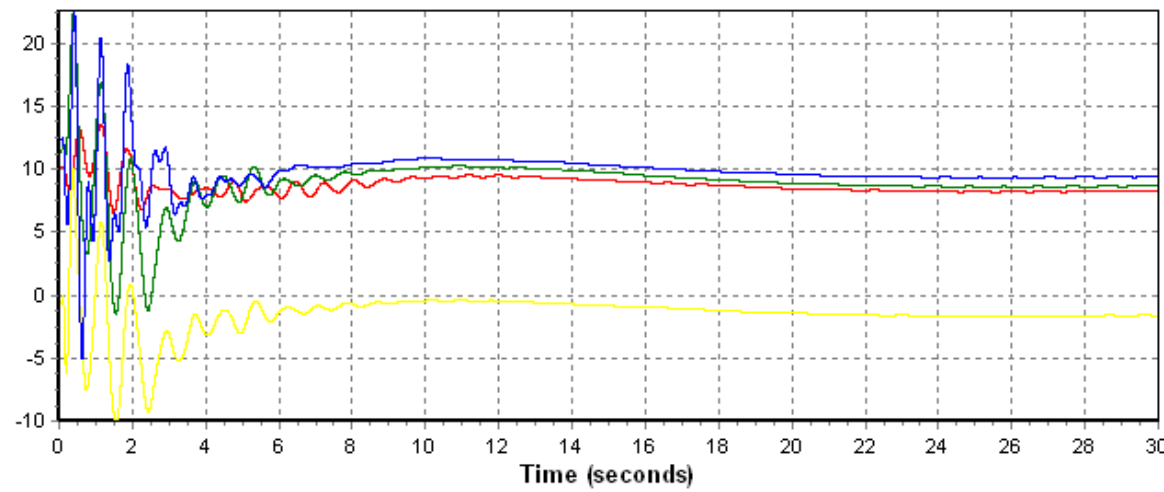
Voltaje en barras de 230 KV



- | | |
|--|---|
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| <input checked="" type="checkbox"/> 6 - MNANCE 230 : CONT18 | <input checked="" type="checkbox"/> 10 - BAY 230 : CONT18 |
| <input checked="" type="checkbox"/> 14 - CONCEPCION 230 : CONT18 | <input checked="" type="checkbox"/> 9 - FORT 230 : CONT18 |

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

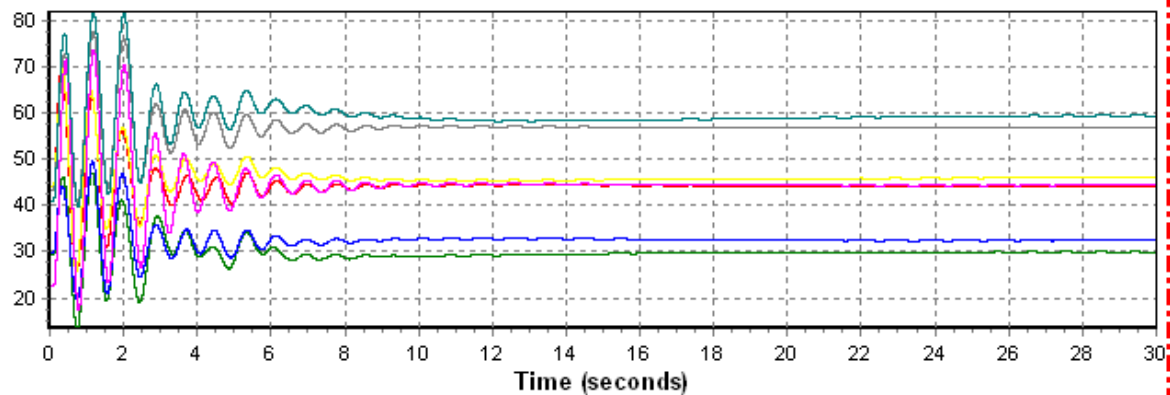
Comportamiento térmico
Ángulos respecto a Bayano



- 17 - ANGL 66[BLM13B 13.800]V2 : CONT18
- 33 - ANGL 116[PACORA13 13.800]P1 : CONT18
- 97 - ANGL 523[TCATIVÁ 13A 13.800]G1 : CONT18
- 107 - ANGL 531[EGIRAL13.8 213.800]G5 : CONT18

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

Comportamiento Hidráulico
Ángulos respecto a Bayano

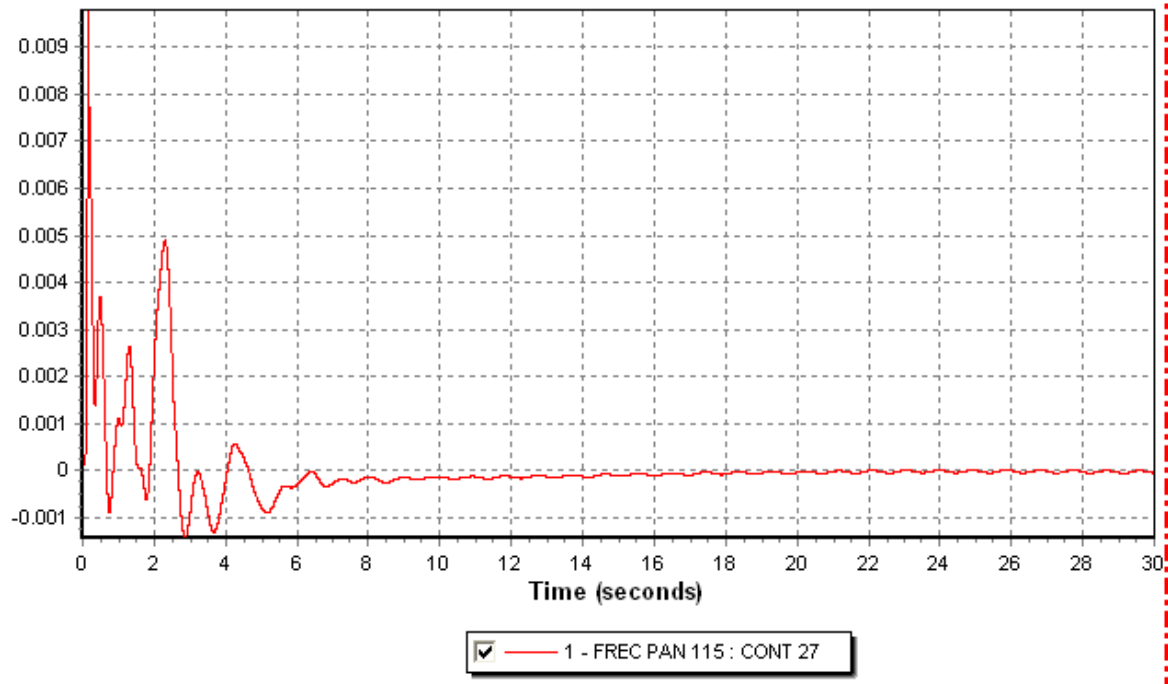


- 20 - ANGL 90[EST-13L 13.800]E1 : CONT18
- 24 - ANGL 97[FOR13A 13.800]F1 : CONT18
- 44 - ANGL 142[CANJ13A 13.800]C1 : CONT18
- 62 - ANGL 307[CHAN1 A 13.800]G1 : CONT18
- 65 - ANGL 316[MTE LIRIO13.13.800]G1 : CONT18
- 92 - ANGL 373[TIZINGAL13.813.800]G1 : CONT18
- 114 - ANGL 705[BAITUN13A 13.800]G1 : CONT18

Falla y apertura de un circuito de Llano Sánchez – Panamá II

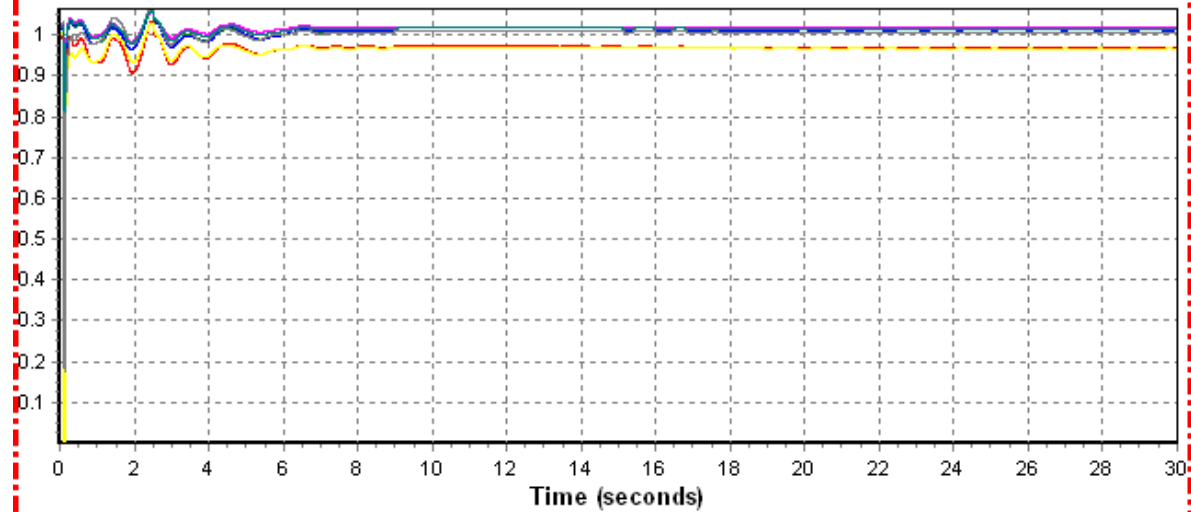
PLAN DE EXPANSION DEL SIN JUNIO-2010 ALTERNATIVA 3
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

Frecuencia en Panamá 115 KV



PLAN DE EXPANSION DEL SIN JUNIO-2010 ALTERNATIVA 3
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

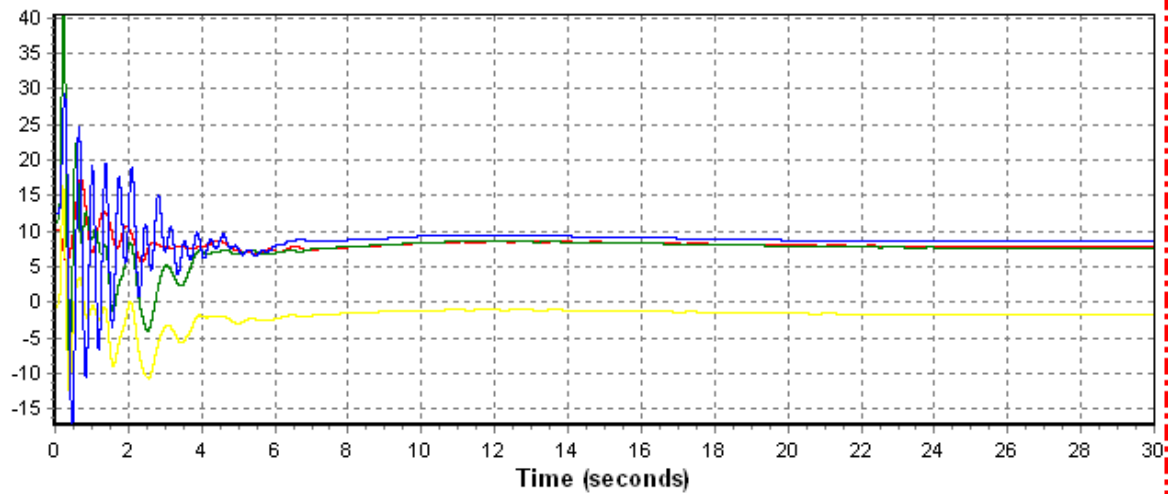
Voltaje en barras de 230 KV



- | | |
|---|--|
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| <input checked="" type="checkbox"/> 9 - FORT 230 : CONT 27 | <input checked="" type="checkbox"/> 3 - PAN II 230 : CONT 27 |
| <input checked="" type="checkbox"/> 10 - BAY 230 : CONT 27 | <input checked="" type="checkbox"/> 13 - CHANG 230 : CONT 27 |
| <input checked="" type="checkbox"/> 14 - CONCEPCION 230 : CONT 27 | |

PLAN DE EXPANSION DEL SIN JUNIO-2010 ALTERNATIVA 3
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

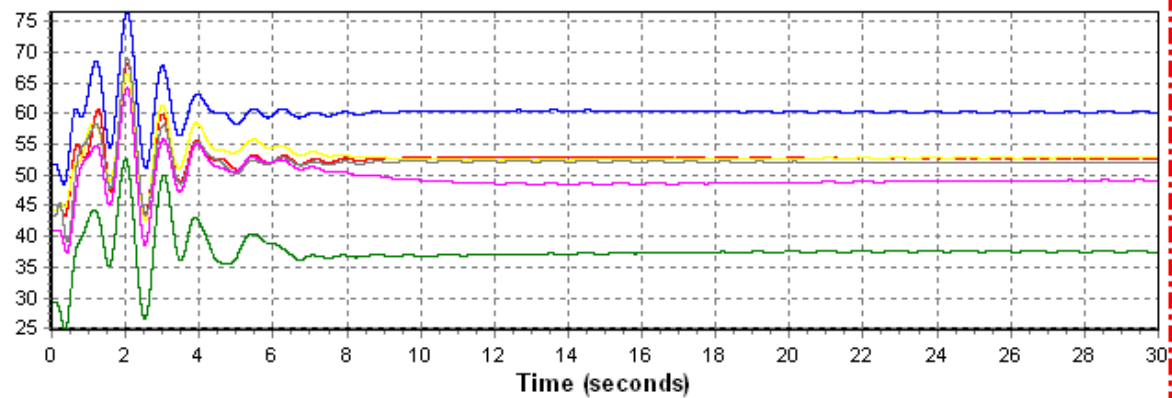
Comportamiento Térmico
Angulos respecto a Bayano



- 17 - ANGL 66[BLM13B 13.800]V2 : CONT 27
- 33 - ANGL 116[PACORA13 13.800]P1 : CONT 27
- 97 - ANGL 523[TCATIVÁ 13A 13.800]G1 : CONT 27
- 107 - ANGL 531[EGIRAL13.8 213.800]G5 : CONT 27

PLAN DE EXPANSION DEL SIN JUNIO-2010 ALTERNATIVA 3
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

Comportamiento Hidráulico
Angulos respecto a Bayano

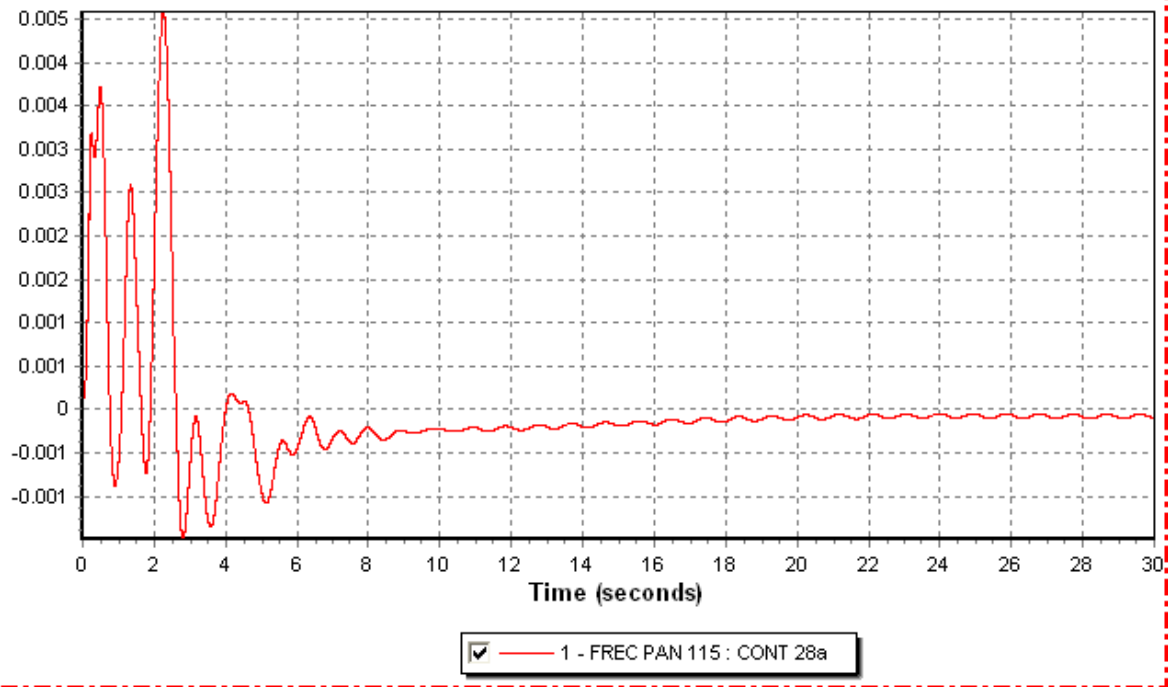


✓	20 - ANGL 90[EST-13L 13.800]E1 : CONT 27
✓	24 - ANGL 97[FOR13A 13.800]F1 : CONT 27
✓	44 - ANGL 142[CANJ13A 13.800]C1 : CONT 27
✓	65 - ANGL 316[MTE LIRIO13.13.800]G1 : CONT 27
✓	114 - ANGL 705[BAITUN13A 13.800]G1 : CONT 27
✓	112 - ANGL 703[BJOMIN13A 13.800]G1 : CONT 27

Falla y Apertura de la línea Guasquitas – Llano Sánchez

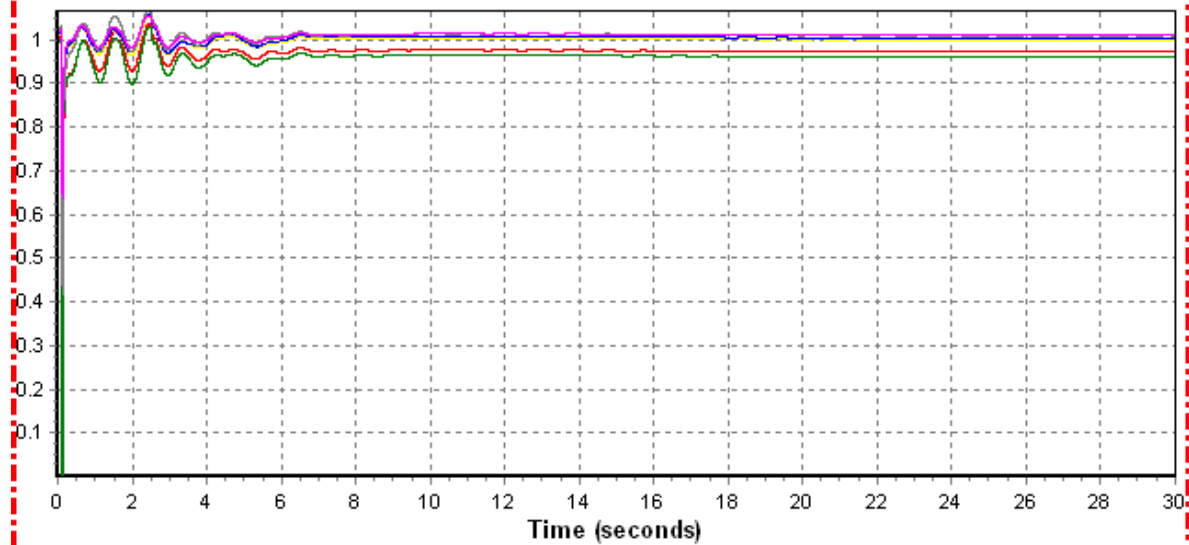
PLAN DE EXPANSION DEL SIN JUNIO-2010 ALTERNATIVA 3
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

Frecuencia en Panamá 115 KV



PLAN DE EXPANSION DEL SIN JUNIO-2010 ALTERNATIVA 3
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

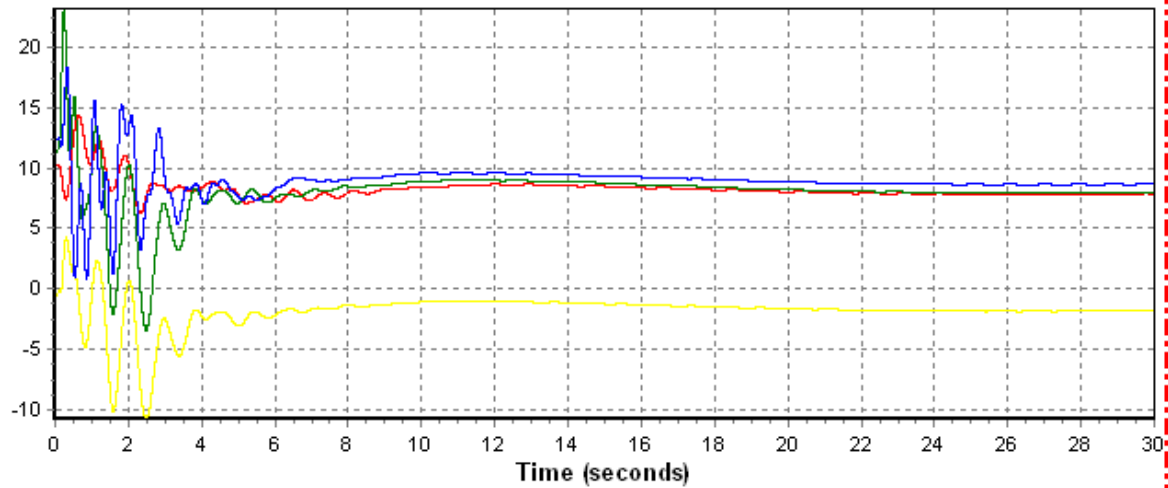
Voltaje en barras de 230 KV



- | | |
|---|--|
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| <input checked="" type="checkbox"/> 8 - GUASQ 230 : CONT 28a | <input checked="" type="checkbox"/> 9 - FORT 230 : CONT 28a |
| <input checked="" type="checkbox"/> 10 - BAY 230 : CONT 28a | <input checked="" type="checkbox"/> 14 - CONCEPCION 230 : CONT 28a |

PLAN DE EXPANSION DEL SIN JUNIO-2010 ALTERNATIVA 3
AÑO 2017 ESC-MOD DEMANDA-MAX-INVIERNO

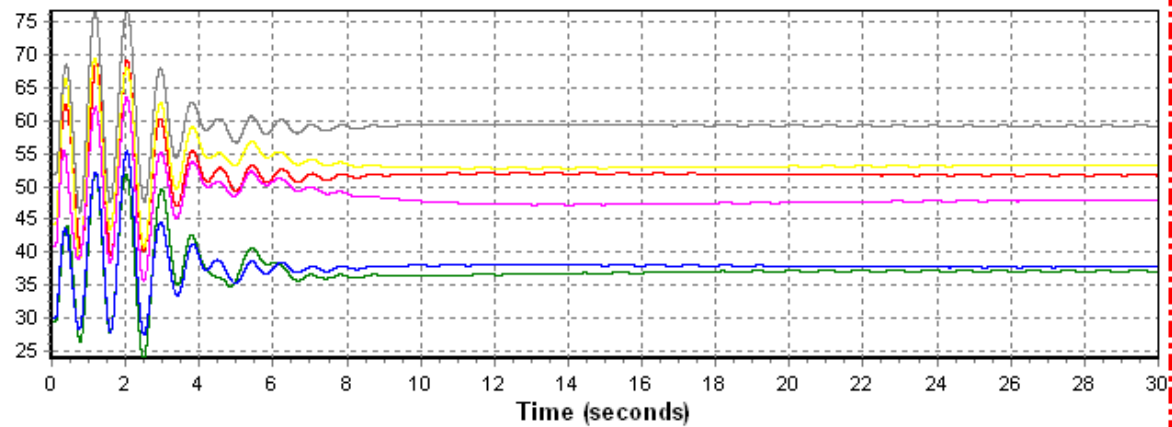
Comportamiento térmico
Angulos respecto a Bayano



- 17 - ANGL 66[BLM13B 13.800]V2 : CONT 28a
- 33 - ANGL 116[PACORA13 13.800]P1 : CONT 28a
- 97 - ANGL 523[TCATIVÁ 13A 13.800]G1 : CONT 28a
- 107 - ANGL 531[EGIRAL13.8 213.800]G5 : CONT 28a

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

Comportamiento Hidráulico
angulos respecto a Bayano



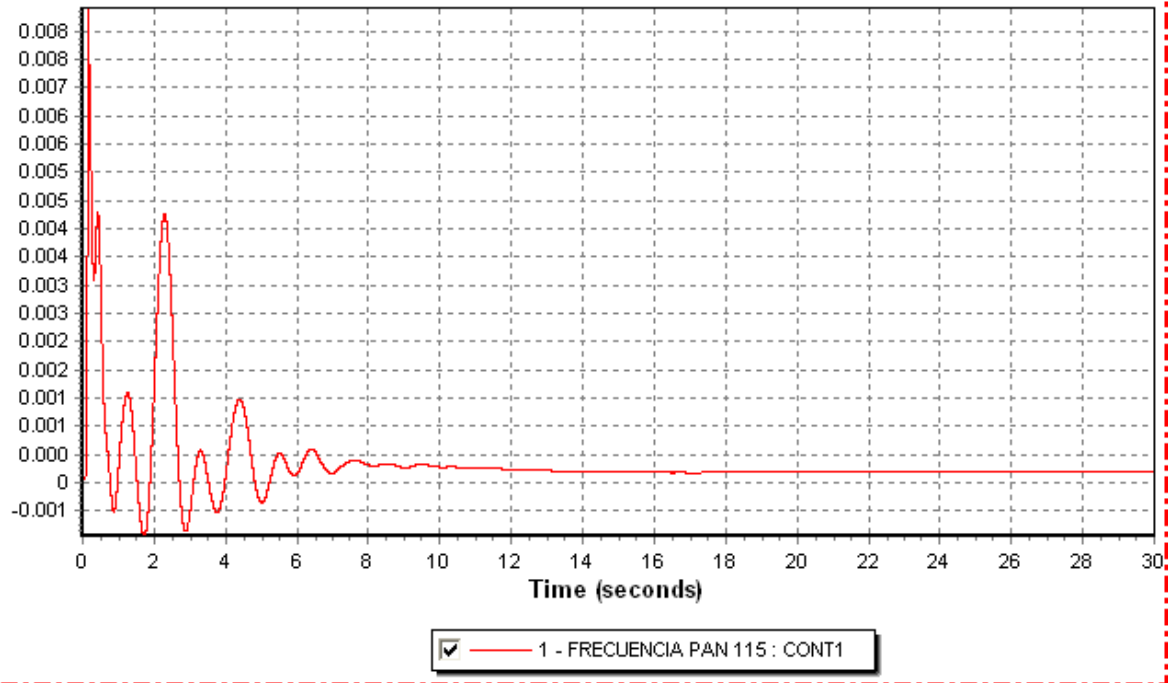
- 20 - ANGL 90[EST-13L 13.800]E1 : CONT 28a
- 24 - ANGL 97[FOR13A 13.800]F1 : CONT 28a
- 44 - ANGL 142[CANJ13A 13.800]C1 : CONT 28a
- 62 - ANGL 307[CHAN1 A 13.800]G1 : CONT 28a
- 112 - ANGL 703[BJOMIN13A 13.800]G1 : CONT 28a
- 114 - ANGL 705[BAITUN13A 13.800]G1 : CONT 28a

Año 2020

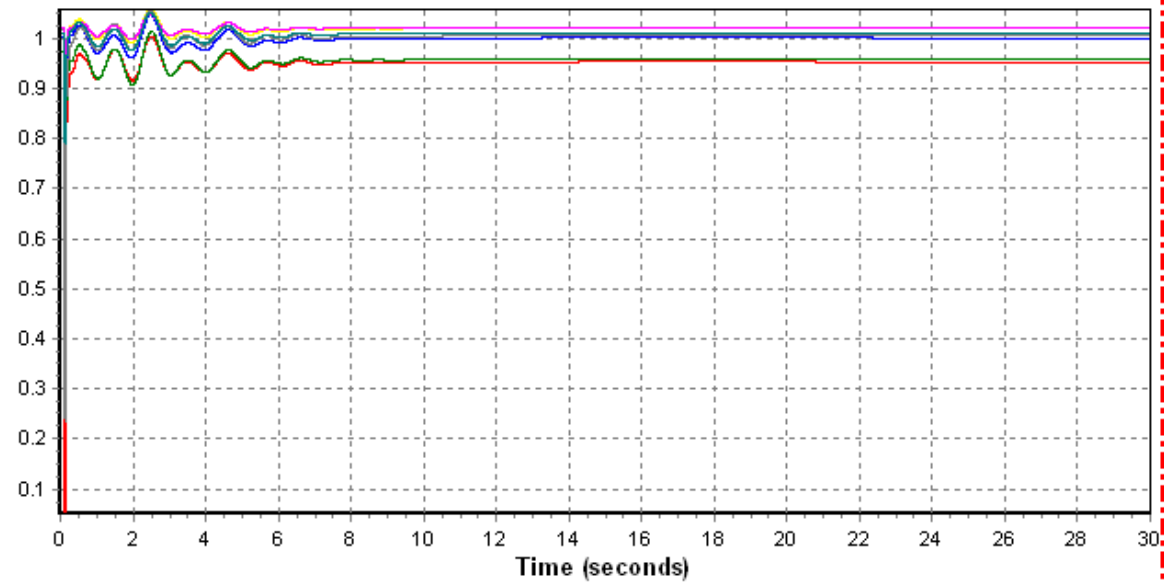
Falla y apertura de un circuito de Panamá - Panamá II

PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO ALTERNATIVA 3

Frecuencia en Panama 115

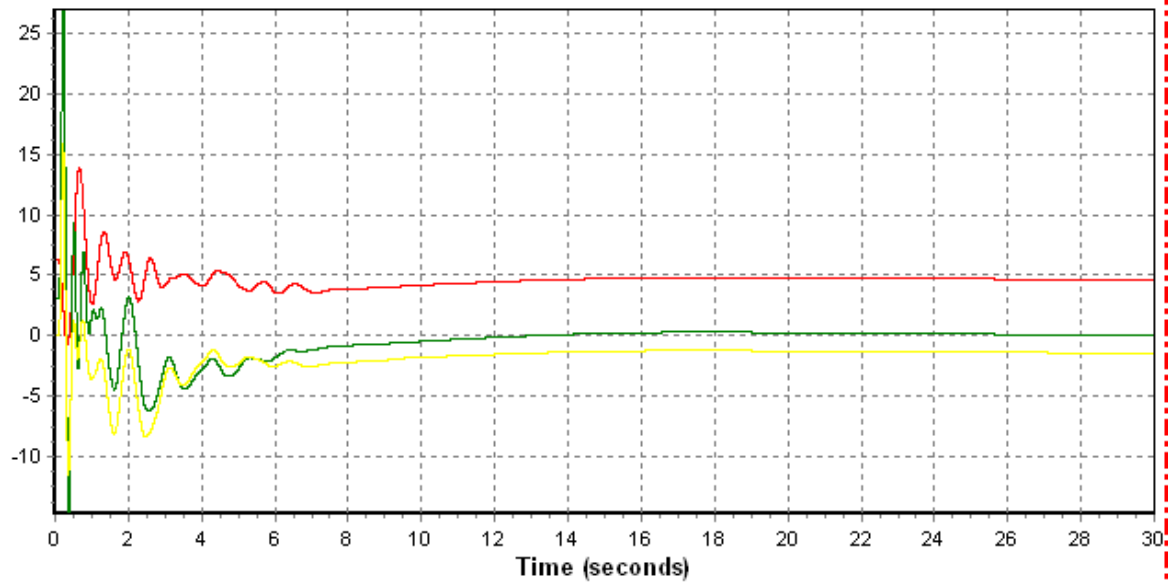


PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO ALTERNATIVA 3



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|---|---|--|
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| <input checked="" type="checkbox"/> 9 - FORT 230 : CONT1 | <input checked="" type="checkbox"/> 10 - BAY 230 : CONT1 | <input checked="" type="checkbox"/> 13 - CHANG 230 : CONT1 |
| <input checked="" type="checkbox"/> 14 - CONCEP 230 : CONT1 | | |

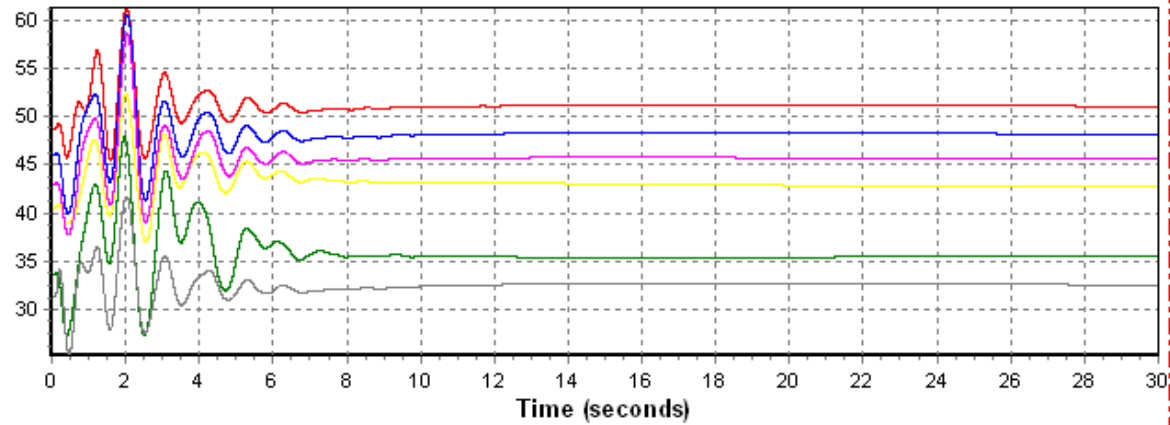
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO ALTERNATIVA 3



- 17 - ANGL 66[BLM13B 13.800]V2 : CONT1
- 29 - ANGL 116[PACORA13 13.800]P1 : CONT1
- 102 - ANGL 523[TCATIVÁ 13A 13.800]G1 : CONT1

PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO ALTERNATIVA 3

Comportamiento Hidráulico
Angulos respecto a Bayano

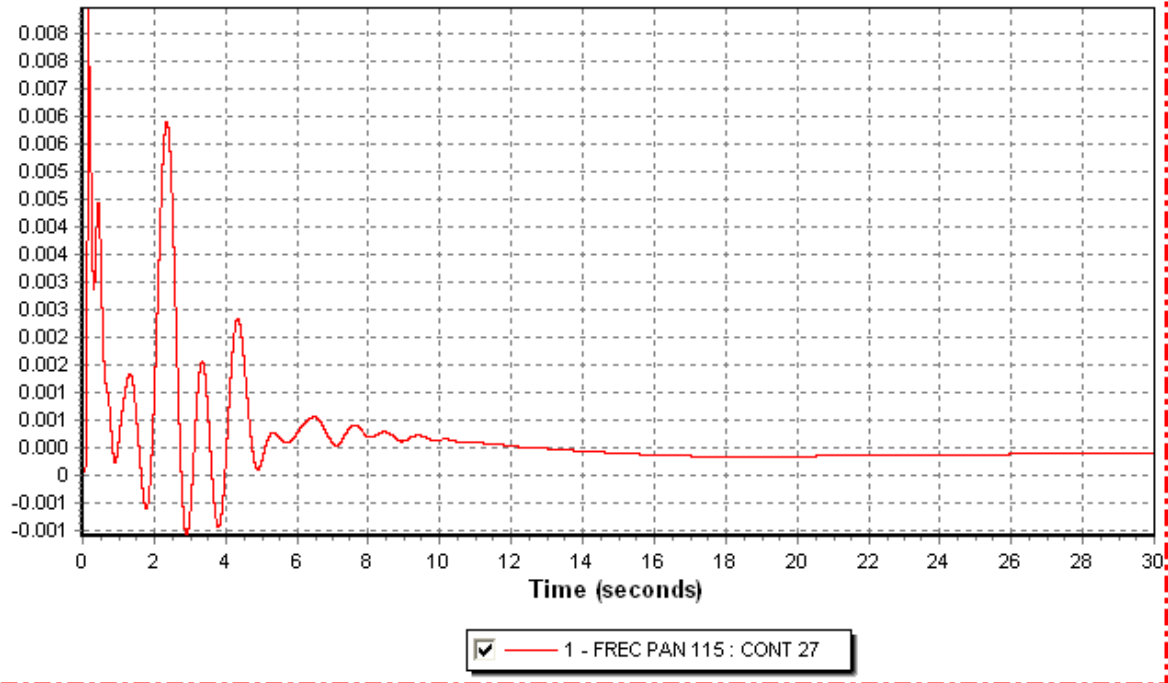


- 20 - ANGL 90[EST-13L 13.800]E1 : CONT1
- 24 - ANGL 97[FOR13A 13.800]F1 : CONT1
- 41 - ANGL 142[CANJ13A 13.800]C1 : CONT1
- 62 - ANGL 307[CHAN1 A 13.800]G1 : CONT1
- 75 - ANGL 343[PRUDENCIA_1 13.800]G1 : CONT1
- 100 - ANGL 507[CHAN2 A 13.800]G1 : CONT1

Falla y apertura de un circuito de Llano Sánchez – Panamá II

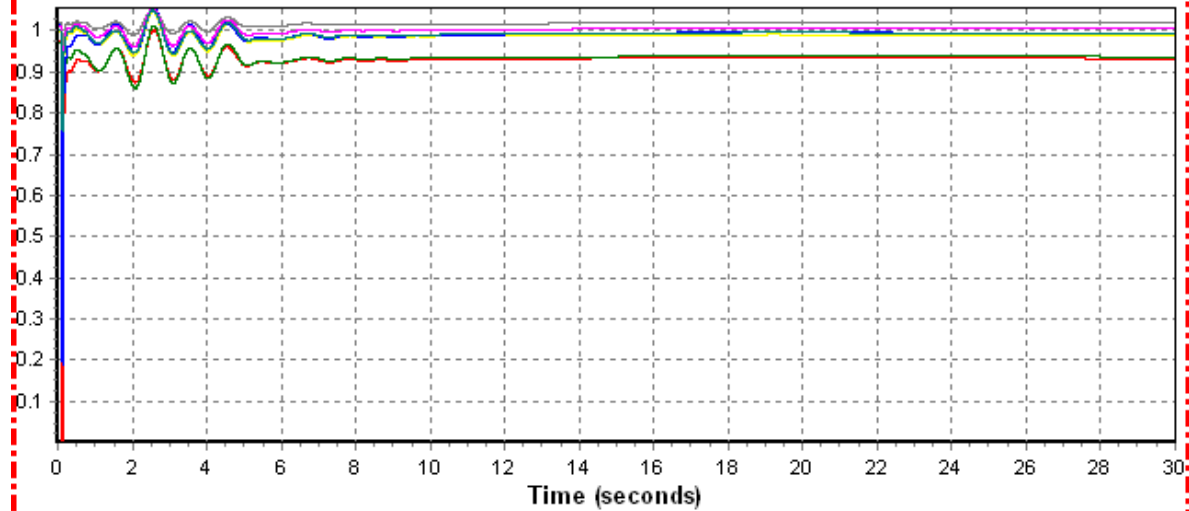
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO ALTERNATIVA 3

Frecuencia en Panamá 115



PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO ALTERNATIVA 3

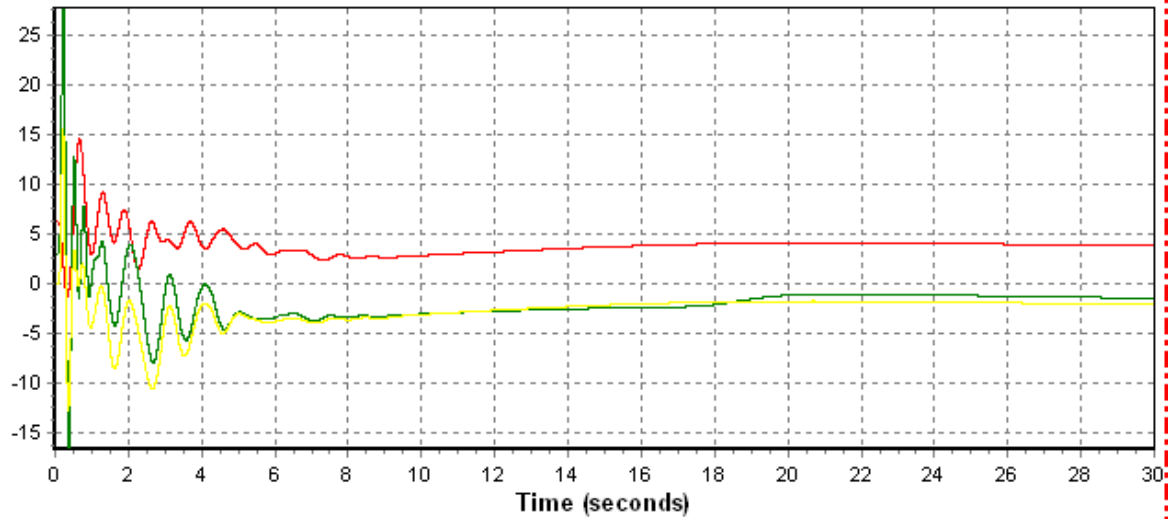
Voltaje en Barras de 230 KV



- | | |
|--|---|
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| <input checked="" type="checkbox"/> 8 - GUASQ 230 : CONT 27 | <input checked="" type="checkbox"/> 10 - BAY 230 : CONT 27 |
| <input checked="" type="checkbox"/> 13 - CHANG 230 : CONT 27 | <input checked="" type="checkbox"/> 14 - CONCEPCION 230 : CONT 27 |
| <input checked="" type="checkbox"/> 9 - FORT 230 : CONT 27 | |

PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO ALTERNATIVA 3

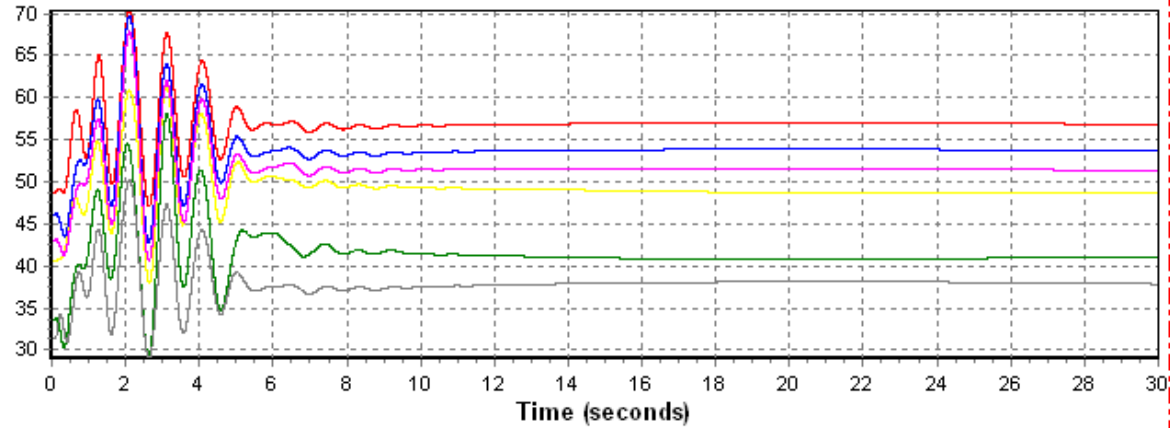
Comportamiento Térmico
Angulos respecto a Bayano



- 17 - ANGL 66[BLM13B 13.800]V2 : CONT 27
- 29 - ANGL 116[PACORA13 13.800]P1 : CONT 27
- 102 - ANGL 523[TCATIVÁ 13A 13.800]G1 : CONT 27

PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO ALTERNATIVA 3

Comportamiento Hidráulico
Angulos respecto a Bayano

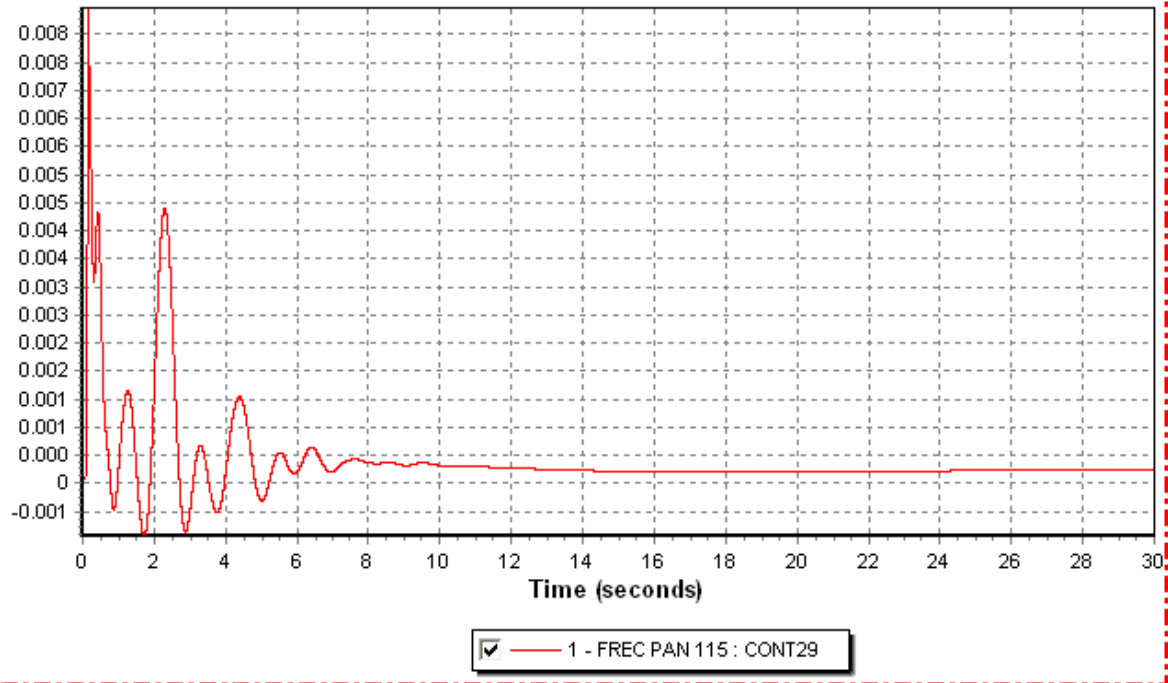


- 20 - ANGL 90[EST-13L 13.800]E1 : CONT 27
- 24 - ANGL 97[FOR13A 13.800]F1 : CONT 27
- 41 - ANGL 142[CANJ13A 13.800]C1 : CONT 27
- 62 - ANGL 307[CHAN1 A 13.800]G1 : CONT 27
- 75 - ANGL 343[PRUDENCIA_1 13.800]G1 : CONT 27
- 100 - ANGL 507[CHAN2 A 13.800]G1 : CONT 27

Falla y Apertura de un circuito Santa Rita – Panamá II

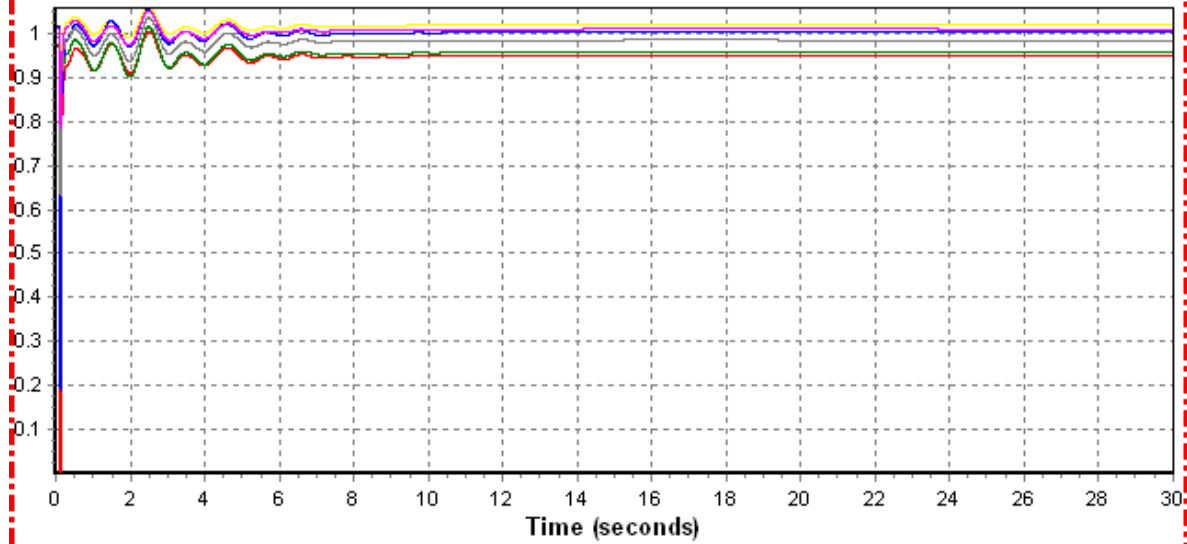
PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO ALTERNATIVA 3

Frecuencia en Panamá 115



PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO ALTERNATIVA 3

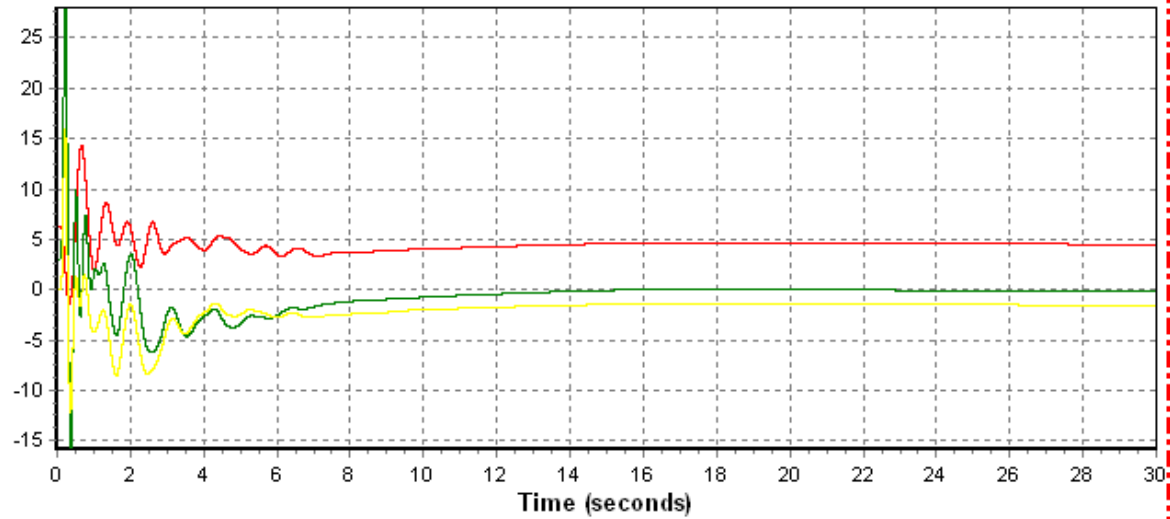
Voltaje en Barras de 230 KV



- | | |
|--|--|
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| <input checked="" type="checkbox"/> 7 - PRO 230 : CONT29 | <input checked="" type="checkbox"/> 10 - BAY 230 : CONT29 |
| <input checked="" type="checkbox"/> 12 - VELADERO 230 : CONT29 | <input checked="" type="checkbox"/> 14 - CONCEPCION 230 : CONT29 |

PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO ALTERNATIVA 3

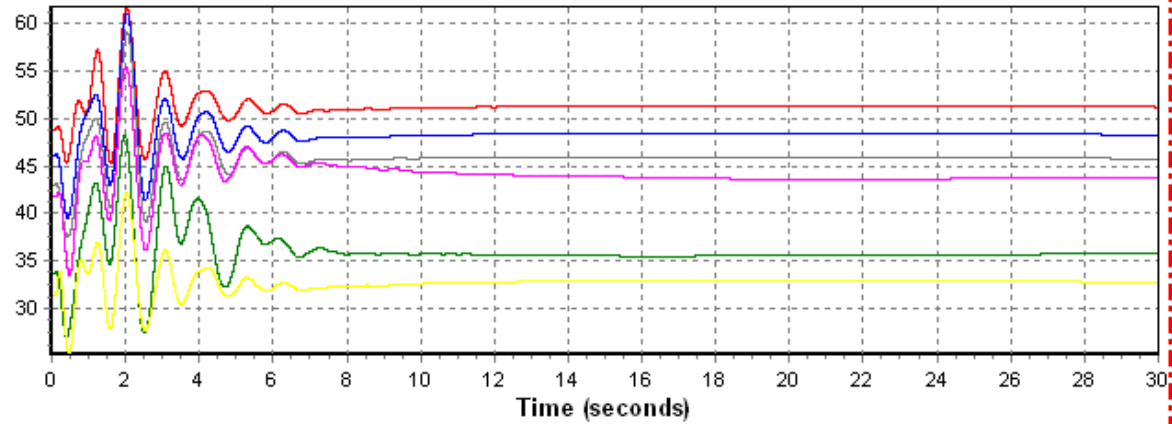
Comportamiento Térmico
Angulos respecto a Bayano



- 17 - ANGL 66[BLM13B 13.800]V2 : CONT29
- 29 - ANGL 116[PACORA13 13.800]P1 : CONT29
- 102 - ANGL 523[TCATIVÁ 13A 13.800]G1 : CONT29

PLAN DE EXPANSION DEL SIN JUNIO-2010
AÑO 2020 ESC-MOD DEMANDA-MAX-INVIERNO ALTERNATIVA 3

Comportamiento Hidráulico
Angulos respecto a Bayano



- 20 - ANGL 90[EST-13L 13.800]E1 : CONT29
- 24 - ANGL 97[FOR13A 13.800]F1 : CONT29
- 75 - ANGL 343[PRUDENCIA_1 13.800]G1 : CONT29
- 62 - ANGL 307[CHAN1 A 13.800]G1 : CONT29
- 100 - ANGL 507[CHAN2 A 13.800]G1 : CONT29
- 115 - ANGL 705[BAITUN13A 13.800]G1 : CONT29