



**ANEXO III-3
RESULTADOS DE FLUJOS DE POTENCIA
INTERCAMBIOS CON C.A.**

INDICE GENERAL**Instructivo de Interpretación a las Salidas del PSS/E****Año 2011**

Demanda Máxima de Inverno
Contingencia 3: Llano Sánchez – Panamá II
Contingencia 4: Llano Sánchez – Veladero
Contingencia 5: Mata de Nance - Veladero
Contingencia 6: Boquerón III – Mata de Nance
Contingencia 15: Las Minas 2 – Chilibre
Contingencia 19: Chorrera – Pan Am
Demanda Máxima de Verano
Demanda Mínima de Invierno
Demanda Mínima de Verano

Año 2012

Demanda Máxima de Invierno
Contingencia 3: Llano Sánchez – Panamá II
Contingencia 4: Llano Sánchez – Veladero
Contingencia 5: Mata de Nance - Veladero
Contingencia 6: Boquerón III – Mata de Nance
Contingencia 10: Fortuna – Gualaca
Contingencia 13: Mata de Nance – Caldera
Demanda Máxima de Verano
Demanda Mínima de Invierno
Demanda Mínima de Verano

Año 2013

Demanda Máxima de Inverno
Contingencia 2: Llano Sánchez – Las Guías
Contingencia 3: Llano Sánchez – Panamá II
Contingencia 7: Frontera – Progreso
Contingencia 13: Mata de Nance – Caldera
Contingencia 21: Llano Sánchez – Veladero
Contingencia 23: Llano Sánchez – Antón
Demanda Máxima de Verano
Demanda Mínima de Invierno
Demanda Mínima de Verano



Año 2014

Demanda Máxima de Inverno
Contingencia 3: Llano Sánchez – Panamá II
Contingencia 7: Frontera – Progreso
Contingencia 13: Mata de Nance – Caldera
Contingencia 21: Llano Sánchez – Veladero
Contingencia 22: Llano Sánchez – San Bartolo
Contingencia 23: Llano Sánchez – Antón
Demanda Máxima de Verano
Demanda Mínima de Invierno
Demanda Mínima de Verano

**Año 2015**

Demanda Máxima de Inverno
Contingencia 2: Llano Sánchez – Las Guías
Contingencia 7: Frontera – Progreso
Contingencia 13: Mata de Nance – Caldera
Contingencia 21: Llano Sánchez – Veladero
Contingencia 22: Llano Sánchez – San Bartolo
Contingencia 23: Llano Sánchez – Antón
Demanda Máxima de Verano
Demanda Mínima de Invierno
Demanda Mínima de Verano

Año 2017

Demanda Máxima de Inverno
Contingencia 2: Llano Sánchez – Las Guías
Contingencia 13: Mata de Nance – Caldera
Contingencia 21: Llano Sánchez – Veladero
Contingencia 22: Llano Sánchez – San Bartolo
Contingencia 23: Llano Sánchez – Antón
Contingencia 24: Llano Sánchez – Barro Blanco
Demanda Máxima de Verano
Demanda Mínima de Invierno
Demanda Mínima de Verano

Año 2020

Demanda Máxima de Inverno

Contingencia 1: Panamá – Panamá II

Contingencia 13: Mata de Nance – Caldera

Contingencia 21: Llano Sánchez – Veladero

Contingencia 22: Llano Sánchez – San Bartolo

Contingencia 24: Llano Sánchez – Barro Blanco

Contingencia 25: Guasquitas – Gualaca

Demanda Máxima de Verano

Demanda Mínima de Invierno

Demanda Mínima de Verano





1073

Instructivo de Interpretación a las Salidas de PSS/E

Título del Caso:

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, JAN 11 2012 14:16
SISTEMA INTERCONECTADO NACIONAL
BASE REGIONAL - DEMANDA MÁXIMA - EPOCA LLUVIOSA 2011

Este incluye información sobre si el caso tiene incorporado al Sistema Eléctrico Regional (SER) o Panamá Aislado del SER. La Demanda modelada (Máxima o Mínima), la estacionalidad (lluviosa o seca) y el año de la simulación.



Reporte de Despacho:

AREA 6 [PANAMA] MACHINE SUMMARY:													X T R A N			GENTAP ZONE AREA SWING		
BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE					
6071		BLMG2		13.800	V2	38.0	0.0	15.0	0.0	1.0059	37.8	1.0000	47.0			62	6	
6072		BLMG3		13.800	V3	38.0	0.0	15.0	0.0	1.0059	37.8	1.0000	47.0			62	6	
6073		BLMG4		13.800	V4	38.0	0.0	15.0	0.0	1.0062	37.8	1.0000	47.0			62	6	
6090		LESG1		13.800	E1	22.4	2.5	12.0	-5.0	1.0100	22.3	0.9937	27.0			64	6	
6091		LESG2		13.800	E2	22.4	2.5	12.0	-5.0	1.0100	22.3	0.9937	27.0			64	6	
6094		LVAG1		13.800	L1	26.0	-4.3	12.0	-5.0	1.0100	26.1	0.9866	27.0			64	6	
6095		LVAG2		13.800	L2	26.0	-4.3	12.0	-5.0	1.0100	26.1	0.9866	27.0			64	6	
6097		FORG1		13.800	F1	62.0	-26.9	50.0	-50.0	0.9850	68.6	0.9175	111.0			64	6	
6101		BAYG1		13.800	B1	66.6	10.9	30.0	-25.0	1.0000	67.5	0.9869	94.0			61	6	SYST
6102		BAYG2		13.800	B2	66.9	3.1	30.0	-25.0	0.9900	67.7	0.9989	94.0			61	6	
6106		PAM13A		13.800	M1	15.1	9.0	9.0	0.0	0.9859	17.8	0.8590	20.7			63	6	

↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16					

1. Área al cual pertenecen las máquinas que se reportan.
2. Bus al que se encuentra asociada la unidad de generación.
3. Nombre de la unidad de generación.
4. Nivel de voltaje de generación.
5. Identificador de la unidad.
6. Potencia Real (P) en MW despachada por la unidad de generación.
7. Potencia Reactiva (Q) en MVAR despachada (sobrecitada) o absorbida (sub-excitada) por la unidad de generación.
8. Potencia Reactiva (Q) máxima que puede aportar la unidad en MVAR. Ésta es de acuerdo a la curva de capacidad de la unidad.
9. Potencia Reactiva (Q) mínima que puede aportar la unidad en MVAR. Ésta es de acuerdo a la curva de capacidad de la unidad.
10. Voltaje en terminales de la unidad (en el estator).



1075

11. Corriente en la unidad de generación.
12. Factor de Potencia asociado a la unidad de generación. No debe ser menor a 0.85.
13. MVA_{base} de la unidad de generación.
14. Zona a la que pertenece la unidad de generación. Para Panamá puede ser del 60 al 64, dependiendo de la ubicación de la planta de generación (capital, este, atlántico, central u oeste). Para ACP la zona corresponde a 65.
15. Área a la que pertenece la unidad de generación. Para Panamá, el área es 6 y para ACP el área es 7.
16. Indica el bus o nodo oscilante (Generalmente Bayano, Fortuna o Changuinola).



Reporte de Voltajes:

1

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0335	237.70
6005		CHO230		230.00	6	1.0031	230.71
6011		MDN230		230.00	6	1.0200	234.61
6096		FOR230		230.00	6	1.0174	234.00
6103		COP230		230.00	6	1.0031	230.72
6171		PAC230		230.00	6	1.0083	231.91
6179		GUA230		230.00	6	1.0186	234.28
6240		LGU 230		230.00	6	1.0069	231.60
6263		ESP230		230.00	6	1.0187	234.30
6340		CAN 230		230.00	6	1.0164	233.76
6363		ZAM230		230.00	6	1.0272	236.25
6380		BOQIII 230		230.00	6	1.0264	236.08
6500		FRONTVEL		230.00	6	1.0385	238.85

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6003		PANII230		230.00	6	1.0008	230.18
6008		ISA230		230.00	6	1.0162	233.74
6014		PRO230		230.00	6	1.0317	237.29
6100		BAY230		230.00	6	1.0145	233.34
6105		PAM230		230.00	6	1.0032	230.75
6178		EST230		230.00	6	1.0186	234.28
6182		VEL230		230.00	6	1.0243	235.59
6260		CHA 230		230.00	6	1.0195	234.49
6330		BAI230		230.00	6	1.0315	237.25
6360		GLA230		230.00	6	1.0223	235.12
6366		EVA230		230.00	6	1.0298	236.86
6400		FRONTCHA		230.00	6	1.0202	234.66
6590		24DIC230		230.00	6	1.0043	230.98

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9969	229.28

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
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3



4



5



6



7



8

1. Muestra los buses con voltaje mayor a 1.00 p.u.
2. Muestra los buses con voltaje menor a 1.00 p.u.
3. Numero de bus.
4. Nombre del bus.
5. Voltaje Base del bus en KV.
6. Área a la que pertenece el bus.
7. Voltaje del bus en p.u.
8. Voltaje Real del bus en KV.



Reporte de Cargabilidad en Circuitos y Transformadores:

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E WED, JAN 11 2012 14:16
 SISTEMA INTERCONECTADO NACIONAL
 BASE REGIONAL - DEMANDA MÁXIMA - EPOCA LLUVIOSA 2011

OUTPUT FOR AREA 6 [PANAMA]

BRANCH LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAF01	WND 1	6	T1	47.8	50.0	95.7	---	---	---	---
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T2	47.8	50.0	95.7	---	---	---	---
6009	LSA115	115.00*	6	3WNDTR	TRAF01	WND 2	6	T1	57.3	60.0	95.5	---	---	---	---
6009	LSA115	115.00*	6	3WNDTR	TRAF02	WND 2	6	T2	57.3	60.0	95.5	---	---	---	---
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	53.6	54.0	99.3	---	---	---	---



1. Indica que el reporte muestra aquellas líneas o transformadores con un porcentaje de carga superior al 95%.
2. Número de bus origen.
3. Nombre del bus origen.
4. Nivel de voltaje base del bus origen.
5. Área a la que pertenece el bus origen.
6. Número de bus destino.
7. Nombre del bus destino.
8. Nivel de voltaje base del bus destino.
9. Área a la que pertenece el bus destino.
10. Identificador del circuito o transformador.
11. Carga que transporta el elemento en MVA.
12. Capacidad nominal del elemento en MVA. Para líneas, estado de operación normal; para transformadores primer estado de enfriamiento o capacidad del transformador.



13. Porcentaje de capacidad del elemento, con base a su capacidad nominal reportada en (12).
14. Capacidad elemento en MVA. Para líneas, estado de operación de emergencia; para transformadores, segundo estado de enfriamiento o capacidad del transformador.
15. Porcentaje de capacidad del elemento, con base a su capacidad reportada en (14).
16. Capacidad elemento en MVA. Corresponde al tercer estado de enfriamiento o capacidad del transformador.
17. Porcentaje de capacidad del elemento, con base a su capacidad reportada en (16).



Reporte de Áreas, Generación, Carga, Intercambios y Pérdidas:

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1 GUATEMAL	1145.6 223.6	1130.4 342.4	0.0 -69.6	0.0 0.0	0.0 296.1	-12.0 -47.1	27.2 293.9	-12.0
2 SALVADOR	890.5 76.1	875.0 270.5	0.0 -146.4	0.0 0.0	0.0 246.5	0.0 25.4	15.5 173.1	0.0
3 HONDURAS	961.5 315.4	938.5 317.1	0.0 -27.0	0.0 0.0	0.0 350.1	-0.1 63.6	23.2 311.8	0.0
4 NICARAGU	415.6 -23.3	409.8 160.6	0.0 -26.0	0.0 0.0	0.0 186.8	0.0 -64.9	5.7 93.8	0.0
5 C. RICA	1175.1 115.4	1157.2 457.9	0.0 -234.3	0.0 0.0	0.0 443.7	0.0 46.3	17.9 289.2	0.0
6 PANAMA	1160.7 14.8	1172.7 205.4	0.0 -133.3	0.0 0.0	0.0 453.5	-47.2 -42.4	35.2 438.6	-48.0
7 ACANAL	104.2 25.4	41.7 7.3	0.0 -15.9	0.0 0.0	0.0 0.0	59.3 19.0	3.2 15.0	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
TOTALS	5853.2 747.4	5725.2 1761.2	0.0 -652.4	0.0 0.0	0.0 1976.7	0.0 0.0	128.0 1615.3	0.0

1. Número y nombre del área.
2. Generación dentro del área en cuestión.
3. Carga en el área del área en cuestión.
4. Intercambio de potencia real dado entre áreas.
5. Pérdidas eléctricas reportadas dentro del área en cuestión.



1080

6. Unidades de los valores numéricos mostrados en el reporte. Los valores superiores corresponden a potencia real (P) en MW y los inferiores a potencia reactiva (Q) en MVAR.
7. Intercambio de potencia deseado entre áreas. (Especificado por el usuario).

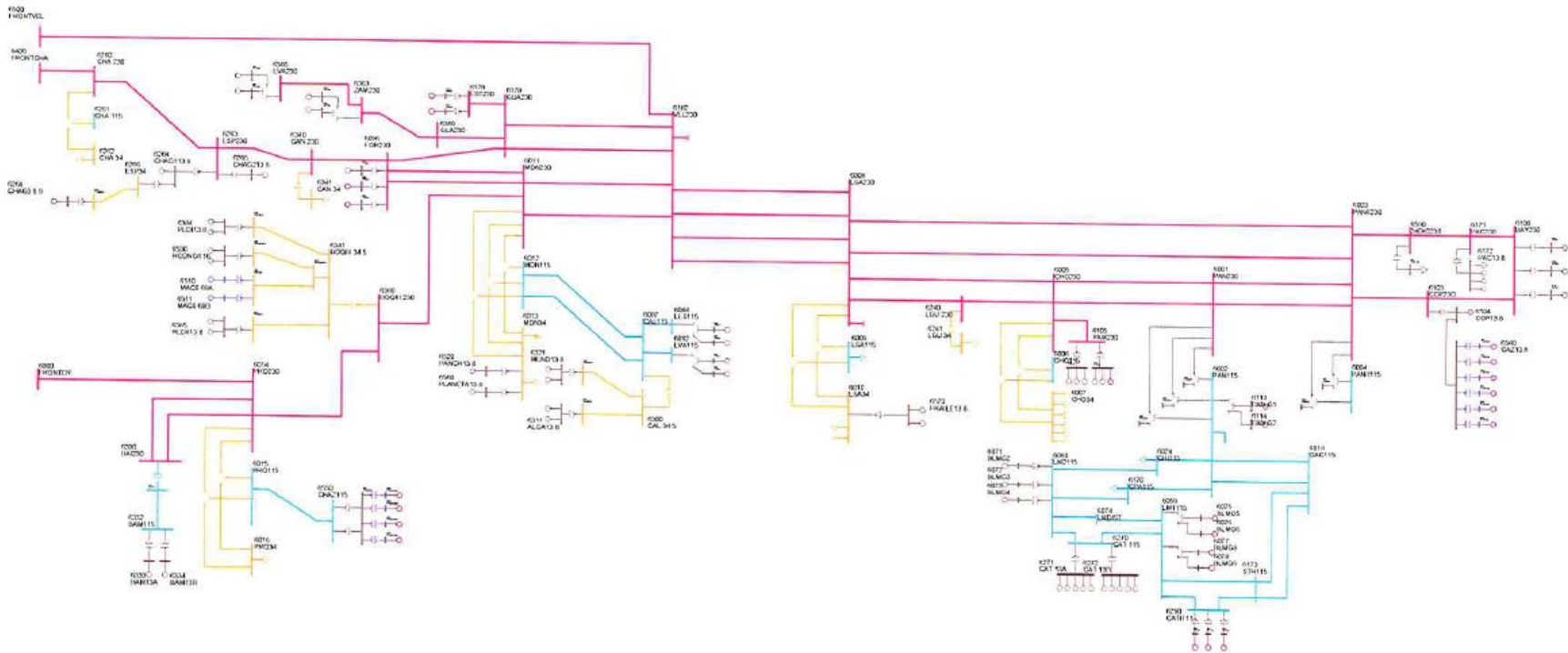
Año 2011



1081



Demanda Máxima de Invierno





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA

WED, APR 13 2011 8:53

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
6071		BLMG2		13.800	V2	38.0	0.0	15.0	0.0	1.0051	37.8	1.0000	47.0			62	6
6072		BLMG3		13.800	V3	38.0	0.0	15.0	0.0	1.0051	37.8	1.0000	47.0			62	6
6073		BLMG4		13.800	V4	38.0	0.0	15.0	0.0	1.0054	37.8	1.0000	47.0			62	6
6090		LESG1		13.800	E1	22.4	2.6	12.0	-5.0	1.0100	22.3	0.9936	27.0			64	6
6091		LESG2		13.800	E2	22.4	2.6	12.0	-5.0	1.0100	22.3	0.9936	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-4.3	12.0	-5.0	1.0100	26.1	0.9868	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-4.3	12.0	-5.0	1.0100	26.1	0.9868	27.0			64	6
6097		FORG1		13.800	F1	62.0	-26.7	50.0	-50.0	0.9850	68.5	0.9185	111.0			64	6
6101		BAYG1		13.800	B1	66.0	11.3	30.0	-25.0	1.0000	67.0	0.9857	94.0			61	6
6102		BAYG2		13.800	B2	66.9	3.6	30.0	-25.0	0.9900	67.7	0.9986	94.0			61	6
6106		PAM13A		13.800	M1	15.1	9.0	9.0	0.0	0.9850	17.8	0.8590	20.7			63	6
6106		PAM13A		13.800	M2	15.1	9.0	9.0	0.0	0.9850	17.8	0.8590	20.7			63	6
6106		PAM13A		13.800	M3	15.1	9.0	9.0	0.0	0.9850	17.8	0.8590	20.7			63	6
6107		PAM13B		13.800	M4	15.1	9.0	9.0	0.0	0.9680	18.2	0.8590	20.7			63	6
6107		PAM13B		13.800	M5	15.1	9.0	9.0	0.0	0.9680	18.2	0.8590	20.7			63	6
6110		BAYG3		13.800	B3	66.9	-6.8	67.0	-25.0	0.9900	68.0	0.9949	100.0			61	6
6172		PAC13.8		13.800	P1	17.0	9.0	9.0	-11.0	0.9832	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	17.0	9.0	9.0	-11.0	0.9832	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	17.0	9.0	9.0	-11.0	0.9832	19.5	0.8832	21.7			61	6
6264		CHAG113.8		13.800	G1	99.6	-6.5	52.4	-48.9	1.0000	99.8	0.9979	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	-3.2	52.4	-48.9	1.0000	99.7	0.9995	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.7	4.9	4.9	-4.1	0.9969	10.0	0.8712	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	-0.4	5.6	-5.6	1.0000	8.3	0.9990	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	-0.4	5.6	-5.6	1.0000	8.3	0.9990	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	-0.4	5.6	-5.6	1.0000	8.3	0.9990	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	-0.4	5.6	-5.6	1.0000	8.3	0.9990	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	-0.4	5.6	-5.6	1.0000	8.3	0.9990	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	-0.4	5.6	-5.6	1.0000	8.3	0.9990	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	-0.4	5.6	-5.6	1.0000	8.3	0.9990	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	-0.4	5.6	-5.6	1.0000	8.3	0.9990	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	-0.4	5.6	-5.6	1.0000	8.3	0.9990	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	-0.4	5.6	-5.6	1.0000	8.3	0.9990	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	-0.4	2.0	-2.0	1.0000	3.7	0.9948	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	-0.4	2.0	-2.0	1.0000	3.7	0.9948	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	-0.4	2.0	-2.0	1.0000	3.7	0.9948	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	-0.4	2.0	-2.0	1.0000	3.7	0.9948	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	-0.8	2.5	-2.5	1.0000	8.3	0.9950	10.9			62	6



6282	GIR 13B	13.800	G6	8.3	-0.8	2.5	-2.5	1.0000	8.3	0.9950	10.9	6
6282	GIR 13B	13.800	G7	8.3	-0.8	2.5	-2.5	1.0000	8.3	0.9950	10.9	6
6282	GIR 13B	13.800	G8	8.3	-0.8	2.5	-2.5	1.0000	8.3	0.9950	10.9	6
6311	ALGA13.8	13.800	A1	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9994	5.7	6
6311	ALGA13.8	13.800	A2	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9994	5.7	6
6321	MEND13.8	13.800	M1	8.9	0.9	4.2	-4.2	1.0100	8.9	0.9952	10.4	6
6321	MEND13.8	13.800	M2	8.9	0.9	4.2	-4.2	1.0100	8.9	0.9952	10.4	6
6333	BAM13A	13.800	G1	26.6	-0.3	10.0	-10.0	1.0000	26.6	0.9999	30.0	6
6334	BAM13B	13.800	G2	26.6	-0.3	10.0	-10.0	1.0000	26.6	0.9999	30.0	6
6364	LOR13A	13.800	G1	16.0	-4.9	7.8	-7.0	1.0200	16.4	0.9561	25.0	6
6365	LOR13B	13.800	G2	16.0	-4.9	7.8	-7.0	1.0200	16.4	0.9561	25.0	6
6367	PRU13A	13.800	G1	26.0	-6.6	8.0	-8.0	1.0200	26.3	0.9694	33.0	6
6368	PRU13B	13.800	G2	26.0	-6.6	8.0	-8.0	1.0200	26.3	0.9694	33.0	6
6384	PEDI13.8	13.800	G1	9.5	0.4	4.9	-4.9	1.0200	9.3	0.9989	12.5	6
6384	PEDI13.8	13.800	G2	9.5	0.4	4.9	-4.9	1.0200	9.3	0.9989	12.5	6
6385	PEDII13.8	13.800	G1	6.2	0.8	3.2	-3.6	1.0200	6.1	0.9925	7.5	6
6385	PEDII13.8	13.800	G2	6.2	0.8	3.2	-3.6	1.0200	6.1	0.9925	7.5	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0250	1.6	0.9985	2.1	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0250	1.6	0.9985	2.1	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9547	5.4	0.9216	6.2	6
6530	HCONC4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0130	5.3	0.8851	5.6	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0130	5.3	0.8851	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9547	4.9	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.5	1.2	1.2	-1.2	0.9787	2.8	0.9040	3.0	6
6570	FRAILE13.8	13.800	G2	2.5	1.2	1.2	-1.2	0.9787	2.8	0.9040	3.0	6
SUBSYSTEM TOTALS				1160.1	18.6	619.5	-445.2				1512.8	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 8:53
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA

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
6127		MIR13B		12.000	G6	18.0	1.2	8.0	0.0	1.0100	17.9	0.9978	27.7			65	7
6128		MIR13C		12.000	G3	20.0	8.7	11.0	0.0	1.0100	21.6	0.9174	29.4			65	7
6129		MIR13D		13.800	G4	20.0	11.4	15.0	0.0	1.0100	22.8	0.8681	44.1			65	7
6130		MIR13F		13.800	G5	17.0	2.1	8.0	0.0	1.0100	17.0	0.9927	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	0.9	6.0	-6.0	1.0100	9.9	0.9956	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.8	6.0	-6.0	1.0100	9.9	0.9964	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	0.9	6.0	-6.0	1.0100	9.9	0.9964	13.0			65	7
SUBSYSTEM TOTALS						105.0	26.0	60.0	-18.0				167.9				



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA

WED, APR 13 2011 8:53

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0332	237.63	6005		CHO230		230.00	6	1.0020	230.47
6008		LSA230		230.00	6	1.0155	233.57	6011		MDN230		230.00	6	1.0198	234.55
6014		PRO230		230.00	6	1.0314	237.22	6096		FOR230		230.00	6	1.0172	233.95
6100		BAY230		230.00	6	1.0139	233.20	6103		COP230		230.00	6	1.0022	230.50
6105		PAM230		230.00	6	1.0022	230.51	6171		PAC230		230.00	6	1.0074	231.70
6178		EST230		230.00	6	1.0184	234.23	6179		GUA230		230.00	6	1.0184	234.23
6182		VEL230		230.00	6	1.0239	235.49	6240		LGU 230		230.00	6	1.0061	231.40
6260		CHA 230		230.00	6	1.0194	234.47	6263		ESP230		230.00	6	1.0186	234.28
6330		BAI230		230.00	6	1.0313	237.19	6340		CAN 230		230.00	6	1.0162	233.72
6360		GLA230		230.00	6	1.0221	235.07	6363		ZAM230		230.00	6	1.0270	236.20
6366		EVA230		230.00	6	1.0297	236.82	6380		BOQIII 230		230.00	6	1.0262	236.02
6400		FRONTCHA		230.00	6	1.0201	234.63	6500		FRONTVEL		230.00	6	1.0382	238.78
6590		24DIC230		230.00	6	1.0033	230.76								

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)
6001		PAN230		230.00	6	0.9958	229.03	6003		PANII230		230.00	6	0.9998	229.95

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA

WED, APR 13 2011 8:53

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0121	116.39	6004		PANII115		115.00	6	1.0150	116.72
6009		LSA115		115.00	6	1.0266	118.05	6012		MDN115		115.00	6	1.0232	117.66
6015		PRO115		115.00	6	1.0297	118.41	6018		CAC115		115.00	6	1.0119	116.37
6019		CVI115A		115.00	6	1.0076	115.88	6024		CHI115		115.00	6	1.0015	115.17
6027		LOC115A		115.00	6	1.0060	115.69	6032		MAR115A		115.00	6	1.0039	115.44
6036		SMA115		115.00	6	1.0103	116.19	6040		SFR115		115.00	6	1.0041	115.47
6055		MOS115B		115.00	6	1.0090	116.04	6057		TOC115		115.00	6	1.0132	116.52



6059	LM1115	115.00	6	1.0085	115.98	6060	LM2115	115.00	6	1.0086	115.99
6066	FFIELD	115.00	6	1.0083	115.95	6074	LMDIST	115.00	6	1.0085	115.98
6087	CAL115	115.00	6	1.0273	118.14	6088	LES115	115.00	6	1.0295	118.39
6092	LVA115	115.00	6	1.0272	118.12	6123	MIR115	115.00	7	1.0236	117.72
6170	CPA115	115.00	6	1.0095	116.09	6173	STR115	115.00	6	1.0088	116.01
6174	PM115-1A	115.00	6	1.0112	116.29	6175	PM115-2A	115.00	6	1.0112	116.29
6210	TIN115	115.00	6	1.0088	116.01	6211	PM115-9	115.00	6	1.0090	116.04
6230	CBA115	115.00	6	1.0051	115.58	6261	CHA 115	115.00	6	1.0158	116.81
6270	CAT 115	115.00	6	1.0087	116.00	6280	GIR 115	115.00	6	1.0097	116.11
6290	CATII 11	115.00	6	1.0085	115.98	6331	BAI115	115.00	6	1.0146	116.68
6332	BAM115	115.00	6	1.0147	116.69	6350	PM115-8	115.00	6	1.0081	115.93
6550	CHAZ115	115.00	6	1.0297	118.41	6580	LBO115	115.00	6	1.0073	115.84

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6006	CHO115	115.00	6	0.9817	112.89	6047	CLA115	115.00	6	0.9964	114.59

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 11:03

SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA
 OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X		X----- TO BUS -----X		RATING SET A		RATING SET B		RATING SET C							
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6005	CHO230	230.00*	6	3WINDTR	TRAF01	WND 1	6	T1	47.8	50.0	95.7	--	--	--	--
6005	CHO230	230.00*	6	3WINDTR	TRAF02	WND 1	6	T2	47.8	50.0	95.7	--	--	--	--
6009	LSA115	115.00*	6	3WINDTR	TRAF01	WND 2	6	T1	57.3	60.0	95.5	--	--	--	--
6009	LSA115	115.00*	6	3WINDTR	TRAF02	WND 2	6	T2	57.3	60.0	95.5	--	--	--	--
6092	LVA115	115.00*	6	3WINDTR	TRAF01	WND 1	6	T1	53.6	54.0	99.2	--	--	--	--
6210	TIN115	115.00*	6	3WINDTR	TIN T1	WND 2	6	T1	40.6	42.0	96.7	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 11:03
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA
 OUTPUT FOR AREA 7 [ACANAL]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)



LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X X----- TO BUS -----X
 BUS# X-- NAME --X BASKV AREA BUS# X-- NAME --X BASKV AREA CKT LOADING RATING SET A RATING SET B RATING SET C
 RATING PERCENT RATING PERCENT RATING PERCENT

* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 8:53
 SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO BUS	TO		TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED
	GENE- RATION	ASSIGNED TO AREA		GNE BUS	BUS				TO TIE	TO TIES	
1	1145.6	1130.4	0.0	0.0	0.0	0.0	27.2	-12.1	-12.1	-12.0	
GUATEMAL	223.1	342.4	-69.3	0.0	0.0	296.2	294.3	-48.1	-48.1		
2	890.5	875.0	0.0	0.0	0.0	0.0	15.5	0.0	0.0	0.0	
SALVADOR	77.8	270.5	-148.4	0.0	0.0	246.2	172.2	29.6	29.6		
3	961.7	938.5	0.0	0.0	0.0	0.0	23.2	0.0	0.0	0.0	
HONDURAS	319.6	317.1	-26.9	0.0	0.0	349.7	311.5	67.6	67.6		
4	427.0	408.0	0.0	0.0	0.0	0.0	18.9	0.1	0.1	0.0	
NICARAGU	35.1	160.0	-25.6	0.0	0.0	174.4	153.4	-78.4	-78.4		
5	1174.8	1157.2	0.0	0.0	0.0	0.0	17.9	-0.3	-0.3	0.0	
C.RICA	122.9	457.9	-234.3	0.0	0.0	442.8	289.5	52.6	52.6		
6	1160.1	1172.7	0.0	0.0	0.0	0.0	35.2	-47.8	-47.8	-48.0	
PANAMA	18.6	205.4	-132.9	0.0	0.0	452.9	441.7	-42.7	-42.7		
7	105.0	41.7	0.0	0.0	0.0	0.0	3.3	60.0	60.0	60.0	
ACANAL	26.0	7.3	-15.9	0.0	0.0	0.0	15.2	19.4	19.4		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	5864.7	5723.4	0.0	0.0	0.0	0.0	141.2	0.0	0.0	0.0	
TOTALS	823.1	1760.6	-653.2	0.0	0.0	1962.2	1677.9	0.0	0.0		



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MAXIMA CONT3

WED, APR 13 2011 9:08

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071	BLMG2	13.800	V2	38.0	1.3	15.0	0.0	1.0000	38.0	0.9994	47.0			62	6
6072	BLMG3	13.800	V3	38.0	1.3	15.0	0.0	1.0000	38.0	0.9994	47.0			62	6
6073	BLMG4	13.800	V4	38.0	1.2	15.0	0.0	1.0000	38.0	0.9995	47.0			62	6
6090	LESG1	13.800	E1	22.4	3.1	12.0	-5.0	1.0100	22.4	0.9906	27.0			64	6
6091	LESG2	13.800	E2	22.4	3.1	12.0	-5.0	1.0100	22.4	0.9906	27.0			64	6
6094	LVAG1	13.800	L1	26.0	-3.7	12.0	-5.0	1.0100	26.0	0.9902	27.0			64	6
6095	LVAG2	13.800	L2	26.0	-3.7	12.0	-5.0	1.0100	26.0	0.9902	27.0			64	6
6097	FORG1	13.800	F1	62.0	-23.4	50.0	-50.0	0.9850	67.3	0.9356	111.0			64	6
6101	BAYG1	13.800	B1	68.9	18.7	30.0	-25.0	1.0000	71.4	0.9649	94.0			61	6
6102	BAYG2	13.800	B2	66.9	10.7	30.0	-25.0	0.9900	68.5	0.9875	94.0			61	6
6106	PAM13A	13.800	M1	15.1	9.0	9.0	0.0	0.9703	18.1	0.8590	20.7			63	6
6106	PAM13A	13.800	M2	15.1	9.0	9.0	0.0	0.9703	18.1	0.8590	20.7			63	6
6106	PAM13A	13.800	M3	15.1	9.0	9.0	0.0	0.9703	18.1	0.8590	20.7			63	6
6107	PAM13B	13.800	M4	15.1	9.0	9.0	0.0	0.9532	18.4	0.8590	20.7			63	6
6107	PAM13B	13.800	M5	15.1	9.0	9.0	0.0	0.9532	18.4	0.8590	20.7			63	6
6110	BAYG3	13.800	B3	66.9	1.5	67.0	-25.0	0.9900	67.6	0.9998	100.0			61	6
6172	PAC13.8	13.800	P1	17.0	9.0	9.0	-11.0	0.9703	19.8	0.8832	21.7			61	6
6172	PAC13.8	13.800	P2	17.0	9.0	9.0	-11.0	0.9703	19.8	0.8832	21.7			61	6
6172	PAC13.8	13.800	P3	17.0	9.0	9.0	-11.0	0.9703	19.8	0.8832	21.7			61	6
6264	CHAG113.8	13.800	G1	99.6	-5.4	52.4	-48.9	1.0000	99.8	0.9985	116.5			64	6
6265	CHAG213.8	13.800	G2	99.6	-2.1	52.4	-48.9	1.0000	99.6	0.9998	116.5			64	6
6268	CHAG3 6.9	6.9000	G3	8.7	4.9	4.9	-4.1	0.9969	10.0	0.8712	10.9			64	6
6271	CAT 13A	13.800	G1	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9993	10.9			62	6
6271	CAT 13A	13.800	G2	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9993	10.9			62	6
6271	CAT 13A	13.800	G3	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9993	10.9			62	6
6271	CAT 13A	13.800	G4	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9993	10.9			62	6
6271	CAT 13A	13.800	G5	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9993	10.9			62	6
6272	CAT 13B	13.800	G0	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9993	10.9			62	6
6272	CAT 13B	13.800	G6	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9993	10.9			62	6
6272	CAT 13B	13.800	G7	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9993	10.9			62	6
6272	CAT 13B	13.800	G8	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9993	10.9			62	6
6272	CAT 13B	13.800	G9	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9993	10.9			62	6
6281	GIR 13A	13.800	G1	3.7	0.0	2.0	-2.0	1.0000	3.7	1.0000	4.8			62	6
6281	GIR 13A	13.800	G2	3.7	0.0	2.0	-2.0	1.0000	3.7	1.0000	4.8			62	6
6281	GIR 13A	13.800	G3	3.7	0.0	2.0	-2.0	1.0000	3.7	1.0000	4.8			62	6
6281	GIR 13A	13.800	G4	3.7	0.0	2.0	-2.0	1.0000	3.7	1.0000	4.8			62	6
6282	GIR 13B	13.800	G5	8.3	0.0	2.5	-2.5	1.0000	8.3	1.0000	10.9			62	6



6282	GIR 13B	13.800	G6	8.3	0.0	2.5	-2.5	1.0000	8.3	1.0000	10.9	6
6282	GIR 13B	13.800	G7	8.3	0.0	2.5	-2.5	1.0000	8.3	1.0000	10.9	6
6282	GIR 13B	13.800	G8	8.3	0.0	2.5	-2.5	1.0000	8.3	1.0000	10.9	6
6311	ALGA13.8	13.800	A1	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9991	5.7	6
6311	ALGA13.8	13.800	A2	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9991	5.7	6
6321	MEND13.8	13.800	M1	8.9	1.1	4.2	-4.2	1.0100	8.9	0.9923	10.4	6
6321	MEND13.8	13.800	M2	8.9	1.1	4.2	-4.2	1.0100	8.9	0.9923	10.4	6
6333	BAM13A	13.800	G1	26.6	0.1	10.0	-10.0	1.0000	26.6	1.0000	30.0	6
6334	BAM13B	13.800	G2	26.6	0.1	10.0	-10.0	1.0000	26.6	1.0000	30.0	6
6364	LOR13A	13.800	G1	16.0	-2.6	7.8	-7.0	1.0200	15.9	0.9874	25.0	6
6365	LOR13B	13.800	G2	16.0	-2.6	7.8	-7.0	1.0200	15.9	0.9874	25.0	6
6367	PRU13A	13.800	G1	26.0	-4.4	8.0	-8.0	1.0200	25.8	0.9862	33.0	6
6368	PRU13B	13.800	G2	26.0	-4.4	8.0	-8.0	1.0200	25.8	0.9862	33.0	6
6384	PEDI13.8	13.800	G1	9.5	0.8	4.9	-4.9	1.0200	9.3	0.9967	12.5	6
6384	PEDI13.8	13.800	G2	9.5	0.8	4.9	-4.9	1.0200	9.3	0.9967	12.5	6
6385	PEDII13.8	13.800	G1	6.2	1.1	3.2	-3.6	1.0200	6.1	0.9847	7.5	6
6385	PEDII13.8	13.800	G2	6.2	1.1	3.2	-3.6	1.0200	6.1	0.9847	7.5	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0237	1.6	0.9985	2.1	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0237	1.6	0.9985	2.1	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9517	5.4	0.9216	6.2	6
6530	HCONC4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0117	5.3	0.8851	5.6	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0117	5.3	0.8851	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9517	5.0	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.5	1.2	1.2	-1.2	0.9652	2.8	0.9040	3.0	6
6570	FRAILE13.8	13.800	G2	2.5	1.2	1.2	-1.2	0.9652	2.8	0.9040	3.0	6
SUBSYSTEM TOTALS				1162.9	76.7	619.5	-445.2				1512.8	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 9:08
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MAXIMA CONT3

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
6127	MIR13B	12.000	G6	18.0	2.6	8.0	0.0	1.0100	18.0	0.9894	27.7			65	7
6128	MIR13C	12.000	G3	20.0	9.9	11.0	0.0	1.0100	22.1	0.8963	29.4			65	7
6129	MIR13D	13.800	G4	20.0	13.0	15.0	0.0	1.0100	23.6	0.8391	44.1			65	7
6130	MIR13F	13.800	G5	17.0	3.8	8.0	0.0	1.0100	17.2	0.9760	27.7			65	7
6134	MAD6A	6.9000	G1	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9921	13.0			65	7
6135	MAD6B	6.9000	G2	10.0	1.1	6.0	-6.0	1.0100	10.0	0.9939	13.0			65	7
6136	MAD6C	6.9000	G3	10.0	1.1	6.0	-6.0	1.0100	10.0	0.9939	13.0			65	7
SUBSYSTEM TOTALS				105.0	32.8	60.0	-18.0				167.9				



1091

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MAXIMA CONT3

WED, APR 13 2011 9:08

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0295	236.78	6008		LSA230		230.00	6	1.0020	230.46
6011		MDN230		230.00	6	1.0154	233.54	6014		PRO230		230.00	6	1.0277	236.37
6096		FOR230		230.00	6	1.0135	233.11	6100		BAY230		230.00	6	1.0045	231.04
6178		EST230		230.00	6	1.0145	233.33	6179		GUA230		230.00	6	1.0145	233.33
6182		VEL230		230.00	6	1.0159	233.66	6260		CHA 230		230.00	6	1.0181	234.17
6263		ESP230		230.00	6	1.0172	233.96	6330		BAI230		230.00	6	1.0276	236.35
6340		CAN 230		230.00	6	1.0132	233.04	6360		GLA230		230.00	6	1.0185	234.25
6363		ZAM230		230.00	6	1.0238	235.47	6366		EVA230		230.00	6	1.0266	236.12
6380		BOQIII 230		230.00	6	1.0223	235.13	6400		FRONTCHA		230.00	6	1.0189	234.35
6500		FRONTVEL		230.00	6	1.0339	237.79								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9799	225.37	6003		PANII230		230.00	6	0.9835	226.21
6005		CHO230		230.00	6	0.9855	226.65	6103		COP230		230.00	6	0.9870	227.00
6105		PAM230		230.00	6	0.9856	226.69	6171		PAC230		230.00	6	0.9931	228.41
6240		LGU 230		230.00	6	0.9901	227.73	6590		24DIC230		230.00	6	0.9880	227.24

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MAXIMA CONT3

WED, APR 13 2011 9:08

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6009		LSA115		115.00	6	1.0124	116.42	6012		MDN115		115.00	6	1.0199	117.28
6015		PRO115		115.00	6	1.0260	117.99	6059		LM1115		115.00	6	1.0006	115.07
6060		LM2115		115.00	6	1.0007	115.08	6066		FFIELD		115.00	6	1.0003	115.04
6074		LMDIST		115.00	6	1.0006	115.07	6087		CAL115		115.00	6	1.0253	117.91
6088		LES115		115.00	6	1.0277	118.19	6092		LVA115		115.00	6	1.0253	117.90
6123		MIR115		115.00	7	1.0111	116.28	6170		CPA115		115.00	6	1.0016	115.19
6173		STR115		115.00	6	1.0001	115.01	6261		CHA 115		115.00	6	1.0145	116.66
6270		CAT 115		115.00	6	1.0008	115.09	6280		GIR 115		115.00	6	1.0022	115.25
6290		CATII 11		115.00	6	1.0005	115.06	6331		BAI115		115.00	6	1.0118	116.36
6332		BAM115		115.00	6	1.0126	116.45	6550		CHAZ115		115.00	6	1.0260	117.99

BUSES WITH VOLTAGE LESS THAN 1.0000:



BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002	PAN	115		0.9974	114.71			6004	PAN	115		0.9986	114.84		
6006	CHO	115		0.9643	110.90			6018	CAC	115		0.9974	114.70		
6019	CVI	115		0.9915	114.02			6024	CHI	115		0.9894	113.78		
6027	LOC	115		0.9910	113.96			6032	MAR	115		0.9889	113.72		
6036	SMA	115		0.9957	114.50			6040	SFR	115		0.9887	113.70		
6047	CLA	115		0.9843	113.19			6055	MOS	115		0.9943	114.35		
6057	TOC	115		0.9967	114.62			6174	PM	115		1.0000	115.00		
6175	PM	115		1.0000	115.00			6210	TIN	115		0.9940	114.31		
6211	PM	115		0.9943	114.34			6230	CBA	115		0.9899	113.84		
6350	PM	115		0.9933	114.23			6580	LBO	115		0.9911	113.98		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 11:06
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MAXIMA CONT3
 OUTPUT FOR AREA 6 [PANAMA]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C				
BUS#	X--	NAME	--X	BASKV	AREA	BUS#	X--	NAME	--X	BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT
6005	CHO	230.00*	6	3W	WND	TRAFO1	WND	1	6	T1	48.0	50.0	95.9	--	--	--
6005	CHO	230.00*	6	3W	WND	TRAFO2	WND	1	6	T2	48.0	50.0	95.9	--	--	--
6009	LSA	115.00*	6	3W	WND	TRAFO1	WND	2	6	T1	57.3	60.0	95.5	--	--	--
6009	LSA	115.00*	6	3W	WND	TRAFO2	WND	2	6	T2	57.3	60.0	95.5	--	--	--
6092	LVA	115.00*	6	3W	WND	TRAFO1	WND	1	6	T1	53.3	54.0	98.7	--	--	--
6210	TIN	115.00*	6	3W	WND	TIN T1	WND	2	6	T1	40.7	42.0	96.8	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 11:06
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MAXIMA CONT3
 OUTPUT FOR AREA 7 [ACANAL]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C				
BUS#	X--	NAME	--X	BASKV	AREA	BUS#	X--	NAME	--X	BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT

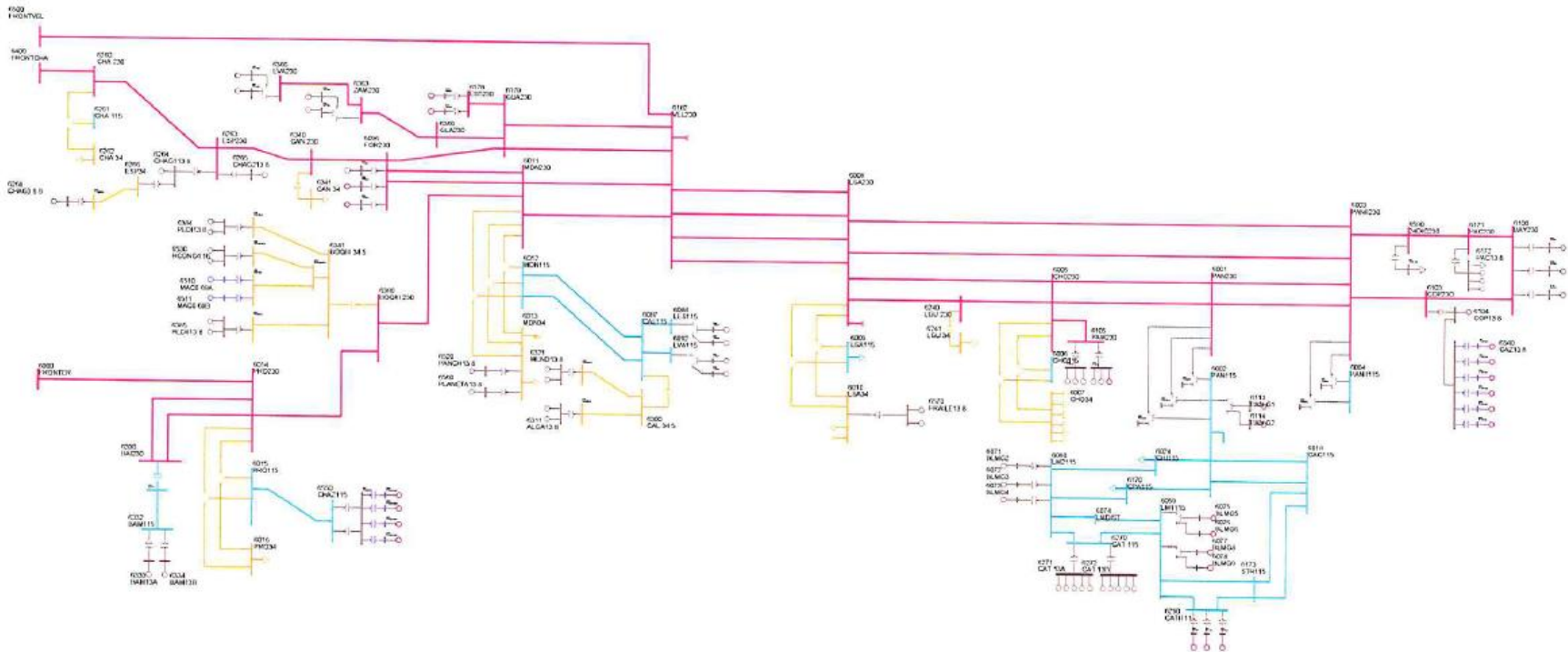
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 11:01

SISTEMA INTERCONECTADO NACIONAL EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MAXIMA CONT3							AREA TOTALS IN MW/MVAR			
X-- AREA --X	FROM GENE- RATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
								TO TIE LINES	TO TIES + LOADS	
1	1145.6	1130.4	0.0	0.0	0.0	0.0	27.2	-12.1	-12.1	-12.0
GUATEMAL	223.1	342.4	-69.3	0.0	0.0	296.2	294.3	-48.1	-48.1	
2	890.5	875.0	0.0	0.0	0.0	0.0	15.5	0.0	0.0	0.0
SALVADOR	77.8	270.5	-148.4	0.0	0.0	246.2	172.2	29.6	29.6	
3	961.7	938.5	0.0	0.0	0.0	0.0	23.2	0.0	0.0	0.0
HONDURAS	319.6	317.1	-26.9	0.0	0.0	349.7	311.5	67.6	67.6	
4	427.0	408.0	0.0	0.0	0.0	0.0	18.9	0.1	0.1	0.0
NICARAGU	35.2	160.0	-25.6	0.0	0.0	174.4	153.4	-78.3	-78.3	
5	1174.8	1157.2	0.0	0.0	0.0	0.0	17.9	-0.3	-0.3	0.0
C.RICA	126.9	457.9	-234.1	0.0	0.0	442.2	289.5	55.8	55.8	
6	1162.9	1172.7	0.0	0.0	0.0	0.0	37.9	-47.6	-47.6	-48.0
PANAMA	76.7	205.4	-128.7	0.0	0.0	408.0	459.8	-51.8	-51.8	
7	105.0	41.7	0.0	0.0	0.0	0.0	3.5	59.8	59.8	60.0
ACANAL	32.8	7.3	-15.7	0.0	0.0	0.0	16.0	25.2	25.2	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	5867.5	5723.4	0.0	0.0	0.0	0.0	144.1	0.0	0.0	0.0
TOTALS	892.1	1760.6	-648.8	0.0	0.0	1916.6	1696.8	0.0	0.0	

Contingencia 4: Llano Sánchez – Veladero (230-5A)





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 4

WED, APR 13 2011 9:14

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
6071		BLMG2		13.800	V2	38.0	0.1	15.0	0.0	1.0000	38.0	1.0000	47.0			62	6
6072		BLMG3		13.800	V3	38.0	0.1	15.0	0.0	1.0000	38.0	1.0000	47.0			62	6
6073		BLMG4		13.800	V4	38.0	0.0	15.0	0.0	1.0001	38.0	1.0000	47.0			62	6
6090		LESG1		13.800	E1	22.4	3.3	12.0	-5.0	1.0100	22.4	0.9891	27.0			64	6
6091		LESG2		13.800	E2	22.4	3.3	12.0	-5.0	1.0100	22.4	0.9891	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-3.4	12.0	-5.0	1.0100	26.0	0.9916	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-3.4	12.0	-5.0	1.0100	26.0	0.9916	27.0			64	6
6097		FORG1		13.800	F1	62.0	-21.9	50.0	-50.0	0.9850	66.8	0.9430	111.0			64	6
6101		BAYG1		13.800	B1	68.0	15.4	30.0	-25.0	1.0000	69.7	0.9753	94.0			61	6
6102		BAYG2		13.800	B2	66.9	7.5	30.0	-25.0	0.9900	68.0	0.9939	94.0			61	6
6106		PAM13A		13.800	M1	15.1	9.0	9.0	0.0	0.9755	18.0	0.8590	20.7			63	6
6106		PAM13A		13.800	M2	15.1	9.0	9.0	0.0	0.9755	18.0	0.8590	20.7			63	6
6106		PAM13A		13.800	M3	15.1	9.0	9.0	0.0	0.9755	18.0	0.8590	20.7			63	6
6107		PAM13B		13.800	M4	15.1	9.0	9.0	0.0	0.9584	18.3	0.8590	20.7			63	6
6107		PAM13B		13.800	M5	15.1	9.0	9.0	0.0	0.9584	18.3	0.8590	20.7			63	6
6110		BAYG3		13.800	B3	66.9	-2.3	67.0	-25.0	0.9900	67.6	0.9994	100.0			61	6
6172		PAC13.8		13.800	P1	17.0	9.0	9.0	-11.0	0.9762	19.7	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	17.0	9.0	9.0	-11.0	0.9762	19.7	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	17.0	9.0	9.0	-11.0	0.9762	19.7	0.8832	21.7			61	6
6264		CHAG113.8		13.800	G1	99.6	-5.0	52.4	-48.9	1.0000	99.7	0.9988	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	-1.6	52.4	-48.9	1.0000	99.6	0.9999	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.7	4.9	4.9	-4.1	0.9969	10.0	0.8712	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.1	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.1	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.1	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.1	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.1	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.1	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.1	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.1	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.1	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.1	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	-0.1	2.0	-2.0	1.0000	3.7	0.9994	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	-0.1	2.0	-2.0	1.0000	3.7	0.9994	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	-0.1	2.0	-2.0	1.0000	3.7	0.9994	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	-0.1	2.0	-2.0	1.0000	3.7	0.9994	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	-0.3	2.5	-2.5	1.0000	8.3	0.9994	10.9			62	6



6282	GIR 13B	13.800	G6	8.3	-0.3	2.5	-2.5	1.0000	8.3	0.9994	10.9	6
6282	GIR 13B	13.800	G7	8.3	-0.3	2.5	-2.5	1.0000	8.3	0.9994	10.9	6
6282	GIR 13B	13.800	G8	8.3	-0.3	2.5	-2.5	1.0000	8.3	0.9994	10.9	6
6311	ALGA13.8	13.800	A1	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9990	5.7	6
6311	ALGA13.8	13.800	A2	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9990	5.7	6
6321	MEND13.8	13.800	M1	8.9	1.2	4.2	-4.2	1.0100	8.9	0.9907	10.4	6
6321	MEND13.8	13.800	M2	8.9	1.2	4.2	-4.2	1.0100	8.9	0.9907	10.4	6
6333	BAM13A	13.800	G1	26.6	0.2	10.0	-10.0	1.0000	26.6	1.0000	30.0	6
6334	BAM13B	13.800	G2	26.6	0.2	10.0	-10.0	1.0000	26.6	1.0000	30.0	6
6364	LOR13A	13.800	G1	16.0	-1.5	7.8	-7.0	1.0200	15.8	0.9957	25.0	6
6365	LOR13B	13.800	G2	16.0	-1.5	7.8	-7.0	1.0200	15.8	0.9957	25.0	6
6367	PRU13A	13.800	G1	26.0	-3.3	8.0	-8.0	1.0200	25.7	0.9918	33.0	6
6368	PRU13B	13.800	G2	26.0	-3.3	8.0	-8.0	1.0200	25.7	0.9918	33.0	6
6384	PEDI13.8	13.800	G1	9.5	0.9	4.9	-4.9	1.0200	9.4	0.9953	12.5	6
6384	PEDI13.8	13.800	G2	9.5	0.9	4.9	-4.9	1.0200	9.4	0.9953	12.5	6
6385	PEDII13.8	13.800	G1	6.2	1.2	3.2	-3.6	1.0200	6.2	0.9803	7.5	6
6385	PEDII13.8	13.800	G2	6.2	1.2	3.2	-3.6	1.0200	6.2	0.9803	7.5	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0231	1.6	0.9985	2.1	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0231	1.6	0.9985	2.1	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9503	5.4	0.9216	6.2	6
6530	HCONC4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0111	5.3	0.8851	5.6	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0111	5.3	0.8851	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9503	5.0	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.5	1.2	1.2	-1.2	0.9633	2.8	0.9040	3.0	6
6570	FRAILE13.8	13.800	G2	2.5	1.2	1.2	-1.2	0.9633	2.8	0.9040	3.0	6
SUBSYSTEM TOTALS				1162.1	67.4	619.5	-445.2				1512.8	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 9:14
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 4

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
6127	MIR13B	12.000	G6	18.0	2.0	8.0	0.0	1.0100	17.9	0.9936	27.7			65	7
6128	MIR13C	12.000	G3	20.0	9.4	11.0	0.0	1.0100	21.9	0.9052	29.4			65	7
6129	MIR13D	13.800	G4	20.0	12.3	15.0	0.0	1.0100	23.2	0.8512	44.1			65	7
6130	MIR13F	13.800	G5	17.0	3.1	8.0	0.0	1.0100	17.1	0.9840	27.7			65	7
6134	MAD6A	6.9000	G1	10.0	1.1	6.0	-6.0	1.0100	10.0	0.9936	13.0			65	7
6135	MAD6B	6.9000	G2	10.0	1.0	6.0	-6.0	1.0100	10.0	0.9950	13.0			65	7
6136	MAD6C	6.9000	G3	10.0	1.0	6.0	-6.0	1.0100	10.0	0.9950	13.0			65	7
SUBSYSTEM TOTALS				105.0	30.0	60.0	-18.0				167.9				



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 9:14
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 4

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0278	236.39	6008		LSA230		230.00	6	1.0001	230.02
6011		MDN230		230.00	6	1.0134	233.07	6014		PRO230		230.00	6	1.0260	235.97
6096		FOR230		230.00	6	1.0118	232.72	6100		BAY230		230.00	6	1.0088	232.02
6178		EST230		230.00	6	1.0127	232.92	6179		GUA230		230.00	6	1.0127	232.92
6182		VEL230		230.00	6	1.0122	232.81	6260		CHA 230		230.00	6	1.0176	234.04
6263		ESP230		230.00	6	1.0166	233.81	6330		BAI230		230.00	6	1.0259	235.97
6340		CAN 230		230.00	6	1.0118	232.72	6360		GLA230		230.00	6	1.0168	233.87
6363		ZAM230		230.00	6	1.0223	235.12	6366		EVA230		230.00	6	1.0252	235.80
6380		BOQIII 230		230.00	6	1.0205	234.71	6400		FRONTCHA		230.00	6	1.0184	234.22
6500		FRONTVEL		230.00	6	1.0319	237.34								

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)
6001		PAN230		230.00	6	0.9867	226.94	6003		PANII230		230.00	6	0.9909	227.91
6005		CHO230		230.00	6	0.9914	228.01	6103		COP230		230.00	6	0.9939	228.59
6105		PAM230		230.00	6	0.9915	228.05	6171		PAC230		230.00	6	0.9996	229.90
6240		LGU 230		230.00	6	0.9924	228.25	6590		24DIC230		230.00	6	0.9950	228.84

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 9:14
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 4

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0036	115.41	6004		PANII115		115.00	6	1.0059	115.68
6009		LSA115		115.00	6	1.0104	116.20	6012		MDN115		115.00	6	1.0183	117.11
6015		PRO115		115.00	6	1.0242	117.79	6018		CAC115		115.00	6	1.0035	115.40
6036		SMA115		115.00	6	1.0018	115.21	6055		MOS115B		115.00	6	1.0005	115.06
6057		TOC115		115.00	6	1.0041	115.47	6059		LM1115		115.00	6	1.0033	115.38
6060		LM2115		115.00	6	1.0034	115.39	6066		FFIELD		115.00	6	1.0031	115.35
6074		LMDIST		115.00	6	1.0033	115.38	6087		CAL115		115.00	6	1.0244	117.80
6088		LBS115		115.00	6	1.0269	118.09	6092		LVA115		115.00	6	1.0244	117.80
6123		MIR115		115.00	7	1.0164	116.88	6170		CPA115		115.00	6	1.0046	115.53
6173		STR115		115.00	6	1.0032	115.37	6174		PM115-1A		115.00	6	1.0044	115.51



6175	PM115-2A	115.00	6	1.0044	115.51	6210	TIN115	115.00	6	1.0002	115.03
6211	PM115-9	115.00	6	1.0005	115.06	6261	CHA 115	115.00	6	1.0139	116.60
6270	CAT 115	115.00	6	1.0035	115.40	6280	GIR 115	115.00	6	1.0050	115.57
6290	CATII 11	115.00	6	1.0033	115.38	6331	BAI115	115.00	6	1.0105	116.21
6332	BAM115	115.00	6	1.0116	116.34	6550	CHAZ115	115.00	6	1.0242	117.79

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6006	CHO115	115.00	6	0.9705	111.61	6019	CVI115A	115.00	6	0.9986	114.84
6024	CHI115	115.00	6	0.9942	114.34	6027	LOC115A	115.00	6	0.9973	114.69
6032	MAR115A	115.00	6	0.9952	114.45	6040	SFR115	115.00	6	0.9953	114.46
6047	CLA115	115.00	6	0.9891	113.75	6230	CBA115	115.00	6	0.9964	114.58
6350	PM115-8	115.00	6	0.9996	114.95	6580	LBO115	115.00	6	0.9983	114.80

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 11:07
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 4
 OUTPUT FOR AREA 6 [PANAMA]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X		X----- TO BUS -----X		RATING SET A			RATING SET B		RATING SET C				
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6005	CHO230	230.00*	6	3WNTDR	TRAF01	WND 1	6	T1	47.9	50.0	95.8	--	--
6005	CHO230	230.00*	6	3WNTDR	TRAF02	WND 1	6	T2	47.9	50.0	95.8	--	--
6009	LSA115	115.00*	6	3WNTDR	TRAF01	WND 2	6	T1	57.3	60.0	95.5	--	--
6009	LSA115	115.00*	6	3WNTDR	TRAF02	WND 2	6	T2	57.3	60.0	95.5	--	--
6092	LVA115	115.00*	6	3WNTDR	TRAF01	WND 1	6	T1	53.2	54.0	98.5	--	--
6210	TIN115	115.00*	6	3WNTDR	TIN T1	WND 2	6	T1	40.6	42.0	96.8	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 11:07
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 4
 OUTPUT FOR AREA 7 [ACANAL]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X		X----- TO BUS -----X		RATING SET A			RATING SET B		RATING SET C				
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *

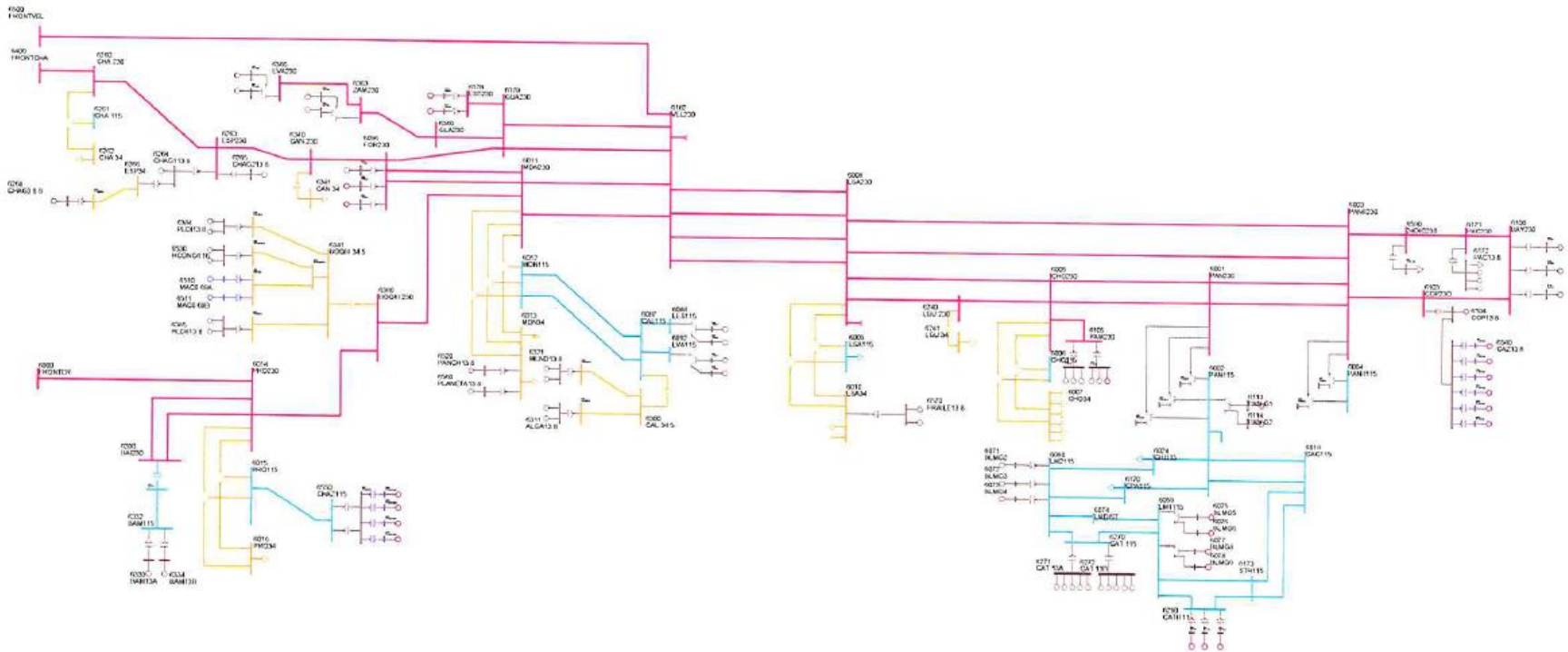


PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E WED, APR 13 2011 11:08
 SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 4 IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO		TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
	GENE- RATION	AT AREA BUSES	TO BUS SHUNT	GNE BUS DEVICES				TO TIE LINES	TO TIES + LOADS	
1	1145.6	1130.4	0.0	0.0	0.0	0.0	27.2	-12.1	-12.1	-12.0
GUATEMAL	223.1	342.4	-69.3	0.0	0.0	296.2	294.3	-48.1	-48.1	
2	890.5	875.0	0.0	0.0	0.0	0.0	15.5	0.0	0.0	0.0
SALVADOR	77.8	270.5	-148.4	0.0	0.0	246.2	172.2	29.6	29.6	
3	961.7	938.5	0.0	0.0	0.0	0.0	23.2	0.0	0.0	0.0
HONDURAS	319.6	317.1	-26.9	0.0	0.0	349.7	311.5	67.6	67.6	
4	427.0	408.0	0.0	0.0	0.0	0.0	18.9	0.1	0.1	0.0
NICARAGU	35.2	160.0	-25.6	0.0	0.0	174.4	153.4	-78.3	-78.3	
5	1174.8	1157.2	0.0	0.0	0.0	0.0	17.9	-0.3	-0.3	0.0
C.RICA	128.7	457.9	-234.1	0.0	0.0	441.9	289.6	57.2	57.2	
6	1162.1	1172.7	0.0	0.0	0.0	0.0	37.1	-47.7	-47.7	-48.0
PANAMA	67.4	205.4	-130.6	0.0	0.0	420.4	463.8	-50.9	-50.9	
7	105.0	41.7	0.0	0.0	0.0	0.0	3.4	59.9	59.9	60.0
ACANAL	30.0	7.3	-15.8	0.0	0.0	0.0	15.6	22.8	22.8	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	5866.6	5723.4	0.0	0.0	0.0	0.0	143.2	0.0	0.0	0.0
TOTALS	881.8	1760.6	-650.6	0.0	0.0	1928.7	1700.5	0.0	0.0	



Contingencia 5: Mata de Nance - Veladero (230-5B)





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 5

WED, APR 13 2011 9:18

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071	BLMG2	13.800	V2	38.0	0.0	15.0	0.0	1.0036	37.9	1.0000	47.0			62	6
6072	BLMG3	13.800	V3	38.0	0.0	15.0	0.0	1.0036	37.9	1.0000	47.0			62	6
6073	BLMG4	13.800	V4	38.0	0.0	15.0	0.0	1.0039	37.9	1.0000	47.0			62	6
6090	LESG1	13.800	E1	22.4	3.3	12.0	-5.0	1.0100	22.4	0.9896	27.0			64	6
6091	LESG2	13.800	E2	22.4	3.3	12.0	-5.0	1.0100	22.4	0.9896	27.0			64	6
6094	LVAG1	13.800	L1	26.0	-3.5	12.0	-5.0	1.0100	26.0	0.9911	27.0			64	6
6095	LVAG2	13.800	L2	26.0	-3.5	12.0	-5.0	1.0100	26.0	0.9911	27.0			64	6
6097	FORG1	13.800	F1	62.0	-22.4	50.0	-50.0	0.9850	66.9	0.9403	111.0			64	6
6101	BAYG1	13.800	B1	67.4	12.5	30.0	-25.0	1.0000	68.6	0.9832	94.0			61	6
6102	BAYG2	13.800	B2	66.9	4.6	30.0	-25.0	0.9900	67.8	0.9976	94.0			61	6
6106	PAM13A	13.800	M1	15.1	9.0	9.0	0.0	0.9824	17.9	0.8590	20.7			63	6
6106	PAM13A	13.800	M2	15.1	9.0	9.0	0.0	0.9824	17.9	0.8590	20.7			63	6
6106	PAM13A	13.800	M3	15.1	9.0	9.0	0.0	0.9824	17.9	0.8590	20.7			63	6
6107	PAM13B	13.800	M4	15.1	9.0	9.0	0.0	0.9653	18.2	0.8590	20.7			63	6
6107	PAM13B	13.800	M5	15.1	9.0	9.0	0.0	0.9653	18.2	0.8590	20.7			63	6
6110	BAYG3	13.800	B3	66.9	-5.6	67.0	-25.0	0.9900	67.8	0.9966	100.0			61	6
6172	PAC13.8	13.800	P1	17.0	9.0	9.0	-11.0	0.9812	19.6	0.8832	21.7			61	6
6172	PAC13.8	13.800	P2	17.0	9.0	9.0	-11.0	0.9812	19.6	0.8832	21.7			61	6
6172	PAC13.8	13.800	P3	17.0	9.0	9.0	-11.0	0.9812	19.6	0.8832	21.7			61	6
6264	CHAG113.8	13.800	G1	99.6	-5.1	52.4	-48.9	1.0000	99.7	0.9987	116.5			64	6
6265	CHAG213.8	13.800	G2	99.6	-1.8	52.4	-48.9	1.0000	99.6	0.9998	116.5			64	6
6268	CHAG3 6.9	6.9000	G3	8.7	4.9	4.9	-4.1	0.9969	10.0	0.8712	10.9			64	6
6271	CAT 13A	13.800	G1	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6271	CAT 13A	13.800	G2	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6271	CAT 13A	13.800	G3	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6271	CAT 13A	13.800	G4	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6271	CAT 13A	13.800	G5	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272	CAT 13B	13.800	G0	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272	CAT 13B	13.800	G6	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272	CAT 13B	13.800	G7	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272	CAT 13B	13.800	G8	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272	CAT 13B	13.800	G9	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6281	GIR 13A	13.800	G1	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9965	4.8			62	6
6281	GIR 13A	13.800	G2	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9965	4.8			62	6
6281	GIR 13A	13.800	G3	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9965	4.8			62	6
6281	GIR 13A	13.800	G4	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9965	4.8			62	6
6282	GIR 13B	13.800	G5	8.3	-0.7	2.5	-2.5	1.0000	8.3	0.9967	10.9			62	6



6282	GIR 13B	13.800	G6	8.3	-0.7	2.5	-2.5	1.0000	8.3	0.9967	10.9	6
6282	GIR 13B	13.800	G7	8.3	-0.7	2.5	-2.5	1.0000	8.3	0.9967	10.9	6
6282	GIR 13B	13.800	G8	8.3	-0.7	2.5	-2.5	1.0000	8.3	0.9967	10.9	6
6311	ALGA13.8	13.800	A1	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9990	5.7	6
6311	ALGA13.8	13.800	A2	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9990	5.7	6
6321	MEND13.8	13.800	M1	8.9	1.2	4.2	-4.2	1.0100	8.9	0.9912	10.4	6
6321	MEND13.8	13.800	M2	8.9	1.2	4.2	-4.2	1.0100	8.9	0.9912	10.4	6
6333	BAM13A	13.800	G1	26.6	0.2	10.0	-10.0	1.0000	26.6	1.0000	30.0	6
6334	BAM13B	13.800	G2	26.6	0.2	10.0	-10.0	1.0000	26.6	1.0000	30.0	6
6364	LOR13A	13.800	G1	16.0	-2.3	7.8	-7.0	1.0200	15.9	0.9896	25.0	6
6365	LOR13B	13.800	G2	16.0	-2.3	7.8	-7.0	1.0200	15.9	0.9896	25.0	6
6367	PRU13A	13.800	G1	26.0	-4.1	8.0	-8.0	1.0200	25.8	0.9876	33.0	6
6368	PRU13B	13.800	G2	26.0	-4.1	8.0	-8.0	1.0200	25.8	0.9876	33.0	6
6384	PEDI13.8	13.800	G1	9.5	0.9	4.9	-4.9	1.0200	9.4	0.9960	12.5	6
6384	PEDI13.8	13.800	G2	9.5	0.9	4.9	-4.9	1.0200	9.4	0.9960	12.5	6
6385	PEDII13.8	13.800	G1	6.2	1.2	3.2	-3.6	1.0200	6.2	0.9823	7.5	6
6385	PEDII13.8	13.800	G2	6.2	1.2	3.2	-3.6	1.0200	6.2	0.9823	7.5	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0234	1.6	0.9985	2.1	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0234	1.6	0.9985	2.1	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9508	5.4	0.9216	6.2	6
6530	HCONC4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0114	5.3	0.8851	5.6	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0114	5.3	0.8851	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9508	5.0	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.5	1.2	1.2	-1.2	0.9744	2.8	0.9040	3.0	6
6570	FRAILE13.8	13.800	G2	2.5	1.2	1.2	-1.2	0.9744	2.8	0.9040	3.0	6
SUBSYSTEM TOTALS				1161.5	47.6	619.5	-445.2				1512.8	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 9:18
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 5

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
6127		MIR13B		12.000	G6	18.0	1.4	8.0	0.0	1.0100	17.9	0.9968	27.7			65	7
6128		MIR13C		12.000	G3	20.0	8.9	11.0	0.0	1.0100	21.7	0.9140	29.4			65	7
6129		MIR13D		13.800	G4	20.0	11.7	15.0	0.0	1.0100	22.9	0.8634	44.1			65	7
6130		MIR13F		13.800	G5	17.0	2.3	8.0	0.0	1.0100	17.0	0.9906	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	1.0	6.0	-6.0	1.0100	9.9	0.9951	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.9	6.0	-6.0	1.0100	9.9	0.9960	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	0.9	6.0	-6.0	1.0100	9.9	0.9960	13.0			65	7
SUBSYSTEM TOTALS						105.0	27.1	60.0	-18.0				167.9				



1103

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 9:18
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 5

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0287	236.60	6008		LSA230		230.00	6	1.0112	232.58
6011		MDN230		230.00	6	1.0141	233.24	6014		PRO230		230.00	6	1.0268	236.17
6096		FOR230		230.00	6	1.0124	232.86	6100		BAY230		230.00	6	1.0125	232.87
6171		PAC230		230.00	6	1.0052	231.20	6178		EST230		230.00	6	1.0141	233.24
6179		GUA230		230.00	6	1.0141	233.24	6182		VEL230		230.00	6	1.0187	234.30
6240		LGU 230		230.00	6	1.0023	230.52	6260		CHA 230		230.00	6	1.0178	234.09
6263		ESP230		230.00	6	1.0168	233.87	6330		BAI230		230.00	6	1.0268	236.16
6340		CAN 230		230.00	6	1.0124	232.84	6360		GLA230		230.00	6	1.0181	234.16
6363		ZAM230		230.00	6	1.0234	235.39	6366		EVA230		230.00	6	1.0263	236.05
6380		BOQIII 230		230.00	6	1.0213	234.89	6400		FRONTCHA		230.00	6	1.0186	234.27
6500		FRONTVEL		230.00	6	1.0335	237.70	6590		24DIC230		230.00	6	1.0010	230.22

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9932	228.45	6003		PANII230		230.00	6	0.9973	229.38
6005		CHO230		230.00	6	0.9991	229.79	6103		COP230		230.00	6	0.9999	229.97
6105		PAM230		230.00	6	0.9992	229.82								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 9:18
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 5
BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0097	116.11	6004		PANII115		115.00	6	1.0125	116.43
6009		LSA115		115.00	6	1.0220	117.53	6012		MDN115		115.00	6	1.0189	117.17
6015		PRO115		115.00	6	1.0251	117.89	6018		CAC115		115.00	6	1.0095	116.10
6019		CVI115A		115.00	6	1.0051	115.59	6027		LOC115A		115.00	6	1.0036	115.41
6032		MAR115A		115.00	6	1.0014	115.17	6036		SMA115		115.00	6	1.0080	115.91
6040		SFR115		115.00	6	1.0016	115.18	6055		MOS115B		115.00	6	1.0066	115.76
6057		TOC115		115.00	6	1.0106	116.22	6059		LM1115		115.00	6	1.0070	115.81
6060		LM2115		115.00	6	1.0071	115.82	6066		FFIELD		115.00	6	1.0068	115.78
6074		LMDIST		115.00	6	1.0070	115.81	6087		CAL115		115.00	6	1.0247	117.84
6088		LES115		115.00	6	1.0272	118.12	6092		LVA115		115.00	6	1.0247	117.84
6123		MIR115		115.00	7	1.0216	117.48	6170		CPA115		115.00	6	1.0081	115.93
6173		STR115		115.00	6	1.0072	115.83	6174		PM115-1A		115.00	6	1.0093	116.07
6175		PM115-2A		115.00	6	1.0093	116.07	6210		TIN115		115.00	6	1.0064	115.73



6211 PM115-9	115.00	6	1.0066	115.76	6230 CBA115	115.00	6	1.0026	115.30
6261 CHA 115	115.00	6	1.0141	116.62	6270 CAT 115	115.00	6	1.0072	115.83
6280 GIR 115	115.00	6	1.0083	115.96	6290 CATII 11	115.00	6	1.0071	115.81
6331 BAI115	115.00	6	1.0112	116.28	6332 BAM115	115.00	6	1.0121	116.39
6350 PM115-8	115.00	6	1.0057	115.66	6550 CHAZ115	115.00	6	1.0251	117.89
6580 LBO115	115.00	6	1.0048	115.55					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6006	CHO115	115.00	6	0.9785	112.53	6024	CHI115	115.00	6	0.9994	114.93
6047	CLA115	115.00	6	0.9944	114.35						

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 11:09
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 5
 OUTPUT FOR AREA 6 [PANAMA]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAF01	WND 1	6	T1	47.9	50.0	95.7	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T2	47.9	50.0	95.7	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF01	WND 2	6	T1	57.3	60.0	95.5	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF02	WND 2	6	T2	57.3	60.0	95.5	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	53.2	54.0	98.6	--	--
6210	TIN115	115.00*	6	3WNDTR	TIN T1	WND 2	6	T1	40.6	42.0	96.7	--	--

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 11:09
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 5
 OUTPUT FOR AREA 7 [ACANAL]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *

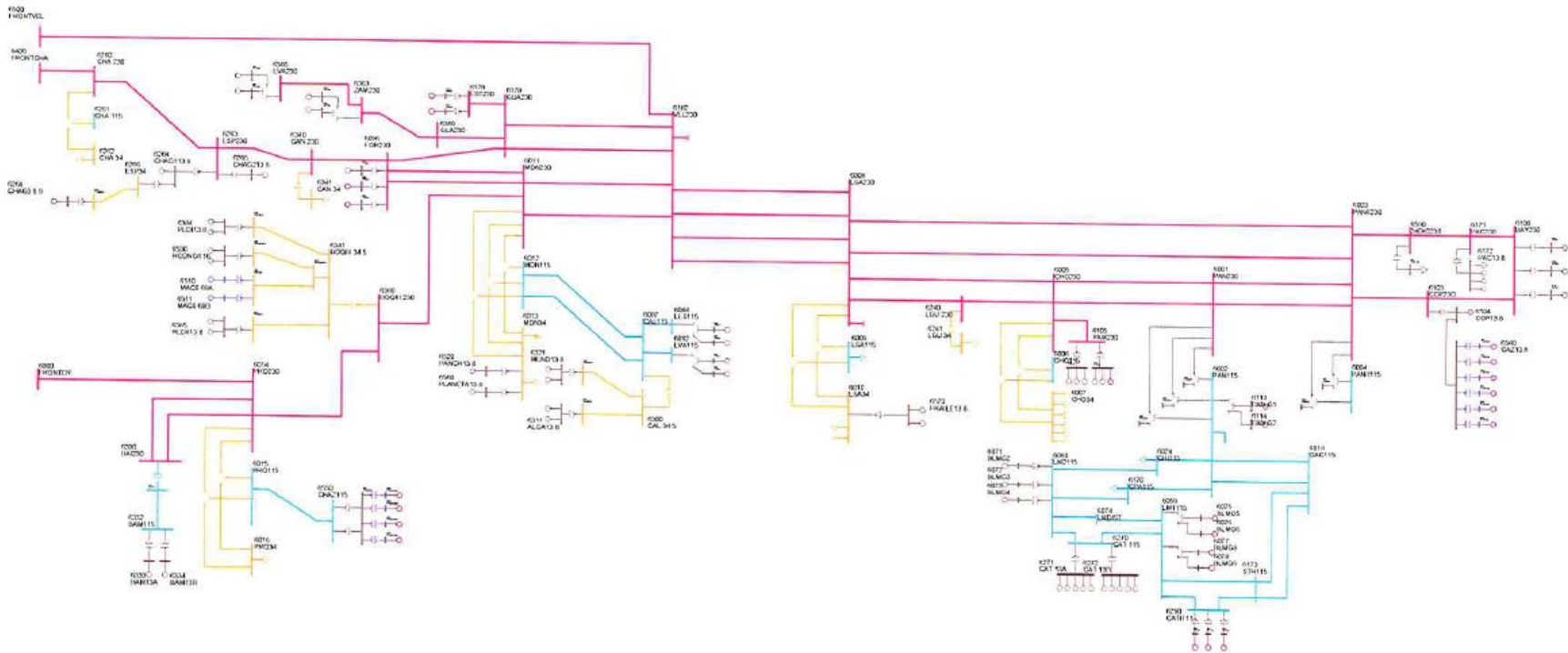


PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 11:09

SISTEMA INTERCONECTADO NACIONAL EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 5							AREA TOTALS IN MW/MVAR				
X-- AREA --X	FROM GENE- RATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT	
								TO TIE LINES	TO TIES + LOADS		
1	1145.6	1130.4	0.0	0.0	0.0	0.0	27.2	-12.1	-12.1	-12.0	
GUATEMAL	223.1	342.4	-69.3	0.0	0.0	296.2	294.3	-48.1	-48.1		
2	890.5	875.0	0.0	0.0	0.0	0.0	15.5	0.0	0.0	0.0	
SALVADOR	77.8	270.5	-148.4	0.0	0.0	246.2	172.2	29.6	29.6		
3	961.7	938.5	0.0	0.0	0.0	0.0	23.2	0.0	0.0	0.0	
HONDURAS	319.6	317.1	-26.9	0.0	0.0	349.7	311.5	67.6	67.6		
4	427.0	408.0	0.0	0.0	0.0	0.0	18.9	0.1	0.1	0.0	
NICARAGU	35.2	160.0	-25.6	0.0	0.0	174.4	153.4	-78.3	-78.3		
5	1174.8	1157.2	0.0	0.0	0.0	0.0	18.0	-0.4	-0.4	0.0	
C.RICA	127.7	457.9	-234.1	0.0	0.0	442.1	290.4	55.6	55.6		
6	1161.5	1172.7	0.0	0.0	0.0	0.0	36.4	-47.6	-47.6	-48.0	
PANAMA	47.6	205.4	-132.4	0.0	0.0	432.3	453.6	-46.8	-46.8		
7	105.0	41.7	0.0	0.0	0.0	0.0	3.3	60.0	60.0	60.0	
ACANAL	27.1	7.3	-15.8	0.0	0.0	0.0	15.3	20.3	20.3		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	5866.0	5723.4	0.0	0.0	0.0	0.0	142.6	0.0	0.0	0.0	
TOTALS	858.1	1760.6	-652.5	0.0	0.0	1940.9	1690.8	0.0	0.0		



Contingencia 6: Boquerón III - Mata de Nance (230-9A)





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E WED, APR 13 2011 9:19
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 6

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
6071		BLMG2		13.800	V2	38.0	0.0	15.0	0.0	1.0039	37.9	1.0000	47.0			62	6
6072		BLMG3		13.800	V3	38.0	0.0	15.0	0.0	1.0039	37.9	1.0000	47.0			62	6
6073		BLMG4		13.800	V4	38.0	0.0	15.0	0.0	1.0043	37.8	1.0000	47.0			62	6
6090		LESG1		13.800	E1	22.4	3.4	12.0	-5.0	1.0100	22.5	0.9887	27.0			64	6
6091		LESG2		13.800	E2	22.4	3.4	12.0	-5.0	1.0100	22.5	0.9887	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-3.3	12.0	-5.0	1.0100	26.0	0.9919	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-3.3	12.0	-5.0	1.0100	26.0	0.9919	27.0			64	6
6097		FORG1		13.800	F1	62.0	-22.6	50.0	-50.0	0.9850	67.0	0.9397	111.0			64	6
6101		BAYG1		13.800	B1	67.0	12.2	30.0	-25.0	1.0000	68.2	0.9838	94.0			61	6
6102		BAYG2		13.800	B2	66.9	4.4	30.0	-25.0	0.9900	67.7	0.9979	94.0			61	6
6106		PAM13A		13.800	M1	15.1	9.0	9.0	0.0	0.9830	17.9	0.8590	20.7			63	6
6106		PAM13A		13.800	M2	15.1	9.0	9.0	0.0	0.9830	17.9	0.8590	20.7			63	6
6106		PAM13A		13.800	M3	15.1	9.0	9.0	0.0	0.9830	17.9	0.8590	20.7			63	6
6107		PAM13B		13.800	M4	15.1	9.0	9.0	0.0	0.9660	18.2	0.8590	20.7			63	6
6107		PAM13B		13.800	M5	15.1	9.0	9.0	0.0	0.9660	18.2	0.8590	20.7			63	6
6110		BAYG3		13.800	B3	66.9	-5.9	67.0	-25.0	0.9900	67.9	0.9962	100.0			61	6
6172		PAC13.8		13.800	P1	17.0	9.0	9.0	-11.0	0.9817	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	17.0	9.0	9.0	-11.0	0.9817	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	17.0	9.0	9.0	-11.0	0.9817	19.5	0.8832	21.7			61	6
6264		CHAG113.8		13.800	G1	99.6	-5.0	52.4	-48.9	1.0000	99.7	0.9987	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	-1.7	52.4	-48.9	1.0000	99.6	0.9999	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.7	4.9	4.9	-4.1	0.9969	10.0	0.8712	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9994	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9994	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9994	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9994	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9994	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9994	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9994	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9994	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9994	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9994	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9961	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9961	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9961	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9961	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	-0.7	2.5	-2.5	1.0000	8.3	0.9963	10.9			62	6



6282	GIR 13B	13.800	G6	8.3	-0.7	2.5	-2.5	1.0000	8.3	0.9963	10.9	6
6282	GIR 13B	13.800	G7	8.3	-0.7	2.5	-2.5	1.0000	8.3	0.9963	10.9	6
6282	GIR 13B	13.800	G8	8.3	-0.7	2.5	-2.5	1.0000	8.3	0.9963	10.9	6
6311	ALGA13.8	13.800	A1	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9989	5.7	6
6311	ALGA13.8	13.800	A2	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9989	5.7	6
6321	MEND13.8	13.800	M1	8.9	1.3	4.2	-4.2	1.0100	8.9	0.9902	10.4	6
6321	MEND13.8	13.800	M2	8.9	1.3	4.2	-4.2	1.0100	8.9	0.9902	10.4	6
6333	BAM13A	13.800	G1	26.6	-1.2	10.0	-10.0	1.0000	26.6	0.9990	30.0	6
6334	BAM13B	13.800	G2	26.6	-1.2	10.0	-10.0	1.0000	26.6	0.9990	30.0	6
6364	LOR13A	13.800	G1	16.0	-2.8	7.8	-7.0	1.0200	15.9	0.9846	25.0	6
6365	LOR13B	13.800	G2	16.0	-2.8	7.8	-7.0	1.0200	15.9	0.9846	25.0	6
6367	PRU13A	13.800	G1	26.0	-4.6	8.0	-8.0	1.0200	25.9	0.9846	33.0	6
6368	PRU13B	13.800	G2	26.0	-4.6	8.0	-8.0	1.0200	25.9	0.9846	33.0	6
6384	PEDI13.8	13.800	G1	9.5	-0.8	4.9	-4.9	1.0200	9.3	0.9965	12.5	6
6384	PEDI13.8	13.800	G2	9.5	-0.8	4.9	-4.9	1.0200	9.3	0.9965	12.5	6
6385	PEDII13.8	13.800	G1	6.2	-0.5	3.2	-3.6	1.0200	6.1	0.9970	7.5	6
6385	PEDII13.8	13.800	G2	6.2	-0.5	3.2	-3.6	1.0200	6.1	0.9970	7.5	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0296	1.6	0.9985	2.1	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0296	1.6	0.9985	2.1	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9500	5.4	0.9216	6.2	6
6530	HCONC4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0177	5.3	0.8851	5.6	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0177	5.3	0.8851	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9500	5.0	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.5	1.2	1.2	-1.2	0.9754	2.8	0.9040	3.0	6
6570	FRAILE13.8	13.800	G2	2.5	1.2	1.2	-1.2	0.9754	2.8	0.9040	3.0	6
SUBSYSTEM TOTALS				1161.1	35.8	619.5	-445.2				1512.8	

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 9:19
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 6

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
6127	MIR13B	12.000	G6	18.0	1.4	8.0	0.0	1.0100	17.9	0.9971	27.7			65	7
6128	MIR13C	12.000	G3	20.0	8.8	11.0	0.0	1.0100	21.6	0.9148	29.4			65	7
6129	MIR13D	13.800	G4	20.0	11.6	15.0	0.0	1.0100	22.9	0.8645	44.1			65	7
6130	MIR13F	13.800	G5	17.0	2.3	8.0	0.0	1.0100	17.0	0.9911	27.7			65	7
6134	MAD6A	6.9000	G1	10.0	1.0	6.0	-6.0	1.0100	9.9	0.9952	13.0			65	7
6135	MAD6B	6.9000	G2	10.0	0.9	6.0	-6.0	1.0100	9.9	0.9961	13.0			65	7
6136	MAD6C	6.9000	G3	10.0	0.9	6.0	-6.0	1.0100	9.9	0.9961	13.0			65	7
SUBSYSTEM TOTALS				105.0	26.9	60.0	-18.0				167.9				



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 9:19

SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 6

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0418	239.61	6008		LSA230		230.00	6	1.0122	232.81
6011		MDN230		230.00	6	1.0128	232.95	6014		PRO230		230.00	6	1.0414	239.53
6096		FOR230		230.00	6	1.0126	232.89	6100		BAY230		230.00	6	1.0128	232.95
6103		COP230		230.00	6	1.0004	230.09	6171		PAC230		230.00	6	1.0057	231.31
6178		EST230		230.00	6	1.0149	233.44	6179		GUA230		230.00	6	1.0149	233.44
6182		VEL230		230.00	6	1.0199	234.58	6240		LGU 230		230.00	6	1.0032	230.73
6260		CHA 230		230.00	6	1.0179	234.12	6263		ESP230		230.00	6	1.0166	233.82
6330		BAI230		230.00	6	1.0411	239.45	6340		CAN 230		230.00	6	1.0120	232.76
6360		GLA230		230.00	6	1.0189	234.34	6363		ZAM230		230.00	6	1.0241	235.55
6366		EVA230		230.00	6	1.0270	236.20	6380		BOQIII 230		230.00	6	1.0407	239.37
6400		FRONTCHA		230.00	6	1.0188	234.33	6500		FRONTVEL		230.00	6	1.0409	239.41
6590		24DIC230		230.00	6	1.0015	230.35								

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)
6001		PAN230		230.00	6	0.9938	228.58	6003		PANII230		230.00	6	0.9979	229.51
6005		CHO230		230.00	6	0.9998	229.95	6105		PAM230		230.00	6	0.9999	229.99

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 9:19

SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 6

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0103	116.18	6004		PANII115		115.00	6	1.0131	116.50
6009		LSA115		115.00	6	1.0231	117.66	6012		MDN115		115.00	6	1.0179	117.06
6015		PRO115		115.00	6	1.0397	119.57	6018		CAC115		115.00	6	1.0101	116.16
6019		CVI115A		115.00	6	1.0057	115.65	6027		LOC115A		115.00	6	1.0041	115.48
6032		MAR115A		115.00	6	1.0020	115.23	6036		SMA115		115.00	6	1.0085	115.98
6040		SFR115		115.00	6	1.0022	115.25	6055		MOS115B		115.00	6	1.0072	115.83
6057		TOC115		115.00	6	1.0113	116.29	6059		LM1115		115.00	6	1.0074	115.85
6060		LM2115		115.00	6	1.0074	115.86	6066		FFIELD		115.00	6	1.0072	115.82
6074		LMDIST		115.00	6	1.0074	115.85	6087		CAL115		115.00	6	1.0241	117.78
6088		LBS115		115.00	6	1.0267	118.07	6092		LVA115		115.00	6	1.0242	117.78
6123		MIR115		115.00	7	1.0221	117.54	6170		CPA115		115.00	6	1.0085	115.97



6173 STR115	115.00	6	1.0076	115.88	6174 PM115-1A	115.00	6	1.0098	116.12
6175 PM115-2A	115.00	6	1.0098	116.12	6210 TIN115	115.00	6	1.0069	115.80
6211 PM115-9	115.00	6	1.0072	115.83	6230 CBA115	115.00	6	1.0032	115.37
6261 CHA 115	115.00	6	1.0142	116.64	6270 CAT 115	115.00	6	1.0076	115.87
6280 GIR 115	115.00	6	1.0087	115.99	6290 CATII 11	115.00	6	1.0074	115.85
6331 BAI115	115.00	6	1.0220	117.54	6332 BAM115	115.00	6	1.0204	117.35
6350 PM115-8	115.00	6	1.0063	115.72	6550 CHAZ115	115.00	6	1.0397	119.57
6580 LBO115	115.00	6	1.0054	115.62					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS# X-- NAME --X BASKV AREA V(PU) V(KV)	BUS# X-- NAME --X BASKV AREA V(PU) V(KV)
6006 CHO115 115.00 6 0.9793 112.62	6024 CHI115 115.00 6 0.9999 114.99
6047 CLA115 115.00 6 0.9948 114.41	

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 14:09

SISTEMA INTERCONECTADO NACIONAL

EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 6

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)

LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X		X----- TO BUS -----X		RATING SET A		RATING SET B		RATING SET C	
BUS# X-- NAME --X BASKV AREA	BUS# X-- NAME --X BASKV AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6005 CHO230 230.00* 6 3WNDTR TRAF01	WND 1 6 T1	47.8	50.0	95.7	--	--	--	--	--
6005 CHO230 230.00* 6 3WNDTR TRAF02	WND 1 6 T2	47.8	50.0	95.7	--	--	--	--	--
6009 LSA115 115.00* 6 3WNDTR TRAF01	WND 2 6 T1	57.3	60.0	95.5	--	--	--	--	--
6009 LSA115 115.00* 6 3WNDTR TRAF02	WND 2 6 T2	57.3	60.0	95.5	--	--	--	--	--
6092 LVA115 115.00* 6 3WNDTR TRAF01	WND 1 6 T1	53.2	54.0	98.4	--	--	--	--	--
6210 TIN115 115.00* 6 3WNDTR TIN T1	WND 2 6 T1	40.6	42.0	96.7	--	--	--	--	--

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 14:09

SISTEMA INTERCONECTADO NACIONAL

EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 6

OUTPUT FOR AREA 7 [ACANAL]

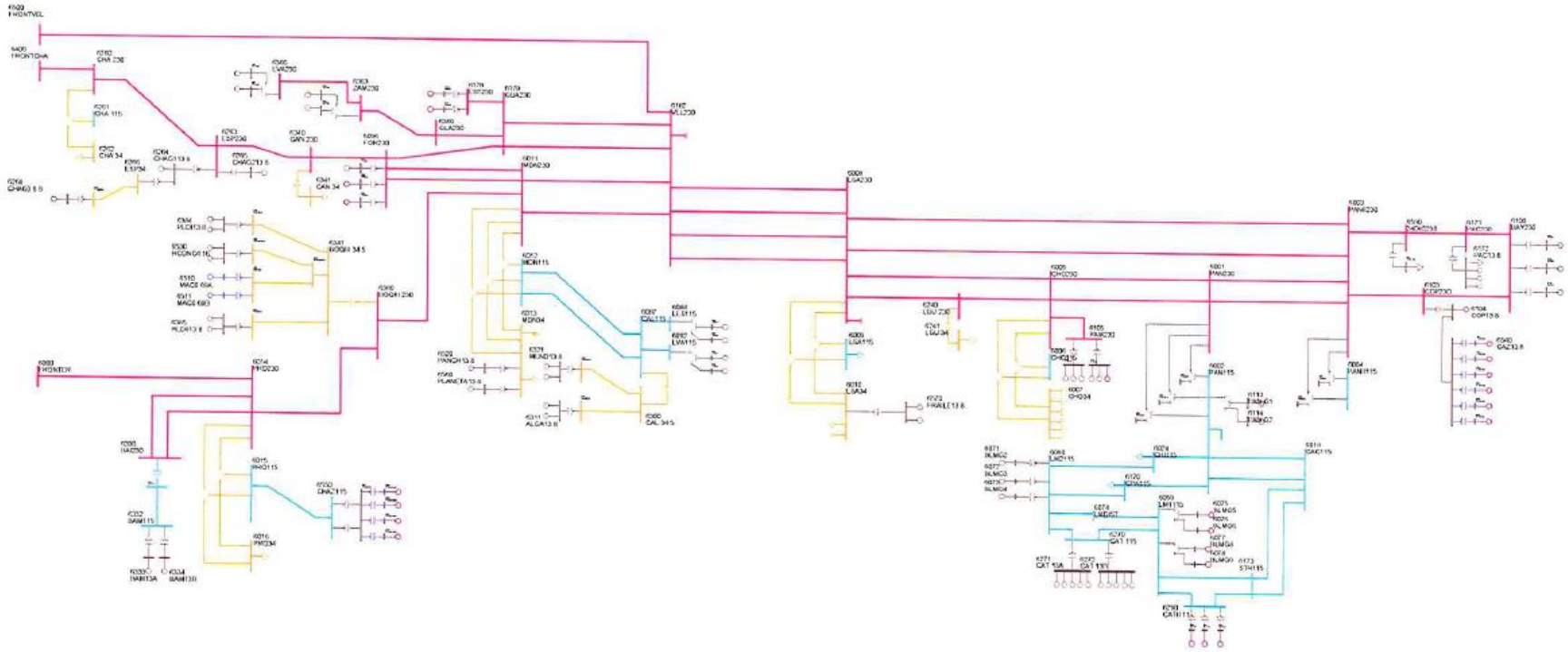
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)

LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X		X----- TO BUS -----X		RATING SET A		RATING SET B		RATING SET C	
BUS# X-- NAME --X BASKV AREA	BUS# X-- NAME --X BASKV AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
* NONE *									



Contingencia 15: Las Minas 2 – Chilibre (115-3B)





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E WED, APR 13 2011 9:29
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 15

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
6071		BLMG2		13.800	V2	38.0	0.0	15.0	0.0	1.0035	37.9	1.0000	47.0			62	6
6072		BLMG3		13.800	V3	38.0	0.0	15.0	0.0	1.0035	37.9	1.0000	47.0			62	6
6073		BLMG4		13.800	V4	38.0	0.0	15.0	0.0	1.0039	37.9	1.0000	47.0			62	6
6090		LESG1		13.800	E1	22.4	2.6	12.0	-5.0	1.0100	22.4	0.9931	27.0			64	6
6091		LESG2		13.800	E2	22.4	2.6	12.0	-5.0	1.0100	22.4	0.9931	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-4.2	12.0	-5.0	1.0100	26.1	0.9874	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-4.2	12.0	-5.0	1.0100	26.1	0.9874	27.0			64	6
6097		FORG1		13.800	F1	62.0	-26.1	50.0	-50.0	0.9850	68.3	0.9214	111.0			64	6
6101		BAYG1		13.800	B1	67.3	12.8	30.0	-25.0	1.0000	68.5	0.9823	94.0			61	6
6102		BAYG2		13.800	B2	66.9	5.0	30.0	-25.0	0.9900	67.8	0.9972	94.0			61	6
6106		PAM13A		13.800	M1	15.1	9.0	9.0	0.0	0.9821	17.9	0.8590	20.7			63	6
6106		PAM13A		13.800	M2	15.1	9.0	9.0	0.0	0.9821	17.9	0.8590	20.7			63	6
6106		PAM13A		13.800	M3	15.1	9.0	9.0	0.0	0.9821	17.9	0.8590	20.7			63	6
6107		PAM13B		13.800	M4	15.1	9.0	9.0	0.0	0.9650	18.2	0.8590	20.7			63	6
6107		PAM13B		13.800	M5	15.1	9.0	9.0	0.0	0.9650	18.2	0.8590	20.7			63	6
6110		BAYG3		13.800	B3	66.9	-5.2	67.0	-25.0	0.9900	67.8	0.9970	100.0			61	6
6172		PAC13.8		13.800	P1	17.0	9.0	9.0	-11.0	0.9806	19.6	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	17.0	9.0	9.0	-11.0	0.9806	19.6	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	17.0	9.0	9.0	-11.0	0.9806	19.6	0.8832	21.7			61	6
6264		CHAG113.8		13.800	G1	99.6	-6.3	52.4	-48.9	1.0000	99.8	0.9980	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	-3.0	52.4	-48.9	1.0000	99.7	0.9995	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.7	4.9	4.9	-4.1	0.9969	10.0	0.8712	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	-0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9974	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9974	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9974	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9974	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	-0.6	2.5	-2.5	1.0000	8.3	0.9975	10.9			62	6



6282	GIR 13B	13.800	G6	8.3	-0.6	2.5	-2.5	1.0000	8.3	0.9975	10.9	6
6282	GIR 13B	13.800	G7	8.3	-0.6	2.5	-2.5	1.0000	8.3	0.9975	10.9	6
6282	GIR 13B	13.800	G8	8.3	-0.6	2.5	-2.5	1.0000	8.3	0.9975	10.9	6
6311	ALGA13.8	13.800	A1	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9994	5.7	6
6311	ALGA13.8	13.800	A2	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9994	5.7	6
6321	MEND13.8	13.800	M1	8.9	0.9	4.2	-4.2	1.0100	8.9	0.9948	10.4	6
6321	MEND13.8	13.800	M2	8.9	0.9	4.2	-4.2	1.0100	8.9	0.9948	10.4	6
6333	BAM13A	13.800	G1	26.6	-0.2	10.0	-10.0	1.0000	26.6	1.0000	30.0	6
6334	BAM13B	13.800	G2	26.6	-0.2	10.0	-10.0	1.0000	26.6	1.0000	30.0	6
6364	LOR13A	13.800	G1	16.0	-4.5	7.8	-7.0	1.0200	16.3	0.9624	25.0	6
6365	LOR13B	13.800	G2	16.0	-4.5	7.8	-7.0	1.0200	16.3	0.9624	25.0	6
6367	PRU13A	13.800	G1	26.0	-6.2	8.0	-8.0	1.0200	26.2	0.9726	33.0	6
6368	PRU13B	13.800	G2	26.0	-6.2	8.0	-8.0	1.0200	26.2	0.9726	33.0	6
6384	PEDI13.8	13.800	G1	9.5	0.5	4.9	-4.9	1.0200	9.3	0.9986	12.5	6
6384	PEDI13.8	13.800	G2	9.5	0.5	4.9	-4.9	1.0200	9.3	0.9986	12.5	6
6385	PEDII13.8	13.800	G1	6.2	0.8	3.2	-3.6	1.0200	6.1	0.9914	7.5	6
6385	PEDII13.8	13.800	G2	6.2	0.8	3.2	-3.6	1.0200	6.1	0.9914	7.5	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0247	1.6	0.9985	2.1	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0247	1.6	0.9985	2.1	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9542	5.4	0.9216	6.2	6
6530	HCONC4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0128	5.3	0.8851	5.6	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0128	5.3	0.8851	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9542	4.9	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.5	1.2	1.2	-1.2	0.9765	2.8	0.9040	3.0	6
6570	FRAILE13.8	13.800	G2	2.5	1.2	1.2	-1.2	0.9765	2.8	0.9040	3.0	6
SUBSYSTEM TOTALS				1161.4	29.3	619.5	-445.2				1512.8	

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 9:29
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 15

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
6127		MIR13B		12.000	G6	18.0	1.6	8.0	0.0	1.0100	17.9	0.9958	27.7			65	7
6128		MIR13C		12.000	G3	20.0	9.1	11.0	0.0	1.0100	21.7	0.9110	29.4			65	7
6129		MIR13D		13.800	G4	20.0	11.9	15.0	0.0	1.0100	23.0	0.8592	44.1			65	7
6130		MIR13F		13.800	G5	17.0	2.6	8.0	0.0	1.0100	17.0	0.9885	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	1.0	6.0	-6.0	1.0100	10.0	0.9950	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.9	6.0	-6.0	1.0100	9.9	0.9959	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	0.9	6.0	-6.0	1.0100	9.9	0.9959	13.0			65	7
SUBSYSTEM TOTALS						105.0	28.0	60.0	-18.0				167.9				



1114

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 9:29
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 15

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0326	237.49	6008		LSA230		230.00	6	1.0133	233.05
6011		MDN230		230.00	6	1.0190	234.38	6014		PRO230		230.00	6	1.0308	237.08
6096		FOR230		230.00	6	1.0166	233.81	6100		BAY230		230.00	6	1.0120	232.76
6171		PAC230		230.00	6	1.0045	231.03	6178		EST230		230.00	6	1.0177	234.08
6179		GUA230		230.00	6	1.0177	234.08	6182		VEL230		230.00	6	1.0225	235.18
6240		LGU 230		230.00	6	1.0033	230.77	6260		CHA 230		230.00	6	1.0192	234.42
6263		ESP230		230.00	6	1.0184	234.23	6330		BAI230		230.00	6	1.0307	237.05
6340		CAN 230		230.00	6	1.0157	233.61	6360		GLA230		230.00	6	1.0215	234.94
6363		ZAM230		230.00	6	1.0264	236.08	6366		EVA230		230.00	6	1.0291	236.70
6380		BOQIII 230		230.00	6	1.0255	235.87	6400		FRONTCHA		230.00	6	1.0199	234.59
6500		FRONTVEL		230.00	6	1.0374	238.61	6590		24DIC230		230.00	6	1.0002	230.05

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9923	228.22	6003		PANII230		230.00	6	0.9965	229.19
6005		CHO230		230.00	6	0.9987	229.71	6103		COP230		230.00	6	0.9991	229.80
6105		PAM230		230.00	6	0.9989	229.75								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 9:29
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 15

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0079	115.90	6004		PANII115		115.00	6	1.0113	116.31
6009		LSA115		115.00	6	1.0242	117.78	6012		MDN115		115.00	6	1.0226	117.60
6015		PRO115		115.00	6	1.0291	118.34	6018		CAC115		115.00	6	1.0077	115.89
6019		CVI115A		115.00	6	1.0038	115.43	6027		LOC115A		115.00	6	1.0018	115.20
6036		SMA115		115.00	6	1.0061	115.70	6055		MOS115B		115.00	6	1.0048	115.55
6057		TOC115		115.00	6	1.0095	116.10	6059		LM1115		115.00	6	1.0069	115.80
6060		LM2115		115.00	6	1.0070	115.81	6066		FFIELD		115.00	6	1.0067	115.77
6074		LMDIST		115.00	6	1.0070	115.80	6087		CAL115		115.00	6	1.0270	118.10
6088		LES115		115.00	6	1.0292	118.36	6092		LVA115		115.00	6	1.0268	118.09
6123		MIR115		115.00	7	1.0200	117.30	6170		CPA115		115.00	6	1.0073	115.84
6173		STR115		115.00	6	1.0066	115.76	6174		PM115-1A		115.00	6	1.0083	115.95
6175		PM115-2A		115.00	6	1.0083	115.95	6210		TIN115		115.00	6	1.0045	115.52



6211 PM115-9	115.00	6	1.0048	115.55	6230 CBA115	115.00	6	1.0009	115.10
6261 CHA 115	115.00	6	1.0156	116.79	6270 CAT 115	115.00	6	1.0072	115.82
6280 GIR 115	115.00	6	1.0076	115.87	6290 CATII 11	115.00	6	1.0069	115.79
6331 BAI115	115.00	6	1.0141	116.62	6332 BAM115	115.00	6	1.0144	116.65
6350 PM115-8	115.00	6	1.0039	115.45	6550 CHAZ115	115.00	6	1.0291	118.34
6580 LBO115	115.00	6	1.0034	115.40					

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS# X-- NAME --X BASKV AREA V(PU) V(KV)	BUS# X-- NAME --X BASKV AREA V(PU) V(KV)
6006 CHO115 115.00 6 0.9782 112.49	6024 CHI115 115.00 6 0.9916 114.04
6032 MAR115A 115.00 6 0.9996 114.96	6040 SFR115 115.00 6 0.9999 114.99
6047 CLA115 115.00 6 0.9865 113.45	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 14:14
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 15
 OUTPUT FOR AREA 6 [PANAMA]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X		X----- TO BUS -----X		RATING SET A		RATING SET B		RATING SET C	
BUS# X-- NAME --X BASKV AREA	BUS# X-- NAME --X BASKV AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6005 CHO230 230.00* 6 3WNDTR TRAF01	WND 1 6 T1	47.9	50.0	95.7	--	--	--	--	--
6005 CHO230 230.00* 6 3WNDTR TRAF02	WND 1 6 T2	47.9	50.0	95.7	--	--	--	--	--
6009 LSA115 115.00* 6 3WNDTR TRAF01	WND 2 6 T1	57.3	60.0	95.5	--	--	--	--	--
6009 LSA115 115.00* 6 3WNDTR TRAF02	WND 2 6 T2	57.3	60.0	95.5	--	--	--	--	--
6060 LM2115 115.00 6 6074 LMDIST	115.00* 6 26	100.8	90.6	111.2	--	--	--	--	--
6092 LVA115 115.00* 6 3WNDTR TRAF01	WND 1 6 T1	53.5	54.0	99.1	--	--	--	--	--
6210 TIN115 115.00* 6 3WNDTR TIN T1	WND 2 6 T1	40.6	42.0	96.7	--	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, APR 13 2011 14:14
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 15
 OUTPUT FOR AREA 7 [ACANAL]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X		X----- TO BUS -----X		RATING SET A		RATING SET B		RATING SET C	
BUS# X-- NAME --X BASKV AREA	BUS# X-- NAME --X BASKV AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

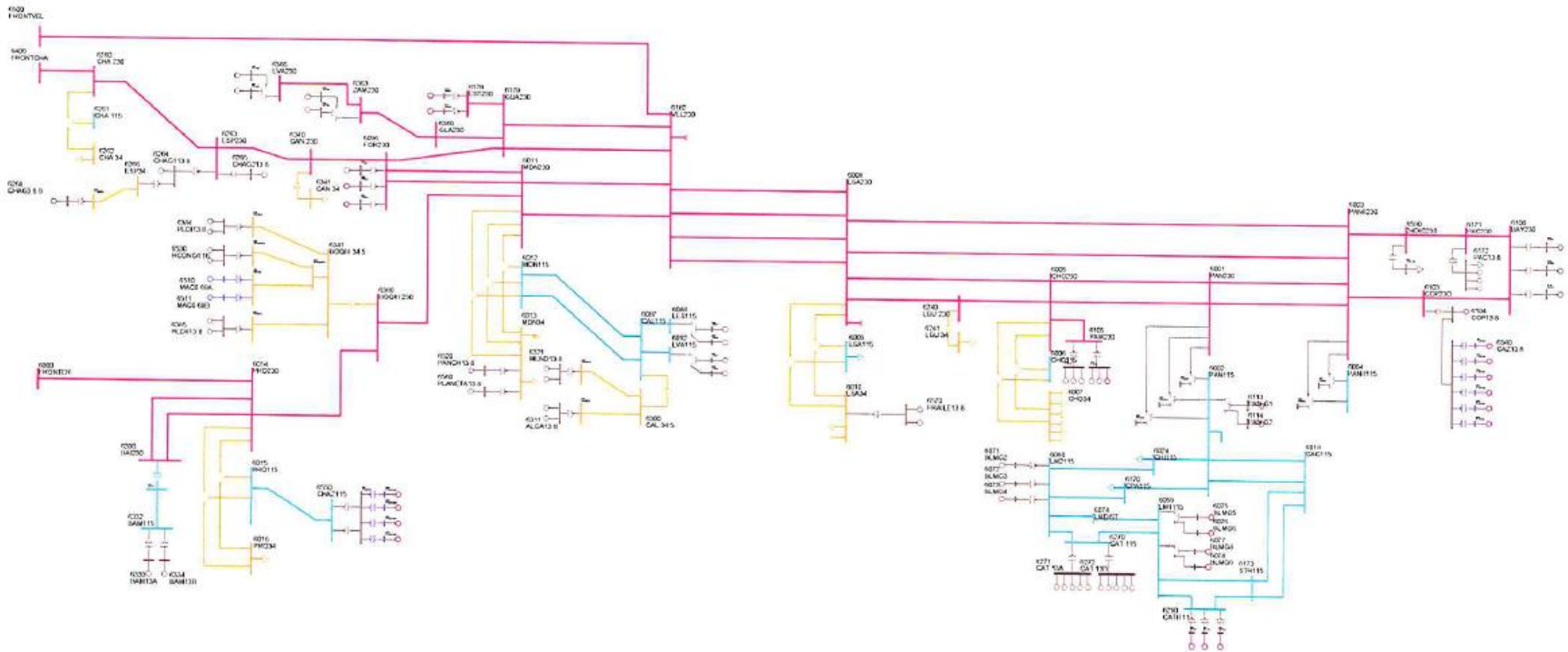
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E							WED, APR 13 2011 14:14		AREA TOTALS		
SISTEMA INTERCONECTADO NACIONAL							IN MW/MVAR				
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 15							-NET INTERCHANGE-				
X-- AREA --X	FROM GENE- RATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	TO TIE LINES	TO TIES + LOADS	DESIRED NET INT	
1	1145.6	1130.4	0.0	0.0	0.0	0.0	27.2	-12.1	-12.1	-12.0	
GUATEMAL	223.1	342.4	-69.3	0.0	0.0	296.2	294.3	-48.1	-48.1		
2	890.5	875.0	0.0	0.0	0.0	0.0	15.5	0.0	0.0	0.0	
SALVADOR	77.8	270.5	-148.4	0.0	0.0	246.2	172.2	29.6	29.6		
3	961.7	938.5	0.0	0.0	0.0	0.0	23.2	0.0	0.0	0.0	
HONDURAS	319.6	317.1	-26.9	0.0	0.0	349.7	311.5	67.6	67.6		
4	427.0	408.0	0.0	0.0	0.0	0.0	18.9	0.1	0.1	0.0	
NICARAGU	35.1	160.0	-25.6	0.0	0.0	174.4	153.4	-78.4	-78.4		
5	1174.8	1157.2	0.0	0.0	0.0	0.0	17.9	-0.3	-0.3	0.0	
C.RICA	123.5	457.9	-234.3	0.0	0.0	442.7	289.5	53.1	53.1		
6	1161.4	1172.7	0.0	0.0	0.0	0.0	36.5	-47.8	-47.8	-48.0	
PANAMA	29.3	205.4	-131.7	0.0	0.0	449.6	450.1	-44.9	-44.9		
7	105.0	41.7	0.0	0.0	0.0	0.0	3.3	60.0	60.0	60.0	
ACANAL	28.0	7.3	-15.8	0.0	0.0	0.0	15.5	21.0	21.0		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	5865.9	5723.4	0.0	0.0	0.0	0.0	142.5	0.0	0.0	0.0	
TOTALS	836.5	1760.6	-652.0	0.0	0.0	1958.8	1686.5	0.0	0.0		



Contingencia 19: Chorrera – Pan Am (230-11)





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 19

MON, MAY 23 2011 11:16

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	2.3	15.0	0.0	1.0000	38.1	0.9982	47.0			62	6
6072		BLMG3		13.800	V3	38.0	2.3	15.0	0.0	1.0000	38.1	0.9982	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.3	15.0	0.0	1.0000	38.1	0.9983	47.0			62	6
6090		LESG1		13.800	E1	22.4	3.4	12.0	-5.0	1.0100	22.4	0.9889	27.0			64	6
6091		LESG2		13.800	E2	22.4	3.4	12.0	-5.0	1.0100	22.4	0.9889	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-3.4	12.0	-5.0	1.0100	26.0	0.9917	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-3.4	12.0	-5.0	1.0100	26.0	0.9917	27.0			64	6
6097		FORG1		13.800	F1	82.0	-20.2	50.0	-50.0	0.9850	85.7	0.9709	111.0			64	6
6101		BAYG1		13.800	B1	86.7	22.0	30.0	-25.0	1.0000	89.4	0.9692	94.0			61	6
6102		BAYG2		13.800	B2	86.7	14.2	30.0	-25.0	0.9900	88.7	0.9869	94.0			61	6
6110		BAYG3		13.800	B3	86.0	4.8	67.0	-25.0	0.9900	87.0	0.9984	100.0			61	6
6172		PAC13.8		13.800	P1	17.0	9.0	9.0	-11.0	0.9670	19.8	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	17.0	9.0	9.0	-11.0	0.9670	19.8	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	17.0	9.0	9.0	-11.0	0.9670	19.8	0.8832	21.7			61	6
6264		CHAG113.8		13.800	G1	99.6	-4.9	52.4	-48.9	1.0000	99.7	0.9988	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	-1.6	52.4	-48.9	1.0000	99.6	0.9999	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.7	4.9	4.9	-4.1	0.9969	10.0	0.8712	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9981	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9981	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9981	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9981	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9981	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9981	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9981	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9981	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9981	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9981	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9993	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9993	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9993	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9993	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	0.3	2.5	-2.5	1.0000	8.3	0.9993	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	0.3	2.5	-2.5	1.0000	8.3	0.9993	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	0.3	2.5	-2.5	1.0000	8.3	0.9993	10.9			62	6
6282		GIR 13B		13.800	G8	8.3	0.3	2.5	-2.5	1.0000	8.3	0.9993	10.9			62	6
6311		ALGA13.8		13.800	A1	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9990	5.7			64	6
6311		ALGA13.8		13.800	A2	4.8	0.2	2.3	-2.3	1.0100	4.8	0.9990	5.7			64	6



6321	MEND13.8	13.800	M1	8.9	1.2	4.2	-4.2	1.0100	8.9	0.9905	10.4	64	6
6321	MEND13.8	13.800	M2	8.9	1.2	4.2	-4.2	1.0100	8.9	0.9905	10.4	64	6
6333	BAM13A	13.800	G1	26.6	0.3	10.0	-10.0	1.0000	26.6	1.0000	30.0	64	6
6334	BAM13B	13.800	G2	26.6	0.3	10.0	-10.0	1.0000	26.6	1.0000	30.0	64	6
6364	LOR13A	13.800	G1	16.0	-1.4	7.8	-7.0	1.0200	15.7	0.9963	25.0	64	6
6365	LOR13B	13.800	G2	16.0	-1.4	7.8	-7.0	1.0200	15.7	0.9963	25.0	64	6
6367	PRU13A	13.800	G1	26.0	-3.2	8.0	-8.0	1.0200	25.7	0.9924	33.0	64	6
6368	PRU13B	13.800	G2	26.0	-3.2	8.0	-8.0	1.0200	25.7	0.9924	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.9	4.9	-4.9	1.0200	9.4	0.9952	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.9	4.9	-4.9	1.0200	9.4	0.9952	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	1.3	3.2	-3.6	1.0200	6.2	0.9798	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	1.3	3.2	-3.6	1.0200	6.2	0.9798	7.5	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0231	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0231	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9502	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0111	5.3	0.8851	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0111	5.3	0.8851	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9502	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.5	1.2	1.2	-1.2	0.9599	2.8	0.9040	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.5	1.2	1.2	-1.2	0.9599	2.8	0.9040	3.0	63	6
SUBSYSTEM TOTALS				1164.1	59.6	574.5	-445.2				1409.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 23 2011 11:16
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 19

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
6127		MIR13B		12.000	G6	18.0	3.1	8.0	0.0	1.0100	18.1	0.9852	27.7			65	7
6128		MIR13C		12.000	G3	20.0	10.3	11.0	0.0	1.0100	22.3	0.8888	29.4			65	7
6129		MIR13D		13.800	G4	20.2	13.4	15.0	0.0	1.0100	24.0	0.8324	44.1			65	7
6130		MIR13F		13.800	G5	17.0	4.4	8.0	0.0	1.0100	17.4	0.9683	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	1.4	6.0	-6.0	1.0100	10.0	0.9907	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	1.2	6.0	-6.0	1.0100	10.0	0.9930	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	1.2	6.0	-6.0	1.0100	10.0	0.9930	13.0			65	7
SUBSYSTEM TOTALS						105.2	35.0	60.0	-18.0				167.9				



1120

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 23 2011 11:16

SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 19

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0276	236.35	6011		MDN230		230.00	6	1.0132	233.03
6014		PRO230		230.00	6	1.0258	235.94	6096		FOR230		230.00	6	1.0117	232.70
6100		BAY230		230.00	6	1.0026	230.60	6178		EST230		230.00	6	1.0125	232.88
6179		GUA230		230.00	6	1.0125	232.88	6182		VEL230		230.00	6	1.0120	232.76
6260		CHA 230		230.00	6	1.0175	234.03	6263		ESP230		230.00	6	1.0166	233.81
6330		BAI230		230.00	6	1.0258	235.93	6340		CAN 230		230.00	6	1.0118	232.71
6360		GLA230		230.00	6	1.0166	233.83	6363		ZAM230		230.00	6	1.0221	235.09
6366		EVA230		230.00	6	1.0251	235.76	6380		BOQIII 230		230.00	6	1.0203	234.68
6400		FRONTCHA		230.00	6	1.0183	234.22	6500		FRONTVEL		230.00	6	1.0317	237.30

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)
6001		PAN230		230.00	6	0.9742	224.06	6003		PANII230		230.00	6	0.9795	225.28
6005		CHO230		230.00	6	0.9734	223.89	6008		LSA230		230.00	6	0.9966	229.22
6103		COP230		230.00	6	0.9831	226.11	6171		PAC230		230.00	6	0.9894	227.56
6240		LGU 230		230.00	6	0.9824	225.94	6590		24DIC230		230.00	6	0.9841	226.35



1121

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 19

MON, MAY 23 2011 11:16

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6009	LSA	115	115.00	6	1.0067	115.77	6012	MDN	115	115.00	6	1.0182	117.09		
6015	PRO	115	115.00	6	1.0241	117.77	6087	CAL	115	115.00	6	1.0243	117.79		
6088	LES	115	115.00	6	1.0268	118.08	6092	LVA	115	115.00	6	1.0243	117.79		
6123	MIR	115	115.00	7	1.0069	115.79	6261	CHA	115	115.00	6	1.0139	116.59		
6331	BAI	115	115.00	6	1.0104	116.20	6332	BAM	115	115.00	6	1.0115	116.33		
6550	CHAZ	115	115.00	6	1.0241	117.77									

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002	PAN	115	115.00	6	0.9924	114.13	6004	PANII	115	115.00	6	0.9943	114.34		
6006	CHO	115	115.00	6	0.9517	109.45	6018	CAC	115	115.00	6	0.9924	114.12		
6019	CVI	115A	115.00	6	0.9869	113.49	6024	CHI	115	115.00	6	0.9855	113.34		
6027	LOC	115A	115.00	6	0.9859	113.38	6032	MAR	115A	115.00	6	0.9838	113.14		
6036	SMA	115	115.00	6	0.9906	113.92	6040	SFR	115	115.00	6	0.9838	113.13		
6047	CLA	115	115.00	6	0.9804	112.74	6055	MOS	115B	115.00	6	0.9893	113.77		
6057	TOC	115	115.00	6	0.9924	114.12	6059	LM	115	115.00	6	0.9984	114.82		
6060	LM2	115	115.00	6	0.9985	114.83	6066	FFIELD	115.00	6	0.9981	114.78			
6074	LMDIST	115.00	6	0.9984	114.82	6170	CPA	115	115.00	6	0.9992	114.91			
6173	STR	115	115.00	6	0.9976	114.72	6174	PM115-1A	115.00	6	0.9964	114.58			
6175	PM115-2A	115.00	6	0.9964	114.58	6210	TIN	115	115.00	6	0.9890	113.73			
6211	PM115-9	115.00	6	0.9893	113.76	6230	CBA	115	115.00	6	0.9849	113.27			
6270	CAT	115	115.00	6	0.9986	114.84	6280	GIR	115	115.00	6	0.9999	114.99		
6290	CATII	11	115.00	6	0.9983	114.80	6350	PM115-8	115.00	6	0.9883	113.66			
6580	LBO	115	115.00	6	0.9865	113.45									



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 23 2011 11:16

SISTEMA INTERCONECTADO NACIONAL

EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 19

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)

LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAF01	WND 1	6	T1	48.0	50.0	96.1	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T2	48.0	50.0	96.1	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF01	WND 2	6	T1	57.3	60.0	95.5	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF02	WND 2	6	T2	57.3	60.0	95.5	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	53.2	54.0	98.5	--	--	--	--
6210	TIN115	115.00*	6	3WNDTR	TIN T1	WND 2	6	T1	40.7	42.0	96.9	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 23 2011 11:16

SISTEMA INTERCONECTADO NACIONAL

EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 19

OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)

LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *



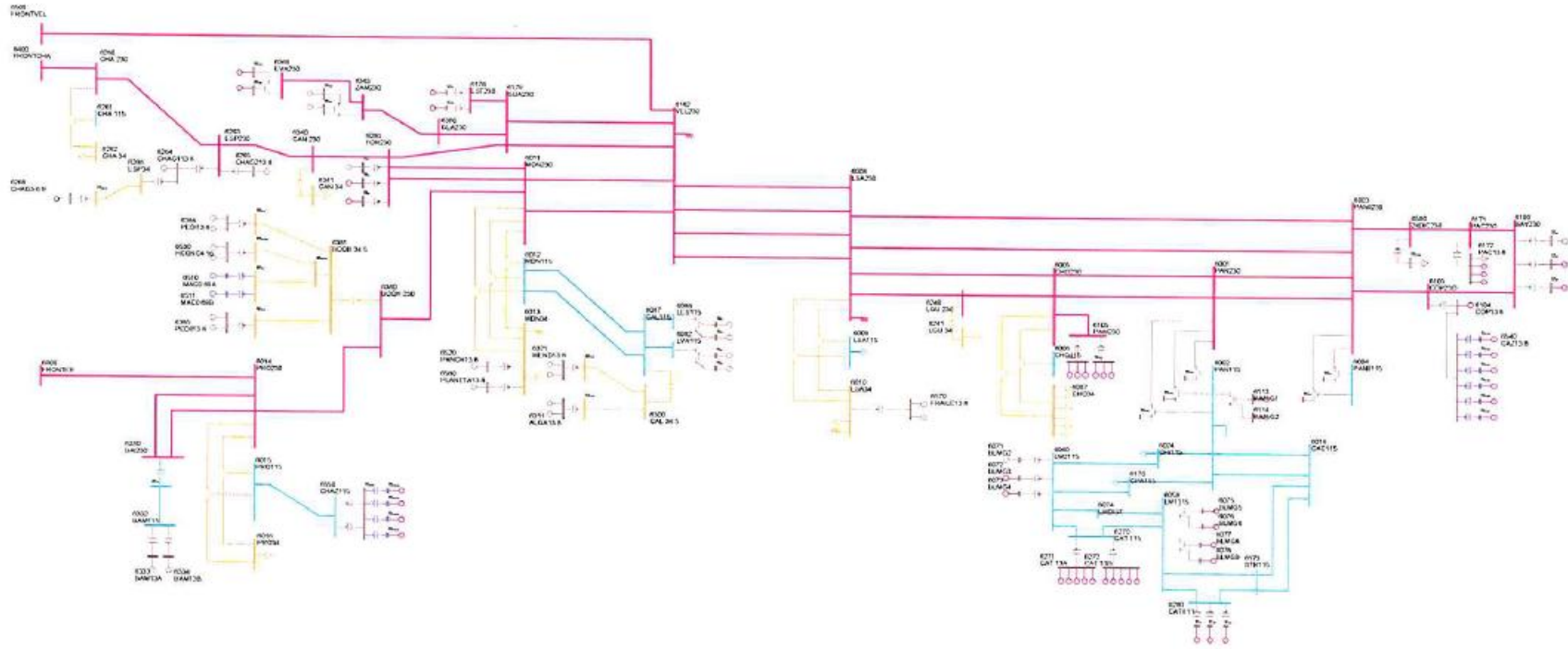
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MÁXIMA CNT 19

MON, MAY 23 2011 11:16

AREA TOTALS
 IN MW/MVAR

X-- AREA --X	FROM GENE- RATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
								TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	1145.6 222.7	1130.4 342.4	0.0 -69.3	0.0 0.0	0.0 0.0	0.0 296.2	27.2 294.3	-12.0 -48.5	-12.0 -48.5	-12.0
2 SALVADOR	890.5 75.5	875.0 270.5	0.0 -148.5	0.0 0.0	0.0 0.0	0.0 246.4	15.5 172.3	0.0 27.5	0.0 27.5	0.0
3 HONDURAS	961.6 313.2	938.5 317.1	0.0 -27.0	0.0 0.0	0.0 0.0	0.0 350.6	23.1 310.6	0.0 63.1	0.0 63.1	0.0
4 NICARAGU	415.4 -23.7	409.8 160.6	0.0 -26.8	0.0 0.0	0.0 0.0	0.0 186.9	5.8 93.7	-0.2 -64.4	-0.2 -64.4	0.0
5 C.RICA	1175.5 121.0	1157.2 457.9	0.0 -234.2	0.0 0.0	0.0 0.0	0.0 442.8	17.9 289.6	0.4 50.6	0.4 50.6	0.0
6 PANAMA	1164.1 59.6	1172.7 205.4	0.0 -127.4	0.0 0.0	0.0 0.0	0.0 439.8	39.7 476.8	-48.2 -55.4	-48.2 -55.4	-48.0
7 ACANAL	105.2 35.0	41.7 7.3	0.0 -15.7	0.0 0.0	0.0 0.0	0.0 0.0	3.5 16.4	60.0 27.1	60.0 27.1	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	5857.9 803.3	5725.2 1761.2	0.0 -648.8	0.0 0.0	0.0 0.0	0.0 1962.7	132.7 1653.7	0.0 0.0	0.0 0.0	0.0

Demanda Mínima de Invierno





SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MINIMA

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	
6071		BLMG2		13.800	V2	38.0	11.8	15.0	0.0	1.0000	39.8	0.9549	47.0			62	6	
6090		LESG1		13.800	E1	22.4	6.9	12.0	-5.0	1.0200	23.0	0.9560	27.0			64	6	
6091		LESG2		13.800	E2	22.4	6.9	12.0	-5.0	1.0200	23.0	0.9560	27.0			64	6	
6094		LVAG1		13.800	L1	26.0	0.3	12.0	-5.0	1.0200	25.5	0.9999	27.0			64	6	
6095		LVAG2		13.800	L2	26.0	0.3	12.0	-5.0	1.0200	25.5	0.9999	27.0			64	6	
6097		FORG1		13.800	F1	69.0	12.8	50.0	-50.0	1.0200	68.8	0.9831	111.0			64	6	
6101		BAYG1		13.800	B1	43.6	20.7	30.0	-25.0	1.0000	48.3	0.9035	94.0			61	6	
6264		CHAG113.8		13.800	G1	99.6	-3.2	52.4	-48.9	1.0000	99.7	0.9995	116.5			64	6	
6265		CHAG213.8		13.800	G2	99.6	0.0	52.4	-48.9	1.0000	99.6	1.0000	116.5			64	6	
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6	
6311		ALGA13.8		13.800	A1	4.8	0.3	2.3	-2.3	1.0100	4.8	0.9985	5.7			64	6	
6311		ALGA13.8		13.800	A2	4.8	0.3	2.3	-2.3	1.0100	4.8	0.9985	5.7			64	6	
6321		MEND13.8		13.800	M1	8.9	1.5	4.2	-4.2	1.0100	8.9	0.9853	10.4			64	6	
6321		MEND13.8		13.800	M2	8.9	1.5	4.2	-4.2	1.0100	8.9	0.9853	10.4			64	6	
6333		BAM13A		13.800	G1	26.6	1.1	10.0	-10.0	1.0000	26.6	0.9991	30.0			64	6	
6334		BAM13B		13.800	G2	26.6	1.1	10.0	-10.0	1.0000	26.6	0.9991	30.0			64	6	
6364		LOR13A		13.800	G1	16.0	5.1	7.8	-7.0	1.0200	16.5	0.9530	25.0			64	6	
6365		LOR13B		13.800	G2	16.0	5.1	7.8	-7.0	1.0200	16.5	0.9530	25.0			64	6	
6384		PEDI13.8		13.800	G1	9.5	0.6	4.9	-4.9	1.0200	9.3	0.9977	12.5			64	6	
6384		PEDI13.8		13.800	G2	9.5	0.6	4.9	-4.9	1.0200	9.3	0.9977	12.5			64	6	
6385		PEDII13.8		13.800	G1	6.2	1.0	3.2	-3.6	1.0200	6.1	0.9879	7.5			64	6	
6385		PEDII13.8		13.800	G2	6.2	1.0	3.2	-3.6	1.0200	6.1	0.9879	7.5			64	6	
6510		MAC0.69A		0.7000	G1	1.6	-0.1	0.9	-0.1	1.0242	1.6	0.9985	2.1			64	6	
6511		MAC0.69B		0.7000	G2	1.6	-0.1	0.9	-0.1	1.0242	1.6	0.9985	2.1			64	6	
6520		PANCH13.8		13.800	P1	4.8	2.0	2.0	-2.0	0.9201	5.6	0.9216	6.2			64	6	
6530		HCONC4.16		4.2000	G1	4.8	0.1	2.5	-2.5	1.0200	4.7	0.9998	5.6			64	6	
6530		HCONC4.16		4.2000	G2	4.8	0.1	2.5	-2.5	1.0200	4.7	0.9998	5.6			64	6	
6560		PLANETA13.8		13.800	G1	4.3	2.0	2.0	-2.0	0.9201	5.1	0.9058	4.9			64	6	
6570		FRAILE13.8		13.800	G1	2.5	1.2	1.2	-1.2	0.9022	3.0	0.9040	3.0			63	6	
6570		FRAILE13.8		13.800	G2	2.5	1.2	1.2	-1.2	0.9022	3.0	0.9040	3.0			63	6	
SUBSYSTEM TOTALS						626.6	87.1	330.5	-272.2					818.3				



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MINIMA

WED, APR 13 2011 10:03

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	
6128		MIR13C		12.000	G3	20.0	11.0	11.0	0.0	1.0026	22.8	0.8762	29.4							65	7	
6129		MIR13D		13.800	G4	22.0	15.0	15.0	0.0	1.0048	26.5	0.8265	44.1							65	7	
6134		MAD6A		6.9000	G1	10.0	1.5	6.0	-6.0	1.0100	10.0	0.9894	13.0							65	7	
6135		MAD6B		6.9000	G2	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9921	13.0							65	7	
6136		MAD6C		6.9000	G3	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9921	13.0							65	7	
SUBSYSTEM TOTALS						72.0	30.0	44.0	-18.0				112.5									

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MINIMA

WED, APR 13 2011 10:03

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0179	234.11	6011		MDN230		230.00	6	1.0068	231.55
6014		PRO230		230.00	6	1.0169	233.89	6096		FOR230		230.00	6	1.0089	232.05
6178		EST230		230.00	6	1.0085	231.96	6179		GUA230		230.00	6	1.0085	231.96
6260		CHA 230		230.00	6	1.0152	233.49	6263		ESP230		230.00	6	1.0144	233.31
6330		BAI230		230.00	6	1.0171	233.93	6340		CAN 230		230.00	6	1.0089	232.04
6360		GLA230		230.00	6	1.0106	232.43	6363		ZAM230		230.00	6	1.0133	233.05
6366		EVA230		230.00	6	1.0133	233.05	6380		BOQIII 230		230.00	6	1.0132	233.03
6400		FRONTCHA		230.00	6	1.0157	233.60	6500		FRONTVEL		230.00	6	1.0192	234.41

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9855	226.65	6003		PANII230		230.00	6	0.9882	227.29
6005		CHO230		230.00	6	0.9815	225.75	6008		LSA230		230.00	6	0.9834	226.18
6100		BAY230		230.00	6	0.9995	229.89	6103		COP230		230.00	6	0.9904	227.80
6105		PAM230		230.00	6	0.9815	225.76	6171		PAC230		230.00	6	0.9914	228.03
6182		VEL230		230.00	6	0.9985	229.65	6240		LGU 230		230.00	6	0.9794	225.26
6590		24DIC230		230.00	6	0.9897	227.63								



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2011 - DEMANDA MINIMA

WED, APR 13 2011 10:03

AREA TOTALS
 IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
	GENE- RATION	ASSIGNED TO AREA						TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	728.5 13.0	706.4 100.0	0.0 81.4	0.0 0.0	0.0 0.0	0.0 298.4	15.1 195.1	7.0 -65.2	7.0 -65.2	5.7
2 SALVADOR	442.7 -57.7	436.3 106.3	0.0 -10.9	0.0 0.0	0.0 0.0	0.0 250.8	4.9 59.9	1.4 37.8	1.4 37.8	0.0
3 HONDURAS	528.1 42.2	519.7 175.7	0.0 40.4	0.0 0.0	0.0 0.0	0.0 363.7	8.4 135.1	0.0 54.7	0.0 54.7	0.0
4 NICARAGU	305.5 -64.4	296.9 116.6	0.0 -24.3	0.0 0.0	0.0 0.0	0.0 190.5	4.2 66.0	4.4 -32.3	4.4 -32.3	0.0
5 C.RICA	555.7 -36.4	553.2 252.4	0.0 -33.4	0.0 0.0	0.0 0.0	0.0 417.3	8.9 141.6	-6.4 20.3	-6.4 20.3	0.0
6 PANAMA	626.6 87.1	645.0 234.1	0.0 -11.3	0.0 0.0	0.0 0.0	0.0 434.1	34.3 337.6	-52.6 -39.2	-52.6 -39.2	-52.7
7 ACANAL	72.0 30.0	22.9 8.3	0.0 -15.5	0.0 0.0	0.0 0.0	0.0 0.0	2.9 13.3	46.2 23.9	46.2 23.9	47.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	3259.1 13.8	3180.4 993.4	0.0 26.5	0.0 0.0	0.0 0.0	0.0 1954.7	78.7 948.6	0.0 0.0	0.0 0.0	0.0

Año 2012

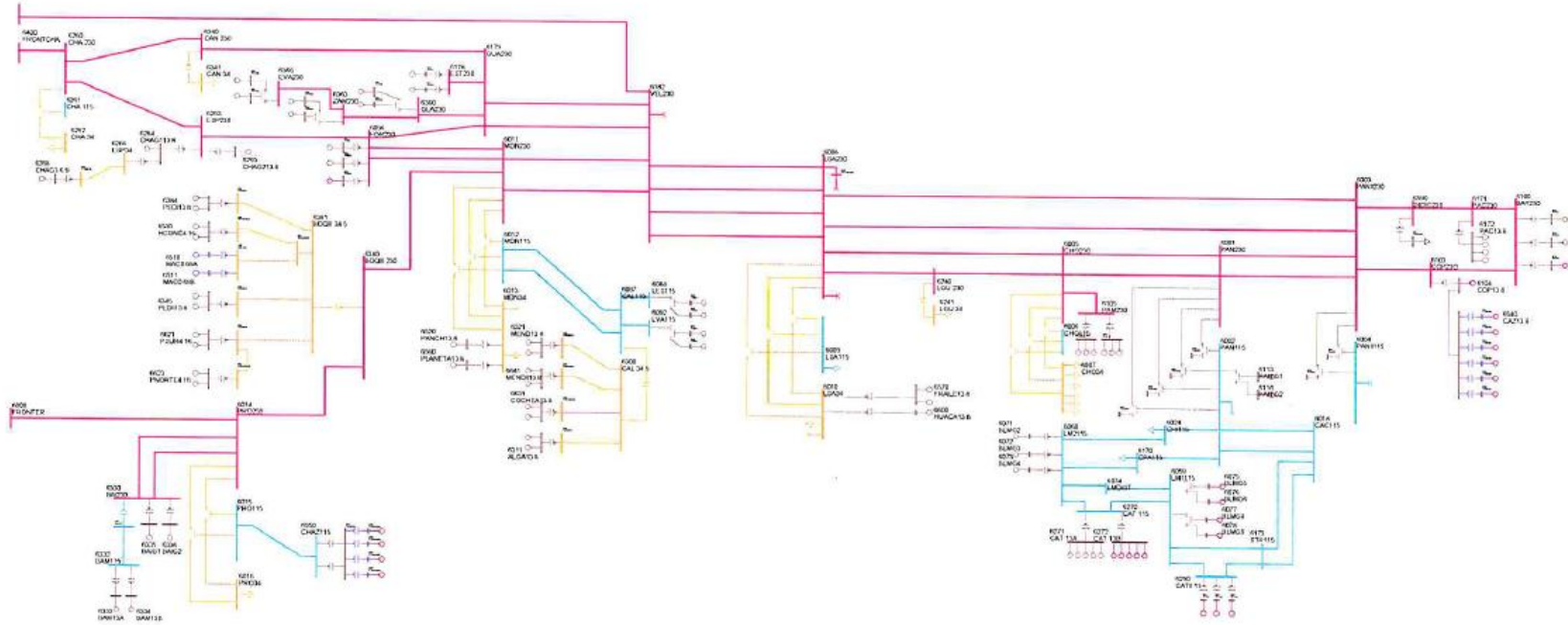


1129



Demanda Máxima de Invierno

1130
1130-1130





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA

THU, APR 14 2011 19:25

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
6071		BLMG2		13.800	V2	38.0	2.3	15.0	0.0	1.0000	38.1	0.9982	47.0			62	6
6072		BLMG3		13.800	V3	38.0	2.3	15.0	0.0	1.0000	38.1	0.9982	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.3	15.0	0.0	1.0000	38.1	0.9982	47.0			62	6
6090		LESG1		13.800	E1	22.4	2.1	12.0	-5.0	1.0000	22.5	0.9955	27.0			64	6
6091		LESG2		13.800	E2	22.4	2.1	12.0	-5.0	1.0000	22.5	0.9955	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-4.6	12.0	-5.0	1.0000	26.4	0.9850	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-4.6	12.0	-5.0	1.0000	26.4	0.9850	27.0			64	6
6097		FORG1		13.800	F1	63.7	-6.5	50.0	-50.0	1.0000	64.1	0.9949	111.0			64	6
6098		FORG2		13.800	F2	63.7	-19.8	50.0	-50.0	0.9850	67.8	0.9552	111.0			64	6
6101		BAYG1		13.800	B1	55.3	13.6	30.0	-25.0	1.0100	56.4	0.9709	94.0			61	6
6102		BAYG2		13.800	B2	46.5	-2.6	30.0	-25.0	0.9900	47.0	0.9984	94.0			61	6
6106		PAM13A		13.800	M1	15.2	9.0	9.0	0.0	0.9837	18.0	0.8605	20.7			63	6
6106		PAM13A		13.800	M2	15.2	9.0	9.0	0.0	0.9837	18.0	0.8605	20.7			63	6
6106		PAM13A		13.800	M3	15.2	9.0	9.0	0.0	0.9837	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M4	15.2	9.0	9.0	0.0	0.9837	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M5	15.2	9.0	9.0	0.0	0.9837	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M6	15.2	9.0	9.0	0.0	0.9837	18.0	0.8605	20.7			63	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9897	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9897	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9897	19.4	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	10.4	29.0	-29.0	1.0100	57.4	0.9838	69.0			64	6
6177		ESTG2		13.800	E2	57.0	10.4	29.0	-29.0	1.0100	57.4	0.9838	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-2.1	52.4	-48.9	1.0100	98.6	0.9998	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	1.2	52.4	-48.9	1.0100	98.6	0.9999	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9980	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9980	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9980	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9980	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9980	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9998	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9998	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9998	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9998	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9998	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9998	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9998	10.9			62	6



6282	GIR 13B	13.800	G8	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9998	10.9	64	6
6311	ALGA13.8	13.800	A1	4.8	1.1	2.3	-2.3	1.0100	4.9	0.9764	5.7	64	6
6311	ALGA13.8	13.800	A2	4.8	1.1	2.3	-2.3	1.0100	4.9	0.9764	5.7	64	6
6321	MEND13.8	13.800	M1	8.9	4.2	4.2	-4.2	1.0009	9.8	0.9060	10.4	64	6
6321	MEND13.8	13.800	M2	8.9	4.2	4.2	-4.2	1.0009	9.8	0.9060	10.4	64	6
6333	BAM13A	13.800	G1	26.6	1.8	10.0	-10.0	1.0100	26.4	0.9976	30.0	64	6
6334	BAM13B	13.800	G2	26.6	1.8	10.0	-10.0	1.0100	26.4	0.9976	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-5.2	14.0	-14.0	1.0100	42.0	0.9926	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-5.2	14.0	-14.0	1.0100	42.0	0.9926	49.0	64	6
6361	GLA13A	13.800	G1	12.1	-2.0	7.8	-7.0	1.0100	12.1	0.9871	14.1	64	6
6362	GLA13B	13.800	G2	12.1	-2.0	7.8	-7.0	1.0100	12.1	0.9871	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-5.5	7.8	-7.0	1.0100	16.8	0.9469	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-5.5	7.8	-7.0	1.0100	16.8	0.9469	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-7.1	8.0	-8.0	1.0100	27.3	0.9660	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-7.1	8.0	-8.0	1.0100	27.3	0.9660	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9978	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9978	7.5	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0064	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0064	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9707	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9918	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9918	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9707	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9716	2.9	0.9118	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9716	2.9	0.9118	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	0.0	0.0	0.0	0.9702	4.9	1.0000	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9974	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9974	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.2	2.5	-2.5	1.0000	4.9	0.9692	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.2	2.5	-2.5	1.0000	4.9	0.9692	5.6	64	6
6631	COCHEA13.8	13.800	G1	7.1	-3.7	3.7	-3.7	1.0036	8.0	0.8877	8.4	64	6
6631	COCHEA13.8	13.800	G2	7.1	-3.7	3.7	-3.7	1.0036	8.0	0.8877	8.4	64	6
6641	MENDII13.8	13.800	G1	3.7	-1.9	1.9	-1.9	1.0056	4.1	0.8916	4.1	64	6
6641	MENDII13.8	13.800	G2	3.7	-1.9	1.9	-1.9	1.0056	4.1	0.8916	4.1	64	6
SUBSYSTEM TOTALS				1372.2	62.6	706.1	-563.3				1806.9		



AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X	T	R	N	GENTAF	ZONE	AREA
6127		MIR13B		12.000	G6	18.0	2.9	8.0	0.0	1.0100	18.0	0.9874	27.7						65	7
6128		MIR13C		12.000	G3	20.0	10.1	11.0	0.0	1.0100	22.2	0.8926	29.4						65	7
6129		MIR13D		13.800	G4	21.4	13.0	15.0	0.0	1.0100	24.8	0.8537	44.1						65	7
6130		MIR13F		13.800	G5	17.0	4.1	8.0	0.0	1.0100	17.3	0.9723	27.7						65	7
6134		MAD6A		6.9000	G1	10.0	1.4	6.0	-6.0	1.0100	10.0	0.9899	13.0						65	7
6135		MAD6B		6.9000	G2	10.0	1.2	6.0	-6.0	1.0100	10.0	0.9924	13.0						65	7
6136		MAD6C		6.9000	G3	10.0	1.2	6.0	-6.0	1.0100	10.0	0.9924	13.0						65	7
SUBSYSTEM TOTALS						106.4	34.0	60.0	-18.0				167.9							

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, APR 14 2011 19:25
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0195	234.48	6003		PANII230		230.00	6	1.0069	231.60
6005		CHO230		230.00	6	1.0007	230.15	6008		LSA230		230.00	6	1.0032	230.73
6011		MDN230		230.00	6	1.0094	232.17	6014		PRO230		230.00	6	1.0182	234.19
6096		FOR230		230.00	6	1.0096	232.20	6100		BAY230		230.00	6	1.0201	234.62
6103		COP230		230.00	6	1.0094	232.16	6105		PAM230		230.00	6	1.0008	230.19
6171		PAC230		230.00	6	1.0145	233.34	6178		EST230		230.00	6	1.0079	231.81
6179		GUA230		230.00	6	1.0080	231.84	6182		VEL230		230.00	6	1.0080	231.84
6240		LGU 230		230.00	6	1.0000	230.00	6260		CHA 230		230.00	6	1.0214	234.93
6263		ESP230		230.00	6	1.0227	235.23	6330		BAI230		230.00	6	1.0185	234.25
6340		CAN 230		230.00	6	1.0139	233.20	6360		GLA230		230.00	6	1.0129	232.96
6363		ZAM230		230.00	6	1.0178	234.09	6366		EVA230		230.00	6	1.0205	234.72
6380		BOQIII 230		230.00	6	1.0141	233.25	6400		FRONTCHA		230.00	6	1.0218	235.00
6450		LSA CAP 230		230.00	6	1.0032	230.73	6500		FRONTVEL		230.00	6	1.0235	235.42
6590		24DIC230		230.00	6	1.0105	232.41								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9997	229.93								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, APR 14 2011 19:25
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA

BUSES WITH VOLTAGE GREATER THAN 1.0000:



BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6009	LSA115	115.00	6	1.0191	117.20	6012	MDN115	115.00	6	1.0173	116.98				
6015	PRO115	115.00	6	1.0164	116.89	6087	CAL115	115.00	6	1.0186	117.14				
6088	LES115	115.00	6	1.0206	117.37	6092	LVA115	115.00	6	1.0184	117.12				
6123	MIR115	115.00	7	1.0110	116.26	6170	CPA115	115.00	6	1.0006	115.06				
6261	CHA 115	115.00	6	1.0178	117.05	6280	GIR 115	115.00	6	1.0011	115.13				
6331	BAI115	115.00	6	1.0075	115.86	6332	BAM115	115.00	6	1.0117	116.35				
6550	CHAZ115	115.00	6	1.0164	116.89										

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002	PAN115	115.00	6	0.9975	114.72	6004	PANII115	115.00	6	0.9989	114.88				
6006	CHO115	115.00	6	0.9845	113.21	6018	CAC115	115.00	6	0.9973	114.69				
6019	CVI115A	115.00	6	0.9913	114.00	6024	CHI115	115.00	6	0.9888	113.71				
6027	LOC115A	115.00	6	0.9900	113.85	6032	MAR115A	115.00	6	0.9866	113.45				
6036	SMA115	115.00	6	0.9958	114.51	6040	SFR115	115.00	6	0.9878	113.59				
6047	CLA115	115.00	6	0.9837	113.12	6055	MOS115B	115.00	6	0.9945	114.36				
6057	TOC115	115.00	6	0.9961	114.55	6059	LM1115	115.00	6	0.9984	114.81				
6060	LM2115	115.00	6	0.9984	114.82	6066	FFIELD	115.00	6	0.9979	114.75				
6074	LMDIST	115.00	6	0.9984	114.81	6173	STR115	115.00	6	0.9983	114.80				
6174	PM115-1A	115.00	6	0.9988	114.86	6175	PM115-2A	115.00	6	0.9988	114.86				
6210	TIN115	115.00	6	0.9944	114.36	6211	PM115-9	115.00	6	0.9946	114.38				
6230	CBA115	115.00	6	0.9889	113.73	6270	CAT 115	115.00	6	0.9985	114.83				
6290	CATII 11	115.00	6	0.9983	114.81	6350	PM115-8	115.00	6	0.9921	114.09				
6580	LBO115	115.00	6	0.9910	113.96										

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, APR 14 2011 19:25
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA
 OUTPUT FOR AREA 6 [PANAMA]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X-----	FROM BUS	-----X	X-----	TO BUS	-----X	RATING SET A	RATING SET B	RATING SET C								
BUS#	X--	NAME	--X	BASKV	AREA	BUS#	X--	NAME	--X	BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	53.8	54.0	99.7	--	--	--	--	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, APR 14 2011 19:25
 SISTEMA INTERCONECTADO NACIONAL
 BASE REGIONAL - DEMANDA MAXIMA - EPOCA LLUVIOSA 2012



OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X X----- TO BUS -----X RATING SET A RATING SET B RATING SET C
BUS# X-- NAME --X BASKV AREA BUS# X-- NAME --X BASKV AREA CKT LOADING RATING PERCENT RATING PERCENT RATING PERCENT

* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E

THU, APR 14 2011 19:25

SISTEMA INTERCONECTADO NACIONAL

AREA TOTALS

EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA

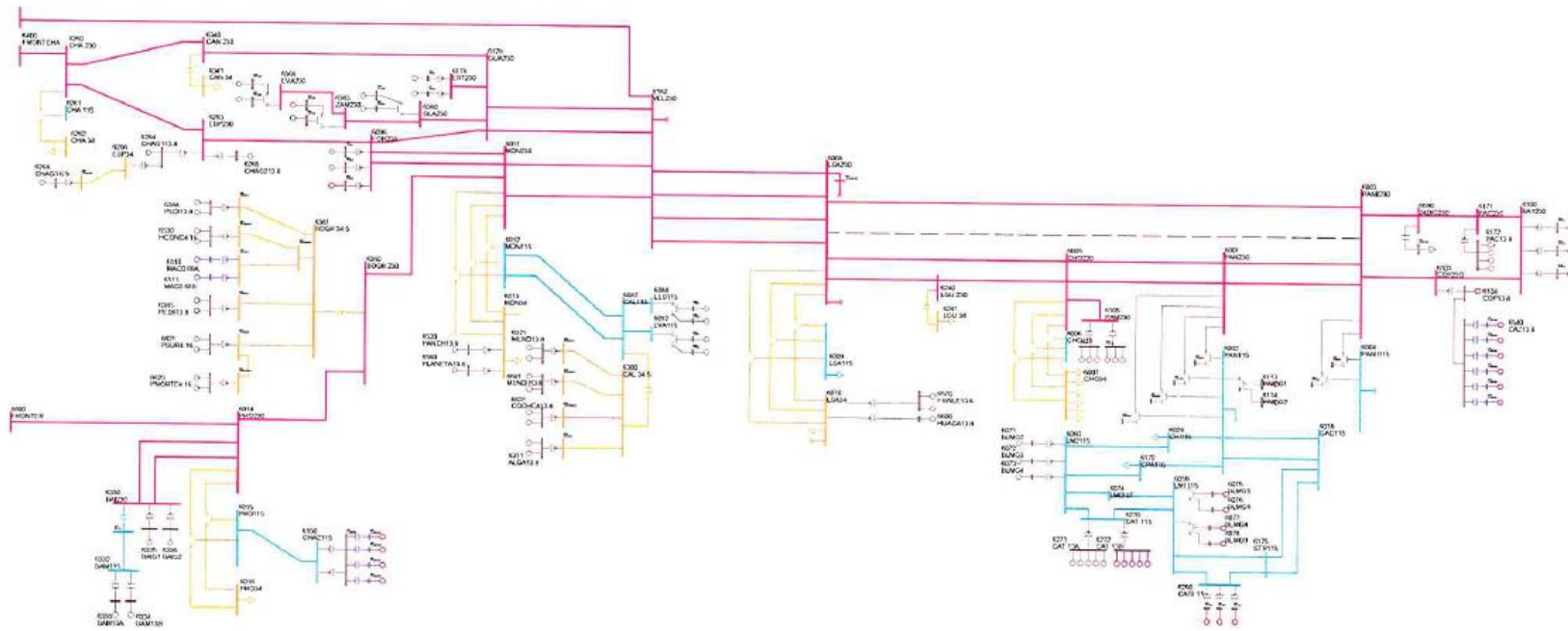
IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO BUS SHUNT	TO GNE BUS DEVICES		TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
	GENE- RATION	ASSIGNED TO AREA		TO TIE LINES	TO TIES + LOADS						
1	1010.0	1158.9	0.0	0.0	0.0	0.0	0.0	25.4	-174.3	-174.3	-174.4
GUATEMAL	210.9	342.4	-69.2	0.0	0.0	0.0	310.8	284.6	-36.1	-36.1	
2	998.0	978.0	0.0	0.0	0.0	0.0	0.0	20.4	-0.4	-0.4	0.0
SALVADOR	262.8	325.2	-150.2	0.0	0.0	0.0	243.4	235.6	95.6	95.6	
3	1039.7	1008.0	0.0	0.0	0.0	0.0	0.0	31.9	-0.2	-0.2	0.0
HONDURAS	370.7	341.6	-36.7	0.0	0.0	0.0	333.1	385.3	13.6	13.6	
4	483.5	473.3	0.0	0.0	0.0	0.0	0.0	10.3	-0.1	-0.1	0.0
NICARAGU	32.1	186.7	-4.3	0.0	0.0	0.0	175.7	132.4	-107.1	-107.1	
5	1235.9	1218.9	0.0	0.0	0.0	0.0	0.0	17.0	-0.1	-0.1	0.0
COSTA RI	141.8	489.8	-233.0	0.0	0.0	0.0	477.8	283.9	78.9	78.9	
6	1372.2	1203.7	0.0	0.0	0.0	0.0	0.0	53.2	115.2	115.2	114.4
PANAMA	62.6	210.9	-214.1	0.0	0.0	0.0	471.4	608.0	-70.8	-70.8	
7	106.4	43.1	0.0	0.0	0.0	0.0	0.0	3.5	59.8	59.8	60.0
ACANAL	34.0	7.5	-15.7	0.0	0.0	0.0	0.0	16.2	25.9	25.9	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	6245.7	6083.9	0.0	0.0	0.0	0.0	0.0	161.8	0.0	0.0	0.0
TOTALS	1114.9	1904.1	-723.1	0.0	0.0	0.0	2012.1	1946.0	0.0	0.0	



Contingencia 3: Llano Sánchez – Panamá II (230-13)

400
FRONTIER





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CONT 3

FRI, APR 15 2011 14:39

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	3.3	15.0	0.0	1.0000	38.1	0.9963	47.0			62	6
6072		BLMG3		13.800	V3	38.0	3.3	15.0	0.0	1.0000	38.1	0.9963	47.0			62	6
6073		BLMG4		13.800	V4	38.0	3.3	15.0	0.0	1.0000	38.1	0.9963	47.0			62	6
6090		LESG1		13.800	E1	22.4	3.2	12.0	-5.0	1.0000	22.6	0.9902	27.0			64	6
6091		LESG2		13.800	E2	22.4	3.2	12.0	-5.0	1.0000	22.6	0.9902	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-3.4	12.0	-5.0	1.0000	26.3	0.9914	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-3.4	12.0	-5.0	1.0000	26.3	0.9914	27.0			64	6
6097		FORG1		13.800	F1	63.7	-1.3	50.0	-50.0	1.0000	63.8	0.9998	111.0			64	6
6098		FORG2		13.800	F2	63.7	-14.6	50.0	-50.0	0.9850	66.4	0.9747	111.0			64	6
6101		BAYG1		13.800	B1	63.2	32.7	30.0	-25.0	1.0100	70.5	0.8884	94.0			61	6
6102		BAYG2		13.800	B2	46.5	15.4	30.0	-25.0	0.9900	49.5	0.9492	94.0			61	6
6106		PAM13A		13.800	M1	15.2	9.0	9.0	0.0	0.9499	18.6	0.8605	20.7			63	6
6106		PAM13A		13.800	M2	15.2	9.0	9.0	0.0	0.9499	18.6	0.8605	20.7			63	6
6106		PAM13A		13.800	M3	15.2	9.0	9.0	0.0	0.9499	18.6	0.8605	20.7			63	6
6107		PAM13B		13.800	M4	15.2	9.0	9.0	0.0	0.9499	18.6	0.8605	20.7			63	6
6107		PAM13B		13.800	M5	15.2	9.0	9.0	0.0	0.9499	18.6	0.8605	20.7			63	6
6107		PAM13B		13.800	M6	15.2	9.0	9.0	0.0	0.9499	18.6	0.8605	20.7			63	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9610	20.0	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9610	20.0	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9610	20.0	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	11.5	29.0	-29.0	1.0100	57.6	0.9804	69.0			64	6
6177		ESTG2		13.800	E2	57.0	11.5	29.0	-29.0	1.0100	57.6	0.9804	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	0.1	52.4	-48.9	1.0100	98.6	1.0000	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	3.4	52.4	-48.9	1.0100	98.7	0.9994	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.7	5.6	-5.6	1.0000	8.3	0.9963	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.7	5.6	-5.6	1.0000	8.3	0.9963	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.7	5.6	-5.6	1.0000	8.3	0.9963	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.7	5.6	-5.6	1.0000	8.3	0.9963	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.7	5.6	-5.6	1.0000	8.3	0.9963	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	0.2	2.0	-2.0	1.0000	3.7	0.9988	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	0.2	2.0	-2.0	1.0000	3.7	0.9988	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	0.2	2.0	-2.0	1.0000	3.7	0.9988	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	0.2	2.0	-2.0	1.0000	3.7	0.9988	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	0.4	2.5	-2.5	1.0000	8.3	0.9988	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	0.4	2.5	-2.5	1.0000	8.3	0.9988	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	0.4	2.5	-2.5	1.0000	8.3	0.9988	10.9			62	6



6282	GIR 13B	13.800	G8	8.3	0.4	2.5	-2.5	1.0000	8.3	0.9988	10.9	64	6
6311	ALGA13.8	13.800	A1	4.8	1.2	2.3	-2.3	1.0100	4.9	0.9698	5.7	64	6
6311	ALGA13.8	13.800	A2	4.8	1.2	2.3	-2.3	1.0100	4.9	0.9698	5.7	64	6
6321	MEND13.8	13.800	M1	8.9	4.2	4.2	-4.2	0.9977	9.9	0.9060	10.4	64	6
6321	MEND13.8	13.800	M2	8.9	4.2	4.2	-4.2	0.9977	9.9	0.9060	10.4	64	6
6333	BAM13A	13.800	G1	26.6	2.2	10.0	-10.0	1.0100	26.4	0.9965	30.0	64	6
6334	BAM13B	13.800	G2	26.6	2.2	10.0	-10.0	1.0100	26.4	0.9965	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-2.2	14.0	-14.0	1.0100	41.8	0.9986	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-2.2	14.0	-14.0	1.0100	41.8	0.9986	49.0	64	6
6361	GLA13A	13.800	G1	12.1	1.9	7.8	-7.0	1.0100	12.1	0.9876	14.1	64	6
6362	GLA13B	13.800	G2	12.1	1.9	7.8	-7.0	1.0100	12.1	0.9876	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-2.0	7.8	-7.0	1.0100	16.0	0.9924	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-2.0	7.8	-7.0	1.0100	16.0	0.9924	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-3.8	8.0	-8.0	1.0100	26.6	0.9897	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-3.8	8.0	-8.0	1.0100	26.6	0.9897	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.3	4.9	-4.9	1.0000	9.5	0.9995	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.3	4.9	-4.9	1.0000	9.5	0.9995	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.6	3.2	-3.6	1.0000	6.2	0.9949	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.6	3.2	-3.6	1.0000	6.2	0.9949	7.5	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0056	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0056	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9651	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9975	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9975	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9651	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9411	3.0	0.9118	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9411	3.0	0.9118	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	0.0	0.0	0.0	0.9397	5.1	1.0000	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	0.0	2.5	-2.5	1.0000	4.8	1.0000	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	0.0	2.5	-2.5	1.0000	4.8	1.0000	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.0	2.5	-2.5	1.0000	4.9	0.9789	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.0	2.5	-2.5	1.0000	4.9	0.9789	5.6	64	6
6631	COCHEA13.8	13.800	G1	7.1	-3.7	3.7	-3.7	1.0003	8.0	0.8877	8.4	64	6
6631	COCHEA13.8	13.800	G2	7.1	-3.7	3.7	-3.7	1.0003	8.0	0.8877	8.4	64	6
6641	MENDII13.8	13.800	G1	3.7	-1.9	1.9	-1.9	1.0023	4.1	0.8916	4.1	64	6
6641	MENDII13.8	13.800	G2	3.7	-1.9	1.9	-1.9	1.0023	4.1	0.8916	4.1	64	6
SUBSYSTEM TOTALS				1380.0	156.9	706.1	-563.3				1806.9		



AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A	GEN	ZONE	AREA
6127		MIR13B		12.000	G6	18.0	3.3	8.0	0.0	1.0100	18.1	0.9837	27.7			65	7
6128		MIR13C		12.000	G3	20.0	10.4	11.0	0.0	1.0100	22.3	0.8865	29.4			65	7
6129		MIR13D		13.800	G4	21.4	13.5	15.0	0.0	1.0100	25.0	0.8461	44.1			65	7
6130		MIR13F		13.800	G5	17.0	4.6	8.0	0.0	1.0100	17.4	0.9657	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	1.5	6.0	-6.0	1.0100	10.0	0.9887	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9916	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9916	13.0			65	7
SUBSYSTEM TOTALS						106.4	35.9	60.0	-18.0				167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 14:39
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CONT 3

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0146	233.36	6011		MDN230		230.00	6	1.0018	230.41
6014		PRO230		230.00	6	1.0135	233.11	6096		FOR230		230.00	6	1.0039	230.89
6178		EST230		230.00	6	1.0019	230.43	6179		GUA230		230.00	6	1.0019	230.44
6260		CHA 230		230.00	6	1.0182	234.18	6263		ESP230		230.00	6	1.0198	234.56
6330		BAI230		230.00	6	1.0145	233.34	6340		CAN 230		230.00	6	1.0088	232.02
6360		GLA230		230.00	6	1.0075	231.72	6363		ZAM230		230.00	6	1.0130	232.99
6366		EVA230		230.00	6	1.0160	233.68	6380		BOQIII 230		230.00	6	1.0083	231.91
6400		FRONTCHA		230.00	6	1.0187	234.30	6500		FRONTVEL		230.00	6	1.0165	233.81

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9638	221.67	6003		PANII230		230.00	6	0.9720	223.56
6005		CHO230		230.00	6	0.9624	221.36	6008		LSA230		230.00	6	0.9723	223.62
6100		BAY230		230.00	6	0.9963	229.14	6103		COP230		230.00	6	0.9762	224.52
6105		PAM230		230.00	6	0.9626	221.40	6171		PAC230		230.00	6	0.9828	226.04
6182		VEL230		230.00	6	0.9913	228.00	6240		LGU 230		230.00	6	0.9632	221.53
6450		LSA CAP 230		230.00	6	0.9723	223.62	6590		24DIC230		230.00	6	0.9771	224.74

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 14:39
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CONT 3

BUSES WITH VOLTAGE GREATER THAN 1.0000:



BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6012		MDN115		115.00	6	1.0113	116.30	6015		PRO115		115.00	6	1.0117	116.35
6087		CAL115		115.00	6	1.0148	116.70	6088		LES115		115.00	6	1.0172	116.98
6092		LVA115		115.00	6	1.0147	116.69	6123		MIR115		115.00	7	1.0073	115.84
6261		CHA 115		115.00	6	1.0146	116.67	6331		BAI115		115.00	6	1.0044	115.51
6332		BAM115		115.00	6	1.0094	116.08	6550		CHAZ115		115.00	6	1.0117	116.35
BUSES WITH VOLTAGE LESS THAN 1.0000:															
6002		PAN115		115.00	6	0.9932	114.22	6004		PANII115		115.00	6	0.9945	114.37
6006		CHO115		115.00	6	0.9449	108.67	6009		LSA115		115.00	6	0.9871	113.51
6018		CAC115		115.00	6	0.9930	114.20	6019		CVI115A		115.00	6	0.9869	113.49
6024		CHI115		115.00	6	0.9854	113.32	6027		LOC115A		115.00	6	0.9856	113.34
6032		MAR115A		115.00	6	0.9822	112.95	6036		SMA115		115.00	6	0.9914	114.02
6040		SFR115		115.00	6	0.9833	113.08	6047		CLA115		115.00	6	0.9802	112.72
6055		MOS115B		115.00	6	0.9901	113.86	6057		TOC115		115.00	6	0.9916	114.04
6059		LM1115		115.00	6	0.9962	114.56	6060		LM2115		115.00	6	0.9963	114.57
6066		FFIELD		115.00	6	0.9957	114.51	6074		LMDIST		115.00	6	0.9962	114.56
6170		CPA115		115.00	6	0.9983	114.81	6173		STR115		115.00	6	0.9959	114.53
6174		PM115-1A		115.00	6	0.9955	114.49	6175		PM115-2A		115.00	6	0.9955	114.49
6210		TIN115		115.00	6	0.9901	113.86	6211		PM115-9		115.00	6	0.9902	113.88
6230		CBA115		115.00	6	0.9845	113.22	6270		CAT 115		115.00	6	0.9963	114.58
6280		GIR 115		115.00	6	0.9990	114.89	6290		CATII 11		115.00	6	0.9962	114.56
6350		PM115-8		115.00	6	0.9878	113.59	6580		LBO115		115.00	6	0.9865	113.45

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 14:39

SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CONT 3
 OUTPUT FOR AREA 6 [PANAMA]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X-----	FROM BUS	-----X	X-----	TO BUS	-----X														
BUS#	X--	NAME	--X	BASKV	AREA	BUS#	X--	NAME	--X	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6092		LVA115		115.00*	6	3WNDTR		TRAF01		WND 1	6	T1	53.3	54.0	98.7	--	--	--	--

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 14:39
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CONT 3



OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X X----- TO BUS -----X RATING SET A RATING SET B RATING SET C
 BUS# X-- NAME --X BASKV AREA BUS# X-- NAME --X BASKV AREA CKT LOADING RATING PERCENT RATING PERCENT RATING PERCENT

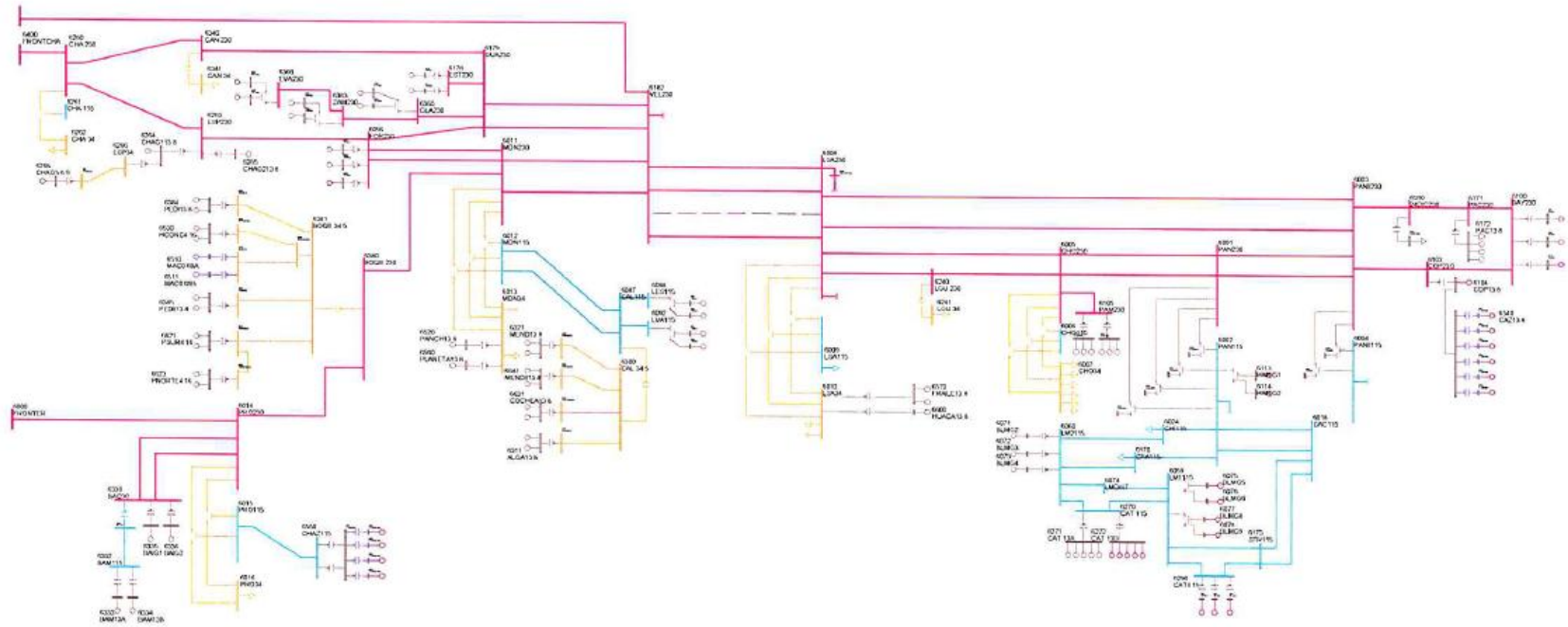
* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 14:39										
SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS			
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CONT 3							IN MW/MVAR			
X-- AREA --X	FROM GENE- RATION	TO AT AREA BUSES	LOAD TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRE
								TO TIE LINES	TO TIES + LOADS	NET INT
1	1010.0	1158.9	0.0	0.0	0.0	0.0	25.4	-174.3	-174.3	-174.4
GUATEMAL	210.9	342.4	-69.2	0.0	0.0	310.8	284.6	-36.1	-36.1	
2	998.0	978.0	0.0	0.0	0.0	0.0	20.4	-0.4	-0.4	0.0
SALVADOR	262.8	325.2	-150.2	0.0	0.0	243.4	235.6	95.6	95.6	
3	1039.7	1008.0	0.0	0.0	0.0	0.0	31.9	-0.2	-0.2	0.0
HONDURAS	370.8	341.6	-36.7	0.0	0.0	333.1	385.3	13.7	13.7	
4	483.5	473.3	0.0	0.0	0.0	0.0	10.3	-0.1	-0.1	0.0
NICARAGU	32.3	186.7	-4.3	0.0	0.0	175.6	132.4	-106.9	-106.9	
5	1235.9	1218.9	0.0	0.0	0.0	0.0	17.1	-0.1	-0.1	0.0
COSTA RI	149.8	489.8	-232.6	0.0	0.0	476.7	284.4	84.9	84.9	
6	1380.0	1203.7	0.0	0.0	0.0	0.0	61.0	115.3	115.3	114.4
PANAMA	156.9	210.9	-211.6	0.0	0.0	418.7	655.0	-78.7	-78.7	
7	106.4	43.1	0.0	0.0	0.0	0.0	3.6	59.7	59.7	60.0
ACANAL	35.9	7.5	-15.7	0.0	0.0	0.0	16.5	27.5	27.5	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	6253.5	6083.9	0.0	0.0	0.0	0.0	169.7	0.0	0.0	0.0
TOTALS	1219.4	1904.1	-720.2	0.0	0.0	1958.3	1993.8	0.0	0.0	



Contingencia 4: Llano Sánchez – Veladero (230-5A)

400 FRONTAL





6282	GIR 13B	13.800	G8	8.3	0.4	2.5	-2.5	1.0000	8.3	0.9987	10.9	64	6
6311	ALGA13.8	13.800	A1	4.8	1.2	2.3	-2.3	1.0100	4.9	0.9699	5.7	64	6
6311	ALGA13.8	13.800	A2	4.8	1.2	2.3	-2.3	1.0100	4.9	0.9699	5.7	64	6
6321	MEND13.8	13.800	M1	8.9	4.2	4.2	-4.2	0.9978	9.9	0.9060	10.4	64	6
6321	MEND13.8	13.800	M2	8.9	4.2	4.2	-4.2	0.9978	9.9	0.9060	10.4	64	6
6333	BAM13A	13.800	G1	26.6	2.2	10.0	-10.0	1.0100	26.4	0.9965	30.0	64	6
6334	BAM13B	13.800	G2	26.6	2.2	10.0	-10.0	1.0100	26.4	0.9965	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-2.2	14.0	-14.0	1.0100	41.8	0.9986	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-2.2	14.0	-14.0	1.0100	41.8	0.9986	49.0	64	6
6361	GLA13A	13.800	G1	12.1	1.9	7.8	-7.0	1.0100	12.1	0.9882	14.1	64	6
6362	GLA13B	13.800	G2	12.1	1.9	7.8	-7.0	1.0100	12.1	0.9882	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-2.0	7.8	-7.0	1.0100	16.0	0.9921	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-2.0	7.8	-7.0	1.0100	16.0	0.9921	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-3.9	8.0	-8.0	1.0100	26.6	0.9895	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-3.9	8.0	-8.0	1.0100	26.6	0.9895	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.3	4.9	-4.9	1.0000	9.5	0.9995	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.3	4.9	-4.9	1.0000	9.5	0.9995	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.6	3.2	-3.6	1.0000	6.2	0.9949	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.6	3.2	-3.6	1.0000	6.2	0.9949	7.5	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0056	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0056	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9652	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9975	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9975	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9652	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9486	3.0	0.9118	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9486	3.0	0.9118	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	0.0	0.0	0.0	0.9472	5.1	1.0000	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	0.0	2.5	-2.5	1.0000	4.8	1.0000	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	0.0	2.5	-2.5	1.0000	4.8	1.0000	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.0	2.5	-2.5	1.0000	4.9	0.9788	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.0	2.5	-2.5	1.0000	4.9	0.9788	5.6	64	6
6631	COCHEA13.8	13.800	G1	7.1	-3.7	3.7	-3.7	1.0003	8.0	0.8877	8.4	64	6
6631	COCHEA13.8	13.800	G2	7.1	-3.7	3.7	-3.7	1.0003	8.0	0.8877	8.4	64	6
6641	MENDII13.8	13.800	G1	3.7	-1.9	1.9	-1.9	1.0024	4.1	0.8916	4.1	64	6
6641	MENDII13.8	13.800	G2	3.7	-1.9	1.9	-1.9	1.0024	4.1	0.8916	4.1	64	6
SUBSYSTEM TOTALS				1376.4	137.2	706.1	-563.3				1806.9		



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 14:54
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 4

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6012		MDN115		115.00	6	1.0113	116.30	6015		PRO115		115.00	6	1.0118	116.35
6087		CAL115		115.00	6	1.0148	116.70	6088		LES115		115.00	6	1.0172	116.98
6092		LVA115		115.00	6	1.0148	116.70	6123		MIR115		115.00	7	1.0072	115.83
6261		CHA 115		115.00	6	1.0146	116.68	6331		BAI115		115.00	6	1.0045	115.51
6332		BAM115		115.00	6	1.0094	116.09	6550		CHAZ115		115.00	6	1.0118	116.35

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	0.9931	114.20	6004		PANII115		115.00	6	0.9943	114.34
6006		CHO115		115.00	6	0.9647	110.94	6009		LSA115		115.00	6	0.9949	114.42
6018		CAC115		115.00	6	0.9929	114.18	6019		CVI115A		115.00	6	0.9867	113.47
6024		CHI115		115.00	6	0.9852	113.30	6027		LOC115A		115.00	6	0.9854	113.32
6032		MAR115A		115.00	6	0.9820	112.93	6036		SMA115		115.00	6	0.9913	114.00
6040		SFR115		115.00	6	0.9832	113.06	6047		CLA115		115.00	6	0.9801	112.71
6055		MOS115B		115.00	6	0.9900	113.85	6057		TOC115		115.00	6	0.9914	114.01
6059		LM1115		115.00	6	0.9962	114.56	6060		LM2115		115.00	6	0.9963	114.57
6066		FFIELD		115.00	6	0.9957	114.50	6074		LMDIST		115.00	6	0.9962	114.56
6170		CPA115		115.00	6	0.9983	114.80	6173		STR115		115.00	6	0.9958	114.52
6174		PM115-1A		115.00	6	0.9954	114.48	6175		PM115-2A		115.00	6	0.9954	114.48
6210		TIN115		115.00	6	0.9899	113.84	6211		PM115-9		115.00	6	0.9901	113.86
6230		CBA115		115.00	6	0.9844	113.20	6270		CAT 115		115.00	6	0.9963	114.58
6280		GIR 115		115.00	6	0.9990	114.88	6290		CATII 11		115.00	6	0.9961	114.55
6350		PM115-8		115.00	6	0.9876	113.58	6580		LBO115		115.00	6	0.9863	113.43

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 14:54
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 4

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)

LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X-----		FROM BUS		-----X X-----		TO BUS		-----X		RATING SET A		RATING SET B		RATING SET C					
BUS#	X--	NAME	--X	BASKV	AREA	BUS#	X--	NAME	--X	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6008		LSA230		230.00	6	6182		VEL230		230.00*	6	14	216.0	225.0	96.0	450.0	48.0	--	--
6008		LSA230		230.00	6	6182		VEL230		230.00*	6	15	216.0	225.0	96.0	450.0	48.0	--	--
6008		LSA230		230.00	6	6182		VEL230		230.00*	6	6A	191.7	193.0	99.3	366.0	52.4	--	--
6092		LVA115		115.00*	6	3WINDTR		TRAF01		WND 1	6	T1	53.3	54.0	98.7	--	--	--	--



OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X X----- TO BUS -----X RATING SET A RATING SET B RATING SET C
 BUS# X-- NAME --X BASKV AREA BUS# X-- NAME --X BASKV AREA CKT LOADING RATING PERCENT RATING PERCENT RATING PERCENT

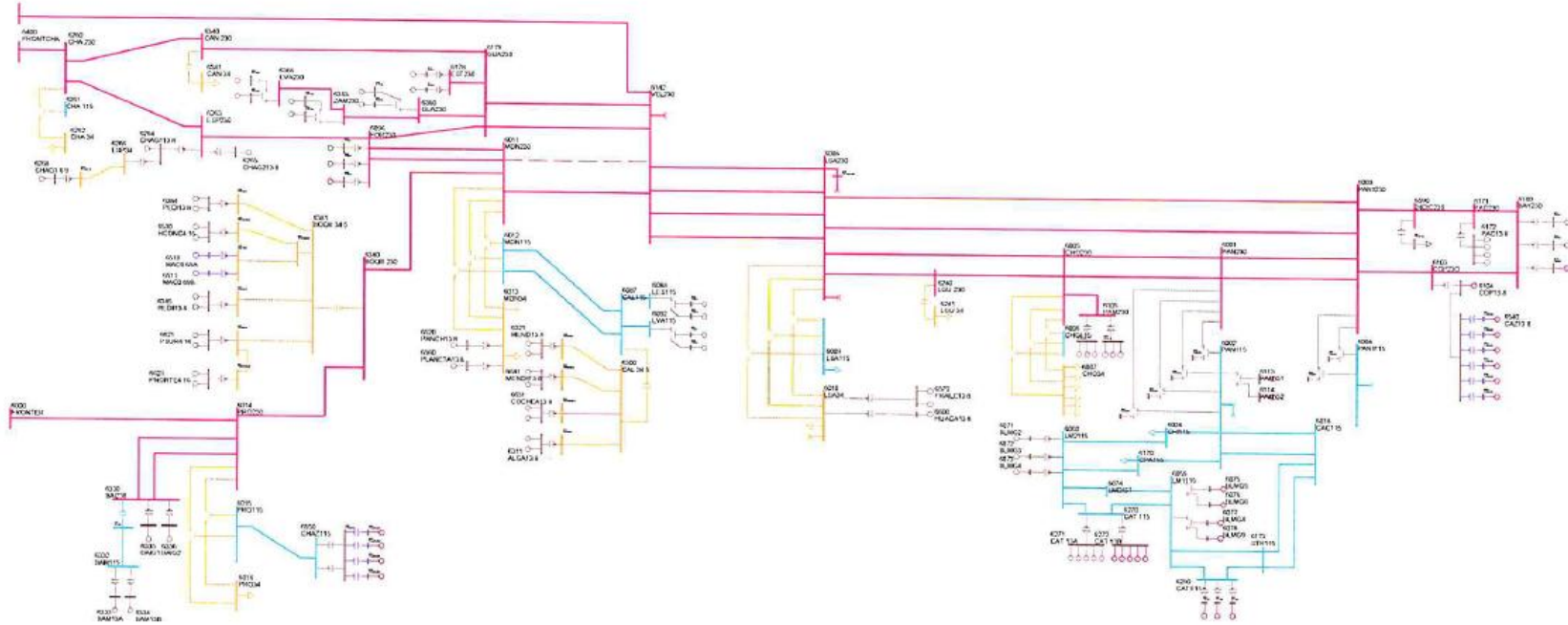
* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E										
SISTEMA INTERCONECTADO NACIONAL										
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 4										
AREA TOTALS										
IN MW/MVAR										
-NET INTERCHANGE-										
X-- AREA --X	FROM GENE-	TO AT AREA	LOAD TO BUS	TO GNE BUS	TO LINE	FROM	TO	TO TIE	TO TIES	DESIRED
	RATION	BUSES	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	LINES	+ LOADS	NET INT
1	1010.0	1158.9	0.0	0.0	0.0	0.0	25.4	-174.3	-174.3	-174.4
GUATEMAL	210.9	342.4	-69.2	0.0	0.0	310.8	284.6	-36.1	-36.1	
2	998.0	978.0	0.0	0.0	0.0	0.0	20.4	-0.4	-0.4	0.0
SALVADOR	262.8	325.2	-150.2	0.0	0.0	243.4	235.6	95.6	95.6	
3	1039.7	1008.0	0.0	0.0	0.0	0.0	31.9	-0.2	-0.2	0.0
HONDURAS	370.8	341.6	-36.7	0.0	0.0	333.1	385.3	13.7	13.7	
4	483.5	473.3	0.0	0.0	0.0	0.0	10.3	-0.1	-0.1	0.0
NICARAGU	32.3	186.7	-4.3	0.0	0.0	175.6	132.4	-106.9	-106.9	
5	1235.9	1218.9	0.0	0.0	0.0	0.0	17.1	-0.1	-0.1	0.0
COSTA RI	149.7	489.8	-232.6	0.0	0.0	476.7	284.4	84.9	84.9	
6	1376.4	1203.7	0.0	0.0	0.0	0.0	57.4	115.3	115.3	114.4
PANAMA	137.2	210.9	-211.7	0.0	0.0	435.6	652.3	-78.7	-78.7	
7	106.4	43.1	0.0	0.0	0.0	0.0	3.6	59.7	59.7	60.0
ACANAL	36.0	7.5	-15.7	0.0	0.0	0.0	16.5	27.6	27.6	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	6249.9	6083.9	0.0	0.0	0.0	0.0	166.1	0.0	0.0	0.0
TOTALS	1199.7	1904.1	-720.3	0.0	0.0	1975.2	1991.1	0.0	0.0	



Contingencia 5: Mata de Nance - Veladero (230-5B)

SUB
TRONFO





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 5

FRI, APR 15 2011 15:03

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
6071		BLMG2		13.800	V2	38.0	3.0	15.0	0.0	1.0000	38.1	0.9969	47.0			62	6
6072		BLMG3		13.800	V3	38.0	3.0	15.0	0.0	1.0000	38.1	0.9969	47.0			62	6
6073		BLMG4		13.800	V4	38.0	3.0	15.0	0.0	1.0000	38.1	0.9969	47.0			62	6
6090		LESG1		13.800	E1	22.4	2.7	12.0	-5.0	1.0000	22.6	0.9928	27.0			64	6
6091		LESG2		13.800	E2	22.4	2.7	12.0	-5.0	1.0000	22.6	0.9928	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-3.9	12.0	-5.0	1.0000	26.3	0.9887	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-3.9	12.0	-5.0	1.0000	26.3	0.9887	27.0			64	6
6097		FORG1		13.800	F1	63.7	-3.1	50.0	-50.0	1.0000	63.8	0.9988	111.0			64	6
6098		FORG2		13.800	F2	63.7	-16.4	50.0	-50.0	0.9850	66.8	0.9683	111.0			64	6
6101		BAYG1		13.800	B1	57.9	15.6	30.0	-25.0	1.0100	59.4	0.9654	94.0			61	6
6102		BAYG2		13.800	B2	46.5	-0.8	30.0	-25.0	0.9900	47.0	0.9998	94.0			61	6
6106		PAM13A		13.800	M1	15.2	9.0	9.0	0.0	0.9801	18.0	0.8605	20.7			63	6
6106		PAM13A		13.800	M2	15.2	9.0	9.0	0.0	0.9801	18.0	0.8605	20.7			63	6
6106		PAM13A		13.800	M3	15.2	9.0	9.0	0.0	0.9801	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M4	15.2	9.0	9.0	0.0	0.9801	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M5	15.2	9.0	9.0	0.0	0.9801	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M6	15.2	9.0	9.0	0.0	0.9801	18.0	0.8605	20.7			63	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9868	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9868	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9868	19.4	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	11.1	29.0	-29.0	1.0100	57.5	0.9817	69.0			64	6
6177		ESTG2		13.800	E2	57.0	11.1	29.0	-29.0	1.0100	57.5	0.9817	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-0.6	52.4	-48.9	1.0100	98.6	1.0000	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	2.7	52.4	-48.9	1.0100	98.7	0.9996	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.7	5.6	-5.6	1.0000	8.3	0.9968	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.7	5.6	-5.6	1.0000	8.3	0.9968	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.7	5.6	-5.6	1.0000	8.3	0.9968	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.7	5.6	-5.6	1.0000	8.3	0.9968	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.7	5.6	-5.6	1.0000	8.3	0.9968	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	0.2	2.0	-2.0	1.0000	3.7	0.9992	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	0.2	2.0	-2.0	1.0000	3.7	0.9992	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	0.2	2.0	-2.0	1.0000	3.7	0.9992	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	0.2	2.0	-2.0	1.0000	3.7	0.9992	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	0.3	2.5	-2.5	1.0000	8.3	0.9991	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	0.3	2.5	-2.5	1.0000	8.3	0.9991	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	0.3	2.5	-2.5	1.0000	8.3	0.9991	10.9			62	6



6282	GIR 13B	13.800	G8	8.3	0.3	2.5	-2.5	1.0000	8.3	0.9991	10.9	64	6
6311	ALGA13.8	13.800	A1	4.8	1.2	2.3	-2.3	1.0100	4.9	0.9729	5.7	64	6
6311	ALGA13.8	13.800	A2	4.8	1.2	2.3	-2.3	1.0100	4.9	0.9729	5.7	64	6
6321	MEND13.8	13.800	M1	8.9	4.2	4.2	-4.2	0.9991	9.8	0.9060	10.4	64	6
6321	MEND13.8	13.800	M2	8.9	4.2	4.2	-4.2	0.9991	9.8	0.9060	10.4	64	6
6333	BAM13A	13.800	G1	26.6	2.1	10.0	-10.0	1.0100	26.4	0.9969	30.0	64	6
6334	BAM13B	13.800	G2	26.6	2.1	10.0	-10.0	1.0100	26.4	0.9969	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-3.3	14.0	-14.0	1.0100	41.8	0.9970	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-3.3	14.0	-14.0	1.0100	41.8	0.9970	49.0	64	6
6361	GLA13A	13.800	G1	12.1	0.5	7.8	-7.0	1.0100	12.0	0.9992	14.1	64	6
6362	GLA13B	13.800	G2	12.1	0.5	7.8	-7.0	1.0100	12.0	0.9992	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-3.3	7.8	-7.0	1.0100	16.2	0.9799	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-3.3	7.8	-7.0	1.0100	16.2	0.9799	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-5.1	8.0	-8.0	1.0100	26.8	0.9824	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-5.1	8.0	-8.0	1.0100	26.8	0.9824	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.2	4.9	-4.9	1.0000	9.5	0.9997	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.2	4.9	-4.9	1.0000	9.5	0.9997	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.5	3.2	-3.6	1.0000	6.2	0.9963	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.5	3.2	-3.6	1.0000	6.2	0.9963	7.5	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0059	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0059	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9676	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.5	2.5	-2.5	1.0000	4.8	0.9955	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.5	2.5	-2.5	1.0000	4.8	0.9955	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9676	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9660	2.9	0.9118	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9660	2.9	0.9118	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	0.0	0.0	0.0	0.9645	5.0	1.0000	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.2	2.5	-2.5	1.0000	4.8	0.9994	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.2	2.5	-2.5	1.0000	4.8	0.9994	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.1	2.5	-2.5	1.0000	4.9	0.9750	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.1	2.5	-2.5	1.0000	4.9	0.9750	5.6	64	6
6631	COCHEA13.8	13.800	G1	7.1	-3.7	3.7	-3.7	1.0018	8.0	0.8877	8.4	64	6
6631	COCHEA13.8	13.800	G2	7.1	-3.7	3.7	-3.7	1.0018	8.0	0.8877	8.4	64	6
6641	MENDII13.8	13.800	G1	3.7	-1.9	1.9	-1.9	1.0038	4.1	0.8916	4.1	64	6
6641	MENDII13.8	13.800	G2	3.7	-1.9	1.9	-1.9	1.0038	4.1	0.8916	4.1	64	6
SUBSYSTEM TOTALS				1374.7	102.9	706.1	-563.3				1806.9		



AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A	GEN	TA	ZONE	AREA
6127		MIR13B		12.000	G6	18.0	3.2	8.0	0.0	1.0100	18.1	0.9845	27.7				65	7
6128		MIR13C		12.000	G3	20.0	10.4	11.0	0.0	1.0100	22.3	0.8878	29.4				65	7
6129		MIR13D		13.800	G4	21.4	13.4	15.0	0.0	1.0100	24.9	0.8477	44.1				65	7
6130		MIR13F		13.800	G5	17.0	4.5	8.0	0.0	1.0100	17.4	0.9672	27.7				65	7
6134		MAD6A		6.9000	G1	10.0	1.5	6.0	-6.0	1.0100	10.0	0.9889	13.0				65	7
6135		MAD6B		6.9000	G2	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9917	13.0				65	7
6136		MAD6C		6.9000	G3	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9917	13.0				65	7
SUBSYSTEM TOTALS						106.4	35.5	60.0	-18.0				167.9					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 15:03
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 5

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0163	233.75	6003		PANII230		230.00	6	1.0034	230.79
6011		MDN230		230.00	6	1.0052	231.20	6014		PRO230		230.00	6	1.0152	233.51
6096		FOR230		230.00	6	1.0059	231.35	6100		BAY230		230.00	6	1.0177	234.08
6103		COP230		230.00	6	1.0061	231.40	6171		PAC230		230.00	6	1.0114	232.61
6178		EST230		230.00	6	1.0041	230.94	6179		GUA230		230.00	6	1.0042	230.96
6182		VEL230		230.00	6	1.0013	230.31	6260		CHA 230		230.00	6	1.0192	234.42
6263		ESP230		230.00	6	1.0208	234.78	6330		BAI230		230.00	6	1.0159	233.67
6340		CAN 230		230.00	6	1.0106	232.44	6360		GLA230		230.00	6	1.0095	232.18
6363		ZAM230		230.00	6	1.0148	233.40	6366		EVA230		230.00	6	1.0177	234.06
6380		BOQIII 230		230.00	6	1.0107	232.47	6400		FRONTCHA		230.00	6	1.0197	234.53
6500		FRONTVEL		230.00	6	1.0192	234.43	6590		24DIC230		230.00	6	1.0072	231.64

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9962	229.12	6005		CHO230		230.00	6	0.9966	229.21
6008		LSA230		230.00	6	0.9974	229.40	6105		PAM230		230.00	6	0.9967	229.25
6240		LGU 230		230.00	6	0.9949	228.82	6450		LSA CAP 230		230.00	6	0.9974	229.40



1152

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 5

FRI, APR 15 2011 15:03

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6009	LSA	115	115.00	6	1.0131	116.51	6012	MDN	115	115.00	6	1.0140	116.60		
6015	PRO	115	115.00	6	1.0134	116.54	6087	CAL	115	115.00	6	1.0165	116.89		
6088	LES	115	115.00	6	1.0187	117.15	6092	LVA	115	115.00	6	1.0164	116.88		
6123	MIR	115	115.00	7	1.0082	115.95	6261	CHA	115	115.00	6	1.0156	116.80		
6331	BAI	115	115.00	6	1.0055	115.64	6332	BAM	115	115.00	6	1.0103	116.18		
6550	CHAZ	115	115.00	6	1.0134	116.54									

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002	PAN	115	115.00	6	0.9943	114.35	6004	PANII	115	115.00	6	0.9955	114.48		
6006	CHO	115	115.00	6	0.9802	112.73	6018	CAC	115	115.00	6	0.9941	114.32		
6019	CVI	115A	115.00	6	0.9879	113.60	6024	CHI	115	115.00	6	0.9862	113.42		
6027	LOC	115A	115.00	6	0.9867	113.47	6032	MAR	115A	115.00	6	0.9833	113.07		
6036	SMA	115	115.00	6	0.9925	114.14	6040	SFR	115	115.00	6	0.9844	113.21		
6047	CLA	115	115.00	6	0.9811	112.82	6055	MOS	115B	115.00	6	0.9912	113.99		
6057	TOC	115	115.00	6	0.9926	114.15	6059	LM	115	115.00	6	0.9968	114.63		
6060	LM	2115	115.00	6	0.9969	114.64	6066	FFIELD	115.00	6	0.9963	114.57			
6074	LM	DIST	115.00	6	0.9968	114.63	6170	CPA	115	115.00	6	0.9989	114.88		
6173	STR	115	115.00	6	0.9965	114.60	6174	PM	115-1A	115.00	6	0.9964	114.58		
6175	PM	115-2A	115.00	6	0.9964	114.58	6210	TIN	115	115.00	6	0.9912	113.98		
6211	PM	115-9	115.00	6	0.9913	114.00	6230	CBA	115	115.00	6	0.9856	113.34		
6270	CAT	115	115.00	6	0.9969	114.65	6280	GIR	115	115.00	6	0.9996	114.95		
6290	CATII	11	115.00	6	0.9968	114.63	6350	PM	115-8	115.00	6	0.9889	113.72		
6580	LBO	115	115.00	6	0.9875	113.56									



1153

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 15:03
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 5
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT		
6011	MDN230	230.00*	6	6182	VEL230	230.00	6	6B	188.8	193.0	97.8	366.0	51.6	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	53.5	54.0	99.1	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 15:03
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 5
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *



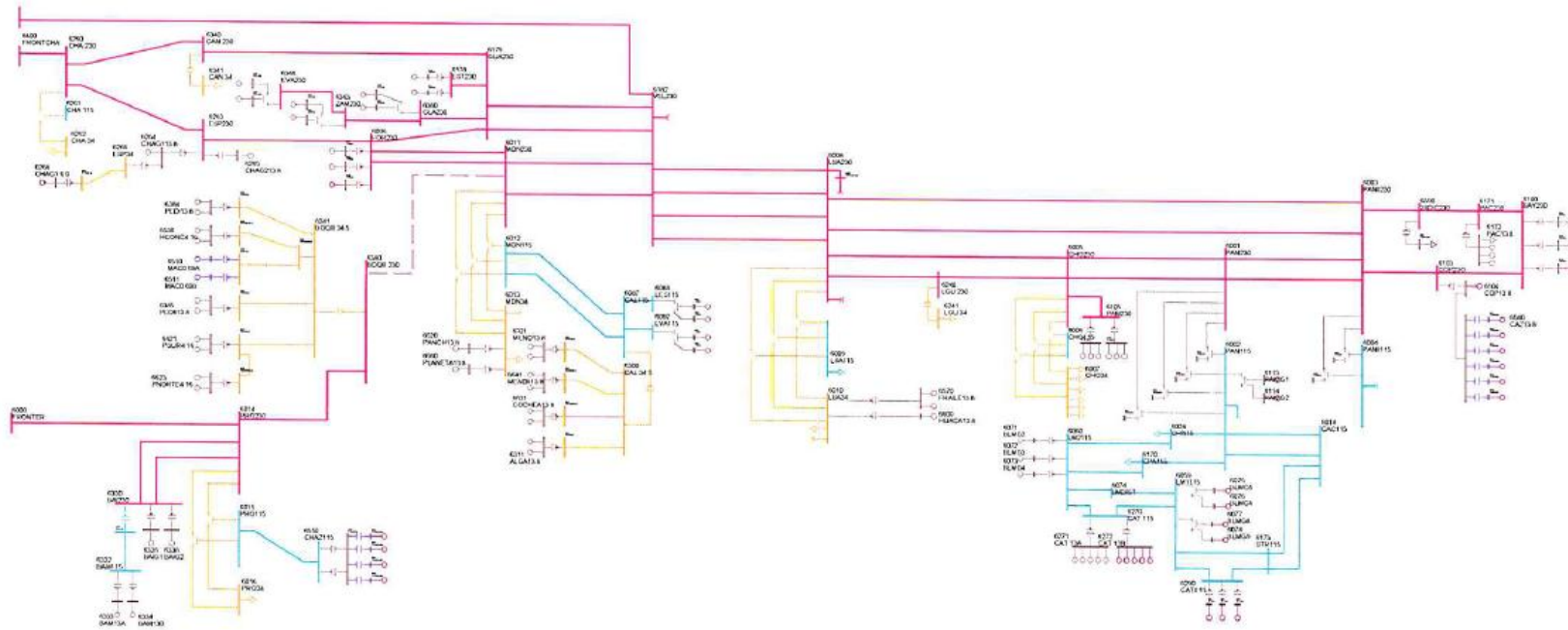
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 5

FRI, APR 15 2011 15:03
 AREA TOTALS
 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
								TO TIE LINES	TO TIES + LOADS	
1 GUATEMALA	1010.0 210.9	1158.9 342.4	0.0 -69.2	0.0 0.0	0.0 0.0	0.0 310.8	25.4 284.6	-174.3 -36.1	-174.3 -36.1	-174.4
2 SALVADOR	998.0 262.8	978.0 325.2	0.0 -150.2	0.0 0.0	0.0 0.0	0.0 243.4	20.4 235.6	-0.4 95.6	-0.4 95.6	0.0
3 HONDURAS	1039.7 370.8	1008.0 341.6	0.0 -36.7	0.0 0.0	0.0 0.0	0.0 333.1	31.9 385.3	-0.2 13.7	-0.2 13.7	0.0
4 NICARAGUA	483.5 32.3	473.3 186.7	0.0 -4.3	0.0 0.0	0.0 0.0	0.0 175.6	10.3 132.4	-0.1 -107.0	-0.1 -107.0	0.0
5 COSTA RICA	1235.9 147.1	1218.9 489.8	0.0 -232.8	0.0 0.0	0.0 0.0	0.0 477.1	17.4 286.0	-0.4 81.1	-0.4 81.1	0.0
6 PANAMA	1374.7 102.9	1203.7 210.9	0.0 -212.6	0.0 0.0	0.0 0.0	0.0 450.5	55.3 629.5	115.6 -74.4	115.6 -74.4	114.4
7 ACANAL	106.4 35.5	43.1 7.5	0.0 -15.7	0.0 0.0	0.0 0.0	0.0 0.0	3.6 16.5	59.7 27.2	59.7 27.2	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	6248.2 1162.1	6083.9 1904.1	0.0 -721.4	0.0 0.0	0.0 0.0	0.0 1990.4	164.3 1969.9	0.0 0.0	0.0 0.0	0.0

Contingencia 6: Boquerón III – Mata de Nance (230-9A)

FIG. 100
PROYECTO





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 6

FRI, APR 15 2011 15:10

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
6071		BLMG2		13.800	V2	38.0	2.6	15.0	0.0	1.0000	38.1	0.9977	47.0			62	6
6072		BLMG3		13.800	V3	38.0	2.6	15.0	0.0	1.0000	38.1	0.9977	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.5	15.0	0.0	1.0000	38.1	0.9978	47.0			62	6
6090		LESG1		13.800	E1	22.4	2.7	12.0	-5.0	1.0000	22.6	0.9927	27.0			64	6
6091		LESG2		13.800	E2	22.4	2.7	12.0	-5.0	1.0000	22.6	0.9927	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-3.9	12.0	-5.0	1.0000	26.3	0.9888	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-3.9	12.0	-5.0	1.0000	26.3	0.9888	27.0			64	6
6097		FORG1		13.800	F1	63.7	-4.4	50.0	-50.0	1.0000	63.9	0.9977	111.0			64	6
6098		FORG2		13.800	F2	63.7	-17.7	50.0	-50.0	0.9850	67.2	0.9637	111.0			64	6
6101		BAYG1		13.800	B1	56.5	14.4	30.0	-25.0	1.0100	57.7	0.9691	94.0			61	6
6102		BAYG2		13.800	B2	46.5	-2.0	30.0	-25.0	0.9900	47.0	0.9991	94.0			61	6
6106		PAM13A		13.800	M1	15.2	9.0	9.0	0.0	0.9824	18.0	0.8605	20.7			63	6
6106		PAM13A		13.800	M2	15.2	9.0	9.0	0.0	0.9824	18.0	0.8605	20.7			63	6
6106		PAM13A		13.800	M3	15.2	9.0	9.0	0.0	0.9824	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M4	15.2	9.0	9.0	0.0	0.9824	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M5	15.2	9.0	9.0	0.0	0.9824	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M6	15.2	9.0	9.0	0.0	0.9824	18.0	0.8605	20.7			63	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9886	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9886	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9886	19.4	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	10.7	29.0	-29.0	1.0100	57.4	0.9829	69.0			64	6
6177		ESTG2		13.800	E2	57.0	10.7	29.0	-29.0	1.0100	57.4	0.9829	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-1.7	52.4	-48.9	1.0100	98.6	0.9998	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	1.5	52.4	-48.9	1.0100	98.6	0.9999	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.6	5.6	-5.6	1.0000	8.3	0.9976	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.6	5.6	-5.6	1.0000	8.3	0.9976	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.6	5.6	-5.6	1.0000	8.3	0.9976	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.6	5.6	-5.6	1.0000	8.3	0.9976	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.6	5.6	-5.6	1.0000	8.3	0.9976	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9996	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9996	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9996	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9996	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9996	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9996	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9996	10.9			62	6



6282	GIR 13B	13.800	G8	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9996	10.9	64	6
6311	ALGA13.8	13.800	A1	4.8	1.2	2.3	-2.3	1.0100	4.9	0.9728	5.7	64	6
6311	ALGA13.8	13.800	A2	4.8	1.2	2.3	-2.3	1.0100	4.9	0.9728	5.7	64	6
6321	MEND13.8	13.800	M1	8.9	4.2	4.2	-4.2	0.9991	9.8	0.9060	10.4	64	6
6321	MEND13.8	13.800	M2	8.9	4.2	4.2	-4.2	0.9991	9.8	0.9060	10.4	64	6
6333	BAM13A	13.800	G1	26.6	1.7	10.0	-10.0	1.0100	26.4	0.9979	30.0	64	6
6334	BAM13B	13.800	G2	26.6	1.7	10.0	-10.0	1.0100	26.4	0.9979	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-6.1	14.0	-14.0	1.0100	42.1	0.9898	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-6.1	14.0	-14.0	1.0100	42.1	0.9898	49.0	64	6
6361	GLA13A	13.800	G1	12.1	-1.0	7.8	-7.0	1.0100	12.0	0.9969	14.1	64	6
6362	GLA13B	13.800	G2	12.1	-1.0	7.8	-7.0	1.0100	12.0	0.9969	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-4.6	7.8	-7.0	1.0100	16.5	0.9620	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-4.6	7.8	-7.0	1.0100	16.5	0.9620	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-6.3	8.0	-8.0	1.0100	27.1	0.9733	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-6.3	8.0	-8.0	1.0100	27.1	0.9733	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	-0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	-0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.2	3.2	-3.6	1.0000	6.2	0.9993	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.2	3.2	-3.6	1.0000	6.2	0.9993	7.5	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0071	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0071	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9675	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.8	2.5	-2.5	1.0000	4.8	0.9845	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.8	2.5	-2.5	1.0000	4.8	0.9845	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9675	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9696	2.9	0.9118	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9696	2.9	0.9118	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	0.0	0.0	0.0	0.9681	5.0	1.0000	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9922	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9922	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	4.9	0.9598	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	4.9	0.9598	5.6	64	6
6631	COCHEA13.8	13.800	G1	7.1	-3.7	3.7	-3.7	1.0017	8.0	0.8877	8.4	64	6
6631	COCHEA13.8	13.800	G2	7.1	-3.7	3.7	-3.7	1.0017	8.0	0.8877	8.4	64	6
6641	MENDII13.8	13.800	G1	3.7	-1.9	1.9	-1.9	1.0038	4.1	0.8916	4.1	64	6
6641	MENDII13.8	13.800	G2	3.7	-1.9	1.9	-1.9	1.0038	4.1	0.8916	4.1	64	6
SUBSYSTEM TOTALS				1373.3	74.9	706.1	-563.3				1806.9		



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 15:10
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 6

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
6127		MIR13B		12.000	G6	18.0	3.0	8.0	0.0	1.0100	18.1	0.9864	27.7			65	7
6128		MIR13C		12.000	G3	20.0	10.2	11.0	0.0	1.0100	22.2	0.8909	29.4			65	7
6129		MIR13D		13.800	G4	21.4	13.1	15.0	0.0	1.0100	24.8	0.8515	44.1			65	7
6130		MIR13F		13.800	G5	17.0	4.2	8.0	0.0	1.0100	17.3	0.9705	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	1.5	6.0	-6.0	1.0100	10.0	0.9895	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9921	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9921	13.0			65	7
SUBSYSTEM TOTALS						106.4	34.5	60.0	-18.0				167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 15:10
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 6

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0200	234.60	6003		PANII230		230.00	6	1.0057	231.30
6008		LSA230		230.00	6	1.0010	230.24	6011		MDN230		230.00	6	1.0051	231.18
6014		PRO230		230.00	6	1.0197	234.53	6096		FOR230		230.00	6	1.0072	231.66
6100		BAY230		230.00	6	1.0192	234.42	6103		COP230		230.00	6	1.0082	231.88
6171		PAC230		230.00	6	1.0134	233.08	6178		EST230		230.00	6	1.0063	231.45
6179		GUA230		230.00	6	1.0064	231.47	6182		VEL230		230.00	6	1.0055	231.27
6260		CHA 230		230.00	6	1.0213	234.89	6263		ESP230		230.00	6	1.0222	235.11
6330		BAI230		230.00	6	1.0197	234.53	6340		CAN 230		230.00	6	1.0127	232.93
6360		GLA230		230.00	6	1.0115	232.63	6363		ZAM230		230.00	6	1.0166	233.81
6366		EVA230		230.00	6	1.0194	234.45	6380		BOQIII 230		230.00	6	1.0191	234.39
6400		FRONTCHA		230.00	6	1.0220	235.05	6450		LSA CAP 230		230.00	6	1.0010	230.24
6500		FRONTVEL		230.00	6	1.0214	234.91	6590		24DIC230		230.00	6	1.0093	232.13

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)
6001		PAN230		230.00	6	0.9984	229.64	6005		CHO230		230.00	6	0.9992	229.81
6105		PAM230		230.00	6	0.9994	229.85	6240		LGU 230		230.00	6	0.9981	229.57



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 15:10

SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 6

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6009	LSA	115	115.00	6	1.0169	116.95	6012	MDN	115	115.00	6	1.0139	116.60		
6015	PRO	115	115.00	6	1.0179	117.06	6087	CAL	115	115.00	6	1.0164	116.89		
6088	LES	115	115.00	6	1.0187	117.15	6092	LVA	115	115.00	6	1.0163	116.88		
6123	MIR	115	115.00	7	1.0100	116.15	6261	CHA	115	115.00	6	1.0177	117.03		
6280	GIR	115	115.00	6	1.0006	115.06	6331	BAI	115	115.00	6	1.0084	115.96		
6332	BAM	115	115.00	6	1.0124	116.43	6550	CHAZ	115	115.00	6	1.0179	117.06		

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002	PAN	115	115.00	6	0.9964	114.58	6004	PANII	115	115.00	6	0.9977	114.73		
6006	CHO	115	115.00	6	0.9829	113.04	6018	CAC	115	115.00	6	0.9962	114.56		
6019	CVI	115A	115.00	6	0.9901	113.86	6024	CHI	115	115.00	6	0.9879	113.61		
6027	LOC	115A	115.00	6	0.9888	113.71	6032	MAR	115A	115.00	6	0.9854	113.32		
6036	SMA	115	115.00	6	0.9946	114.38	6040	SFR	115	115.00	6	0.9865	113.45		
6047	CLA	115	115.00	6	0.9827	113.01	6055	MOS	115B	115.00	6	0.9933	114.23		
6057	TOC	115	115.00	6	0.9948	114.41	6059	LM	115	115.00	6	0.9978	114.75		
6060	LM	2115	115.00	6	0.9979	114.76	6066	FFIELD	115.00	6	0.9973	114.69			
6074	LM	DIST	115.00	6	0.9978	114.75	6170	CPA	115	115.00	6	1.0000	115.00		
6173	STR	115	115.00	6	0.9977	114.73	6174	PM	115-1A	115.00	6	0.9979	114.76		
6175	PM	115-2A	115.00	6	0.9979	114.76	6210	TIN	115	115.00	6	0.9932	114.22		
6211	PM	115-9	115.00	6	0.9934	114.24	6230	CBA	115	115.00	6	0.9877	113.59		
6270	CAT	115	115.00	6	0.9979	114.76	6290	CATII	11	115.00	6	0.9978	114.74		
6350	PM	115-8	115.00	6	0.9909	113.96	6580	LBO	115	115.00	6	0.9897	113.82		



1160

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 15:10
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 6
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT		
6000	FRONTER	230.00	6	6014	PRO230	230.00*	6	1	185.3	193.0	96.0	366.0	50.6	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	53.5	54.0	99.1	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 15:10
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 6
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 6

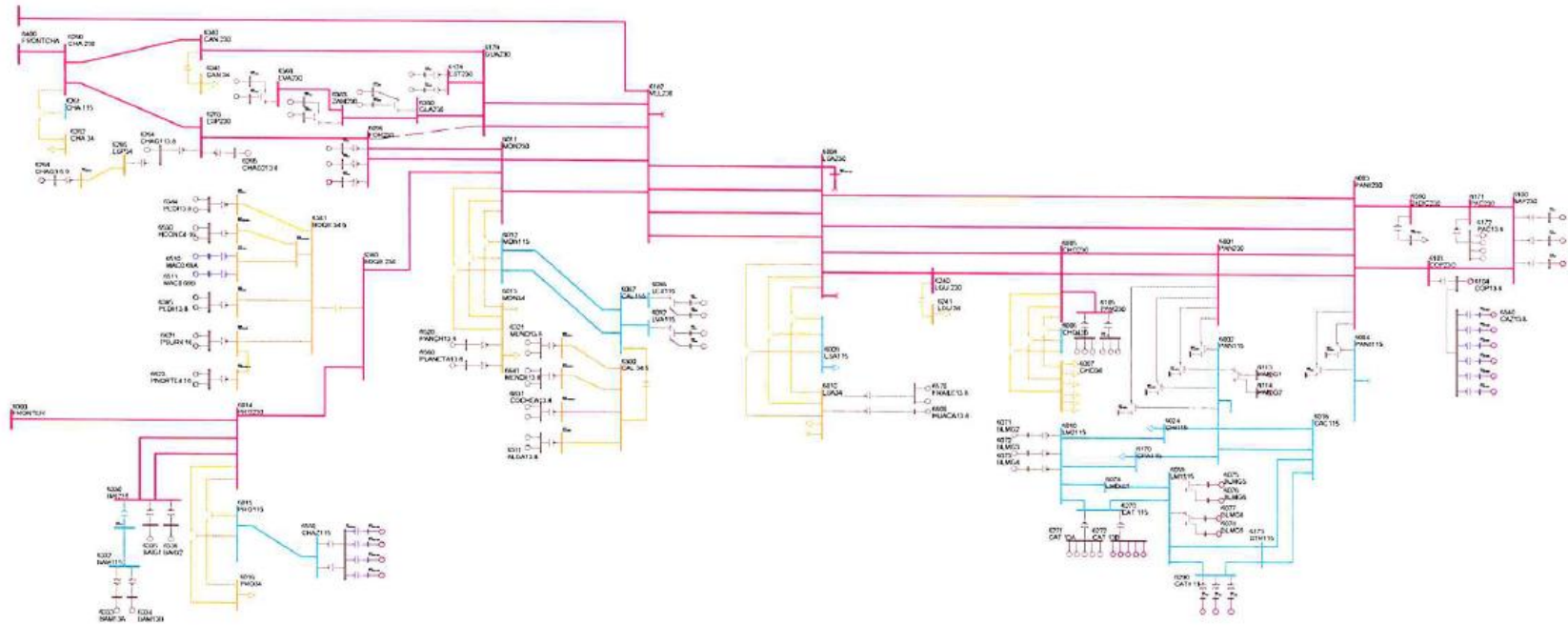
FRI, APR 15 2011 15:10
 AREA TOTALS
 IN MW/MVAR

X-- AREA --X	FROM GENE- RATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
								TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	1010.0 210.9	1158.9 342.4	0.0 -69.2	0.0 0.0	0.0 0.0	0.0 310.8	25.4 284.6	-174.3 -36.1	-174.3 -36.1	-174.4
2 SALVADOR	998.0 262.8	978.0 325.2	0.0 -150.2	0.0 0.0	0.0 0.0	0.0 243.4	20.4 235.6	-0.4 95.6	-0.4 95.6	0.0
3 HONDURAS	1039.7 370.7	1008.0 341.6	0.0 -36.7	0.0 0.0	0.0 0.0	0.0 333.1	31.9 385.3	-0.2 13.6	-0.2 13.6	0.0
4 NICARAGU	483.5 32.2	473.3 186.7	0.0 -4.3	0.0 0.0	0.0 0.0	0.0 175.6	10.3 132.4	-0.1 -107.1	-0.1 -107.1	0.0
5 COSTA RI	1235.9 142.7	1218.9 489.8	0.0 -233.0	0.0 0.0	0.0 0.0	0.0 477.6	17.7 287.6	-0.7 76.0	-0.7 76.0	0.0
6 PANAMA	1373.3 74.9	1203.7 210.9	0.0 -213.6	0.0 0.0	0.0 0.0	0.0 465.1	53.6 611.1	115.9 -68.4	115.9 -68.4	114.4
7 ACANAL	106.4 34.5	43.1 7.5	0.0 -15.7	0.0 0.0	0.0 0.0	0.0 0.0	3.6 16.3	59.7 26.4	59.7 26.4	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	6246.8 1128.7	6083.9 1904.1	0.0 -722.5	0.0 0.0	0.0 0.0	0.0 2005.7	162.9 1952.8	0.0 0.0	0.0 0.0	0.0



Contingencia 10: Fortuna – Gualaca (230–18)

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, APR 15 2011 15:14

SISTEMA INTERCONECTADO NACIONAL

EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 10

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
6071		BLMG2		13.800	V2	38.0	2.4	15.0	0.0	1.0000	38.1	0.9979	47.0			62	6
6072		BLMG3		13.800	V3	38.0	2.4	15.0	0.0	1.0000	38.1	0.9979	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.4	15.0	0.0	1.0000	38.1	0.9980	47.0			62	6
6090		LESG1		13.800	E1	22.4	2.1	12.0	-5.0	1.0000	22.5	0.9954	27.0			64	6
6091		LESG2		13.800	E2	22.4	2.1	12.0	-5.0	1.0000	22.5	0.9954	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-4.6	12.0	-5.0	1.0000	26.4	0.9850	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-4.6	12.0	-5.0	1.0000	26.4	0.9850	27.0			64	6
6097		FORG1		13.800	F1	63.7	-8.0	50.0	-50.0	1.0000	64.2	0.9923	111.0			64	6
6098		FORG2		13.800	F2	63.7	-21.2	50.0	-50.0	0.9850	68.2	0.9488	111.0			64	6
6101		BAYG1		13.800	B1	56.8	14.1	30.0	-25.0	1.0100	57.9	0.9707	94.0			61	6
6102		BAYG2		13.800	B2	46.5	-2.3	30.0	-25.0	0.9900	47.0	0.9988	94.0			61	6
6106		PAM13A		13.800	M1	15.2	9.0	9.0	0.0	0.9830	18.0	0.8605	20.7			63	6
6106		PAM13A		13.800	M2	15.2	9.0	9.0	0.0	0.9830	18.0	0.8605	20.7			63	6
6106		PAM13A		13.800	M3	15.2	9.0	9.0	0.0	0.9830	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M4	15.2	9.0	9.0	0.0	0.9830	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M5	15.2	9.0	9.0	0.0	0.9830	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M6	15.2	9.0	9.0	0.0	0.9830	18.0	0.8605	20.7			63	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9891	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9891	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9891	19.4	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	10.7	29.0	-29.0	1.0100	57.4	0.9828	69.0			64	6
6177		ESTG2		13.800	E2	57.0	10.7	29.0	-29.0	1.0100	57.4	0.9828	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-2.0	52.4	-48.9	1.0100	98.6	0.9998	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	1.3	52.4	-48.9	1.0100	98.6	0.9999	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9978	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9978	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9978	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9978	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9978	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9997	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9997	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9997	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9997	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9997	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9997	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9997	10.9			62	6
6282		GIR 13B		13.800	G8	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9997	10.9			62	6



6311	ALGA13.8	13.800	A1	4.8	1.1	2.3	-2.3	1.0100	4.9	0.9764	5.7	64	6
6311	ALGA13.8	13.800	A2	4.8	1.1	2.3	-2.3	1.0100	4.9	0.9764	5.7	64	6
6321	MEND13.8	13.800	M1	8.9	4.2	4.2	-4.2	1.0008	9.8	0.9060	10.4	64	6
6321	MEND13.8	13.800	M2	8.9	4.2	4.2	-4.2	1.0008	9.8	0.9060	10.4	64	6
6333	BAM13A	13.800	G1	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9975	30.0	64	6
6334	BAM13B	13.800	G2	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9975	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-4.9	14.0	-14.0	1.0100	42.0	0.9933	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-4.9	14.0	-14.0	1.0100	42.0	0.9933	49.0	64	6
6361	GLA13A	13.800	G1	12.1	-0.8	7.8	-7.0	1.0100	12.0	0.9976	14.1	64	6
6362	GLA13B	13.800	G2	12.1	-0.8	7.8	-7.0	1.0100	12.0	0.9976	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-4.4	7.8	-7.0	1.0100	16.5	0.9637	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-4.4	7.8	-7.0	1.0100	16.5	0.9637	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-6.2	8.0	-8.0	1.0100	27.0	0.9741	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-6.2	8.0	-8.0	1.0100	27.0	0.9741	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9977	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9977	7.5	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0064	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0064	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9706	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9921	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9921	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9706	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9705	2.9	0.9118	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9705	2.9	0.9118	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	0.0	0.0	0.0	0.9691	5.0	1.0000	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9976	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9976	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.2	2.5	-2.5	1.0000	4.9	0.9696	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.2	2.5	-2.5	1.0000	4.9	0.9696	5.6	64	6
6631	COCHEA13.8	13.800	G1	7.1	-3.7	3.7	-3.7	1.0035	8.0	0.8877	8.4	64	6
6631	COCHEA13.8	13.800	G2	7.1	-3.7	3.7	-3.7	1.0035	8.0	0.8877	8.4	64	6
6641	MENDII13.8	13.800	G1	3.7	-1.9	1.9	-1.9	1.0056	4.1	0.8916	4.1	64	6
6641	MENDII13.8	13.800	G2	3.7	-1.9	1.9	-1.9	1.0056	4.1	0.8916	4.1	64	6
SUBSYSTEM TOTALS				1373.6	68.9	706.1	-563.3				1806.9		

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
6127		MIR13B		12.000	G6	18.0	2.9	8.0	0.0	1.0100	18.1	0.9869	27.7			65	7
6128		MIR13C		12.000	G3	20.0	10.1	11.0	0.0	1.0100	22.2	0.8918	29.4			65	7
6129		MIR13D		13.800	G4	21.4	13.1	15.0	0.0	1.0100	24.8	0.8526	44.1			65	7
6130		MIR13F		13.800	G5	17.0	4.2	8.0	0.0	1.0100	17.3	0.9714	27.7			65	7



1166

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, APR 15 2011 15:14
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 10

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6009	LSA	115	115.00	6	1.0179	117.06	6012	MDN	115	115.00	6	1.0172	116.98		
6015	PRO	115	115.00	6	1.0160	116.84	6087	CAL	115	115.00	6	1.0185	117.13		
6088	LES	115	115.00	6	1.0206	117.37	6092	LVA	115	115.00	6	1.0184	117.11		
6123	MIR	115	115.00	7	1.0105	116.20	6170	CPA	115	115.00	6	1.0003	115.03		
6261	CHA	115	115.00	6	1.0171	116.97	6280	GIR	115	115.00	6	1.0008	115.10		
6331	BAI	115	115.00	6	1.0072	115.83	6332	BAM	115	115.00	6	1.0115	116.32		
6550	CHAZ	115	115.00	6	1.0160	116.84									

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002	PAN	115	115.00	6	0.9969	114.65	6004	PANII	115	115.00	6	0.9983	114.80		
6006	CHO	115	115.00	6	0.9837	113.12	6018	CAC	115	115.00	6	0.9967	114.62		
6019	CVI	115A	115.00	6	0.9907	113.93	6024	CHI	115	115.00	6	0.9883	113.66		
6027	LOC	115A	115.00	6	0.9894	113.78	6032	MAR	115A	115.00	6	0.9859	113.38		
6036	SMA	115	115.00	6	0.9952	114.44	6040	SFR	115	115.00	6	0.9871	113.52		
6047	CLA	115	115.00	6	0.9832	113.07	6055	MOS	115B	115.00	6	0.9939	114.29		
6057	TOC	115	115.00	6	0.9955	114.48	6059	LM	115	115.00	6	0.9981	114.78		
6060	LM	2115	115.00	6	0.9982	114.79	6066	FFIELD	115.00	6	0.9976	114.72			
6074	LMDIST	115.00	6	0.9981	114.78	6173	STR	115	115.00	6	0.9980	114.77			
6174	PM	115-1A	115.00	6	0.9983	114.81	6175	PM	115-2A	115.00	6	0.9983	114.81		
6210	TIN	115	115.00	6	0.9938	114.29	6211	PM	115-9	115.00	6	0.9940	114.31		
6230	CBA	115	115.00	6	0.9883	113.66	6270	CAT	115	115.00	6	0.9982	114.79		
6290	CATII	11	115.00	6	0.9981	114.78	6350	PM	115-8	115.00	6	0.9915	114.02		
6580	LBO	115	115.00	6	0.9903	113.89									



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 15:14
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 10
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X-----	FROM BUS	-----X	X-----	TO BUS	-----X				RATING SET A	RATING SET B	RATING SET C					
BUS#	X--	NAME	--X	BASKV	AREA	BUS#	X--	NAME	--X	BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT
6092	LVA115		115.00*	6	3WNDTR	TRAF01		WND 1	6	T1			53.8	54.0	99.7	-- -- --

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 15:14
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 10
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X-----	FROM BUS	-----X	X-----	TO BUS	-----X				RATING SET A	RATING SET B	RATING SET C					
BUS#	X--	NAME	--X	BASKV	AREA	BUS#	X--	NAME	--X	BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 10

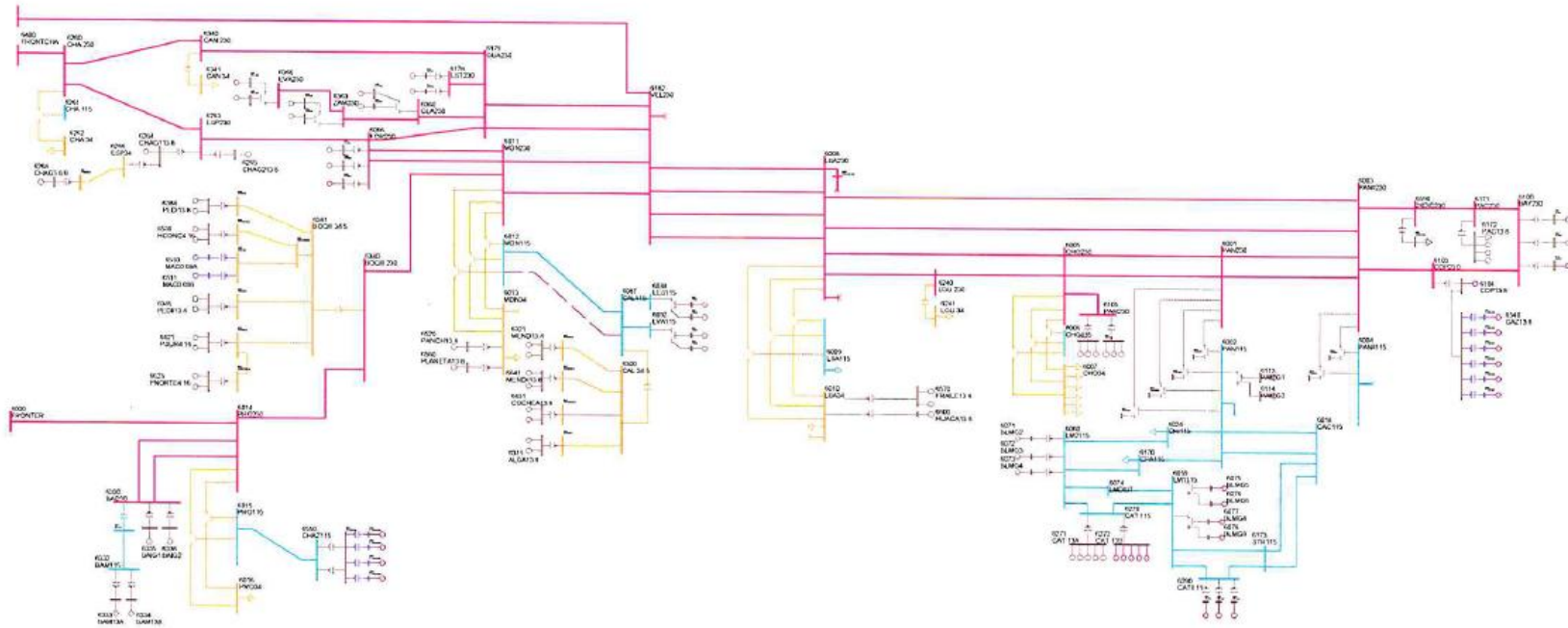
FRI, APR 15 2011 15:14
 AREA TOTALS
 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
								TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	1010.0 210.9	1158.9 342.4	0.0 -69.2	0.0 0.0	0.0 0.0	0.0 310.8	25.4 284.6	-174.3 -36.1	-174.3 -36.1	-174.4
2 SALVADOR	998.0 262.8	978.0 325.2	0.0 -150.2	0.0 0.0	0.0 0.0	0.0 243.4	20.4 235.6	-0.4 95.6	-0.4 95.6	0.0
3 HONDURAS	1039.7 370.7	1008.0 341.6	0.0 -36.7	0.0 0.0	0.0 0.0	0.0 333.1	31.9 385.3	-0.2 13.6	-0.2 13.6	0.0
4 NICARAGU	483.5 32.1	473.3 186.7	0.0 -4.3	0.0 0.0	0.0 0.0	0.0 175.7	10.3 132.4	-0.1 -107.1	-0.1 -107.1	0.0
5 COSTA RI	1235.9 142.9	1218.9 489.8	0.0 -232.9	0.0 0.0	0.0 0.0	0.0 477.6	17.1 284.4	-0.2 79.3	-0.2 79.3	0.0
6 PANAMA	1373.6 68.9	1203.7 210.9	0.0 -213.8	0.0 0.0	0.0 0.0	0.0 467.7	54.5 611.1	115.3 -71.5	115.3 -71.5	114.4
7 ACANAL	106.4 34.3	43.1 7.5	0.0 -15.7	0.0 0.0	0.0 0.0	0.0 0.0	3.5 16.3	59.7 26.1	59.7 26.1	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	6247.1 1122.6	6083.9 1904.1	0.0 -722.8	0.0 0.0	0.0 0.0	0.0 2008.3	163.2 1949.6	0.0 0.0	0.0 0.0	0.0



Contingencia 13: Mata de Nance – Caldera (115-16)

1180 HONTVAL





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 13

FRI, APR 15 2011 15:29

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
6071		BLMG2		13.800	V2	38.0	2.3	15.0	0.0	1.0000	38.1	0.9981	47.0			62	6
6072		BLMG3		13.800	V3	38.0	2.3	15.0	0.0	1.0000	38.1	0.9981	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.3	15.0	0.0	1.0000	38.1	0.9982	47.0			62	6
6090		LESG1		13.800	E1	22.4	3.2	12.0	-5.0	1.0000	22.6	0.9901	27.0			64	6
6091		LESG2		13.800	E2	22.4	3.2	12.0	-5.0	1.0000	22.6	0.9901	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-3.4	12.0	-5.0	1.0000	26.3	0.9915	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-3.4	12.0	-5.0	1.0000	26.3	0.9915	27.0			64	6
6097		FORG1		13.800	F1	63.7	-5.8	50.0	-50.0	1.0000	64.0	0.9959	111.0			64	6
6098		FORG2		13.800	F2	63.7	-19.1	50.0	-50.0	0.9850	67.6	0.9580	111.0			64	6
6101		BAYG1		13.800	B1	57.1	13.8	30.0	-25.0	1.0100	58.1	0.9719	94.0			61	6
6102		BAYG2		13.800	B2	46.5	-2.6	30.0	-25.0	0.9900	47.0	0.9985	94.0			61	6
6106		PAM13A		13.800	M1	15.2	9.0	9.0	0.0	0.9835	18.0	0.8605	20.7			63	6
6106		PAM13A		13.800	M2	15.2	9.0	9.0	0.0	0.9835	18.0	0.8605	20.7			63	6
6106		PAM13A		13.800	M3	15.2	9.0	9.0	0.0	0.9835	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M4	15.2	9.0	9.0	0.0	0.9835	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M5	15.2	9.0	9.0	0.0	0.9835	18.0	0.8605	20.7			63	6
6107		PAM13B		13.800	M6	15.2	9.0	9.0	0.0	0.9835	18.0	0.8605	20.7			63	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9895	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9895	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9895	19.4	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	10.5	29.0	-29.0	1.0100	57.4	0.9835	69.0			64	6
6177		ESTG2		13.800	E2	57.0	10.5	29.0	-29.0	1.0100	57.4	0.9835	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-1.9	52.4	-48.9	1.0100	98.6	0.9998	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	1.4	52.4	-48.9	1.0100	98.6	0.9999	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9980	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9980	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9980	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9980	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.5	5.6	-5.6	1.0000	8.3	0.9980	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9998	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9998	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9998	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	0.1	2.0	-2.0	1.0000	3.7	0.9998	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9998	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9998	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9998	10.9			62	6



6282	GIR 13B	13.800	G8	8.3	0.2	2.5	-2.5	1.0000	8.3	0.9998	10.9	64	6
6311	ALGA13.8	13.800	A1	4.8	1.2	2.3	-2.3	1.0100	4.9	0.9697	5.7	64	6
6311	ALGA13.8	13.800	A2	4.8	1.2	2.3	-2.3	1.0100	4.9	0.9697	5.7	64	6
6321	MEND13.8	13.800	M1	8.9	4.2	4.2	-4.2	0.9977	9.9	0.9060	10.4	64	6
6321	MEND13.8	13.800	M2	8.9	4.2	4.2	-4.2	0.9977	9.9	0.9060	10.4	64	6
6333	BAM13A	13.800	G1	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9975	30.0	64	6
6334	BAM13B	13.800	G2	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9975	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-4.8	14.0	-14.0	1.0100	42.0	0.9936	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-4.8	14.0	-14.0	1.0100	42.0	0.9936	49.0	64	6
6361	GLA13A	13.800	G1	12.1	-1.6	7.8	-7.0	1.0100	12.1	0.9909	14.1	64	6
6362	GLA13B	13.800	G2	12.1	-1.6	7.8	-7.0	1.0100	12.1	0.9909	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-5.2	7.8	-7.0	1.0100	16.7	0.9519	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-5.2	7.8	-7.0	1.0100	16.7	0.9519	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-6.9	8.0	-8.0	1.0100	27.2	0.9684	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-6.9	8.0	-8.0	1.0100	27.2	0.9684	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9974	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9974	7.5	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0063	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0063	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9662	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9929	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9929	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9662	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9713	2.9	0.9118	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9713	2.9	0.9118	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	0.0	0.0	0.0	0.9698	4.9	1.0000	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9981	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9981	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.2	2.5	-2.5	1.0000	4.9	0.9708	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.2	2.5	-2.5	1.0000	4.9	0.9708	5.6	64	6
6631	COCHEA13.8	13.800	G1	7.1	-3.7	3.7	-3.7	1.0002	8.0	0.8877	8.4	64	6
6631	COCHEA13.8	13.800	G2	7.1	-3.7	3.7	-3.7	1.0002	8.0	0.8877	8.4	64	6
6641	MENDII13.8	13.800	G1	3.7	-1.9	1.9	-1.9	1.0023	4.1	0.8916	4.1	64	6
6641	MENDII13.8	13.800	G2	3.7	-1.9	1.9	-1.9	1.0023	4.1	0.8916	4.1	64	6
SUBSYSTEM TOTALS				1373.9	72.8	706.1	-563.3				1806.9		



AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A	GEN	TA	ZONE	AREA
6127		MIR13B		12.000	G6	18.0	2.9	8.0	0.0	1.0100	18.1	0.9873	27.7				65	7
6128		MIR13C		12.000	G3	20.0	10.1	11.0	0.0	1.0100	22.2	0.8924	29.4				65	7
6129		MIR13D		13.800	G4	21.4	13.0	15.0	0.0	1.0100	24.8	0.8534	44.1				65	7
6130		MIR13F		13.800	G5	17.0	4.1	8.0	0.0	1.0100	17.3	0.9721	27.7				65	7
6134		MAD6A		6.9000	G1	10.0	1.4	6.0	-6.0	1.0100	10.0	0.9898	13.0				65	7
6135		MAD6B		6.9000	G2	10.0	1.2	6.0	-6.0	1.0100	10.0	0.9924	13.0				65	7
6136		MAD6C		6.9000	G3	10.0	1.2	6.0	-6.0	1.0100	10.0	0.9924	13.0				65	7
SUBSYSTEM TOTALS						106.4	34.1	60.0	-18.0				167.9					

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 15:29
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 13

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0189	234.35	6003		PANII230		230.00	6	1.0068	231.56
6005		CHO230		230.00	6	1.0004	230.10	6008		LSA230		230.00	6	1.0028	230.63
6011		MDN230		230.00	6	1.0081	231.86	6014		PRO230		230.00	6	1.0176	234.05
6096		FOR230		230.00	6	1.0088	232.03	6100		BAY230		230.00	6	1.0200	234.60
6103		COP230		230.00	6	1.0092	232.12	6105		PAM230		230.00	6	1.0006	230.15
6171		PAC230		230.00	6	1.0144	233.31	6178		EST230		230.00	6	1.0074	231.70
6179		GUA230		230.00	6	1.0075	231.72	6182		VEL230		230.00	6	1.0073	231.68
6260		CHA 230		230.00	6	1.0211	234.85	6263		ESP230		230.00	6	1.0224	235.15
6330		BAI230		230.00	6	1.0179	234.13	6340		CAN 230		230.00	6	1.0135	233.10
6360		GLA230		230.00	6	1.0124	232.85	6363		ZAM230		230.00	6	1.0174	234.00
6366		EVA230		230.00	6	1.0202	234.64	6380		BOQIII 230		230.00	6	1.0132	233.04
6400		FRONTCHA		230.00	6	1.0214	234.93	6450		LSA CAP 230		230.00	6	1.0028	230.63
6500		FRONTVEL		230.00	6	1.0230	235.30	6590		24DIC230		230.00	6	1.0103	232.37

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9995	229.89	6240		LGU 230		230.00	6	0.9997	229.93



1173

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 13

FRI, APR 15 2011 15:29

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6009	LSA	115	115.00	6	1.0187	117.15	6012	MDN	115	115.00	6	1.0130	116.50		
6015	PRO	115	115.00	6	1.0158	116.82	6087	CAL	115	115.00	6	1.0147	116.69		
6088	LES	115	115.00	6	1.0171	116.97	6092	LVA	115	115.00	6	1.0147	116.69		
6123	MIR	115	115.00	7	1.0108	116.25	6170	CPA	115	115.00	6	1.0005	115.05		
6261	CHA	115	115.00	6	1.0175	117.01	6280	GIR	115	115.00	6	1.0011	115.12		
6331	BAI	115	115.00	6	1.0071	115.81	6332	BAM	115	115.00	6	1.0114	116.31		
6550	CHAZ	115	115.00	6	1.0158	116.82									

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)
6002	PAN	115	115.00	6	0.9974	114.70	6004	PANII	115	115.00	6	0.9988	114.86		
6006	CHO	115	115.00	6	0.9843	113.19	6018	CAC	115	115.00	6	0.9972	114.67		
6019	CVI	115A	115.00	6	0.9912	113.98	6024	CHI	115	115.00	6	0.9887	113.70		
6027	LOC	115A	115.00	6	0.9898	113.83	6032	MAR	115A	115.00	6	0.9864	113.44		
6036	SMA	115	115.00	6	0.9956	114.49	6040	SFR	115	115.00	6	0.9876	113.57		
6047	CLA	115	115.00	6	0.9835	113.11	6055	MOS	115B	115.00	6	0.9943	114.34		
6057	TOC	115	115.00	6	0.9959	114.53	6059	LM	115	115.00	6	0.9983	114.80		
6060	LM	2115	115.00	6	0.9984	114.81	6066	FFIELD	115.00	6	0.9978	114.74			
6074	LMDIST	115.00	6	0.9983	114.80	6173	STR	115	115.00	6	0.9982	114.79			
6174	PM	115-1A	115.00	6	0.9986	114.84	6175	PM	115-2A	115.00	6	0.9986	114.84		
6210	TIN	115	115.00	6	0.9943	114.34	6211	PM	115-9	115.00	6	0.9944	114.36		
6230	CBA	115	115.00	6	0.9888	113.71	6270	CAT	115	115.00	6	0.9984	114.82		
6290	CATII	11	115.00	6	0.9983	114.80	6350	PM	115-8	115.00	6	0.9920	114.08		
6580	LBO	115	115.00	6	0.9908	113.94									



1174

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 15:53
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 13
 OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT		
6012	MDN115	115.00	6	6087	CAL115	115.00*	6	15	144.4	93.0	155.2	175.0	82.5	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	53.3	54.0	98.7	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, APR 15 2011 15:53
SISTEMA INTERCONECTADO NACIONAL
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 13
 OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *

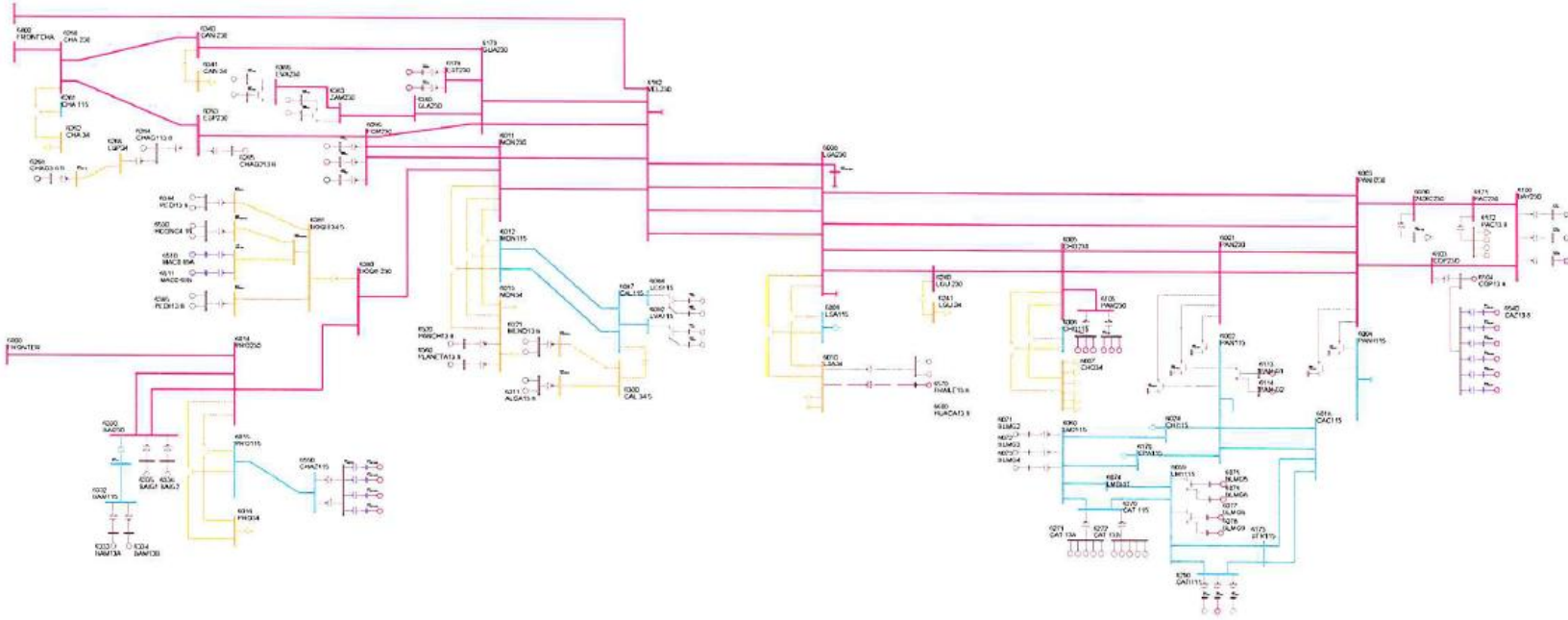


PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E						FRI, APR 15 2011 15:54		AREA TOTALS			
SISTEMA INTERCONECTADO NACIONAL											
EPOCA LLUVIOSA DEL AÑO 2012 - DEMANDA MÁXIMA CNT 13						IN MW/MVAR					
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT	
	RATION	BUSES						LINES	+ LOADS		
1	1010.0	1158.9	0.0	0.0	0.0	0.0	25.4	-174.3	-174.3	-174.4	
GUATEMAL	210.9	342.4	-69.2	0.0	0.0	310.8	284.6	-36.1	-36.1		
2	998.0	978.0	0.0	0.0	0.0	0.0	20.4	-0.4	-0.4	0.0	
SALVADOR	262.8	325.2	-150.2	0.0	0.0	243.4	235.6	95.6	95.6		
3	1039.7	1008.0	0.0	0.0	0.0	0.0	31.9	-0.2	-0.2	0.0	
HONDURAS	370.7	341.6	-36.7	0.0	0.0	333.1	385.3	13.6	13.6		
4	483.5	473.3	0.0	0.0	0.0	0.0	10.3	-0.1	-0.1	0.0	
NICARAGU	32.1	186.7	-4.3	0.0	0.0	175.7	132.4	-107.1	-107.1		
5	1235.9	1218.9	0.0	0.0	0.0	0.0	17.0	-0.1	-0.1	0.0	
COSTA RI	142.5	489.8	-232.9	0.0	0.0	477.7	283.9	79.5	79.5		
6	1373.9	1203.7	0.0	0.0	0.0	0.0	54.9	115.2	115.2	114.4	
PANAMA	72.8	210.9	-214.0	0.0	0.0	469.8	617.2	-71.5	-71.5		
7	106.4	43.1	0.0	0.0	0.0	0.0	3.5	59.8	59.8	60.0	
ACANAL	34.1	7.5	-15.7	0.0	0.0	0.0	16.3	26.0	26.0		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	6247.4	6083.9	0.0	0.0	0.0	0.0	163.5	0.0	0.0	0.0	
TOTALS	1125.9	1904.1	-723.0	0.0	0.0	2010.4	1955.3	0.0	0.0		



Demanda Máxima de Verano

1000
HIGHVOLT





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SIN JUNIOI - 2011
 AÑO 2012 ESC MOD DEMANDA MÁX-VERANO

MON, APR 18 2011 14:02

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
6071		BLMG2		13.800	V2	38.0	0.0	15.0	0.0	1.0032	37.9	1.0000	47.0			62	6
6072		BLMG3		13.800	V3	38.0	0.0	15.0	0.0	1.0032	37.9	1.0000	47.0			62	6
6073		BLMG4		13.800	V4	38.0	0.0	15.0	0.0	1.0035	37.9	1.0000	47.0			62	6
6090		LESG1		13.800	E1	17.7	-0.8	12.0	-5.0	0.9900	17.9	0.9990	27.0			64	6
6091		LESG2		13.800	E2	17.7	-0.8	12.0	-5.0	0.9900	17.9	0.9990	27.0			64	6
6094		LVAG1		13.800	L1	20.6	-4.9	12.0	-5.0	1.0000	21.1	0.9727	27.0			64	6
6095		LVAG2		13.800	L2	20.6	-4.9	12.0	-5.0	1.0000	21.1	0.9727	27.0			64	6
6097		FORG1		13.800	F1	76.0	-12.5	50.0	-50.0	0.9850	78.2	0.9867	111.0			64	6
6098		FORG2		13.800	F2	76.0	-12.5	50.0	-50.0	0.9850	78.2	0.9867	111.0			64	6
6099		FORG3		13.800	F3	50.0	-14.3	50.0	-50.0	0.9850	52.8	0.9613	111.0			64	6
6101		BAYG1		13.800	B1	78.3	16.0	30.0	-25.0	1.0000	79.9	0.9797	94.0			61	6
6102		BAYG2		13.800	B2	78.3	8.2	30.0	-25.0	0.9900	79.5	0.9946	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9771	19.6	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9771	19.6	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9771	19.6	0.8832	21.7			61	6
6264		CHAG113.8		13.800	G1	78.6	-12.4	52.4	-48.9	0.9900	80.4	0.9877	116.5			64	6
6265		CHAG213.8		13.800	G2	78.6	-8.7	52.4	-48.9	0.9900	79.9	0.9939	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	7.3	4.9	4.9	-4.1	0.9872	8.9	0.8325	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	-1.1	5.6	-5.6	0.9900	8.4	0.9917	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	-1.1	5.6	-5.6	0.9900	8.4	0.9917	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	-1.1	5.6	-5.6	0.9900	8.4	0.9917	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	-1.1	5.6	-5.6	0.9900	8.4	0.9917	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	-1.1	5.6	-5.6	0.9900	8.4	0.9917	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	-1.1	5.6	-5.6	0.9900	8.4	0.9917	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	-1.1	5.6	-5.6	0.9900	8.4	0.9917	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	-1.1	5.6	-5.6	0.9900	8.4	0.9917	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	-1.1	5.6	-5.6	0.9900	8.4	0.9917	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	-1.1	5.6	-5.6	0.9900	8.4	0.9917	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	-0.5	2.0	-2.0	0.9900	3.7	0.9921	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	-0.5	2.0	-2.0	0.9900	3.7	0.9921	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	-0.5	2.0	-2.0	0.9900	3.7	0.9921	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	-0.5	2.0	-2.0	0.9900	3.7	0.9921	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	-1.0	2.5	-2.5	0.9900	8.4	0.9926	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	-1.0	2.5	-2.5	0.9900	8.4	0.9926	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	-1.0	2.5	-2.5	0.9900	8.4	0.9926	10.9			62	6
6282		GIR 13B		13.800	G8	8.3	-1.0	2.5	-2.5	0.9900	8.4	0.9926	10.9			62	6
6291		TCOG1		13.800	G1	47.0	25.0	25.0	-25.0	0.9808	54.3	0.8829	71.9			62	6



6293	TCOG3	13.800	G3	42.0	25.0	25.0	-35.0	0.9809	49.8	0.8593	70.6	64	6
6311	ALGA13.8	13.800	A1	3.8	0.3	2.3	-2.3	1.0100	3.8	0.9977	5.7	64	6
6311	ALGA13.8	13.800	A2	3.8	0.3	2.3	-2.3	1.0100	3.8	0.9977	5.7	64	6
6321	MEND13.8	13.800	M1	7.0	1.8	4.2	-4.2	1.0100	7.2	0.9673	10.4	64	6
6321	MEND13.8	13.800	M2	7.0	1.8	4.2	-4.2	1.0100	7.2	0.9673	10.4	64	6
6333	BAM13A	13.800	G1	21.0	0.3	10.0	-10.0	1.0000	21.0	0.9999	30.0	64	6
6334	BAM13B	13.800	G2	21.0	0.3	10.0	-10.0	1.0000	21.0	0.9999	30.0	64	6
6335	BAIG1	13.800	G1	33.3	-8.1	14.0	-14.0	1.0000	34.2	0.9718	49.0	64	6
6336	BAIG2	13.800	G2	33.3	-8.1	14.0	-14.0	1.0000	34.2	0.9718	49.0	64	6
6364	LOR13A	13.800	G1	12.7	-6.2	7.8	-7.0	1.0000	14.1	0.8992	25.0	64	6
6365	LOR13B	13.800	G2	12.7	-6.2	7.8	-7.0	1.0000	14.1	0.8992	25.0	64	6
6367	PRU13A	13.800	G1	21.0	-7.5	8.0	-8.0	1.0000	22.3	0.9425	33.0	64	6
6368	PRU13B	13.800	G2	21.0	-7.5	8.0	-8.0	1.0000	22.3	0.9425	33.0	64	6
6384	PEDI13.8	13.800	G1	7.5	-0.4	4.9	-4.9	1.0000	7.5	0.9988	12.5	64	6
6384	PEDI13.8	13.800	G2	7.5	-0.4	4.9	-4.9	1.0000	7.5	0.9988	12.5	64	6
6385	PEDII13.8	13.800	G1	4.9	-0.1	3.2	-3.6	1.0000	4.9	0.9998	7.5	64	6
6385	PEDII13.8	13.800	G2	4.9	-0.1	3.2	-3.6	1.0000	4.9	0.9998	7.5	64	6
6510	MAC0.69A	0.7000	G1	1.5	-0.1	0.9	-0.1	1.0077	1.4	0.9981	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.5	-0.1	0.9	-0.1	1.0077	1.4	0.9981	2.1	64	6
6520	PANCH13.8	13.800	P1	3.8	2.0	2.0	-2.0	0.9703	4.4	0.8824	6.2	64	6
6530	HCONC4.16	4.2000	G1	3.8	-1.0	2.5	-2.5	1.0000	3.9	0.9657	5.6	64	6
6530	HCONC4.16	4.2000	G2	3.8	-1.0	2.5	-2.5	1.0000	3.9	0.9657	5.6	64	6
6560	PLANETA13.8	13.800	G1	3.4	2.0	2.0	-2.0	0.9703	4.0	0.8603	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.1	1.2	1.2	-1.2	0.9572	2.5	0.8692	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.1	1.2	1.2	-1.2	0.9572	2.5	0.8692	3.0	63	6
SUBSYSTEM TOTALS				1228.2	-17.7	685.5	-608.2				1771.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E

MON, APR 18 2011 14:02

PLAN DE EXPANSIÓN DEL SIN JUNIOI - 2011

AÑO 2012 ESC MOD DEMANDA MÁX-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
6127		MIR13B		12.000	G6	18.0	2.2	8.0	0.0	1.0100	17.9	0.9929	27.7			65	7
6128		MIR13C		12.000	G3	20.0	9.5	11.0	0.0	1.0100	21.9	0.9034	29.4			65	7
6129		MIR13D		13.800	G4	22.8	12.1	15.0	0.0	1.0100	25.6	0.8841	44.1			65	7
6130		MIR13F		13.800	G5	17.0	3.2	8.0	0.0	1.0100	17.1	0.9826	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	0.5	6.0	-6.0	1.0100	9.9	0.9990	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.5	6.0	-6.0	1.0100	9.9	0.9989	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	0.5	6.0	-6.0	1.0100	9.9	0.9989	13.0			65	7
SUBSYSTEM TOTALS						107.8	28.3	60.0	-18.0				167.9				



1179

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, APR 18 2011 14:02
PLAN DE EXPANSIÓN DEL SIN JUNIOI - 2011
AÑO 2012 ESC MOD DEMANDA MÁX-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)
6000		FRONTER		230.00	6	1.0141	233.24	6011		MDN230		230.00	6	1.0039	230.89
6014		PRO230		230.00	6	1.0124	232.85	6096		FOR230		230.00	6	1.0026	230.59
6100		BAY230		230.00	6	1.0092	232.13	6171		PAC230		230.00	6	1.0007	230.16
6178		EST230		230.00	6	1.0024	230.55	6179		GUA230		230.00	6	1.0024	230.55
6182		VEL230		230.00	6	1.0033	230.76	6260		CHA 230		230.00	6	1.0151	233.48
6263		ESP230		230.00	6	1.0129	232.96	6330		BAI230		230.00	6	1.0119	232.73
6340		CAN 230		230.00	6	1.0076	231.74	6360		GLA230		230.00	6	1.0051	231.18
6363		ZAM230		230.00	6	1.0088	232.02	6366		EVA230		230.00	6	1.0109	232.50
6380		BOQIII 230		230.00	6	1.0086	231.98	6400		FRONTCHA		230.00	6	1.0174	233.99
6500		FRONTVEL		230.00	6	1.0184	234.24								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9868	226.96	6003		PANII230		230.00	6	0.9921	228.18
6005		CHO230		230.00	6	0.9823	225.93	6008		LSA230		230.00	6	0.9961	229.11
6103		COP230		230.00	6	0.9951	228.87	6105		PAM230		230.00	6	0.9823	225.93
6240		LGU 230		230.00	6	0.9844	226.40	6450		LSA CAP 230		230.00	6	0.9961	229.11
6590		24DIC230		230.00	6	0.9961	229.11								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, APR 18 2011 14:02
PLAN DE EXPANSIÓN DEL SIN JUNIOI - 2011
AÑO 2012 ESC MOD DEMANDA MÁX-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)
6009		LSA115		115.00	6	1.0044	115.50	6012		MDN115		115.00	6	1.0169	116.94
6015		PRO115		115.00	6	1.0105	116.21	6059		LM1115		115.00	6	1.0067	115.77
6060		LM2115		115.00	6	1.0067	115.77	6066		FFIELD		115.00	6	1.0014	115.16
6074		LMDIST		115.00	6	1.0067	115.77	6087		CAL115		115.00	6	1.0184	117.12
6088		LES115		115.00	6	1.0192	117.20	6092		LVA115		115.00	6	1.0182	117.09
6123		MIR115		115.00	7	1.0072	115.83	6170		CPA115		115.00	6	1.0014	115.16
6173		STR115		115.00	6	1.0052	115.60	6174		PM115-1A		115.00	6	1.0006	115.07
6175		PM115-2A		115.00	6	1.0006	115.07	6261		CHA 115		115.00	6	1.0113	116.31
6270		CAT 115		115.00	6	1.0069	115.79	6280		GIR 115		115.00	6	1.0014	115.16
6290		CATII 11		115.00	6	1.0080	115.92	6331		BAI115		115.00	6	1.0032	115.37
6332		BAM115		115.00	6	1.0061	115.70	6550		CHAZ115		115.00	6	1.0105	116.21



BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002	PAN115	115.00	6	0.9920	114.08	6004	PANII115	115.00	6	0.9948	114.40				
6006	CHO115	115.00	6	0.9602	110.42	6018	CAC115	115.00	6	0.9922	114.10				
6019	CVI115A	115.00	6	0.9871	113.52	6024	CHI115	115.00	6	0.9894	113.78				
6027	LOC115A	115.00	6	0.9859	113.38	6032	MAR115A	115.00	6	0.9852	113.30				
6036	SMA115	115.00	6	0.9904	113.90	6040	SFR115	115.00	6	0.9841	113.17				
6047	CLA115	115.00	6	0.9840	113.16	6055	MOS115B	115.00	6	0.9891	113.75				
6057	TOC115	115.00	6	0.9926	114.15	6210	TIN115	115.00	6	0.9888	113.71				
6211	PM115-9	115.00	6	0.9891	113.74	6230	CBA115	115.00	6	0.9850	113.27				
6350	PM115-8	115.00	6	0.9890	113.73	6580	LBO115	115.00	6	0.9867	113.47				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, APR 18 2011 14:02
 PLAN DE EXPANSIÓN DEL SIN JUNIOI - 2011
 AÑO 2012 ESC MOD DEMANDA MÁX-VERANO
 OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C					
BUS#	X--	NAME	--X	BASKV	AREA	BUS#	X--	NAME	--X	BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6005	CHO230	230.00*	6	3WINDTR	TRAF01	WND 1	6	T1	49.3	50.0	98.5	--	--	--	--		
6005	CHO230	230.00*	6	3WINDTR	TRAF02	WND 1	6	T2	49.3	50.0	98.5	--	--	--	--		
6009	LSA115	115.00*	6	3WINDTR	TRAF01	WND 2	6	T1	62.2	60.0	103.6	--	--	--	--		
6009	LSA115	115.00*	6	3WINDTR	TRAF02	WND 2	6	T2	62.2	60.0	103.6	--	--	--	--		
6210	TIN115	115.00*	6	3WINDTR	TIN T1	WND 2	6	T1	43.2	42.0	102.8	--	--	--	--		
6240	LGU 230	230.00*	6	6241	LGU 34	34.500	6	T1	49.1	50.0	98.2	--	--	--	--		

 OUTPUT FOR AREA 7 [ACANAL]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C				
BUS#	X--	NAME	--X	BASKV	AREA	BUS#	X--	NAME	--X	BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SIN JUNIOI - 2011
 AÑO 2012 ESC MOD DEMANDA MÁX-VERANO

MON, APR 18 2011

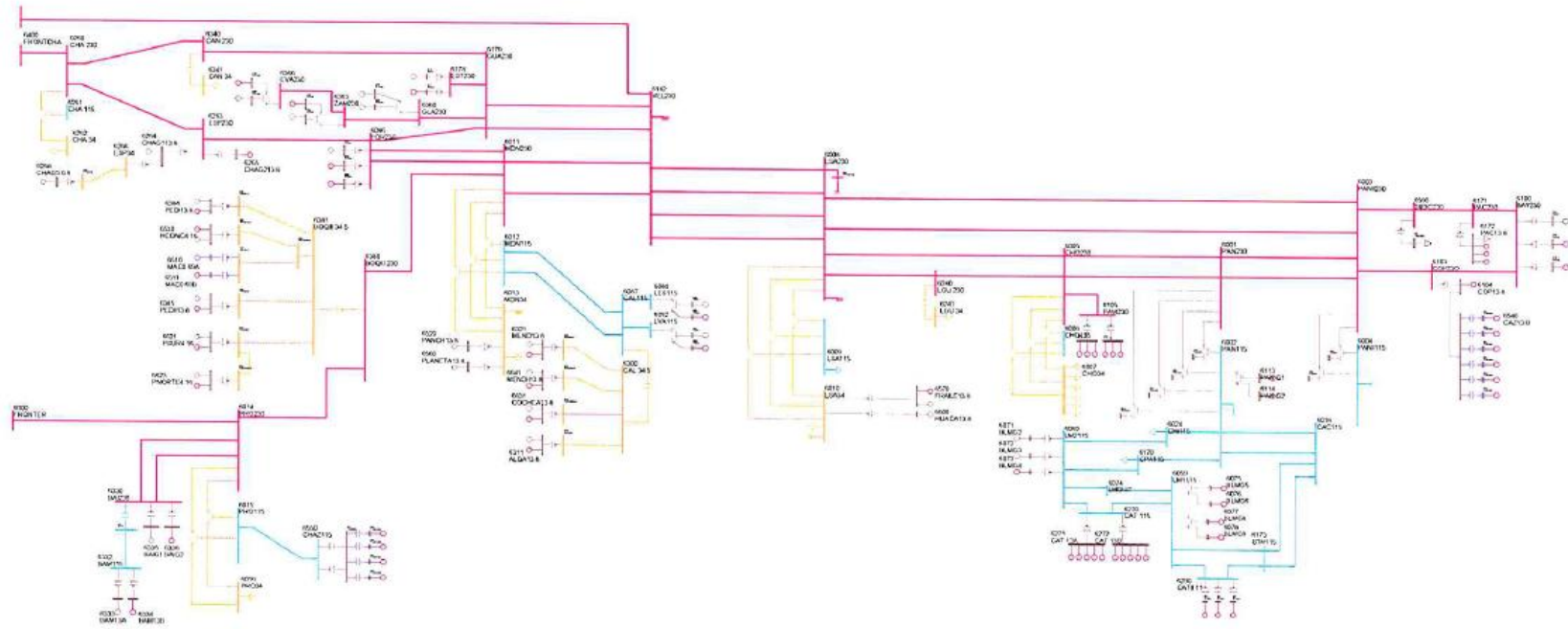
14:02

AREA TOTALS
 IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO BUS SHUNT	TO GNE BUS DEVICES		TO LINE SHUNT	FROM CHARGING	-NET INTERCHANGE-			DESIRED NET INT
	GENE- RATION	ASSIGNED TO AREA		TO	TO			TO TIE LINES	TO TIES + LOADS	LOSSES	
1	1123.2	1092.8	0.0	0.0	0.0	0.0	0.0	30.4	0.0	0.0	0.0
GUATEMAL	201.5	340.6	-66.8	0.0	0.0	0.0	312.1	306.0	-66.3	-66.3	0.0
2	1000.7	978.0	0.0	0.0	0.0	0.0	0.0	22.7	0.0	0.0	0.0
SALVADOR	231.2	325.2	-152.1	0.0	0.0	0.0	244.2	225.8	76.5	76.5	0.0
3	1036.0	1008.0	0.0	0.0	0.0	0.0	0.0	28.0	0.0	0.0	0.0
HONDURAS	351.4	341.6	-36.6	0.0	0.0	0.0	336.0	358.4	24.0	24.0	0.0
4	490.7	481.7	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0	0.0
NICARAGU	51.3	189.9	-9.4	0.0	0.0	0.0	178.7	122.1	-72.6	-72.6	0.0
5	1342.0	1319.0	0.0	0.0	0.0	0.0	0.0	23.7	-0.7	-0.7	0.0
COSTA RI	235.4	497.4	-232.7	0.0	0.0	0.0	475.9	375.4	71.3	71.3	0.0
6	1228.2	1241.5	0.0	0.0	0.0	0.0	0.0	45.7	-59.0	-59.0	-60.0
PANAMA	-17.7	217.5	-230.4	0.0	0.0	0.0	464.0	511.4	-52.2	-52.2	-60.0
7	107.8	44.4	0.0	0.0	0.0	0.0	0.0	3.7	59.8	59.8	60.0
ACANAL	28.3	7.8	-15.8	0.0	0.0	0.0	0.0	17.2	19.2	19.2	60.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLUMN	6328.6	6165.4	0.0	0.0	0.0	0.0	0.0	163.2	0.0	0.0	0.0
TOTALS	1081.5	1919.9	-743.9	0.0	0.0	0.0	2010.8	1916.2	0.0	0.0	0.0

Demanda Mínima de Invierno

ENR
FRONTIER





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 SISTEMA INTERCONECTADO NACIONAL
 BASE REGIONAL - DEMANDA MINIMA EPOCA - LLUVIOSA 2012

MON, APR 18 2011 14:19

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	
6071		BLMG2		13.800	V2	38.0	3.0	15.0	0.0	1.0100	37.7	0.9970	47.0			62	6	
6072		BLMG3		13.800	V3	38.0	3.0	15.0	0.0	1.0100	37.7	0.9970	47.0			62	6	
6090		LESG1		13.800	E1	22.4	0.5	12.0	-5.0	0.9900	22.7	0.9997	27.0			64	6	
6094		LVAG1		13.800	L1	26.0	-5.0	12.0	-5.0	0.9959	26.6	0.9820	27.0			64	6	
6097		FORG1		13.800	F1	62.0	-22.8	50.0	-50.0	0.9900	66.7	0.9386	111.0			64	6	
6101		BAYG1		13.800	B1	56.4	24.1	30.0	-25.0	1.0100	60.7	0.9199	94.0			61	6	
6176		ESTG1		13.800	E1	57.0	8.7	29.0	-29.0	1.0100	57.1	0.9884	69.0			64	6	
6264		CHAG113.8		13.800	G1	99.6	-9.3	52.4	-48.9	1.0100	99.0	0.9957	116.5			64	6	
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6	
6311		ALGA13.8		13.800	A1	4.8	1.6	2.3	-2.3	1.0100	5.1	0.9482	5.7			64	6	
6321		MEND13.8		13.800	M1	8.9	4.2	4.2	-4.2	0.9981	9.8	0.9060	10.4			64	6	
6333		BAM13A		13.800	G1	26.6	-0.1	10.0	-10.0	1.0100	26.3	1.0000	30.0			64	6	
6335		BAIG1		13.800	G1	42.1	-12.5	14.0	-14.0	1.0100	43.5	0.9588	49.0			64	6	
6361		GLA13A		13.800	G1	12.1	-7.0	7.8	-7.0	1.0102	13.8	0.8649	14.1			64	6	
6362		GLA13B		13.800	G2	12.1	-7.0	7.8	-7.0	1.0102	13.8	0.8649	14.1			64	6	
6364		LOR13A		13.800	G1	16.1	-7.0	7.8	-7.0	1.0140	17.3	0.9167	25.0			64	6	
6367		PRU13A		13.800	G1	26.6	-8.0	8.0	-8.0	1.0138	27.4	0.9576	33.0			64	6	
6384		PEDI13.8		13.800	G1	9.5	-1.3	4.9	-4.9	1.0000	9.6	0.9910	12.5			64	6	
6385		PEDII13.8		13.800	G1	6.2	-0.9	3.2	-3.6	1.0000	6.2	0.9890	7.5			64	6	
6510		MAC0.69A		0.7000	G1	1.6	-0.1	0.9	-0.1	1.0059	1.6	0.9985	2.1			64	6	
6520		PANCH13.8		13.800	P1	4.8	2.0	2.0	-2.0	0.9232	5.6	0.9216	6.2			64	6	
6530		HCONC4.16		4.2000	G2	4.8	-2.3	2.5	-2.5	1.0000	5.3	0.9015	5.6			64	6	
6560		PLANETA13.8		13.800	G1	4.3	2.0	2.0	-2.0	0.9232	5.1	0.9058	4.9			64	6	
6570		FRAILE13.8		13.800	G2	2.6	1.2	1.2	-1.2	0.9711	2.9	0.9118	3.0			63	6	
6600		HUACA13.8		13.800	G1	4.8	0.0	0.0	0.0	0.9704	4.9	1.0000	5.5			63	6	
6621		PSUR4.16		4.2000	G1	4.8	-2.2	2.5	-2.5	1.0000	5.2	0.9092	5.6			64	6	
6623		PNORTE4.16		4.2000	G1	4.8	-2.5	2.5	-2.5	1.0000	5.4	0.8851	5.6			64	6	
6631		COCHEA13.8		13.800	G1	7.1	-3.7	3.7	-3.7	1.0116	7.9	0.8877	8.4			64	6	
6641		MENDII13.8		13.800	G1	3.7	-1.9	1.9	-1.9	1.0126	4.1	0.8916	4.1			64	6	
SUBSYSTEM TOTALS						616.8	-38.4	309.3	-253.2				801.6					

 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
6127		MIR13B		12.000	G6	18.0	1.3	8.0	0.0	1.0100	17.9	0.9975	27.7			65	7
6128		MIR13C		12.000	G3	20.0	8.7	11.0	0.0	1.0100	21.6	0.9163	29.4			65	7
6129		MIR13D		13.800	G4	1.8	14.3	15.0	0.0	1.0100	14.3	0.1270	44.1			65	7



6130 MIR13F	13.800	G5	17.0	2.2	8.0	0.0	1.0100	17.0	0.9921	27.7	7
6134 MAD6A	6.9000	G1	10.0	1.0	6.0	-6.0	1.0100	9.9	0.9951	13.0	7
6135 MAD6B	6.9000	G2	10.0	0.9	6.0	-6.0	1.0100	9.9	0.9961	13.0	7
6136 MAD6C	6.9000	G3	10.0	0.9	6.0	-6.0	1.0100	9.9	0.9961	13.0	7
SUBSYSTEM TOTALS			86.8	29.3	60.0	-18.0				167.9	65

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, APR 18 2011 14:19
 SISTEMA INTERCONECTADO NACIONAL
 BASE REGIONAL - DEMANDA MINIMA EPOCA - LLUVIOSA 2012

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0311	237.16	6008		LSA230		230.00	6	1.0060	231.38
6011		MDN230		230.00	6	1.0158	233.64	6014		PRO230		230.00	6	1.0287	236.59
6096		FOR230		230.00	6	1.0177	234.06	6100		BAY230		230.00	6	1.0067	231.54
6178		EST230		230.00	6	1.0173	233.98	6179		GUA230		230.00	6	1.0174	233.99
6182		VEL230		230.00	6	1.0152	233.49	6260		CHA 230		230.00	6	1.0337	237.75
6263		ESP230		230.00	6	1.0322	237.40	6330		BAI230		230.00	6	1.0282	236.49
6340		CAN 230		230.00	6	1.0245	235.64	6360		GLA230		230.00	6	1.0200	234.60
6363		ZAM230		230.00	6	1.0224	235.16	6366		EVA230		230.00	6	1.0238	235.47
6380		BOQIII 230		230.00	6	1.0220	235.06	6400		FRONTCHA		230.00	6	1.0353	238.13
6450		LSA CAP 230		230.00	6	1.0060	231.38	6500		FRONTVEL		230.00	6	1.0370	238.52

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9906	227.83	6003		PANII230		230.00	6	0.9942	228.67
6005		CHO230		230.00	6	0.9905	227.83	6103		COP230		230.00	6	0.9966	229.22
6105		PAM230		230.00	6	0.9905	227.83	6171		PAC230		230.00	6	0.9977	229.48
6240		LGU 230		230.00	6	0.9996	229.90	6590		24DIC230		230.00	6	0.9958	229.04

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, APR 18 2011 14:19
 SISTEMA INTERCONECTADO NACIONAL
 BASE REGIONAL - DEMANDA MINIMA EPOCA - LLUVIOSA 2012

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0076	115.88	6004		PANII115		115.00	6	1.0080	115.92
6009		LSA115		115.00	6	1.0210	117.42	6012		MDN115		115.00	6	1.0129	116.49
6015		PRO115		115.00	6	1.0268	118.08	6018		CAC115		115.00	6	1.0076	115.87



6019 CVI115A	115.00	6	1.0035	115.40	6024 CHI115	115.00	6	1.0015	115.17
6027 LOC115A	115.00	6	1.0032	115.36	6032 MAR115A	115.00	6	1.0006	115.07
6036 SMA115	115.00	6	1.0064	115.74	6040 SFR115	115.00	6	1.0020	115.23
6055 MOS115B	115.00	6	1.0056	115.64	6057 TOC115	115.00	6	1.0060	115.69
6059 LM1115	115.00	6	1.0069	115.80	6060 LM2115	115.00	6	1.0069	115.80
6066 FFIELD	115.00	6	1.0077	115.88	6074 LMDIST	115.00	6	1.0069	115.79
6087 CAL115	115.00	6	1.0148	116.71	6088 LES115	115.00	6	1.0156	116.79
6092 LVA115	115.00	6	1.0147	116.70	6123 MIR115	115.00	7	1.0201	117.31
6170 CPA115	115.00	6	1.0067	115.77	6173 STR115	115.00	6	1.0072	115.83
6174 PM115-1A	115.00	6	1.0080	115.92	6175 PM115-2A	115.00	6	1.0080	115.92
6210 TIN115	115.00	6	1.0055	115.64	6211 PM115-9	115.00	6	1.0057	115.66
6230 CBA115	115.00	6	1.0026	115.30	6261 CHA 115	115.00	6	1.0302	118.47
6270 CAT 115	115.00	6	1.0069	115.80	6280 GIR 115	115.00	6	1.0067	115.77
6290 CATII 11	115.00	6	1.0070	115.80	6331 BAI115	115.00	6	1.0225	117.59
6332 BAM115	115.00	6	1.0234	117.69	6350 PM115-8	115.00	6	1.0042	115.48
6550 CHAZ115	115.00	6	1.0268	118.08	6580 LBO115	115.00	6	1.0032	115.37

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6006	CHO115	115.00	6	0.9776	112.43	6047	CLA115	115.00	6	0.9979	114.76

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, APR 18 2011 14:19

SISTEMA INTERCONECTADO NACIONAL

BASE REGIONAL - DEMANDA MINIMA EPOCA - LLUVIOSA 2012

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)

LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X-----	FROM BUS	-----X	X-----	TO BUS	-----X	RATING SET A	RATING SET B	RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, APR 18 2011 14:19

SISTEMA INTERCONECTADO NACIONAL

BASE REGIONAL - DEMANDA MINIMA EPOCA - LLUVIOSA 2012

OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)

LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X-----	FROM BUS	-----X	X-----	TO BUS	-----X	RATING SET A	RATING SET B	RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT

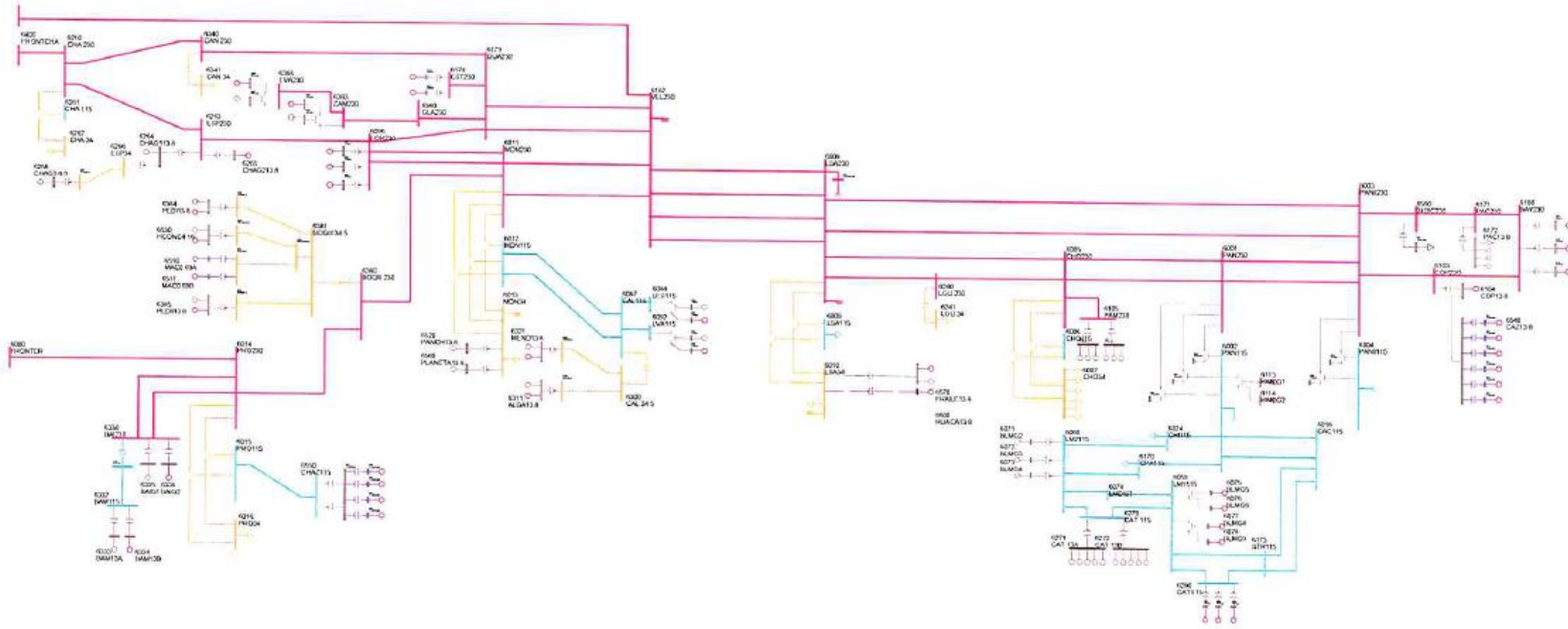
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E										
SISTEMA INTERCONECTADO NACIONAL										
BASE REGIONAL - DEMANDA MINIMA EPOCA - LLUVIOSA 2012										
MON, APR 18 2011 14:19										
AREA TOTALS										
IN MW/MVAR										
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED
	GENE-	ASSIGNED	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT
	RATION	TO AREA						LINES	+ LOADS	
1	748.1	724.0	0.0	0.0	0.0	0.0	15.6	8.5	8.5	8.5
GUATEMAL	-4.7	99.8	78.0	0.0	0.0	316.3	203.7	-69.9	-69.9	
2	460.1	453.5	0.0	0.0	0.0	0.0	6.7	-0.1	-0.1	0.0
SALVADOR	1.4	121.8	0.0	0.0	0.0	253.0	84.3	48.2	48.2	
3	454.7	446.2	0.0	0.0	0.0	0.0	8.6	-0.1	-0.1	0.0
HONDURAS	16.5	145.3	41.1	0.0	0.0	366.0	120.6	75.5	75.5	
4	268.4	265.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
NICARAGU	-115.3	105.2	18.3	0.0	0.0	189.7	42.5	-91.6	-91.6	
5	662.1	656.4	0.0	0.0	0.0	0.0	5.8	-0.1	-0.1	0.0
COSTA RI	-57.8	271.2	-35.1	0.0	0.0	494.8	123.7	77.1	77.1	
6	616.8	662.1	0.0	0.0	0.0	0.0	23.1	-68.4	-68.4	-68.5
PANAMA	-38.4	240.3	2.0	0.0	0.0	474.0	255.2	-61.9	-61.9	
7	86.8	23.7	0.0	0.0	0.0	0.0	3.0	60.1	60.1	60.0
ACANAL	29.3	8.6	-15.9	0.0	0.0	0.0	14.0	22.6	22.6	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	3297.1	3231.5	0.0	0.0	0.0	0.0	65.7	0.0	0.0	0.0
TOTALS	-168.9	992.3	88.5	0.0	0.0	2093.7	844.0	0.0	0.0	

Demanda Mínima de Verano

FIG. 01
FRONTAL





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, APR 18 2011 14:27
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA SECA DEL AÑO 2012 - DEMANDA MÍNIMA DE VERANO PMA MANDANDO
 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
6071		BLMG2		13.800	V2	38.0	1.5	15.0	0.0	1.0000	38.0	0.9992	47.0			62	6
6072		BLMG3		13.800	V3	38.0	1.5	15.0	0.0	1.0000	38.0	0.9992	47.0			62	6
6073		BLMG4		13.800	V4	38.0	1.4	15.0	0.0	1.0000	38.0	0.9993	47.0			62	6
6090		LESG1		13.800	E1	17.7	-4.6	12.0	-5.0	0.9800	18.7	0.9680	27.0			64	6
6094		LVAG1		13.800	L1	20.5	-5.0	12.0	-5.0	1.0038	21.1	0.9717	27.0			64	6
6101		BAYG1		13.800	B1	63.9	-6.3	30.0	-25.0	0.9800	65.5	0.9952	94.0			61	6
6106		PAM13A		13.800	M1	15.2	6.6	9.0	0.0	0.9800	16.9	0.9171	20.7			63	6
6106		PAM13A		13.800	M2	15.2	6.6	9.0	0.0	0.9800	16.9	0.9171	20.7			63	6
6106		PAM13A		13.800	M3	15.2	6.6	9.0	0.0	0.9800	16.9	0.9171	20.7			63	6
6107		PAM13B		13.800	M4	15.2	8.1	9.0	0.0	0.9900	17.4	0.8827	20.7			63	6
6107		PAM13B		13.800	M5	15.2	8.1	9.0	0.0	0.9900	17.4	0.8827	20.7			63	6
6107		PAM13B		13.800	M6	15.2	8.1	9.0	0.0	0.9900	17.4	0.8827	20.7			63	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9898	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9898	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9898	19.4	0.8832	21.7			61	6
6264		CHAG113.8		13.800	G1	78.6	-33.3	52.4	-48.9	0.9800	87.1	0.9208	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	7.3	4.9	4.9	-4.1	0.9774	9.0	0.8325	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.4	5.6	-5.6	1.0000	8.3	0.9991	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.4	5.6	-5.6	1.0000	8.3	0.9991	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.4	5.6	-5.6	1.0000	8.3	0.9991	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.4	5.6	-5.6	1.0000	8.3	0.9991	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.4	5.6	-5.6	1.0000	8.3	0.9991	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.4	5.6	-5.6	1.0000	8.3	0.9991	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.4	5.6	-5.6	1.0000	8.3	0.9991	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.4	5.6	-5.6	1.0000	8.3	0.9991	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.4	5.6	-5.6	1.0000	8.3	0.9991	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.4	5.6	-5.6	1.0000	8.3	0.9991	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	-1.3	2.0	-2.0	0.9900	3.9	0.9461	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	-1.3	2.0	-2.0	0.9900	3.9	0.9461	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	0.0	2.5	-2.5	1.0000	8.3	1.0000	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	0.0	2.5	-2.5	1.0000	8.3	1.0000	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	0.0	2.5	-2.5	1.0000	8.3	1.0000	10.9			62	6
6282		GIR 13B		13.800	G8	8.3	0.0	2.5	-2.5	1.0000	8.3	1.0000	10.9			62	6
6311		ALGA13.8		13.800	A1	3.8	-0.4	2.3	-2.3	0.9900	3.9	0.9952	5.7			64	6
6321		MEND13.8		13.800	M1	7.0	-2.1	4.2	-4.2	0.9900	7.4	0.9599	10.4			64	6
6333		BAM13A		13.800	G1	21.0	-5.0	10.0	-10.0	0.9800	22.0	0.9728	30.0			64	6
6335		BAIG1		13.800	G1	33.3	-14.0	14.0	-14.0	1.0134	35.6	0.9217	49.0			64	6



6364	LOR13A	13.800	G1	12.7	-7.0	7.8	-7.0	1.0279	14.1	0.8754	25.0	64	6
6367	PRU13A	13.800	G1	21.0	-8.0	8.0	-8.0	1.0275	21.9	0.9345	33.0	64	6
6384	PEDI13.8	13.800	G1	7.5	-4.9	4.9	-4.9	0.9993	9.0	0.8384	12.5	64	6
6385	PEDII13.8	13.800	G1	4.9	-3.6	3.2	-3.6	1.0013	6.0	0.8059	7.5	64	6
6510	MAC0.69A	0.7000	G1	1.5	-0.1	0.9	-0.1	1.0119	1.4	0.9981	2.1	64	6
6520	PANCH13.8	13.800	P1	3.8	2.0	2.0	-2.0	0.9324	4.6	0.8824	6.2	64	6
6530	HCONC4.16	4.2000	G1	3.8	-2.5	2.5	-2.5	1.0057	4.5	0.8324	5.6	64	6
6560	PLANETA13.8	13.800	G1	3.4	2.0	2.0	-2.0	0.9324	4.2	0.8603	4.9	64	6
6570	FRAILE13.8	13.800	G2	2.1	1.2	1.2	-1.2	0.9307	2.5	0.8692	3.0	63	6
SUBSYSTEM TOTALS				693.1	-10.2	370.2	-252.7				962.6		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, APR 18 2011 14:27
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA SECA DEL AÑO 2012 - DEMANDA MÍNIMA DE VERANO PMA MANDANDO

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
6127		MIR13B		12.000	G6	18.0	3.5	8.0	0.0	1.0000	18.3	0.9816	27.7			65	7
6128		MIR13C		12.000	G3	20.0	10.5	11.0	0.0	1.0000	22.6	0.8861	29.4			65	7
6129		MIR13D		13.800	G4	-10.6	15.0	15.0	0.0	0.9909	18.5	-0.5777	44.1			65	7
6130		MIR13F		13.800	G5	17.0	4.8	8.0	0.0	1.0000	17.7	0.9620	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	1.3	6.0	-6.0	1.0000	10.1	0.9916	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	1.1	6.0	-6.0	1.0000	10.1	0.9936	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	1.1	6.0	-6.0	1.0000	10.1	0.9936	13.0			65	7
SUBSYSTEM TOTALS						74.4	37.4	60.0	-18.0				167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, APR 18 2011 14:27
 SISTEMA INTERCONECTADO NACIONAL
 EPOCA SECA DEL AÑO 2012 - DEMANDA MÍNIMA DE VERANO PMA MANDANDO

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0360	238.29	6001		PAN230		230.00	6	1.0063	231.45
6003		PANII230		230.00	6	1.0101	232.32	6005		CHO230		230.00	6	1.0146	233.35
6008		LSA230		230.00	6	1.0187	234.29	6011		MDN230		230.00	6	1.0281	236.47
6014		PRO230		230.00	6	1.0341	237.84	6096		FOR230		230.00	6	1.0320	237.35
6100		BAY230		230.00	6	1.0165	233.78	6103		COP230		230.00	6	1.0115	232.65
6105		PAM230		230.00	6	1.0147	233.39	6171		PAC230		230.00	6	1.0159	233.66
6178		EST230		230.00	6	1.0330	237.60	6179		GUA230		230.00	6	1.0330	237.60
6182		VEL230		230.00	6	1.0295	236.79	6240		LGU 230		230.00	6	1.0160	233.67
6260		CHA 230		230.00	6	1.0347	237.98	6263		ESP230		230.00	6	1.0314	237.23
6330		BAI230		230.00	6	1.0330	237.59	6340		CAN 230		230.00	6	1.0354	238.14
6360		GLA230		230.00	6	1.0344	237.91	6363		ZAM230		230.00	6	1.0361	238.31



1191

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, APR 18 2011 14:27
SISTEMA INTERCONECTADO NACIONAL
EPOCA SECA DEL AÑO 2012 - DEMANDA MÍNIMA DE VERANO PMA MANDANDO
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X-----	FROM BUS	-----X	X-----	TO BUS	-----X		RATING SET A	RATING SET B	RATING SET C							
BUS#	X--	NAME	--X	BASKV	AREA	BUS#	X--	NAME	--X	BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, APR 18 2011 14:27
SISTEMA INTERCONECTADO NACIONAL
EPOCA SECA DEL AÑO 2012 - DEMANDA MÍNIMA PMA MANDANDO
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X-----	FROM BUS	-----X	X-----	TO BUS	-----X		RATING SET A	RATING SET B	RATING SET C							
BUS#	X--	NAME	--X	BASKV	AREA	BUS#	X--	NAME	--X	BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, APR 18 2011 14:27
 SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 EPOCA SECA DEL AÑO 2012 - DEMANDA MÍNIMA DE VERANO PMA MANDANDO

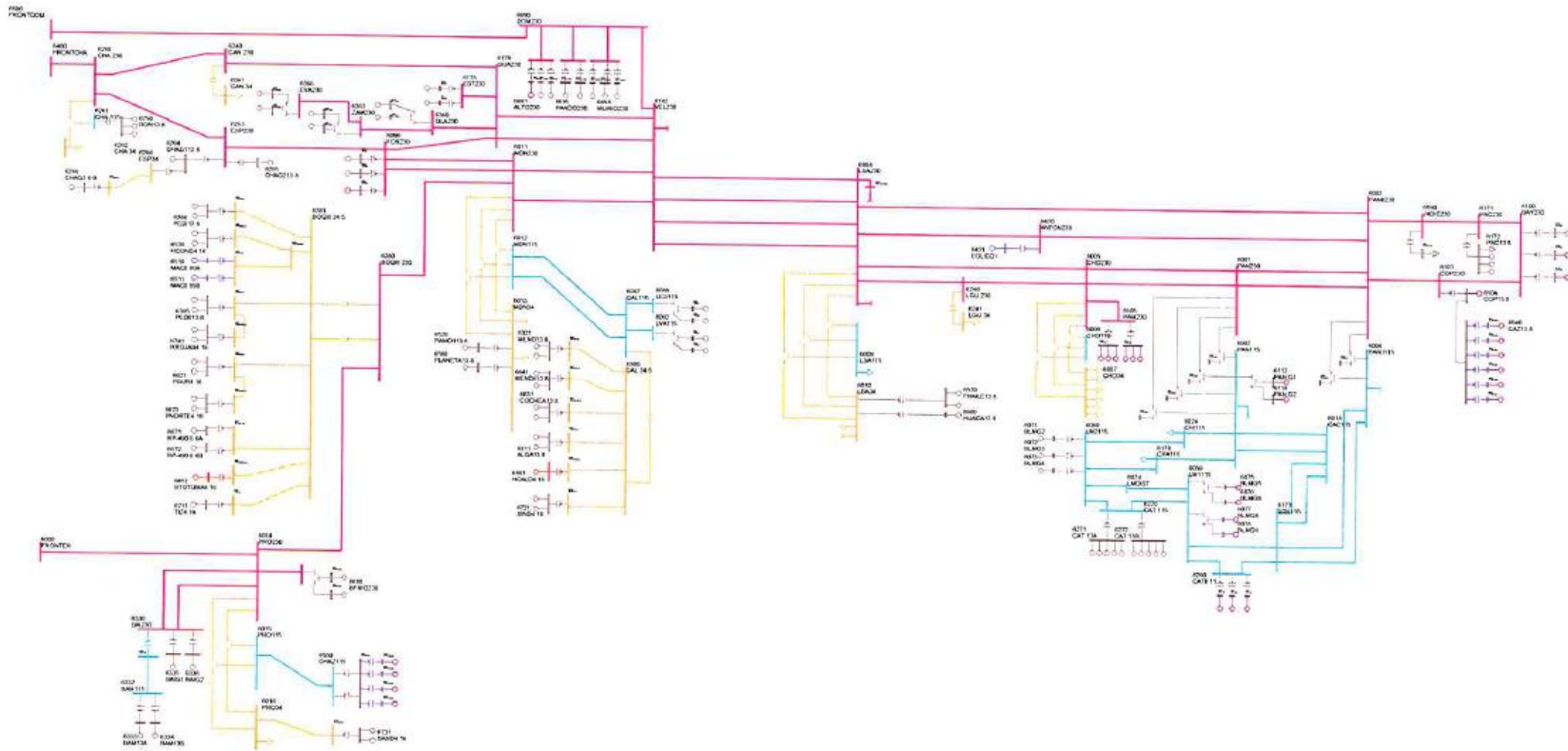
X-- AREA --X	FROM GENERATION	TO LOAD ASSIGNED TO AREA	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
								TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	671.3 -12.4	707.7 99.0	0.0 76.8	0.0 0.0	0.0 0.0	0.0 321.9	13.5 184.2	-50.0 -50.4	-50.0 -50.4	-50.0
2 SALVADOR	459.1 11.0	453.5 121.8	0.0 0.0	0.0 0.0	0.0 0.0	0.0 250.9	5.9 79.4	-0.3 60.5	-0.3 60.5	0.0
3 HONDURAS	486.4 25.3	474.7 155.3	0.0 40.3	0.0 0.0	0.0 0.0	0.0 358.9	11.7 147.6	0.0 41.1	0.0 41.1	0.0
4 NICARAGU	269.2 -87.0	265.0 105.0	0.0 17.5	0.0 0.0	0.0 0.0	0.0 185.1	4.2 49.9	0.0 -74.3	0.0 -74.3	0.0
5 COSTA RI	675.3 -18.2	664.8 277.0	0.0 -35.0	0.0 0.0	0.0 0.0	0.0 488.2	10.5 177.2	0.0 50.8	0.0 50.8	0.0
6 PANAMA	693.1 -10.2	682.9 247.8	0.0 121.0	0.0 0.0	0.0 0.0	0.0 485.4	7.3 150.2	2.9 -43.8	2.9 -43.8	3.0
7 ACANAL	74.4 37.4	24.4 8.9	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	2.6 12.3	47.3 16.2	47.3 16.2	47.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	3328.8 -54.1	3273.0 1014.8	0.0 220.7	0.0 0.0	0.0 0.0	0.0 2090.4	55.7 800.8	0.0 0.0	0.0 0.0	0.0

Año 2013



1193

Demanda Máxima de Inverno





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 06 2011 18:22
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013

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
6071		BLMG2		13.800	V2	38.0	7.0	15.0	0.0	1.0200	37.9	0.9835	47.0			62	6
6072		BLMG3		13.800	V3	38.0	7.0	15.0	0.0	1.0200	37.9	0.9835	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.4	15.0	0.0	1.0100	37.7	0.9981	47.0			62	6
6090		LESG1		13.800	E1	22.4	3.6	12.0	-5.0	1.0100	22.5	0.9875	27.0			64	6
6091		LESG2		13.800	E2	22.4	3.6	12.0	-5.0	1.0100	22.5	0.9875	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-3.1	12.0	-5.0	1.0100	26.0	0.9928	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-3.1	12.0	-5.0	1.0100	26.0	0.9928	27.0			64	6
6097		FORG1		13.800	F1	65.0	2.0	50.0	-50.0	1.0100	64.4	0.9995	111.0			64	6
6098		FORG2		13.800	F2	65.0	-20.3	50.0	-50.0	0.9850	69.1	0.9545	111.0			64	6
6101		BAYG1		13.800	B1	84.8	11.5	30.0	-25.0	1.0100	84.7	0.9909	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9958	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9958	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9958	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	12.0	29.0	-29.0	1.0200	57.1	0.9787	69.0			64	6
6177		ESTG2		13.800	E2	57.0	12.0	29.0	-29.0	1.0200	57.1	0.9787	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	2.3	52.4	-48.9	1.0200	97.7	0.9997	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	5.7	52.4	-48.9	1.0200	97.8	0.9984	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0165	10.3	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9992	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9992	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9992	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9992	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9992	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9992	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9992	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9992	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9992	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9992	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9962	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9962	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9962	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9962	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	-0.7	2.5	-2.5	1.0000	8.3	0.9965	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	-0.7	2.5	-2.5	1.0000	8.3	0.9965	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	-0.7	2.5	-2.5	1.0000	8.3	0.9965	10.9			62	6
6282		GIR 13B		13.800	G8	8.3	-0.7	2.5	-2.5	1.0000	8.3	0.9965	10.9			62	6
6311		ALGA13.8		13.800	A1	4.6	0.2	2.3	-2.3	1.0000	4.6	0.9986	5.7			64	6



6311	ALGA13.8	13.800	A2	4.6	0.2	2.3	-2.3	1.0000	4.6	0.9986	5.7	64	6
6321	MEND13.8	13.800	M1	8.4	1.4	4.2	-4.2	1.0000	8.6	0.9859	10.4	64	6
6321	MEND13.8	13.800	M2	8.4	1.4	4.2	-4.2	1.0000	8.6	0.9859	10.4	64	6
6333	BAM13A	13.800	G1	26.6	1.8	10.0	-10.0	1.0100	26.4	0.9978	30.0	64	6
6334	BAM13B	13.800	G2	26.6	1.8	10.0	-10.0	1.0100	26.4	0.9978	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-5.7	14.0	-14.0	1.0100	42.1	0.9910	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-5.7	14.0	-14.0	1.0100	42.1	0.9910	49.0	64	6
6361	GLA13A	13.800	G1	12.1	-1.9	7.8	-7.0	1.0100	12.1	0.9874	14.1	64	6
6362	GLA13B	13.800	G2	12.1	-1.9	7.8	-7.0	1.0100	12.1	0.9874	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-5.4	7.8	-7.0	1.0100	16.8	0.9473	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-5.4	7.8	-7.0	1.0100	16.8	0.9473	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-7.1	8.0	-8.0	1.0100	27.3	0.9662	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-7.1	8.0	-8.0	1.0100	27.3	0.9662	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	-2.1	4.9	-4.9	1.0000	9.7	0.9754	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	-2.1	4.9	-4.9	1.0000	9.7	0.9754	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	-3.3	3.2	-3.6	1.0000	7.0	0.8812	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	-3.3	3.2	-3.6	1.0000	7.0	0.8812	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0164	59.9	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0151	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0151	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9710	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0030	5.4	0.8851	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0030	5.4	0.8851	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9710	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9782	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9782	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9782	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	2.5	2.5	-2.5	1.0177	5.3	0.8851	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	2.5	2.5	-2.5	1.0177	5.3	0.8851	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	2.2	2.5	-2.5	1.0200	5.1	0.9078	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	2.2	2.5	-2.5	1.0200	5.1	0.9078	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.8	0.8	3.7	-3.7	1.0200	6.7	0.9926	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.8	0.8	3.7	-3.7	1.0200	6.7	0.9926	8.4	64	6
6641	MENDII13.8	13.800	G1	3.5	1.8	1.9	-1.9	1.0200	3.8	0.8860	4.1	64	6
6641	MENDII13.8	13.800	G2	3.5	1.8	1.9	-1.9	1.0200	3.8	0.8860	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	1.0086	5.3	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.6	-2.0	2.0	-2.0	1.0400	3.9	0.8793	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.9	2.3	-2.6	1.0200	6.7	0.9916	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.9	2.3	-2.6	1.0200	6.7	0.9916	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-1.2	8.0	-8.0	1.0200	26.1	0.9991	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-1.2	8.0	-8.0	1.0200	26.1	0.9991	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0110	23.2	0.9074	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	-5.3	9.9	-9.9	1.0000	21.9	0.9708	24.9	64	6



6696	PANDO13A	13.800	G1	15.8	-2.5	12.8	-8.3	1.0000	16.0	0.9874	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-2.5	12.8	-8.3	1.0000	16.0	0.9874	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-2.4	12.8	-8.3	1.0000	16.0	0.9891	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-2.4	12.8	-8.3	1.0000	16.0	0.9891	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-2.4	12.8	-8.3	1.0000	16.0	0.9891	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	-2.3	2.3	-2.3	1.0035	4.9	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.5	-2.5	2.5	-2.5	1.0386	5.0	0.8744	5.6	64	6
6721	SIND4.16	4.2000	G2	4.5	-2.5	2.5	-2.5	1.0386	5.0	0.8744	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0039	4.8	0.8892	5.0	64	6
6731	SAND4.16	4.2000	G2	4.8	-2.2	2.2	-2.2	1.0039	5.2	0.9074	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	2.1	2.1	-2.1	1.0148	4.5	0.8892	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	2.1	2.1	-2.1	1.0148	4.5	0.8892	4.8	64	6
6750	BON13.8	13.800	G1	9.9	0.6	4.0	-4.0	1.0200	9.7	0.9984	35.3	64	6
6750	BON13.8	13.800	G2	9.9	0.6	4.0	-4.0	1.0200	9.7	0.9984	35.3	64	6
6750	BON13.8	13.800	G3	9.9	0.6	4.0	-4.0	1.0200	9.7	0.9984	35.3	64	6
SUBSYSTEM TOTALS				1622.3	16.7	799.5	-693.8				2170.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 06 2011 18:22
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013

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
6127		MIR13B		12.000	G6	18.0	2.1	8.0	0.0	1.0100	17.9	0.9931	27.7			65	7
6128		MIR13C		12.000	G3	20.0	9.5	11.0	0.0	1.0100	21.9	0.9040	29.4			65	7
6129		MIR13D		13.800	G4	25.1	11.8	15.0	0.0	1.0100	27.4	0.9055	44.1			65	7
6130		MIR13F		13.800	G5	17.0	3.2	8.0	0.0	1.0100	17.1	0.9830	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9920	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	1.1	6.0	-6.0	1.0100	10.0	0.9939	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	1.1	6.0	-6.0	1.0100	10.0	0.9939	13.0			65	7
SUBSYSTEM TOTALS				110.1	30.0	60.0	-18.0						167.9				



1199

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 06 2011 18:22
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0075	115.86	6004		PANII115		115.00	6	1.0087	116.00
6009		LSA115		115.00	6	1.0241	117.77	6012		MDN115		115.00	6	1.0186	117.14
6015		PRO115		115.00	6	1.0142	116.64	6018		CAC115		115.00	6	1.0073	115.84
6019		CVI115A		115.00	6	1.0025	115.29	6027		LOC115A		115.00	6	1.0005	115.05
6036		SMA115		115.00	6	1.0059	115.68	6055		MOS115B		115.00	6	1.0058	115.66
6057		TOC115		115.00	6	1.0056	115.64	6059		LM1115		115.00	6	1.0081	115.93
6060		LM2115		115.00	6	1.0082	115.94	6066		FFIELD		115.00	6	1.0071	115.81
6074		LMDIST		115.00	6	1.0081	115.93	6087		CAL115		115.00	6	1.0235	117.70
6088		LES115		115.00	6	1.0261	118.00	6092		LVA115		115.00	6	1.0235	117.71
6123		MIR115		115.00	7	1.0194	117.23	6170		CPA115		115.00	6	1.0083	115.96
6173		STR115		115.00	6	1.0081	115.93	6174		PM115-1A		115.00	6	1.0087	116.00
6175		PM115-2A		115.00	6	1.0087	116.00	6210		TIN115		115.00	6	1.0051	115.58
6211		PM115-9		115.00	6	1.0055	115.63	6261		CHA 115		115.00	6	1.0189	117.18
6270		CAT 115		115.00	6	1.0083	115.95	6280		GIR 115		115.00	6	1.0085	115.98
6290		CATII 11		115.00	6	1.0081	115.93	6331		BAI115		115.00	6	1.0080	115.92
6332		BAM115		115.00	6	1.0121	116.40	6350		PM115-8		115.00	6	1.0034	115.39
6550		CHAZ115		115.00	6	1.0142	116.64	6580		LBO115		115.00	6	1.0022	115.25

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6006		CHO115		115.00	6	0.9831	113.06	6024		CHI115		115.00	6	0.9981	114.78
6032		MAR115A		115.00	6	0.9989	114.88	6040		SFR115		115.00	6	0.9986	114.84
6047		CLA115		115.00	6	0.9928	114.17	6230		CBA115		115.00	6	0.9995	114.94



1200

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 06 2011 18:22
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6027	LOC115A	115.00*	6 3WNTDR	LOC	T3	WND 2	6 T3		44.9	47.0	95.5	--	--	--	--
6060	LM2115	115.00	6	6074	LMDIST	115.00*	6 26		87.7	90.6	96.8	--	--	--	--
6092	LVA115	115.00*	6 3WNTDR	TRAF01		WND 1	6 T1		53.1	54.0	98.4	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 06 2011 18:22
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *

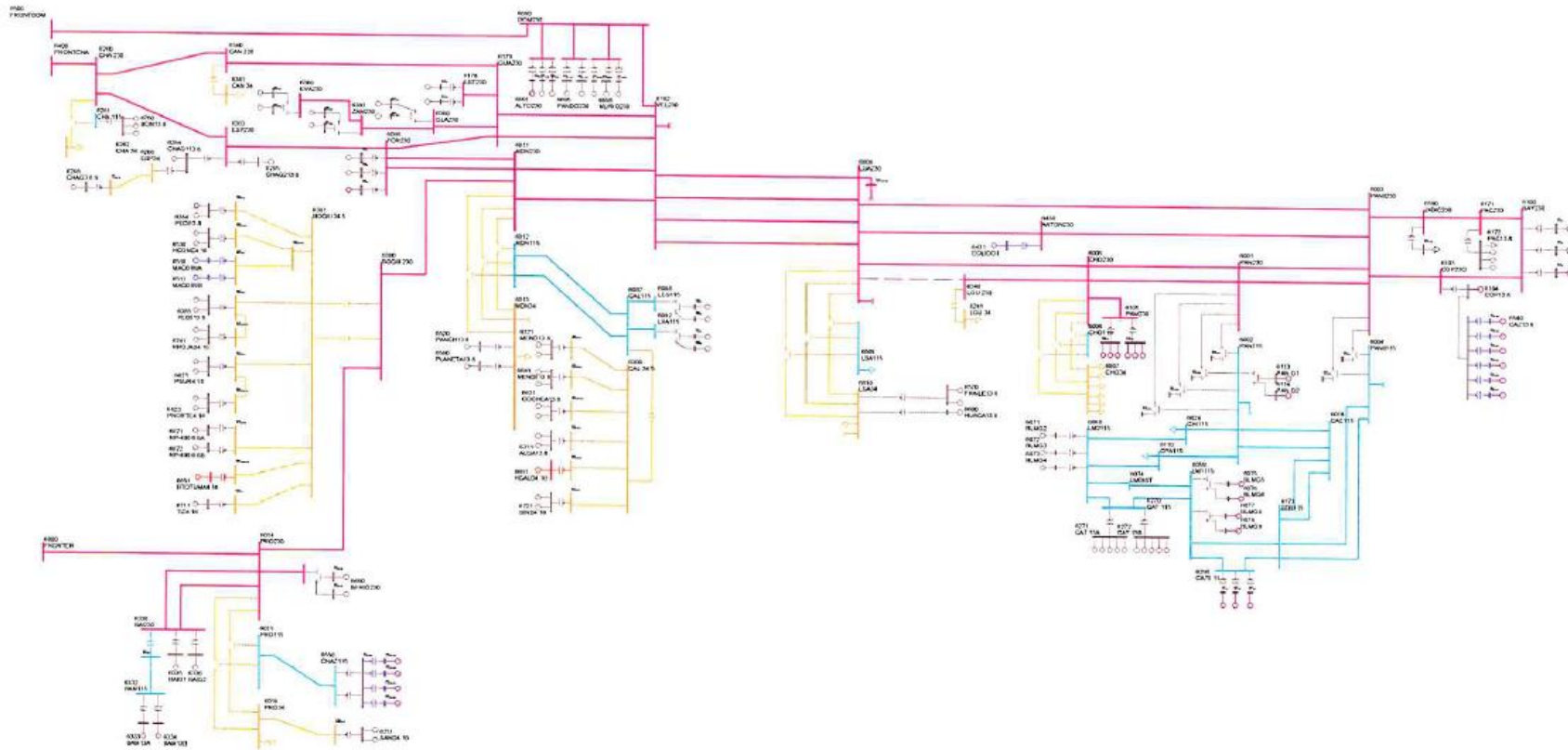


1201

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 06 2011 18:22
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO			-NET INTERCHANGE-				DESIRED NET INT
	GENE- RATION	ASSIGNED TO AREA	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	906.3 237.5	1184.2 342.4	0.0 212.4	0.0 0.0	0.0 0.0	0.0 577.6	22.0 247.0	-300.0 13.4	-300.0 13.4	-300.0
2 SALVADOR	1046.1 309.8	1012.0 336.5	0.0 -158.1	0.0 0.0	0.0 0.0	0.0 240.8	34.1 313.7	0.0 58.5	0.0 58.5	0.0
3 HONDURAS	1096.2 451.0	1056.7 346.4	0.0 -27.9	0.0 0.0	0.0 0.0	0.0 349.1	39.5 465.1	0.0 16.4	0.0 16.4	0.0
4 NICARAGU	508.4 81.7	489.7 193.1	0.0 -8.0	0.0 0.0	0.0 0.0	0.0 186.0	18.7 190.0	0.0 -107.4	0.0 -107.4	0.0
5 COSTA RI	1305.5 129.9	1280.1 509.8	0.0 -231.4	0.0 0.0	0.0 0.0	0.0 552.4	25.4 333.2	0.0 70.7	0.0 70.7	0.0
6 PANAMA	1622.3 16.7	1306.7 228.9	0.0 -403.8	0.0 0.0	0.0 0.0	0.0 498.5	75.5 763.0	240.1 -72.9	240.1 -72.9	240.0
7 ACANAL	110.1 30.0	46.7 8.2	0.0 -15.7	0.0 0.0	0.0 0.0	0.0 0.0	3.6 16.2	59.9 21.3	59.9 21.3	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	6594.9 1256.6	6376.1 1965.4	0.0 -632.6	0.0 0.0	0.0 0.0	0.0 2404.4	218.8 2328.2	0.0 0.0	0.0 0.0	0.0

Contingencia 2: Llano Sánchez – Las Guías





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 2

SAT, MAY 07 2011 9:54

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	8.9	15.0	0.0	1.0200	38.3	0.9735	47.0			62	6
6072		BLMG3		13.800	V3	38.0	8.9	15.0	0.0	1.0200	38.3	0.9735	47.0			62	6
6073		BLMG4		13.800	V4	38.0	4.4	15.0	0.0	1.0100	37.9	0.9934	47.0			62	6
6090		LESG1		13.800	E1	22.4	4.4	12.0	-5.0	1.0100	22.6	0.9812	27.0			64	6
6091		LESG2		13.800	E2	22.4	4.4	12.0	-5.0	1.0100	22.6	0.9812	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-2.2	12.0	-5.0	1.0100	25.9	0.9964	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-2.2	12.0	-5.0	1.0100	25.9	0.9964	27.0			64	6
6097		FORG1		13.800	F1	65.0	6.9	50.0	-50.0	1.0100	64.7	0.9944	111.0			64	6
6098		FORG2		13.800	F2	65.0	-15.5	50.0	-50.0	0.9850	67.9	0.9726	111.0			64	6
6101		BAYG1		13.800	B1	48.1	25.4	30.0	-25.0	1.0100	53.8	0.8843	94.0			61	6
6102		BAYG2		13.800	B2	48.1	17.3	30.0	-25.0	1.0000	51.1	0.9407	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9690	19.8	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9690	19.8	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9690	19.8	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	13.0	29.0	-29.0	1.0200	57.3	0.9750	69.0			64	6
6177		ESTG2		13.800	E2	57.0	13.0	29.0	-29.0	1.0200	57.3	0.9750	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	4.3	52.4	-48.9	1.0200	97.7	0.9991	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	7.6	52.4	-48.9	1.0200	97.9	0.9971	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0165	10.3	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.0	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.0	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.0	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.0	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.0	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.0	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.0	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.0	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.0	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.0	5.6	-5.6	1.0000	8.3	1.0000	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	-0.1	2.0	-2.0	1.0000	3.7	0.9996	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	-0.1	2.0	-2.0	1.0000	3.7	0.9996	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	-0.1	2.0	-2.0	1.0000	3.7	0.9996	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	-0.1	2.0	-2.0	1.0000	3.7	0.9996	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	-0.2	2.5	-2.5	1.0000	8.3	0.9997	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	-0.2	2.5	-2.5	1.0000	8.3	0.9997	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	-0.2	2.5	-2.5	1.0000	8.3	0.9997	10.9			62	6
6282		GIR 13B		13.800	G8	8.3	-0.2	2.5	-2.5	1.0000	8.3	0.9997	10.9			62	6



6311	ALGA13.8	13.800	A1	4.6	0.3	2.3	-2.3	1.0000	4.6	0.9983	5.7	64	6
6311	ALGA13.8	13.800	A2	4.6	0.3	2.3	-2.3	1.0000	4.6	0.9983	5.7	64	6
6321	MEND13.8	13.800	M1	8.4	1.6	4.2	-4.2	1.0000	8.6	0.9823	10.4	64	6
6321	MEND13.8	13.800	M2	8.4	1.6	4.2	-4.2	1.0000	8.6	0.9823	10.4	64	6
6333	BAM13A	13.800	G1	26.6	2.0	10.0	-10.0	1.0100	26.4	0.9973	30.0	64	6
6334	BAM13B	13.800	G2	26.6	2.0	10.0	-10.0	1.0100	26.4	0.9973	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-4.3	14.0	-14.0	1.0100	41.9	0.9948	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-4.3	14.0	-14.0	1.0100	41.9	0.9948	49.0	64	6
6361	GLA13A	13.800	G1	12.1	1.8	7.8	-7.0	1.0100	12.1	0.9892	14.1	64	6
6362	GLA13B	13.800	G2	12.1	1.8	7.8	-7.0	1.0100	12.1	0.9892	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-2.1	7.8	-7.0	1.0100	16.0	0.9915	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-2.1	7.8	-7.0	1.0100	16.0	0.9915	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-4.0	8.0	-8.0	1.0100	26.6	0.9891	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-4.0	8.0	-8.0	1.0100	26.6	0.9891	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	-1.7	4.9	-4.9	1.0000	9.7	0.9843	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	-1.7	4.9	-4.9	1.0000	9.7	0.9843	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	-2.9	3.2	-3.6	1.0000	6.8	0.9069	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	-2.9	3.2	-3.6	1.0000	6.8	0.9069	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	10.5	10.5	-10.5	0.9962	61.1	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0133	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0133	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9661	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0012	5.4	0.8851	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0012	5.4	0.8851	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9661	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9467	3.0	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9467	3.0	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9467	5.6	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	2.5	2.5	-2.5	1.0163	5.3	0.8851	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	2.5	2.5	-2.5	1.0163	5.3	0.8851	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	2.5	2.5	-2.5	1.0191	5.3	0.8851	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	2.5	2.5	-2.5	1.0191	5.3	0.8851	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.8	1.1	3.7	-3.7	1.0200	6.7	0.9860	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.8	1.1	3.7	-3.7	1.0200	6.7	0.9860	8.4	64	6
6641	MENDII13.8	13.800	G1	3.5	1.9	1.9	-1.9	1.0195	3.9	0.8813	4.1	64	6
6641	MENDII13.8	13.800	G2	3.5	1.9	1.9	-1.9	1.0195	3.9	0.8813	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	1.0069	5.3	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.6	-2.0	2.0	-2.0	1.0394	3.9	0.8793	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.9	2.3	-2.6	1.0200	6.7	0.9907	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.9	2.3	-2.6	1.0200	6.7	0.9907	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	0.4	8.0	-8.0	1.0200	26.1	0.9999	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	0.4	8.0	-8.0	1.0200	26.1	0.9999	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0095	23.3	0.9074	24.9	64	6



6693	ALTO13B	13.800	G2	21.3	-3.2	9.9	-9.9	1.0000	21.6	0.9886	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-0.7	12.8	-8.3	1.0000	15.8	0.9990	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-0.7	12.8	-8.3	1.0000	15.8	0.9990	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-0.5	12.8	-8.3	1.0000	15.8	0.9995	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-0.5	12.8	-8.3	1.0000	15.8	0.9995	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-0.5	12.8	-8.3	1.0000	15.8	0.9995	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	-2.3	2.3	-2.3	1.0018	4.9	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.5	-2.5	2.5	-2.5	1.0380	5.0	0.8744	5.6	64	6
6721	SIND4.16	4.2000	G2	4.5	-2.5	2.5	-2.5	1.0380	5.0	0.8744	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0016	4.8	0.8892	5.0	64	6
6731	SAND4.16	4.2000	G2	4.8	-2.2	2.2	-2.2	1.0016	5.2	0.9074	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	2.1	2.1	-2.1	1.0139	4.5	0.8892	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	2.1	2.1	-2.1	1.0139	4.5	0.8892	4.8	64	6
6750	BON13.8	13.800	G1	9.9	0.8	4.0	-4.0	1.0200	9.7	0.9970	35.3	64	6
6750	BON13.8	13.800	G2	9.9	0.8	4.0	-4.0	1.0200	9.7	0.9970	35.3	64	6
6750	BON13.8	13.800	G3	9.9	0.8	4.0	-4.0	1.0200	9.7	0.9970	35.3	64	6
SUBSYSTEM TOTALS				1633.7	142.5	829.5	-718.8				2264.8		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 9:54
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 2

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
6127		MIR13B		12.000	G6	18.0	2.9	8.0	0.0	1.0100	18.1	0.9870	27.7			65	7
6128		MIR13C		12.000	G3	20.0	10.1	11.0	0.0	1.0100	22.2	0.8920	29.4			65	7
6129		MIR13D		13.800	G4	25.1	12.6	15.0	0.0	1.0100	27.8	0.8936	44.1			65	7
6130		MIR13F		13.800	G5	17.0	4.1	8.0	0.0	1.0100	17.3	0.9717	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	1.4	6.0	-6.0	1.0100	10.0	0.9898	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	1.2	6.0	-6.0	1.0100	10.0	0.9924	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	1.2	6.0	-6.0	1.0100	10.0	0.9924	13.0			65	7
SUBSYSTEM TOTALS						110.1	33.7	60.0	-18.0				167.9				



1206

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 9:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 2

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0182	234.20	6011		MDN230		230.00	6	1.0025	230.58
6014		PRO230		230.00	6	1.0169	233.88	6096		FOR230		230.00	6	1.0050	231.15
6100		BAY230		230.00	6	1.0043	230.98	6178		EST230		230.00	6	1.0021	230.49
6179		GUA230		230.00	6	1.0021	230.49	6260		CHA 230		230.00	6	1.0212	234.89
6263		ESP230		230.00	6	1.0243	235.58	6330		BAI230		230.00	6	1.0173	233.98
6340		CAN 230		230.00	6	1.0098	232.25	6360		GLA230		230.00	6	1.0077	231.76
6363		ZAM230		230.00	6	1.0132	233.03	6366		EVA230		230.00	6	1.0161	233.71
6380		BOQIII 230		230.00	6	1.0106	232.45	6400		FRONTCHA		230.00	6	1.0208	234.78
6500		FRONTDOM		230.00	6	1.0244	235.61	6680		BFRIO230		230.00	6	1.0202	234.63
6690		DOM230		230.00	6	1.0247	235.68	6691		ALTO230		230.00	6	1.0276	236.34
6695		PANDO230		230.00	6	1.0254	235.84	6698		MLIRIO230		230.00	6	1.0253	235.82

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)
6001		PAN230		230.00	6	0.9719	223.54	6003		PANII230		230.00	6	0.9818	225.82
6005		CHO230		230.00	6	0.9572	220.15	6008		LSA230		230.00	6	0.9747	224.18
6103		COP230		230.00	6	0.9857	226.71	6105		PAM230		230.00	6	0.9572	220.15
6171		PAC230		230.00	6	0.9920	228.16	6182		VEL230		230.00	6	0.9892	227.51
6240		LGU 230		230.00	6	0.9544	219.52	6430		ANTON230		230.00	6	0.9903	227.76
6450		LSA CAP 230		230.00	6	0.9747	224.18	6590		24DIC230		230.00	6	0.9866	226.92



1207

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 9:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 2

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6004		PANII115		115.00	6	1.0009	115.11	6012		MDN115		115.00	6	1.0134	116.54
6015		PRO115		115.00	6	1.0120	116.38	6059		LM1115		115.00	6	1.0038	115.44
6060		LM2115		115.00	6	1.0040	115.45	6066		FFIELD		115.00	6	1.0028	115.33
6074		LMDIST		115.00	6	1.0038	115.44	6087		CAL115		115.00	6	1.0204	117.35
6088		LES115		115.00	6	1.0234	117.69	6092		LVA115		115.00	6	1.0206	117.37
6123		MIR115		115.00	7	1.0124	116.42	6170		CPA115		115.00	6	1.0040	115.46
6173		STR115		115.00	6	1.0031	115.35	6174		PM115-1A		115.00	6	1.0022	115.26
6175		PM115-2A		115.00	6	1.0022	115.26	6261		CHA 115		115.00	6	1.0170	116.96
6270		CAT 115		115.00	6	1.0041	115.47	6280		GIR 115		115.00	6	1.0044	115.51
6290		CATII 11		115.00	6	1.0037	115.43	6331		BAI115		115.00	6	1.0066	115.76
6332		BAM115		115.00	6	1.0111	116.27	6550		CHAZ115		115.00	6	1.0120	116.38

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	0.9992	114.91	6006		CHO115		115.00	6	0.9440	108.56
6009		LSA115		115.00	6	0.9909	113.96	6018		CAC115		115.00	6	0.9991	114.89
6019		CVI115A		115.00	6	0.9944	114.36	6024		CHI115		115.00	6	0.9914	114.02
6027		LOC115A		115.00	6	0.9921	114.09	6032		MAR115A		115.00	6	0.9905	113.91
6036		SMA115		115.00	6	0.9976	114.72	6040		SFR115		115.00	6	0.9902	113.87
6047		CLA115		115.00	6	0.9861	113.40	6055		MOS115B		115.00	6	0.9974	114.70
6057		TOC115		115.00	6	0.9977	114.74	6210		TIN115		115.00	6	0.9967	114.62
6211		PM115-9		115.00	6	0.9971	114.67	6230		CBA115		115.00	6	0.9911	113.97
6350		PM115-8		115.00	6	0.9950	114.43	6580		LBO115		115.00	6	0.9940	114.31



1208

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 9:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 2
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6027	LOC115A	115.00*	6	3WNTDR	LOC T3	WND 2	6	T3	44.9	47.0	95.6	--	--	--	--
6060	LM2115	115.00	6	6074	LMDIST	115.00*	6	26	87.2	90.6	96.2	--	--	--	--
6092	LVA115	115.00*	6	3WNTDR	TRAF01	WND 1	6	T1	52.8	54.0	97.8	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 9:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 2
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

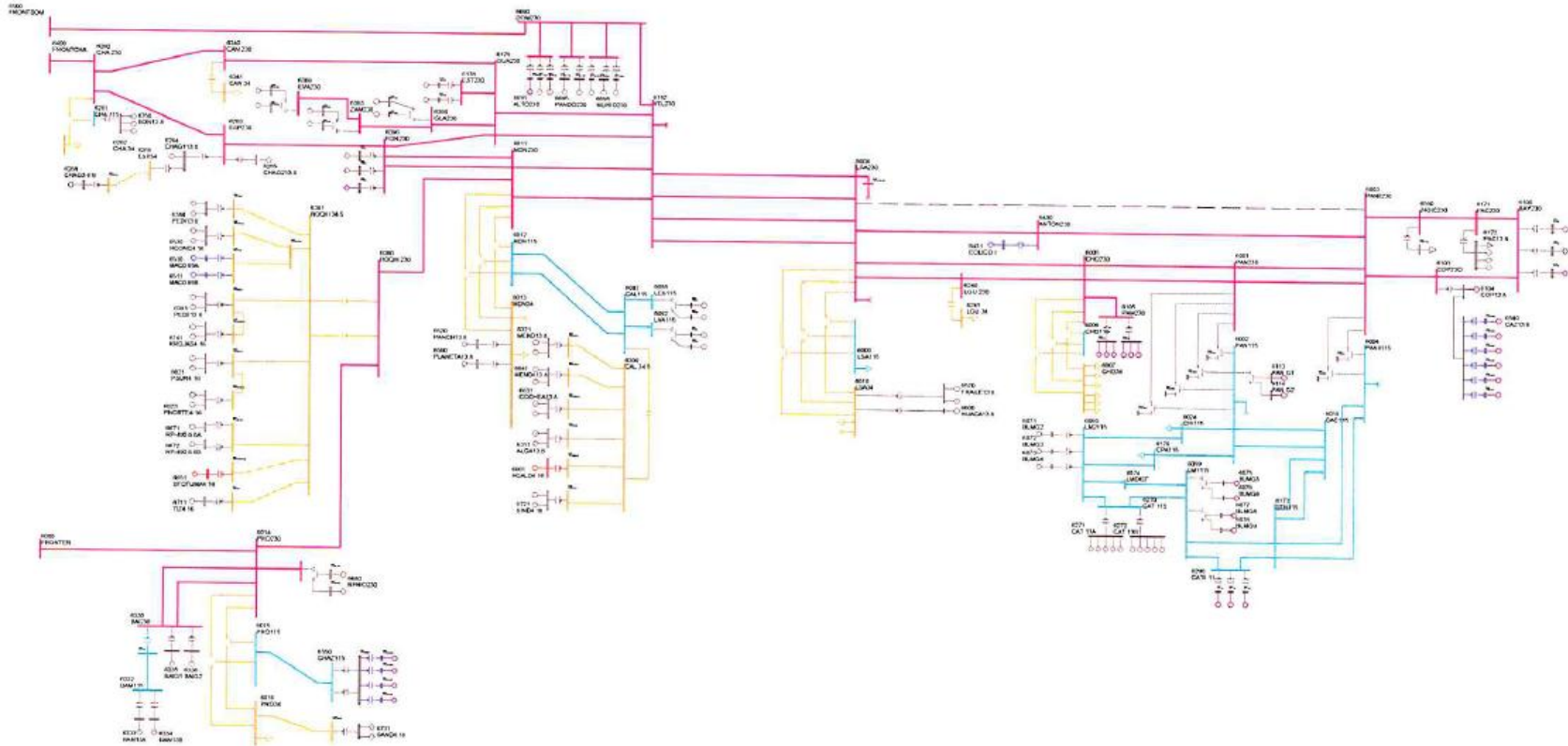
FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						SAT, MAY 07 2011 9:56		AREA TOTALS			
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						IN MW/MVAR					
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 2											
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT	
	RATION	BUSES						LINES	+ LOADS		
1	906.3	1184.2	0.0	0.0	0.0	0.0	22.0	-300.0	-300.0	-300.0	
GUATEMAL	237.5	342.4	212.4	0.0	0.0	577.6	247.0	13.4	13.4		
2	1046.1	1012.0	0.0	0.0	0.0	0.0	34.1	0.0	0.0	0.0	
SALVADOR	309.8	336.5	-158.1	0.0	0.0	240.8	313.7	58.5	58.5		
3	1096.2	1056.7	0.0	0.0	0.0	0.0	39.5	0.0	0.0	0.0	
HONDURAS	451.0	346.4	-27.9	0.0	0.0	349.1	465.1	16.4	16.4		
4	508.4	489.7	0.0	0.0	0.0	0.0	18.7	0.0	0.0	0.0	
NICARAGU	81.8	193.1	-8.0	0.0	0.0	186.0	190.0	-107.3	-107.3		
5	1305.5	1280.1	0.0	0.0	0.0	0.0	25.5	-0.1	-0.1	0.0	
COSTA RI	133.9	509.8	-231.2	0.0	0.0	551.9	333.5	73.7	73.7		
6	1633.7	1306.7	0.0	0.0	0.0	0.0	86.7	240.3	240.3	240.0	
PANAMA	142.5	228.9	-393.3	0.0	0.0	469.5	855.5	-79.2	-79.2		
7	110.1	46.7	0.0	0.0	0.0	0.0	3.6	59.8	59.8	60.0	
ACANAL	33.7	8.2	-15.7	0.0	0.0	0.0	16.7	24.5	24.5		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	6606.3	6376.1	0.0	0.0	0.0	0.0	230.2	0.0	0.0	0.0	
TOTALS	1390.2	1965.4	-621.9	0.0	0.0	2374.8	2421.5	0.0	0.0		

Contingencia 3: Llano Sánchez – Panama II





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 3

SAT, MAY 07 2011 10:17

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
6071		BLMG2		13.800	V2	38.0	12.7	15.0	0.0	1.0200	39.3	0.9481	47.0			62	6
6072		BLMG3		13.800	V3	38.0	12.7	15.0	0.0	1.0200	39.3	0.9481	47.0			62	6
6073		BLMG4		13.800	V4	38.0	8.4	15.0	0.0	1.0100	38.5	0.9766	47.0			62	6
6090		LESG1		13.800	E1	22.4	4.3	12.0	-5.0	1.0100	22.6	0.9821	27.0			64	6
6091		LESG2		13.800	E2	22.4	4.3	12.0	-5.0	1.0100	22.6	0.9821	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-2.3	12.0	-5.0	1.0100	25.9	0.9960	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-2.3	12.0	-5.0	1.0100	25.9	0.9960	27.0			64	6
6097		FORG1		13.800	F1	65.0	6.3	50.0	-50.0	1.0100	64.7	0.9954	111.0			64	6
6098		FORG2		13.800	F2	65.0	-16.2	50.0	-50.0	0.9850	68.0	0.9705	111.0			64	6
6101		BAYG1		13.800	B1	48.9	21.4	30.0	-25.0	1.0100	52.9	0.9163	94.0			61	6
6102		BAYG2		13.800	B2	48.9	13.4	30.0	-25.0	1.0000	50.7	0.9646	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9753	19.7	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9753	19.7	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9753	19.7	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	12.9	29.0	-29.0	1.0200	57.3	0.9755	69.0			64	6
6177		ESTG2		13.800	E2	57.0	12.9	29.0	-29.0	1.0200	57.3	0.9755	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	4.0	52.4	-48.9	1.0200	97.7	0.9992	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	7.4	52.4	-48.9	1.0200	97.9	0.9973	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0165	10.3	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.8	5.6	-5.6	1.0000	8.3	0.9958	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.8	5.6	-5.6	1.0000	8.3	0.9958	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.8	5.6	-5.6	1.0000	8.3	0.9958	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.8	5.6	-5.6	1.0000	8.3	0.9958	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.8	5.6	-5.6	1.0000	8.3	0.9958	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.8	5.6	-5.6	1.0000	8.3	0.9958	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.8	5.6	-5.6	1.0000	8.3	0.9958	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.8	5.6	-5.6	1.0000	8.3	0.9958	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.8	5.6	-5.6	1.0000	8.3	0.9958	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.8	5.6	-5.6	1.0000	8.3	0.9958	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	0.3	2.0	-2.0	1.0000	3.7	0.9962	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	0.3	2.0	-2.0	1.0000	3.7	0.9962	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	0.3	2.0	-2.0	1.0000	3.7	0.9962	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	0.3	2.0	-2.0	1.0000	3.7	0.9962	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	0.7	2.5	-2.5	1.0000	8.3	0.9963	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	0.7	2.5	-2.5	1.0000	8.3	0.9963	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	0.7	2.5	-2.5	1.0000	8.3	0.9963	10.9			62	6
6282		GIR 13B		13.800	G8	8.3	0.7	2.5	-2.5	1.0000	8.3	0.9963	10.9			62	6



6311	ALGA13.8	13.800	A1	4.6	0.3	2.3	-2.3	1.0000	4.6	0.9984	5.7	64	6
6311	ALGA13.8	13.800	A2	4.6	0.3	2.3	-2.3	1.0000	4.6	0.9984	5.7	64	6
6321	MEND13.8	13.800	M1	8.4	1.6	4.2	-4.2	1.0000	8.6	0.9828	10.4	64	6
6321	MEND13.8	13.800	M2	8.4	1.6	4.2	-4.2	1.0000	8.6	0.9828	10.4	64	6
6333	BAM13A	13.800	G1	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9974	30.0	64	6
6334	BAM13B	13.800	G2	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9974	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-4.5	14.0	-14.0	1.0100	42.0	0.9944	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-4.5	14.0	-14.0	1.0100	42.0	0.9944	49.0	64	6
6361	GLA13A	13.800	G1	12.1	1.3	7.8	-7.0	1.0100	12.0	0.9941	14.1	64	6
6362	GLA13B	13.800	G2	12.1	1.3	7.8	-7.0	1.0100	12.0	0.9941	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-2.5	7.8	-7.0	1.0100	16.1	0.9878	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-2.5	7.8	-7.0	1.0100	16.1	0.9878	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-4.4	8.0	-8.0	1.0100	26.7	0.9869	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-4.4	8.0	-8.0	1.0100	26.7	0.9869	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	-1.8	4.9	-4.9	1.0000	9.7	0.9830	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	-1.8	4.9	-4.9	1.0000	9.7	0.9830	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	-2.9	3.2	-3.6	1.0000	6.8	0.9031	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	-2.9	3.2	-3.6	1.0000	6.8	0.9031	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	7.6	10.5	-10.5	1.0000	60.5	0.9921	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0136	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0136	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9667	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0015	5.4	0.8851	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0015	5.4	0.8851	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9667	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9508	3.0	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9508	3.0	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9507	5.6	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	2.5	2.5	-2.5	1.0165	5.3	0.8851	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	2.5	2.5	-2.5	1.0165	5.3	0.8851	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	2.5	2.5	-2.5	1.0193	5.3	0.8851	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	2.5	2.5	-2.5	1.0193	5.3	0.8851	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.8	1.1	3.7	-3.7	1.0200	6.7	0.9870	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.8	1.1	3.7	-3.7	1.0200	6.7	0.9870	8.4	64	6
6641	MENDII13.8	13.800	G1	3.5	1.9	1.9	-1.9	1.0196	3.9	0.8813	4.1	64	6
6641	MENDII13.8	13.800	G2	3.5	1.9	1.9	-1.9	1.0196	3.9	0.8813	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	1.0072	5.3	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.6	-2.0	2.0	-2.0	1.0395	3.9	0.8793	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.9	2.3	-2.6	1.0200	6.7	0.9908	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.9	2.3	-2.6	1.0200	6.7	0.9908	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	0.2	8.0	-8.0	1.0200	26.1	1.0000	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	0.2	8.0	-8.0	1.0200	26.1	1.0000	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0097	23.3	0.9074	24.9	64	6



1213

6693	ALTO13B	13.800	G2	21.3	-3.5	9.9	-9.9	1.0000	21.6	0.9868	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-0.9	12.8	-8.3	1.0000	15.8	0.9983	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-0.9	12.8	-8.3	1.0000	15.8	0.9983	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-0.7	12.8	-8.3	1.0000	15.8	0.9989	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-0.7	12.8	-8.3	1.0000	15.8	0.9989	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-0.7	12.8	-8.3	1.0000	15.8	0.9989	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	-2.3	2.3	-2.3	1.0020	4.9	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.5	-2.5	2.5	-2.5	1.0381	5.0	0.8744	5.6	64	6
6721	SIND4.16	4.2000	G2	4.5	-2.5	2.5	-2.5	1.0381	5.0	0.8744	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0019	4.8	0.8892	5.0	64	6
6731	SAND4.16	4.2000	G2	4.8	-2.2	2.2	-2.2	1.0019	5.2	0.9074	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	2.1	2.1	-2.1	1.0141	4.5	0.8892	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	2.1	2.1	-2.1	1.0141	4.5	0.8892	4.8	64	6
6750	BON13.8	13.800	G1	9.9	0.7	4.0	-4.0	1.0200	9.7	0.9972	35.3	64	6
6750	BON13.8	13.800	G2	9.9	0.7	4.0	-4.0	1.0200	9.7	0.9972	35.3	64	6
6750	BON13.8	13.800	G3	9.9	0.7	4.0	-4.0	1.0200	9.7	0.9972	35.3	64	6
SUBSYSTEM TOTALS				1635.5	148.1	829.5	-718.8				2264.8		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:17
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 3

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
6127		MIR13B		12.000	G6	18.0	4.6	8.0	0.0	1.0100	18.4	0.9687	27.7			65	7
6128		MIR13C		12.000	G3	20.0	11.0	11.0	0.0	1.0084	22.6	0.8762	29.4			65	7
6129		MIR13D		13.800	G4	25.1	14.4	15.0	0.0	1.0100	28.6	0.8676	44.1			65	7
6130		MIR13F		13.800	G5	17.0	6.2	8.0	0.0	1.0100	17.9	0.9402	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	1.8	6.0	-6.0	1.0100	10.1	0.9838	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	1.5	6.0	-6.0	1.0100	10.0	0.9882	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	1.5	6.0	-6.0	1.0100	10.0	0.9882	13.0			65	7
SUBSYSTEM TOTALS						110.1	41.1	60.0	-18.0				167.9				



1214

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:17
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 3

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0185	234.26	6011		MDN230		230.00	6	1.0034	230.78
6014		PRO230		230.00	6	1.0172	233.95	6096		FOR230		230.00	6	1.0057	231.30
6100		BAY230		230.00	6	1.0095	232.19	6178		EST230		230.00	6	1.0029	230.66
6179		GUA230		230.00	6	1.0029	230.66	6260		CHA 230		230.00	6	1.0216	234.96
6263		ESP230		230.00	6	1.0246	235.65	6330		BAI230		230.00	6	1.0176	234.04
6340		CAN 230		230.00	6	1.0104	232.39	6360		GLA230		230.00	6	1.0083	231.91
6363		ZAM230		230.00	6	1.0138	233.16	6366		EVA230		230.00	6	1.0167	233.84
6380		BOQIII 230		230.00	6	1.0112	232.57	6400		FRONTCHA		230.00	6	1.0211	234.86
6500		FRONTDOM		230.00	6	1.0246	235.66	6680		BFRIO230		230.00	6	1.0204	234.70
6690		DOM230		230.00	6	1.0249	235.73	6691		ALTO230		230.00	6	1.0277	236.38
6695		PANDO230		230.00	6	1.0255	235.87	6698		MLIRIO230		230.00	6	1.0254	235.85

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9794	225.27	6003		PANII230		230.00	6	0.9894	227.57
6005		CHO230		230.00	6	0.9628	221.44	6008		LSA230		230.00	6	0.9788	225.12
6103		COP230		230.00	6	0.9929	228.38	6105		PAM230		230.00	6	0.9628	221.44
6171		PAC230		230.00	6	0.9989	229.75	6182		VEL230		230.00	6	0.9913	227.99
6240		LGU 230		230.00	6	0.9615	221.15	6430		ANTON230		230.00	6	0.9950	228.86
6450		LSA CAP 230		230.00	6	0.9788	225.12	6590		24DIC230		230.00	6	0.9939	228.59



1216

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:17
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 3
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6027	LOC115A	115.00*	6	3WNTDR	LOC T3	WND 2	6	T3	45.0	47.0	95.8	--	--	--	--
6060	LM2115	115.00*	6	6074	LMDIST	115.00	6	26	89.3	90.6	98.6	--	--	--	--
6092	LVA115	115.00*	6	3WNTDR	TRAF01	WND 1	6	T1	52.8	54.0	97.8	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:17
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 3
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

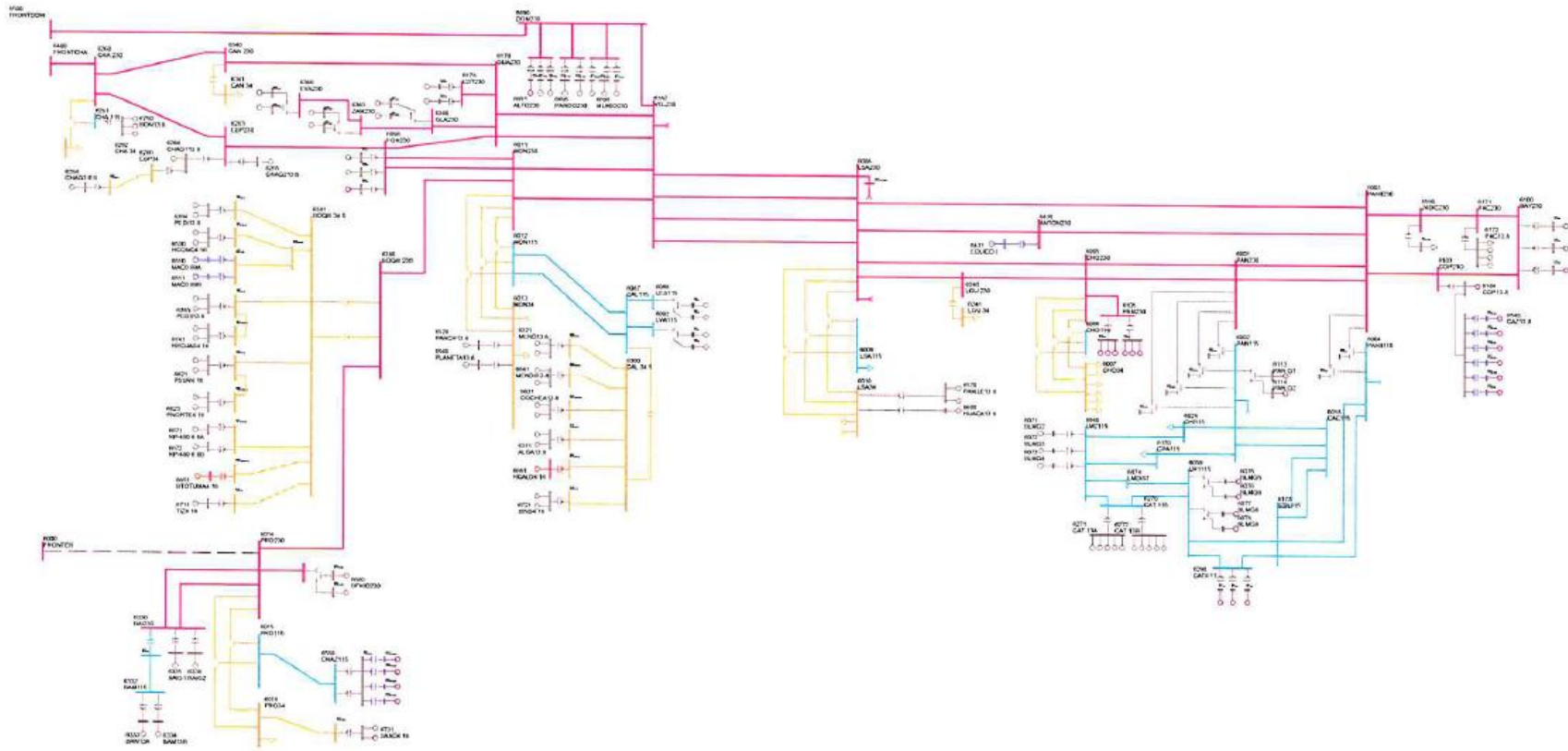
* NONE *



1217

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						SAT, MAY 07 2011 10:17		AREA TOTALS		
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						IN MW/MVAR				
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 3										
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT
	RATION	BUSES						LINES	+ LOADS	
1	906.3	1184.2	0.0	0.0	0.0	0.0	22.0	-300.0	-300.0	-300.0
GUATEMAL	237.5	342.4	212.4	0.0	0.0	577.6	247.0	13.4	13.4	
2	1046.1	1012.0	0.0	0.0	0.0	0.0	34.1	0.0	0.0	0.0
SALVADOR	309.8	336.5	-158.1	0.0	0.0	240.8	313.7	58.5	58.5	
3	1096.2	1056.7	0.0	0.0	0.0	0.0	39.5	0.0	0.0	0.0
HONDURAS	451.0	346.4	-27.9	0.0	0.0	349.1	465.1	16.4	16.4	
4	508.4	489.7	0.0	0.0	0.0	0.0	18.7	0.0	0.0	0.0
NICARAGU	81.8	193.1	-8.0	0.0	0.0	186.0	190.0	-107.3	-107.3	
5	1305.5	1280.1	0.0	0.0	0.0	0.0	25.5	0.0	0.0	0.0
COSTA RI	133.4	509.8	-231.2	0.0	0.0	552.0	333.5	73.3	73.3	
6	1635.5	1306.7	0.0	0.0	0.0	0.0	88.2	240.5	240.5	240.0
PANAMA	148.1	228.9	-384.1	0.0	0.0	446.3	834.5	-85.0	-85.0	
7	110.1	46.7	0.0	0.0	0.0	0.0	3.9	59.6	59.6	60.0
ACANAL	41.1	8.2	-15.5	0.0	0.0	0.0	17.8	30.7	30.7	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	6608.0	6376.1	0.0	0.0	0.0	0.0	231.9	0.0	0.0	0.0
TOTALS	1402.7	1965.4	-612.5	0.0	0.0	2351.7	2401.5	0.0	0.0	

Contingencia 7: Frontera – Progreso





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:33
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 cnt 7

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
6071		BLMG2		13.800	V2	38.0	7.4	15.0	0.0	1.0200	37.9	0.9817	47.0			62	6
6072		BLMG3		13.800	V3	38.0	7.4	15.0	0.0	1.0200	37.9	0.9817	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.8	15.0	0.0	1.0100	37.7	0.9974	47.0			62	6
6090		LESG1		13.800	E1	22.4	4.4	12.0	-5.0	1.0100	22.6	0.9811	27.0			64	6
6091		LESG2		13.800	E2	22.4	4.4	12.0	-5.0	1.0100	22.6	0.9811	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-2.2	12.0	-5.0	1.0100	25.9	0.9964	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-2.2	12.0	-5.0	1.0100	25.9	0.9964	27.0			64	6
6097		FORG1		13.800	F1	65.0	6.5	50.0	-50.0	1.0100	64.7	0.9951	111.0			64	6
6098		FORG2		13.800	F2	65.0	-16.0	50.0	-50.0	0.9850	68.0	0.9711	111.0			64	6
6101		BAYG1		13.800	B1	46.5	8.8	30.0	-25.0	1.0100	46.9	0.9824	94.0			61	6
6102		BAYG2		13.800	B2	46.5	1.0	30.0	-25.0	1.0000	46.5	0.9998	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9946	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9946	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9946	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	12.6	29.0	-29.0	1.0200	57.2	0.9763	69.0			64	6
6177		ESTG2		13.800	E2	57.0	12.6	29.0	-29.0	1.0200	57.2	0.9763	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	5.9	52.4	-48.9	1.0200	97.8	0.9982	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	9.3	52.4	-48.9	1.0200	98.1	0.9956	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0165	10.3	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	-0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9971	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9971	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9971	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	-0.3	2.0	-2.0	1.0000	3.7	0.9971	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	-0.6	2.5	-2.5	1.0000	8.3	0.9974	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	-0.6	2.5	-2.5	1.0000	8.3	0.9974	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	-0.6	2.5	-2.5	1.0000	8.3	0.9974	10.9			62	6
6282		GIR 13B		13.800	G8	8.3	-0.6	2.5	-2.5	1.0000	8.3	0.9974	10.9			62	6



6311	ALGA13.8	13.800	A1	4.6	0.3	2.3	-2.3	1.0000	4.6	0.9983	5.7	64	6
6311	ALGA13.8	13.800	A2	4.6	0.3	2.3	-2.3	1.0000	4.6	0.9983	5.7	64	6
6321	MEND13.8	13.800	M1	8.4	1.6	4.2	-4.2	1.0000	8.6	0.9822	10.4	64	6
6321	MEND13.8	13.800	M2	8.4	1.6	4.2	-4.2	1.0000	8.6	0.9822	10.4	64	6
6333	BAM13A	13.800	G1	26.6	2.4	10.0	-10.0	1.0100	26.4	0.9961	30.0	64	6
6334	BAM13B	13.800	G2	26.6	2.4	10.0	-10.0	1.0100	26.4	0.9961	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-1.2	14.0	-14.0	1.0100	41.7	0.9996	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-1.2	14.0	-14.0	1.0100	41.7	0.9996	49.0	64	6
6361	GLA13A	13.800	G1	12.1	0.5	7.8	-7.0	1.0100	12.0	0.9990	14.1	64	6
6362	GLA13B	13.800	G2	12.1	0.5	7.8	-7.0	1.0100	12.0	0.9990	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-3.2	7.8	-7.0	1.0100	16.2	0.9805	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-3.2	7.8	-7.0	1.0100	16.2	0.9805	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-5.0	8.0	-8.0	1.0100	26.8	0.9828	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-5.0	8.0	-8.0	1.0100	26.8	0.9828	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	-1.3	4.9	-4.9	1.0000	9.6	0.9912	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	-1.3	4.9	-4.9	1.0000	9.6	0.9912	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	-2.4	3.2	-3.6	1.0000	6.6	0.9304	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	-2.4	3.2	-3.6	1.0000	6.6	0.9304	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0137	60.1	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0117	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0117	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9660	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-2.3	2.5	-2.5	1.0000	5.3	0.8965	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-2.3	2.5	-2.5	1.0000	5.3	0.8965	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9660	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9743	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9743	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9742	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	2.5	2.5	-2.5	1.0146	5.3	0.8851	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	2.5	2.5	-2.5	1.0146	5.3	0.8851	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	2.5	2.5	-2.5	1.0174	5.3	0.8851	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	2.5	2.5	-2.5	1.0174	5.3	0.8851	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.8	1.1	3.7	-3.7	1.0200	6.7	0.9859	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.8	1.1	3.7	-3.7	1.0200	6.7	0.9859	8.4	64	6
6641	MENDII13.8	13.800	G1	3.5	1.9	1.9	-1.9	1.0195	3.9	0.8813	4.1	64	6
6641	MENDII13.8	13.800	G2	3.5	1.9	1.9	-1.9	1.0195	3.9	0.8813	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	1.0052	5.3	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.6	-2.0	2.0	-2.0	1.0394	3.9	0.8793	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	1.0	2.3	-2.6	1.0200	6.7	0.9897	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	1.0	2.3	-2.6	1.0200	6.7	0.9897	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	3.7	8.0	-8.0	1.0200	26.3	0.9903	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	3.7	8.0	-8.0	1.0200	26.3	0.9903	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0130	23.2	0.9074	24.9	64	6



6693	ALTO13B	13.800	G2	21.3	-8.1	9.9	-9.9	1.0000	22.8	0.9354	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-5.1	12.8	-8.3	1.0000	16.6	0.9521	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-5.1	12.8	-8.3	1.0000	16.6	0.9521	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-4.9	12.8	-8.3	1.0000	16.6	0.9550	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-4.9	12.8	-8.3	1.0000	16.6	0.9550	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-4.9	12.8	-8.3	1.0000	16.6	0.9550	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	-2.3	2.3	-2.3	1.0001	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.5	-2.5	2.5	-2.5	1.0380	5.0	0.8744	5.6	64	6
6721	SIND4.16	4.2000	G2	4.5	-2.5	2.5	-2.5	1.0380	5.0	0.8744	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-1.6	2.2	-2.2	1.0000	4.6	0.9393	5.0	64	6
6731	SAND4.16	4.2000	G2	4.8	-1.7	2.2	-2.2	1.0000	5.1	0.9393	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	2.1	2.1	-2.1	1.0131	4.5	0.8892	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	2.1	2.1	-2.1	1.0131	4.5	0.8892	4.8	64	6
6750	BON13.8	13.800	G1	9.9	1.1	4.0	-4.0	1.0200	9.8	0.9944	35.3	64	6
6750	BON13.8	13.800	G2	9.9	1.1	4.0	-4.0	1.0200	9.8	0.9944	35.3	64	6
6750	BON13.8	13.800	G3	9.9	1.1	4.0	-4.0	1.0200	9.8	0.9944	35.3	64	6
SUBSYSTEM TOTALS				1630.6	64.5	829.5	-718.8				2264.8		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:33
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 Cnt 7

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
6127		MIR13B		12.000	G6	18.0	2.3	8.0	0.0	1.0100	18.0	0.9920	27.7			65	7
6128		MIR13C		12.000	G3	20.0	9.6	11.0	0.0	1.0100	22.0	0.9016	29.4			65	7
6129		MIR13D		13.800	G4	25.1	11.9	15.0	0.0	1.0100	27.5	0.9032	44.1			65	7
6130		MIR13F		13.800	G5	17.0	3.4	8.0	0.0	1.0100	17.2	0.9810	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9916	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	1.1	6.0	-6.0	1.0100	10.0	0.9936	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	1.1	6.0	-6.0	1.0100	10.0	0.9936	13.0			65	7
SUBSYSTEM TOTALS						110.1	30.8	60.0	-18.0				167.9				



1224

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:33

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL

BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 Cnt 7

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)

LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6027	LOC115A	115.00*	6	3WNTDR	LOC T3	WND 2	6	T3	44.9	47.0	95.5	--	--
6060	LM2115	115.00	6	6074	LMDIST	115.00*	6	26	87.7	90.6	96.8	--	--
6092	LVA115	115.00*	6	3WNTDR	TRAF01	WND 1	6	T1	52.8	54.0	97.8	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:33

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL

BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013

OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)

LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

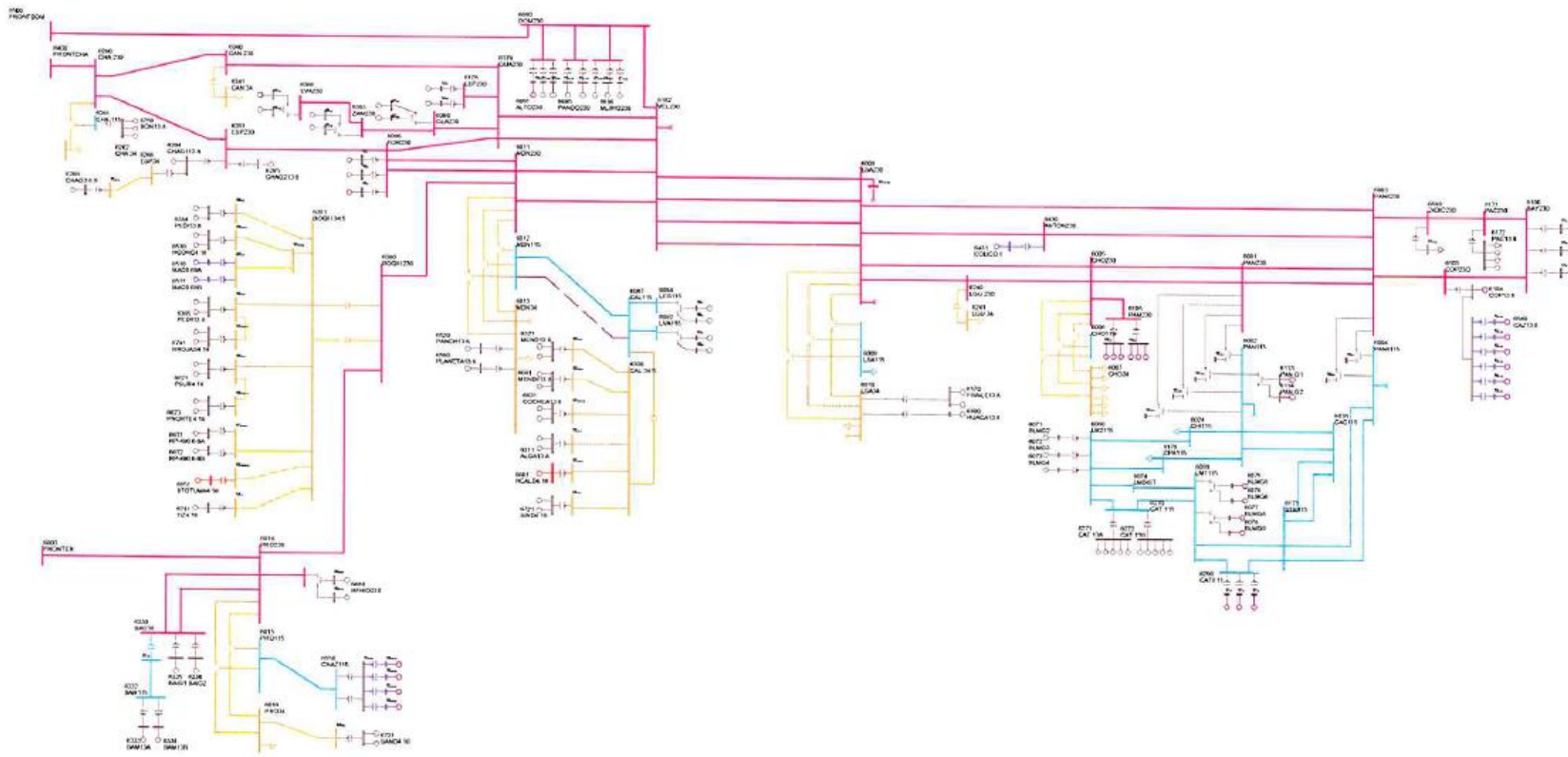
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:33
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 Cnt 7

X-- AREA --X	FROM TO LOAD		TO				IN MW/MVAR				DESIRED NET INT
	GENE- RATION	AT AREA BUSES	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	TO TIE LINES	TO TIES + LOADS		
1	906.3	1184.2	0.0	0.0	0.0	0.0	22.0	-300.0	-300.0	-300.0	
GUATEMAL	237.5	342.4	212.4	0.0	0.0	577.6	247.0	13.4	13.4		
2	1046.1	1012.0	0.0	0.0	0.0	0.0	34.1	0.0	0.0	0.0	
SALVADOR	309.8	336.5	-158.1	0.0	0.0	240.8	313.7	58.5	58.5		
3	1096.2	1056.7	0.0	0.0	0.0	0.0	39.5	0.0	0.0	0.0	
HONDURAS	450.9	346.4	-27.9	0.0	0.0	349.1	465.1	16.4	16.4		
4	508.4	489.7	0.0	0.0	0.0	0.0	18.7	0.0	0.0	0.0	
NICARAGU	81.4	193.1	-8.0	0.0	0.0	186.0	190.0	-107.7	-107.7		
5	1305.5	1280.1	0.0	0.0	0.0	0.0	27.0	-1.5	-1.5	0.0	
COSTA RI	133.4	509.8	-231.2	0.0	0.0	552.9	343.7	64.0	64.0		
6	1630.6	1306.7	0.0	0.0	0.0	0.0	82.2	241.7	241.7	240.0	
PANAMA	64.5	228.9	-402.1	0.0	0.0	493.1	797.3	-66.6	-66.6		
7	110.1	46.7	0.0	0.0	0.0	0.0	3.6	59.8	59.8	60.0	
ACANAL	30.8	8.2	-15.7	0.0	0.0	0.0	16.3	22.0	22.0		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	6603.2	6376.1	0.0	0.0	0.0	0.0	227.1	0.0	0.0	0.0	
TOTALS	1308.3	1965.4	-630.8	0.0	0.0	2399.4	2373.1	0.0	0.0		

Contingencia 13: Mata de Mance – Caldera





6311	ALGA13.8	13.800	A2	4.6	0.3	2.3	-2.3	1.0000	4.6	0.9984	5.7	64	6
6321	MEND13.8	13.800	M1	8.4	1.6	4.2	-4.2	1.0000	8.6	0.9828	10.4	64	6
6321	MEND13.8	13.800	M2	8.4	1.6	4.2	-4.2	1.0000	8.6	0.9828	10.4	64	6
6333	BAM13A	13.800	G1	26.6	1.8	10.0	-10.0	1.0100	26.4	0.9977	30.0	64	6
6334	BAM13B	13.800	G2	26.6	1.8	10.0	-10.0	1.0100	26.4	0.9977	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-5.4	14.0	-14.0	1.0100	42.1	0.9918	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-5.4	14.0	-14.0	1.0100	42.1	0.9918	49.0	64	6
6361	GLA13A	13.800	G1	12.1	-1.6	7.8	-7.0	1.0100	12.0	0.9916	14.1	64	6
6362	GLA13B	13.800	G2	12.1	-1.6	7.8	-7.0	1.0100	12.0	0.9916	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-5.1	7.8	-7.0	1.0100	16.7	0.9529	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-5.1	7.8	-7.0	1.0100	16.7	0.9529	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-6.8	8.0	-8.0	1.0100	27.2	0.9689	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-6.8	8.0	-8.0	1.0100	27.2	0.9689	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	-2.1	4.9	-4.9	1.0000	9.7	0.9772	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	-2.1	4.9	-4.9	1.0000	9.7	0.9772	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	-3.2	3.2	-3.6	1.0000	7.0	0.8861	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	-3.2	3.2	-3.6	1.0000	7.0	0.8861	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0162	59.9	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0147	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0147	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9653	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0027	5.4	0.8851	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0027	5.4	0.8851	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9653	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9779	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9779	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9778	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	2.5	2.5	-2.5	1.0175	5.3	0.8851	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	2.5	2.5	-2.5	1.0175	5.3	0.8851	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	2.3	2.5	-2.5	1.0200	5.2	0.8985	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	2.3	2.5	-2.5	1.0200	5.2	0.8985	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.8	1.1	3.7	-3.7	1.0200	6.7	0.9871	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.8	1.1	3.7	-3.7	1.0200	6.7	0.9871	8.4	64	6
6641	MENDII13.8	13.800	G1	3.5	1.9	1.9	-1.9	1.0196	3.9	0.8813	4.1	64	6
6641	MENDII13.8	13.800	G2	3.5	1.9	1.9	-1.9	1.0196	3.9	0.8813	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	1.0083	5.3	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.6	-2.0	2.0	-2.0	1.0395	3.9	0.8793	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.9	2.3	-2.6	1.0200	6.7	0.9914	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.9	2.3	-2.6	1.0200	6.7	0.9914	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-0.9	8.0	-8.0	1.0200	26.1	0.9995	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-0.9	8.0	-8.0	1.0200	26.1	0.9995	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0109	23.2	0.9074	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	-5.1	9.9	-9.9	1.0000	21.9	0.9724	24.9	64	6



6696	PANDO13A	13.800	G1	15.8	-2.4	12.8	-8.3	1.0000	16.0	0.9887	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-2.4	12.8	-8.3	1.0000	16.0	0.9887	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-2.2	12.8	-8.3	1.0000	16.0	0.9903	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-2.2	12.8	-8.3	1.0000	16.0	0.9903	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-2.2	12.8	-8.3	1.0000	16.0	0.9903	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	-2.3	2.3	-2.3	1.0032	4.9	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.5	-2.5	2.5	-2.5	1.0381	5.0	0.8744	5.6	64	6
6721	SIND4.16	4.2000	G2	4.5	-2.5	2.5	-2.5	1.0381	5.0	0.8744	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0034	4.8	0.8892	5.0	64	6
6731	SAND4.16	4.2000	G2	4.8	-2.2	2.2	-2.2	1.0034	5.2	0.9074	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	2.1	2.1	-2.1	1.0146	4.5	0.8892	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	2.1	2.1	-2.1	1.0146	4.5	0.8892	4.8	64	6
6750	BON13.8	13.800	G1	9.9	0.6	4.0	-4.0	1.0200	9.7	0.9983	35.3	64	6
6750	BON13.8	13.800	G2	9.9	0.6	4.0	-4.0	1.0200	9.7	0.9983	35.3	64	6
6750	BON13.8	13.800	G3	9.9	0.6	4.0	-4.0	1.0200	9.7	0.9983	35.3	64	6
SUBSYSTEM TOTALS				1624.2	28.1	799.5	-693.8				2170.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:41
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 13

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6127		MIR13B		12.000	G6	18.0	2.1	8.0	0.0	1.0100	17.9	0.9930	27.7			65	7
6128		MIR13C		12.000	G3	20.0	9.5	11.0	0.0	1.0100	21.9	0.9038	29.4			65	7
6129		MIR13D		13.800	G4	25.1	11.8	15.0	0.0	1.0100	27.4	0.9053	44.1			65	7
6130		MIR13F		13.800	G5	17.0	3.2	8.0	0.0	1.0100	17.1	0.9828	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9920	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	1.1	6.0	-6.0	1.0100	10.0	0.9939	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	1.1	6.0	-6.0	1.0100	10.0	0.9939	13.0			65	7
SUBSYSTEM TOTALS				110.1	30.1	60.0	-18.0						167.9				



1231

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:41
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 13

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0074	115.85	6004		PANII115		115.00	6	1.0086	115.99
6009		LSA115		115.00	6	1.0237	117.73	6012		MDN115		115.00	6	1.0133	116.53
6015		PRO115		115.00	6	1.0138	116.59	6018		CAC115		115.00	6	1.0072	115.83
6019		CVI115A		115.00	6	1.0024	115.28	6027		LOC115A		115.00	6	1.0003	115.04
6036		SMA115		115.00	6	1.0058	115.66	6055		MOS115B		115.00	6	1.0056	115.65
6057		TOC115		115.00	6	1.0055	115.63	6059		LM1115		115.00	6	1.0080	115.92
6060		LM2115		115.00	6	1.0081	115.93	6066		FFIELD		115.00	6	1.0070	115.80
6074		LMDIST		115.00	6	1.0080	115.92	6087		CAL115		115.00	6	1.0209	117.40
6088		LES115		115.00	6	1.0237	117.73	6092		LVA115		115.00	6	1.0210	117.42
6123		MIR115		115.00	7	1.0193	117.22	6170		CPA115		115.00	6	1.0083	115.95
6173		STR115		115.00	6	1.0080	115.92	6174		PM115-1A		115.00	6	1.0086	115.99
6175		PM115-2A		115.00	6	1.0086	115.99	6210		TIN115		115.00	6	1.0049	115.57
6211		PM115-9		115.00	6	1.0053	115.62	6261		CHA 115		115.00	6	1.0187	117.15
6270		CAT 115		115.00	6	1.0082	115.95	6280		GIR 115		115.00	6	1.0085	115.97
6290		CATII 11		115.00	6	1.0080	115.92	6331		BAI115		115.00	6	1.0077	115.89
6332		BAM115		115.00	6	1.0119	116.37	6350		PM115-8		115.00	6	1.0033	115.37
6550		CHAZ115		115.00	6	1.0138	116.59	6580		LBO115		115.00	6	1.0020	115.23

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6006		CHO115		115.00	6	0.9830	113.04	6024		CHI115		115.00	6	0.9980	114.77
6032		MAR115A		115.00	6	0.9988	114.86	6040		SFR115		115.00	6	0.9985	114.83
6047		CLA115		115.00	6	0.9927	114.16	6230		CBA115		115.00	6	0.9994	114.93



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:41
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 13
 OUTPUT FOR AREA 6 [PANAMA]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6012	MDN115	115.00	6	6087	CAL115	115.00*	6	15	152.8	93.0	164.3	175.0	87.3
6027	LOC115A	115.00*	6	3WNDTR	LOC T3	WND 2	6	T3	44.9	47.0	95.5	--	--
6060	LM2115	115.00	6	6074	LMDIST	115.00*	6	26	87.7	90.6	96.8	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.8	54.0	97.9	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:41
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 13
 OUTPUT FOR AREA 7 [ACANAL]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

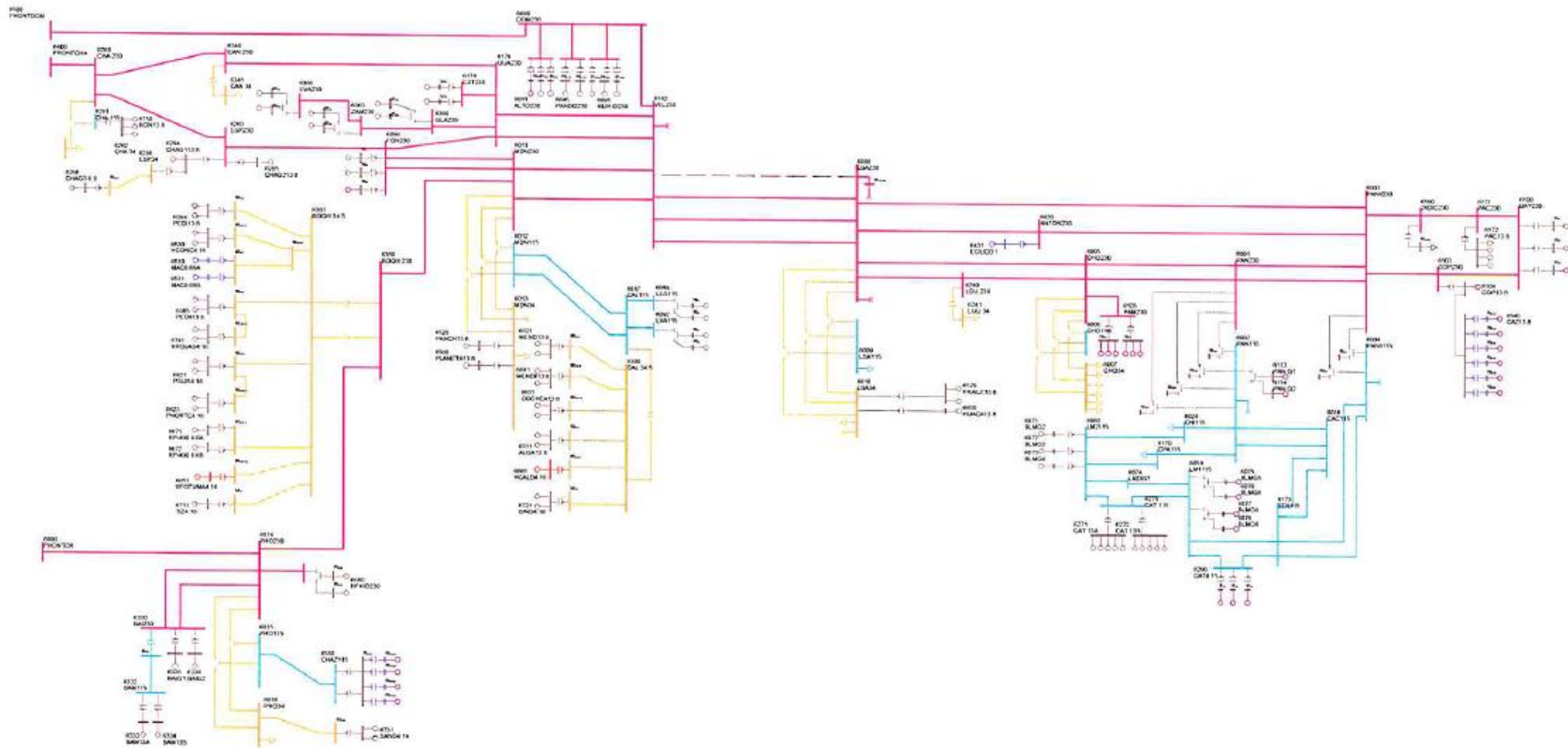
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:44
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 13 IN MW/MVAR

X-- AREA --X	FROM GENE- RATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
								TO TIE LINES	TO TIES + LOADS	
1	906.3	1184.2	0.0	0.0	0.0	0.0	22.0	-300.0	-300.0	-300.0
GUATEMAL	237.5	342.4	212.4	0.0	0.0	577.6	247.0	13.4	13.4	
2	1046.1	1012.0	0.0	0.0	0.0	0.0	34.1	0.0	0.0	0.0
SALVADOR	309.8	336.5	-158.1	0.0	0.0	240.8	313.7	58.5	58.5	
3	1096.2	1056.7	0.0	0.0	0.0	0.0	39.5	0.0	0.0	0.0
HONDURAS	451.0	346.4	-27.9	0.0	0.0	349.1	465.1	16.4	16.4	
4	508.4	489.7	0.0	0.0	0.0	0.0	18.7	0.0	0.0	0.0
NICARAGU	81.7	193.1	-8.0	0.0	0.0	186.0	190.0	-107.4	-107.4	
5	1305.5	1280.1	0.0	0.0	0.0	0.0	25.4	0.0	0.0	0.0
COSTA RI	130.5	509.8	-231.3	0.0	0.0	552.4	333.2	71.1	71.1	
6	1624.2	1306.7	0.0	0.0	0.0	0.0	77.3	240.1	240.1	240.0
PANAMA	28.1	228.9	-403.7	0.0	0.0	497.0	773.2	-73.4	-73.4	
7	110.1	46.7	0.0	0.0	0.0	0.0	3.6	59.9	59.9	60.0
ACANAL	30.1	8.2	-15.7	0.0	0.0	0.0	16.3	21.4	21.4	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	6596.8	6376.1	0.0	0.0	0.0	0.0	220.7	0.0	0.0	0.0
TOTALS	1268.7	1965.4	-632.4	0.0	0.0	2402.7	2338.5	0.0	0.0	

Contingencia 21: Llano de Sánchez – Veladero





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:48
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 21

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	10.0	15.0	0.0	1.0200	38.5	0.9672	47.0			62	6
6072		BLMG3		13.800	V3	38.0	10.0	15.0	0.0	1.0200	38.5	0.9672	47.0			62	6
6073		BLMG4		13.800	V4	38.0	5.5	15.0	0.0	1.0100	38.0	0.9897	47.0			62	6
6090		LESG1		13.800	E1	22.4	4.5	12.0	-5.0	1.0100	22.6	0.9806	27.0			64	6
6091		LESG2		13.800	E2	22.4	4.5	12.0	-5.0	1.0100	22.6	0.9806	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-2.1	12.0	-5.0	1.0100	25.9	0.9966	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-2.1	12.0	-5.0	1.0100	25.9	0.9966	27.0			64	6
6097		FORG1		13.800	F1	65.0	7.3	50.0	-50.0	1.0100	64.8	0.9938	111.0			64	6
6098		FORG2		13.800	F2	65.0	-15.2	50.0	-50.0	0.9850	67.8	0.9739	111.0			64	6
6101		BAYG1		13.800	B1	48.9	17.2	30.0	-25.0	1.0100	51.3	0.9435	94.0			61	6
6102		BAYG2		13.800	B2	48.9	9.2	30.0	-25.0	1.0000	49.7	0.9827	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9818	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9818	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9818	19.5	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	13.1	29.0	-29.0	1.0200	57.3	0.9747	69.0			64	6
6177		ESTG2		13.800	E2	57.0	13.1	29.0	-29.0	1.0200	57.3	0.9747	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	4.4	52.4	-48.9	1.0200	97.7	0.9990	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	7.8	52.4	-48.9	1.0200	97.9	0.9969	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0165	10.3	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.2	5.6	-5.6	1.0000	8.3	0.9996	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	0.0	2.0	-2.0	1.0000	3.7	1.0000	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	0.0	2.0	-2.0	1.0000	3.7	1.0000	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	0.0	2.0	-2.0	1.0000	3.7	1.0000	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	0.0	2.0	-2.0	1.0000	3.7	1.0000	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	0.0	2.5	-2.5	1.0000	8.3	1.0000	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	0.0	2.5	-2.5	1.0000	8.3	1.0000	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	0.0	2.5	-2.5	1.0000	8.3	1.0000	10.9			62	6
6282		GIR 13B		13.800	G8	8.3	0.0	2.5	-2.5	1.0000	8.3	1.0000	10.9			62	6



6311	ALGA13.8	13.800	A1	4.6	0.3	2.3	-2.3	1.0000	4.6	0.9983	5.7	64	6
6311	ALGA13.8	13.800	A2	4.6	0.3	2.3	-2.3	1.0000	4.6	0.9983	5.7	64	6
6321	MEND13.8	13.800	M1	8.4	1.6	4.2	-4.2	1.0000	8.6	0.9819	10.4	64	6
6321	MEND13.8	13.800	M2	8.4	1.6	4.2	-4.2	1.0000	8.6	0.9819	10.4	64	6
6333	BAM13A	13.800	G1	26.6	2.0	10.0	-10.0	1.0100	26.4	0.9973	30.0	64	6
6334	BAM13B	13.800	G2	26.6	2.0	10.0	-10.0	1.0100	26.4	0.9973	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-4.2	14.0	-14.0	1.0100	41.9	0.9951	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-4.2	14.0	-14.0	1.0100	41.9	0.9951	49.0	64	6
6361	GLA13A	13.800	G1	12.1	2.1	7.8	-7.0	1.0100	12.1	0.9854	14.1	64	6
6362	GLA13B	13.800	G2	12.1	2.1	7.8	-7.0	1.0100	12.1	0.9854	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-1.8	7.8	-7.0	1.0100	16.0	0.9935	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-1.8	7.8	-7.0	1.0100	16.0	0.9935	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-3.7	8.0	-8.0	1.0100	26.6	0.9905	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-3.7	8.0	-8.0	1.0100	26.6	0.9905	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	-1.7	4.9	-4.9	1.0000	9.6	0.9850	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	-1.7	4.9	-4.9	1.0000	9.6	0.9850	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	-2.8	3.2	-3.6	1.0000	6.8	0.9093	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	-2.8	3.2	-3.6	1.0000	6.8	0.9093	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	-2.0	10.5	-10.5	1.0000	60.0	0.9994	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0132	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0132	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9657	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0011	5.4	0.8851	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0011	5.4	0.8851	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9657	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9486	3.0	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9486	3.0	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9485	5.6	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	2.5	2.5	-2.5	1.0161	5.3	0.8851	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	2.5	2.5	-2.5	1.0161	5.3	0.8851	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	2.5	2.5	-2.5	1.0189	5.3	0.8851	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	2.5	2.5	-2.5	1.0189	5.3	0.8851	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.8	1.2	3.7	-3.7	1.0200	6.7	0.9854	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.8	1.2	3.7	-3.7	1.0200	6.7	0.9854	8.4	64	6
6641	MENDII13.8	13.800	G1	3.5	1.9	1.9	-1.9	1.0194	3.9	0.8813	4.1	64	6
6641	MENDII13.8	13.800	G2	3.5	1.9	1.9	-1.9	1.0194	3.9	0.8813	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	1.0067	5.3	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.6	-2.0	2.0	-2.0	1.0394	3.9	0.8793	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.9	2.3	-2.6	1.0200	6.7	0.9906	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.9	2.3	-2.6	1.0200	6.7	0.9906	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	0.5	8.0	-8.0	1.0200	26.1	0.9998	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	0.5	8.0	-8.0	1.0200	26.1	0.9998	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0094	23.3	0.9074	24.9	64	6



1237

6693	ALTO13B	13.800	G2	21.3	-3.1	9.9	-9.9	1.0000	21.5	0.9897	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-0.5	12.8	-8.3	1.0000	15.8	0.9994	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-0.5	12.8	-8.3	1.0000	15.8	0.9994	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-0.4	12.8	-8.3	1.0000	15.8	0.9997	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-0.4	12.8	-8.3	1.0000	15.8	0.9997	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-0.4	12.8	-8.3	1.0000	15.8	0.9997	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	-2.3	2.3	-2.3	1.0016	4.9	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.5	-2.5	2.5	-2.5	1.0379	5.0	0.8744	5.6	64	6
6721	SIND4.16	4.2000	G2	4.5	-2.5	2.5	-2.5	1.0379	5.0	0.8744	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0014	4.8	0.8892	5.0	64	6
6731	SAND4.16	4.2000	G2	4.8	-2.2	2.2	-2.2	1.0014	5.2	0.9074	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	2.1	2.1	-2.1	1.0138	4.5	0.8892	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	2.1	2.1	-2.1	1.0138	4.5	0.8892	4.8	64	6
6750	BON13.8	13.800	G1	9.9	0.8	4.0	-4.0	1.0200	9.7	0.9969	35.3	64	6
6750	BON13.8	13.800	G2	9.9	0.8	4.0	-4.0	1.0200	9.7	0.9969	35.3	64	6
6750	BON13.8	13.800	G3	9.9	0.8	4.0	-4.0	1.0200	9.7	0.9969	35.3	64	6
SUBSYSTEM TOTALS				1635.3	125.0	829.5	-718.8				2264.8		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:48
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 21

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
6127		MIR13B		12.000	G6	18.0	3.3	8.0	0.0	1.0100	18.1	0.9839	27.7			65	7
6128		MIR13C		12.000	G3	20.0	10.4	11.0	0.0	1.0100	22.3	0.8868	29.4			65	7
6129		MIR13D		13.800	G4	25.1	13.0	15.0	0.0	1.0100	28.0	0.8884	44.1			65	7
6130		MIR13F		13.800	G5	17.0	4.5	8.0	0.0	1.0100	17.4	0.9660	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	1.5	6.0	-6.0	1.0100	10.0	0.9886	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9915	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9915	13.0			65	7
SUBSYSTEM TOTALS						110.1	35.4	60.0	-18.0				167.9				



1240

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:48
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 21
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6027	LOC115A	115.00*	6 3WNTDR	LOC T3	WND 2	6	T3		44.9	47.0	95.6	--	--	--	--
6060	LM2115	115.00	6	6074 LMDIST	115.00*	6	26		88.2	90.6	97.3	--	--	--	--
6092	LVA115	115.00*	6 3WNTDR	TRAF01	WND 1	6	T1		52.8	54.0	97.7	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:48
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 21
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

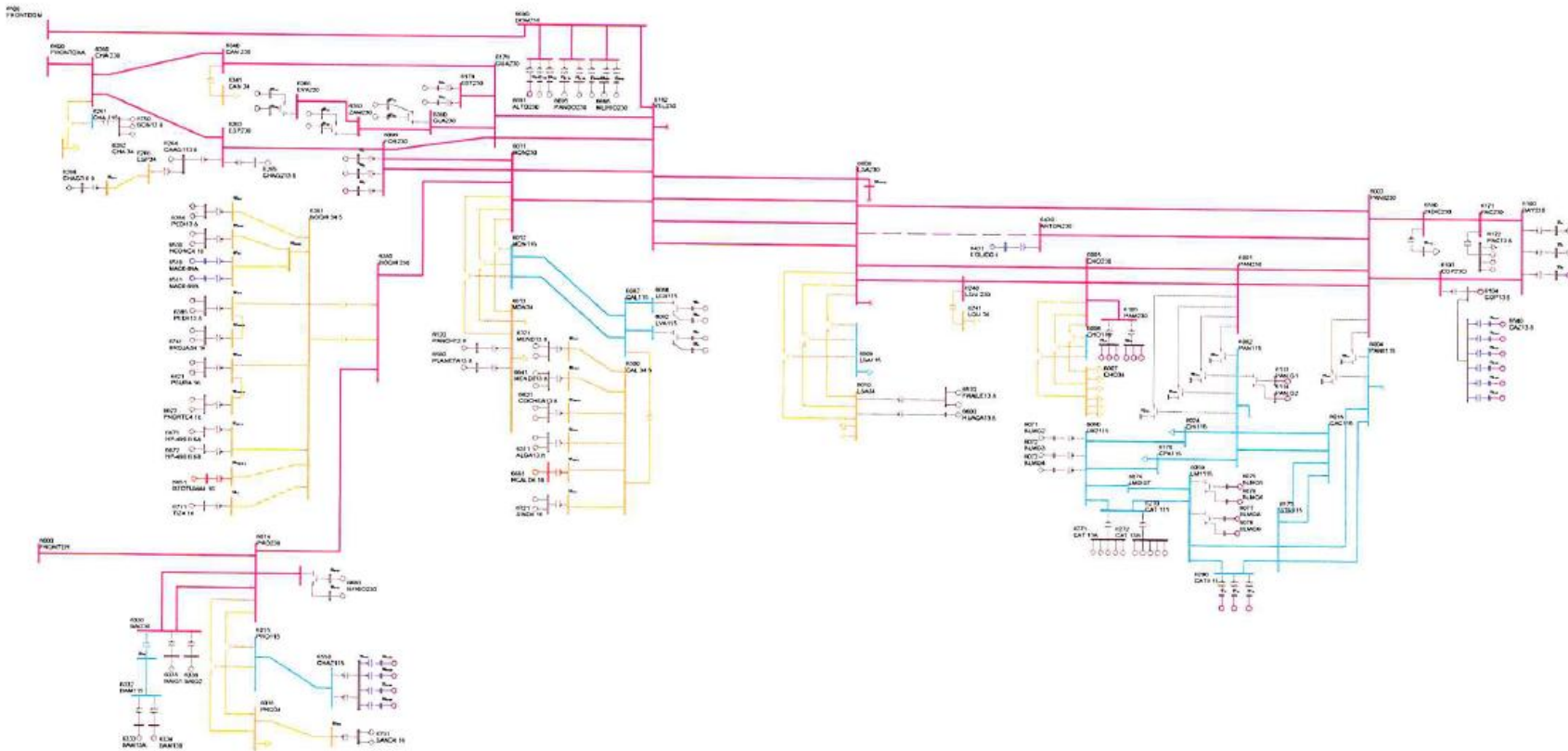
FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						SAT, MAY 07 2011 10:48		AREA TOTALS		
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						IN MW/MVAR				
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 CNT 21										
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT
	RATION	BUSES						LINES	+ LOADS	
1	906.3	1184.2	0.0	0.0	0.0	0.0	22.0	-300.0	-300.0	-300.0
GUATEMAL	237.5	342.4	212.4	0.0	0.0	577.6	247.0	13.4	13.4	
2	1046.1	1012.0	0.0	0.0	0.0	0.0	34.1	0.0	0.0	0.0
SALVADOR	309.8	336.5	-158.1	0.0	0.0	240.8	313.7	58.5	58.5	
3	1096.2	1056.7	0.0	0.0	0.0	0.0	39.5	0.0	0.0	0.0
HONDURAS	451.0	346.4	-27.9	0.0	0.0	349.1	465.1	16.4	16.4	
4	508.4	489.7	0.0	0.0	0.0	0.0	18.7	0.0	0.0	0.0
NICARAGU	81.8	193.1	-8.0	0.0	0.0	186.0	190.0	-107.3	-107.3	
5	1305.5	1280.1	0.0	0.0	0.0	0.0	25.5	-0.1	-0.1	0.0
COSTA RI	134.2	509.8	-231.2	0.0	0.0	551.9	333.6	74.0	74.0	
6	1635.3	1306.7	0.0	0.0	0.0	0.0	88.3	240.3	240.3	240.0
PANAMA	125.0	228.9	-390.5	0.0	0.0	463.5	831.0	-80.9	-80.9	
7	110.1	46.7	0.0	0.0	0.0	0.0	3.7	59.7	59.7	60.0
ACANAL	35.4	8.2	-15.6	0.0	0.0	0.0	16.9	25.9	25.9	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	6607.9	6376.1	0.0	0.0	0.0	0.0	231.8	0.0	0.0	0.0
TOTALS	1374.7	1965.4	-619.0	0.0	0.0	2368.8	2397.2	0.0	0.0	

Contingencia 23: Llano de Sánchez – Anton





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:57
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013

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
6071		BLMG2		13.800	V2	38.0	10.1	15.0	0.0	1.0200	38.5	0.9664	47.0			62	6
6072		BLMG3		13.800	V3	38.0	10.1	15.0	0.0	1.0200	38.5	0.9664	47.0			62	6
6073		BLMG4		13.800	V4	38.0	5.6	15.0	0.0	1.0100	38.0	0.9892	47.0			62	6
6090		LESG1		13.800	E1	22.4	4.1	12.0	-5.0	1.0100	22.6	0.9838	27.0			64	6
6091		LESG2		13.800	E2	22.4	4.1	12.0	-5.0	1.0100	22.6	0.9838	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-2.6	12.0	-5.0	1.0100	25.9	0.9951	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-2.6	12.0	-5.0	1.0100	25.9	0.9951	27.0			64	6
6097		FORG1		13.800	F1	65.0	5.0	50.0	-50.0	1.0100	64.5	0.9971	111.0			64	6
6098		FORG2		13.800	F2	65.0	-17.4	50.0	-50.0	0.9850	68.3	0.9659	111.0			64	6
6101		BAYG1		13.800	B1	45.6	15.1	30.0	-25.0	1.0100	47.6	0.9492	94.0			61	6
6102		BAYG2		13.800	B2	45.6	7.2	30.0	-25.0	1.0000	46.2	0.9878	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9848	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9848	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9848	19.5	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	12.6	29.0	-29.0	1.0200	57.2	0.9765	69.0			64	6
6177		ESTG2		13.800	E2	57.0	12.6	29.0	-29.0	1.0200	57.2	0.9765	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	3.5	52.4	-48.9	1.0200	97.7	0.9994	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	6.9	52.4	-48.9	1.0200	97.9	0.9976	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0165	10.3	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.3	5.6	-5.6	1.0000	8.3	0.9995	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	0.0	2.0	-2.0	1.0000	3.7	1.0000	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	0.0	2.0	-2.0	1.0000	3.7	1.0000	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	0.0	2.0	-2.0	1.0000	3.7	1.0000	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	0.0	2.0	-2.0	1.0000	3.7	1.0000	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	0.1	2.5	-2.5	1.0000	8.3	1.0000	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	0.1	2.5	-2.5	1.0000	8.3	1.0000	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	0.1	2.5	-2.5	1.0000	8.3	1.0000	10.9			62	6
6282		GIR 13B		13.800	G8	8.3	0.1	2.5	-2.5	1.0000	8.3	1.0000	10.9			62	6



6311	ALGA13.8	13.800	A1	4.6	0.3	2.3	-2.3	1.0000	4.6	0.9985	5.7	64	6
6311	ALGA13.8	13.800	A2	4.6	0.3	2.3	-2.3	1.0000	4.6	0.9985	5.7	64	6
6321	MEND13.8	13.800	M1	8.4	1.5	4.2	-4.2	1.0000	8.6	0.9838	10.4	64	6
6321	MEND13.8	13.800	M2	8.4	1.5	4.2	-4.2	1.0000	8.6	0.9838	10.4	64	6
6333	BAM13A	13.800	G1	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9975	30.0	64	6
6334	BAM13B	13.800	G2	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9975	30.0	64	6
6335	BAIG1	13.800	G1	42.1	-4.9	14.0	-14.0	1.0100	42.0	0.9934	49.0	64	6
6336	BAIG2	13.800	G2	42.1	-4.9	14.0	-14.0	1.0100	42.0	0.9934	49.0	64	6
6361	GLA13A	13.800	G1	12.1	0.3	7.8	-7.0	1.0100	11.9	0.9997	14.1	64	6
6362	GLA13B	13.800	G2	12.1	0.3	7.8	-7.0	1.0100	11.9	0.9997	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-3.4	7.8	-7.0	1.0100	16.3	0.9781	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-3.4	7.8	-7.0	1.0100	16.3	0.9781	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-5.2	8.0	-8.0	1.0100	26.8	0.9815	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-5.2	8.0	-8.0	1.0100	26.8	0.9815	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	-1.9	4.9	-4.9	1.0000	9.7	0.9803	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	-1.9	4.9	-4.9	1.0000	9.7	0.9803	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	-3.1	3.2	-3.6	1.0000	6.9	0.8951	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	-3.1	3.2	-3.6	1.0000	6.9	0.8951	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0067	60.5	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0141	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0141	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9680	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0021	5.4	0.8851	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0021	5.4	0.8851	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9680	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9591	3.0	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9591	3.0	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9591	5.5	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	2.5	2.5	-2.5	1.0171	5.3	0.8851	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	2.5	2.5	-2.5	1.0171	5.3	0.8851	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	2.5	2.5	-2.5	1.0199	5.3	0.8851	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	2.5	2.5	-2.5	1.0199	5.3	0.8851	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.8	1.0	3.7	-3.7	1.0200	6.7	0.9891	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.8	1.0	3.7	-3.7	1.0200	6.7	0.9891	8.4	64	6
6641	MENDII13.8	13.800	G1	3.5	1.9	1.9	-1.9	1.0197	3.9	0.8813	4.1	64	6
6641	MENDII13.8	13.800	G2	3.5	1.9	1.9	-1.9	1.0197	3.9	0.8813	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	1.0077	5.3	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.6	-2.0	2.0	-2.0	1.0397	3.9	0.8793	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.9	2.3	-2.6	1.0200	6.7	0.9911	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.9	2.3	-2.6	1.0200	6.7	0.9911	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-0.2	8.0	-8.0	1.0200	26.1	1.0000	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-0.2	8.0	-8.0	1.0200	26.1	1.0000	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0101	23.2	0.9074	24.9	64	6



6693	ALTO13B	13.800	G2	21.3	-4.0	9.9	-9.9	1.0000	21.7	0.9825	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-1.4	12.8	-8.3	1.0000	15.9	0.9960	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-1.4	12.8	-8.3	1.0000	15.9	0.9960	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-1.2	12.8	-8.3	1.0000	15.9	0.9969	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-1.2	12.8	-8.3	1.0000	15.9	0.9969	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-1.2	12.8	-8.3	1.0000	15.9	0.9969	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	-2.3	2.3	-2.3	1.0026	4.9	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.5	-2.5	2.5	-2.5	1.0383	5.0	0.8744	5.6	64	6
6721	SIND4.16	4.2000	G2	4.5	-2.5	2.5	-2.5	1.0383	5.0	0.8744	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0025	4.8	0.8892	5.0	64	6
6731	SAND4.16	4.2000	G2	4.8	-2.2	2.2	-2.2	1.0025	5.2	0.9074	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	2.1	2.1	-2.1	1.0143	4.5	0.8892	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	2.1	2.1	-2.1	1.0143	4.5	0.8892	4.8	64	6
6750	BON13.8	13.800	G1	9.9	0.7	4.0	-4.0	1.0200	9.7	0.9976	35.3	64	6
6750	BON13.8	13.800	G2	9.9	0.7	4.0	-4.0	1.0200	9.7	0.9976	35.3	64	6
6750	BON13.8	13.800	G3	9.9	0.7	4.0	-4.0	1.0200	9.7	0.9976	35.3	64	6
SUBSYSTEM TOTALS				1628.8	84.4	829.5	-718.8				2264.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:57
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013

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
6127		MIR13B		12.000	G6	18.0	3.4	8.0	0.0	1.0100	18.1	0.9825	27.7			65	7
6128		MIR13C		12.000	G3	20.0	10.5	11.0	0.0	1.0100	22.4	0.8845	29.4			65	7
6129		MIR13D		13.800	G4	25.1	13.1	15.0	0.0	1.0100	28.0	0.8862	44.1			65	7
6130		MIR13F		13.800	G5	17.0	4.7	8.0	0.0	1.0100	17.5	0.9635	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	1.6	6.0	-6.0	1.0100	10.0	0.9882	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9912	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9912	13.0			65	7
SUBSYSTEM TOTALS						110.1	36.0	60.0	-18.0				167.9				



1247

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:57
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6009	LSA	115	115.00	6	1.0040	115.46	6012	MDN	115	115.00	6	1.0155	116.78		
6015	PRO	115	115.00	6	1.0129	116.48	6059	LM	115	115.00	6	1.0012	115.14		
6060	LM	2115	115.00	6	1.0014	115.16	6066	FFIELD	115	115.00	6	1.0002	115.03		
6074	LM	DIST	115.00	6	1.0013	115.15	6087	CAL	115	115.00	6	1.0217	117.49		
6088	LES	115	115.00	6	1.0244	117.81	6092	LVA	115	115.00	6	1.0218	117.50		
6123	MIR	115	115.00	7	1.0082	115.94	6170	CPA	115	115.00	6	1.0014	115.16		
6261	CHA	115	115.00	6	1.0178	117.04	6270	CAT	115	115.00	6	1.0015	115.17		
6280	GIR	115	115.00	6	1.0020	115.22	6290	CAT	11	115.00	6	1.0011	115.13		
6331	BAI	115	115.00	6	1.0072	115.82	6332	BAM	115	115.00	6	1.0115	116.32		
6550	CHAZ	115	115.00	6	1.0129	116.48									

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002	PAN	115	115.00	6	0.9943	114.35	6004	PAN	115	115.00	6	0.9959	114.53		
6006	CHO	115	115.00	6	0.9646	110.93	6018	CAC	115	115.00	6	0.9942	114.34		
6019	CVI	115A	115.00	6	0.9894	113.78	6024	CHI	115	115.00	6	0.9875	113.56		
6027	LOC	115A	115.00	6	0.9871	113.51	6032	MAR	115A	115.00	6	0.9855	113.33		
6036	SMA	115	115.00	6	0.9927	114.16	6040	SFR	115	115.00	6	0.9852	113.29		
6047	CLA	115	115.00	6	0.9821	112.94	6055	MOS	115B	115.00	6	0.9925	114.13		
6057	TOC	115	115.00	6	0.9927	114.16	6173	STR	115	115.00	6	1.0000	115.00		
6174	PM	115-1A	115.00	6	0.9984	114.81	6175	PM	115-2A	115.00	6	0.9984	114.81		
6210	TIN	115	115.00	6	0.9918	114.06	6211	PM	115-9	115.00	6	0.9922	114.10		
6230	CBA	115	115.00	6	0.9861	113.40	6350	PM	115-8	115.00	6	0.9901	113.86		
6580	LBO	115	115.00	6	0.9890	113.74									



1248

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:57
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6027	LOC115A	115.00*	6 3WNTDR	LOC T3	WND 2	6	T3		45.0	47.0	95.6	--	--	--	--
6060	LM2115	115.00	6	6074 LMDIST	115.00*	6	26		88.5	90.6	97.6	--	--	--	--
6092	LVA115	115.00*	6 3WNTDR	TRAF01	WND 1	6	T1		52.9	54.0	98.0	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:57
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *



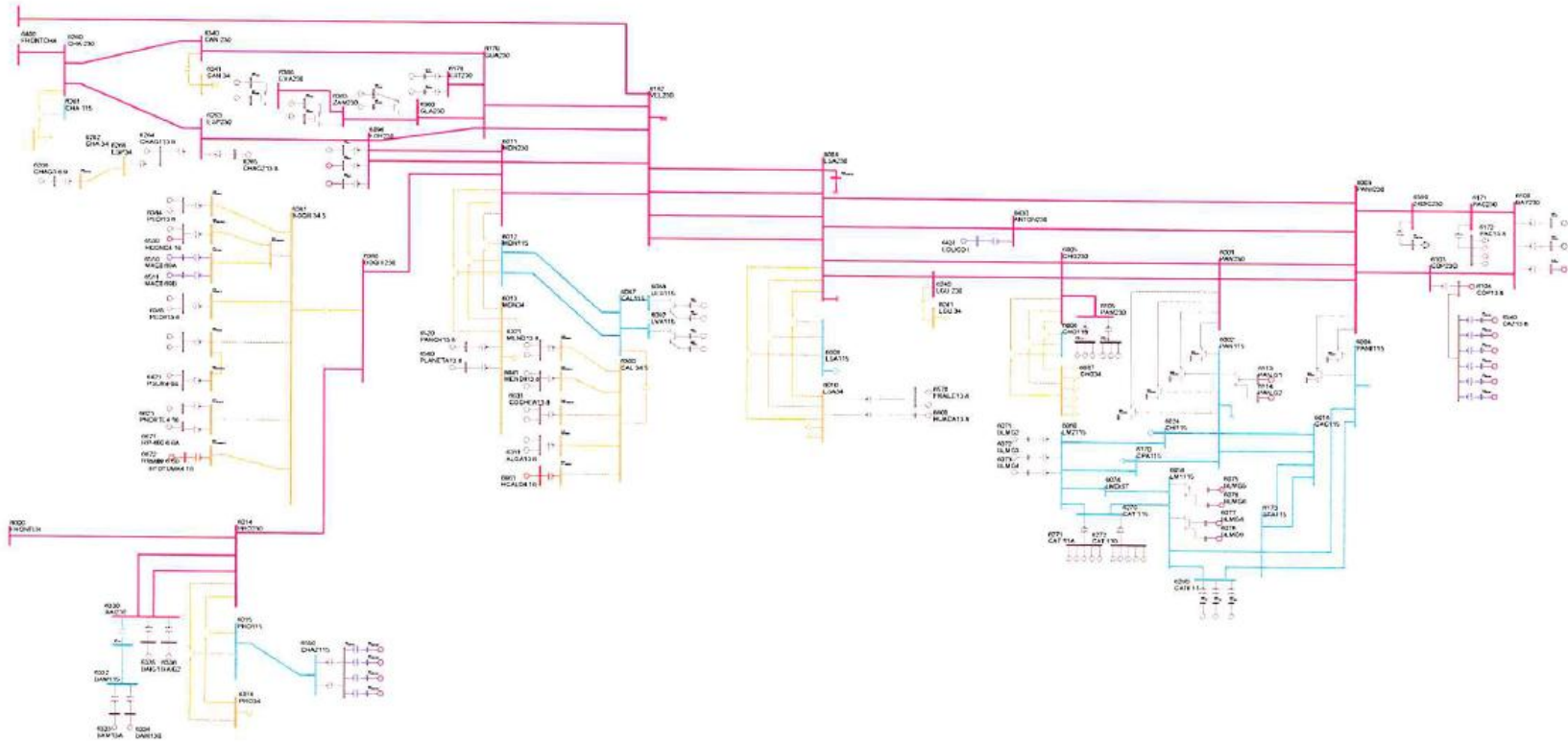
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 10:58
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2013 IN MW/MVAR

X-- AREA --X	FROM GENE- RATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
								TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	906.3 237.5	1184.2 342.4	0.0 212.4	0.0 0.0	0.0 0.0	0.0 577.6	22.0 247.0	-300.0 13.4	-300.0 13.4	-300.0
2 SALVADOR	1046.1 309.8	1012.0 336.5	0.0 -158.1	0.0 0.0	0.0 0.0	0.0 240.8	34.1 313.7	0.0 58.5	0.0 58.5	0.0
3 HONDURAS	1096.2 451.0	1056.7 346.4	0.0 -27.9	0.0 0.0	0.0 0.0	0.0 349.1	39.5 465.1	0.0 16.4	0.0 16.4	0.0
4 NICARAGU	508.4 81.8	489.7 193.1	0.0 -8.0	0.0 0.0	0.0 0.0	0.0 186.0	18.7 190.0	0.0 -107.4	0.0 -107.4	0.0
5 COSTA RI	1305.5 132.3	1280.1 509.8	0.0 -231.3	0.0 0.0	0.0 0.0	0.0 552.1	25.5 333.4	0.0 72.5	0.0 72.5	0.0
6 PANAMA	1628.8 84.4	1306.7 228.9	0.0 -392.5	0.0 0.0	0.0 0.0	0.0 462.9	81.7 790.8	240.3 -79.9	240.3 -79.9	240.0
7 ACANAL	110.1 36.0	46.7 8.2	0.0 -15.6	0.0 0.0	0.0 0.0	0.0 0.0	3.7 17.0	59.7 26.5	59.7 26.5	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	6601.3 1332.9	6376.1 1965.4	0.0 -621.0	0.0 0.0	0.0 0.0	0.0 2368.5	225.2 2357.0	0.0 0.0	0.0 0.0	0.0



Demanda Máxima de Verano

450
HENRIEY





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 11:02
 SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - EPOCA SECA 2013
 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
6071		BLMG2		13.800	V2	38.0	0.0	15.0	0.0	1.0139	37.5	1.0000	47.0			62	6
6072		BLMG3		13.800	V3	38.0	0.0	15.0	0.0	1.0139	37.5	1.0000	47.0			62	6
6073		BLMG4		13.800	V4	38.0	0.0	15.0	0.0	1.0142	37.5	1.0000	47.0			62	6
6090		LESG1		13.800	E1	20.1	-0.3	12.0	-5.0	0.9900	20.3	0.9999	27.0			64	6
6091		LESG2		13.800	E2	20.1	-0.3	12.0	-5.0	0.9900	20.3	0.9999	27.0			64	6
6094		LVAG1		13.800	L1	23.3	-5.0	12.0	-5.0	0.9975	23.9	0.9777	27.0			64	6
6095		LVAG2		13.800	L2	23.3	-5.0	12.0	-5.0	0.9975	23.9	0.9777	27.0			64	6
6097		FORG1		13.800	F1	66.0	-10.5	50.0	-50.0	1.0000	66.9	0.9877	111.0			64	6
6101		BAYG1		13.800	B1	54.4	14.2	30.0	-25.0	1.0100	55.6	0.9677	94.0			61	6
6102		BAYG2		13.800	B2	54.4	-1.5	30.0	-25.0	0.9900	54.9	0.9996	94.0			61	6
6106		PAM13A		13.800	M1	15.2	9.0	9.0	0.0	0.9876	17.9	0.8605	20.7			63	6
6106		PAM13A		13.800	M2	15.2	9.0	9.0	0.0	0.9876	17.9	0.8605	20.7			63	6
6106		PAM13A		13.800	M3	15.2	9.0	9.0	0.0	0.9876	17.9	0.8605	20.7			63	6
6107		PAM13B		13.800	M4	15.2	9.0	9.0	0.0	0.9876	17.9	0.8605	20.7			63	6
6107		PAM13B		13.800	M5	15.2	9.0	9.0	0.0	0.9876	17.9	0.8605	20.7			63	6
6107		PAM13B		13.800	M6	15.2	9.0	9.0	0.0	0.9876	17.9	0.8605	20.7			63	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9883	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9883	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9883	19.4	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	51.0	6.1	29.0	-29.0	1.0000	51.4	0.9930	69.0			64	6
6177		ESTG2		13.800	E2	51.0	6.1	29.0	-29.0	1.0000	51.4	0.9930	69.0			64	6
6264		CHAG113.8		13.800	G1	89.1	-8.3	52.4	-48.9	1.0000	89.5	0.9957	116.5			64	6
6265		CHAG213.8		13.800	G2	89.1	-4.8	52.4	-48.9	1.0000	89.3	0.9986	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.3	4.9	4.9	-4.1	0.9969	9.7	0.8623	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	-1.1	5.6	-5.6	1.0000	8.4	0.9905	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	-1.1	5.6	-5.6	1.0000	8.4	0.9905	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	-1.1	5.6	-5.6	1.0000	8.4	0.9905	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	-1.1	5.6	-5.6	1.0000	8.4	0.9905	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	-1.1	5.6	-5.6	1.0000	8.4	0.9905	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	-1.1	5.6	-5.6	1.0000	8.4	0.9905	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	-1.1	5.6	-5.6	1.0000	8.4	0.9905	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	-1.1	5.6	-5.6	1.0000	8.4	0.9905	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	-1.1	5.6	-5.6	1.0000	8.4	0.9905	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	-1.1	5.6	-5.6	1.0000	8.4	0.9905	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	-0.5	2.0	-2.0	1.0000	3.7	0.9912	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	-0.5	2.0	-2.0	1.0000	3.7	0.9912	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	-0.5	2.0	-2.0	1.0000	3.7	0.9912	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	-0.5	2.0	-2.0	1.0000	3.7	0.9912	4.8			62	6



6282	GIR 13B	13.800	G5	8.3	-1.1	2.5	-2.5	1.0000	8.4	0.9917	10.9	62	6
6282	GIR 13B	13.800	G6	8.3	-1.1	2.5	-2.5	1.0000	8.4	0.9917	10.9	62	6
6282	GIR 13B	13.800	G7	8.3	-1.1	2.5	-2.5	1.0000	8.4	0.9917	10.9	62	6
6282	GIR 13B	13.800	G8	8.3	-1.1	2.5	-2.5	1.0000	8.4	0.9917	10.9	62	6
6291	TCOG1	13.800	G1	47.0	23.7	25.0	-25.0	0.9900	53.2	0.8928	71.9	62	6
6292	TCOG2	13.800	G2	47.0	23.7	25.0	-25.0	0.9900	53.2	0.8928	71.9	62	6
6293	TCOG3	13.800	G3	47.0	23.7	25.0	-35.0	0.9900	53.2	0.8928	70.6	62	6
6311	ALGA13.8	13.800	A1	4.8	0.8	2.3	-2.3	1.0000	4.9	0.9864	5.7	64	6
6311	ALGA13.8	13.800	A2	4.8	0.8	2.3	-2.3	1.0000	4.9	0.9864	5.7	64	6
6321	MEND13.8	13.800	M1	8.9	4.2	4.2	-4.2	0.9966	9.9	0.9060	10.4	64	6
6321	MEND13.8	13.800	M2	8.9	4.2	4.2	-4.2	0.9966	9.9	0.9060	10.4	64	6
6333	BAM13A	13.800	G1	23.8	0.8	10.0	-10.0	1.0000	23.8	0.9995	30.0	64	6
6334	BAM13B	13.800	G2	23.8	0.8	10.0	-10.0	1.0000	23.8	0.9995	30.0	64	6
6335	BAIG1	13.800	G1	37.7	-9.0	14.0	-14.0	1.0000	38.8	0.9725	49.0	64	6
6336	BAIG2	13.800	G2	37.7	-9.0	14.0	-14.0	1.0000	38.8	0.9725	49.0	64	6
6361	GLA13A	13.800	G1	11.4	-7.0	7.8	-7.0	1.0064	13.3	0.8526	14.1	64	6
6362	GLA13B	13.800	G2	11.4	-7.0	7.8	-7.0	1.0064	13.3	0.8526	14.1	64	6
6364	LOR13A	13.800	G1	15.2	-7.0	7.8	-7.0	1.0108	16.6	0.9084	25.0	64	6
6365	LOR13B	13.800	G2	15.2	-7.0	7.8	-7.0	1.0108	16.6	0.9084	25.0	64	6
6367	PRU13A	13.800	G1	25.2	-8.0	8.0	-8.0	1.0115	26.1	0.9531	33.0	64	6
6368	PRU13B	13.800	G2	25.2	-8.0	8.0	-8.0	1.0115	26.1	0.9531	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.0	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.0	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9990	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9990	7.5	64	6
6431	EOLICO I	0.6000	G1	120.0	-21.0	21.0	-21.0	1.0115	120.4	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0069	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0069	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9705	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.7	0.4	2.5	-2.5	1.0000	4.8	0.9960	5.6	64	6
6560	PLANETA13.8	13.800	G1	3.8	2.0	2.0	-2.0	0.9705	4.4	0.8862	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.3	1.2	1.2	-1.2	0.9871	2.6	0.8937	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.3	1.2	1.2	-1.2	0.9871	2.6	0.8937	3.0	63	6
6600	HUACA13.8	13.800	G1	4.3	2.2	2.2	-2.2	0.9870	4.9	0.8893	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.2	-0.3	2.5	-2.5	1.0000	4.3	0.9969	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.2	-0.3	2.5	-2.5	1.0000	4.3	0.9969	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.2	-1.1	2.5	-2.5	1.0000	4.4	0.9679	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.2	-1.1	2.5	-2.5	1.0000	4.4	0.9679	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-3.0	3.7	-3.7	1.0000	7.1	0.9034	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-3.0	3.7	-3.7	1.0000	7.1	0.9034	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-1.9	1.9	-1.9	1.0010	3.8	0.8696	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-1.9	1.9	-1.9	1.0010	3.8	0.8696	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.2	2.2	2.5	-2.5	1.0000	4.8	0.8849	5.6	64	6



6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0269	3.8	0.8675	4.4	6
6671	RP-490 6.6A	6.6000	G1	6.4	0.5	2.3	-2.6	1.0000	6.4	0.9967	7.5	6
6672	RP-490 6.6B	6.6000	G2	6.4	0.5	2.3	-2.6	1.0000	6.4	0.9967	7.5	6
SUBSYSTEM TOTALS				1565.6	56.3	788.9	-656.7				2136.5	64

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 11:02
 SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - EPOCA SECA 2013

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
6127	MIR13B	12.000	G6	18.0	1.5	8.0	0.0	1.0100	17.9	0.9966	27.7			65	7
6128	MIR13C	12.000	G3	20.0	8.9	11.0	0.0	1.0100	21.7	0.9132	29.4			65	7
6129	MIR13D	13.800	G4	24.7	11.1	15.0	0.0	1.0100	26.9	0.9121	44.1			65	7
6130	MIR13F	13.800	G5	17.0	2.4	8.0	0.0	1.0100	17.0	0.9901	27.7			65	7
6134	MAD6A	6.9000	G1	10.5	0.3	6.0	-6.0	1.0100	10.4	0.9996	13.0			65	7
6135	MAD6B	6.9000	G2	10.0	0.4	6.0	-6.0	1.0100	9.9	0.9991	13.0			65	7
6136	MAD6C	6.9000	G3	10.0	0.4	6.0	-6.0	1.0100	9.9	0.9991	13.0			65	7
SUBSYSTEM TOTALS				110.2	25.1	60.0	-18.0				167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 11:02
 SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - EPOCA SECA 2013

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6000	FRONTER	230.00	6	1.0150	233.44	6003	PANII230	230.00	6	1.0057	231.31
6005	CHO230	230.00	6	1.0050	231.15	6008	LSA230	230.00	6	1.0156	233.60
6011	MDN230	230.00	6	1.0134	233.07	6014	PRO230	230.00	6	1.0142	233.27
6096	FOR230	230.00	6	1.0141	233.25	6100	BAY230	230.00	6	1.0193	234.45
6103	COP230	230.00	6	1.0082	231.89	6105	PAM230	230.00	6	1.0052	231.20
6171	PAC230	230.00	6	1.0133	233.06	6178	EST230	230.00	6	1.0120	232.77
6179	GUA230	230.00	6	1.0122	232.80	6182	VEL230	230.00	6	1.0160	233.67
6240	LGU 230	230.00	6	1.0106	232.44	6260	CHA 230	230.00	6	1.0180	234.13
6263	ESP230	230.00	6	1.0190	234.37	6330	BAI230	230.00	6	1.0135	233.09
6340	CAN 230	230.00	6	1.0156	233.59	6360	GLA230	230.00	6	1.0163	233.74
6363	ZAM230	230.00	6	1.0207	234.76	6366	EVA230	230.00	6	1.0232	235.34
6380	BOQIII 230	230.00	6	1.0141	233.25	6400	FRONTCHA	230.00	6	1.0176	234.04
6430	ANTON230	230.00	6	1.0139	233.20	6450	LSA CAP 230	230.00	6	1.0156	233.60
6500	FRONTVEL	230.00	6	1.0201	234.63	6590	24DIC230	230.00	6	1.0092	232.12



1255

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 11:02
SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - EPOCA SECA 2013
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS	TO BUS	RATING SET A	RATING SET B	RATING SET C
BUS# X-- NAME --X BASKV AREA	BUS# X-- NAME --X BASKV AREA	CKT LOADING RATING PERCENT	RATING PERCENT	RATING PERCENT
6027 LOC115A 115.00* 6	3WNDTR LOC T3 WND 2 6 T3	44.8 47.0 95.3	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 11:02
SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - EPOCA SECA 2013
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS	TO BUS	RATING SET A	RATING SET B	RATING SET C
BUS# X-- NAME --X BASKV AREA	BUS# X-- NAME --X BASKV AREA	CKT LOADING RATING PERCENT	RATING PERCENT	RATING PERCENT

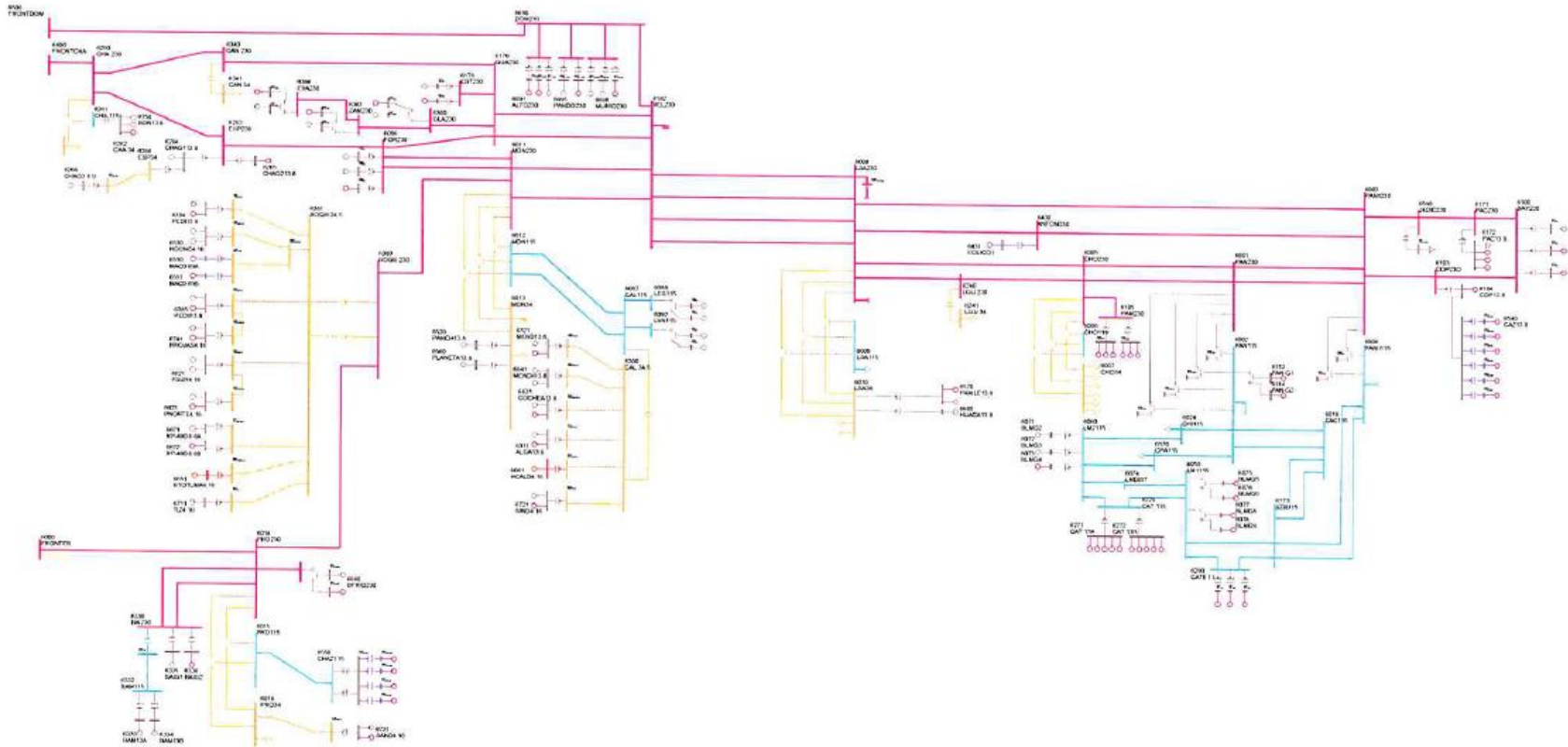
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 11:02
 SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - EPOCA SECA 2013 IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
	GENE- RATION	ASSIGNED TO AREA						TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	860.7 226.4	1120.2 340.6	0.0 -67.0	0.0 0.0	0.0 0.0	0.0 304.3	27.9 279.5	-287.4 -22.4	-287.4 -22.4	-287.4
2 SALVADOR	1044.8 314.4	1012.0 336.5	0.0 -146.0	0.0 0.0	0.0 0.0	0.0 239.7	32.7 286.4	0.0 77.2	0.0 77.2	0.0
3 HONDURAS	1094.1 462.1	1055.9 346.1	0.0 -27.8	0.0 0.0	0.0 0.0	0.0 344.3	38.3 452.9	0.0 35.1	0.0 35.1	0.0
4 NICARAGU	518.6 110.2	497.3 196.2	0.0 -9.3	0.0 0.0	0.0 0.0	0.0 181.8	21.3 216.8	0.0 -111.7	0.0 -111.7	0.0
5 COSTA RI	1473.7 260.6	1446.5 517.9	0.0 -231.2	0.0 0.0	0.0 0.0	0.0 470.4	27.3 378.4	-0.1 65.9	-0.1 65.9	0.0
6 PANAMA	1565.6 56.3	1303.9 228.4	0.0 -93.3	0.0 0.0	0.0 0.0	0.0 495.2	34.1 476.3	227.6 -59.9	227.6 -59.9	227.4
7 ACANAL	110.2 25.1	46.6 8.2	0.0 -15.9	0.0 0.0	0.0 0.0	0.0 0.0	3.6 17.0	60.0 15.9	60.0 15.9	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	6667.7 1455.1	6482.5 1973.9	0.0 -590.6	0.0 0.0	0.0 0.0	0.0 2035.6	185.2 2107.4	0.0 0.0	0.0 0.0	0.0

Demanda Mínima de Invierno





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 11:08
 SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MINIMA - EPOCA HUMEDA DE 2013

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
6071		BLMG2		13.800	V2	20.0	3.6	15.0	0.0	1.0100	20.1	0.9839	47.0			62	6
6072		BLMG3		13.800	V3	20.0	3.6	15.0	0.0	1.0100	20.1	0.9839	47.0			62	6
6090		LESG1		13.800	E1	20.1	2.8	12.0	-5.0	1.0000	20.3	0.9904	27.0			64	6
6091		LESG2		13.800	E2	20.1	2.8	12.0	-5.0	1.0000	20.3	0.9904	27.0			64	6
6094		LVAG1		13.800	L1	23.3	-3.9	12.0	-5.0	1.0000	23.6	0.9864	27.0			64	6
6095		LVAG2		13.800	L2	23.3	-3.9	12.0	-5.0	1.0000	23.6	0.9864	27.0			64	6
6097		FORG1		13.800	F1	57.6	-10.9	50.0	-50.0	1.0000	58.6	0.9826	111.0			64	6
6098		FORG2		13.800	F2	57.6	-24.1	50.0	-50.0	0.9850	63.4	0.9226	111.0			64	6
6101		BAYG1		13.800	B1	50.3	24.8	30.0	-25.0	1.0100	55.6	0.8966	94.0			61	6
6176		ESTG1		13.800	E1	51.0	7.2	29.0	-29.0	1.0100	51.0	0.9902	69.0			64	6
6264		CHAG113.8		13.800	G1	89.1	-7.1	52.4	-48.9	1.0100	88.5	0.9969	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.3	4.9	4.9	-4.1	1.0067	9.6	0.8623	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.8	2.3	-2.3	1.0000	4.7	0.9253	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9863	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	23.8	0.8	10.0	-10.0	1.0100	23.6	0.9994	30.0			64	6
6334		BAM13B		13.800	G2	23.8	0.8	10.0	-10.0	1.0100	23.6	0.9994	30.0			64	6
6335		BAIG1		13.800	G1	37.7	-8.1	14.0	-14.0	1.0100	38.2	0.9777	49.0			64	6
6361		GLA13A		13.800	G1	10.8	-5.5	7.8	-7.0	1.0100	12.0	0.8903	14.1			64	6
6364		LOR13A		13.800	G1	14.4	-7.0	7.8	-7.0	1.0103	15.8	0.8989	25.0			64	6
6367		PRU13A		13.800	G1	23.8	-8.0	8.0	-8.0	1.0100	24.9	0.9479	33.0			64	6
6384		PEDI13.8		13.800	G1	8.5	-0.9	4.9	-4.9	1.0000	8.6	0.9941	12.5			64	6
6385		PEDII13.8		13.800	G1	5.5	-0.3	3.2	-3.6	1.0000	5.5	0.9985	7.5			64	6
6431		EOLICO I		0.6000	G1	50.0	-8.8	8.8	-8.8	1.0082	50.4	0.9850	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.5	-0.1	0.9	-0.1	1.0048	1.5	0.9981	2.1			64	6
6520		PANCH13.8		13.800	P1	4.2	2.0	2.0	-2.0	0.9435	5.0	0.9048	6.2			64	6
6530		HCONC4.16		4.2000	G1	4.2	-1.8	2.5	-2.5	1.0000	4.6	0.9232	5.6			64	6
6530		HCONC4.16		4.2000	G2	4.2	-1.8	2.5	-2.5	1.0000	4.6	0.9232	5.6			64	6
6560		PLANETA13.8		13.800	G1	3.8	2.0	2.0	-2.0	0.9435	4.6	0.8862	4.9			64	6
6570		FRAILE13.8		13.800	G2	2.3	1.2	1.2	-1.2	0.9732	2.7	0.8937	3.0			63	6
6600		HUACA13.8		13.800	G1	4.3	2.2	2.2	-2.2	0.9739	5.0	0.8893	5.5			63	6
6621		PSUR4.16		4.2000	G1	4.2	-1.3	2.5	-2.5	1.0000	4.5	0.9531	5.6			64	6
6621		PSUR4.16		4.2000	G2	4.2	-1.3	2.5	-2.5	1.0000	4.5	0.9531	5.6			64	6
6623		PNORTE4.16		4.2000	G1	4.2	-2.5	2.5	-2.5	1.0003	4.9	0.8622	5.6			64	6
6631		COCHEA13.8		13.800	G1	6.4	-3.1	3.7	-3.7	1.0000	7.1	0.9014	8.4			64	6
6641		MENDII13.8		13.800	G1	3.3	-1.6	1.9	-1.9	1.0000	3.7	0.8960	4.1			64	6
6641		MENDII13.8		13.800	G2	3.3	-1.6	1.9	-1.9	1.0000	3.7	0.8960	4.1			64	6
6651		BTOTUMA4.16		4.1600	G1	4.2	-1.2	2.5	-2.5	1.0000	4.4	0.9623	5.6			64	6



6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0255	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.1	0.2	2.3	-2.6	1.0000	6.1	0.9996	7.5	64	6
6681	BFRIO13A	13.800	G1	23.8	-8.0	8.0	-8.0	1.0134	24.8	0.9479	33.0	64	6
6692	ALTO13A	13.800	G1	19.1	-5.9	9.9	-9.9	1.0000	20.0	0.9554	24.9	64	6
6696	PANDO13A	13.800	G1	14.2	-5.8	12.8	-8.3	1.0000	15.3	0.9247	18.5	64	6
6699	MLIRIO13A	13.800	G1	14.2	-5.3	12.8	-8.3	1.0000	15.1	0.9354	18.5	64	6
6700	MLIRIO13B	13.800	G2	14.2	-5.3	12.8	-8.3	1.0000	15.1	0.9354	18.5	64	6
6711	TIZ4.16	4.2000	G1	3.9	-1.1	2.3	-2.3	1.0000	4.1	0.9627	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0252	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	3.8	-2.2	2.2	-2.2	1.0113	4.4	0.8668	5.0	64	6
6741	RROJAS4.16	4.2000	G1	3.7	-1.5	2.1	-2.1	1.0000	4.0	0.9215	4.8	64	6
6750	BON13.8	13.800	G1	8.9	-2.4	4.0	-4.0	1.0000	9.2	0.9651	35.3	64	6
6750	BON13.8	13.800	G2	8.9	-2.4	4.0	-4.0	1.0000	9.2	0.9651	35.3	64	6
SUBSYSTEM TOTALS				834.0	-84.4	483.4	-400.9				1371.9		

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
6127	MIR13B	12.000	G6	18.0	5.1	8.0	0.0	1.0100	18.5	0.9621	27.7			65	7
6129	MIR13D	13.800	G4	27.2	14.6	15.0	0.0	1.0100	30.6	0.8804	44.1			65	7
6134	MAD6A	6.9000	G1	10.1	1.5	6.0	-6.0	1.0100	10.1	0.9896	13.0			65	7
6135	MAD6B	6.9000	G2	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9919	13.0			65	7
6136	MAD6C	6.9000	G3	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9919	13.0			65	7
SUBSYSTEM TOTALS				75.3	23.8	41.0	-18.0				110.8				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 11:08
 SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MINIMA - EPOCA HUMEDA DE 2013

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X-----	FROM BUS	-----X	X-----	TO BUS	-----X	RATING SET A	RATING SET B	RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *

OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):



1260

X-----	FROM BUS	-----X	X-----	TO BUS	-----X					RATING SET A	RATING SET B	RATING SET C				
BUS#	X--	NAME	--X	BASKV	AREA	BUS#	X--	NAME	--X	BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *



1261

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E

SAT, MAY 07 2011 11:08

SISTEMA INTERCONECTADO NACIONAL

BASE DE DATOS REGIONAL - DEMANDA MINIMA - EPOCA HUMEDA DE 2013

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0244	235.60	6008		LSA230		230.00	6	1.0047	231.09
6011		MDN230		230.00	6	1.0129	232.96	6014		PRO230		230.00	6	1.0221	235.09
6096		FOR230		230.00	6	1.0139	233.21	6100		BAY230		230.00	6	1.0051	231.18
6178		EST230		230.00	6	1.0146	233.36	6179		GUA230		230.00	6	1.0146	233.37
6182		VEL230		230.00	6	1.0131	233.01	6260		CHA 230		230.00	6	1.0275	236.32
6263		ESP230		230.00	6	1.0272	236.25	6330		BAI230		230.00	6	1.0221	235.08
6340		CAN 230		230.00	6	1.0206	234.75	6360		GLA230		230.00	6	1.0166	233.83
6363		ZAM230		230.00	6	1.0187	234.31	6366		EVA230		230.00	6	1.0199	234.58
6380		BOQIII 230		230.00	6	1.0169	233.88	6400		FRONTCHA		230.00	6	1.0285	236.54
6430		ANTON230		230.00	6	1.0090	232.07	6450		LSA CAP 230		230.00	6	1.0047	231.09
6500		FRONTDOM		230.00	6	1.0289	236.65	6680		BFRIO230		230.00	6	1.0233	235.36
6690		DOM230		230.00	6	1.0285	236.56	6691		ALTO230		230.00	6	1.0295	236.79
6695		PANDO230		230.00	6	1.0282	236.48	6698		MLIRIO230		230.00	6	1.0279	236.42

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9893	227.54	6003		PANII230		230.00	6	0.9926	228.30
6005		CHO230		230.00	6	0.9876	227.14	6103		COP230		230.00	6	0.9950	228.85
6105		PAM230		230.00	6	0.9876	227.14	6171		PAC230		230.00	6	0.9960	229.09
6240		LGU 230		230.00	6	0.9961	229.11	6590		24DIC230		230.00	6	0.9941	228.65



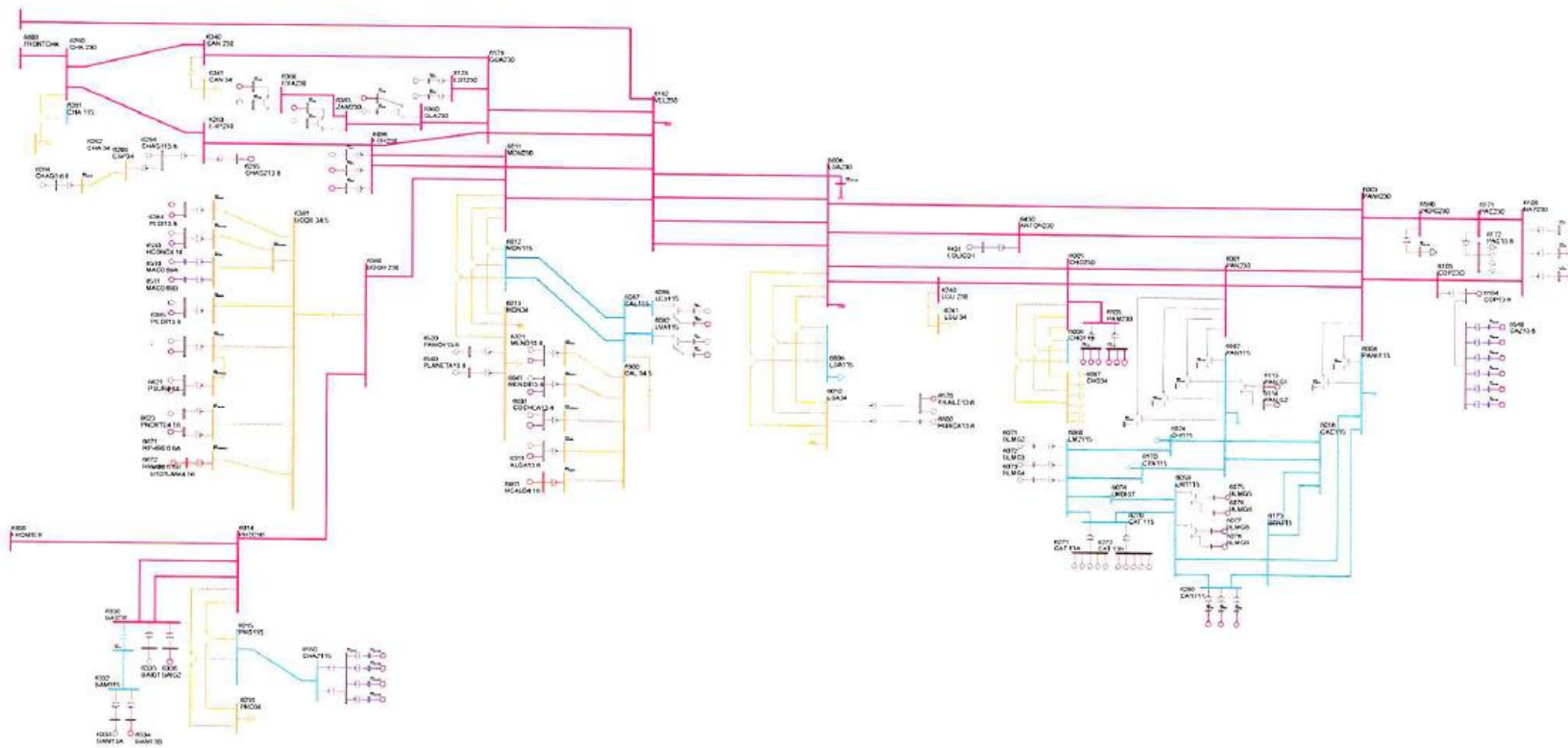
1263

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E SAT, MAY 07 2011 11:08
 SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BASE DE DATOS REGIONAL - DEMANDA MINIMA - EPOCA HUMEDA DE 2013 IN MW/MVAR

X-- AREA --X	FROM RATION	TO LOAD TO AREA	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
	GENE-	ASSIGNED						TO TIE	TO TIES	
								LINES	+ LOADS	
1	616.8	734.7	0.0	0.0	0.0	0.0	10.2	-128.2	-128.2	-128.2
GUATEMAL	18.5	100.4	380.7	0.0	0.0	597.9	161.8	-26.4	-26.4	
2	480.5	470.9	0.0	0.0	0.0	0.0	10.8	-1.1	-1.1	0.0
SALVADOR	48.9	126.5	0.0	0.0	0.0	248.8	108.6	62.5	62.5	
3	515.0	503.2	0.0	0.0	0.0	0.0	11.7	0.1	0.1	0.0
HONDURAS	-9.2	164.8	38.9	0.0	0.0	382.3	151.4	18.0	18.0	
4	278.4	273.9	0.0	0.0	0.0	0.0	4.5	0.0	0.0	0.0
NICARAGU	-85.6	108.5	19.8	0.0	0.0	201.0	52.0	-64.9	-64.9	
5	696.1	689.6	0.0	0.0	0.0	0.0	6.5	0.0	0.0	0.0
COSTA RI	-77.1	282.1	21.1	0.0	0.0	571.1	120.3	70.6	70.6	
6	834.0	718.7	0.0	0.0	0.0	0.0	33.1	82.2	82.2	81.2
PANAMA	-84.4	260.9	-99.0	0.0	0.0	496.5	328.3	-78.0	-78.0	
7	75.3	25.7	0.0	0.0	0.0	0.0	2.6	47.0	47.0	47.0
ACANAL	23.8	9.3	-15.6	0.0	0.0	0.0	11.8	18.2	18.2	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	3496.0	3416.6	0.0	0.0	0.0	0.0	79.4	0.0	0.0	0.0
TOTALS	-165.1	1052.4	345.9	0.0	0.0	2497.6	934.2	0.0	0.0	

Demanda Mínima de Verano

FIG. 1





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 11:18
 SISTEMA INTERCONECTADO NACIONAL
 BASE REGIONAL - DEMANDA MINIMA - EPOCA SECA 2013

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
6071		BLMG2		13.800	V2	38.0	1.4	15.0	0.0	1.0100	37.6	0.9993	47.0			62	6
6072		BLMG3		13.800	V3	38.0	1.4	15.0	0.0	1.0100	37.6	0.9993	47.0			62	6
6073		BLMG4		13.800	V4	38.0	1.3	15.0	0.0	1.0100	37.6	0.9994	47.0			62	6
6090		LESG1		13.800	E1	20.1	-0.2	12.0	-5.0	0.9900	20.3	0.9999	27.0			64	6
6094		LVAG1		13.800	L1	23.3	-5.0	12.0	-5.0	0.9987	23.9	0.9777	27.0			64	6
6097		FORG1		13.800	F1	50.0	-27.7	50.0	-50.0	0.9900	57.7	0.8746	111.0			64	6
6101		BAYG1		13.800	B1	49.0	1.2	30.0	-25.0	1.0100	48.5	0.9997	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	7.9	9.0	-11.0	1.0000	18.7	0.9059	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	7.9	9.0	-11.0	1.0000	18.7	0.9059	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	7.9	9.0	-11.0	1.0000	18.7	0.9059	21.7			61	6
6176		ESTG1		13.800	E1	51.0	2.7	29.0	-29.0	0.9900	51.6	0.9986	69.0			64	6
6177		ESTG2		13.800	E2	51.0	2.7	29.0	-29.0	0.9900	51.6	0.9986	69.0			64	6
6264		CHAG113.8		13.800	G1	89.1	-20.5	52.4	-48.9	0.9900	92.4	0.9745	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.3	4.9	4.9	-4.1	0.9871	9.8	0.8623	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	-0.5	5.6	-5.6	1.0000	8.3	0.9979	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	-0.5	5.6	-5.6	1.0000	8.3	0.9979	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	-0.5	5.6	-5.6	1.0000	8.3	0.9979	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	-0.5	5.6	-5.6	1.0000	8.3	0.9979	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	-0.5	5.6	-5.6	1.0000	8.3	0.9979	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	-0.5	5.6	-5.6	1.0000	8.3	0.9979	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	-0.5	5.6	-5.6	1.0000	8.3	0.9979	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	-0.5	5.6	-5.6	1.0000	8.3	0.9979	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	-0.5	5.6	-5.6	1.0000	8.3	0.9979	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	-0.5	5.6	-5.6	1.0000	8.3	0.9979	10.9			62	6
6311		ALGA13.8		13.800	A1	4.8	1.0	2.3	-2.3	1.0000	5.0	0.9774	5.7			64	6
6321		MEND13.8		13.800	M1	8.9	4.2	4.2	-4.2	0.9943	9.9	0.9060	10.4			64	6
6333		BAM13A		13.800	G1	23.8	-1.5	10.0	-10.0	1.0000	23.8	0.9980	30.0			64	6
6335		BAIG1		13.800	G1	37.7	-14.0	14.0	-14.0	1.0061	40.0	0.9374	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-7.0	7.8	-7.0	1.0173	13.7	0.8649	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-7.0	7.8	-7.0	1.0196	17.2	0.9167	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-8.0	8.0	-8.0	1.0195	27.2	0.9576	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	-1.6	4.9	-4.9	0.9900	9.7	0.9858	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	-1.3	3.2	-3.6	0.9900	6.4	0.9797	7.5			64	6
6431		EOLICO I		0.6000	G1	120.0	-21.0	21.0	-21.0	1.0272	118.6	0.9850	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.6	-0.1	0.9	-0.1	0.9966	1.6	0.9985	2.1			64	6
6520		PANCH13.8		13.800	P1	4.7	2.0	2.0	-2.0	0.9251	5.6	0.9216	6.2			64	6
6530		HCONC4.16		4.2000	G1	4.7	-2.5	2.5	-2.5	0.9903	5.4	0.8851	5.6			64	6



BUSES WITH VOLTAGE LESS THAN 1.0000: * NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 11:18
 SISTEMA INTERCONECTADO NACIONAL
 BASE REGIONAL - DEMANDA MINIMA - EPOCA SECA 2013

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0115	116.33	6004		PANII115		115.00	6	1.0103	116.19
6006		CHO115		115.00	6	1.0119	116.36	6009		LSA115		115.00	6	1.0313	118.60
6012		MDN115		115.00	6	1.0165	116.89	6015		PRO115		115.00	6	1.0248	117.85
6018		CAC115		115.00	6	1.0116	116.34	6019		CVI115A		115.00	6	1.0065	115.75
6024		CHI115		115.00	6	1.0046	115.53	6027		LOC115A		115.00	6	1.0083	115.96
6032		MAR115A		115.00	6	1.0077	115.89	6036		SMA115		115.00	6	1.0107	116.23
6040		SFR115		115.00	6	1.0071	115.82	6047		CLA115		115.00	6	1.0009	115.10
6055		MOS115B		115.00	6	1.0110	116.27	6057		TOC115		115.00	6	1.0082	115.95
6059		LM1115		115.00	6	1.0103	116.19	6060		LM2115		115.00	6	1.0104	116.19
6066		FFIELD		115.00	6	1.0106	116.22	6074		LMDIST		115.00	6	1.0103	116.19
6087		CAL115		115.00	6	1.0169	116.94	6088		LES115		115.00	6	1.0174	117.01
6092		LVA115		115.00	6	1.0168	116.93	6123		MIR115		115.00	7	1.0224	117.58
6170		CPA115		115.00	6	1.0100	116.15	6173		STR115		115.00	6	1.0104	116.19
6174		PM115-1A		115.00	6	1.0119	116.37	6175		PM115-2A		115.00	6	1.0119	116.37
6210		TIN115		115.00	6	1.0103	116.18	6211		PM115-9		115.00	6	1.0107	116.23
6230		CBA115		115.00	6	1.0077	115.89	6261		CHA 115		115.00	6	1.0232	117.67
6270		CAT 115		115.00	6	1.0105	116.21	6280		GIR 115		115.00	6	1.0100	116.15
6290		CATII 11		115.00	6	1.0103	116.19	6331		BAI115		115.00	6	1.0198	117.27
6332		BAM115		115.00	6	1.0196	117.26	6350		PM115-8		115.00	6	1.0099	116.13
6550		CHAZ115		115.00	6	1.0248	117.85	6580		LBO115		115.00	6	1.0063	115.72

BUSES WITH VOLTAGE LESS THAN 1.0000: * NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 07 2011 11:18
 SISTEMA INTERCONECTADO NACIONAL
 BASE REGIONAL - DEMANDA MINIMA - EPOCA SECA 2013

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)

LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X-----	FROM BUS	-----X	X-----	TO BUS	-----X	RATING SET A	RATING SET B	RATING SET C							
BUS#	X--	NAME	--X	BASKV	AREA	BUS#	X--	NAME	--X	BASKV	AREA	CKT LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT



* NONE *

 OUTPUT FOR AREA 7 [ACANAL]

* NONE *

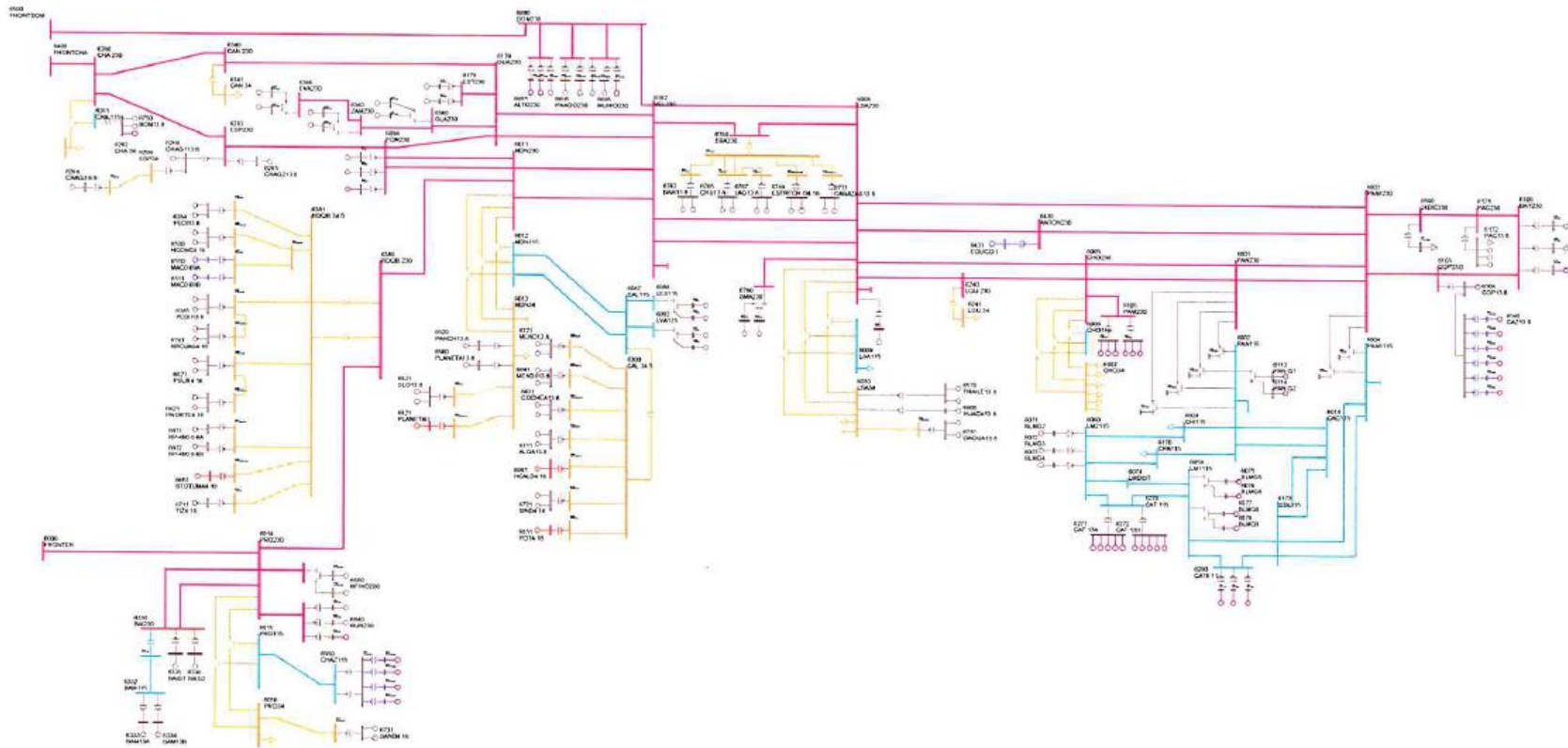
		PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E						SAT, MAY 07 2011		11:18			
		SISTEMA INTERCONECTADO NACIONAL								AREA TOTALS			
		BASE REGIONAL - DEMANDA MINIMA - EPOCA SECA 2013								IN MW/MVAR			
X-- AREA --X	FROM GENE- RATION	TO LOAD ASSIGNED TO AREA	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-			DESIRED NET INT		
								TO TIE LINES	TO TIES + LOADS				
1	507.6	720.4	0.0	0.0	0.0	0.0	13.7	-226.6	-226.6	-226.5			
GUATEMAL	5.0	100.0	74.3	0.0	0.0	316.1	169.7	-22.9	-22.9				
2	481.8	470.9	0.0	0.0	0.0	0.0	11.0	0.0	0.0	0.0			
SALVADOR	59.1	126.5	0.0	0.0	0.0	252.0	108.0	76.6	76.6				
3	512.0	496.8	0.0	0.0	0.0	0.0	15.3	-0.1	-0.1	0.0			
HONDURAS	12.2	162.7	38.9	0.0	0.0	378.7	174.0	15.4	15.4				
4	285.1	273.8	0.0	0.0	0.0	0.0	11.3	0.0	0.0	0.0			
NICARAGU	-37.5	108.4	19.1	0.0	0.0	194.4	97.1	-67.8	-67.8				
5	776.0	763.6	0.0	0.0	0.0	0.0	12.4	-0.1	-0.1	0.0			
COSTA RI	-3.9	288.2	-35.2	0.0	0.0	484.6	179.6	48.1	48.1				
6	908.5	717.1	0.0	0.0	0.0	0.0	11.8	179.6	179.6	179.5			
PANAMA	-85.6	260.3	26.6	0.0	0.0	506.8	204.9	-70.5	-70.5				
7	74.7	25.6	0.0	0.0	0.0	0.0	2.0	47.1	47.1	47.0			
ACANAL	24.3	9.3	-15.7	0.0	0.0	0.0	9.6	21.1	21.1				
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
COLUMN	3545.7	3468.2	0.0	0.0	0.0	0.0	77.5	0.0	0.0	0.0			
TOTALS	-26.3	1055.3	108.0	0.0	0.0	2132.5	942.8	0.0	0.0				

Año 2014



1269

Demanda Máxima de Invierno





6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0073	1.6	0.9985	2.1	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0073	1.6	0.9985	2.1	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9685	5.3	0.9216	6.2	6
6530	HCONC4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9818	5.6	6
6530	HCONC4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9818	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9685	4.9	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9782	5.4	0.9084	5.5	6
6621	PSUR4.16	4.2000	G1	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9900	5.6	6
6621	PSUR4.16	4.2000	G2	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9900	5.6	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9566	5.6	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9566	5.6	6
6631	COCHEA13.8	13.800	G1	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9848	8.4	6
6631	COCHEA13.8	13.800	G2	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9848	8.4	6
6641	MENDII13.8	13.800	G1	3.3	-0.4	1.9	-1.9	1.0000	3.3	0.9942	4.1	6
6641	MENDII13.8	13.800	G2	3.3	-0.4	1.9	-1.9	1.0000	3.3	0.9942	4.1	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.7	2.5	-2.5	1.0000	5.0	0.9417	5.6	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0233	3.8	0.8675	4.4	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9964	7.5	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9964	7.5	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0061	27.6	0.9576	33.0	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0061	27.6	0.9576	33.0	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0089	23.3	0.9074	24.9	6
6696	PANDO13A	13.800	G1	15.8	-1.3	12.8	-8.3	1.0000	15.9	0.9967	18.5	6
6697	PANDO13B	13.800	G2	15.8	-1.3	12.8	-8.3	1.0000	15.9	0.9967	18.5	6
6699	MLIRIO13A	13.800	G1	15.8	-1.0	12.8	-8.3	1.0000	15.8	0.9981	18.5	6
6700	MLIRIO13B	13.800	G2	15.8	-1.0	12.8	-8.3	1.0000	15.8	0.9981	18.5	6
6711	TIZ4.16	4.2000	G1	4.4	1.8	2.3	-2.3	1.0000	4.8	0.9256	5.2	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0217	4.8	0.8622	5.6	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0217	4.8	0.8622	5.6	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0000	4.8	0.8925	5.0	6
6731	SAND4.16	4.2000	G2	4.3	-2.2	2.2	-2.2	1.0000	4.8	0.8925	5.0	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9598	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9598	4.8	6
6750	BON13.8	13.800	G1	9.9	-1.0	4.0	-4.0	1.0000	10.0	0.9948	35.3	6
6750	BON13.8	13.800	G2	9.9	-1.0	4.0	-4.0	1.0000	10.0	0.9948	35.3	6
6763	BAR13.8	13.800	G1	7.2	2.8	4.0	-4.0	1.0000	7.7	0.9328	9.0	6
6763	BAR13.8	13.800	G2	7.2	2.8	4.0	-4.0	1.0000	7.7	0.9328	9.0	6
6765	CRU13.8	13.800	G1	4.6	1.3	2.6	-2.6	1.0000	4.8	0.9616	5.8	6
6765	CRU13.8	13.800	G2	4.6	1.3	2.6	-2.6	1.0000	4.8	0.9616	5.8	6
6767	LAG13.8	13.800	G1	4.7	0.9	2.6	-2.6	1.0000	4.7	0.9814	5.8	6
6767	LAG13.8	13.800	G2	4.7	0.9	2.6	-2.6	1.0000	4.7	0.9814	5.8	6



6769	ESTRECHO4.164.2000	G1	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9732	5.6	63	6
6769	ESTRECHO4.164.2000	G2	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9732	5.6	63	6
6771	CAÑAZAS13.8	G1	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9444	3.3	63	6
6771	CAÑAZAS13.8	G2	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9444	3.3	63	6
6781	OAGUA13.8	G1	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6781	OAGUA13.8	G2	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6791	SMA13A	G1	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6792	SMA13B	G2	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6810	SVC-LV	1	0.0	189.1	300.0	-225.0	1.0461	180.7	0.0000	300.0	63	6
6821	PLANETAII	G1	3.5	-1.8	1.8	-1.8	1.0149	3.9	0.8892	4.1	64	6
6831	SLO13.8	G1	4.0	2.1	2.1	-2.1	0.9961	4.5	0.8892	4.7	64	6
6831	SLO13.8	G2	4.0	2.1	2.1	-2.1	0.9961	4.5	0.8892	4.7	64	6
6841	BUR13A	G1	15.8	8.1	8.1	-8.1	0.9970	17.9	0.8892	18.5	64	6
6842	BUR13B	G2	15.8	8.1	8.1	-8.1	0.9970	17.9	0.8892	18.5	64	6
6851	POT4.16	G1	3.5	-2.0	2.0	-2.0	1.0232	4.0	0.8678	4.6	64	6
SUBSYSTEM TOTALS			1633.4	202.5	1094.8	-913.5				2463.9		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 8:47

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014

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
6127		MIR13B		12.000	G6	18.0	0.0	8.0	0.0	1.0141	17.7	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	20.0	6.3	11.0	0.0	1.0100	20.8	0.9533	29.4			65	7
6129		MIR13D		13.800	G4	25.1	7.8	15.0	0.0	1.0100	26.0	0.9544	44.1			65	7
6130		MIR13F		13.800	G5	17.0	0.0	8.0	0.0	1.0127	16.8	1.0000	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	-0.2	6.0	-6.0	1.0100	9.9	0.9998	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.0	6.0	-6.0	1.0100	9.9	1.0000	13.0			65	7
6136		MAD6C		6.9000	G3	10.1	-0.1	6.0	-6.0	1.0100	10.0	1.0000	13.0			65	7
SUBSYSTEM TOTALS				110.2	13.9	60.0	-18.0						167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 8:47

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0166	233.83	6001		PAN230		230.00	6	1.0044	231.00
6003		PANII230		230.00	6	1.0141	233.25	6008		LSA230		230.00	6	1.0100	232.30
6011		MDN230		230.00	6	1.0054	231.25	6014		PRO230		230.00	6	1.0152	233.50



6096	FOR230	230.00	6	1.0071	231.64	6100	BAY230	230.00	6	1.0288	236.62
6103	COP230	230.00	6	1.0168	233.85	6171	PAC230	230.00	6	1.0220	235.05
6178	EST230	230.00	6	1.0022	230.51	6179	GUA230	230.00	6	1.0023	230.54
6182	VEL230	230.00	6	1.0028	230.65	6260	CHA 230	230.00	6	1.0158	233.64
6263	ESP230	230.00	6	1.0166	233.81	6330	BAI230	230.00	6	1.0143	233.30
6340	CAN 230	230.00	6	1.0080	231.84	6360	GLA230	230.00	6	1.0069	231.59
6363	ZAM230	230.00	6	1.0117	232.69	6366	EVA230	230.00	6	1.0144	233.31
6380	BOQIII 230	230.00	6	1.0104	232.40	6400	FRONTCHA	230.00	6	1.0166	233.81
6430	ANTON230	230.00	6	1.0162	233.71	6500	FRONTDOM	230.00	6	1.0246	235.65
6590	24DIC230	230.00	6	1.0177	234.08	6680	BFRIO230	230.00	6	1.0179	234.12
6690	DOM230	230.00	6	1.0252	235.80	6691	ALTO230	230.00	6	1.0269	236.18
6695	PANDO230	230.00	6	1.0257	235.92	6698	MLIRIO230	230.00	6	1.0256	235.88
6760	SBA230	230.00	6	1.0048	231.10	6790	SMA230	230.00	6	1.0109	232.51
6840	BUR230	230.00	6	1.0175	234.03						

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)
6005		CHO230		230.00	6	0.9921	228.19	6105		PAM230		230.00	6	0.9921	228.19
6240		LGU 230		230.00	6	0.9947	228.79								

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 8:47
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0274	118.15	6004		PANII115		115.00	6	1.0261	118.01
6009		LSA115		115.00	6	1.0265	118.04	6012		MDN115		115.00	6	1.0132	116.52
6015		PRO115		115.00	6	1.0104	116.20	6018		CAC115		115.00	6	1.0271	118.12
6019		CVI115A		115.00	6	1.0226	117.60	6024		CHI115		115.00	6	1.0153	116.76
6027		LOC115A		115.00	6	1.0217	117.50	6032		MAR115A		115.00	6	1.0198	117.28
6036		SMA115		115.00	6	1.0263	118.02	6040		SFR115		115.00	6	1.0198	117.27
6047		CLA115		115.00	6	1.0104	116.19	6055		MOS115B		115.00	6	1.0254	117.92
6057		TOC115		115.00	6	1.0242	117.78	6059		LM1115		115.00	6	1.0197	117.26
6060		LM2115		115.00	6	1.0198	117.28	6066		FFIELD		115.00	6	1.0132	116.52
6074		LMDIST		115.00	6	1.0197	117.27	6087		CAL115		115.00	6	1.0153	116.76
6088		LES115		115.00	6	1.0177	117.03	6092		LVA115		115.00	6	1.0152	116.75
6123		MIR115		115.00	7	1.0374	119.30	6170		CPA115		115.00	6	1.0213	117.45
6173		STR115		115.00	6	1.0216	117.49	6174		PM115-1A		115.00	6	1.0245	117.82
6175		PM115-2A		115.00	6	1.0245	117.82	6210		TIN115		115.00	6	1.0241	117.77
6211		PM115-9		115.00	6	1.0247	117.84	6230		CBA115		115.00	6	1.0207	117.38



6261	CHA 115	115.00	6	1.0082	115.95	6270	CAT 115	115.00	6	1.0197	117.27
6280	GIR 115	115.00	6	1.0213	117.45	6290	CATII 11	115.00	6	1.0199	117.29
6331	BAI115	115.00	6	1.0017	115.19	6332	BAM115	115.00	6	1.0049	115.56
6350	PM115-8	115.00	6	1.0237	117.73	6550	CHAZ115	115.00	6	1.0104	116.20
6580	LBO115	115.00	6	1.0222	117.55						

BUSES WITH VOLTAGE LESS THAN 1.0000:

6006 CHO115 115.00 6 0.9796 112.66

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 8:47

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL

BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)

LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X		X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME --X BASKV AREA	BUS#	X-- NAME --X BASKV AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6087	CAL115 115.00* 6	6300	CAL 34.5 34.500 6	T1	60.2	62.5	96.3	--	--	--	--
6092	LVA115 115.00* 6	3WNDTR	TRAF01 WND 1 6	T1	53.4	54.0	98.8	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 8:47

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL

BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014

OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)

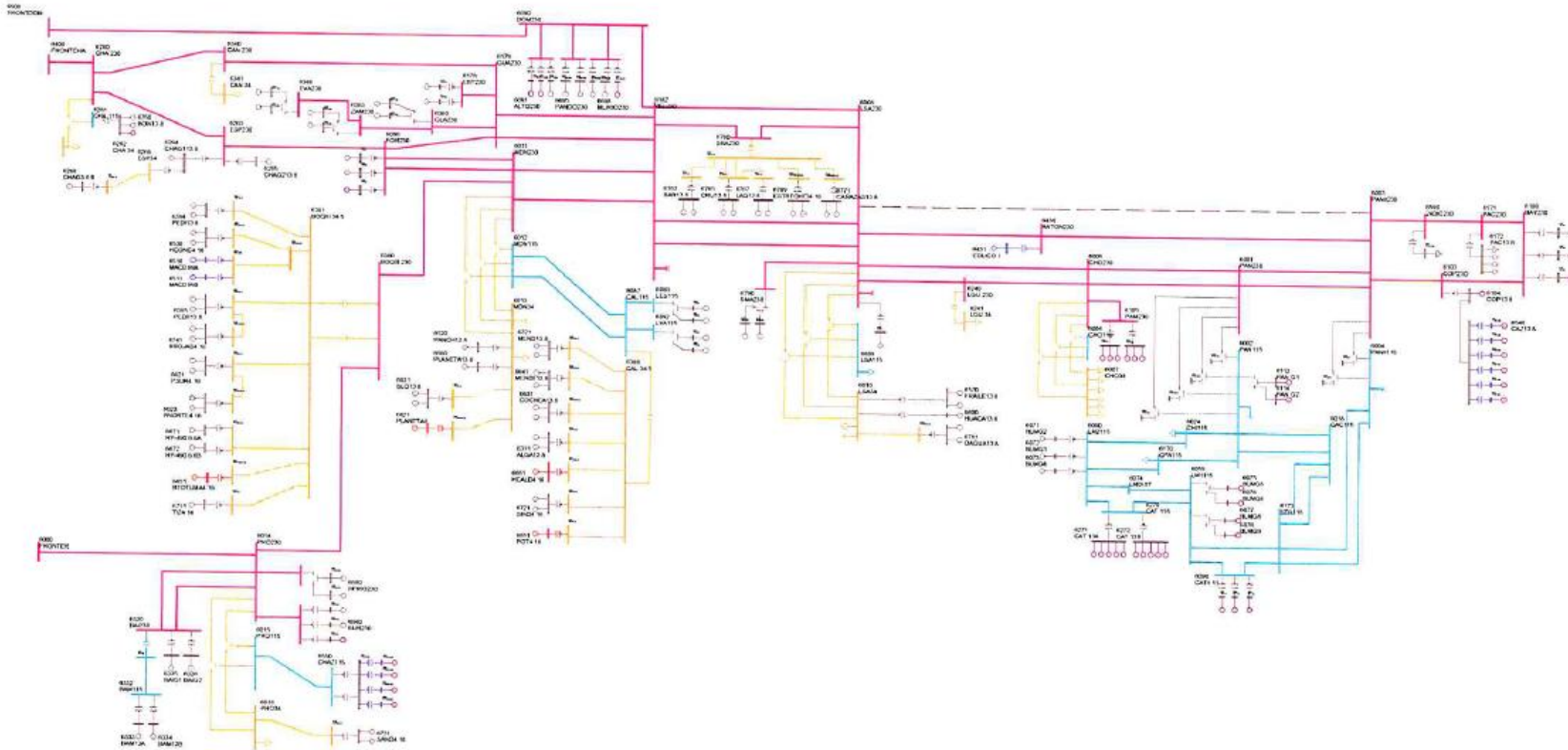
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X		X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME --X BASKV AREA	BUS#	X-- NAME --X BASKV AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							THU, MAY 12 2011 8:47				
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS				
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014							IN MW/MVAR				
X-- AREA --X	FROM RATION	TO LOAD TO AREA	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT	
								TO TIE LINES	TO TIES + LOADS		
1	905.3	1150.5	0.0	0.0	0.0	0.0	20.9	-266.1	-266.1	-266.1	
GUATEMAL	220.0	340.6	219.0	0.0	0.0	600.8	237.6	23.6	23.6		
2	1088.7	1054.0	0.0	0.0	0.0	0.0	34.8	0.0	0.0	0.0	
SALVADOR	265.2	350.4	-159.5	0.0	0.0	234.9	301.7	7.5	7.5		
3	1137.6	1106.0	0.0	0.0	0.0	0.0	31.6	0.0	0.0	0.0	
HONDURAS	370.0	362.7	-10.0	0.0	0.0	457.8	412.3	62.8	62.8		
4	533.5	514.6	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	
NICARAGU	81.3	202.9	-9.1	0.0	0.0	203.2	200.3	-109.6	-109.6		
5	1498.0	1468.8	0.0	0.0	0.0	0.0	29.1	0.1	0.1	0.0	
COSTA RI	240.1	538.4	-228.4	0.0	0.0	555.3	417.7	67.7	67.7		
6	1633.4	1333.8	0.0	0.0	0.0	0.0	93.6	206.0	206.0	206.1	
PANAMA	202.5	233.7	-365.1	0.0	0.0	501.3	893.1	-57.9	-57.9		
7	110.2	46.6	0.0	0.0	0.0	0.0	3.6	60.0	60.0	60.0	
ACANAL	13.9	8.2	-16.1	0.0	0.0	0.0	15.9	6.0	6.0		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	6906.7	6674.4	0.0	0.0	0.0	0.0	232.2	0.0	0.0	0.0	
TOTALS	1393.0	2036.9	-569.3	0.0	0.0	2553.3	2478.6	0.0	0.0		

Contingencia 3: Llano Sánchez – Panamá II





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 3

THU, MAY 12 2011 9:27

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
6071		BLMG2		13.800	V2	38.0	7.9	15.0	0.0	1.0200	38.0	0.9792	47.0			62	6
6072		BLMG3		13.800	V3	38.0	7.9	15.0	0.0	1.0200	38.0	0.9792	47.0			62	6
6073		BLMG4		13.800	V4	38.0	8.1	15.0	0.0	1.0200	38.1	0.9780	47.0			62	6
6090		LESG1		13.800	E1	22.4	3.0	12.0	-5.0	1.0000	22.6	0.9910	27.0			64	6
6091		LESG2		13.800	E2	22.4	3.0	12.0	-5.0	1.0000	22.6	0.9910	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-3.6	12.0	-5.0	1.0000	26.3	0.9906	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-3.6	12.0	-5.0	1.0000	26.3	0.9906	27.0			64	6
6097		FORG1		13.800	F1	75.0	5.7	50.0	-50.0	1.0100	74.5	0.9971	111.0			64	6
6098		FORG2		13.800	F2	75.0	5.7	50.0	-50.0	1.0100	74.5	0.9971	111.0			64	6
6101		BAYG1		13.800	B1	81.2	19.8	30.0	-25.0	1.0100	82.8	0.9714	94.0			61	6
6102		BAYG2		13.800	B2	65.8	18.4	30.0	-25.0	1.0100	67.7	0.9631	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9793	19.6	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9793	19.6	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9793	19.6	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	9.9	29.0	-29.0	1.0000	57.8	0.9854	69.0			64	6
6177		ESTG2		13.800	E2	57.0	9.9	29.0	-29.0	1.0000	57.8	0.9854	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-4.8	52.4	-48.9	1.0000	99.7	0.9988	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	-1.6	52.4	-48.9	1.0000	99.6	0.9999	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9765	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9765	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9928	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9928	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.4	10.0	-10.0	1.0000	26.6	0.9987	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.4	10.0	-10.0	1.0000	26.6	0.9987	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-9.4	14.0	-14.0	1.0000	43.2	0.9758	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-9.4	14.0	-14.0	1.0000	43.2	0.9758	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-4.8	7.8	-7.0	1.0000	13.0	0.9283	14.1			64	6
6362		GLA13B		13.800	G2	12.1	-4.8	7.8	-7.0	1.0000	13.0	0.9283	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-7.0	7.8	-7.0	1.0016	17.5	0.9167	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-7.0	7.8	-7.0	1.0016	17.5	0.9167	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-8.0	8.0	-8.0	1.0025	27.7	0.9576	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-8.0	8.0	-8.0	1.0025	27.7	0.9576	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	-0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	-0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9990	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9990	7.5			64	6



6431	EOLICO I	0.6000	G1	60.0	-6.4	10.5	-10.5	1.0000	60.3	0.9944	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0073	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0073	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9685	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9818	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9818	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9685	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9782	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9900	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9900	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9566	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9566	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9848	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9848	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.4	1.9	-1.9	1.0000	3.3	0.9942	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.4	1.9	-1.9	1.0000	3.3	0.9942	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.7	2.5	-2.5	1.0000	5.0	0.9417	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0233	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9964	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9964	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0061	27.6	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0061	27.6	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0089	23.3	0.9074	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-1.3	12.8	-8.3	1.0000	15.9	0.9967	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-1.3	12.8	-8.3	1.0000	15.9	0.9967	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-1.0	12.8	-8.3	1.0000	15.8	0.9981	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-1.0	12.8	-8.3	1.0000	15.8	0.9981	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	1.8	2.3	-2.3	1.0000	4.8	0.9256	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0217	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0217	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0000	4.8	0.8925	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-2.2	2.2	-2.2	1.0000	4.8	0.8925	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9598	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9598	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-1.0	4.0	-4.0	1.0000	10.0	0.9948	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-1.0	4.0	-4.0	1.0000	10.0	0.9948	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	2.8	4.0	-4.0	1.0000	7.7	0.9328	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	2.8	4.0	-4.0	1.0000	7.7	0.9328	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	1.3	2.6	-2.6	1.0000	4.8	0.9616	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.3	2.6	-2.6	1.0000	4.8	0.9616	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	0.9	2.6	-2.6	1.0000	4.7	0.9814	5.8	63	6



6767	LAG13.8	13.800	G2	4.7	0.9	2.6	-2.6	1.0000	4.7	0.9814	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9732	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9732	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9444	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9444	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	282.4	300.0	-225.0	1.0631	265.6	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0149	3.9	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9961	4.5	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9961	4.5	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9970	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9970	17.9	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0232	4.0	0.8678	4.6	64	6
SUBSYSTEM TOTALS				1648.7	341.9	1094.8	-913.5				2463.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 9:27
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 3

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
6127		MIR13B		12.000	G6	18.0	1.1	8.0	0.0	1.0100	17.9	0.9981	27.7			65	7
6128		MIR13C		12.000	G3	20.0	8.6	11.0	0.0	1.0100	21.6	0.9188	29.4			65	7
6129		MIR13D		13.800	G4	25.1	10.7	15.0	0.0	1.0100	27.0	0.9202	44.1			65	7
6130		MIR13F		13.800	G5	17.0	1.9	8.0	0.0	1.0100	16.9	0.9935	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	0.5	6.0	-6.0	1.0100	9.9	0.9988	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.5	6.0	-6.0	1.0100	9.9	0.9988	13.0			65	7
6136		MAD6C		6.9000	G3	10.1	0.5	6.0	-6.0	1.0100	10.0	0.9988	13.0			65	7
SUBSYSTEM TOTALS						110.2	23.8	60.0	-18.0				167.9				



1281

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 9:27
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 3

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0166	233.83	6008		LSA230		230.00	6	1.0100	232.30
6011		MDN230		230.00	6	1.0054	231.25	6014		PRO230		230.00	6	1.0152	233.50
6096		FOR230		230.00	6	1.0071	231.64	6100		BAY230		230.00	6	1.0150	233.45
6171		PAC230		230.00	6	1.0034	230.78	6178		EST230		230.00	6	1.0022	230.51
6179		GUA230		230.00	6	1.0023	230.54	6182		VEL230		230.00	6	1.0028	230.65
6260		CHA 230		230.00	6	1.0158	233.64	6263		ESP230		230.00	6	1.0166	233.81
6330		BAI230		230.00	6	1.0143	233.30	6340		CAN 230		230.00	6	1.0080	231.84
6360		GLA230		230.00	6	1.0069	231.59	6363		ZAM230		230.00	6	1.0117	232.69
6366		EVA230		230.00	6	1.0144	233.31	6380		BOQIII 230		230.00	6	1.0104	232.40
6400		FRONTCHA		230.00	6	1.0166	233.81	6500		FRONTDOM		230.00	6	1.0246	235.65
6680		BFRIO230		230.00	6	1.0179	234.12	6690		DOM230		230.00	6	1.0252	235.80
6691		ALTO230		230.00	6	1.0269	236.18	6695		PANDO230		230.00	6	1.0257	235.92
6698		MLIRIO230		230.00	6	1.0256	235.88	6760		SBA230		230.00	6	1.0048	231.10
6790		SMA230		230.00	6	1.0109	232.51	6840		BUR230		230.00	6	1.0175	234.03

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)
6001		PAN230		230.00	6	0.9832	226.12	6003		PANII230		230.00	6	0.9937	228.55
6005		CHO230		230.00	6	0.9683	222.72	6103		COP230		230.00	6	0.9973	229.39
6105		PAM230		230.00	6	0.9683	222.72	6240		LGU 230		230.00	6	0.9785	225.04
6430		ANTON230		230.00	6	0.9997	229.92	6590		24DIC230		230.00	6	0.9982	229.59



1282

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 3

THU, MAY 12 2011 9:27

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0067	115.77	6004		PANII115		115.00	6	1.0060	115.69
6009		LSA115		115.00	6	1.0265	118.04	6012		MDN115		115.00	6	1.0132	116.52
6015		PRO115		115.00	6	1.0104	116.20	6018		CAC115		115.00	6	1.0066	115.76
6019		CVI115A		115.00	6	1.0019	115.22	6027		LOC115A		115.00	6	1.0007	115.08
6036		SMA115		115.00	6	1.0056	115.64	6055		MOS115B		115.00	6	1.0046	115.53
6057		TOC115		115.00	6	1.0039	115.45	6059		LM1115		115.00	6	1.0061	115.70
6060		LM2115		115.00	6	1.0063	115.72	6066		FFIELD		115.00	6	1.0003	115.04
6074		LMDIST		115.00	6	1.0062	115.71	6087		CAL115		115.00	6	1.0153	116.76
6088		LES115		115.00	6	1.0177	117.03	6092		LVA115		115.00	6	1.0152	116.75
6123		MIR115		115.00	7	1.0194	117.23	6170		CPA115		115.00	6	1.0057	115.66
6173		STR115		115.00	6	1.0066	115.76	6174		PM115-1A		115.00	6	1.0070	115.81
6175		PM115-2A		115.00	6	1.0070	115.81	6210		TIN115		115.00	6	1.0033	115.38
6211		PM115-9		115.00	6	1.0039	115.45	6261		CHA 115		115.00	6	1.0082	115.95
6270		CAT 115		115.00	6	1.0062	115.71	6280		GIR 115		115.00	6	1.0057	115.66
6290		CATII 11		115.00	6	1.0061	115.71	6331		BAI115		115.00	6	1.0017	115.19
6332		BAM115		115.00	6	1.0049	115.56	6350		PM115-8		115.00	6	1.0029	115.34
6550		CHAZ115		115.00	6	1.0104	116.20	6580		LBO115		115.00	6	1.0015	115.18

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6006		CHO115		115.00	6	0.9552	109.85	6024		CHI115		115.00	6	0.9974	114.70
6032		MAR115A		115.00	6	0.9987	114.85	6040		SFR115		115.00	6	0.9986	114.84
6047		CLA115		115.00	6	0.9923	114.12	6230		CBA115		115.00	6	0.9997	114.96



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 9:27
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 3
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.2	62.5	96.3	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	53.4	54.0	98.8	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 9:27
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 3
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

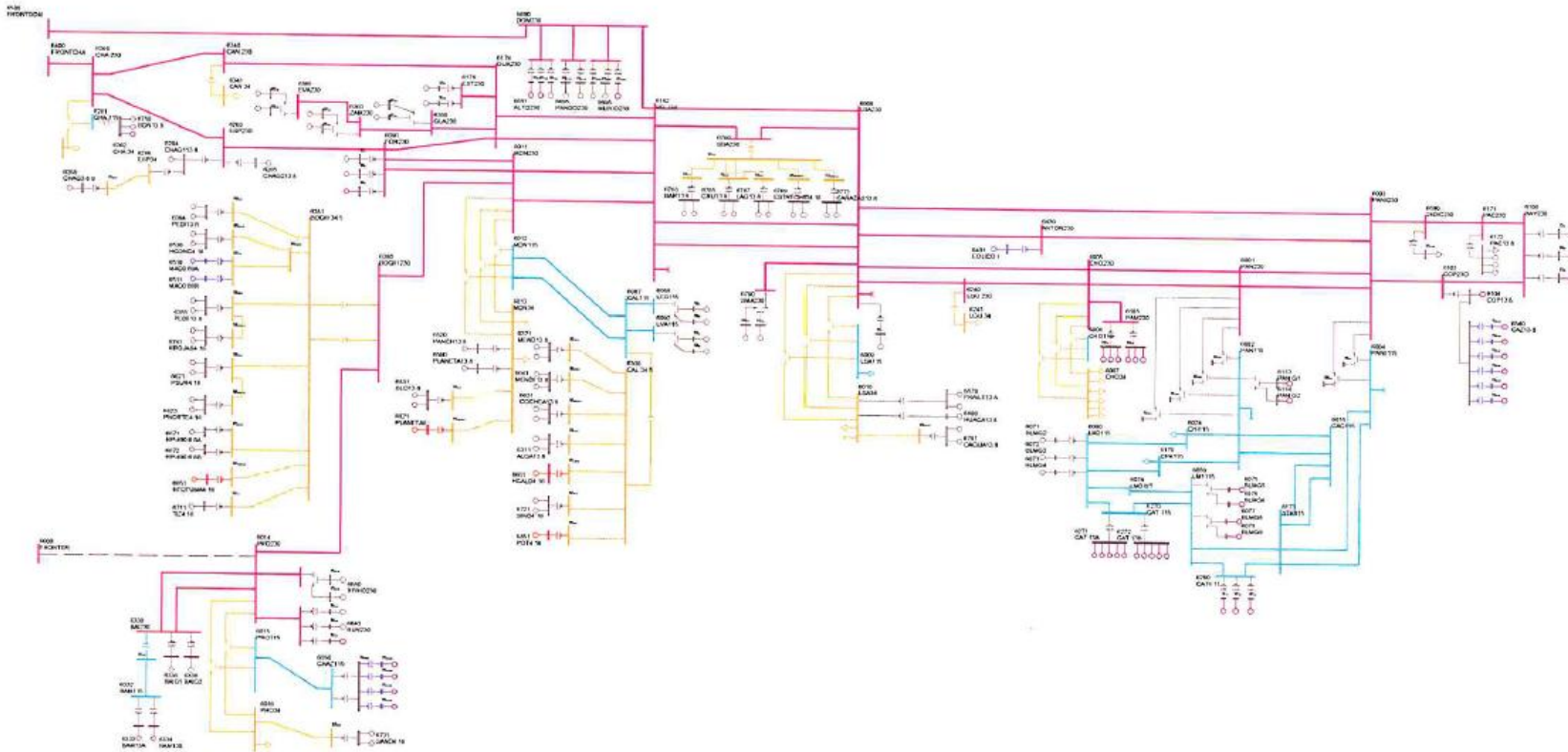
X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							THU, MAY 12 2011 9:27		AREA TOTALS		
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							IN MW/MVAR				
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 3											
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT	
	RATION	BUSES						LINES	+ LOADS		
1	905.3	1150.5	0.0	0.0	0.0	0.0	20.9	-266.1	-266.1	-266.1	
GUATEMAL	220.0	340.6	219.0	0.0	0.0	600.8	237.6	23.6	23.6		
2	1088.7	1054.0	0.0	0.0	0.0	0.0	34.8	0.0	0.0	0.0	
SALVADOR	265.2	350.4	-159.5	0.0	0.0	234.9	301.7	7.5	7.5		
3	1137.6	1106.0	0.0	0.0	0.0	0.0	31.6	0.0	0.0	0.0	
HONDURAS	370.0	362.7	-10.0	0.0	0.0	457.8	412.3	62.8	62.8		
4	533.5	514.6	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	
NICARAGU	81.3	202.9	-9.1	0.0	0.0	203.2	200.3	-109.6	-109.6		
5	1498.0	1468.8	0.0	0.0	0.0	0.0	29.1	0.1	0.1	0.0	
COSTA RI	240.1	538.4	-228.4	0.0	0.0	555.3	417.7	67.7	67.7		
6	1648.7	1333.8	0.0	0.0	0.0	0.0	108.8	206.1	206.1	206.1	
PANAMA	341.9	233.7	-350.7	0.0	0.0	458.4	984.0	-66.7	-66.7		
7	110.2	46.6	0.0	0.0	0.0	0.0	3.7	59.9	59.9	60.0	
ACANAL	23.8	8.2	-15.9	0.0	0.0	0.0	16.7	14.9	14.9		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	6922.0	6674.4	0.0	0.0	0.0	0.0	247.6	0.0	0.0	0.0	
TOTALS	1542.2	2036.9	-554.6	0.0	0.0	2510.4	2570.2	0.0	0.0		

Contingencia 7: Frontera – Progreso





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 7

THU, MAY 12 2011 9:33

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
6071		BLMG2		13.800	V2	38.0	1.4	15.0	0.0	1.0200	37.3	0.9993	47.0			62	6
6072		BLMG3		13.800	V3	38.0	1.4	15.0	0.0	1.0200	37.3	0.9993	47.0			62	6
6073		BLMG4		13.800	V4	38.0	1.3	15.0	0.0	1.0200	37.3	0.9994	47.0			62	6
6090		LESG1		13.800	E1	22.4	4.0	12.0	-5.0	1.0000	22.8	0.9847	27.0			64	6
6091		LESG2		13.800	E2	22.4	4.0	12.0	-5.0	1.0000	22.8	0.9847	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-2.5	12.0	-5.0	1.0000	26.2	0.9952	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-2.5	12.0	-5.0	1.0000	26.2	0.9952	27.0			64	6
6097		FORG1		13.800	F1	75.0	10.7	50.0	-50.0	1.0100	75.0	0.9899	111.0			64	6
6098		FORG2		13.800	F2	75.0	10.7	50.0	-50.0	1.0100	75.0	0.9899	111.0			64	6
6101		BAYG1		13.800	B1	75.9	8.1	30.0	-25.0	1.0100	75.6	0.9944	94.0			61	6
6102		BAYG2		13.800	B2	65.8	7.2	30.0	-25.0	1.0100	65.6	0.9941	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9967	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9967	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9967	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	10.6	29.0	-29.0	1.0000	58.0	0.9831	69.0			64	6
6177		ESTG2		13.800	E2	57.0	10.6	29.0	-29.0	1.0000	58.0	0.9831	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-1.2	52.4	-48.9	1.0000	99.6	0.9999	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	2.0	52.4	-48.9	1.0000	99.6	0.9998	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9753	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9753	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9922	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9922	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	2.1	10.0	-10.0	1.0000	26.7	0.9968	30.0			64	6
6334		BAM13B		13.800	G2	26.6	2.1	10.0	-10.0	1.0000	26.7	0.9968	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-3.5	14.0	-14.0	1.0000	42.3	0.9967	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-3.5	14.0	-14.0	1.0000	42.3	0.9967	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-1.9	7.8	-7.0	1.0000	12.2	0.9872	14.1			64	6
6362		GLA13B		13.800	G2	12.1	-1.9	7.8	-7.0	1.0000	12.2	0.9872	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-5.4	7.8	-7.0	1.0000	17.0	0.9471	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-5.4	7.8	-7.0	1.0000	17.0	0.9471	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-7.1	8.0	-8.0	1.0000	27.5	0.9661	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-7.1	8.0	-8.0	1.0000	27.5	0.9661	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	0.4	4.9	-4.9	1.0000	9.5	0.9992	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	0.4	4.9	-4.9	1.0000	9.5	0.9992	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.7	3.2	-3.6	1.0000	6.2	0.9944	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.7	3.2	-3.6	1.0000	6.2	0.9944	7.5			64	6



6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0158	60.0	0.9850	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0053	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0053	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9629	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.2	2.5	-2.5	1.0000	4.8	0.9987	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.2	2.5	-2.5	1.0000	4.8	0.9987	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9629	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9782	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9999	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9999	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9818	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9818	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.8	3.7	-3.7	1.0000	6.4	0.9919	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.8	3.7	-3.7	1.0000	6.4	0.9919	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.0	1.9	-1.9	1.0000	3.3	1.0000	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.0	1.9	-1.9	1.0000	3.3	1.0000	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	0.9988	5.4	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0227	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9956	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9956	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-5.6	8.0	-8.0	1.0000	27.2	0.9786	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-5.6	8.0	-8.0	1.0000	27.2	0.9786	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	7.1	9.9	-9.9	1.0100	22.3	0.9481	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-5.1	12.8	-8.3	1.0000	16.6	0.9517	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-5.1	12.8	-8.3	1.0000	16.6	0.9517	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-5.4	12.8	-8.3	1.0000	16.7	0.9471	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-5.4	12.8	-8.3	1.0000	16.7	0.9471	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9984	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0211	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0211	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-0.6	2.2	-2.2	1.0000	4.3	0.9918	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-0.6	2.2	-2.2	1.0000	4.3	0.9918	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9779	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9779	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.3	4.0	-4.0	1.0000	9.9	0.9996	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.3	4.0	-4.0	1.0000	9.9	0.9996	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	2.9	4.0	-4.0	1.0000	7.7	0.9272	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	2.9	4.0	-4.0	1.0000	7.7	0.9272	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	1.4	2.6	-2.6	1.0000	4.8	0.9575	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.4	2.6	-2.6	1.0000	4.8	0.9575	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.0	2.6	-2.6	1.0000	4.8	0.9787	5.8	63	6



6767	LAG13.8	13.800	G2	4.7	1.0	2.6	-2.6	1.0000	4.8	0.9787	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9700	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9700	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9376	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9376	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	200.2	300.0	-225.0	1.0482	191.0	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0089	3.9	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9904	4.5	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9904	4.5	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9877	18.0	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9877	18.0	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0226	4.0	0.8678	4.6	64	6
SUBSYSTEM TOTALS				1643.5	260.1	1094.8	-913.5				2463.9		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 9:33

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 7

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
6127		MIR13B		12.000	G6	18.0	0.0	8.0	0.0	1.0144	17.7	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	20.0	6.2	11.0	0.0	1.0100	20.7	0.9548	29.4			65	7
6129		MIR13D		13.800	G4	25.1	7.7	15.0	0.0	1.0100	26.0	0.9559	44.1			65	7
6130		MIR13F		13.800	G5	17.0	0.0	8.0	0.0	1.0131	16.8	1.0000	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	-0.2	6.0	-6.0	1.0100	9.9	0.9998	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	-0.1	6.0	-6.0	1.0100	9.9	1.0000	13.0			65	7
6136		MAD6C		6.9000	G3	10.1	-0.1	6.0	-6.0	1.0100	10.0	1.0000	13.0			65	7
SUBSYSTEM TOTALS						110.2	13.6	60.0	-18.0				167.9				



1290

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 7

THU, MAY 12 2011 9:33

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0282	118.24	6004		PANII115		115.00	6	1.0269	118.10
6009		LSA115		115.00	6	1.0265	118.04	6012		MDN115		115.00	6	1.0072	115.83
6015		PRO115		115.00	6	1.0030	115.35	6018		CAC115		115.00	6	1.0279	118.21
6019		CVI115A		115.00	6	1.0234	117.69	6024		CHI115		115.00	6	1.0160	116.85
6027		LOC115A		115.00	6	1.0225	117.59	6032		MAR115A		115.00	6	1.0206	117.37
6036		SMA115		115.00	6	1.0271	118.12	6040		SFR115		115.00	6	1.0206	117.37
6047		CLA115		115.00	6	1.0111	116.28	6055		MOS115B		115.00	6	1.0262	118.02
6057		TOC115		115.00	6	1.0250	117.87	6059		LM1115		115.00	6	1.0202	117.32
6060		LM2115		115.00	6	1.0203	117.34	6066		FFIELD		115.00	6	1.0137	116.58
6074		LMDIST		115.00	6	1.0203	117.33	6087		CAL115		115.00	6	1.0118	116.35
6088		LES115		115.00	6	1.0145	116.67	6092		LVA115		115.00	6	1.0119	116.36
6123		MIR115		115.00	7	1.0381	119.38	6170		CPA115		115.00	6	1.0220	117.53
6173		STR115		115.00	6	1.0222	117.56	6174		PM115-1A		115.00	6	1.0252	117.90
6175		PM115-2A		115.00	6	1.0252	117.90	6210		TIN115		115.00	6	1.0249	117.86
6211		PM115-9		115.00	6	1.0255	117.94	6230		CBA115		115.00	6	1.0215	117.48
6261		CHA 115		115.00	6	1.0037	115.42	6270		CAT 115		115.00	6	1.0203	117.33
6280		GIR 115		115.00	6	1.0220	117.53	6290		CATII 11		115.00	6	1.0204	117.35
6332		BAM115		115.00	6	1.0002	115.02	6350		PM115-8		115.00	6	1.0246	117.82
6550		CHAZ115		115.00	6	1.0030	115.35	6580		LBO115		115.00	6	1.0230	117.65

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6006		CHO115		115.00	6	0.9806	112.76	6331		BAI115		115.00	6	0.9955	114.49



1291

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 9:33
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 7
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	59.9	62.5	95.9	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.9	54.0	98.0	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 9:33
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 7
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

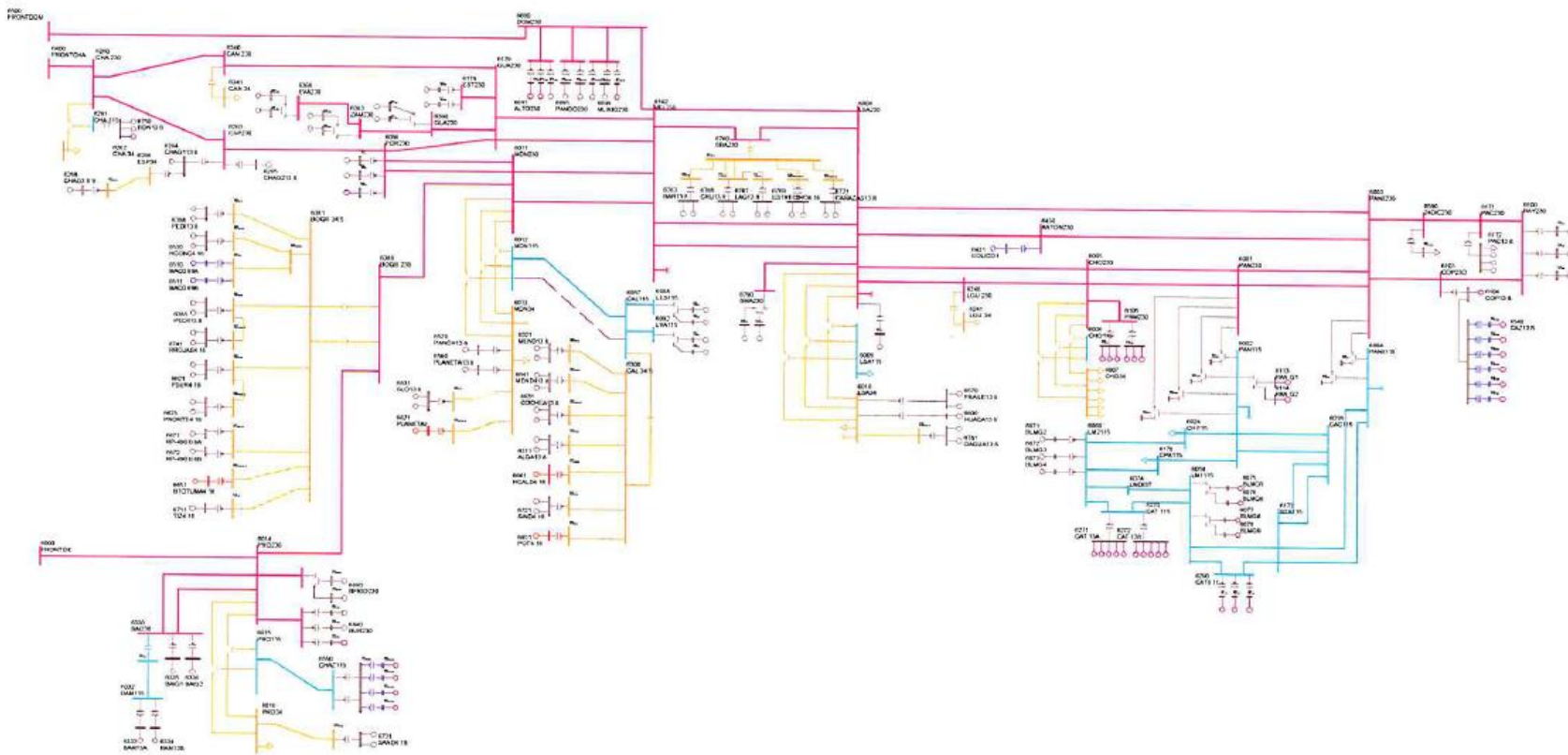
FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E							THU, MAY 12 2011		9:33		
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS				
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 7							IN MW/MVAR				
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENERATION	AT AREA BUSES	SHUNT	DEVICES	SHUNT CHARGING	LOSSES	TO TIE	TO TIES	+ LOADS	NET INT	
1	905.3	1150.5	0.0	0.0	0.0	0.0	20.9	-266.1	-266.1	-266.1	
GUATEMAL	220.0	340.6	219.0	0.0	0.0	600.8	237.6	23.6	23.6		
2	1088.7	1054.0	0.0	0.0	0.0	0.0	34.8	0.0	0.0	0.0	
SALVADOR	265.1	350.4	-159.5	0.0	0.0	234.9	301.7	7.5	7.5		
3	1137.6	1106.0	0.0	0.0	0.0	0.0	31.6	0.0	0.0	0.0	
HONDURAS	370.0	362.7	-10.0	0.0	0.0	457.8	412.3	62.8	62.8		
4	533.5	514.6	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	
NICARAGU	81.0	202.9	-9.1	0.0	0.0	203.2	200.3	-109.8	-109.8		
5	1498.0	1468.8	0.0	0.0	0.0	0.0	30.7	-1.6	-1.6	0.0	
COSTA RI	246.4	538.4	-228.4	0.0	0.0	556.0	429.8	62.7	62.7		
6	1643.5	1333.8	0.0	0.0	0.0	0.0	102.0	207.6	207.6	206.1	
PANAMA	260.1	233.7	-365.7	0.0	0.0	497.5	941.9	-52.4	-52.4		
7	110.2	46.6	0.0	0.0	0.0	0.0	3.6	60.0	60.0	60.0	
ACANAL	13.6	8.2	-16.2	0.0	0.0	0.0	15.9	5.7	5.7		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	6916.7	6674.4	0.0	0.0	0.0	0.0	242.3	0.0	0.0	0.0	
TOTALS	1456.2	2036.9	-569.8	0.0	0.0	2550.2	2539.4	0.0	0.0		

Contingencia 13: Mata de Nance – Caldera





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 9:37
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 13

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	1.6	15.0	0.0	1.0200	37.3	0.9991	47.0			62	6
6072		BLMG3		13.800	V3	38.0	1.6	15.0	0.0	1.0200	37.3	0.9991	47.0			62	6
6073		BLMG4		13.800	V4	38.0	1.5	15.0	0.0	1.0200	37.3	0.9992	47.0			62	6
6090		LESG1		13.800	E1	22.4	4.0	12.0	-5.0	1.0000	22.8	0.9846	27.0			64	6
6091		LESG2		13.800	E2	22.4	4.0	12.0	-5.0	1.0000	22.8	0.9846	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-2.5	12.0	-5.0	1.0000	26.2	0.9953	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-2.5	12.0	-5.0	1.0000	26.2	0.9953	27.0			64	6
6097		FORG1		13.800	F1	75.0	6.4	50.0	-50.0	1.0100	74.5	0.9964	111.0			64	6
6098		FORG2		13.800	F2	75.0	6.4	50.0	-50.0	1.0100	74.5	0.9964	111.0			64	6
6101		BAYG1		13.800	B1	67.7	7.8	30.0	-25.0	1.0100	67.5	0.9935	94.0			61	6
6102		BAYG2		13.800	B2	65.8	7.6	30.0	-25.0	1.0100	65.6	0.9934	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9962	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9962	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9962	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	10.0	29.0	-29.0	1.0000	57.9	0.9851	69.0			64	6
6177		ESTG2		13.800	E2	57.0	10.0	29.0	-29.0	1.0000	57.9	0.9851	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-4.6	52.4	-48.9	1.0000	99.7	0.9989	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	-1.4	52.4	-48.9	1.0000	99.6	0.9999	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9753	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9753	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9922	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9922	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.4	10.0	-10.0	1.0000	26.6	0.9986	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.4	10.0	-10.0	1.0000	26.6	0.9986	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-9.2	14.0	-14.0	1.0000	43.1	0.9772	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-9.2	14.0	-14.0	1.0000	43.1	0.9772	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-4.4	7.8	-7.0	1.0000	12.9	0.9383	14.1			64	6
6362		GLA13B		13.800	G2	12.1	-4.4	7.8	-7.0	1.0000	12.9	0.9383	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-7.0	7.8	-7.0	1.0011	17.5	0.9167	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-7.0	7.8	-7.0	1.0011	17.5	0.9167	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-8.0	8.0	-8.0	1.0020	27.7	0.9576	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-8.0	8.0	-8.0	1.0020	27.7	0.9576	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	-0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	-0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9988	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9988	7.5			64	6



6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0153	60.0	0.9850	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0072	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0072	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9636	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9835	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9835	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9636	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9782	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9913	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9913	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9585	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9585	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.8	3.7	-3.7	1.0000	6.4	0.9919	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.8	3.7	-3.7	1.0000	6.4	0.9919	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.0	1.9	-1.9	1.0000	3.3	1.0000	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.0	1.9	-1.9	1.0000	3.3	1.0000	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.8	2.5	-2.5	1.0000	5.1	0.9336	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0227	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9963	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9963	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0057	27.6	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0057	27.6	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0087	23.3	0.9074	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-1.1	12.8	-8.3	1.0000	15.9	0.9974	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-1.1	12.8	-8.3	1.0000	15.9	0.9974	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-0.8	12.8	-8.3	1.0000	15.8	0.9987	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-0.8	12.8	-8.3	1.0000	15.8	0.9987	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	1.9	2.3	-2.3	1.0000	4.8	0.9162	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0211	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0211	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.1	2.2	-2.2	1.0000	4.8	0.8987	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-2.1	2.2	-2.2	1.0000	4.8	0.8987	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9611	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9611	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-1.0	4.0	-4.0	1.0000	10.0	0.9951	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-1.0	4.0	-4.0	1.0000	10.0	0.9951	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	2.8	4.0	-4.0	1.0000	7.7	0.9323	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	2.8	4.0	-4.0	1.0000	7.7	0.9323	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	1.3	2.6	-2.6	1.0000	4.8	0.9612	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.3	2.6	-2.6	1.0000	4.8	0.9612	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	0.9	2.6	-2.6	1.0000	4.7	0.9812	5.8	63	6



6767	LAG13.8	13.800	G2	4.7	0.9	2.6	-2.6	1.0000	4.7	0.9812	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9729	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9729	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9438	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9438	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	189.4	300.0	-225.0	1.0462	181.0	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0097	3.9	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9911	4.5	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9911	4.5	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9965	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9965	17.9	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0226	4.0	0.8678	4.6	64	6
SUBSYSTEM TOTALS				1635.3	213.2	1094.8	-913.5				2463.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 9:37
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 13

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6127		MIR13B		12.000	G6	18.0	0.0	8.0	0.0	1.0141	17.7	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	20.0	6.3	11.0	0.0	1.0100	20.8	0.9536	29.4			65	7
6129		MIR13D		13.800	G4	25.1	7.8	15.0	0.0	1.0100	26.0	0.9547	44.1			65	7
6130		MIR13F		13.800	G5	17.0	0.0	8.0	0.0	1.0128	16.8	1.0000	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	-0.2	6.0	-6.0	1.0100	9.9	0.9998	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.0	6.0	-6.0	1.0100	9.9	1.0000	13.0			65	7
6136		MAD6C		6.9000	G3	10.1	-0.1	6.0	-6.0	1.0100	10.0	1.0000	13.0			65	7
SUBSYSTEM TOTALS						110.2	13.8	60.0	-18.0				167.9				



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 9:37
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 13
 OUTPUT FOR AREA 6 [PANAMA]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6012	MDN115	115.00	6	6087	CAL115	115.00*	6	15	154.8	93.0	166.5	175.0	88.5	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	59.9	62.5	95.9	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.9	54.0	98.0	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 9:37
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 13
 OUTPUT FOR AREA 7 [ACANAL]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

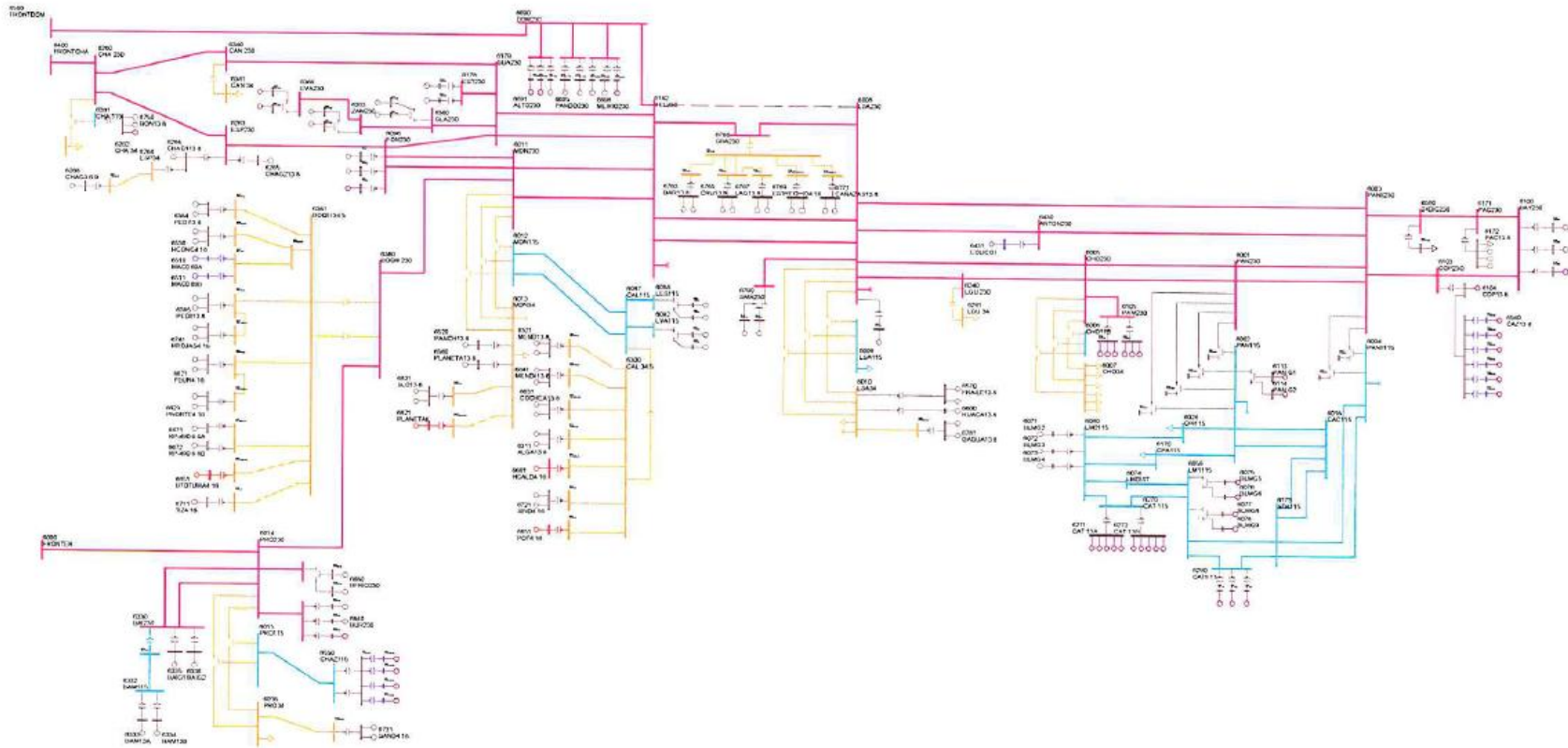
FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						THU, MAY 12 2011 9:38		AREA TOTALS			
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 13					
X-- AREA --X		FROM	TO LOAD	TO		FROM	TO	-NET INTERCHANGE-		DESIRED	
		GENE-	AT AREA	TO BUS	GNE BUS	TO LINE	FROM	TO	TO TIE	TO TIES	NET INT
		RATION	BUSES	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	LINES	+ LOADS	
1		905.3	1150.5	0.0	0.0	0.0	0.0	20.9	-266.1	-266.1	-266.1
GUATEMAL		220.0	340.6	219.0	0.0	0.0	600.8	237.6	23.6	23.6	
2		1088.7	1054.0	0.0	0.0	0.0	0.0	34.8	0.0	0.0	0.0
SALVADOR		265.2	350.4	-159.5	0.0	0.0	234.9	301.7	7.5	7.5	
3		1137.6	1106.0	0.0	0.0	0.0	0.0	31.6	0.0	0.0	0.0
HONDURAS		370.0	362.7	-10.0	0.0	0.0	457.8	412.3	62.8	62.8	
4		533.5	514.6	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0
NICARAGU		81.3	202.9	-9.1	0.0	0.0	203.2	200.3	-109.6	-109.6	
5		1498.0	1468.8	0.0	0.0	0.0	0.0	29.1	0.0	0.0	0.0
COSTA RI		240.6	538.4	-228.4	0.0	0.0	555.2	417.8	68.1	68.1	
6		1635.3	1333.8	0.0	0.0	0.0	0.0	95.4	206.0	206.0	206.1
PANAMA		213.2	233.7	-365.2	0.0	0.0	499.9	902.9	-58.3	-58.3	
7		110.2	46.6	0.0	0.0	0.0	0.0	3.6	60.0	60.0	60.0
ACANAL		13.8	8.2	-16.1	0.0	0.0	0.0	15.9	5.9	5.9	
10		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN		6908.5	6674.4	0.0	0.0	0.0	0.0	234.1	0.0	0.0	0.0
TOTALS		1404.1	2036.9	-569.4	0.0	0.0	2551.9	2488.4	0.0	0.0	

Contingencia 21: Llano Sánchez – Veladero





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 10:05
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 21

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	1.3	15.0	0.0	1.0200	37.3	0.9994	47.0			62	6
6072		BLMG3		13.800	V3	38.0	1.3	15.0	0.0	1.0200	37.3	0.9994	47.0			62	6
6073		BLMG4		13.800	V4	38.0	1.2	15.0	0.0	1.0200	37.3	0.9995	47.0			62	6
6090		LESG1		13.800	E1	22.4	3.3	12.0	-5.0	1.0000	22.7	0.9890	27.0			64	6
6091		LESG2		13.800	E2	22.4	3.3	12.0	-5.0	1.0000	22.7	0.9890	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-3.2	12.0	-5.0	1.0000	26.2	0.9924	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-3.2	12.0	-5.0	1.0000	26.2	0.9924	27.0			64	6
6097		FORG1		13.800	F1	75.0	7.8	50.0	-50.0	1.0100	74.7	0.9947	111.0			64	6
6098		FORG2		13.800	F2	75.0	7.8	50.0	-50.0	1.0100	74.7	0.9947	111.0			64	6
6101		BAYG1		13.800	B1	78.3	8.2	30.0	-25.0	1.0100	77.9	0.9946	94.0			61	6
6102		BAYG2		13.800	B2	65.8	7.1	30.0	-25.0	1.0100	65.6	0.9943	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9969	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9969	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9969	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	10.3	29.0	-29.0	1.0000	57.9	0.9840	69.0			64	6
6177		ESTG2		13.800	E2	57.0	10.3	29.0	-29.0	1.0000	57.9	0.9840	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-4.0	52.4	-48.9	1.0000	99.7	0.9992	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	-0.8	52.4	-48.9	1.0000	99.6	1.0000	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9761	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9761	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9926	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9926	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.5	10.0	-10.0	1.0000	26.6	0.9985	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.5	10.0	-10.0	1.0000	26.6	0.9985	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-8.8	14.0	-14.0	1.0000	43.0	0.9789	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-8.8	14.0	-14.0	1.0000	43.0	0.9789	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-3.0	7.8	-7.0	1.0000	12.4	0.9697	14.1			64	6
6362		GLA13B		13.800	G2	12.1	-3.0	7.8	-7.0	1.0000	12.4	0.9697	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-6.4	7.8	-7.0	1.0000	17.3	0.9286	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-6.4	7.8	-7.0	1.0000	17.3	0.9286	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-8.0	8.0	-8.0	1.0000	27.8	0.9576	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-8.0	8.0	-8.0	1.0000	27.8	0.9576	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	-0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	-0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9986	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9986	7.5			64	6



6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0160	60.0	0.9850	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0070	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0070	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9665	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.8	2.5	-2.5	1.0000	4.8	0.9852	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.8	2.5	-2.5	1.0000	4.8	0.9852	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9665	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9782	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9927	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9927	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	4.9	0.9606	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	4.9	0.9606	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-1.0	3.7	-3.7	1.0000	6.5	0.9875	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-1.0	3.7	-3.7	1.0000	6.5	0.9875	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.2	1.9	-1.9	1.0000	3.3	0.9974	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.2	1.9	-1.9	1.0000	3.3	0.9974	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.0	2.5	-2.5	1.0000	5.1	0.9242	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0231	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9963	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9963	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0051	27.6	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0051	27.6	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0081	23.3	0.9074	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-0.4	12.8	-8.3	1.0000	15.8	0.9998	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-0.4	12.8	-8.3	1.0000	15.8	0.9998	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	0.1	12.8	-8.3	1.0000	15.8	1.0000	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	0.1	12.8	-8.3	1.0000	15.8	1.0000	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.1	2.3	-2.3	1.0000	4.9	0.9054	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0215	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0215	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.0	2.2	-2.2	1.0000	4.7	0.9070	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-2.0	2.2	-2.2	1.0000	4.7	0.9070	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.2	0.9625	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.2	0.9625	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.9	4.0	-4.0	1.0000	9.9	0.9960	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.9	4.0	-4.0	1.0000	9.9	0.9960	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	3.2	4.0	-4.0	1.0000	7.8	0.9151	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	3.2	4.0	-4.0	1.0000	7.8	0.9151	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	1.5	2.6	-2.6	1.0000	4.9	0.9483	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.5	2.6	-2.6	1.0000	4.9	0.9483	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9725	5.8	63	6



6767	LAG13.8	13.800	G2	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9725	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9627	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9627	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.2	1.5	-1.5	1.0000	3.0	0.9225	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.2	1.5	-1.5	1.0000	3.0	0.9225	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	253.2	300.0	-225.0	1.0579	239.4	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0128	3.9	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9941	4.5	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9941	4.5	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9960	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9960	17.9	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0230	4.0	0.8678	4.6	64	6
SUBSYSTEM TOTALS				1645.8	288.9	1094.8	-913.5				2463.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 10:05
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 21

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
6127		MIR13B		12.000	G6	18.0	0.0	8.0	0.0	1.0145	17.7	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	20.0	6.2	11.0	0.0	1.0100	20.7	0.9551	29.4			65	7
6129		MIR13D		13.800	G4	25.1	7.7	15.0	0.0	1.0100	26.0	0.9562	44.1			65	7
6130		MIR13F		13.800	G5	17.0	0.0	8.0	0.0	1.0131	16.8	1.0000	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	-0.2	6.0	-6.0	1.0100	9.9	0.9998	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	-0.1	6.0	-6.0	1.0100	9.9	1.0000	13.0			65	7
6136		MAD6C		6.9000	G3	10.1	-0.1	6.0	-6.0	1.0100	10.0	1.0000	13.0			65	7
SUBSYSTEM TOTALS						110.2	13.5	60.0	-18.0				167.9				



1307

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 10:05
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 21
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6008	LSA230	230.00	6	6760	SBA230	230.00*	6	4A	312.8	314.0	99.6	450.0	69.5	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.1	62.5	96.2	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	53.2	54.0	98.5	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 10:05
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 21
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

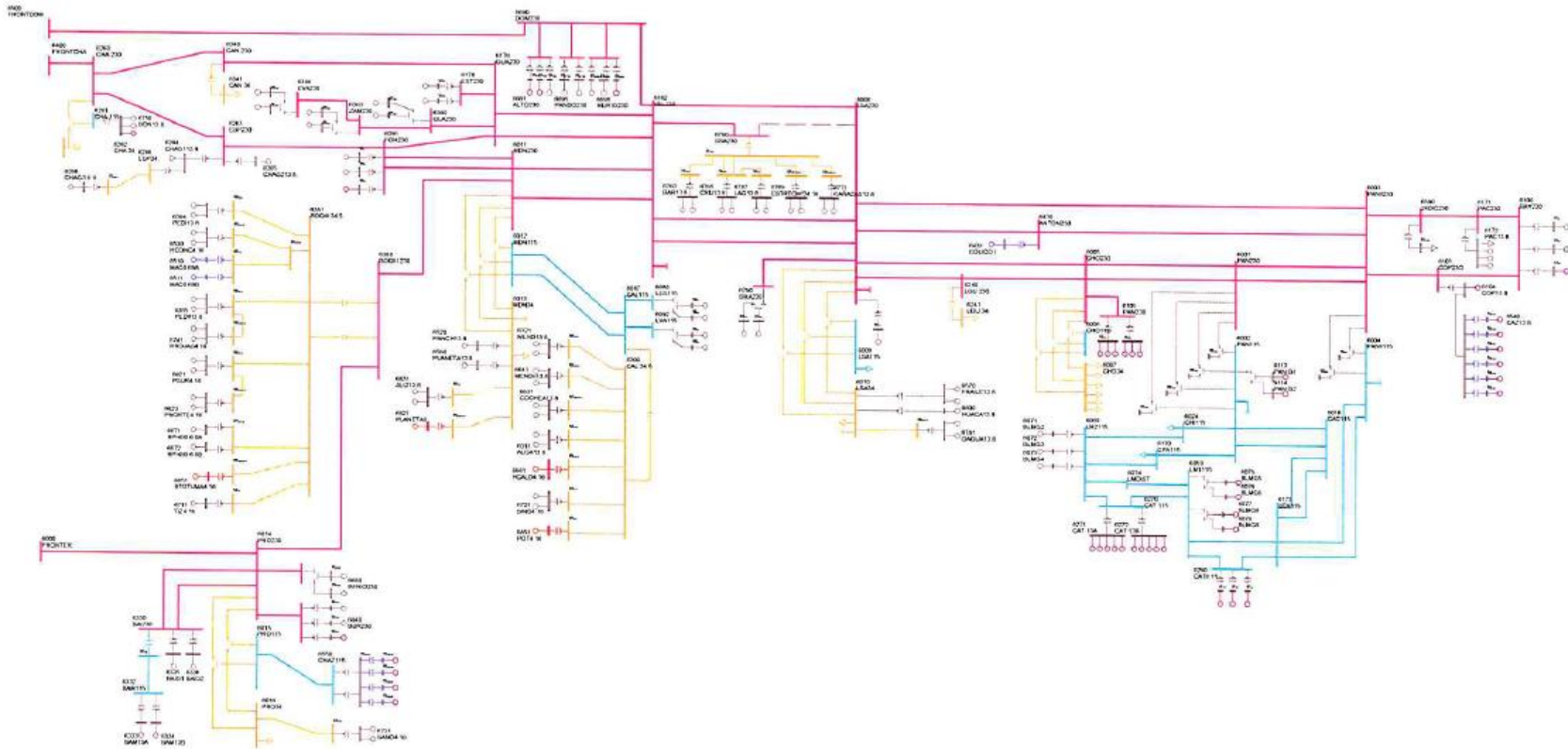
X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							THU, MAY 12 2011 10:05			
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS			
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 21							IN MW/MVAR			
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT
	RATION	BUSES						LINES	+ LOADS	
1	905.3	1150.5	0.0	0.0	0.0	0.0	20.9	-266.1	-266.1	-266.1
GUATEMAL	220.0	340.6	219.0	0.0	0.0	600.8	237.6	23.6	23.6	
2	1088.7	1054.0	0.0	0.0	0.0	0.0	34.8	0.0	0.0	0.0
SALVADOR	265.2	350.4	-159.5	0.0	0.0	234.9	301.7	7.5	7.5	
3	1137.6	1106.0	0.0	0.0	0.0	0.0	31.6	0.0	0.0	0.0
HONDURAS	370.0	362.7	-10.0	0.0	0.0	457.8	412.3	62.8	62.8	
4	533.5	514.6	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0
NICARAGU	81.3	202.9	-9.1	0.0	0.0	203.2	200.3	-109.6	-109.6	
5	1498.0	1468.8	0.0	0.0	0.0	0.0	29.1	0.0	0.0	0.0
COSTA RI	242.1	538.4	-228.4	0.0	0.0	555.1	417.9	69.2	69.2	
6	1645.8	1333.8	0.0	0.0	0.0	0.0	106.0	206.0	206.0	206.1
PANAMA	288.9	233.7	-365.8	0.0	0.0	479.8	960.0	-59.1	-59.1	
7	110.2	46.6	0.0	0.0	0.0	0.0	3.6	60.0	60.0	60.0
ACANAL	13.5	8.2	-16.2	0.0	0.0	0.0	15.8	5.7	5.7	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	6919.1	6674.4	0.0	0.0	0.0	0.0	244.7	0.0	0.0	0.0
TOTALS	1481.0	2036.9	-569.9	0.0	0.0	2531.6	2545.6	0.0	0.0	

Contingencia 22: Llano Sánchez – San Bartolo





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 10:10
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 22

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
6071		BLMG2		13.800	V2	38.0	1.3	15.0	0.0	1.0200	37.3	0.9994	47.0			62	6
6072		BLMG3		13.800	V3	38.0	1.3	15.0	0.0	1.0200	37.3	0.9994	47.0			62	6
6073		BLMG4		13.800	V4	38.0	1.2	15.0	0.0	1.0200	37.3	0.9995	47.0			62	6
6090		LESG1		13.800	E1	22.4	3.3	12.0	-5.0	1.0000	22.7	0.9891	27.0			64	6
6091		LESG2		13.800	E2	22.4	3.3	12.0	-5.0	1.0000	22.7	0.9891	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-3.3	12.0	-5.0	1.0000	26.2	0.9923	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-3.3	12.0	-5.0	1.0000	26.2	0.9923	27.0			64	6
6097		FORG1		13.800	F1	75.0	7.7	50.0	-50.0	1.0100	74.6	0.9948	111.0			64	6
6098		FORG2		13.800	F2	75.0	7.7	50.0	-50.0	1.0100	74.6	0.9948	111.0			64	6
6101		BAYG1		13.800	B1	80.0	8.3	30.0	-25.0	1.0100	79.6	0.9947	94.0			61	6
6102		BAYG2		13.800	B2	65.8	7.0	30.0	-25.0	1.0100	65.6	0.9944	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9970	19.2	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9970	19.2	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9970	19.2	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	10.3	29.0	-29.0	1.0000	57.9	0.9841	69.0			64	6
6177		ESTG2		13.800	E2	57.0	10.3	29.0	-29.0	1.0000	57.9	0.9841	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-4.1	52.4	-48.9	1.0000	99.7	0.9992	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	-0.9	52.4	-48.9	1.0000	99.6	1.0000	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9761	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9761	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9926	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9926	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.4	10.0	-10.0	1.0000	26.6	0.9985	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.4	10.0	-10.0	1.0000	26.6	0.9985	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-8.8	14.0	-14.0	1.0000	43.0	0.9788	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-8.8	14.0	-14.0	1.0000	43.0	0.9788	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-3.1	7.8	-7.0	1.0000	12.5	0.9679	14.1			64	6
6362		GLA13B		13.800	G2	12.1	-3.1	7.8	-7.0	1.0000	12.5	0.9679	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-6.5	7.8	-7.0	1.0000	17.3	0.9269	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-6.5	7.8	-7.0	1.0000	17.3	0.9269	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-8.0	8.0	-8.0	1.0002	27.8	0.9576	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-8.0	8.0	-8.0	1.0002	27.8	0.9576	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	-0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	-0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9986	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9986	7.5			64	6



6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0161	59.9	0.9850	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0071	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0071	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9667	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.8	2.5	-2.5	1.0000	4.8	0.9850	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.8	2.5	-2.5	1.0000	4.8	0.9850	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9667	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9782	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9926	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9926	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	4.9	0.9604	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	4.9	0.9604	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-1.0	3.7	-3.7	1.0000	6.5	0.9874	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-1.0	3.7	-3.7	1.0000	6.5	0.9874	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.2	1.9	-1.9	1.0000	3.3	0.9972	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.2	1.9	-1.9	1.0000	3.3	0.9972	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.9	2.5	-2.5	1.0000	5.1	0.9252	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0231	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9963	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9963	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0051	27.6	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0051	27.6	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0081	23.3	0.9074	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-0.4	12.8	-8.3	1.0000	15.8	0.9997	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-0.4	12.8	-8.3	1.0000	15.8	0.9997	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	0.0	12.8	-8.3	1.0000	15.8	1.0000	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	0.0	12.8	-8.3	1.0000	15.8	1.0000	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.1	2.3	-2.3	1.0000	4.9	0.9066	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0215	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0215	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.0	2.2	-2.2	1.0000	4.7	0.9062	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-2.0	2.2	-2.2	1.0000	4.7	0.9062	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.2	0.9624	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.2	0.9624	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.9	4.0	-4.0	1.0000	9.9	0.9960	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.9	4.0	-4.0	1.0000	9.9	0.9960	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	2.9	4.0	-4.0	1.0000	7.7	0.9284	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	2.9	4.0	-4.0	1.0000	7.7	0.9284	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	1.4	2.6	-2.6	1.0000	4.8	0.9584	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.4	2.6	-2.6	1.0000	4.8	0.9584	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.0	2.6	-2.6	1.0000	4.8	0.9793	5.8	63	6



6767	LAG13.8	13.800	G2	4.7	1.0	2.6	-2.6	1.0000	4.8	0.9793	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9706	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9706	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9390	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9390	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	260.0	300.0	-225.0	1.0591	245.5	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0129	3.9	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9942	4.5	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9942	4.5	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9960	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9960	17.9	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0230	4.0	0.8678	4.6	64	6
SUBSYSTEM TOTALS				1647.5	292.5	1094.8	-913.5				2463.9		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 10:10
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 22

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
6127		MIR13B		12.000	G6	18.0	0.0	8.0	0.0	1.0145	17.7	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	20.0	6.2	11.0	0.0	1.0100	20.7	0.9554	29.4			65	7
6129		MIR13D		13.800	G4	25.1	7.7	15.0	0.0	1.0100	26.0	0.9564	44.1			65	7
6130		MIR13F		13.800	G5	17.0	0.0	8.0	0.0	1.0132	16.8	1.0000	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	-0.2	6.0	-6.0	1.0100	9.9	0.9998	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	-0.1	6.0	-6.0	1.0100	9.9	1.0000	13.0			65	7
6136		MAD6C		6.9000	G3	10.1	-0.1	6.0	-6.0	1.0100	10.0	1.0000	13.0			65	7
SUBSYSTEM TOTALS						110.2	13.5	60.0	-18.0				167.9				



1313

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 10:10
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 22

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0157	233.61	6001		PAN230		230.00	6	1.0055	231.27
6003		PANII230		230.00	6	1.0152	233.50	6008		LSA230		230.00	6	1.0100	232.30
6011		MDN230		230.00	6	1.0028	230.65	6014		PRO230		230.00	6	1.0142	233.28
6096		FOR230		230.00	6	1.0050	231.14	6100		BAY230		230.00	6	1.0298	236.84
6103		COP230		230.00	6	1.0178	234.10	6171		PAC230		230.00	6	1.0230	235.28
6260		CHA 230		230.00	6	1.0147	233.39	6263		ESP230		230.00	6	1.0156	233.58
6330		BAI230		230.00	6	1.0135	233.11	6340		CAN 230		230.00	6	1.0060	231.37
6360		GLA230		230.00	6	1.0045	231.04	6363		ZAM230		230.00	6	1.0094	232.15
6366		EVA230		230.00	6	1.0121	232.77	6380		BOQIII 230		230.00	6	1.0088	232.03
6400		FRONTCHA		230.00	6	1.0156	233.59	6430		ANTON230		230.00	6	1.0171	233.94
6500		FRONTDOM		230.00	6	1.0238	235.48	6590		24DIC230		230.00	6	1.0188	234.32
6680		BFRIO230		230.00	6	1.0169	233.89	6690		DOM230		230.00	6	1.0245	235.63
6691		ALTO230		230.00	6	1.0261	236.01	6695		PANDO230		230.00	6	1.0253	235.81
6698		MLIRIO230		230.00	6	1.0250	235.76	6760		SBA230		230.00	6	1.0026	230.61
6790		SMA230		230.00	6	1.0109	232.51	6840		BUR230		230.00	6	1.0165	233.81

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6005		CHO230		230.00	6	0.9934	228.49	6105		PAM230		230.00	6	0.9934	228.49
6178		EST230		230.00	6	0.9997	229.93	6179		GUA230		230.00	6	0.9998	229.96
6182		VEL230		230.00	6	0.9970	229.31	6240		LGU 230		230.00	6	0.9956	228.99



1315

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 10:10
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 22
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6008	LSA230	230.00	6	6182	VEL230	230.00*	6	15	302.1	314.0	96.2	450.0	67.1	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.1	62.5	96.2	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	53.2	54.0	98.5	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 10:10
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 22
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

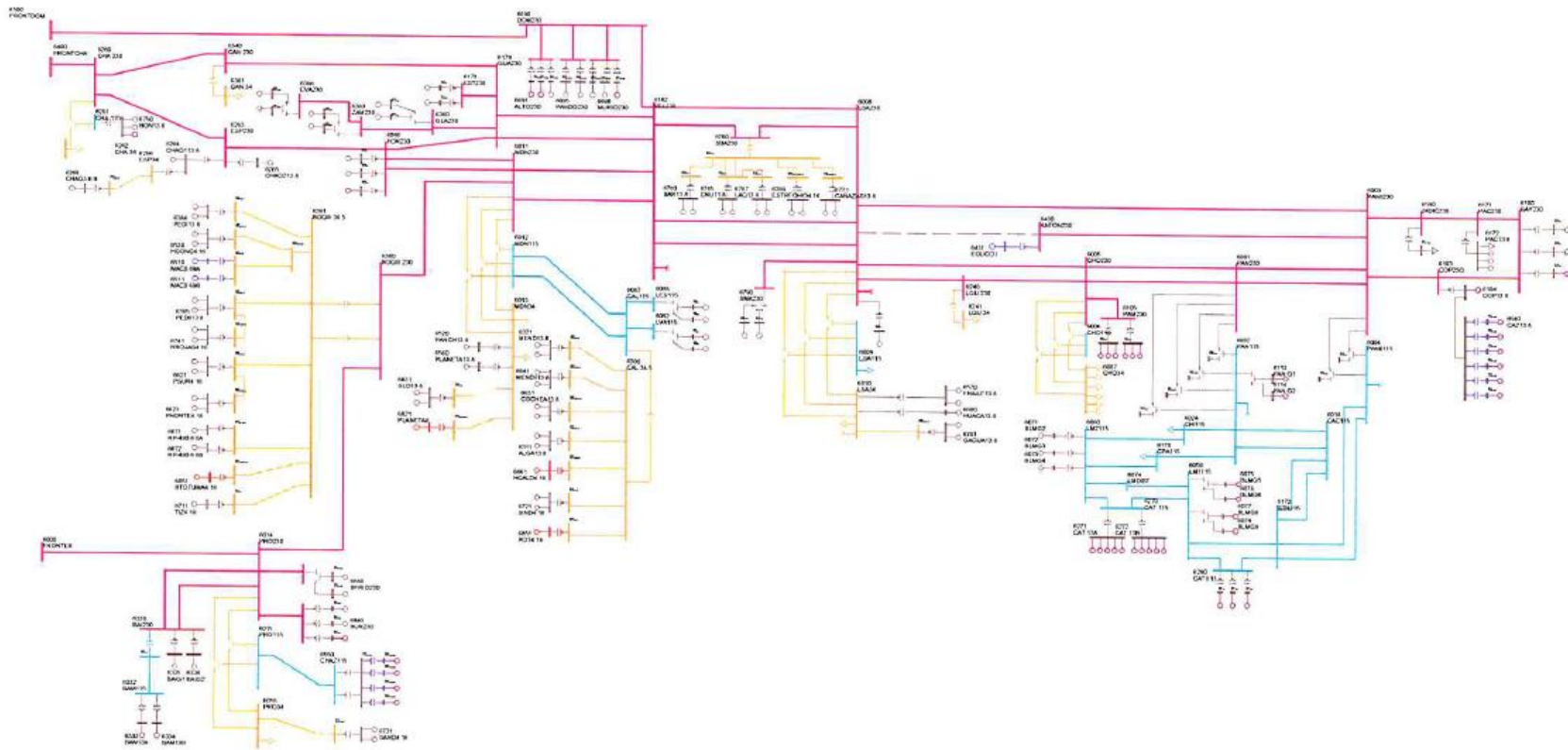
X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							THU, MAY 12 2011 10:10				
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS				
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 22							IN MW/MVAR				
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT	
	RATION	BUSES						LINES	+ LOADS		
1	905.3	1150.5	0.0	0.0	0.0	0.0	20.9	-266.1	-266.1	-266.1	
GUATEMAL	220.0	340.6	219.0	0.0	0.0	600.8	237.6	23.6	23.6		
2	1088.7	1054.0	0.0	0.0	0.0	0.0	34.8	0.0	0.0	0.0	
SALVADOR	265.2	350.4	-159.5	0.0	0.0	234.9	301.7	7.5	7.5		
3	1137.6	1106.0	0.0	0.0	0.0	0.0	31.6	0.0	0.0	0.0	
HONDURAS	370.0	362.7	-10.0	0.0	0.0	457.8	412.3	62.8	62.8		
4	533.5	514.6	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	
NICARAGU	81.3	202.9	-9.1	0.0	0.0	203.2	200.3	-109.6	-109.6		
5	1498.0	1468.8	0.0	0.0	0.0	0.0	29.1	0.0	0.0	0.0	
COSTA RI	242.0	538.4	-228.4	0.0	0.0	555.1	417.9	69.1	69.1		
6	1647.5	1333.8	0.0	0.0	0.0	0.0	107.7	206.0	206.0	206.1	
PANAMA	292.5	233.7	-365.9	0.0	0.0	487.3	971.0	-59.0	-59.0		
7	110.2	46.6	0.0	0.0	0.0	0.0	3.6	60.0	60.0	60.0	
ACANAL	13.5	8.2	-16.2	0.0	0.0	0.0	15.8	5.6	5.6		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	6920.8	6674.4	0.0	0.0	0.0	0.0	246.3	0.0	0.0	0.0	
TOTALS	1484.5	2036.9	-570.0	0.0	0.0	2539.1	2556.6	0.0	0.0		

Contingencia 23: Llano Sánchez – Antón





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 11:08
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 23

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	3.7	15.0	0.0	1.0200	37.4	0.9952	47.0			62	6
6072		BLMG3		13.800	V3	38.0	3.7	15.0	0.0	1.0200	37.4	0.9952	47.0			62	6
6073		BLMG4		13.800	V4	38.0	3.8	15.0	0.0	1.0200	37.4	0.9951	47.0			62	6
6090		LESG1		13.800	E1	22.4	3.0	12.0	-5.0	1.0000	22.6	0.9910	27.0			64	6
6091		LESG2		13.800	E2	22.4	3.0	12.0	-5.0	1.0000	22.6	0.9910	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-3.6	12.0	-5.0	1.0000	26.3	0.9906	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-3.6	12.0	-5.0	1.0000	26.3	0.9906	27.0			64	6
6097		FORG1		13.800	F1	75.0	5.7	50.0	-50.0	1.0100	74.5	0.9971	111.0			64	6
6098		FORG2		13.800	F2	75.0	5.7	50.0	-50.0	1.0100	74.5	0.9971	111.0			64	6
6101		BAYG1		13.800	B1	73.3	11.6	30.0	-25.0	1.0100	73.5	0.9876	94.0			61	6
6102		BAYG2		13.800	B2	65.8	11.0	30.0	-25.0	1.0100	66.1	0.9864	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9909	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9909	19.4	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9909	19.4	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	9.9	29.0	-29.0	1.0000	57.8	0.9854	69.0			64	6
6177		ESTG2		13.800	E2	57.0	9.9	29.0	-29.0	1.0000	57.8	0.9854	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-4.8	52.4	-48.9	1.0000	99.7	0.9988	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	-1.6	52.4	-48.9	1.0000	99.6	0.9999	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9765	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9765	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9928	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9928	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.4	10.0	-10.0	1.0000	26.6	0.9987	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.4	10.0	-10.0	1.0000	26.6	0.9987	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-9.4	14.0	-14.0	1.0000	43.2	0.9758	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-9.4	14.0	-14.0	1.0000	43.2	0.9758	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-4.8	7.8	-7.0	1.0000	13.0	0.9283	14.1			64	6
6362		GLA13B		13.800	G2	12.1	-4.8	7.8	-7.0	1.0000	13.0	0.9283	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-7.0	7.8	-7.0	1.0016	17.5	0.9167	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-7.0	7.8	-7.0	1.0016	17.5	0.9167	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-8.0	8.0	-8.0	1.0025	27.7	0.9576	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-8.0	8.0	-8.0	1.0025	27.7	0.9576	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	-0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	-0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9990	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9990	7.5			64	6



6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0137	60.1	0.9850	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0073	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0073	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9685	5.3	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9818	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9818	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9685	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9783	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9782	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9900	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9900	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9566	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9566	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9848	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9848	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.4	1.9	-1.9	1.0000	3.3	0.9942	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.4	1.9	-1.9	1.0000	3.3	0.9942	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.7	2.5	-2.5	1.0000	5.0	0.9417	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0233	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9964	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9964	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0061	27.6	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0061	27.6	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0089	23.3	0.9074	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-1.3	12.8	-8.3	1.0000	15.9	0.9967	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-1.3	12.8	-8.3	1.0000	15.9	0.9967	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-1.0	12.8	-8.3	1.0000	15.8	0.9981	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-1.0	12.8	-8.3	1.0000	15.8	0.9981	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	1.8	2.3	-2.3	1.0000	4.8	0.9256	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0217	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0217	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0000	4.8	0.8925	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-2.2	2.2	-2.2	1.0000	4.8	0.8925	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9598	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9598	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-1.0	4.0	-4.0	1.0000	10.0	0.9948	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-1.0	4.0	-4.0	1.0000	10.0	0.9948	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	2.8	4.0	-4.0	1.0000	7.7	0.9328	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	2.8	4.0	-4.0	1.0000	7.7	0.9328	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	1.3	2.6	-2.6	1.0000	4.8	0.9616	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.3	2.6	-2.6	1.0000	4.8	0.9616	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	0.9	2.6	-2.6	1.0000	4.7	0.9814	5.8	63	6



6767	LAG13.8	13.800	G2	4.7	0.9	2.6	-2.6	1.0000	4.7	0.9814	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9732	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9732	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9444	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9444	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	-1.2	1.6	-1.6	1.0000	3.3	0.9363	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	241.1	300.0	-225.0	1.0557	228.4	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0149	3.9	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9961	4.5	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9961	4.5	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9970	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9970	17.9	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0232	4.0	0.8678	4.6	64	6
SUBSYSTEM TOTALS				1640.8	268.2	1094.8	-913.5				2463.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 11:08
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 23

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6127		MIR13B		12.000	G6	18.0	0.0	8.0	0.0	1.0113	17.8	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	20.0	7.2	11.0	0.0	1.0100	21.1	0.9405	29.4			65	7
6129		MIR13D		13.800	G4	25.1	9.0	15.0	0.0	1.0100	26.4	0.9417	44.1			65	7
6130		MIR13F		13.800	G5	17.0	0.0	8.0	0.0	1.0100	16.8	1.0000	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	0.1	6.0	-6.0	1.0100	9.9	1.0000	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.1	6.0	-6.0	1.0100	9.9	0.9999	13.0			65	7
6136		MAD6C		6.9000	G3	10.1	0.1	6.0	-6.0	1.0100	10.0	0.9999	13.0			65	7
SUBSYSTEM TOTALS						110.2	16.5	60.0	-18.0				167.9				



1321

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 11:08
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 23

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0166	233.83	6003		PANII230		230.00	6	1.0078	231.79
6008		LSA230		230.00	6	1.0100	232.30	6011		MDN230		230.00	6	1.0054	231.25
6014		PRO230		230.00	6	1.0152	233.50	6096		FOR230		230.00	6	1.0071	231.64
6100		BAY230		230.00	6	1.0246	235.65	6103		COP230		230.00	6	1.0107	232.47
6171		PAC230		230.00	6	1.0162	233.73	6178		EST230		230.00	6	1.0022	230.51
6179		GUA230		230.00	6	1.0023	230.54	6182		VEL230		230.00	6	1.0028	230.65
6260		CHA 230		230.00	6	1.0158	233.64	6263		ESP230		230.00	6	1.0166	233.81
6330		BAI230		230.00	6	1.0143	233.30	6340		CAN 230		230.00	6	1.0080	231.84
6360		GLA230		230.00	6	1.0069	231.59	6363		ZAM230		230.00	6	1.0117	232.69
6366		EVA230		230.00	6	1.0144	233.31	6380		BOQIII 230		230.00	6	1.0104	232.40
6400		FRONTCHA		230.00	6	1.0166	233.81	6430		ANTON230		230.00	6	1.0147	233.38
6500		FRONTDOM		230.00	6	1.0246	235.65	6590		24DIC230		230.00	6	1.0117	232.69
6680		BFRIO230		230.00	6	1.0179	234.12	6690		DOM230		230.00	6	1.0252	235.80
6691		ALTO230		230.00	6	1.0269	236.18	6695		PANDO230		230.00	6	1.0257	235.92
6698		MLIRIO230		230.00	6	1.0256	235.88	6760		SBA230		230.00	6	1.0048	231.10
6790		SMA230		230.00	6	1.0109	232.51	6840		BUR230		230.00	6	1.0175	234.03

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)
6001		PAN230		230.00	6	0.9974	229.41	6005		CHO230		230.00	6	0.9835	226.20
6105		PAM230		230.00	6	0.9835	226.20	6240		LGU 230		230.00	6	0.9882	227.28



1323

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 11:08
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 23
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.2	62.5	96.3	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	53.4	54.0	98.8	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E THU, MAY 12 2011 11:08
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 23
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

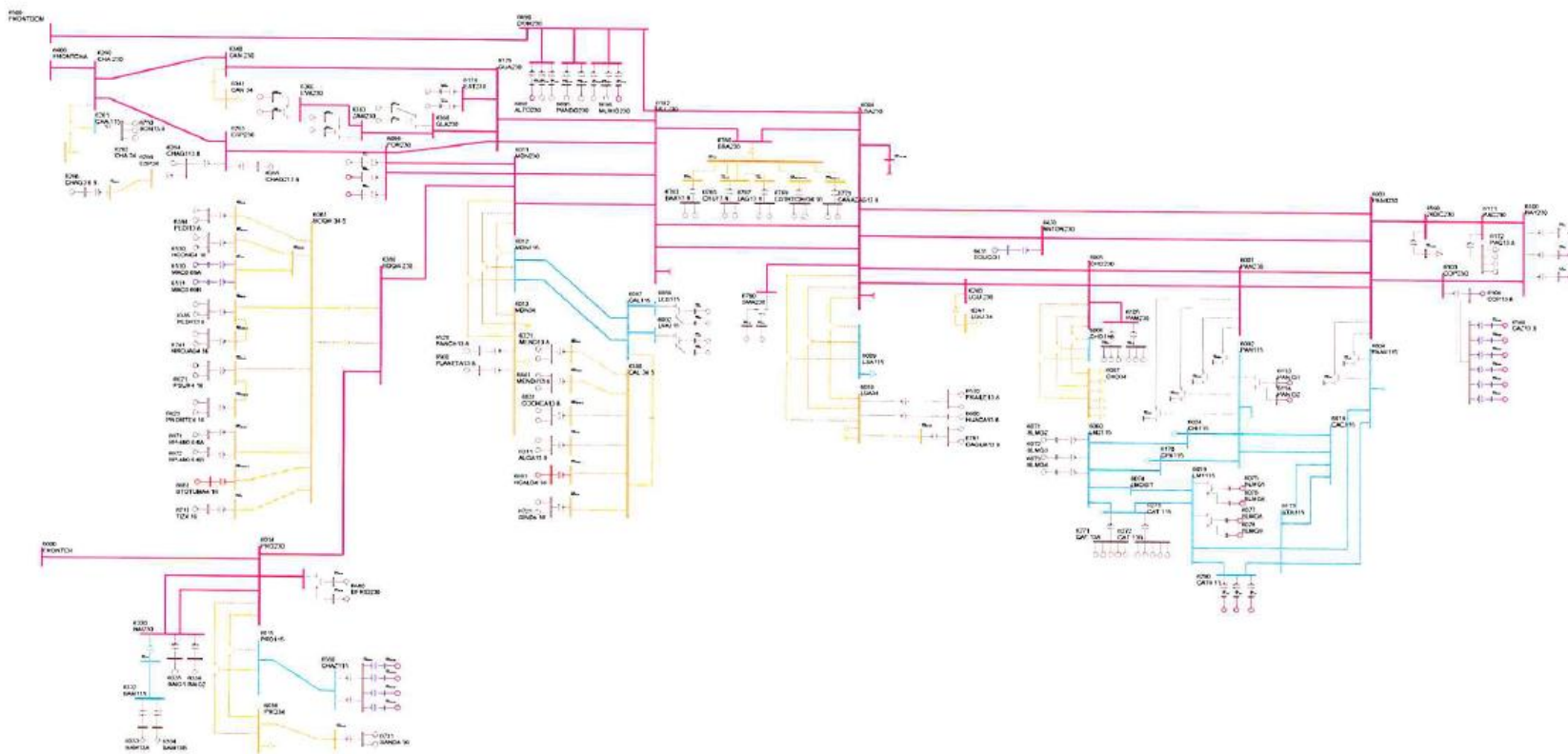
FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							THU, MAY 12 2011 11:08			
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS			
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HUMEDA 2014 CNT 23							IN MW/MVAR			
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT
	RATION	BUSES						LINES	+ LOADS	
1	905.3	1150.5	0.0	0.0	0.0	0.0	20.9	-266.1	-266.1	-266.1
GUATEMAL	220.0	340.6	219.0	0.0	0.0	600.8	237.6	23.6	23.6	
2	1088.7	1054.0	0.0	0.0	0.0	0.0	34.8	0.0	0.0	0.0
SALVADOR	265.2	350.4	-159.5	0.0	0.0	234.9	301.7	7.5	7.5	
3	1137.6	1106.0	0.0	0.0	0.0	0.0	31.6	0.0	0.0	0.0
HONDURAS	370.0	362.7	-10.0	0.0	0.0	457.8	412.3	62.8	62.8	
4	533.5	514.6	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0
NICARAGU	81.3	202.9	-9.1	0.0	0.0	203.2	200.3	-109.6	-109.6	
5	1498.0	1468.8	0.0	0.0	0.0	0.0	29.1	0.1	0.1	0.0
COSTA RI	240.1	538.4	-228.4	0.0	0.0	555.3	417.7	67.7	67.7	
6	1640.8	1333.8	0.0	0.0	0.0	0.0	101.0	206.0	206.0	206.1
PANAMA	268.2	233.7	-360.4	0.0	0.0	473.6	928.6	-60.1	-60.1	
7	110.2	46.6	0.0	0.0	0.0	0.0	3.6	60.0	60.0	60.0
ACANAL	16.5	8.2	-16.0	0.0	0.0	0.0	16.1	8.3	8.3	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	6914.1	6674.4	0.0	0.0	0.0	0.0	239.7	0.0	0.0	0.0
TOTALS	1461.2	2036.9	-564.4	0.0	0.0	2525.6	2514.3	0.0	0.0	

Demanda Máxima de Verano





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:03
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2014

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
6071		BLMG2		13.800	V2	38.0	1.7	15.0	0.0	1.0200	37.3	0.9990	47.0			62	6
6072		BLMG3		13.800	V3	38.0	1.7	15.0	0.0	1.0200	37.3	0.9990	47.0			62	6
6073		BLMG4		13.800	V4	38.0	1.6	15.0	0.0	1.0200	37.3	0.9991	47.0			62	6
6090		LESG1		13.800	E1	20.1	5.2	12.0	-5.0	1.0100	20.5	0.9674	27.0			64	6
6091		LESG2		13.800	E2	20.1	5.2	12.0	-5.0	1.0100	20.5	0.9674	27.0			64	6
6094		LVAG1		13.800	L1	24.7	-1.3	12.0	-5.0	1.0100	24.4	0.9987	27.0			64	6
6095		LVAG2		13.800	L2	24.7	-1.3	12.0	-5.0	1.0100	24.4	0.9987	27.0			64	6
6097		FORG1		13.800	F1	75.0	1.2	50.0	-50.0	1.0100	74.3	0.9999	111.0			64	6
6101		BAYG1		13.800	B1	78.1	21.1	30.0	-25.0	1.0100	80.1	0.9656	94.0			61	6
6106		PAM13A		13.800	M1	15.2	9.0	9.0	0.0	0.9760	18.1	0.8605	20.7			63	6
6106		PAM13A		13.800	M2	15.2	9.0	9.0	0.0	0.9760	18.1	0.8605	20.7			63	6
6106		PAM13A		13.800	M3	15.2	9.0	9.0	0.0	0.9760	18.1	0.8605	20.7			63	6
6107		PAM13B		13.800	M4	15.2	9.0	9.0	0.0	0.9760	18.1	0.8605	20.7			63	6
6107		PAM13B		13.800	M5	15.2	9.0	9.0	0.0	0.9760	18.1	0.8605	20.7			63	6
6107		PAM13B		13.800	M6	15.2	9.0	9.0	0.0	0.9760	18.1	0.8605	20.7			63	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9820	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9820	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9820	19.5	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	54.0	9.1	29.0	-29.0	1.0100	54.2	0.9861	69.0			64	6
6177		ESTG2		13.800	E2	54.0	9.1	29.0	-29.0	1.0100	54.2	0.9861	69.0			64	6
6264		CHAG113.8		13.800	G1	74.6	-6.0	52.4	-48.9	1.0100	74.1	0.9968	116.5			64	6
6265		CHAG213.8		13.800	G2	74.6	-2.2	52.4	-48.9	1.0100	73.9	0.9996	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.3	4.9	4.9	-4.1	1.0067	9.6	0.8623	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9989	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9989	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9989	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9989	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9989	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9989	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9989	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9989	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9989	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9989	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	-0.4	2.0	-2.0	1.0100	3.7	0.9928	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	-0.4	2.0	-2.0	1.0100	3.7	0.9928	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	-0.4	2.0	-2.0	1.0100	3.7	0.9928	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	-0.4	2.0	-2.0	1.0100	3.7	0.9928	4.8			62	6



6282	GIR 13B	13.800	G5	8.3	-1.0	2.5	-2.5	1.0100	8.3	0.9932	10.9	6
6282	GIR 13B	13.800	G6	8.3	-1.0	2.5	-2.5	1.0100	8.3	0.9932	10.9	6
6282	GIR 13B	13.800	G7	8.3	-1.0	2.5	-2.5	1.0100	8.3	0.9932	10.9	6
6282	GIR 13B	13.800	G8	8.3	-1.0	2.5	-2.5	1.0100	8.3	0.9932	10.9	6
6311	ALGA13.8	13.800	A1	4.6	0.9	2.3	-2.3	1.0000	4.7	0.9807	5.7	64
6311	ALGA13.8	13.800	A2	4.6	0.9	2.3	-2.3	1.0000	4.7	0.9807	5.7	64
6321	MEND13.8	13.800	M1	8.4	4.2	4.2	-4.2	0.9940	9.5	0.8969	10.4	64
6321	MEND13.8	13.800	M2	8.4	4.2	4.2	-4.2	0.9940	9.5	0.8969	10.4	64
6333	BAM13A	13.800	G1	25.2	1.2	10.0	-10.0	1.0000	25.2	0.9988	30.0	64
6334	BAM13B	13.800	G2	25.2	1.2	10.0	-10.0	1.0000	25.2	0.9988	30.0	64
6335	BAIG1	13.800	G1	37.7	-8.1	14.0	-14.0	1.0000	38.6	0.9778	49.0	64
6336	BAIG2	13.800	G2	37.7	-8.1	14.0	-14.0	1.0000	38.6	0.9778	49.0	64
6361	GLA13A	13.800	G1	10.8	-7.0	7.8	-7.0	1.0032	12.8	0.8389	14.1	64
6362	GLA13B	13.800	G2	10.8	-7.0	7.8	-7.0	1.0032	12.8	0.8389	14.1	64
6364	LOR13A	13.800	G1	14.4	-7.0	7.8	-7.0	1.0073	15.9	0.8989	25.0	64
6365	LOR13B	13.800	G2	14.4	-7.0	7.8	-7.0	1.0073	15.9	0.8989	25.0	64
6367	PRU13A	13.800	G1	23.8	-8.0	8.0	-8.0	1.0080	24.9	0.9479	33.0	64
6368	PRU13B	13.800	G2	23.8	-8.0	8.0	-8.0	1.0080	24.9	0.9479	33.0	64
6384	PEDI13.8	13.800	G1	8.5	-0.2	4.9	-4.9	1.0000	8.5	0.9996	12.5	64
6384	PEDI13.8	13.800	G2	8.5	-0.2	4.9	-4.9	1.0000	8.5	0.9996	12.5	64
6385	PEDII13.8	13.800	G1	5.5	0.2	3.2	-3.6	1.0000	5.5	0.9995	7.5	64
6385	PEDII13.8	13.800	G2	5.5	0.2	3.2	-3.6	1.0000	5.5	0.9995	7.5	64
6431	EOLICO I	0.6000	G1	120.0	-20.1	21.0	-21.0	1.0000	121.7	0.9863	152.3	63
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0081	1.6	0.9985	2.1	64
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0081	1.6	0.9985	2.1	64
6520	PANCH13.8	13.800	P1	4.3	2.0	2.0	-2.0	0.9397	5.0	0.9048	6.2	64
6530	HCONC4.16	4.2000	G1	4.3	-1.0	2.5	-2.5	1.0000	4.4	0.9759	5.6	64
6530	HCONC4.16	4.2000	G2	4.3	-1.0	2.5	-2.5	1.0000	4.4	0.9759	5.6	64
6560	PLANETA13.8	13.800	G1	3.8	2.0	2.0	-2.0	0.9397	4.6	0.8862	4.9	64
6570	FRAILE13.8	13.800	G1	2.5	1.2	1.2	-1.2	0.9765	2.8	0.9036	3.0	63
6570	FRAILE13.8	13.800	G2	2.5	1.2	1.2	-1.2	0.9765	2.8	0.9036	3.0	63
6600	HUACA13.8	13.800	G1	4.3	2.2	2.2	-2.2	0.9764	4.9	0.8893	5.5	63
6621	PSUR4.16	4.2000	G1	4.3	-0.7	2.5	-2.5	1.0000	4.3	0.9849	5.6	64
6621	PSUR4.16	4.2000	G2	4.3	-0.7	2.5	-2.5	1.0000	4.3	0.9849	5.6	64
6623	PNORTE4.16	4.2000	G1	4.3	-1.4	2.5	-2.5	1.0000	4.5	0.9500	5.6	64
6623	PNORTE4.16	4.2000	G2	4.3	-1.4	2.5	-2.5	1.0000	4.5	0.9500	5.6	64
6631	COCHEA13.8	13.800	G1	6.4	-1.7	3.7	-3.7	1.0000	6.6	0.9670	8.4	64
6631	COCHEA13.8	13.800	G2	6.4	-1.7	3.7	-3.7	1.0000	6.6	0.9670	8.4	64
6641	MENDII13.8	13.800	G1	3.3	-1.0	1.9	-1.9	1.0000	3.4	0.9597	4.1	64
6641	MENDII13.8	13.800	G2	3.3	-1.0	1.9	-1.9	1.0000	3.4	0.9597	4.1	64
6651	BTOTUMA4.16	4.1600	G1	4.3	1.2	2.5	-2.5	1.0000	4.4	0.9650	5.6	64
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0243	3.8	0.8675	4.4	64
6671	RP-490 6.6A	6.6000	G1	6.1	0.4	2.3	-2.6	1.0000	6.1	0.9976	7.5	64



6672	RP-490 6.6B	6.6000	G2	6.1	0.4	2.3	-2.6	1.0000	6.1	0.9976	7.5	64	6
6681	BFRIO13A	13.800	G1	23.8	-8.0	8.0	-8.0	1.0034	25.0	0.9479	33.0	64	6
6682	BFRIO13B	13.800	G2	23.8	-8.0	8.0	-8.0	1.0034	25.0	0.9479	33.0	64	6
6692	ALTO13A	13.800	G1	19.1	9.6	9.9	-9.9	1.0100	21.1	0.8935	24.9	64	6
6693	ALTO13B	13.800	G2	19.1	-4.2	9.9	-9.9	1.0000	19.5	0.9766	24.9	64	6
6696	PANDO13A	13.800	G1	14.2	-1.8	12.8	-8.3	1.0000	14.3	0.9921	18.5	64	6
6697	PANDO13B	13.800	G2	14.2	-1.8	12.8	-8.3	1.0000	14.3	0.9921	18.5	64	6
6699	MLIRIO13A	13.800	G1	14.2	-1.6	12.8	-8.3	1.0000	14.2	0.9937	18.5	64	6
6700	MLIRIO13B	13.800	G2	14.2	-1.6	12.8	-8.3	1.0000	14.2	0.9937	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.2	1.2	2.3	-2.3	1.0000	4.3	0.9625	5.2	64	6
6721	SIND4.16	4.2000	G1	4.3	-2.5	2.5	-2.5	1.0228	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.3	-2.5	2.5	-2.5	1.0228	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	3.8	-1.7	2.2	-2.2	1.0000	4.2	0.9172	5.0	64	6
6731	SAND4.16	4.2000	G2	3.8	-1.7	2.2	-2.2	1.0000	4.2	0.9172	5.0	64	6
6741	RROJAS4.16	4.2000	G1	3.7	-1.1	2.1	-2.1	1.0000	3.8	0.9549	4.8	64	6
6741	RROJAS4.16	4.2000	G2	3.7	-1.1	2.1	-2.1	1.0000	3.8	0.9549	4.8	64	6
6750	BON13.8	13.800	G1	8.9	-0.9	4.0	-4.0	1.0000	8.9	0.9944	35.3	64	6
6750	BON13.8	13.800	G2	8.9	-0.9	4.0	-4.0	1.0000	8.9	0.9944	35.3	64	6
6750	BON13.8	13.800	G3	8.9	-0.9	4.0	-4.0	1.0000	8.9	0.9944	35.3	64	6
6763	BAR13.8	13.800	G1	6.4	2.4	4.0	-4.0	1.0000	6.8	0.9381	9.0	63	6
6763	BAR13.8	13.800	G2	6.4	2.4	4.0	-4.0	1.0000	6.8	0.9381	9.0	63	6
6765	CRU13.8	13.800	G1	4.1	1.1	2.6	-2.6	1.0000	4.3	0.9657	5.8	63	6
6765	CRU13.8	13.800	G2	4.1	1.1	2.6	-2.6	1.0000	4.3	0.9657	5.8	63	6
6767	LAG13.8	13.800	G1	4.2	0.8	2.6	-2.6	1.0000	4.2	0.9841	5.8	63	6
6767	LAG13.8	13.800	G2	4.2	0.8	2.6	-2.6	1.0000	4.2	0.9841	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.4	1.0	2.5	-2.5	1.0000	4.5	0.9764	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.4	1.0	2.5	-2.5	1.0000	4.5	0.9764	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.5	0.8	1.5	-1.5	1.0000	2.6	0.9503	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.5	0.8	1.5	-1.5	1.0000	2.6	0.9503	3.3	63	6
6781	OAGUA13.8	13.800	G1	2.7	0.0	1.6	-1.6	1.0000	2.7	1.0000	3.6	63	6
6781	OAGUA13.8	13.800	G2	2.7	0.0	1.6	-1.6	1.0000	2.7	1.0000	3.6	63	6
6791	SMA13A	13.800	G1	10.9	-4.6	6.2	-6.2	1.0000	11.8	0.9206	14.2	63	6
6792	SMA13B	13.800	G2	10.9	-4.6	6.2	-6.2	1.0000	11.8	0.9206	14.2	63	6
SUBSYSTEM TOTALS				1644.8	31.8	842.9	-687.6				2260.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:03

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL

BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2014

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
6127		MIR13B		12.000	G6	18.0	0.0	8.0	0.0	1.0112	17.8	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	20.0	7.3	11.0	0.0	1.0100	21.1	0.9397	29.4			65	7

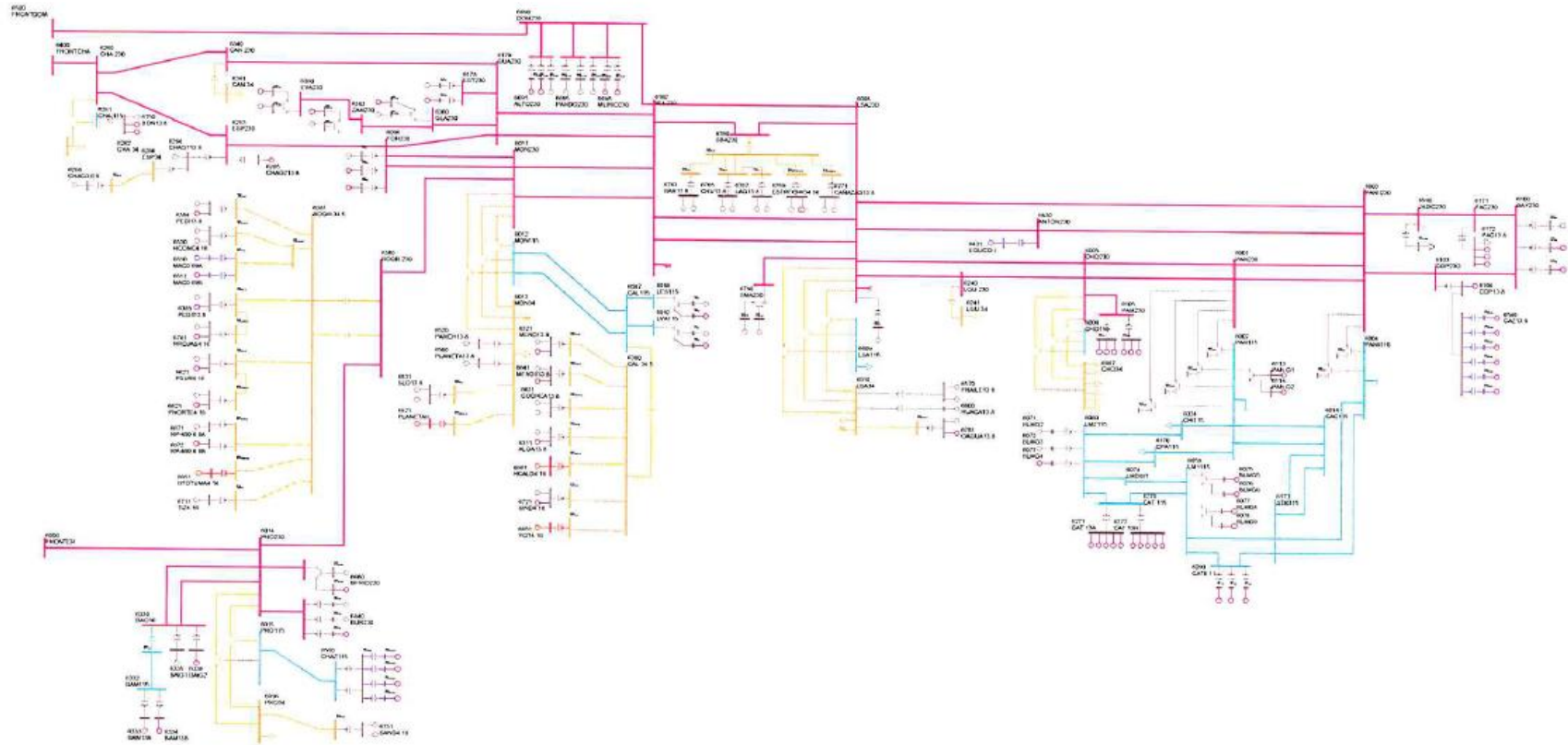
6129	MIR13D	13.800	G4	26.9	8.8	15.0	0.0	1.0100	28.1	0.9504	44.1
6130	MIR13F	13.800	G5	17.0	0.1	8.0	0.0	1.0100	16.8	1.0000	27.7
6134	MAD6A	6.9000	G1	10.0	0.1	6.0	-6.0	1.0100	9.9	0.9999	13.0
6135	MAD6B	6.9000	G2	10.0	0.2	6.0	-6.0	1.0100	9.9	0.9998	13.0
6136	MAD6C	6.9000	G3	10.0	0.2	6.0	-6.0	1.0100	9.9	0.9998	13.0
SUBSYSTEM TOTALS				111.9	16.7	60.0	-18.0				167.9



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Demanda Mínima de Invierno





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 13 2011 15:05
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HUMEDA 2014

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
6071		BLMG2		13.800	V2	20.0	0.4	15.0	0.0	1.0000	20.0	0.9998	47.0			62	6
6072		BLMG3		13.800	V3	20.0	0.4	15.0	0.0	1.0000	20.0	0.9998	47.0			62	6
6090		LESG1		13.800	E1	19.1	3.2	12.0	-5.0	0.9900	19.5	0.9863	27.0			64	6
6094		LVAG1		13.800	L1	23.3	-4.0	12.0	-5.0	0.9900	23.9	0.9857	27.0			64	6
6097		FORG1		13.800	F1	60.0	-5.9	50.0	-50.0	1.0000	60.3	0.9951	111.0			64	6
6101		BAYG1		13.800	B1	56.2	12.8	30.0	-25.0	1.0000	57.6	0.9751	94.0			61	6
6176		ESTG1		13.800	E1	51.0	5.4	29.0	-29.0	0.9900	51.8	0.9945	69.0			64	6
6264		CHAG113.8		13.800	G1	89.1	-16.2	52.4	-48.9	0.9900	91.5	0.9838	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.3	4.9	4.9	-4.1	0.9871	9.8	0.8623	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	2.3	2.3	-2.3	0.9945	4.9	0.8867	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9755	9.2	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	23.8	-1.8	10.0	-10.0	0.9900	24.1	0.9971	30.0			64	6
6335		BAIG1		13.800	G1	37.7	-13.3	14.0	-14.0	1.0000	40.0	0.9431	49.0			64	6
6361		GLA13A		13.800	G1	10.8	-7.0	7.8	-7.0	1.0009	12.9	0.8389	14.1			64	6
6364		LOR13A		13.800	G1	14.4	-7.0	7.8	-7.0	1.0030	15.9	0.8989	25.0			64	6
6367		PRU13A		13.800	G1	23.8	-8.0	8.0	-8.0	1.0027	25.0	0.9479	33.0			64	6
6384		PEDI13.8		13.800	G1	8.5	-4.6	4.9	-4.9	0.9900	9.7	0.8807	12.5			64	6
6385		PEDII13.8		13.800	G1	5.5	0.7	3.2	-3.6	1.0000	5.6	0.9913	7.5			64	6
6431		EOLICO I		0.6000	G1	60.0	-10.5	10.5	-10.5	1.0039	60.7	0.9850	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.5	-0.1	0.9	-0.1	1.0020	1.5	0.9981	2.1			64	6
6520		PANCH13.8		13.800	P1	4.2	2.0	2.0	-2.0	0.9200	5.1	0.9048	6.2			64	6
6530		HCONC4.16		4.2000	G1	4.2	-0.8	2.5	-2.5	1.0000	4.3	0.9809	5.6			64	6
6530		HCONC4.16		4.2000	G2	4.2	-0.8	2.5	-2.5	1.0000	4.3	0.9809	5.6			64	6
6560		PLANETA13.8		13.800	G1	3.8	2.0	2.0	-2.0	0.9200	4.7	0.8862	4.9			64	6
6570		FRAILE13.8		13.800	G1	2.3	1.2	1.2	-1.2	0.9364	2.8	0.8937	3.0			63	6
6570		FRAILE13.8		13.800	G2	2.3	1.2	1.2	-1.2	0.9364	2.8	0.8937	3.0			63	6
6600		HUACA13.8		13.800	G1	4.3	2.2	2.2	-2.2	0.9363	5.2	0.8893	5.5			63	6
6621		PSUR4.16		4.2000	G1	4.2	-2.5	2.5	-2.5	0.9960	4.9	0.8622	5.6			64	6
6623		PNORTE4.16		4.2000	G1	4.2	-2.5	2.5	-2.5	0.9961	4.9	0.8622	5.6			64	6
6631		COCHEA13.8		13.800	G1	6.4	-1.6	3.7	-3.7	0.9900	6.6	0.9683	8.4			64	6
6631		COCHEA13.8		13.800	G2	6.4	-1.6	3.7	-3.7	0.9900	6.6	0.9683	8.4			64	6
6641		MENDII13.8		13.800	G1	3.3	-1.0	1.9	-1.9	0.9900	3.5	0.9531	4.1			64	6
6651		BTOTUMA4.16		4.1600	G1	4.2	-2.5	2.5	-2.5	0.9958	5.0	0.8622	5.6			64	6
6661		HCALD4.16		4.1600	G1	3.4	-2.0	2.0	-2.0	1.0140	3.9	0.8675	4.4			64	6
6671		RP-490 6.6A		6.6000	G1	6.1	-0.1	2.3	-2.6	0.9900	6.1	0.9998	7.5			64	6
6681		BFRIO13A		13.800	G1	23.8	-8.0	8.0	-8.0	1.0112	24.8	0.9479	33.0			64	6
6692		ALTO13A		13.800	G1	19.1	-9.5	9.9	-9.9	0.9900	21.5	0.8953	24.9			64	6



6696	PANDO13A	13.800	G1	14.2	-8.3	12.8	-8.3	0.9900	16.6	0.8626	18.5	64	6
6697	PANDO13B	13.800	G2	14.2	-8.3	12.8	-8.3	0.9900	16.6	0.8626	18.5	64	6
6699	MLIRIO13A	13.800	G1	14.2	-8.3	12.8	-8.3	0.9913	16.6	0.8626	18.5	64	6
6711	TIZ4.16	4.2000	G1	3.9	1.6	2.3	-2.3	1.0000	4.2	0.9297	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0137	4.9	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	3.8	-2.2	2.2	-2.2	1.0036	4.4	0.8668	5.0	64	6
6731	SAND4.16	4.2000	G2	3.8	-2.2	2.2	-2.2	1.0036	4.4	0.8668	5.0	64	6
6741	RROJAS4.16	4.2000	G1	3.7	-0.7	2.1	-2.1	1.0000	3.7	0.9843	4.8	64	6
6750	BON13.8	13.800	G1	8.9	-4.0	4.0	-4.0	1.0004	9.7	0.9115	35.3	64	6
6763	BAR13.8	13.800	G1	6.4	2.8	4.0	-4.0	1.0000	7.0	0.9192	9.0	63	6
6763	BAR13.8	13.800	G2	6.4	2.8	4.0	-4.0	1.0000	7.0	0.9192	9.0	63	6
6765	CRU13.8	13.800	G1	4.1	1.3	2.6	-2.6	1.0000	4.3	0.9517	5.8	63	6
6765	CRU13.8	13.800	G2	4.1	1.3	2.6	-2.6	1.0000	4.3	0.9517	5.8	63	6
6767	LAG13.8	13.800	G1	4.2	1.0	2.6	-2.6	1.0000	4.3	0.9749	5.8	63	6
6767	LAG13.8	13.800	G2	4.2	1.0	2.6	-2.6	1.0000	4.3	0.9749	5.8	63	6
6769	ESTRECHO4.16	4.2000	G1	4.4	2.5	2.5	-2.5	0.9974	5.1	0.8734	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.5	1.0	1.5	-1.5	1.0000	2.7	0.9271	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.5	1.0	1.5	-1.5	1.0000	2.7	0.9271	3.3	63	6
6781	OAGUA13.8	13.800	G1	2.7	1.6	1.6	-1.6	0.9597	3.3	0.8674	3.6	63	6
6791	SMA13A	13.800	G1	10.9	6.1	6.2	-6.2	1.0000	12.5	0.8718	14.2	63	6
6792	SMA13B	13.800	G2	10.9	6.1	6.2	-6.2	1.0000	12.5	0.8718	14.2	63	6
6810	SVC-LV	13.200	1	0.0	-59.9	300.0	-225.0	0.9777	61.3	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.2	1.8	1.8	-1.8	0.9677	3.8	0.8669	4.1	64	6
6831	SLO13.8	13.800	G1	3.6	2.1	2.1	-2.1	0.9465	4.4	0.8669	4.7	64	6
6831	SLO13.8	13.800	G2	3.6	2.1	2.1	-2.1	0.9465	4.4	0.8669	4.7	64	6
6841	BUR13A	13.800	G1	14.2	6.1	8.1	-8.1	1.0000	15.4	0.9179	18.5	64	6
6842	BUR13B	13.800	G2	14.2	6.1	8.1	-8.1	1.0000	15.4	0.9179	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0140	4.0	0.8678	4.6	64	6
SUBSYSTEM TOTALS				828.2	-119.1	761.8	-618.3				1589.0		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:05
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HUMEDA 2014

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
6127		MIR13B		12.000	G6	18.0	5.9	8.0	0.0	1.0100	18.7	0.9506	27.7			65	7
6129		MIR13D		13.800	G4	28.0	15.0	15.0	0.0	1.0091	31.5	0.8813	44.1			65	7
6134		MAD6A		6.9000	G1	9.3	2.0	6.0	-6.0	1.0100	9.4	0.9773	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	1.6	6.0	-6.0	1.0100	10.0	0.9874	13.0			65	7
6136		MAD6C		6.9000	G3	10.0	1.6	6.0	-6.0	1.0100	10.0	0.9874	13.0			65	7
SUBSYSTEM TOTALS						75.3	26.1	41.0	-18.0				110.8				



1333

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:05
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HUMEDA 2014

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0219	235.03	6003		PANII230		230.00	6	1.0018	230.41
6011		MDN230		230.00	6	1.0059	231.35	6014		PRO230		230.00	6	1.0199	234.58
6096		FOR230		230.00	6	1.0087	232.00	6100		BAY230		230.00	6	1.0109	232.51
6103		COP230		230.00	6	1.0037	230.84	6171		PAC230		230.00	6	1.0043	230.98
6178		EST230		230.00	6	1.0073	231.69	6179		GUA230		230.00	6	1.0074	231.71
6182		VEL230		230.00	6	1.0008	230.18	6260		CHA 230		230.00	6	1.0222	235.10
6263		ESP230		230.00	6	1.0199	234.58	6330		BAI230		230.00	6	1.0192	234.42
6340		CAN 230		230.00	6	1.0141	233.23	6360		GLA230		230.00	6	1.0094	232.16
6363		ZAM230		230.00	6	1.0115	232.64	6366		EVA230		230.00	6	1.0127	232.92
6380		BOQIII 230		230.00	6	1.0124	232.85	6400		FRONTCHA		230.00	6	1.0244	235.62
6430		ANTON230		230.00	6	1.0049	231.13	6500		FRONTDOM		230.00	6	1.0223	235.13
6590		24DIC230		230.00	6	1.0028	230.65	6680		BFRIO230		230.00	6	1.0211	234.85
6690		DOM230		230.00	6	1.0212	234.87	6691		ALTO230		230.00	6	1.0220	235.07
6695		PANDO230		230.00	6	1.0193	234.44	6698		MLIRIO230		230.00	6	1.0206	234.74
6760		SBA230		230.00	6	1.0006	230.15	6840		BUR230		230.00	6	1.0217	235.00

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9961	229.11	6005		CHO230		230.00	6	0.9894	227.57
6008		LSA230		230.00	6	0.9900	227.70	6105		PAM230		230.00	6	0.9894	227.57
6240		LGU 230		230.00	6	0.9881	227.25	6790		SMA230		230.00	6	0.9916	228.06



1334

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:05
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HUMEDA 2014

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0043	115.49	6004		PANII115		115.00	6	1.0036	115.42
6012		MDN115		115.00	6	1.0038	115.44	6015		PRO115		115.00	6	1.0149	116.71
6018		CAC115		115.00	6	1.0042	115.48	6036		SMA115		115.00	6	1.0033	115.38
6055		MOS115B		115.00	6	1.0018	115.20	6057		TOC115		115.00	6	1.0015	115.17
6059		LM1115		115.00	6	1.0002	115.02	6060		LM2115		115.00	6	1.0002	115.02
6066		FFIELD		115.00	6	1.0004	115.05	6074		LMDIST		115.00	6	1.0001	115.02
6087		CAL115		115.00	6	1.0052	115.59	6088		LES115		115.00	6	1.0064	115.73
6092		LVA115		115.00	6	1.0051	115.59	6123		MIR115		115.00	7	1.0148	116.71
6170		CPA115		115.00	6	1.0009	115.11	6173		STR115		115.00	6	1.0015	115.17
6174		PM115-1A		115.00	6	1.0030	115.35	6175		PM115-2A		115.00	6	1.0030	115.35
6210		TIN115		115.00	6	1.0013	115.15	6211		PM115-9		115.00	6	1.0016	115.19
6261		CHA 115		115.00	6	1.0133	116.52	6270		CAT 115		115.00	6	1.0002	115.02
6280		GIR 115		115.00	6	1.0009	115.11	6290		CATII 11		115.00	6	1.0003	115.04
6331		BAI115		115.00	6	1.0123	116.42	6332		BAM115		115.00	6	1.0118	116.36
6350		PM115-8		115.00	6	1.0010	115.11	6550		CHAZ115		115.00	6	1.0149	116.71

BUSES WITH VOLTAGE LESS THAN 1.0000:

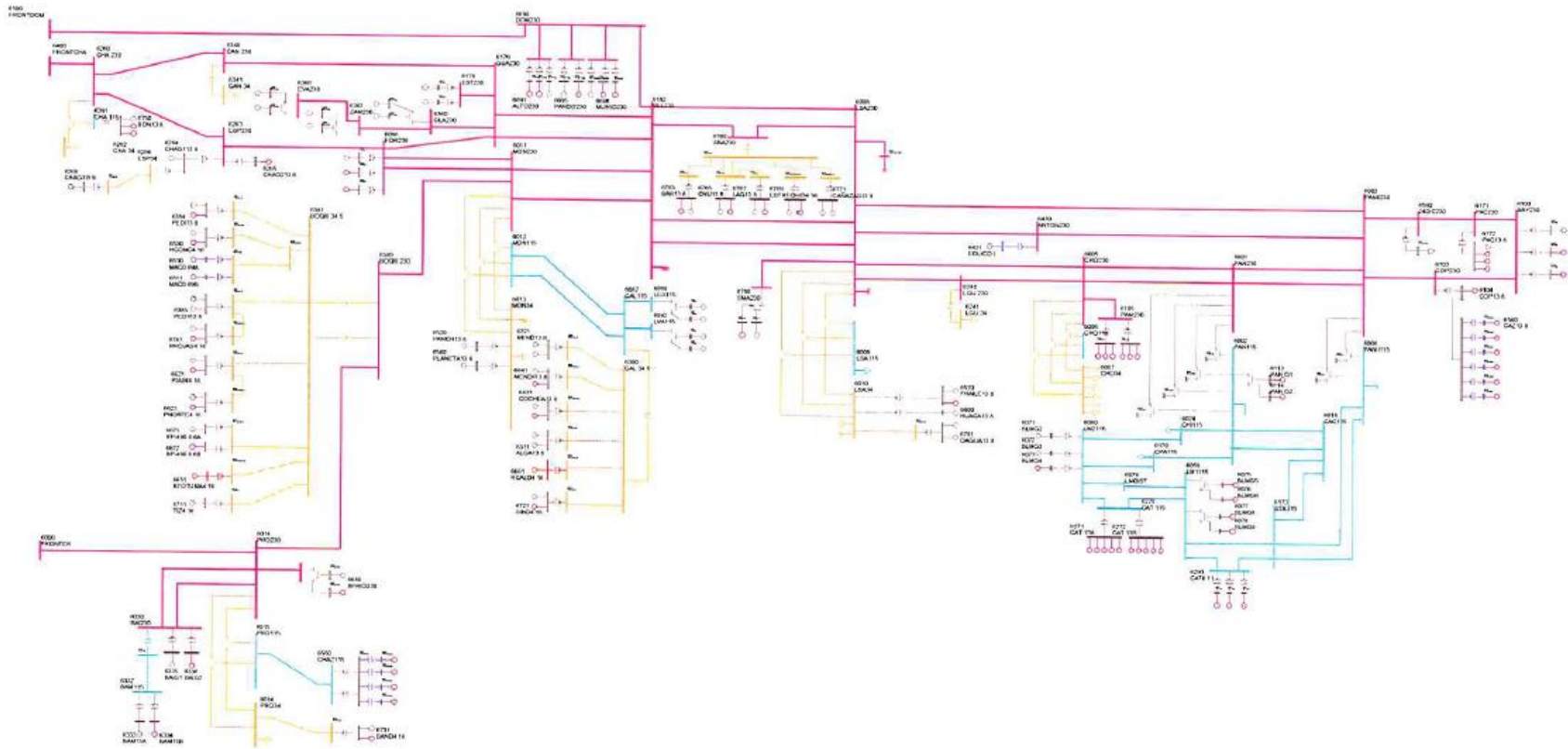
BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6006		CHO115		115.00	6	0.9791	112.59	6009		LSA115		115.00	6	0.9984	114.82
6019		CVI115A		115.00	6	0.9991	114.89	6024		CHI115		115.00	6	0.9965	114.60
6027		LOC115A		115.00	6	0.9993	114.92	6032		MAR115A		115.00	6	0.9976	114.72
6040		SFR115		115.00	6	0.9981	114.78	6047		CLA115		115.00	6	0.9929	114.18
6230		CBA115		115.00	6	0.9985	114.83	6580		LBO115		115.00	6	0.9988	114.86



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E							FRI, MAY 13 2011 15:05		AREA TOTALS		
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							IN MW/MVAR				
BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HUMEDA 2014											
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE-	ASSIGNED	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT	
	RATION	TO AREA						LINES	+ LOADS		
1	654.4	754.0	0.0	0.0	0.0	0.0	11.0	-110.6	-110.6	-110.6	
GUATEMAL	-14.0	100.4	385.4	0.0	0.0	620.9	171.2	-50.0	-50.0		
2	501.2	490.6	0.0	0.0	0.0	0.0	11.0	-0.3	-0.3	0.0	
SALVADOR	28.6	131.8	0.0	0.0	0.0	252.0	104.2	44.7	44.7		
3	536.1	520.9	0.0	0.0	0.0	0.0	15.2	0.0	0.0	0.0	
HONDURAS	-83.3	170.5	46.1	0.0	0.0	507.7	138.8	69.1	69.1		
4	301.8	296.3	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0	
NICARAGU	-128.4	117.3	20.6	0.0	0.0	254.8	57.9	-69.3	-69.3		
5	728.2	720.7	0.0	0.0	0.0	0.0	7.4	0.0	0.0	0.0	
COSTA RI	-83.5	292.5	-13.8	0.0	0.0	581.6	135.5	84.0	84.0		
6	828.2	733.6	0.0	0.0	0.0	0.0	30.8	63.9	63.9	63.6	
PANAMA	-119.1	266.3	-100.6	0.0	0.0	493.6	307.7	-98.9	-98.9		
7	75.3	25.6	0.0	0.0	0.0	0.0	2.6	47.0	47.0	47.0	
ACANAL	26.1	9.3	-15.5	0.0	0.0	0.0	11.8	20.5	20.5		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	3625.2	3541.8	0.0	0.0	0.0	0.0	83.5	0.0	0.0	0.0	
TOTALS	-373.5	1087.9	322.2	0.0	0.0	2710.7	927.1	0.0	0.0		



Demanda Mínima de Verano





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 13 2011 15:17
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2014

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
6071		BLMG2		13.800	V2	20.0	0.0	15.0	0.0	1.0018	20.0	1.0000	47.0			62	6
6072		BLMG3		13.800	V3	20.0	0.0	15.0	0.0	1.0018	20.0	1.0000	47.0			62	6
6090		LESG1		13.800	E1	19.0	0.5	12.0	-5.0	0.9900	19.2	0.9997	27.0			64	6
6091		LESG2		13.800	E2	19.0	0.5	12.0	-5.0	0.9900	19.2	0.9997	27.0			64	6
6094		LVAG1		13.800	L1	22.0	-5.0	12.0	-5.0	0.9947	22.7	0.9751	27.0			64	6
6095		LVAG2		13.800	L2	22.0	-5.0	12.0	-5.0	0.9947	22.7	0.9751	27.0			64	6
6097		FORG1		13.800	F1	60.0	-20.0	50.0	-50.0	0.9900	63.9	0.9485	111.0			64	6
6101		BAYG1		13.800	B1	65.7	15.8	30.0	-25.0	1.0000	67.6	0.9722	94.0			61	6
6176		ESTG1		13.800	E1	50.0	5.5	29.0	-29.0	1.0000	50.3	0.9940	69.0			64	6
6177		ESTG2		13.800	E2	50.0	5.5	29.0	-29.0	1.0000	50.3	0.9940	69.0			64	6
6264		CHAG113.8		13.800	G1	74.6	-18.9	52.4	-48.9	0.9900	77.7	0.9695	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.3	4.9	4.9	-4.1	0.9871	9.8	0.8623	10.9			64	6
6311		ALGA13.8		13.800	A1	4.0	0.5	2.3	-2.3	1.0000	4.0	0.9924	5.7			64	6
6311		ALGA13.8		13.800	A2	4.0	0.5	2.3	-2.3	1.0000	4.0	0.9924	5.7			64	6
6321		MEND13.8		13.800	M1	7.0	3.5	4.2	-4.2	1.0000	7.8	0.8969	10.4			64	6
6321		MEND13.8		13.800	M2	7.0	3.5	4.2	-4.2	1.0000	7.8	0.8969	10.4			64	6
6333		BAM13A		13.800	G1	25.2	-1.5	10.0	-10.0	0.9900	25.5	0.9982	30.0			64	6
6335		BAIG1		13.800	G1	35.0	-14.0	14.0	-14.0	0.9989	37.7	0.9285	49.0			64	6
6361		GLA13A		13.800	G1	11.0	-4.9	7.8	-7.0	1.0100	11.9	0.9126	14.1			64	6
6362		GLA13B		13.800	G2	11.0	-4.9	7.8	-7.0	1.0100	11.9	0.9126	14.1			64	6
6364		LOR13A		13.800	G1	12.0	-7.0	7.8	-7.0	1.0104	13.7	0.8638	25.0			64	6
6365		LOR13B		13.800	G2	12.0	-7.0	7.8	-7.0	1.0104	13.7	0.8638	25.0			64	6
6367		PRU13A		13.800	G1	20.0	-8.0	8.0	-8.0	1.0107	21.3	0.9285	33.0			64	6
6368		PRU13B		13.800	G2	20.0	-8.0	8.0	-8.0	1.0107	21.3	0.9285	33.0			64	6
6384		PEDI13.8		13.800	G1	8.1	-1.1	4.9	-4.9	1.0000	8.2	0.9912	12.5			64	6
6385		PEDII13.8		13.800	G1	5.5	-0.4	3.2	-3.6	1.0000	5.5	0.9971	7.5			64	6
6385		PEDII13.8		13.800	G2	5.5	-0.4	3.2	-3.6	1.0000	5.5	0.9971	7.5			64	6
6431		EOLICO I		0.6000	G1	100.0	-17.5	17.5	-17.5	1.0070	100.8	0.9850	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.6	-0.1	0.9	-0.1	1.0109	1.6	0.9985	2.1			64	6
6511		MAC0.69B		0.7000	G2	1.6	-0.1	0.9	-0.1	1.0109	1.6	0.9985	2.1			64	6
6520		PANCH13.8		13.800	P1	4.0	2.0	2.0	-2.0	0.9420	4.7	0.8944	6.2			64	6
6530		HCONC4.16		4.2000	G1	4.0	-1.9	2.5	-2.5	1.0000	4.4	0.9039	5.6			64	6
6560		PLANETA13.8		13.800	G1	3.8	2.0	2.0	-2.0	0.9420	4.6	0.8862	4.9			64	6
6570		FRAILE13.8		13.800	G1	2.5	1.2	1.2	-1.2	0.9767	2.8	0.9036	3.0			63	6
6600		HUACA13.8		13.800	G1	4.1	2.2	2.2	-2.2	0.9773	4.8	0.8804	5.5			63	6
6621		PSUR4.16		4.2000	G1	4.0	-1.8	2.5	-2.5	1.0000	4.4	0.9123	5.6			64	6
6623		PNORTE4.16		4.2000	G1	4.0	-2.1	2.5	-2.5	1.0000	4.5	0.8856	5.6			64	6



6631	COCHEA	13.8	13.800	G1	6.0	-1.0	3.7	-3.7	1.0100	6.0	0.9870	8.4	64	6
6641	MENDII	13.8	13.800	G1	3.3	-1.9	1.9	-1.9	1.0087	3.7	0.8696	4.1	64	6
6651	BTOTUMA	4.16	4.1600	G1	4.1	-1.5	2.5	-2.5	1.0000	4.4	0.9384	5.6	64	6
6661	HCALD	4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0339	3.8	0.8675	4.4	64	6
6671	RP-490	6.6A	6.6000	G1	6.1	0.1	2.3	-2.6	1.0000	6.1	0.9997	7.5	64	6
6681	BFRIO	13A	13.800	G1	23.8	-8.0	8.0	-8.0	1.0111	24.8	0.9479	33.0	64	6
6692	ALTO	13A	13.800	G1	19.1	-5.6	9.9	-9.9	1.0000	19.9	0.9598	24.9	64	6
6696	PANDO	13A	13.800	G1	12.0	-5.4	12.8	-8.3	1.0000	13.2	0.9112	18.5	64	6
6699	MLIRIO	13A	13.800	G1	12.0	-5.5	12.8	-8.3	1.0000	13.2	0.9085	18.5	64	6
6711	TIZ	4.16	4.2000	G1	4.2	-1.5	2.3	-2.3	1.0000	4.4	0.9388	5.2	64	6
6721	SIND	4.16	4.2000	G1	4.1	-2.5	2.5	-2.5	1.0335	4.7	0.8569	5.6	64	6
6731	SAND	4.16	4.2000	G1	3.8	-1.8	2.2	-2.2	1.0100	4.2	0.9090	5.0	64	6
6741	RROJAS	4.16	4.2000	G1	3.7	-2.0	2.1	-2.1	1.0000	4.2	0.8728	4.8	64	6
6750	BON	13.8	13.800	G1	8.9	-4.0	4.0	-4.0	1.0006	9.7	0.9115	35.3	64	6
6763	BAR	13.8	13.800	G1	6.4	3.4	4.0	-4.0	1.0000	7.3	0.8846	9.0	63	6
6765	CRU	13.8	13.800	G1	4.1	1.7	2.6	-2.6	1.0000	4.5	0.9255	5.8	63	6
6767	LAG	13.8	13.800	G1	4.2	1.3	2.6	-2.6	1.0000	4.4	0.9569	5.8	63	6
6769	ESTRECHO	4.164	4.2000	G1	4.4	1.5	2.5	-2.5	1.0000	4.7	0.9452	5.6	63	6
6771	CAÑAZAS	13.8	13.800	G1	2.5	0.4	1.5	-1.5	1.0000	2.6	0.9847	3.3	63	6
6771	CAÑAZAS	13.8	13.800	G2	2.5	0.4	1.5	-1.5	1.0000	2.6	0.9847	3.3	63	6
6781	OAGUA	13.8	13.800	G1	2.7	-0.6	1.6	-1.6	1.0000	2.8	0.9803	3.6	63	6
6781	OAGUA	13.8	13.800	G2	2.7	-0.6	1.6	-1.6	1.0000	2.8	0.9803	3.6	63	6
6791	SMA	13A	13.800	G1	10.9	-0.8	6.2	-6.2	1.0100	10.8	0.9970	14.2	63	6
SUBSYSTEM TOTALS					902.5	-117.4	495.5	-415.5				1382.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:17
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2014

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
6127		MIR13B		12.000	G6	18.0	3.6	8.0	0.0	1.0100	18.2	0.9804	27.7			65	7
6129		MIR13D		13.800	G4	20.2	14.0	15.0	0.0	1.0100	24.3	0.8225	44.1			65	7
6130		MIR13F		13.800	G5	17.0	5.0	8.0	0.0	1.0100	17.5	0.9599	27.7			65	7
6134		MAD6A		6.9000	G1	10.6	2.3	6.0	-6.0	1.0100	10.7	0.9779	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	2.0	6.0	-6.0	1.0100	10.1	0.9809	13.0			65	7
SUBSYSTEM TOTALS						75.8	26.8	43.0	-12.0				125.5				



1339

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:17
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2014

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0220	235.05	6008		LSA230		230.00	6	1.0105	232.42
6011		MDN230		230.00	6	1.0137	233.15	6014		PRO230		230.00	6	1.0198	234.54
6096		FOR230		230.00	6	1.0144	233.32	6100		BAY230		230.00	6	1.0079	231.83
6171		PAC230		230.00	6	1.0005	230.12	6178		EST230		230.00	6	1.0135	233.10
6179		GUA230		230.00	6	1.0136	233.13	6182		VEL230		230.00	6	1.0174	233.99
6240		LGU 230		230.00	6	1.0012	230.27	6260		CHA 230		230.00	6	1.0225	235.16
6263		ESP230		230.00	6	1.0211	234.85	6330		BAI230		230.00	6	1.0190	234.36
6340		CAN 230		230.00	6	1.0183	234.22	6360		GLA230		230.00	6	1.0169	233.90
6363		ZAM230		230.00	6	1.0202	234.65	6366		EVA230		230.00	6	1.0221	235.09
6380		BOQIII 230		230.00	6	1.0163	233.74	6400		FRONTCHA		230.00	6	1.0235	235.41
6430		ANTON230		230.00	6	1.0089	232.05	6450		LSA CAP 230		230.00	6	1.0105	232.42
6500		FRONTDOM		230.00	6	1.0283	236.51	6680		BFRIO230		230.00	6	1.0209	234.82
6690		DOM230		230.00	6	1.0283	236.51	6691		ALTO230		230.00	6	1.0293	236.73
6695		PANDO230		230.00	6	1.0279	236.43	6698		MLIRIO230		230.00	6	1.0280	236.44
6760		SBA230		230.00	6	1.0179	234.12	6790		SMA230		230.00	6	1.0111	232.55

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9933	228.45	6003		PANII230		230.00	6	0.9978	229.50
6005		CHO230		230.00	6	0.9917	228.09	6103		COP230		230.00	6	0.9999	229.97
6105		PAM230		230.00	6	0.9917	228.09	6590		24DIC230		230.00	6	0.9990	229.76



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E							FRI, MAY 13 2011		15:17		
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS				
BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2014							IN MW/MVAR				
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE-	ASSIGNED	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT	
	RATION	TO AREA						LINES	+ LOADS		
1	594.4	740.0	0.0	0.0	0.0	0.0	11.2	-156.7	-156.7	-156.8	
GUATEMAL	6.8	99.0	406.1	0.0	0.0	613.4	156.3	-41.2	-41.2		
2	500.0	490.6	0.0	0.0	0.0	0.0	9.4	0.0	0.0	0.0	
SALVADOR	44.0	132.2	0.0	0.0	0.0	253.6	99.8	65.5	65.5		
3	534.0	520.9	0.0	0.0	0.0	0.0	13.2	0.0	0.0	0.0	
HONDURAS	-72.7	170.5	45.4	0.0	0.0	492.2	146.9	56.7	56.7		
4	290.6	282.7	0.0	0.0	0.0	0.0	7.8	0.0	0.0	0.0	
NICARAGU	-96.2	111.9	16.7	0.0	0.0	219.7	75.4	-80.6	-80.6		
5	767.6	757.3	0.0	0.0	0.0	0.0	10.3	0.0	0.0	0.0	
COSTA RI	-8.9	299.2	20.9	0.0	0.0	569.2	184.6	55.7	55.7		
6	902.5	761.8	0.0	0.0	0.0	0.0	30.9	109.8	109.8	109.8	
PANAMA	-117.4	276.5	-135.3	0.0	0.0	500.0	320.1	-78.8	-78.8		
7	75.8	26.6	0.0	0.0	0.0	0.0	2.2	47.0	47.0	47.0	
ACANAL	26.8	9.7	-15.7	0.0	0.0	0.0	10.0	22.8	22.8		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	3664.9	3579.9	0.0	0.0	0.0	0.0	85.0	0.0	0.0	0.0	
TOTALS	-217.6	1098.9	338.2	0.0	0.0	2647.9	993.2	0.0	0.0		

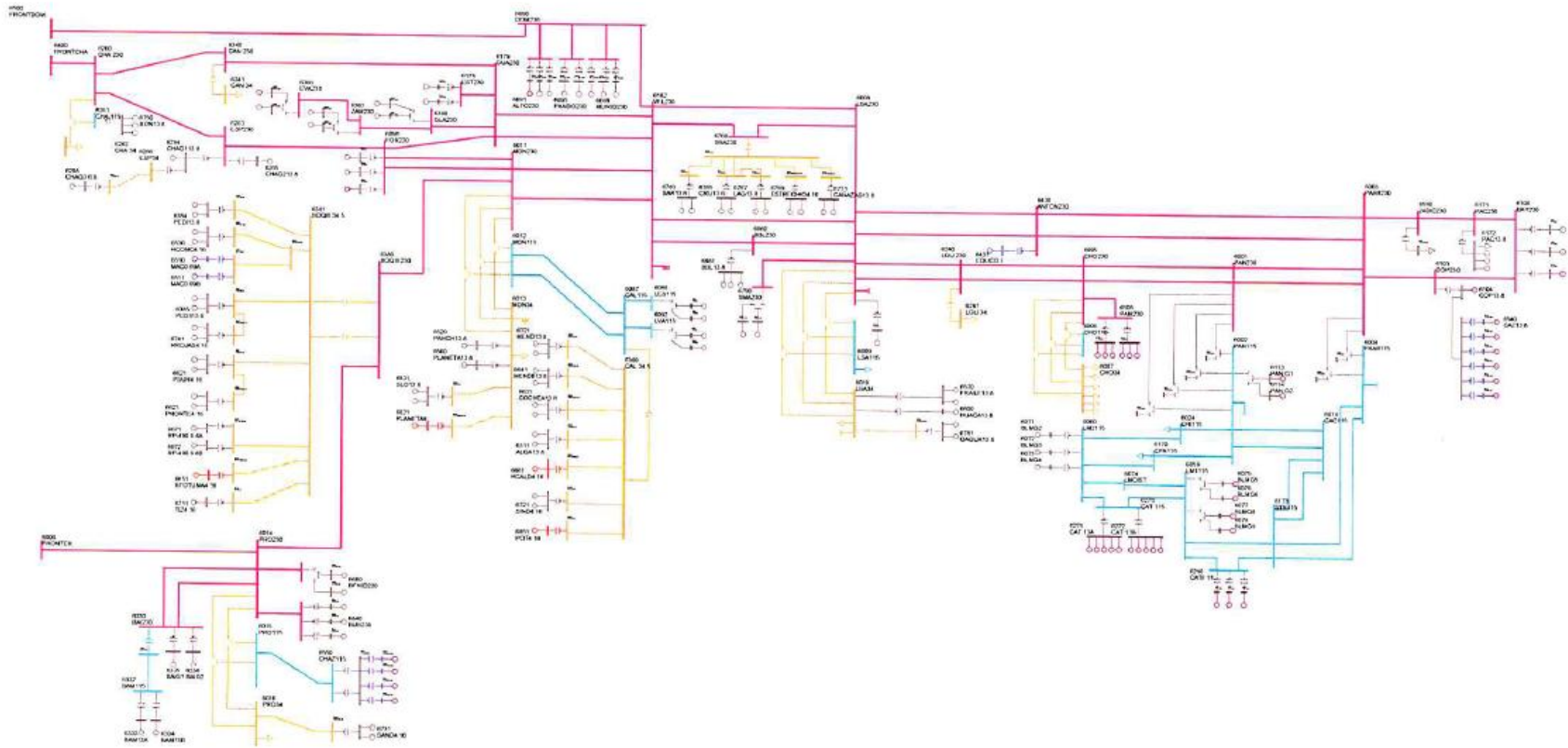
Año 2015



1342



Demanda Máxima de Invierno





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 11:21
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015

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
6071		BLMG2		13.800	V2	38.0	1.8	15.0	0.0	1.0200	37.3	0.9988	47.0			62	6
6072		BLMG3		13.800	V3	38.0	1.8	15.0	0.0	1.0200	37.3	0.9988	47.0			62	6
6073		BLMG4		13.800	V4	38.0	1.8	15.0	0.0	1.0200	37.3	0.9989	47.0			62	6
6090		LESG1		13.800	E1	22.4	5.8	12.0	-5.0	1.0100	22.9	0.9684	27.0			64	6
6091		LESG2		13.800	E2	22.4	5.8	12.0	-5.0	1.0100	22.9	0.9684	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-0.7	12.0	-5.0	1.0100	25.8	0.9996	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-0.7	12.0	-5.0	1.0100	25.8	0.9996	27.0			64	6
6097		FORG1		13.800	F1	86.1	6.0	50.0	-50.0	1.0100	85.5	0.9976	111.0			64	6
6098		FORG2		13.800	F2	86.1	6.0	50.0	-50.0	1.0100	85.5	0.9976	111.0			64	6
6101		BAYG1		13.800	B1	72.8	15.0	30.0	-25.0	1.0100	73.6	0.9796	94.0			61	6
6102		BAYG2		13.800	B2	72.8	15.0	30.0	-25.0	1.0100	73.6	0.9796	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9854	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9854	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9854	19.5	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	51.0	8.9	29.0	-29.0	1.0100	51.3	0.9850	69.0			64	6
6177		ESTG2		13.800	E2	51.0	8.9	29.0	-29.0	1.0100	51.3	0.9850	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-0.8	52.4	-48.9	1.0100	98.6	1.0000	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	2.5	52.4	-48.9	1.0100	98.7	0.9997	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9765	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9765	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9928	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9928	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9975	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9975	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-4.7	14.0	-14.0	1.0100	42.0	0.9937	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-4.7	14.0	-14.0	1.0100	42.0	0.9937	49.0			64	6
6361		GLA13A		13.800	G1	12.1	0.2	7.8	-7.0	1.0100	11.9	0.9998	14.1			64	6
6362		GLA13B		13.800	G2	12.1	0.2	7.8	-7.0	1.0100	11.9	0.9998	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-3.5	7.8	-7.0	1.0100	16.3	0.9772	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-3.5	7.8	-7.0	1.0100	16.3	0.9772	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-5.3	8.0	-8.0	1.0100	26.8	0.9810	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-5.3	8.0	-8.0	1.0100	26.8	0.9810	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	-0.2	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	-0.2	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9990	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9990	7.5			64	6



6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0077	60.5	0.9850	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0074	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0074	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9445	5.5	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9812	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9812	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9445	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9779	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9779	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9778	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9894	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9894	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.5	2.5	-2.5	1.0000	5.0	0.9559	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.5	2.5	-2.5	1.0000	5.0	0.9559	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9846	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9846	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.4	1.9	-1.9	1.0000	3.3	0.9939	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.4	1.9	-1.9	1.0000	3.3	0.9939	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.6	2.5	-2.5	1.0000	5.0	0.9447	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0233	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9964	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9964	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-7.0	8.0	-8.0	1.0100	27.2	0.9675	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-7.0	8.0	-8.0	1.0100	27.2	0.9675	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	-4.4	9.9	-9.9	0.9900	22.0	0.9792	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	-4.4	9.9	-9.9	0.9900	22.0	0.9792	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-2.3	12.8	-8.3	0.9900	16.2	0.9893	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-2.3	12.8	-8.3	0.9900	16.2	0.9893	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-2.2	12.8	-8.3	0.9900	16.1	0.9908	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-2.2	12.8	-8.3	0.9900	16.1	0.9908	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-2.2	12.8	-8.3	0.9900	16.1	0.9908	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	1.8	2.3	-2.3	1.0000	4.7	0.9292	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0217	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0217	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-0.8	2.2	-2.2	1.0100	4.3	0.9817	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-0.8	2.2	-2.2	1.0100	4.3	0.9817	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9593	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9593	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.6	4.0	-4.0	1.0000	9.9	0.9982	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.6	4.0	-4.0	1.0000	9.9	0.9982	35.3	64	6
6750	BON13.8	13.800	G3	9.9	-0.6	4.0	-4.0	1.0000	9.9	0.9982	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	2.9	4.0	-4.0	1.0000	7.8	0.9253	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	2.9	4.0	-4.0	1.0000	7.8	0.9253	9.0	63	6



6765	CRU13.8	13.800	G1	4.6	1.4	2.6	-2.6	1.0000	4.8	0.9560	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.4	2.6	-2.6	1.0000	4.8	0.9560	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.0	2.6	-2.6	1.0000	4.8	0.9777	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.0	2.6	-2.6	1.0000	4.8	0.9777	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.3	2.5	-2.5	1.0000	5.1	0.9688	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.3	2.5	-2.5	1.0000	5.1	0.9688	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9352	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9352	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	-0.9	1.6	-1.6	1.0000	3.2	0.9573	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	-0.9	1.6	-1.6	1.0000	3.2	0.9573	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	290.9	300.0	-225.0	1.0647	273.3	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	1.8	1.8	-1.8	0.9935	4.0	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9716	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9716	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	7.8	8.1	-8.1	1.0000	17.7	0.8966	18.5	64	6
6842	BUR13B	13.800	G2	15.8	7.8	8.1	-8.1	1.0000	17.7	0.8966	18.5	64	6
6843	BUR13C	13.800	G3	15.8	7.8	8.1	-8.1	1.0000	17.7	0.8966	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0233	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9764	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9764	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9764	2.0	0.9057	2.1	64	6
SUBSYSTEM TOTALS				1739.4	371.3	1138.5	-950.5				2583.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 11:21
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015

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
6127		MIR13B		12.000	G6	18.0	0.0	8.0	0.0	1.0113	17.8	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	20.0	7.2	11.0	0.0	1.0100	21.1	0.9403	29.4			65	7
6129		MIR13D		13.800	G4	28.4	8.6	15.0	0.0	1.0100	29.4	0.9571	44.1			65	7
6130		MIR13F		13.800	G5	17.0	0.0	8.0	0.0	1.0100	16.8	1.0000	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	0.3	6.0	-6.0	1.0100	9.9	0.9996	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.3	6.0	-6.0	1.0100	9.9	0.9995	13.0			65	7
6136		MAD6C		6.9000	G3	9.1	0.4	6.0	-6.0	1.0100	9.0	0.9988	13.0			65	7
SUBSYSTEM TOTALS						112.5	16.9	60.0	-18.0				167.9				



1347

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 11:21
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0173	233.98	6003		PANII230		230.00	6	1.0014	230.32
6008		LSA230		230.00	6	1.0100	232.30	6011		MDN230		230.00	6	1.0041	230.94
6014		PRO230		230.00	6	1.0176	234.04	6096		FOR230		230.00	6	1.0079	231.81
6100		BAY230		230.00	6	1.0202	234.65	6103		COP230		230.00	6	1.0046	231.07
6171		PAC230		230.00	6	1.0103	232.37	6178		EST230		230.00	6	1.0045	231.04
6179		GUA230		230.00	6	1.0045	231.04	6260		CHA 230		230.00	6	1.0191	234.40
6263		ESP230		230.00	6	1.0211	234.84	6330		BAI230		230.00	6	1.0179	234.11
6340		CAN 230		230.00	6	1.0104	232.40	6360		GLA230		230.00	6	1.0098	232.25
6363		ZAM230		230.00	6	1.0151	233.47	6366		EVA230		230.00	6	1.0180	234.13
6380		BOQIII 230		230.00	6	1.0108	232.47	6400		FRONTCHA		230.00	6	1.0194	234.46
6430		ANTON230		230.00	6	1.0087	232.00	6500		FRONTDOM		230.00	6	1.0162	233.72
6590		24DIC230		230.00	6	1.0055	231.27	6680		BFRIO230		230.00	6	1.0203	234.67
6690		DOM230		230.00	6	1.0159	233.66	6691		ALTO230		230.00	6	1.0182	234.19
6695		PANDO230		230.00	6	1.0161	233.69	6698		MLIRIO230		230.00	6	1.0160	233.67
6760		SBA230		230.00	6	1.0011	230.26	6790		SMA230		230.00	6	1.0109	232.51
6840		BUR230		230.00	6	1.0208	234.79								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9903	227.77	6005		CHO230		230.00	6	0.9770	224.71
6105		PAM230		230.00	6	0.9770	224.71	6182		VEL230		230.00	6	0.9986	229.67
6240		LGU 230		230.00	6	0.9869	227.00	6860		BBL230		230.00	6	0.9993	229.85



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 11:21
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.2	62.5	96.3	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.4	54.0	97.0	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 11:21
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

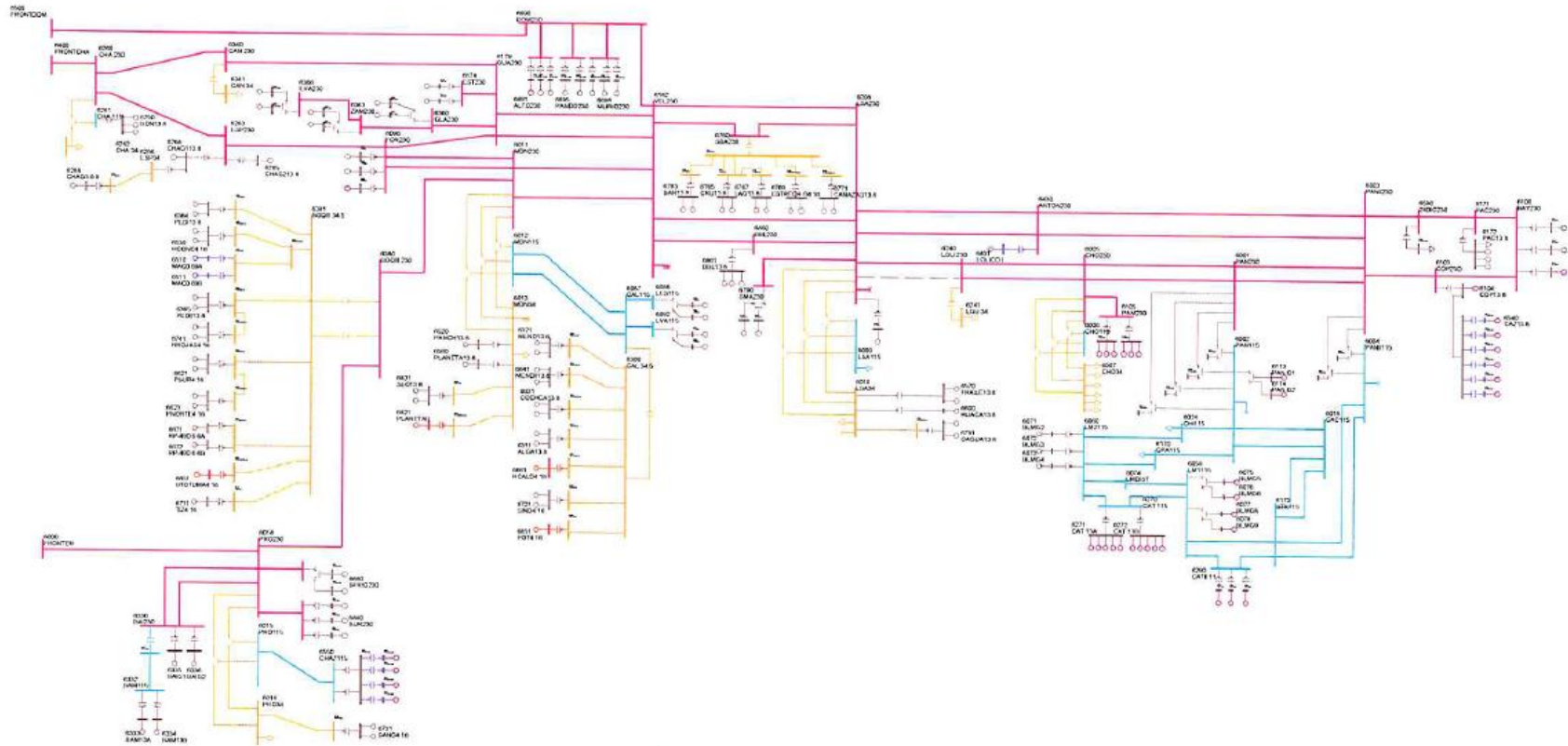
FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							FRI, MAY 13 2011 11:21				
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS				
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015							IN MW/MVAR				
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE-	ASSIGNED	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT	
	RATION	TO AREA						LINES	+ LOADS		
1	930.2	1179.4	0.0	0.0	0.0	0.0	23.0	-272.2	-272.2	-272.2	
GUATEMAL	227.1	340.6	218.1	0.0	0.0	600.5	256.9	12.0	12.0		
2	1141.9	1104.0	0.0	0.0	0.0	0.0	37.9	0.0	0.0	0.0	
SALVADOR	300.8	367.1	-180.9	0.0	0.0	241.1	322.3	33.4	33.4		
3	1239.0	1205.2	0.0	0.0	0.0	0.0	33.8	0.0	0.0	0.0	
HONDURAS	392.9	395.2	-20.3	0.0	0.0	468.8	453.9	32.9	32.9		
4	479.2	459.0	0.0	0.0	0.0	0.0	20.1	0.0	0.0	0.0	
NICARAGU	-17.7	181.0	-12.8	0.0	0.0	288.9	180.4	-77.5	-77.5		
5	1520.8	1489.7	0.0	0.0	0.0	0.0	31.1	0.0	0.0	0.0	
COSTA RI	260.2	558.4	-226.5	0.0	0.0	555.0	432.9	50.4	50.4		
6	1739.4	1416.9	0.0	0.0	0.0	0.0	110.5	212.1	212.1	212.2	
PANAMA	371.3	248.2	-339.7	0.0	0.0	511.3	1033.8	-59.6	-59.6		
7	112.5	48.8	0.0	0.0	0.0	0.0	3.6	60.1	60.1	60.0	
ACANAL	16.9	8.6	-16.0	0.0	0.0	0.0	16.0	8.3	8.3		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	7163.1	6903.1	0.0	0.0	0.0	0.0	260.0	0.0	0.0	0.0	
TOTALS	1551.5	2099.1	-578.1	0.0	0.0	2665.7	2696.2	0.0	0.0		

Contingencia 2: Llano Sánchez – Las Guías





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 2

FRI, MAY 13 2011 14:03

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
6071		BLMG2		13.800	V2	38.0	7.5	15.0	0.0	1.0200	38.0	0.9809	47.0			62	6
6072		BLMG3		13.800	V3	38.0	7.5	15.0	0.0	1.0200	38.0	0.9809	47.0			62	6
6073		BLMG4		13.800	V4	38.0	7.8	15.0	0.0	1.0200	38.0	0.9797	47.0			62	6
6090		LESG1		13.800	E1	22.4	6.0	12.0	-5.0	1.0100	23.0	0.9656	27.0			64	6
6091		LESG2		13.800	E2	22.4	6.0	12.0	-5.0	1.0100	23.0	0.9656	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-0.4	12.0	-5.0	1.0100	25.8	0.9999	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-0.4	12.0	-5.0	1.0100	25.8	0.9999	27.0			64	6
6097		FORG1		13.800	F1	86.1	7.6	50.0	-50.0	1.0100	85.6	0.9961	111.0			64	6
6098		FORG2		13.800	F2	86.1	7.6	50.0	-50.0	1.0100	85.6	0.9961	111.0			64	6
6101		BAYG1		13.800	B1	81.7	25.3	30.0	-25.0	1.0100	84.7	0.9553	94.0			61	6
6102		BAYG2		13.800	B2	72.8	24.4	30.0	-25.0	1.0100	76.0	0.9482	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9707	19.8	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9707	19.8	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9707	19.8	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	51.0	9.3	29.0	-29.0	1.0100	51.3	0.9839	69.0			64	6
6177		ESTG2		13.800	E2	51.0	9.3	29.0	-29.0	1.0100	51.3	0.9839	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-0.2	52.4	-48.9	1.0100	98.6	1.0000	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	3.1	52.4	-48.9	1.0100	98.7	0.9995	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9762	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9762	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9926	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9926	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9973	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9973	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-4.4	14.0	-14.0	1.0100	41.9	0.9946	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-4.4	14.0	-14.0	1.0100	41.9	0.9946	49.0			64	6
6361		GLA13A		13.800	G1	12.1	1.5	7.8	-7.0	1.0100	12.0	0.9924	14.1			64	6
6362		GLA13B		13.800	G2	12.1	1.5	7.8	-7.0	1.0100	12.0	0.9924	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-2.4	7.8	-7.0	1.0100	16.1	0.9893	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-2.4	7.8	-7.0	1.0100	16.1	0.9893	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-4.2	8.0	-8.0	1.0100	26.7	0.9878	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-4.2	8.0	-8.0	1.0100	26.7	0.9878	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	-0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	-0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9988	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9988	7.5			64	6



6431	EOLICO I	0.6000	G1	60.0	10.5	10.5	-10.5	0.9997	60.9	0.9850	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0072	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0072	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9430	5.5	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9837	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9837	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9430	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9736	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9736	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9735	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9915	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9915	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9588	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9588	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-1.0	3.7	-3.7	1.0000	6.5	0.9868	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-1.0	3.7	-3.7	1.0000	6.5	0.9868	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.3	1.9	-1.9	1.0000	3.3	0.9966	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.3	1.9	-1.9	1.0000	3.3	0.9966	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.8	2.5	-2.5	1.0000	5.1	0.9323	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0231	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9963	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9963	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-6.6	8.0	-8.0	1.0100	27.1	0.9705	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-6.6	8.0	-8.0	1.0100	27.1	0.9705	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	-3.9	9.9	-9.9	0.9900	21.9	0.9839	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	-3.9	9.9	-9.9	0.9900	21.9	0.9839	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-1.8	12.8	-8.3	0.9900	16.1	0.9935	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-1.8	12.8	-8.3	0.9900	16.1	0.9935	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-1.6	12.8	-8.3	0.9900	16.1	0.9947	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-1.6	12.8	-8.3	0.9900	16.1	0.9947	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-1.6	12.8	-8.3	0.9900	16.1	0.9947	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	1.9	2.3	-2.3	1.0000	4.8	0.9147	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0216	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0216	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-0.7	2.2	-2.2	1.0100	4.3	0.9853	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-0.7	2.2	-2.2	1.0100	4.3	0.9853	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.2	0.9613	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.2	0.9613	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.5	4.0	-4.0	1.0000	9.9	0.9986	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.5	4.0	-4.0	1.0000	9.9	0.9986	35.3	64	6
6750	BON13.8	13.800	G3	9.9	-0.5	4.0	-4.0	1.0000	9.9	0.9986	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	3.3	4.0	-4.0	1.0000	7.9	0.9095	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	3.3	4.0	-4.0	1.0000	7.9	0.9095	9.0	63	6



6765	CRU13.8	13.800	G1	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9440	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9440	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9695	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9695	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.5	2.5	-2.5	1.0000	5.1	0.9593	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.5	2.5	-2.5	1.0000	5.1	0.9593	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.2	1.5	-1.5	1.0000	3.1	0.9154	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.2	1.5	-1.5	1.0000	3.1	0.9154	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	1.6	1.6	-1.6	0.9998	3.4	0.8897	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	1.6	1.6	-1.6	0.9998	3.4	0.8897	3.6	63	6
6791	SMA13A	13.800	G1	12.2	0.0	6.2	-6.2	1.0000	12.2	1.0000	14.2	63	6
6792	SMA13B	13.800	G2	12.2	0.0	6.2	-6.2	1.0000	12.2	1.0000	14.2	63	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0557	284.2	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	1.8	1.8	-1.8	0.9919	4.0	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9700	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9700	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9998	17.8	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9998	17.8	0.8892	18.5	64	6
6843	BUR13C	13.800	G3	15.8	8.1	8.1	-8.1	0.9998	17.8	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0231	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9705	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9705	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9705	2.0	0.9057	2.1	64	6
SUBSYSTEM TOTALS				1748.3	479.2	1138.5	-950.5				2583.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:03
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 2

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
6127		MIR13B		12.000	G6	18.0	1.4	8.0	0.0	1.0100	17.9	0.9968	27.7			65	7
6128		MIR13C		12.000	G3	20.0	8.9	11.0	0.0	1.0100	21.7	0.9140	29.4			65	7
6129		MIR13D		13.800	G4	28.4	10.7	15.0	0.0	1.0100	30.0	0.9364	44.1			65	7
6130		MIR13F		13.800	G5	17.0	2.3	8.0	0.0	1.0100	17.0	0.9906	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	0.7	6.0	-6.0	1.0100	9.9	0.9973	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.7	6.0	-6.0	1.0100	9.9	0.9976	13.0			65	7
6136		MAD6C		6.9000	G3	9.1	0.8	6.0	-6.0	1.0100	9.0	0.9962	13.0			65	7
SUBSYSTEM TOTALS						112.5	25.5	60.0	-18.0				167.9				



1356

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:03
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 2

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0075	115.86	6004		PANII115		115.00	6	1.0072	115.83
6009		LSA115		115.00	6	1.0164	116.88	6012		MDN115		115.00	6	1.0063	115.72
6015		PRO115		115.00	6	1.0141	116.62	6018		CAC115		115.00	6	1.0073	115.85
6019		CVI115A		115.00	6	1.0024	115.28	6027		LOC115A		115.00	6	1.0009	115.10
6036		SMA115		115.00	6	1.0065	115.75	6055		MOS115B		115.00	6	1.0051	115.58
6057		TOC115		115.00	6	1.0050	115.57	6059		LM1115		115.00	6	1.0068	115.78
6060		LM2115		115.00	6	1.0070	115.80	6066		FFIELD		115.00	6	1.0018	115.21
6074		LMDIST		115.00	6	1.0069	115.79	6087		CAL115		115.00	6	1.0144	116.66
6088		LES115		115.00	6	1.0180	117.07	6092		LVA115		115.00	6	1.0148	116.70
6123		MIR115		115.00	7	1.0198	117.28	6170		CPA115		115.00	6	1.0064	115.74
6173		STR115		115.00	6	1.0075	115.86	6174		PM115-1A		115.00	6	1.0078	115.90
6175		PM115-2A		115.00	6	1.0078	115.90	6210		TIN115		115.00	6	1.0037	115.43
6211		PM115-9		115.00	6	1.0044	115.50	6261		CHA 115		115.00	6	1.0091	116.05
6270		CAT 115		115.00	6	1.0069	115.79	6280		GIR 115		115.00	6	1.0064	115.74
6290		CATII 11		115.00	6	1.0069	115.79	6331		BAI115		115.00	6	1.0067	115.77
6332		BAM115		115.00	6	1.0111	116.28	6350		PM115-8		115.00	6	1.0037	115.42
6550		CHAZ115		115.00	6	1.0141	116.62	6580		LBO115		115.00	6	1.0020	115.23

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6006		CHO115		115.00	6	0.9404	108.14	6024		CHI115		115.00	6	0.9994	114.94
6032		MAR115A		115.00	6	0.9994	114.93	6040		SFR115		115.00	6	0.9985	114.83
6047		CLA115		115.00	6	0.9943	114.35	6230		CBA115		115.00	6	0.9997	114.97



1357

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:03
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 2
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6008	LSA230	230.00*	6	6240	LGU 230	230.00	6	3C	445.1	350.0	127.2	450.0	98.9	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.1	62.5	96.2	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.3	54.0	96.9	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:03
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 2
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

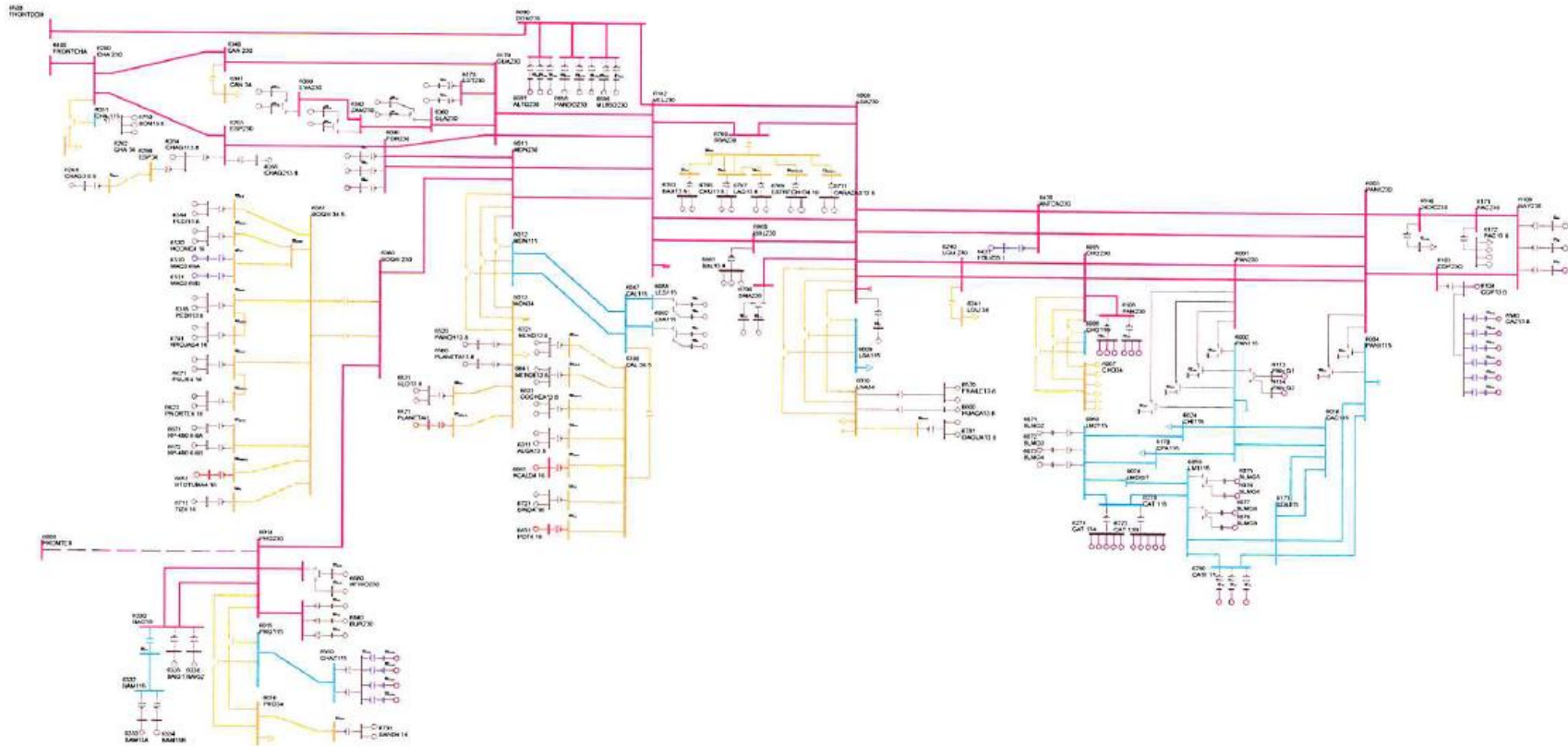
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:03
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 2 IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO			-NET INTERCHANGE-				DESIRED NET INT
	GENE- RATION	AT AREA BUSES	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	930.2 227.1	1179.4 340.6	0.0 218.1	0.0 0.0	0.0 0.0	0.0 600.5	23.0 256.9	-272.2 12.0	-272.2 12.0	-272.2
2 SALVADOR	1141.9 300.8	1104.0 367.1	0.0 -180.9	0.0 0.0	0.0 0.0	0.0 241.1	37.9 322.3	0.0 33.4	0.0 33.4	0.0
3 HONDURAS	1239.0 392.9	1205.2 395.2	0.0 -20.3	0.0 0.0	0.0 0.0	0.0 468.8	33.8 453.9	0.0 32.9	0.0 32.9	0.0
4 NICARAGU	479.2 -17.7	459.0 181.0	0.0 -12.8	0.0 0.0	0.0 0.0	0.0 288.9	20.1 180.4	0.0 -77.5	0.0 -77.5	0.0
5 COSTA RI	1520.8 261.5	1489.7 558.4	0.0 -226.4	0.0 0.0	0.0 0.0	0.0 554.9	31.1 433.0	0.0 51.4	0.0 51.4	0.0
6 PANAMA	1748.3 479.2	1416.9 248.2	0.0 -326.5	0.0 0.0	0.0 0.0	0.0 490.7	119.2 1116.5	212.2 -68.3	212.2 -68.3	212.2
7 ACANAL	112.5 25.5	48.8 8.6	0.0 -15.8	0.0 0.0	0.0 0.0	0.0 0.0	3.7 16.9	59.9 16.0	59.9 16.0	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	7172.0 1669.3	6903.1 2099.1	0.0 -564.8	0.0 0.0	0.0 0.0	0.0 2644.9	268.9 2779.9	0.0 0.0	0.0 0.0	0.0

Contingencia 7: Frontera – Progreso





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 7

FRI, MAY 13 2011 14:36

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
6071		BLMG2		13.800	V2	38.0	1.5	15.0	0.0	1.0200	37.3	0.9992	47.0			62	6
6072		BLMG3		13.800	V3	38.0	1.5	15.0	0.0	1.0200	37.3	0.9992	47.0			62	6
6073		BLMG4		13.800	V4	38.0	1.5	15.0	0.0	1.0200	37.3	0.9993	47.0			62	6
6090		LESG1		13.800	E1	22.4	6.5	12.0	-5.0	1.0100	23.1	0.9603	27.0			64	6
6091		LESG2		13.800	E2	22.4	6.5	12.0	-5.0	1.0100	23.1	0.9603	27.0			64	6
6094		LVAG1		13.800	L1	26.0	0.1	12.0	-5.0	1.0100	25.8	1.0000	27.0			64	6
6095		LVAG2		13.800	L2	26.0	0.1	12.0	-5.0	1.0100	25.8	1.0000	27.0			64	6
6097		FORG1		13.800	F1	86.1	9.9	50.0	-50.0	1.0100	85.8	0.9935	111.0			64	6
6098		FORG2		13.800	F2	86.1	9.9	50.0	-50.0	1.0100	85.8	0.9935	111.0			64	6
6101		BAYG1		13.800	B1	81.8	15.3	30.0	-25.0	1.0100	82.4	0.9831	94.0			61	6
6102		BAYG2		13.800	B2	72.8	14.4	30.0	-25.0	1.0100	73.5	0.9811	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9862	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9862	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9862	19.5	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	51.0	9.5	29.0	-29.0	1.0100	51.4	0.9832	69.0			64	6
6177		ESTG2		13.800	E2	51.0	9.5	29.0	-29.0	1.0100	51.4	0.9832	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	2.2	52.4	-48.9	1.0100	98.6	0.9998	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	5.5	52.4	-48.9	1.0100	98.8	0.9985	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9756	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9756	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9923	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9923	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	2.2	10.0	-10.0	1.0100	26.4	0.9965	30.0			64	6
6334		BAM13B		13.800	G2	26.6	2.2	10.0	-10.0	1.0100	26.4	0.9965	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-2.2	14.0	-14.0	1.0100	41.8	0.9986	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-2.2	14.0	-14.0	1.0100	41.8	0.9986	49.0			64	6
6361		GLA13A		13.800	G1	12.1	2.3	7.8	-7.0	1.0100	12.2	0.9828	14.1			64	6
6362		GLA13B		13.800	G2	12.1	2.3	7.8	-7.0	1.0100	12.2	0.9828	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-1.7	7.8	-7.0	1.0100	16.0	0.9946	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-1.7	7.8	-7.0	1.0100	16.0	0.9946	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-3.5	8.0	-8.0	1.0100	26.6	0.9913	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-3.5	8.0	-8.0	1.0100	26.6	0.9913	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	0.2	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	0.2	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.5	3.2	-3.6	1.0000	6.2	0.9967	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.5	3.2	-3.6	1.0000	6.2	0.9967	7.5			64	6



6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0085	60.4	0.9850	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0061	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0061	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9403	5.5	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.5	2.5	-2.5	1.0000	4.8	0.9940	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.5	2.5	-2.5	1.0000	4.8	0.9940	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9403	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9779	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9779	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9778	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.2	2.5	-2.5	1.0000	4.8	0.9987	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.2	2.5	-2.5	1.0000	4.8	0.9987	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.1	2.5	-2.5	1.0000	4.9	0.9725	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.1	2.5	-2.5	1.0000	4.9	0.9725	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.9	3.7	-3.7	1.0000	6.4	0.9902	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.9	3.7	-3.7	1.0000	6.4	0.9902	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.1	1.9	-1.9	1.0000	3.3	0.9995	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.1	1.9	-1.9	1.0000	3.3	0.9995	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	0.9996	5.4	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0228	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9959	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9959	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-4.2	8.0	-8.0	1.0100	26.7	0.9877	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-4.2	8.0	-8.0	1.0100	26.7	0.9877	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	-6.1	9.9	-9.9	0.9900	22.4	0.9612	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	-6.1	9.9	-9.9	0.9900	22.4	0.9612	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-3.9	12.8	-8.3	0.9900	16.5	0.9703	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-3.9	12.8	-8.3	0.9900	16.5	0.9703	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-3.8	12.8	-8.3	0.9900	16.4	0.9726	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-3.8	12.8	-8.3	0.9900	16.4	0.9726	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-3.8	12.8	-8.3	0.9900	16.4	0.9726	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9993	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0213	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0213	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-0.2	2.2	-2.2	1.0100	4.2	0.9994	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-0.2	2.2	-2.2	1.0100	4.2	0.9994	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.0	2.1	-2.1	1.0000	4.2	0.9710	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.0	2.1	-2.1	1.0000	4.2	0.9710	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9998	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9998	35.3	64	6
6750	BON13.8	13.800	G3	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9998	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	3.0	4.0	-4.0	1.0000	7.8	0.9209	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	3.0	4.0	-4.0	1.0000	7.8	0.9209	9.0	63	6



6765	CRU13.8	13.800	G1	4.6	1.5	2.6	-2.6	1.0000	4.8	0.9527	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.5	2.6	-2.6	1.0000	4.8	0.9527	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.0	2.6	-2.6	1.0000	4.8	0.9755	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.0	2.6	-2.6	1.0000	4.8	0.9755	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.3	2.5	-2.5	1.0000	5.1	0.9662	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.3	2.5	-2.5	1.0000	5.1	0.9662	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9298	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9298	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	-0.9	1.6	-1.6	1.0000	3.2	0.9573	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	-0.9	1.6	-1.6	1.0000	3.2	0.9573	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	297.3	300.0	-225.0	1.0658	278.9	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	1.8	1.8	-1.8	0.9891	4.0	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9673	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9673	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9964	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9964	17.9	0.8892	18.5	64	6
6843	BUR13C	13.800	G3	15.8	8.1	8.1	-8.1	0.9964	17.9	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0228	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9732	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9732	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9732	2.0	0.9057	2.1	64	6
SUBSYSTEM TOTALS				1748.5	415.9	1138.5	-950.5				2583.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:36
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 7

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
6127		MIR13B		12.000	G6	18.0	0.0	8.0	0.0	1.0117	17.8	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	20.0	7.1	11.0	0.0	1.0100	21.0	0.9421	29.4			65	7
6129		MIR13D		13.800	G4	28.4	8.4	15.0	0.0	1.0100	29.3	0.9585	44.1			65	7
6130		MIR13F		13.800	G5	17.0	0.0	8.0	0.0	1.0103	16.8	1.0000	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	0.3	6.0	-6.0	1.0100	9.9	0.9997	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.3	6.0	-6.0	1.0100	9.9	0.9995	13.0			65	7
6136		MAD6C		6.9000	G3	9.1	0.4	6.0	-6.0	1.0100	9.0	0.9990	13.0			65	7
SUBSYSTEM TOTALS						112.5	16.5	60.0	-18.0				167.9				



1363

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:36
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 7

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0209	234.82	6003		PANII230		230.00	6	1.0023	230.53
6008		LSA230		230.00	6	1.0100	232.30	6014		PRO230		230.00	6	1.0136	233.12
6096		FOR230		230.00	6	1.0036	230.84	6100		BAY230		230.00	6	1.0210	234.83
6103		COP230		230.00	6	1.0055	231.27	6171		PAC230		230.00	6	1.0112	232.57
6178		EST230		230.00	6	1.0014	230.31	6179		GUA230		230.00	6	1.0014	230.32
6260		CHA 230		230.00	6	1.0138	233.16	6263		ESP230		230.00	6	1.0171	233.93
6330		BAI230		230.00	6	1.0145	233.34	6340		CAN 230		230.00	6	1.0069	231.58
6360		GLA230		230.00	6	1.0070	231.61	6363		ZAM230		230.00	6	1.0126	232.89
6366		EVA230		230.00	6	1.0156	233.58	6380		BOQIII 230		230.00	6	1.0041	230.93
6400		FRONTCHA		230.00	6	1.0130	232.99	6430		ANTON230		230.00	6	1.0095	232.19
6500		FRONTDOM		230.00	6	1.0179	234.12	6590		24DIC230		230.00	6	1.0064	231.47
6680		BFRIO230		230.00	6	1.0165	233.80	6690		DOM230		230.00	6	1.0173	233.98
6691		ALTO230		230.00	6	1.0195	234.49	6695		PANDO230		230.00	6	1.0169	233.89
6698		MLIRIO230		230.00	6	1.0168	233.87	6790		SMA230		230.00	6	1.0109	232.51
6840		BUR230		230.00	6	1.0169	233.90								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9913	227.99	6005		CHO230		230.00	6	0.9781	224.96
6011		MDN230		230.00	6	0.9979	229.51	6105		PAM230		230.00	6	0.9781	224.96
6182		VEL230		230.00	6	0.9950	228.85	6240		LGU 230		230.00	6	0.9877	227.17
6760		SBA230		230.00	6	0.9991	229.79	6860		BBL230		230.00	6	0.9961	229.09



1365

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:36
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 7
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.0	62.5	96.0	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.2	54.0	96.7	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:36
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 7
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

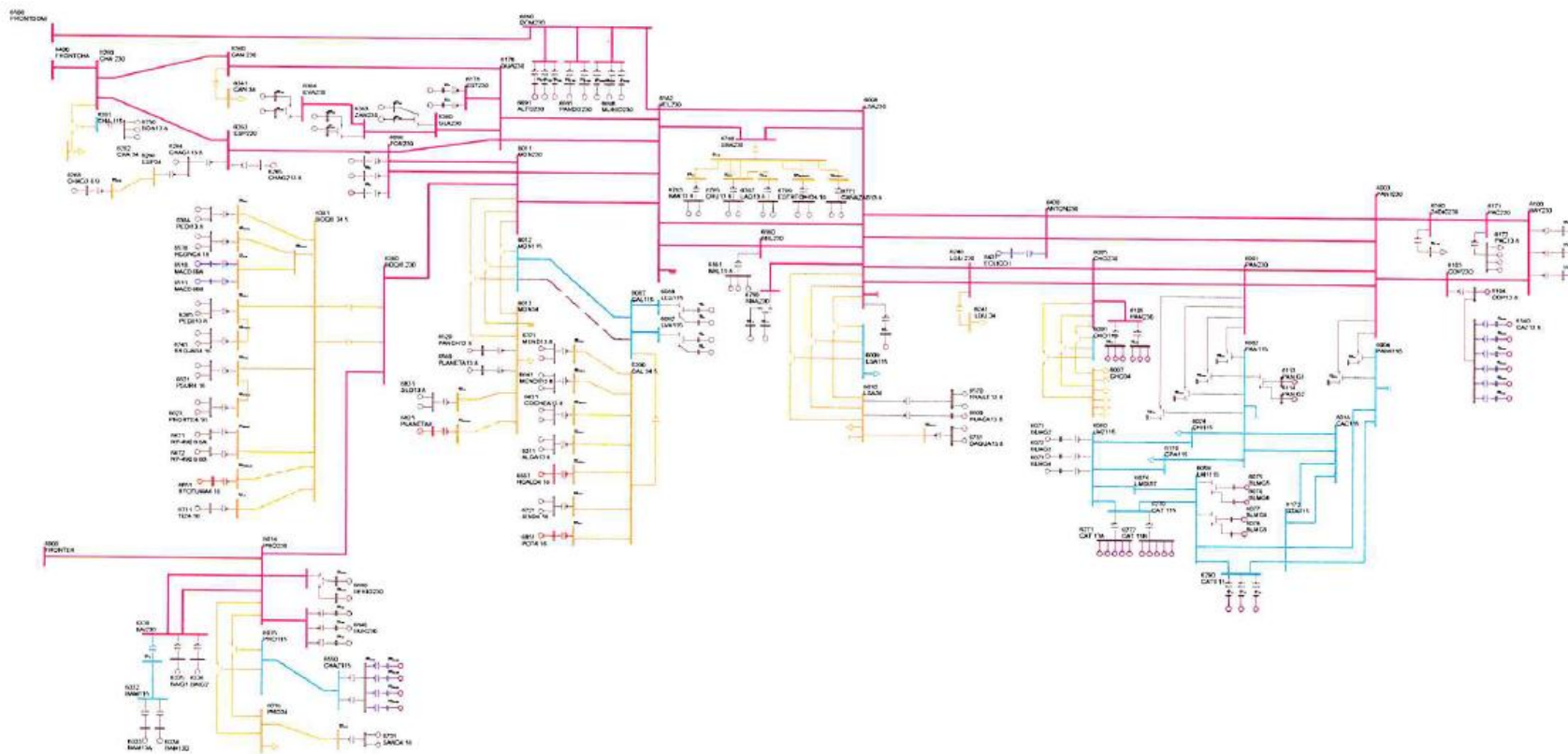
FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						FRI, MAY 13 2011 14:36		AREA TOTALS			
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 7					
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT	
	RATION	BUSES						LINES	+ LOADS		
1	930.2	1179.4	0.0	0.0	0.0	0.0	23.0	-272.2	-272.2	-272.2	
GUATEMAL	227.1	340.6	218.1	0.0	0.0	600.5	256.9	12.0	12.0		
2	1141.9	1104.0	0.0	0.0	0.0	0.0	37.9	0.0	0.0	0.0	
SALVADOR	300.8	367.1	-180.9	0.0	0.0	241.1	322.3	33.4	33.4		
3	1239.0	1205.2	0.0	0.0	0.0	0.0	33.8	0.0	0.0	0.0	
HONDURAS	392.9	395.2	-20.3	0.0	0.0	468.8	453.9	32.9	32.9		
4	479.2	459.0	0.0	0.0	0.0	0.0	20.1	0.0	0.0	0.0	
NICARAGU	-17.7	181.0	-12.8	0.0	0.0	288.9	180.5	-77.6	-77.6		
5	1520.8	1489.7	0.0	0.0	0.0	0.0	32.6	-1.5	-1.5	0.0	
COSTA RI	271.4	558.4	-226.3	0.0	0.0	554.9	444.1	50.1	50.1		
6	1748.4	1416.9	0.0	0.0	0.0	0.0	118.0	213.6	213.6	212.2	
PANAMA	415.9	248.2	-340.7	0.0	0.0	508.2	1075.4	-58.9	-58.9		
7	112.5	48.8	0.0	0.0	0.0	0.0	3.6	60.1	60.1	60.0	
ACANAL	16.5	8.6	-16.0	0.0	0.0	0.0	16.0	8.0	8.0		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	7172.2	6903.1	0.0	0.0	0.0	0.0	269.1	0.0	0.0	0.0	
TOTALS	1606.9	2099.1	-579.0	0.0	0.0	2662.4	2749.1	0.0	0.0		

Contingencia 13: Mata de Nance – Caldera





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:42
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 13

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	1.8	15.0	0.0	1.0200	37.3	0.9989	47.0			62	6
6072		BLMG3		13.800	V3	38.0	1.8	15.0	0.0	1.0200	37.3	0.9989	47.0			62	6
6073		BLMG4		13.800	V4	38.0	1.7	15.0	0.0	1.0200	37.3	0.9990	47.0			62	6
6090		LESG1		13.800	E1	22.4	6.3	12.0	-5.0	1.0100	23.1	0.9630	27.0			64	6
6091		LESG2		13.800	E2	22.4	6.3	12.0	-5.0	1.0100	23.1	0.9630	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-0.2	12.0	-5.0	1.0100	25.8	1.0000	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-0.2	12.0	-5.0	1.0100	25.8	1.0000	27.0			64	6
6097		FORG1		13.800	F1	86.1	6.8	50.0	-50.0	1.0100	85.5	0.9969	111.0			64	6
6098		FORG2		13.800	F2	86.1	6.8	50.0	-50.0	1.0100	85.5	0.9969	111.0			64	6
6101		BAYG1		13.800	B1	74.6	15.0	30.0	-25.0	1.0100	75.4	0.9804	94.0			61	6
6102		BAYG2		13.800	B2	72.8	14.8	30.0	-25.0	1.0100	73.6	0.9799	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9856	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9856	19.5	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9856	19.5	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	51.0	9.0	29.0	-29.0	1.0100	51.3	0.9847	69.0			64	6
6177		ESTG2		13.800	E2	51.0	9.0	29.0	-29.0	1.0100	51.3	0.9847	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-0.6	52.4	-48.9	1.0100	98.6	1.0000	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	2.7	52.4	-48.9	1.0100	98.7	0.9996	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9759	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9759	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9925	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9925	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9974	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9974	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-4.6	14.0	-14.0	1.0100	42.0	0.9942	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-4.6	14.0	-14.0	1.0100	42.0	0.9942	49.0			64	6
6361		GLA13A		13.800	G1	12.1	0.6	7.8	-7.0	1.0100	12.0	0.9988	14.1			64	6
6362		GLA13B		13.800	G2	12.1	0.6	7.8	-7.0	1.0100	12.0	0.9988	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-3.2	7.8	-7.0	1.0100	16.2	0.9809	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-3.2	7.8	-7.0	1.0100	16.2	0.9809	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-5.0	8.0	-8.0	1.0100	26.8	0.9830	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-5.0	8.0	-8.0	1.0100	26.8	0.9830	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	-0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	-0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9988	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9988	7.5			64	6



6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0078	60.4	0.9850	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0072	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0072	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9384	5.5	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9829	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9829	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9384	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9779	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9779	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9778	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9909	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9909	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9579	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9579	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-1.0	3.7	-3.7	1.0000	6.4	0.9886	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-1.0	3.7	-3.7	1.0000	6.4	0.9886	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.2	1.9	-1.9	1.0000	3.3	0.9983	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.2	1.9	-1.9	1.0000	3.3	0.9983	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.8	2.5	-2.5	1.0000	5.1	0.9363	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0230	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9963	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9963	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-6.8	8.0	-8.0	1.0100	27.2	0.9692	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-6.8	8.0	-8.0	1.0100	27.2	0.9692	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	-4.3	9.9	-9.9	0.9900	22.0	0.9799	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	-4.3	9.9	-9.9	0.9900	22.0	0.9799	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-2.3	12.8	-8.3	0.9900	16.1	0.9900	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-2.3	12.8	-8.3	0.9900	16.1	0.9900	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-2.1	12.8	-8.3	0.9900	16.1	0.9914	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-2.1	12.8	-8.3	0.9900	16.1	0.9914	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-2.1	12.8	-8.3	0.9900	16.1	0.9914	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	1.9	2.3	-2.3	1.0000	4.8	0.9194	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0214	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0214	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-0.8	2.2	-2.2	1.0100	4.3	0.9837	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-0.8	2.2	-2.2	1.0100	4.3	0.9837	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9607	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9607	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.6	4.0	-4.0	1.0000	9.9	0.9984	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.6	4.0	-4.0	1.0000	9.9	0.9984	35.3	64	6
6750	BON13.8	13.800	G3	9.9	-0.6	4.0	-4.0	1.0000	9.9	0.9984	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	3.0	4.0	-4.0	1.0000	7.8	0.9247	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	3.0	4.0	-4.0	1.0000	7.8	0.9247	9.0	63	6



6765	CRU13.8	13.800	G1	4.6	1.4	2.6	-2.6	1.0000	4.8	0.9556	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.4	2.6	-2.6	1.0000	4.8	0.9556	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.0	2.6	-2.6	1.0000	4.8	0.9774	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.0	2.6	-2.6	1.0000	4.8	0.9774	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.3	2.5	-2.5	1.0000	5.1	0.9685	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.3	2.5	-2.5	1.0000	5.1	0.9685	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9344	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9344	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	-0.9	1.6	-1.6	1.0000	3.2	0.9573	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	-0.9	1.6	-1.6	1.0000	3.2	0.9573	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-6.2	6.2	-6.2	1.0020	13.6	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	291.3	300.0	-225.0	1.0647	273.6	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	1.8	1.8	-1.8	0.9871	4.0	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9653	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9653	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	1.0000	17.8	0.8893	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	1.0000	17.8	0.8893	18.5	64	6
6843	BUR13C	13.800	G3	15.8	8.1	8.1	-8.1	1.0000	17.8	0.8893	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0229	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9759	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9759	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9759	2.0	0.9057	2.1	64	6
SUBSYSTEM TOTALS				1741.2	381.7	1138.5	-950.5				2583.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:42
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 13

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6127		MIR13B		12.000	G6	18.0	0.0	8.0	0.0	1.0114	17.8	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	20.0	7.2	11.0	0.0	1.0100	21.1	0.9406	29.4			65	7
6129		MIR13D		13.800	G4	28.4	8.6	15.0	0.0	1.0100	29.4	0.9573	44.1			65	7
6130		MIR13F		13.800	G5	17.0	0.0	8.0	0.0	1.0100	16.8	1.0000	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	0.3	6.0	-6.0	1.0100	9.9	0.9996	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.3	6.0	-6.0	1.0100	9.9	0.9995	13.0			65	7
6136		MAD6C		6.9000	G3	9.1	0.4	6.0	-6.0	1.0100	9.0	0.9989	13.0			65	7
SUBSYSTEM TOTALS						112.5	16.8	60.0	-18.0				167.9				



1371

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:42
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 13

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0171	233.93	6003		PANII230		230.00	6	1.0016	230.36
6008		LSA230		230.00	6	1.0100	232.30	6011		MDN230		230.00	6	1.0025	230.57
6014		PRO230		230.00	6	1.0173	233.97	6096		FOR230		230.00	6	1.0070	231.60
6100		BAY230		230.00	6	1.0204	234.69	6103		COP230		230.00	6	1.0048	231.11
6171		PAC230		230.00	6	1.0105	232.41	6178		EST230		230.00	6	1.0040	230.91
6179		GUA230		230.00	6	1.0040	230.92	6260		CHA 230		230.00	6	1.0188	234.33
6263		ESP230		230.00	6	1.0207	234.77	6330		BAI230		230.00	6	1.0177	234.06
6340		CAN 230		230.00	6	1.0100	232.29	6360		GLA230		230.00	6	1.0093	232.14
6363		ZAM230		230.00	6	1.0147	233.37	6366		EVA230		230.00	6	1.0176	234.04
6380		BOQIII 230		230.00	6	1.0099	232.28	6400		FRONTCHA		230.00	6	1.0191	234.39
6430		ANTON230		230.00	6	1.0089	232.04	6500		FRONTDOM		230.00	6	1.0161	233.70
6590		24DIC230		230.00	6	1.0057	231.31	6680		BFRIO230		230.00	6	1.0200	234.61
6690		DOM230		230.00	6	1.0158	233.64	6691		ALTO230		230.00	6	1.0182	234.18
6695		PANDO230		230.00	6	1.0160	233.68	6698		MLIRIO230		230.00	6	1.0159	233.66
6760		SBA230		230.00	6	1.0008	230.20	6790		SMA230		230.00	6	1.0109	232.51
6840		BUR230		230.00	6	1.0207	234.75								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9905	227.82	6005		CHO230		230.00	6	0.9772	224.76
6105		PAM230		230.00	6	0.9772	224.76	6182		VEL230		230.00	6	0.9980	229.55
6240		LGU 230		230.00	6	0.9871	227.03	6860		BBL230		230.00	6	0.9989	229.74



1373

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:42
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 13
 OUTPUT FOR AREA 6 [PANAMA]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6012	MDN115	115.00	6	6087	CAL115	115.00*	6	15	153.9	93.0	165.5	175.0	88.0	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.1	62.5	96.1	--	--	--	--
6092	LVA115	115.00*	6	3WNTDR	TRAF01	WND 1	6	T1	52.3	54.0	96.8	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:42
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 13
 OUTPUT FOR AREA 7 [ACANAL]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

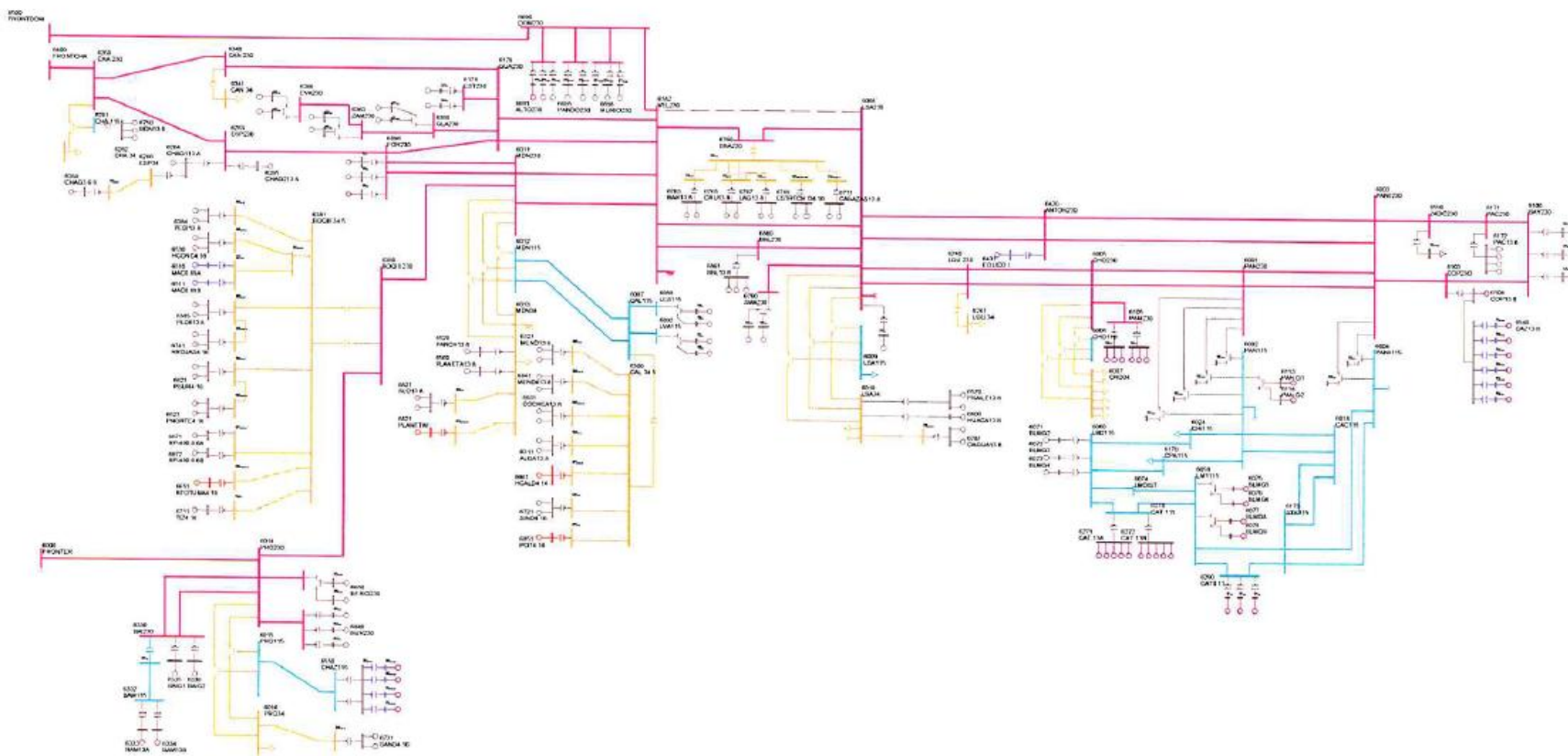
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						FRI, MAY 13 2011 14:42				
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						AREA TOTALS				
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 13						IN MW/MVAR				
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT
	RATION	BUSES						LINES	+ LOADS	
1	930.2	1179.4	0.0	0.0	0.0	0.0	23.0	-272.2	-272.2	-272.2
GUATEMAL	227.1	340.6	218.1	0.0	0.0	600.5	256.9	12.0	12.0	
2	1141.9	1104.0	0.0	0.0	0.0	0.0	37.9	0.0	0.0	0.0
SALVADOR	300.8	367.1	-180.9	0.0	0.0	241.1	322.3	33.4	33.4	
3	1239.0	1205.2	0.0	0.0	0.0	0.0	33.8	0.0	0.0	0.0
HONDURAS	392.9	395.2	-20.3	0.0	0.0	468.8	453.9	32.9	32.9	
4	479.2	459.0	0.0	0.0	0.0	0.0	20.1	0.0	0.0	0.0
NICARAGU	-17.7	181.0	-12.8	0.0	0.0	288.9	180.4	-77.5	-77.5	
5	1520.8	1489.7	0.0	0.0	0.0	0.0	31.1	0.0	0.0	0.0
COSTA RI	260.6	558.4	-226.4	0.0	0.0	555.0	432.9	50.8	50.8	
6	1741.2	1416.9	0.0	0.0	0.0	0.0	112.3	212.1	212.1	212.2
PANAMA	381.7	248.2	-340.1	0.0	0.0	510.0	1043.5	-59.9	-59.9	
7	112.5	48.8	0.0	0.0	0.0	0.0	3.6	60.1	60.1	60.0
ACANAL	16.8	8.6	-16.0	0.0	0.0	0.0	16.0	8.2	8.2	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	7165.0	6903.1	0.0	0.0	0.0	0.0	261.9	0.0	0.0	0.0
TOTALS	1562.3	2099.1	-578.5	0.0	0.0	2664.3	2706.0	0.0	0.0	



Contingencia 21: Llano Sánchez – Veladero





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:47
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 21

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	4.8	15.0	0.0	1.0200	37.6	0.9921	47.0			62	6
6072		BLMG3		13.800	V3	38.0	4.8	15.0	0.0	1.0200	37.6	0.9921	47.0			62	6
6073		BLMG4		13.800	V4	38.0	4.9	15.0	0.0	1.0200	37.6	0.9918	47.0			62	6
6090		LESG1		13.800	E1	22.4	6.5	12.0	-5.0	1.0100	23.1	0.9607	27.0			64	6
6091		LESG2		13.800	E2	22.4	6.5	12.0	-5.0	1.0100	23.1	0.9607	27.0			64	6
6094		LVAG1		13.800	L1	26.0	0.1	12.0	-5.0	1.0100	25.8	1.0000	27.0			64	6
6095		LVAG2		13.800	L2	26.0	0.1	12.0	-5.0	1.0100	25.8	1.0000	27.0			64	6
6097		FORG1		13.800	F1	86.1	10.2	50.0	-50.0	1.0100	85.9	0.9930	111.0			64	6
6098		FORG2		13.800	F2	86.1	10.2	50.0	-50.0	1.0100	85.9	0.9930	111.0			64	6
6101		BAYG1		13.800	B1	81.3	20.6	30.0	-25.0	1.0100	83.0	0.9694	94.0			61	6
6102		BAYG2		13.800	B2	81.3	20.6	30.0	-25.0	1.0100	83.0	0.9694	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9778	19.6	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9778	19.6	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9778	19.6	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	51.0	9.8	29.0	-29.0	1.0100	51.4	0.9820	69.0			64	6
6177		ESTG2		13.800	E2	51.0	9.8	29.0	-29.0	1.0100	51.4	0.9820	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	0.8	52.4	-48.9	1.0100	98.6	1.0000	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	4.1	52.4	-48.9	1.0100	98.7	0.9992	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9756	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9756	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9924	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9924	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	2.0	10.0	-10.0	1.0100	26.4	0.9971	30.0			64	6
6334		BAM13B		13.800	G2	26.6	2.0	10.0	-10.0	1.0100	26.4	0.9971	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-3.8	14.0	-14.0	1.0100	41.9	0.9961	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-3.8	14.0	-14.0	1.0100	41.9	0.9961	49.0			64	6
6361		GLA13A		13.800	G1	12.1	3.5	7.8	-7.0	1.0100	12.4	0.9607	14.1			64	6
6362		GLA13B		13.800	G2	12.1	3.5	7.8	-7.0	1.0100	12.4	0.9607	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-0.6	7.8	-7.0	1.0100	15.9	0.9993	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-0.6	7.8	-7.0	1.0100	15.9	0.9993	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-2.5	8.0	-8.0	1.0100	26.5	0.9956	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-2.5	8.0	-8.0	1.0100	26.5	0.9956	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	0.0	4.9	-4.9	1.0000	9.5	1.0000	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	0.0	4.9	-4.9	1.0000	9.5	1.0000	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9982	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9982	7.5			64	6



6431	EOLICO I	0.6000	G1	60.0	-2.2	10.5	-10.5	1.0000	60.0	0.9993	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0068	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0068	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9405	5.5	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.8	2.5	-2.5	1.0000	4.8	0.9876	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.8	2.5	-2.5	1.0000	4.8	0.9876	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9405	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9686	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9686	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9685	5.5	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.5	2.5	-2.5	1.0000	4.8	0.9946	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.5	2.5	-2.5	1.0000	4.8	0.9946	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.3	2.5	-2.5	1.0000	4.9	0.9636	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.3	2.5	-2.5	1.0000	4.9	0.9636	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.9	3.7	-3.7	1.0000	6.4	0.9900	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.9	3.7	-3.7	1.0000	6.4	0.9900	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.1	1.9	-1.9	1.0000	3.3	0.9993	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.1	1.9	-1.9	1.0000	3.3	0.9993	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.2	2.5	-2.5	1.0000	5.2	0.9096	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0229	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9962	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9962	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-5.9	8.0	-8.0	1.0100	27.0	0.9764	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-5.9	8.0	-8.0	1.0100	27.0	0.9764	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	-3.0	9.9	-9.9	0.9900	21.7	0.9904	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	-3.0	9.9	-9.9	0.9900	21.7	0.9904	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-1.0	12.8	-8.3	0.9900	16.0	0.9982	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-1.0	12.8	-8.3	0.9900	16.0	0.9982	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-0.8	12.8	-8.3	0.9900	16.0	0.9988	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-0.8	12.8	-8.3	0.9900	16.0	0.9988	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-0.8	12.8	-8.3	0.9900	16.0	0.9988	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	1.0000	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0213	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0213	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-0.6	2.2	-2.2	1.0100	4.3	0.9914	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-0.6	2.2	-2.2	1.0100	4.3	0.9914	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.1	2.1	-2.1	1.0000	4.2	0.9646	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.1	2.1	-2.1	1.0000	4.2	0.9646	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.4	4.0	-4.0	1.0000	9.9	0.9991	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.4	4.0	-4.0	1.0000	9.9	0.9991	35.3	64	6
6750	BON13.8	13.800	G3	9.9	-0.4	4.0	-4.0	1.0000	9.9	0.9991	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	3.9	4.0	-4.0	1.0000	8.2	0.8787	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	3.9	4.0	-4.0	1.0000	8.2	0.8787	9.0	63	6



6765	CRU13.8	13.800	G1	4.6	2.0	2.6	-2.6	1.0000	5.0	0.9194	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	2.0	2.6	-2.6	1.0000	5.0	0.9194	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.5	2.6	-2.6	1.0000	4.9	0.9516	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.5	2.6	-2.6	1.0000	4.9	0.9516	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.8	2.5	-2.5	1.0000	5.3	0.9393	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.8	2.5	-2.5	1.0000	5.3	0.9393	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.5	1.5	-1.5	0.9983	3.2	0.8885	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.5	1.5	-1.5	0.9983	3.2	0.8885	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	1.6	1.6	-1.6	0.9948	3.5	0.8897	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	1.6	1.6	-1.6	0.9948	3.5	0.8897	3.6	63	6
6791	SMA13A	13.800	G1	12.2	3.4	6.2	-6.2	1.0000	12.6	0.9624	14.2	63	6
6792	SMA13B	13.800	G2	12.2	3.4	6.2	-6.2	1.0000	12.6	0.9624	14.2	63	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0509	285.5	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	1.8	1.8	-1.8	0.9893	4.0	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9675	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9675	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9988	17.8	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9988	17.8	0.8892	18.5	64	6
6843	BUR13C	13.800	G3	15.8	8.1	8.1	-8.1	0.9988	17.8	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0228	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9602	9.9	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9602	9.9	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9602	2.1	0.9057	2.1	64	6
SUBSYSTEM TOTALS				1756.4	493.3	1138.5	-950.5				2583.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:47
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 21

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
6127		MIR13B		12.000	G6	18.0	0.6	8.0	0.0	1.0100	17.8	0.9995	27.7			65	7
6128		MIR13C		12.000	G3	20.0	8.1	11.0	0.0	1.0100	21.4	0.9263	29.4			65	7
6129		MIR13D		13.800	G4	28.4	9.7	15.0	0.0	1.0100	29.7	0.9462	44.1			65	7
6130		MIR13F		13.800	G5	17.0	1.3	8.0	0.0	1.0100	16.9	0.9971	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	0.5	6.0	-6.0	1.0100	9.9	0.9986	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.5	6.0	-6.0	1.0100	9.9	0.9986	13.0			65	7
6136		MAD6C		6.9000	G3	9.1	0.6	6.0	-6.0	1.0100	9.0	0.9976	13.0			65	7
SUBSYSTEM TOTALS						112.5	21.4	60.0	-18.0				167.9				



1379

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:47
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 21

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0158	233.65	6014		PRO230		230.00	6	1.0160	233.68
6096		FOR230		230.00	6	1.0033	230.75	6100		BAY230		230.00	6	1.0140	233.23
6171		PAC230		230.00	6	1.0018	230.42	6260		CHA 230		230.00	6	1.0169	233.89
6263		ESP230		230.00	6	1.0190	234.36	6330		BAI230		230.00	6	1.0166	233.81
6340		CAN 230		230.00	6	1.0063	231.45	6360		GLA230		230.00	6	1.0053	231.22
6363		ZAM230		230.00	6	1.0111	232.55	6366		EVA230		230.00	6	1.0142	233.26
6380		BOQIII 230		230.00	6	1.0074	231.70	6400		FRONTCHA		230.00	6	1.0174	234.00
6500		FRONTDOM		230.00	6	1.0150	233.45	6680		BFRIO230		230.00	6	1.0188	234.33
6690		DOM230		230.00	6	1.0147	233.38	6691		ALTO230		230.00	6	1.0171	233.94
6695		PANDO230		230.00	6	1.0153	233.52	6698		MLIRIO230		230.00	6	1.0152	233.50
6840		BUR230		230.00	6	1.0194	234.46								

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)
6001		PAN230		230.00	6	0.9806	225.54	6003		PANII230		230.00	6	0.9920	228.17
6005		CHO230		230.00	6	0.9657	222.10	6008		LSA230		230.00	6	0.9938	228.58
6011		MDN230		230.00	6	0.9982	229.58	6103		COP230		230.00	6	0.9958	229.02
6105		PAM230		230.00	6	0.9657	222.10	6178		EST230		230.00	6	0.9995	229.88
6179		GUA230		230.00	6	0.9995	229.88	6182		VEL230		230.00	6	0.9840	226.33
6240		LGU 230		230.00	6	0.9727	223.72	6430		ANTON230		230.00	6	0.9983	229.61
6590		24DIC230		230.00	6	0.9966	229.22	6760		SBA230		230.00	6	0.9809	225.61
6790		SMA230		230.00	6	0.9953	228.93	6860		BBL230		230.00	6	0.9827	226.02



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:47
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 21
 OUTPUT FOR AREA 6 [PANAMA]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6008	LSA230	230.00	6	6760	SBA230	230.00*	6	4A	343.8	314.0	109.5	450.0	76.4	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.0	62.5	96.0	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.2	54.0	96.7	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:47
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 21
 OUTPUT FOR AREA 7 [ACANAL]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *

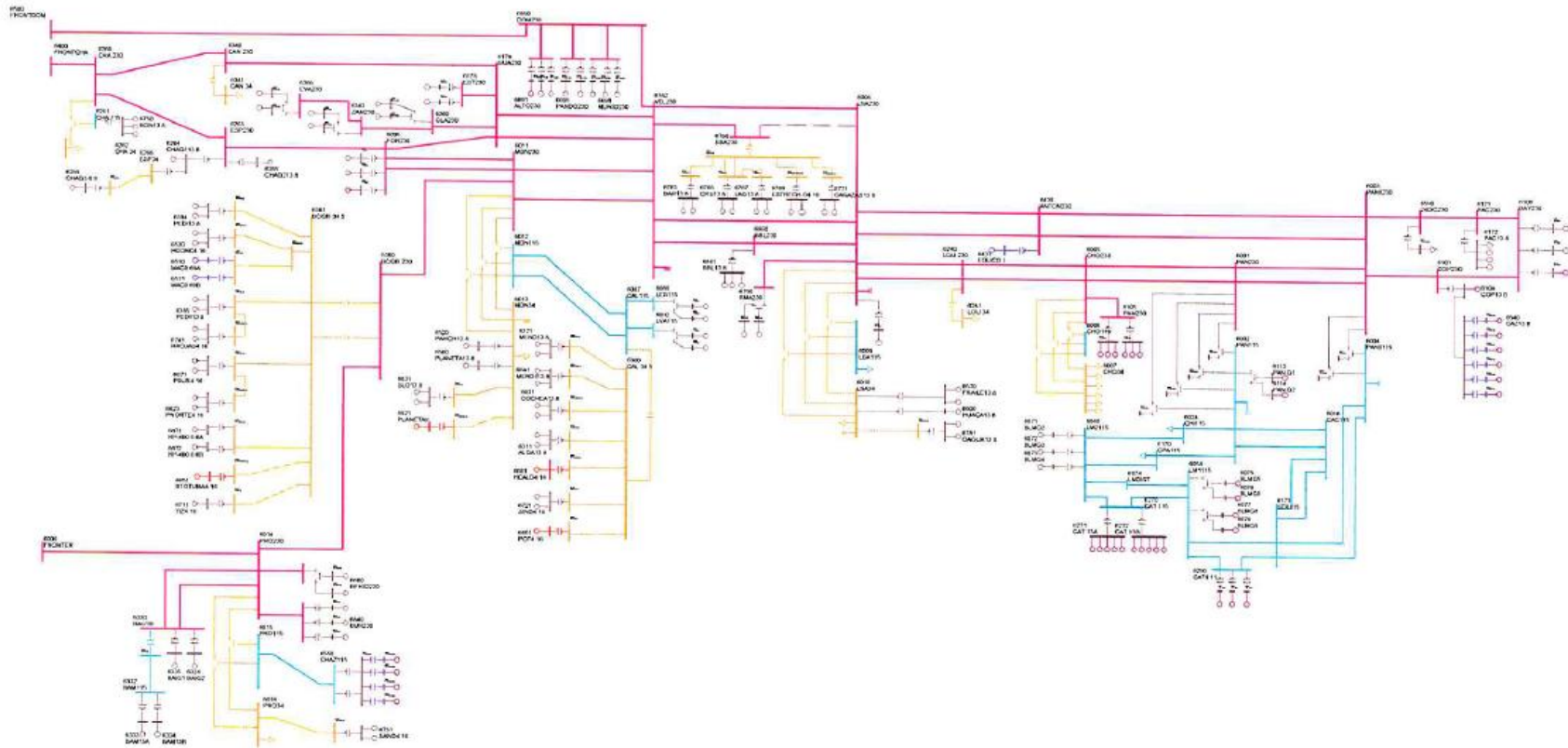


PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:47
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 21 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
								TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	930.2 227.1	1179.4 340.6	0.0 218.1	0.0 0.0	0.0 0.0	0.0 600.5	23.0 256.9	-272.2 12.0	-272.2 12.0	-272.2
2 SALVADOR	1141.9 300.8	1104.0 367.1	0.0 -180.9	0.0 0.0	0.0 0.0	0.0 241.1	37.9 322.3	0.0 33.4	0.0 33.4	0.0
3 HONDURAS	1239.0 392.9	1205.2 395.2	0.0 -20.3	0.0 0.0	0.0 0.0	0.0 468.8	33.8 453.9	0.0 33.0	0.0 33.0	0.0
4 NICARAGU	479.2 -17.7	459.0 181.0	0.0 -12.8	0.0 0.0	0.0 0.0	0.0 288.8	20.1 180.4	0.0 -77.5	0.0 -77.5	0.0
5 COSTA RI	1520.8 263.6	1489.7 558.4	0.0 -226.4	0.0 0.0	0.0 0.0	0.0 554.7	31.2 433.2	0.0 53.1	0.0 53.1	0.0
6 PANAMA	1756.4 493.3	1416.9 248.2	0.0 -333.3	0.0 0.0	0.0 0.0	0.0 481.6	127.3 1126.4	212.2 -66.4	212.2 -66.4	212.2
7 ACANAL	112.5 21.4	48.8 8.6	0.0 -15.9	0.0 0.0	0.0 0.0	0.0 0.0	3.7 16.4	60.0 12.3	60.0 12.3	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	7180.1 1681.5	6903.1 2099.1	0.0 -571.6	0.0 0.0	0.0 0.0	0.0 2635.5	277.0 2789.6	0.0 0.0	0.0 0.0	0.0



Contingencia 22: Llano Sánchez – San Bartolo





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:52
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 22

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
6071		BLMG2		13.800	V2	38.0	5.1	15.0	0.0	1.0200	37.6	0.9910	47.0			62	6
6072		BLMG3		13.800	V3	38.0	5.1	15.0	0.0	1.0200	37.6	0.9910	47.0			62	6
6073		BLMG4		13.800	V4	38.0	5.3	15.0	0.0	1.0200	37.6	0.9906	47.0			62	6
6090		LESG1		13.800	E1	22.4	6.5	12.0	-5.0	1.0100	23.1	0.9603	27.0			64	6
6091		LESG2		13.800	E2	22.4	6.5	12.0	-5.0	1.0100	23.1	0.9603	27.0			64	6
6094		LVAG1		13.800	L1	26.0	0.1	12.0	-5.0	1.0100	25.8	1.0000	27.0			64	6
6095		LVAG2		13.800	L2	26.0	0.1	12.0	-5.0	1.0100	25.8	1.0000	27.0			64	6
6097		FORG1		13.800	F1	86.1	10.4	50.0	-50.0	1.0100	85.9	0.9927	111.0			64	6
6098		FORG2		13.800	F2	86.1	10.4	50.0	-50.0	1.0100	85.9	0.9927	111.0			64	6
6101		BAYG1		13.800	B1	82.4	21.2	30.0	-25.0	1.0100	84.2	0.9684	94.0			61	6
6102		BAYG2		13.800	B2	82.4	21.2	30.0	-25.0	1.0100	84.2	0.9684	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9769	19.6	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9769	19.6	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9769	19.6	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	51.0	9.8	29.0	-29.0	1.0100	51.4	0.9819	69.0			64	6
6177		ESTG2		13.800	E2	51.0	9.8	29.0	-29.0	1.0100	51.4	0.9819	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	0.8	52.4	-48.9	1.0100	98.6	1.0000	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	4.2	52.4	-48.9	1.0100	98.7	0.9991	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9756	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9756	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9923	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9923	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	2.0	10.0	-10.0	1.0100	26.4	0.9971	30.0			64	6
6334		BAM13B		13.800	G2	26.6	2.0	10.0	-10.0	1.0100	26.4	0.9971	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-3.7	14.0	-14.0	1.0100	41.9	0.9962	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-3.7	14.0	-14.0	1.0100	41.9	0.9962	49.0			64	6
6361		GLA13A		13.800	G1	12.1	3.7	7.8	-7.0	1.0100	12.5	0.9571	14.1			64	6
6362		GLA13B		13.800	G2	12.1	3.7	7.8	-7.0	1.0100	12.5	0.9571	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-0.4	7.8	-7.0	1.0100	15.9	0.9996	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-0.4	7.8	-7.0	1.0100	15.9	0.9996	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-2.4	8.0	-8.0	1.0100	26.4	0.9961	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-2.4	8.0	-8.0	1.0100	26.4	0.9961	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	0.0	4.9	-4.9	1.0000	9.5	1.0000	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	0.0	4.9	-4.9	1.0000	9.5	1.0000	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9981	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9981	7.5			64	6



6431	EOLICO I	0.6000	G1	60.0	0.3	10.5	-10.5	1.0000	60.0	1.0000	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0068	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0068	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9403	5.5	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9880	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9880	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9403	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9664	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9664	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9664	5.5	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.5	2.5	-2.5	1.0000	4.8	0.9948	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.5	2.5	-2.5	1.0000	4.8	0.9948	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.3	2.5	-2.5	1.0000	4.9	0.9640	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.3	2.5	-2.5	1.0000	4.9	0.9640	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.9	3.7	-3.7	1.0000	6.4	0.9902	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.9	3.7	-3.7	1.0000	6.4	0.9902	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.1	1.9	-1.9	1.0000	3.3	0.9995	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.1	1.9	-1.9	1.0000	3.3	0.9995	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.2	2.5	-2.5	1.0000	5.2	0.9072	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0228	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9962	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9962	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-5.8	8.0	-8.0	1.0100	27.0	0.9769	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-5.8	8.0	-8.0	1.0100	27.0	0.9769	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	-2.9	9.9	-9.9	0.9900	21.7	0.9909	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	-2.9	9.9	-9.9	0.9900	21.7	0.9909	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-0.9	12.8	-8.3	0.9900	16.0	0.9984	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-0.9	12.8	-8.3	0.9900	16.0	0.9984	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-0.7	12.8	-8.3	0.9900	16.0	0.9990	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-0.7	12.8	-8.3	0.9900	16.0	0.9990	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-0.7	12.8	-8.3	0.9900	16.0	0.9990	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	1.0000	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0213	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0213	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-0.5	2.2	-2.2	1.0100	4.3	0.9918	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-0.5	2.2	-2.2	1.0100	4.3	0.9918	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.1	2.1	-2.1	1.0000	4.2	0.9649	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.1	2.1	-2.1	1.0000	4.2	0.9649	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.4	4.0	-4.0	1.0000	9.9	0.9991	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.4	4.0	-4.0	1.0000	9.9	0.9991	35.3	64	6
6750	BON13.8	13.800	G3	9.9	-0.4	4.0	-4.0	1.0000	9.9	0.9991	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	3.5	4.0	-4.0	1.0000	8.0	0.9013	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	3.5	4.0	-4.0	1.0000	8.0	0.9013	9.0	63	6



6765	CRU13.8	13.800	G1	4.6	1.7	2.6	-2.6	1.0000	4.9	0.9376	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.7	2.6	-2.6	1.0000	4.9	0.9376	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.3	2.6	-2.6	1.0000	4.8	0.9649	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.3	2.6	-2.6	1.0000	4.8	0.9649	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.6	2.5	-2.5	1.0000	5.2	0.9541	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.6	2.5	-2.5	1.0000	5.2	0.9541	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.3	1.5	-1.5	1.0000	3.1	0.9049	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.3	1.5	-1.5	1.0000	3.1	0.9049	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	1.6	1.6	-1.6	0.9926	3.5	0.8897	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	1.6	1.6	-1.6	0.9926	3.5	0.8897	3.6	63	6
6791	SMA13A	13.800	G1	12.2	4.9	6.2	-6.2	1.0000	13.1	0.9266	14.2	63	6
6792	SMA13B	13.800	G2	12.2	4.9	6.2	-6.2	1.0000	13.1	0.9266	14.2	63	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0488	286.0	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	1.8	1.8	-1.8	0.9891	4.0	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9673	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9673	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9987	17.8	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9987	17.8	0.8892	18.5	64	6
6843	BUR13C	13.800	G3	15.8	8.1	8.1	-8.1	0.9987	17.8	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0228	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9592	9.9	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9592	9.9	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9592	2.1	0.9057	2.1	64	6
SUBSYSTEM TOTALS				1758.6	501.3	1138.5	-950.5				2583.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:52
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 22

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
6127		MIR13B		12.000	G6	18.0	0.7	8.0	0.0	1.0100	17.8	0.9993	27.7			65	7
6128		MIR13C		12.000	G3	20.0	8.2	11.0	0.0	1.0100	21.4	0.9248	29.4			65	7
6129		MIR13D		13.800	G4	28.4	9.8	15.0	0.0	1.0100	29.8	0.9450	44.1			65	7
6130		MIR13F		13.800	G5	17.0	1.4	8.0	0.0	1.0100	16.9	0.9965	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	0.6	6.0	-6.0	1.0100	9.9	0.9984	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.5	6.0	-6.0	1.0100	9.9	0.9985	13.0			65	7
6136		MAD6C		6.9000	G3	9.1	0.7	6.0	-6.0	1.0100	9.0	0.9974	13.0			65	7
SUBSYSTEM TOTALS						112.5	21.9	60.0	-18.0				167.9				



1387

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:52
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 22

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0158	233.63	6014		PRO230		230.00	6	1.0159	233.66
6096		FOR230		230.00	6	1.0030	230.70	6100		BAY230		230.00	6	1.0134	233.07
6171		PAC230		230.00	6	1.0009	230.21	6260		CHA 230		230.00	6	1.0168	233.86
6263		ESP230		230.00	6	1.0189	234.34	6330		BAI230		230.00	6	1.0165	233.80
6340		CAN 230		230.00	6	1.0061	231.40	6360		GLA230		230.00	6	1.0051	231.17
6363		ZAM230		230.00	6	1.0109	232.50	6366		EVA230		230.00	6	1.0140	233.21
6380		BOQIII 230		230.00	6	1.0072	231.66	6400		FRONTCHA		230.00	6	1.0173	233.97
6500		FRONTDOM		230.00	6	1.0149	233.43	6680		BFRIO230		230.00	6	1.0187	234.31
6690		DOM230		230.00	6	1.0146	233.37	6691		ALTO230		230.00	6	1.0171	233.93
6695		PANDO230		230.00	6	1.0153	233.51	6698		MLIRIO230		230.00	6	1.0152	233.49
6840		BUR230		230.00	6	1.0193	234.44								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9795	225.29	6003		PANII230		230.00	6	0.9910	227.93
6005		CHO230		230.00	6	0.9643	221.79	6008		LSA230		230.00	6	0.9916	228.07
6011		MDN230		230.00	6	0.9979	229.51	6103		COP230		230.00	6	0.9948	228.80
6105		PAM230		230.00	6	0.9643	221.79	6178		EST230		230.00	6	0.9992	229.82
6179		GUA230		230.00	6	0.9992	229.82	6182		VEL230		230.00	6	0.9833	226.16
6240		LGU 230		230.00	6	0.9708	223.29	6430		ANTON230		230.00	6	0.9975	229.41
6590		24DIC230		230.00	6	0.9956	228.99	6760		SBA230		230.00	6	0.9902	227.75
6790		SMA230		230.00	6	0.9932	228.44	6860		BBL230		230.00	6	0.9816	225.77



1389

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:52
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 22
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6008	LSA230	230.00	6	6182	VEL230	230.00*	6	15	333.1	314.0	106.1	450.0	74.0	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.0	62.5	96.0	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.2	54.0	96.7	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:52
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 22
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *

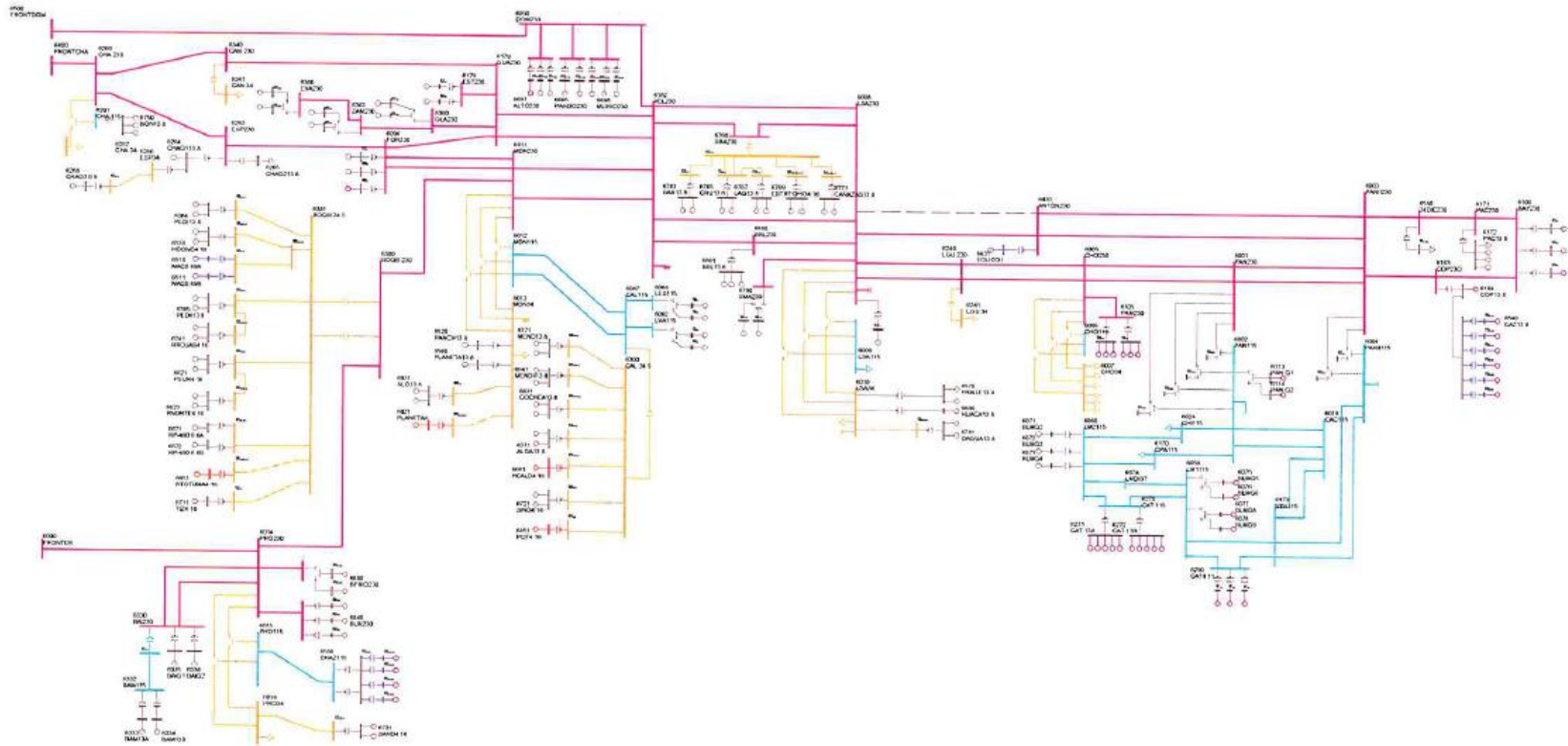


PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:52
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 22 IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO			-NET INTERCHANGE-				DESIRED NET INT
	GENE- RATION	AT AREA BUSES	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	930.2 227.1	1179.4 340.6	0.0 218.1	0.0 0.0	0.0 0.0	0.0 600.5	23.0 256.9	-272.2 12.0	-272.2 12.0	-272.2
2 SALVADOR	1141.9 300.8	1104.0 367.1	0.0 -180.9	0.0 0.0	0.0 0.0	0.0 241.1	37.9 322.3	0.0 33.4	0.0 33.4	0.0
3 HONDURAS	1239.0 392.9	1205.2 395.2	0.0 -20.3	0.0 0.0	0.0 0.0	0.0 468.8	33.8 453.9	0.0 33.0	0.0 33.0	0.0
4 NICARAGU	479.2 -17.6	459.0 181.0	0.0 -12.8	0.0 0.0	0.0 0.0	0.0 288.8	20.1 180.4	0.0 -77.5	0.0 -77.5	0.0
5 COSTA RI	1520.8 263.8	1489.7 558.4	0.0 -226.4	0.0 0.0	0.0 0.0	0.0 554.7	31.2 433.3	0.0 53.3	0.0 53.3	0.0
6 PANAMA	1758.6 501.3	1416.9 248.2	0.0 -332.6	0.0 0.0	0.0 0.0	0.0 487.9	129.5 1140.5	212.2 -67.0	212.2 -67.0	212.2
7 ACANAL	112.5 21.9	48.8 8.6	0.0 -15.9	0.0 0.0	0.0 0.0	0.0 0.0	3.7 16.5	60.0 12.8	60.0 12.8	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	7182.3 1690.2	6903.1 2099.1	0.0 -570.8	0.0 0.0	0.0 0.0	0.0 2641.8	279.2 2803.8	0.0 0.0	0.0 0.0	0.0



Contingencia 23: Llano Sánchez – Antón





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 13 2011 14:56
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 23

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	6.0	15.0	0.0	1.0200	37.7	0.9876	47.0			62	6
6072		BLMG3		13.800	V3	38.0	6.0	15.0	0.0	1.0200	37.7	0.9876	47.0			62	6
6073		BLMG4		13.800	V4	38.0	6.2	15.0	0.0	1.0200	37.7	0.9870	47.0			62	6
6090		LESG1		13.800	E1	22.4	6.0	12.0	-5.0	1.0100	23.0	0.9657	27.0			64	6
6091		LESG2		13.800	E2	22.4	6.0	12.0	-5.0	1.0100	23.0	0.9657	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-0.4	12.0	-5.0	1.0100	25.8	0.9999	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-0.4	12.0	-5.0	1.0100	25.8	0.9999	27.0			64	6
6097		FORG1		13.800	F1	86.1	7.5	50.0	-50.0	1.0100	85.6	0.9962	111.0			64	6
6098		FORG2		13.800	F2	86.1	7.5	50.0	-50.0	1.0100	85.6	0.9962	111.0			64	6
6101		BAYG1		13.800	B1	81.4	22.5	30.0	-25.0	1.0100	83.6	0.9639	94.0			61	6
6102		BAYG2		13.800	B2	72.8	21.6	30.0	-25.0	1.0100	75.2	0.9585	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9750	19.7	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9750	19.7	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9750	19.7	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	51.0	9.2	29.0	-29.0	1.0100	51.3	0.9840	69.0			64	6
6177		ESTG2		13.800	E2	51.0	9.2	29.0	-29.0	1.0100	51.3	0.9840	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-0.3	52.4	-48.9	1.0100	98.6	1.0000	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	3.0	52.4	-48.9	1.0100	98.7	0.9995	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	1.0067	10.4	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9762	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9762	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9926	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9926	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9974	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.9	10.0	-10.0	1.0100	26.4	0.9974	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-4.4	14.0	-14.0	1.0100	41.9	0.9945	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-4.4	14.0	-14.0	1.0100	41.9	0.9945	49.0			64	6
6361		GLA13A		13.800	G1	12.1	1.4	7.8	-7.0	1.0100	12.0	0.9932	14.1			64	6
6362		GLA13B		13.800	G2	12.1	1.4	7.8	-7.0	1.0100	12.0	0.9932	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-2.4	7.8	-7.0	1.0100	16.1	0.9886	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-2.4	7.8	-7.0	1.0100	16.1	0.9886	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-4.3	8.0	-8.0	1.0100	26.7	0.9874	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-4.3	8.0	-8.0	1.0100	26.7	0.9874	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	-0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	-0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9988	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9988	7.5			64	6



6431	EOLICO I	0.6000	G1	60.0	2.7	10.5	-10.5	1.0000	60.1	0.9990	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0072	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0072	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9431	5.5	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9836	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9836	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9431	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9739	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9739	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9738	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9914	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9914	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9586	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9586	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9866	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9866	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.3	1.9	-1.9	1.0000	3.3	0.9964	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.3	1.9	-1.9	1.0000	3.3	0.9964	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.8	2.5	-2.5	1.0000	5.1	0.9332	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0231	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9963	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9963	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-6.6	8.0	-8.0	1.0100	27.1	0.9703	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-6.6	8.0	-8.0	1.0100	27.1	0.9703	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	-3.9	9.9	-9.9	0.9900	21.9	0.9836	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	-3.9	9.9	-9.9	0.9900	21.9	0.9836	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	-1.8	12.8	-8.3	0.9900	16.1	0.9932	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	-1.8	12.8	-8.3	0.9900	16.1	0.9932	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	-1.7	12.8	-8.3	0.9900	16.1	0.9944	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	-1.7	12.8	-8.3	0.9900	16.1	0.9944	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	-1.7	12.8	-8.3	0.9900	16.1	0.9944	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	1.9	2.3	-2.3	1.0000	4.8	0.9157	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0216	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0216	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-0.7	2.2	-2.2	1.0100	4.3	0.9850	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-0.7	2.2	-2.2	1.0100	4.3	0.9850	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9611	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9611	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.5	4.0	-4.0	1.0000	9.9	0.9986	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.5	4.0	-4.0	1.0000	9.9	0.9986	35.3	64	6
6750	BON13.8	13.800	G3	9.9	-0.5	4.0	-4.0	1.0000	9.9	0.9986	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	3.3	4.0	-4.0	1.0000	7.9	0.9105	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	3.3	4.0	-4.0	1.0000	7.9	0.9105	9.0	63	6



6765	CRU13.8	13.800	G1	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9448	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9448	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9700	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9700	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9599	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9599	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.2	1.5	-1.5	1.0000	3.1	0.9167	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.2	1.5	-1.5	1.0000	3.1	0.9167	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	1.5	1.6	-1.6	1.0000	3.4	0.9041	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	1.5	1.6	-1.6	1.0000	3.4	0.9041	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-0.5	6.2	-6.2	1.0000	12.2	0.9991	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-0.5	6.2	-6.2	1.0000	12.2	0.9991	14.2	63	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0564	284.0	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	1.8	1.8	-1.8	0.9920	4.0	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9701	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9701	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9998	17.8	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9998	17.8	0.8892	18.5	64	6
6843	BUR13C	13.800	G3	15.8	8.1	8.1	-8.1	0.9998	17.8	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0231	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9709	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9709	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9709	2.0	0.9057	2.1	64	6
SUBSYSTEM TOTALS				1748.0	458.6	1138.5	-950.5				2583.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:56
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 23

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6127		MIR13B		12.000	G6	18.0	1.0	8.0	0.0	1.0100	17.8	0.9986	27.7			65	7
6128		MIR13C		12.000	G3	20.0	8.5	11.0	0.0	1.0100	21.5	0.9207	29.4			65	7
6129		MIR13D		13.800	G4	28.4	10.1	15.0	0.0	1.0100	29.9	0.9417	44.1			65	7
6130		MIR13F		13.800	G5	17.0	1.8	8.0	0.0	1.0100	16.9	0.9946	27.7			65	7
6134		MAD6A		6.9000	G1	10.0	0.6	6.0	-6.0	1.0100	9.9	0.9980	13.0			65	7
6135		MAD6B		6.9000	G2	10.0	0.6	6.0	-6.0	1.0100	9.9	0.9982	13.0			65	7
6136		MAD6C		6.9000	G3	9.1	0.7	6.0	-6.0	1.0100	9.0	0.9970	13.0			65	7
SUBSYSTEM TOTALS						112.5	23.3	60.0	-18.0				167.9				



1396

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:56
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 23

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0123	116.42	6004		PANII115		115.00	6	1.0121	116.39
6009		LSA115		115.00	6	1.0170	116.96	6012		MDN115		115.00	6	1.0064	115.73
6015		PRO115		115.00	6	1.0141	116.62	6018		CAC115		115.00	6	1.0121	116.40
6019		CVI115A		115.00	6	1.0075	115.86	6024		CHI115		115.00	6	1.0037	115.42
6027		LOC115A		115.00	6	1.0058	115.67	6032		MAR115A		115.00	6	1.0044	115.50
6036		SMA115		115.00	6	1.0113	116.30	6040		SFR115		115.00	6	1.0035	115.40
6055		MOS115B		115.00	6	1.0099	116.14	6057		TOC115		115.00	6	1.0099	116.14
6059		LM1115		115.00	6	1.0101	116.16	6060		LM2115		115.00	6	1.0102	116.18
6066		FFIELD		115.00	6	1.0051	115.59	6074		LMDIST		115.00	6	1.0102	116.17
6087		CAL115		115.00	6	1.0145	116.66	6088		LES115		115.00	6	1.0180	117.07
6092		LVA115		115.00	6	1.0149	116.71	6123		MIR115		115.00	7	1.0240	117.76
6170		CPA115		115.00	6	1.0102	116.17	6173		STR115		115.00	6	1.0110	116.27
6174		PM115-1A		115.00	6	1.0119	116.37	6175		PM115-2A		115.00	6	1.0119	116.37
6210		TIN115		115.00	6	1.0086	115.99	6211		PM115-9		115.00	6	1.0093	116.06
6230		CBA115		115.00	6	1.0047	115.54	6261		CHA 115		115.00	6	1.0092	116.05
6270		CAT 115		115.00	6	1.0102	116.17	6280		GIR 115		115.00	6	1.0102	116.17
6290		CATII 11		115.00	6	1.0102	116.17	6331		BAI115		115.00	6	1.0067	115.77
6332		BAM115		115.00	6	1.0112	116.28	6350		PM115-8		115.00	6	1.0086	115.99
6550		CHAZ115		115.00	6	1.0141	116.62	6580		LBO115		115.00	6	1.0070	115.81

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6006		CHO115		115.00	6	0.9451	108.68	6047		CLA115		115.00	6	0.9986	114.84



1397

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:56
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 23
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.1	62.5	96.2	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAFO1	WND 1	6	T1	52.3	54.0	96.9	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:56
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 23
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

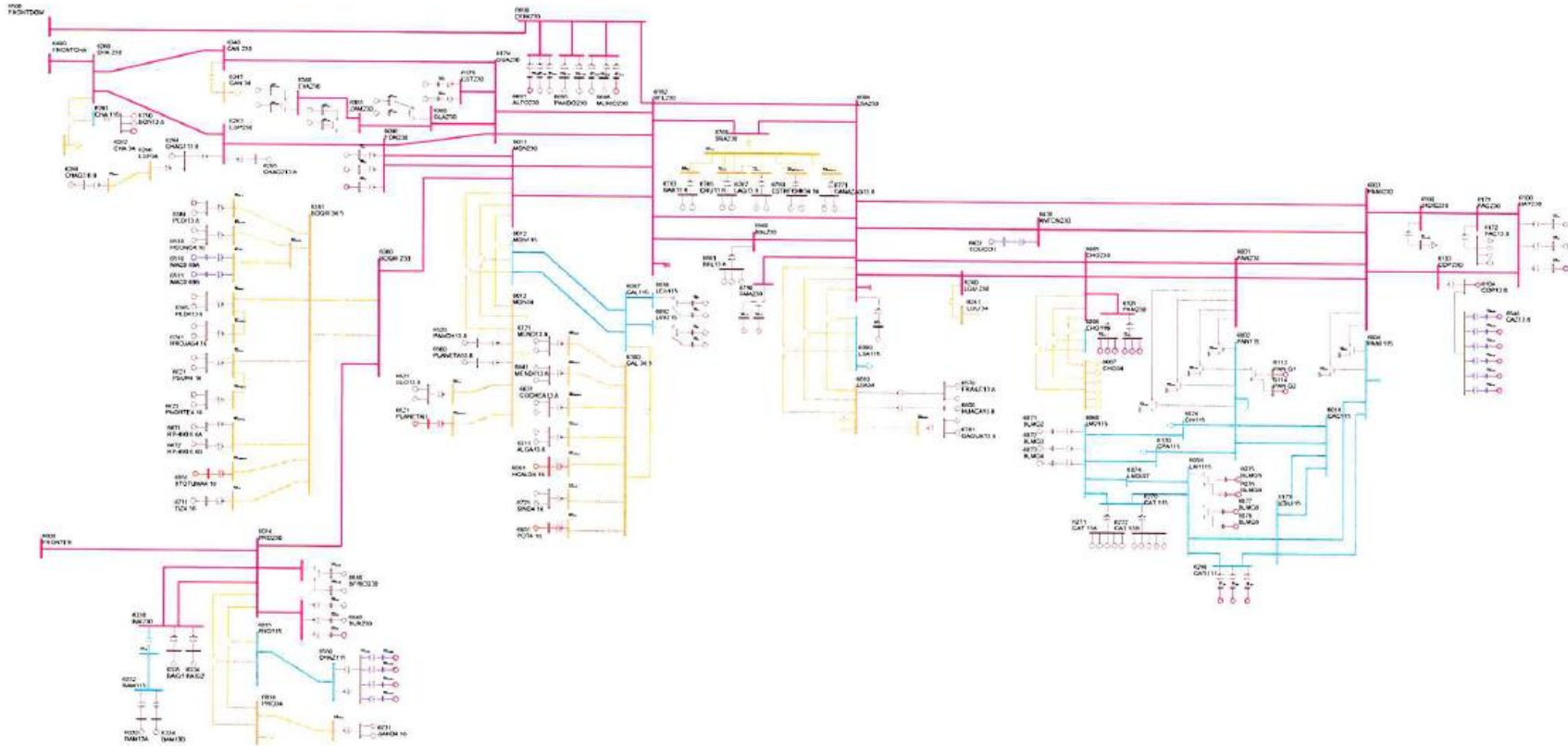
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 14:56
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 23 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
								TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	930.2 227.1	1179.4 340.6	0.0 218.1	0.0 0.0	0.0 0.0	0.0 600.5	23.0 256.9	-272.2 12.0	-272.2 12.0	-272.2
2 SALVADOR	1141.9 300.8	1104.0 367.1	0.0 -180.9	0.0 0.0	0.0 0.0	0.0 241.1	37.9 322.3	0.0 33.4	0.0 33.4	0.0
3 HONDURAS	1239.0 392.9	1205.2 395.2	0.0 -20.3	0.0 0.0	0.0 0.0	0.0 468.8	33.8 453.9	0.0 32.9	0.0 32.9	0.0
4 NICARAGU	479.2 -17.7	459.0 181.0	0.0 -12.8	0.0 0.0	0.0 0.0	0.0 288.9	20.1 180.4	0.0 -77.5	0.0 -77.5	0.0
5 COSTA RI	1520.8 261.4	1489.7 558.4	0.0 -226.4	0.0 0.0	0.0 0.0	0.0 554.9	31.1 433.0	0.0 51.4	0.0 51.4	0.0
6 PANAMA	1748.0 458.6	1416.9 248.2	0.0 -330.0	0.0 0.0	0.0 0.0	0.0 478.2	119.0 1084.9	212.2 -66.3	212.2 -66.3	212.2
7 ACANAL	112.5 23.3	48.8 8.6	0.0 -15.9	0.0 0.0	0.0 0.0	0.0 0.0	3.7 16.6	60.0 14.0	60.0 14.0	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	7171.7 1646.4	6903.1 2099.1	0.0 -568.3	0.0 0.0	0.0 0.0	0.0 2632.4	268.6 2748.0	0.0 0.0	0.0 0.0	0.0

Demanda Máxima de Verano





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:25
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2015
 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
6071		BLMG2		13.800	V2	38.0	3.6	15.0	0.0	1.0200	37.4	0.9956	47.0			62	6
6072		BLMG3		13.800	V3	38.0	3.6	15.0	0.0	1.0200	37.4	0.9956	47.0			62	6
6073		BLMG4		13.800	V4	38.0	3.6	15.0	0.0	1.0200	37.4	0.9955	47.0			62	6
6090		LESG1		13.800	E1	19.1	2.0	12.0	-5.0	1.0000	19.2	0.9947	27.0			64	6
6091		LESG2		13.800	E2	19.1	2.0	12.0	-5.0	1.0000	19.2	0.9947	27.0			64	6
6094		LVAG1		13.800	L1	23.3	-4.8	12.0	-5.0	1.0000	23.8	0.9798	27.0			64	6
6095		LVAG2		13.800	L2	23.3	-4.8	12.0	-5.0	1.0000	23.8	0.9798	27.0			64	6
6097		FORG1		13.800	F1	62.5	-1.8	50.0	-50.0	1.0100	61.9	0.9996	111.0			64	6
6098		FORG2		13.800	F2	62.5	-1.8	50.0	-50.0	1.0100	61.9	0.9996	111.0			64	6
6101		BAYG1		13.800	B1	54.3	8.4	30.0	-25.0	1.0100	54.3	0.9883	94.0			61	6
6102		BAYG2		13.800	B2	54.2	8.4	30.0	-25.0	1.0100	54.3	0.9883	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9940	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9940	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9940	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	51.0	6.1	29.0	-29.0	1.0000	51.4	0.9930	69.0			64	6
6177		ESTG2		13.800	E2	51.0	6.1	29.0	-29.0	1.0000	51.4	0.9930	69.0			64	6
6264		CHAG113.8		13.800	G1	89.1	-2.5	52.4	-48.9	1.0000	89.2	0.9996	116.5			64	6
6265		CHAG213.8		13.800	G2	89.1	-5.8	52.4	-48.9	1.0000	89.3	0.9979	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.3	-1.9	4.9	-4.1	0.9850	8.6	0.9755	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.8	5.6	-5.6	1.0200	8.2	0.9958	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.8	5.6	-5.6	1.0200	8.2	0.9958	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.8	5.6	-5.6	1.0200	8.2	0.9958	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.8	5.6	-5.6	1.0200	8.2	0.9958	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.8	5.6	-5.6	1.0200	8.2	0.9958	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.8	5.6	-5.6	1.0200	8.2	0.9958	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.8	5.6	-5.6	1.0200	8.2	0.9958	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.8	5.6	-5.6	1.0200	8.2	0.9958	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.8	5.6	-5.6	1.0200	8.2	0.9958	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.8	5.6	-5.6	1.0200	8.2	0.9958	10.9			62	6
6281		GIR 13A		13.800	G1	3.7	-0.3	2.0	-2.0	1.0100	3.6	0.9976	4.8			62	6
6281		GIR 13A		13.800	G2	3.7	-0.3	2.0	-2.0	1.0100	3.6	0.9976	4.8			62	6
6281		GIR 13A		13.800	G3	3.7	-0.3	2.0	-2.0	1.0100	3.6	0.9976	4.8			62	6
6281		GIR 13A		13.800	G4	3.7	-0.3	2.0	-2.0	1.0100	3.6	0.9976	4.8			62	6
6282		GIR 13B		13.800	G5	8.3	-0.5	2.5	-2.5	1.0100	8.2	0.9978	10.9			62	6
6282		GIR 13B		13.800	G6	8.3	-0.5	2.5	-2.5	1.0100	8.2	0.9978	10.9			62	6
6282		GIR 13B		13.800	G7	8.3	-0.5	2.5	-2.5	1.0100	8.2	0.9978	10.9			62	6
6282		GIR 13B		13.800	G8	8.3	-0.5	2.5	-2.5	1.0100	8.2	0.9978	10.9			62	6
6311		ALGA13.8		13.800	A1	4.3	0.9	2.3	-2.3	1.0000	4.4	0.9776	5.7			64	6



6311	ALGA13.8	13.800	A2	4.3	0.9	2.3	-2.3	1.0000	4.4	0.9776	5.7	64	6
6321	MEND13.8	13.800	M1	8.0	4.2	4.2	-4.2	0.9933	9.0	0.8865	10.4	64	6
6321	MEND13.8	13.800	M2	8.0	4.2	4.2	-4.2	0.9933	9.0	0.8865	10.4	64	6
6333	BAM13A	13.800	G1	23.8	0.5	10.0	-10.0	1.0000	23.8	0.9998	30.0	64	6
6334	BAM13B	13.800	G2	23.8	0.5	10.0	-10.0	1.0000	23.8	0.9998	30.0	64	6
6335	BAIG1	13.800	G1	37.7	-11.3	14.0	-14.0	1.0000	39.3	0.9581	49.0	64	6
6336	BAIG2	13.800	G2	37.7	-11.3	14.0	-14.0	1.0000	39.3	0.9581	49.0	64	6
6361	GLA13A	13.800	G1	10.8	2.6	7.8	-7.0	1.0200	10.9	0.9725	14.1	64	6
6362	GLA13B	13.800	G2	10.8	2.6	7.8	-7.0	1.0200	10.9	0.9725	14.1	64	6
6364	LOR13A	13.800	G1	14.4	-7.0	7.8	-7.0	1.0108	15.8	0.8989	25.0	64	6
6365	LOR13B	13.800	G2	14.4	-7.0	7.8	-7.0	1.0108	15.8	0.8989	25.0	64	6
6367	PRU13A	13.800	G1	23.8	-8.0	8.0	-8.0	1.0114	24.8	0.9479	33.0	64	6
6368	PRU13B	13.800	G2	23.8	-8.0	8.0	-8.0	1.0114	24.8	0.9479	33.0	64	6
6384	PEDI13.8	13.800	G1	8.5	-0.4	4.9	-4.9	1.0000	8.5	0.9989	12.5	64	6
6384	PEDI13.8	13.800	G2	8.5	-0.4	4.9	-4.9	1.0000	8.5	0.9989	12.5	64	6
6385	PEDII13.8	13.800	G1	5.5	0.1	3.2	-3.6	1.0000	5.5	0.9999	7.5	64	6
6385	PEDII13.8	13.800	G2	5.5	0.1	3.2	-3.6	1.0000	5.5	0.9999	7.5	64	6
6431	EOLICO I	0.6000	G1	120.0	-21.0	21.0	-21.0	1.0117	120.4	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.5	-0.1	0.9	-0.1	1.0074	1.4	0.9981	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.5	-0.1	0.9	-0.1	1.0074	1.4	0.9981	2.1	64	6
6520	PANCH13.8	13.800	P1	4.3	2.0	2.0	-2.0	0.9723	4.8	0.9048	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.3	-1.1	2.5	-2.5	1.0000	4.4	0.9654	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.3	-1.1	2.5	-2.5	1.0000	4.4	0.9654	5.6	64	6
6560	PLANETA13.8	13.800	G1	3.8	2.0	2.0	-2.0	0.9723	4.4	0.8862	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.3	1.2	1.2	-1.2	0.9858	2.6	0.8937	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.3	1.2	1.2	-1.2	0.9858	2.6	0.8937	3.0	63	6
6600	HUACA13.8	13.800	G1	4.3	2.2	2.2	-2.2	0.9857	4.9	0.8892	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.3	-1.0	2.5	-2.5	1.0000	4.4	0.9753	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.2	-1.0	2.5	-2.5	1.0000	4.4	0.9753	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.3	-1.5	2.5	-2.5	1.0000	4.5	0.9395	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.2	-1.5	2.5	-2.5	1.0000	4.5	0.9395	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-1.4	3.7	-3.7	1.0000	6.5	0.9767	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-1.4	3.7	-3.7	1.0000	6.5	0.9767	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.7	1.9	-1.9	1.0000	3.3	0.9805	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.7	1.9	-1.9	1.0000	3.3	0.9805	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.3	0.6	2.5	-2.5	1.0000	4.3	0.9905	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0238	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.1	0.4	2.3	-2.6	1.0000	6.1	0.9977	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.1	0.4	2.3	-2.6	1.0000	6.1	0.9977	7.5	64	6
6681	BFRIO13A	13.800	G1	23.8	-8.0	8.0	-8.0	1.0085	24.9	0.9479	33.0	64	6
6682	BFRIO13B	13.800	G2	23.8	-8.0	8.0	-8.0	1.0085	24.9	0.9479	33.0	64	6
6692	ALTO13A	13.800	G1	19.1	8.9	9.9	-9.9	1.0100	20.8	0.9056	24.9	64	6
6693	ALTO13B	13.800	G2	19.1	-4.8	9.9	-9.9	1.0000	19.7	0.9693	24.9	64	6



6696	PANDO13A	13.800	G1	14.2	-2.4	12.8	-8.3	1.0000	14.4	0.9859	18.5	64	6
6697	PANDO13B	13.800	G2	14.2	-2.4	12.8	-8.3	1.0000	14.4	0.9859	18.5	64	6
6699	MLIRIO13A	13.800	G1	14.2	-2.3	12.8	-8.3	1.0000	14.3	0.9871	18.5	64	6
6700	MLIRIO13B	13.800	G2	14.2	-2.3	12.8	-8.3	1.0000	14.3	0.9871	18.5	64	6
6711	TIZ4.16	4.2000	G1	3.9	0.7	2.3	-2.3	1.0000	4.0	0.9853	5.2	64	6
6721	SIND4.16	4.2000	G1	4.3	-2.5	2.5	-2.5	1.0222	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.3	-2.5	2.5	-2.5	1.0222	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	3.8	-2.2	2.2	-2.2	1.0016	4.4	0.8668	5.0	64	6
6731	SAND4.16	4.2000	G2	3.8	-2.2	2.2	-2.2	1.0016	4.4	0.8668	5.0	64	6
6741	RROJAS4.16	4.2000	G1	3.7	-1.2	2.1	-2.1	1.0000	3.9	0.9478	4.8	64	6
6741	RROJAS4.16	4.2000	G2	3.7	-1.2	2.1	-2.1	1.0000	3.9	0.9478	4.8	64	6
6750	BON13.8	13.800	G1	8.9	-1.6	4.0	-4.0	1.0000	9.0	0.9849	35.3	64	6
6750	BON13.8	13.800	G2	8.9	-1.6	4.0	-4.0	1.0000	9.0	0.9849	35.3	64	6
6763	BAR13.8	13.800	G1	6.4	2.1	4.0	-4.0	1.0000	6.8	0.9486	9.0	63	6
6763	BAR13.8	13.800	G2	6.4	2.1	4.0	-4.0	1.0000	6.8	0.9486	9.0	63	6
6765	CRU13.8	13.800	G1	4.1	1.0	2.6	-2.6	1.0000	4.2	0.9731	5.8	63	6
6765	CRU13.8	13.800	G2	4.1	1.0	2.6	-2.6	1.0000	4.2	0.9731	5.8	63	6
6767	LAG13.8	13.800	G1	4.2	0.6	2.6	-2.6	1.0000	4.2	0.9887	5.8	63	6
6767	LAG13.8	13.800	G2	4.2	0.6	2.6	-2.6	1.0000	4.2	0.9887	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.4	0.8	2.5	-2.5	1.0000	4.5	0.9821	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.4	0.8	2.5	-2.5	1.0000	4.5	0.9821	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.5	0.7	1.5	-1.5	1.0000	2.6	0.9625	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.5	0.7	1.5	-1.5	1.0000	2.6	0.9625	3.3	63	6
6781	OAGUA13.8	13.800	G1	2.7	-1.6	1.6	-1.6	1.0068	3.1	0.8674	3.6	63	6
6781	OAGUA13.8	13.800	G2	2.7	-1.6	1.6	-1.6	1.0068	3.1	0.8674	3.6	63	6
6791	SMA13A	13.800	G1	10.9	-6.2	6.2	-6.2	1.0120	12.4	0.8671	14.2	63	6
6792	SMA13B	13.800	G2	10.9	-6.2	6.2	-6.2	1.0120	12.4	0.8671	14.2	63	6
6810	SVC-LV	13.200	1	0.0	188.7	300.0	-225.0	1.0558	178.8	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.2	-1.8	1.8	-1.8	1.0188	3.6	0.8669	4.1	64	6
6831	SLO13.8	13.800	G1	3.6	2.1	2.1	-2.1	0.9998	4.1	0.8669	4.7	64	6
6831	SLO13.8	13.800	G2	3.6	2.1	2.1	-2.1	0.9998	4.1	0.8669	4.7	64	6
6841	BUR13A	13.800	G1	14.2	8.1	8.1	-8.1	0.9994	16.4	0.8669	18.5	64	6
6842	BUR13B	13.800	G2	14.2	8.1	8.1	-8.1	0.9994	16.4	0.8669	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0238	4.0	0.8677	4.6	64	6
6861	BBL13.8	13.800	G1	7.7	4.0	4.0	-3.0	0.9910	8.8	0.8863	10.1	64	6
6861	BBL13.8	13.800	G2	7.7	4.0	4.0	-3.0	0.9910	8.8	0.8863	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9910	2.0	0.9057	2.1	64	6
SUBSYSTEM TOTALS				1697.7	163.9	1198.0	-1014.6				2683.0		

AREA 7 [ACANAL] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6127		MIR13B		12.000	G6	18.0	0.2	8.0	0.0	1.0100	17.8	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	20.0	7.8	11.0	0.0	1.0100	21.3	0.9318	29.4			65	7



1403

6129	MIR13D	13.800	G4	27.7	9.4	15.0	0.0	1.0100	28.9	0.9471	44.1	7
6130	MIR13F	13.800	G5	17.0	0.8	8.0	0.0	1.0100	16.9	0.9989	27.7	7
6134	MAD6A	6.9000	G1	10.0	0.2	6.0	-6.0	1.0100	9.9	0.9998	13.0	7
6135	MAD6B	6.9000	G2	10.0	0.2	6.0	-6.0	1.0100	9.9	0.9997	13.0	7
6136	MAD6C	6.9000	G3	10.7	0.2	6.0	-6.0	1.0100	10.6	0.9999	13.0	7
SUBSYSTEM TOTALS				113.4	18.7	60.0	-18.0				167.9	
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E												
FRI, MAY 13 2011 15:25												
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL												
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2015												

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0190	234.38	6001		PAN230		230.00	6	1.0026	230.59
6003		PANII230		230.00	6	1.0120	232.75	6008		LSA230		230.00	6	1.0200	234.60
6011		MDN230		230.00	6	1.0123	232.83	6014		PRO230		230.00	6	1.0178	234.09
6096		FOR230		230.00	6	1.0142	233.26	6100		BAY230		230.00	6	1.0268	236.17
6103		COP230		230.00	6	1.0147	233.38	6171		PAC230		230.00	6	1.0198	234.56
6178		EST230		230.00	6	1.0120	232.77	6179		GUA230		230.00	6	1.0122	232.80
6182		VEL230		230.00	6	1.0132	233.04	6240		LGU 230		230.00	6	1.0020	230.47
6260		CHA 230		230.00	6	1.0200	234.61	6263		ESP230		230.00	6	1.0203	234.66
6330		BAI230		230.00	6	1.0165	233.79	6340		CAN 230		230.00	6	1.0159	233.66
6360		GLA230		230.00	6	1.0166	233.81	6363		ZAM230		230.00	6	1.0207	234.76
6366		EVA230		230.00	6	1.0230	235.30	6380		BOQIII 230		230.00	6	1.0147	233.38
6400		FRONTCHA		230.00	6	1.0204	234.70	6430		ANTON230		230.00	6	1.0142	233.26
6500		FRONTDOM		230.00	6	1.0257	235.91	6590		24DIC230		230.00	6	1.0156	233.58
6680		BFRIO230		230.00	6	1.0201	234.63	6690		DOM230		230.00	6	1.0262	236.04
6691		ALTO230		230.00	6	1.0287	236.61	6695		PANDO230		230.00	6	1.0263	236.05
6698		MLIRIO230		230.00	6	1.0263	236.04	6760		SBA230		230.00	6	1.0155	233.58
6790		SMA230		230.00	6	1.0208	234.78	6840		BUR230		230.00	6	1.0200	234.61
6860		BBL230		230.00	6	1.0143	233.29								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6005		CHO230		230.00	6	0.9933	228.45	6105		PAM230		230.00	6	0.9933	228.45



1405

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:25
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2015
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.4	62.5	96.7	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:25
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2015
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

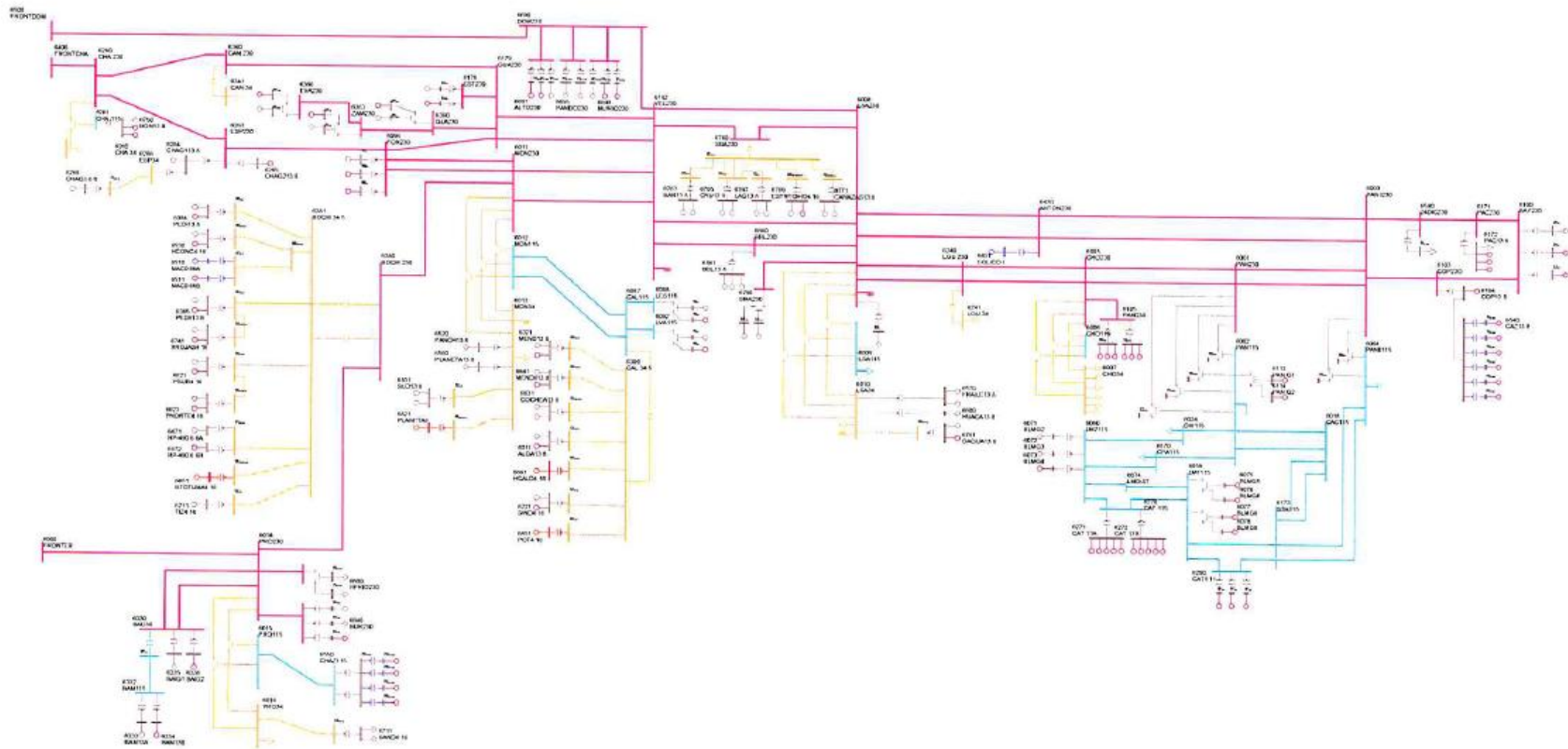
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							FRI, MAY 13 2011 15:25		AREA TOTALS		
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							IN MW/MVAR				
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2015											
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE-	ASSIGNED	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT	
	RATION	TO AREA						LINES	+ LOADS		
1	967.6	1179.4	0.0	0.0	0.0	0.0	22.3	-234.0	-234.0	-234.0	
GUATEMAL	217.7	340.6	220.2	0.0	0.0	604.2	255.2	5.9	5.9		
2	1140.0	1104.0	0.0	0.0	0.0	0.0	35.9	0.0	0.0	0.0	
SALVADOR	286.1	367.1	-181.4	0.0	0.0	242.2	310.6	32.0	32.0		
3	1237.2	1205.2	0.0	0.0	0.0	0.0	31.6	0.4	0.4	0.0	
HONDURAS	375.4	395.2	-20.4	0.0	0.0	471.8	437.9	34.4	34.4		
4	476.1	459.0	0.0	0.0	0.0	0.0	17.2	0.0	0.0	0.0	
NICARAGU	-34.6	181.0	-13.0	0.0	0.0	291.5	161.8	-73.0	-73.0		
5	1518.7	1489.7	0.0	0.0	0.0	0.0	28.9	0.0	0.0	0.0	
COSTA RI	237.4	558.4	-226.8	0.0	0.0	557.0	418.8	44.0	44.0		
6	1697.7	1443.3	0.0	0.0	0.0	0.0	80.7	173.7	173.7	174.0	
PANAMA	163.9	252.8	-330.4	0.0	0.0	505.8	799.8	-52.5	-52.5		
7	113.4	49.7	0.0	0.0	0.0	0.0	3.7	59.9	59.9	60.0	
ACANAL	18.7	8.7	-16.0	0.0	0.0	0.0	16.7	9.2	9.2		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	7150.7	6930.4	0.0	0.0	0.0	0.0	220.2	0.0	0.0	0.0	
TOTALS	1264.7	2103.9	-567.7	0.0	0.0	2672.4	2400.9	0.0	0.0		



Demanda Mínima de Invierno





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 13 2011 15:30
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2015

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
6071		BLMG2		13.800	V2	20.0	6.4	15.0	0.0	1.0200	20.6	0.9522	47.0			62	6
6072		BLMG3		13.800	V3	20.0	6.4	15.0	0.0	1.0200	20.6	0.9522	47.0			62	6
6090		LESG1		13.800	E1	19.1	1.8	12.0	-5.0	1.0000	19.1	0.9955	27.0			64	6
6094		LVAG1		13.800	L1	23.3	-5.0	12.0	-5.0	1.0019	23.8	0.9777	27.0			64	6
6097		FORG1		13.800	F1	70.0	-6.2	50.0	-50.0	1.0100	69.6	0.9961	111.0			64	6
6101		BAYG1		13.800	B1	54.0	14.5	30.0	-25.0	1.0100	55.4	0.9660	94.0			61	6
6176		ESTG1		13.800	E1	51.0	3.3	29.0	-29.0	0.9900	51.6	0.9979	69.0			64	6
6264		CHAG113.8		13.800	G1	89.1	-21.4	52.4	-48.9	0.9900	92.6	0.9723	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.3	4.9	4.9	-4.1	0.9871	9.8	0.8623	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.8	2.3	-2.3	1.0000	4.7	0.9219	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9859	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	23.8	-1.7	10.0	-10.0	0.9900	24.1	0.9976	30.0			64	6
6335		BAIG1		13.800	G1	37.7	-14.0	14.0	-14.0	0.9977	40.3	0.9374	49.0			64	6
6361		GLA13A		13.800	G1	10.8	-1.2	7.8	-7.0	1.0200	10.6	0.9936	14.1			64	6
6364		LOR13A		13.800	G1	14.4	-7.0	7.8	-7.0	1.0152	15.7	0.8989	25.0			64	6
6367		PRU13A		13.800	G1	23.8	-8.0	8.0	-8.0	1.0149	24.7	0.9479	33.0			64	6
6384		PEDI13.8		13.800	G1	8.5	-1.3	4.9	-4.9	1.0000	8.6	0.9892	12.5			64	6
6385		PEDII13.8		13.800	G1	5.5	-0.5	3.2	-3.6	1.0000	5.6	0.9953	7.5			64	6
6431		EOLICO I		0.6000	G1	60.0	-10.5	10.5	-10.5	1.0144	60.1	0.9850	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.5	-0.1	0.9	-0.1	1.0054	1.5	0.9981	2.1			64	6
6520		PANCH13.8		13.800	P1	4.3	2.0	2.0	-2.0	0.9533	4.9	0.9048	6.2			64	6
6530		HCONC4.16		4.2000	G1	4.3	-2.2	2.5	-2.5	1.0000	4.8	0.8901	5.6			64	6
6560		PLANETA13.8		13.800	G1	3.8	2.0	2.0	-2.0	0.9533	4.5	0.8862	4.9			64	6
6570		FRAILE13.8		13.800	G1	2.3	1.2	1.2	-1.2	0.9449	2.8	0.8937	3.0			63	6
6570		FRAILE13.8		13.800	G2	2.3	1.2	1.2	-1.2	0.9449	2.8	0.8937	3.0			63	6
6600		HUACA13.8		13.800	G1	4.3	2.2	2.2	-2.2	0.9449	5.1	0.8893	5.5			63	6
6621		PSUR4.16		4.2000	G1	4.3	-2.1	2.5	-2.5	1.0000	4.7	0.8976	5.6			64	6
6623		PNORTE4.16		4.2000	G1	4.3	-2.4	2.5	-2.5	1.0000	4.9	0.8746	5.6			64	6
6631		COCHEA13.8		13.800	G1	6.4	-2.0	3.7	-3.7	1.0000	6.7	0.9534	8.4			64	6
6631		COCHEA13.8		13.800	G2	6.4	-2.0	3.7	-3.7	1.0000	6.7	0.9534	8.4			64	6
6641		MENDII13.8		13.800	G1	3.3	-1.8	1.9	-1.9	1.0000	3.8	0.8706	4.1			64	6
6651		BTOTUMA4.16		4.1600	G1	4.3	-1.8	2.5	-2.5	1.0000	4.6	0.9202	5.6			64	6
6661		HCALD4.16		4.1600	G1	3.4	-2.0	2.0	-2.0	1.0250	3.8	0.8675	4.4			64	6
6671		RP-490 6.6A		6.6000	G1	6.1	0.1	2.3	-2.6	1.0000	6.1	0.9997	7.5			64	6
6681		BFRIO13A		13.800	G1	23.8	-8.0	8.0	-8.0	1.0094	24.9	0.9479	33.0			64	6
6682		BFRIO13B		13.800	G2	23.8	-8.0	8.0	-8.0	1.0094	24.9	0.9479	33.0			64	6
6692		ALTO13A		13.800	G1	19.1	-3.1	9.9	-9.9	1.0000	19.3	0.9866	24.9			64	6



6696	PANDO13A	13.800	G1	14.2	-8.3	12.8	-8.3	0.9952	16.5	0.8626	18.5	64	6
6697	PANDO13B	13.800	G2	14.2	-8.3	12.8	-8.3	0.9952	16.5	0.8626	18.5	64	6
6699	MLIRIO13A	13.800	G1	14.2	-8.3	12.8	-8.3	0.9964	16.5	0.8626	18.5	64	6
6711	TIZ4.16	4.2000	G1	3.9	-1.7	2.3	-2.3	1.0000	4.3	0.9170	5.2	64	6
6721	SIND4.16	4.2000	G1	4.3	-2.5	2.5	-2.5	1.0247	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	3.8	-2.2	2.2	-2.2	1.0021	4.4	0.8668	5.0	64	6
6731	SAND4.16	4.2000	G2	3.8	-2.2	2.2	-2.2	1.0021	4.4	0.8668	5.0	64	6
6741	RROJAS4.16	4.2000	G1	3.7	-1.7	2.1	-2.1	1.0000	4.0	0.9027	4.8	64	6
6750	BON13.8	13.800	G1	8.9	-4.0	4.0	-4.0	1.0077	9.7	0.9115	35.3	64	6
6763	BAR13.8	13.800	G1	6.4	2.2	4.0	-4.0	1.0000	6.8	0.9477	9.0	63	6
6763	BAR13.8	13.800	G2	6.4	2.2	4.0	-4.0	1.0000	6.8	0.9477	9.0	63	6
6765	CRU13.8	13.800	G1	4.1	1.0	2.6	-2.6	1.0000	4.2	0.9724	5.8	63	6
6765	CRU13.8	13.800	G2	4.1	1.0	2.6	-2.6	1.0000	4.2	0.9724	5.8	63	6
6767	LAG13.8	13.800	G1	4.2	0.6	2.6	-2.6	1.0000	4.2	0.9883	5.8	63	6
6767	LAG13.8	13.800	G2	4.2	0.6	2.6	-2.6	1.0000	4.2	0.9883	5.8	63	6
6769	ESTRECHO4.16	4.2000	G1	4.4	2.1	2.5	-2.5	1.0000	4.9	0.9001	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.5	0.7	1.5	-1.5	1.0000	2.6	0.9615	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.5	0.7	1.5	-1.5	1.0000	2.6	0.9615	3.3	63	6
6781	OAGUA13.8	13.800	G1	2.7	1.6	1.6	-1.6	0.9685	3.3	0.8674	3.6	63	6
6791	SMA13A	13.800	G1	10.9	-0.7	6.2	-6.2	1.0000	10.9	0.9978	14.2	63	6
6792	SMA13B	13.800	G2	10.9	-0.7	6.2	-6.2	1.0000	10.9	0.9978	14.2	63	6
6810	SVC-LV	13.200	1	0.0	-26.8	300.0	-225.0	0.9946	27.0	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.2	-0.7	1.8	-1.8	1.0000	3.2	0.9767	4.1	64	6
6831	SLO13.8	13.800	G1	3.6	2.1	2.1	-2.1	0.9805	4.2	0.8669	4.7	64	6
6831	SLO13.8	13.800	G2	3.6	2.1	2.1	-2.1	0.9805	4.2	0.8669	4.7	64	6
6841	BUR13A	13.800	G1	14.2	-5.9	8.1	-8.1	0.9900	15.5	0.9239	18.5	64	6
6842	BUR13B	13.800	G2	14.2	-5.9	8.1	-8.1	0.9900	15.5	0.9239	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0249	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	7.7	4.0	4.0	-3.0	0.9924	8.7	0.8863	10.1	64	6
6861	BBL13.8	13.800	G2	7.7	4.0	4.0	-3.0	0.9924	8.7	0.8863	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9924	2.0	0.9057	2.1	64	6
SUBSYSTEM TOTALS				872.8	-116.6	776.1	-630.4				1638.7		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:30
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2015

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
6128		MIR13C		12.000	G3	20.0	10.9	11.0	0.0	1.0100	22.5	0.8786	29.4			65	7
6129		MIR13D		13.800	G4	26.0	13.4	15.0	0.0	1.0100	29.0	0.8887	44.1			65	7

6134 MAD6A	6.9000	G1	10.0	1.5	6.0	-6.0	1.0100	10.0	0.9889	13.0
6135 MAD6B	6.9000	G2	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9917	13.0
6136 MAD6C	6.9000	G3	10.0	1.3	6.0	-6.0	1.0100	10.0	0.9917	13.0
SUBSYSTEM TOTALS			76.0	28.4	44.0	-18.0				112.5



1410

7

7

7



1411

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:30
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2015

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0215	234.94	6001		PAN230		230.00	6	1.0041	230.93
6003		PANII230		230.00	6	1.0094	232.15	6011		MDN230		230.00	6	1.0165	233.79
6014		PRO230		230.00	6	1.0187	234.31	6096		FOR230		230.00	6	1.0196	234.52
6100		BAY230		230.00	6	1.0189	234.35	6103		COP230		230.00	6	1.0113	232.60
6171		PAC230		230.00	6	1.0119	232.74	6178		EST230		230.00	6	1.0193	234.43
6179		GUA230		230.00	6	1.0194	234.46	6182		VEL230		230.00	6	1.0156	233.59
6260		CHA 230		230.00	6	1.0293	236.75	6263		ESP230		230.00	6	1.0269	236.18
6330		BAI230		230.00	6	1.0180	234.13	6340		CAN 230		230.00	6	1.0244	235.61
6360		GLA230		230.00	6	1.0215	234.95	6363		ZAM230		230.00	6	1.0236	235.43
6366		EVA230		230.00	6	1.0248	235.70	6380		BOQIII 230		230.00	6	1.0168	233.86
6400		FRONTCHA		230.00	6	1.0312	237.17	6430		ANTON230		230.00	6	1.0154	233.55
6500		FRONTDOM		230.00	6	1.0269	236.19	6590		24DIC230		230.00	6	1.0104	232.40
6680		BFRIO230		230.00	6	1.0211	234.85	6690		DOM230		230.00	6	1.0264	236.07
6691		ALTO230		230.00	6	1.0275	236.32	6695		PANDO230		230.00	6	1.0245	235.65
6698		MLIRIO230		230.00	6	1.0258	235.94	6760		SBA230		230.00	6	1.0127	232.92
6790		SMA230		230.00	6	1.0011	230.26	6840		BUR230		230.00	6	1.0180	234.13
6860		BBL230		230.00	6	1.0157	233.62								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6005		CHO230		230.00	6	0.9964	229.16	6008		LSA230		230.00	6	1.0000	230.00
6105		PAM230		230.00	6	0.9964	229.16	6240		LGU 230		230.00	6	0.9969	229.30



1412

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:30
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2015

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0074	115.85	6004		PANII115		115.00	6	1.0064	115.74
6009		LSA115		115.00	6	1.0079	115.90	6012		MDN115		115.00	6	1.0207	117.38
6015		PRO115		115.00	6	1.0135	116.56	6018		CAC115		115.00	6	1.0075	115.86
6019		CVI115A		115.00	6	1.0051	115.59	6024		CHI115		115.00	6	1.0026	115.30
6027		LOC115A		115.00	6	1.0044	115.50	6032		MAR115A		115.00	6	1.0041	115.47
6036		SMA115		115.00	6	1.0070	115.80	6040		SFR115		115.00	6	1.0033	115.38
6055		MOS115B		115.00	6	1.0063	115.73	6057		TOC115		115.00	6	1.0050	115.58
6059		LM1115		115.00	6	1.0069	115.80	6060		LM2115		115.00	6	1.0070	115.80
6066		FFIELD		115.00	6	1.0068	115.79	6074		LMDIST		115.00	6	1.0069	115.79
6087		CAL115		115.00	6	1.0201	117.31	6088		LES115		115.00	6	1.0210	117.42
6092		LVA115		115.00	6	1.0200	117.29	6123		MIR115		115.00	7	1.0186	117.14
6170		CPA115		115.00	6	1.0066	115.76	6173		STR115		115.00	6	1.0075	115.86
6174		PM115-1A		115.00	6	1.0078	115.90	6175		PM115-2A		115.00	6	1.0078	115.90
6210		TIN115		115.00	6	1.0052	115.60	6211		PM115-9		115.00	6	1.0058	115.66
6230		CBA115		115.00	6	1.0037	115.43	6261		CHA 115		115.00	6	1.0204	117.35
6270		CAT 115		115.00	6	1.0069	115.80	6280		GIR 115		115.00	6	1.0066	115.76
6290		CATII 11		115.00	6	1.0070	115.80	6331		BAI115		115.00	6	1.0113	116.30
6332		BAM115		115.00	6	1.0109	116.25	6350		PM115-8		115.00	6	1.0060	115.69
6550		CHAZ115		115.00	6	1.0135	116.56	6580		LBO115		115.00	6	1.0048	115.55

BUSES WITH VOLTAGE LESS THAN 1.0000:

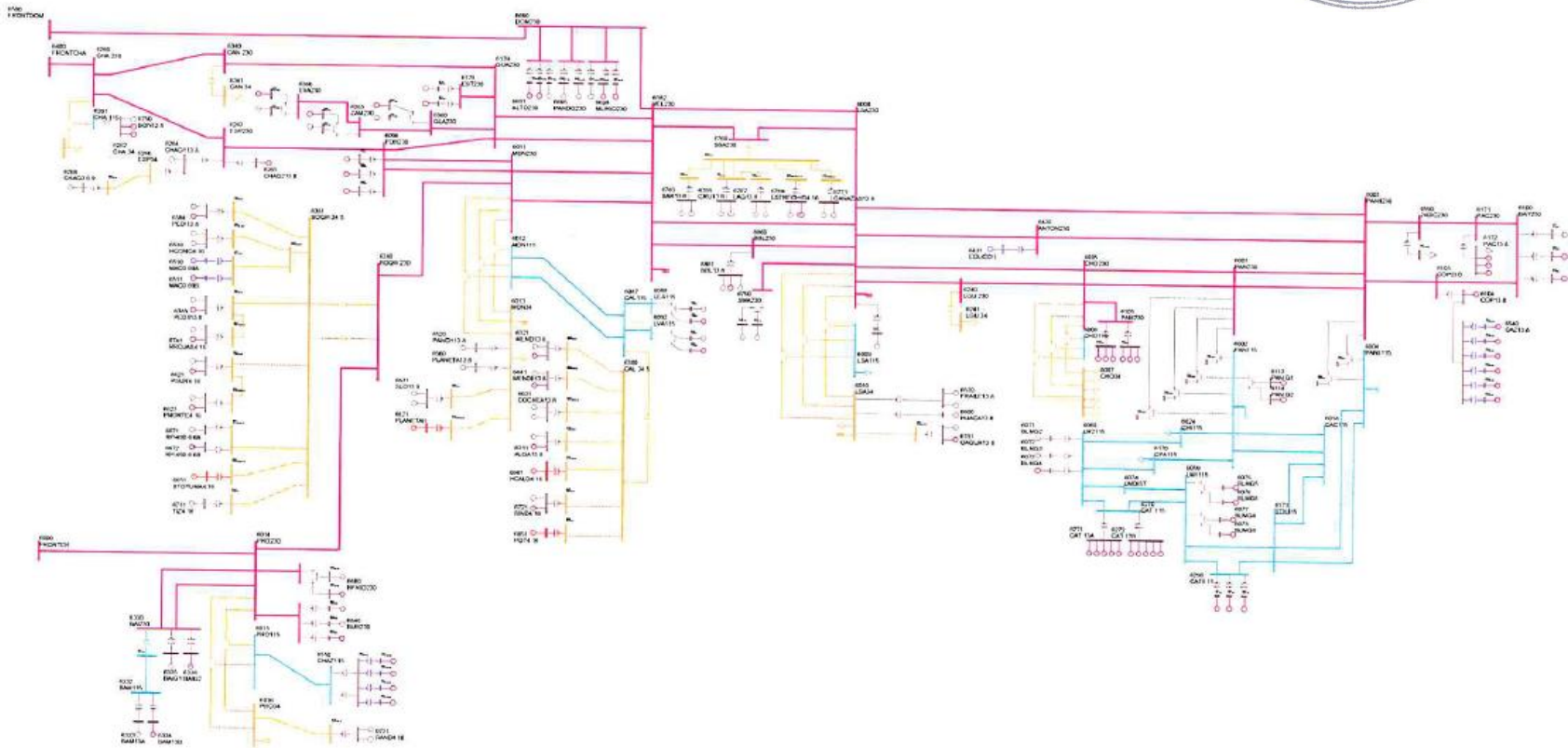
BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6006		CHO115		115.00	6	0.9853	113.31	6047		CLA115		115.00	6	0.9989	114.87



1413

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							FRI, MAY 13 2011 15:30				
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS				
BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2015							IN MW/MVAR				
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE-	ASSIGNED	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT	
	RATION	TO AREA						LINES	+ LOADS		
1	680.4	773.5	0.0	0.0	0.0	0.0	10.8	-103.9	-103.9	-104.0	
GUATEMAL	-18.4	100.4	384.6	0.0	0.0	621.2	167.5	-49.7	-49.7		
2	522.9	512.7	0.0	0.0	0.0	0.0	10.2	0.0	0.0	0.0	
SALVADOR	14.4	137.7	-22.6	0.0	0.0	254.6	101.1	52.6	52.6		
3	560.2	545.5	0.0	0.0	0.0	0.0	14.7	0.0	0.0	0.0	
HONDURAS	-110.7	179.1	40.6	0.0	0.0	515.5	131.3	53.8	53.8		
4	304.4	298.5	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	
NICARAGU	-143.2	118.2	51.5	0.0	0.0	315.3	66.1	-63.8	-63.8		
5	775.9	769.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	
COSTA RI	-92.0	302.3	-13.9	0.0	0.0	592.3	135.1	76.8	76.8		
6	872.8	779.3	0.0	0.0	0.0	0.0	36.0	57.5	57.5	57.0	
PANAMA	-116.6	282.8	-135.2	0.0	0.0	517.5	345.1	-91.8	-91.8		
7	76.0	26.9	0.0	0.0	0.0	0.0	2.7	46.4	46.4	47.0	
ACANAL	28.4	9.7	-15.6	0.0	0.0	0.0	12.2	22.1	22.1		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	3792.7	3705.3	0.0	0.0	0.0	0.0	87.4	0.0	0.0	0.0	
TOTALS	-438.3	1130.2	289.4	0.0	0.0	2816.4	958.6	0.0	0.0		

Demanda Mínima de Verano





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:33
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2015

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
6071		BLMG2		13.800	V2	24.6	6.1	15.0	0.0	1.0200	24.8	0.9703	47.0			62	6
6072		BLMG3		13.800	V3	24.6	6.1	15.0	0.0	1.0200	24.8	0.9703	47.0			62	6
6090		LESG1		13.800	E1	19.1	2.0	12.0	-5.0	0.9900	19.4	0.9944	27.0			64	6
6094		LVAG1		13.800	L1	23.3	-5.0	12.0	-5.0	0.9907	24.0	0.9777	27.0			64	6
6097		FORG1		13.800	F1	60.0	-12.2	50.0	-50.0	1.0000	61.2	0.9799	111.0			64	6
6101		BAYG1		13.800	B1	53.0	6.7	30.0	-25.0	1.0000	53.4	0.9921	94.0			61	6
6176		ESTG1		13.800	E1	51.0	3.9	29.0	-29.0	0.9900	51.7	0.9971	69.0			64	6
6264		CHAG113.8		13.800	G1	73.4	-20.3	52.4	-48.9	0.9900	76.9	0.9640	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.3	4.9	4.9	-4.1	0.9871	9.8	0.8623	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.9	2.3	-2.3	1.0000	4.7	0.9158	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9850	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	23.8	-2.2	10.0	-10.0	0.9900	24.1	0.9959	30.0			64	6
6335		BAIG1		13.800	G1	37.7	-14.0	14.0	-14.0	1.0021	40.1	0.9374	49.0			64	6
6361		GLA13A		13.800	G1	10.8	1.6	7.8	-7.0	1.0200	10.7	0.9895	14.1			64	6
6364		LOR13A		13.800	G1	14.4	-7.0	7.8	-7.0	1.0119	15.8	0.8989	25.0			64	6
6367		PRU13A		13.800	G1	23.8	-8.0	8.0	-8.0	1.0116	24.8	0.9479	33.0			64	6
6384		PEDI13.8		13.800	G1	8.5	-1.1	4.9	-4.9	1.0000	8.6	0.9914	12.5			64	6
6385		PEDII13.8		13.800	G1	5.5	-0.4	3.2	-3.6	1.0000	5.5	0.9969	7.5			64	6
6431		EOLICO I		0.6000	G1	120.0	-21.0	21.0	-21.0	1.0046	121.3	0.9850	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.5	-0.1	0.9	-0.1	1.0051	1.5	0.9981	2.1			64	6
6520		PANCH13.8		13.800	P1	4.2	2.0	2.0	-2.0	0.9163	5.1	0.9048	6.2			64	6
6530		HCONC4.16		4.2000	G1	4.2	-1.9	2.5	-2.5	1.0000	4.7	0.9138	5.6			64	6
6530		HCONC4.16		4.2000	G2	4.2	-1.9	2.5	-2.5	1.0000	4.7	0.9138	5.6			64	6
6560		PLANETA13.8		13.800	G1	3.1	0.1	2.0	-2.0	0.9150	3.4	0.9997	4.9			64	6
6570		FRAILE13.8		13.800	G1	2.3	1.2	1.2	-1.2	0.9447	2.8	0.8937	3.0			63	6
6570		FRAILE13.8		13.800	G2	2.3	1.2	1.2	-1.2	0.9447	2.8	0.8937	3.0			63	6
6600		HUACA13.8		13.800	G1	3.5	2.2	2.2	-2.2	0.9446	4.4	0.8481	5.5			63	6
6621		PSUR4.16		4.2000	G1	4.2	-1.9	2.5	-2.5	1.0000	4.7	0.9138	5.6			64	6
6623		PNORTE4.16		4.2000	G1	4.2	-2.2	2.5	-2.5	1.0000	4.8	0.8868	5.6			64	6
6631		COCHEA13.8		13.800	G1	6.4	-1.5	3.7	-3.7	1.0000	6.6	0.9722	8.4			64	6
6631		COCHEA13.8		13.800	G2	6.4	-1.5	3.7	-3.7	1.0000	6.6	0.9722	8.4			64	6
6641		MENDII13.8		13.800	G1	3.3	-0.8	1.9	-1.9	1.0000	3.4	0.9711	4.1			64	6
6651		BTOTUMA4.16		4.1600	G1	4.2	-1.5	2.5	-2.5	1.0000	4.5	0.9397	5.6			64	6
6661		HCALD4.16		4.1600	G1	2.8	-0.9	2.0	-2.0	1.0250	2.9	0.9559	4.4			64	6
6671		RP-490 6.6A		6.6000	G1	6.1	0.1	2.3	-2.6	1.0000	6.1	0.9997	7.5			64	6
6681		BFRIO13A		13.800	G1	23.8	-8.0	8.0	-8.0	1.0144	24.8	0.9479	33.0			64	6
6692		ALTO13A		13.800	G1	19.1	4.9	9.9	-9.9	1.0100	19.5	0.9686	24.9			64	6



6696	PANDO13A	13.800	G1	14.2	-7.2	12.8	-8.3	1.0000	15.9	0.8913	18.5	64	6
6697	PANDO13B	13.800	G2	14.2	-7.2	12.8	-8.3	1.0000	15.9	0.8913	18.5	64	6
6699	MLIRIO13A	13.800	G1	14.2	-8.3	12.8	-8.3	1.0003	16.4	0.8626	18.5	64	6
6711	TIZ4.16	4.2000	G1	3.5	-1.3	2.3	-2.3	1.0000	3.7	0.9358	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0238	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	3.8	-2.2	2.2	-2.2	1.0064	4.4	0.8668	5.0	64	6
6731	SAND4.16	4.2000	G2	3.8	-2.2	2.2	-2.2	1.0064	4.4	0.8668	5.0	64	6
6741	RROJAS4.16	4.2000	G1	3.7	-1.7	2.1	-2.1	1.0000	4.0	0.9109	4.8	64	6
6750	BON13.8	13.800	G1	8.9	-4.0	4.0	-4.0	1.0028	9.7	0.9115	35.3	64	6
6763	BAR13.8	13.800	G1	6.4	2.2	4.0	-4.0	1.0000	6.8	0.9445	9.0	63	6
6763	BAR13.8	13.800	G2	6.4	2.2	4.0	-4.0	1.0000	6.8	0.9445	9.0	63	6
6765	CRU13.8	13.800	G1	4.1	1.0	2.6	-2.6	1.0000	4.2	0.9702	5.8	63	6
6765	CRU13.8	13.800	G2	4.1	1.0	2.6	-2.6	1.0000	4.2	0.9702	5.8	63	6
6767	LAG13.8	13.800	G1	4.2	0.7	2.6	-2.6	1.0000	4.2	0.9870	5.8	63	6
6767	LAG13.8	13.800	G2	4.2	0.7	2.6	-2.6	1.0000	4.2	0.9870	5.8	63	6
6769	ESTRECHO4.16	4.2000	G1	4.4	2.2	2.5	-2.5	1.0000	4.9	0.8938	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.5	0.8	1.5	-1.5	1.0000	2.6	0.9578	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.5	0.8	1.5	-1.5	1.0000	2.6	0.9578	3.3	63	6
6781	OAGUA13.8	13.800	G1	2.7	1.6	1.6	-1.6	0.9682	3.3	0.8674	3.6	63	6
6791	SMA13A	13.800	G1	10.9	-0.7	6.2	-6.2	1.0000	10.9	0.9978	14.2	63	6
6792	SMA13B	13.800	G2	10.9	-0.7	6.2	-6.2	1.0000	10.9	0.9978	14.2	63	6
6810	SVC-LV	13.200	1	0.0	-26.3	300.0	-225.0	0.9947	26.5	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	2.9	-1.5	1.8	-1.8	0.9600	3.4	0.8838	4.1	64	6
6831	SLO13.8	13.800	G1	3.6	2.1	2.1	-2.1	0.9426	4.4	0.8669	4.7	64	6
6831	SLO13.8	13.800	G2	3.6	2.1	2.1	-2.1	0.9426	4.4	0.8669	4.7	64	6
6841	BUR13A	13.800	G1	14.2	2.0	8.1	-8.1	1.0000	14.3	0.9905	18.5	64	6
6842	BUR13B	13.800	G2	14.2	2.0	8.1	-8.1	1.0000	14.3	0.9905	18.5	64	6
6851	POT4.16	4.1600	G1	2.9	-0.9	2.0	-2.0	1.0250	3.0	0.9559	4.6	64	6
6861	BBL13.8	13.800	G1	7.7	4.0	4.0	-3.0	0.9886	8.8	0.8863	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9886	2.0	0.9057	2.1	64	6
SUBSYSTEM TOTALS				884.5	-105.1	777.1	-632.4				1601.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E FRI, MAY 13 2011 15:33
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2015

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
6127		MIR13B		12.000	G6	18.0	1.5	8.0	0.0	1.0100	17.9	0.9965	27.7			65	7
6129		MIR13D		13.800	G4	30.6	10.5	15.0	0.0	1.0100	32.0	0.9459	44.1			65	7
6130		MIR13F		13.800	G5	17.0	2.4	8.0	0.0	1.0100	17.0	0.9898	27.7			65	7

6134 MAD6A	6.9000 G1	10.8	1.9	6.0	-6.0	1.0100	10.9	0.9842	13.0
SUBSYSTEM TOTALS		76.4	16.4	37.0	-6.0				112.5



1417



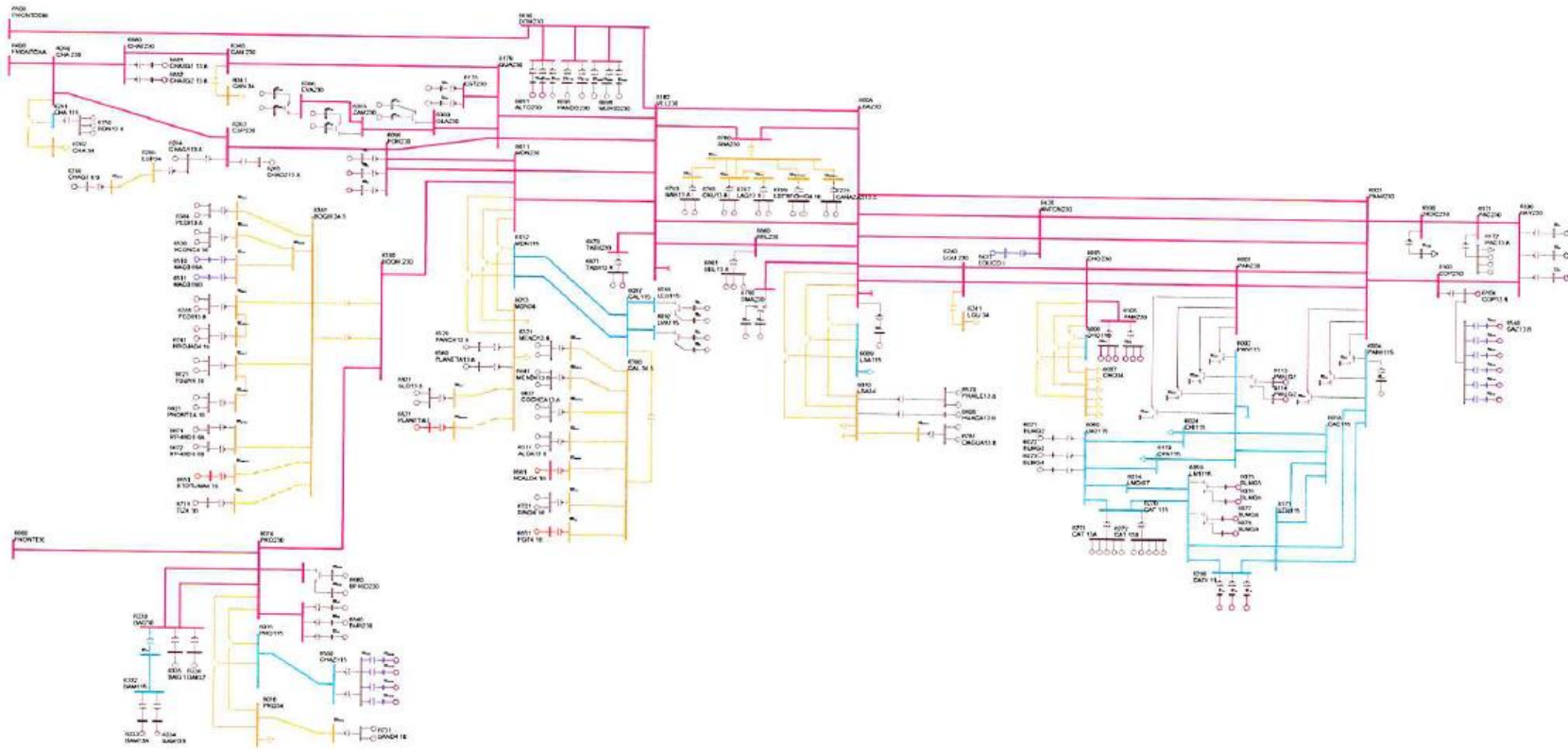
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							FRI, MAY 13 2011 15:33				
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS				
BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2015							IN MW/MVAR				
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE-	ASSIGNED	TO BUS	GNE BUS	TO LINE	FROM	TO	TO TIE	TO TIES	NET INT	
	RATION	TO AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	LINES	+ LOADS		
1	666.0	758.5	0.0	0.0	0.0	0.0	13.1	-105.6	-105.6	-105.9	
GUATEMAL	-8.0	99.0	383.3	0.0	0.0	623.5	173.6	-40.3	-40.3		
2	519.6	512.7	0.0	0.0	0.0	0.0	7.5	-0.6	-0.6	0.0	
SALVADOR	17.3	137.7	0.0	0.0	0.0	253.2	88.9	43.8	43.8		
3	554.9	545.5	0.0	0.0	0.0	0.0	10.4	-0.9	-0.9	0.0	
HONDURAS	-115.9	179.1	45.6	0.0	0.0	517.3	123.3	53.6	53.6		
4	311.0	304.3	0.0	0.0	0.0	0.0	7.7	-1.0	-1.0	0.0	
NICARAGU	-116.5	120.4	52.0	0.0	0.0	314.1	78.1	-53.0	-53.0		
5	763.6	750.0	0.0	0.0	0.0	0.0	11.6	1.9	1.9	0.0	
COSTA RI	-23.2	309.9	0.0	0.0	0.0	573.0	188.5	51.4	51.4		
6	884.5	793.8	0.0	0.0	0.0	0.0	31.4	59.3	59.3	58.9	
PANAMA	-105.1	288.1	-138.0	0.0	0.0	502.1	314.8	-67.9	-67.9		
7	76.4	27.4	0.0	0.0	0.0	0.0	2.1	47.0	47.0	47.0	
ACANAL	16.4	9.9	-15.9	0.0	0.0	0.0	9.9	12.5	12.5		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	3776.1	3692.3	0.0	0.0	0.0	0.0	83.8	0.0	0.0	0.0	
TOTALS	-335.0	1144.1	327.0	0.0	0.0	2783.2	977.1	0.0	0.0		

Año 2017



1421

Demanda Máxima de Invierno





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 14 2011 13:40
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017
 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
6071		BLMG2		13.800	V2	38.0	2.9	15.0	0.0	1.0200	37.4	0.9972	47.0			62	6
6072		BLMG3		13.800	V3	38.0	2.9	15.0	0.0	1.0200	37.4	0.9972	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.9	15.0	0.0	1.0200	37.4	0.9972	47.0			62	6
6090		LESG1		13.800	E1	22.4	4.1	12.0	-5.0	1.0000	22.8	0.9834	27.0			64	6
6091		LESG2		13.800	E2	22.4	4.1	12.0	-5.0	1.0000	22.8	0.9834	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-2.4	12.0	-5.0	1.0000	26.1	0.9959	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-2.4	12.0	-5.0	1.0000	26.1	0.9959	27.0			64	6
6097		FORG1		13.800	F1	95.0	14.6	50.0	-50.0	1.0100	95.2	0.9884	111.0			64	6
6101		BAYG1		13.800	B1	69.1	15.7	30.0	-25.0	1.0200	69.5	0.9752	94.0			61	6
6102		BAYG2		13.800	B2	69.1	15.7	30.0	-25.0	1.0200	69.5	0.9752	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	11.1	29.0	-29.0	1.0000	58.1	0.9816	69.0			64	6
6177		ESTG2		13.800	E2	57.0	11.1	29.0	-29.0	1.0000	58.1	0.9816	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-3.1	52.4	-48.9	1.0000	99.7	0.9995	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	0.4	52.4	-48.9	1.0000	99.6	1.0000	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9751	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9751	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9921	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9921	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.4	10.0	-10.0	1.0000	26.6	0.9986	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.4	10.0	-10.0	1.0000	26.6	0.9986	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-9.1	14.0	-14.0	1.0000	43.1	0.9777	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-9.1	14.0	-14.0	1.0000	43.1	0.9777	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-0.2	7.8	-7.0	1.0000	12.1	0.9998	14.1			64	6
6362		GLA13B		13.800	G2	12.1	-0.2	7.8	-7.0	1.0000	12.1	0.9998	14.1			64	6



6364	LOR13A	13.800	G1	16.1	-3.9	7.8	-7.0	1.0000	16.5	0.9716	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-3.9	7.8	-7.0	1.0000	16.5	0.9716	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-5.7	8.0	-8.0	1.0000	27.2	0.9782	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-5.7	8.0	-8.0	1.0000	27.2	0.9782	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.0	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.0	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9978	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9978	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0164	59.9	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0066	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0066	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9580	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.7	-0.7	2.5	-2.5	1.0000	4.8	0.9897	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.7	-0.7	2.5	-2.5	1.0000	4.8	0.9897	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9580	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9731	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9731	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9730	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.7	-0.4	2.5	-2.5	1.0000	4.8	0.9960	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.7	-0.4	2.5	-2.5	1.0000	4.8	0.9960	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.7	-1.3	2.5	-2.5	1.0000	4.9	0.9662	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.7	-1.3	2.5	-2.5	1.0000	4.9	0.9662	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.8	3.7	-3.7	1.0000	6.4	0.9929	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.8	3.7	-3.7	1.0000	6.4	0.9929	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.0	1.9	-1.9	1.0000	3.3	0.9999	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.0	1.9	-1.9	1.0000	3.3	0.9999	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.7	2.4	2.5	-2.5	1.0000	5.3	0.8955	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0226	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9961	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9961	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0055	27.6	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0055	27.6	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0075	23.3	0.9074	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	0.3	12.8	-8.3	1.0000	15.8	0.9998	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	0.3	12.8	-8.3	1.0000	15.8	0.9998	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	0.5	12.8	-8.3	1.0000	15.8	0.9995	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	0.5	12.8	-8.3	1.0000	15.8	0.9995	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	0.5	12.8	-8.3	1.0000	15.8	0.9995	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9998	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0210	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0210	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-1.9	2.2	-2.2	1.0000	4.7	0.9157	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-1.9	2.2	-2.2	1.0000	4.7	0.9157	5.0	64	6



6741	RROJAS4.16	4.2000	G1	4.1	-1.1	2.1	-2.1	1.0000	4.2	0.9665	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.1	2.1	-2.1	1.0000	4.2	0.9665	4.8	6
6750	BON13.8	13.800	G1	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9997	35.3	6
6750	BON13.8	13.800	G2	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9997	35.3	6
6750	BON13.8	13.800	G3	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9997	35.3	6
6763	BAR13.8	13.800	G1	7.2	3.2	4.0	-4.0	1.0000	7.9	0.9146	9.0	6
6763	BAR13.8	13.800	G2	7.2	3.2	4.0	-4.0	1.0000	7.9	0.9146	9.0	6
6765	CRU13.8	13.800	G1	4.6	1.5	2.6	-2.6	1.0000	4.9	0.9479	5.8	6
6765	CRU13.8	13.800	G2	4.6	1.5	2.6	-2.6	1.0000	4.9	0.9479	5.8	6
6767	LAG13.8	13.800	G1	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9722	5.8	6
6767	LAG13.8	13.800	G2	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9722	5.8	6
6769	ESTRECHO4.164.2000	G1	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9624	5.6	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9624	5.6	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.2	1.5	-1.5	1.0000	3.1	0.9218	3.3	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.2	1.5	-1.5	1.0000	3.1	0.9218	3.3	6
6781	OAGUA13.8	13.800	G1	3.1	-1.6	1.6	-1.6	0.9940	3.5	0.8897	3.6	6
6781	OAGUA13.8	13.800	G2	3.1	-1.6	1.6	-1.6	0.9940	3.5	0.8897	3.6	6
6791	SMA13A	13.800	G1	12.2	-6.2	6.2	-6.2	1.0012	13.7	0.8894	14.2	6
6792	SMA13B	13.800	G2	12.2	-6.2	6.2	-6.2	1.0012	13.7	0.8894	14.2	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0655	281.6	0.0000	300.0	6
6821	PLANETAI	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0039	4.0	0.8892	4.1	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9854	4.6	0.8892	4.7	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9854	4.6	0.8892	4.7	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9974	17.9	0.8892	18.5	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9974	17.9	0.8892	18.5	6
6843	BUR13C	13.800	G3	15.8	8.1	8.1	-8.1	0.9974	17.9	0.8892	18.5	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0225	4.0	0.8678	4.6	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9711	9.8	0.9059	10.1	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9711	9.8	0.9059	10.1	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9711	2.0	0.9058	2.1	6
6871	TABII13.8	13.800	G1	16.4	2.9	9.0	-9.0	1.0000	16.6	0.9843	20.5	6
6881	CHAIIG1	13.813.800	G1	101.6	8.5	52.3	-52.3	1.0100	101.0	0.9965	118.9	6
6900	SVC-LV	13.200	1	0.0	194.0	300.0	-225.0	1.0528	184.2	0.0000	300.0	6
SUBSYSTEM TOTALS				1846.3	612.0	1495.9	-1233.0				2995.8	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 14 2011 13:40
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017
 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
6127		MIR13B		12.000	G6	17.1	0.2	8.0	0.0	1.0100	16.9	0.9999	27.7			65	7
6128		MIR13C		12.000	G3	21.5	7.5	11.0	0.0	1.0100	22.6	0.9436	29.4			65	7



6129	MIR13D	13.800	G4	26.6	9.4	15.0	0.0	1.0100	28.0	0.9431	44.1	7
6130	MIR13F	13.800	G5	17.1	0.7	8.0	0.0	1.0100	16.9	0.9992	27.7	7
6134	MAD6A	6.9000	G1	11.4	0.2	6.0	-6.0	1.0100	11.3	0.9999	13.0	7
6135	MAD6B	6.9000	G2	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0	7
6136	MAD6C	6.9000	G3	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0	7
SUBSYSTEM TOTALS				116.5	18.5	60.0	-18.0				167.9	
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 14 2011 13:40												
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL												
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017												

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0163	233.74	6003		PANII230		230.00	6	1.0100	232.30
6008		LSA230		230.00	6	1.0092	232.11	6014		PRO230		230.00	6	1.0146	233.36
6100		BAY230		230.00	6	1.0292	236.71	6103		COP230		230.00	6	1.0133	233.07
6171		PAC230		230.00	6	1.0189	234.35	6260		CHA 230		230.00	6	1.0146	233.37
6263		ESP230		230.00	6	1.0142	233.27	6330		BAI230		230.00	6	1.0138	233.18
6340		CAN 230		230.00	6	1.0018	230.41	6360		GLA230		230.00	6	1.0005	230.11
6363		ZAM230		230.00	6	1.0057	231.32	6366		EVA230		230.00	6	1.0086	231.98
6380		BOQIII 230		230.00	6	1.0063	231.46	6400		FRONTCHA		230.00	6	1.0156	233.59
6430		ANTON230		230.00	6	1.0174	234.00	6500		FRONTDOM		230.00	6	1.0234	235.38
6590		24DIC230		230.00	6	1.0141	233.23	6680		BFRIO230		230.00	6	1.0173	233.98
6690		DOM230		230.00	6	1.0239	235.49	6691		ALTO230		230.00	6	1.0255	235.87
6695		PANDO230		230.00	6	1.0249	235.72	6698		MLIRIO230		230.00	6	1.0248	235.70
6790		SMA230		230.00	6	1.0101	232.33	6840		BUR230		230.00	6	1.0180	234.14
6880		CHAI230		230.00	6	1.0136	233.13								

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)
6001		PAN230		230.00	6	0.9949	228.82	6005		CHO230		230.00	6	0.9823	225.92
6011		MDN230		230.00	6	0.9978	229.48	6096		FOR230		230.00	6	0.9995	229.88
6105		PAM230		230.00	6	0.9823	225.92	6178		EST230		230.00	6	0.9952	228.88
6179		GUA230		230.00	6	0.9953	228.91	6182		VEL230		230.00	6	0.9933	228.47
6240		LGU 230		230.00	6	0.9918	228.12	6760		SBA230		230.00	6	0.9962	229.12
6860		BBL230		230.00	6	0.9939	228.60	6870		TABII230		230.00	6	0.9941	228.65



1428

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 16 2011 9:05
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS		X		TO BUS		X		RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	59.9	62.5	95.9	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAFO1	WND 1	6	T1	52.9	54.0	97.9	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 16 2011 9:05
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

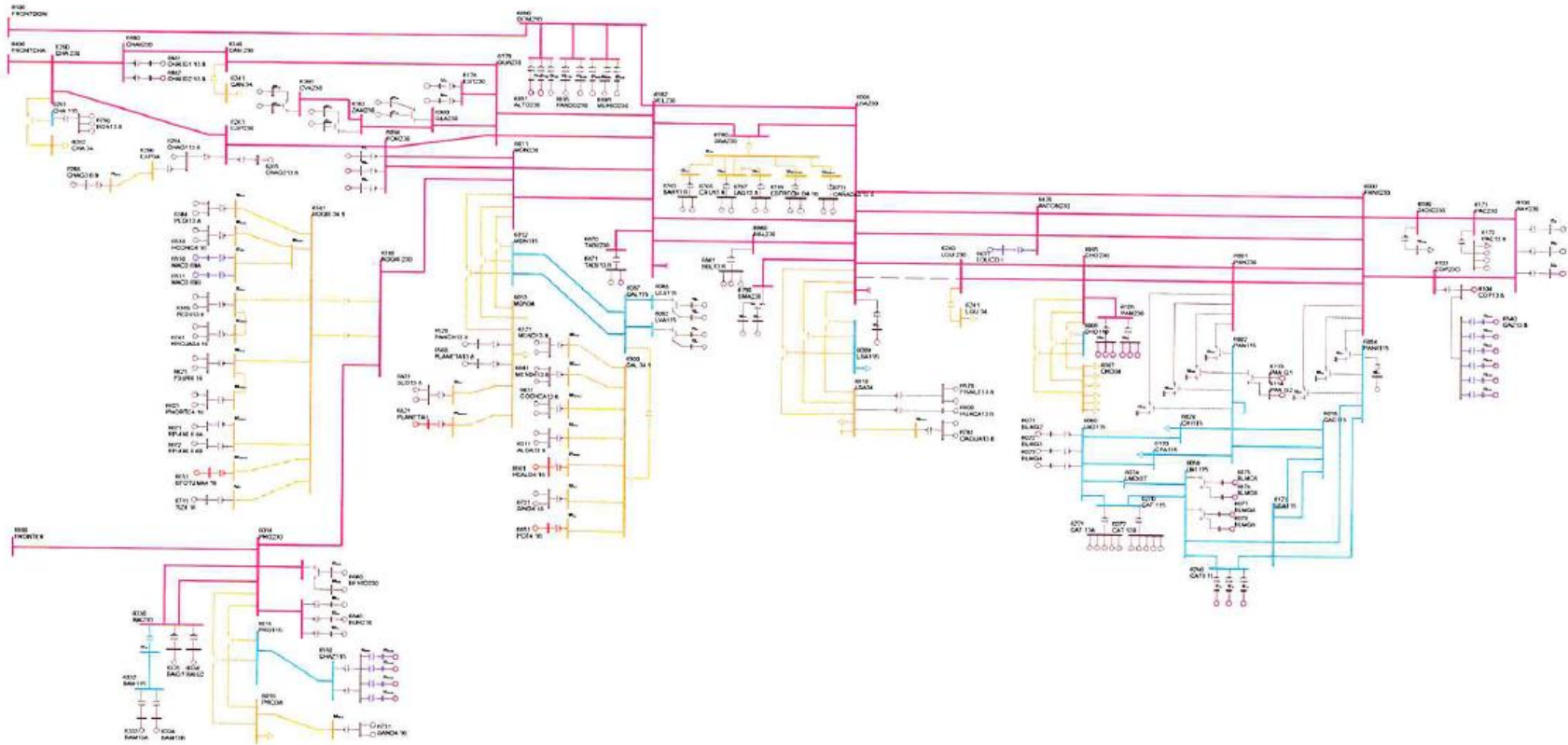
FROM BUS		X		TO BUS		X		RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E							SAT, MAY 14 2011		13:40		
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS				
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017							IN MW/MVAR				
X-- AREA --X	FROM	TO	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE- RATION	ASSIGNED TO AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE LINES	TO TIES + LOADS	NET INT	
1	1014.4	1179.4	0.0	0.0	0.0	0.0	21.7	-186.7	-186.7	-186.7	
GUATEMAL	208.1	340.6	222.0	0.0	0.0	608.6	255.7	-1.7	-1.7		
2	1137.6	1104.0	0.0	0.0	0.0	0.0	33.6	0.0	0.0	0.0	
SALVADOR	269.1	367.1	-182.0	0.0	0.0	243.4	297.1	30.3	30.3		
3	1234.5	1205.2	0.0	0.0	0.0	0.0	29.3	0.0	0.0	0.0	
HONDURAS	356.0	395.2	-20.4	0.0	0.0	475.5	420.7	35.9	35.9		
4	473.3	459.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0	0.0	
NICARAGU	-51.1	181.0	-13.0	0.0	0.0	294.2	142.4	-67.3	-67.3		
5	1517.5	1489.7	0.0	0.0	0.0	0.0	27.8	0.0	0.0	0.0	
COSTA RI	234.1	558.4	-226.9	0.0	0.0	557.4	411.1	48.9	48.9		
6	1846.3	1598.2	0.0	0.0	0.0	0.0	120.8	127.3	127.3	126.7	
PANAMA	612.0	280.0	-227.6	0.0	0.0	559.8	1173.3	-53.9	-53.9		
7	116.5	53.2	0.0	0.0	0.0	0.0	3.9	59.4	59.4	60.0	
ACANAL	18.5	9.3	-15.9	0.0	0.0	0.0	17.5	7.7	7.7		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	7340.0	7088.8	0.0	0.0	0.0	0.0	251.3	0.0	0.0	0.0	
TOTALS	1646.6	2131.6	-463.8	0.0	0.0	2739.0	2717.8	0.0	0.0		

Contingencia 2:– Las Guías Llano Sánchez





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT2
 AREA 6 [PANAMA] MACHINE SUMMARY:

MON, MAY 16 2011 13:35

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	2.4	15.0	0.0	1.0200	37.3	0.9981	47.0			62	6
6072		BLMG3		13.800	V3	38.0	2.4	15.0	0.0	1.0200	37.3	0.9981	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.3	15.0	0.0	1.0200	37.3	0.9981	47.0			62	6
6090		LESG1		13.800	E1	22.4	4.3	12.0	-5.0	1.0000	22.8	0.9822	27.0			64	6
6091		LESG2		13.800	E2	22.4	4.3	12.0	-5.0	1.0000	22.8	0.9822	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-2.2	12.0	-5.0	1.0000	26.1	0.9964	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-2.2	12.0	-5.0	1.0000	26.1	0.9964	27.0			64	6
6097		FORG1		13.800	F1	95.0	15.5	50.0	-50.0	1.0100	95.3	0.9870	111.0			64	6
6101		BAYG1		13.800	B1	73.9	16.1	30.0	-25.0	1.0200	74.2	0.9772	94.0			61	6
6102		BAYG2		13.800	B2	69.1	15.6	30.0	-25.0	1.0200	69.4	0.9754	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	11.3	29.0	-29.0	1.0000	58.1	0.9811	69.0			64	6
6177		ESTG2		13.800	E2	57.0	11.3	29.0	-29.0	1.0000	58.1	0.9811	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-2.8	52.4	-48.9	1.0000	99.6	0.9996	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	0.6	52.4	-48.9	1.0000	99.6	1.0000	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9749	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9749	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9920	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9920	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.5	10.0	-10.0	1.0000	26.6	0.9985	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.5	10.0	-10.0	1.0000	26.6	0.9985	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-8.8	14.0	-14.0	1.0000	43.0	0.9790	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-8.8	14.0	-14.0	1.0000	43.0	0.9790	49.0			64	6
6361		GLA13A		13.800	G1	12.1	0.4	7.8	-7.0	1.0000	12.1	0.9995	14.1			64	6
6362		GLA13B		13.800	G2	12.1	0.4	7.8	-7.0	1.0000	12.1	0.9995	14.1			64	6



6364	LOR13A	13.800	G1	16.1	-3.3	7.8	-7.0	1.0000	16.4	0.9789	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-3.3	7.8	-7.0	1.0000	16.4	0.9789	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-5.1	8.0	-8.0	1.0000	27.1	0.9820	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-5.1	8.0	-8.0	1.0000	27.1	0.9820	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9975	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9975	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0109	60.3	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0065	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0065	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9572	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.7	-0.6	2.5	-2.5	1.0000	4.8	0.9910	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.7	-0.6	2.5	-2.5	1.0000	4.8	0.9910	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9572	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9687	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9687	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9686	5.5	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.7	-0.4	2.5	-2.5	1.0000	4.8	0.9969	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.7	-0.4	2.5	-2.5	1.0000	4.8	0.9969	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.7	-1.2	2.5	-2.5	1.0000	4.9	0.9681	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.7	-1.2	2.5	-2.5	1.0000	4.9	0.9681	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.7	3.7	-3.7	1.0000	6.4	0.9937	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.7	3.7	-3.7	1.0000	6.4	0.9937	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.1	1.9	-1.9	1.0000	3.3	0.9996	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.1	1.9	-1.9	1.0000	3.3	0.9996	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.7	2.5	2.5	-2.5	1.0000	5.4	0.8852	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0225	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9961	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9961	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0050	27.6	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0050	27.6	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0072	23.3	0.9074	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	0.7	12.8	-8.3	1.0000	15.8	0.9991	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	0.7	12.8	-8.3	1.0000	15.8	0.9991	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	0.8	12.8	-8.3	1.0000	15.8	0.9986	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	0.8	12.8	-8.3	1.0000	15.8	0.9986	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	0.8	12.8	-8.3	1.0000	15.8	0.9986	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9996	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0209	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0209	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-1.8	2.2	-2.2	1.0000	4.6	0.9215	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-1.8	2.2	-2.2	1.0000	4.6	0.9215	5.0	64	6



6741	RROJAS4.16	4.2000	G1	4.1	-1.1	2.1	-2.1	1.0000	4.2	0.9678	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.1	2.1	-2.1	1.0000	4.2	0.9678	4.8	6
6750	BON13.8	13.800	G1	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9998	35.3	6
6750	BON13.8	13.800	G2	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9998	35.3	6
6750	BON13.8	13.800	G3	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9998	35.3	6
6763	BAR13.8	13.800	G1	7.2	3.3	4.0	-4.0	1.0000	7.9	0.9067	9.0	6
6763	BAR13.8	13.800	G2	7.2	3.3	4.0	-4.0	1.0000	7.9	0.9067	9.0	6
6765	CRU13.8	13.800	G1	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9418	5.8	6
6765	CRU13.8	13.800	G2	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9418	5.8	6
6767	LAG13.8	13.800	G1	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9680	5.8	6
6767	LAG13.8	13.800	G2	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9680	5.8	6
6769	ESTRECHO4.164.2000	G1	4.9	1.5	2.5	-2.5	1.0000	5.2	0.9575	5.6	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.5	2.5	-2.5	1.0000	5.2	0.9575	5.6	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.3	1.5	-1.5	1.0000	3.1	0.9118	3.3	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.3	1.5	-1.5	1.0000	3.1	0.9118	3.3	6
6781	OAGUA13.8	13.800	G1	3.1	-1.2	1.6	-1.6	0.9900	3.3	0.9289	3.6	6
6781	OAGUA13.8	13.800	G2	3.1	-1.2	1.6	-1.6	0.9900	3.3	0.9289	3.6	6
6791	SMA13A	13.800	G1	12.2	-3.4	6.2	-6.2	1.0000	12.6	0.9637	14.2	6
6792	SMA13B	13.800	G2	12.2	-3.4	6.2	-6.2	1.0000	12.6	0.9637	14.2	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0603	282.9	0.0000	300.0	6
6821	PLANETAI	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0030	4.0	0.8892	4.1	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9846	4.6	0.8892	4.7	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9846	4.6	0.8892	4.7	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9970	17.9	0.8892	18.5	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9970	17.9	0.8892	18.5	6
6843	BUR13C	13.800	G3	15.8	8.1	8.1	-8.1	0.9970	17.9	0.8892	18.5	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0225	4.0	0.8678	4.6	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9683	9.8	0.9059	10.1	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9683	9.8	0.9059	10.1	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9683	2.0	0.9058	2.1	6
6871	TABII13.8	13.800	G1	16.4	4.1	9.0	-9.0	1.0000	16.9	0.9702	20.5	6
6881	CHAIIG1	13.813.800	G1	101.6	8.9	52.3	-52.3	1.0100	101.0	0.9962	118.9	6
6900	SVC-LV	13.200	1	0.0	242.3	300.0	-225.0	1.0669	227.1	0.0000	300.0	6
SUBSYSTEM TOTALS				1851.1	676.4	1495.9	-1233.0				2995.8	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 16 2011 13:35

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL

BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT2

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
6127		MIR13B		12.000	G6	17.1	0.1	8.0	0.0	1.0100	16.9	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	21.5	7.5	11.0	0.0	1.0100	22.5	0.9443	29.4			65	7

6129	MIR13D	13.800	G4	26.6	9.3	15.0	0.0	1.0100	28.0	0.9437	44.1
6130	MIR13F	13.800	G5	17.1	0.6	8.0	0.0	1.0100	16.9	0.9994	27.7
6134	MAD6A	6.9000	G1	11.4	0.1	6.0	-6.0	1.0100	11.3	0.9999	13.0
6135	MAD6B	6.9000	G2	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9998	13.0
6136	MAD6C	6.9000	G3	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9998	13.0
SUBSYSTEM TOTALS				116.5	18.2	60.0	-18.0				167.9



1434

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1437

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 16 2011 13:35
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT2
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6008	LSA230	230.00*	6	6240	LGU 230	230.00	6	3C	357.9	350.0	102.3	450.0	79.5	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	59.9	62.5	95.8	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.8	54.0	97.8	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 16 2011 13:35
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT2
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

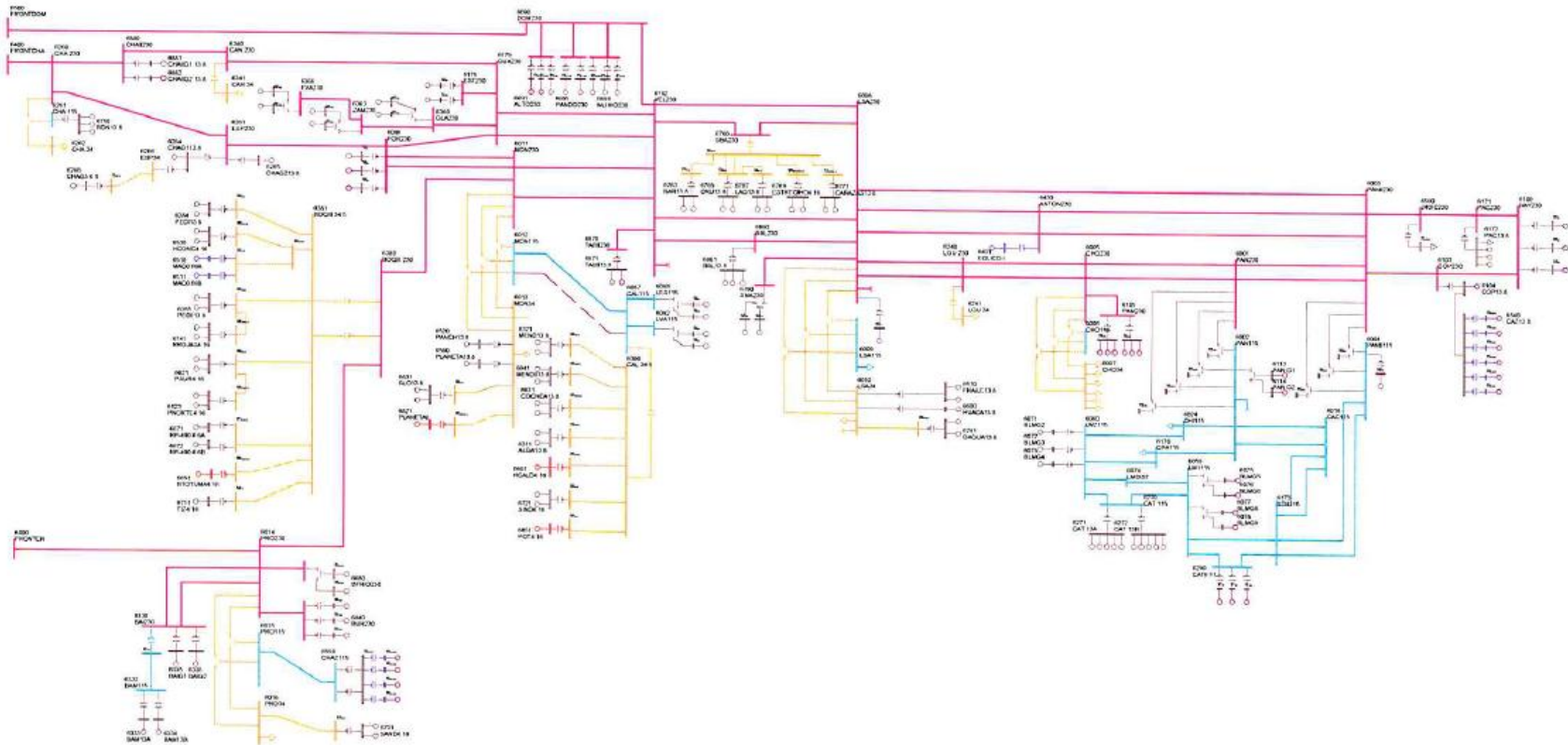
X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						MON, MAY 16 2011 13:38		AREA TOTALS				
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT2						
X--	AREA	--X	FROM	TO	TO	TO	TO	-NET INTERCHANGE-		DESIRED		
			GENERATION	AT AREA BUSES	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	TO TIE LINES	TO TIES + LOADS	NET INT
	1		1014.4	1179.4	0.0	0.0	0.0	0.0	21.7	-186.7	-186.7	-186.7
	GUATEMAL		208.1	340.6	222.0	0.0	0.0	608.6	255.7	-1.7	-1.7	
	2		1137.6	1104.0	0.0	0.0	0.0	0.0	33.6	0.0	0.0	0.0
	SALVADOR		269.1	367.1	-182.0	0.0	0.0	243.4	297.1	30.3	30.3	
	3		1234.5	1205.2	0.0	0.0	0.0	0.0	29.3	0.0	0.0	0.0
	HONDURAS		356.0	395.2	-20.4	0.0	0.0	475.5	420.7	36.0	36.0	
	4		473.3	459.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0	0.0
	NICARAGU		-51.1	181.0	-13.0	0.0	0.0	294.2	142.4	-67.3	-67.3	
	5		1517.5	1489.7	0.0	0.0	0.0	0.0	27.8	0.0	0.0	0.0
	COSTA RI		234.8	558.4	-226.9	0.0	0.0	557.3	411.2	49.5	49.5	
	6		1851.1	1598.2	0.0	0.0	0.0	0.0	125.6	127.3	127.3	126.7
	PANAMA		676.4	280.0	-228.1	0.0	0.0	546.2	1224.9	-54.2	-54.2	
	7		116.5	53.2	0.0	0.0	0.0	0.0	3.9	59.4	59.4	60.0
	ACANAL		18.2	9.3	-15.9	0.0	0.0	0.0	17.4	7.4	7.4	
	10		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MEXICO		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	COLUMN		7344.9	7088.8	0.0	0.0	0.0	0.0	256.1	0.0	0.0	0.0
	TOTALS		1711.5	2131.6	-464.3	0.0	0.0	2725.3	2769.5	0.0	0.0	

Contingencia 13:– Mata de Nance – Caldera





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 16 2011 13:43
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT13

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
6071	BLMG2	13.800	V2	38.0	2.9	15.0	0.0	1.0200	37.4	0.9972	47.0			62	6
6072	BLMG3	13.800	V3	38.0	2.9	15.0	0.0	1.0200	37.4	0.9972	47.0			62	6
6073	BLMG4	13.800	V4	38.0	2.9	15.0	0.0	1.0200	37.4	0.9972	47.0			62	6
6090	LESG1	13.800	E1	22.4	4.8	12.0	-5.0	1.0000	22.9	0.9776	27.0			64	6
6091	LESG2	13.800	E2	22.4	4.8	12.0	-5.0	1.0000	22.9	0.9776	27.0			64	6
6094	LVAG1	13.800	L1	26.0	-1.6	12.0	-5.0	1.0000	26.1	0.9981	27.0			64	6
6095	LVAG2	13.800	L2	26.0	-1.6	12.0	-5.0	1.0000	26.1	0.9981	27.0			64	6
6097	FORG1	13.800	F1	95.0	15.4	50.0	-50.0	1.0100	95.3	0.9871	111.0			64	6
6101	BAYG1	13.800	B1	71.0	15.8	30.0	-25.0	1.0200	71.3	0.9761	94.0			61	6
6102	BAYG2	13.800	B2	69.1	15.7	30.0	-25.0	1.0200	69.5	0.9753	94.0			61	6
6172	PAC13.8	13.800	P1	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172	PAC13.8	13.800	P2	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172	PAC13.8	13.800	P3	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6176	ESTG1	13.800	E1	57.0	11.2	29.0	-29.0	1.0000	58.1	0.9813	69.0			64	6
6177	ESTG2	13.800	E2	57.0	11.2	29.0	-29.0	1.0000	58.1	0.9813	69.0			64	6
6264	CHAG113.8	13.800	G1	99.6	-2.8	52.4	-48.9	1.0000	99.6	0.9996	116.5			64	6
6265	CHAG213.8	13.800	G2	99.6	0.6	52.4	-48.9	1.0000	99.6	1.0000	116.5			64	6
6268	CHAG3 6.9	6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6271	CAT 13A	13.800	G1	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6271	CAT 13A	13.800	G2	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6271	CAT 13A	13.800	G3	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6271	CAT 13A	13.800	G4	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6271	CAT 13A	13.800	G5	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6272	CAT 13B	13.800	G0	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6272	CAT 13B	13.800	G6	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6272	CAT 13B	13.800	G7	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6272	CAT 13B	13.800	G8	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6272	CAT 13B	13.800	G9	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9972	10.9			62	6
6311	ALGA13.8	13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9742	5.7			64	6
6311	ALGA13.8	13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9742	5.7			64	6
6321	MEND13.8	13.800	M1	8.0	4.2	4.2	-4.2	0.9917	9.1	0.8865	10.4			64	6
6321	MEND13.8	13.800	M2	8.0	4.2	4.2	-4.2	0.9917	9.1	0.8865	10.4			64	6
6333	BAM13A	13.800	G1	26.6	1.5	10.0	-10.0	1.0000	26.6	0.9985	30.0			64	6
6334	BAM13B	13.800	G2	26.6	1.5	10.0	-10.0	1.0000	26.6	0.9985	30.0			64	6
6335	BAIG1	13.800	G1	42.1	-8.7	14.0	-14.0	1.0000	43.0	0.9791	49.0			64	6
6336	BAIG2	13.800	G2	42.1	-8.7	14.0	-14.0	1.0000	43.0	0.9791	49.0			64	6
6361	GLA13A	13.800	G1	12.1	0.1	7.8	-7.0	1.0000	12.1	1.0000	14.1			64	6



6362	GLA13B	13.800	G2	12.1	0.1	7.8	-7.0	1.0000	12.1	1.0000	14.1	64	6
6364	LOR13A	13.800	G1	16.1	-3.6	7.8	-7.0	1.0000	16.5	0.9756	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-3.6	7.8	-7.0	1.0000	16.5	0.9756	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-5.4	8.0	-8.0	1.0000	27.1	0.9802	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-5.4	8.0	-8.0	1.0000	27.1	0.9802	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9974	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9974	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0163	59.9	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0064	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0064	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9535	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.7	-0.6	2.5	-2.5	1.0000	4.8	0.9914	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.7	-0.6	2.5	-2.5	1.0000	4.8	0.9914	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9535	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9730	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9730	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9729	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.7	-0.4	2.5	-2.5	1.0000	4.8	0.9972	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.7	-0.4	2.5	-2.5	1.0000	4.8	0.9972	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.7	-1.2	2.5	-2.5	1.0000	4.9	0.9686	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.7	-1.2	2.5	-2.5	1.0000	4.9	0.9686	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9964	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9964	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.3	1.9	-1.9	1.0000	3.3	0.9965	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.3	1.9	-1.9	1.0000	3.3	0.9965	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.7	2.5	2.5	-2.5	1.0000	5.4	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0222	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9961	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9961	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0050	27.6	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0050	27.6	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0074	23.3	0.9074	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	0.4	12.8	-8.3	1.0000	15.8	0.9996	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	0.4	12.8	-8.3	1.0000	15.8	0.9996	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	0.6	12.8	-8.3	1.0000	15.8	0.9992	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	0.6	12.8	-8.3	1.0000	15.8	0.9992	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	0.6	12.8	-8.3	1.0000	15.8	0.9992	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9996	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0206	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0206	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-1.8	2.2	-2.2	1.0000	4.6	0.9222	5.0	64	6



6731	SAND4.16	4.2000	G2	4.3	-1.8	2.2	-2.2	1.0000	4.6	0.9222	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.1	2.1	-2.1	1.0000	4.2	0.9681	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.1	2.1	-2.1	1.0000	4.2	0.9681	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9998	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9998	35.3	64	6
6750	BON13.8	13.800	G3	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9998	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	3.2	4.0	-4.0	1.0000	7.9	0.9138	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	3.2	4.0	-4.0	1.0000	7.9	0.9138	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9473	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9473	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9718	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9718	5.8	63	6
6769	ESTRECHO4.164.2000	13.800	G1	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9619	5.6	63	6
6769	ESTRECHO4.164.2000	13.800	G2	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9619	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.8	1.2	1.5	-1.5	1.0000	3.1	0.9209	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.2	1.5	-1.5	1.0000	3.1	0.9209	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	-1.6	1.6	-1.6	0.9938	3.5	0.8897	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	-1.6	1.6	-1.6	0.9938	3.5	0.8897	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-6.2	6.2	-6.2	1.0011	13.7	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-6.2	6.2	-6.2	1.0011	13.7	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0654	281.6	0.0000	300.0	63	6
6821	PLANETAI I	4.1600	G1	3.5	-1.0	1.8	-1.8	1.0000	3.7	0.9635	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9808	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9808	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9969	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9969	17.9	0.8892	18.5	64	6
6843	BUR13C	13.800	G3	15.8	8.1	8.1	-8.1	0.9969	17.9	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0221	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9707	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9707	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9707	2.0	0.9058	2.1	64	6
6871	TABII13.8	13.800	G1	16.4	3.2	9.0	-9.0	1.0000	16.7	0.9819	20.5	64	6
6881	CHAIIG1	13.813.800	G1	101.6	8.8	52.3	-52.3	1.0100	101.0	0.9963	118.9	64	6
6900	SVC-LV	13.200	1	0.0	194.0	300.0	-225.0	1.0528	184.2	0.0000	300.0	61	6
SUBSYSTEM TOTALS				1848.2	623.0	1495.9	-1233.0				2995.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 16 2011 13:43

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT13

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
6127		MIR13B		12.000	G6	17.1	0.2	8.0	0.0	1.0100	16.9	0.9999	27.7			65	7
6128		MIR13C		12.000	G3	21.5	7.5	11.0	0.0	1.0100	22.6	0.9436	29.4			65	7

6129 MIR13D	13.800	G4	26.6	9.4	15.0	0.0	1.0100	28.0	0.9431	44.1
6130 MIR13F	13.800	G5	17.1	0.7	8.0	0.0	1.0100	16.9	0.9992	27.7
6134 MAD6A	6.9000	G1	11.4	0.2	6.0	-6.0	1.0100	11.3	0.9999	13.0
6135 MAD6B	6.9000	G2	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0
6136 MAD6C	6.9000	G3	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0
SUBSYSTEM TOTALS			116.5	18.5	60.0	-18.0				167.9



1443

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 16 2011 13:43
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT13
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6012	MDN115	115.00	6	6087	CAL115	115.00*	6	15	154.9	93.0	166.6	175.0	88.5	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	59.8	62.5	95.6	--	--	--	--
6092	LVA115	115.00*	6	3WNTDR	TRAF01	WND 1	6	T1	52.6	54.0	97.4	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 16 2011 13:43
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT13
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

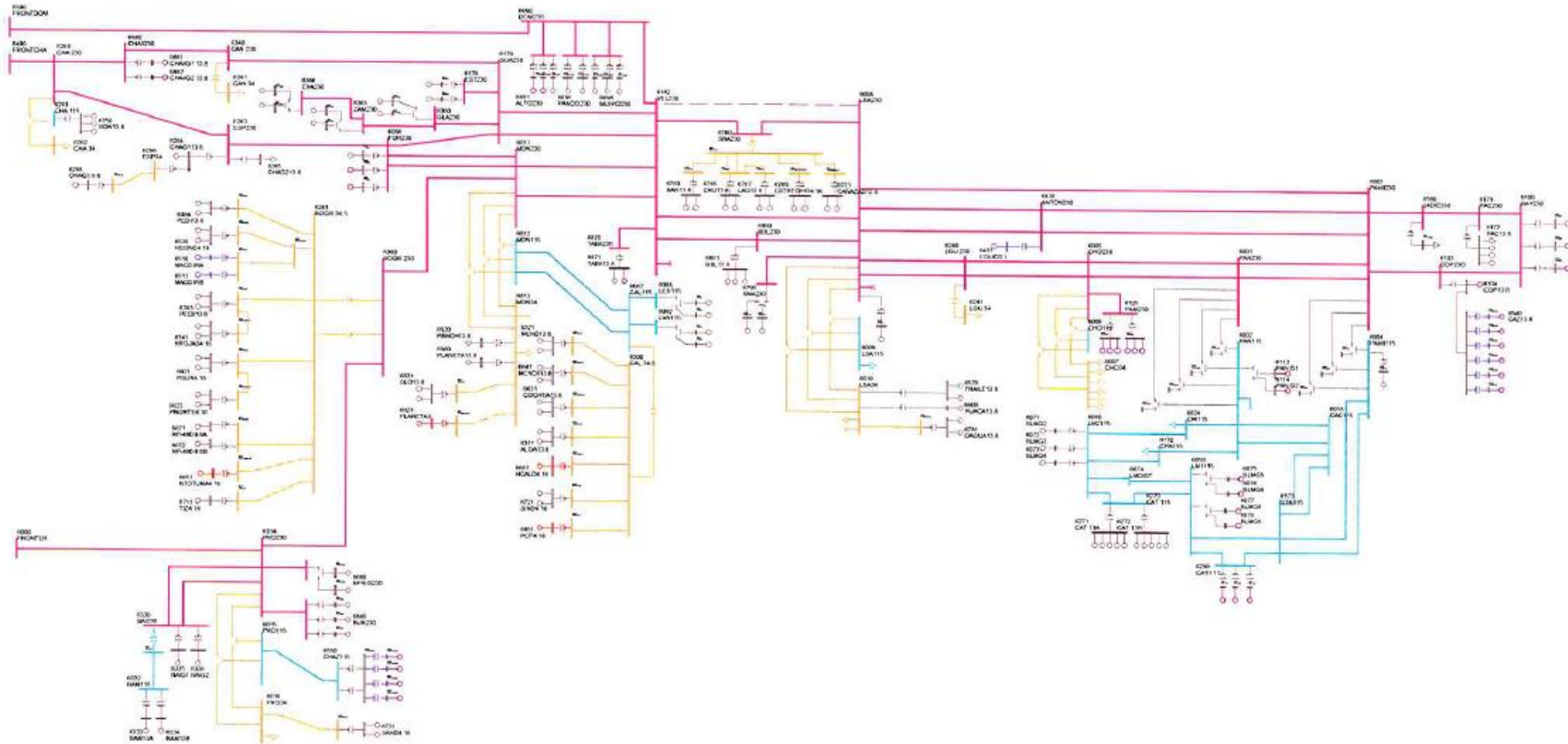
FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						MON, MAY 16 2011 13:43		AREA TOTALS			
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT13					
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENERATION	AT AREA BUSES	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT	
								LINES	+ LOADS		
1	1014.4	1179.4	0.0	0.0	0.0	0.0	21.7	-186.7	-186.7	-186.7	
GUATEMAL	208.1	340.6	222.0	0.0	0.0	608.6	255.7	-1.7	-1.7		
2	1137.6	1104.0	0.0	0.0	0.0	0.0	33.6	0.0	0.0	0.0	
SALVADOR	269.1	367.1	-182.0	0.0	0.0	243.4	297.1	30.3	30.3		
3	1234.5	1205.2	0.0	0.0	0.0	0.0	29.3	0.0	0.0	0.0	
HONDURAS	356.0	395.2	-20.4	0.0	0.0	475.5	420.7	36.0	36.0		
4	473.3	459.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0	0.0	
NICARAGU	-51.1	181.0	-13.0	0.0	0.0	294.2	142.4	-67.3	-67.3		
5	1517.5	1489.7	0.0	0.0	0.0	0.0	27.8	0.0	0.0	0.0	
COSTA RI	234.6	558.4	-226.9	0.0	0.0	557.4	411.2	49.3	49.3		
6	1848.2	1598.2	0.0	0.0	0.0	0.0	122.7	127.3	127.3	126.7	
PANAMA	623.0	280.0	-227.6	0.0	0.0	558.4	1183.3	-54.3	-54.3		
7	116.5	53.2	0.0	0.0	0.0	0.0	3.9	59.4	59.4	60.0	
ACANAL	18.5	9.3	-15.9	0.0	0.0	0.0	17.5	7.7	7.7		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	7342.0	7088.8	0.0	0.0	0.0	0.0	253.2	0.0	0.0	0.0	
TOTALS	1658.2	2131.6	-463.8	0.0	0.0	2737.5	2727.9	0.0	0.0		

Contingencia 21:– Llano Sánchez – Veladero





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT21
 AREA 6 [PANAMA] MACHINE SUMMARY:

MON, MAY 16 2011 14:25

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	2.4	15.0	0.0	1.0200	37.3	0.9981	47.0			62	6
6072		BLMG3		13.800	V3	38.0	2.4	15.0	0.0	1.0200	37.3	0.9981	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.3	15.0	0.0	1.0200	37.3	0.9981	47.0			62	6
6090		LESG1		13.800	E1	22.4	4.9	12.0	-5.0	1.0000	23.0	0.9766	27.0			64	6
6091		LESG2		13.800	E2	22.4	4.9	12.0	-5.0	1.0000	23.0	0.9766	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-1.5	12.0	-5.0	1.0000	26.1	0.9984	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-1.5	12.0	-5.0	1.0000	26.1	0.9984	27.0			64	6
6097		FORG1		13.800	F1	95.0	19.8	50.0	-50.0	1.0100	96.1	0.9790	111.0			64	6
6101		BAYG1		13.800	B1	79.6	16.4	30.0	-25.0	1.0200	79.7	0.9794	94.0			61	6
6102		BAYG2		13.800	B2	79.6	16.4	30.0	-25.0	1.0200	79.7	0.9794	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	12.1	29.0	-29.0	1.0000	58.3	0.9782	69.0			64	6
6177		ESTG2		13.800	E2	57.0	12.1	29.0	-29.0	1.0000	58.3	0.9782	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-1.4	52.4	-48.9	1.0000	99.6	0.9999	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	2.0	52.4	-48.9	1.0000	99.6	0.9998	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9980	10.9			62	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9740	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9740	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9917	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9917	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.6	10.0	-10.0	1.0000	26.6	0.9981	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.6	10.0	-10.0	1.0000	26.6	0.9981	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-7.4	14.0	-14.0	1.0000	42.8	0.9848	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-7.4	14.0	-14.0	1.0000	42.8	0.9848	49.0			64	6
6361		GLA13A		13.800	G1	12.1	3.4	7.8	-7.0	1.0000	12.5	0.9618	14.1			64	6
6362		GLA13B		13.800	G2	12.1	3.4	7.8	-7.0	1.0000	12.5	0.9618	14.1			64	6



6364	LOR13A	13.800	G1	16.1	-0.6	7.8	-7.0	1.0000	16.1	0.9992	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-0.6	7.8	-7.0	1.0000	16.1	0.9992	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-2.5	8.0	-8.0	1.0000	26.7	0.9954	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-2.5	8.0	-8.0	1.0000	26.7	0.9954	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.3	4.9	-4.9	1.0000	9.5	0.9995	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.3	4.9	-4.9	1.0000	9.5	0.9995	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.6	3.2	-3.6	1.0000	6.2	0.9954	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.6	3.2	-3.6	1.0000	6.2	0.9954	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0089	60.4	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0056	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0056	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9539	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.7	-0.4	2.5	-2.5	1.0000	4.8	0.9971	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.7	-0.4	2.5	-2.5	1.0000	4.8	0.9971	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9539	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9650	3.0	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9650	3.0	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9650	5.5	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.7	-0.1	2.5	-2.5	1.0000	4.8	0.9999	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.7	-0.1	2.5	-2.5	1.0000	4.8	0.9999	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.7	-1.0	2.5	-2.5	1.0000	4.9	0.9780	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.7	-1.0	2.5	-2.5	1.0000	4.9	0.9780	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9968	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9968	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.3	1.9	-1.9	1.0000	3.3	0.9954	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.3	1.9	-1.9	1.0000	3.3	0.9954	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.7	2.5	2.5	-2.5	0.9991	5.4	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0221	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9958	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9958	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0029	27.7	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0029	27.7	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0058	23.3	0.9074	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	2.4	12.8	-8.3	1.0000	16.0	0.9886	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	2.4	12.8	-8.3	1.0000	16.0	0.9886	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	2.6	12.8	-8.3	1.0000	16.0	0.9868	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	2.6	12.8	-8.3	1.0000	16.0	0.9868	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	2.6	12.8	-8.3	1.0000	16.0	0.9868	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9988	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0205	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0205	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-1.4	2.2	-2.2	1.0000	4.5	0.9477	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-1.4	2.2	-2.2	1.0000	4.5	0.9477	5.0	64	6



6741	RROJAS4.16	4.2000	G1	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9750	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9750	4.8	6
6750	BON13.8	13.800	G1	9.9	-0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	6
6750	BON13.8	13.800	G2	9.9	-0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	6
6750	BON13.8	13.800	G3	9.9	-0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	6
6763	BAR13.8	13.800	G1	7.2	4.0	4.0	-4.0	0.9969	8.2	0.8757	9.0	6
6763	BAR13.8	13.800	G2	7.2	4.0	4.0	-4.0	0.9969	8.2	0.8757	9.0	6
6765	CRU13.8	13.800	G1	4.6	2.2	2.6	-2.6	1.0000	5.1	0.9010	5.8	6
6765	CRU13.8	13.800	G2	4.6	2.2	2.6	-2.6	1.0000	5.1	0.9010	5.8	6
6767	LAG13.8	13.800	G1	4.7	1.7	2.6	-2.6	1.0000	5.0	0.9376	5.8	6
6767	LAG13.8	13.800	G2	4.7	1.7	2.6	-2.6	1.0000	5.0	0.9376	5.8	6
6769	ESTRECHO4.164.2000	G1	4.9	2.0	2.5	-2.5	1.0000	5.3	0.9240	5.6	6	
6769	ESTRECHO4.164.2000	G2	4.9	2.0	2.5	-2.5	1.0000	5.3	0.9240	5.6	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.5	1.5	-1.5	0.9947	3.2	0.8885	3.3	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.5	1.5	-1.5	0.9947	3.2	0.8885	3.3	6
6781	OAGUA13.8	13.800	G1	3.1	0.9	1.6	-1.6	0.9900	3.2	0.9582	3.6	6
6781	OAGUA13.8	13.800	G2	3.1	0.9	1.6	-1.6	0.9900	3.2	0.9582	3.6	6
6791	SMA13A	13.800	G1	12.2	3.1	6.2	-6.2	1.0000	12.5	0.9691	14.2	6
6792	SMA13B	13.800	G2	12.2	3.1	6.2	-6.2	1.0000	12.5	0.9691	14.2	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0514	285.3	0.0000	300.0	6
6821	PLANETAI	4.1600	G1	3.5	-1.3	1.8	-1.8	1.0000	3.8	0.9361	4.1	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9812	4.6	0.8892	4.7	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9812	4.6	0.8892	4.7	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9949	17.9	0.8892	18.5	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9949	17.9	0.8892	18.5	6
6843	BUR13C	13.800	G3	15.8	8.1	8.1	-8.1	0.9949	17.9	0.8892	18.5	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0221	4.0	0.8678	4.6	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9534	10.0	0.9059	10.1	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9534	10.0	0.9059	10.1	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9534	2.1	0.9058	2.1	6
6871	TABII13.8	13.800	G1	16.4	9.0	9.0	-9.0	0.9985	18.7	0.8761	20.5	6
6881	CHAIIG1	13.813.800	G1	101.6	10.4	52.3	-52.3	1.0100	101.2	0.9948	118.9	6
6900	SVC-LV	13.200	1	0.0	242.4	300.0	-225.0	1.0669	227.2	0.0000	300.0	6
SUBSYSTEM TOTALS				1867.2	751.4	1495.9	-1233.0				2995.8	

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 16 2011 14:25
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT21
 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
6127		MIR13B		12.000	G6	17.1	0.1	8.0	0.0	1.0100	16.9	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	21.5	7.5	11.0	0.0	1.0100	22.5	0.9442	29.4			65	7



6129	MIR13D	13.800	G4	26.6	9.3	15.0	0.0	1.0100	28.0	0.9437	44.1	7
6130	MIR13F	13.800	G5	17.1	0.6	8.0	0.0	1.0100	16.9	0.9993	27.7	7
6134	MAD6A	6.9000	G1	11.4	0.1	6.0	-6.0	1.0100	11.3	0.9999	13.0	7
6135	MAD6B	6.9000	G2	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9998	13.0	7
6136	MAD6C	6.9000	G3	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9998	13.0	7
SUBSYSTEM TOTALS				116.5	18.2	60.0	-18.0				167.9	
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E												
MON, MAY 16 2011 14:25												
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL												
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT21												

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0139	233.19	6003		PANII230		230.00	6	1.0100	232.30
6014		PRO230		230.00	6	1.0120	232.77	6100		BAY230		230.00	6	1.0295	236.79
6103		COP230		230.00	6	1.0134	233.07	6171		PAC230		230.00	6	1.0189	234.36
6260		CHA 230		230.00	6	1.0125	232.87	6263		ESP230		230.00	6	1.0120	232.76
6330		BAI230		230.00	6	1.0116	232.68	6363		ZAM230		230.00	6	1.0011	230.26
6366		EVA230		230.00	6	1.0043	230.98	6380		BOQIII 230		230.00	6	1.0020	230.46
6400		FRONTCHA		230.00	6	1.0136	233.14	6430		ANTON230		230.00	6	1.0099	232.28
6500		FRONTDOM		230.00	6	1.0216	234.96	6590		24DIC230		230.00	6	1.0141	233.23
6680		BFRIO230		230.00	6	1.0147	233.39	6690		DOM230		230.00	6	1.0220	235.07
6691		ALTO230		230.00	6	1.0237	235.45	6695		PANDO230		230.00	6	1.0237	235.46
6698		MLIRIO230		230.00	6	1.0236	235.44	6840		BUR230		230.00	6	1.0154	233.55
6880		CHAI230		230.00	6	1.0112	232.57								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9944	228.71	6005		CHO230		230.00	6	0.9787	225.09
6008		LSA230		230.00	6	0.9943	228.69	6011		MDN230		230.00	6	0.9908	227.89
6096		FOR230		230.00	6	0.9938	228.58	6105		PAM230		230.00	6	0.9787	225.09
6178		EST230		230.00	6	0.9894	227.56	6179		GUA230		230.00	6	0.9895	227.58
6182		VEL230		230.00	6	0.9775	224.83	6240		LGU 230		230.00	6	0.9817	225.79
6340		CAN 230		230.00	6	0.9973	229.38	6360		GLA230		230.00	6	0.9953	228.93
6760		SBA230		230.00	6	0.9740	224.01	6790		SMA230		230.00	6	0.9958	229.04
6860		BBL230		230.00	6	0.9757	224.41	6870		TABII230		230.00	6	0.9791	225.18



1453

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 16 2011 14:25
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT21

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0247	117.84	6004		PANII115		115.00	6	1.0215	117.47
6009		LSA115		115.00	6	1.0091	116.05	6012		MDN115		115.00	6	1.0010	115.12
6015		PRO115		115.00	6	1.0078	115.89	6018		CAC115		115.00	6	1.0242	117.79
6019		CVI115A		115.00	6	1.0143	116.65	6024		CHI115		115.00	6	1.0122	116.41
6027		LOC115A		115.00	6	1.0154	116.78	6032		MAR115A		115.00	6	1.0127	116.46
6036		SMA115		115.00	6	1.0236	117.71	6040		SFR115		115.00	6	1.0118	116.35
6047		CLA115		115.00	6	1.0072	115.82	6055		MOS115B		115.00	6	1.0219	117.52
6057		TOC115		115.00	6	1.0187	117.15	6059		LM1115		115.00	6	1.0180	117.07
6060		LM2115		115.00	6	1.0182	117.09	6066		FFIELD		115.00	6	1.0113	116.30
6074		LMDIST		115.00	6	1.0181	117.08	6087		CAL115		115.00	6	1.0082	115.94
6088		LES115		115.00	6	1.0113	116.30	6092		LVA115		115.00	6	1.0084	115.97
6123		MIR115		115.00	7	1.0342	118.93	6170		CPA115		115.00	6	1.0194	117.23
6173		STR115		115.00	6	1.0194	117.24	6174		PM115-1A		115.00	6	1.0224	117.57
6175		PM115-2A		115.00	6	1.0224	117.57	6210		TIN115		115.00	6	1.0204	117.35
6211		PM115-9		115.00	6	1.0211	117.43	6230		CBA115		115.00	6	1.0138	116.58
6261		CHA 115		115.00	6	1.0050	115.57	6270		CAT 115		115.00	6	1.0183	117.11
6280		GIR 115		115.00	6	1.0194	117.23	6290		CATII 11		115.00	6	1.0182	117.09
6332		BAM115		115.00	6	1.0033	115.38	6350		PM115-8		115.00	6	1.0187	117.15
6550		CHAZ115		115.00	6	1.0078	115.89	6580		LBO115		115.00	6	1.0138	116.59

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)
6006		CHO115		115.00	6	0.9614	110.56	6331		BAI115		115.00	6	0.9996	114.96



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 16 2011 14:25
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT21
 OUTPUT FOR AREA 6 [PANAMA]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6008	LSA230	230.00	6	6760	SBA230	230.00*	6	4A	381.5	314.0	121.5	450.0	84.8	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	59.7	62.5	95.6	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.6	54.0	97.4	--	--	--	--
6182	VEL230	230.00*	6	6760	SBA230	230.00	6	4B	334.7	314.0	106.6	450.0	74.4	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E MON, MAY 16 2011 14:25
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT21
 OUTPUT FOR AREA 7 [ACANAL]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

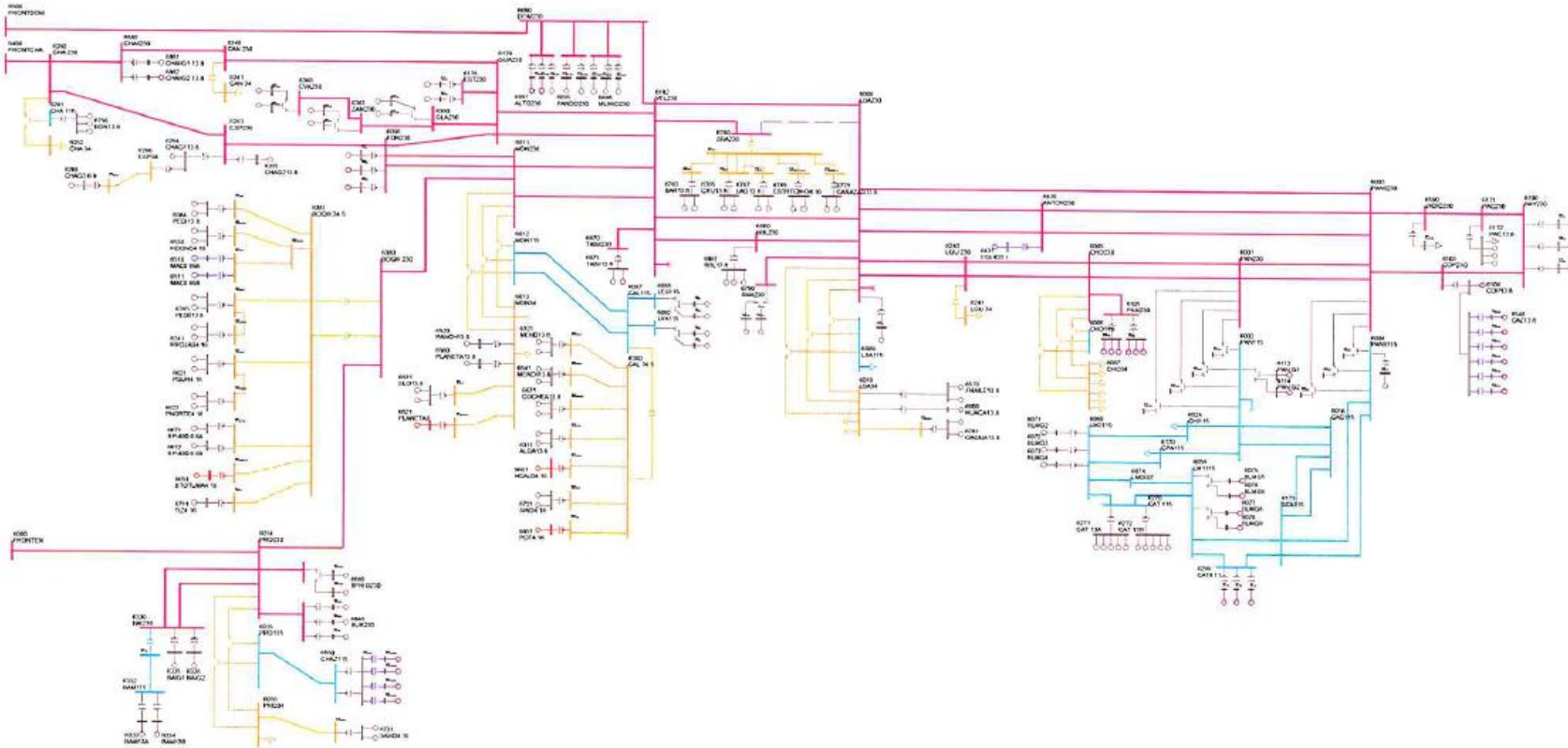
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						MON, MAY 16 2011 14:25		AREA TOTALS			
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT21					
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT	
	RATION	BUSES						LINES	+ LOADS		
1	1014.4	1179.4	0.0	0.0	0.0	0.0	21.7	-186.7	-186.7	-186.7	
GUATEMAL	208.1	340.6	222.0	0.0	0.0	608.6	255.7	-1.7	-1.7		
2	1137.6	1104.0	0.0	0.0	0.0	0.0	33.6	0.0	0.0	0.0	
SALVADOR	269.1	367.1	-182.0	0.0	0.0	243.4	297.1	30.4	30.4		
3	1234.5	1205.2	0.0	0.0	0.0	0.0	29.3	0.0	0.0	0.0	
HONDURAS	356.0	395.2	-20.4	0.0	0.0	475.5	420.7	36.0	36.0		
4	473.3	459.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0	0.0	
NICARAGU	-51.0	181.0	-13.0	0.0	0.0	294.2	142.4	-67.2	-67.2		
5	1517.5	1489.7	0.0	0.0	0.0	0.0	27.8	0.0	0.0	0.0	
COSTA RI	238.4	558.4	-226.8	0.0	0.0	557.0	411.5	52.3	52.3		
6	1867.2	1598.2	0.0	0.0	0.0	0.0	141.7	127.4	127.4	126.7	
PANAMA	751.4	280.0	-228.1	0.0	0.0	531.8	1288.4	-57.1	-57.1		
7	116.5	53.2	0.0	0.0	0.0	0.0	3.9	59.4	59.4	60.0	
ACANAL	18.2	9.3	-15.9	0.0	0.0	0.0	17.4	7.4	7.4		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	7361.0	7088.8	0.0	0.0	0.0	0.0	272.2	0.0	0.0	0.0	
TOTALS	1790.3	2131.6	-464.2	0.0	0.0	2710.5	2833.4	0.0	0.0		



Contingencia 22: Llano Sánchez – San Bartolo





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT22
 AREA 6 [PANAMA] MACHINE SUMMARY:

WED, MAY 18 2011 8:51

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	2.3	15.0	0.0	1.0200	37.3	0.9982	47.0			62	6
6072		BLMG3		13.800	V3	38.0	2.3	15.0	0.0	1.0200	37.3	0.9982	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.3	15.0	0.0	1.0200	37.3	0.9982	47.0			62	6
6090		LESG1		13.800	E1	22.4	5.0	12.0	-5.0	1.0000	23.0	0.9763	27.0			64	6
6091		LESG2		13.800	E2	22.4	5.0	12.0	-5.0	1.0000	23.0	0.9763	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-1.4	12.0	-5.0	1.0000	26.1	0.9985	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-1.4	12.0	-5.0	1.0000	26.1	0.9985	27.0			64	6
6097		FORG1		13.800	F1	95.0	20.0	50.0	-50.0	1.0100	96.1	0.9785	111.0			64	6
6101		BAYG1		13.800	B1	80.8	16.5	30.0	-25.0	1.0200	80.9	0.9798	94.0			61	6
6102		BAYG2		13.800	B2	80.8	16.5	30.0	-25.0	1.0200	80.9	0.9798	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	12.1	29.0	-29.0	1.0000	58.3	0.9781	69.0			64	6
6177		ESTG2		13.800	E2	57.0	12.1	29.0	-29.0	1.0000	58.3	0.9781	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-1.3	52.4	-48.9	1.0000	99.6	0.9999	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	2.1	52.4	-48.9	1.0000	99.6	0.9998	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9981	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9981	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9981	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9981	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9981	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9981	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9981	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9981	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9981	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9981	10.9			62	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9740	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9740	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9916	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9916	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.6	10.0	-10.0	1.0000	26.7	0.9981	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.6	10.0	-10.0	1.0000	26.7	0.9981	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-7.4	14.0	-14.0	1.0000	42.8	0.9851	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-7.4	14.0	-14.0	1.0000	42.8	0.9851	49.0			64	6
6361		GLA13A		13.800	G1	12.1	3.6	7.8	-7.0	1.0000	12.6	0.9581	14.1			64	6
6362		GLA13B		13.800	G2	12.1	3.6	7.8	-7.0	1.0000	12.6	0.9581	14.1			64	6



6364	LOR13A	13.800	G1	16.1	-0.5	7.8	-7.0	1.0000	16.1	0.9996	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-0.5	7.8	-7.0	1.0000	16.1	0.9996	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-2.4	8.0	-8.0	1.0000	26.7	0.9960	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-2.4	8.0	-8.0	1.0000	26.7	0.9960	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.3	4.9	-4.9	1.0000	9.5	0.9995	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.3	4.9	-4.9	1.0000	9.5	0.9995	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.6	3.2	-3.6	1.0000	6.2	0.9953	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.6	3.2	-3.6	1.0000	6.2	0.9953	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0079	60.4	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0056	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0056	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9538	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.7	-0.3	2.5	-2.5	1.0000	4.8	0.9974	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.7	-0.3	2.5	-2.5	1.0000	4.8	0.9974	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9538	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9643	3.0	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9643	3.0	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9642	5.5	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.7	-0.1	2.5	-2.5	1.0000	4.8	0.9999	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.7	-0.1	2.5	-2.5	1.0000	4.8	0.9999	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.7	-1.0	2.5	-2.5	1.0000	4.9	0.9786	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.7	-1.0	2.5	-2.5	1.0000	4.9	0.9786	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9970	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9970	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.3	1.9	-1.9	1.0000	3.3	0.9951	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.3	1.9	-1.9	1.0000	3.3	0.9951	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.7	2.5	2.5	-2.5	0.9991	5.4	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0221	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9957	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9957	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0027	27.7	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0027	27.7	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0057	23.3	0.9074	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	2.5	12.8	-8.3	1.0000	16.0	0.9877	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	2.5	12.8	-8.3	1.0000	16.0	0.9877	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	2.7	12.8	-8.3	1.0000	16.0	0.9858	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	2.7	12.8	-8.3	1.0000	16.0	0.9858	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	2.7	12.8	-8.3	1.0000	16.0	0.9858	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9987	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0205	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0205	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-1.4	2.2	-2.2	1.0000	4.5	0.9490	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-1.4	2.2	-2.2	1.0000	4.5	0.9490	5.0	64	6



6741	RROJAS4.16	4.2000	G1	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9754	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9754	4.8	6
6750	BON13.8	13.800	G1	9.9	-0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	6
6750	BON13.8	13.800	G2	9.9	-0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	6
6750	BON13.8	13.800	G3	9.9	-0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	6
6763	BAR13.8	13.800	G1	7.2	3.7	4.0	-4.0	1.0000	8.1	0.8875	9.0	6
6763	BAR13.8	13.800	G2	7.2	3.7	4.0	-4.0	1.0000	8.1	0.8875	9.0	6
6765	CRU13.8	13.800	G1	4.6	1.9	2.6	-2.6	1.0000	5.0	0.9265	5.8	6
6765	CRU13.8	13.800	G2	4.6	1.9	2.6	-2.6	1.0000	5.0	0.9265	5.8	6
6767	LAG13.8	13.800	G1	4.7	1.4	2.6	-2.6	1.0000	4.9	0.9569	5.8	6
6767	LAG13.8	13.800	G2	4.7	1.4	2.6	-2.6	1.0000	4.9	0.9569	5.8	6
6769	ESTRECHO4.164.2000	G1	4.9	1.7	2.5	-2.5	1.0000	5.2	0.9452	5.6	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.7	2.5	-2.5	1.0000	5.2	0.9452	5.6	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.5	1.5	-1.5	0.9998	3.2	0.8885	3.3	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.5	1.5	-1.5	0.9998	3.2	0.8885	3.3	6
6781	OAGUA13.8	13.800	G1	3.1	1.3	1.6	-1.6	0.9900	3.4	0.9164	3.6	6
6781	OAGUA13.8	13.800	G2	3.1	1.3	1.6	-1.6	0.9900	3.4	0.9164	3.6	6
6791	SMA13A	13.800	G1	12.2	4.4	6.2	-6.2	1.0000	12.9	0.9410	14.2	6
6792	SMA13B	13.800	G2	12.2	4.4	6.2	-6.2	1.0000	12.9	0.9410	14.2	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0496	285.8	0.0000	300.0	6
6821	PLANETAI	4.1600	G1	3.5	-1.2	1.8	-1.8	1.0000	3.8	0.9439	4.1	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9811	4.6	0.8892	4.7	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9811	4.6	0.8892	4.7	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9948	17.9	0.8892	18.5	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9948	17.9	0.8892	18.5	6
6843	BUR13C	13.800	G3	15.8	8.1	8.1	-8.1	0.9948	17.9	0.8892	18.5	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0220	4.0	0.8678	4.6	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9523	10.0	0.9059	10.1	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9523	10.0	0.9059	10.1	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9523	2.1	0.9058	2.1	6
6871	TABII13.8	13.800	G1	16.4	9.0	9.0	-9.0	0.9977	18.7	0.8761	20.5	6
6881	CHAIIG1	13.813.800	G1	101.6	10.5	52.3	-52.3	1.0100	101.2	0.9947	118.9	6
6900	SVC-LV	13.200	1	0.0	248.6	300.0	-225.0	1.0687	232.6	0.0000	300.0	6
SUBSYSTEM TOTALS				1869.8	761.2	1495.9	-1233.0				2995.8	

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 8:51
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT22
 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
6127		MIR13B		12.000	G6	17.1	0.1	8.0	0.0	1.0100	16.9	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	21.5	7.5	11.0	0.0	1.0100	22.5	0.9443	29.4			65	7



6129	MIR13D	13.800	G4	26.6	9.3	15.0	0.0	1.0100	28.0	0.9438	44.1	7
6130	MIR13F	13.800	G5	17.1	0.6	8.0	0.0	1.0100	16.9	0.9994	27.7	7
6134	MAD6A	6.9000	G1	11.4	0.1	6.0	-6.0	1.0100	11.3	0.9999	13.0	7
6135	MAD6B	6.9000	G2	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9998	13.0	7
6136	MAD6C	6.9000	G3	11.4	0.2	6.0	-6.0	1.0100	11.3	0.9998	13.0	7
SUBSYSTEM TOTALS				116.5	18.2	60.0	-18.0				167.9	
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E										WED, MAY 18 2011 8:51		
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL												
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT22												

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0138	233.16	6003		PANII230		230.00	6	1.0100	232.30
6014		PRO230		230.00	6	1.0119	232.74	6100		BAY230		230.00	6	1.0295	236.79
6103		COP230		230.00	6	1.0134	233.07	6171		PAC230		230.00	6	1.0189	234.36
6260		CHA 230		230.00	6	1.0124	232.85	6263		ESP230		230.00	6	1.0119	232.73
6330		BAI230		230.00	6	1.0115	232.65	6363		ZAM230		230.00	6	1.0009	230.21
6366		EVA230		230.00	6	1.0040	230.93	6380		BOQIII 230		230.00	6	1.0018	230.41
6400		FRONTCHA		230.00	6	1.0135	233.12	6430		ANTON230		230.00	6	1.0090	232.06
6500		FRONTDOM		230.00	6	1.0215	234.94	6590		24DIC230		230.00	6	1.0141	233.23
6680		BFRIO230		230.00	6	1.0146	233.36	6690		DOM230		230.00	6	1.0220	235.05
6691		ALTO230		230.00	6	1.0236	235.43	6695		PANDO230		230.00	6	1.0237	235.45
6698		MLIRIO230		230.00	6	1.0236	235.42	6840		BUR230		230.00	6	1.0153	233.52
6880		CHAI230		230.00	6	1.0111	232.54								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9944	228.70	6005		CHO230		230.00	6	0.9782	224.99
6008		LSA230		230.00	6	0.9924	228.26	6011		MDN230		230.00	6	0.9905	227.81
6096		FOR230		230.00	6	0.9936	228.52	6105		PAM230		230.00	6	0.9782	224.99
6178		EST230		230.00	6	0.9891	227.50	6179		GUA230		230.00	6	0.9892	227.51
6182		VEL230		230.00	6	0.9768	224.66	6240		LGU 230		230.00	6	0.9804	225.49
6340		CAN 230		230.00	6	0.9971	229.33	6360		GLA230		230.00	6	0.9951	228.87
6760		SBA230		230.00	6	0.9843	226.38	6790		SMA230		230.00	6	0.9940	228.63
6860		BBL230		230.00	6	0.9746	224.16	6870		TABII230		230.00	6	0.9783	225.01



1461

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 8:51
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT22

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0248	117.85	6004		PANII115		115.00	6	1.0222	117.55
6009		LSA115		115.00	6	1.0075	115.87	6012		MDN115		115.00	6	1.0008	115.09
6015		PRO115		115.00	6	1.0077	115.88	6018		CAC115		115.00	6	1.0243	117.79
6019		CVI115A		115.00	6	1.0149	116.71	6024		CHI115		115.00	6	1.0123	116.42
6027		LOC115A		115.00	6	1.0156	116.79	6032		MAR115A		115.00	6	1.0128	116.47
6036		SMA115		115.00	6	1.0236	117.72	6040		SFR115		115.00	6	1.0120	116.38
6047		CLA115		115.00	6	1.0073	115.83	6055		MOS115B		115.00	6	1.0219	117.52
6057		TOC115		115.00	6	1.0194	117.24	6059		LM1115		115.00	6	1.0182	117.09
6060		LM2115		115.00	6	1.0183	117.11	6066		FFIELD		115.00	6	1.0114	116.31
6074		LMDIST		115.00	6	1.0183	117.10	6087		CAL115		115.00	6	1.0080	115.92
6088		LES115		115.00	6	1.0112	116.29	6092		LVA115		115.00	6	1.0083	115.95
6123		MIR115		115.00	7	1.0342	118.94	6170		CPA115		115.00	6	1.0195	117.24
6173		STR115		115.00	6	1.0196	117.26	6174		PM115-1A		115.00	6	1.0225	117.59
6175		PM115-2A		115.00	6	1.0225	117.59	6210		TIN115		115.00	6	1.0205	117.35
6211		PM115-9		115.00	6	1.0212	117.44	6230		CBA115		115.00	6	1.0139	116.60
6261		CHA 115		115.00	6	1.0049	115.56	6270		CAT 115		115.00	6	1.0185	117.12
6280		GIR 115		115.00	6	1.0195	117.24	6290		CATII 11		115.00	6	1.0183	117.11
6332		BAM115		115.00	6	1.0032	115.37	6350		PM115-8		115.00	6	1.0188	117.16
6550		CHAZ115		115.00	6	1.0077	115.88	6580		LBO115		115.00	6	1.0144	116.65

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6006		CHO115		115.00	6	0.9609	110.51	6331		BAI115		115.00	6	0.9995	114.95



1462

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 8:51
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT22
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6008	LSA230	230.00	6	6182	VEL230	230.00*	6	15	371.0	314.0	118.1	450.0	82.4	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	59.7	62.5	95.6	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.6	54.0	97.4	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 8:51
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT22
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

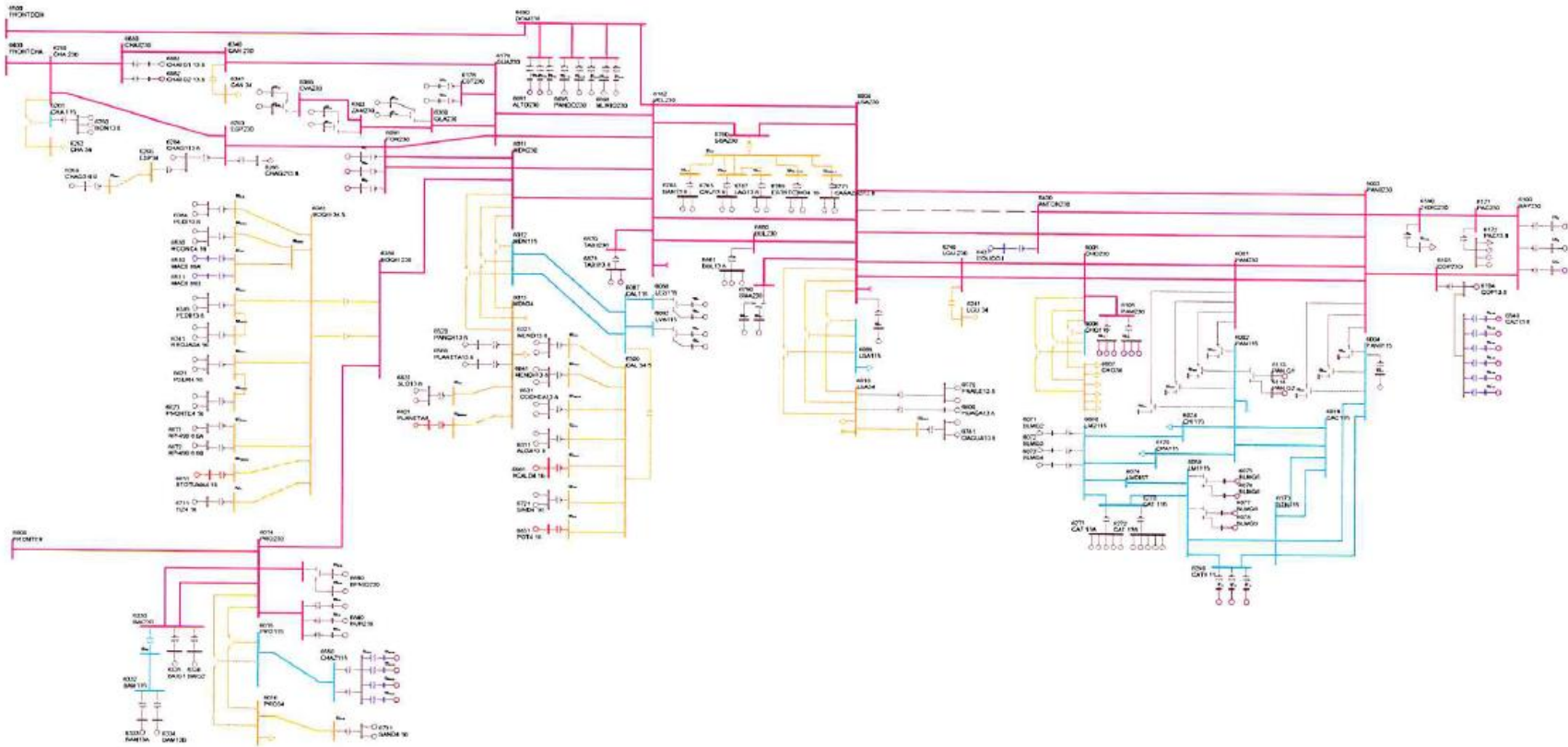
FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						WED, MAY 18 2011 8:51		AREA TOTALS		
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT22				
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT
	RATION	BUSES						LINES	+ LOADS	
1	1014.4	1179.4	0.0	0.0	0.0	0.0	21.7	-186.7	-186.7	-186.7
GUATEMAL	208.1	340.6	222.0	0.0	0.0	608.6	255.7	-1.7	-1.7	
2	1137.6	1104.0	0.0	0.0	0.0	0.0	33.6	0.0	0.0	0.0
SALVADOR	269.1	367.1	-182.0	0.0	0.0	243.4	297.1	30.4	30.4	
3	1234.5	1205.2	0.0	0.0	0.0	0.0	29.3	0.0	0.0	0.0
HONDURAS	356.0	395.2	-20.4	0.0	0.0	475.5	420.7	36.0	36.0	
4	473.3	459.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0	0.0
NICARAGU	-51.0	181.0	-13.0	0.0	0.0	294.2	142.4	-67.2	-67.2	
5	1517.5	1489.7	0.0	0.0	0.0	0.0	27.8	0.0	0.0	0.0
COSTA RI	238.6	558.4	-226.8	0.0	0.0	556.9	411.5	52.4	52.4	
6	1869.8	1598.2	0.0	0.0	0.0	0.0	144.2	127.4	127.4	126.7
PANAMA	761.2	280.0	-228.1	0.0	0.0	538.3	1305.0	-57.2	-57.2	
7	116.5	53.2	0.0	0.0	0.0	0.0	3.9	59.4	59.4	60.0
ACANAL	18.2	9.3	-15.9	0.0	0.0	0.0	17.4	7.4	7.4	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	7363.5	7088.8	0.0	0.0	0.0	0.0	274.7	0.0	0.0	0.0
TOTALS	1800.3	2131.6	-464.3	0.0	0.0	2717.0	2849.9	0.0	0.0	

Contingencia 23: Llano Sánchez – Antón





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT23
 AREA 6 [PANAMA] MACHINE SUMMARY:

WED, MAY 18 2011 8:56

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	2.6	15.0	0.0	1.0200	37.3	0.9977	47.0			62	6
6072		BLMG3		13.800	V3	38.0	2.6	15.0	0.0	1.0200	37.3	0.9977	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.5	15.0	0.0	1.0200	37.3	0.9978	47.0			62	6
6090		LESG1		13.800	E1	22.4	4.3	12.0	-5.0	1.0000	22.8	0.9820	27.0			64	6
6091		LESG2		13.800	E2	22.4	4.3	12.0	-5.0	1.0000	22.8	0.9820	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-2.2	12.0	-5.0	1.0000	26.1	0.9965	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-2.2	12.0	-5.0	1.0000	26.1	0.9965	27.0			64	6
6097		FORG1		13.800	F1	95.0	15.7	50.0	-50.0	1.0100	95.3	0.9867	111.0			64	6
6101		BAYG1		13.800	B1	71.2	15.8	30.0	-25.0	1.0200	71.5	0.9762	94.0			61	6
6102		BAYG2		13.800	B2	71.2	15.8	30.0	-25.0	1.0200	71.5	0.9762	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	11.3	29.0	-29.0	1.0000	58.1	0.9809	69.0			64	6
6177		ESTG2		13.800	E2	57.0	11.3	29.0	-29.0	1.0000	58.1	0.9809	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-2.7	52.4	-48.9	1.0000	99.6	0.9996	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	0.7	52.4	-48.9	1.0000	99.6	1.0000	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9977	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9977	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9977	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9977	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9977	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9977	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9977	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9977	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9977	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.6	5.6	-5.6	1.0200	8.1	0.9977	10.9			62	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9748	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9748	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9920	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9920	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.5	10.0	-10.0	1.0000	26.6	0.9985	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.5	10.0	-10.0	1.0000	26.6	0.9985	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-8.7	14.0	-14.0	1.0000	43.0	0.9792	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-8.7	14.0	-14.0	1.0000	43.0	0.9792	49.0			64	6
6361		GLA13A		13.800	G1	12.1	0.5	7.8	-7.0	1.0000	12.1	0.9991	14.1			64	6
6362		GLA13B		13.800	G2	12.1	0.5	7.8	-7.0	1.0000	12.1	0.9991	14.1			64	6



6364	LOR13A	13.800	G1	16.1	-3.2	7.8	-7.0	1.0000	16.4	0.9803	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-3.2	7.8	-7.0	1.0000	16.4	0.9803	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-5.0	8.0	-8.0	1.0000	27.1	0.9827	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-5.0	8.0	-8.0	1.0000	27.1	0.9827	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.1	4.9	-4.9	1.0000	9.5	1.0000	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9975	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.4	3.2	-3.6	1.0000	6.2	0.9975	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0127	60.2	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0064	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0064	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9570	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.7	-0.6	2.5	-2.5	1.0000	4.8	0.9913	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.7	-0.6	2.5	-2.5	1.0000	4.8	0.9913	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9570	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9682	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9682	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9682	5.5	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.7	-0.4	2.5	-2.5	1.0000	4.8	0.9971	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.7	-0.4	2.5	-2.5	1.0000	4.8	0.9971	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.7	-1.2	2.5	-2.5	1.0000	4.9	0.9685	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.7	-1.2	2.5	-2.5	1.0000	4.9	0.9685	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.7	3.7	-3.7	1.0000	6.4	0.9939	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.7	3.7	-3.7	1.0000	6.4	0.9939	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.1	1.9	-1.9	1.0000	3.3	0.9996	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.1	1.9	-1.9	1.0000	3.3	0.9996	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.7	2.5	2.5	-2.5	1.0000	5.4	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0225	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9961	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9961	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0050	27.6	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0050	27.6	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0072	23.3	0.9074	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	0.7	12.8	-8.3	1.0000	15.8	0.9989	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	0.7	12.8	-8.3	1.0000	15.8	0.9989	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	0.9	12.8	-8.3	1.0000	15.8	0.9983	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	0.9	12.8	-8.3	1.0000	15.8	0.9983	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	0.9	12.8	-8.3	1.0000	15.8	0.9983	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9996	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0209	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0209	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-1.8	2.2	-2.2	1.0000	4.6	0.9227	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-1.8	2.2	-2.2	1.0000	4.6	0.9227	5.0	64	6



6741	RROJAS4.16	4.2000	G1	4.1	-1.1	2.1	-2.1	1.0000	4.2	0.9681	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.1	2.1	-2.1	1.0000	4.2	0.9681	4.8	6
6750	BON13.8	13.800	G1	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9998	35.3	6
6750	BON13.8	13.800	G2	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9998	35.3	6
6750	BON13.8	13.800	G3	9.9	-0.2	4.0	-4.0	1.0000	9.9	0.9998	35.3	6
6763	BAR13.8	13.800	G1	7.2	3.4	4.0	-4.0	1.0000	7.9	0.9051	9.0	6
6763	BAR13.8	13.800	G2	7.2	3.4	4.0	-4.0	1.0000	7.9	0.9051	9.0	6
6765	CRU13.8	13.800	G1	4.6	1.7	2.6	-2.6	1.0000	4.9	0.9405	5.8	6
6765	CRU13.8	13.800	G2	4.6	1.7	2.6	-2.6	1.0000	4.9	0.9405	5.8	6
6767	LAG13.8	13.800	G1	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9670	5.8	6
6767	LAG13.8	13.800	G2	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9670	5.8	6
6769	ESTRECHO4.164.2000	G1	4.9	1.5	2.5	-2.5	1.0000	5.2	0.9565	5.6	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.5	2.5	-2.5	1.0000	5.2	0.9565	5.6	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.3	1.5	-1.5	1.0000	3.1	0.9098	3.3	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.3	1.5	-1.5	1.0000	3.1	0.9098	3.3	6
6781	OAGUA13.8	13.800	G1	3.1	-1.0	1.6	-1.6	0.9900	3.3	0.9535	3.6	6
6781	OAGUA13.8	13.800	G2	3.1	-1.0	1.6	-1.6	0.9900	3.3	0.9535	3.6	6
6791	SMA13A	13.800	G1	12.2	-2.6	6.2	-6.2	1.0000	12.4	0.9779	14.2	6
6792	SMA13B	13.800	G2	12.2	-2.6	6.2	-6.2	1.0000	12.4	0.9779	14.2	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0593	283.2	0.0000	300.0	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0028	4.0	0.8892	4.1	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9844	4.6	0.8892	4.7	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9844	4.6	0.8892	4.7	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9969	17.9	0.8892	18.5	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9969	17.9	0.8892	18.5	6
6843	BUR13C	13.800	G3	15.8	8.1	8.1	-8.1	0.9969	17.9	0.8892	18.5	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0224	4.0	0.8678	4.6	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9677	9.8	0.9059	10.1	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9677	9.8	0.9059	10.1	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9677	2.0	0.9058	2.1	6
6871	TABII13.8	13.800	G1	16.4	4.3	9.0	-9.0	1.0000	16.9	0.9668	20.5	6
6881	CHAIIG1	13.813.800	G1	101.6	8.9	52.3	-52.3	1.0100	101.0	0.9962	118.9	6
6900	SVC-LV	13.200	1	0.0	228.8	300.0	-225.0	1.0629	215.3	0.0000	300.0	6
SUBSYSTEM TOTALS				1850.5	668.3	1495.9	-1233.0				2995.8	

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 8:56
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT23
 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
6127		MIR13B		12.000	G6	17.1	0.2	8.0	0.0	1.0100	16.9	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	21.5	7.5	11.0	0.0	1.0100	22.6	0.9438	29.4			65	7



6129	MIR13D	13.800	G4	26.6	9.4	15.0	0.0	1.0100	28.0	0.9433	44.1	7
6130	MIR13F	13.800	G5	17.1	0.7	8.0	0.0	1.0100	16.9	0.9993	27.7	7
6134	MAD6A	6.9000	G1	11.4	0.2	6.0	-6.0	1.0100	11.3	0.9999	13.0	7
6135	MAD6B	6.9000	G2	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0	7
6136	MAD6C	6.9000	G3	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0	7
SUBSYSTEM TOTALS				116.5	18.4	60.0	-18.0				167.9	
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							WED, MAY 18 2011		8:56			
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL												
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT23												

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0158	233.63	6003		PANII230		230.00	6	1.0100	232.30
6008		LSA230		230.00	6	1.0026	230.61	6014		PRO230		230.00	6	1.0141	233.24
6100		BAY230		230.00	6	1.0293	236.73	6103		COP230		230.00	6	1.0133	233.07
6171		PAC230		230.00	6	1.0189	234.35	6260		CHA 230		230.00	6	1.0142	233.26
6263		ESP230		230.00	6	1.0138	233.16	6330		BAI230		230.00	6	1.0134	233.08
6340		CAN 230		230.00	6	1.0009	230.20	6363		ZAM230		230.00	6	1.0048	231.10
6366		EVA230		230.00	6	1.0077	231.77	6380		BOQIII 230		230.00	6	1.0054	231.25
6400		FRONTCHA		230.00	6	1.0152	233.49	6430		ANTON230		230.00	6	1.0137	233.15
6500		FRONTDOM		230.00	6	1.0230	235.29	6590		24DIC230		230.00	6	1.0141	233.23
6680		BFRIO230		230.00	6	1.0168	233.86	6690		DOM230		230.00	6	1.0235	235.40
6691		ALTO230		230.00	6	1.0251	235.78	6695		PANDO230		230.00	6	1.0246	235.67
6698		MLIRIO230		230.00	6	1.0245	235.64	6790		SMA230		230.00	6	1.0038	230.87
6840		BUR230		230.00	6	1.0175	234.02	6880		CHAI230		230.00	6	1.0131	233.02

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9943	228.68	6005		CHO230		230.00	6	0.9787	225.11
6011		MDN230		230.00	6	0.9963	229.15	6096		FOR230		230.00	6	0.9983	229.61
6105		PAM230		230.00	6	0.9787	225.11	6178		EST230		230.00	6	0.9940	228.61
6179		GUA230		230.00	6	0.9941	228.63	6182		VEL230		230.00	6	0.9901	227.72
6240		LGU 230		230.00	6	0.9850	226.55	6360		GLA230		230.00	6	0.9994	229.86
6760		SBA230		230.00	6	0.9919	228.13	6860		BBL230		230.00	6	0.9904	227.78
6870		TABII230		230.00	6	0.9910	227.94								



1470

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 8:56
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT23
OUTPUT FOR AREA 6 [PANAMA]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	59.9	62.5	95.8	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAFO1	WND 1	6	T1	52.8	54.0	97.8	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 8:56
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT23
OUTPUT FOR AREA 7 [ACANAL]
SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

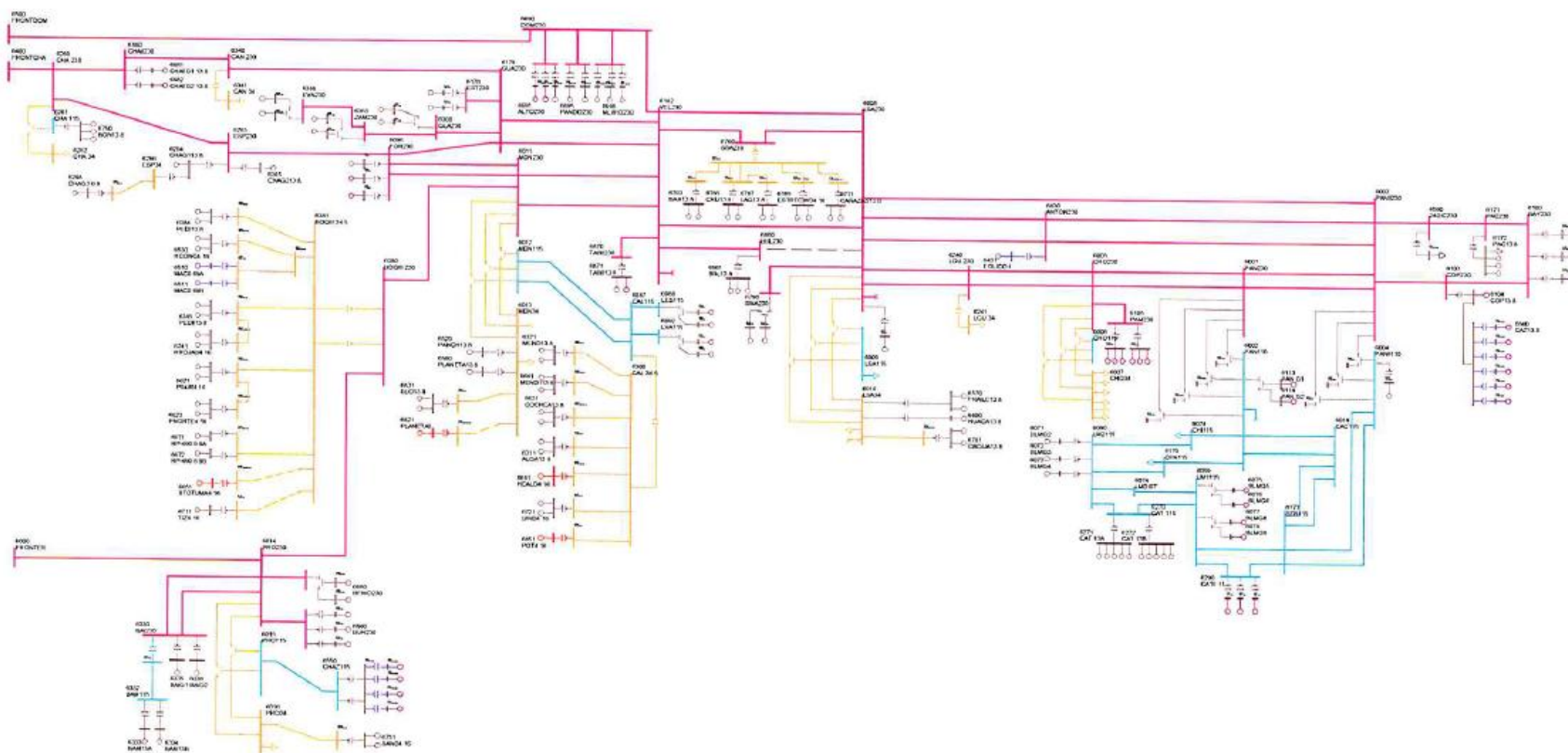
* NONE *



1471

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						WED, MAY 18 2011 8:56		AREA TOTALS				
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT23						
X--	AREA	--X	FROM	TO	TO	FROM	TO	-NET INTERCHANGE-		DESIRED		
			GENERATION	AT AREA BUSES	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	CHARGING	LOSSES	TO TIE LINES	TO TIES + LOADS	NET INT
	1		1014.4	1179.4	0.0	0.0	0.0	0.0	21.7	-186.7	-186.7	-186.7
GUATEMAL			208.1	340.6	222.0	0.0	0.0	608.6	255.7	-1.7	-1.7	
	2		1137.6	1104.0	0.0	0.0	0.0	0.0	33.6	0.0	0.0	0.0
SALVADOR			269.1	367.1	-182.0	0.0	0.0	243.4	297.1	30.3	30.3	
	3		1234.5	1205.2	0.0	0.0	0.0	0.0	29.3	0.0	0.0	0.0
HONDURAS			356.0	395.2	-20.4	0.0	0.0	475.5	420.7	36.0	36.0	
	4		473.3	459.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0	0.0
NICARAGU			-51.1	181.0	-13.0	0.0	0.0	294.2	142.4	-67.3	-67.3	
	5		1517.5	1489.7	0.0	0.0	0.0	0.0	27.8	0.0	0.0	0.0
COSTA RI			235.0	558.4	-226.9	0.0	0.0	557.3	411.2	49.6	49.6	
	6		1850.5	1598.2	0.0	0.0	0.0	0.0	124.9	127.3	127.3	126.7
PANAMA			668.3	280.0	-227.9	0.0	0.0	531.3	1202.0	-54.5	-54.5	
	7		116.5	53.2	0.0	0.0	0.0	0.0	3.9	59.4	59.4	60.0
ACANAL			18.4	9.3	-15.9	0.0	0.0	0.0	17.5	7.6	7.6	
	10		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN			7344.2	7088.8	0.0	0.0	0.0	0.0	255.5	0.0	0.0	0.0
TOTALS			1703.8	2131.6	-464.1	0.0	0.0	2710.4	2746.6	0.0	0.0	

Contingencia 24: Llano Sánchez – Barro Blanco





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 9:00
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT24
 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
6071		BLMG2		13.800	V2	38.0	2.5	15.0	0.0	1.0200	37.3	0.9979	47.0			62	6
6072		BLMG3		13.800	V3	38.0	2.5	15.0	0.0	1.0200	37.3	0.9979	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.4	15.0	0.0	1.0200	37.3	0.9980	47.0			62	6
6090		LESG1		13.800	E1	22.4	5.0	12.0	-5.0	1.0000	23.0	0.9760	27.0			64	6
6091		LESG2		13.800	E2	22.4	5.0	12.0	-5.0	1.0000	23.0	0.9760	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-1.4	12.0	-5.0	1.0000	26.1	0.9985	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-1.4	12.0	-5.0	1.0000	26.1	0.9985	27.0			64	6
6097		FORG1		13.800	F1	95.0	20.3	50.0	-50.0	1.0100	96.2	0.9779	111.0			64	6
6101		BAYG1		13.800	B1	78.6	16.4	30.0	-25.0	1.0200	78.7	0.9788	94.0			61	6
6102		BAYG2		13.800	B2	69.1	15.6	30.0	-25.0	1.0200	69.4	0.9755	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9929	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	57.0	12.2	29.0	-29.0	1.0000	58.3	0.9779	69.0			64	6
6177		ESTG2		13.800	E2	57.0	12.2	29.0	-29.0	1.0000	58.3	0.9779	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-1.2	52.4	-48.9	1.0000	99.6	0.9999	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	2.2	52.4	-48.9	1.0000	99.6	0.9998	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9978	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9978	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9978	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9978	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9978	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9978	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9978	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9978	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9978	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.5	5.6	-5.6	1.0200	8.1	0.9978	10.9			62	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9739	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9739	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9916	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9916	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.6	10.0	-10.0	1.0000	26.7	0.9981	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.6	10.0	-10.0	1.0000	26.7	0.9981	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-7.3	14.0	-14.0	1.0000	42.8	0.9854	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-7.3	14.0	-14.0	1.0000	42.8	0.9854	49.0			64	6
6361		GLA13A		13.800	G1	12.1	3.8	7.8	-7.0	1.0000	12.6	0.9539	14.1			64	6
6362		GLA13B		13.800	G2	12.1	3.8	7.8	-7.0	1.0000	12.6	0.9539	14.1			64	6



6364	LOR13A	13.800	G1	16.1	-0.3	7.8	-7.0	1.0000	16.1	0.9998	25.0	64	6
6365	LOR13B	13.800	G2	16.1	-0.3	7.8	-7.0	1.0000	16.1	0.9998	25.0	64	6
6367	PRU13A	13.800	G1	26.6	-2.2	8.0	-8.0	1.0000	26.7	0.9965	33.0	64	6
6368	PRU13B	13.800	G2	26.6	-2.2	8.0	-8.0	1.0000	26.7	0.9965	33.0	64	6
6384	PEDI13.8	13.800	G1	9.5	0.3	4.9	-4.9	1.0000	9.5	0.9994	12.5	64	6
6384	PEDI13.8	13.800	G2	9.5	0.3	4.9	-4.9	1.0000	9.5	0.9994	12.5	64	6
6385	PEDII13.8	13.800	G1	6.2	0.6	3.2	-3.6	1.0000	6.2	0.9952	7.5	64	6
6385	PEDII13.8	13.800	G2	6.2	0.6	3.2	-3.6	1.0000	6.2	0.9952	7.5	64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0103	60.3	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0055	1.6	0.9985	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0055	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.7	2.0	2.0	-2.0	0.9537	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.7	-0.3	2.5	-2.5	1.0000	4.8	0.9976	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.7	-0.3	2.5	-2.5	1.0000	4.8	0.9976	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9537	4.9	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9663	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9663	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9662	5.5	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.7	0.0	2.5	-2.5	1.0000	4.8	1.0000	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.7	0.0	2.5	-2.5	1.0000	4.8	1.0000	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.7	-1.0	2.5	-2.5	1.0000	4.9	0.9791	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.7	-1.0	2.5	-2.5	1.0000	4.9	0.9791	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9971	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9971	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.3	1.9	-1.9	1.0000	3.3	0.9947	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.3	1.9	-1.9	1.0000	3.3	0.9947	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.7	2.5	2.5	-2.5	0.9990	5.4	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0221	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9957	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9957	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0026	27.7	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0026	27.7	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0056	23.4	0.9074	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	2.6	12.8	-8.3	1.0000	16.0	0.9866	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	2.6	12.8	-8.3	1.0000	16.0	0.9866	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	2.8	12.8	-8.3	1.0000	16.1	0.9846	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	2.8	12.8	-8.3	1.0000	16.1	0.9846	18.5	64	6
6701	MLIRIO13C	13.800	G3	15.8	2.8	12.8	-8.3	1.0000	16.1	0.9846	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9987	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0205	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0205	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-1.4	2.2	-2.2	1.0000	4.5	0.9505	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-1.4	2.2	-2.2	1.0000	4.5	0.9505	5.0	64	6



6741	RROJAS4.16	4.2000	G1	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9759	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9759	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	64	6
6750	BON13.8	13.800	G3	9.9	-0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	4.0	4.0	-4.0	0.9976	8.2	0.8757	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	4.0	4.0	-4.0	0.9976	8.2	0.8757	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	2.2	2.6	-2.6	1.0000	5.1	0.9047	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	2.2	2.6	-2.6	1.0000	5.1	0.9047	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.7	2.6	-2.6	1.0000	4.9	0.9404	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.7	2.6	-2.6	1.0000	4.9	0.9404	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	2.0	2.5	-2.5	1.0000	5.3	0.9271	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	2.0	2.5	-2.5	1.0000	5.3	0.9271	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.5	1.5	-1.5	0.9954	3.2	0.8885	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.5	1.5	-1.5	0.9954	3.2	0.8885	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	0.2	1.6	-1.6	0.9900	3.1	0.9980	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	0.2	1.6	-1.6	0.9900	3.1	0.9980	3.6	63	6
6791	SMA13A	13.800	G1	12.2	0.9	6.2	-6.2	1.0000	12.2	0.9972	14.2	63	6
6792	SMA13B	13.800	G2	12.2	0.9	6.2	-6.2	1.0000	12.2	0.9972	14.2	63	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0544	284.5	0.0000	300.0	63	6
6821	PLANETAI	4.1600	G1	3.5	-1.1	1.8	-1.8	1.0000	3.7	0.9519	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9810	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9810	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9947	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9947	17.9	0.8892	18.5	64	6
6843	BUR13C	13.800	G3	15.8	8.1	8.1	-8.1	0.9947	17.9	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0220	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9548	9.9	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9548	9.9	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9548	2.1	0.9058	2.1	64	6
6871	TABII13.8	13.800	G1	16.4	9.0	9.0	-9.0	0.9969	18.8	0.8761	20.5	64	6
6881	CHAIIG1	13.813.800	G1	101.6	10.6	52.3	-52.3	1.0100	101.2	0.9946	118.9	64	6
6900	SVC-LV	13.200	1	0.0	233.7	300.0	-225.0	1.0644	219.5	0.0000	300.0	61	6
SUBSYSTEM TOTALS				1855.8	742.0	1495.9	-1233.0				2995.8		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 9:00
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT24
 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
6127		MIR13B		12.000	G6	17.1	0.1	8.0	0.0	1.0100	16.9	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	21.5	7.5	11.0	0.0	1.0100	22.5	0.9441	29.4			65	7

6129	MIR13D	13.800	G4	26.6	9.4	15.0	0.0	1.0100	28.0	0.9436	44.1
6130	MIR13F	13.800	G5	17.1	0.6	8.0	0.0	1.0100	16.9	0.9993	27.7
6134	MAD6A	6.9000	G1	11.4	0.1	6.0	-6.0	1.0100	11.3	0.9999	13.0
6135	MAD6B	6.9000	G2	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9998	13.0
6136	MAD6C	6.9000	G3	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9998	13.0
SUBSYSTEM TOTALS				116.5	18.3	60.0	-18.0				167.9



1476

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1477

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 9:00
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT24

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0136	233.14	6003		PANII230		230.00	6	1.0100	232.30
6014		PRO230		230.00	6	1.0118	232.71	6100		BAY230		230.00	6	1.0293	236.75
6103		COP230		230.00	6	1.0133	233.07	6171		PAC230		230.00	6	1.0189	234.35
6260		CHA 230		230.00	6	1.0123	232.82	6263		ESP230		230.00	6	1.0118	232.70
6330		BAI230		230.00	6	1.0114	232.63	6363		ZAM230		230.00	6	1.0007	230.16
6366		EVA230		230.00	6	1.0038	230.88	6380		BOQIII 230		230.00	6	1.0016	230.36
6400		FRONTCHA		230.00	6	1.0134	233.09	6430		ANTON230		230.00	6	1.0114	232.61
6500		FRONTDOM		230.00	6	1.0214	234.92	6590		24DIC230		230.00	6	1.0141	233.23
6680		BFRIO230		230.00	6	1.0145	233.33	6690		DOM230		230.00	6	1.0219	235.03
6691		ALTO230		230.00	6	1.0235	235.41	6695		PANDO230		230.00	6	1.0236	235.43
6698		MLIRIO230		230.00	6	1.0235	235.41	6840		BUR230		230.00	6	1.0152	233.49
6880		CHAI230		230.00	6	1.0109	232.51								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9945	228.73	6005		CHO230		230.00	6	0.9793	225.23
6008		LSA230		230.00	6	0.9975	229.42	6011		MDN230		230.00	6	0.9901	227.73
6096		FOR230		230.00	6	0.9933	228.46	6105		PAM230		230.00	6	0.9793	225.24
6178		EST230		230.00	6	0.9888	227.43	6179		GUA230		230.00	6	0.9889	227.45
6182		VEL230		230.00	6	0.9759	224.47	6240		LGU 230		230.00	6	0.9837	226.24
6340		CAN 230		230.00	6	0.9969	229.28	6360		GLA230		230.00	6	0.9948	228.81
6760		SBA230		230.00	6	0.9753	224.32	6790		SMA230		230.00	6	0.9989	229.74
6860		BBL230		230.00	6	0.9772	224.75	6870		TABII230		230.00	6	0.9775	224.82



1478

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 9:00
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT24

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0247	117.84	6004		PANII115		115.00	6	1.0205	117.36
6009		LSA115		115.00	6	1.0118	116.36	6012		MDN115		115.00	6	1.0006	115.07
6015		PRO115		115.00	6	1.0076	115.87	6018		CAC115		115.00	6	1.0241	117.78
6019		CVI115A		115.00	6	1.0136	116.56	6024		CHI115		115.00	6	1.0121	116.39
6027		LOC115A		115.00	6	1.0153	116.76	6032		MAR115A		115.00	6	1.0126	116.45
6036		SMA115		115.00	6	1.0235	117.70	6040		SFR115		115.00	6	1.0115	116.32
6047		CLA115		115.00	6	1.0070	115.81	6055		MOS115B		115.00	6	1.0218	117.51
6057		TOC115		115.00	6	1.0178	117.04	6059		LM1115		115.00	6	1.0178	117.05
6060		LM2115		115.00	6	1.0180	117.07	6066		FFIELD		115.00	6	1.0111	116.27
6074		LMDIST		115.00	6	1.0179	117.06	6087		CAL115		115.00	6	1.0079	115.91
6088		LES115		115.00	6	1.0111	116.27	6092		LVA115		115.00	6	1.0082	115.94
6123		MIR115		115.00	7	1.0341	118.93	6170		CPA115		115.00	6	1.0192	117.21
6173		STR115		115.00	6	1.0192	117.21	6174		PM115-1A		115.00	6	1.0222	117.55
6175		PM115-2A		115.00	6	1.0222	117.55	6210		TIN115		115.00	6	1.0204	117.34
6211		PM115-9		115.00	6	1.0211	117.42	6230		CBA115		115.00	6	1.0136	116.56
6261		CHA 115		115.00	6	1.0048	115.55	6270		CAT 115		115.00	6	1.0181	117.08
6280		GIR 115		115.00	6	1.0192	117.21	6290		CATII 11		115.00	6	1.0180	117.07
6332		BAM115		115.00	6	1.0032	115.37	6350		PM115-8		115.00	6	1.0186	117.14
6550		CHAZ115		115.00	6	1.0076	115.87	6580		LBO115		115.00	6	1.0131	116.50

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)
6006		CHO115		115.00	6	0.9620	110.63	6331		BAI115		115.00	6	0.9995	114.94



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 9:00
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT24
 OUTPUT FOR AREA 6 [PANAMA]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT
6008	LSA230	230.00	6	6182	VEL230	230.00*	6	15	350.3	314.0	111.6	450.0	77.8
6008	LSA230	230.00	6	6760	SBA230	230.00*	6	4A	367.9	314.0	117.2	450.0	81.8
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	59.7	62.5	95.6	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.6	54.0	97.3	--	--
6182	VEL230	230.00*	6	6760	SBA230	230.00	6	4B	321.6	314.0	102.4	450.0	71.5

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 9:00
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT24
 OUTPUT FOR AREA 7 [ACANAL]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C	
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT	RATING PERCENT

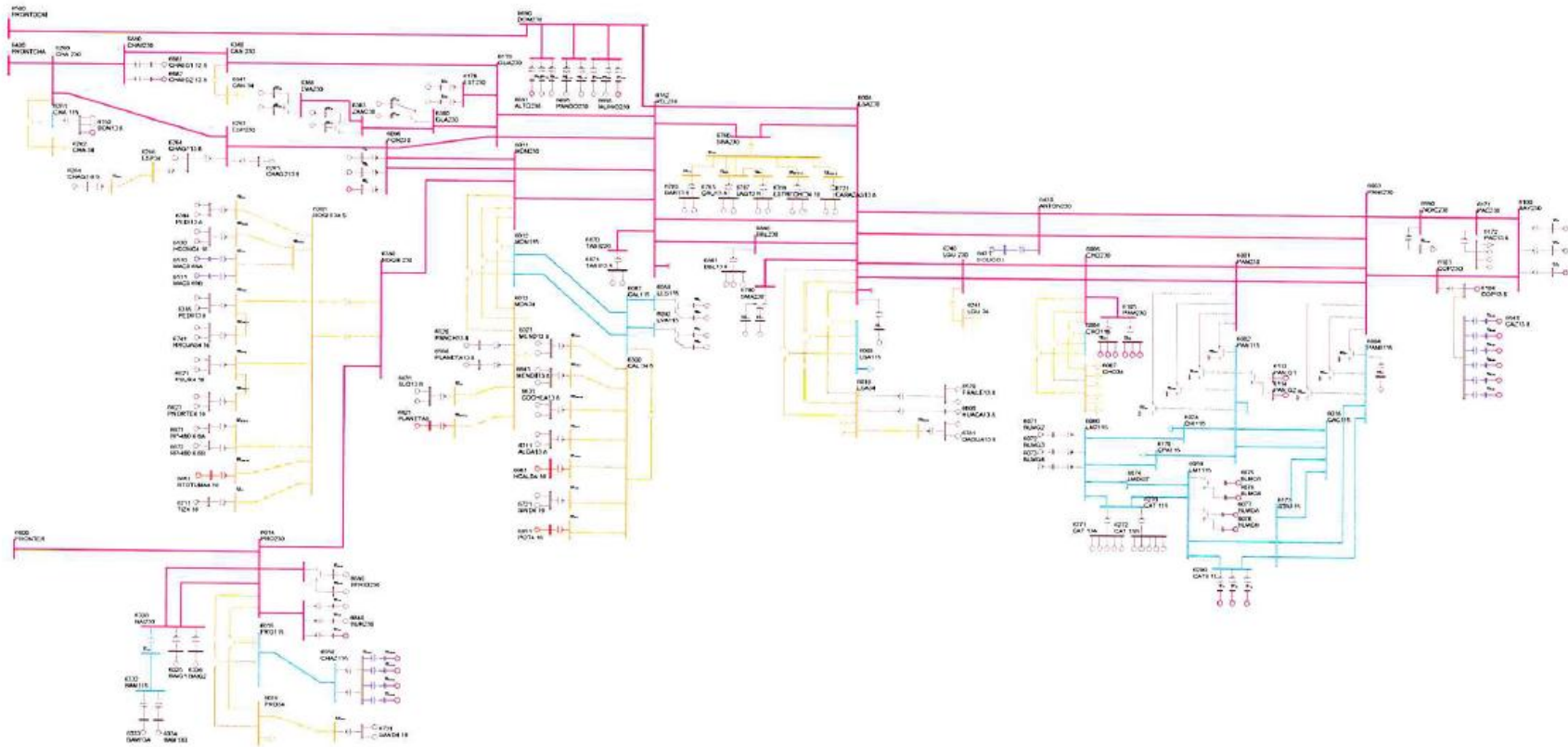
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						WED, MAY 18 2011 9:01		AREA TOTALS			
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT24					
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED	
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT	
	RATION	BUSES						LINES	+ LOADS		
1	1014.4	1179.4	0.0	0.0	0.0	0.0	21.7	-186.7	-186.7	-186.7	
GUATEMAL	208.1	340.6	222.0	0.0	0.0	608.6	255.7	-1.7	-1.7		
2	1137.6	1104.0	0.0	0.0	0.0	0.0	33.6	0.0	0.0	0.0	
SALVADOR	269.1	367.1	-182.0	0.0	0.0	243.4	297.1	30.4	30.4		
3	1234.5	1205.2	0.0	0.0	0.0	0.0	29.3	0.0	0.0	0.0	
HONDURAS	356.0	395.2	-20.4	0.0	0.0	475.5	420.7	36.0	36.0		
4	473.3	459.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0	0.0	
NICARAGU	-51.0	181.0	-13.0	0.0	0.0	294.2	142.4	-67.2	-67.2		
5	1517.5	1489.7	0.0	0.0	0.0	0.0	27.8	0.0	0.0	0.0	
COSTA RI	238.9	558.4	-226.7	0.0	0.0	556.9	411.6	52.6	52.6		
6	1855.8	1598.2	0.0	0.0	0.0	0.0	130.2	127.4	127.4	126.7	
PANAMA	742.0	280.0	-228.0	0.0	0.0	530.9	1278.4	-57.5	-57.5		
7	116.5	53.2	0.0	0.0	0.0	0.0	3.9	59.4	59.4	60.0	
ACANAL	18.3	9.3	-15.9	0.0	0.0	0.0	17.4	7.5	7.5		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	7349.6	7088.8	0.0	0.0	0.0	0.0	260.8	0.0	0.0	0.0	
TOTALS	1781.3	2131.6	-464.1	0.0	0.0	2709.5	2823.3	0.0	0.0		



Demanda Máxima de Verano





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 14 2011 14:37
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2017
 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
6071		BLMG2		13.800	V2	38.0	1.8	15.0	0.0	1.0200	37.3	0.9989	47.0			62	6
6072		BLMG3		13.800	V3	38.0	1.8	15.0	0.0	1.0200	37.3	0.9989	47.0			62	6
6073		BLMG4		13.800	V4	38.0	1.7	15.0	0.0	1.0200	37.3	0.9990	47.0			62	6
6090		LESG1		13.800	E1	20.1	3.7	12.0	-5.0	1.0000	20.4	0.9836	27.0			64	6
6091		LESG2		13.800	E2	20.1	3.7	12.0	-5.0	1.0000	20.4	0.9836	27.0			64	6
6094		LVAG1		13.800	L1	23.3	-2.9	12.0	-5.0	1.0000	23.5	0.9922	27.0			64	6
6095		LVAG2		13.800	L2	23.3	-2.9	12.0	-5.0	1.0000	23.5	0.9922	27.0			64	6
6097		FORG1		13.800	F1	85.0	9.4	50.0	-50.0	1.0100	84.7	0.9939	111.0			64	6
6098		FORG2		13.800	F2	85.0	9.4	50.0	-50.0	1.0100	84.7	0.9939	111.0			64	6
6101		BAYG1		13.800	B1	71.4	10.3	30.0	-25.0	1.0100	71.4	0.9897	94.0			61	6
6102		BAYG2		13.800	B2	72.8	10.4	30.0	-25.0	1.0100	72.8	0.9899	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9921	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9921	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9921	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	51.0	8.3	29.0	-29.0	1.0000	51.7	0.9870	69.0			64	6
6177		ESTG2		13.800	E2	51.0	8.3	29.0	-29.0	1.0000	51.7	0.9870	69.0			64	6
6264		CHAG113.8		13.800	G1	89.1	-6.2	52.4	-48.9	1.0000	89.3	0.9976	116.5			64	6
6265		CHAG213.8		13.800	G2	89.1	-2.5	52.4	-48.9	1.0000	89.2	0.9996	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.3	4.9	4.9	-4.1	0.9969	9.7	0.8623	10.9			64	6
6271		CAT 13A		13.800	G1	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9988	10.9			62	6
6271		CAT 13A		13.800	G2	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9988	10.9			62	6
6271		CAT 13A		13.800	G3	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9988	10.9			62	6
6271		CAT 13A		13.800	G4	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9988	10.9			62	6
6271		CAT 13A		13.800	G5	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9988	10.9			62	6
6272		CAT 13B		13.800	G0	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9988	10.9			62	6
6272		CAT 13B		13.800	G6	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9988	10.9			62	6
6272		CAT 13B		13.800	G7	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9988	10.9			62	6
6272		CAT 13B		13.800	G8	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9988	10.9			62	6
6272		CAT 13B		13.800	G9	8.3	0.4	5.6	-5.6	1.0200	8.1	0.9988	10.9			62	6
6311		ALGA13.8		13.800	A1	4.3	0.9	2.3	-2.3	1.0000	4.4	0.9807	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	0.9	2.3	-2.3	1.0000	4.4	0.9807	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9948	9.0	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9948	9.0	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	23.8	0.8	10.0	-10.0	1.0000	23.8	0.9995	30.0			64	6
6334		BAM13B		13.800	G2	23.8	0.8	10.0	-10.0	1.0000	23.8	0.9995	30.0			64	6
6335		BAIG1		13.800	G1	37.7	-9.0	14.0	-14.0	1.0000	38.7	0.9729	49.0			64	6
6336		BAIG2		13.800	G2	37.7	-9.0	14.0	-14.0	1.0000	38.7	0.9729	49.0			64	6
6361		GLA13A		13.800	G1	10.8	-2.4	7.8	-7.0	1.0000	11.0	0.9766	14.1			64	6



6362	GLA13B	13.800	G2	10.8	-2.4	7.8	-7.0	1.0000	11.0	0.9766	14.1	64	6
6364	LOR13A	13.800	G1	14.4	-5.5	7.8	-7.0	1.0000	15.4	0.9349	25.0	64	6
6365	LOR13B	13.800	G2	14.4	-5.5	7.8	-7.0	1.0000	15.4	0.9349	25.0	64	6
6367	PRU13A	13.800	G1	23.8	-6.9	8.0	-8.0	1.0000	24.8	0.9599	33.0	64	6
6368	PRU13B	13.800	G2	23.8	-6.9	8.0	-8.0	1.0000	24.8	0.9599	33.0	64	6
6384	PEDI13.8	13.800	G1	8.5	-0.1	4.9	-4.9	1.0000	8.5	0.9999	12.5	64	6
6384	PEDI13.8	13.800	G2	8.5	-0.1	4.9	-4.9	1.0000	8.5	0.9999	12.5	64	6
6385	PEDII13.8	13.800	G1	5.5	0.3	3.2	-3.6	1.0000	5.5	0.9989	7.5	64	6
6385	PEDII13.8	13.800	G2	5.5	0.3	3.2	-3.6	1.0000	5.5	0.9989	7.5	64	6
6431	EOLICO I	0.6000	G1	120.0	-21.0	21.0	-21.0	1.0042	121.3	0.9850	152.3	63	6
6510	MAC0.69A	0.7000	G1	1.5	-0.1	0.9	-0.1	1.0064	1.5	0.9981	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.5	-0.1	0.9	-0.1	1.0064	1.5	0.9981	2.1	64	6
6520	PANCH13.8	13.800	P1	4.3	2.0	2.0	-2.0	0.9610	4.9	0.9048	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.3	-0.8	2.5	-2.5	1.0000	4.3	0.9831	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.3	-0.8	2.5	-2.5	1.0000	4.3	0.9831	5.6	64	6
6560	PLANETA13.8	13.800	G1	3.8	2.0	2.0	-2.0	0.9610	4.5	0.8862	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.3	1.2	1.2	-1.2	0.9759	2.7	0.8937	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.3	1.2	1.2	-1.2	0.9759	2.7	0.8937	3.0	63	6
6600	HUACA13.8	13.800	G1	4.3	2.2	2.2	-2.2	0.9758	4.9	0.8893	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.3	-0.6	2.5	-2.5	1.0000	4.3	0.9911	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.3	-0.6	2.5	-2.5	1.0000	4.3	0.9911	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.3	-1.3	2.5	-2.5	1.0000	4.4	0.9581	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.3	-1.3	2.5	-2.5	1.0000	4.4	0.9581	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-2.2	3.7	-3.7	1.0000	6.8	0.9431	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-2.2	3.7	-3.7	1.0000	6.8	0.9431	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-1.6	1.9	-1.9	1.0000	3.6	0.9010	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-1.6	1.9	-1.9	1.0000	3.6	0.9010	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.3	1.6	2.5	-2.5	1.0000	4.5	0.9345	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0254	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.1	0.4	2.3	-2.6	1.0000	6.1	0.9974	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.1	0.4	2.3	-2.6	1.0000	6.1	0.9974	7.5	64	6
6681	BFRIO13A	13.800	G1	23.8	-8.0	8.0	-8.0	1.0048	25.0	0.9479	33.0	64	6
6682	BFRIO13B	13.800	G2	23.8	-8.0	8.0	-8.0	1.0048	25.0	0.9479	33.0	64	6
6692	ALTO13A	13.800	G1	19.1	9.9	9.9	-9.9	1.0088	21.3	0.8881	24.9	64	6
6693	ALTO13B	13.800	G2	19.1	-2.3	9.9	-9.9	1.0000	19.2	0.9927	24.9	64	6
6696	PANDO13A	13.800	G1	14.2	-0.1	12.8	-8.3	1.0000	14.2	1.0000	18.5	64	6
6697	PANDO13B	13.800	G2	14.2	-0.1	12.8	-8.3	1.0000	14.2	1.0000	18.5	64	6
6699	MLIRIO13A	13.800	G1	14.2	0.4	12.8	-8.3	1.0000	14.2	0.9996	18.5	64	6
6700	MLIRIO13B	13.800	G2	14.2	0.4	12.8	-8.3	1.0000	14.2	0.9996	18.5	64	6
6711	TIZ4.16	4.2000	G1	3.9	1.7	2.3	-2.3	1.0000	4.3	0.9172	5.2	64	6
6721	SIND4.16	4.2000	G1	4.3	-2.5	2.5	-2.5	1.0239	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.3	-2.5	2.5	-2.5	1.0239	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	3.8	-1.7	2.2	-2.2	1.0000	4.2	0.9097	5.0	64	6



6731	SAND4.16	4.2000	G2	3.8	-1.7	2.2	-2.2	1.0000	4.2	0.9097	5.0	6
6741	RROJAS4.16	4.2000	G1	3.7	-1.1	2.1	-2.1	1.0000	3.8	0.9605	4.8	6
6741	RROJAS4.16	4.2000	G2	3.7	-1.1	2.1	-2.1	1.0000	3.8	0.9605	4.8	6
6750	BON13.8	13.800	G1	8.9	-1.1	4.0	-4.0	1.0000	8.9	0.9918	35.3	6
6750	BON13.8	13.800	G2	8.9	-1.1	4.0	-4.0	1.0000	8.9	0.9918	35.3	6
6763	BAR13.8	13.800	G1	6.4	2.9	4.0	-4.0	1.0000	7.1	0.9102	9.0	6
6763	BAR13.8	13.800	G2	6.4	2.9	4.0	-4.0	1.0000	7.1	0.9102	9.0	6
6765	CRU13.8	13.800	G1	4.1	1.4	2.6	-2.6	1.0000	4.4	0.9447	5.8	6
6765	CRU13.8	13.800	G2	4.1	1.4	2.6	-2.6	1.0000	4.4	0.9447	5.8	6
6767	LAG13.8	13.800	G1	4.2	1.0	2.6	-2.6	1.0000	4.3	0.9701	5.8	6
6767	LAG13.8	13.800	G2	4.2	1.0	2.6	-2.6	1.0000	4.3	0.9701	5.8	6
6769	ESTRECHO4.164.2000	G1	4.4	1.3	2.5	-2.5	1.0000	4.6	0.9600	5.6	6	
6769	ESTRECHO4.164.2000	G2	4.4	1.3	2.5	-2.5	1.0000	4.6	0.9600	5.6	6	
6771	CAÑAZAS13.8	13.800	G1	2.5	1.1	1.5	-1.5	1.0000	2.7	0.9156	3.3	6
6771	CAÑAZAS13.8	13.800	G2	2.5	1.1	1.5	-1.5	1.0000	2.7	0.9156	3.3	6
6781	OAGUA13.8	13.800	G1	2.7	0.3	1.6	-1.6	1.0000	2.8	0.9922	3.6	6
6781	OAGUA13.8	13.800	G2	2.7	0.3	1.6	-1.6	1.0000	2.8	0.9922	3.6	6
6791	SMA13A	13.800	G1	10.9	-5.4	6.2	-6.2	1.0000	12.1	0.8958	14.2	6
6792	SMA13B	13.800	G2	10.9	-5.4	6.2	-6.2	1.0000	12.1	0.8958	14.2	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0633	282.2	0.0000	300.0	6
6821	PLANETAI	4.1600	G1	3.2	-1.8	1.8	-1.8	1.0068	3.6	0.8669	4.1	6
6831	SLO13.8	13.800	G1	3.6	2.1	2.1	-2.1	0.9882	4.2	0.8669	4.7	6
6831	SLO13.8	13.800	G2	3.6	2.1	2.1	-2.1	0.9882	4.2	0.8669	4.7	6
6841	BUR13A	13.800	G1	14.2	8.1	8.1	-8.1	0.9959	16.4	0.8669	18.5	6
6842	BUR13B	13.800	G2	14.2	8.1	8.1	-8.1	0.9959	16.4	0.8669	18.5	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0254	4.0	0.8678	4.6	6
6861	BBL13.8	13.800	G1	7.7	4.0	4.0	-3.0	0.9746	8.9	0.8863	10.1	6
6861	BBL13.8	13.800	G2	7.7	4.0	4.0	-3.0	0.9746	8.9	0.8863	10.1	6
6861	BBL13.8	13.800	G3	1.6	0.8	0.8	-0.6	0.9746	1.9	0.8862	2.1	6
6871	TABII13.8	13.800	G1	11.4	0.8	9.0	-9.0	1.0000	11.4	0.9977	20.5	6
6871	TABII13.8	13.800	G2	11.4	0.8	9.0	-9.0	1.0000	11.4	0.9977	20.5	6
6881	CHAIIG1	13.813.800	G1	91.0	5.6	52.3	-52.3	1.0100	90.2	0.9981	118.9	6
6900	SVC-LV	13.200	1	0.0	291.0	300.0	-225.0	1.0807	269.3	0.0000	300.0	6
SUBSYSTEM TOTALS				1846.1	639.6	1550.4	-1291.9				3079.9	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 14 2011 14:37

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL

BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2017

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
6127		MIR13B		12.000	G6	17.1	0.1	8.0	0.0	1.0100	16.9	1.0000	27.7			65	7
6128		MIR13C		12.000	G3	20.9	7.6	11.0	0.0	1.0100	22.0	0.9401	29.4			65	7



1485

6129	MIR13D	13.800	G4	27.8	9.2	15.0	0.0	1.0100	29.0	0.9489	44.1
6130	MIR13F	13.800	G5	17.1	0.6	8.0	0.0	1.0100	16.9	0.9993	27.7
6134	MAD6A	6.9000	G1	11.4	0.2	6.0	-6.0	1.0100	11.3	0.9999	13.0
6135	MAD6B	6.9000	G2	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0
6136	MAD6C	6.9000	G3	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0

SUBSYSTEM TOTALS 117.1 18.3 60.0 -18.0

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 14 2011 14:37

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2017

167.9

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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)
6000		FRONTER		230.00	6	1.0159	233.66	6003		PANII230		230.00	6	1.0100	232.30
6008		LSA230		230.00	6	1.0068	231.57	6011		MDN230		230.00	6	1.0014	230.32
6014		PRO230		230.00	6	1.0141	233.25	6096		FOR230		230.00	6	1.0040	230.93
6100		BAY230		230.00	6	1.0261	236.00	6103		COP230		230.00	6	1.0128	232.95
6171		PAC230		230.00	6	1.0180	234.14	6260		CHA 230		230.00	6	1.0164	233.76
6263		ESP230		230.00	6	1.0162	233.73	6330		BAI230		230.00	6	1.0134	233.08
6340		CAN 230		230.00	6	1.0054	231.25	6360		GLA230		230.00	6	1.0034	230.79
6363		ZAM230		230.00	6	1.0078	231.80	6366		EVA230		230.00	6	1.0103	232.36
6380		BOQIII 230		230.00	6	1.0080	231.84	6400		FRONTCHA		230.00	6	1.0171	233.93
6430		ANTON230		230.00	6	1.0067	231.54	6500		FRONTDOM		230.00	6	1.0237	235.46
6590		24DIC230		230.00	6	1.0136	233.13	6680		BFRIO230		230.00	6	1.0165	233.79
6690		DOM230		230.00	6	1.0242	235.57	6691		ALTO230		230.00	6	1.0268	236.17
6695		PANDO230		230.00	6	1.0251	235.77	6698		MLIRIO230		230.00	6	1.0248	235.71
6790		SMA230		230.00	6	1.0077	231.76	6840		BUR230		230.00	6	1.0164	233.77
6880		CHAI230		230.00	6	1.0157	233.62								

BUSES WITH VOLTAGE LESS THAN 1.0000:

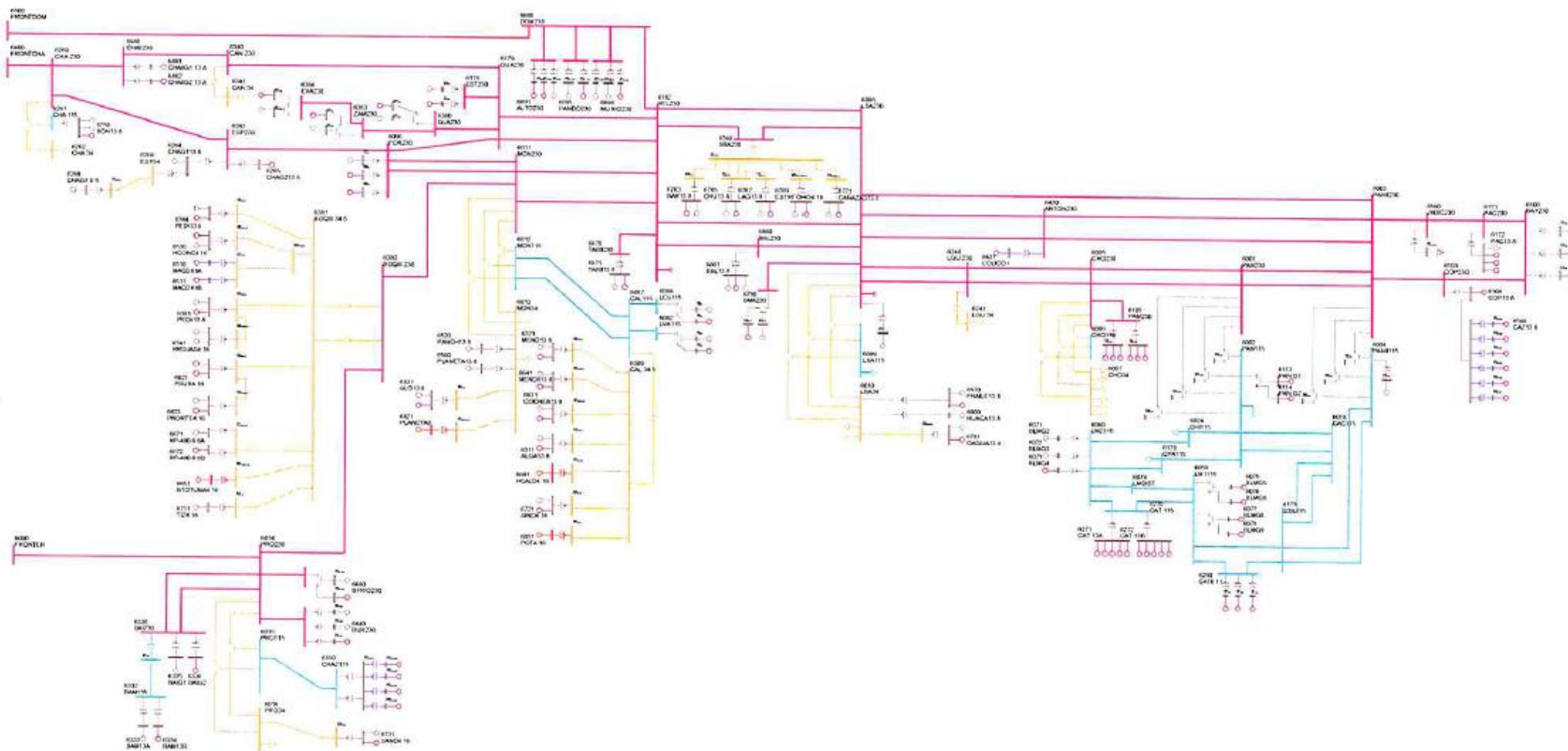
BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9941	228.64	6005		CHO230		230.00	6	0.9761	224.51
6105		PAM230		230.00	6	0.9761	224.51	6178		EST230		230.00	6	0.9991	229.79
6179		GUA230		230.00	6	0.9991	229.80	6182		VEL230		230.00	6	0.9971	229.34
6240		LGU 230		230.00	6	0.9832	226.14	6760		SBA230		230.00	6	0.9987	229.70
6860		BBL230		230.00	6	0.9975	229.43	6870		TABII230		230.00	6	0.9978	229.50



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							SAT, MAY 14 2011 14:37			
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS			
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2017							IN MW/MVAR			
X-- AREA --X	FROM RATION	TO LOAD TO AREA	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
								TO TIE LINES	TO TIES + LOADS	
1	1011.8	1179.4	0.0	0.0	0.0	0.0	22.3	-189.9	-189.9	-189.9
GUATEMAL	204.7	340.6	223.2	0.0	0.0	609.6	251.6	-1.1	-1.1	
2	1137.8	1104.0	0.0	0.0	0.0	0.0	33.8	0.0	0.0	0.0
SALVADOR	270.3	367.1	-182.0	0.0	0.0	243.3	298.1	30.4	30.4	
3	1234.7	1205.2	0.0	0.0	0.0	0.0	29.4	0.1	0.1	0.0
HONDURAS	357.2	395.2	-20.4	0.0	0.0	475.5	422.2	35.7	35.7	
4	473.4	459.0	0.0	0.0	0.0	0.0	14.4	0.0	0.0	0.0
NICARAGU	-50.3	181.0	-13.0	0.0	0.0	294.2	143.2	-67.3	-67.3	
5	1517.4	1489.7	0.0	0.0	0.0	0.0	27.7	0.0	0.0	0.0
COSTA RI	232.8	558.4	-226.7	0.0	0.0	557.3	410.8	47.7	47.7	
6	1846.1	1594.5	0.0	0.0	0.0	0.0	121.8	129.8	129.8	129.9
PANAMA	639.6	279.3	-228.7	0.0	0.0	512.7	1154.6	-52.9	-52.9	
7	117.1	53.1	0.0	0.0	0.0	0.0	4.0	60.0	60.0	60.0
ACANAL	18.3	9.3	-15.9	0.0	0.0	0.0	17.6	7.4	7.4	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	7338.2	7085.0	0.0	0.0	0.0	0.0	253.2	0.0	0.0	0.0
TOTALS	1672.8	2130.9	-463.6	0.0	0.0	2692.7	2698.1	0.0	0.0	



Demanda Mínima de Invierno





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E SAT, MAY 14 2011 14:42
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2017

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
6071		BLMG2		13.800	V2	20.0	6.8	15.0	0.0	1.0200	20.7	0.9475	47.0			62	6
6072		BLMG3		13.800	V3	20.0	6.8	15.0	0.0	1.0200	20.7	0.9475	47.0			62	6
6090		LESG1		13.800	E1	22.4	0.4	12.0	-5.0	1.0000	22.4	0.9999	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-5.0	12.0	-5.0	1.0070	26.3	0.9820	27.0			64	6
6097		FORG1		13.800	F1	91.2	-10.7	50.0	-50.0	1.0000	91.8	0.9932	111.0			64	6
6101		BAYG1		13.800	B1	73.3	15.1	30.0	-25.0	1.0000	74.8	0.9795	94.0			61	6
6176		ESTG1		13.800	E1	57.0	7.6	29.0	-29.0	1.0000	57.5	0.9911	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-5.6	52.4	-48.9	1.0000	99.8	0.9985	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	-1.9	4.9	-4.1	0.9850	9.6	0.9804	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	0.5	2.3	-2.3	1.0000	4.4	0.9945	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	3.7	4.2	-4.2	1.0000	8.8	0.9079	10.4			64	6
6333		BAM13A		13.800	G1	26.6	-0.7	10.0	-10.0	1.0000	26.6	0.9996	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-14.0	14.0	-14.0	1.0036	44.2	0.9490	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-7.0	7.8	-7.0	1.0088	13.8	0.8649	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-7.0	7.8	-7.0	1.0111	17.3	0.9167	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-8.0	8.0	-8.0	1.0110	27.5	0.9576	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	-1.3	4.9	-4.9	1.0000	9.6	0.9906	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	-0.4	3.2	-3.6	1.0000	6.2	0.9981	7.5			64	6
6431		EOLICO I		0.6000	G1	60.0	-10.5	10.5	-10.5	1.0083	60.4	0.9850	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.6	-0.1	0.9	-0.1	1.0059	1.6	0.9985	2.1			64	6
6520		PANCH13.8		13.800	P1	4.7	2.0	2.0	-2.0	0.9754	5.3	0.9216	6.2			64	6
6530		HCONC4.16		4.2000	G2	4.7	-2.3	2.5	-2.5	1.0000	5.3	0.8992	5.6			64	6
6560		PLANETA13.8		13.800	G1	4.3	2.0	2.0	-2.0	0.9754	4.8	0.9058	4.9			64	6
6570		FRAILE13.8		13.800	G1	2.6	1.2	1.2	-1.2	0.9623	3.0	0.9122	3.0			63	6
6600		HUACA13.8		13.800	G1	4.8	2.2	2.2	-2.2	0.9629	5.5	0.9084	5.5			63	6
6621		PSUR4.16		4.2000	G1	4.7	-2.2	2.5	-2.5	1.0000	5.2	0.9059	5.6			64	6
6623		PNORTE4.16		4.2000	G1	4.7	-2.5	2.5	-2.5	1.0000	5.4	0.8851	5.6			64	6
6631		COCHEA13.8		13.800	G1	6.4	-3.7	3.7	-3.7	1.0143	7.3	0.8651	8.4			64	6
6641		MENDII13.8		13.800	G1	3.3	-1.9	1.9	-1.9	1.0154	3.7	0.8696	4.1			64	6
6651		BTOTUMA4.16		4.1600	G1	4.7	-1.9	2.5	-2.5	1.0000	5.1	0.9317	5.6			64	6
6661		HCALD4.16		4.1600	G1	3.4	-2.0	2.0	-2.0	1.0408	3.8	0.8675	4.4			64	6
6671		RP-490 6.6A		6.6000	G1	6.8	0.2	2.3	-2.6	1.0000	6.8	0.9995	7.5			64	6
6681		BFRIO13A		13.800	G1	26.6	-8.0	8.0	-8.0	1.0161	27.3	0.9576	33.0			64	6
6692		ALTO13A		13.800	G1	21.3	4.1	9.9	-9.9	1.0100	21.5	0.9817	24.9			64	6
6696		PANDO13A		13.800	G1	15.8	-8.3	12.8	-8.3	1.0006	17.9	0.8855	18.5			64	6
6699		MLIRIO13A		13.800	G1	15.8	-8.3	12.8	-8.3	1.0001	17.9	0.8855	18.5			64	6
6700		MLIRIO13B		13.800	G2	15.8	-8.3	12.8	-8.3	1.0001	17.9	0.8855	18.5			64	6



6711	TIZ4.16	4.2000	G1	4.4	-1.7	2.3	-2.3	1.0000	4.7	0.9296	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0405	4.7	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0129	4.7	0.8892	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.6	2.1	-2.1	1.0000	4.4	0.9333	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.6	2.1	-2.1	1.0000	4.4	0.9333	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-2.3	4.0	-4.0	1.0000	10.2	0.9734	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-2.3	4.0	-4.0	1.0000	10.2	0.9734	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	4.0	4.0	-4.0	0.9983	8.2	0.8757	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	2.2	2.6	-2.6	1.0000	5.1	0.9009	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.7	2.6	-2.6	1.0000	5.0	0.9382	5.8	63	6
6769	ESTRECHO4.16	4.2000	G1	4.9	2.0	2.5	-2.5	1.0000	5.3	0.9247	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.8	1.5	1.5	-1.5	0.9970	3.2	0.8885	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	1.6	1.6	-1.6	0.9870	3.5	0.8897	3.6	63	6
6791	SMA13A	13.800	G1	12.2	3.6	6.2	-6.2	1.0000	12.7	0.9586	14.2	63	6
6810	SVC-LV	13.200	1	0.0	-61.7	300.0	-225.0	0.9824	62.8	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0221	3.9	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	1.4	2.1	-2.1	1.0000	4.2	0.9426	4.7	64	6
6841	BUR13A	13.800	G1	15.8	-0.3	8.1	-8.1	1.0000	15.8	0.9998	18.5	64	6
6842	BUR13B	13.800	G2	15.8	-0.3	8.1	-8.1	1.0000	15.8	0.9998	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0408	3.9	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9875	9.6	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9875	2.0	0.9058	2.1	64	6
6871	TABII13.8	13.800	G1	16.4	-5.1	9.0	-9.0	1.0000	17.2	0.9555	20.5	64	6
6881	CHAIIG1	13.813.800	G1	101.7	-1.4	52.3	-52.3	1.0100	100.7	0.9999	118.9	64	6
6900	SVC-LV	13.200	1	0.0	13.5	300.0	-225.0	0.9944	13.6	0.0000	300.0	61	6
SUBSYSTEM TOTALS				1034.0	-119.7	1105.6	-885.9				2015.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 14 2011 14:42
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2017

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
6127		MIR13B		12.000	G6	17.1	0.5	8.0	0.0	1.0100	16.9	0.9996	27.7			65	7
6128		MIR13C		12.000	G3	20.9	7.9	11.0	0.0	1.0100	22.1	0.9360	29.4			65	7
6129		MIR13D		13.800	G4	18.1	10.8	15.0	0.0	1.0100	20.9	0.8592	44.1			65	7
6134		MAD6A		6.9000	G1	11.4	0.8	6.0	-6.0	1.0100	11.3	0.9978	13.0			65	7
6136		MAD6C		6.9000	G3	10.4	0.8	6.0	-6.0	1.0100	10.3	0.9967	13.0			65	7
SUBSYSTEM TOTALS						77.9	20.7	46.0	-12.0				127.2				



1491

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 14 2011 14:42
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2017

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0270	236.20	6011		MDN230		230.00	6	1.0159	233.66
6014		PRO230		230.00	6	1.0247	235.69	6096		FOR230		230.00	6	1.0167	233.85
6100		BAY230		230.00	6	1.0098	232.26	6103		COP230		230.00	6	1.0020	230.45
6171		PAC230		230.00	6	1.0024	230.56	6178		EST230		230.00	6	1.0149	233.42
6179		GUA230		230.00	6	1.0150	233.44	6182		VEL230		230.00	6	1.0120	232.77
6260		CHA 230		230.00	6	1.0275	236.32	6263		ESP230		230.00	6	1.0264	236.07
6330		BAI230		230.00	6	1.0240	235.53	6340		CAN 230		230.00	6	1.0201	234.62
6360		GLA230		230.00	6	1.0172	233.96	6363		ZAM230		230.00	6	1.0196	234.51
6366		EVA230		230.00	6	1.0210	234.82	6380		BOQIII 230		230.00	6	1.0194	234.46
6400		FRONTCHA		230.00	6	1.0290	236.67	6430		ANTON230		230.00	6	1.0093	232.15
6500		FRONTDOM		230.00	6	1.0313	237.19	6590		24DIC230		230.00	6	1.0009	230.22
6680		BFRIO230		230.00	6	1.0261	236.00	6690		DOM230		230.00	6	1.0309	237.10
6691		ALTO230		230.00	6	1.0323	237.43	6695		PANDO230		230.00	6	1.0301	236.93
6698		MLIRIO230		230.00	6	1.0296	236.82	6760		SBA230		230.00	6	1.0082	231.88
6840		BUR230		230.00	6	1.0252	235.80	6860		BBL230		230.00	6	1.0114	232.61
6870		TABII230		230.00	6	1.0119	232.74	6880		CHAI230		230.00	6	1.0267	236.15

BUSES WITH VOLTAGE LESS THAN 1.0000:

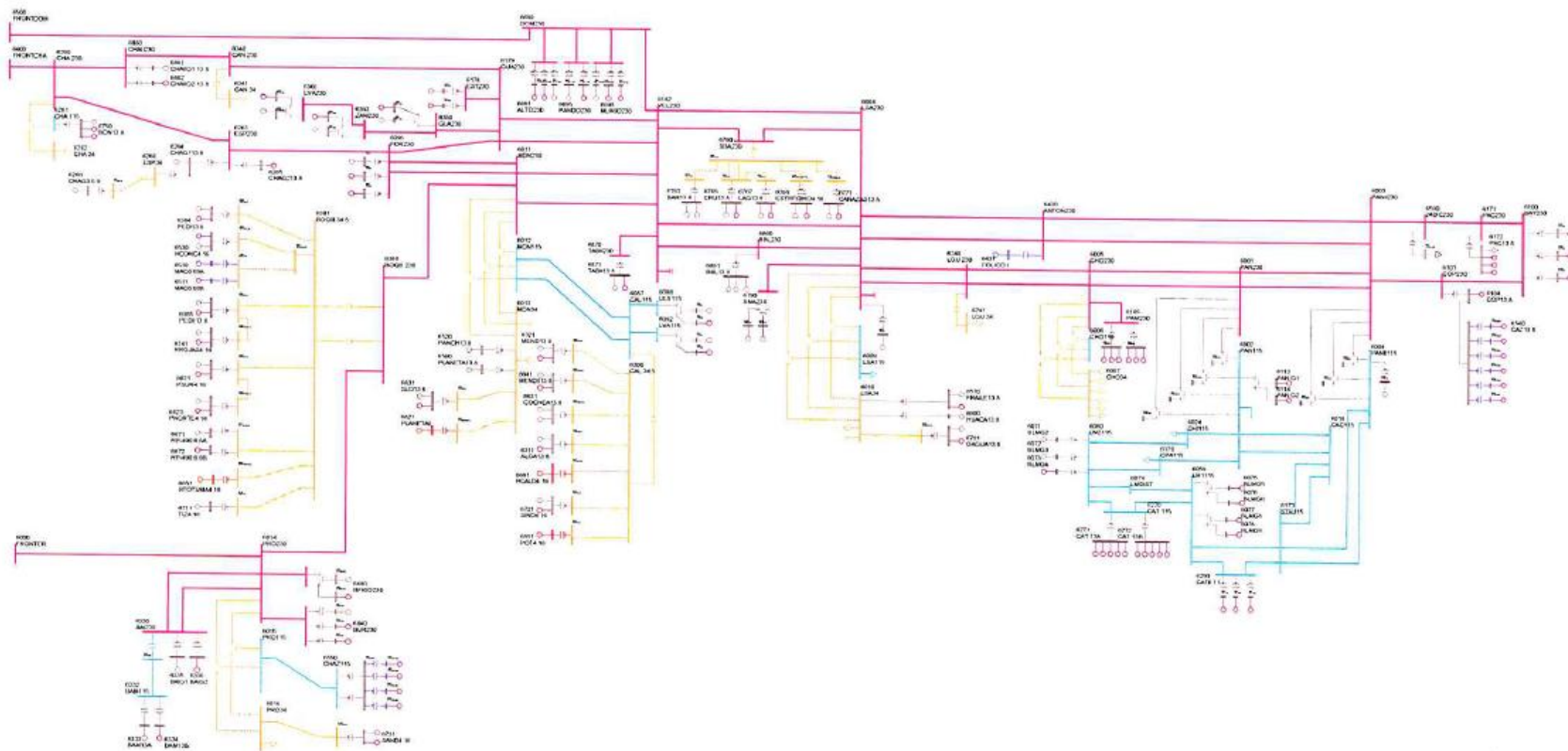
BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9925	228.27	6005		CHO230		230.00	6	0.9859	226.77
6008		LSA230		230.00	6	0.9950	228.85	6105		PAM230		230.00	6	0.9859	226.77
6240		LGU 230		230.00	6	0.9904	227.79	6790		SMA230		230.00	6	0.9958	229.03



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 14 2011 14:42
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2017 IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO			-NET INTERCHANGE-				
	GENE- RATION	ASSIGNED TO AREA	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1 GUATEMAL	625.7 -10.1	773.5 100.4	0.0 383.9	0.0 0.0	0.0 0.0	0.0 620.1	10.8 161.9	-158.5 -36.1	-158.5 -36.1	-158.6
2 SALVADOR	524.8 27.3	512.7 137.7	0.0 -22.4	0.0 0.0	0.0 0.0	0.0 253.1	12.2 112.4	-0.1 52.7	-0.1 52.7	0.0
3 HONDURAS	561.9 -98.2	545.5 179.1	0.0 40.3	0.0 0.0	0.0 0.0	0.0 512.0	16.4 142.3	0.0 52.2	0.0 52.2	0.0
4 NICARAGU	306.3 -138.1	298.5 118.2	0.0 50.7	0.0 0.0	0.0 0.0	0.0 310.4	7.8 78.6	0.0 -75.1	0.0 -75.1	0.0
5 COSTA RI	777.9 -81.0	769.0 302.3	0.0 -13.8	0.0 0.0	0.0 0.0	0.0 590.9	8.8 146.1	0.2 75.4	0.2 75.4	0.0
6 PANAMA	1034.0 -119.7	879.0 319.0	0.0 -225.4	0.0 0.0	0.0 0.0	0.0 561.5	42.9 432.8	112.1 -84.6	112.1 -84.6	111.6
7 ACANAL	77.9 20.7	29.3 10.6	0.0 -16.0	0.0 0.0	0.0 0.0	0.0 0.0	2.3 10.5	46.4 15.6	46.4 15.6	47.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	3908.6 -399.1	3807.5 1167.2	0.0 197.2	0.0 0.0	0.0 0.0	0.0 2848.1	101.2 1084.6	0.0 0.0	0.0 0.0	0.0

Demanda Mínima de Verano





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 14 2011 14:46
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2017

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
6071		BLMG2		13.800	V2	20.0	5.3	15.0	0.0	1.0200	20.3	0.9668	47.0			62	6
6072		BLMG3		13.800	V3	20.0	5.3	15.0	0.0	1.0200	20.3	0.9668	47.0			62	6
6090		LESG1		13.800	E1	20.1	0.4	12.0	-5.0	1.0000	20.1	0.9998	27.0			64	6
6094		LVAG1		13.800	L1	23.3	-5.0	12.0	-5.0	1.0070	23.7	0.9777	27.0			64	6
6097		FORG1		13.800	F1	75.0	-4.9	50.0	-50.0	1.0100	74.4	0.9978	111.0			64	6
6101		BAYG1		13.800	B1	63.0	20.9	30.0	-25.0	1.0100	65.7	0.9491	94.0			61	6
6176		ESTG1		13.800	E1	51.0	5.1	29.0	-29.0	1.0000	51.3	0.9950	69.0			64	6
6264		CHAG113.8		13.800	G1	70.0	-19.8	52.4	-48.9	0.9900	73.5	0.9623	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.3	4.9	4.9	-4.1	0.9871	9.8	0.8623	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.7	2.3	-2.3	1.0000	4.7	0.9310	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9872	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	23.8	-1.1	10.0	-10.0	1.0000	23.8	0.9990	30.0			64	6
6335		BAIG1		13.800	G1	31.0	-14.0	14.0	-14.0	1.0028	34.0	0.9116	49.0			64	6
6361		GLA13A		13.800	G1	8.9	0.4	7.8	-7.0	1.0200	8.7	0.9989	14.1			64	6
6364		LOR13A		13.800	G1	11.8	-1.1	7.8	-7.0	1.0200	11.7	0.9955	25.0			64	6
6367		PRU13A		13.800	G1	19.6	-8.0	8.0	-8.0	1.0126	20.9	0.9258	33.0			64	6
6384		PEDI13.8		13.800	G1	8.5	-1.5	4.9	-4.9	1.0000	8.6	0.9855	12.5			64	6
6385		PEDII13.8		13.800	G1	5.5	-0.7	3.2	-3.6	1.0000	5.6	0.9925	7.5			64	6
6431		EOLICO I		0.6000	G1	120.0	-19.0	21.0	-21.0	1.0000	121.5	0.9877	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.5	-0.1	0.9	-0.1	1.0058	1.5	0.9981	2.1			64	6
6520		PANCH13.8		13.800	P1	4.2	2.0	2.0	-2.0	0.9755	4.8	0.9048	6.2			64	6
6530		HCONC4.16		4.2000	G2	4.2	-2.4	2.5	-2.5	1.0000	4.9	0.8681	5.6			64	6
6560		PLANETA13.8		13.800	G1	3.8	2.0	2.0	-2.0	0.9755	4.4	0.8862	4.9			64	6
6570		FRAILE13.8		13.800	G1	2.3	1.2	1.2	-1.2	0.9574	2.7	0.8937	3.0			63	6
6600		HUACA13.8		13.800	G1	4.3	2.2	2.2	-2.2	0.9580	5.0	0.8892	5.5			63	6
6621		PSUR4.16		4.2000	G1	4.2	-2.4	2.5	-2.5	1.0000	4.9	0.8715	5.6			64	6
6623		PNORTE4.16		4.2000	G1	4.2	-2.5	2.5	-2.5	1.0001	4.9	0.8622	5.6			64	6
6631		COCHEA13.8		13.800	G1	6.4	-2.8	3.7	-3.7	1.0000	6.9	0.9180	8.4			64	6
6631		COCHEA13.8		13.800	G2	6.4	-2.8	3.7	-3.7	1.0000	6.9	0.9180	8.4			64	6
6641		MENDII13.8		13.800	G1	3.3	-1.9	1.9	-1.9	1.0014	3.8	0.8696	4.1			64	6
6651		BTOTUMA4.16		4.1600	G1	4.2	-2.2	2.5	-2.5	1.0000	4.8	0.8903	5.6			64	6
6661		HCALD4.16		4.1600	G1	3.4	-2.0	2.0	-2.0	1.0264	3.8	0.8675	4.4			64	6
6671		RP-490 6.6A		6.6000	G1	6.1	0.1	2.3	-2.6	1.0000	6.1	0.9998	7.5			64	6
6681		BFRIO13A		13.800	G1	23.8	-8.0	8.0	-8.0	1.0146	24.7	0.9479	33.0			64	6
6692		ALTO13A		13.800	G1	19.1	-9.9	9.9	-9.9	0.9949	21.6	0.8881	24.9			64	6
6696		PANDO13A		13.800	G1	14.2	-8.3	12.8	-8.3	0.9962	16.5	0.8626	18.5			64	6
6699		MLIRIO13A		13.800	G1	14.2	-8.3	12.8	-8.3	0.9964	16.5	0.8626	18.5			64	6



6711	TIZ4.16	4.2000	G1	3.9	-2.1	2.3	-2.3	1.0000	4.5	0.8844	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0261	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	3.8	-2.2	2.2	-2.2	1.0113	4.4	0.8668	5.0	64	6
6741	RROJAS4.16	4.2000	G1	3.7	-1.9	2.1	-2.1	1.0000	4.1	0.8909	4.8	64	6
6750	BON13.8	13.800	G1	8.9	-4.0	4.0	-4.0	1.0003	9.7	0.9115	35.3	64	6
6763	BAR13.8	13.800	G1	6.4	2.2	4.0	-4.0	1.0000	6.8	0.9474	9.0	63	6
6763	BAR13.8	13.800	G2	6.4	2.2	4.0	-4.0	1.0000	6.8	0.9474	9.0	63	6
6765	CRU13.8	13.800	G1	4.1	2.3	2.6	-2.6	1.0000	4.7	0.8709	5.8	63	6
6767	LAG13.8	13.800	G1	4.2	1.8	2.6	-2.6	1.0000	4.6	0.9145	5.8	63	6
6769	ESTRECHO4.16	4.2000	G1	4.4	2.1	2.5	-2.5	1.0000	4.9	0.8995	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.5	1.5	1.5	-1.5	0.9961	2.9	0.8661	3.3	63	6
6781	OAGUA13.8	13.800	G1	2.7	1.6	1.6	-1.6	0.9820	3.2	0.8674	3.6	63	6
6791	SMA13A	13.800	G1	10.9	6.1	6.2	-6.2	1.0000	12.5	0.8718	14.2	63	6
6792	SMA13B	13.800	G2	10.9	6.1	6.2	-6.2	1.0000	12.5	0.8718	14.2	63	6
6810	SVC-LV	13.200	1	0.0	-74.9	300.0	-225.0	0.9746	76.8	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.2	-1.8	1.8	-1.8	1.0221	3.6	0.8669	4.1	64	6
6831	SLO13.8	13.800	G1	3.6	1.4	2.1	-2.1	1.0000	3.8	0.9299	4.7	64	6
6841	BUR13A	13.800	G1	14.2	2.3	8.1	-8.1	1.0000	14.3	0.9876	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0264	4.0	0.8677	4.6	64	6
6861	BBL13.8	13.800	G1	7.7	4.0	4.0	-3.0	0.9890	8.8	0.8863	10.1	64	6
6861	BBL13.8	13.800	G2	7.7	4.0	4.0	-3.0	0.9890	8.8	0.8863	10.1	64	6
6861	BBL13.8	13.800	G3	1.6	0.8	0.8	-0.6	0.9890	1.8	0.8861	2.1	64	6
6871	TABII13.8	13.800	G1	14.7	-5.4	9.0	-9.0	1.0000	15.6	0.9380	20.5	64	6
6881	CHAIIG1	13.813.800	G1	70.0	-15.2	52.3	-52.3	0.9900	72.4	0.9771	118.9	64	6
6900	SVC-LV	13.200	1	0.0	65.5	300.0	-225.0	1.0078	65.0	0.0000	300.0	61	6
SUBSYSTEM TOTALS				925.1	-80.9	1107.0	-890.8				1980.5		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 14 2011 14:46
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2017

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
6127		MIR13B		12.000	G6	17.1	1.4	8.0	0.0	1.0100	17.0	0.9967	27.7			65	7
6129		MIR13D		13.800	G4	31.9	10.1	15.0	0.0	1.0100	33.1	0.9532	44.1			65	7
6130		MIR13F		13.800	G5	17.1	2.1	8.0	0.0	1.0100	17.1	0.9923	27.7			65	7
6134		MAD6A		6.9000	G1	12.2	2.0	6.0	-6.0	1.0100	12.2	0.9869	13.0			65	7
SUBSYSTEM TOTALS						78.2	15.6	37.0	-6.0				112.5				



1497

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 14 2011 14:46
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2017

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0251	235.77	6011		MDN230		230.00	6	1.0170	233.90
6014		PRO230		230.00	6	1.0233	235.35	6096		FOR230		230.00	6	1.0187	234.29
6100		BAY230		230.00	6	1.0115	232.63	6103		COP230		230.00	6	1.0022	230.51
6171		PAC230		230.00	6	1.0029	230.67	6178		EST230		230.00	6	1.0176	234.04
6179		GUA230		230.00	6	1.0177	234.06	6182		VEL230		230.00	6	1.0128	232.94
6260		CHA 230		230.00	6	1.0222	235.10	6263		ESP230		230.00	6	1.0217	234.99
6330		BAI230		230.00	6	1.0225	235.18	6340		CAN 230		230.00	6	1.0195	234.49
6360		GLA230		230.00	6	1.0196	234.50	6363		ZAM230		230.00	6	1.0214	234.93
6366		EVA230		230.00	6	1.0224	235.14	6380		BOQIII 230		230.00	6	1.0191	234.40
6400		FRONTCHA		230.00	6	1.0236	235.44	6430		ANTON230		230.00	6	1.0018	230.42
6500		FRONTDOM		230.00	6	1.0271	236.23	6590		24DIC230		230.00	6	1.0012	230.27
6680		BFRIO230		230.00	6	1.0244	235.62	6690		DOM230		230.00	6	1.0264	236.08
6691		ALTO230		230.00	6	1.0273	236.27	6695		PANDO230		230.00	6	1.0256	235.90
6698		MLIRIO230		230.00	6	1.0259	235.95	6760		SBA230		230.00	6	1.0075	231.71
6840		BUR230		230.00	6	1.0238	235.48	6860		BBL230		230.00	6	1.0122	232.82
6870		TABII230		230.00	6	1.0126	232.89	6880		CHAI230		230.00	6	1.0208	234.79

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9911	227.94	6005		CHO230		230.00	6	0.9817	225.78
6008		LSA230		230.00	6	0.9900	227.70	6105		PAM230		230.00	6	0.9817	225.78
6240		LGU 230		230.00	6	0.9837	226.26	6790		SMA230		230.00	6	0.9916	228.06



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E SAT, MAY 14 2011 14:46
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2017 IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO			-NET INTERCHANGE-				
	GENE- RATION	ASSIGNED TO AREA	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1 GUATEMAL	718.4 -15.7	758.5 99.0	0.0 383.6	0.0 0.0	0.0 0.0	0.0 624.2	12.0 176.1	-52.1 -50.2	-52.1 -50.2	-52.1
2 SALVADOR	519.6 13.2	512.7 137.7	0.0 0.0	0.0 0.0	0.0 0.0	0.0 253.7	6.9 85.7	0.0 43.5	0.0 43.5	0.0
3 HONDURAS	555.0 -122.0	545.5 179.1	0.0 45.7	0.0 0.0	0.0 0.0	0.0 518.7	9.6 118.4	0.0 53.6	0.0 53.6	0.0
4 NICARAGU	311.1 -119.3	304.3 120.4	0.0 52.3	0.0 0.0	0.0 0.0	0.0 315.9	6.7 71.2	0.0 -47.2	0.0 -47.2	0.0
5 COSTA RI	762.2 -18.8	750.0 309.9	0.0 0.0	0.0 0.0	0.0 0.0	0.0 572.4	12.2 192.1	0.0 51.6	0.0 51.6	0.0
6 PANAMA	925.1 -80.9	877.0 318.3	0.0 -227.5	0.0 0.0	0.0 0.0	0.0 514.3	43.0 405.0	5.2 -62.3	5.2 -62.3	5.1
7 ACANAL	78.3 15.6	29.2 10.6	0.0 -15.9	0.0 0.0	0.0 0.0	0.0 0.0	2.1 9.8	47.0 11.1	47.0 11.1	47.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	3869.7 -327.8	3777.2 1174.9	0.0 238.2	0.0 0.0	0.0 0.0	0.0 2799.2	92.5 1058.3	0.0 0.0	0.0 0.0	0.0

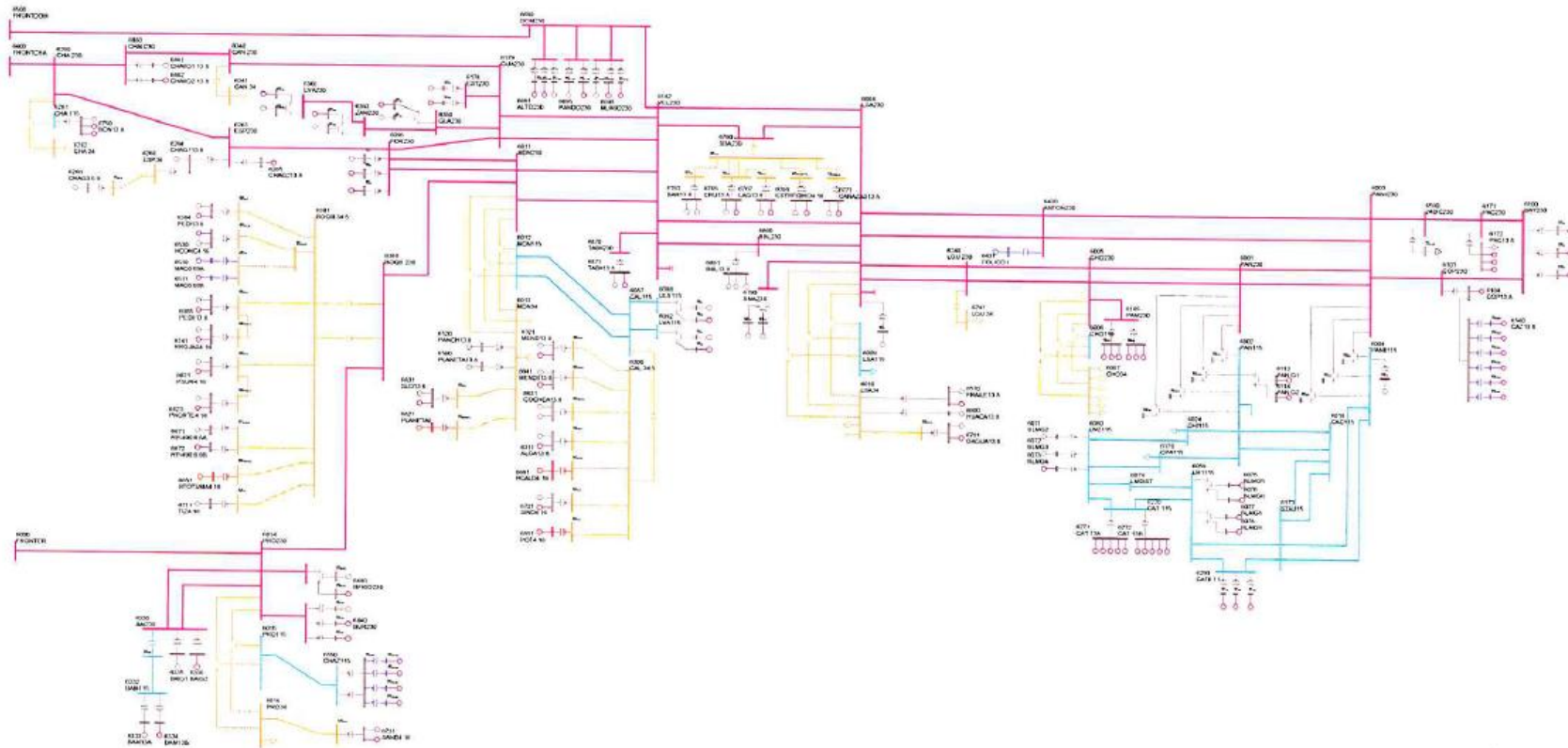
Año 2020



1500



Demanda Máxima de Invierno





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 8:17
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020

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
6071		BLMG2		13.800	V2	38.0	2.5	15.0	0.0	1.0200	37.3	0.9979	47.0			62	6
6072		BLMG3		13.800	V3	38.0	2.5	15.0	0.0	1.0200	37.3	0.9979	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.4	15.0	0.0	1.0200	37.3	0.9980	47.0			62	6
6090		LESG1		13.800	E1	22.4	4.4	12.0	-5.0	1.0000	22.9	0.9811	27.0			64	6
6091		LESG2		13.800	E2	22.4	4.4	12.0	-5.0	1.0000	22.9	0.9811	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-2.1	12.0	-5.0	1.0000	26.1	0.9969	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-2.1	12.0	-5.0	1.0000	26.1	0.9969	27.0			64	6
6097		FORG1		13.800	F1	90.0	13.5	50.0	-50.0	1.0100	90.1	0.9890	111.0			64	6
6098		FORG2		13.800	F2	90.0	13.5	50.0	-50.0	1.0100	90.1	0.9890	111.0			64	6
6101		BAYG1		13.800	B1	79.1	26.0	30.0	-25.0	1.0200	81.6	0.9502	94.0			61	6
6102		BAYG2		13.800	B2	79.9	26.0	30.0	-25.0	1.0200	82.4	0.9508	94.0			61	6
6176		ESTG1		13.800	E1	57.0	11.3	29.0	-29.0	1.0000	58.1	0.9811	69.0			64	6
6177		ESTG2		13.800	E2	57.0	11.3	29.0	-29.0	1.0000	58.1	0.9811	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-2.7	52.4	-48.9	1.0000	99.6	0.9996	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	0.7	52.4	-48.9	1.0000	99.6	1.0000	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9747	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9747	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9919	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9919	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.6	10.0	-10.0	1.0000	26.7	0.9981	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.6	10.0	-10.0	1.0000	26.7	0.9981	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-7.4	14.0	-14.0	1.0000	42.8	0.9851	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-7.4	14.0	-14.0	1.0000	42.8	0.9851	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-7.0	7.8	-7.0	0.9891	14.1	0.8649	14.1			64	6
6362		GLA13B		13.800	G2	12.1	-7.0	7.8	-7.0	0.9891	14.1	0.8649	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-3.1	7.8	-7.0	1.0000	16.4	0.9819	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-3.1	7.8	-7.0	1.0000	16.4	0.9819	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-4.9	8.0	-8.0	1.0000	27.0	0.9836	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-4.9	8.0	-8.0	1.0000	27.0	0.9836	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.5	3.2	-3.6	1.0000	6.2	0.9973	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.5	3.2	-3.6	1.0000	6.2	0.9973	7.5			64	6
6431		EOLICO I		0.6000	G1	60.0	-10.5	10.5	-10.5	1.0063	60.5	0.9850	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.6	-0.1	0.9	-0.1	1.0064	1.6	0.9985	2.1			64	6
6511		MAC0.69B		0.7000	G2	1.6	-0.1	0.9	-0.1	1.0064	1.6	0.9985	2.1			64	6



6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9531	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9920	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9920	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9531	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9703	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9703	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9702	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9975	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9975	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.2	2.5	-2.5	1.0000	4.9	0.9695	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.2	2.5	-2.5	1.0000	4.9	0.9695	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.7	3.7	-3.7	1.0000	6.4	0.9945	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.7	3.7	-3.7	1.0000	6.4	0.9945	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.1	1.9	-1.9	1.0000	3.3	0.9991	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.1	1.9	-1.9	1.0000	3.3	0.9991	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	0.9999	5.4	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0224	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9960	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9960	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0027	27.7	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0027	27.7	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0081	23.3	0.9074	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	-1.3	9.9	-9.9	1.0000	21.4	0.9980	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	1.0	12.8	-8.3	1.0000	15.9	0.9979	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	1.0	12.8	-8.3	1.0000	15.9	0.9979	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	1.7	12.8	-8.3	1.0000	15.9	0.9944	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	1.7	12.8	-8.3	1.0000	15.9	0.9944	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9995	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0208	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0208	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-1.2	2.2	-2.2	1.0000	4.4	0.9623	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-1.2	2.2	-2.2	1.0000	4.4	0.9623	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.0	2.1	-2.1	1.0000	4.2	0.9688	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.0	2.1	-2.1	1.0000	4.2	0.9688	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.1	4.0	-4.0	1.0000	9.9	0.9999	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.1	4.0	-4.0	1.0000	9.9	0.9999	35.3	64	6
6750	BON13.8	13.800	G3	9.9	-0.1	4.0	-4.0	1.0000	9.9	0.9999	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	3.3	4.0	-4.0	1.0000	7.9	0.9070	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	3.3	4.0	-4.0	1.0000	7.9	0.9070	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9421	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9421	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9681	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9681	5.8	63	6

6140 GAT6A	6.9000 G4	4.3	-2.4	3.0	-3.0	0.9900	5.0	0.8677	5.6
6140 GAT6A	6.9000 G5	4.3	-2.4	3.0	-3.0	0.9900	5.0	0.8677	6.2
SUBSYSTEM TOTALS		125.8	17.8	66.0	-24.0				179.8



1505

7

7



1507

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 8:17
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0248	117.85	6004		PANII115		115.00	6	1.0224	117.58
6009		LSA115		115.00	6	1.0141	116.62	6012		MDN115		115.00	6	1.0043	115.49
6015		PRO115		115.00	6	1.0075	115.86	6018		CAC115		115.00	6	1.0240	117.75
6019		CVI115A		115.00	6	1.0121	116.39	6024		CHI115		115.00	6	1.0156	116.79
6027		LOC115A		115.00	6	1.0115	116.32	6032		MAR115A		115.00	6	1.0076	115.87
6036		SMA115		115.00	6	1.0233	117.67	6040		SFR115		115.00	6	1.0065	115.75
6047		CLA115		115.00	6	1.0150	116.72	6055		MOS115B		115.00	6	1.0212	117.44
6057		TOC115		115.00	6	1.0192	117.21	6059		LM1115		115.00	6	1.0179	117.06
6060		LM2115		115.00	6	1.0180	117.07	6066		FFIELD		115.00	6	1.0098	116.13
6074		LMDIST		115.00	6	1.0180	117.07	6087		CAL115		115.00	6	1.0101	116.16
6088		LES115		115.00	6	1.0130	116.50	6092		LVA115		115.00	6	1.0102	116.18
6123		MIR115		115.00	7	1.0335	118.85	6170		CPA115		115.00	6	1.0185	117.12
6173		STR115		115.00	6	1.0221	117.54	6174		PM115-1A		115.00	6	1.0240	117.76
6175		PM115-2A		115.00	6	1.0240	117.76	6210		TIN115		115.00	6	1.0197	117.27
6211		PM115-9		115.00	6	1.0204	117.35	6230		CBA115		115.00	6	1.0092	116.06
6261		CHA 115		115.00	6	1.0054	115.62	6270		CAT 115		115.00	6	1.0180	117.07
6280		GIR 115		115.00	6	1.0185	117.12	6290		CATII 11		115.00	6	1.0184	117.12
6332		BAM115		115.00	6	1.0032	115.37	6350		PM115-8		115.00	6	1.0160	116.84
6550		CHAZ115		115.00	6	1.0075	115.86	6580		LBO115		115.00	6	1.0113	116.30
6910		GON115		115.00	6	1.0189	117.18								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6006		CHO115		115.00	6	0.9410	108.21	6331		BAI115		115.00	6	0.9995	114.95



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 8:17
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020
 OUTPUT FOR AREA 6 [PANAMA]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAF01	WND 1	6	T1	48.1	50.0	96.2	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T3	96.2	100.0	96.2	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T2	48.1	50.0	96.2	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF01	WND 2	6	T1	57.5	60.0	95.8	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF02	WND 2	6	T2	57.5	60.0	95.8	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T1	WND 2	6	T1	48.6	50.0	97.1	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T2	WND 2	6	T2	47.9	50.0	95.8	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T4	WND 2	6	T4	48.5	50.0	97.0	--	--	--	--
6087	CAL115	115.00*	6	6300 CAL	34.5	34.500	6	T1	59.8	62.5	95.8	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.8	54.0	97.7	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 8:17
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020
 OUTPUT FOR AREA 7 [ACANAL]
 SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 8:17
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO			-NET INTERCHANGE-				DESIRED NET INT
	GENE- RATION	ASSIGNED TO AREA	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	924.9 217.8	1179.4 340.6	0.0 219.3	0.0 0.0	0.0 0.0	0.0 602.5	22.8 244.8	-277.3 15.6	-277.3 15.6	-277.3
2 SALVADOR	1142.3 300.2	1104.0 367.1	0.0 -180.9	0.0 0.0	0.0 0.0	0.0 241.1	38.3 324.6	0.0 30.6	0.0 30.6	0.0
3 HONDURAS	1239.1 390.9	1205.2 395.2	0.0 -20.4	0.0 0.0	0.0 0.0	0.0 469.1	33.8 452.5	0.0 32.6	0.0 32.6	0.0
4 NICARAGU	479.3 -16.9	459.0 181.0	0.0 -12.8	0.0 0.0	0.0 0.0	0.0 289.0	20.3 180.8	0.0 -76.9	0.0 -76.9	0.0
5 COSTA RI	1521.7 265.9	1489.7 558.4	0.0 -226.4	0.0 0.0	0.0 0.0	0.0 555.0	31.9 438.4	0.0 50.6	0.0 50.6	0.0
6 PANAMA	2249.5 790.2	1911.3 334.8	0.0 -227.3	0.0 0.0	0.0 0.0	0.0 553.4	120.7 1294.1	217.5 -58.1	217.5 -58.1	217.3
7 ACANAL	125.8 17.8	62.1 10.9	0.0 -15.8	0.0 0.0	0.0 0.0	0.0 0.0	3.8 17.2	59.9 5.6	59.9 5.6	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	7682.5 1966.0	7410.8 2188.0	0.0 -464.3	0.0 0.0	0.0 0.0	0.0 2710.1	271.7 2952.3	0.0 0.0	0.0 0.0	0.0



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT1

WED, MAY 18 2011 9:30

AREA 6 [PANAMA] MACHINE SUMMARY:

BUS#	X--	NAME	--X	BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA
6071		BLMG2		13.800	V2	38.0	4.3	15.0	0.0	1.0200	37.5	0.9938	47.0			62	6
6072		BLMG3		13.800	V3	38.0	4.3	15.0	0.0	1.0200	37.5	0.9938	47.0			62	6
6073		BLMG4		13.800	V4	38.0	4.3	15.0	0.0	1.0200	37.5	0.9936	47.0			62	6
6090		LESG1		13.800	E1	22.4	4.5	12.0	-5.0	1.0000	22.9	0.9807	27.0			64	6
6091		LESG2		13.800	E2	22.4	4.5	12.0	-5.0	1.0000	22.9	0.9807	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-2.0	12.0	-5.0	1.0000	26.1	0.9971	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-2.0	12.0	-5.0	1.0000	26.1	0.9971	27.0			64	6
6097		FORG1		13.800	F1	90.0	13.8	50.0	-50.0	1.0100	90.2	0.9884	111.0			64	6
6098		FORG2		13.800	F2	90.0	13.8	50.0	-50.0	1.0100	90.2	0.9884	111.0			64	6
6101		BAYG1		13.800	B1	82.1	25.2	30.0	-25.0	1.0200	84.2	0.9560	94.0			61	6
6102		BAYG2		13.800	B2	79.9	25.0	30.0	-25.0	1.0200	82.1	0.9545	94.0			61	6
6176		ESTG1		13.800	E1	57.0	11.3	29.0	-29.0	1.0000	58.1	0.9808	69.0			64	6
6177		ESTG2		13.800	E2	57.0	11.3	29.0	-29.0	1.0000	58.1	0.9808	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-2.6	52.4	-48.9	1.0000	99.6	0.9997	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	0.8	52.4	-48.9	1.0000	99.6	1.0000	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9746	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9746	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9919	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9919	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.7	10.0	-10.0	1.0000	26.7	0.9981	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.7	10.0	-10.0	1.0000	26.7	0.9981	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-7.2	14.0	-14.0	1.0000	42.7	0.9856	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-7.2	14.0	-14.0	1.0000	42.7	0.9856	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-7.0	7.8	-7.0	0.9887	14.1	0.8649	14.1			64	6
6362		GLA13B		13.800	G2	12.1	-7.0	7.8	-7.0	0.9887	14.1	0.8649	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-2.8	7.8	-7.0	1.0000	16.3	0.9850	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-2.8	7.8	-7.0	1.0000	16.3	0.9850	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-4.6	8.0	-8.0	1.0000	27.0	0.9853	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-4.6	8.0	-8.0	1.0000	27.0	0.9853	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.5	3.2	-3.6	1.0000	6.2	0.9971	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.5	3.2	-3.6	1.0000	6.2	0.9971	7.5			64	6
6431		EOLICO I		0.6000	G1	60.0	-10.5	10.5	-10.5	1.0064	60.5	0.9850	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.6	-0.1	0.9	-0.1	1.0063	1.6	0.9985	2.1			64	6
6511		MAC0.69B		0.7000	G2	1.6	-0.1	0.9	-0.1	1.0063	1.6	0.9985	2.1			64	6



6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9530	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9926	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9926	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9530	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9678	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9678	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9677	5.5	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9979	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9979	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.2	2.5	-2.5	1.0000	4.9	0.9704	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.2	2.5	-2.5	1.0000	4.9	0.9704	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.7	3.7	-3.7	1.0000	6.4	0.9947	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.7	3.7	-3.7	1.0000	6.4	0.9947	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.2	1.9	-1.9	1.0000	3.3	0.9989	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.2	1.9	-1.9	1.0000	3.3	0.9989	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	0.9998	5.4	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0224	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9960	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9960	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0025	27.7	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0025	27.7	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0080	23.3	0.9074	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	-1.2	9.9	-9.9	1.0000	21.3	0.9985	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	1.2	12.8	-8.3	1.0000	15.9	0.9972	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	1.2	12.8	-8.3	1.0000	15.9	0.9972	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	1.9	12.8	-8.3	1.0000	15.9	0.9932	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	1.9	12.8	-8.3	1.0000	15.9	0.9932	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9995	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0208	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0208	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-1.2	2.2	-2.2	1.0000	4.4	0.9642	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-1.2	2.2	-2.2	1.0000	4.4	0.9642	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.0	2.1	-2.1	1.0000	4.2	0.9694	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.0	2.1	-2.1	1.0000	4.2	0.9694	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.1	4.0	-4.0	1.0000	9.9	0.9999	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.1	4.0	-4.0	1.0000	9.9	0.9999	35.3	64	6
6750	BON13.8	13.800	G3	9.9	-0.1	4.0	-4.0	1.0000	9.9	0.9999	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	3.4	4.0	-4.0	1.0000	7.9	0.9034	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	3.4	4.0	-4.0	1.0000	7.9	0.9034	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	1.7	2.6	-2.6	1.0000	4.9	0.9392	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.7	2.6	-2.6	1.0000	4.9	0.9392	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9661	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9661	5.8	63	6



6769	ESTRECHO4.164.2000	G1	4.9	1.5	2.5	-2.5	1.0000	5.2	0.9555	5.6	63	6
6769	ESTRECHO4.164.2000	G2	4.9	1.5	2.5	-2.5	1.0000	5.2	0.9555	5.6	63	6
6771	CAÑAZAS13.8	G1	2.8	1.3	1.5	-1.5	1.0000	3.1	0.9076	3.3	63	6
6771	CAÑAZAS13.8	G2	2.8	1.3	1.5	-1.5	1.0000	3.1	0.9076	3.3	63	6
6781	OAGUA13.8	G1	3.1	1.6	1.6	-1.6	0.9940	3.5	0.8897	3.6	63	6
6781	OAGUA13.8	G2	3.1	1.6	1.6	-1.6	0.9940	3.5	0.8897	3.6	63	6
6791	SMA13A	G1	12.2	-0.4	6.2	-6.2	1.0000	12.2	0.9994	14.2	63	6
6792	SMA13B	G2	12.2	-0.4	6.2	-6.2	1.0000	12.2	0.9994	14.2	63	6
6810	SVC-LV	1	0.0	300.0	300.0	-225.0	1.0563	284.0	0.0000	300.0	63	6
6821	PLANETAII	G1	3.5	-0.5	1.8	-1.8	1.0000	3.6	0.9920	4.1	64	6
6831	SLO13.8	G1	4.0	2.1	2.1	-2.1	0.9803	4.6	0.8892	4.7	64	6
6831	SLO13.8	G2	4.0	2.1	2.1	-2.1	0.9803	4.6	0.8892	4.7	64	6
6841	BUR13A	G1	15.8	8.1	8.1	-8.1	0.9935	17.9	0.8892	18.5	64	6
6842	BUR13B	G2	15.8	8.1	8.1	-8.1	0.9935	17.9	0.8892	18.5	64	6
6851	POT4.16	G1	3.5	-2.0	2.0	-2.0	1.0223	4.0	0.8678	4.6	64	6
6861	BBL13.8	G1	8.6	4.0	4.0	-3.0	0.9676	9.8	0.9059	10.1	64	6
6861	BBL13.8	G2	8.6	4.0	4.0	-3.0	0.9676	9.8	0.9059	10.1	64	6
6861	BBL13.8	G3	1.8	0.8	0.8	-0.6	0.9676	2.0	0.9058	2.1	64	6
6871	TABII13.8	G1	16.4	2.5	9.0	-9.0	1.0000	16.6	0.9882	20.5	64	6
6871	TABII13.8	G2	16.4	2.5	9.0	-9.0	1.0000	16.6	0.9882	20.5	64	6
6881	CHAIIG1	G1	101.7	9.4	52.3	-52.3	1.0100	101.1	0.9958	118.9	64	6
6900	SVC-LV	1	0.0	300.0	300.0	-225.0	1.0769	278.6	0.0000	300.0	61	6
6921	CB250A-1	C1	106.3	17.3	61.1	-61.1	1.0300	104.5	0.9869	138.9	62	6
6922	CB250A-2	C2	106.3	17.3	61.1	-61.1	1.0300	104.5	0.9869	138.9	62	6
6923	CB250B-1	C1	106.3	17.3	61.1	-61.1	1.0300	104.5	0.9869	138.9	62	6
6924	CB250B-2	C2	106.3	17.3	61.1	-61.1	1.0300	104.5	0.9869	138.9	62	6
SUBSYSTEM TOTALS			2252.5	809.9	1705.3	-1440.8				3496.7		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 9:30
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT1

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
6127		MIR13B		12.000	G6	17.1	2.2	8.0	0.0	1.0100	17.1	0.9922	27.7			65	7
6128		MIR13C		12.000	G3	20.9	9.3	11.0	0.0	1.0100	22.6	0.9140	29.4			65	7
6129		MIR13D		13.800	G4	28.0	11.3	15.0	0.0	1.0100	29.9	0.9268	44.1			65	7
6130		MIR13F		13.800	G5	17.1	3.1	8.0	0.0	1.0100	17.2	0.9844	27.7			65	7
6134		MAD6A		6.9000	G1	11.4	0.7	6.0	-6.0	1.0100	11.3	0.9983	13.0			65	7
6135		MAD6B		6.9000	G2	11.4	0.7	6.0	-6.0	1.0100	11.3	0.9983	13.0			65	7
6136		MAD6C		6.9000	G3	11.4	0.7	6.0	-6.0	1.0100	11.3	0.9983	13.0			65	7

6140 GAT6A	6.9000 G4	4.3	-2.1	3.0	-3.0	0.9900	4.8	0.8940	5.6
6140 GAT6A	6.9000 G5	4.3	-2.1	3.0	-3.0	0.9900	4.8	0.8940	6.2
SUBSYSTEM TOTALS		125.8	23.5	66.0	-24.0				179.8



1514

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1515

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT1

WED, MAY 18 2011 9:30

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0134	233.08	6014		PRO230		230.00	6	1.0117	232.69
6100		BAY230		230.00	6	1.0186	234.28	6103		COP230		230.00	6	1.0009	230.21
6171		PAC230		230.00	6	1.0022	230.50	6260		CHA 230		230.00	6	1.0132	233.03
6263		ESP230		230.00	6	1.0136	233.13	6330		BAI230		230.00	6	1.0114	232.61
6340		CAN 230		230.00	6	1.0007	230.16	6363		ZAM230		230.00	6	1.0042	230.96
6366		EVA230		230.00	6	1.0071	231.64	6380		BOQIII 230		230.00	6	1.0048	231.11
6400		FRONTCHA		230.00	6	1.0136	233.12	6430		ANTON230		230.00	6	1.0074	231.70
6500		FRONTDOM		230.00	6	1.0224	235.14	6680		BFRIO230		230.00	6	1.0144	233.31
6690		DOM230		230.00	6	1.0231	235.31	6691		ALTO230		230.00	6	1.0260	235.98
6695		PANDO230		230.00	6	1.0244	235.61	6698		MLIRIO230		230.00	6	1.0240	235.53
6790		SMA230		230.00	6	1.0007	230.17	6840		BUR230		230.00	6	1.0140	233.22
6880		CHAI230		230.00	6	1.0125	232.89	6920		STR230		230.00	6	1.0210	234.82

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)
6001		PAN230		230.00	6	0.9626	221.41	6003		PANII230		230.00	6	0.9973	229.37
6005		CHO230		230.00	6	0.9515	218.85	6008		LSA230		230.00	6	0.9995	229.88
6011		MDN230		230.00	6	0.9966	229.22	6096		FOR230		230.00	6	0.9997	229.94
6105		PAM230		230.00	6	0.9515	218.85	6178		EST230		230.00	6	0.9937	228.55
6179		GUA230		230.00	6	0.9938	228.58	6182		VEL230		230.00	6	0.9902	227.74
6240		LGU 230		230.00	6	0.9720	223.57	6360		GLA230		230.00	6	0.9987	229.71
6590		24DIC230		230.00	6	0.9992	229.81	6760		SBA230		230.00	6	0.9911	227.96
6860		BBL230		230.00	6	0.9903	227.77	6870		TABII230		230.00	6	0.9914	228.02



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 9:30

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT1

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6001	PAN230	230.00*	6	6003	PANII230	230.00	6	2B	416.9	350.0	119.1	450.0	92.6	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF01		WND 1	6	T1	48.2	50.0	96.4	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02		WND 1	6	T3	96.4	100.0	96.4	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02		WND 1	6	T2	48.2	50.0	96.4	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF01		WND 2	6	T1	57.5	60.0	95.8	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF02		WND 2	6	T2	57.5	60.0	95.8	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T1		WND 2	6	T1	48.6	50.0	97.2	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T2		WND 2	6	T2	47.9	50.0	95.9	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T4		WND 2	6	T4	48.6	50.0	97.1	--	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500		6	T1	59.8	62.5	95.7	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01		WND 1	6	T1	52.7	54.0	97.7	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 9:30

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT1

OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

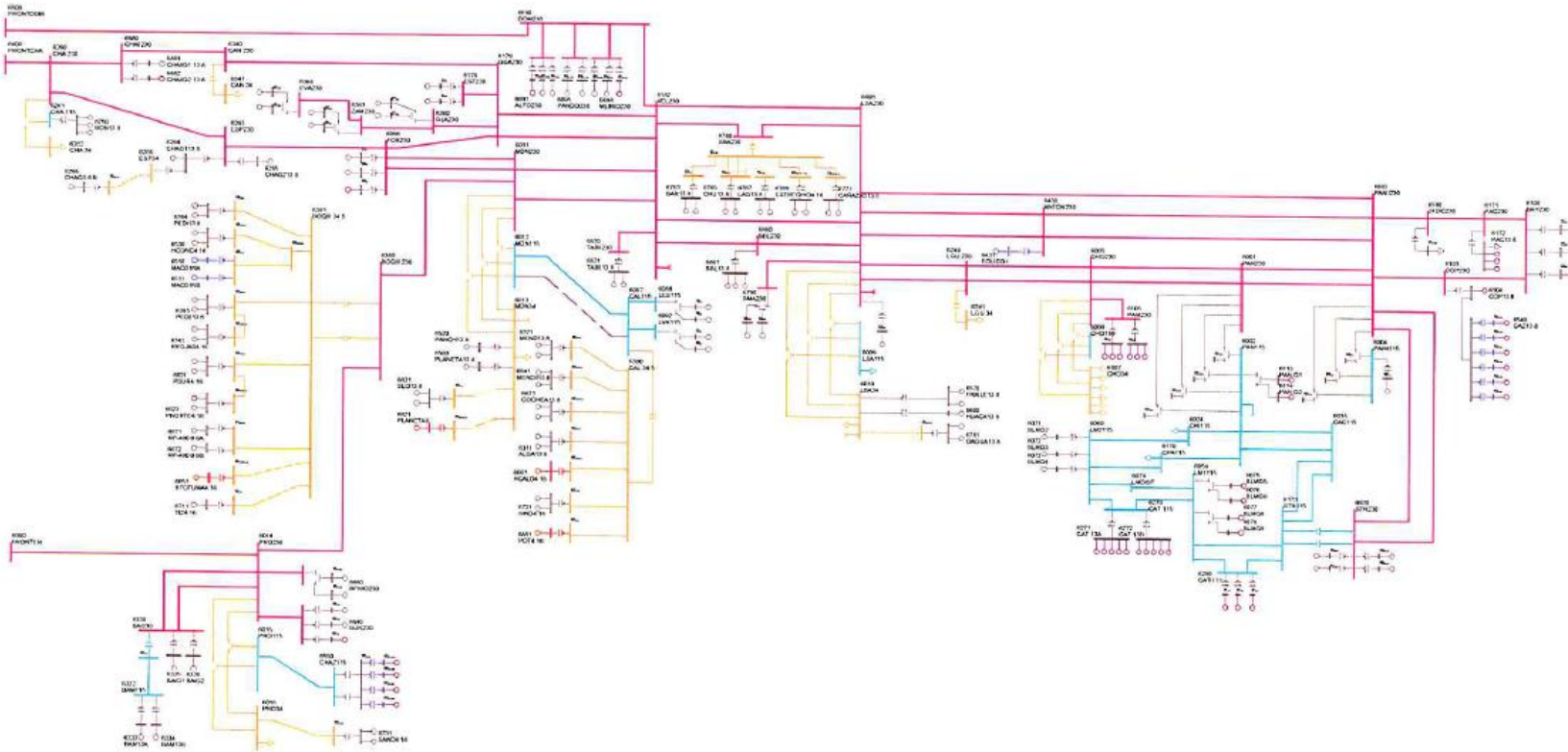
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						WED, MAY 18 2011 9:31		AREA TOTALS		
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						IN MW/MVAR				
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT1										
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT
	RATION	BUSES						LINES	+ LOADS	
1	924.9	1179.4	0.0	0.0	0.0	0.0	22.8	-277.3	-277.3	-277.3
GUATEMAL	217.8	340.6	219.3	0.0	0.0	602.5	244.8	15.6	15.6	
2	1142.3	1104.0	0.0	0.0	0.0	0.0	38.3	0.0	0.0	0.0
SALVADOR	300.2	367.1	-180.9	0.0	0.0	241.1	324.6	30.6	30.6	
3	1239.1	1205.2	0.0	0.0	0.0	0.0	33.8	0.0	0.0	0.0
HONDURAS	390.9	395.2	-20.4	0.0	0.0	469.1	452.5	32.6	32.6	
4	479.3	459.0	0.0	0.0	0.0	0.0	20.3	0.0	0.0	0.0
NICARAGU	-16.9	181.0	-12.8	0.0	0.0	289.0	180.8	-76.9	-76.9	
5	1521.7	1489.7	0.0	0.0	0.0	0.0	31.9	0.0	0.0	0.0
COSTA RI	266.3	558.4	-226.4	0.0	0.0	554.9	438.4	50.8	50.8	
6	2252.5	1911.3	0.0	0.0	0.0	0.0	123.6	217.6	217.6	217.3
PANAMA	809.9	334.8	-222.7	0.0	0.0	548.9	1310.2	-63.4	-63.4	
7	125.8	62.1	0.0	0.0	0.0	0.0	3.9	59.8	59.8	60.0
ACANAL	23.5	10.9	-15.7	0.0	0.0	0.0	17.7	10.7	10.7	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	7685.4	7410.8	0.0	0.0	0.0	0.0	274.7	0.0	0.0	0.0
TOTALS	1991.8	2188.0	-459.6	0.0	0.0	2705.6	2968.9	0.0	0.0	



Contingencia 13: Mata de Nance – Caldera





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT13

WED, MAY 18 2011 9:50

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
6071		BLMG2		13.800	V2	38.0	2.5	15.0	0.0	1.0200	37.3	0.9979	47.0			62	6
6072		BLMG3		13.800	V3	38.0	2.5	15.0	0.0	1.0200	37.3	0.9979	47.0			62	6
6073		BLMG4		13.800	V4	38.0	2.4	15.0	0.0	1.0200	37.3	0.9980	47.0			62	6
6090		LESG1		13.800	E1	22.4	5.0	12.0	-5.0	1.0000	23.0	0.9764	27.0			64	6
6091		LESG2		13.800	E2	22.4	5.0	12.0	-5.0	1.0000	23.0	0.9764	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-1.5	12.0	-5.0	1.0000	26.1	0.9984	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-1.5	12.0	-5.0	1.0000	26.1	0.9984	27.0			64	6
6097		FORG1		13.800	F1	90.0	14.1	50.0	-50.0	1.0100	90.2	0.9879	111.0			64	6
6098		FORG2		13.800	F2	90.0	14.1	50.0	-50.0	1.0100	90.2	0.9879	111.0			64	6
6101		BAYG1		13.800	B1	81.0	26.1	30.0	-25.0	1.0200	83.4	0.9518	94.0			61	6
6102		BAYG2		13.800	B2	79.9	26.0	30.0	-25.0	1.0200	82.4	0.9510	94.0			61	6
6176		ESTG1		13.800	E1	57.0	11.3	29.0	-29.0	1.0000	58.1	0.9808	69.0			64	6
6177		ESTG2		13.800	E2	57.0	11.3	29.0	-29.0	1.0000	58.1	0.9808	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-2.5	52.4	-48.9	1.0000	99.6	0.9997	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	0.9	52.4	-48.9	1.0000	99.6	1.0000	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9740	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9740	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9916	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9916	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.7	10.0	-10.0	1.0000	26.7	0.9980	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.7	10.0	-10.0	1.0000	26.7	0.9980	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-7.1	14.0	-14.0	1.0000	42.7	0.9862	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-7.1	14.0	-14.0	1.0000	42.7	0.9862	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-7.0	7.8	-7.0	0.9887	14.1	0.8649	14.1			64	6
6362		GLA13B		13.800	G2	12.1	-7.0	7.8	-7.0	0.9887	14.1	0.8649	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-2.8	7.8	-7.0	1.0000	16.3	0.9850	25.0			64	6
6365		LOR13B		13.800	G2	16.1	-2.8	7.8	-7.0	1.0000	16.3	0.9850	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-4.6	8.0	-8.0	1.0000	27.0	0.9853	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-4.6	8.0	-8.0	1.0000	27.0	0.9853	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	0.1	4.9	-4.9	1.0000	9.5	0.9999	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.5	3.2	-3.6	1.0000	6.2	0.9969	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.5	3.2	-3.6	1.0000	6.2	0.9969	7.5			64	6
6431		EOLICO I		0.6000	G1	60.0	-10.5	10.5	-10.5	1.0064	60.5	0.9850	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.6	-0.1	0.9	-0.1	1.0062	1.6	0.9985	2.1			64	6
6511		MAC0.69B		0.7000	G2	1.6	-0.1	0.9	-0.1	1.0062	1.6	0.9985	2.1			64	6



6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9508	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.5	2.5	-2.5	1.0000	4.8	0.9936	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.5	2.5	-2.5	1.0000	4.8	0.9936	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9508	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9702	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9702	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9701	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9984	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	-0.3	2.5	-2.5	1.0000	4.8	0.9984	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.2	2.5	-2.5	1.0000	4.9	0.9718	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.2	2.5	-2.5	1.0000	4.9	0.9718	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9969	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9969	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.3	1.9	-1.9	1.0000	3.3	0.9952	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.3	1.9	-1.9	1.0000	3.3	0.9952	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	0.9997	5.4	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0221	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9960	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9960	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0023	27.7	0.9576	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0023	27.7	0.9576	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0080	23.3	0.9074	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	-1.2	9.9	-9.9	1.0000	21.3	0.9984	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	1.2	12.8	-8.3	1.0000	15.9	0.9973	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	1.2	12.8	-8.3	1.0000	15.9	0.9973	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	1.8	12.8	-8.3	1.0000	15.9	0.9935	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	1.8	12.8	-8.3	1.0000	15.9	0.9935	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9993	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0205	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0205	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-1.1	2.2	-2.2	1.0000	4.4	0.9666	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-1.1	2.2	-2.2	1.0000	4.4	0.9666	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.0	2.1	-2.1	1.0000	4.2	0.9704	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.0	2.1	-2.1	1.0000	4.2	0.9704	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.1	4.0	-4.0	1.0000	9.9	0.9999	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.1	4.0	-4.0	1.0000	9.9	0.9999	35.3	64	6
6750	BON13.8	13.800	G3	9.9	-0.1	4.0	-4.0	1.0000	9.9	0.9999	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	3.3	4.0	-4.0	1.0000	7.9	0.9065	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	3.3	4.0	-4.0	1.0000	7.9	0.9065	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9417	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9417	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9678	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.2	2.6	-2.6	1.0000	4.8	0.9678	5.8	63	6



6769	ESTRECHO4.164.2000	G1	4.9	1.5	2.5	-2.5	1.0000	5.2	0.9574	5.6	63	6
6769	ESTRECHO4.164.2000	G2	4.9	1.5	2.5	-2.5	1.0000	5.2	0.9574	5.6	63	6
6771	CAÑAZAS13.8	G1	2.8	1.3	1.5	-1.5	1.0000	3.1	0.9116	3.3	63	6
6771	CAÑAZAS13.8	G2	2.8	1.3	1.5	-1.5	1.0000	3.1	0.9116	3.3	63	6
6781	OAGUA13.8	G1	3.1	1.6	1.6	-1.6	0.9964	3.5	0.8897	3.6	63	6
6781	OAGUA13.8	G2	3.1	1.6	1.6	-1.6	0.9964	3.5	0.8897	3.6	63	6
6791	SMA13A	G1	12.2	-2.1	6.2	-6.2	1.0000	12.3	0.9856	14.2	63	6
6792	SMA13B	G2	12.2	-2.1	6.2	-6.2	1.0000	12.3	0.9856	14.2	63	6
6810	SVC-LV	1	0.0	300.0	300.0	-225.0	1.0586	283.4	0.0000	300.0	63	6
6821	PLANETAII	G1	3.5	1.7	1.8	-1.8	1.0000	3.9	0.9005	4.1	64	6
6831	SLO13.8	G1	4.0	2.1	2.1	-2.1	0.9780	4.6	0.8892	4.7	64	6
6831	SLO13.8	G2	4.0	2.1	2.1	-2.1	0.9780	4.6	0.8892	4.7	64	6
6841	BUR13A	G1	15.8	8.1	8.1	-8.1	0.9933	17.9	0.8892	18.5	64	6
6842	BUR13B	G2	15.8	8.1	8.1	-8.1	0.9933	17.9	0.8892	18.5	64	6
6851	POT4.16	G1	3.5	-2.0	2.0	-2.0	1.0220	4.0	0.8678	4.6	64	6
6861	BBL13.8	G1	8.6	4.0	4.0	-3.0	0.9685	9.8	0.9059	10.1	64	6
6861	BBL13.8	G2	8.6	4.0	4.0	-3.0	0.9685	9.8	0.9059	10.1	64	6
6861	BBL13.8	G3	1.8	0.8	0.8	-0.6	0.9685	2.0	0.9058	2.1	64	6
6871	TABII13.8	G1	16.4	2.4	9.0	-9.0	1.0000	16.6	0.9897	20.5	64	6
6871	TABII13.8	G2	16.4	2.4	9.0	-9.0	1.0000	16.6	0.9897	20.5	64	6
6881	CHAIIG1	G1	101.7	9.4	52.3	-52.3	1.0100	101.1	0.9958	118.9	64	6
6900	SVC-LV	1	0.0	300.0	300.0	-225.0	1.0781	278.3	0.0000	300.0	61	6
6921	CB250A-1	C1	106.3	15.5	61.1	-61.1	1.0300	104.2	0.9896	138.9	62	6
6922	CB250A-2	C2	106.3	15.5	61.1	-61.1	1.0300	104.2	0.9896	138.9	62	6
6923	CB250B-1	C1	106.3	15.5	61.1	-61.1	1.0300	104.2	0.9896	138.9	62	6
6924	CB250B-2	C2	106.3	15.5	61.1	-61.1	1.0300	104.2	0.9896	138.9	62	6
SUBSYSTEM TOTALS			2251.4	801.1	1705.3	-1440.8				3496.7		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E WED, MAY 18 2011 9:50
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT13

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
6127		MIR13B		12.000	G6	17.1	1.0	8.0	0.0	1.0100	17.0	0.9981	27.7			65	7
6128		MIR13C		12.000	G3	20.9	8.3	11.0	0.0	1.0100	22.3	0.9287	29.4			65	7
6129		MIR13D		13.800	G4	28.0	10.2	15.0	0.0	1.0100	29.4	0.9398	44.1			65	7
6130		MIR13F		13.800	G5	17.1	1.7	8.0	0.0	1.0100	17.0	0.9950	27.7			65	7
6134		MAD6A		6.9000	G1	11.4	0.5	6.0	-6.0	1.0100	11.3	0.9992	13.0			65	7
6135		MAD6B		6.9000	G2	11.4	0.5	6.0	-6.0	1.0100	11.3	0.9991	13.0			65	7
6136		MAD6C		6.9000	G3	11.4	0.5	6.0	-6.0	1.0100	11.3	0.9991	13.0			65	7

6140 GAT6A	6.9000 G4	4.3	-2.5	3.0	-3.0	0.9900	5.0	0.8676	5.6
6140 GAT6A	6.9000 G5	4.3	-2.5	3.0	-3.0	0.9900	5.0	0.8676	6.2
SUBSYSTEM TOTALS		125.8	17.8	66.0	-24.0				179.8



1523

7

7



1524

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 9:50
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT13

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0132	233.04	6008		LSA230		230.00	6	1.0019	230.43
6014		PRO230		230.00	6	1.0114	232.63	6100		BAY230		230.00	6	1.0173	233.98
6171		PAC230		230.00	6	1.0004	230.10	6260		CHA 230		230.00	6	1.0131	233.02
6263		ESP230		230.00	6	1.0135	233.11	6330		BAI230		230.00	6	1.0112	232.57
6340		CAN 230		230.00	6	1.0007	230.16	6363		ZAM230		230.00	6	1.0042	230.96
6366		EVA230		230.00	6	1.0071	231.64	6380		BOQIII 230		230.00	6	1.0043	230.99
6400		FRONTCHA		230.00	6	1.0135	233.11	6430		ANTON230		230.00	6	1.0074	231.71
6500		FRONTDOM		230.00	6	1.0224	235.15	6680		BFRIO230		230.00	6	1.0141	233.25
6690		DOM230		230.00	6	1.0231	235.32	6691		ALTO230		230.00	6	1.0260	235.99
6695		PANDO230		230.00	6	1.0244	235.62	6698		MLIRIO230		230.00	6	1.0241	235.53
6790		SMA230		230.00	6	1.0031	230.71	6840		BUR230		230.00	6	1.0138	233.16
6880		CHAI230		230.00	6	1.0125	232.88	6920		STR230		230.00	6	1.0222	235.10

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9758	224.44	6003		PANII230		230.00	6	0.9954	228.94
6005		CHO230		230.00	6	0.9632	221.54	6011		MDN230		230.00	6	0.9958	229.03
6096		FOR230		230.00	6	0.9994	229.87	6103		COP230		230.00	6	0.9991	229.80
6105		PAM230		230.00	6	0.9632	221.54	6178		EST230		230.00	6	0.9937	228.55
6179		GUA230		230.00	6	0.9938	228.58	6182		VEL230		230.00	6	0.9910	227.92
6240		LGU 230		230.00	6	0.9789	225.14	6360		GLA230		230.00	6	0.9987	229.71
6590		24DIC230		230.00	6	0.9973	229.39	6760		SBA230		230.00	6	0.9925	228.28
6860		BBL230		230.00	6	0.9912	227.99	6870		TABII230		230.00	6	0.9922	228.20



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 9:50

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT13

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAF01	WND 1	6	T1	48.1	50.0	96.2	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T3	96.2	100.0	96.2	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T2	48.1	50.0	96.2	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF01	WND 2	6	T1	57.5	60.0	95.8	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF02	WND 2	6	T2	57.5	60.0	95.8	--	--	--	--
6012	MDN115	115.00	6	6087	CAL115	115.00*	6	15	154.9	93.0	166.6	175.0	88.5	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T1	WND 2	6	T1	48.6	50.0	97.1	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T2	WND 2	6	T2	47.9	50.0	95.8	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T4	WND 2	6	T4	48.5	50.0	97.0	--	--	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	59.7	62.5	95.6	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.6	54.0	97.4	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 9:50

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT13

OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

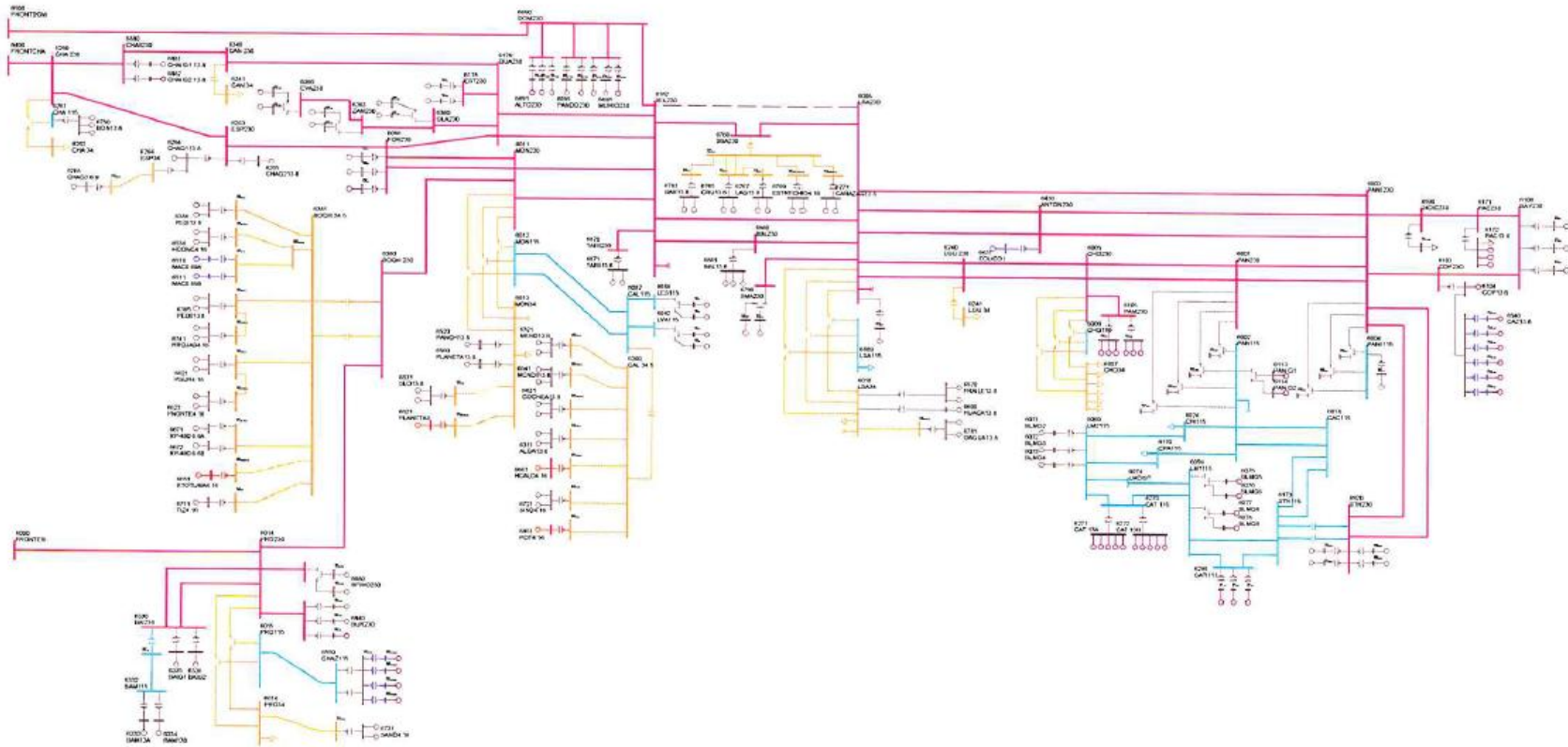
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E WED, MAY 18 2011 9:50
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT13 IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO			-NET INTERCHANGE-				
	GENE- RATION	AT AREA BUSES	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1 GUATEMAL	924.9 217.8	1179.4 340.6	0.0 219.3	0.0 0.0	0.0 0.0	0.0 602.5	22.8 244.8	-277.3 15.6	-277.3 15.6	-277.3
2 SALVADOR	1142.3 300.2	1104.0 367.1	0.0 -180.9	0.0 0.0	0.0 0.0	0.0 241.1	38.3 324.6	0.0 30.6	0.0 30.6	0.0
3 HONDURAS	1239.1 390.9	1205.2 395.2	0.0 -20.4	0.0 0.0	0.0 0.0	0.0 469.1	33.8 452.5	0.0 32.6	0.0 32.6	0.0
4 NICARAGU	479.3 -16.9	459.0 181.0	0.0 -12.8	0.0 0.0	0.0 0.0	0.0 289.0	20.3 180.8	0.0 -76.9	0.0 -76.9	0.0
5 COSTA RI	1521.7 266.4	1489.7 558.4	0.0 -226.4	0.0 0.0	0.0 0.0	0.0 554.9	31.9 438.4	0.0 50.9	0.0 50.9	0.0
6 PANAMA	2251.4 801.1	1911.3 334.8	0.0 -227.3	0.0 0.0	0.0 0.0	0.0 552.1	122.6 1304.1	217.5 -58.4	217.5 -58.4	217.3
7 ACANAL	125.8 17.8	62.1 10.9	0.0 -15.8	0.0 0.0	0.0 0.0	0.0 0.0	3.8 17.2	59.9 5.6	59.9 5.6	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	7684.4 1977.4	7410.8 2188.0	0.0 -464.3	0.0 0.0	0.0 0.0	0.0 2708.7	273.6 2962.4	0.0 0.0	0.0 0.0	0.0

Contingencia 21: Llano Sánchez – Veladero





6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0053	1.6	0.9985	2.1	64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9510	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.2	2.5	-2.5	1.0000	4.8	0.9988	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.2	2.5	-2.5	1.0000	4.8	0.9988	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9510	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9483	3.0	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9483	3.0	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9483	5.6	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9999	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9999	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9819	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9819	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.4	3.7	-3.7	1.0000	6.4	0.9978	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.4	3.7	-3.7	1.0000	6.4	0.9978	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.4	1.9	-1.9	1.0000	3.3	0.9925	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.4	1.9	-1.9	1.0000	3.3	0.9925	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	0.9988	5.4	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0219	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9956	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9956	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-7.9	8.0	-8.0	1.0000	27.8	0.9583	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-7.9	8.0	-8.0	1.0000	27.8	0.9583	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0063	23.3	0.9074	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	1.1	9.9	-9.9	1.0000	21.3	0.9986	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	3.3	12.8	-8.3	1.0000	16.2	0.9791	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	3.3	12.8	-8.3	1.0000	16.2	0.9791	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	4.3	12.8	-8.3	1.0000	16.4	0.9657	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	4.3	12.8	-8.3	1.0000	16.4	0.9657	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9984	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0204	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0204	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-0.7	2.2	-2.2	1.0000	4.3	0.9855	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-0.7	2.2	-2.2	1.0000	4.3	0.9855	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9780	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9780	4.8	64	6
6750	BON13.8	13.800	G1	9.9	0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	64	6
6750	BON13.8	13.800	G2	9.9	0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	64	6
6750	BON13.8	13.800	G3	9.9	0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	4.0	4.0	-4.0	0.9930	8.3	0.8757	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	4.0	4.0	-4.0	0.9930	8.3	0.8757	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	2.5	2.6	-2.6	1.0000	5.2	0.8803	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	2.5	2.6	-2.6	1.0000	5.2	0.8803	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	2.0	2.6	-2.6	1.0000	5.1	0.9212	5.8	63	6



6767	LAG13.8	13.800	G2	4.7	2.0	2.6	-2.6	1.0000	5.1	0.9212	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	2.3	2.5	-2.5	1.0000	5.4	0.9064	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	2.3	2.5	-2.5	1.0000	5.4	0.9064	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.5	1.5	-1.5	0.9908	3.2	0.8885	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.5	1.5	-1.5	0.9908	3.2	0.8885	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	1.6	1.6	-1.6	0.9741	3.5	0.8897	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	1.6	1.6	-1.6	0.9741	3.5	0.8897	3.6	63	6
6791	SMA13A	13.800	G1	12.2	6.2	6.2	-6.2	0.9902	13.8	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	6.2	6.2	-6.2	0.9902	13.8	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0376	289.1	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	1.5	1.8	-1.8	1.0000	3.9	0.9170	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9782	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9782	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9910	18.0	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9910	18.0	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0219	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9488	10.0	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9488	10.0	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9488	2.1	0.9058	2.1	64	6
6871	TABII13.8	13.800	G1	16.4	6.1	9.0	-9.0	1.0000	17.5	0.9372	20.5	64	6
6871	TABII13.8	13.800	G2	16.4	6.1	9.0	-9.0	1.0000	17.5	0.9372	20.5	64	6
6881	CHAIIG1	13.813.800	G1	101.7	11.4	52.3	-52.3	1.0100	101.3	0.9938	118.9	64	6
6900	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0695	280.5	0.0000	300.0	61	6
6921	CB250A-1	13.800	C1	106.3	19.2	61.1	-61.1	1.0300	104.8	0.9840	138.9	62	6
6922	CB250A-2	13.800	C2	106.3	19.2	61.1	-61.1	1.0300	104.8	0.9840	138.9	62	6
6923	CB250B-1	13.800	C1	106.3	19.2	61.1	-61.1	1.0300	104.8	0.9840	138.9	62	6
6924	CB250B-2	13.800	C2	106.3	19.2	61.1	-61.1	1.0300	104.8	0.9840	138.9	62	6
SUBSYSTEM TOTALS				2271.0	933.4	1772.3	-1465.8				3596.7		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:03
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT 21

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
6127		MIR13B		12.000	G6	17.1	2.0	8.0	0.0	1.0100	17.0	0.9934	27.7			65	7
6128		MIR13C		12.000	G3	20.9	9.1	11.0	0.0	1.0100	22.6	0.9165	29.4			65	7
6129		MIR13D		13.800	G4	28.0	11.1	15.0	0.0	1.0100	29.8	0.9289	44.1			65	7
6130		MIR13F		13.800	G5	17.1	2.8	8.0	0.0	1.0100	17.2	0.9865	27.7			65	7
6134		MAD6A		6.9000	G1	11.4	0.6	6.0	-6.0	1.0100	11.3	0.9984	13.0			65	7
6135		MAD6B		6.9000	G2	11.4	0.6	6.0	-6.0	1.0100	11.3	0.9984	13.0			65	7

6136 MAD6C	6.9000 G3	11.4	0.6	6.0	-6.0	1.0100	11.3	0.9984	13.0
6140 GAT6A	6.9000 G4	4.3	-2.1	3.0	-3.0	0.9900	4.8	0.8961	5.6
6140 GAT6A	6.9000 G5	4.3	-2.1	3.0	-3.0	0.9900	4.8	0.8961	6.2
SUBSYSTEM TOTALS		125.8	22.8	66.0	-24.0				179.8



1532

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65
7



1533

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:03
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT 21

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0110	232.53	6014		PRO230		230.00	6	1.0091	232.09
6100		BAY230		230.00	6	1.0137	233.16	6260		CHA 230		230.00	6	1.0109	232.50
6263		ESP230		230.00	6	1.0112	232.59	6330		BAI230		230.00	6	1.0092	232.11
6366		EVA230		230.00	6	1.0020	230.47	6380		BOQIII 230		230.00	6	1.0004	230.10
6400		FRONTCHA		230.00	6	1.0114	232.63	6500		FRONTDOM		230.00	6	1.0206	234.73
6680		BFRIO230		230.00	6	1.0118	232.71	6690		DOM230		230.00	6	1.0213	234.90
6691		ALTO230		230.00	6	1.0243	235.59	6695		PANDO230		230.00	6	1.0233	235.35
6698		MLIRIO230		230.00	6	1.0227	235.23	6840		BUR230		230.00	6	1.0114	232.62
6880		CHAI230		230.00	6	1.0099	232.27	6920		STR230		230.00	6	1.0197	234.53

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9659	222.17	6003		PANII230		230.00	6	0.9861	226.81
6005		CHO230		230.00	6	0.9501	218.53	6008		LSA230		230.00	6	0.9798	225.36
6011		MDN230		230.00	6	0.9896	227.60	6096		FOR230		230.00	6	0.9941	228.64
6103		COP230		230.00	6	0.9907	227.86	6105		PAM230		230.00	6	0.9501	218.53
6171		PAC230		230.00	6	0.9927	228.32	6178		EST230		230.00	6	0.9872	227.06
6179		GUA230		230.00	6	0.9873	227.07	6182		VEL230		230.00	6	0.9735	223.91
6240		LGU 230		230.00	6	0.9603	220.86	6340		CAN 230		230.00	6	0.9957	229.01
6360		GLA230		230.00	6	0.9927	228.33	6363		ZAM230		230.00	6	0.9988	229.73
6430		ANTON230		230.00	6	0.9961	229.09	6590		24DIC230		230.00	6	0.9888	227.43
6760		SBA230		230.00	6	0.9668	222.37	6790		SMA230		230.00	6	0.9815	225.75
6860		BBL230		230.00	6	0.9710	223.32	6870		TABII230		230.00	6	0.9756	224.39



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:03

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT 21

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAF01	WND 1	6	T1	48.2	50.0	96.4	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T3	96.4	100.0	96.4	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T2	48.2	50.0	96.4	--	--	--	--
6008	LSA230	230.00	6	6760	SBA230	230.00*	6	4A	376.2	314.0	119.8	450.0	83.6	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF01	WND 2	6	T1	57.5	60.0	95.8	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF02	WND 2	6	T2	57.5	60.0	95.8	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T1	WND 2	6	T1	48.6	50.0	97.2	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T2	WND 2	6	T2	47.9	50.0	95.9	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T4	WND 2	6	T4	48.5	50.0	97.1	--	--	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	59.7	62.5	95.5	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.5	54.0	97.2	--	--	--	--
6182	VEL230	230.00*	6	6760	SBA230	230.00	6	4B	328.4	314.0	104.6	450.0	73.0	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:03

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT 21

OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *

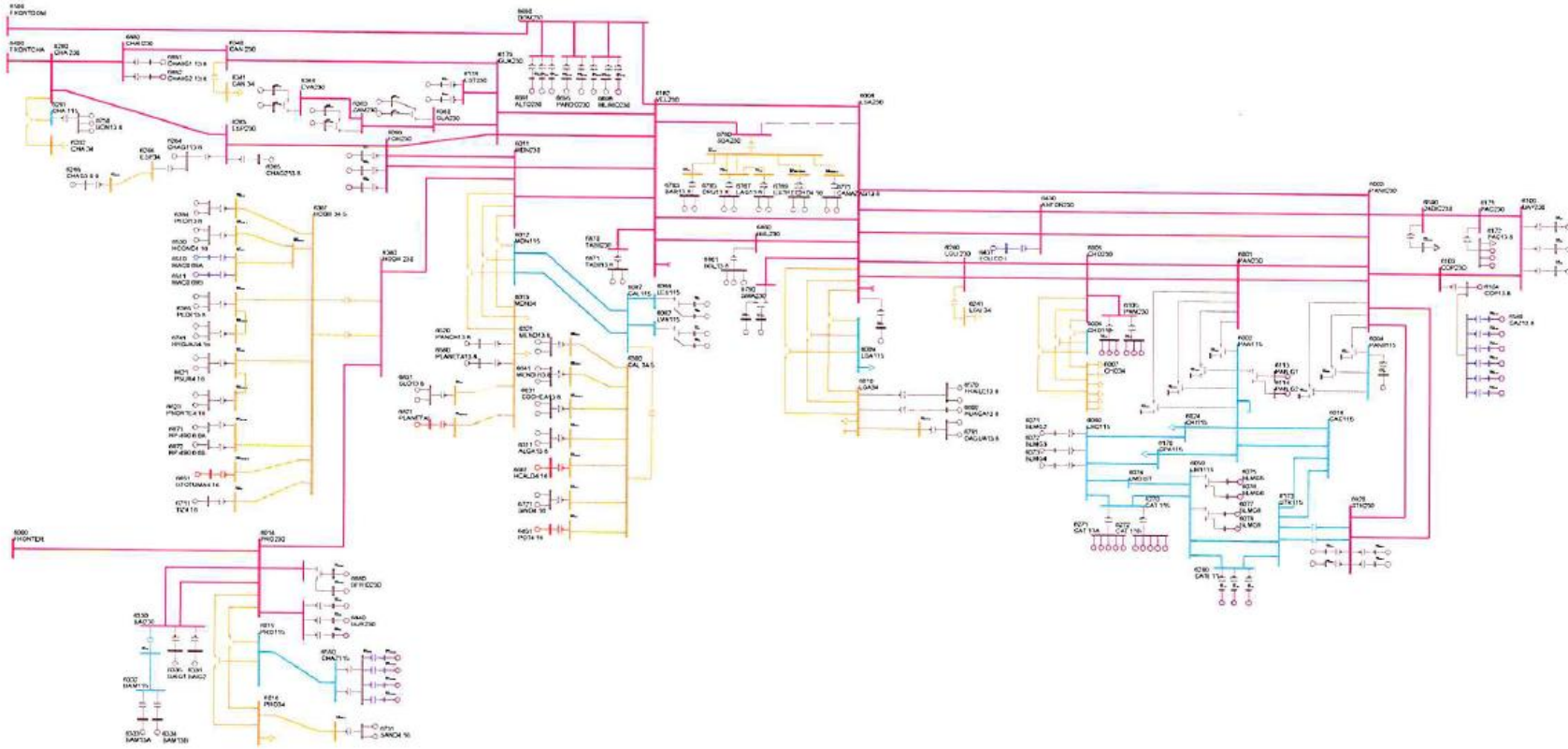


PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:03
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT 21 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
								TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	924.9 217.8	1179.4 340.6	0.0 219.3	0.0 0.0	0.0 0.0	0.0 602.5	22.8 244.8	-277.3 15.6	-277.3 15.6	-277.3
2 SALVADOR	1142.3 300.2	1104.0 367.1	0.0 -180.9	0.0 0.0	0.0 0.0	0.0 241.1	38.3 324.6	0.0 30.6	0.0 30.6	0.0
3 HONDURAS	1239.1 390.9	1205.2 395.2	0.0 -20.4	0.0 0.0	0.0 0.0	0.0 469.1	33.8 452.5	0.0 32.6	0.0 32.6	0.0
4 NICARAGU	479.3 -16.7	459.0 181.0	0.0 -12.8	0.0 0.0	0.0 0.0	0.0 289.0	20.3 180.8	0.0 -76.8	0.0 -76.8	0.0
5 COSTA RI	1521.7 270.8	1489.7 558.4	0.0 -226.2	0.0 0.0	0.0 0.0	0.0 554.4	32.0 439.0	-0.1 54.2	-0.1 54.2	0.0
6 PANAMA	2271.0 933.4	1911.3 334.8	0.0 -223.0	0.0 0.0	0.0 0.0	0.0 520.5	142.1 1408.3	217.6 -66.3	217.6 -66.3	217.3
7 ACANAL	125.8 22.8	62.1 10.9	0.0 -15.7	0.0 0.0	0.0 0.0	0.0 0.0	3.9 17.6	59.8 10.0	59.8 10.0	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	7704.0 2119.1	7410.8 2188.0	0.0 -459.7	0.0 0.0	0.0 0.0	0.0 2676.7	293.2 3067.5	0.0 0.0	0.0 0.0	0.0



Contingencia 22: Llano Sánchez – San Bartolo





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT22

WED, MAY 18 2011 10:10

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
6071		BLMG2		13.800	V2	38.0	4.7	15.0	0.0	1.0200	37.5	0.9923	47.0			62	6
6072		BLMG3		13.800	V3	38.0	4.7	15.0	0.0	1.0200	37.5	0.9923	47.0			62	6
6073		BLMG4		13.800	V4	38.0	4.8	15.0	0.0	1.0200	37.6	0.9920	47.0			62	6
6090		LESG1		13.800	E1	22.4	5.3	12.0	-5.0	1.0000	23.0	0.9736	27.0			64	6
6091		LESG2		13.800	E2	22.4	5.3	12.0	-5.0	1.0000	23.0	0.9736	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-1.1	12.0	-5.0	1.0000	26.1	0.9991	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-1.1	12.0	-5.0	1.0000	26.1	0.9991	27.0			64	6
6097		FORG1		13.800	F1	90.0	19.5	50.0	-50.0	1.0100	91.2	0.9773	111.0			64	6
6098		FORG2		13.800	F2	90.0	19.5	50.0	-50.0	1.0100	91.2	0.9773	111.0			64	6
6101		BAYG1		13.800	B1	61.1	27.8	30.0	-25.0	1.0200	65.8	0.9105	94.0			61	6
6102		BAYG2		13.800	B2	61.1	27.8	30.0	-25.0	1.0200	65.8	0.9105	94.0			61	6
6110		BAYG3		13.800	B3	61.1	11.6	67.0	-25.0	1.0100	61.6	0.9825	100.0			61	6
6176		ESTG1		13.800	E1	57.0	12.6	29.0	-29.0	1.0000	58.4	0.9765	69.0			64	6
6177		ESTG2		13.800	E2	57.0	12.6	29.0	-29.0	1.0000	58.4	0.9765	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-0.7	52.4	-48.9	1.0000	99.6	1.0000	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	2.8	52.4	-48.9	1.0000	99.6	0.9996	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9736	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9736	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9915	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9915	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.9	10.0	-10.0	1.0000	26.7	0.9975	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.9	10.0	-10.0	1.0000	26.7	0.9975	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-5.5	14.0	-14.0	1.0000	42.5	0.9916	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-5.5	14.0	-14.0	1.0000	42.5	0.9916	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-7.0	7.8	-7.0	0.9821	14.2	0.8649	14.1			64	6
6362		GLA13B		13.800	G2	12.1	-7.0	7.8	-7.0	0.9821	14.2	0.8649	14.1			64	6
6364		LOR13A		13.800	G1	16.1	1.4	7.8	-7.0	1.0000	16.1	0.9964	25.0			64	6
6365		LOR13B		13.800	G2	16.1	1.4	7.8	-7.0	1.0000	16.1	0.9964	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-0.6	8.0	-8.0	1.0000	26.6	0.9997	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-0.6	8.0	-8.0	1.0000	26.6	0.9997	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	0.4	4.9	-4.9	1.0000	9.5	0.9991	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	0.4	4.9	-4.9	1.0000	9.5	0.9991	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.7	3.2	-3.6	1.0000	6.2	0.9941	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.7	3.2	-3.6	1.0000	6.2	0.9941	7.5			64	6
6431		EOLICO I		0.6000	G1	60.0	8.6	10.5	-10.5	1.0000	60.6	0.9900	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.6	-0.1	0.9	-0.1	1.0052	1.6	0.9985	2.1			64	6



6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0052	1.6	0.9985	2.1	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9508	5.4	0.9216	6.2	6
6530	HCONC4.16	4.2000	G1	4.8	-0.2	2.5	-2.5	1.0000	4.8	0.9990	5.6	6
6530	HCONC4.16	4.2000	G2	4.8	-0.2	2.5	-2.5	1.0000	4.8	0.9990	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9508	5.0	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9448	3.0	0.9122	3.0	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9448	3.0	0.9122	3.0	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9447	5.6	0.9084	5.5	6
6621	PSUR4.16	4.2000	G1	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9998	5.6	6
6621	PSUR4.16	4.2000	G2	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9998	5.6	6
6623	PNORTE4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9828	5.6	6
6623	PNORTE4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9828	5.6	6
6631	COCHEA13.8	13.800	G1	6.4	-0.4	3.7	-3.7	1.0000	6.4	0.9980	8.4	6
6631	COCHEA13.8	13.800	G2	6.4	-0.4	3.7	-3.7	1.0000	6.4	0.9980	8.4	6
6641	MENDII13.8	13.800	G1	3.3	0.4	1.9	-1.9	1.0000	3.3	0.9917	4.1	6
6641	MENDII13.8	13.800	G2	3.3	0.4	1.9	-1.9	1.0000	3.3	0.9917	4.1	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	0.9987	5.4	0.8851	5.6	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0219	3.8	0.8675	4.4	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9956	7.5	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9956	7.5	6
6681	BFRIO13A	13.800	G1	26.6	-7.8	8.0	-8.0	1.0000	27.7	0.9595	33.0	6
6682	BFRIO13B	13.800	G2	26.6	-7.8	8.0	-8.0	1.0000	27.7	0.9595	33.0	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0062	23.3	0.9074	24.9	6
6693	ALTO13B	13.800	G2	21.3	1.3	9.9	-9.9	1.0000	21.3	0.9981	24.9	6
6696	PANDO13A	13.800	G1	15.8	3.5	12.8	-8.3	1.0000	16.2	0.9769	18.5	6
6697	PANDO13B	13.800	G2	15.8	3.5	12.8	-8.3	1.0000	16.2	0.9769	18.5	6
6699	MLIRIO13A	13.800	G1	15.8	4.5	12.8	-8.3	1.0000	16.4	0.9626	18.5	6
6700	MLIRIO13B	13.800	G2	15.8	4.5	12.8	-8.3	1.0000	16.4	0.9626	18.5	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9983	5.0	0.8892	5.2	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0203	4.8	0.8622	5.6	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0203	4.8	0.8622	5.6	6
6731	SAND4.16	4.2000	G1	4.3	-0.7	2.2	-2.2	1.0000	4.3	0.9866	5.0	6
6731	SAND4.16	4.2000	G2	4.3	-0.7	2.2	-2.2	1.0000	4.3	0.9866	5.0	6
6741	RROJAS4.16	4.2000	G1	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9786	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9786	4.8	6
6750	BON13.8	13.800	G1	9.9	0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	6
6750	BON13.8	13.800	G2	9.9	0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	6
6750	BON13.8	13.800	G3	9.9	0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	6
6763	BAR13.8	13.800	G1	7.2	3.9	4.0	-4.0	1.0000	8.2	0.8763	9.0	6
6763	BAR13.8	13.800	G2	7.2	3.9	4.0	-4.0	1.0000	8.2	0.8763	9.0	6
6765	CRU13.8	13.800	G1	4.6	2.0	2.6	-2.6	1.0000	5.0	0.9174	5.8	6
6765	CRU13.8	13.800	G2	4.6	2.0	2.6	-2.6	1.0000	5.0	0.9174	5.8	6
6767	LAG13.8	13.800	G1	4.7	1.5	2.6	-2.6	1.0000	4.9	0.9502	5.8	6



6767	LAG13.8	13.800	G2	4.7	1.5	2.6	-2.6	1.0000	4.9	0.9502	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.9	1.8	2.5	-2.5	1.0000	5.3	0.9377	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.9	1.8	2.5	-2.5	1.0000	5.3	0.9377	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.8	1.5	1.5	-1.5	0.9979	3.2	0.8885	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.5	1.5	-1.5	0.9979	3.2	0.8885	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	1.6	1.6	-1.6	0.9705	3.6	0.8897	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	1.6	1.6	-1.6	0.9705	3.6	0.8897	3.6	63	6
6791	SMA13A	13.800	G1	12.2	6.2	6.2	-6.2	0.9867	13.9	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	6.2	6.2	-6.2	0.9867	13.9	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0343	290.1	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	1.7	1.8	-1.8	1.0000	3.9	0.9004	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9780	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9780	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9908	18.0	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9908	18.0	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0219	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9470	10.0	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9470	10.0	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9470	2.1	0.9058	2.1	64	6
6871	TABII13.8	13.800	G1	16.4	6.4	9.0	-9.0	1.0000	17.6	0.9314	20.5	64	6
6871	TABII13.8	13.800	G2	16.4	6.4	9.0	-9.0	1.0000	17.6	0.9314	20.5	64	6
6881	CHAIIG1	13.813.800	G1	101.7	11.6	52.3	-52.3	1.0100	101.3	0.9936	118.9	64	6
6900	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0681	280.9	0.0000	300.0	61	6
6921	CB250A-1	13.800	C1	106.3	19.9	61.1	-61.1	1.0300	104.9	0.9830	138.9	62	6
6922	CB250A-2	13.800	C2	106.3	19.9	61.1	-61.1	1.0300	104.9	0.9830	138.9	62	6
6923	CB250B-1	13.800	C1	106.3	19.9	61.1	-61.1	1.0300	104.9	0.9830	138.9	62	6
6924	CB250B-2	13.800	C2	106.3	19.9	61.1	-61.1	1.0300	104.9	0.9830	138.9	62	6
SUBSYSTEM TOTALS				2273.8	946.1	1772.3	-1465.8				3596.7		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:10
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT22

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
6127		MIR13B		12.000	G6	17.1	2.1	8.0	0.0	1.0100	17.1	0.9924	27.7			65	7
6128		MIR13C		12.000	G3	20.9	9.3	11.0	0.0	1.0100	22.6	0.9144	29.4			65	7
6129		MIR13D		13.800	G4	28.0	11.3	15.0	0.0	1.0100	29.9	0.9271	44.1			65	7
6130		MIR13F		13.800	G5	17.1	3.0	8.0	0.0	1.0100	17.2	0.9848	27.7			65	7
6134		MAD6A		6.9000	G1	11.4	0.7	6.0	-6.0	1.0100	11.3	0.9983	13.0			65	7
6135		MAD6B		6.9000	G2	11.4	0.7	6.0	-6.0	1.0100	11.3	0.9983	13.0			65	7

6136 MAD6C	6.9000 G3	11.4	0.7	6.0	-6.0	1.0100	11.3	0.9983	13.0
6140 GAT6A	6.9000 G4	4.3	-2.1	3.0	-3.0	0.9900	4.8	0.9006	5.6
6140 GAT6A	6.9000 G5	4.3	-2.1	3.0	-3.0	0.9900	4.8	0.9006	6.2
SUBSYSTEM TOTALS		125.8	23.6	66.0	-24.0				179.8



1541

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1542

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:10
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT22

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0108	232.49	6014		PRO230		230.00	6	1.0089	232.05
6100		BAY230		230.00	6	1.0129	232.97	6260		CHA 230		230.00	6	1.0107	232.45
6263		ESP230		230.00	6	1.0110	232.54	6330		BAI230		230.00	6	1.0090	232.07
6366		EVA230		230.00	6	1.0016	230.37	6380		BOQIII 230		230.00	6	1.0001	230.01
6400		FRONTCHA		230.00	6	1.0113	232.59	6500		FRONTDOM		230.00	6	1.0204	234.70
6680		BFRIO230		230.00	6	1.0116	232.67	6690		DOM230		230.00	6	1.0211	234.86
6691		ALTO230		230.00	6	1.0241	235.55	6695		PANDO230		230.00	6	1.0232	235.33
6698		MLIRIO230		230.00	6	1.0226	235.21	6840		BUR230		230.00	6	1.0112	232.58
6880		CHAI230		230.00	6	1.0096	232.21	6920		STR230		230.00	6	1.0193	234.44

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9643	221.79	6003		PANII230		230.00	6	0.9846	226.46
6005		CHO230		230.00	6	0.9480	218.04	6008		LSA230		230.00	6	0.9762	224.54
6011		MDN230		230.00	6	0.9889	227.46	6096		FOR230		230.00	6	0.9936	228.53
6103		COP230		230.00	6	0.9893	227.54	6105		PAM230		230.00	6	0.9480	218.04
6171		PAC230		230.00	6	0.9914	228.02	6178		EST230		230.00	6	0.9867	226.93
6179		GUA230		230.00	6	0.9867	226.95	6182		VEL230		230.00	6	0.9721	223.58
6240		LGU 230		230.00	6	0.9573	220.17	6340		CAN 230		230.00	6	0.9953	228.91
6360		GLA230		230.00	6	0.9922	228.21	6363		ZAM230		230.00	6	0.9983	229.62
6430		ANTON230		230.00	6	0.9947	228.78	6590		24DIC230		230.00	6	0.9874	227.11
6760		SBA230		230.00	6	0.9800	225.40	6790		SMA230		230.00	6	0.9780	224.93
6860		BBL230		230.00	6	0.9691	222.90	6870		TABII230		230.00	6	0.9742	224.07



1543

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:10
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT22

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6002		PAN115		115.00	6	1.0134	116.54	6004		PANII115		115.00	6	1.0120	116.37
6015		PRO115		115.00	6	1.0052	115.60	6018		CAC115		115.00	6	1.0127	116.46
6019		CVI115A		115.00	6	1.0011	115.13	6024		CHI115		115.00	6	1.0063	115.72
6036		SMA115		115.00	6	1.0119	116.36	6047		CLA115		115.00	6	1.0051	115.59
6055		MOS115B		115.00	6	1.0097	116.12	6057		TOC115		115.00	6	1.0087	116.00
6059		LM1115		115.00	6	1.0130	116.49	6060		LM2115		115.00	6	1.0130	116.50
6066		FFIELD		115.00	6	1.0049	115.56	6074		LMDIST		115.00	6	1.0130	116.50
6087		CAL115		115.00	6	1.0070	115.80	6088		LES115		115.00	6	1.0102	116.18
6092		LVA115		115.00	6	1.0073	115.84	6123		MIR115		115.00	7	1.0238	117.74
6170		CPA115		115.00	6	1.0116	116.34	6173		STR115		115.00	6	1.0172	116.98
6174		PM115-1A		115.00	6	1.0163	116.87	6175		PM115-2A		115.00	6	1.0163	116.87
6210		TIN115		115.00	6	1.0082	115.94	6211		PM115-9		115.00	6	1.0089	116.03
6261		CHA 115		115.00	6	1.0034	115.40	6270		CAT 115		115.00	6	1.0130	116.50
6280		GIR 115		115.00	6	1.0116	116.34	6290		CATII 11		115.00	6	1.0134	116.55
6332		BAM115		115.00	6	1.0018	115.20	6350		PM115-8		115.00	6	1.0045	115.52
6550		CHAZ115		115.00	6	1.0052	115.60	6580		LBO115		115.00	6	1.0003	115.03
6910		GON115		115.00	6	1.0087	116.00								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6006		CHO115		115.00	6	0.9250	106.38	6009		LSA115		115.00	6	0.9873	113.53
6012		MDN115		115.00	6	0.9990	114.88	6027		LOC115A		115.00	6	0.9999	114.98
6032		MAR115A		115.00	6	0.9958	114.52	6040		SFR115		115.00	6	0.9948	114.40
6230		CBA115		115.00	6	0.9976	114.72	6331		BAI115		115.00	6	0.9976	114.73



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:10

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT22

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAF01	WND 1	6	T1	48.2	50.0	96.5	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T3	96.5	100.0	96.5	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T2	48.2	50.0	96.5	--	--	--	--
6008	LSA230	230.00	6	6182	VEL230	230.00*	6	15	365.5	314.0	116.4	450.0	81.2	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF01	WND 2	6	T1	57.5	60.0	95.8	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF02	WND 2	6	T2	57.5	60.0	95.8	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T1	WND 2	6	T1	48.6	50.0	97.2	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T2	WND 2	6	T2	47.9	50.0	95.9	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T4	WND 2	6	T4	48.6	50.0	97.1	--	--	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	59.7	62.5	95.5	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.5	54.0	97.2	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:10

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT22

OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

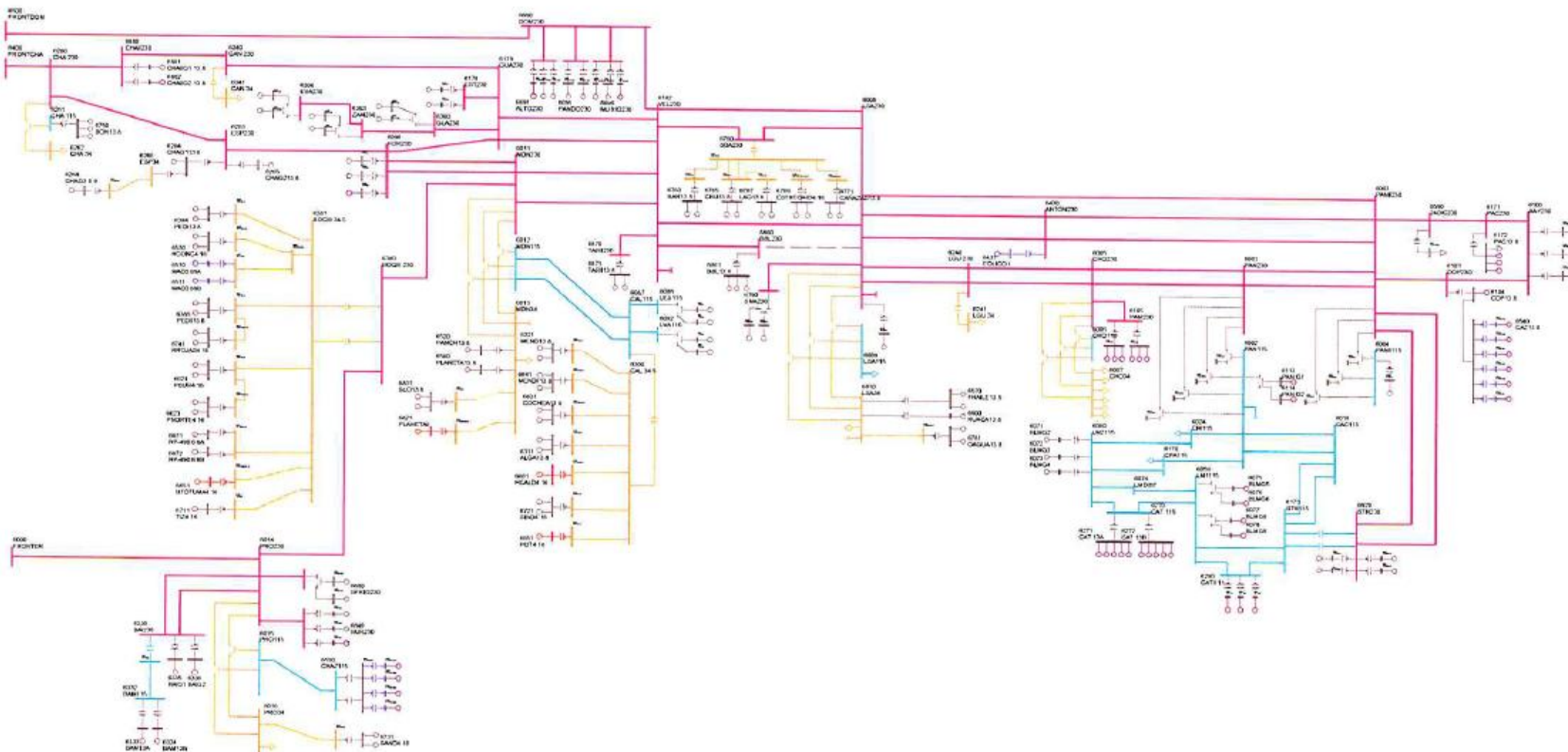
FROM BUS				TO BUS				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
* NONE *															



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E						WED, MAY 18 2011 10:10		AREA TOTALS		
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL						BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT22		IN MW/MVAR		
X-- AREA --X	FROM GENE- RATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT
								TO TIE LINES	TO TIES + LOADS	
1	924.9	1179.4	0.0	0.0	0.0	0.0	22.8	-277.3	-277.3	-277.3
GUATEMAL	217.8	340.6	219.3	0.0	0.0	602.5	244.8	15.6	15.6	
2	1142.3	1104.0	0.0	0.0	0.0	0.0	38.3	0.0	0.0	0.0
SALVADOR	300.2	367.1	-180.9	0.0	0.0	241.1	324.6	30.6	30.6	
3	1239.1	1205.2	0.0	0.0	0.0	0.0	33.8	0.0	0.0	0.0
HONDURAS	390.9	395.2	-20.4	0.0	0.0	469.1	452.5	32.6	32.6	
4	479.3	459.0	0.0	0.0	0.0	0.0	20.3	0.0	0.0	0.0
NICARAGU	-16.7	181.0	-12.8	0.0	0.0	289.0	180.8	-76.8	-76.8	
5	1521.7	1489.7	0.0	0.0	0.0	0.0	32.0	-0.1	-0.1	0.0
COSTA RI	271.2	558.4	-226.2	0.0	0.0	554.4	439.0	54.5	54.5	
6	2273.8	1911.3	0.0	0.0	0.0	0.0	144.9	217.7	217.7	217.3
PANAMA	946.1	334.8	-222.3	0.0	0.0	525.9	1426.7	-67.3	-67.3	
7	125.8	62.1	0.0	0.0	0.0	0.0	3.9	59.8	59.8	60.0
ACANAL	23.6	10.9	-15.7	0.0	0.0	0.0	17.6	10.8	10.8	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	7706.8	7410.8	0.0	0.0	0.0	0.0	296.0	0.0	0.0	0.0
TOTALS	2133.1	2188.0	-459.0	0.0	0.0	2682.0	3086.1	0.0	0.0	



Contingencia 24: Llano Sánchez – Barro Blanco





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT24

WED, MAY 18 2011 10:14

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
6071		BLMG2		13.800	V2	38.0	4.4	15.0	0.0	1.0200	37.5	0.9934	47.0			62	6
6072		BLMG3		13.800	V3	38.0	4.4	15.0	0.0	1.0200	37.5	0.9934	47.0			62	6
6073		BLMG4		13.800	V4	38.0	4.5	15.0	0.0	1.0200	37.5	0.9932	47.0			62	6
6090		LESG1		13.800	E1	22.4	5.2	12.0	-5.0	1.0000	23.0	0.9738	27.0			64	6
6091		LESG2		13.800	E2	22.4	5.2	12.0	-5.0	1.0000	23.0	0.9738	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-1.2	12.0	-5.0	1.0000	26.1	0.9990	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-1.2	12.0	-5.0	1.0000	26.1	0.9990	27.0			64	6
6097		FORG1		13.800	F1	90.0	19.4	50.0	-50.0	1.0100	91.2	0.9776	111.0			64	6
6098		FORG2		13.800	F2	90.0	19.4	50.0	-50.0	1.0100	91.2	0.9776	111.0			64	6
6101		BAYG1		13.800	B1	84.6	31.7	30.0	-25.0	1.0200	88.6	0.9365	94.0			61	6
6102		BAYG2		13.800	B2	84.6	30.0	30.0	-25.0	1.0179	88.2	0.9425	94.0			61	6
6176		ESTG1		13.800	E1	57.0	12.5	29.0	-29.0	1.0000	58.4	0.9766	69.0			64	6
6177		ESTG2		13.800	E2	57.0	12.5	29.0	-29.0	1.0000	58.4	0.9766	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-0.7	52.4	-48.9	1.0000	99.6	1.0000	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	2.7	52.4	-48.9	1.0000	99.6	0.9996	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9736	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9736	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9915	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9915	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.9	10.0	-10.0	1.0000	26.7	0.9975	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.9	10.0	-10.0	1.0000	26.7	0.9975	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-5.5	14.0	-14.0	1.0000	42.5	0.9915	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-5.5	14.0	-14.0	1.0000	42.5	0.9915	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-7.0	7.8	-7.0	0.9822	14.2	0.8649	14.1			64	6
6362		GLA13B		13.800	G2	12.1	-7.0	7.8	-7.0	0.9822	14.2	0.8649	14.1			64	6
6364		LOR13A		13.800	G1	16.1	1.3	7.8	-7.0	1.0000	16.1	0.9968	25.0			64	6
6365		LOR13B		13.800	G2	16.1	1.3	7.8	-7.0	1.0000	16.1	0.9968	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-0.7	8.0	-8.0	1.0000	26.6	0.9996	33.0			64	6
6368		PRU13B		13.800	G2	26.6	-0.7	8.0	-8.0	1.0000	26.6	0.9996	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	0.4	4.9	-4.9	1.0000	9.5	0.9991	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	0.4	4.9	-4.9	1.0000	9.5	0.9991	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.7	3.2	-3.6	1.0000	6.2	0.9941	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.7	3.2	-3.6	1.0000	6.2	0.9941	7.5			64	6
6431		EOLICO I		0.6000	G1	60.0	1.2	10.5	-10.5	1.0000	60.0	0.9998	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.6	-0.1	0.9	-0.1	1.0052	1.6	0.9985	2.1			64	6
6511		MAC0.69B		0.7000	G2	1.6	-0.1	0.9	-0.1	1.0052	1.6	0.9985	2.1			64	6



6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9508	5.4	0.9216	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.2	2.5	-2.5	1.0000	4.8	0.9990	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	-0.2	2.5	-2.5	1.0000	4.8	0.9990	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9508	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9528	3.0	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9528	3.0	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9527	5.5	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9998	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9998	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9825	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9825	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.4	3.7	-3.7	1.0000	6.4	0.9979	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.4	3.7	-3.7	1.0000	6.4	0.9979	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.4	1.9	-1.9	1.0000	3.3	0.9919	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.4	1.9	-1.9	1.0000	3.3	0.9919	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	0.9987	5.4	0.8851	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0219	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9956	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9956	7.5	64	6
6681	BFRIO13A	13.800	G1	26.6	-7.8	8.0	-8.0	1.0000	27.7	0.9592	33.0	64	6
6682	BFRIO13B	13.800	G2	26.6	-7.8	8.0	-8.0	1.0000	27.7	0.9592	33.0	64	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0062	23.3	0.9074	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	1.3	9.9	-9.9	1.0000	21.3	0.9983	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	3.4	12.8	-8.3	1.0000	16.2	0.9775	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	3.4	12.8	-8.3	1.0000	16.2	0.9775	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	4.4	12.8	-8.3	1.0000	16.4	0.9634	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	4.4	12.8	-8.3	1.0000	16.4	0.9634	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9984	5.0	0.8892	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0203	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0203	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-0.7	2.2	-2.2	1.0000	4.3	0.9863	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-0.7	2.2	-2.2	1.0000	4.3	0.9863	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9785	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	-0.9	2.1	-2.1	1.0000	4.2	0.9785	4.8	64	6
6750	BON13.8	13.800	G1	9.9	0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	64	6
6750	BON13.8	13.800	G2	9.9	0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	64	6
6750	BON13.8	13.800	G3	9.9	0.1	4.0	-4.0	1.0000	9.9	1.0000	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	4.0	4.0	-4.0	0.9941	8.2	0.8757	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	4.0	4.0	-4.0	0.9941	8.2	0.8757	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	2.4	2.6	-2.6	1.0000	5.2	0.8864	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	2.4	2.6	-2.6	1.0000	5.2	0.8864	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.9	2.6	-2.6	1.0000	5.0	0.9261	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.9	2.6	-2.6	1.0000	5.0	0.9261	5.8	63	6



6769	ESTRECHO4.164.2000	G1	4.9	2.2	2.5	-2.5	1.0000	5.4	0.9117	5.6	63	6
6769	ESTRECHO4.164.2000	G2	4.9	2.2	2.5	-2.5	1.0000	5.4	0.9117	5.6	63	6
6771	CAÑAZAS13.8	G1	2.8	1.5	1.5	-1.5	0.9920	3.2	0.8885	3.3	63	6
6771	CAÑAZAS13.8	G2	2.8	1.5	1.5	-1.5	0.9920	3.2	0.8885	3.3	63	6
6781	OAGUA13.8	G1	3.1	1.6	1.6	-1.6	0.9786	3.5	0.8897	3.6	63	6
6781	OAGUA13.8	G2	3.1	1.6	1.6	-1.6	0.9786	3.5	0.8897	3.6	63	6
6791	SMA13A	G1	12.2	6.2	6.2	-6.2	0.9947	13.7	0.8894	14.2	63	6
6792	SMA13B	G2	12.2	6.2	6.2	-6.2	0.9947	13.7	0.8894	14.2	63	6
6810	SVC-LV	1	0.0	300.0	300.0	-225.0	1.0419	287.9	0.0000	300.0	63	6
6821	PLANETAII	G1	3.5	1.7	1.8	-1.8	1.0000	3.9	0.9048	4.1	64	6
6831	SLO13.8	G1	4.0	2.1	2.1	-2.1	0.9781	4.6	0.8892	4.7	64	6
6831	SLO13.8	G2	4.0	2.1	2.1	-2.1	0.9781	4.6	0.8892	4.7	64	6
6841	BUR13A	G1	15.8	8.1	8.1	-8.1	0.9909	18.0	0.8892	18.5	64	6
6842	BUR13B	G2	15.8	8.1	8.1	-8.1	0.9909	18.0	0.8892	18.5	64	6
6851	POT4.16	G1	3.5	-2.0	2.0	-2.0	1.0219	4.0	0.8678	4.6	64	6
6861	BBL13.8	G1	8.6	4.0	4.0	-3.0	0.9514	10.0	0.9059	10.1	64	6
6861	BBL13.8	G2	8.6	4.0	4.0	-3.0	0.9514	10.0	0.9059	10.1	64	6
6861	BBL13.8	G3	1.8	0.8	0.8	-0.6	0.9514	2.1	0.9058	2.1	64	6
6871	TABII13.8	G1	16.4	6.3	9.0	-9.0	1.0000	17.6	0.9329	20.5	64	6
6871	TABII13.8	G2	16.4	6.3	9.0	-9.0	1.0000	17.6	0.9329	20.5	64	6
6881	CHAIIG1	G1	101.7	11.5	52.3	-52.3	1.0100	101.3	0.9936	118.9	64	6
6900	SVC-LV	1	0.0	300.0	300.0	-225.0	1.0695	280.5	0.0000	300.0	61	6
6921	CB250A-1	C1	106.3	19.2	61.1	-61.1	1.0300	104.8	0.9840	138.9	62	6
6922	CB250A-2	C2	106.3	19.2	61.1	-61.1	1.0300	104.8	0.9840	138.9	62	6
6923	CB250B-1	C1	106.3	19.2	61.1	-61.1	1.0300	104.8	0.9840	138.9	62	6
6924	CB250B-2	C2	106.3	19.2	61.1	-61.1	1.0300	104.8	0.9840	138.9	62	6
SUBSYSTEM TOTALS			2259.7	930.6	1705.3	-1440.8				3496.7		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E WED, MAY 18 2011 10:14
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT24

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
6127		MIR13B		12.000	G6	17.1	2.0	8.0	0.0	1.0100	17.0	0.9935	27.7		65	7	
6128		MIR13C		12.000	G3	20.9	9.1	11.0	0.0	1.0100	22.6	0.9167	29.4		65	7	
6129		MIR13D		13.800	G4	28.0	11.1	15.0	0.0	1.0100	29.8	0.9291	44.1		65	7	
6130		MIR13F		13.800	G5	17.1	2.8	8.0	0.0	1.0100	17.2	0.9867	27.7		65	7	
6134		MAD6A		6.9000	G1	11.4	0.6	6.0	-6.0	1.0100	11.3	0.9985	13.0		65	7	
6135		MAD6B		6.9000	G2	11.4	0.6	6.0	-6.0	1.0100	11.3	0.9984	13.0		65	7	
6136		MAD6C		6.9000	G3	11.4	0.6	6.0	-6.0	1.0100	11.3	0.9984	13.0		65	7	

6140 GAT6A	6.9000 G4	4.3	-2.1	3.0	-3.0	0.9900	4.8	0.8958	5.6
6140 GAT6A	6.9000 G5	4.3	-2.1	3.0	-3.0	0.9900	4.8	0.8958	6.2
SUBSYSTEM TOTALS		125.8	22.7	66.0	-24.0				179.8



1550

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7



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:14
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT24

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0109	232.50	6014		PRO230		230.00	6	1.0090	232.06
6100		BAY230		230.00	6	1.0107	232.45	6260		CHA 230		230.00	6	1.0107	232.46
6263		ESP230		230.00	6	1.0111	232.55	6330		BAI230		230.00	6	1.0091	232.08
6366		EVA230		230.00	6	1.0017	230.39	6380		BOQIII 230		230.00	6	1.0002	230.03
6400		FRONTCHA		230.00	6	1.0113	232.60	6500		FRONTDOM		230.00	6	1.0205	234.70
6680		BFRIO230		230.00	6	1.0117	232.68	6690		DOM230		230.00	6	1.0212	234.87
6691		ALTO230		230.00	6	1.0242	235.56	6695		PANDO230		230.00	6	1.0232	235.34
6698		MLIRIO230		230.00	6	1.0227	235.21	6840		BUR230		230.00	6	1.0113	232.59
6880		CHAI230		230.00	6	1.0097	232.23	6920		STR230		230.00	6	1.0197	234.54

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9661	222.21	6003		PANII230		230.00	6	0.9861	226.80
6005		CHO230		230.00	6	0.9512	218.77	6008		LSA230		230.00	6	0.9843	226.39
6011		MDN230		230.00	6	0.9891	227.49	6096		FOR230		230.00	6	0.9937	228.56
6103		COP230		230.00	6	0.9902	227.75	6105		PAM230		230.00	6	0.9512	218.77
6171		PAC230		230.00	6	0.9918	228.12	6178		EST230		230.00	6	0.9868	226.97
6179		GUA230		230.00	6	0.9869	226.98	6182		VEL230		230.00	6	0.9725	223.67
6240		LGU 230		230.00	6	0.9632	221.54	6340		CAN 230		230.00	6	0.9954	228.94
6360		GLA230		230.00	6	0.9923	228.24	6363		ZAM230		230.00	6	0.9985	229.65
6430		ANTON230		230.00	6	0.9972	229.34	6590		24DIC230		230.00	6	0.9884	227.33
6760		SBA230		230.00	6	0.9689	222.85	6790		SMA230		230.00	6	0.9860	226.78
6860		BBL230		230.00	6	0.9737	223.95	6870		TABII230		230.00	6	0.9746	224.15



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:14

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT24

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAF01	WND 1	6	T1	48.2	50.0	96.4	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T3	96.4	100.0	96.4	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T2	48.2	50.0	96.4	--	--	--	--
6008	LSA230	230.00	6	6182	VEL230	230.00*	6	15	344.6	314.0	109.7	450.0	76.6	--	--
6008	LSA230	230.00	6	6760	SBA230	230.00*	6	4A	362.6	314.0	115.5	450.0	80.6	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF01	WND 2	6	T1	57.5	60.0	95.8	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF02	WND 2	6	T2	57.5	60.0	95.8	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T1	WND 2	6	T1	48.6	50.0	97.2	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T2	WND 2	6	T2	47.9	50.0	95.9	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T4	WND 2	6	T4	48.5	50.0	97.1	--	--	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	59.7	62.5	95.5	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	52.5	54.0	97.2	--	--	--	--
6182	VEL230	230.00*	6	6760	SBA230	230.00	6	4B	315.5	314.0	100.5	450.0	70.1	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:14

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT24

OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

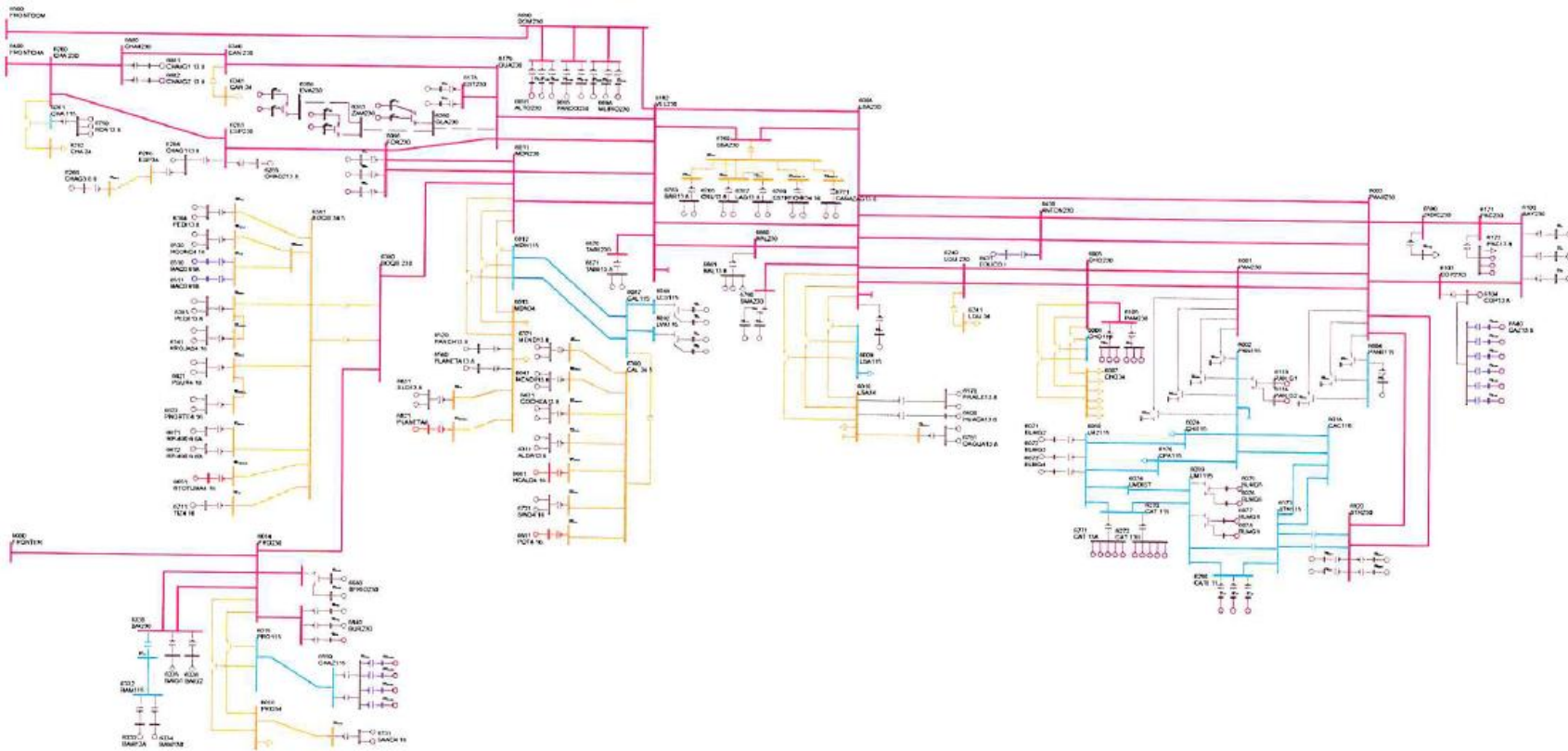
X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							WED, MAY 18 2011 10:14			
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS			
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT24							IN MW/MVAR			
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT
	RATION	BUSES						LINES	+ LOADS	
1	924.9	1179.4	0.0	0.0	0.0	0.0	22.8	-277.3	-277.3	-277.3
GUATEMAL	217.8	340.6	219.3	0.0	0.0	602.5	244.8	15.6	15.6	
2	1142.3	1104.0	0.0	0.0	0.0	0.0	38.3	0.0	0.0	0.0
SALVADOR	300.2	367.1	-180.9	0.0	0.0	241.1	324.6	30.6	30.6	
3	1239.1	1205.2	0.0	0.0	0.0	0.0	33.8	0.0	0.0	0.0
HONDURAS	390.9	395.2	-20.4	0.0	0.0	469.1	452.5	32.6	32.6	
4	479.3	459.0	0.0	0.0	0.0	0.0	20.3	0.0	0.0	0.0
NICARAGU	-16.7	181.0	-12.8	0.0	0.0	289.0	180.8	-76.8	-76.8	
5	1521.7	1489.7	0.0	0.0	0.0	0.0	32.0	-0.1	-0.1	0.0
COSTA RI	271.1	558.4	-226.2	0.0	0.0	554.4	439.0	54.4	54.4	
6	2259.7	1911.3	0.0	0.0	0.0	0.0	130.8	217.6	217.6	217.3
PANAMA	930.6	334.8	-223.0	0.0	0.0	519.9	1405.1	-66.4	-66.4	
7	125.8	62.1	0.0	0.0	0.0	0.0	3.9	59.8	59.8	60.0
ACANAL	22.7	10.9	-15.7	0.0	0.0	0.0	17.6	10.0	10.0	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	7692.7	7410.8	0.0	0.0	0.0	0.0	281.9	0.0	0.0	0.0
TOTALS	2116.6	2188.0	-459.8	0.0	0.0	2676.0	3064.3	0.0	0.0	

Contingencia 25: Guasquitas –Gualaca





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT25

WED, MAY 18 2011 10:33

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
6071		BLMG2		13.800	V2	38.0	1.7	15.0	0.0	1.0200	37.3	0.9990	47.0			62	6
6072		BLMG3		13.800	V3	38.0	1.7	15.0	0.0	1.0200	37.3	0.9990	47.0			62	6
6073		BLMG4		13.800	V4	38.0	1.6	15.0	0.0	1.0200	37.3	0.9991	47.0			62	6
6090		LESG1		13.800	E1	22.4	3.2	12.0	-5.0	1.0000	22.6	0.9899	27.0			64	6
6091		LESG2		13.800	E2	22.4	3.2	12.0	-5.0	1.0000	22.6	0.9899	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-3.4	12.0	-5.0	1.0000	26.2	0.9917	27.0			64	6
6095		LVAG2		13.800	L2	26.0	-3.4	12.0	-5.0	1.0000	26.2	0.9917	27.0			64	6
6097		FORG1		13.800	F1	90.0	3.8	50.0	-50.0	1.0100	89.2	0.9991	111.0			64	6
6098		FORG2		13.800	F2	90.0	3.8	50.0	-50.0	1.0100	89.2	0.9991	111.0			64	6
6101		BAYG1		13.800	B1	82.7	17.7	30.0	-25.0	1.0200	82.9	0.9779	94.0			61	6
6102		BAYG2		13.800	B2	82.6	17.7	30.0	-25.0	1.0200	82.8	0.9779	94.0			61	6
6110		BAYG3		13.800	B3	82.6	-0.6	67.0	-25.0	1.0100	81.8	1.0000	100.0			61	6
6176		ESTG1		13.800	E1	57.0	8.7	29.0	-29.0	1.0000	57.7	0.9885	69.0			64	6
6177		ESTG2		13.800	E2	57.0	8.7	29.0	-29.0	1.0000	57.7	0.9885	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-6.3	52.4	-48.9	1.0000	99.8	0.9980	116.5			64	6
6265		CHAG213.8		13.800	G2	99.6	-2.9	52.4	-48.9	1.0000	99.6	0.9996	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9762	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9762	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9926	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9926	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	26.6	1.3	10.0	-10.0	1.0000	26.6	0.9988	30.0			64	6
6334		BAM13B		13.800	G2	26.6	1.3	10.0	-10.0	1.0000	26.6	0.9988	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-9.8	14.0	-14.0	1.0000	43.3	0.9741	49.0			64	6
6336		BAIG2		13.800	G2	42.1	-9.8	14.0	-14.0	1.0000	43.3	0.9741	49.0			64	6
6384		PEDI13.8		13.800	G1	9.5	-0.2	4.9	-4.9	1.0000	9.5	0.9998	12.5			64	6
6384		PEDI13.8		13.800	G2	9.5	-0.2	4.9	-4.9	1.0000	9.5	0.9998	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	0.2	3.2	-3.6	1.0000	6.2	0.9992	7.5			64	6
6385		PEDII13.8		13.800	G2	6.2	0.2	3.2	-3.6	1.0000	6.2	0.9992	7.5			64	6
6431		EOLICO I		0.6000	G1	60.0	-10.5	10.5	-10.5	1.0249	59.4	0.9850	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.6	-0.1	0.9	-0.1	1.0075	1.6	0.9985	2.1			64	6
6511		MAC0.69B		0.7000	G2	1.6	-0.1	0.9	-0.1	1.0075	1.6	0.9985	2.1			64	6
6520		PANCH13.8		13.800	P1	4.8	2.0	2.0	-2.0	0.9590	5.4	0.9216	6.2			64	6
6530		HCONC4.16		4.2000	G1	4.8	-1.0	2.5	-2.5	1.0000	4.9	0.9791	5.6			64	6
6530		HCONC4.16		4.2000	G2	4.8	-1.0	2.5	-2.5	1.0000	4.9	0.9791	5.6			64	6
6560		PLANETA13.8		13.800	G1	4.3	2.0	2.0	-2.0	0.9590	4.9	0.9058	4.9			64	6
6570		FRAILE13.8		13.800	G1	2.6	1.2	1.2	-1.2	0.9799	2.9	0.9122	3.0			63	6



6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9799	2.9	0.9122	3.0	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9798	5.4	0.9084	5.5	6
6621	PSUR4.16	4.2000	G1	4.8	-0.8	2.5	-2.5	1.0000	4.8	0.9877	5.6	6
6621	PSUR4.16	4.2000	G2	4.8	-0.8	2.5	-2.5	1.0000	4.8	0.9877	5.6	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.5	2.5	-2.5	1.0000	5.0	0.9536	5.6	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.5	2.5	-2.5	1.0000	5.0	0.9536	5.6	6
6631	COCHEA13.8	13.800	G1	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9865	8.4	6
6631	COCHEA13.8	13.800	G2	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9865	8.4	6
6641	MENDII13.8	13.800	G1	3.3	-0.3	1.9	-1.9	1.0000	3.3	0.9962	4.1	6
6641	MENDII13.8	13.800	G2	3.3	-0.3	1.9	-1.9	1.0000	3.3	0.9962	4.1	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.5	2.5	-2.5	1.0000	5.0	0.9536	5.6	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0231	3.8	0.8675	4.4	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9964	7.5	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9964	7.5	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0067	27.6	0.9576	33.0	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0067	27.6	0.9576	33.0	6
6692	ALTO13A	13.800	G1	21.3	9.6	9.9	-9.9	1.0100	23.1	0.9116	24.9	6
6693	ALTO13B	13.800	G2	21.3	-4.2	9.9	-9.9	1.0000	21.7	0.9814	24.9	6
6696	PANDO13A	13.800	G1	15.8	-1.5	12.8	-8.3	1.0000	15.9	0.9953	18.5	6
6697	PANDO13B	13.800	G2	15.8	-1.5	12.8	-8.3	1.0000	15.9	0.9953	18.5	6
6699	MLIRIO13A	13.800	G1	15.8	-1.3	12.8	-8.3	1.0000	15.9	0.9967	18.5	6
6700	MLIRIO13B	13.800	G2	15.8	-1.3	12.8	-8.3	1.0000	15.9	0.9967	18.5	6
6711	TIZ4.16	4.2000	G1	4.4	1.6	2.3	-2.3	1.0000	4.7	0.9397	5.2	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0216	4.8	0.8622	5.6	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0216	4.8	0.8622	5.6	6
6731	SAND4.16	4.2000	G1	4.3	-1.9	2.2	-2.2	1.0000	4.7	0.9168	5.0	6
6731	SAND4.16	4.2000	G2	4.3	-1.9	2.2	-2.2	1.0000	4.7	0.9168	5.0	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9577	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9577	4.8	6
6750	BON13.8	13.800	G1	9.9	-0.5	4.0	-4.0	1.0000	9.9	0.9987	35.3	6
6750	BON13.8	13.800	G2	9.9	-0.5	4.0	-4.0	1.0000	9.9	0.9987	35.3	6
6750	BON13.8	13.800	G3	9.9	-0.5	4.0	-4.0	1.0000	9.9	0.9987	35.3	6
6763	BAR13.8	13.800	G1	7.2	2.5	4.0	-4.0	1.0000	7.6	0.9462	9.0	6
6763	BAR13.8	13.800	G2	7.2	2.5	4.0	-4.0	1.0000	7.6	0.9462	9.0	6
6765	CRU13.8	13.800	G1	4.6	1.1	2.6	-2.6	1.0000	4.7	0.9712	5.8	6
6765	CRU13.8	13.800	G2	4.6	1.1	2.6	-2.6	1.0000	4.7	0.9712	5.8	6
6767	LAG13.8	13.800	G1	4.7	0.7	2.6	-2.6	1.0000	4.7	0.9875	5.8	6
6767	LAG13.8	13.800	G2	4.7	0.7	2.6	-2.6	1.0000	4.7	0.9875	5.8	6
6769	ESTRECHO4.164.2000	4.164.2000	G1	4.9	1.0	2.5	-2.5	1.0000	5.0	0.9806	5.6	6
6769	ESTRECHO4.164.2000	4.164.2000	G2	4.9	1.0	2.5	-2.5	1.0000	5.0	0.9806	5.6	6
6771	CAÑAZAS13.8	13.800	G1	2.8	0.8	1.5	-1.5	1.0000	2.9	0.9602	3.3	6
6771	CAÑAZAS13.8	13.800	G2	2.8	0.8	1.5	-1.5	1.0000	2.9	0.9602	3.3	6
6781	OAGUA13.8	13.800	G1	3.1	-1.6	1.6	-1.6	1.0009	3.4	0.8897	3.6	6



6781	OAGUA13.8	13.800	G2	3.1	-1.6	1.6	-1.6	1.0009	3.4	0.8897	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-6.2	6.2	-6.2	1.0121	13.5	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-6.2	6.2	-6.2	1.0121	13.5	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	256.3	300.0	-225.0	1.0680	240.0	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0048	4.0	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9864	4.5	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9864	4.5	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9975	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9975	17.9	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0231	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9872	9.6	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9872	9.6	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9872	2.0	0.9058	2.1	64	6
6871	TABII13.8	13.800	G1	16.4	-1.6	9.0	-9.0	1.0000	16.5	0.9953	20.5	64	6
6871	TABII13.8	13.800	G2	16.4	-1.6	9.0	-9.0	1.0000	16.5	0.9953	20.5	64	6
6881	CHAIIG1	13.813.800	G1	101.7	4.9	52.3	-52.3	1.0100	100.8	0.9989	118.9	64	6
6900	SVC-LV	13.200	1	0.0	296.9	300.0	-225.0	1.0795	275.0	0.0000	300.0	61	6
6921	CB250A-1	13.800	C1	106.3	12.2	61.1	-61.1	1.0300	103.8	0.9935	138.9	62	6
6922	CB250A-2	13.800	C2	106.3	12.2	61.1	-61.1	1.0300	103.8	0.9935	138.9	62	6
6923	CB250B-1	13.800	C1	106.3	12.2	61.1	-61.1	1.0300	103.8	0.9935	138.9	62	6
6924	CB250B-2	13.800	C2	106.3	12.2	61.1	-61.1	1.0300	103.8	0.9935	138.9	62	6
SUBSYSTEM TOTALS				2228.9	641.2	1725.1	-1421.8				3452.5		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:33
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT25

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
6127		MIR13B		12.000	G6	17.1	0.8	8.0	0.0	1.0100	16.9	0.9990	27.7			65	7
6128		MIR13C		12.000	G3	20.9	8.1	11.0	0.0	1.0100	22.2	0.9324	29.4			65	7
6129		MIR13D		13.800	G4	28.0	9.9	15.0	0.0	1.0100	29.3	0.9430	44.1			65	7
6130		MIR13F		13.800	G5	17.1	1.4	8.0	0.0	1.0100	17.0	0.9968	27.7			65	7
6134		MAD6A		6.9000	G1	11.4	0.4	6.0	-6.0	1.0100	11.3	0.9994	13.0			65	7
6135		MAD6B		6.9000	G2	11.4	0.4	6.0	-6.0	1.0100	11.3	0.9993	13.0			65	7
6136		MAD6C		6.9000	G3	11.4	0.4	6.0	-6.0	1.0100	11.3	0.9993	13.0			65	7
6140		GAT6A		6.9000	G4	4.3	-2.8	3.0	-3.0	0.9900	5.2	0.8377	5.6			65	7
6140		GAT6A		6.9000	G5	4.3	-2.8	3.0	-3.0	0.9900	5.2	0.8377	6.2			65	7
SUBSYSTEM TOTALS						125.8	15.8	66.0	-24.0				179.8				



1559

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:33
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT25

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0171	233.94	6003		PANII230		230.00	6	1.0100	232.30
6008		LSA230		230.00	6	1.0200	234.60	6011		MDN230		230.00	6	1.0079	231.81
6014		PRO230		230.00	6	1.0158	233.63	6096		FOR230		230.00	6	1.0107	232.45
6100		BAY230		230.00	6	1.0283	236.51	6103		COP230		230.00	6	1.0130	232.99
6171		PAC230		230.00	6	1.0137	233.16	6178		EST230		230.00	6	1.0087	232.00
6179		GUA230		230.00	6	1.0089	232.04	6182		VEL230		230.00	6	1.0095	232.18
6260		CHA 230		230.00	6	1.0183	234.20	6263		ESP230		230.00	6	1.0185	234.25
6330		BAI230		230.00	6	1.0148	233.40	6340		CAN 230		230.00	6	1.0120	232.76
6380		BOQIII 230		230.00	6	1.0117	232.70	6400		FRONTCHA		230.00	6	1.0182	234.19
6430		ANTON230		230.00	6	1.0260	235.97	6500		FRONTDOM		230.00	6	1.0248	235.70
6590		24DIC230		230.00	6	1.0113	232.60	6680		BFRIO230		230.00	6	1.0185	234.25
6690		DOM230		230.00	6	1.0254	235.85	6691		ALTO230		230.00	6	1.0282	236.50
6695		PANDO230		230.00	6	1.0259	235.95	6698		MLIRIO230		230.00	6	1.0257	235.92
6760		SBA230		230.00	6	1.0116	232.68	6790		SMA230		230.00	6	1.0209	234.81
6840		BUR230		230.00	6	1.0181	234.16	6860		BBL230		230.00	6	1.0104	232.38
6870		TABII230		230.00	6	1.0098	232.24	6880		CHAI230		230.00	6	1.0185	234.25
6920		STR230		230.00	6	1.0244	235.61								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9915	228.06	6005		CHO230		230.00	6	0.9818	225.81
6105		PAM230		230.00	6	0.9818	225.81	6240		LGU 230		230.00	6	0.9991	229.78



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:33

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT25

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAF01	WND 1	6	T1	48.0	50.0	95.9	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T3	95.9	100.0	95.9	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T2	48.0	50.0	95.9	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF01	WND 2	6	T1	57.5	60.0	95.8	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF02	WND 2	6	T2	57.5	60.0	95.8	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T1	WND 2	6	T1	48.6	50.0	97.1	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T2	WND 2	6	T2	47.9	50.0	95.7	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T4	WND 2	6	T4	48.5	50.0	97.0	--	--	--	--
6087	CAL115	115.00*	6	6300 CAL	34.5	34.500	6	T1	60.1	62.5	96.2	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAF01	WND 1	6	T1	53.3	54.0	98.6	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:33

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT25

OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

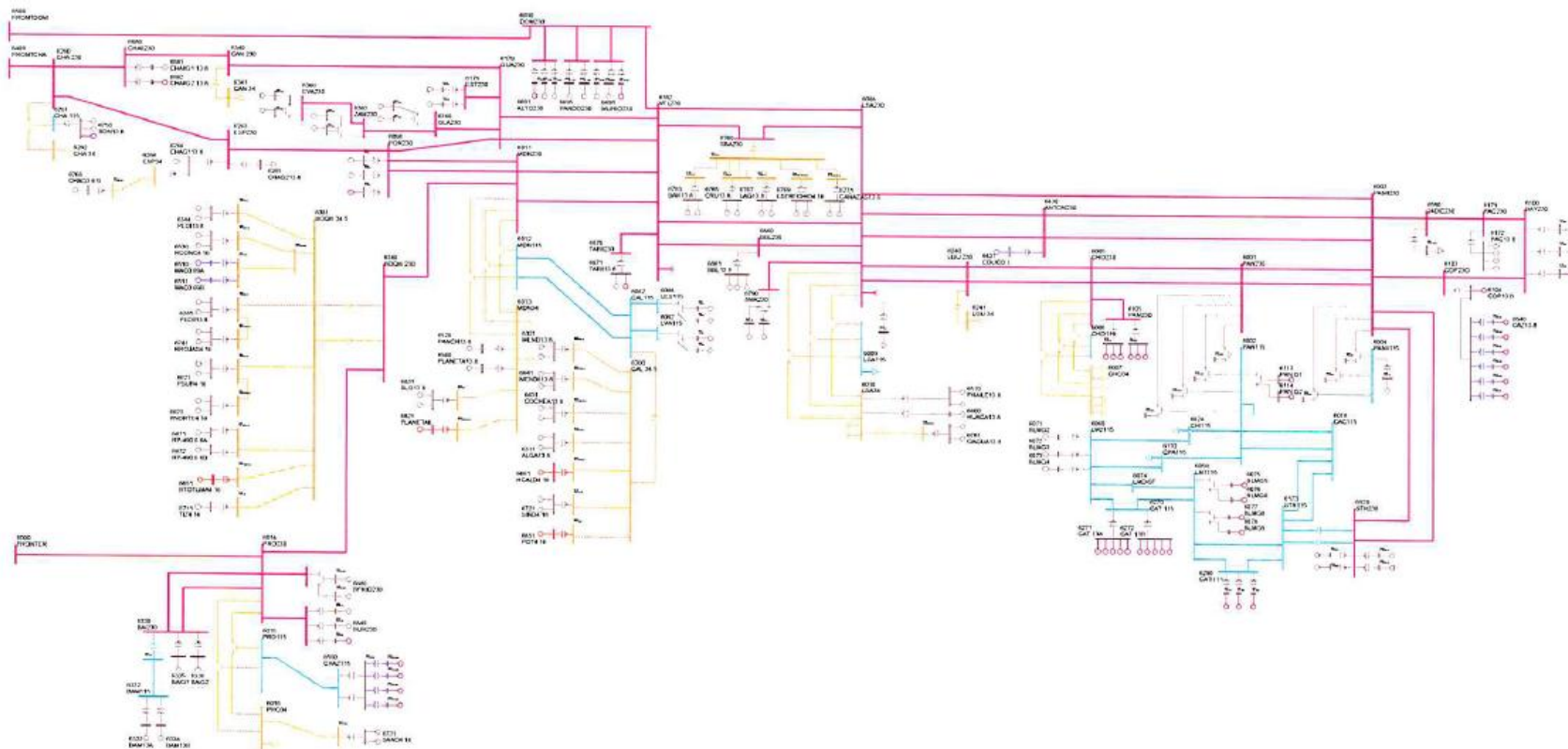
X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							WED, MAY 18 2011 10:33			
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS			
BD REGIONAL - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 CNT25							IN MW/MVAR			
X-- AREA --X	FROM	TO LOAD	TO BUS	GNE BUS	TO LINE	FROM	TO	-NET INTERCHANGE-		DESIRED
	GENE-	AT AREA	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	TO TIE	TO TIES	NET INT
	RATION	BUSES						LINES	+ LOADS	
1	924.9	1179.4	0.0	0.0	0.0	0.0	22.8	-277.3	-277.3	-277.3
GUATEMAL	217.8	340.6	219.3	0.0	0.0	602.5	244.8	15.6	15.6	
2	1142.3	1104.0	0.0	0.0	0.0	0.0	38.3	0.0	0.0	0.0
SALVADOR	300.2	367.1	-180.9	0.0	0.0	241.1	324.6	30.6	30.6	
3	1239.1	1205.2	0.0	0.0	0.0	0.0	33.8	0.0	0.0	0.0
HONDURAS	390.8	395.2	-20.4	0.0	0.0	469.1	452.5	32.6	32.6	
4	479.3	459.0	0.0	0.0	0.0	0.0	20.3	0.0	0.0	0.0
NICARAGU	-17.0	181.0	-12.8	0.0	0.0	289.0	180.8	-77.0	-77.0	
5	1521.7	1489.7	0.0	0.0	0.0	0.0	31.7	0.3	0.3	0.0
COSTA RI	257.7	558.4	-226.6	0.0	0.0	555.7	436.3	45.3	45.3	
6	2228.9	1911.3	0.0	0.0	0.0	0.0	100.4	217.2	217.2	217.3
PANAMA	641.2	334.8	-228.6	0.0	0.0	567.3	1152.9	-50.7	-50.7	
7	125.8	62.1	0.0	0.0	0.0	0.0	3.8	59.9	59.9	60.0
ACANAL	15.8	10.9	-15.8	0.0	0.0	0.0	17.1	3.6	3.6	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLUMN	7661.9	7410.8	0.0	0.0	0.0	0.0	251.1	0.0	0.0	0.0
TOTALS	1806.5	2188.0	-465.8	0.0	0.0	2724.7	2809.0	0.0	0.0	

Demanda Máxima de Verano





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:38
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2020

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
6071		BLMG2		13.800	V2	38.0	3.7	15.0	0.0	1.0200	37.4	0.9953	47.0			62	6
6072		BLMG3		13.800	V3	38.0	3.7	15.0	0.0	1.0200	37.4	0.9953	47.0			62	6
6073		BLMG4		13.800	V4	38.0	3.7	15.0	0.0	1.0200	37.4	0.9952	47.0			62	6
6090		LESG1		13.800	E1	21.2	3.7	12.0	-5.0	1.0000	21.6	0.9855	27.0			64	6
6091		LESG2		13.800	E2	21.2	3.7	12.0	-5.0	1.0000	21.6	0.9855	27.0			64	6
6094		LVAG1		13.800	L1	24.7	-2.9	12.0	-5.0	1.0000	24.8	0.9930	27.0			64	6
6095		LVAG2		13.800	L2	24.7	-2.9	12.0	-5.0	1.0000	24.8	0.9930	27.0			64	6
6097		FORG1		13.800	F1	90.0	8.4	50.0	-50.0	1.0100	89.5	0.9956	111.0			64	6
6098		FORG2		13.800	F2	90.0	8.4	50.0	-50.0	1.0100	89.5	0.9956	111.0			64	6
6101		BAYG1		13.800	B1	78.4	16.4	30.0	-25.0	1.0200	78.5	0.9788	94.0			61	6
6102		BAYG2		13.800	B2	79.3	16.5	30.0	-25.0	1.0200	79.4	0.9790	94.0			61	6
6172		PAC13.8		13.800	P1	16.9	9.0	9.0	-11.0	0.9922	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P2	16.9	9.0	9.0	-11.0	0.9922	19.3	0.8832	21.7			61	6
6172		PAC13.8		13.800	P3	16.9	9.0	9.0	-11.0	0.9922	19.3	0.8832	21.7			61	6
6176		ESTG1		13.800	E1	54.0	9.0	29.0	-29.0	1.0000	54.7	0.9863	69.0			64	6
6177		ESTG2		13.800	E2	54.0	9.0	29.0	-29.0	1.0000	54.7	0.9863	69.0			64	6
6264		CHAG113.8		13.800	G1	94.4	-5.5	52.4	-48.9	1.0000	94.5	0.9983	116.5			64	6
6265		CHAG213.8		13.800	G2	94.4	-1.9	52.4	-48.9	1.0000	94.4	0.9998	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	8.8	4.9	4.9	-4.1	0.9969	10.1	0.8745	10.9			64	6
6311		ALGA13.8		13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9756	5.7			64	6
6311		ALGA13.8		13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9756	5.7			64	6
6321		MEND13.8		13.800	M1	8.0	4.2	4.2	-4.2	0.9923	9.1	0.8865	10.4			64	6
6321		MEND13.8		13.800	M2	8.0	4.2	4.2	-4.2	0.9923	9.1	0.8865	10.4			64	6
6333		BAM13A		13.800	G1	25.2	1.1	10.0	-10.0	1.0000	25.2	0.9991	30.0			64	6
6334		BAM13B		13.800	G2	25.2	1.1	10.0	-10.0	1.0000	25.2	0.9991	30.0			64	6
6335		BAIG1		13.800	G1	39.9	-9.0	14.0	-14.0	1.0000	40.9	0.9754	49.0			64	6
6336		BAIG2		13.800	G2	39.9	-9.0	14.0	-14.0	1.0000	40.9	0.9754	49.0			64	6
6361		GLA13A		13.800	G1	11.4	-3.7	7.8	-7.0	1.0000	12.0	0.9525	14.1			64	6
6362		GLA13B		13.800	G2	11.4	-3.7	7.8	-7.0	1.0000	12.0	0.9525	14.1			64	6
6364		LOR13A		13.800	G1	15.2	-6.8	7.8	-7.0	1.0000	16.7	0.9131	25.0			64	6
6365		LOR13B		13.800	G2	15.2	-6.8	7.8	-7.0	1.0000	16.7	0.9131	25.0			64	6
6367		PRU13A		13.800	G1	25.2	-8.0	8.0	-8.0	1.0005	26.4	0.9531	33.0			64	6
6368		PRU13B		13.800	G2	25.2	-8.0	8.0	-8.0	1.0005	26.4	0.9531	33.0			64	6
6384		PEDI13.8		13.800	G1	9.0	-0.1	4.9	-4.9	1.0000	9.0	0.9999	12.5			64	6
6384		PEDI13.8		13.800	G2	9.0	-0.1	4.9	-4.9	1.0000	9.0	0.9999	12.5			64	6
6385		PEDII13.8		13.800	G1	5.8	0.3	3.2	-3.6	1.0000	5.9	0.9989	7.5			64	6
6385		PEDII13.8		13.800	G2	5.9	0.3	3.2	-3.6	1.0000	5.9	0.9989	7.5			64	6



6431	EOLICO I	0.6000	G1	120.0	-21.0	21.0	-21.0	1.0184	119.6	0.9850	152.3	64	6
6510	MAC0.69A	0.7000	G1	1.5	-0.1	0.9	-0.1	1.0068	1.5	0.9983	2.1	64	6
6511	MAC0.69B	0.7000	G2	1.5	-0.1	0.9	-0.1	1.0068	1.5	0.9983	2.1	64	6
6520	PANCH13.8	13.800	P1	4.2	2.0	2.0	-2.0	0.9557	4.9	0.9048	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.5	-0.8	2.5	-2.5	1.0000	4.6	0.9828	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.5	-0.8	2.5	-2.5	1.0000	4.6	0.9828	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.0	2.0	2.0	-2.0	0.9557	4.7	0.8966	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.5	1.2	1.2	-1.2	0.9787	2.8	0.9036	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.5	1.2	1.2	-1.2	0.9787	2.8	0.9036	3.0	63	6
6600	HUACA13.8	13.800	G1	4.5	2.2	2.2	-2.2	0.9786	5.2	0.8995	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.5	-0.6	2.5	-2.5	1.0000	4.5	0.9908	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.5	-0.6	2.5	-2.5	1.0000	4.5	0.9908	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.5	-1.4	2.5	-2.5	1.0000	4.7	0.9577	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.5	-1.4	2.5	-2.5	1.0000	4.7	0.9577	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.9	3.7	-3.7	1.0000	6.4	0.9902	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.9	3.7	-3.7	1.0000	6.4	0.9902	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.1	1.9	-1.9	1.0000	3.3	0.9995	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.1	1.9	-1.9	1.0000	3.3	0.9995	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.5	1.7	2.5	-2.5	1.0000	4.8	0.9367	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0228	3.8	0.8675	4.4	64	6
6671	RP-490 6.6A	6.6000	G1	6.4	0.5	2.3	-2.6	1.0000	6.4	0.9969	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.4	0.5	2.3	-2.6	1.0000	6.4	0.9969	7.5	64	6
6681	BFRIO13A	13.800	G1	25.2	-8.0	8.0	-8.0	1.0051	26.3	0.9531	33.0	64	6
6682	BFRIO13B	13.800	G2	25.2	-8.0	8.0	-8.0	1.0051	26.3	0.9531	33.0	64	6
6692	ALTO13A	13.800	G1	20.2	9.9	9.9	-9.9	1.0089	22.3	0.8984	24.9	64	6
6693	ALTO13B	13.800	G2	10.0	-2.5	9.9	-9.9	1.0000	10.3	0.9712	24.9	64	6
6696	PANDO13A	13.800	G1	15.0	-0.7	12.8	-8.3	1.0000	15.0	0.9989	18.5	64	6
6697	PANDO13B	13.800	G2	15.0	-0.7	12.8	-8.3	1.0000	15.0	0.9989	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.0	-0.3	12.8	-8.3	1.0000	15.0	0.9998	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.0	-0.3	12.8	-8.3	1.0000	15.0	0.9998	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.2	1.8	2.3	-2.3	1.0000	4.5	0.9199	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0213	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0213	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	4.0	-1.6	2.2	-2.2	1.0000	4.4	0.9308	5.0	64	6
6731	SAND4.16	4.2000	G2	4.0	-1.6	2.2	-2.2	1.0000	4.4	0.9308	5.0	64	6
6741	RROJAS4.16	4.2000	G1	3.9	-1.1	2.1	-2.1	1.0000	4.0	0.9603	4.8	64	6
6741	RROJAS4.16	4.2000	G2	3.9	-1.1	2.1	-2.1	1.0000	4.0	0.9603	4.8	64	6
6750	BON13.8	13.800	G1	9.4	-1.0	4.0	-4.0	1.0000	9.4	0.9940	35.3	64	6
6750	BON13.8	13.800	G2	9.4	-1.0	4.0	-4.0	1.0000	9.4	0.9940	35.3	64	6
6763	BAR13.8	13.800	G1	6.8	2.6	4.0	-4.0	1.0000	7.3	0.9335	9.0	63	6
6763	BAR13.8	13.800	G2	6.8	2.6	4.0	-4.0	1.0000	7.3	0.9335	9.0	63	6
6765	CRU13.8	13.800	G1	4.4	1.2	2.6	-2.6	1.0000	4.5	0.9622	5.8	63	6
6765	CRU13.8	13.800	G2	4.4	1.2	2.6	-2.6	1.0000	4.5	0.9622	5.8	63	6



6767	LAG13.8	13.800	G1	4.4	0.9	2.6	-2.6	1.0000	4.5	0.9819	5.8	63	6
6767	LAG13.8	13.800	G2	4.4	0.9	2.6	-2.6	1.0000	4.5	0.9819	5.8	63	6
6769	ESTRECHO4.164.2000	G1	4.7	1.1	2.5	-2.5	1.0000	4.8	0.9737	5.6	63	6	
6769	ESTRECHO4.164.2000	G2	4.7	1.1	2.5	-2.5	1.0000	4.8	0.9737	5.6	63	6	
6771	CAÑAZAS13.8	13.800	G1	2.7	0.9	1.5	-1.5	1.0000	2.8	0.9449	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.7	0.9	1.5	-1.5	1.0000	2.8	0.9449	3.3	63	6
6781	OAGUA13.8	13.800	G1	2.9	-1.3	1.6	-1.6	1.0000	3.2	0.9088	3.6	63	6
6781	OAGUA13.8	13.800	G2	2.9	-1.3	1.6	-1.6	1.0000	3.2	0.9088	3.6	63	6
6791	SMA13A	13.800	G1	11.5	-6.2	6.2	-6.2	1.0104	13.0	0.8790	14.2	63	6
6792	SMA13B	13.800	G2	11.5	-6.2	6.2	-6.2	1.0104	13.0	0.8790	14.2	63	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0742	279.3	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.4	-1.8	1.8	-1.8	1.0013	3.8	0.8788	4.1	64	6
6831	SLO13.8	13.800	G1	3.8	2.1	2.1	-2.1	0.9829	4.4	0.8788	4.7	64	6
6831	SLO13.8	13.800	G2	3.8	2.1	2.1	-2.1	0.9829	4.4	0.8788	4.7	64	6
6841	BUR13A	13.800	G1	15.0	8.1	8.1	-8.1	0.9961	17.1	0.8787	18.5	64	6
6842	BUR13B	13.800	G2	15.0	8.1	8.1	-8.1	0.9961	17.1	0.8787	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0228	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.1	4.0	4.0	-3.0	0.9813	9.3	0.8967	10.1	64	6
6861	BBL13.8	13.800	G2	8.1	4.0	4.0	-3.0	0.9813	9.3	0.8967	10.1	64	6
6861	BBL13.8	13.800	G3	1.7	0.8	0.8	-0.6	0.9813	1.9	0.8966	2.1	64	6
6871	TABII13.8	13.800	G1	15.5	-1.4	9.0	-9.0	1.0000	15.6	0.9961	20.5	64	6
6881	CHAIIG1	13.813.800	G1	96.3	6.2	52.3	-52.3	1.0100	95.5	0.9979	118.9	64	6
6900	SVC-LV	13.200	1	0.0	296.5	300.0	-225.0	1.0767	275.3	0.0000	300.0	61	6
6921	CB250A-1	13.800	C1	95.8	7.1	61.1	-61.1	1.0200	94.2	0.9972	138.9	62	6
6922	CB250A-2	13.800	C2	95.8	7.1	61.1	-61.1	1.0200	94.2	0.9972	138.9	62	6
6923	CB250B-1	13.800	C1	95.8	7.1	61.1	-61.1	1.0200	94.2	0.9972	138.9	62	6
6924	CB250B-2	13.800	C2	95.8	7.1	61.1	-61.1	1.0200	94.2	0.9972	138.9	62	6
SUBSYSTEM TOTALS				2216.0	675.4	1729.8	-1471.3				3506.0		

 PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:38
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2020

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
6127		MIR13B		12.000	G6	17.1	2.4	8.0	0.0	1.0100	17.1	0.9906	27.7			65	7
6128		MIR13C		12.000	G3	20.9	9.5	11.0	0.0	1.0100	22.7	0.9112	29.4			65	7
6129		MIR13D		13.800	G4	29.1	11.4	15.0	0.0	1.0100	30.9	0.9306	44.1			65	7
6130		MIR13F		13.800	G5	17.1	3.3	8.0	0.0	1.0100	17.2	0.9819	27.7			65	7
6134		MAD6A		6.9000	G1	11.4	1.0	6.0	-6.0	1.0100	11.3	0.9960	13.0			65	7
6135		MAD6B		6.9000	G2	11.4	0.9	6.0	-6.0	1.0100	11.3	0.9966	13.0			65	7

6136 MAD6C	6.9000 G3	10.8	1.0	6.0	-6.0	1.0100	10.7	0.9956	13.0
6140 GAT6A	6.9000 G4	4.3	2.1	3.0	-3.0	0.9900	4.8	0.8969	5.6
6140 GAT6A	6.9000 G5	4.3	2.1	3.0	-3.0	0.9900	4.8	0.8969	6.2
SUBSYSTEM TOTALS		126.3	33.7	66.0	-24.0				179.8



1567

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:38
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2020

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0160	233.67	6003		PANII230		230.00	6	1.0100	232.30
6008		LSA230		230.00	6	1.0183	234.21	6011		MDN230		230.00	6	1.0033	230.75
6014		PRO230		230.00	6	1.0144	233.30	6096		FOR230		230.00	6	1.0056	231.29
6100		BAY230		230.00	6	1.0293	236.75	6103		COP230		230.00	6	1.0133	233.07
6171		PAC230		230.00	6	1.0186	234.28	6178		EST230		230.00	6	1.0008	230.18
6179		GUA230		230.00	6	1.0009	230.20	6182		VEL230		230.00	6	1.0034	230.78
6260		CHA 230		230.00	6	1.0161	233.70	6263		ESP230		230.00	6	1.0164	233.76
6330		BAI230		230.00	6	1.0136	233.13	6340		CAN 230		230.00	6	1.0064	231.47
6360		GLA230		230.00	6	1.0052	231.21	6363		ZAM230		230.00	6	1.0097	232.24
6366		EVA230		230.00	6	1.0123	232.82	6380		BOQIII 230		230.00	6	1.0091	232.08
6400		FRONTCHA		230.00	6	1.0165	233.79	6430		ANTON230		230.00	6	1.0208	234.79
6500		FRONTDOM		230.00	6	1.0241	235.54	6590		24DIC230		230.00	6	1.0137	233.16
6680		BFRIO230		230.00	6	1.0169	233.88	6690		DOM230		230.00	6	1.0248	235.69
6691		ALTO230		230.00	6	1.0269	236.18	6695		PANDO230		230.00	6	1.0254	235.84
6698		MLIRIO230		230.00	6	1.0252	235.80	6760		SBA230		230.00	6	1.0068	231.56
6790		SMA230		230.00	6	1.0192	234.40	6840		BUR230		230.00	6	1.0166	233.83
6860		BBL230		230.00	6	1.0043	231.00	6870		TABII230		230.00	6	1.0037	230.84
6880		CHAI230		230.00	6	1.0158	233.63	6920		STR230		230.00	6	1.0172	233.97

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9921	228.17	6005		CHO230		230.00	6	0.9807	225.55
6105		PAM230		230.00	6	0.9807	225.55	6240		LGU 230		230.00	6	0.9966	229.21



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:38

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2020

OUTPUT FOR AREA 6 [PANAMA]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAF01	WND 1	6	T1	48.3	50.0	96.6	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T3	96.6	100.0	96.6	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAF02	WND 1	6	T2	48.3	50.0	96.6	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF01	WND 2	6	T1	57.8	60.0	96.4	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAF02	WND 2	6	T2	57.8	60.0	96.4	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T1	WND 2	6	T1	48.9	50.0	97.8	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T2	WND 2	6	T2	48.2	50.0	96.5	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T4	WND 2	6	T4	48.9	50.0	97.7	--	--	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.0	62.5	96.0	--	--	--	--

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:38

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2020

OUTPUT FOR AREA 7 [ACANAL]

SUBSYSTEM LOADING CHECK (INCLUDED: LINES; BREAKERS AND SWITCHES; TRANSFORMERS) (EXCLUDED: NONE)
 LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

X----- FROM BUS -----X				X----- TO BUS -----X				RATING SET A		RATING SET B		RATING SET C			
BUS#	X-- NAME	--X BASKV	AREA	BUS#	X-- NAME	--X BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

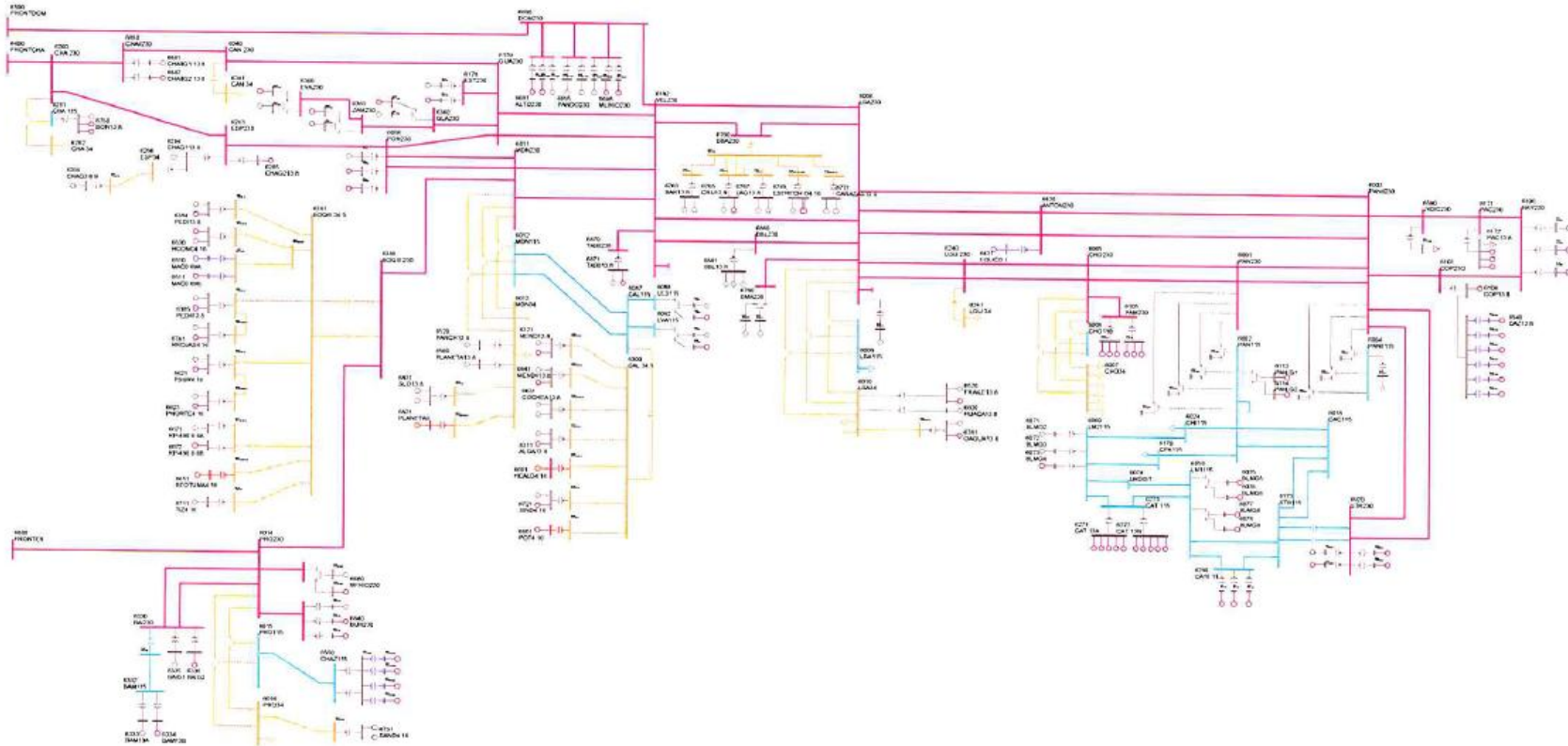
* NONE *



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:38
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BASE DE DATOS REGIONAL - DEMANDA MÁXIMA - ÉPOCA SECA 2020 IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO			-NET INTERCHANGE-				DESIRED NET INT
	GENE- RATION	ASSIGNED TO AREA	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	958.8 215.5	1179.4 340.6	0.0 221.0	0.0 0.0	0.0 0.0	0.0 605.4	22.9 250.1	-243.5 9.2	-243.5 9.2	-243.5
2 SALVADOR	1140.3 287.5	1104.0 367.1	0.0 -181.4	0.0 0.0	0.0 0.0	0.0 242.0	36.2 312.6	0.0 31.2	0.0 31.2	0.0
3 HONDURAS	1237.3 377.0	1205.2 395.2	0.0 -20.4	0.0 0.0	0.0 0.0	0.0 471.5	32.1 440.2	0.0 33.5	0.0 33.5	0.0
4 NICARAGU	476.9 -30.9	459.0 181.0	0.0 -12.9	0.0 0.0	0.0 0.0	0.0 290.8	17.8 165.8	0.0 -74.0	0.0 -74.0	0.0
5 COSTA RI	1519.7 248.2	1489.7 558.4	0.0 -226.5	0.0 0.0	0.0 0.0	0.0 556.1	29.9 425.0	0.1 47.6	0.1 47.6	0.0
6 PANAMA	2216.0 675.4	1923.1 336.9	0.0 -221.9	0.0 0.0	0.0 0.0	0.0 565.3	109.5 1194.1	183.5 -68.5	183.5 -68.5	183.5
7 ACANAL	126.3 33.7	62.5 10.9	0.0 -15.6	0.0 0.0	0.0 0.0	0.0 0.0	3.9 17.5	60.0 21.0	60.0 21.0	60.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	7675.3 1806.5	7423.0 2190.2	0.0 -457.7	0.0 0.0	0.0 0.0	0.0 2731.2	252.3 2805.2	0.0 0.0	0.0 0.0	0.0

Demanda Mínima de Invierno





PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:42
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2020

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
6071		BLMG2		13.800	V2	20.0	1.1	15.0	0.0	1.0100	19.8	0.9985	47.0			62	6
6072		BLMG3		13.800	V3	20.0	1.1	15.0	0.0	1.0100	19.8	0.9985	47.0			62	6
6090		LESG1		13.800	E1	22.4	-1.8	12.0	-5.0	0.9900	22.7	0.9968	27.0			64	6
6094		LVAG1		13.800	L1	26.0	-5.0	12.0	-5.0	1.0040	26.4	0.9820	27.0			64	6
6097		FORG1		13.800	F1	95.0	-2.7	50.0	-50.0	1.0100	94.1	0.9996	111.0			64	6
6101		BAYG1		13.800	B1	83.4	16.1	30.0	-25.0	1.0000	84.9	0.9819	94.0			61	6
6176		ESTG1		13.800	E1	57.0	7.4	29.0	-29.0	1.0000	57.5	0.9916	69.0			64	6
6264		CHAG113.8		13.800	G1	99.6	-12.2	52.4	-48.9	1.0000	100.3	0.9926	116.5			64	6
6268		CHAG3 6.9		6.9000	G3	9.3	4.9	4.9	-4.1	0.9969	10.5	0.8852	10.9			64	6
6311		ALGA13.8		13.800	A1	4.8	1.7	2.3	-2.3	1.0000	5.1	0.9463	5.7			64	6
6321		MEND13.8		13.800	M1	8.9	4.2	4.2	-4.2	0.9877	10.0	0.9060	10.4			64	6
6333		BAM13A		13.800	G1	26.6	-0.7	10.0	-10.0	1.0000	26.6	0.9996	30.0			64	6
6335		BAIG1		13.800	G1	42.1	-14.0	14.0	-14.0	1.0035	44.2	0.9490	49.0			64	6
6361		GLA13A		13.800	G1	12.1	-7.0	7.8	-7.0	1.0101	13.8	0.8649	14.1			64	6
6364		LOR13A		13.800	G1	16.1	-7.0	7.8	-7.0	1.0124	17.3	0.9167	25.0			64	6
6367		PRU13A		13.800	G1	26.6	-8.0	8.0	-8.0	1.0123	27.4	0.9576	33.0			64	6
6384		PEDI13.8		13.800	G1	9.5	-1.5	4.9	-4.9	1.0000	9.6	0.9883	12.5			64	6
6385		PEDII13.8		13.800	G1	6.2	-0.6	3.2	-3.6	1.0000	6.2	0.9946	7.5			64	6
6431		EOLICO I		0.6000	G1	60.0	-10.5	10.5	-10.5	1.0107	60.3	0.9850	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.6	-0.1	0.9	-0.1	1.0062	1.6	0.9985	2.1			64	6
6520		PANCH13.8		13.800	P1	4.8	2.0	2.0	-2.0	0.9725	5.3	0.9216	6.2			64	6
6530		HCONC4.16		4.2000	G2	4.8	-2.5	2.5	-2.5	1.0000	5.4	0.8851	5.6			64	6
6560		PLANETA13.8		13.800	G1	4.3	2.0	2.0	-2.0	0.9725	4.9	0.9058	4.9			64	6
6570		FRAILE13.8		13.800	G1	2.6	1.2	1.2	-1.2	0.9633	3.0	0.9122	3.0			63	6
6600		HUACA13.8		13.800	G1	4.8	2.2	2.2	-2.2	0.9640	5.5	0.9084	5.5			63	6
6621		PSUR4.16		4.2000	G1	4.8	-2.5	2.5	-2.5	1.0000	5.4	0.8851	5.6			64	6
6623		PNORTE4.16		4.2000	G1	4.8	-2.5	2.5	-2.5	1.0002	5.4	0.8851	5.6			64	6
6631		COCHEA13.8		13.800	G1	7.1	-3.1	3.7	-3.7	1.0000	7.8	0.9176	8.4			64	6
6631		COCHEA13.8		13.800	G2	7.1	-3.1	3.7	-3.7	1.0000	7.8	0.9176	8.4			64	6
6641		MENDII13.8		13.800	G1	3.7	-1.9	1.9	-1.9	1.0017	4.1	0.8915	4.1			64	6
6651		BTOTUMA4.16		4.1600	G1	4.8	-2.1	2.5	-2.5	1.0000	5.2	0.9115	5.6			64	6
6661		HCALD4.16		4.1600	G1	3.8	-2.0	2.0	-2.0	1.0268	4.2	0.8897	4.4			64	6
6671		RP-490 6.6A		6.6000	G1	6.8	0.2	2.3	-2.6	1.0000	6.8	0.9995	7.5			64	6
6681		BFRIO13A		13.800	G1	26.6	-8.0	8.0	-8.0	1.0160	27.3	0.9576	33.0			64	6
6692		ALTO13A		13.800	G1	21.3	3.4	9.9	-9.9	1.0100	21.4	0.9877	24.9			64	6
6696		PANDO13A		13.800	G1	15.8	-8.3	12.8	-8.3	1.0002	17.9	0.8855	18.5			64	6
6697		PANDO13B		13.800	G2	15.8	-8.3	12.8	-8.3	1.0002	17.9	0.8855	18.5			64	6



6699	MLIRIO13A	13.800	G1	15.8	-8.3	12.8	-8.3	1.0014	17.8	0.8855	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	-2.0	2.3	-2.3	1.0000	4.9	0.9076	5.2	64	6
6721	SIND4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0266	5.2	0.8851	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0062	4.8	0.8892	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-2.2	2.2	-2.2	1.0062	4.8	0.8892	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-2.0	2.1	-2.1	1.0000	4.5	0.8996	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-4.0	4.0	-4.0	1.0047	10.6	0.9273	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	2.3	4.0	-4.0	1.0000	7.5	0.9542	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	2.3	4.0	-4.0	1.0000	7.5	0.9542	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	2.1	2.6	-2.6	1.0000	5.1	0.9089	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	0.8	2.6	-2.6	1.0000	4.7	0.9867	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	0.8	2.6	-2.6	1.0000	4.7	0.9867	5.8	63	6
6769	ESTRECHO4.16	4.2000	G1	4.9	2.2	2.5	-2.5	1.0000	5.4	0.9146	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.8	0.7	1.5	-1.5	1.0000	2.9	0.9692	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	0.7	1.5	-1.5	1.0000	2.9	0.9692	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	1.6	1.6	-1.6	0.9881	3.5	0.8896	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-0.8	6.2	-6.2	1.0000	12.2	0.9979	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-0.8	6.2	-6.2	1.0000	12.2	0.9979	14.2	63	6
6810	SVC-LV	13.200	1	0.0	-2.8	300.0	-225.0	0.9994	2.8	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0191	3.9	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	1.9	2.1	-2.1	1.0000	4.4	0.9006	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	1.9	2.1	-2.1	1.0000	4.4	0.9006	4.7	64	6
6841	BUR13A	13.800	G1	15.8	0.2	8.1	-8.1	1.0000	15.8	0.9999	18.5	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9909	9.6	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9909	9.6	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9909	2.0	0.9057	2.1	64	6
6871	TABII13.8	13.800	G1	16.4	-6.0	9.0	-9.0	1.0000	17.5	0.9387	20.5	64	6
6881	CHAIIG1	13.813.800	G1	101.7	-7.7	52.3	-52.3	1.0000	101.9	0.9971	118.9	64	6
6900	SVC-LV	13.200	1	0.0	92.8	300.0	-225.0	1.0182	91.2	0.0000	300.0	61	6
6921	CB250A-1	13.800	C1	100.0	-5.4	61.1	-61.1	1.0000	100.1	0.9986	138.9	62	6
SUBSYSTEM TOTALS				1168.8	2.6	1176.7	-956.0				2152.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:42
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2020

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
6127		MIR13B		12.000	G6	17.1	1.4	8.0	0.0	1.0100	17.0	0.9969	27.7			65	7
6128		MIR13C		12.000	G3	20.9	8.6	11.0	0.0	1.0100	22.4	0.9248	29.4			65	7
6129		MIR13D		13.800	G4	24.7	10.9	15.0	0.0	1.0100	26.7	0.9154	44.1			65	7



1575

6134	MAD6A	6.9000	G1	11.7	2.6	6.0	-6.0	1.0100	11.9	0.9755	13.0
6140	GAT6A	6.9000	G4	4.3	0.4	3.0	-3.0	0.9900	4.3	0.9956	5.6
6140	GAT6A	6.9000	G5	4.3	0.4	3.0	-3.0	0.9900	4.3	0.9956	6.2
SUBSYSTEM TOTALS				82.9	24.3	46.0	-12.0				126.1

7
7
7

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:42
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2020

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0270	236.22	6011		MDN230		230.00	6	1.0167	233.84
6014		PRO230		230.00	6	1.0246	235.65	6096		FOR230		230.00	6	1.0182	234.19
6100		BAY230		230.00	6	1.0099	232.27	6103		COP230		230.00	6	1.0020	230.45
6171		PAC230		230.00	6	1.0022	230.50	6178		EST230		230.00	6	1.0161	233.71
6179		GUA230		230.00	6	1.0162	233.74	6182		VEL230		230.00	6	1.0143	233.29
6260		CHA 230		230.00	6	1.0269	236.18	6263		ESP230		230.00	6	1.0263	236.04
6330		BAI230		230.00	6	1.0239	235.50	6340		CAN 230		230.00	6	1.0201	234.61
6360		GLA230		230.00	6	1.0185	234.25	6363		ZAM230		230.00	6	1.0209	234.80
6366		EVA230		230.00	6	1.0222	235.11	6380		BOQIII 230		230.00	6	1.0197	234.52
6400		FRONTCHA		230.00	6	1.0287	236.60	6430		ANTON230		230.00	6	1.0117	232.69
6500		FRONTDOM		230.00	6	1.0319	237.33	6590		24DIC230		230.00	6	1.0007	230.16
6680		BFRIO230		230.00	6	1.0259	235.96	6690		DOM230		230.00	6	1.0315	237.23
6691		ALTO230		230.00	6	1.0329	237.56	6695		PANDO230		230.00	6	1.0297	236.83
6698		MLIRIO230		230.00	6	1.0309	237.11	6760		SBA230		230.00	6	1.0108	232.48
6790		SMA230		230.00	6	1.0013	230.29	6840		BUR230		230.00	6	1.0249	235.74
6860		BBL230		230.00	6	1.0142	233.26	6870		TABII230		230.00	6	1.0140	233.23
6880		CHAI230		230.00	6	1.0253	235.81	6920		STR230		230.00	6	1.0059	231.37

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9891	227.49	6005		CHO230		230.00	6	0.9824	225.95
6105		PAM230		230.00	6	0.9824	225.95	6240		LGU 230		230.00	6	0.9906	227.83



1577

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E							WED, MAY 18 2011 10:42				
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL							AREA TOTALS				
BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2020							IN MW/MVAR				
X-- AREA --X	FROM RATION	TO LOAD TO AREA	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE-		DESIRED NET INT	
								TO TIE LINES	TO TIES + LOADS		
1	667.8	773.5	0.0	0.0	0.0	0.0	11.0	-116.6	-116.6	-116.6	
GUATEMAL	-8.3	100.4	385.6	0.0	0.0	622.6	173.8	-45.4	-45.4		
2	523.2	512.7	0.0	0.0	0.0	0.0	10.5	0.0	0.0	0.0	
SALVADOR	15.3	137.7	-22.5	0.0	0.0	254.5	103.0	51.6	51.6		
3	560.5	545.5	0.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0	
HONDURAS	-109.2	179.1	40.6	0.0	0.0	515.1	133.2	53.1	53.1		
4	304.7	298.5	0.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	
NICARAGU	-142.9	118.2	51.4	0.0	0.0	314.6	68.0	-65.9	-65.9		
5	776.3	769.0	0.0	0.0	0.0	0.0	7.4	0.0	0.0	0.0	
COSTA RI	-93.0	302.3	-13.9	0.0	0.0	592.9	137.6	73.8	73.8		
6	1168.8	1051.2	0.0	0.0	0.0	0.0	47.8	69.8	69.8	69.6	
PANAMA	2.6	381.5	-228.3	0.0	0.0	564.1	499.2	-85.8	-85.8		
7	82.9	34.2	0.0	0.0	0.0	0.0	1.9	46.9	46.9	47.0	
ACANAL	24.3	12.4	-15.8	0.0	0.0	0.0	9.0	18.6	18.6		
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
COLUMN	4084.4	3984.5	0.0	0.0	0.0	0.0	99.8	0.0	0.0	0.0	
TOTALS	-311.3	1231.5	197.1	0.0	0.0	2863.7	1123.9	0.0	0.0		



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:44
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2020

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
6071		BLMG2		13.800	V2	20.0	3.0	15.0	0.0	1.0200	19.8	0.9889	47.0			62	6
6072		BLMG3		13.800	V3	20.0	3.0	15.0	0.0	1.0200	19.8	0.9889	47.0			62	6
6073		BLMG4		13.800	V4	20.0	3.1	15.0	0.0	1.0200	19.8	0.9881	47.0			62	6
6090		LESG1		13.800	E1	21.2	-0.4	12.0	-5.0	1.0000	21.2	0.9998	27.0			64	6
6094		LVAG1		13.800	L1	24.7	-5.0	12.0	-5.0	1.0097	24.9	0.9801	27.0			64	6
6097		FORG1		13.800	F1	75.0	-8.0	50.0	-50.0	1.0100	74.7	0.9943	111.0			64	6
6101		BAYG1		13.800	B1	67.5	27.9	30.0	-25.0	1.0200	71.6	0.9239	94.0			61	6
6176		ESTG1		13.800	E1	54.0	5.6	29.0	-29.0	1.0000	54.3	0.9947	69.0			64	6
6264		CHAG113.8		13.800	G1	94.4	-10.8	52.4	-48.9	1.0000	95.0	0.9935	116.5			64	6
6311		ALGA13.8		13.800	A1	4.6	1.1	2.3	-2.3	1.0000	4.7	0.9733	5.7			64	6
6321		MEND13.8		13.800	M1	8.4	4.2	4.2	-4.2	0.9939	9.5	0.8969	10.4			64	6
6333		BAM13A		13.800	G1	25.2	-1.2	10.0	-10.0	1.0000	25.2	0.9989	30.0			64	6
6335		BAIG1		13.800	G1	39.9	-14.0	14.0	-14.0	1.0052	42.1	0.9436	49.0			64	6
6361		GLA13A		13.800	G1	11.4	-7.0	7.8	-7.0	1.0144	13.2	0.8527	14.1			64	6
6364		LOR13A		13.800	G1	15.2	-7.0	7.8	-7.0	1.0166	16.5	0.9084	25.0			64	6
6367		PRU13A		13.800	G1	25.2	-8.0	8.0	-8.0	1.0164	26.0	0.9531	33.0			64	6
6384		PEDI13.8		13.800	G1	9.0	-2.0	4.9	-4.9	1.0000	9.2	0.9771	12.5			64	6
6385		PEDII13.8		13.800	G1	5.8	-1.1	3.2	-3.6	1.0000	5.9	0.9836	7.5			64	6
6431		EOLICO I		0.6000	G1	100.0	-17.5	17.5	-17.5	1.0079	100.7	0.9850	152.3			63	6
6510		MAC0.69A		0.7000	G1	1.5	-0.1	0.9	-0.1	1.0070	1.5	0.9983	2.1			64	6
6520		PANCH13.8		13.800	P1	4.5	2.0	2.0	-2.0	0.9747	5.1	0.9138	6.2			64	6
6530		HCONC4.16		4.2000	G2	4.5	-2.5	2.5	-2.5	1.0009	5.1	0.8744	5.6			64	6
6560		PLANETA13.8		13.800	G1	4.1	2.0	2.0	-2.0	0.9747	4.6	0.8966	4.9			64	6
6570		FRAILE13.8		13.800	G1	2.5	1.2	1.2	-1.2	0.9612	2.8	0.9036	3.0			63	6
6600		HUACA13.8		13.800	G1	4.5	2.2	2.2	-2.2	0.9619	5.3	0.8995	5.5			63	6
6621		PSUR4.16		4.2000	G1	4.5	-2.5	2.5	-2.5	1.0009	5.1	0.8744	5.6			64	6
6623		PNORTE4.16		4.2000	G1	4.5	-2.5	2.5	-2.5	1.0011	5.1	0.8744	5.6			64	6
6631		COCHEA13.8		13.800	G1	6.8	-3.7	3.7	-3.7	1.0072	7.6	0.8771	8.4			64	6
6641		MENDII13.8		13.800	G1	3.5	-1.9	1.9	-1.9	1.0083	3.9	0.8813	4.1			64	6
6651		BTOTUMA4.16		4.1600	G1	4.5	-2.5	2.5	-2.5	1.0006	5.1	0.8744	5.6			64	6
6661		HCALD4.16		4.1600	G1	3.6	-2.0	2.0	-2.0	1.0335	4.0	0.8793	4.4			64	6
6671		RP-490 6.6A		6.6000	G1	6.4	0.1	2.3	-2.6	1.0000	6.4	0.9998	7.5			64	6
6681		BFRIO13A		13.800	G1	25.2	-8.0	8.0	-8.0	1.0175	26.0	0.9531	33.0			64	6
6692		ALTO13A		13.800	G1	16.8	0.7	9.9	-9.9	1.0100	16.7	0.9992	24.9			64	6
6696		PANDO13A		13.800	G1	15.0	-8.3	12.8	-8.3	1.0035	17.1	0.8748	18.5			64	6
6699		MLIRIO13A		13.800	G1	15.0	-8.3	12.8	-8.3	1.0036	17.1	0.8748	18.5			64	6
6711		TIZ4.16		4.2000	G1	4.2	-2.3	2.3	-2.3	1.0007	4.7	0.8788	5.2			64	6



6721	SIND4.16	4.2000	G1	4.5	-2.5	2.5	-2.5	1.0332	5.0	0.8744	5.6	6
6731	SAND4.16	4.2000	G1	4.1	-2.2	2.2	-2.2	1.0129	4.6	0.8787	5.0	6
6741	RROJAS4.16	4.2000	G1	3.9	-2.1	2.1	-2.1	1.0002	4.4	0.8787	4.8	6
6750	BON13.8	13.800	G1	9.4	-4.0	4.0	-4.0	1.0064	10.1	0.9200	35.3	6
6763	BAR13.8	13.800	G1	6.8	3.7	4.0	-4.0	1.0000	7.7	0.8807	9.0	6
6765	CRU13.8	13.800	G1	4.4	1.8	2.6	-2.6	1.0000	4.7	0.9222	5.8	6
6767	LAG13.8	13.800	G1	4.4	1.4	2.6	-2.6	1.0000	4.6	0.9544	5.8	6
6769	ESTRECHO4.16	4.2000	G1	4.7	1.7	2.5	-2.5	1.0000	5.0	0.9425	5.6	6
6771	CAÑAZAS13.8	13.800	G1	2.7	1.5	1.5	-1.5	0.9998	3.0	0.8780	3.3	6
6781	OAGUA13.8	13.800	G1	2.9	1.6	1.6	-1.6	0.9859	3.4	0.8792	3.6	6
6791	SMA13A	13.800	G1	11.5	1.2	6.2	-6.2	1.0000	11.6	0.9947	14.2	6
6810	SVC-LV	13.200	1	0.0	-76.1	300.0	-225.0	0.9825	77.4	0.0000	300.0	6
6821	PLANETAII	4.1600	G1	3.4	-1.8	1.8	-1.8	1.0214	3.7	0.8788	4.1	6
6831	SLO13.8	13.800	G1	3.8	2.1	2.1	-2.1	0.9998	4.3	0.8788	4.7	6
6841	BUR13A	13.800	G1	15.0	-2.2	8.1	-8.1	1.0000	15.2	0.9896	18.5	6
6851	POT4.16	4.1600	G1	3.8	-2.0	2.0	-2.0	1.0334	4.1	0.8796	4.6	6
6861	BBL13.8	13.800	G1	8.1	4.0	4.0	-3.0	0.9934	9.1	0.8967	10.1	6
6871	TABII13.8	13.800	G1	12.9	-7.8	9.0	-9.0	1.0000	15.1	0.8564	20.5	6
6881	CHAIIG1	13.813.800	G1	80.2	-5.1	52.3	-52.3	1.0100	79.6	0.9980	118.9	6
6900	SVC-LV	13.200	1	0.0	38.0	300.0	-225.0	0.9994	38.1	0.0000	300.0	6
6921	CB250A-1	13.800	C1	106.2	11.0	61.1	-61.1	1.0200	104.7	0.9947	138.9	6
6923	CB250B-1	13.800	C1	106.2	11.0	61.1	-61.1	1.0200	104.7	0.9947	138.9	6
SUBSYSTEM TOTALS				1171.9	-97.4	1217.1	-987.9				2250.6	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:44
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2020

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
6127		MIR13B		12.000	G6	17.1	3.3	8.0	0.0	1.0100	17.3	0.9814	27.7			65	7
6129		MIR13D		13.800	G4	28.4	12.5	15.0	0.0	1.0100	30.7	0.9149	44.1			65	7
6130		MIR13F		13.800	G5	17.7	4.4	8.0	0.0	1.0100	18.1	0.9705	27.7			65	7
6134		MAD6A		6.9000	G1	11.4	3.4	6.0	-6.0	1.0100	11.8	0.9593	13.0			65	7
6140		GAT6A		6.9000	G4	4.3	1.3	3.0	-3.0	0.9900	4.5	0.9539	5.6			65	7
6140		GAT6A		6.9000	G5	4.3	1.3	3.0	-3.0	0.9900	4.5	0.9539	6.2			65	7
SUBSYSTEM TOTALS						83.2	26.3	43.0	-12.0				124.4				



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:44
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2020

BUSES WITH VOLTAGE GREATER THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6000		FRONTER		230.00	6	1.0284	236.52	6011		MDN230		230.00	6	1.0204	234.70
6014		PRO230		230.00	6	1.0261	236.01	6096		FOR230		230.00	6	1.0220	235.06
6100		BAY230		230.00	6	1.0133	233.07	6103		COP230		230.00	6	1.0025	230.58
6171		PAC230		230.00	6	1.0032	230.73	6178		EST230		230.00	6	1.0206	234.73
6179		GUA230		230.00	6	1.0207	234.76	6182		VEL230		230.00	6	1.0183	234.20
6260		CHA 230		230.00	6	1.0285	236.55	6263		ESP230		230.00	6	1.0281	236.46
6330		BAI230		230.00	6	1.0254	235.84	6340		CAN 230		230.00	6	1.0243	235.58
6360		GLA230		230.00	6	1.0228	235.23	6363		ZAM230		230.00	6	1.0250	235.75
6366		EVA230		230.00	6	1.0263	236.04	6380		BOQIII 230		230.00	6	1.0221	235.09
6400		FRONTCHA		230.00	6	1.0291	236.70	6430		ANTON230		230.00	6	1.0098	232.26
6500		FRONTDOM		230.00	6	1.0339	237.80	6590		24DIC230		230.00	6	1.0012	230.28
6680		BFRIO230		230.00	6	1.0274	236.30	6690		DOM230		230.00	6	1.0338	237.77
6691		ALTO230		230.00	6	1.0348	238.01	6695		PANDO230		230.00	6	1.0330	237.60
6698		MLIRIO230		230.00	6	1.0332	237.64	6760		SBA230		230.00	6	1.0139	233.20
6840		BUR230		230.00	6	1.0262	236.03	6860		BBL230		230.00	6	1.0175	234.03
6870		TABII230		230.00	6	1.0178	234.09	6880		CHAI230		230.00	6	1.0283	236.50
6920		STR230		230.00	6	1.0152	233.49								

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)	BUS#	X--	NAME	--X	BASKV	AREA	V(PU)	V(KV)
6001		PAN230		230.00	6	0.9903	227.76	6005		CHO230		230.00	6	0.9842	226.37
6008		LSA230		230.00	6	0.9980	229.54	6105		PAM230		230.00	6	0.9842	226.37
6240		LGU 230		230.00	6	0.9915	228.05	6790		SMA230		230.00	6	0.9987	229.69



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS@E WED, MAY 18 2011 10:44
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
 BASE DE DATOS REGIONAL - DEMANDA MÍNIMA - ÉPOCA SECA 2020 IN MW/MVAR

X-- AREA --X	FROM TO LOAD		TO			-NET INTERCHANGE-				DESIRED NET INT
	GENE- RATION	ASSIGNED TO AREA	TO BUS SHUNT	GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	TO TIE LINES	TO TIES + LOADS	
1 GUATEMAL	641.4 -18.9	758.5 99.0	0.0 382.5	0.0 0.0	0.0 0.0	0.0 622.4	11.5 160.0	-128.6 -38.1	-128.6 -38.1	-128.6
2 SALVADOR	520.6 22.9	512.7 137.7	0.0 0.0	0.0 0.0	0.0 0.0	0.0 253.0	7.9 91.4	0.0 46.8	0.0 46.8	0.0
3 HONDURAS	556.3 -113.1	545.5 179.1	0.0 45.6	0.0 0.0	0.0 0.0	0.0 516.7	10.8 126.1	0.0 53.0	0.0 53.0	0.0
4 NICARAGU	312.7 -114.9	304.3 120.4	0.0 51.9	0.0 0.0	0.0 0.0	0.0 313.0	8.3 82.6	0.0 -56.7	0.0 -56.7	0.0
5 COSTA RI	761.9 -26.9	750.0 309.9	0.0 0.0	0.0 0.0	0.0 0.0	0.0 573.7	11.8 189.6	0.0 47.3	0.0 47.3	0.0
6 PANAMA	1171.9 -97.4	1057.7 383.9	0.0 -224.5	0.0 0.0	0.0 0.0	0.0 565.2	32.6 381.3	81.6 -72.9	81.6 -72.9	81.6
7 ACANAL	83.2 26.3	34.4 12.5	0.0 -15.6	0.0 0.0	0.0 0.0	0.0 0.0	1.8 8.9	47.0 20.6	47.0 20.6	47.0
10 MEXICO	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0
COLUMN TOTALS	4048.1 -321.9	3963.2 1242.4	0.0 239.8	0.0 0.0	0.0 0.0	0.0 2844.1	84.9 1039.9	0.0 0.0	0.0 0.0	0.0