ANEXO III-6
RESULTADOS DE FLUJOS DE POTENCIA CONSIDERANDO INTERCAMBIOS CON C.A. Y COLOMBIA

INDICE GENERAL

Instructivo de Interpretación a las Salidas del PSS/E

Título del Caso:

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    PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E      WED, JAN 11 2012  14:16
 SISTEMA INTERCONECTADO NACIONAL
 BASE REGIONAL - DEMANDA MÁXIMA - EPOCA LLUVIOSA 2011
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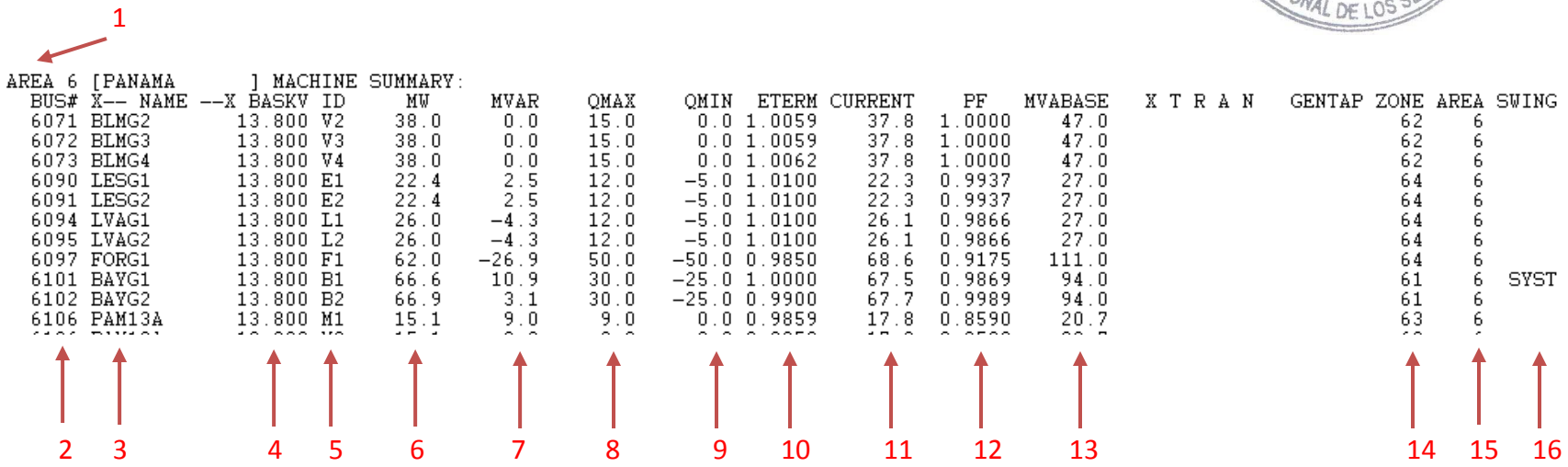
Este incluye información sobre si el caso tiene incorporado al Sistema Eléctrico Regional (SER) o Panamá Aislado del SER. La Demanda modelada (Máxima o Mínima), la estacionalidad (lluviosa o seca) y el año de la simulación.

Reporte de Despacho:



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AREA 6 [PANAMA] MACHINE SUMMARY:

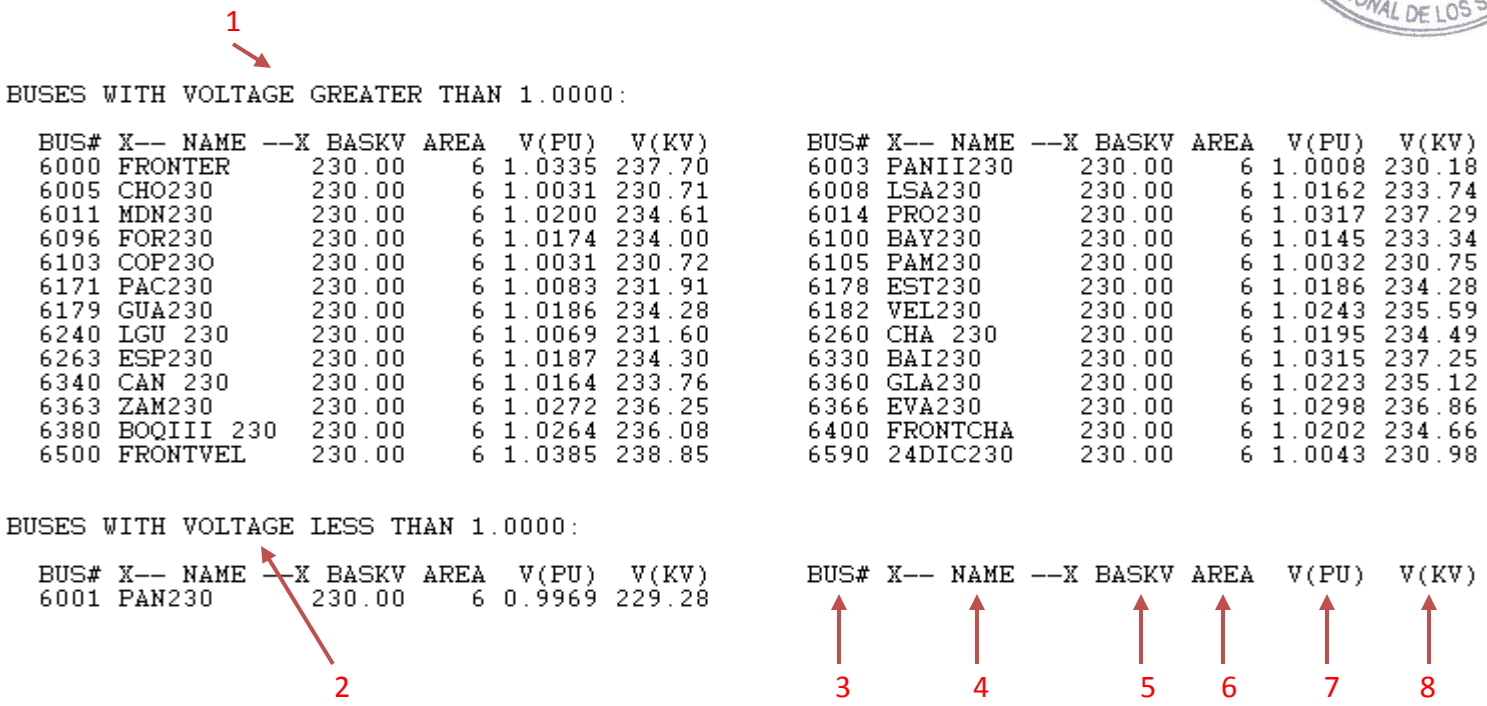
BUS#	X-- NAME	--X BASKV	ID	MW	MVAR	QMAX	QMIN	ETERM	CURRENT	PF	MVABASE	X T R A N	GENTAP	ZONE	AREA	SWING
6071	BLMG2	13.800	V2	38.0	0.0	15.0	0.0	1.0059	37.8	1.0000	47.0			62	6	
6072	BLMG3	13.800	V3	38.0	0.0	15.0	0.0	1.0059	37.8	1.0000	47.0			62	6	
6073	BLMG4	13.800	V4	38.0	0.0	15.0	0.0	1.0062	37.8	1.0000	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 (sobrexcitada) 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).

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 pude 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:



BUSES WITH VOLTAGE GREATER THAN 1.0000:

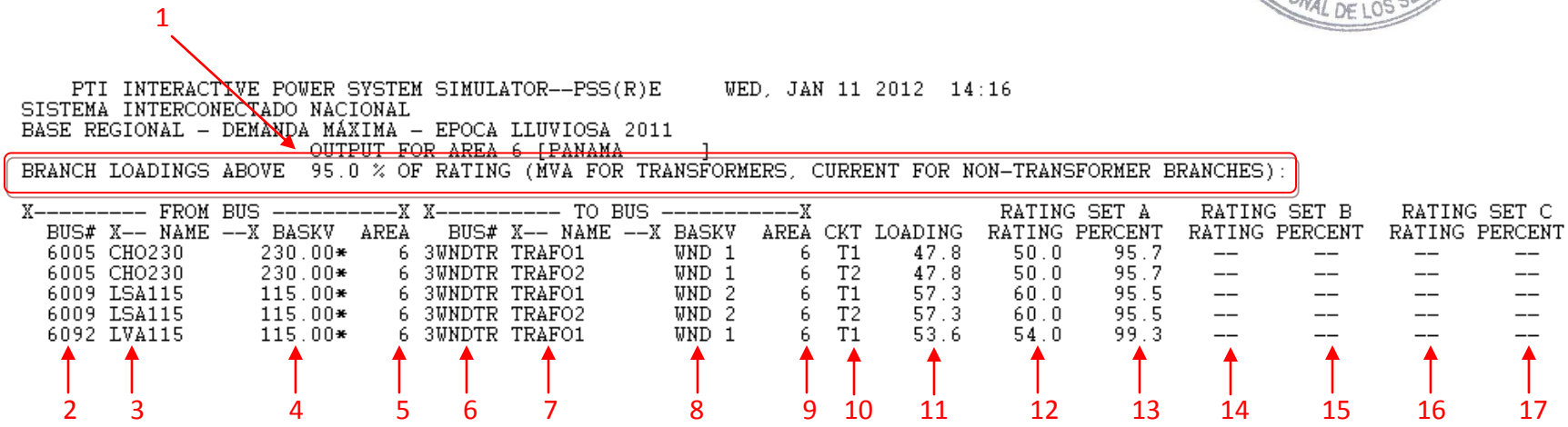
BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6000	FRONTER	230.00	6	1.0335	237.70
6005	CHO230	230.00	6	1.0031	230.71
6011	MDN230	230.00	6	1.0200	234.61
6096	FOR230	230.00	6	1.0174	234.00
6103	COP23O	230.00	6	1.0031	230.72
6171	PAC230	230.00	6	1.0083	231.91
6179	GUA230	230.00	6	1.0186	234.28
6240	LGU 230	230.00	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
6003	PANII230	230.00	6	1.0008	230.18
6008	LSA230	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

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:



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    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):

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 TRAFO1       WND 1     6  T1    47.8   50.0    95.7    --      --      --      --
  6005 CHO230      230.00*    6 3WNDTR TRAFO2       WND 1     6  T2    47.8   50.0    95.7    --      --      --      --
  6009 LSA115      115.00*    6 3WNDTR TRAFO1       WND 2     6  T1    57.3   60.0    95.5    --      --      --      --
  6009 LSA115      115.00*    6 3WNDTR TRAFO2       WND 2     6  T2    57.3   60.0    95.5    --      --      --      --
  6092 LVA115      115.00*    6 3WNDTR TRAFO1       WND 1     6  T1    53.6   54.0    99.3    --      --      --      --
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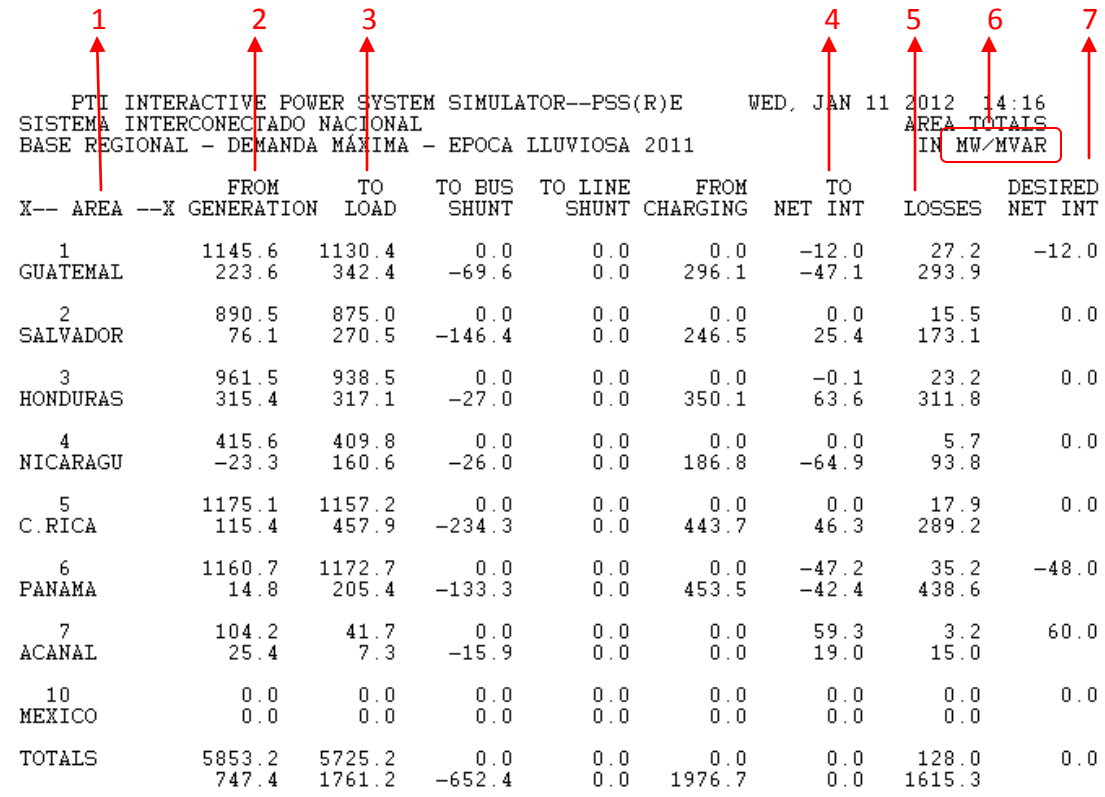
1. Indica que el reporte muestra aquellas líneas o transformadores con un porcentaje de carga superior al 95%.
2. Número de bus origen.
3. Nombre del bus origen.
4. Nivel de voltaje base del bus origen.
5. Área a la que pertenece el bus origen.
6. Número de bus destino.
7. Nombre del bus destino.
8. 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:



1 2 3 4 5 6 7

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

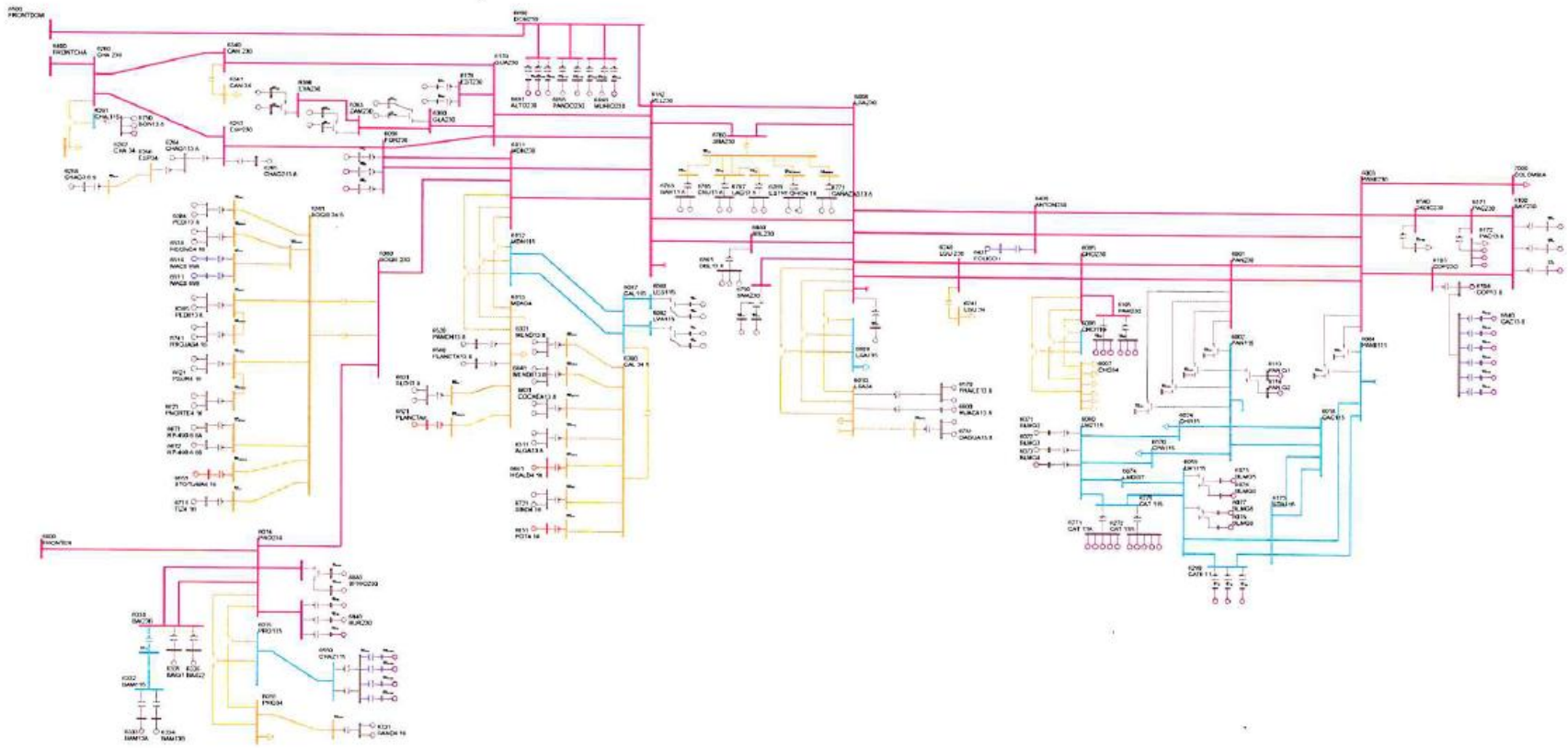
X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	1145.6	1130.4	0.0	0.0	0.0	-12.0	27.2	-12.0
GUATEMAL	223.6	342.4	-69.6	0.0	296.1	-47.1	293.9	
2	890.5	875.0	0.0	0.0	0.0	0.0	15.5	0.0
SALVADOR	76.1	270.5	-146.4	0.0	246.5	25.4	173.1	
3	961.5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

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.

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 2015

Demanda Máxima de Invierno



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 15:22
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	28.8	4.4	15.0	0.0	1.0200	28.5	0.9884	47.0			62	6
6072	BLMG3	13.800	V3	28.8	4.4	15.0	0.0	1.0200	28.5	0.9884	47.0			62	6
6090	LESG1	13.800	E1	22.4	3.0	12.0	-5.0	1.0000	22.6	0.9912	27.0			64	6
6091	LESG2	13.800	E2	22.4	3.0	12.0	-5.0	1.0000	22.6	0.9912	27.0			64	6
6094	LVAG1	13.800	L1	26.0	-3.6	12.0	-5.0	1.0000	26.3	0.9904	27.0			64	6
6095	LVAG2	13.800	L2	26.0	-3.6	12.0	-5.0	1.0000	26.3	0.9904	27.0			64	6
6097	FORG1	13.800	F1	75.0	5.6	50.0	-50.0	1.0100	74.5	0.9972	111.0			64	6
6101	BAYG1	13.800	B1	77.3	10.5	30.0	-25.0	1.0100	77.2	0.9909	94.0			61	6
6102	BAYG2	13.800	B2	77.3	10.5	30.0	-25.0	1.0100	77.2	0.9909	94.0			61	6
6176	ESTG1	13.800	E1	57.0	9.7	29.0	-29.0	1.0000	57.8	0.9858	69.0			64	6
6177	ESTG2	13.800	E2	57.0	9.7	29.0	-29.0	1.0000	57.8	0.9858	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	0.9765	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	0.9986	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	0.9769	49.0			64	6
6336	BAIG2	13.800	G2	42.1	-9.2	14.0	-14.0	1.0000	43.1	0.9769	49.0			64	6
6361	GLA13A	13.800	G1	12.1	-5.4	7.8	-7.0	1.0000	13.2	0.9113	14.1			64	6
6362	GLA13B	13.800	G2	12.1	-5.4	7.8	-7.0	1.0000	13.2	0.9113	14.1			64	6
6364	LOR13A	13.800	G1	16.1	-7.0	7.8	-7.0	1.0025	17.5	0.9167	25.0			64	6
6365	LOR13B	13.800	G2	16.1	-7.0	7.8	-7.0	1.0025	17.5	0.9167	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0034	27.7	0.9576	33.0			64	6
6368	PRU13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0034	27.7	0.9576	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	1.0135	60.1	0.9850	152.3			63	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	0.9675	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	0.9814	5.6			64	6

6530	HCONC4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9814	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9675	4.9	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9741	2.9	0.9122	3.0	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9741	2.9	0.9122	3.0	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9740	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	0.9896	5.6	6
6621	PSUR4.16	4.2000	G2	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9896	5.6	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.5	2.5	-2.5	1.0000	5.0	0.9562	5.6	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.5	2.5	-2.5	1.0000	5.0	0.9562	5.6	6
6631	COCHEA13.8	13.800	G1	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9846	8.4	6
6631	COCHEA13.8	13.800	G2	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9846	8.4	6
6641	MENDII13.8	13.800	G1	3.3	-0.4	1.9	-1.9	1.0000	3.3	0.9939	4.1	6
6641	MENDII13.8	13.800	G2	3.3	-0.4	1.9	-1.9	1.0000	3.3	0.9939	4.1	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.7	2.5	-2.5	1.0000	5.0	0.9437	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	1.0058	27.6	0.9576	33.0	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0058	27.6	0.9576	33.0	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0087	23.3	0.9074	24.9	6
6696	PANDO13A	13.800	G1	15.8	-1.1	12.8	-8.3	1.0000	15.9	0.9978	18.5	6
6697	PANDO13B	13.800	G2	15.8	-1.1	12.8	-8.3	1.0000	15.9	0.9978	18.5	6
6699	MLIRIO13A	13.800	G1	15.8	-0.7	12.8	-8.3	1.0000	15.8	0.9990	18.5	6
6700	MLIRIO13B	13.800	G2	15.8	-0.7	12.8	-8.3	1.0000	15.8	0.9990	18.5	6
6711	TIZ4.16	4.2000	G1	4.4	1.8	2.3	-2.3	1.0000	4.7	0.9280	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	-2.0	2.2	-2.2	1.0000	4.7	0.9019	5.0	6
6731	SAND4.16	4.2000	G2	4.3	-2.0	2.2	-2.2	1.0000	4.7	0.9019	5.0	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9594	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9594	4.8	6
6750	BON13.8	13.800	G1	9.9	-0.9	4.0	-4.0	1.0000	10.0	0.9955	35.3	6
6750	BON13.8	13.800	G2	9.9	-0.9	4.0	-4.0	1.0000	10.0	0.9955	35.3	6
6763	BAR13.8	13.800	G1	7.2	2.8	4.0	-4.0	1.0000	7.7	0.9296	9.0	6
6763	BAR13.8	13.800	G2	7.2	2.8	4.0	-4.0	1.0000	7.7	0.9296	9.0	6
6765	CRU13.8	13.800	G1	4.6	1.4	2.6	-2.6	1.0000	4.8	0.9592	5.8	6
6765	CRU13.8	13.800	G2	4.6	1.4	2.6	-2.6	1.0000	4.8	0.9592	5.8	6
6767	LAG13.8	13.800	G1	4.7	0.9	2.6	-2.6	1.0000	4.8	0.9799	5.8	6
6767	LAG13.8	13.800	G2	4.7	0.9	2.6	-2.6	1.0000	4.8	0.9799	5.8	6
6769	ESTRECHO4.16	4.2000	G1	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9713	5.6	6
6769	ESTRECHO4.16	4.2000	G2	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9713	5.6	6
6771	CAÑAZAS13.8	13.800	G1	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9404	3.3	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9404	3.3	6

6781	OAGUA13.8	13.800	G1	3.1	1.4	1.6	-1.6	1.0000	3.4	0.9149	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	1.4	1.6	-1.6	1.0000	3.4	0.9149	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	72.9	300.0	-225.0	1.0144	71.9	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0139	3.9	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9951	4.5	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9951	4.5	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9966	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9966	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
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9813	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9813	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9813	2.0	0.9058	2.1	64	6
SUBSYSTEM TOTALS				1492.9	89.0	1011.6	-837.2				2263.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 15:22
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.2	8.0	0.0	1.0100	17.9	0.9976	27.7			65	7
6128	MIR13C	12.000	G3	20.0	8.7	11.0	0.0	1.0100	21.6	0.9168	29.4			65	7
6129	MIR13D	13.800	G4	27.7	10.5	15.0	0.0	1.0100	29.3	0.9347	44.1			65	7
6130	MIR13F	13.800	G5	17.0	2.1	8.0	0.0	1.0100	17.0	0.9924	27.7			65	7
6134	MAD6A	6.9000	G1	10.0	1.1	6.0	-6.0	1.0100	10.0	0.9935	13.0			65	7
6135	MAD6B	6.9000	G2	10.0	1.0	6.0	-6.0	1.0100	10.0	0.9949	13.0			65	7
6136	MAD6C	6.9000	G3	10.0	1.0	6.0	-6.0	1.0100	10.0	0.9949	13.0			65	7
SUBSYSTEM TOTALS				112.7	25.8	60.0	-18.0				167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 15:22
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0161	233.69	6001	PAN230	230.00	6	1.0015	230.34
6003	PANII230	230.00	6	1.0132	233.03	6011	MDN230	230.00	6	1.0062	231.42
6014	PRO230	230.00	6	1.0149	233.42	6096	FOR230	230.00	6	1.0072	231.66
6100	BAY230	230.00	6	1.0265	236.10	6103	COP23O	230.00	6	1.0156	233.59
6171	PAC230	230.00	6	1.0164	233.76	6178	EST230	230.00	6	1.0031	230.71
6179	GUA230	230.00	6	1.0032	230.75	6182	VEL230	230.00	6	1.0040	230.93
6260	CHA 230	230.00	6	1.0153	233.51	6263	ESP230	230.00	6	1.0162	233.74
6330	BAI230	230.00	6	1.0140	233.23	6340	CAN 230	230.00	6	1.0085	231.95
6360	GLA230	230.00	6	1.0078	231.79	6363	ZAM230	230.00	6	1.0125	232.88
6366	EVA230	230.00	6	1.0152	233.50	6380	BOQIII 230	230.00	6	1.0107	232.45
6400	FRONTCHA	230.00	6	1.0157	233.61	6430	ANTON230	230.00	6	1.0145	233.33
6500	FRONTDOM	230.00	6	1.0242	235.57	6590	24DIC230	230.00	6	1.0145	233.33
6680	BFRIO230	230.00	6	1.0176	234.04	6690	DOM230	230.00	6	1.0250	235.76
6691	ALTO230	230.00	6	1.0267	236.14	6695	PANDO230	230.00	6	1.0256	235.89
6698	MLIRIO230	230.00	6	1.0254	235.85	6760	SBA230	230.00	6	1.0032	230.74
6790	SMA230	230.00	6	1.0013	230.29	6840	BUR230	230.00	6	1.0172	233.95
6860	BBL230	230.00	6	1.0043	231.00						

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)
6005	CHO230	230.00	6	0.9877	227.17	6105	PAM230	230.00	6	0.9877	227.17
6240	LGU 230	230.00	6	0.9893	227.53						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 15:22
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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)
6002	PAN115	115.00	6	1.0176	117.02	6004	PANII115	115.00	6	1.0202	117.33
6009	LSA115	115.00	6	1.0174	117.00	6012	MDN115	115.00	6	1.0134	116.54
6015	PRO115	115.00	6	1.0101	116.16	6018	CAC115	115.00	6	1.0173	116.99
6019	CVI115A	115.00	6	1.0132	116.52	6024	CHI115	115.00	6	1.0061	115.70
6027	LOC115A	115.00	6	1.0110	116.26	6032	MAR115A	115.00	6	1.0087	116.00
6036	SMA115	115.00	6	1.0166	116.91	6040	SFR115	115.00	6	1.0088	116.01
6047	CLA115	115.00	6	1.0010	115.11	6055	MOS115B	115.00	6	1.0152	116.75
6057	TOC115	115.00	6	1.0181	117.08	6059	LM1115	115.00	6	1.0123	116.41
6060	LM2115	115.00	6	1.0123	116.41	6066	FFIELD	115.00	6	1.0105	116.21
6074	LMDIST	115.00	6	1.0122	116.41	6087	CAL115	115.00	6	1.0154	116.77
6088	LES115	115.00	6	1.0178	117.04	6092	LVA115	115.00	6	1.0154	116.77
6123	MIR115	115.00	7	1.0280	118.22	6170	CPA115	115.00	6	1.0131	116.51
6173	STR115	115.00	6	1.0143	116.64	6174	PM115-1A	115.00	6	1.0158	116.81
6175	PM115-2A	115.00	6	1.0158	116.81	6210	TIN115	115.00	6	1.0139	116.60
6211	PM115-9	115.00	6	1.0146	116.67	6230	CBA115	115.00	6	1.0099	116.13
6261	CHA 115	115.00	6	1.0078	115.89	6270	CAT 115	115.00	6	1.0123	116.41
6280	GIR 115	115.00	6	1.0131	116.51	6290	CATII 11	115.00	6	1.0125	116.44
6331	BAI115	115.00	6	1.0015	115.17	6332	BAM115	115.00	6	1.0047	115.54
6350	PM115-8	115.00	6	1.0133	116.53	6550	CHAZ115	115.00	6	1.0101	116.16
6580	LBO115	115.00	6	1.0128	116.47						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6006	CHO115	115.00	6	0.9738	111.99						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 15:22
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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#	NAME	BASKV	AREA	BUS#	NAME	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	TRAFO1	WND 1	6	T1	53.4	54.0	98.8	--	--	--	--

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 15:22
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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):

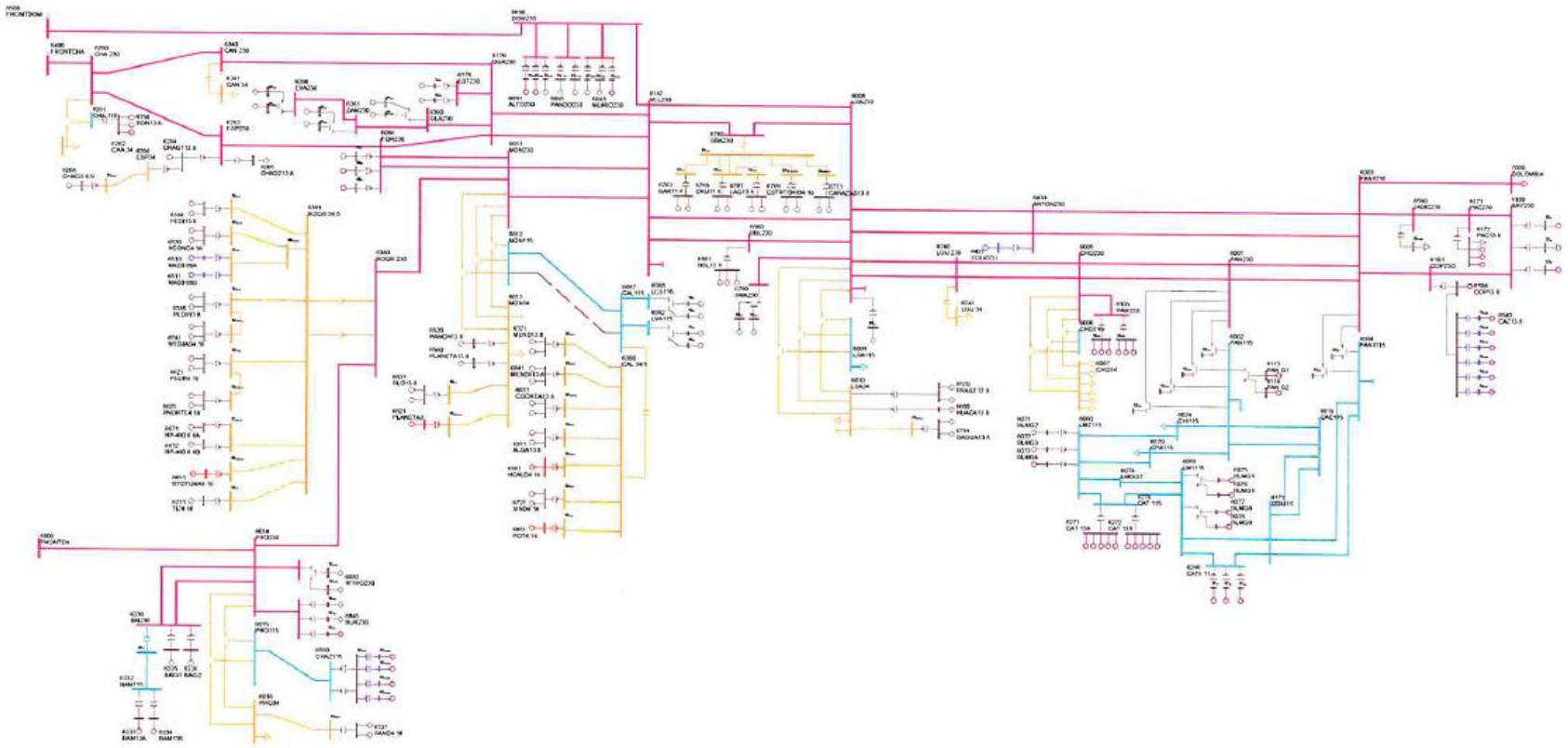
FROM BUS				TO BUS						RATING SET A		RATING SET B		RATING SET C	
BUS#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 15:22
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 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- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	907.5	1179.4	0.0	0.0	0.0	0.0	23.5	-295.5	-295.5	-295.5
GUATEMAL	225.5	340.6	218.7	0.0	0.0	600.3	250.2	16.3	16.3	
2	1143.9	1104.0	0.0	0.0	0.0	0.0	39.9	0.0	0.0	0.0
SALVADOR	313.8	367.1	-180.5	0.0	0.0	240.2	333.8	33.6	33.6	
3	1240.4	1205.2	0.0	0.0	0.0	0.0	35.2	0.0	0.0	0.0
HONDURAS	404.2	395.2	-20.3	0.0	0.0	467.2	463.1	33.3	33.3	
4	481.4	459.0	0.0	0.0	0.0	0.0	22.4	0.0	0.0	0.0
NICARAGU	-4.3	181.0	-12.7	0.0	0.0	286.3	196.9	-83.3	-83.3	
5	1522.5	1489.7	0.0	0.0	0.0	0.0	32.8	0.0	0.0	0.0
COSTA RI	270.4	558.4	-226.2	0.0	0.0	554.4	444.3	48.3	48.3	
6	1492.9	1416.9	0.0	0.0	0.0	0.0	79.1	-3.1	-3.1	-2.9
PANAMA	89.0	248.2	-351.4	0.0	0.0	512.6	803.4	-98.5	-98.5	
7	112.7	48.8	0.0	0.0	0.0	0.0	3.8	60.1	60.1	60.0
ACANAL	25.8	8.6	-15.8	0.0	0.0	0.0	16.7	16.3	16.3	
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	
11	0.0	-238.5	0.0	0.0	0.0	0.0	0.0	238.5	238.5	238.5
COLOMBIA	0.0	-34.0	0.0	0.0	0.0	0.0	0.0	34.0	34.0	
COLUMN	6901.3	6664.6	0.0	0.0	0.0	0.0	236.7	0.0	0.0	0.0
TOTALS	1324.3	2065.1	-588.2	0.0	0.0	2661.0	2508.4	0.0	0.0	

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



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:09
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC. COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 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	28.8	4.4	15.0	0.0	1.0200	28.5	0.9886	47.0			62	6
6072	BLMG3	13.800	V3	28.8	4.4	15.0	0.0	1.0200	28.5	0.9886	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	-2.6	12.0	-5.0	1.0000	26.2	0.9952	27.0			64	6
6095	LVAG2	13.800	L2	26.0	-2.6	12.0	-5.0	1.0000	26.2	0.9952	27.0			64	6
6097	FORG1	13.800	F1	75.0	6.5	50.0	-50.0	1.0100	74.5	0.9963	111.0			64	6
6101	BAYG1	13.800	B1	79.2	10.6	30.0	-25.0	1.0100	79.1	0.9911	94.0			61	6
6102	BAYG2	13.800	B2	77.3	10.4	30.0	-25.0	1.0100	77.2	0.9910	94.0			61	6
6176	ESTG1	13.800	E1	57.0	9.8	29.0	-29.0	1.0000	57.8	0.9855	69.0			64	6
6177	ESTG2	13.800	E2	57.0	9.8	29.0	-29.0	1.0000	57.8	0.9855	69.0			64	6
6264	CHAG113.8	13.800	G1	99.6	-4.3	52.4	-48.9	1.0000	99.7	0.9991	116.5			64	6
6265	CHAG213.8	13.800	G2	99.6	-1.1	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	-8.9	14.0	-14.0	1.0000	43.1	0.9783	49.0			64	6
6336	BAIG2	13.800	G2	42.1	-8.9	14.0	-14.0	1.0000	43.1	0.9783	49.0			64	6
6361	GLA13A	13.800	G1	12.1	-5.0	7.8	-7.0	1.0000	13.1	0.9237	14.1			64	6
6362	GLA13B	13.800	G2	12.1	-5.0	7.8	-7.0	1.0000	13.1	0.9237	14.1			64	6
6364	LOR13A	13.800	G1	16.1	-7.0	7.8	-7.0	1.0019	17.5	0.9167	25.0			64	6
6365	LOR13B	13.800	G2	16.1	-7.0	7.8	-7.0	1.0019	17.5	0.9167	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0028	27.7	0.9576	33.0			64	6
6368	PRU13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0028	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	1.0136	60.1	0.9850	152.3			63	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	0.9626	5.4	0.9216	6.2			64	6
6530	HCONC4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9832	5.6			64	6

6530	HCONC4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9832	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9626	4.9	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9741	2.9	0.9122	3.0	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9741	2.9	0.9122	3.0	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9740	5.4	0.9084	5.5	6
6621	PSUR4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9911	5.6	6
6621	PSUR4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9911	5.6	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9582	5.6	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9582	5.6	6
6631	COCHEA13.8	13.800	G1	6.4	-0.8	3.7	-3.7	1.0000	6.4	0.9918	8.4	6
6631	COCHEA13.8	13.800	G2	6.4	-0.8	3.7	-3.7	1.0000	6.4	0.9918	8.4	6
6641	MENDII13.8	13.800	G1	3.3	0.0	1.9	-1.9	1.0000	3.3	1.0000	4.1	6
6641	MENDII13.8	13.800	G2	3.3	0.0	1.9	-1.9	1.0000	3.3	1.0000	4.1	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.8	2.5	-2.5	1.0000	5.1	0.9352	5.6	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0227	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	0.9963	7.5	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	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0053	27.6	0.9576	33.0	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0053	27.6	0.9576	33.0	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0085	23.3	0.9074	24.9	6
6696	PANDO13A	13.800	G1	15.8	-0.9	12.8	-8.3	1.0000	15.8	0.9984	18.5	6
6697	PANDO13B	13.800	G2	15.8	-0.9	12.8	-8.3	1.0000	15.8	0.9984	18.5	6
6699	MLIRIO13A	13.800	G1	15.8	-0.5	12.8	-8.3	1.0000	15.8	0.9994	18.5	6
6700	MLIRIO13B	13.800	G2	15.8	-0.5	12.8	-8.3	1.0000	15.8	0.9994	18.5	6
6711	TIZ4.16	4.2000	G1	4.4	1.9	2.3	-2.3	1.0000	4.8	0.9181	5.2	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0211	4.8	0.8622	5.6	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0211	4.8	0.8622	5.6	6
6731	SAND4.16	4.2000	G1	4.3	-2.0	2.2	-2.2	1.0000	4.7	0.9084	5.0	6
6731	SAND4.16	4.2000	G2	4.3	-2.0	2.2	-2.2	1.0000	4.7	0.9084	5.0	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9608	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9608	4.8	6
6750	BON13.8	13.800	G1	9.9	-0.9	4.0	-4.0	1.0000	9.9	0.9959	35.3	6
6750	BON13.8	13.800	G2	9.9	-0.9	4.0	-4.0	1.0000	9.9	0.9959	35.3	6
6763	BAR13.8	13.800	G1	7.2	2.9	4.0	-4.0	1.0000	7.7	0.9290	9.0	6
6763	BAR13.8	13.800	G2	7.2	2.9	4.0	-4.0	1.0000	7.7	0.9290	9.0	6
6765	CRU13.8	13.800	G1	4.6	1.4	2.6	-2.6	1.0000	4.8	0.9588	5.8	6
6765	CRU13.8	13.800	G2	4.6	1.4	2.6	-2.6	1.0000	4.8	0.9588	5.8	6
6767	LAG13.8	13.800	G1	4.7	1.0	2.6	-2.6	1.0000	4.8	0.9796	5.8	6
6767	LAG13.8	13.800	G2	4.7	1.0	2.6	-2.6	1.0000	4.8	0.9796	5.8	6
6769	ESTRECHO4.16	4.2000	G1	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9710	5.6	6
6769	ESTRECHO4.16	4.2000	G2	4.9	1.2	2.5	-2.5	1.0000	5.1	0.9710	5.6	6
6771	CAÑAZAS13.8	13.800	G1	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9397	3.3	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9397	3.3	6

6781	OAGUA13.8	13.800	G1	3.1	1.4	1.6	-1.6	1.0000	3.4	0.9149	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	1.4	1.6	-1.6	1.0000	3.4	0.9149	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	73.6	300.0	-225.0	1.0145	72.5	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0087	4.0	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9901	4.5	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9901	4.5	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9962	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9962	17.9	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0227	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9808	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9808	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9808	2.0	0.9058	2.1	64	6
SUBSYSTEM TOTALS				1494.9	99.9	1011.6	-837.2				2263.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:09
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC. COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 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	18.0	1.2	8.0	0.0	1.0100	17.9	0.9977	27.7			65	7
6128	MIR13C	12.000	G3	20.0	8.7	11.0	0.0	1.0100	21.6	0.9170	29.4			65	7
6129	MIR13D	13.800	G4	27.7	10.5	15.0	0.0	1.0100	29.3	0.9348	44.1			65	7
6130	MIR13F	13.800	G5	17.0	2.1	8.0	0.0	1.0100	17.0	0.9925	27.7			65	7
6134	MAD6A	6.9000	G1	10.0	1.1	6.0	-6.0	1.0100	10.0	0.9935	13.0			65	7
6135	MAD6B	6.9000	G2	10.0	1.0	6.0	-6.0	1.0100	10.0	0.9949	13.0			65	7
6136	MAD6C	6.9000	G3	10.0	1.0	6.0	-6.0	1.0100	10.0	0.9949	13.0			65	7
SUBSYSTEM TOTALS				112.7	25.7	60.0	-18.0				167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:09
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC. COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 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	1.0156	233.60	6001	PAN230	230.00	6	1.0016	230.37
6003	PANII230	230.00	6	1.0133	233.06	6011	MDN230	230.00	6	1.0047	231.09
6014	PRO230	230.00	6	1.0144	233.31	6096	FOR230	230.00	6	1.0063	231.45
6100	BAY230	230.00	6	1.0266	236.12	6103	COP23O	230.00	6	1.0157	233.62
6171	PAC230	230.00	6	1.0165	233.79	6178	EST230	230.00	6	1.0025	230.56
6179	GUA230	230.00	6	1.0026	230.60	6182	VEL230	230.00	6	1.0035	230.81
6260	CHA 230	230.00	6	1.0149	233.43	6263	ESP230	230.00	6	1.0159	233.65
6330	BAI230	230.00	6	1.0136	233.14	6340	CAN 230	230.00	6	1.0079	231.82
6360	GLA230	230.00	6	1.0071	231.64	6363	ZAM230	230.00	6	1.0119	232.74
6366	EVA230	230.00	6	1.0146	233.36	6380	BOQIII 230	230.00	6	1.0098	232.25
6400	FRONTCHA	230.00	6	1.0154	233.54	6430	ANTON230	230.00	6	1.0146	233.36
6500	FRONTDOM	230.00	6	1.0241	235.53	6590	24DIC230	230.00	6	1.0146	233.36
6680	BFRIO230	230.00	6	1.0171	233.93	6690	DOM230	230.00	6	1.0249	235.72
6691	ALTO230	230.00	6	1.0265	236.10	6695	PANDO230	230.00	6	1.0255	235.87
6698	MLIRIO230	230.00	6	1.0253	235.82	6760	SBA230	230.00	6	1.0029	230.67
6790	SMA230	230.00	6	1.0013	230.29	6840	BUR230	230.00	6	1.0167	233.84
6860	BBL230	230.00	6	1.0039	230.89						

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)
6005	CHO230	230.00	6	0.9879	227.21	6105	PAM230	230.00	6	0.9879	227.21
6240	LGU 230	230.00	6	0.9894	227.56						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:09
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC. COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 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)
6002	PAN115	115.00	6	1.0177	117.04	6004	PANII115	115.00	6	1.0204	117.34
6009	LSA115	115.00	6	1.0174	117.00	6012	MDN115	115.00	6	1.0088	116.01
6015	PRO115	115.00	6	1.0097	116.12	6018	CAC115	115.00	6	1.0175	117.01
6019	CVI115A	115.00	6	1.0134	116.54	6024	CHI115	115.00	6	1.0062	115.71
6027	LOC115A	115.00	6	1.0111	116.28	6032	MAR115A	115.00	6	1.0088	116.01
6036	SMA115	115.00	6	1.0167	116.93	6040	SFR115	115.00	6	1.0089	116.03
6047	CLA115	115.00	6	1.0011	115.13	6055	MOS115B	115.00	6	1.0154	116.77
6057	TOC115	115.00	6	1.0182	117.09	6059	LM1115	115.00	6	1.0124	116.42
6060	LM2115	115.00	6	1.0124	116.43	6066	FFIELD	115.00	6	1.0106	116.22
6074	LMDIST	115.00	6	1.0124	116.42	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	116.37
6123	MIR115	115.00	7	1.0281	118.23	6170	CPA115	115.00	6	1.0132	116.52
6173	STR115	115.00	6	1.0144	116.66	6174	PM115-1A	115.00	6	1.0159	116.83
6175	PM115-2A	115.00	6	1.0159	116.83	6210	TIN115	115.00	6	1.0141	116.62
6211	PM115-9	115.00	6	1.0147	116.69	6230	CBA115	115.00	6	1.0100	116.15
6261	CHA 115	115.00	6	1.0075	115.86	6270	CAT 115	115.00	6	1.0124	116.43
6280	GIR 115	115.00	6	1.0132	116.52	6290	CATII 11	115.00	6	1.0126	116.45
6331	BAI115	115.00	6	1.0011	115.13	6332	BAM115	115.00	6	1.0045	115.51
6350	PM115-8	115.00	6	1.0134	116.54	6550	CHAZ115	115.00	6	1.0097	116.12
6580	LBO115	115.00	6	1.0129	116.49						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6006	CHO115	115.00	6	0.9740	112.01						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:09
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC. COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 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#	NAME	BASKV	AREA	BUS#	NAME	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	TRAFO1	WND 1	6	T1	52.9	54.0	98.0	--	--	--	--

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:09
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC. COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 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):

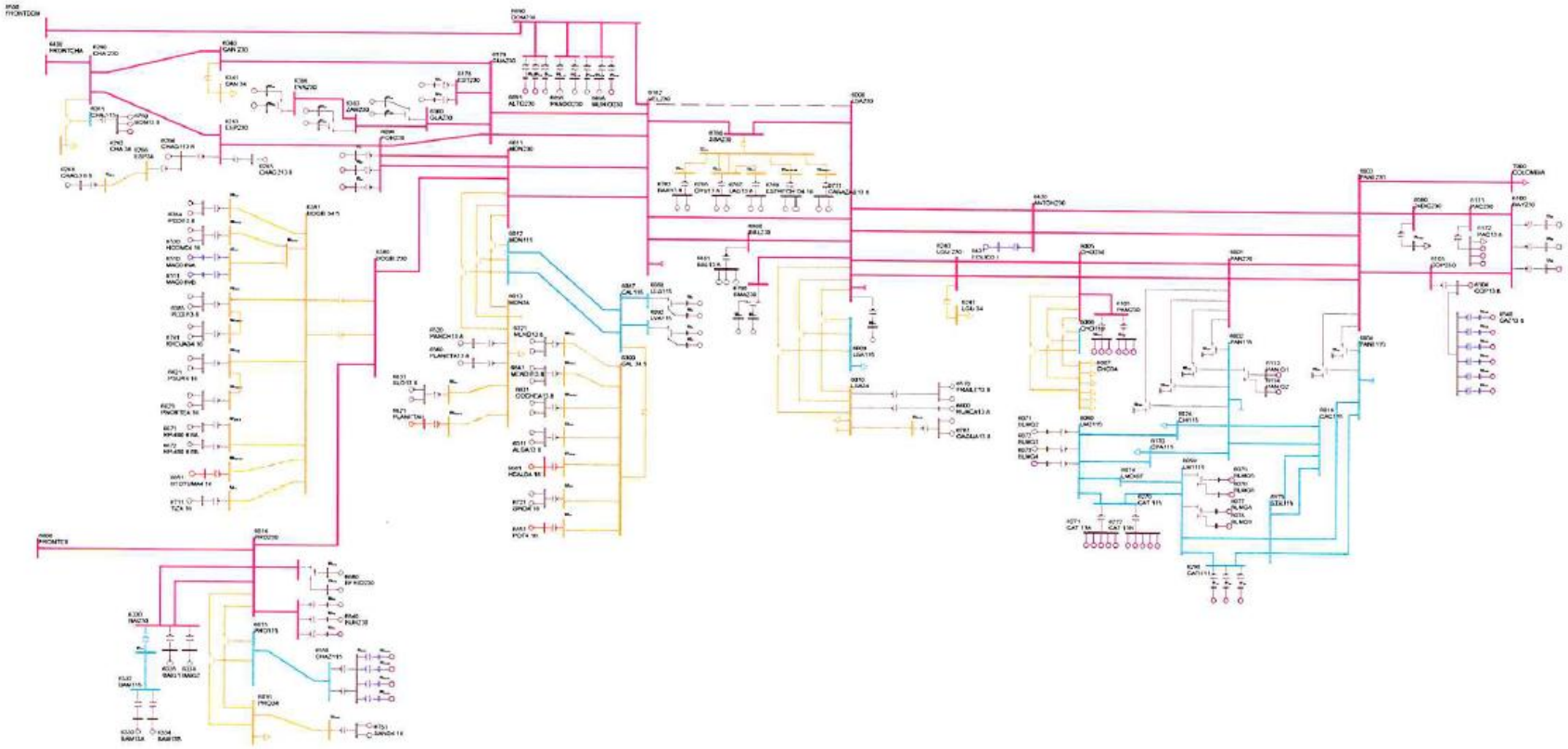
FROM BUS				TO BUS						RATING SET A		RATING SET B		RATING SET C	
BUS#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:09
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERC. COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT13 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- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	907.5	1179.4	0.0	0.0	0.0	0.0	23.5	-295.5	-295.5	-295.5
GUATEMAL	225.5	340.6	218.7	0.0	0.0	600.3	250.2	16.3	16.3	
2	1143.9	1104.0	0.0	0.0	0.0	0.0	39.9	0.0	0.0	0.0
SALVADOR	313.8	367.1	-180.5	0.0	0.0	240.2	333.8	33.6	33.6	
3	1240.4	1205.2	0.0	0.0	0.0	0.0	35.2	0.0	0.0	0.0
HONDURAS	404.2	395.2	-20.3	0.0	0.0	467.2	463.1	33.3	33.3	
4	481.4	459.0	0.0	0.0	0.0	0.0	22.4	0.0	0.0	0.0
NICARAGU	-4.3	181.0	-12.7	0.0	0.0	286.3	196.9	-83.3	-83.3	
5	1522.5	1489.7	0.0	0.0	0.0	0.0	32.8	0.0	0.0	0.0
COSTA RI	271.0	558.4	-226.2	0.0	0.0	554.3	444.4	48.8	48.8	
6	1494.9	1416.9	0.0	0.0	0.0	0.0	81.0	-3.0	-3.0	-2.9
PANAMA	99.9	248.2	-351.5	0.0	0.0	511.3	813.5	-98.9	-98.9	
7	112.7	48.8	0.0	0.0	0.0	0.0	3.8	60.1	60.1	60.0
ACANAL	25.7	8.6	-15.8	0.0	0.0	0.0	16.7	16.3	16.3	
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	
11	0.0	-238.5	0.0	0.0	0.0	0.0	0.0	238.5	238.5	238.5
COLOMBIA	0.0	-34.0	0.0	0.0	0.0	0.0	0.0	34.0	34.0	
COLUMN	6903.2	6664.6	0.0	0.0	0.0	0.0	238.6	0.0	0.0	0.0
TOTALS	1335.7	2065.1	-588.3	0.0	0.0	2659.6	2518.5	0.0	0.0	

Contingencia 21: Llano Sánchez – Veladero (230-15)



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:17
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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	28.8	4.2	15.0	0.0	1.0200	28.5	0.9897	47.0			62	6
6072	BLMG3	13.800	V3	28.8	4.2	15.0	0.0	1.0200	28.5	0.9897	47.0			62	6
6090	LESG1	13.800	E1	22.4	3.2	12.0	-5.0	1.0000	22.6	0.9900	27.0			64	6
6091	LESG2	13.800	E2	22.4	3.2	12.0	-5.0	1.0000	22.6	0.9900	27.0			64	6
6094	LVAG1	13.800	L1	26.0	-3.4	12.0	-5.0	1.0000	26.3	0.9916	27.0			64	6
6095	LVAG2	13.800	L2	26.0	-3.4	12.0	-5.0	1.0000	26.3	0.9916	27.0			64	6
6097	FORG1	13.800	F1	75.0	7.0	50.0	-50.0	1.0100	74.6	0.9956	111.0			64	6
6101	BAYG1	13.800	B1	82.2	10.6	30.0	-25.0	1.0100	82.1	0.9919	94.0			61	6
6102	BAYG2	13.800	B2	82.2	10.6	30.0	-25.0	1.0100	82.1	0.9919	94.0			61	6
6176	ESTG1	13.800	E1	57.0	10.0	29.0	-29.0	1.0000	57.9	0.9850	69.0			64	6
6177	ESTG2	13.800	E2	57.0	10.0	29.0	-29.0	1.0000	57.9	0.9850	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	0.9763	5.7			64	6
6311	ALGA13.8	13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9763	5.7			64	6
6321	MEND13.8	13.800	M1	8.0	4.2	4.2	-4.2	0.9927	9.1	0.8865	10.4			64	6
6321	MEND13.8	13.800	M2	8.0	4.2	4.2	-4.2	0.9927	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	-4.3	7.8	-7.0	1.0000	12.8	0.9422	14.1			64	6
6362	GLA13B	13.800	G2	12.1	-4.3	7.8	-7.0	1.0000	12.8	0.9422	14.1			64	6
6364	LOR13A	13.800	G1	16.1	-7.0	7.8	-7.0	1.0009	17.5	0.9167	25.0			64	6
6365	LOR13B	13.800	G2	16.1	-7.0	7.8	-7.0	1.0009	17.5	0.9167	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0018	27.7	0.9576	33.0			64	6
6368	PRU13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0018	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	1.0141	60.1	0.9850	152.3			63	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	0.9663	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	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9663	4.9	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9741	2.9	0.9122	3.0	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9741	2.9	0.9122	3.0	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9740	5.4	0.9084	5.5	6
6621	PSUR4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9914	5.6	6
6621	PSUR4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9914	5.6	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9586	5.6	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9586	5.6	6
6631	COCHEA13.8	13.800	G1	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9863	8.4	6
6631	COCHEA13.8	13.800	G2	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9863	8.4	6
6641	MENDII13.8	13.800	G1	3.3	-0.3	1.9	-1.9	1.0000	3.3	0.9960	4.1	6
6641	MENDII13.8	13.800	G2	3.3	-0.3	1.9	-1.9	1.0000	3.3	0.9960	4.1	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.8	2.5	-2.5	1.0000	5.1	0.9333	5.6	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0232	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	0.9963	7.5	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	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0051	27.6	0.9576	33.0	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0051	27.6	0.9576	33.0	6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0082	23.3	0.9074	24.9	6
6696	PANDO13A	13.800	G1	15.8	-0.5	12.8	-8.3	1.0000	15.8	0.9995	18.5	6
6697	PANDO13B	13.800	G2	15.8	-0.5	12.8	-8.3	1.0000	15.8	0.9995	18.5	6
6699	MLIRIO13A	13.800	G1	15.8	-0.1	12.8	-8.3	1.0000	15.8	1.0000	18.5	6
6700	MLIRIO13B	13.800	G2	15.8	-0.1	12.8	-8.3	1.0000	15.8	1.0000	18.5	6
6711	TIZ4.16	4.2000	G1	4.4	1.9	2.3	-2.3	1.0000	4.8	0.9159	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	0.9106	5.0	6
6731	SAND4.16	4.2000	G2	4.3	-1.9	2.2	-2.2	1.0000	4.7	0.9106	5.0	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9611	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9611	4.8	6
6750	BON13.8	13.800	G1	9.9	-0.9	4.0	-4.0	1.0000	9.9	0.9963	35.3	6
6750	BON13.8	13.800	G2	9.9	-0.9	4.0	-4.0	1.0000	9.9	0.9963	35.3	6
6763	BAR13.8	13.800	G1	7.2	3.1	4.0	-4.0	1.0000	7.8	0.9173	9.0	6
6763	BAR13.8	13.800	G2	7.2	3.1	4.0	-4.0	1.0000	7.8	0.9173	9.0	6
6765	CRU13.8	13.800	G1	4.6	1.5	2.6	-2.6	1.0000	4.8	0.9500	5.8	6
6765	CRU13.8	13.800	G2	4.6	1.5	2.6	-2.6	1.0000	4.8	0.9500	5.8	6
6767	LAG13.8	13.800	G1	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9737	5.8	6
6767	LAG13.8	13.800	G2	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9737	5.8	6
6769	ESTRECHO4.16	4.2000	G1	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9641	5.6	6
6769	ESTRECHO4.16	4.2000	G2	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9641	5.6	6
6771	CAÑAZAS13.8	13.800	G1	2.8	1.2	1.5	-1.5	1.0000	3.0	0.9253	3.3	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.2	1.5	-1.5	1.0000	3.0	0.9253	3.3	6

6781	OAGUA13.8	13.800	G1	3.1	1.4	1.6	-1.6	1.0000	3.4	0.9149	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	1.4	1.6	-1.6	1.0000	3.4	0.9149	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	131.2	300.0	-225.0	1.0256	128.0	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0126	3.9	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9939	4.5	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9939	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	1.0231	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9769	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9769	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9769	2.0	0.9058	2.1	64	6
SUBSYSTEM TOTALS				1502.7	159.5	1011.6	-837.2				2263.0		

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PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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	1.2	8.0	0.0	1.0100	17.9	0.9979	27.7			65	7
6128	MIR13C	12.000	G3	20.0	8.6	11.0	0.0	1.0100	21.6	0.9179	29.4			65	7
6129	MIR13D	13.800	G4	27.7	10.4	15.0	0.0	1.0100	29.3	0.9355	44.1			65	7
6130	MIR13F	13.800	G5	17.0	2.0	8.0	0.0	1.0100	17.0	0.9930	27.7			65	7
6134	MAD6A	6.9000	G1	10.0	1.1	6.0	-6.0	1.0100	10.0	0.9937	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				112.7	25.4	60.0	-18.0				167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:17
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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	1.0155	233.56	6001	PAN230	230.00	6	1.0022	230.51
6003	PANII230	230.00	6	1.0139	233.19	6011	MDN230	230.00	6	1.0045	231.03
6014	PRO230	230.00	6	1.0142	233.28	6096	FOR230	230.00	6	1.0057	231.31
6100	BAY230	230.00	6	1.0271	236.24	6103	COP23O	230.00	6	1.0163	233.74
6171	PAC230	230.00	6	1.0170	233.91	6178	EST230	230.00	6	1.0014	230.32
6179	GUA230	230.00	6	1.0015	230.36	6182	VEL230	230.00	6	1.0005	230.12
6260	CHA 230	230.00	6	1.0145	233.34	6263	ESP230	230.00	6	1.0155	233.58
6330	BAI230	230.00	6	1.0135	233.11	6340	CAN 230	230.00	6	1.0071	231.63
6360	GLA230	230.00	6	1.0061	231.41	6363	ZAM230	230.00	6	1.0109	232.51
6366	EVA230	230.00	6	1.0136	233.13	6380	BOQIII 230	230.00	6	1.0096	232.21
6400	FRONTCHA	230.00	6	1.0150	233.46	6430	ANTON230	230.00	6	1.0151	233.48
6500	FRONTDOM	230.00	6	1.0237	235.46	6590	24DIC230	230.00	6	1.0151	233.48
6680	BFRIO230	230.00	6	1.0169	233.89	6690	DOM230	230.00	6	1.0246	235.65
6691	ALTO230	230.00	6	1.0262	236.03	6695	PANDO230	230.00	6	1.0253	235.82
6698	MLIRIO230	230.00	6	1.0251	235.77	6790	SMA230	230.00	6	1.0013	230.29
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	0.9885	227.36	6105	PAM230	230.00	6	0.9885	227.36
6240	LGU 230	230.00	6	0.9899	227.67	6760	SBA230	230.00	6	0.9974	229.40
6860	BBL230	230.00	6	0.9999	229.97						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:17
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INTERC COL-PAN - 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)
6002	PAN115	115.00	6	1.0183	117.11	6004	PANII115	115.00	6	1.0210	117.41
6009	LSA115	115.00	6	1.0174	117.00	6012	MDN115	115.00	6	1.0121	116.39
6015	PRO115	115.00	6	1.0096	116.10	6018	CAC115	115.00	6	1.0180	117.07
6019	CVI115A	115.00	6	1.0140	116.60	6024	CHI115	115.00	6	1.0067	115.77
6027	LOC115A	115.00	6	1.0117	116.35	6032	MAR115A	115.00	6	1.0094	116.08
6036	SMA115	115.00	6	1.0173	116.99	6040	SFR115	115.00	6	1.0095	116.09
6047	CLA115	115.00	6	1.0017	115.19	6055	MOS115B	115.00	6	1.0160	116.84
6057	TOC115	115.00	6	1.0188	117.16	6059	LM1115	115.00	6	1.0128	116.48
6060	LM2115	115.00	6	1.0129	116.48	6066	FFIELD	115.00	6	1.0111	116.27
6074	LMDIST	115.00	6	1.0128	116.47	6087	CAL115	115.00	6	1.0146	116.68
6088	LES115	115.00	6	1.0171	116.97	6092	LVA115	115.00	6	1.0146	116.68
6123	MIR115	115.00	7	1.0286	118.29	6170	CPA115	115.00	6	1.0137	116.58
6173	STR115	115.00	6	1.0149	116.71	6174	PM115-1A	115.00	6	1.0164	116.89
6175	PM115-2A	115.00	6	1.0164	116.89	6210	TIN115	115.00	6	1.0146	116.68
6211	PM115-9	115.00	6	1.0153	116.76	6230	CBA115	115.00	6	1.0106	116.22
6261	CHA 115	115.00	6	1.0072	115.83	6270	CAT 115	115.00	6	1.0128	116.48
6280	GIR 115	115.00	6	1.0137	116.58	6290	CATII 11	115.00	6	1.0131	116.50
6331	BAI115	115.00	6	1.0010	115.12	6332	BAM115	115.00	6	1.0044	115.51
6350	PM115-8	115.00	6	1.0140	116.61	6550	CHAZ115	115.00	6	1.0096	116.10
6580	LBO115	115.00	6	1.0135	116.56						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6006	CHO115	115.00	6	0.9747	112.09						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:17
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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):

FROM BUS				TO BUS						RATING SET A		RATING SET B		RATING SET C	
BUS#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	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	53.3	54.0	98.7	--	--	--	--

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:17
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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):

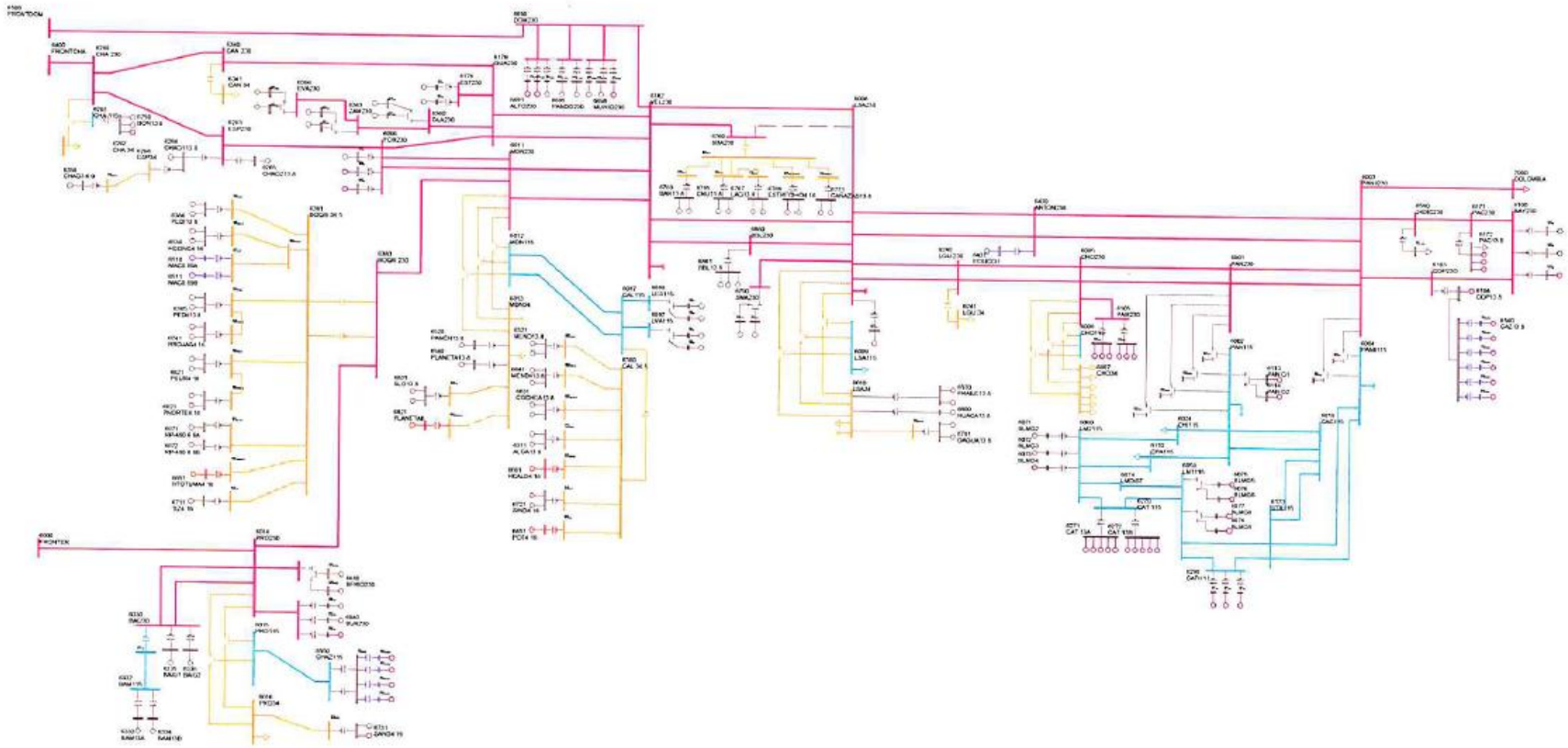
FROM BUS				TO BUS						RATING SET A		RATING SET B		RATING SET C	
BUS#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:17
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT 21 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- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	907.5	1179.4	0.0	0.0	0.0	0.0	23.5	-295.5	-295.5	-295.5
GUATEMAL	225.5	340.6	218.7	0.0	0.0	600.3	250.2	16.3	16.3	
2	1143.9	1104.0	0.0	0.0	0.0	0.0	39.9	0.0	0.0	0.0
SALVADOR	313.8	367.1	-180.5	0.0	0.0	240.2	333.8	33.6	33.6	
3	1240.4	1205.2	0.0	0.0	0.0	0.0	35.2	0.0	0.0	0.0
HONDURAS	404.2	395.2	-20.3	0.0	0.0	467.2	463.1	33.4	33.4	
4	481.4	459.0	0.0	0.0	0.0	0.0	22.4	0.0	0.0	0.0
NICARAGU	-4.3	181.0	-12.7	0.0	0.0	286.3	196.9	-83.3	-83.3	
5	1522.5	1489.7	0.0	0.0	0.0	0.0	32.8	-0.1	-0.1	0.0
COSTA RI	271.7	558.4	-226.1	0.0	0.0	554.2	444.4	49.3	49.3	
6	1502.7	1416.9	0.0	0.0	0.0	0.0	88.9	-3.0	-3.0	-2.9
PANAMA	159.5	248.2	-352.0	0.0	0.0	491.9	854.3	-99.2	-99.2	
7	112.7	48.8	0.0	0.0	0.0	0.0	3.8	60.1	60.1	60.0
ACANAL	25.4	8.6	-15.8	0.0	0.0	0.0	16.6	16.0	16.0	
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	
11	0.0	-238.5	0.0	0.0	0.0	0.0	0.0	238.5	238.5	238.5
COLOMBIA	0.0	-34.0	0.0	0.0	0.0	0.0	0.0	34.0	34.0	
COLUMN	6911.1	6664.6	0.0	0.0	0.0	0.0	246.5	0.0	0.0	0.0
TOTALS	1395.8	2065.1	-588.7	0.0	0.0	2640.1	2559.5	0.0	0.0	

Contingencia 22: Llano Sánchez – San Bartolo (230-4A)



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT22

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	28.8	4.1	15.0	0.0	1.0200	28.5	0.9898	47.0			62	6
6072	BLMG3	13.800	V3	28.8	4.1	15.0	0.0	1.0200	28.5	0.9898	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	75.0	6.8	50.0	-50.0	1.0100	74.6	0.9959	111.0			64	6
6101	BAYG1	13.800	B1	82.9	10.6	30.0	-25.0	1.0100	82.8	0.9920	94.0			61	6
6102	BAYG2	13.800	B2	82.9	10.6	30.0	-25.0	1.0100	82.8	0.9920	94.0			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	-4.1	52.4	-48.9	1.0000	99.7	0.9991	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	0.9763	5.7			64	6
6311	ALGA13.8	13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9763	5.7			64	6
6321	MEND13.8	13.800	M1	8.0	4.2	4.2	-4.2	0.9927	9.1	0.8865	10.4			64	6
6321	MEND13.8	13.800	M2	8.0	4.2	4.2	-4.2	0.9927	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	-8.9	14.0	-14.0	1.0000	43.1	0.9785	49.0			64	6
6336	BAIG2	13.800	G2	42.1	-8.9	14.0	-14.0	1.0000	43.1	0.9785	49.0			64	6
6361	GLA13A	13.800	G1	12.1	-4.4	7.8	-7.0	1.0000	12.8	0.9387	14.1			64	6
6362	GLA13B	13.800	G2	12.1	-4.4	7.8	-7.0	1.0000	12.8	0.9387	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	1.0142	60.1	0.9850	152.3			63	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	0.9665	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	0.9833	5.6			64	6

6530	HCONC4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9833	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9665	4.9	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9741	2.9	0.9122	3.0	63 6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9741	2.9	0.9122	3.0	63 6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9740	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	0.9912	5.6	64 6
6621	PSUR4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9912	5.6	64 6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9583	5.6	64 6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9583	5.6	64 6
6631	COCHEA13.8	13.800	G1	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9861	8.4	64 6
6631	COCHEA13.8	13.800	G2	6.4	-1.1	3.7	-3.7	1.0000	6.5	0.9861	8.4	64 6
6641	MENDII13.8	13.800	G1	3.3	-0.3	1.9	-1.9	1.0000	3.3	0.9958	4.1	64 6
6641	MENDII13.8	13.800	G2	3.3	-0.3	1.9	-1.9	1.0000	3.3	0.9958	4.1	64 6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.8	2.5	-2.5	1.0000	5.1	0.9347	5.6	64 6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0232	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	1.0052	27.6	0.9576	33.0	64 6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0052	27.6	0.9576	33.0	64 6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0083	23.3	0.9074	24.9	64 6
6696	PANDO13A	13.800	G1	15.8	-0.6	12.8	-8.3	1.0000	15.8	0.9993	18.5	64 6
6697	PANDO13B	13.800	G2	15.8	-0.6	12.8	-8.3	1.0000	15.8	0.9993	18.5	64 6
6699	MLIRIO13A	13.800	G1	15.8	-0.2	12.8	-8.3	1.0000	15.8	0.9999	18.5	64 6
6700	MLIRIO13B	13.800	G2	15.8	-0.2	12.8	-8.3	1.0000	15.8	0.9999	18.5	64 6
6711	TIZ4.16	4.2000	G1	4.4	1.9	2.3	-2.3	1.0000	4.8	0.9174	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	-2.0	2.2	-2.2	1.0000	4.7	0.9095	5.0	64 6
6731	SAND4.16	4.2000	G2	4.3	-2.0	2.2	-2.2	1.0000	4.7	0.9095	5.0	64 6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9609	4.8	64 6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9609	4.8	64 6
6750	BON13.8	13.800	G1	9.9	-0.9	4.0	-4.0	1.0000	9.9	0.9962	35.3	64 6
6750	BON13.8	13.800	G2	9.9	-0.9	4.0	-4.0	1.0000	9.9	0.9962	35.3	64 6
6763	BAR13.8	13.800	G1	7.2	2.7	4.0	-4.0	1.0000	7.7	0.9357	9.0	63 6
6763	BAR13.8	13.800	G2	7.2	2.7	4.0	-4.0	1.0000	7.7	0.9357	9.0	63 6
6765	CRU13.8	13.800	G1	4.6	1.3	2.6	-2.6	1.0000	4.8	0.9637	5.8	63 6
6765	CRU13.8	13.800	G2	4.6	1.3	2.6	-2.6	1.0000	4.8	0.9637	5.8	63 6
6767	LAG13.8	13.800	G1	4.7	0.9	2.6	-2.6	1.0000	4.7	0.9828	5.8	63 6
6767	LAG13.8	13.800	G2	4.7	0.9	2.6	-2.6	1.0000	4.7	0.9828	5.8	63 6
6769	ESTRECHO4.16	4.2000	G1	4.9	1.1	2.5	-2.5	1.0000	5.1	0.9748	5.6	63 6
6769	ESTRECHO4.16	4.2000	G2	4.9	1.1	2.5	-2.5	1.0000	5.1	0.9748	5.6	63 6
6771	CAÑAZAS13.8	13.800	G1	2.8	0.9	1.5	-1.5	1.0000	3.0	0.9479	3.3	63 6
6771	CAÑAZAS13.8	13.800	G2	2.8	0.9	1.5	-1.5	1.0000	3.0	0.9479	3.3	63 6

6781	OAGUA13.8	13.800	G1	3.1	1.4	1.6	-1.6	1.0000	3.4	0.9149	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	1.4	1.6	-1.6	1.0000	3.4	0.9149	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	137.3	300.0	-225.0	1.0267	133.7	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	0.9940	4.5	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9940	4.5	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9961	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9961	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	0.9772	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9772	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9772	2.0	0.9058	2.1	64	6
SUBSYSTEM TOTALS				1504.2	161.6	1011.6	-837.2				2263.0		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 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	18.0	1.2	8.0	0.0	1.0100	17.9	0.9979	27.7			65	7
6128	MIR13C	12.000	G3	20.0	8.6	11.0	0.0	1.0100	21.6	0.9180	29.4			65	7
6129	MIR13D	13.800	G4	27.7	10.4	15.0	0.0	1.0100	29.3	0.9357	44.1			65	7
6130	MIR13F	13.800	G5	17.0	2.0	8.0	0.0	1.0100	16.9	0.9931	27.7			65	7
6134	MAD6A	6.9000	G1	10.0	1.1	6.0	-6.0	1.0100	10.0	0.9937	13.0			65	7
6135	MAD6B	6.9000	G2	10.0	1.0	6.0	-6.0	1.0100	10.0	0.9951	13.0			65	7
6136	MAD6C	6.9000	G3	10.0	1.0	6.0	-6.0	1.0100	10.0	0.9951	13.0			65	7
SUBSYSTEM TOTALS				112.7	25.4	60.0	-18.0				167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 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	1.0155	233.57	6001	PAN230	230.00	6	1.0023	230.54
6003	PANII230	230.00	6	1.0140	233.21	6011	MDN230	230.00	6	1.0047	231.08
6014	PRO230	230.00	6	1.0143	233.30	6096	FOR230	230.00	6	1.0059	231.35
6100	BAY230	230.00	6	1.0272	236.26	6103	COP23O	230.00	6	1.0164	233.76
6171	PAC230	230.00	6	1.0171	233.94	6178	EST230	230.00	6	1.0016	230.37
6179	GUA230	230.00	6	1.0018	230.40	6182	VEL230	230.00	6	1.0010	230.22
6260	CHA 230	230.00	6	1.0146	233.36	6263	ESP230	230.00	6	1.0156	233.60
6330	BAI230	230.00	6	1.0136	233.12	6340	CAN 230	230.00	6	1.0072	231.67
6360	GLA230	230.00	6	1.0063	231.46	6363	ZAM230	230.00	6	1.0111	232.56
6366	EVA230	230.00	6	1.0138	233.18	6380	BOQIII 230	230.00	6	1.0097	232.24
6400	FRONTCHA	230.00	6	1.0151	233.47	6430	ANTON230	230.00	6	1.0152	233.50
6500	FRONTDOM	230.00	6	1.0238	235.48	6590	24DIC230	230.00	6	1.0152	233.50
6680	BFRIO230	230.00	6	1.0170	233.91	6690	DOM230	230.00	6	1.0246	235.66
6691	ALTO230	230.00	6	1.0263	236.04	6695	PANDO230	230.00	6	1.0253	235.83
6698	MLIRIO230	230.00	6	1.0251	235.78	6760	SBA230	230.00	6	1.0062	231.44
6790	SMA230	230.00	6	1.0013	230.29	6840	BUR230	230.00	6	1.0166	233.82
6860	BBL230	230.00	6	1.0001	230.03						

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	0.9887	227.39	6105	PAM230	230.00	6	0.9887	227.39
6240	LGU 230	230.00	6	0.9899	227.69						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 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	1.0184	117.12	6004	PANII115	115.00	6	1.0211	117.42
6009	LSA115	115.00	6	1.0174	117.00	6012	MDN115	115.00	6	1.0123	116.41
6015	PRO115	115.00	6	1.0097	116.11	6018	CAC115	115.00	6	1.0181	117.09
6019	CVI115A	115.00	6	1.0141	116.62	6024	CHI115	115.00	6	1.0068	115.78
6027	LOC115A	115.00	6	1.0118	116.36	6032	MAR115A	115.00	6	1.0095	116.10
6036	SMA115	115.00	6	1.0174	117.01	6040	SFR115	115.00	6	1.0096	116.11
6047	CLA115	115.00	6	1.0018	115.20	6055	MOS115B	115.00	6	1.0161	116.85
6057	TOC115	115.00	6	1.0189	117.17	6059	LM1115	115.00	6	1.0129	116.48
6060	LM2115	115.00	6	1.0129	116.49	6066	FFIELD	115.00	6	1.0112	116.28
6074	LMDIST	115.00	6	1.0129	116.48	6087	CAL115	115.00	6	1.0147	116.69
6088	LES115	115.00	6	1.0172	116.98	6092	LVA115	115.00	6	1.0147	116.69
6123	MIR115	115.00	7	1.0287	118.30	6170	CPA115	115.00	6	1.0138	116.59
6173	STR115	115.00	6	1.0150	116.72	6174	PM115-1A	115.00	6	1.0165	116.90
6175	PM115-2A	115.00	6	1.0165	116.90	6210	TIN115	115.00	6	1.0148	116.70
6211	PM115-9	115.00	6	1.0154	116.77	6230	CBA115	115.00	6	1.0107	116.23
6261	CHA 115	115.00	6	1.0073	115.84	6270	CAT 115	115.00	6	1.0129	116.49
6280	GIR 115	115.00	6	1.0138	116.59	6290	CATII 11	115.00	6	1.0131	116.51
6331	BAI115	115.00	6	1.0011	115.13	6332	BAM115	115.00	6	1.0044	115.51
6350	PM115-8	115.00	6	1.0141	116.62	6550	CHAZ115	115.00	6	1.0097	116.11
6580	LBO115	115.00	6	1.0136	116.57						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6006	CHO115	115.00	6	0.9748	112.10						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 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#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	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	53.3	54.0	98.7	--	--	--	--

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 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):

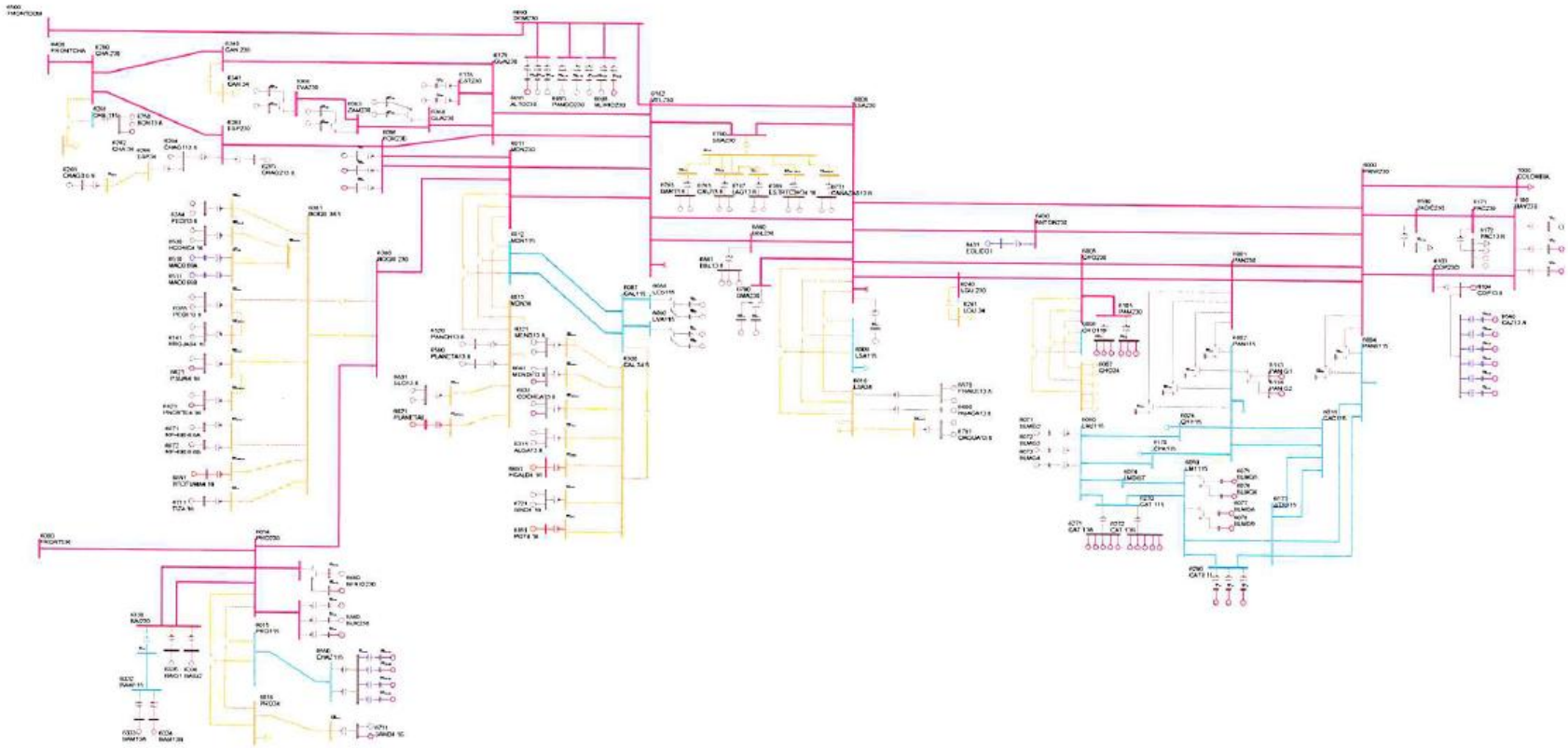
FROM BUS				TO BUS						RATING SET A		RATING SET B		RATING SET C	
BUS#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2015 CNT22 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- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	907.5	1179.4	0.0	0.0	0.0	0.0	23.5	-295.5	-295.5	-295.5
GUATEMAL	225.5	340.6	218.7	0.0	0.0	600.3	250.2	16.3	16.3	
2	1143.9	1104.0	0.0	0.0	0.0	0.0	39.9	0.0	0.0	0.0
SALVADOR	313.8	367.1	-180.5	0.0	0.0	240.2	333.8	33.6	33.6	
3	1240.4	1205.2	0.0	0.0	0.0	0.0	35.2	0.0	0.0	0.0
HONDURAS	404.2	395.2	-20.3	0.0	0.0	467.2	463.1	33.4	33.4	
4	481.4	459.0	0.0	0.0	0.0	0.0	22.4	0.0	0.0	0.0
NICARAGU	-4.3	181.0	-12.7	0.0	0.0	286.3	196.9	-83.3	-83.3	
5	1522.5	1489.7	0.0	0.0	0.0	0.0	32.8	0.0	0.0	0.0
COSTA RI	271.5	558.4	-226.1	0.0	0.0	554.3	444.4	49.2	49.2	
6	1504.2	1416.9	0.0	0.0	0.0	0.0	90.4	-3.0	-3.0	-2.9
PANAMA	161.6	248.2	-352.0	0.0	0.0	499.4	863.8	-99.0	-99.0	
7	112.7	48.8	0.0	0.0	0.0	0.0	3.8	60.1	60.1	60.0
ACANAL	25.4	8.6	-15.8	0.0	0.0	0.0	16.6	16.0	16.0	
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	
11	0.0	-238.5	0.0	0.0	0.0	0.0	0.0	238.5	238.5	238.5
COLOMBIA	0.0	-34.0	0.0	0.0	0.0	0.0	0.0	34.0	34.0	
COLUMN	6912.6	6664.6	0.0	0.0	0.0	0.0	247.9	0.0	0.0	0.0
TOTALS	1397.6	2065.1	-588.8	0.0	0.0	2647.6	2568.9	0.0	0.0	

Demanda Máxima de Verano



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:59
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	7.1	15.0	0.0	1.0100	38.3	0.9829	47.0			62	6
6072	BLMG3	13.800	V3	38.0	7.1	15.0	0.0	1.0100	38.3	0.9829	47.0			62	6
6073	BLMG4	13.800	V4	38.0	7.3	15.0	0.0	1.0100	38.3	0.9819	47.0			62	6
6090	LESG1	13.800	E1	19.1	1.9	12.0	-5.0	1.0000	19.1	0.9952	27.0			64	6
6091	LESG2	13.800	E2	19.1	1.9	12.0	-5.0	1.0000	19.1	0.9952	27.0			64	6
6094	LVAG1	13.800	L1	23.3	-4.9	12.0	-5.0	1.0000	23.8	0.9789	27.0			64	6
6095	LVAG2	13.800	L2	23.3	-4.9	12.0	-5.0	1.0000	23.8	0.9789	27.0			64	6
6097	FORG1	13.800	F1	75.0	0.9	50.0	-50.0	1.0100	74.3	0.9999	111.0			64	6
6101	BAYG1	13.800	B1	58.2	8.6	30.0	-25.0	1.0100	58.2	0.9893	94.0			61	6
6172	PAC13.8	13.800	P1	16.9	9.0	9.0	-11.0	0.9969	19.2	0.8832	21.7			61	6
6172	PAC13.8	13.800	P2	16.9	9.0	9.0	-11.0	0.9969	19.2	0.8832	21.7			61	6
6172	PAC13.8	13.800	P3	16.9	9.0	9.0	-11.0	0.9969	19.2	0.8832	21.7			61	6
6176	ESTG1	13.800	E1	51.0	6.6	29.0	-29.0	1.0000	51.4	0.9917	69.0			64	6
6177	ESTG2	13.800	E2	51.0	6.6	29.0	-29.0	1.0000	51.4	0.9917	69.0			64	6
6264	CHAG113.8	13.800	G1	89.1	-8.2	52.4	-48.9	1.0000	89.5	0.9958	116.5			64	6
6265	CHAG213.8	13.800	G2	89.1	-4.7	52.4	-48.9	1.0000	89.2	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
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	0.9947	9.0	0.8865	10.4			64	6
6321	MEND13.8	13.800	M2	8.0	4.2	4.2	-4.2	0.9947	9.0	0.8865	10.4			64	6
6333	BAM13A	13.800	G1	23.8	0.4	10.0	-10.0	1.0000	23.8	0.9998	30.0			64	6
6334	BAM13B	13.800	G2	23.8	0.4	10.0	-10.0	1.0000	23.8	0.9998	30.0			64	6
6335	BAIG1	13.800	G1	37.7	-11.6	14.0	-14.0	1.0000	39.4	0.9557	49.0			64	6
6336	BAIG2	13.800	G2	37.7	-11.6	14.0	-14.0	1.0000	39.4	0.9557	49.0			64	6
6361	GLA13A	13.800	G1	10.8	-7.0	7.8	-7.0	1.0028	12.8	0.8389	14.1			64	6
6362	GLA13B	13.800	G2	10.8	-7.0	7.8	-7.0	1.0028	12.8	0.8389	14.1			64	6
6364	LOR13A	13.800	G1	14.4	-7.0	7.8	-7.0	1.0069	15.9	0.8989	25.0			64	6
6365	LOR13B	13.800	G2	14.4	-7.0	7.8	-7.0	1.0069	15.9	0.8989	25.0			64	6
6367	PRU13A	13.800	G1	23.8	-8.0	8.0	-8.0	1.0076	24.9	0.9479	33.0			64	6
6368	PRU13B	13.800	G2	23.8	-8.0	8.0	-8.0	1.0076	24.9	0.9479	33.0			64	6
6384	PEDI13.8	13.800	G1	8.5	-0.6	4.9	-4.9	1.0000	8.5	0.9975	12.5			64	6
6384	PEDI13.8	13.800	G2	8.5	-0.6	4.9	-4.9	1.0000	8.5	0.9975	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	1.0060	121.1	0.9850	152.3			63	6
6510	MAC0.69A	0.7000	G1	1.5	-0.1	0.9	-0.1	1.0082	1.4	0.9981	2.1			64	6

6511	MAC0.69B	0.7000	G2	1.5	-0.1	0.9	-0.1	1.0082	1.4	0.9981	2.1	6
6520	PANCH13.8	13.800	P1	4.3	2.0	2.0	-2.0	0.9726	4.8	0.9048	6.2	64 6
6530	HCONC4.16	4.2000	G1	4.3	-1.4	2.5	-2.5	1.0000	4.5	0.9498	5.6	64 6
6530	HCONC4.16	4.2000	G2	4.3	-1.4	2.5	-2.5	1.0000	4.5	0.9498	5.6	64 6
6560	PLANETA13.8	13.800	G1	3.8	2.0	2.0	-2.0	0.9726	4.4	0.8862	4.9	64 6
6570	FRAILE13.8	13.800	G1	2.3	1.2	1.2	-1.2	0.9740	2.7	0.8937	3.0	63 6
6570	FRAILE13.8	13.800	G2	2.3	1.2	1.2	-1.2	0.9740	2.7	0.8937	3.0	63 6
6600	HUACA13.8	13.800	G1	4.3	2.2	2.2	-2.2	0.9740	5.0	0.8892	5.5	63 6
6621	PSUR4.16	4.2000	G1	4.3	-0.8	2.5	-2.5	1.0000	4.3	0.9821	5.6	64 6
6623	PNORTE4.16	4.2000	G1	4.3	-1.4	2.5	-2.5	1.0000	4.5	0.9465	5.6	64 6
6631	COCHEA13.8	13.800	G1	6.4	-2.9	3.7	-3.7	1.0000	7.0	0.9076	8.4	64 6
6641	MENDII13.8	13.800	G1	3.3	-1.9	1.9	-1.9	1.0004	3.8	0.8696	4.1	64 6
6651	BTOTUMA4.16	4.1600	G1	4.3	-0.1	2.5	-2.5	1.0000	4.3	0.9995	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	0.9980	7.5	64 6
6672	RP-490 6.6B	6.6000	G2	6.1	0.4	2.3	-2.6	1.0000	6.1	0.9980	7.5	64 6
6681	BFRIO13A	13.800	G1	23.8	-8.0	8.0	-8.0	1.0096	24.9	0.9479	33.0	64 6
6692	ALTO13A	13.800	G1	19.1	-2.7	9.9	-9.9	1.0000	19.3	0.9899	24.9	64 6
6693	ALTO13B	13.800	G2	19.1	-2.7	9.9	-9.9	1.0000	19.3	0.9899	24.9	64 6
6696	PANDO13A	13.800	G1	14.2	-1.0	12.8	-8.3	1.0000	14.2	0.9977	18.5	64 6
6697	PANDO13B	13.800	G2	14.2	-1.0	12.8	-8.3	1.0000	14.2	0.9977	18.5	64 6
6699	MLIRIO13A	13.800	G1	14.2	-0.6	12.8	-8.3	1.0000	14.2	0.9990	18.5	64 6
6700	MLIRIO13B	13.800	G2	14.2	-0.6	12.8	-8.3	1.0000	14.2	0.9990	18.5	64 6
6711	TIZ4.16	4.2000	G1	3.9	0.0	2.3	-2.3	1.0000	3.9	0.9999	5.2	64 6
6721	SIND4.16	4.2000	G1	4.3	-2.5	2.5	-2.5	1.0238	4.8	0.8622	5.6	64 6
6721	SIND4.16	4.2000	G2	4.3	-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	1.0075	4.4	0.8668	5.0	64 6
6741	RROJAS4.16	4.2000	G1	3.7	-1.3	2.1	-2.1	1.0000	3.9	0.9381	4.8	64 6
6741	RROJAS4.16	4.2000	G2	3.7	-1.3	2.1	-2.1	1.0000	3.9	0.9381	4.8	64 6
6750	BON13.8	13.800	G1	8.9	-1.4	4.0	-4.0	1.0000	9.0	0.9885	35.3	64 6
6750	BON13.8	13.800	G2	8.9	-1.4	4.0	-4.0	1.0000	9.0	0.9885	35.3	64 6
6763	BAR13.8	13.800	G1	6.4	2.5	4.0	-4.0	1.0000	6.9	0.9332	9.0	63 6
6763	BAR13.8	13.800	G2	6.4	2.5	4.0	-4.0	1.0000	6.9	0.9332	9.0	63 6
6765	CRU13.8	13.800	G1	4.1	1.2	2.6	-2.6	1.0000	4.3	0.9621	5.8	63 6
6765	CRU13.8	13.800	G2	4.1	1.2	2.6	-2.6	1.0000	4.3	0.9621	5.8	63 6
6767	LAG13.8	13.800	G1	4.2	0.8	2.6	-2.6	1.0000	4.2	0.9818	5.8	63 6
6767	LAG13.8	13.800	G2	4.2	0.8	2.6	-2.6	1.0000	4.2	0.9818	5.8	63 6
6769	ESTRECHO4.16	4.2000	G1	4.4	1.0	2.5	-2.5	1.0000	4.5	0.9737	5.6	63 6
6769	ESTRECHO4.16	4.2000	G2	4.4	1.0	2.5	-2.5	1.0000	4.5	0.9737	5.6	63 6
6771	CAÑAZAS13.8	13.800	G1	2.5	0.9	1.5	-1.5	1.0000	2.7	0.9444	3.3	63 6
6771	CAÑAZAS13.8	13.800	G2	2.5	0.9	1.5	-1.5	1.0000	2.7	0.9444	3.3	63 6
6781	OAGUA13.8	13.800	G1	2.7	1.5	1.6	-1.6	1.0000	3.1	0.8838	3.6	63 6
6781	OAGUA13.8	13.800	G2	2.7	1.5	1.6	-1.6	1.0000	3.1	0.8838	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	-0.3	300.0	-225.0	0.9999	0.3	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.2	-1.8	1.8	-1.8	1.0191	3.6	0.8669	4.1	64	6
6831	SLO13.8	13.800	G1	3.6	2.0	2.1	-2.1	1.0000	4.1	0.8741	4.7	64	6
6831	SLO13.8	13.800	G2	3.6	2.0	2.1	-2.1	1.0000	4.1	0.8741	4.7	64	6
6841	BUR13A	13.800	G1	14.2	8.1	8.1	-8.1	1.0000	16.3	0.8669	18.5	64	6
6842	BUR13B	13.800	G2	14.2	8.1	8.1	-8.1	1.0000	16.3	0.8669	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0254	4.0	0.8677	4.6	64	6
6861	BBL13.8	13.800	G1	7.7	4.0	4.0	-3.0	0.9874	8.8	0.8863	10.1	64	6
6861	BBL13.8	13.800	G2	7.7	4.0	4.0	-3.0	0.9874	8.8	0.8863	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9874	2.0	0.9057	2.1	64	6
SUBSYSTEM TOTALS				1420.9	-14.3	1023.3	-844.8				2244.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:59
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - 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	3.2	8.0	0.0	1.0100	18.1	0.9846	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	27.7	12.6	15.0	0.0	1.0100	30.1	0.9104	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	1.6	6.0	-6.0	1.0100	10.0	0.9868	13.0			65	7
6135	MAD6B	6.9000	G2	10.0	1.4	6.0	-6.0	1.0100	10.0	0.9903	13.0			65	7
6136	MAD6C	6.9000	G3	10.7	1.3	6.0	-6.0	1.0100	10.7	0.9925	13.0			65	7
SUBSYSTEM TOTALS				113.4	35.0	60.0	-18.0				167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:59
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0193	234.43	6001	PAN230	230.00	6	1.0044	231.02
6003	PANII230	230.00	6	1.0163	233.75	6011	MDN230	230.00	6	1.0115	232.65
6014	PRO230	230.00	6	1.0184	234.22	6096	FOR230	230.00	6	1.0123	232.83
6100	BAY230	230.00	6	1.0269	236.19	6103	COP23O	230.00	6	1.0184	234.23
6171	PAC230	230.00	6	1.0230	235.30	6178	EST230	230.00	6	1.0088	232.02
6179	GUA230	230.00	6	1.0089	232.05	6182	VEL230	230.00	6	1.0105	232.41
6260	CHA 230	230.00	6	1.0183	234.20	6263	ESP230	230.00	6	1.0189	234.35
6330	BAI230	230.00	6	1.0170	233.90	6340	CAN 230	230.00	6	1.0133	233.06
6360	GLA230	230.00	6	1.0127	232.93	6363	ZAM230	230.00	6	1.0169	233.88
6366	EVA230	230.00	6	1.0192	234.42	6380	BOQIII 230	230.00	6	1.0147	233.39
6400	FRONTCHA	230.00	6	1.0186	234.27	6430	ANTON230	230.00	6	1.0085	231.96
6500	FRONTDOM	230.00	6	1.0245	235.64	6590	24DIC230	230.00	6	1.0194	234.45
6680	BFRIO230	230.00	6	1.0195	234.49	6690	DOM230	230.00	6	1.0250	235.75
6691	ALTO230	230.00	6	1.0271	236.24	6695	PANDO230	230.00	6	1.0255	235.87
6698	MLIRIO230	230.00	6	1.0254	235.83	6760	SBA230	230.00	6	1.0084	231.94
6790	SMA230	230.00	6	1.0011	230.26	6840	BUR230	230.00	6	1.0206	234.74
6860	BBL230	230.00	6	1.0106	232.45						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)
6005	CHO230	230.00	6	0.9923	228.24	6105	PAM230	230.00	6	0.9923	228.24
6240	LGU 230	230.00	6	0.9918	228.12						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:59
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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)
6009	LSA115	115.00	6	1.0172	116.98	6012	MDN115	115.00	6	1.0192	117.21
6015	PRO115	115.00	6	1.0148	116.70	6087	CAL115	115.00	6	1.0189	117.17
6088	LES115	115.00	6	1.0207	117.39	6092	LVA115	115.00	6	1.0187	117.15
6123	MIR115	115.00	7	1.0126	116.45	6261	CHA 115	115.00	6	1.0100	116.14
6331	BAI115	115.00	6	1.0054	115.63	6332	BAM115	115.00	6	1.0078	115.90
6550	CHAZ115	115.00	6	1.0148	116.70						

BUSES WITH VOLTAGE LESS THAN 1.0000:

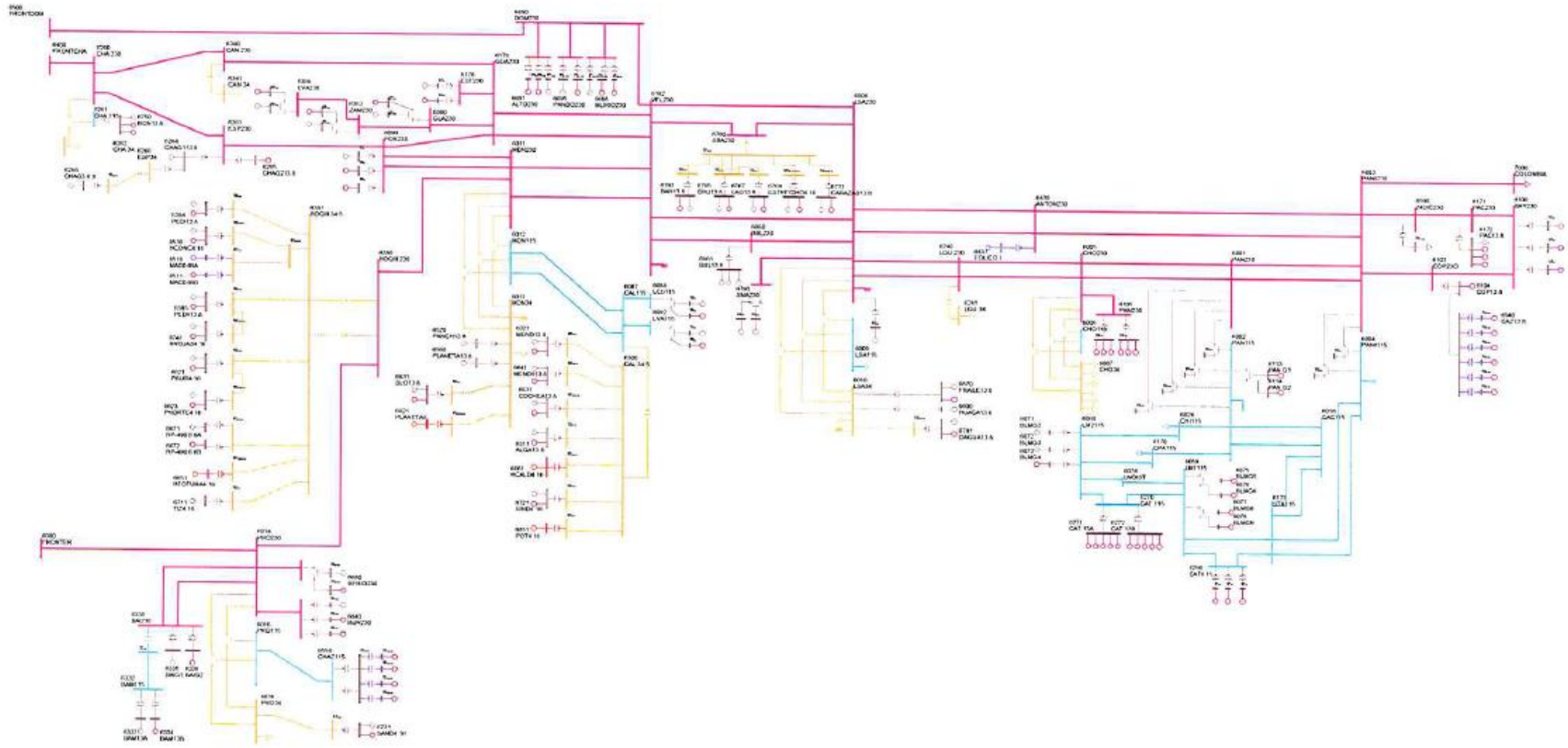
BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6002	PAN115	115.00	6	0.9999	114.99	6004	PANII115	115.00	6	0.9951	114.43
6006	CHO115	115.00	6	0.9782	112.49	6018	CAC115	115.00	6	0.9996	114.95
6019	CVI115A	115.00	6	0.9894	113.78	6024	CHI115	115.00	6	0.9893	113.76
6027	LOC115A	115.00	6	0.9919	114.06	6032	MAR115A	115.00	6	0.9896	113.80
6036	SMA115	115.00	6	0.9988	114.86	6040	SFR115	115.00	6	0.9885	113.68
6047	CLA115	115.00	6	0.9839	113.15	6055	MOS115B	115.00	6	0.9973	114.68
6057	TOC115	115.00	6	0.9927	114.16	6059	LM1115	115.00	6	0.9977	114.74
6060	LM2115	115.00	6	0.9978	114.75	6066	FFIELD	115.00	6	0.9960	114.54
6074	LMDIST	115.00	6	0.9977	114.74	6170	CPA115	115.00	6	0.9977	114.74
6173	STR115	115.00	6	0.9982	114.79	6174	PM115-1A	115.00	6	0.9993	114.91
6175	PM115-2A	115.00	6	0.9993	114.91	6210	TIN115	115.00	6	0.9959	114.53
6211	PM115-9	115.00	6	0.9966	114.61	6230	CBA115	115.00	6	0.9903	113.89
6270	CAT 115	115.00	6	0.9978	114.74	6280	GIR 115	115.00	6	0.9977	114.74
6290	CATII 11	115.00	6	0.9978	114.74	6350	PM115-8	115.00	6	0.9949	114.41
6580	LBO115	115.00	6	0.9889	113.72						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 16:59
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - ÉPOCA SECA 2015 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- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	928.8	1179.4	0.0	0.0	0.0	0.0	22.9	-273.6	-273.6	-273.6
GUATEMAL	217.2	340.6	219.7	0.0	0.0	603.2	243.4	16.6	16.6	
2	1142.1	1104.0	0.0	0.0	0.0	0.0	38.1	0.0	0.0	0.0
SALVADOR	298.2	367.1	-181.0	0.0	0.0	241.3	323.2	30.1	30.1	
3	1239.0	1205.2	0.0	0.0	0.0	0.0	33.8	0.0	0.0	0.0
HONDURAS	391.8	395.2	-20.4	0.0	0.0	469.0	453.7	32.3	32.3	
4	479.4	459.0	0.0	0.0	0.0	0.0	20.4	0.0	0.0	0.0
NICARAGU	-16.2	181.0	-12.8	0.0	0.0	288.6	182.7	-78.6	-78.6	
5	1520.6	1489.7	0.0	0.0	0.0	0.0	30.9	0.0	0.0	0.0
COSTA RI	254.5	558.4	-226.5	0.0	0.0	555.7	431.8	46.5	46.5	
6	1420.9	1443.3	0.0	0.0	0.0	0.0	60.2	-82.6	-82.6	-82.9
PANAMA	-14.3	252.8	-307.4	0.0	0.0	499.7	653.3	-113.4	-113.4	
7	113.4	49.7	0.0	0.0	0.0	0.0	4.0	59.7	59.7	60.0
ACANAL	35.0	8.7	-15.6	0.0	0.0	0.0	17.7	24.1	24.1	
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	
11	0.0	-296.5	0.0	0.0	0.0	0.0	0.0	296.5	296.5	296.5
COLOMBIA	0.0	-42.3	0.0	0.0	0.0	0.0	0.0	42.3	42.3	
COLUMN	6844.2	6633.9	0.0	0.0	0.0	0.0	210.2	0.0	0.0	0.0
TOTALS	1166.1	2061.6	-543.9	0.0	0.0	2657.4	2305.9	0.0	0.0	

1959

Demanda Mínima de Invierno



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 17:02
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	4.0	15.0	0.0	1.0200	20.0	0.9809	47.0			62	6
6072	BLMG3	13.800	V3	20.0	4.0	15.0	0.0	1.0200	20.0	0.9809	47.0			62	6
6090	LESG1	13.800	E1	22.4	2.2	12.0	-5.0	1.0000	22.5	0.9952	27.0			64	6
6094	LVAG1	13.800	L1	26.0	-5.0	12.0	-5.0	1.0006	26.5	0.9820	27.0			64	6
6097	FORG1	13.800	F1	72.5	-13.6	50.0	-50.0	1.0000	73.8	0.9828	111.0			64	6
6101	BAYG1	13.800	B1	48.4	1.4	30.0	-25.0	1.0000	48.4	0.9996	94.0			61	6
6176	ESTG1	13.800	E1	57.0	5.6	29.0	-29.0	0.9900	57.9	0.9952	69.0			64	6
6264	CHAG113.8	13.800	G1	99.6	-18.1	52.4	-48.9	0.9900	102.3	0.9839	116.5			64	6
6268	CHAG3 6.9	6.9000	G3	9.3	4.9	4.9	-4.1	0.9871	10.6	0.8852	10.9			64	6
6311	ALGA13.8	13.800	A1	4.8	1.7	2.3	-2.3	1.0000	5.1	0.9415	5.7			64	6
6321	MEND13.8	13.800	M1	8.9	4.2	4.2	-4.2	0.9868	10.0	0.9060	10.4			64	6
6333	BAM13A	13.800	G1	26.6	-1.2	10.0	-10.0	0.9900	26.9	0.9989	30.0			64	6
6335	BAIG1	13.800	G1	42.1	-14.0	14.0	-14.0	0.9985	44.5	0.9490	49.0			64	6
6361	GLA13A	13.800	G1	12.1	-0.3	7.8	-7.0	1.0200	11.8	0.9997	14.1			64	6
6364	LOR13A	13.800	G1	16.1	-7.0	7.8	-7.0	1.0144	17.3	0.9167	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0143	27.4	0.9576	33.0			64	6
6384	PEDI13.8	13.800	G1	9.5	-1.2	4.9	-4.9	1.0000	9.6	0.9915	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
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	1.0058	1.6	0.9985	2.1			64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9517	5.4	0.9216	6.2			64	6
6530	HCONC4.16	4.2000	G1	4.8	-2.2	2.5	-2.5	1.0000	5.2	0.9050	5.6			64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9517	5.0	0.9058	4.9			64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9331	3.1	0.9122	3.0			63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9337	5.7	0.9084	5.5			63	6
6621	PSUR4.16	4.2000	G1	4.8	-2.1	2.5	-2.5	1.0000	5.2	0.9135	5.6			64	6
6623	PNORTE4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0000	5.4	0.8866	5.6			64	6
6631	COCHEA13.8	13.800	G1	7.1	-3.5	3.7	-3.7	1.0000	8.0	0.8953	8.4			64	6
6641	MENDII13.8	13.800	G1	3.7	-1.9	1.9	-1.9	1.0009	4.1	0.8916	4.1			64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	-1.7	2.5	-2.5	1.0000	5.1	0.9391	5.6			64	6
6661	HCALD4.16	4.1600	G1	3.8	-2.0	2.0	-2.0	1.0259	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	1.0112	27.5	0.9576	33.0			64	6
6692	ALTO13A	13.800	G1	21.3	-4.6	9.9	-9.9	1.0000	21.8	0.9776	24.9			64	6
6696	PANDO13A	13.800	G1	15.8	-8.3	12.8	-8.3	0.9972	17.9	0.8855	18.5			64	6
6699	MLIRIO13A	13.800	G1	15.8	-8.3	12.8	-8.3	0.9974	17.9	0.8855	18.5			64	6
6711	TIZ4.16	4.2000	G1	4.4	-1.6	2.3	-2.3	1.0000	4.7	0.9376	5.2			64	6

6721	SIND4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0257	5.2	0.8851	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0087	4.8	0.8892	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.8	2.1	-2.1	1.0000	4.5	0.9110	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-4.0	4.0	-4.0	1.0045	10.6	0.9273	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	4.0	4.0	-4.0	0.9988	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	0.9062	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.7	2.6	-2.6	1.0000	4.9	0.9423	5.8	63	6
6769	ESTRECHO4.16	4.2000	G1	4.9	2.0	2.5	-2.5	1.0000	5.3	0.9292	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.8	1.5	1.5	-1.5	0.9975	3.2	0.8885	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	1.6	1.6	-1.6	0.9572	3.6	0.8897	3.6	63	6
6791	SMA13A	13.800	G1	12.2	6.0	6.2	-6.2	1.0000	13.6	0.8957	14.2	63	6
6792	SMA13B	13.800	G2	12.2	6.0	6.2	-6.2	1.0000	13.6	0.8957	14.2	63	6
6810	SVC-LV	13.200	1	0.0	-143.2	300.0	-225.0	0.9602	149.1	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	0.8	1.8	-1.8	1.0000	3.6	0.9750	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9763	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	-8.1	8.1	-8.1	0.9900	18.0	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	4.0	-2.0	2.0	-2.0	1.0259	4.3	0.8900	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9902	9.6	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9902	9.6	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9902	2.0	0.9058	2.1	64	6
SUBSYSTEM TOTALS				851.4	-218.2	727.5	-586.3				1523.7		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 17:02
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	8.3	11.0	0.0	1.0100	21.4	0.9232	29.4			65	7
6129	MIR13D	13.800	G4	26.0	10.2	15.0	0.0	1.0100	27.7	0.9305	44.1			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	10.5	0.3	6.0	-6.0	1.0100	10.4	0.9997	13.0			65	7
SUBSYSTEM TOTALS				76.5	19.4	44.0	-18.0				112.5				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 17:02
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0220	235.07	6001	PAN230	230.00	6	1.0134	233.09
6003	PANII230	230.00	6	1.0196	234.50	6005	CHO230	230.00	6	1.0035	230.80
6011	MDN230	230.00	6	1.0157	233.61	6014	PRO230	230.00	6	1.0198	234.56
6096	FOR230	230.00	6	1.0181	234.16	6100	BAY230	230.00	6	1.0252	235.79
6103	COP23O	230.00	6	1.0209	234.81	6105	PAM230	230.00	6	1.0035	230.80
6171	PAC230	230.00	6	1.0210	234.83	6178	EST230	230.00	6	1.0179	234.11
6179	GUA230	230.00	6	1.0180	234.15	6182	VEL230	230.00	6	1.0137	233.14
6260	CHA 230	230.00	6	1.0264	236.07	6263	ESP230	230.00	6	1.0246	235.65
6330	BAI230	230.00	6	1.0190	234.38	6340	CAN 230	230.00	6	1.0226	235.20
6360	GLA230	230.00	6	1.0205	234.71	6363	ZAM230	230.00	6	1.0229	235.26
6366	EVA230	230.00	6	1.0242	235.57	6380	BOQIII 230	230.00	6	1.0172	233.95
6400	FRONTCHA	230.00	6	1.0278	236.38	6430	ANTON230	230.00	6	1.0174	234.01
6500	FRONTDOM	230.00	6	1.0276	236.36	6590	24DIC230	230.00	6	1.0201	234.62
6680	BFRIO230	230.00	6	1.0212	234.87	6690	DOM230	230.00	6	1.0274	236.30
6691	ALTO230	230.00	6	1.0286	236.57	6695	PANDO230	230.00	6	1.0267	236.13
6698	MLIRIO230	230.00	6	1.0269	236.18	6760	SBA230	230.00	6	1.0091	232.10
6840	BUR230	230.00	6	1.0193	234.43	6860	BBL230	230.00	6	1.0135	233.10

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)
6008	LSA230	230.00	6	0.9900	227.70	6240	LGU 230	230.00	6	0.9959	229.06
6790	SMA230	230.00	6	0.9917	228.09						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 17:02
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0164	116.88	6004	PANII115	115.00	6	1.0158	116.82
6012	MDN115	115.00	6	1.0196	117.26	6015	PRO115	115.00	6	1.0162	116.86
6018	CAC115	115.00	6	1.0164	116.89	6019	CVI115A	115.00	6	1.0145	116.67
6024	CHI115	115.00	6	1.0101	116.16	6027	LOC115A	115.00	6	1.0135	116.55
6032	MAR115A	115.00	6	1.0132	116.52	6036	SMA115	115.00	6	1.0160	116.84
6040	SFR115	115.00	6	1.0126	116.44	6047	CLA115	115.00	6	1.0064	115.74
6055	MOS115B	115.00	6	1.0154	116.77	6057	TOC115	115.00	6	1.0145	116.66
6059	LM1115	115.00	6	1.0122	116.40	6060	LM2115	115.00	6	1.0123	116.41
6066	FFIELD	115.00	6	1.0074	115.85	6074	LMDIST	115.00	6	1.0123	116.41
6087	CAL115	115.00	6	1.0194	117.23	6088	LES115	115.00	6	1.0205	117.36
6092	LVA115	115.00	6	1.0193	117.22	6123	MIR115	115.00	7	1.0275	118.16
6170	CPA115	115.00	6	1.0130	116.50	6173	STR115	115.00	6	1.0136	116.56
6174	PM115-1A	115.00	6	1.0152	116.75	6175	PM115-2A	115.00	6	1.0152	116.75
6210	TIN115	115.00	6	1.0142	116.63	6211	PM115-9	115.00	6	1.0148	116.70
6230	CBA115	115.00	6	1.0129	116.49	6261	CHA 115	115.00	6	1.0174	117.00
6270	CAT 115	115.00	6	1.0122	116.41	6280	GIR 115	115.00	6	1.0130	116.50
6290	CATII 11	115.00	6	1.0124	116.42	6331	BAI115	115.00	6	1.0114	116.31
6332	BAM115	115.00	6	1.0111	116.27	6350	PM115-8	115.00	6	1.0151	116.73
6550	CHAZ115	115.00	6	1.0162	116.86	6580	LBO115	115.00	6	1.0142	116.64

BUSES WITH VOLTAGE LESS THAN 1.0000:

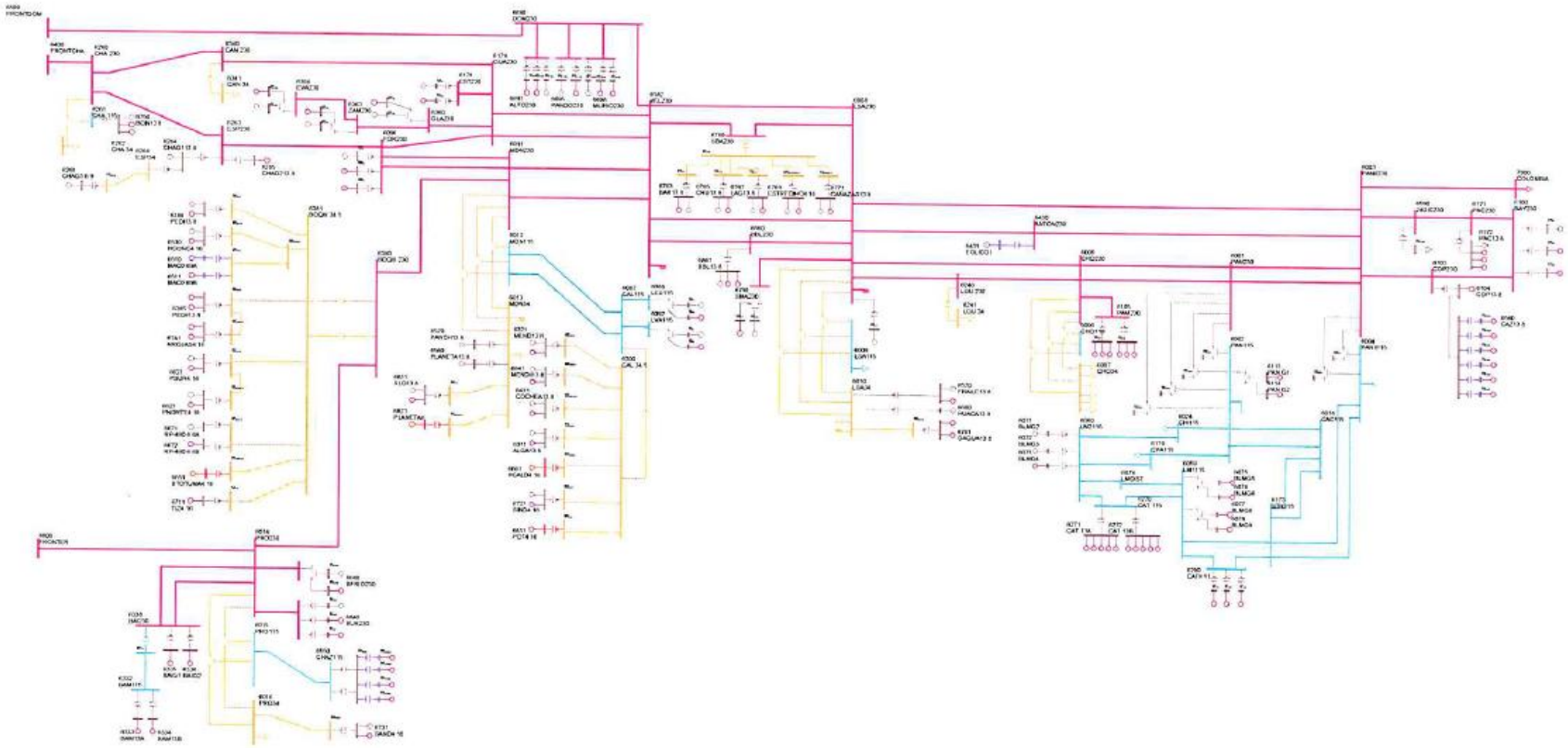
BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6006	CHO115	115.00	6	0.9925	114.13	6009	LSA115	115.00	6	0.9971	114.66

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 17:02
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERCONEXIÓN COL-PAN - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2015 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- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	559.0	773.5	0.0	0.0	0.0	0.0	10.8	-225.3	-225.3	-225.3
GUATEMAL	8.4	100.4	383.0	0.0	0.0	618.3	162.8	-19.5	-19.5	
2	528.0	512.7	0.0	0.0	0.0	0.0	15.2	0.1	0.1	0.0
SALVADOR	45.9	137.7	-22.3	0.0	0.0	251.0	129.4	52.1	52.1	
3	564.6	545.5	0.0	0.0	0.0	0.0	19.2	0.0	0.0	0.0
HONDURAS	-78.5	179.1	39.8	0.0	0.0	507.3	159.5	50.4	50.4	
4	309.8	298.5	0.0	0.0	0.0	0.0	11.3	0.0	0.0	0.0
NICARAGU	-121.7	118.2	49.6	0.0	0.0	304.2	101.3	-86.6	-86.6	
5	781.1	769.0	0.0	0.0	0.0	0.0	12.1	0.0	0.0	0.0
COSTA RI	-52.6	302.3	-13.8	0.0	0.0	586.4	166.8	78.5	78.5	
6	851.4	779.3	0.0	0.0	0.0	0.0	21.9	50.3	50.3	50.3
PANAMA	-218.2	282.8	-139.8	0.0	0.0	517.6	263.0	-106.6	-106.6	
7	76.5	26.9	0.0	0.0	0.0	0.0	2.7	46.9	46.9	47.0
ACANAL	19.4	9.7	-16.0	0.0	0.0	0.0	12.2	13.5	13.5	
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	
11	0.0	-128.0	0.0	0.0	0.0	0.0	0.0	128.0	128.0	128.0
COLOMBIA	0.0	-18.2	0.0	0.0	0.0	0.0	0.0	18.2	18.2	
COLUMN	3670.5	3577.3	0.0	0.0	0.0	0.0	93.2	0.0	0.0	0.0
TOTALS	-397.3	1111.9	280.7	0.0	0.0	2784.9	995.0	0.0	0.0	

1965

Demanda Mínima de Verano



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 17:08
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	20.0	10.3	15.0	0.0	1.0200	22.1	0.8882	47.0			62	6
6072	BLMG3	13.800	V3	20.0	10.3	15.0	0.0	1.0200	22.1	0.8882	47.0			62	6
6090	LESG1	13.800	E1	19.1	2.2	12.0	-5.0	0.9900	19.4	0.9937	27.0			64	6
6094	LVAG1	13.800	L1	23.3	-5.0	12.0	-5.0	0.9903	24.1	0.9777	27.0			64	6
6097	FORG1	13.800	F1	60.0	-19.5	50.0	-50.0	0.9900	63.7	0.9512	111.0			64	6
6101	BAYG1	13.800	B1	49.5	-5.8	30.0	-25.0	0.9900	50.3	0.9933	94.0			61	6
6176	ESTG1	13.800	E1	51.0	4.2	29.0	-29.0	0.9900	51.7	0.9966	69.0			64	6
6264	CHAG113.8	13.800	G1	73.4	-18.4	52.4	-48.9	0.9900	76.4	0.9700	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	0.9214	5.7			64	6
6321	MEND13.8	13.800	M1	8.0	4.2	4.2	-4.2	0.9858	9.1	0.8865	10.4			64	6
6361	GLA13A	13.800	G1	10.8	-3.6	7.8	-7.0	1.0120	11.2	0.9491	14.1			64	6
6364	LOR13A	13.800	G1	14.4	-7.0	7.8	-7.0	1.0100	15.8	0.8989	25.0			64	6
6367	PRU13A	13.800	G1	23.8	-8.0	8.0	-8.0	1.0097	24.9	0.9479	33.0			64	6
6384	PEDI13.8	13.800	G1	8.5	-2.1	4.9	-4.9	1.0000	8.8	0.9709	12.5			64	6
6431	EOLICO I	0.6000	G1	100.0	-17.5	17.5	-17.5	1.0099	100.5	0.9850	152.3			63	6
6510	MAC0.69A	0.7000	G1	1.5	-0.1	0.9	-0.1	1.0070	1.4	0.9981	2.1			64	6
6520	PANCH13.8	13.800	P1	4.2	2.0	2.0	-2.0	0.9156	5.1	0.9048	6.2			64	6
6530	HCONC4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0011	4.9	0.8622	5.6			64	6
6560	PLANETA13.8	13.800	G1	3.2	1.1	2.0	-2.0	0.9150	3.7	0.9403	4.9			64	6
6570	FRAILE13.8	13.800	G1	2.3	1.2	1.2	-1.2	0.9264	2.8	0.8937	3.0			63	6
6600	HUACA13.8	13.800	G1	3.5	-0.9	2.2	-2.2	0.9250	4.0	0.9663	5.5			63	6
6621	PSUR4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0011	4.9	0.8622	5.6			64	6
6623	PNORTE4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0013	4.9	0.8622	5.6			64	6
6631	COCHEA13.8	13.800	G1	6.4	-2.4	3.7	-3.7	1.0000	6.8	0.9345	8.4			64	6
6641	MENDII13.8	13.800	G1	3.3	-1.8	1.9	-1.9	1.0000	3.7	0.8812	4.1			64	6
6651	BTOTUMA4.16	4.1600	G1	4.2	-2.5	2.5	-2.5	1.0009	4.9	0.8622	5.6			64	6
6661	HCALD4.16	4.1600	G1	2.8	-1.7	2.0	-2.0	1.0250	3.2	0.8591	4.4			64	6
6671	RP-490 6.6A	6.6000	G1	6.1	0.1	2.3	-2.6	1.0000	6.1	0.9999	7.5			64	6
6681	BFRIO13A	13.800	G1	23.8	-8.0	8.0	-8.0	1.0133	24.8	0.9479	33.0			64	6
6692	ALTO13A	13.800	G1	19.1	4.5	9.9	-9.9	1.0100	19.4	0.9737	24.9			64	6
6696	PANDO13A	13.800	G1	14.2	-8.3	12.8	-8.3	1.0004	16.4	0.8626	18.5			64	6
6699	MLIRIO13A	13.800	G1	14.2	-8.3	12.8	-8.3	1.0006	16.4	0.8626	18.5			64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0246	4.8	0.8622	5.6			64	6
6731	SAND4.16	4.2000	G1	3.8	-2.2	2.2	-2.2	1.0107	4.4	0.8668	5.0			64	6
6750	BON13.8	13.800	G1	8.9	-3.9	4.0	-4.0	1.0000	9.7	0.9143	35.3			64	6
6763	BAR13.8	13.800	G1	6.4	4.0	4.0	-4.0	0.9987	7.6	0.8513	9.0			63	6

6765	CRU13.8	13.800	G1	4.1	2.2	2.6	-2.6	1.0000	4.7	0.8826	5.8	63	6
6767	LAG13.8	13.800	G1	4.2	1.7	2.6	-2.6	1.0000	4.5	0.9239	5.8	63	6
6769	ESTRECHO4.16	4.2000	G1	4.4	2.0	2.5	-2.5	1.0000	4.9	0.9094	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.5	1.5	1.5	-1.5	0.9970	2.9	0.8661	3.3	63	6
6791	SMA13A	13.800	G1	10.9	6.2	6.2	-6.2	0.9982	12.6	0.8671	14.2	63	6
6810	SVC-LV	13.200	1	0.0	-149.3	300.0	-225.0	0.9589	155.7	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	2.9	-0.9	1.8	-1.8	0.9600	3.1	0.9580	4.1	64	6
6831	SLO13.8	13.800	G1	3.6	2.1	2.1	-2.1	0.9392	4.4	0.8669	4.7	64	6
6841	BUR13A	13.800	G1	14.2	-8.1	8.1	-8.1	0.9922	16.5	0.8669	18.5	64	6
6861	BBL13.8	13.800	G1	7.7	4.0	4.0	-3.0	0.9867	8.8	0.8863	10.1	64	6
SUBSYSTEM TOTALS				693.5	-224.8	688.2	-547.9				1392.7		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 17:08
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	5.1	8.0	0.0	1.0100	18.5	0.9622	27.7			65	7
6129	MIR13D	13.800	G4	30.6	14.3	15.0	0.0	1.0100	33.4	0.9063	44.1			65	7
6130	MIR13F	13.800	G5	17.0	6.7	8.0	0.0	1.0100	18.1	0.9296	27.7			65	7
6134	MAD6A	6.9000	G1	10.8	4.3	6.0	-6.0	1.0100	11.5	0.9280	13.0			65	7
SUBSYSTEM TOTALS				76.4	30.4	37.0	-6.0				112.5				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 17:08
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÍNIMA - 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	1.0243	235.59	6001	PAN230	230.00	6	1.0144	233.32
6003	PANII230	230.00	6	1.0210	234.83	6005	CHO230	230.00	6	1.0058	231.34
6011	MDN230	230.00	6	1.0114	232.62	6014	PRO230	230.00	6	1.0220	235.06
6096	FOR230	230.00	6	1.0138	233.18	6100	BAY230	230.00	6	1.0245	235.63
6103	COP23O	230.00	6	1.0220	235.06	6105	PAM230	230.00	6	1.0058	231.34
6171	PAC230	230.00	6	1.0218	235.02	6178	EST230	230.00	6	1.0142	233.26
6179	GUA230	230.00	6	1.0143	233.28	6182	VEL230	230.00	6	1.0110	232.53
6260	CHA 230	230.00	6	1.0216	234.96	6263	ESP230	230.00	6	1.0203	234.67
6330	BAI230	230.00	6	1.0226	235.19	6340	CAN 230	230.00	6	1.0185	234.25
6360	GLA230	230.00	6	1.0163	233.76	6363	ZAM230	230.00	6	1.0184	234.24
6366	EVA230	230.00	6	1.0196	234.51	6380	BOQIII 230	230.00	6	1.0161	233.71
6400	FRONTCHA	230.00	6	1.0225	235.17	6430	ANTON230	230.00	6	1.0119	232.73
6500	FRONTDOM	230.00	6	1.0307	237.07	6590	24DIC230	230.00	6	1.0212	234.88
6680	BFRIO230	230.00	6	1.0232	235.33	6690	DOM230	230.00	6	1.0307	237.06
6691	ALTO230	230.00	6	1.0320	237.37	6695	PANDO230	230.00	6	1.0299	236.88
6698	MLIRIO230	230.00	6	1.0301	236.93	6760	SBA230	230.00	6	1.0082	231.90
6840	BUR230	230.00	6	1.0214	234.93	6860	BBL230	230.00	6	1.0107	232.46

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)
6008	LSA230	230.00	6	0.9900	227.70	6240	LGU 230	230.00	6	0.9972	229.36
6790	SMA230	230.00	6	0.9908	227.88						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 17:08
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÍNIMA - 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)
6012	MDN115	115.00	6	1.0072	115.83	6015	PRO115	115.00	6	1.0183	117.11
6087	CAL115	115.00	6	1.0087	116.00	6088	LES115	115.00	6	1.0097	116.12
6092	LVA115	115.00	6	1.0086	115.98	6123	MIR115	115.00	7	1.0099	116.14
6261	CHA 115	115.00	6	1.0126	116.45	6331	BAI115	115.00	6	1.0240	117.77
6332	BAM115	115.00	6	1.0246	117.83	6550	CHAZ115	115.00	6	1.0183	117.11

BUSES WITH VOLTAGE 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	0.9947	114.39
6006	CHO115	115.00	6	0.9946	114.38	6009	LSA115	115.00	6	0.9948	114.40
6018	CAC115	115.00	6	0.9976	114.72	6019	CVI115A	115.00	6	0.9919	114.07
6024	CHI115	115.00	6	0.9914	114.01	6027	LOC115A	115.00	6	0.9935	114.25
6032	MAR115A	115.00	6	0.9924	114.13	6036	SMA115	115.00	6	0.9971	114.66
6040	SFR115	115.00	6	0.9919	114.06	6047	CLA115	115.00	6	0.9876	113.58
6055	MOS115B	115.00	6	0.9963	114.58	6057	TOC115	115.00	6	0.9932	114.22
6059	LM1115	115.00	6	0.9983	114.81	6060	LM2115	115.00	6	0.9984	114.81
6066	FFIELD	115.00	6	0.9981	114.78	6074	LMDIST	115.00	6	0.9983	114.81
6170	CPA115	115.00	6	0.9977	114.73	6173	STR115	115.00	6	0.9984	114.82
6174	PM115-1A	115.00	6	0.9984	114.81	6175	PM115-2A	115.00	6	0.9984	114.81
6210	TIN115	115.00	6	0.9952	114.45	6211	PM115-9	115.00	6	0.9958	114.51
6230	CBA115	115.00	6	0.9927	114.15	6270	CAT 115	115.00	6	0.9984	114.81
6280	GIR 115	115.00	6	0.9977	114.73	6290	CATII 11	115.00	6	0.9983	114.81
6350	PM115-8	115.00	6	0.9952	114.44	6580	LBO115	115.00	6	0.9915	114.03

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E THU, MAY 19 2011 17:08
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERCONEXIÓN COL-PAN - DEMANDA MÍNIMA - ÉPOCA SECA 2015 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- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	555.1	758.5	0.0	0.0	0.0	0.0	11.4	-214.8	-214.8	-214.8
GUATEMAL	-6.4	99.0	379.5	0.0	0.0	617.5	155.3	-22.7	-22.7	
2	523.4	512.7	0.0	0.0	0.0	0.0	10.7	0.0	0.0	0.0
SALVADOR	44.5	137.7	0.0	0.0	0.0	250.7	107.3	50.2	50.2	
3	559.3	545.5	0.0	0.0	0.0	0.0	13.8	0.0	0.0	0.0
HONDURAS	-87.6	179.1	45.0	0.0	0.0	511.1	145.1	54.4	54.4	
4	316.5	304.3	0.0	0.0	0.0	0.0	12.2	-0.1	-0.1	0.0
NICARAGU	-102.7	120.4	50.4	0.0	0.0	304.9	108.3	-77.0	-77.0	
5	763.6	750.0	0.0	0.0	0.0	0.0	13.6	-0.1	-0.1	0.0
COSTA RI	1.8	309.9	0.0	0.0	0.0	570.0	201.5	60.4	60.4	
6	693.5	793.8	0.0	0.0	0.0	0.0	11.3	-111.7	-111.7	-112.0
PANAMA	-224.8	288.1	-57.5	0.0	0.0	500.4	175.8	-130.8	-130.8	
7	76.4	27.4	0.0	0.0	0.0	0.0	2.2	46.9	46.9	47.0
ACANAL	30.4	9.9	-15.5	0.0	0.0	0.0	10.5	25.6	25.6	
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	
11	0.0	-279.7	0.0	0.0	0.0	0.0	0.0	279.7	279.7	279.7
COLOMBIA	0.0	-39.9	0.0	0.0	0.0	0.0	0.0	39.9	39.9	
COLUMN	3487.9	3412.5	0.0	0.0	0.0	0.0	75.3	0.0	0.0	0.0
TOTALS	-344.8	1104.2	401.9	0.0	0.0	2754.7	903.7	0.0	0.0	

Año 2017

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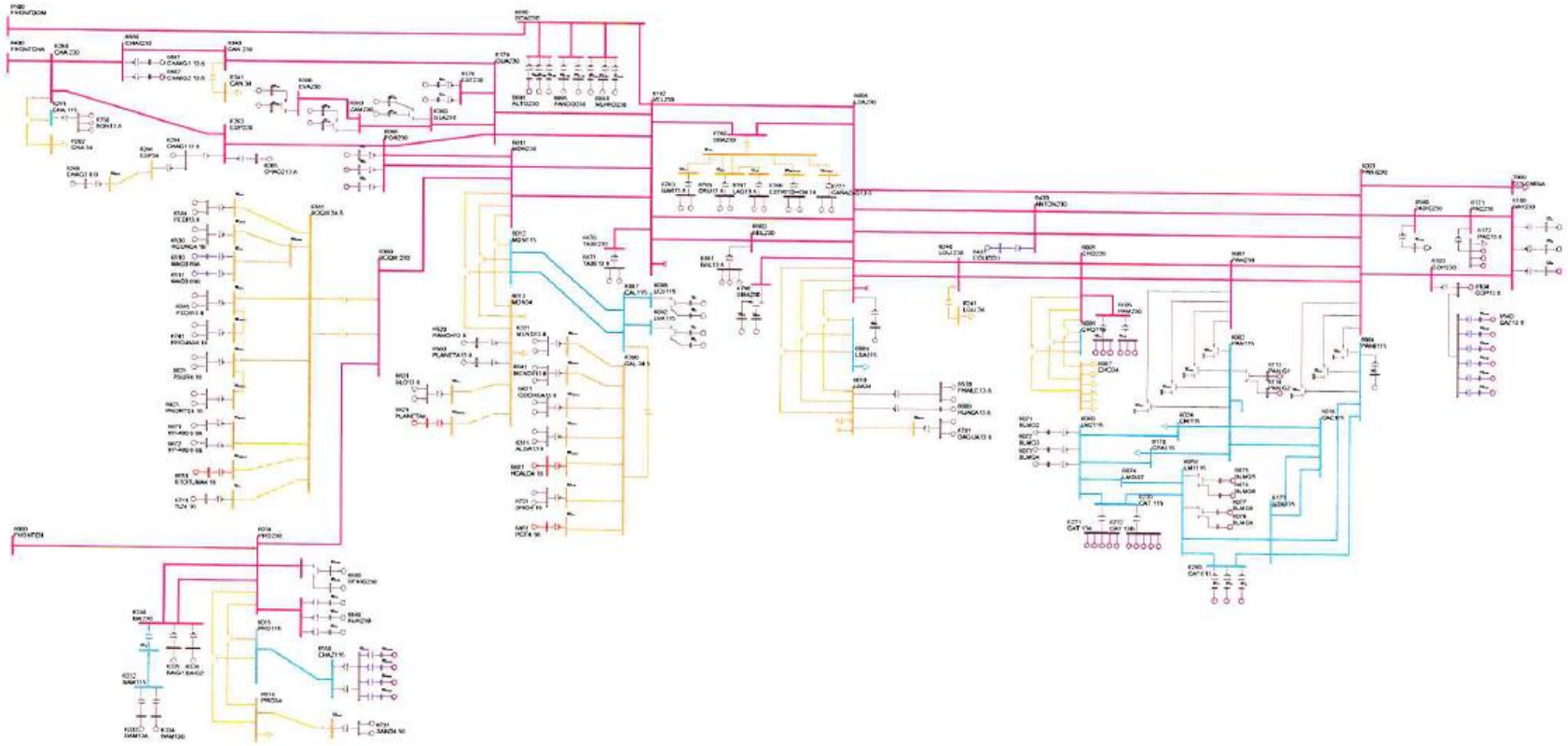
Demanda Máxima de Invierno



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 8:28
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	4.6	15.0	0.0	1.0200	37.5	0.9926	47.0			62	6
6072	BLMG3	13.800	V3	38.0	4.6	15.0	0.0	1.0200	37.5	0.9926	47.0			62	6
6073	BLMG4	13.800	V4	38.0	4.7	15.0	0.0	1.0200	37.5	0.9924	47.0			62	6
6090	LESG1	13.800	E1	22.4	3.9	12.0	-5.0	1.0000	22.8	0.9854	27.0			64	6
6091	LESG2	13.800	E2	22.4	3.9	12.0	-5.0	1.0000	22.8	0.9854	27.0			64	6
6094	LVAG1	13.800	L1	26.0	-2.6	12.0	-5.0	1.0000	26.2	0.9949	27.0			64	6
6095	LVAG2	13.800	L2	26.0	-2.6	12.0	-5.0	1.0000	26.2	0.9949	27.0			64	6
6097	FORG1	13.800	F1	95.0	13.3	50.0	-50.0	1.0100	95.0	0.9904	111.0			64	6
6101	BAYG1	13.800	B1	65.8	17.0	30.0	-25.0	1.0200	66.6	0.9683	94.0			61	6
6102	BAYG2	13.800	B2	71.0	17.4	30.0	-25.0	1.0200	71.7	0.9712	94.0			61	6
6176	ESTG1	13.800	E1	57.0	10.8	29.0	-29.0	1.0000	58.0	0.9825	69.0			64	6
6177	ESTG2	13.800	E2	57.0	10.8	29.0	-29.0	1.0000	58.0	0.9825	69.0			64	6
6264	CHAG113.8	13.800	G1	99.6	-7.8	52.4	-48.9	0.9900	100.9	0.9970	116.5			64	6
6265	CHAG213.8	13.800	G2	99.6	-4.4	52.4	-48.9	0.9900	100.7	0.9990	116.5			64	6
6268	CHAG3 6.9	6.9000	G3	9.3	4.9	4.9	-4.1	0.9871	10.6	0.8852	10.9			64	6
6311	ALGA13.8	13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9754	5.7			64	6
6311	ALGA13.8	13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9754	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	1.3	10.0	-10.0	1.0000	26.6	0.9989	30.0			64	6
6334	BAM13B	13.800	G2	26.6	1.3	10.0	-10.0	1.0000	26.6	0.9989	30.0			64	6
6335	BAIG1	13.800	G1	42.1	-10.3	14.0	-14.0	1.0000	43.4	0.9716	49.0			64	6
6336	BAIG2	13.800	G2	42.1	-10.3	14.0	-14.0	1.0000	43.4	0.9716	49.0			64	6
6361	GLA13A	13.800	G1	12.1	-1.2	7.8	-7.0	1.0000	12.1	0.9951	14.1			64	6
6362	GLA13B	13.800	G2	12.1	-1.2	7.8	-7.0	1.0000	12.1	0.9951	14.1			64	6
6364	LOR13A	13.800	G1	16.1	-4.8	7.8	-7.0	1.0000	16.7	0.9586	25.0			64	6
6365	LOR13B	13.800	G2	16.1	-4.8	7.8	-7.0	1.0000	16.7	0.9586	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-6.5	8.0	-8.0	1.0000	27.4	0.9717	33.0			64	6
6368	PRU13B	13.800	G2	26.6	-6.5	8.0	-8.0	1.0000	27.4	0.9717	33.0			64	6
6384	PEDI13.8	13.800	G1	9.5	2.3	4.9	-4.9	1.0100	9.7	0.9717	12.5			64	6
6384	PEDI13.8	13.800	G2	9.5	2.3	4.9	-4.9	1.0100	9.7	0.9717	12.5			64	6
6385	PEDII13.8	13.800	G1	6.2	0.2	3.2	-3.6	1.0000	6.2	0.9996	7.5			64	6
6385	PEDII13.8	13.800	G2	6.2	0.2	3.2	-3.6	1.0000	6.2	0.9996	7.5			64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0173	59.9	0.9850	152.3			63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0079	1.6	0.9985	2.1			64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0079	1.6	0.9985	2.1			64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9596	5.4	0.9216	6.2			64	6

6530	HCONC4.16	4.2000	G1	4.8	-1.1	2.5	-2.5	1.0000	4.9	0.9745	5.6	6
6530	HCONC4.16	4.2000	G2	4.8	-1.1	2.5	-2.5	1.0000	4.9	0.9745	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9596	4.9	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9770	2.9	0.9122	3.0	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9770	2.9	0.9122	3.0	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9770	5.4	0.9084	5.5	6
6621	PSUR4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9837	5.6	6
6621	PSUR4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9837	5.6	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.6	2.5	-2.5	1.0000	5.0	0.9487	5.6	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.6	2.5	-2.5	1.0000	5.0	0.9487	5.6	6
6631	COCHEA13.8	13.800	G1	6.4	-0.8	3.7	-3.7	1.0000	6.4	0.9913	8.4	6
6631	COCHEA13.8	13.800	G2	6.4	-0.8	3.7	-3.7	1.0000	6.4	0.9913	8.4	6
6641	MENDII13.8	13.800	G1	3.3	-0.1	1.9	-1.9	1.0000	3.3	0.9999	4.1	6
6641	MENDII13.8	13.800	G2	3.3	-0.1	1.9	-1.9	1.0000	3.3	0.9999	4.1	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.2	2.5	-2.5	1.0000	4.9	0.9699	5.6	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0227	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	0.9965	7.5	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9965	7.5	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0075	27.6	0.9576	33.0	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0075	27.6	0.9576	33.0	6
6692	ALTO13A	13.800	G1	20.3	4.2	9.9	-9.9	1.0100	20.6	0.9793	24.9	6
6693	ALTO13B	13.800	G2	20.3	-9.5	9.9	-9.9	1.0000	22.5	0.9058	24.9	6
6696	PANDO13A	13.800	G1	15.8	5.2	12.8	-8.3	1.0100	16.5	0.9502	18.5	6
6697	PANDO13B	13.800	G2	15.8	5.2	12.8	-8.3	1.0100	16.5	0.9502	18.5	6
6699	MLIRIO13A	13.800	G1	15.8	5.4	12.8	-8.3	1.0100	16.5	0.9466	18.5	6
6700	MLIRIO13B	13.800	G2	15.8	5.4	12.8	-8.3	1.0100	16.5	0.9466	18.5	6
6701	MLIRIO13C	13.800	G3	15.8	5.4	12.8	-8.3	1.0100	16.5	0.9466	18.5	6
6711	TIZ4.16	4.2000	G1	4.4	1.3	2.3	-2.3	1.0000	4.6	0.9593	5.2	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0212	4.8	0.8622	5.6	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0212	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	0.8892	5.0	6
6731	SAND4.16	4.2000	G2	4.3	-2.2	2.2	-2.2	1.0000	4.8	0.8892	5.0	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.3	2.1	-2.1	1.0000	4.3	0.9544	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.3	2.1	-2.1	1.0000	4.3	0.9544	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	3.0	4.0	-4.0	1.0000	7.8	0.9205	9.0	6
6763	BAR13.8	13.800	G2	7.2	3.0	4.0	-4.0	1.0000	7.8	0.9205	9.0	6
6765	CRU13.8	13.800	G1	4.6	1.5	2.6	-2.6	1.0000	4.8	0.9524	5.8	6
6765	CRU13.8	13.800	G2	4.6	1.5	2.6	-2.6	1.0000	4.8	0.9524	5.8	6
6767	LAG13.8	13.800	G1	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9753	5.8	6
6767	LAG13.8	13.800	G2	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9753	5.8	6

6769	ESTRECHO4.164.2000	G1	4.9	1.3	2.5	-2.5	1.0000	5.1	0.9660	5.6		63	6
6769	ESTRECHO4.164.2000	G2	4.9	1.3	2.5	-2.5	1.0000	5.1	0.9660	5.6		63	6
6771	CAÑAZAS13.8	13.800 G1	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9292	3.3		63	6
6771	CAÑAZAS13.8	13.800 G2	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9292	3.3		63	6
6781	OAGUA13.8	13.800 G1	3.1	-0.4	1.6	-1.6	1.0000	3.1	0.9914	3.6		63	6
6781	OAGUA13.8	13.800 G2	3.1	-0.4	1.6	-1.6	1.0000	3.1	0.9914	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	275.2	300.0	-225.0	1.0618	259.2	0.0000	300.0		63	6
6821	PLANETAII	4.1600 G1	3.5	-1.8	1.8	-1.8	1.0055	4.0	0.8892	4.1		64	6
6831	SLO13.8	13.800 G1	4.0	2.1	2.1	-2.1	0.9870	4.5	0.8892	4.7		64	6
6831	SLO13.8	13.800 G2	4.0	2.1	2.1	-2.1	0.9870	4.5	0.8892	4.7		64	6
6841	BUR13A	13.800 G1	15.8	8.1	8.1	-8.1	0.9993	17.8	0.8892	18.5		64	6
6842	BUR13B	13.800 G2	15.8	8.1	8.1	-8.1	0.9993	17.8	0.8892	18.5		64	6
6843	BUR13C	13.800 G3	15.8	8.1	8.1	-8.1	0.9993	17.8	0.8892	18.5		64	6
6851	POT4.16	4.1600 G1	3.5	-2.0	2.0	-2.0	1.0227	4.0	0.8678	4.6		64	6
6861	BBL13.8	13.800 G1	8.6	4.0	4.0	-3.0	0.9743	9.7	0.9059	10.1		64	6
6861	BBL13.8	13.800 G2	8.6	4.0	4.0	-3.0	0.9743	9.7	0.9059	10.1		64	6
6861	BBL13.8	13.800 G3	1.8	0.8	0.8	-0.6	0.9743	2.0	0.9058	2.1		64	6
6871	TABII13.8	13.800 G1	16.4	1.1	9.0	-9.0	1.0000	16.4	0.9976	20.5		64	6
6871	TABII13.8	13.800 G2	16.4	1.1	9.0	-9.0	1.0000	16.4	0.9976	20.5		64	6
6881	CHAIIG1 13.81	3.800 G1	101.7	9.6	52.3	-52.3	1.0100	101.1	0.9956	118.9		64	6
6900	SVC-LV	13.200 1	0.0	200.2	300.0	-225.0	1.0541	189.9	0.0000	300.0		61	6
SUBSYSTEM TOTALS			1747.0	558.1	1431.8	-1162.9				2867.2			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 8:28
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	0.4	8.0	0.0	1.0100	16.9	0.9997	27.7			65	7
6128	MIR13C	12.000	G3	20.9	7.8	11.0	0.0	1.0100	22.1	0.9367	29.4			65	7
6129	MIR13D	13.800	G4	28.0	9.5	15.0	0.0	1.0100	29.2	0.9469	44.1			65	7
6130	MIR13F	13.800	G5	17.1	1.0	8.0	0.0	1.0100	17.0	0.9984	27.7			65	7
6134	MAD6A	6.9000	G1	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0			65	7
6135	MAD6B	6.9000	G2	11.4	0.4	6.0	-6.0	1.0100	11.3	0.9995	13.0			65	7
6136	MAD6C	6.9000	G3	11.4	0.4	6.0	-6.0	1.0100	11.3	0.9995	13.0			65	7
SUBSYSTEM TOTALS				117.3	19.7	60.0	-18.0				167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 8:28
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0185	234.25	6003	PANII230	230.00	6	1.0100	232.30
6008	LSA230	230.00	6	1.0100	232.30	6014	PRO230	230.00	6	1.0166	233.81
6096	FOR230	230.00	6	1.0009	230.21	6100	BAY230	230.00	6	1.0272	236.25
6103	COP23O	230.00	6	1.0131	233.00	6171	PAC230	230.00	6	1.0141	233.25
6260	CHA 230	230.00	6	1.0123	232.83	6263	ESP230	230.00	6	1.0108	232.48
6330	BAI230	230.00	6	1.0155	233.56	6340	CAN 230	230.00	6	1.0024	230.55
6360	GLA230	230.00	6	1.0018	230.42	6363	ZAM230	230.00	6	1.0069	231.59
6366	EVA230	230.00	6	1.0097	232.24	6380	BOQIII 230	230.00	6	1.0084	231.94
6400	FRONTCHA	230.00	6	1.0132	233.03	6430	ANTON230	230.00	6	1.0183	234.22
6500	FRONTDOM	230.00	6	1.0290	236.66	6590	24DIC230	230.00	6	1.0117	232.69
6680	BFRIO230	230.00	6	1.0192	234.42	6690	DOM230	230.00	6	1.0299	236.89
6691	ALTO230	230.00	6	1.0322	237.42	6695	PANDO230	230.00	6	1.0325	237.48
6698	MLIRIO230	230.00	6	1.0324	237.45	6790	SMA230	230.00	6	1.0109	232.51
6840	BUR230	230.00	6	1.0199	234.59	6880	CHAII230	230.00	6	1.0123	232.82

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	0.9937	228.56	6005	CHO230	230.00	6	0.9819	225.83
6011	MDN230	230.00	6	1.0000	229.99	6105	PAM230	230.00	6	0.9819	225.83
6178	EST230	230.00	6	0.9967	229.23	6179	GUA230	230.00	6	0.9968	229.26
6182	VEL230	230.00	6	0.9967	229.23	6240	LGU 230	230.00	6	0.9924	228.26
6760	SBA230	230.00	6	0.9989	229.74	6860	BBL230	230.00	6	0.9972	229.36
6870	TABII230	230.00	6	0.9976	229.44						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 8:28
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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)
6002	PAN115	115.00	6	1.0225	117.58	6004	PANII115	115.00	6	1.0161	116.86
6009	LSA115	115.00	6	1.0243	117.80	6012	MDN115	115.00	6	1.0077	115.89
6015	PRO115	115.00	6	1.0113	116.30	6018	CAC115	115.00	6	1.0219	117.52
6019	CVI115A	115.00	6	1.0097	116.12	6024	CHI115	115.00	6	1.0089	116.02
6027	LOC115A	115.00	6	1.0128	116.47	6032	MAR115A	115.00	6	1.0101	116.17
6036	SMA115	115.00	6	1.0213	117.45	6040	SFR115	115.00	6	1.0088	116.01
6047	CLA115	115.00	6	1.0038	115.43	6055	MOS115B	115.00	6	1.0196	117.26
6057	TOC115	115.00	6	1.0134	116.54	6059	LM1115	115.00	6	1.0131	116.51
6060	LM2115	115.00	6	1.0133	116.53	6066	FFIELD	115.00	6	1.0063	115.73
6074	LMDIST	115.00	6	1.0132	116.52	6087	CAL115	115.00	6	1.0121	116.39
6088	LES115	115.00	6	1.0148	116.70	6092	LVA115	115.00	6	1.0122	116.40
6123	MIR115	115.00	7	1.0322	118.70	6170	CPA115	115.00	6	1.0153	116.76
6173	STR115	115.00	6	1.0150	116.72	6174	PM115-1A	115.00	6	1.0185	117.13
6175	PM115-2A	115.00	6	1.0185	117.13	6210	TIN115	115.00	6	1.0181	117.09
6211	PM115-9	115.00	6	1.0189	117.17	6230	CBA115	115.00	6	1.0110	116.27
6261	CHA 115	115.00	6	1.0048	115.56	6270	CAT 115	115.00	6	1.0132	116.52
6280	GIR 115	115.00	6	1.0153	116.76	6290	CATII 11	115.00	6	1.0133	116.53
6331	BAI115	115.00	6	1.0025	115.29	6332	BAM115	115.00	6	1.0055	115.64
6350	PM115-8	115.00	6	1.0163	116.87	6550	CHAZ115	115.00	6	1.0113	116.30
6580	LBO115	115.00	6	1.0092	116.06						

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)
6006	CHO115	115.00	6	0.9647	110.94						

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     PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E      FRI, MAY 20 2011   8:28
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 INTERCONEXIÓN COL-PAN - 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):

 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    60.0    62.5    95.9    --      --      --      --
   6092 LVA115      115.00*    6 3WNDTR TRAFO1       WND 1     6  T1    53.0    54.0    98.1    --      --      --      --

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     PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E      FRI, MAY 20 2011   8:28
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 INTERCONEXIÓN COL-PAN - 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):

 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 *
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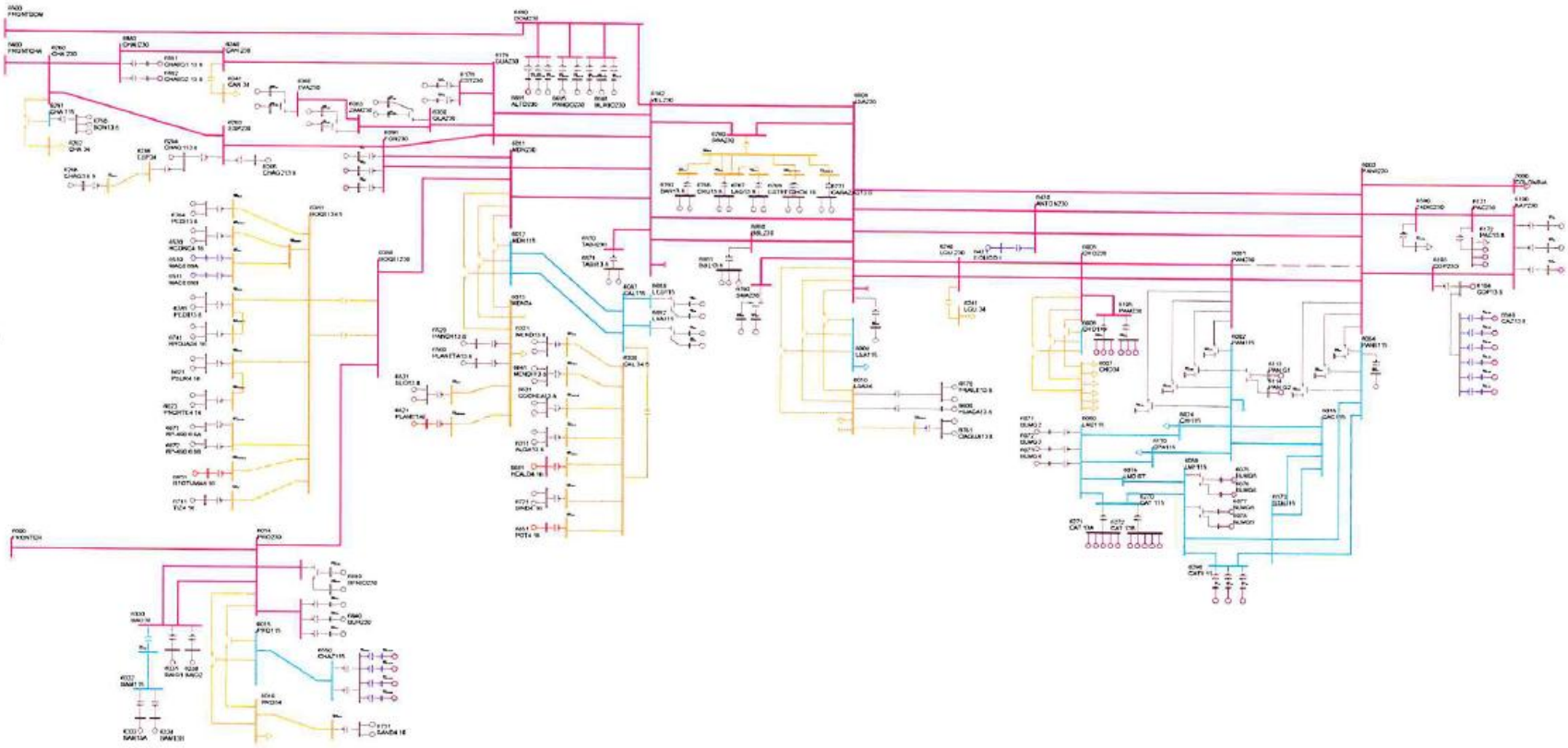
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 8:28
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 IN MW/MVAR

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- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	953.0	1179.4	0.0	0.0	0.0	0.0	22.7	-249.1	-249.1	-249.1
GUATEMAL	226.3	340.6	221.2	0.0	0.0	605.1	260.4	9.2	9.2	
2	1140.7	1104.0	0.0	0.0	0.0	0.0	36.7	0.0	0.0	0.0
SALVADOR	291.4	367.1	-181.3	0.0	0.0	241.8	315.1	32.2	32.2	
3	1237.6	1205.2	0.0	0.0	0.0	0.0	32.4	0.0	0.0	0.0
HONDURAS	380.3	395.2	-20.4	0.0	0.0	471.1	442.8	33.6	33.6	
4	477.4	459.0	0.0	0.0	0.0	0.0	18.3	0.0	0.0	0.0
NICARAGU	-28.1	181.0	-12.8	0.0	0.0	290.3	169.4	-75.4	-75.4	
5	1519.7	1489.7	0.0	0.0	0.0	0.0	30.1	-0.1	-0.1	0.0
COSTA RI	248.4	558.4	-226.8	0.0	0.0	556.6	425.9	47.5	47.5	
6	1747.0	1598.2	0.0	0.0	0.0	0.0	114.4	34.4	34.4	34.2
PANAMA	558.1	280.0	-211.0	0.0	0.0	560.9	1127.7	-77.6	-77.6	
7	117.3	53.2	0.0	0.0	0.0	0.0	4.1	60.0	60.0	60.0
ACANAL	19.7	9.3	-15.9	0.0	0.0	0.0	17.9	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	
11	0.0	-154.9	0.0	0.0	0.0	0.0	0.0	154.9	154.9	154.9
COLOMBIA	0.0	-22.1	0.0	0.0	0.0	0.0	0.0	22.1	22.1	
COLUMN	7192.6	6933.9	0.0	0.0	0.0	0.0	258.6	0.0	0.0	0.0
TOTALS	1696.0	2109.6	-447.0	0.0	0.0	2725.8	2759.3	0.0	0.0	

1980

Contingencia 1: Panamá – Panamá II



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 8:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT1

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	0.9813	47.0			62	6
6072	BLMG3	13.800	V3	38.0	7.5	15.0	0.0	1.0200	38.0	0.9813	47.0			62	6
6073	BLMG4	13.800	V4	38.0	7.7	15.0	0.0	1.0200	38.0	0.9801	47.0			62	6
6090	LESG1	13.800	E1	22.4	3.9	12.0	-5.0	1.0000	22.8	0.9854	27.0			64	6
6091	LESG2	13.800	E2	22.4	3.9	12.0	-5.0	1.0000	22.8	0.9854	27.0			64	6
6094	LVAG1	13.800	L1	26.0	-2.6	12.0	-5.0	1.0000	26.2	0.9949	27.0			64	6
6095	LVAG2	13.800	L2	26.0	-2.6	12.0	-5.0	1.0000	26.2	0.9949	27.0			64	6
6097	FORG1	13.800	F1	95.0	13.3	50.0	-50.0	1.0100	95.0	0.9904	111.0			64	6
6101	BAYG1	13.800	B1	68.9	17.2	30.0	-25.0	1.0200	69.6	0.9702	94.0			61	6
6102	BAYG2	13.800	B2	71.0	17.4	30.0	-25.0	1.0200	71.6	0.9713	94.0			61	6
6176	ESTG1	13.800	E1	57.0	10.8	29.0	-29.0	1.0000	58.0	0.9825	69.0			64	6
6177	ESTG2	13.800	E2	57.0	10.8	29.0	-29.0	1.0000	58.0	0.9825	69.0			64	6
6264	CHAG113.8	13.800	G1	99.6	-7.8	52.4	-48.9	0.9900	100.9	0.9970	116.5			64	6
6265	CHAG213.8	13.800	G2	99.6	-4.4	52.4	-48.9	0.9900	100.7	0.9990	116.5			64	6
6268	CHAG3 6.9	6.9000	G3	9.3	4.9	4.9	-4.1	0.9871	10.6	0.8852	10.9			64	6
6311	ALGA13.8	13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9754	5.7			64	6
6311	ALGA13.8	13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9754	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	1.3	10.0	-10.0	1.0000	26.6	0.9989	30.0			64	6
6334	BAM13B	13.800	G2	26.6	1.3	10.0	-10.0	1.0000	26.6	0.9989	30.0			64	6
6335	BAIG1	13.800	G1	42.1	-10.3	14.0	-14.0	1.0000	43.4	0.9716	49.0			64	6
6336	BAIG2	13.800	G2	42.1	-10.3	14.0	-14.0	1.0000	43.4	0.9716	49.0			64	6
6361	GLA13A	13.800	G1	12.1	-1.2	7.8	-7.0	1.0000	12.1	0.9951	14.1			64	6
6362	GLA13B	13.800	G2	12.1	-1.2	7.8	-7.0	1.0000	12.1	0.9951	14.1			64	6
6364	LOR13A	13.800	G1	16.1	-4.8	7.8	-7.0	1.0000	16.7	0.9586	25.0			64	6
6365	LOR13B	13.800	G2	16.1	-4.8	7.8	-7.0	1.0000	16.7	0.9586	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-6.5	8.0	-8.0	1.0000	27.4	0.9717	33.0			64	6
6368	PRU13B	13.800	G2	26.6	-6.5	8.0	-8.0	1.0000	27.4	0.9717	33.0			64	6
6384	PEDI13.8	13.800	G1	9.5	2.3	4.9	-4.9	1.0100	9.7	0.9717	12.5			64	6
6384	PEDI13.8	13.800	G2	9.5	2.3	4.9	-4.9	1.0100	9.7	0.9717	12.5			64	6
6385	PEDII13.8	13.800	G1	6.2	0.2	3.2	-3.6	1.0000	6.2	0.9996	7.5			64	6
6385	PEDII13.8	13.800	G2	6.2	0.2	3.2	-3.6	1.0000	6.2	0.9996	7.5			64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0177	59.9	0.9850	152.3			63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0079	1.6	0.9985	2.1			64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0079	1.6	0.9985	2.1			64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9596	5.4	0.9216	6.2			64	6

6530	HCONC4.16	4.2000	G1	4.8	-1.1	2.5	-2.5	1.0000	4.9	0.9745	5.6	6
6530	HCONC4.16	4.2000	G2	4.8	-1.1	2.5	-2.5	1.0000	4.9	0.9745	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9596	4.9	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9770	2.9	0.9122	3.0	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9770	2.9	0.9122	3.0	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9770	5.4	0.9084	5.5	6
6621	PSUR4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9837	5.6	6
6621	PSUR4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9837	5.6	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.6	2.5	-2.5	1.0000	5.0	0.9487	5.6	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.6	2.5	-2.5	1.0000	5.0	0.9487	5.6	6
6631	COCHEA13.8	13.800	G1	6.4	-0.8	3.7	-3.7	1.0000	6.4	0.9913	8.4	6
6631	COCHEA13.8	13.800	G2	6.4	-0.8	3.7	-3.7	1.0000	6.4	0.9913	8.4	6
6641	MENDII13.8	13.800	G1	3.3	-0.1	1.9	-1.9	1.0000	3.3	0.9999	4.1	6
6641	MENDII13.8	13.800	G2	3.3	-0.1	1.9	-1.9	1.0000	3.3	0.9999	4.1	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.2	2.5	-2.5	1.0000	4.9	0.9699	5.6	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0227	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	0.9965	7.5	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.6	2.3	-2.6	1.0000	6.8	0.9965	7.5	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0075	27.6	0.9576	33.0	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0075	27.6	0.9576	33.0	6
6692	ALTO13A	13.800	G1	20.3	4.2	9.9	-9.9	1.0100	20.6	0.9793	24.9	6
6693	ALTO13B	13.800	G2	20.3	-9.5	9.9	-9.9	1.0000	22.5	0.9058	24.9	6
6696	PANDO13A	13.800	G1	15.8	5.2	12.8	-8.3	1.0100	16.5	0.9502	18.5	6
6697	PANDO13B	13.800	G2	15.8	5.2	12.8	-8.3	1.0100	16.5	0.9502	18.5	6
6699	MLIRIO13A	13.800	G1	15.8	5.4	12.8	-8.3	1.0100	16.5	0.9466	18.5	6
6700	MLIRIO13B	13.800	G2	15.8	5.4	12.8	-8.3	1.0100	16.5	0.9466	18.5	6
6701	MLIRIO13C	13.800	G3	15.8	5.4	12.8	-8.3	1.0100	16.5	0.9466	18.5	6
6711	TIZ4.16	4.2000	G1	4.4	1.3	2.3	-2.3	1.0000	4.6	0.9593	5.2	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0212	4.8	0.8622	5.6	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0212	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	0.8892	5.0	6
6731	SAND4.16	4.2000	G2	4.3	-2.2	2.2	-2.2	1.0000	4.8	0.8892	5.0	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.3	2.1	-2.1	1.0000	4.3	0.9544	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.3	2.1	-2.1	1.0000	4.3	0.9544	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	3.0	4.0	-4.0	1.0000	7.8	0.9205	9.0	6
6763	BAR13.8	13.800	G2	7.2	3.0	4.0	-4.0	1.0000	7.8	0.9205	9.0	6
6765	CRU13.8	13.800	G1	4.6	1.5	2.6	-2.6	1.0000	4.8	0.9524	5.8	6
6765	CRU13.8	13.800	G2	4.6	1.5	2.6	-2.6	1.0000	4.8	0.9524	5.8	6
6767	LAG13.8	13.800	G1	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9753	5.8	6
6767	LAG13.8	13.800	G2	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9753	5.8	6

6769	ESTRECHO4.164.2000	G1	4.9	1.3	2.5	-2.5	1.0000	5.1	0.9660	5.6		63	6
6769	ESTRECHO4.164.2000	G2	4.9	1.3	2.5	-2.5	1.0000	5.1	0.9660	5.6		63	6
6771	CAÑAZAS13.8	13.800 G1	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9292	3.3		63	6
6771	CAÑAZAS13.8	13.800 G2	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9292	3.3		63	6
6781	OAGUA13.8	13.800 G1	3.1	-0.4	1.6	-1.6	1.0000	3.1	0.9914	3.6		63	6
6781	OAGUA13.8	13.800 G2	3.1	-0.4	1.6	-1.6	1.0000	3.1	0.9914	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	293.1	300.0	-225.0	1.0650	275.2	0.0000	300.0		63	6
6821	PLANETAII	4.1600 G1	3.5	-1.8	1.8	-1.8	1.0055	4.0	0.8892	4.1		64	6
6831	SLO13.8	13.800 G1	4.0	2.1	2.1	-2.1	0.9870	4.5	0.8892	4.7		64	6
6831	SLO13.8	13.800 G2	4.0	2.1	2.1	-2.1	0.9870	4.5	0.8892	4.7		64	6
6841	BUR13A	13.800 G1	15.8	8.1	8.1	-8.1	0.9993	17.8	0.8892	18.5		64	6
6842	BUR13B	13.800 G2	15.8	8.1	8.1	-8.1	0.9993	17.8	0.8892	18.5		64	6
6843	BUR13C	13.800 G3	15.8	8.1	8.1	-8.1	0.9993	17.8	0.8892	18.5		64	6
6851	POT4.16	4.1600 G1	3.5	-2.0	2.0	-2.0	1.0227	4.0	0.8678	4.6		64	6
6861	BBL13.8	13.800 G1	8.6	4.0	4.0	-3.0	0.9743	9.7	0.9059	10.1		64	6
6861	BBL13.8	13.800 G2	8.6	4.0	4.0	-3.0	0.9743	9.7	0.9059	10.1		64	6
6861	BBL13.8	13.800 G3	1.8	0.8	0.8	-0.6	0.9743	2.0	0.9058	2.1		64	6
6871	TABII13.8	13.800 G1	16.4	1.1	9.0	-9.0	1.0000	16.4	0.9976	20.5		64	6
6871	TABII13.8	13.800 G2	16.4	1.1	9.0	-9.0	1.0000	16.4	0.9976	20.5		64	6
6881	CHAIIG1 13.81	3.800 G1	101.7	9.6	52.3	-52.3	1.0100	101.1	0.9956	118.9		64	6
6900	SVC-LV	13.200 1	0.0	192.6	300.0	-225.0	1.0494	183.6	0.0000	300.0		61	6
SUBSYSTEM TOTALS			1750.1	577.2	1431.8	-1162.9				2867.2			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 8:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 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	1.6	8.0	0.0	1.0100	17.0	0.9955	27.7			65	7
6128	MIR13C	12.000	G3	20.9	8.8	11.0	0.0	1.0100	22.5	0.9212	29.4			65	7
6129	MIR13D	13.800	G4	28.0	10.8	15.0	0.0	1.0100	29.7	0.9332	44.1			65	7
6130	MIR13F	13.800	G5	17.1	2.4	8.0	0.0	1.0100	17.1	0.9902	27.7			65	7
6134	MAD6A	6.9000	G1	11.4	0.6	6.0	-6.0	1.0100	11.3	0.9988	13.0			65	7
6135	MAD6B	6.9000	G2	11.4	0.6	6.0	-6.0	1.0100	11.3	0.9987	13.0			65	7
6136	MAD6C	6.9000	G3	11.4	0.6	6.0	-6.0	1.0100	11.3	0.9987	13.0			65	7
SUBSYSTEM TOTALS				117.3	25.4	60.0	-18.0				167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 8:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT1

BUSES WITH VOLTAGE 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	234.25	6003	PANII230	230.00	6	1.0100	232.30
6008	LSA230	230.00	6	1.0100	232.30	6014	PRO230	230.00	6	1.0166	233.81
6096	FOR230	230.00	6	1.0009	230.21	6100	BAY230	230.00	6	1.0272	236.26
6103	COP23O	230.00	6	1.0131	233.00	6171	PAC230	230.00	6	1.0141	233.25
6260	CHA 230	230.00	6	1.0123	232.83	6263	ESP230	230.00	6	1.0108	232.48
6330	BAI230	230.00	6	1.0155	233.56	6340	CAN 230	230.00	6	1.0024	230.55
6360	GLA230	230.00	6	1.0018	230.42	6363	ZAM230	230.00	6	1.0069	231.59
6366	EVA230	230.00	6	1.0097	232.24	6380	BOQIII 230	230.00	6	1.0084	231.94
6400	FRONTCHA	230.00	6	1.0132	233.03	6430	ANTON230	230.00	6	1.0187	234.31
6500	FRONTDOM	230.00	6	1.0290	236.66	6590	24DIC230	230.00	6	1.0117	232.69
6680	BFRIO230	230.00	6	1.0192	234.42	6690	DOM230	230.00	6	1.0299	236.89
6691	ALTO230	230.00	6	1.0322	237.42	6695	PANDO230	230.00	6	1.0325	237.48
6698	MLIRIO230	230.00	6	1.0324	237.45	6790	SMA230	230.00	6	1.0109	232.51
6840	BUR230	230.00	6	1.0199	234.59	6880	CHAII230	230.00	6	1.0123	232.82

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	0.9809	225.61	6005	CHO230	230.00	6	0.9710	223.33
6011	MDN230	230.00	6	1.0000	229.99	6105	PAM230	230.00	6	0.9710	223.33
6178	EST230	230.00	6	0.9967	229.23	6179	GUA230	230.00	6	0.9968	229.26
6182	VEL230	230.00	6	0.9967	229.23	6240	LGU 230	230.00	6	0.9874	227.10
6760	SBA230	230.00	6	0.9989	229.74	6860	BBL230	230.00	6	0.9972	229.36
6870	TABII230	230.00	6	0.9976	229.44						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 8:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT1

BUSES WITH VOLTAGE 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	1.0107	116.23	6004	PANII115	115.00	6	1.0126	116.45
6009	LSA115	115.00	6	1.0243	117.80	6012	MDN115	115.00	6	1.0077	115.89
6015	PRO115	115.00	6	1.0113	116.30	6018	CAC115	115.00	6	1.0103	116.18
6019	CVI115A	115.00	6	1.0037	115.42	6027	LOC115A	115.00	6	1.0015	115.18
6036	SMA115	115.00	6	1.0095	116.09	6055	MOS115B	115.00	6	1.0077	115.89
6057	TOC115	115.00	6	1.0099	116.13	6059	LM1115	115.00	6	1.0070	115.80
6060	LM2115	115.00	6	1.0071	115.82	6066	FFIELD	115.00	6	1.0004	115.05
6074	LMDIST	115.00	6	1.0071	115.81	6087	CAL115	115.00	6	1.0121	116.39
6088	LES115	115.00	6	1.0148	116.70	6092	LVA115	115.00	6	1.0122	116.40
6123	MIR115	115.00	7	1.0221	117.55	6170	CPA115	115.00	6	1.0075	115.86
6173	STR115	115.00	6	1.0085	115.98	6174	PM115-1A	115.00	6	1.0098	116.13
6175	PM115-2A	115.00	6	1.0098	116.13	6210	TIN115	115.00	6	1.0062	115.72
6211	PM115-9	115.00	6	1.0069	115.80	6261	CHA 115	115.00	6	1.0048	115.56
6270	CAT 115	115.00	6	1.0071	115.81	6280	GIR 115	115.00	6	1.0075	115.86
6290	CATII 11	115.00	6	1.0071	115.82	6331	BAI115	115.00	6	1.0025	115.29
6332	BAM115	115.00	6	1.0055	115.64	6350	PM115-8	115.00	6	1.0046	115.53
6550	CHAZ115	115.00	6	1.0113	116.30	6580	LBO115	115.00	6	1.0031	115.36

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)
6006	CHO115	115.00	6	0.9535	109.65	6024	CHI115	115.00	6	0.9993	114.92
6032	MAR115A	115.00	6	0.9985	114.83	6040	SFR115	115.00	6	0.9983	114.80
6047	CLA115	115.00	6	0.9941	114.32	6230	CBA115	115.00	6	1.0000	115.00

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 8:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 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#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6001	PAN230	230.00*	6	6003	PANII230	230.00	6	2B	428.2	350.0	122.3	450.0	95.2	--	--
6087	CAL115	115.00*	6	6300	CAL 34.5	34.500	6	T1	60.0	62.5	95.9	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAFO1	WND 1	6	T1	53.0	54.0	98.1	--	--	--	--

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 8:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 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#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

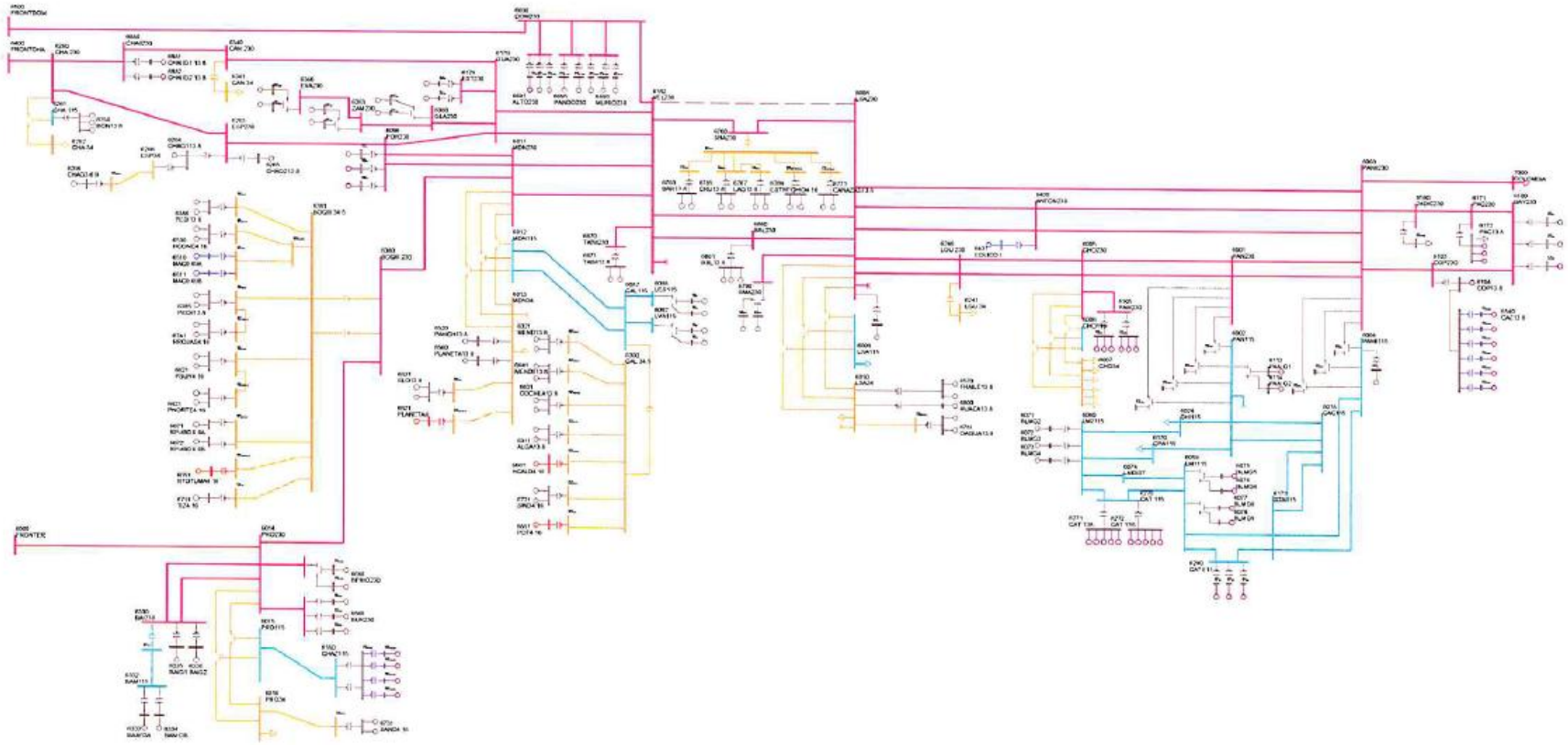
* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 8:54
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT1 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- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	953.0	1179.4	0.0	0.0	0.0	0.0	22.7	-249.1	-249.1	-249.1
GUATEMAL	226.3	340.6	221.2	0.0	0.0	605.1	260.4	9.2	9.2	
2	1140.7	1104.0	0.0	0.0	0.0	0.0	36.7	0.0	0.0	0.0
SALVADOR	291.4	367.1	-181.3	0.0	0.0	241.8	315.1	32.2	32.2	
3	1237.6	1205.2	0.0	0.0	0.0	0.0	32.4	0.0	0.0	0.0
HONDURAS	380.3	395.2	-20.4	0.0	0.0	471.1	442.8	33.6	33.6	
4	477.4	459.0	0.0	0.0	0.0	0.0	18.3	0.0	0.0	0.0
NICARAGU	-28.1	181.0	-12.8	0.0	0.0	290.3	169.4	-75.4	-75.4	
5	1519.7	1489.7	0.0	0.0	0.0	0.0	30.1	-0.1	-0.1	0.0
COSTA RI	248.4	558.4	-226.8	0.0	0.0	556.6	425.9	47.5	47.5	
6	1750.1	1598.2	0.0	0.0	0.0	0.0	117.4	34.5	34.5	34.2
PANAMA	577.2	280.0	-206.6	0.0	0.0	557.0	1143.5	-82.7	-82.7	
7	117.3	53.2	0.0	0.0	0.0	0.0	4.2	59.9	59.9	60.0
ACANAL	25.4	9.3	-15.8	0.0	0.0	0.0	18.4	13.5	13.5	
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	
11	0.0	-154.9	0.0	0.0	0.0	0.0	0.0	154.9	154.9	154.9
COLOMBIA	0.0	-22.1	0.0	0.0	0.0	0.0	0.0	22.1	22.1	
COLUMN	7195.7	6933.9	0.0	0.0	0.0	0.0	261.7	0.0	0.0	0.0
TOTALS	1720.8	2109.6	-442.4	0.0	0.0	2721.9	2775.6	0.0	0.0	

1988

Contingencia 21: Llano Sánchez – Veladero (230-15)



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:05
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT21

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	4.2	15.0	0.0	1.0200	37.5	0.9938	47.0			62	6
6072	BLMG3	13.800	V3	38.0	4.2	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	0.9801	27.0			64	6
6091	LESG2	13.800	E2	22.4	4.5	12.0	-5.0	1.0000	22.9	0.9801	27.0			64	6
6094	LVAG1	13.800	L1	26.0	-1.9	12.0	-5.0	1.0000	26.1	0.9973	27.0			64	6
6095	LVAG2	13.800	L2	26.0	-1.9	12.0	-5.0	1.0000	26.1	0.9973	27.0			64	6
6097	FORG1	13.800	F1	95.0	17.4	50.0	-50.0	1.0100	95.6	0.9836	111.0			64	6
6101	BAYG1	13.800	B1	78.0	17.8	30.0	-25.0	1.0200	78.4	0.9748	94.0			61	6
6102	BAYG2	13.800	B2	78.0	17.8	30.0	-25.0	1.0200	78.4	0.9748	94.0			61	6
6176	ESTG1	13.800	E1	57.0	11.6	29.0	-29.0	1.0000	58.2	0.9798	69.0			64	6
6177	ESTG2	13.800	E2	57.0	11.6	29.0	-29.0	1.0000	58.2	0.9798	69.0			64	6
6264	CHAG113.8	13.800	G1	99.6	-6.4	52.4	-48.9	0.9900	100.8	0.9979	116.5			64	6
6265	CHAG213.8	13.800	G2	99.6	-3.0	52.4	-48.9	0.9900	100.7	0.9995	116.5			64	6
6268	CHAG3 6.9	6.9000	G3	9.3	4.9	4.9	-4.1	0.9871	10.6	0.8852	10.9			64	6
6311	ALGA13.8	13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9745	5.7			64	6
6311	ALGA13.8	13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9745	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	1.4	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	-9.0	14.0	-14.0	1.0000	43.1	0.9778	49.0			64	6
6336	BAIG2	13.800	G2	42.1	-9.0	14.0	-14.0	1.0000	43.1	0.9778	49.0			64	6
6361	GLA13A	13.800	G1	12.1	1.7	7.8	-7.0	1.0000	12.2	0.9896	14.1			64	6
6362	GLA13B	13.800	G2	12.1	1.7	7.8	-7.0	1.0000	12.2	0.9896	14.1			64	6
6364	LOR13A	13.800	G1	16.1	-2.1	7.8	-7.0	1.0000	16.2	0.9912	25.0			64	6
6365	LOR13B	13.800	G2	16.1	-2.1	7.8	-7.0	1.0000	16.2	0.9912	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-4.0	8.0	-8.0	1.0000	26.9	0.9890	33.0			64	6
6368	PRU13B	13.800	G2	26.6	-4.0	8.0	-8.0	1.0000	26.9	0.9890	33.0			64	6
6384	PEDI13.8	13.800	G1	9.5	2.5	4.9	-4.9	1.0100	9.7	0.9682	12.5			64	6
6384	PEDI13.8	13.800	G2	9.5	2.5	4.9	-4.9	1.0100	9.7	0.9682	12.5			64	6
6385	PEDII13.8	13.800	G1	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9989	7.5			64	6
6385	PEDII13.8	13.800	G2	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9989	7.5			64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0123	60.2	0.9850	152.3			63	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	0.9556	5.4	0.9216	6.2			64	6

6530	HCONC4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9821	5.6	6
6530	HCONC4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9821	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9556	4.9	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9722	2.9	0.9122	3.0	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9722	2.9	0.9122	3.0	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9721	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	0.9902	5.6	6
6621	PSUR4.16	4.2000	G2	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9902	5.6	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9570	5.6	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9570	5.6	6
6631	COCHEA13.8	13.800	G1	6.4	-0.6	3.7	-3.7	1.0000	6.4	0.9951	8.4	6
6631	COCHEA13.8	13.800	G2	6.4	-0.6	3.7	-3.7	1.0000	6.4	0.9951	8.4	6
6641	MENDII13.8	13.800	G1	3.3	0.2	1.9	-1.9	1.0000	3.3	0.9985	4.1	6
6641	MENDII13.8	13.800	G2	3.3	0.2	1.9	-1.9	1.0000	3.3	0.9985	4.1	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.7	2.5	-2.5	1.0000	5.1	0.9404	5.6	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0223	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	1.0054	27.6	0.9576	33.0	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0054	27.6	0.9576	33.0	6
6692	ALTO13A	13.800	G1	20.3	5.6	9.9	-9.9	1.0100	20.9	0.9642	24.9	6
6693	ALTO13B	13.800	G2	20.3	-8.1	9.9	-9.9	1.0000	21.9	0.9284	24.9	6
6696	PANDO13A	13.800	G1	15.8	6.5	12.8	-8.3	1.0100	16.9	0.9248	18.5	6
6697	PANDO13B	13.800	G2	15.8	6.5	12.8	-8.3	1.0100	16.9	0.9248	18.5	6
6699	MLIRIO13A	13.800	G1	15.8	6.7	12.8	-8.3	1.0100	17.0	0.9205	18.5	6
6700	MLIRIO13B	13.800	G2	15.8	6.7	12.8	-8.3	1.0100	17.0	0.9205	18.5	6
6701	MLIRIO13C	13.800	G3	15.8	6.7	12.8	-8.3	1.0100	17.0	0.9205	18.5	6
6711	TIZ4.16	4.2000	G1	4.4	1.8	2.3	-2.3	1.0000	4.8	0.9241	5.2	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0208	4.8	0.8622	5.6	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0208	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	0.9164	5.0	6
6731	SAND4.16	4.2000	G2	4.3	-1.9	2.2	-2.2	1.0000	4.7	0.9164	5.0	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9600	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9600	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	0.8785	9.0	6
6763	BAR13.8	13.800	G2	7.2	3.9	4.0	-4.0	1.0000	8.2	0.8785	9.0	6
6765	CRU13.8	13.800	G1	4.6	2.0	2.6	-2.6	1.0000	5.0	0.9192	5.8	6
6765	CRU13.8	13.800	G2	4.6	2.0	2.6	-2.6	1.0000	5.0	0.9192	5.8	6
6767	LAG13.8	13.800	G1	4.7	1.5	2.6	-2.6	1.0000	4.9	0.9515	5.8	6
6767	LAG13.8	13.800	G2	4.7	1.5	2.6	-2.6	1.0000	4.9	0.9515	5.8	6

6769	ESTRECHO4.164.2000	G1	4.9	1.8	2.5	-2.5	1.0000	5.3	0.9391	5.6		63	6
6769	ESTRECHO4.164.2000	G2	4.9	1.8	2.5	-2.5	1.0000	5.3	0.9391	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	0.9985	3.5	0.8897	3.6		63	6
6781	OAGUA13.8	13.800 G2	3.1	1.6	1.6	-1.6	0.9985	3.5	0.8897	3.6		63	6
6791	SMA13A	13.800 G1	12.2	-0.7	6.2	-6.2	1.0000	12.2	0.9985	14.2		63	6
6792	SMA13B	13.800 G2	12.2	-0.7	6.2	-6.2	1.0000	12.2	0.9985	14.2		63	6
6810	SVC-LV	13.200 1	0.0	300.0	300.0	-225.0	1.0566	283.9	0.0000	300.0		63	6
6821	PLANETAII	4.1600 G1	3.5	-1.8	1.8	-1.8	1.0013	4.0	0.8892	4.1		64	6
6831	SLO13.8	13.800 G1	4.0	2.1	2.1	-2.1	0.9830	4.6	0.8892	4.7		64	6
6831	SLO13.8	13.800 G2	4.0	2.1	2.1	-2.1	0.9830	4.6	0.8892	4.7		64	6
6841	BUR13A	13.800 G1	15.8	8.1	8.1	-8.1	0.9974	17.9	0.8892	18.5		64	6
6842	BUR13B	13.800 G2	15.8	8.1	8.1	-8.1	0.9974	17.9	0.8892	18.5		64	6
6843	BUR13C	13.800 G3	15.8	8.1	8.1	-8.1	0.9974	17.9	0.8892	18.5		64	6
6851	POT4.16	4.1600 G1	3.5	-2.0	2.0	-2.0	1.0223	4.0	0.8678	4.6		64	6
6861	BBL13.8	13.800 G1	8.6	4.0	4.0	-3.0	0.9599	9.9	0.9059	10.1		64	6
6861	BBL13.8	13.800 G2	8.6	4.0	4.0	-3.0	0.9599	9.9	0.9059	10.1		64	6
6861	BBL13.8	13.800 G3	1.8	0.8	0.8	-0.6	0.9599	2.1	0.9058	2.1		64	6
6871	TABII13.8	13.800 G1	16.4	3.9	9.0	-9.0	1.0000	16.8	0.9733	20.5		64	6
6871	TABII13.8	13.800 G2	16.4	3.9	9.0	-9.0	1.0000	16.8	0.9733	20.5		64	6
6881	CHAIIG1 13.81	3.800 G1	101.7	11.1	52.3	-52.3	1.0100	101.2	0.9941	118.9		64	6
6900	SVC-LV	13.200 1	0.0	231.5	300.0	-225.0	1.0633	217.7	0.0000	300.0		61	6
SUBSYSTEM TOTALS			1766.1	686.0	1431.8	-1162.9				2867.2			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:05
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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	0.4	8.0	0.0	1.0100	16.9	0.9998	27.7			65	7
6128	MIR13C	12.000	G3	20.9	7.8	11.0	0.0	1.0100	22.1	0.9372	29.4			65	7
6129	MIR13D	13.800	G4	28.0	9.5	15.0	0.0	1.0100	29.2	0.9473	44.1			65	7
6130	MIR13F	13.800	G5	17.1	0.9	8.0	0.0	1.0100	17.0	0.9986	27.7			65	7
6134	MAD6A	6.9000	G1	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0			65	7
6135	MAD6B	6.9000	G2	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9995	13.0			65	7
6136	MAD6C	6.9000	G3	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9995	13.0			65	7
SUBSYSTEM TOTALS				117.3	19.5	60.0	-18.0				167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:05
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INTERC COL-PAN - 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	1.0167	233.83	6003	PANII230	230.00	6	1.0100	232.30
6014	PRO230	230.00	6	1.0146	233.35	6100	BAY230	230.00	6	1.0275	236.32
6103	COP23O	230.00	6	1.0131	233.01	6171	PAC230	230.00	6	1.0142	233.26
6260	CHA 230	230.00	6	1.0106	232.43	6263	ESP230	230.00	6	1.0090	232.06
6330	BAI230	230.00	6	1.0138	233.17	6363	ZAM230	230.00	6	1.0032	230.75
6366	EVA230	230.00	6	1.0062	231.44	6380	BOQIII 230	230.00	6	1.0050	231.15
6400	FRONTCHA	230.00	6	1.0116	232.67	6430	ANTON230	230.00	6	1.0133	233.06
6500	FRONTDOM	230.00	6	1.0278	236.40	6590	24DIC230	230.00	6	1.0117	232.69
6680	BFRIO230	230.00	6	1.0173	233.97	6690	DOM230	230.00	6	1.0288	236.63
6691	ALTO230	230.00	6	1.0312	237.18	6695	PANDO230	230.00	6	1.0318	237.32
6698	MLIRIO230	230.00	6	1.0317	237.29	6790	SMA230	230.00	6	1.0011	230.25
6840	BUR230	230.00	6	1.0180	234.13	6880	CHAII230	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	0.9934	228.49	6005	CHO230	230.00	6	0.9795	225.29
6008	LSA230	230.00	6	0.9998	229.96	6011	MDN230	230.00	6	0.9944	228.71
6096	FOR230	230.00	6	0.9964	229.17	6105	PAM230	230.00	6	0.9795	225.29
6178	EST230	230.00	6	0.9920	228.17	6179	GUA230	230.00	6	0.9921	228.19
6182	VEL230	230.00	6	0.9839	226.31	6240	LGU 230	230.00	6	0.9856	226.70
6340	CAN 230	230.00	6	0.9988	229.73	6360	GLA230	230.00	6	0.9977	229.47
6760	SBA230	230.00	6	0.9808	225.59	6860	BBL230	230.00	6	0.9824	225.94
6870	TABII230	230.00	6	0.9855	226.66						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:05
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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	1.0227	117.61	6004	PANII115	115.00	6	1.0197	117.27
6009	LSA115	115.00	6	1.0154	116.77	6012	MDN115	115.00	6	1.0035	115.41
6015	PRO115	115.00	6	1.0097	116.12	6018	CAC115	115.00	6	1.0222	117.55
6019	CVI115A	115.00	6	1.0124	116.43	6024	CHI115	115.00	6	1.0094	116.08
6027	LOC115A	115.00	6	1.0134	116.54	6032	MAR115A	115.00	6	1.0106	116.22
6036	SMA115	115.00	6	1.0216	117.48	6040	SFR115	115.00	6	1.0097	116.12
6047	CLA115	115.00	6	1.0043	115.49	6055	MOS115B	115.00	6	1.0199	117.29
6057	TOC115	115.00	6	1.0170	116.95	6059	LM1115	115.00	6	1.0140	116.61
6060	LM2115	115.00	6	1.0141	116.63	6066	FFIELD	115.00	6	1.0072	115.83
6074	LMDIST	115.00	6	1.0141	116.62	6087	CAL115	115.00	6	1.0096	116.11
6088	LES115	115.00	6	1.0126	116.45	6092	LVA115	115.00	6	1.0098	116.13
6123	MIR115	115.00	7	1.0324	118.73	6170	CPA115	115.00	6	1.0160	116.84
6173	STR115	115.00	6	1.0161	116.85	6174	PM115-1A	115.00	6	1.0192	117.21
6175	PM115-2A	115.00	6	1.0192	117.21	6210	TIN115	115.00	6	1.0184	117.12
6211	PM115-9	115.00	6	1.0191	117.20	6230	CBA115	115.00	6	1.0117	116.35
6261	CHA 115	115.00	6	1.0036	115.41	6270	CAT 115	115.00	6	1.0141	116.62
6280	GIR 115	115.00	6	1.0160	116.84	6290	CATII 11	115.00	6	1.0142	116.63
6331	BAI115	115.00	6	1.0012	115.14	6332	BAM115	115.00	6	1.0045	115.52
6350	PM115-8	115.00	6	1.0167	116.92	6550	CHAZ115	115.00	6	1.0097	116.12
6580	LBO115	115.00	6	1.0119	116.37						

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	0.9623	110.66						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:05
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6008	LSA230	230.00	6	6760	SBA230	230.00*	6	4A	370.4	314.0	118.0	450.0	82.3	--	--
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	TRAFO1	WND 1	6	T1	52.7	54.0	97.6	--	--	--	--
6182	VEL230	230.00*	6	6760	SBA230	230.00	6	4B	323.8	314.0	103.1	450.0	72.0	--	--

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:05
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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):

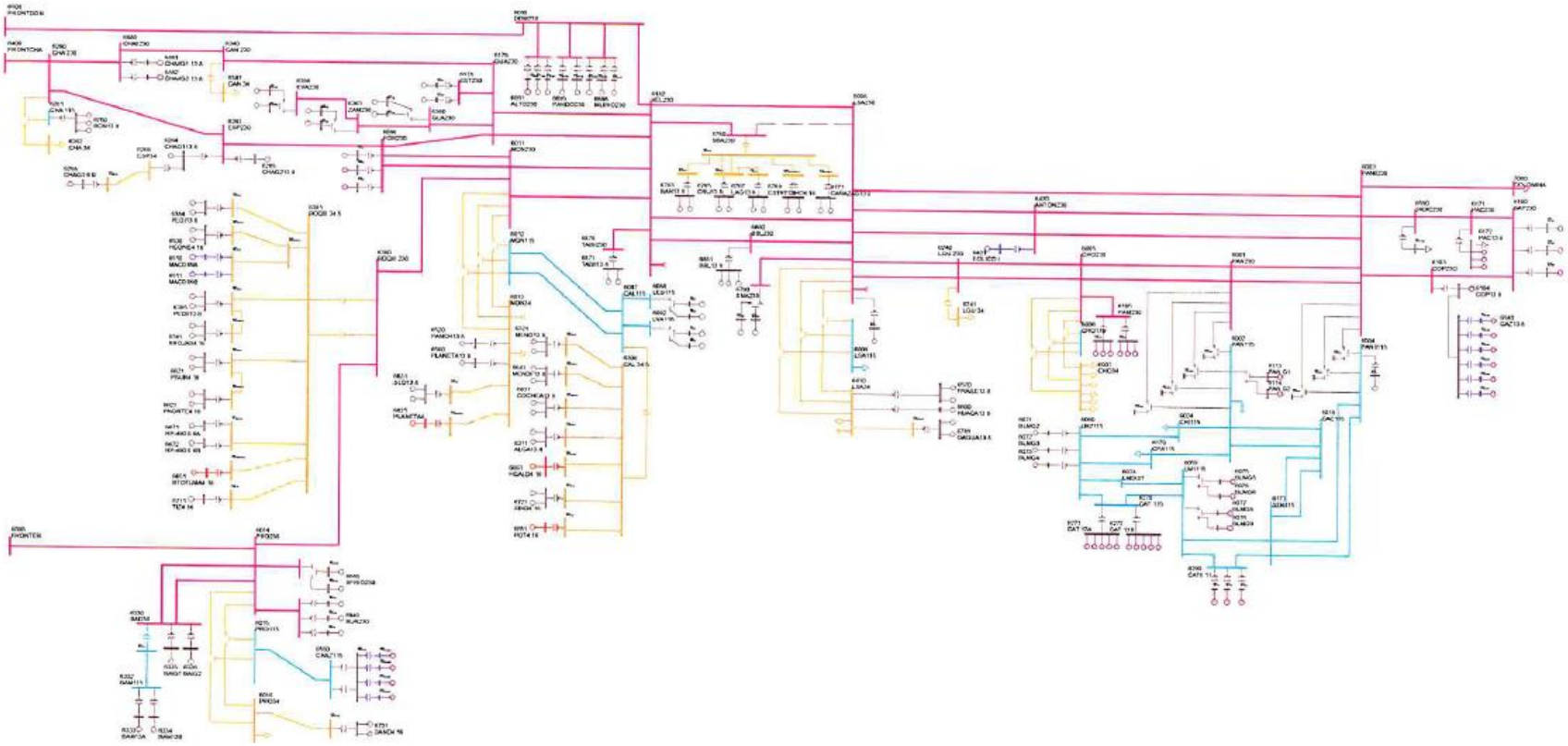
FROM BUS				TO BUS						RATING SET A		RATING SET B		RATING SET C	
BUS#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:05
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT21 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- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	953.0	1179.4	0.0	0.0	0.0	0.0	22.7	-249.1	-249.1	-249.1
GUATEMAL	226.3	340.6	221.2	0.0	0.0	605.1	260.4	9.2	9.2	
2	1140.7	1104.0	0.0	0.0	0.0	0.0	36.7	0.0	0.0	0.0
SALVADOR	291.4	367.1	-181.3	0.0	0.0	241.8	315.1	32.2	32.2	
3	1237.6	1205.2	0.0	0.0	0.0	0.0	32.4	0.0	0.0	0.0
HONDURAS	380.3	395.2	-20.4	0.0	0.0	471.1	442.8	33.6	33.6	
4	477.4	459.0	0.0	0.0	0.0	0.0	18.3	0.0	0.0	0.0
NICARAGU	-28.0	181.0	-12.8	0.0	0.0	290.3	169.4	-75.3	-75.3	
5	1519.7	1489.7	0.0	0.0	0.0	0.0	30.1	-0.1	-0.1	0.0
COSTA RI	251.6	558.4	-226.7	0.0	0.0	556.3	426.3	49.9	49.9	
6	1766.1	1598.2	0.0	0.0	0.0	0.0	133.5	34.4	34.4	34.2
PANAMA	686.0	280.0	-211.4	0.0	0.0	534.9	1232.2	-79.9	-79.9	
7	117.3	53.2	0.0	0.0	0.0	0.0	4.1	60.0	60.0	60.0
ACANAL	19.5	9.3	-15.9	0.0	0.0	0.0	17.9	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	
11	0.0	-154.9	0.0	0.0	0.0	0.0	0.0	154.9	154.9	154.9
COLOMBIA	0.0	-22.1	0.0	0.0	0.0	0.0	0.0	22.1	22.1	
COLUMN	7211.7	6933.9	0.0	0.0	0.0	0.0	277.8	0.0	0.0	0.0
TOTALS	1827.1	2109.6	-447.2	0.0	0.0	2699.4	2864.1	0.0	0.0	

Contingencia 22: Llano Sánchez – San Bartolo (230-4A)



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:10
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT22

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	4.2	15.0	0.0	1.0200	37.5	0.9940	47.0			62	6
6072	BLMG3	13.800	V3	38.0	4.2	15.0	0.0	1.0200	37.5	0.9940	47.0			62	6
6073	BLMG4	13.800	V4	38.0	4.2	15.0	0.0	1.0200	37.5	0.9939	47.0			62	6
6090	LESG1	13.800	E1	22.4	4.6	12.0	-5.0	1.0000	22.9	0.9798	27.0			64	6
6091	LESG2	13.800	E2	22.4	4.6	12.0	-5.0	1.0000	22.9	0.9798	27.0			64	6
6094	LVAG1	13.800	L1	26.0	-1.9	12.0	-5.0	1.0000	26.1	0.9974	27.0			64	6
6095	LVAG2	13.800	L2	26.0	-1.9	12.0	-5.0	1.0000	26.1	0.9974	27.0			64	6
6097	FORG1	13.800	F1	95.0	17.7	50.0	-50.0	1.0100	95.7	0.9831	111.0			64	6
6101	BAYG1	13.800	B1	79.2	17.9	30.0	-25.0	1.0200	79.6	0.9753	94.0			61	6
6102	BAYG2	13.800	B2	79.2	17.9	30.0	-25.0	1.0200	79.6	0.9753	94.0			61	6
6176	ESTG1	13.800	E1	57.0	11.7	29.0	-29.0	1.0000	58.2	0.9797	69.0			64	6
6177	ESTG2	13.800	E2	57.0	11.7	29.0	-29.0	1.0000	58.2	0.9797	69.0			64	6
6264	CHAG113.8	13.800	G1	99.6	-6.4	52.4	-48.9	0.9900	100.8	0.9980	116.5			64	6
6265	CHAG213.8	13.800	G2	99.6	-3.0	52.4	-48.9	0.9900	100.7	0.9996	116.5			64	6
6268	CHAG3 6.9	6.9000	G3	9.3	4.9	4.9	-4.1	0.9871	10.6	0.8852	10.9			64	6
6311	ALGA13.8	13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9745	5.7			64	6
6311	ALGA13.8	13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9745	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	1.4	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	-9.0	14.0	-14.0	1.0000	43.1	0.9782	49.0			64	6
6336	BAIG2	13.800	G2	42.1	-9.0	14.0	-14.0	1.0000	43.1	0.9782	49.0			64	6
6361	GLA13A	13.800	G1	12.1	1.9	7.8	-7.0	1.0000	12.2	0.9876	14.1			64	6
6362	GLA13B	13.800	G2	12.1	1.9	7.8	-7.0	1.0000	12.2	0.9876	14.1			64	6
6364	LOR13A	13.800	G1	16.1	-2.0	7.8	-7.0	1.0000	16.2	0.9924	25.0			64	6
6365	LOR13B	13.800	G2	16.1	-2.0	7.8	-7.0	1.0000	16.2	0.9924	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-3.8	8.0	-8.0	1.0000	26.9	0.9898	33.0			64	6
6368	PRU13B	13.800	G2	26.6	-3.8	8.0	-8.0	1.0000	26.9	0.9898	33.0			64	6
6384	PEDI13.8	13.800	G1	9.5	2.5	4.9	-4.9	1.0100	9.7	0.9680	12.5			64	6
6384	PEDI13.8	13.800	G2	9.5	2.5	4.9	-4.9	1.0100	9.7	0.9680	12.5			64	6
6385	PEDII13.8	13.800	G1	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9989	7.5			64	6
6385	PEDII13.8	13.800	G2	6.2	0.3	3.2	-3.6	1.0000	6.2	0.9989	7.5			64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0113	60.2	0.9850	152.3			63	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	0.9554	5.4	0.9216	6.2			64	6

6530	HCONC4.16	4.2000	G1	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9825	5.6	6
6530	HCONC4.16	4.2000	G2	4.8	-0.9	2.5	-2.5	1.0000	4.8	0.9825	5.6	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9554	4.9	0.9058	4.9	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9704	2.9	0.9122	3.0	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9704	2.9	0.9122	3.0	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9703	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	0.9905	5.6	6
6621	PSUR4.16	4.2000	G2	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9905	5.6	6
6623	PNORTE4.16	4.2000	G1	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9574	5.6	6
6623	PNORTE4.16	4.2000	G2	4.8	-1.4	2.5	-2.5	1.0000	5.0	0.9574	5.6	6
6631	COCHEA13.8	13.800	G1	6.4	-0.6	3.7	-3.7	1.0000	6.4	0.9953	8.4	6
6631	COCHEA13.8	13.800	G2	6.4	-0.6	3.7	-3.7	1.0000	6.4	0.9953	8.4	6
6641	MENDII13.8	13.800	G1	3.3	0.2	1.9	-1.9	1.0000	3.3	0.9983	4.1	6
6641	MENDII13.8	13.800	G2	3.3	0.2	1.9	-1.9	1.0000	3.3	0.9983	4.1	6
6651	BTOTUMA4.16	4.1600	G1	4.8	1.7	2.5	-2.5	1.0000	5.1	0.9385	5.6	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0223	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	0.9963	7.5	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	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0053	27.6	0.9576	33.0	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0053	27.6	0.9576	33.0	6
6692	ALTO13A	13.800	G1	20.3	5.7	9.9	-9.9	1.0100	20.9	0.9632	24.9	6
6693	ALTO13B	13.800	G2	20.3	-8.1	9.9	-9.9	1.0000	21.9	0.9296	24.9	6
6696	PANDO13A	13.800	G1	15.8	6.6	12.8	-8.3	1.0100	17.0	0.9232	18.5	6
6697	PANDO13B	13.800	G2	15.8	6.6	12.8	-8.3	1.0100	17.0	0.9232	18.5	6
6699	MLIRIO13A	13.800	G1	15.8	6.8	12.8	-8.3	1.0100	17.0	0.9189	18.5	6
6700	MLIRIO13B	13.800	G2	15.8	6.8	12.8	-8.3	1.0100	17.0	0.9189	18.5	6
6701	MLIRIO13C	13.800	G3	15.8	6.8	12.8	-8.3	1.0100	17.0	0.9189	18.5	6
6711	TIZ4.16	4.2000	G1	4.4	1.9	2.3	-2.3	1.0000	4.8	0.9219	5.2	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0207	4.8	0.8622	5.6	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0207	4.8	0.8622	5.6	6
6731	SAND4.16	4.2000	G1	4.3	-1.8	2.2	-2.2	1.0000	4.7	0.9179	5.0	6
6731	SAND4.16	4.2000	G2	4.3	-1.8	2.2	-2.2	1.0000	4.7	0.9179	5.0	6
6741	RROJAS4.16	4.2000	G1	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9603	4.8	6
6741	RROJAS4.16	4.2000	G2	4.1	-1.2	2.1	-2.1	1.0000	4.3	0.9603	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	3.5	4.0	-4.0	1.0000	8.0	0.9011	9.0	6
6763	BAR13.8	13.800	G2	7.2	3.5	4.0	-4.0	1.0000	8.0	0.9011	9.0	6
6765	CRU13.8	13.800	G1	4.6	1.7	2.6	-2.6	1.0000	4.9	0.9374	5.8	6
6765	CRU13.8	13.800	G2	4.6	1.7	2.6	-2.6	1.0000	4.9	0.9374	5.8	6
6767	LAG13.8	13.800	G1	4.7	1.3	2.6	-2.6	1.0000	4.8	0.9648	5.8	6
6767	LAG13.8	13.800	G2	4.7	1.3	2.6	-2.6	1.0000	4.8	0.9648	5.8	6

6769	ESTRECHO4.164.2000	G1	4.9	1.6	2.5	-2.5	1.0000	5.2	0.9540	5.6		63	6
6769	ESTRECHO4.164.2000	G2	4.9	1.6	2.5	-2.5	1.0000	5.2	0.9540	5.6		63	6
6771	CAÑAZAS13.8	13.800 G1	2.8	1.3	1.5	-1.5	1.0000	3.1	0.9047	3.3		63	6
6771	CAÑAZAS13.8	13.800 G2	2.8	1.3	1.5	-1.5	1.0000	3.1	0.9047	3.3		63	6
6781	OAGUA13.8	13.800 G1	3.1	1.6	1.6	-1.6	0.9966	3.5	0.8897	3.6		63	6
6781	OAGUA13.8	13.800 G2	3.1	1.6	1.6	-1.6	0.9966	3.5	0.8897	3.6		63	6
6791	SMA13A	13.800 G1	12.2	0.6	6.2	-6.2	1.0000	12.2	0.9987	14.2		63	6
6792	SMA13B	13.800 G2	12.2	0.6	6.2	-6.2	1.0000	12.2	0.9987	14.2		63	6
6810	SVC-LV	13.200 1	0.0	300.0	300.0	-225.0	1.0548	284.4	0.0000	300.0		63	6
6821	PLANETAII	4.1600 G1	3.5	-1.8	1.8	-1.8	1.0011	4.0	0.8892	4.1		64	6
6831	SLO13.8	13.800 G1	4.0	2.1	2.1	-2.1	0.9827	4.6	0.8892	4.7		64	6
6831	SLO13.8	13.800 G2	4.0	2.1	2.1	-2.1	0.9827	4.6	0.8892	4.7		64	6
6841	BUR13A	13.800 G1	15.8	8.1	8.1	-8.1	0.9973	17.9	0.8892	18.5		64	6
6842	BUR13B	13.800 G2	15.8	8.1	8.1	-8.1	0.9973	17.9	0.8892	18.5		64	6
6843	BUR13C	13.800 G3	15.8	8.1	8.1	-8.1	0.9973	17.9	0.8892	18.5		64	6
6851	POT4.16	4.1600 G1	3.5	-2.0	2.0	-2.0	1.0223	4.0	0.8678	4.6		64	6
6861	BBL13.8	13.800 G1	8.6	4.0	4.0	-3.0	0.9589	9.9	0.9059	10.1		64	6
6861	BBL13.8	13.800 G2	8.6	4.0	4.0	-3.0	0.9589	9.9	0.9059	10.1		64	6
6861	BBL13.8	13.800 G3	1.8	0.8	0.8	-0.6	0.9589	2.1	0.9058	2.1		64	6
6871	TABII13.8	13.800 G1	16.4	4.0	9.0	-9.0	1.0000	16.9	0.9712	20.5		64	6
6871	TABII13.8	13.800 G2	16.4	4.0	9.0	-9.0	1.0000	16.9	0.9712	20.5		64	6
6881	CHAIIG1 13.81	3.800 G1	101.7	11.2	52.3	-52.3	1.0100	101.2	0.9940	118.9		64	6
6900	SVC-LV	13.200 1	0.0	237.6	300.0	-225.0	1.0650	223.1	0.0000	300.0		61	6
SUBSYSTEM TOTALS			1768.5	694.9	1431.8	-1162.9				2867.2			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:10
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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	0.4	8.0	0.0	1.0100	16.9	0.9998	27.7			65	7
6128	MIR13C	12.000	G3	20.9	7.8	11.0	0.0	1.0100	22.1	0.9373	29.4			65	7
6129	MIR13D	13.800	G4	28.0	9.4	15.0	0.0	1.0100	29.2	0.9474	44.1			65	7
6130	MIR13F	13.800	G5	17.1	0.9	8.0	0.0	1.0100	17.0	0.9986	27.7			65	7
6134	MAD6A	6.9000	G1	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0			65	7
6135	MAD6B	6.9000	G2	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9996	13.0			65	7
6136	MAD6C	6.9000	G3	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9996	13.0			65	7
SUBSYSTEM TOTALS				117.3	19.4	60.0	-18.0				167.9				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:10
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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	1.0166	233.81	6003	PANII230	230.00	6	1.0100	232.30
6014	PRO230	230.00	6	1.0145	233.32	6100	BAY230	230.00	6	1.0275	236.33
6103	COP23O	230.00	6	1.0131	233.01	6171	PAC230	230.00	6	1.0142	233.26
6260	CHA 230	230.00	6	1.0105	232.41	6263	ESP230	230.00	6	1.0089	232.04
6330	BAI230	230.00	6	1.0137	233.15	6363	ZAM230	230.00	6	1.0030	230.70
6366	EVA230	230.00	6	1.0060	231.39	6380	BOQIII 230	230.00	6	1.0048	231.11
6400	FRONTCHA	230.00	6	1.0115	232.65	6430	ANTON230	230.00	6	1.0124	232.84
6500	FRONTDOM	230.00	6	1.0277	236.38	6590	24DIC230	230.00	6	1.0117	232.69
6680	BFRIO230	230.00	6	1.0171	233.94	6690	DOM230	230.00	6	1.0287	236.61
6691	ALTO230	230.00	6	1.0312	237.17	6695	PANDO230	230.00	6	1.0318	237.31
6698	MLIRIO230	230.00	6	1.0317	237.28	6840	BUR230	230.00	6	1.0178	234.10
6880	CHAII230	230.00	6	1.0102	232.34						

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	0.9934	228.48	6005	CHO230	230.00	6	0.9791	225.18
6008	LSA230	230.00	6	0.9979	229.53	6011	MDN230	230.00	6	0.9941	228.63
6096	FOR230	230.00	6	0.9961	229.11	6105	PAM230	230.00	6	0.9791	225.18
6178	EST230	230.00	6	0.9918	228.11	6179	GUA230	230.00	6	0.9919	228.13
6182	VEL230	230.00	6	0.9832	226.14	6240	LGU 230	230.00	6	0.9844	226.40
6340	CAN 230	230.00	6	0.9986	229.68	6360	GLA230	230.00	6	0.9975	229.42
6760	SBA230	230.00	6	0.9901	227.73	6790	SMA230	230.00	6	0.9993	229.84
6860	BBL230	230.00	6	0.9813	225.71	6870	TABII230	230.00	6	0.9848	226.50

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:10
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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	1.0228	117.62	6004	PANII115	115.00	6	1.0204	117.35
6009	LSA115	115.00	6	1.0135	116.55	6012	MDN115	115.00	6	1.0033	115.38
6015	PRO115	115.00	6	1.0096	116.11	6018	CAC115	115.00	6	1.0222	117.56
6019	CVI115A	115.00	6	1.0130	116.49	6024	CHI115	115.00	6	1.0095	116.09
6027	LOC115A	115.00	6	1.0135	116.55	6032	MAR115A	115.00	6	1.0107	116.23
6036	SMA115	115.00	6	1.0216	117.49	6040	SFR115	115.00	6	1.0099	116.14
6047	CLA115	115.00	6	1.0044	115.51	6055	MOS115B	115.00	6	1.0199	117.29
6057	TOC115	115.00	6	1.0177	117.03	6059	LM1115	115.00	6	1.0141	116.63
6060	LM2115	115.00	6	1.0143	116.64	6066	FFIELD	115.00	6	1.0074	115.85
6074	LMDIST	115.00	6	1.0142	116.64	6087	CAL115	115.00	6	1.0095	116.09
6088	LES115	115.00	6	1.0125	116.44	6092	LVA115	115.00	6	1.0097	116.11
6123	MIR115	115.00	7	1.0325	118.73	6170	CPA115	115.00	6	1.0161	116.85
6173	STR115	115.00	6	1.0163	116.87	6174	PM115-1A	115.00	6	1.0194	117.23
6175	PM115-2A	115.00	6	1.0194	117.23	6210	TIN115	115.00	6	1.0184	117.12
6211	PM115-9	115.00	6	1.0192	117.20	6230	CBA115	115.00	6	1.0119	116.36
6261	CHA 115	115.00	6	1.0035	115.40	6270	CAT 115	115.00	6	1.0142	116.64
6280	GIR 115	115.00	6	1.0161	116.85	6290	CATII 11	115.00	6	1.0144	116.65
6331	BAI115	115.00	6	1.0012	115.13	6332	BAM115	115.00	6	1.0045	115.52
6350	PM115-8	115.00	6	1.0167	116.92	6550	CHAZ115	115.00	6	1.0096	116.11
6580	LBO115	115.00	6	1.0124	116.43						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6006	CHO115	115.00	6	0.9618	110.61						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:10
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6008	LSA230	230.00	6	6182	VEL230	230.00*	6	15	359.9	314.0	114.6	450.0	80.0	--	--
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	TRAFO1	WND 1	6	T1	52.7	54.0	97.6	--	--	--	--

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:10
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERC COL-PAN - 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#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

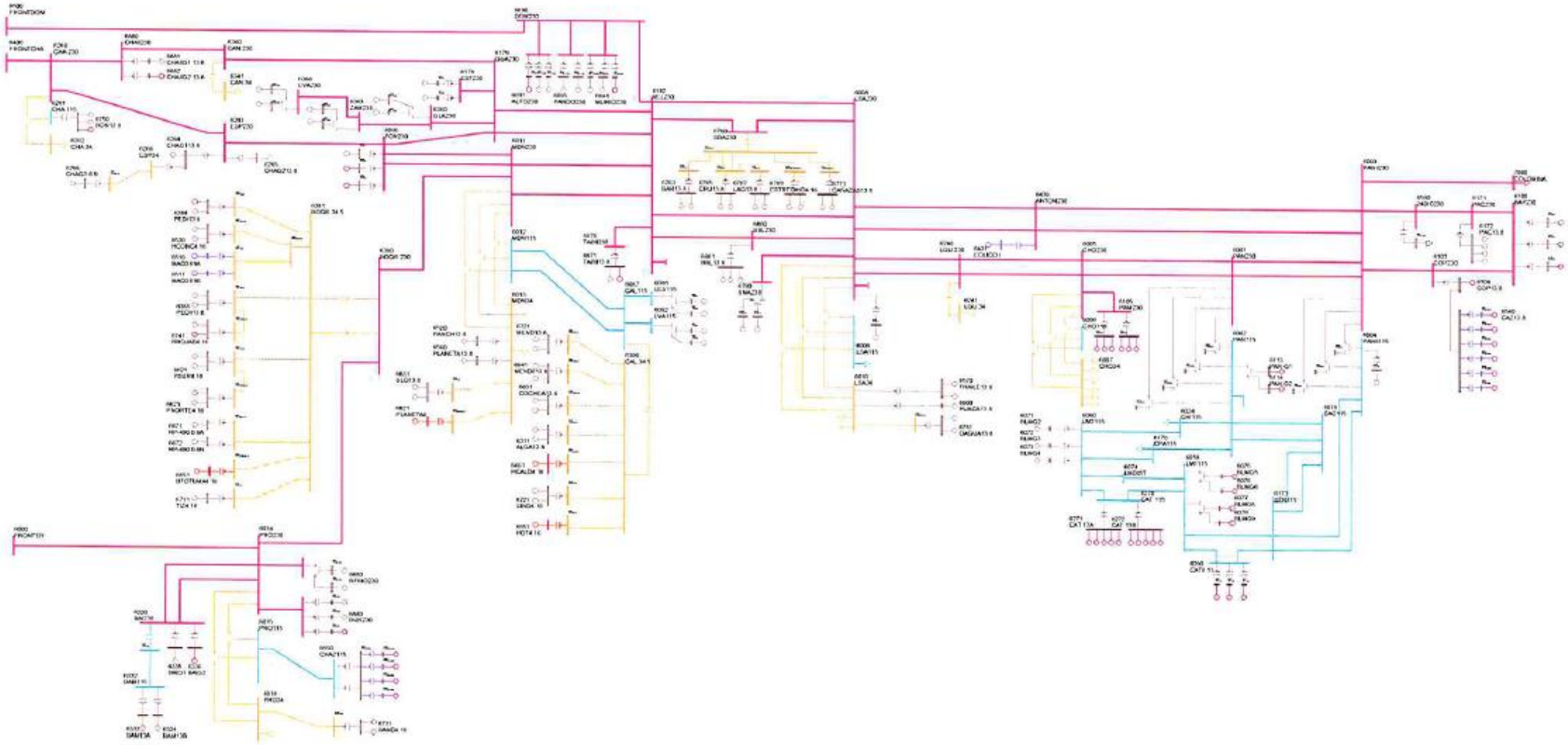
* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:10
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERC COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2017 CNT22 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- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	953.0	1179.4	0.0	0.0	0.0	0.0	22.7	-249.1	-249.1	-249.1
GUATEMAL	226.3	340.6	221.2	0.0	0.0	605.1	260.4	9.2	9.2	
2	1140.7	1104.0	0.0	0.0	0.0	0.0	36.7	0.0	0.0	0.0
SALVADOR	291.4	367.1	-181.3	0.0	0.0	241.8	315.1	32.2	32.2	
3	1237.6	1205.2	0.0	0.0	0.0	0.0	32.4	0.0	0.0	0.0
HONDURAS	380.3	395.2	-20.4	0.0	0.0	471.1	442.8	33.6	33.6	
4	477.4	459.0	0.0	0.0	0.0	0.0	18.3	0.0	0.0	0.0
NICARAGU	-28.0	181.0	-12.8	0.0	0.0	290.3	169.4	-75.3	-75.3	
5	1519.7	1489.7	0.0	0.0	0.0	0.0	30.1	-0.1	-0.1	0.0
COSTA RI	251.8	558.4	-226.7	0.0	0.0	556.3	426.3	50.1	50.1	
6	1768.5	1598.2	0.0	0.0	0.0	0.0	135.9	34.5	34.5	34.2
PANAMA	694.9	280.0	-211.4	0.0	0.0	541.4	1247.8	-80.0	-80.0	
7	117.3	53.2	0.0	0.0	0.0	0.0	4.1	60.0	60.0	60.0
ACANAL	19.4	9.3	-15.9	0.0	0.0	0.0	17.9	8.1	8.1	
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	
11	0.0	-154.9	0.0	0.0	0.0	0.0	0.0	154.9	154.9	154.9
COLOMBIA	0.0	-22.1	0.0	0.0	0.0	0.0	0.0	22.1	22.1	
COLUMN	7214.1	6933.9	0.0	0.0	0.0	0.0	280.2	0.0	0.0	0.0
TOTALS	1836.1	2109.6	-447.3	0.0	0.0	2705.9	2879.8	0.0	0.0	

2004

Demanda Máxima de Verano



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:15
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.6	15.0	0.0	1.0100	37.7	0.9991	47.0			62	6
6072	BLMG3	13.800	V3	38.0	1.6	15.0	0.0	1.0100	37.7	0.9991	47.0			62	6
6073	BLMG4	13.800	V4	38.0	1.5	15.0	0.0	1.0100	37.7	0.9992	47.0			62	6
6090	LESG1	13.800	E1	20.1	2.7	12.0	-5.0	1.0000	20.2	0.9909	27.0			64	6
6091	LESG2	13.800	E2	20.1	2.7	12.0	-5.0	1.0000	20.2	0.9909	27.0			64	6
6094	LVAG1	13.800	L1	23.3	-4.0	12.0	-5.0	1.0000	23.6	0.9858	27.0			64	6
6095	LVAG2	13.800	L2	23.3	-4.0	12.0	-5.0	1.0000	23.6	0.9858	27.0			64	6
6097	FORG1	13.800	F1	85.0	-3.1	50.0	-50.0	1.0000	85.1	0.9993	111.0			64	6
6101	BAYG1	13.800	B1	74.0	5.1	30.0	-25.0	1.0000	74.1	0.9976	94.0			61	6
6102	BAYG2	13.800	B2	74.0	5.1	30.0	-25.0	1.0000	74.1	0.9976	94.0			61	6
6172	PAC13.8	13.800	P1	16.9	9.0	9.0	-11.0	0.9913	19.4	0.8832	21.7			61	6
6172	PAC13.8	13.800	P2	16.9	9.0	9.0	-11.0	0.9913	19.4	0.8832	21.7			61	6
6172	PAC13.8	13.800	P3	16.9	9.0	9.0	-11.0	0.9913	19.4	0.8832	21.7			61	6
6176	ESTG1	13.800	E1	51.0	7.4	29.0	-29.0	1.0000	51.5	0.9897	69.0			64	6
6177	ESTG2	13.800	E2	51.0	7.4	29.0	-29.0	1.0000	51.5	0.9897	69.0			64	6
6264	CHAG113.8	13.800	G1	89.1	-7.3	52.4	-48.9	1.0000	89.4	0.9967	116.5			64	6
6265	CHAG213.8	13.800	G2	89.1	-3.5	52.4	-48.9	1.0000	89.2	0.9992	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
6311	ALGA13.8	13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9767	5.7			64	6
6311	ALGA13.8	13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9767	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	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	-11.5	14.0	-14.0	1.0000	39.4	0.9563	49.0			64	6
6361	GLA13A	13.800	G1	10.8	-5.9	7.8	-7.0	1.0000	12.3	0.8768	14.1			64	6
6362	GLA13B	13.800	G2	10.8	-5.9	7.8	-7.0	1.0000	12.3	0.8768	14.1			64	6
6364	LOR13A	13.800	G1	14.4	-7.0	7.8	-7.0	1.0026	15.9	0.8989	25.0			64	6
6365	LOR13B	13.800	G2	14.4	-7.0	7.8	-7.0	1.0026	15.9	0.8989	25.0			64	6
6367	PRU13A	13.800	G1	23.8	-8.0	8.0	-8.0	1.0032	25.0	0.9479	33.0			64	6
6368	PRU13B	13.800	G2	23.8	-8.0	8.0	-8.0	1.0032	25.0	0.9479	33.0			64	6
6384	PEDI13.8	13.800	G1	8.5	-0.4	4.9	-4.9	1.0000	8.5	0.9991	12.5			64	6
6384	PEDI13.8	13.800	G2	8.5	-0.4	4.9	-4.9	1.0000	8.5	0.9991	12.5			64	6
6385	PEDII13.8	13.800	G1	5.5	0.0	3.2	-3.6	1.0000	5.5	1.0000	7.5			64	6
6385	PEDII13.8	13.800	G2	5.5	0.0	3.2	-3.6	1.0000	5.5	1.0000	7.5			64	6
6431	EOLICO I	0.6000	G1	120.0	-21.0	21.0	-21.0	1.0120	120.4	0.9850	152.3			63	6
6510	MAC0.69A	0.7000	G1	1.5	-0.1	0.9	-0.1	1.0073	1.4	0.9981	2.1			64	6

6511	MAC0.69B	0.7000	G2	1.5	-0.1	0.9	-0.1	1.0073	1.4	0.9981	2.1		6
6520	PANCH13.8	13.800	P1	4.2	2.0	2.0	-2.0	0.9658	4.9	0.9048	6.2	64	6
6530	HCONC4.16	4.2000	G1	4.2	-1.1	2.5	-2.5	1.0000	4.4	0.9676	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.2	-1.1	2.5	-2.5	1.0000	4.4	0.9676	5.6	64	6
6560	PLANETA13.8	13.800	G1	3.8	2.0	2.0	-2.0	0.9658	4.5	0.8862	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.3	1.2	1.2	-1.2	0.9771	2.7	0.8937	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.3	1.2	1.2	-1.2	0.9771	2.7	0.8937	3.0	63	6
6600	HUACA13.8	13.800	G1	4.3	2.2	2.2	-2.2	0.9770	4.9	0.8893	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.2	-0.9	2.5	-2.5	1.0000	4.3	0.9773	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.2	-0.9	2.5	-2.5	1.0000	4.3	0.9773	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.2	-1.5	2.5	-2.5	1.0000	4.5	0.9417	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.2	-1.5	2.5	-2.5	1.0000	4.5	0.9417	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-1.2	3.7	-3.7	1.0000	6.5	0.9835	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-1.2	3.7	-3.7	1.0000	6.5	0.9835	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	-0.4	1.9	-1.9	1.0000	3.3	0.9923	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	-0.4	1.9	-1.9	1.0000	3.3	0.9923	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.2	0.7	2.5	-2.5	1.0000	4.3	0.9867	5.6	64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0234	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	1.0081	24.9	0.9479	33.0	64	6
6682	BFRIO13B	13.800	G2	23.8	-8.0	8.0	-8.0	1.0081	24.9	0.9479	33.0	64	6
6692	ALTO13A	13.800	G1	19.1	-2.5	9.9	-9.9	1.0000	19.2	0.9918	24.9	64	6
6693	ALTO13B	13.800	G2	19.1	-2.5	9.9	-9.9	1.0000	19.2	0.9918	24.9	64	6
6696	PANDO13A	13.800	G1	14.2	-0.7	12.8	-8.3	1.0000	14.2	0.9988	18.5	64	6
6697	PANDO13B	13.800	G2	14.2	-0.7	12.8	-8.3	1.0000	14.2	0.9988	18.5	64	6
6699	MLIRIO13A	13.800	G1	14.2	-0.3	12.8	-8.3	1.0000	14.2	0.9997	18.5	64	6
6700	MLIRIO13B	13.800	G2	14.2	-0.3	12.8	-8.3	1.0000	14.2	0.9997	18.5	64	6
6711	TIZ4.16	4.2000	G1	3.9	0.8	2.3	-2.3	1.0000	4.0	0.9803	5.2	64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0218	4.8	0.8622	5.6	64	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0218	4.8	0.8622	5.6	64	6
6731	SAND4.16	4.2000	G1	3.8	-2.2	2.2	-2.2	1.0006	4.4	0.8668	5.0	64	6
6731	SAND4.16	4.2000	G2	3.8	-2.2	2.2	-2.2	1.0006	4.4	0.8668	5.0	64	6
6741	RROJAS4.16	4.2000	G1	3.7	-1.3	2.1	-2.1	1.0000	3.9	0.9424	4.8	64	6
6750	BON13.8	13.800	G1	8.9	-1.3	4.0	-4.0	1.0000	9.0	0.9896	35.3	64	6
6750	BON13.8	13.800	G2	8.9	-1.3	4.0	-4.0	1.0000	9.0	0.9896	35.3	64	6
6763	BAR13.8	13.800	G1	6.4	2.4	4.0	-4.0	1.0000	6.9	0.9347	9.0	63	6
6763	BAR13.8	13.800	G2	6.4	2.4	4.0	-4.0	1.0000	6.9	0.9347	9.0	63	6
6765	CRU13.8	13.800	G1	4.1	1.2	2.6	-2.6	1.0000	4.3	0.9632	5.8	63	6
6765	CRU13.8	13.800	G2	4.1	1.2	2.6	-2.6	1.0000	4.3	0.9632	5.8	63	6
6767	LAG13.8	13.800	G1	4.2	0.8	2.6	-2.6	1.0000	4.2	0.9825	5.8	63	6
6767	LAG13.8	13.800	G2	4.2	0.8	2.6	-2.6	1.0000	4.2	0.9825	5.8	63	6
6769	ESTRECHO4.16	4.2000	G1	4.4	1.0	2.5	-2.5	1.0000	4.5	0.9745	5.6	63	6

2007

6769	ESTRECHO4.16	4.2000	G2	4.4	1.0	2.5	-2.5	1.0000	4.5	0.9745	5.6		63	6
6771	CAÑAZAS13.8	13.800	G1	2.5	0.9	1.5	-1.5	1.0000	2.7	0.9462	3.3		63	6
6771	CAÑAZAS13.8	13.800	G2	2.5	0.9	1.5	-1.5	1.0000	2.7	0.9462	3.3		63	6
6781	OAGUA13.8	13.800	G1	2.7	-0.4	1.6	-1.6	1.0000	2.8	0.9905	3.6		63	6
6781	OAGUA13.8	13.800	G2	2.7	-0.4	1.6	-1.6	1.0000	2.8	0.9905	3.6		63	6
6791	SMA13A	13.800	G1	10.9	-6.2	6.2	-6.2	1.0019	12.5	0.8671	14.2		63	6
6792	SMA13B	13.800	G2	10.9	-6.2	6.2	-6.2	1.0019	12.5	0.8671	14.2		63	6
6810	SVC-LV	13.200	1	0.0	165.2	300.0	-225.0	1.0417	158.5	0.0000	300.0		63	6
6821	PLANETAII	4.1600	G1	3.2	-1.8	1.8	-1.8	1.0119	3.6	0.8669	4.1		64	6
6831	SLO13.8	13.800	G1	3.6	2.1	2.1	-2.1	0.9931	4.1	0.8669	4.7		64	6
6831	SLO13.8	13.800	G2	3.6	2.1	2.1	-2.1	0.9931	4.1	0.8669	4.7		64	6
6841	BUR13A	13.800	G1	14.2	8.1	8.1	-8.1	0.9990	16.4	0.8669	18.5		64	6
6842	BUR13B	13.800	G2	14.2	8.1	8.1	-8.1	0.9990	16.4	0.8669	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	7.7	4.0	4.0	-3.0	0.9857	8.8	0.8863	10.1		64	6
6861	BBL13.8	13.800	G2	7.7	4.0	4.0	-3.0	0.9857	8.8	0.8863	10.1		64	6
6861	BBL13.8	13.800	G3	1.6	0.8	0.8	-0.6	0.9857	1.8	0.8862	2.1		64	6
6871	TABII13.8	13.800	G1	14.7	-3.5	9.0	-9.0	1.0000	15.1	0.9730	20.5		64	6
6881	CHAIIG1 13.8	13.800	G1	90.9	4.1	52.3	-52.3	1.0100	90.1	0.9990	118.9		64	6
6900	SVC-LV	13.200	1	0.0	179.2	300.0	-225.0	1.0477	171.0	0.0000	300.0		61	6
SUBSYSTEM TOTALS				1632.5	313.2	1419.2	-1160.8				2785.7			

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:15
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	0.5	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	0.9356	29.4			65	7
6129	MIR13D	13.800	G4	27.9	9.6	15.0	0.0	1.0100	29.2	0.9454	44.1			65	7
6130	MIR13F	13.800	G5	17.1	1.1	8.0	0.0	1.0100	17.0	0.9980	27.7			65	7
6134	MAD6A	6.9000	G1	11.4	0.4	6.0	-6.0	1.0100	11.3	0.9995	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
SUBSYSTEM TOTALS				117.2	20.3	60.0	-18.0				167.9				

2008

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:15
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - 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	1.0186	234.29	6003	PANII230	230.00	6	1.0100	232.30
6008	LSA230	230.00	6	1.0100	232.30	6011	MDN230	230.00	6	1.0076	231.75
6014	PRO230	230.00	6	1.0174	234.00	6096	FOR230	230.00	6	1.0078	231.78
6100	BAY230	230.00	6	1.0229	235.27	6103	COP23O	230.00	6	1.0123	232.84
6171	PAC230	230.00	6	1.0171	233.93	6178	EST230	230.00	6	1.0044	231.01
6179	GUA230	230.00	6	1.0045	231.03	6182	VEL230	230.00	6	1.0082	231.90
6260	CHA 230	230.00	6	1.0176	234.05	6263	ESP230	230.00	6	1.0176	234.06
6330	BAI230	230.00	6	1.0168	233.87	6340	CAN 230	230.00	6	1.0097	232.24
6360	GLA230	230.00	6	1.0084	231.93	6363	ZAM230	230.00	6	1.0126	232.89
6366	EVA230	230.00	6	1.0149	233.43	6380	BOQIII 230	230.00	6	1.0125	232.87
6400	FRONTCHA	230.00	6	1.0179	234.11	6430	ANTON230	230.00	6	1.0145	233.33
6500	FRONTDOM	230.00	6	1.0244	235.60	6590	24DIC230	230.00	6	1.0131	233.02
6680	BFRIO230	230.00	6	1.0197	234.54	6690	DOM230	230.00	6	1.0248	235.70
6691	ALTO230	230.00	6	1.0269	236.20	6695	PANDO230	230.00	6	1.0254	235.84
6698	MLIRIO230	230.00	6	1.0252	235.80	6760	SBA230	230.00	6	1.0091	232.09
6790	SMA230	230.00	6	1.0108	232.48	6840	BUR230	230.00	6	1.0196	234.52
6860	BBL230	230.00	6	1.0089	232.05	6870	TABII230	230.00	6	1.0083	231.90
6880	CHAII230	230.00	6	1.0176	234.05						

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	0.9938	228.58	6005	CHO230	230.00	6	0.9815	225.74
6105	PAM230	230.00	6	0.9815	225.74	6240	LGU 230	230.00	6	0.9918	228.12

2009

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:15
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - 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)
6002	PAN115	115.00	6	1.0229	117.63	6004	PANII115	115.00	6	1.0135	116.56
6009	LSA115	115.00	6	1.0244	117.80	6012	MDN115	115.00	6	1.0143	116.65
6015	PRO115	115.00	6	1.0121	116.39	6018	CAC115	115.00	6	1.0223	117.56
6019	CVI115A	115.00	6	1.0079	115.91	6024	CHI115	115.00	6	1.0078	115.89
6027	LOC115A	115.00	6	1.0130	116.49	6032	MAR115A	115.00	6	1.0104	116.20
6036	SMA115	115.00	6	1.0218	117.50	6040	SFR115	115.00	6	1.0086	115.99
6047	CLA115	115.00	6	1.0027	115.31	6055	MOS115B	115.00	6	1.0201	117.31
6057	TOC115	115.00	6	1.0108	116.24	6059	LM1115	115.00	6	1.0098	116.13
6060	LM2115	115.00	6	1.0100	116.15	6066	FFIELD	115.00	6	1.0035	115.40
6074	LMDIST	115.00	6	1.0099	116.14	6087	CAL115	115.00	6	1.0159	116.83
6088	LES115	115.00	6	1.0181	117.08	6092	LVA115	115.00	6	1.0158	116.81
6123	MIR115	115.00	7	1.0324	118.73	6170	CPA115	115.00	6	1.0131	116.50
6173	STR115	115.00	6	1.0122	116.40	6174	PM115-1A	115.00	6	1.0171	116.97
6175	PM115-2A	115.00	6	1.0171	116.97	6210	TIN115	115.00	6	1.0186	117.14
6211	PM115-9	115.00	6	1.0193	117.22	6230	CBA115	115.00	6	1.0111	116.27
6261	CHA 115	115.00	6	1.0095	116.09	6270	CAT 115	115.00	6	1.0099	116.14
6280	GIR 115	115.00	6	1.0131	116.50	6290	CATII 11	115.00	6	1.0101	116.16
6331	BAI115	115.00	6	1.0054	115.62	6332	BAM115	115.00	6	1.0077	115.89
6350	PM115-8	115.00	6	1.0166	116.91	6550	CHAZ115	115.00	6	1.0121	116.39
6580	LBO115	115.00	6	1.0074	115.85						

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)
6006	CHO115	115.00	6	0.9644	110.90						

2010

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:15
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - ÉPOCA SECA 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				TO BUS						RATING SET A	RATING SET B	RATING SET C
BUS#	NAME	BASKV	AREA	BUS#	NAME	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 96.4	-- --	-- --

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:15
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - ÉPOCA SECA 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				TO BUS						RATING SET A	RATING SET B	RATING SET C
BUS#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING PERCENT	RATING PERCENT	RATING PERCENT

* NONE *

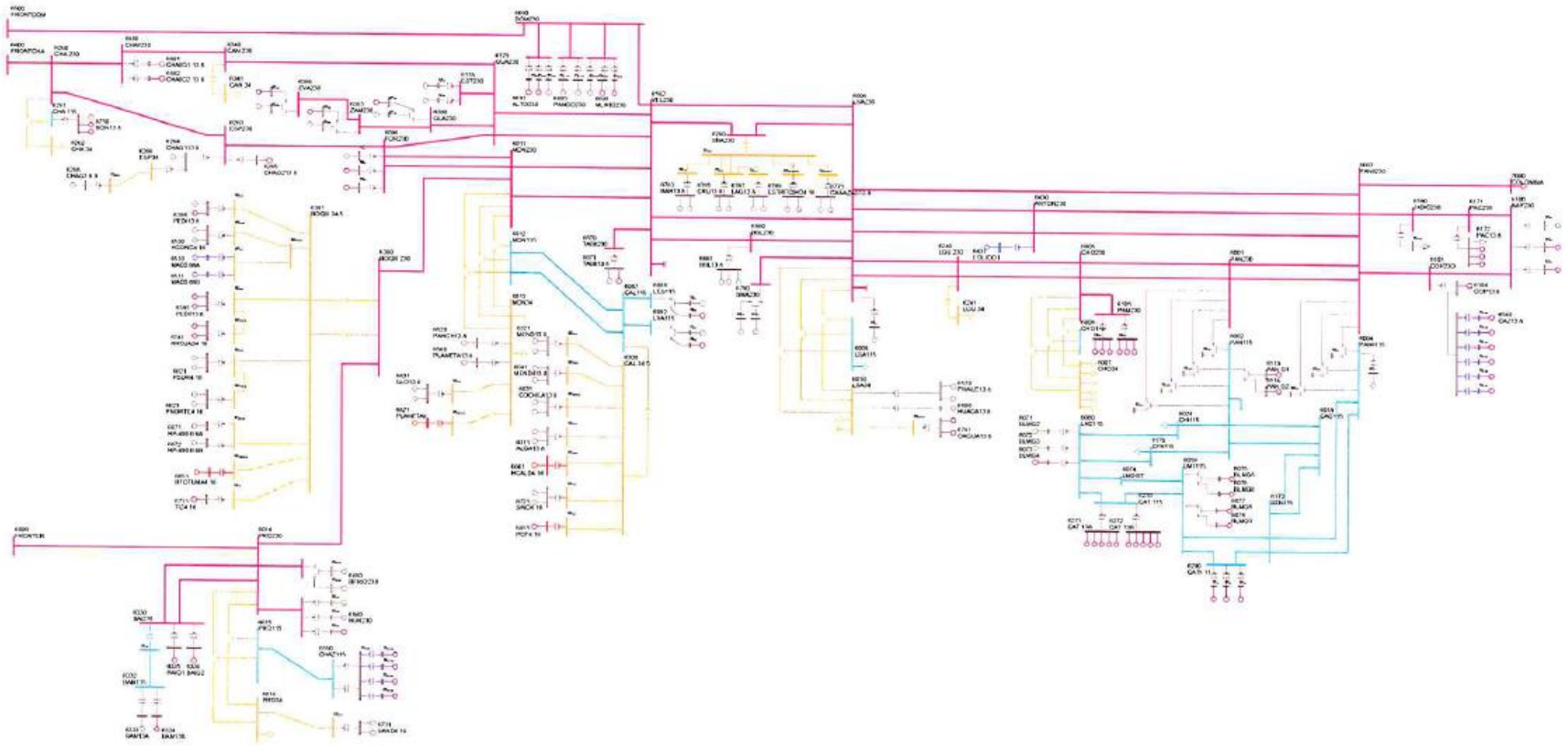
2011

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:15
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - ÉPOCA SECA 2017 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- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	953.2	1179.4	0.0	0.0	0.0	0.0	22.6	-248.9	-248.9	-248.9
GUATEMAL	213.3	340.6	219.5	0.0	0.0	603.7	247.4	9.4	9.4	
2	1140.7	1104.0	0.0	0.0	0.0	0.0	36.7	0.0	0.0	0.0
SALVADOR	290.8	367.1	-181.3	0.0	0.0	241.8	315.3	31.5	31.5	
3	1237.6	1205.2	0.0	0.0	0.0	0.0	32.4	0.0	0.0	0.0
HONDURAS	381.7	395.2	-20.4	0.0	0.0	470.8	443.5	34.2	34.2	
4	477.4	459.0	0.0	0.0	0.0	0.0	18.3	0.0	0.0	0.0
NICARAGU	-27.8	181.0	-12.8	0.0	0.0	290.2	169.8	-75.6	-75.6	
5	1519.6	1489.7	0.0	0.0	0.0	0.0	29.8	0.1	0.1	0.0
COSTA RI	247.7	558.4	-226.8	0.0	0.0	556.5	424.3	48.3	48.3	
6	1632.5	1594.5	0.0	0.0	0.0	0.0	83.7	-45.6	-45.6	-45.3
PANAMA	313.2	279.3	-226.6	0.0	0.0	517.3	868.1	-90.2	-90.2	
7	117.2	53.1	0.0	0.0	0.0	0.0	4.1	60.0	60.0	60.0
ACANAL	20.3	9.3	-15.9	0.0	0.0	0.0	17.9	9.0	9.0	
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	
11	0.0	-234.3	0.0	0.0	0.0	0.0	0.0	234.3	234.3	234.3
COLOMBIA	0.0	-33.4	0.0	0.0	0.0	0.0	0.0	33.4	33.4	
COLUMN	7078.2	6850.7	0.0	0.0	0.0	0.0	227.5	0.0	0.0	0.0
TOTALS	1439.2	2097.6	-464.2	0.0	0.0	2680.4	2486.2	0.0	0.0	

2012

Demanda Mínima de Invierno



2013

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:42
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	6.0	15.0	0.0	1.0200	20.5	0.9584	47.0			62	6
6072	BLMG3	13.800	V3	20.0	6.0	15.0	0.0	1.0200	20.5	0.9584	47.0			62	6
6090	LESG1	13.800	E1	18.9	0.9	12.0	-5.0	1.0000	18.9	0.9988	27.0			64	6
6094	LVAG1	13.800	L1	21.9	-5.0	12.0	-5.0	1.0053	22.4	0.9750	27.0			64	6
6097	FORG1	13.800	F1	80.0	-10.4	50.0	-50.0	1.0000	80.7	0.9917	111.0			64	6
6101	BAYG1	13.800	B1	74.7	15.2	30.0	-25.0	1.0000	76.2	0.9799	94.0			61	6
6176	ESTG1	13.800	E1	57.0	8.0	29.0	-29.0	1.0000	57.6	0.9902	69.0			64	6
6177	ESTG2	13.800	E2	57.0	8.0	29.0	-29.0	1.0000	57.6	0.9902	69.0			64	6
6264	CHAG113.8	13.800	G1	83.9	-7.6	52.4	-48.9	1.0000	84.2	0.9959	116.5			64	6
6268	CHAG3 6.9	6.9000	G3	7.8	-1.9	4.9	-4.1	0.9850	8.2	0.9724	10.9			64	6
6311	ALGA13.8	13.800	A1	4.3	0.9	2.3	-2.3	1.0000	4.4	0.9808	5.7			64	6
6311	ALGA13.8	13.800	A2	4.3	0.9	2.3	-2.3	1.0000	4.4	0.9808	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	26.6	-0.9	10.0	-10.0	1.0000	26.6	0.9994	30.0			64	6
6361	GLA13A	13.800	G1	12.1	-7.0	7.8	-7.0	1.0066	13.9	0.8649	14.1			64	6
6364	LOR13A	13.800	G1	16.1	-7.0	7.8	-7.0	1.0090	17.4	0.9167	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0088	27.5	0.9576	33.0			64	6
6384	PEDI13.8	13.800	G1	9.5	-0.9	4.9	-4.9	1.0000	9.5	0.9955	12.5			64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0072	60.5	0.9850	152.3			63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0103	1.6	0.9985	2.1			64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0103	1.6	0.9985	2.1			64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9738	5.3	0.9216	6.2			64	6
6530	HCONC4.16	4.2000	G1	4.8	-1.9	2.5	-2.5	1.0000	5.1	0.9289	5.6			64	6
6530	HCONC4.16	4.2000	G2	4.8	-1.9	2.5	-2.5	1.0000	5.1	0.9289	5.6			64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9738	4.8	0.9058	4.9			64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9624	3.0	0.9122	3.0			63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9624	3.0	0.9122	3.0			63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9624	5.5	0.9084	5.5			63	6
6621	PSUR4.16	4.2000	G1	4.8	-1.7	2.5	-2.5	1.0000	5.1	0.9387	5.6			64	6
6621	PSUR4.16	4.2000	G2	4.8	-1.7	2.5	-2.5	1.0000	5.1	0.9387	5.6			64	6
6623	PNORTE4.16	4.2000	G1	4.8	-2.2	2.5	-2.5	1.0000	5.2	0.9069	5.6			64	6
6623	PNORTE4.16	4.2000	G2	4.8	-2.2	2.5	-2.5	1.0000	5.2	0.9069	5.6			64	6
6631	COCHEA13.8	13.800	G1	6.4	-2.3	3.7	-3.7	1.0000	6.8	0.9419	8.4			64	6
6631	COCHEA13.8	13.800	G2	6.4	-2.3	3.7	-3.7	1.0000	6.8	0.9419	8.4			64	6
6641	MENDII13.8	13.800	G1	3.3	-1.6	1.9	-1.9	1.0000	3.6	0.8979	4.1			64	6
6641	MENDII13.8	13.800	G2	3.3	-1.6	1.9	-1.9	1.0000	3.6	0.8979	4.1			64	6

6651	BTOTUMA4.16	4.1600	G1	4.8	-1.1	2.5	-2.5	1.0000	4.9	0.9735	5.6	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0255	3.8	0.8675	4.4	6
6671	RP-490 6.6A	6.6000	G1	6.8	0.5	2.3	-2.6	1.0000	6.8	0.9973	7.5	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.5	2.3	-2.6	1.0000	6.8	0.9973	7.5	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0160	27.3	0.9576	33.0	6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0160	27.3	0.9576	33.0	6
6692	ALTO13A	13.800	G1	21.3	4.1	9.9	-9.9	1.0100	21.5	0.9823	24.9	6
6696	PANDO13A	13.800	G1	15.8	-7.9	12.8	-8.3	1.0000	17.7	0.8949	18.5	6
6697	PANDO13B	13.800	G2	15.8	-7.9	12.8	-8.3	1.0000	17.7	0.8949	18.5	6
6699	MLIRIO13A	13.800	G1	15.8	-8.3	12.8	-8.3	1.0008	17.8	0.8855	18.5	6
6721	SIND4.16	4.2000	G1	4.3	-2.5	2.5	-2.5	1.0239	4.8	0.8622	5.6	6
6721	SIND4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0239	4.8	0.8622	5.6	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0080	4.8	0.8892	5.0	6
6731	SAND4.16	4.2000	G2	4.3	-2.2	2.2	-2.2	1.0080	4.8	0.8892	5.0	6
6750	BON13.8	13.800	G1	9.9	-4.0	4.0	-4.0	1.0056	10.6	0.9273	35.3	6
6763	BAR13.8	13.800	G1	7.2	2.7	4.0	-4.0	1.0000	7.7	0.9350	9.0	6
6763	BAR13.8	13.800	G2	7.2	2.7	4.0	-4.0	1.0000	7.7	0.9350	9.0	6
6765	CRU13.8	13.800	G1	4.6	1.3	2.6	-2.6	1.0000	4.8	0.9632	5.8	6
6765	CRU13.8	13.800	G2	4.6	1.3	2.6	-2.6	1.0000	4.8	0.9632	5.8	6
6767	LAG13.8	13.800	G1	4.7	0.9	2.6	-2.6	1.0000	4.7	0.9825	5.8	6
6767	LAG13.8	13.800	G2	4.7	0.9	2.6	-2.6	1.0000	4.7	0.9825	5.8	6
6769	ESTRECHO4.16	4.2000	G1	4.9	1.1	2.5	-2.5	1.0000	5.1	0.9744	5.6	6
6769	ESTRECHO4.16	4.2000	G2	4.9	1.1	2.5	-2.5	1.0000	5.1	0.9744	5.6	6
6771	CAÑAZAS13.8	13.800	G1	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9471	3.3	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.0	1.5	-1.5	1.0000	3.0	0.9471	3.3	6
6791	SMA13A	13.800	G1	12.2	2.6	6.2	-6.2	1.0000	12.4	0.9776	14.2	6
6792	SMA13B	13.800	G2	12.2	2.6	6.2	-6.2	1.0000	12.4	0.9776	14.2	6
6810	SVC-LV	13.200	1	0.0	-25.7	300.0	-225.0	0.9898	26.0	0.0000	300.0	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0204	3.9	0.8893	4.1	6
6831	SLO13.8	13.800	G1	4.0	1.2	2.1	-2.1	1.0000	4.2	0.9592	4.7	6
6831	SLO13.8	13.800	G2	4.0	1.2	2.1	-2.1	1.0000	4.2	0.9592	4.7	6
6841	BUR13A	13.800	G1	15.8	-0.7	8.1	-8.1	1.0000	15.9	0.9989	18.5	6
6842	BUR13B	13.800	G2	15.8	-0.7	8.1	-8.1	1.0000	15.9	0.9989	18.5	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9865	9.6	0.9059	10.1	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9865	9.6	0.9059	10.1	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9865	2.0	0.9058	2.1	6
6871	TABII13.8	13.800	G1	16.4	-4.2	9.0	-9.0	1.0000	16.9	0.9688	20.5	6
6881	CHAIIG1 13.8	13.800	G1	85.6	-3.2	52.3	-52.3	1.0100	84.8	0.9993	118.9	6
6900	SVC-LV	13.200	1	0.0	56.9	300.0	-225.0	1.0085	56.4	0.0000	300.0	6
SUBSYSTEM TOTALS				1094.2	-16.6	1165.2	-943.6				2130.1	

2015

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:42

PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	21.7	7.8	11.0	0.0	1.0100	22.8	0.9416	29.4			65	7
6129	MIR13D	13.800	G4	28.2	9.5	15.0	0.0	1.0100	29.5	0.9476	44.1			65	7
6134	MAD6A	6.9000	G1	11.4	1.8	6.0	-6.0	1.0100	11.4	0.9874	13.0			65	7
SUBSYSTEM TOTALS				78.4	19.6	40.0	-6.0				114.2				

2016

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:42
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0273	236.28	6011	MDN230	230.00	6	1.0145	233.33
6014	PRO230	230.00	6	1.0250	235.76	6096	FOR230	230.00	6	1.0152	233.51
6100	BAY230	230.00	6	1.0098	232.26	6103	COP23O	230.00	6	1.0020	230.45
6171	PAC230	230.00	6	1.0024	230.56	6178	EST230	230.00	6	1.0126	232.90
6179	GUA230	230.00	6	1.0128	232.95	6182	VEL230	230.00	6	1.0100	232.30
6260	CHA 230	230.00	6	1.0275	236.31	6263	ESP230	230.00	6	1.0261	235.99
6330	BAI230	230.00	6	1.0254	235.84	6340	CAN 230	230.00	6	1.0189	234.35
6360	GLA230	230.00	6	1.0151	233.46	6363	ZAM230	230.00	6	1.0175	234.02
6366	EVA230	230.00	6	1.0188	234.33	6380	BOQIII 230	230.00	6	1.0189	234.34
6400	FRONTCHA	230.00	6	1.0292	236.73	6430	ANTON230	230.00	6	1.0082	231.89
6500	FRONTDOM	230.00	6	1.0314	237.22	6590	24DIC230	230.00	6	1.0009	230.22
6680	BFRIO230	230.00	6	1.0277	236.37	6690	DOM230	230.00	6	1.0309	237.11
6691	ALTO230	230.00	6	1.0324	237.44	6695	PANDO230	230.00	6	1.0293	236.73
6698	MLIRIO230	230.00	6	1.0304	236.98	6760	SBA230	230.00	6	1.0059	231.36
6840	BUR230	230.00	6	1.0254	235.85	6860	BBL230	230.00	6	1.0097	232.23
6870	TABII230	230.00	6	1.0100	232.30	6880	CHAII230	230.00	6	1.0264	236.08

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)
6001	PAN230	230.00	6	0.9926	228.30	6005	CHO230	230.00	6	0.9850	226.54
6008	LSA230	230.00	6	0.9950	228.85	6105	PAM230	230.00	6	0.9850	226.54
6240	LGU 230	230.00	6	0.9889	227.46	6790	SMA230	230.00	6	0.9965	229.19

2017

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:42
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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)
6002	PAN115	115.00	6	1.0193	117.21	6009	LSA115	115.00	6	1.0087	116.00
6012	MDN115	115.00	6	1.0243	117.79	6015	PRO115	115.00	6	1.0196	117.25
6018	CAC115	115.00	6	1.0189	117.18	6024	CHI115	115.00	6	1.0080	115.92
6027	LOC115A	115.00	6	1.0124	116.43	6032	MAR115A	115.00	6	1.0116	116.33
6036	SMA115	115.00	6	1.0187	117.16	6040	SFR115	115.00	6	1.0083	115.95
6047	CLA115	115.00	6	1.0043	115.50	6055	MOS115B	115.00	6	1.0179	117.06
6059	LM1115	115.00	6	1.0078	115.90	6060	LM2115	115.00	6	1.0080	115.91
6066	FFIELD	115.00	6	1.0030	115.34	6074	LMDIST	115.00	6	1.0079	115.91
6087	CAL115	115.00	6	1.0230	117.65	6088	LES115	115.00	6	1.0238	117.74
6092	LVA115	115.00	6	1.0229	117.63	6123	MIR115	115.00	7	1.0297	118.42
6170	CPA115	115.00	6	1.0108	116.24	6173	STR115	115.00	6	1.0085	115.98
6174	PM115-1A	115.00	6	1.0134	116.55	6175	PM115-2A	115.00	6	1.0134	116.55
6210	TIN115	115.00	6	1.0167	116.92	6211	PM115-9	115.00	6	1.0173	116.99
6230	CBA115	115.00	6	1.0107	116.23	6261	CHA 115	115.00	6	1.0184	117.12
6270	CAT 115	115.00	6	1.0079	115.91	6280	GIR 115	115.00	6	1.0108	116.24
6290	CATII 11	115.00	6	1.0079	115.91	6331	BAI115	115.00	6	1.0184	117.12
6332	BAM115	115.00	6	1.0185	117.13	6350	PM115-8	115.00	6	1.0154	116.77
6550	CHAZ115	115.00	6	1.0196	117.25						

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)
6004	PANII115	115.00	6	0.9972	114.68	6006	CHO115	115.00	6	0.9717	111.75
6019	CVI115A	115.00	6	0.9988	114.86	6057	TOC115	115.00	6	0.9954	114.47
6580	LBO115	115.00	6	0.9984	114.81						

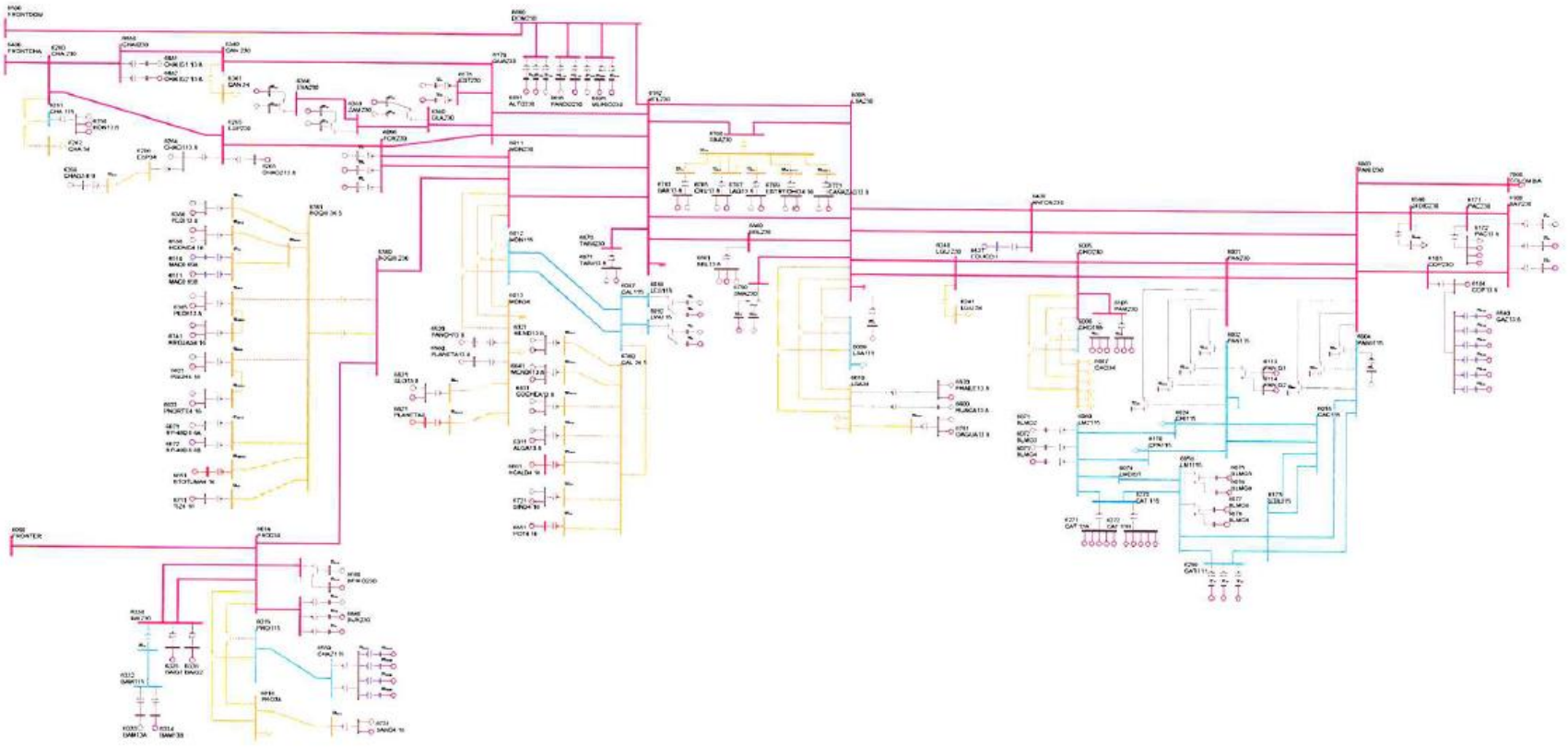
2018

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:42
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERCONEXIÓN COL-PAN - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2017 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- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	660.7	773.5	0.0	0.0	0.0	0.0	10.8	-123.7	-123.7	-123.6
GUATEMAL	-8.8	100.4	385.1	0.0	0.0	621.8	171.3	-43.8	-43.8	
2	523.4	512.7	0.0	0.0	0.0	0.0	10.7	0.0	0.0	0.0
SALVADOR	18.0	137.7	-22.5	0.0	0.0	254.1	104.1	52.7	52.7	
3	560.9	545.5	0.0	0.0	0.0	0.0	15.5	0.0	0.0	0.0
HONDURAS	-106.6	179.1	40.4	0.0	0.0	514.0	136.3	51.6	51.6	
4	304.9	298.5	0.0	0.0	0.0	0.0	6.5	0.0	0.0	0.0
NICARAGU	-142.2	118.2	51.3	0.0	0.0	313.8	69.4	-67.2	-67.2	
5	776.5	769.0	0.0	0.0	0.0	0.0	7.5	0.0	0.0	0.0
COSTA RI	-91.4	302.3	-13.9	0.0	0.0	592.6	138.6	74.2	74.2	
6	1094.2	879.0	0.0	0.0	0.0	0.0	53.0	162.2	162.2	162.1
PANAMA	-16.6	319.0	-226.1	0.0	0.0	560.8	521.2	-69.9	-69.9	
7	78.4	29.3	0.0	0.0	0.0	0.0	2.2	47.0	47.0	47.0
ACANAL	19.6	10.6	-16.0	0.0	0.0	0.0	10.3	14.6	14.6	
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	
11	0.0	85.5	0.0	0.0	0.0	0.0	0.0	-85.5	-85.5	-85.5
COLOMBIA	0.0	12.2	0.0	0.0	0.0	0.0	0.0	-12.2	-12.2	
COLUMN	3999.0	3893.0	0.0	0.0	0.0	0.0	106.1	0.0	0.0	0.0
TOTALS	-328.1	1179.4	198.3	0.0	0.0	2857.0	1151.3	0.0	0.0	

2019

Demanda Mínima de Verano



2020

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:47
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	5.5	15.0	0.0	1.0200	20.3	0.9642	47.0			62	6
6072	BLMG3	13.800	V3	20.0	5.5	15.0	0.0	1.0200	20.3	0.9642	47.0			62	6
6090	LESG1	13.800	E1	20.1	1.3	12.0	-5.0	1.0000	20.1	0.9980	27.0			64	6
6094	LVAG1	13.800	L1	23.3	-5.0	12.0	-5.0	1.0040	23.7	0.9777	27.0			64	6
6097	FORG1	13.800	F1	75.0	-6.0	50.0	-50.0	1.0100	74.5	0.9968	111.0			64	6
6101	BAYG1	13.800	B1	66.1	21.1	30.0	-25.0	1.0100	68.7	0.9527	94.0			61	6
6176	ESTG1	13.800	E1	51.0	4.9	29.0	-29.0	1.0000	51.2	0.9955	69.0			64	6
6264	CHAG113.8	13.800	G1	70.0	-19.8	52.4	-48.9	0.9900	73.5	0.9621	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	1.1	2.3	-2.3	1.0000	4.5	0.9689	5.7			64	6
6321	MEND13.8	13.800	M1	8.0	4.2	4.2	-4.2	0.9936	9.0	0.8865	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
6361	GLA13A	13.800	G1	8.9	3.6	7.8	-7.0	1.0250	9.4	0.9269	14.1			64	6
6364	LOR13A	13.800	G1	11.8	-7.0	7.8	-7.0	1.0141	13.6	0.8606	25.0			64	6
6367	PRU13A	13.800	G1	19.6	-8.0	8.0	-8.0	1.0137	20.9	0.9258	33.0			64	6
6384	PEDI13.8	13.800	G1	8.5	-2.7	4.9	-4.9	1.0000	8.9	0.9515	12.5			64	6
6385	PEDII13.8	13.800	G1	5.5	-2.4	3.2	-3.6	1.0000	6.0	0.9148	7.5			64	6
6431	EOLICO I	0.6000	G1	100.0	-17.5	17.5	-17.5	1.0036	101.2	0.9850	152.3			63	6
6510	MAC0.69A	0.7000	G1	1.5	-0.1	0.9	-0.1	1.0083	1.4	0.9981	2.1			64	6
6520	PANCH13.8	13.800	P1	4.2	2.0	2.0	-2.0	0.9518	4.9	0.9048	6.2			64	6
6530	HCONC4.16	4.2000	G2	4.2	-2.5	2.5	-2.5	1.0024	4.9	0.8622	5.6			64	6
6560	PLANETA13.8	13.800	G1	3.8	2.0	2.0	-2.0	0.9518	4.5	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	-2.5	2.5	-2.5	1.0024	4.9	0.8622	5.6			64	6
6623	PNORTE4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0025	4.9	0.8622	5.6			64	6
6631	COCHEA13.8	13.800	G1	6.4	-3.7	3.7	-3.7	1.0070	7.3	0.8651	8.4			64	6
6641	MENDII13.8	13.800	G1	3.3	-1.9	1.9	-1.9	1.0080	3.7	0.8696	4.1			64	6
6651	BTOTUMA4.16	4.1600	G1	4.2	-2.5	2.5	-2.5	1.0022	4.9	0.8622	5.6			64	6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0332	3.8	0.8675	4.4			64	6
6671	RP-490 6.6A	6.6000	G1	6.1	0.0	2.3	-2.6	1.0000	6.1	1.0000	7.5			64	6
6681	BFRIO13A	13.800	G1	23.8	-8.0	8.0	-8.0	1.0172	24.7	0.9479	33.0			64	6
6692	ALTO13A	13.800	G1	19.1	-9.9	9.9	-9.9	0.9973	21.5	0.8881	24.9			64	6
6696	PANDO13A	13.800	G1	14.2	-8.3	12.8	-8.3	0.9986	16.4	0.8626	18.5			64	6
6699	MLIRIO13A	13.800	G1	14.2	-8.3	12.8	-8.3	0.9988	16.4	0.8626	18.5			64	6
6721	SIND4.16	4.2000	G1	4.2	-2.5	2.5	-2.5	1.0329	4.8	0.8622	5.6			64	6
6731	SAND4.16	4.2000	G1	3.8	-2.2	2.2	-2.2	1.0139	4.4	0.8668	5.0			64	6

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6750	BON13.8	13.800	G1	8.9	-4.0	4.0	-4.0	1.0001	9.7	0.9115	35.3	63	6
6763	BAR13.8	13.800	G1	6.4	4.0	4.0	-4.0	0.9993	7.6	0.8513	9.0	63	6
6765	CRU13.8	13.800	G1	4.1	2.1	2.6	-2.6	1.0000	4.6	0.8899	5.8	63	6
6767	LAG13.8	13.800	G1	4.2	1.6	2.6	-2.6	1.0000	4.5	0.9297	5.8	63	6
6769	ESTRECHO4.16	4.2000	G1	4.4	1.9	2.5	-2.5	1.0000	4.8	0.9156	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.5	1.5	1.5	-1.5	0.9977	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	6.2	6.2	-6.2	0.9982	12.6	0.8671	14.2	63	6
6810	SVC-LV	13.200	1	0.0	-126.8	300.0	-225.0	0.9637	131.6	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.2	0.8	1.8	-1.8	1.0000	3.3	0.9700	4.1	64	6
6831	SLO13.8	13.800	G1	3.6	2.1	2.1	-2.1	0.9764	4.2	0.8669	4.7	64	6
6841	BUR13A	13.800	G1	14.2	-1.8	8.1	-8.1	1.0000	14.3	0.9921	18.5	64	6
6861	BBL13.8	13.800	G1	7.7	4.0	4.0	-3.0	0.9894	8.8	0.8863	10.1	64	6
6861	BBL13.8	13.800	G3	1.6	0.8	0.8	-0.6	0.9894	1.8	0.8861	2.1	64	6
6871	TABII13.8	13.800	G1	14.7	-5.9	9.0	-9.0	1.0000	15.8	0.9268	20.5	64	6
6881	CHAIIG1 13.8	13.800	G1	70.0	-15.4	52.3	-52.3	0.9900	72.4	0.9768	118.9	64	6
6900	SVC-LV	13.200	1	0.0	-27.4	300.0	-225.0	0.9866	27.8	0.0000	300.0	61	6
SUBSYSTEM TOTALS				834.7	-222.1	1065.2	-850.0				1875.2		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:47
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	0.9969	27.7			65	7
6129	MIR13D	13.800	G4	31.9	10.1	15.0	0.0	1.0100	33.1	0.9535	44.1			65	7
6130	MIR13F	13.800	G5	17.1	2.1	8.0	0.0	1.0100	17.1	0.9926	27.7			65	7
6134	MAD6A	6.9000	G1	11.4	2.1	6.0	-6.0	1.0100	11.5	0.9832	13.0			65	7
SUBSYSTEM TOTALS				77.5	15.6	37.0	-6.0				112.5				

2022

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:47
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0275	236.32	6011	MDN230	230.00	6	1.0176	234.05
6014	PRO230	230.00	6	1.0259	235.95	6096	FOR230	230.00	6	1.0198	234.55
6100	BAY230	230.00	6	1.0115	232.65	6103	COP23O	230.00	6	1.0022	230.52
6171	PAC230	230.00	6	1.0029	230.68	6178	EST230	230.00	6	1.0189	234.36
6179	GUA230	230.00	6	1.0190	234.38	6182	VEL230	230.00	6	1.0140	233.22
6260	CHA 230	230.00	6	1.0219	235.03	6263	ESP230	230.00	6	1.0217	235.00
6330	BAI230	230.00	6	1.0262	236.03	6340	CAN 230	230.00	6	1.0207	234.76
6360	GLA230	230.00	6	1.0208	234.79	6363	ZAM230	230.00	6	1.0225	235.17
6366	EVA230	230.00	6	1.0234	235.38	6380	BOQIII 230	230.00	6	1.0209	234.80
6400	FRONTCHA	230.00	6	1.0229	235.28	6430	ANTON230	230.00	6	1.0056	231.29
6500	FRONTDOM	230.00	6	1.0294	236.77	6590	24DIC230	230.00	6	1.0012	230.28
6680	BFRIO230	230.00	6	1.0270	236.22	6690	DOM230	230.00	6	1.0289	236.64
6691	ALTO230	230.00	6	1.0297	236.83	6695	PANDO230	230.00	6	1.0281	236.46
6698	MLIRIO230	230.00	6	1.0283	236.51	6760	SBA230	230.00	6	1.0094	232.16
6840	BUR230	230.00	6	1.0260	235.98	6860	BBL230	230.00	6	1.0133	233.06
6870	TABII230	230.00	6	1.0137	233.16	6880	CHAII230	230.00	6	1.0210	234.83

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)
6001	PAN230	230.00	6	0.9918	228.11	6005	CHO230	230.00	6	0.9853	226.63
6008	LSA230	230.00	6	0.9900	227.70	6105	PAM230	230.00	6	0.9853	226.63
6240	LGU 230	230.00	6	0.9882	227.28	6790	SMA230	230.00	6	0.9908	227.88

2023

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:47
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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)
6002	PAN115	115.00	6	1.0232	117.67	6009	LSA115	115.00	6	1.0037	115.42
6012	MDN115	115.00	6	1.0221	117.54	6015	PRO115	115.00	6	1.0220	117.53
6018	CAC115	115.00	6	1.0227	117.61	6024	CHI115	115.00	6	1.0108	116.24
6027	LOC115A	115.00	6	1.0155	116.79	6032	MAR115A	115.00	6	1.0150	116.72
6036	SMA115	115.00	6	1.0227	117.61	6040	SFR115	115.00	6	1.0104	116.20
6047	CLA115	115.00	6	1.0071	115.82	6055	MOS115B	115.00	6	1.0219	117.52
6059	LM1115	115.00	6	1.0088	116.01	6060	LM2115	115.00	6	1.0089	116.03
6066	FFIELD	115.00	6	1.0042	115.48	6074	LMDIST	115.00	6	1.0089	116.02
6087	CAL115	115.00	6	1.0221	117.54	6088	LES115	115.00	6	1.0230	117.64
6092	LVA115	115.00	6	1.0220	117.53	6123	MIR115	115.00	7	1.0323	118.72
6170	CPA115	115.00	6	1.0127	116.46	6173	STR115	115.00	6	1.0092	116.06
6174	PM115-1A	115.00	6	1.0155	116.78	6175	PM115-2A	115.00	6	1.0155	116.78
6210	TIN115	115.00	6	1.0207	117.37	6211	PM115-9	115.00	6	1.0213	117.45
6230	CBA115	115.00	6	1.0135	116.55	6261	CHA 115	115.00	6	1.0129	116.48
6270	CAT 115	115.00	6	1.0089	116.02	6280	GIR 115	115.00	6	1.0127	116.46
6290	CATII 11	115.00	6	1.0088	116.02	6331	BAI115	115.00	6	1.0199	117.29
6332	BAM115	115.00	6	1.0197	117.27	6350	PM115-8	115.00	6	1.0190	117.19
6550	CHAZ115	115.00	6	1.0220	117.53						

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)
6004	PANII115	115.00	6	0.9921	114.10	6006	CHO115	115.00	6	0.9721	111.79
6019	CVI115A	115.00	6	0.9961	114.55	6057	TOC115	115.00	6	0.9903	113.89
6580	LBO115	115.00	6	0.9957	114.50						

2024

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E FRI, MAY 20 2011 9:47
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERCONEXIÓN COL-PAN - DEMANDA MÍNIMA - ÉPOCA SECA 2017 IN MW/MVAR

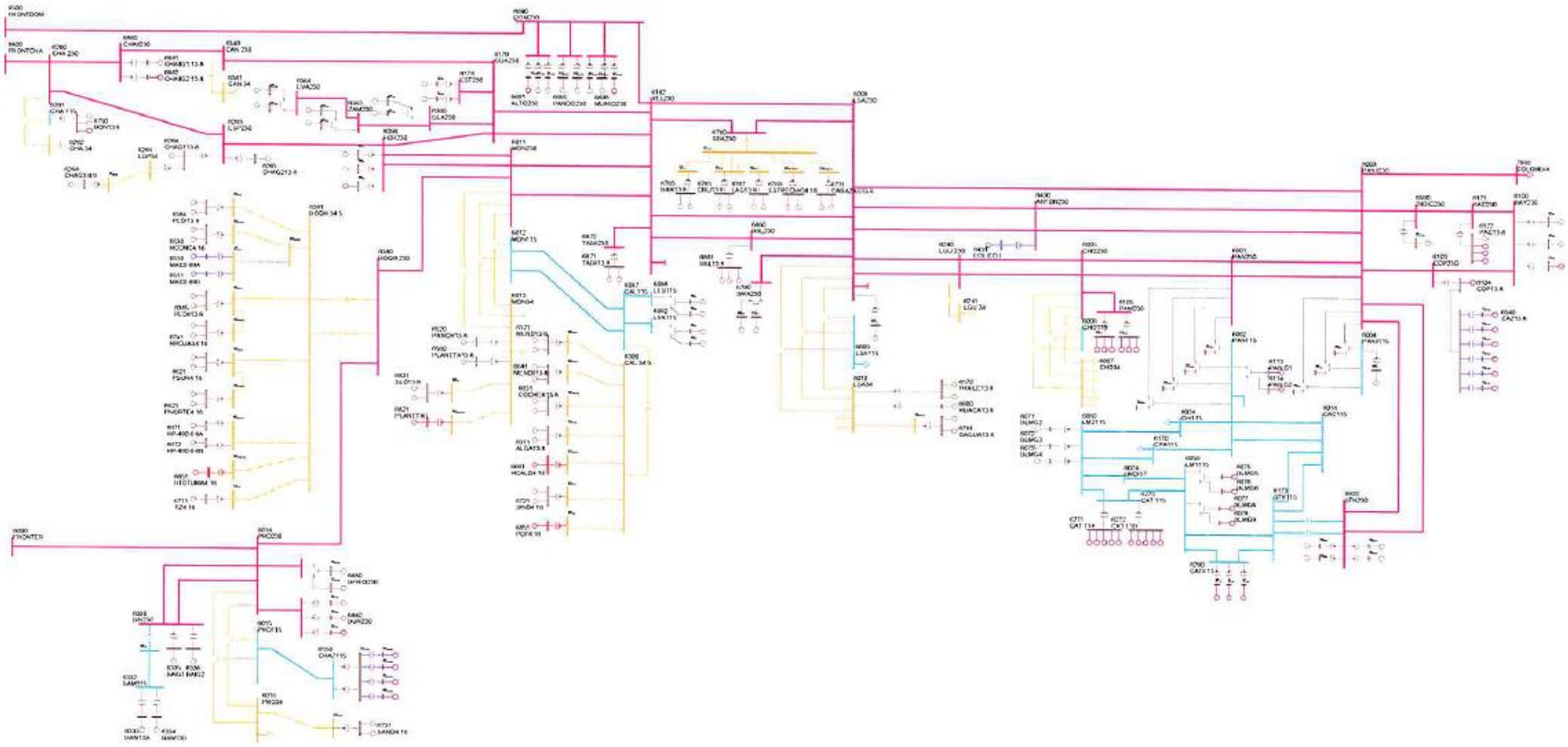
X-- AREA --X	FROM GENE- RATION	TO LOAD ASSIGNED TO AREA	TO BUS SHUNT	TO GNE BUS DEVICES	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	604.8	758.5	0.0	0.0	0.0	0.0	11.3	-165.1	-165.1	-165.1
GUATEMAL	-5.6	99.0	380.5	0.0	0.0	619.3	167.4	-33.1	-33.1	
2	521.6	512.7	0.0	0.0	0.0	0.0	8.9	0.0	0.0	0.0
SALVADOR	31.8	137.7	0.0	0.0	0.0	252.1	97.0	49.1	49.1	
3	557.3	545.5	0.0	0.0	0.0	0.0	11.9	0.0	0.0	0.0
HONDURAS	-103.9	179.1	45.4	0.0	0.0	514.6	132.3	53.9	53.9	
4	314.0	304.3	0.0	0.0	0.0	0.0	9.7	0.0	0.0	0.0
NICARAGU	-110.8	120.4	51.3	0.0	0.0	309.9	91.6	-64.2	-64.2	
5	762.3	750.0	0.0	0.0	0.0	0.0	12.3	0.0	0.0	0.0
COSTA RI	-12.9	309.9	0.0	0.0	0.0	571.8	192.5	56.5	56.5	
6	834.7	877.0	0.0	0.0	0.0	0.0	21.9	-64.2	-64.2	-65.0
PANAMA	-222.1	318.3	-186.9	0.0	0.0	515.7	261.8	-99.6	-99.6	
7	77.5	29.2	0.0	0.0	0.0	0.0	2.0	46.2	46.2	47.0
ACANAL	15.6	10.6	-15.9	0.0	0.0	0.0	9.6	11.4	11.4	
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	
11	0.0	-183.1	0.0	0.0	0.0	0.0	0.0	183.1	183.1	183.1
COLOMBIA	0.0	-26.1	0.0	0.0	0.0	0.0	0.0	26.1	26.1	
COLUMN	3672.2	3594.2	0.0	0.0	0.0	0.0	78.0	0.0	0.0	0.0
TOTALS	-408.0	1148.9	274.4	0.0	0.0	2783.4	952.1	0.0	0.0	

2025

Año 2020

2026

Demanda Máxima de Invierno



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:42
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	4.8	15.0	0.0	1.0300	37.2	0.9920	47.0			62	6
6072	BLMG3	13.800	V3	38.0	4.8	15.0	0.0	1.0300	37.2	0.9920	47.0			62	6
6073	BLMG4	13.800	V4	38.0	4.9	15.0	0.0	1.0300	37.2	0.9917	47.0			62	6
6090	LESG1	13.800	E1	22.4	4.3	12.0	-5.0	1.0000	22.8	0.9821	27.0			64	6
6091	LESG2	13.800	E2	22.4	4.3	12.0	-5.0	1.0000	22.8	0.9821	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	13.3	50.0	-50.0	1.0100	95.0	0.9904	111.0			64	6
6098	FORG2	13.800	F2	95.0	13.3	50.0	-50.0	1.0100	95.0	0.9904	111.0			64	6
6101	BAYG1	13.800	B1	78.9	18.0	30.0	-25.0	1.0200	79.3	0.9748	94.0			61	6
6102	BAYG2	13.800	B2	79.2	18.1	30.0	-25.0	1.0200	79.7	0.9749	94.0			61	6
6176	ESTG1	13.800	E1	57.0	11.1	29.0	-29.0	1.0000	58.1	0.9817	69.0			64	6
6177	ESTG2	13.800	E2	57.0	11.1	29.0	-29.0	1.0000	58.1	0.9817	69.0			64	6
6264	CHAG113.8	13.800	G1	99.6	-7.3	52.4	-48.9	0.9900	100.9	0.9973	116.5			64	6
6265	CHAG213.8	13.800	G2	99.6	-3.9	52.4	-48.9	0.9900	100.7	0.9992	116.5			64	6
6268	CHAG3 6.9	6.9000	G3	9.3	4.9	4.9	-4.1	0.9871	10.6	0.8852	10.9			64	6
6311	ALGA13.8	13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9749	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	1.6	10.0	-10.0	1.0000	26.6	0.9982	30.0			64	6
6334	BAM13B	13.800	G2	26.6	1.6	10.0	-10.0	1.0000	26.6	0.9982	30.0			64	6
6335	BAIG1	13.800	G1	42.1	-7.5	14.0	-14.0	1.0000	42.8	0.9846	49.0			64	6
6336	BAIG2	13.800	G2	42.1	-7.5	14.0	-14.0	1.0000	42.8	0.9846	49.0			64	6
6361	GLA13A	13.800	G1	12.1	-7.0	7.8	-7.0	0.9902	14.1	0.8649	14.1			64	6
6362	GLA13B	13.800	G2	12.1	-7.0	7.8	-7.0	0.9902	14.1	0.8649	14.1			64	6
6364	LOR13A	13.800	G1	16.1	-3.7	7.8	-7.0	1.0000	16.5	0.9739	25.0			64	6
6365	LOR13B	13.800	G2	16.1	-3.7	7.8	-7.0	1.0000	16.5	0.9739	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-5.5	8.0	-8.0	1.0000	27.2	0.9794	33.0			64	6
6368	PRU13B	13.800	G2	26.6	-5.5	8.0	-8.0	1.0000	27.2	0.9794	33.0			64	6
6384	PEDI13.8	13.800	G1	9.5	-1.9	4.9	-4.9	0.9900	9.8	0.9802	12.5			64	6
6384	PEDI13.8	13.800	G2	9.5	-1.9	4.9	-4.9	0.9900	9.8	0.9802	12.5			64	6
6385	PEDII13.8	13.800	G1	6.2	-2.4	3.2	-3.6	0.9900	6.7	0.9304	7.5			64	6
6385	PEDII13.8	13.800	G2	6.2	-2.4	3.2	-3.6	0.9900	6.7	0.9304	7.5			64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0182	59.8	0.9850	152.3			63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0043	1.6	0.9985	2.1			64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0043	1.6	0.9985	2.1			64	6

6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9535	5.4	0.9216	6.2	6
6530	HCONC4.16	4.2000	G1	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9999	5.6	64 6
6530	HCONC4.16	4.2000	G2	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9999	5.6	64 6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9535	5.0	0.9058	4.9	64 6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9754	2.9	0.9122	3.0	63 6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9754	2.9	0.9122	3.0	63 6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9754	5.4	0.9084	5.5	63 6
6621	PSUR4.16	4.2000	G1	4.8	0.4	2.5	-2.5	1.0000	4.8	0.9964	5.6	64 6
6621	PSUR4.16	4.2000	G2	4.8	0.4	2.5	-2.5	1.0000	4.8	0.9964	5.6	64 6
6623	PNORTE4.16	4.2000	G1	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9900	5.6	64 6
6623	PNORTE4.16	4.2000	G2	4.8	-0.7	2.5	-2.5	1.0000	4.8	0.9900	5.6	64 6
6631	COCHEA13.8	13.800	G1	6.4	-0.7	3.7	-3.7	1.0000	6.4	0.9938	8.4	64 6
6631	COCHEA13.8	13.800	G2	6.4	-0.7	3.7	-3.7	1.0000	6.4	0.9938	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	4.8	2.5	2.5	-2.5	0.9978	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	0.7	2.3	-2.6	1.0000	6.8	0.9953	7.5	64 6
6672	RP-490 6.6B	6.6000	G2	6.8	0.7	2.3	-2.6	1.0000	6.8	0.9953	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	1.0084	23.3	0.9074	24.9	64 6
6693	ALTO13B	13.800	G2	21.3	-1.8	9.9	-9.9	1.0000	21.4	0.9966	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	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
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9975	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	-1.2	2.2	-2.2	1.0000	4.5	0.9602	5.0	64 6
6731	SAND4.16	4.2000	G2	4.3	-1.2	2.2	-2.2	1.0000	4.5	0.9602	5.0	64 6
6741	RROJAS4.16	4.2000	G1	4.1	0.7	2.1	-2.1	1.0000	4.1	0.9844	4.8	64 6
6741	RROJAS4.16	4.2000	G2	4.1	0.7	2.1	-2.1	1.0000	4.1	0.9844	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
6763	BAR13.8	13.800	G1	7.2	3.1	4.0	-4.0	1.0000	7.8	0.9184	9.0	63 6
6763	BAR13.8	13.800	G2	7.2	3.1	4.0	-4.0	1.0000	7.8	0.9184	9.0	63 6
6765	CRU13.8	13.800	G1	4.6	1.5	2.6	-2.6	1.0000	4.8	0.9508	5.8	63 6
6765	CRU13.8	13.800	G2	4.6	1.5	2.6	-2.6	1.0000	4.8	0.9508	5.8	63 6
6767	LAG13.8	13.800	G1	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9742	5.8	63 6
6767	LAG13.8	13.800	G2	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9742	5.8	63 6
6769	ESTRECHO4.16	4.2000	G1	4.9	1.3	2.5	-2.5	1.0000	5.1	0.9647	5.6	63 6

6769	ESTRECHO4.16	4.2000	G2	4.9	1.3	2.5	-2.5	1.0000	5.1	0.9647	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9266	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9266	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	0.5	1.6	-1.6	1.0000	3.1	0.9850	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	0.5	1.6	-1.6	1.0000	3.1	0.9850	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	300.0	300.0	-225.0	1.0662	281.4	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-0.9	1.8	-1.8	1.0000	3.7	0.9672	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	0.9939	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9939	17.9	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0224	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9730	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9730	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9730	2.0	0.9058	2.1	64	6
6871	TABII13.8	13.800	G1	16.4	1.5	9.0	-9.0	1.0000	16.5	0.9961	20.5	64	6
6871	TABII13.8	13.800	G2	16.4	1.5	9.0	-9.0	1.0000	16.5	0.9961	20.5	64	6
6881	CHAIIG1 13.8	13.800	G1	101.7	10.3	52.3	-52.3	1.0100	101.2	0.9949	118.9	64	6
6900	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0852	276.5	0.0000	300.0	61	6
6921	CB250A-1	13.800	C1	80.2	8.1	61.1	-61.1	1.0300	78.2	0.9950	138.9	62	6
6922	CB250A-2	13.800	C2	80.2	8.1	61.1	-61.1	1.0300	78.2	0.9950	138.9	62	6
6923	CB250B-1	13.800	C1	80.2	8.1	61.1	-61.1	1.0300	78.2	0.9950	138.9	62	6
6924	CB250B-2	13.800	C2	80.2	8.1	61.1	-61.1	1.0300	78.2	0.9950	138.9	62	6
SUBSYSTEM TOTALS				2144.3	720.7	1701.3	-1436.8				3461.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:42
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - 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	0.4	8.0	0.0	1.0100	16.9	0.9998	27.7			65	7
6128	MIR13C	12.000	G3	20.9	7.8	11.0	0.0	1.0100	22.1	0.9373	29.4			65	7
6129	MIR13D	13.800	G4	28.0	9.4	15.0	0.0	1.0100	29.3	0.9476	44.1			65	7
6130	MIR13F	13.800	G5	17.1	0.9	8.0	0.0	1.0100	17.0	0.9986	27.7			65	7
6134	MAD6A	6.9000	G1	11.4	0.2	6.0	-6.0	1.0100	11.3	0.9999	13.0			65	7
6135	MAD6B	6.9000	G2	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0			65	7
6136	MAD6C	6.9000	G3	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0			65	7
6140	GAT6A	6.9000	G4	4.3	-3.0	3.0	-3.0	0.9994	5.2	0.8186	5.6			65	7
6140	GAT6A	6.9000	G5	4.3	-3.0	3.0	-3.0	0.9994	5.2	0.8186	6.2			65	7

2030

SUBSYSTEM TOTALS	125.9	13.2	66.0	-24.0		179.8

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PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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)
6000	FRONTER	230.00	6	1.0138	233.17	6003	PANII230	230.00	6	1.0100	232.30
6008	LSA230	230.00	6	1.0099	232.28	6014	PRO230	230.00	6	1.0121	232.78
6096	FOR230	230.00	6	1.0009	230.20	6100	BAY230	230.00	6	1.0273	236.29
6103	COP23O	230.00	6	1.0130	233.00	6171	PAC230	230.00	6	1.0138	233.17
6260	CHA 230	230.00	6	1.0111	232.56	6263	ESP230	230.00	6	1.0102	232.34
6330	BAI230	230.00	6	1.0117	232.69	6340	CAN 230	230.00	6	1.0012	230.28
6360	GLA230	230.00	6	1.0002	230.05	6363	ZAM230	230.00	6	1.0055	231.26
6366	EVA230	230.00	6	1.0084	231.93	6380	BOQIII 230	230.00	6	1.0055	231.27
6400	FRONTCHA	230.00	6	1.0117	232.69	6430	ANTON230	230.00	6	1.0192	234.42
6500	FRONTDOM	230.00	6	1.0228	235.24	6590	24DIC230	230.00	6	1.0113	232.61
6680	BFRIO230	230.00	6	1.0148	233.40	6690	DOM230	230.00	6	1.0236	235.42
6691	ALTO230	230.00	6	1.0264	236.08	6695	PANDO230	230.00	6	1.0247	235.68
6698	MLIRIO230	230.00	6	1.0244	235.60	6790	SMA230	230.00	6	1.0108	232.49
6840	BUR230	230.00	6	1.0144	233.31	6880	CHAII230	230.00	6	1.0113	232.60
6920	STR230	230.00	6	1.0260	235.99						

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)
6001	PAN230	230.00	6	0.9909	227.92	6005	CHO230	230.00	6	0.9774	224.80
6011	MDN230	230.00	6	0.9983	229.61	6105	PAM230	230.00	6	0.9774	224.80
6178	EST230	230.00	6	0.9953	228.91	6179	GUA230	230.00	6	0.9954	228.94
6182	VEL230	230.00	6	0.9952	228.90	6240	LGU 230	230.00	6	0.9897	227.64
6760	SBA230	230.00	6	0.9979	229.52	6860	BBL230	230.00	6	0.9958	229.04
6870	TABII230	230.00	6	0.9962	229.12						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:42
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0287	118.30	6004	PANII115	115.00	6	1.0299	118.43
6009	LSA115	115.00	6	1.0216	117.48	6012	MDN115	115.00	6	1.0051	115.58
6015	PRO115	115.00	6	1.0076	115.88	6018	CAC115	115.00	6	1.0280	118.22
6019	CVI115A	115.00	6	1.0188	117.16	6024	CHI115	115.00	6	1.0213	117.45
6027	LOC115A	115.00	6	1.0160	116.84	6032	MAR115A	115.00	6	1.0120	116.38
6036	SMA115	115.00	6	1.0272	118.13	6040	SFR115	115.00	6	1.0114	116.31
6047	CLA115	115.00	6	1.0215	117.47	6055	MOS115B	115.00	6	1.0253	117.90
6057	TOC115	115.00	6	1.0267	118.07	6059	LM1115	115.00	6	1.0227	117.62
6060	LM2115	115.00	6	1.0229	117.63	6066	FFIELD	115.00	6	1.0132	116.52
6074	LMDIST	115.00	6	1.0228	117.62	6087	CAL115	115.00	6	1.0105	116.21
6088	LES115	115.00	6	1.0134	116.54	6092	LVA115	115.00	6	1.0107	116.23
6123	MIR115	115.00	7	1.0371	119.26	6170	CPA115	115.00	6	1.0234	117.69
6173	STR115	115.00	6	1.0264	118.03	6174	PM115-1A	115.00	6	1.0283	118.25
6175	PM115-2A	115.00	6	1.0283	118.25	6210	TIN115	115.00	6	1.0237	117.73
6211	PM115-9	115.00	6	1.0245	117.81	6230	CBA115	115.00	6	1.0138	116.59
6261	CHA 115	115.00	6	1.0045	115.52	6270	CAT 115	115.00	6	1.0228	117.62
6280	GIR 115	115.00	6	1.0234	117.69	6290	CATII 11	115.00	6	1.0231	117.66
6332	BAM115	115.00	6	1.0033	115.38	6350	PM115-8	115.00	6	1.0202	117.32
6550	CHAZ115	115.00	6	1.0076	115.88	6580	LBO115	115.00	6	1.0180	117.07
6910	GON115	115.00	6	1.0261	118.00						

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	0.9559	109.93	6331	BAI115	115.00	6	0.9997	114.96

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:42
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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):

FROM BUS				TO BUS						RATING SET A		RATING SET B		RATING SET C	
BUS#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAFO1	WND 1	6	T1	48.0	50.0	96.0	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAFO2	WND 1	6	T3	96.0	100.0	96.0	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAFO2	WND 1	6	T2	48.0	50.0	96.0	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAFO1	WND 2	6	T1	57.5	60.0	95.8	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAFO2	WND 2	6	T2	57.5	60.0	95.8	--	--	--	--
6027	LOC115A	115.00*	6	3WNDTR	LOC T1	WND 2	6	T1	48.5	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	59.9	62.5	95.8	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAFO1	WND 1	6	T1	52.8	54.0	97.8	--	--	--	--

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:42
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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):

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

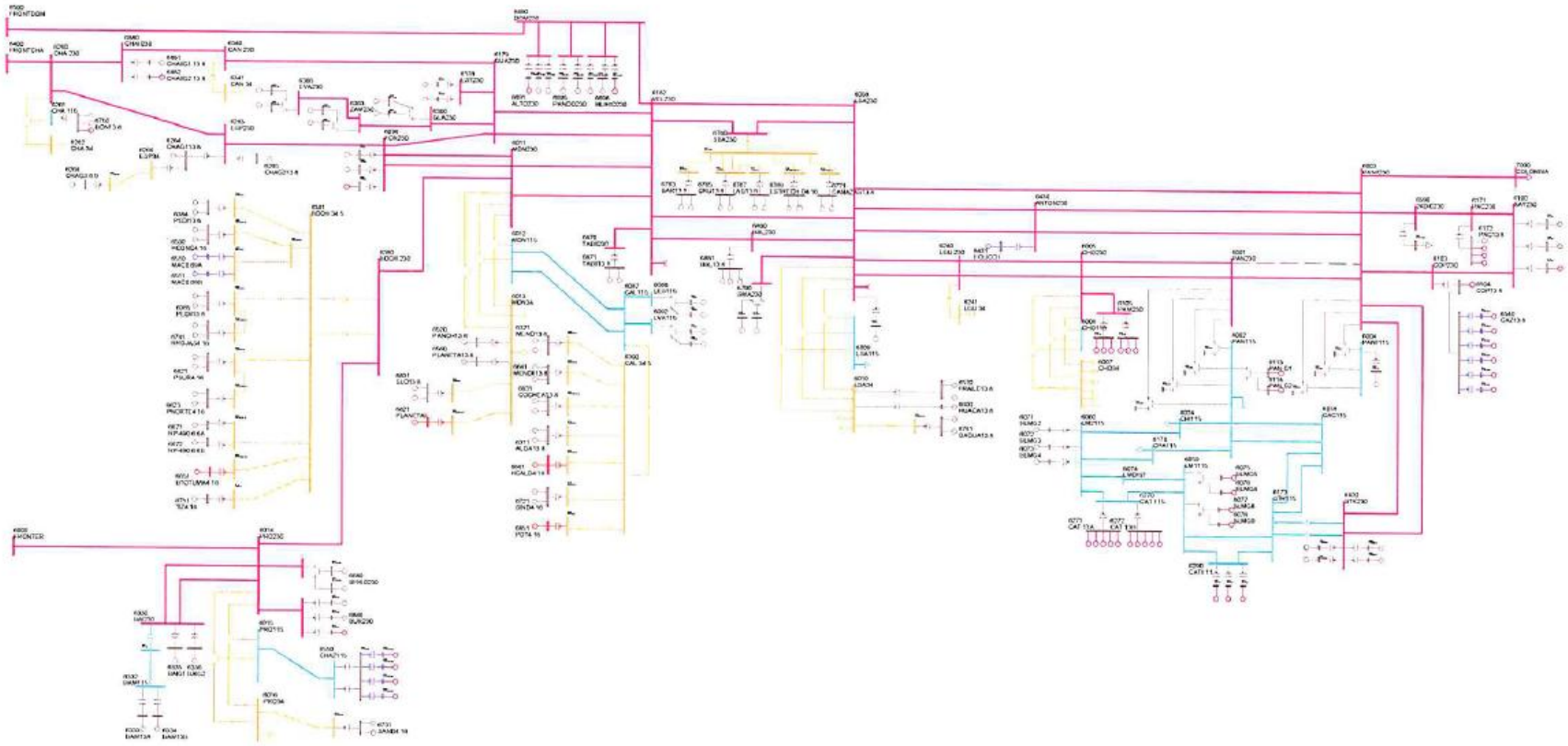
* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:42
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 IN MW/MVAR

X-- AREA --X	FROM GENE- RATION	TO LOAD ASSIGNED TO AREA	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	920.3	1179.4	0.0	0.0	0.0	21.6	-280.7	-280.7	-280.7
GUATEMAL	222.3	340.6	220.5	0.0	604.8	246.6	19.4	19.4	
2	1142.7	1104.0	0.0	0.0	0.0	38.6	0.0	0.0	0.0
SALVADOR	301.9	367.1	-180.9	0.0	241.0	326.9	29.8	29.8	
3	1239.4	1205.2	0.0	0.0	0.0	34.2	0.0	0.0	0.0
HONDURAS	394.2	395.2	-20.4	0.0	468.6	456.2	31.8	31.8	
4	480.0	459.0	0.0	0.0	0.0	21.1	0.0	0.0	0.0
NICARAGU	-12.3	181.0	-12.7	0.0	287.5	188.1	-81.2	-81.2	
5	1521.8	1489.7	0.0	0.0	0.0	32.1	-0.1	-0.1	0.0
COSTA RI	270.9	558.4	-226.3	0.0	554.5	439.6	53.8	53.8	
6	2144.3	1911.3	0.0	0.0	0.0	116.5	116.5	116.5	116.4
PANAMA	720.7	334.8	-229.4	0.0	560.9	1245.7	-69.5	-69.5	
7	125.9	62.1	0.0	0.0	0.0	3.8	59.9	59.9	60.0
ACANAL	13.2	10.9	-15.9	0.0	0.0	17.2	1.0	1.0	
10	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	
11	0.0	-104.3	0.0	0.0	0.0	0.0	104.3	104.3	104.3
COLOMBIA	0.0	-14.9	0.0	0.0	0.0	0.0	14.9	14.9	
COLUMN	7574.4	7306.4	0.0	0.0	0.0	267.9	0.0	0.0	0.0
TOTALS	1911.0	2173.2	-465.1	0.0	2717.4	2920.4	0.0	0.0	

2035

Contingencia 1: Panamá – Panamá II (230-1C)



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:45
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	7.0	15.0	0.0	1.0300	37.5	0.9834	47.0			62	6
6072	BLMG3	13.800	V3	38.0	7.0	15.0	0.0	1.0300	37.5	0.9834	47.0			62	6
6073	BLMG4	13.800	V4	38.0	7.2	15.0	0.0	1.0300	37.6	0.9824	47.0			62	6
6090	LESG1	13.800	E1	22.4	4.4	12.0	-5.0	1.0000	22.8	0.9815	27.0			64	6
6091	LESG2	13.800	E2	22.4	4.4	12.0	-5.0	1.0000	22.8	0.9815	27.0			64	6
6094	LVAG1	13.800	L1	26.0	-2.1	12.0	-5.0	1.0000	26.1	0.9968	27.0			64	6
6095	LVAG2	13.800	L2	26.0	-2.1	12.0	-5.0	1.0000	26.1	0.9968	27.0			64	6
6097	FORG1	13.800	F1	95.0	13.8	50.0	-50.0	1.0100	95.1	0.9895	111.0			64	6
6098	FORG2	13.800	F2	95.0	13.8	50.0	-50.0	1.0100	95.1	0.9895	111.0			64	6
6101	BAYG1	13.800	B1	82.3	18.4	30.0	-25.0	1.0200	82.7	0.9760	94.0			61	6
6102	BAYG2	13.800	B2	79.2	18.0	30.0	-25.0	1.0200	79.7	0.9750	94.0			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	-7.2	52.4	-48.9	0.9900	100.9	0.9974	116.5			64	6
6265	CHAG213.8	13.800	G2	99.6	-3.8	52.4	-48.9	0.9900	100.7	0.9993	116.5			64	6
6268	CHAG3 6.9	6.9000	G3	9.3	4.9	4.9	-4.1	0.9871	10.6	0.8852	10.9			64	6
6311	ALGA13.8	13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9748	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	1.6	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	0.9853	49.0			64	6
6336	BAIG2	13.800	G2	42.1	-7.3	14.0	-14.0	1.0000	42.8	0.9853	49.0			64	6
6361	GLA13A	13.800	G1	12.1	-7.0	7.8	-7.0	0.9895	14.1	0.8649	14.1			64	6
6362	GLA13B	13.800	G2	12.1	-7.0	7.8	-7.0	0.9895	14.1	0.8649	14.1			64	6
6364	LOR13A	13.800	G1	16.1	-3.3	7.8	-7.0	1.0000	16.4	0.9791	25.0			64	6
6365	LOR13B	13.800	G2	16.1	-3.3	7.8	-7.0	1.0000	16.4	0.9791	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-5.1	8.0	-8.0	1.0000	27.1	0.9821	33.0			64	6
6368	PRU13B	13.800	G2	26.6	-5.1	8.0	-8.0	1.0000	27.1	0.9821	33.0			64	6
6384	PEDI13.8	13.800	G1	9.5	-1.9	4.9	-4.9	0.9900	9.8	0.9807	12.5			64	6
6384	PEDI13.8	13.800	G2	9.5	-1.9	4.9	-4.9	0.9900	9.8	0.9807	12.5			64	6
6385	PEDII13.8	13.800	G1	6.2	-2.4	3.2	-3.6	0.9900	6.7	0.9314	7.5			64	6
6385	PEDII13.8	13.800	G2	6.2	-2.4	3.2	-3.6	0.9900	6.7	0.9314	7.5			64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0167	59.9	0.9850	152.3			63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0042	1.6	0.9985	2.1			64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0042	1.6	0.9985	2.1			64	6

6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9533	5.4	0.9216	6.2	6
6530	HCONC4.16	4.2000	G1	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9997	5.6	64 6
6530	HCONC4.16	4.2000	G2	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9997	5.6	64 6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9533	5.0	0.9058	4.9	64 6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9741	2.9	0.9122	3.0	63 6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9741	2.9	0.9122	3.0	63 6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9740	5.4	0.9084	5.5	63 6
6621	PSUR4.16	4.2000	G1	4.8	0.4	2.5	-2.5	1.0000	4.8	0.9956	5.6	64 6
6621	PSUR4.16	4.2000	G2	4.8	0.4	2.5	-2.5	1.0000	4.8	0.9956	5.6	64 6
6623	PNORTE4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9908	5.6	64 6
6623	PNORTE4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9908	5.6	64 6
6631	COCHEA13.8	13.800	G1	6.4	-0.7	3.7	-3.7	1.0000	6.4	0.9942	8.4	64 6
6631	COCHEA13.8	13.800	G2	6.4	-0.7	3.7	-3.7	1.0000	6.4	0.9942	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	2.5	2.5	-2.5	0.9977	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	0.7	2.3	-2.6	1.0000	6.8	0.9952	7.5	64 6
6672	RP-490 6.6B	6.6000	G2	6.8	0.7	2.3	-2.6	1.0000	6.8	0.9952	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	1.0083	23.3	0.9074	24.9	64 6
6693	ALTO13B	13.800	G2	21.3	-1.5	9.9	-9.9	1.0000	21.4	0.9975	24.9	64 6
6696	PANDO13A	13.800	G1	15.8	0.9	12.8	-8.3	1.0000	15.8	0.9985	18.5	64 6
6697	PANDO13B	13.800	G2	15.8	0.9	12.8	-8.3	1.0000	15.8	0.9985	18.5	64 6
6699	MLIRIO13A	13.800	G1	15.8	1.5	12.8	-8.3	1.0000	15.9	0.9956	18.5	64 6
6700	MLIRIO13B	13.800	G2	15.8	1.5	12.8	-8.3	1.0000	15.9	0.9956	18.5	64 6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9974	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	-1.2	2.2	-2.2	1.0000	4.4	0.9630	5.0	64 6
6731	SAND4.16	4.2000	G2	4.3	-1.2	2.2	-2.2	1.0000	4.4	0.9630	5.0	64 6
6741	RROJAS4.16	4.2000	G1	4.1	0.7	2.1	-2.1	1.0000	4.2	0.9836	4.8	64 6
6741	RROJAS4.16	4.2000	G2	4.1	0.7	2.1	-2.1	1.0000	4.2	0.9836	4.8	64 6
6750	BON13.8	13.800	G1	9.9	-0.4	4.0	-4.0	1.0000	9.9	0.9992	35.3	64 6
6750	BON13.8	13.800	G2	9.9	-0.4	4.0	-4.0	1.0000	9.9	0.9992	35.3	64 6
6763	BAR13.8	13.800	G1	7.2	3.2	4.0	-4.0	1.0000	7.9	0.9134	9.0	63 6
6763	BAR13.8	13.800	G2	7.2	3.2	4.0	-4.0	1.0000	7.9	0.9134	9.0	63 6
6765	CRU13.8	13.800	G1	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9470	5.8	63 6
6765	CRU13.8	13.800	G2	4.6	1.6	2.6	-2.6	1.0000	4.9	0.9470	5.8	63 6
6767	LAG13.8	13.800	G1	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9716	5.8	63 6
6767	LAG13.8	13.800	G2	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9716	5.8	63 6
6769	ESTRECHO4.16	4.2000	G1	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9617	5.6	63 6

6769	ESTRECHO4.16	4.2000	G2	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9617	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.8	1.2	1.5	-1.5	1.0000	3.1	0.9203	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.2	1.5	-1.5	1.0000	3.1	0.9203	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	1.4	1.6	-1.6	1.0000	3.4	0.9146	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	1.4	1.6	-1.6	1.0000	3.4	0.9146	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-5.2	6.2	-6.2	1.0000	13.2	0.9208	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-5.2	6.2	-6.2	1.0000	13.2	0.9208	14.2	63	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0628	282.3	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-0.7	1.8	-1.8	1.0000	3.6	0.9800	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9805	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9805	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9937	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9937	17.9	0.8892	18.5	64	6
6851	POT4.16	4.1600	G1	3.5	-2.0	2.0	-2.0	1.0224	4.0	0.8678	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9711	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9711	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9711	2.0	0.9058	2.1	64	6
6871	TABII13.8	13.800	G1	16.4	1.8	9.0	-9.0	1.0000	16.5	0.9938	20.5	64	6
6871	TABII13.8	13.800	G2	16.4	1.8	9.0	-9.0	1.0000	16.5	0.9938	20.5	64	6
6881	CHAIIG1 13.8	13.800	G1	101.7	10.5	52.3	-52.3	1.0100	101.2	0.9947	118.9	64	6
6900	SVC-LV	13.200	1	0.0	295.3	300.0	-225.0	1.0810	273.2	0.0000	300.0	61	6
6921	CB250A-1	13.800	C1	80.2	10.7	61.1	-61.1	1.0300	78.5	0.9913	138.9	62	6
6922	CB250A-2	13.800	C2	80.2	10.7	61.1	-61.1	1.0300	78.5	0.9913	138.9	62	6
6923	CB250B-1	13.800	C1	80.2	10.7	61.1	-61.1	1.0300	78.5	0.9913	138.9	62	6
6924	CB250B-2	13.800	C2	80.2	10.7	61.1	-61.1	1.0300	78.5	0.9913	138.9	62	6
SUBSYSTEM TOTALS				2147.7	744.9	1701.3	-1436.8				3461.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:45
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - 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	1.7	8.0	0.0	1.0100	17.0	0.9953	27.7			65	7
6128	MIR13C	12.000	G3	20.9	8.9	11.0	0.0	1.0100	22.5	0.9206	29.4			65	7
6129	MIR13D	13.800	G4	28.0	10.8	15.0	0.0	1.0100	29.7	0.9330	44.1			65	7
6130	MIR13F	13.800	G5	17.1	2.5	8.0	0.0	1.0100	17.1	0.9898	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	-3.0	3.0	-3.0	0.9953	5.2	0.8186	5.6			65	7
6140	GAT6A	6.9000	G5	4.3	-3.0	3.0	-3.0	0.9953	5.2	0.8186	6.2			65	7

SUBSYSTEM TOTALS	125.9	19.2	66.0	-24.0		179.8

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:45
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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)
6000	FRONTER	230.00	6	1.0135	233.11	6003	PANII230	230.00	6	1.0100	232.30
6008	LSA230	230.00	6	1.0064	231.46	6014	PRO230	230.00	6	1.0118	232.72
6096	FOR230	230.00	6	1.0003	230.07	6100	BAY230	230.00	6	1.0274	236.30
6103	COP23O	230.00	6	1.0130	233.00	6171	PAC230	230.00	6	1.0138	233.17
6260	CHA 230	230.00	6	1.0109	232.50	6263	ESP230	230.00	6	1.0099	232.28
6330	BAI230	230.00	6	1.0115	232.64	6340	CAN 230	230.00	6	1.0007	230.16
6363	ZAM230	230.00	6	1.0049	231.13	6366	EVA230	230.00	6	1.0078	231.80
6380	BOQIII 230	230.00	6	1.0051	231.16	6400	FRONTCHA	230.00	6	1.0115	232.64
6430	ANTON230	230.00	6	1.0177	234.07	6500	FRONTDOM	230.00	6	1.0226	235.20
6590	24DIC230	230.00	6	1.0113	232.61	6680	BFRIO230	230.00	6	1.0145	233.34
6690	DOM230	230.00	6	1.0234	235.37	6691	ALTO230	230.00	6	1.0263	236.04
6695	PANDO230	230.00	6	1.0246	235.65	6698	MLIRIO230	230.00	6	1.0242	235.57
6790	SMA230	230.00	6	1.0074	231.69	6840	BUR230	230.00	6	1.0141	233.25
6880	CHAII230	230.00	6	1.0110	232.53	6920	STR230	230.00	6	1.0243	235.60

BUSES WITH VOLTAGE 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	0.9762	224.53	6005	CHO230	230.00	6	0.9642	221.76
6011	MDN230	230.00	6	0.9975	229.44	6105	PAM230	230.00	6	0.9642	221.76
6178	EST230	230.00	6	0.9946	228.76	6179	GUA230	230.00	6	0.9947	228.78
6182	VEL230	230.00	6	0.9934	228.49	6240	LGU 230	230.00	6	0.9815	225.76
6360	GLA230	230.00	6	0.9996	229.90	6760	SBA230	230.00	6	0.9956	228.99
6860	BBL230	230.00	6	0.9939	228.60	6870	TABII230	230.00	6	0.9945	228.74

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:45
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0154	116.77	6004	PANII115	115.00	6	1.0264	118.03
6009	LSA115	115.00	6	1.0186	117.13	6012	MDN115	115.00	6	1.0046	115.53
6015	PRO115	115.00	6	1.0074	115.85	6018	CAC115	115.00	6	1.0148	116.71
6019	CVI115A	115.00	6	1.0123	116.41	6024	CHI115	115.00	6	1.0135	116.55
6027	LOC115A	115.00	6	1.0032	115.37	6036	SMA115	115.00	6	1.0139	116.60
6047	CLA115	115.00	6	1.0154	116.77	6055	MOS115B	115.00	6	1.0118	116.36
6057	TOC115	115.00	6	1.0232	117.67	6059	LM1115	115.00	6	1.0180	117.07
6060	LM2115	115.00	6	1.0182	117.09	6066	FFIELD	115.00	6	1.0085	115.97
6074	LMDIST	115.00	6	1.0181	117.08	6087	CAL115	115.00	6	1.0102	116.18
6088	LES115	115.00	6	1.0132	116.51	6092	LVA115	115.00	6	1.0104	116.20
6123	MIR115	115.00	7	1.0258	117.97	6170	CPA115	115.00	6	1.0161	116.86
6173	STR115	115.00	6	1.0218	117.51	6174	PM115-1A	115.00	6	1.0199	117.29
6175	PM115-2A	115.00	6	1.0199	117.29	6210	TIN115	115.00	6	1.0103	116.18
6211	PM115-9	115.00	6	1.0110	116.27	6230	CBA115	115.00	6	1.0014	115.16
6261	CHA 115	115.00	6	1.0044	115.50	6270	CAT 115	115.00	6	1.0181	117.08
6280	GIR 115	115.00	6	1.0161	116.86	6290	CATII 11	115.00	6	1.0185	117.12
6332	BAM115	115.00	6	1.0032	115.37	6350	PM115-8	115.00	6	1.0071	115.81
6550	CHAZ115	115.00	6	1.0074	115.85	6580	LBO115	115.00	6	1.0115	116.32
6910	GON115	115.00	6	1.0217	117.50						

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	0.9420	108.33	6032	MAR115A	115.00	6	0.9989	114.87
6040	SFR115	115.00	6	0.9996	114.95	6331	BAI115	115.00	6	0.9995	114.94

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:45
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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):

FROM BUS				TO BUS						RATING SET A		RATING SET B		RATING SET C	
BUS#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6001	PAN230	230.00*	6	6003	PANII230	230.00	6	2B	436.0	350.0	124.6	450.0	96.9	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAFO1	WND 1	6	T1	48.1	50.0	96.2	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAFO2	WND 1	6	T3	96.2	100.0	96.2	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAFO2	WND 1	6	T2	48.1	50.0	96.2	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAFO1	WND 2	6	T1	57.5	60.0	95.8	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAFO2	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	59.9	62.5	95.8	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAFO1	WND 1	6	T1	52.8	54.0	97.7	--	--	--	--

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:45
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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):

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

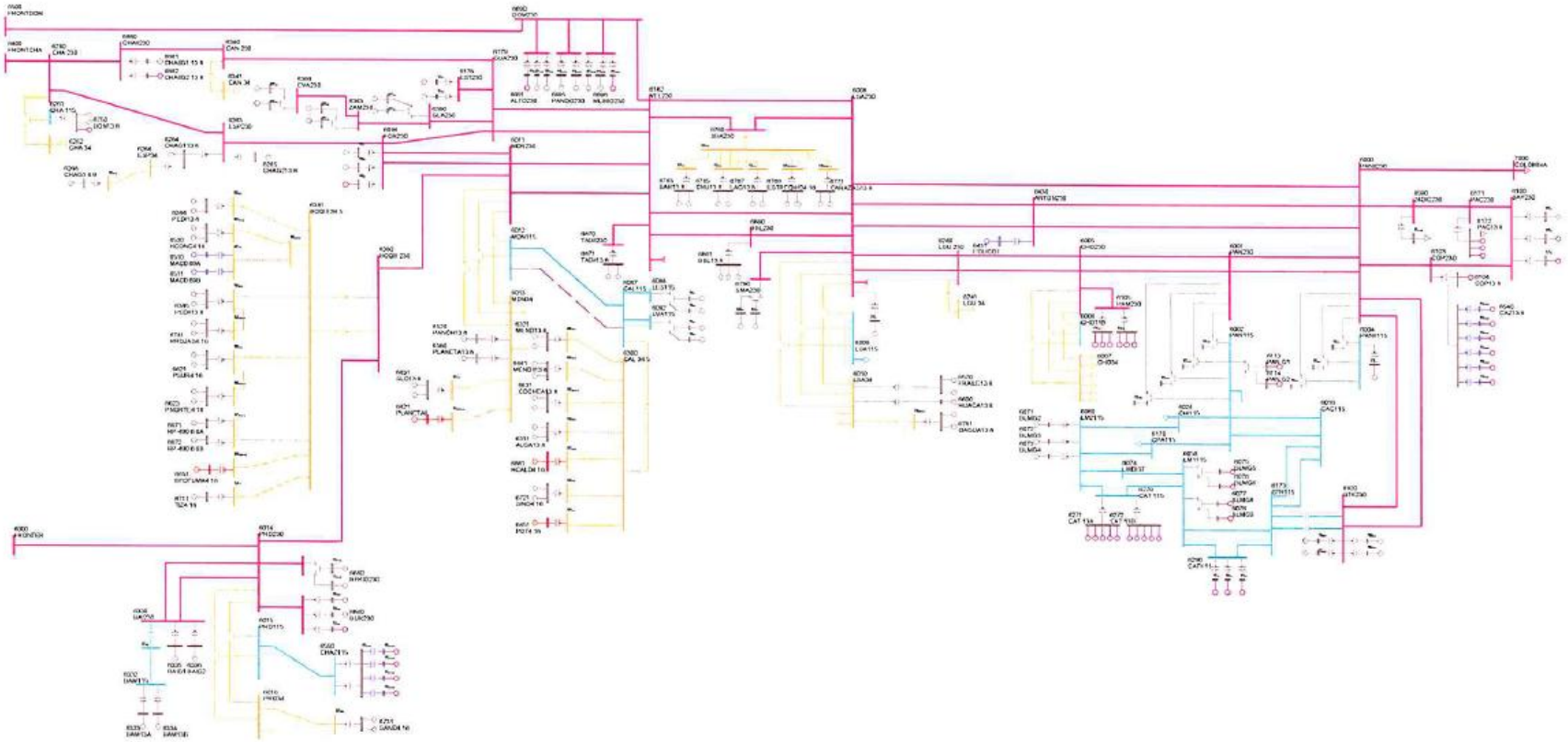
* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:47
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020

AREA TOTALS
IN MW/MVAR

X-- AREA --X	FROM GENE-RATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	920.3	1179.4	0.0	0.0	0.0	21.6	-280.7	-280.7	-280.7
GUATEMAL	222.3	340.6	220.5	0.0	604.8	246.6	19.4	19.4	
2	1142.7	1104.0	0.0	0.0	0.0	38.6	0.0	0.0	0.0
SALVADOR	301.9	367.1	-180.9	0.0	241.0	326.9	29.8	29.8	
3	1239.4	1205.2	0.0	0.0	0.0	34.2	0.0	0.0	0.0
HONDURAS	394.2	395.2	-20.4	0.0	468.6	456.2	31.8	31.8	
4	480.0	459.0	0.0	0.0	0.0	21.1	0.0	0.0	0.0
NICARAGU	-12.3	181.0	-12.7	0.0	287.5	188.1	-81.2	-81.2	
5	1521.8	1489.7	0.0	0.0	0.0	32.1	-0.1	-0.1	0.0
COSTA RI	271.4	558.4	-226.3	0.0	554.5	439.7	54.2	54.2	
6	2147.7	1911.3	0.0	0.0	0.0	119.8	116.6	116.6	116.4
PANAMA	744.9	334.8	-224.0	0.0	555.3	1264.6	-75.2	-75.2	
7	125.9	62.1	0.0	0.0	0.0	3.9	59.8	59.8	60.0
ACANAL	19.2	10.9	-15.8	0.0	0.0	17.7	6.4	6.4	
10	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	
11	0.0	-104.3	0.0	0.0	0.0	0.0	104.3	104.3	104.3
COLOMBIA	0.0	-14.9	0.0	0.0	0.0	0.0	14.9	14.9	
COLUMN	7577.8	7306.4	0.0	0.0	0.0	271.4	0.0	0.0	0.0
TOTALS	1941.7	2173.2	-459.5	0.0	2711.7	2939.8	0.0	0.0	

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



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:49
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	4.8	15.0	0.0	1.0300	37.2	0.9920	47.0			62	6
6072	BLMG3	13.800	V3	38.0	4.8	15.0	0.0	1.0300	37.2	0.9920	47.0			62	6
6073	BLMG4	13.800	V4	38.0	4.9	15.0	0.0	1.0300	37.2	0.9917	47.0			62	6
6090	LESG1	13.800	E1	22.4	4.9	12.0	-5.0	1.0000	22.9	0.9772	27.0			64	6
6091	LESG2	13.800	E2	22.4	4.9	12.0	-5.0	1.0000	22.9	0.9772	27.0			64	6
6094	LVAG1	13.800	L1	26.0	-1.6	12.0	-5.0	1.0000	26.1	0.9982	27.0			64	6
6095	LVAG2	13.800	L2	26.0	-1.6	12.0	-5.0	1.0000	26.1	0.9982	27.0			64	6
6097	FORG1	13.800	F1	95.0	14.0	50.0	-50.0	1.0100	95.1	0.9894	111.0			64	6
6098	FORG2	13.800	F2	95.0	14.0	50.0	-50.0	1.0100	95.1	0.9894	111.0			64	6
6101	BAYG1	13.800	B1	80.8	18.2	30.0	-25.0	1.0200	81.2	0.9755	94.0			61	6
6102	BAYG2	13.800	B2	79.2	18.1	30.0	-25.0	1.0200	79.7	0.9750	94.0			61	6
6176	ESTG1	13.800	E1	57.0	11.1	29.0	-29.0	1.0000	58.1	0.9814	69.0			64	6
6177	ESTG2	13.800	E2	57.0	11.1	29.0	-29.0	1.0000	58.1	0.9814	69.0			64	6
6264	CHAG113.8	13.800	G1	99.6	-7.2	52.4	-48.9	0.9900	100.9	0.9974	116.5			64	6
6265	CHAG213.8	13.800	G2	99.6	-3.7	52.4	-48.9	0.9900	100.7	0.9993	116.5			64	6
6268	CHAG3 6.9	6.9000	G3	9.3	4.9	4.9	-4.1	0.9871	10.6	0.8852	10.9			64	6
6311	ALGA13.8	13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9741	5.7			64	6
6311	ALGA13.8	13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9741	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	1.7	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	0.9857	49.0			64	6
6336	BAIG2	13.800	G2	42.1	-7.2	14.0	-14.0	1.0000	42.7	0.9857	49.0			64	6
6361	GLA13A	13.800	G1	12.1	-7.0	7.8	-7.0	0.9897	14.1	0.8649	14.1			64	6
6362	GLA13B	13.800	G2	12.1	-7.0	7.8	-7.0	0.9897	14.1	0.8649	14.1			64	6
6364	LOR13A	13.800	G1	16.1	-3.5	7.8	-7.0	1.0000	16.4	0.9776	25.0			64	6
6365	LOR13B	13.800	G2	16.1	-3.5	7.8	-7.0	1.0000	16.4	0.9776	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-5.2	8.0	-8.0	1.0000	27.1	0.9813	33.0			64	6
6368	PRU13B	13.800	G2	26.6	-5.2	8.0	-8.0	1.0000	27.1	0.9813	33.0			64	6
6384	PEDI13.8	13.800	G1	9.5	-1.9	4.9	-4.9	0.9900	9.8	0.9811	12.5			64	6
6384	PEDI13.8	13.800	G2	9.5	-1.9	4.9	-4.9	0.9900	9.8	0.9811	12.5			64	6
6385	PEDII13.8	13.800	G1	6.2	-2.4	3.2	-3.6	0.9900	6.7	0.9321	7.5			64	6
6385	PEDII13.8	13.800	G2	6.2	-2.4	3.2	-3.6	0.9900	6.7	0.9321	7.5			64	6
6431	EOLICO I	0.6000	G1	60.0	-10.5	10.5	-10.5	1.0182	59.8	0.9850	152.3			63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0041	1.6	0.9985	2.1			64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0041	1.6	0.9985	2.1			64	6

6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9512	5.4	0.9216	6.2		6
6530	HCONC4.16	4.2000	G1	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9996	5.6	64	6
6530	HCONC4.16	4.2000	G2	4.8	0.1	2.5	-2.5	1.0000	4.8	0.9996	5.6	64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9512	5.0	0.9058	4.9	64	6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9754	2.9	0.9122	3.0	63	6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9754	2.9	0.9122	3.0	63	6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9753	5.4	0.9084	5.5	63	6
6621	PSUR4.16	4.2000	G1	4.8	0.5	2.5	-2.5	1.0000	4.8	0.9951	5.6	64	6
6621	PSUR4.16	4.2000	G2	4.8	0.5	2.5	-2.5	1.0000	4.8	0.9951	5.6	64	6
6623	PNORTE4.16	4.2000	G1	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9914	5.6	64	6
6623	PNORTE4.16	4.2000	G2	4.8	-0.6	2.5	-2.5	1.0000	4.8	0.9914	5.6	64	6
6631	COCHEA13.8	13.800	G1	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9966	8.4	64	6
6631	COCHEA13.8	13.800	G2	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9966	8.4	64	6
6641	MENDII13.8	13.800	G1	3.3	0.3	1.9	-1.9	1.0000	3.3	0.9961	4.1	64	6
6641	MENDII13.8	13.800	G2	3.3	0.3	1.9	-1.9	1.0000	3.3	0.9961	4.1	64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	0.9976	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	0.7	2.3	-2.6	1.0000	6.8	0.9952	7.5	64	6
6672	RP-490 6.6B	6.6000	G2	6.8	0.7	2.3	-2.6	1.0000	6.8	0.9952	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	1.0084	23.3	0.9074	24.9	64	6
6693	ALTO13B	13.800	G2	21.3	-1.6	9.9	-9.9	1.0000	21.4	0.9971	24.9	64	6
6696	PANDO13A	13.800	G1	15.8	0.8	12.8	-8.3	1.0000	15.8	0.9988	18.5	64	6
6697	PANDO13B	13.800	G2	15.8	0.8	12.8	-8.3	1.0000	15.8	0.9988	18.5	64	6
6699	MLIRIO13A	13.800	G1	15.8	1.4	12.8	-8.3	1.0000	15.9	0.9962	18.5	64	6
6700	MLIRIO13B	13.800	G2	15.8	1.4	12.8	-8.3	1.0000	15.9	0.9962	18.5	64	6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9973	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	-1.2	2.2	-2.2	1.0000	4.4	0.9645	5.0	64	6
6731	SAND4.16	4.2000	G2	4.3	-1.2	2.2	-2.2	1.0000	4.4	0.9645	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	0.8	2.1	-2.1	1.0000	4.2	0.9831	4.8	64	6
6741	RROJAS4.16	4.2000	G2	4.1	0.8	2.1	-2.1	1.0000	4.2	0.9831	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-0.4	4.0	-4.0	1.0000	9.9	0.9992	35.3	64	6
6750	BON13.8	13.800	G2	9.9	-0.4	4.0	-4.0	1.0000	9.9	0.9992	35.3	64	6
6763	BAR13.8	13.800	G1	7.2	3.1	4.0	-4.0	1.0000	7.8	0.9178	9.0	63	6
6763	BAR13.8	13.800	G2	7.2	3.1	4.0	-4.0	1.0000	7.8	0.9178	9.0	63	6
6765	CRU13.8	13.800	G1	4.6	1.5	2.6	-2.6	1.0000	4.8	0.9504	5.8	63	6
6765	CRU13.8	13.800	G2	4.6	1.5	2.6	-2.6	1.0000	4.8	0.9504	5.8	63	6
6767	LAG13.8	13.800	G1	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9739	5.8	63	6
6767	LAG13.8	13.800	G2	4.7	1.1	2.6	-2.6	1.0000	4.8	0.9739	5.8	63	6
6769	ESTRECHO4.16	4.2000	G1	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9644	5.6	63	6

6769	ESTRECHO4.16	4.2000	G2	4.9	1.4	2.5	-2.5	1.0000	5.1	0.9644	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9259	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.1	1.5	-1.5	1.0000	3.0	0.9259	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	0.6	1.6	-1.6	1.0000	3.1	0.9839	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	0.6	1.6	-1.6	1.0000	3.1	0.9839	3.6	63	6
6791	SMA13A	13.800	G1	12.2	-6.2	6.2	-6.2	1.0019	13.6	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	-6.2	6.2	-6.2	1.0019	13.6	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0661	281.4	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	1.3	1.8	-1.8	1.0000	3.8	0.9351	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9784	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9784	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9935	17.9	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9935	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	0.9726	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9726	9.8	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9726	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	0.9956	20.5	64	6
6871	TABII13.8	13.800	G2	16.4	1.6	9.0	-9.0	1.0000	16.5	0.9956	20.5	64	6
6881	CHAIIG1 13.8	13.800	G1	101.7	10.5	52.3	-52.3	1.0100	101.2	0.9947	118.9	64	6
6900	SVC-LV	13.200	1	0.0	299.9	300.0	-225.0	1.0851	276.4	0.0000	300.0	61	6
6921	CB250A-1	13.800	C1	80.2	8.1	61.1	-61.1	1.0300	78.2	0.9950	138.9	62	6
6922	CB250A-2	13.800	C2	80.2	8.1	61.1	-61.1	1.0300	78.2	0.9950	138.9	62	6
6923	CB250B-1	13.800	C1	80.2	8.1	61.1	-61.1	1.0300	78.2	0.9950	138.9	62	6
6924	CB250B-2	13.800	C2	80.2	8.1	61.1	-61.1	1.0300	78.2	0.9950	138.9	62	6
SUBSYSTEM TOTALS				2146.2	731.7	1701.3	-1436.8				3461.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:49
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - 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	0.4	8.0	0.0	1.0100	16.9	0.9998	27.7			65	7
6128	MIR13C	12.000	G3	20.9	7.8	11.0	0.0	1.0100	22.1	0.9373	29.4			65	7
6129	MIR13D	13.800	G4	28.0	9.4	15.0	0.0	1.0100	29.3	0.9476	44.1			65	7
6130	MIR13F	13.800	G5	17.1	0.9	8.0	0.0	1.0100	17.0	0.9986	27.7			65	7
6134	MAD6A	6.9000	G1	11.4	0.2	6.0	-6.0	1.0100	11.3	0.9999	13.0			65	7
6135	MAD6B	6.9000	G2	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0			65	7
6136	MAD6C	6.9000	G3	11.4	0.3	6.0	-6.0	1.0100	11.3	0.9997	13.0			65	7
6140	GAT6A	6.9000	G4	4.3	-3.0	3.0	-3.0	0.9994	5.2	0.8186	5.6			65	7
6140	GAT6A	6.9000	G5	4.3	-3.0	3.0	-3.0	0.9994	5.2	0.8186	6.2			65	7

SUBSYSTEM TOTALS	125.9	13.2	66.0	-24.0		179.8

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:49
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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)
6000	FRONTER	230.00	6	1.0134	233.08	6003	PANII230	230.00	6	1.0100	232.30
6008	LSA230	230.00	6	1.0098	232.26	6014	PRO230	230.00	6	1.0117	232.68
6096	FOR230	230.00	6	1.0002	230.04	6100	BAY230	230.00	6	1.0274	236.29
6103	COP23O	230.00	6	1.0130	233.00	6171	PAC230	230.00	6	1.0138	233.17
6260	CHA 230	230.00	6	1.0109	232.50	6263	ESP230	230.00	6	1.0099	232.28
6330	BAI230	230.00	6	1.0113	232.61	6340	CAN 230	230.00	6	1.0008	230.19
6363	ZAM230	230.00	6	1.0051	231.17	6366	EVA230	230.00	6	1.0080	231.84
6380	BOQIII 230	230.00	6	1.0047	231.08	6400	FRONTCHA	230.00	6	1.0115	232.64
6430	ANTON230	230.00	6	1.0192	234.42	6500	FRONTDOM	230.00	6	1.0227	235.22
6590	24DIC230	230.00	6	1.0113	232.61	6680	BFRIO230	230.00	6	1.0144	233.30
6690	DOM230	230.00	6	1.0235	235.39	6691	ALTO230	230.00	6	1.0264	236.06
6695	PANDO230	230.00	6	1.0246	235.66	6698	MLIRIO230	230.00	6	1.0243	235.59
6790	SMA230	230.00	6	1.0108	232.48	6840	BUR230	230.00	6	1.0140	233.21
6880	CHAII230	230.00	6	1.0110	232.54	6920	STR230	230.00	6	1.0260	235.99

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)
6001	PAN230	230.00	6	0.9909	227.92	6005	CHO230	230.00	6	0.9774	224.81
6011	MDN230	230.00	6	0.9970	229.30	6105	PAM230	230.00	6	0.9774	224.81
6178	EST230	230.00	6	0.9948	228.80	6179	GUA230	230.00	6	0.9949	228.83
6182	VEL230	230.00	6	0.9948	228.80	6240	LGU 230	230.00	6	0.9897	227.63
6360	GLA230	230.00	6	0.9998	229.94	6760	SBA230	230.00	6	0.9977	229.46
6860	BBL230	230.00	6	0.9954	228.95	6870	TABII230	230.00	6	0.9958	229.03

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:49
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0287	118.30	6004	PANII115	115.00	6	1.0299	118.43
6009	LSA115	115.00	6	1.0215	117.47	6012	MDN115	115.00	6	1.0006	115.07
6015	PRO115	115.00	6	1.0073	115.84	6018	CAC115	115.00	6	1.0280	118.22
6019	CVI115A	115.00	6	1.0188	117.16	6024	CHI115	115.00	6	1.0213	117.45
6027	LOC115A	115.00	6	1.0160	116.84	6032	MAR115A	115.00	6	1.0120	116.38
6036	SMA115	115.00	6	1.0273	118.13	6040	SFR115	115.00	6	1.0114	116.31
6047	CLA115	115.00	6	1.0215	117.47	6055	MOS115B	115.00	6	1.0253	117.90
6057	TOC115	115.00	6	1.0267	118.07	6059	LM1115	115.00	6	1.0227	117.62
6060	LM2115	115.00	6	1.0229	117.63	6066	FFIELD	115.00	6	1.0132	116.52
6074	LMDIST	115.00	6	1.0228	117.62	6087	CAL115	115.00	6	1.0084	115.97
6088	LES115	115.00	6	1.0115	116.33	6092	LVA115	115.00	6	1.0086	115.99
6123	MIR115	115.00	7	1.0371	119.27	6170	CPA115	115.00	6	1.0234	117.70
6173	STR115	115.00	6	1.0264	118.03	6174	PM115-1A	115.00	6	1.0283	118.25
6175	PM115-2A	115.00	6	1.0283	118.25	6210	TIN115	115.00	6	1.0237	117.73
6211	PM115-9	115.00	6	1.0245	117.81	6230	CBA115	115.00	6	1.0138	116.59
6261	CHA 115	115.00	6	1.0044	115.50	6270	CAT 115	115.00	6	1.0228	117.62
6280	GIR 115	115.00	6	1.0234	117.70	6290	CATII 11	115.00	6	1.0231	117.66
6332	BAM115	115.00	6	1.0031	115.36	6350	PM115-8	115.00	6	1.0202	117.33
6550	CHAZ115	115.00	6	1.0073	115.84	6580	LBO115	115.00	6	1.0180	117.07
6910	GON115	115.00	6	1.0261	118.00						

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	0.9559	109.93	6331	BAI115	115.00	6	0.9994	114.93

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:49
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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):

FROM BUS BUS#	NAME	BASKV	AREA	TO BUS BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING SET A RATING	A PERCENT	RATING SET B RATING	B PERCENT	RATING SET C RATING	C PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAFO1	WND 1	6	T1	48.0	50.0	96.0	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAFO2	WND 1	6	T3	96.0	100.0	96.0	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAFO2	WND 1	6	T2	48.0	50.0	96.0	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAFO1	WND 2	6	T1	57.5	60.0	95.8	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAFO2	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	48.5	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	59.8	62.5	95.6	--	--	--	--
6092	LVA115	115.00*	6	3WNDTR	TRAFO1	WND 1	6	T1	52.6	54.0	97.4	--	--	--	--

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:49
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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):

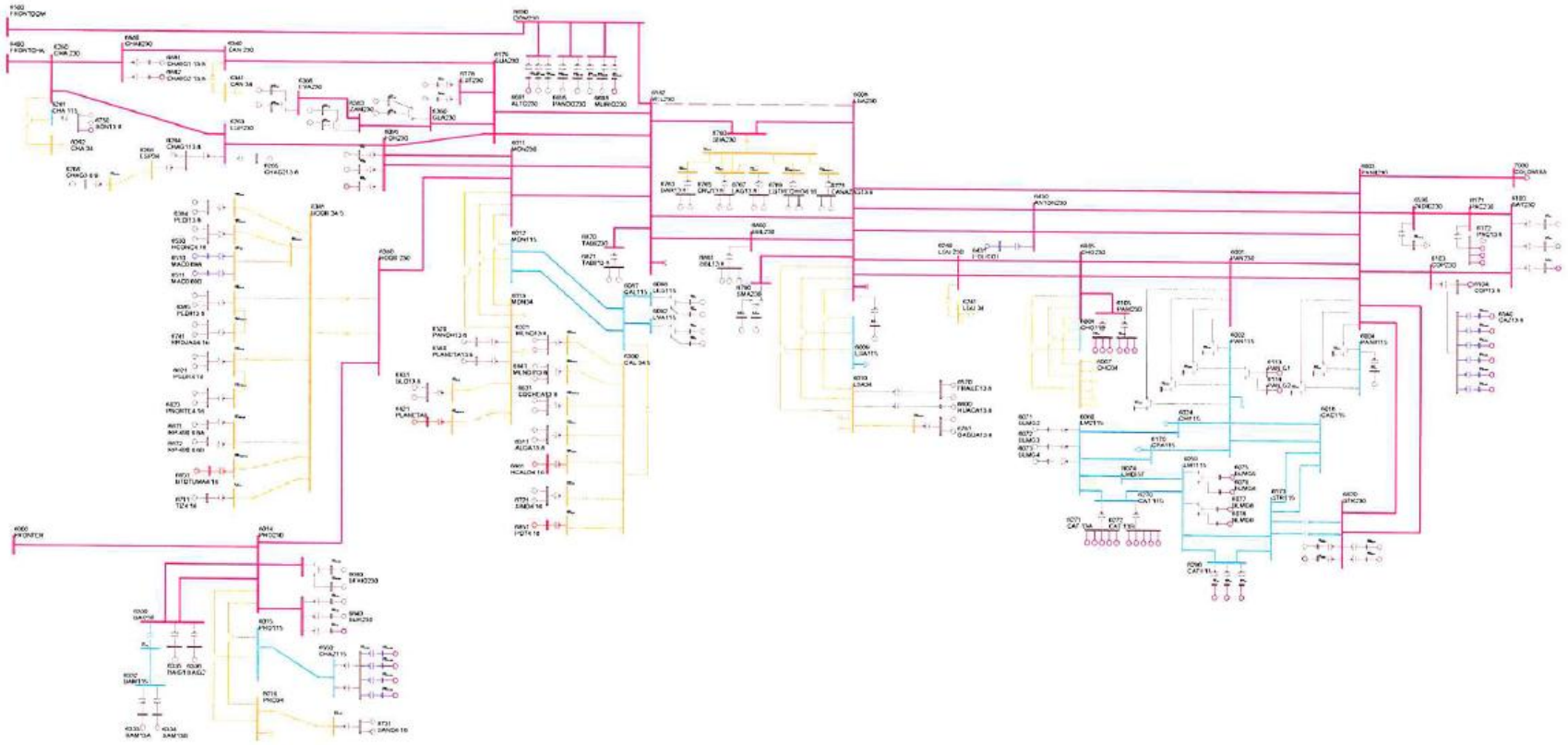
FROM BUS BUS#	NAME	BASKV	AREA	TO BUS BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING SET A RATING	A PERCENT	RATING SET B RATING	B PERCENT	RATING SET C RATING	C PERCENT

* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:49
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 IN MW/MVAR

X-- AREA --X	FROM GENE-RATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	920.3	1179.4	0.0	0.0	0.0	21.6	-280.7	-280.7	-280.7
GUATEMAL	222.3	340.6	220.5	0.0	604.8	246.6	19.4	19.4	
2	1142.7	1104.0	0.0	0.0	0.0	38.6	0.0	0.0	0.0
SALVADOR	301.9	367.1	-180.9	0.0	241.0	326.9	29.8	29.8	
3	1239.4	1205.2	0.0	0.0	0.0	34.2	0.0	0.0	0.0
HONDURAS	394.2	395.2	-20.4	0.0	468.6	456.2	31.8	31.8	
4	480.0	459.0	0.0	0.0	0.0	21.1	0.0	0.0	0.0
NICARAGU	-12.3	181.0	-12.7	0.0	287.5	188.1	-81.2	-81.2	
5	1521.8	1489.7	0.0	0.0	0.0	32.1	-0.1	-0.1	0.0
COSTA RI	271.4	558.4	-226.3	0.0	554.5	439.7	54.2	54.2	
6	2146.2	1911.3	0.0	0.0	0.0	118.4	116.5	116.5	116.4
PANAMA	731.7	334.8	-229.4	0.0	559.5	1255.7	-69.9	-69.9	
7	125.9	62.1	0.0	0.0	0.0	3.8	59.9	59.9	60.0
ACANAL	13.2	10.9	-15.9	0.0	0.0	17.2	1.0	1.0	
10	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	
11	0.0	-104.3	0.0	0.0	0.0	0.0	104.3	104.3	104.3
COLOMBIA	0.0	-14.9	0.0	0.0	0.0	0.0	14.9	14.9	
COLUMN	7576.3	7306.4	0.0	0.0	0.0	269.8	0.0	0.0	0.0
TOTALS	1922.5	2173.2	-465.1	0.0	2716.0	2930.5	0.0	0.0	

Contingencia 21: Llano Sánchez - Veladero (230-15)



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 23 2011 9:52
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	7.6	15.0	0.0	1.0300	37.6	0.9806	47.0			62	6
6072	BLMG3	13.800	V3	38.0	7.6	15.0	0.0	1.0300	37.6	0.9806	47.0			62	6
6073	BLMG4	13.800	V4	38.0	7.8	15.0	0.0	1.0300	37.7	0.9793	47.0			62	6
6090	LESG1	13.800	E1	22.4	5.1	12.0	-5.0	1.0000	23.0	0.9750	27.0			64	6
6091	LESG2	13.800	E2	22.4	5.1	12.0	-5.0	1.0000	23.0	0.9750	27.0			64	6
6094	LVAG1	13.800	L1	26.0	-1.3	12.0	-5.0	1.0000	26.1	0.9988	27.0			64	6
6095	LVAG2	13.800	L2	26.0	-1.3	12.0	-5.0	1.0000	26.1	0.9988	27.0			64	6
6097	FORG1	13.800	F1	95.0	19.2	50.0	-50.0	1.0100	96.0	0.9802	111.0			64	6
6098	FORG2	13.800	F2	95.0	19.2	50.0	-50.0	1.0100	96.0	0.9802	111.0			64	6
6101	BAYG1	13.800	B1	100.3	27.4	30.0	-25.0	1.0200	102.0*	0.9646	94.0			61	6
6102	BAYG2	13.800	B2	79.2	25.0	30.0	-25.0	1.0200	81.5	0.9535	94.0			61	6
6176	ESTG1	13.800	E1	57.0	12.3	29.0	-29.0	1.0000	58.3	0.9773	69.0			64	6
6177	ESTG2	13.800	E2	57.0	12.3	29.0	-29.0	1.0000	58.3	0.9773	69.0			64	6
6264	CHAG113.8	13.800	G1	99.6	-5.4	52.4	-48.9	0.9900	100.8	0.9986	116.5			64	6
6265	CHAG213.8	13.800	G2	99.6	-2.0	52.4	-48.9	0.9900	100.6	0.9998	116.5			64	6
6268	CHAG3 6.9	6.9000	G3	9.3	4.9	4.9	-4.1	0.9871	10.6	0.8852	10.9			64	6
6311	ALGA13.8	13.800	A1	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9738	5.7			64	6
6311	ALGA13.8	13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.5	0.9738	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	0.9976	30.0			64	6
6334	BAM13B	13.800	G2	26.6	1.9	10.0	-10.0	1.0000	26.7	0.9976	30.0			64	6
6335	BAIG1	13.800	G1	42.1	-5.6	14.0	-14.0	1.0000	42.5	0.9912	49.0			64	6
6336	BAIG2	13.800	G2	42.1	-5.6	14.0	-14.0	1.0000	42.5	0.9912	49.0			64	6
6361	GLA13A	13.800	G1	12.1	-7.0	7.8	-7.0	0.9833	14.2	0.8649	14.1			64	6
6362	GLA13B	13.800	G2	12.1	-7.0	7.8	-7.0	0.9833	14.2	0.8649	14.1			64	6
6364	LOR13A	13.800	G1	16.1	0.6	7.8	-7.0	1.0000	16.1	0.9993	25.0			64	6
6365	LOR13B	13.800	G2	16.1	0.6	7.8	-7.0	1.0000	16.1	0.9993	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-1.4	8.0	-8.0	1.0000	26.6	0.9987	33.0			64	6
6368	PRU13B	13.800	G2	26.6	-1.4	8.0	-8.0	1.0000	26.6	0.9987	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
6384	PEDI13.8	13.800	G2	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	-2.2	3.2	-3.6	0.9900	6.6	0.9411	7.5			64	6
6385	PEDII13.8	13.800	G2	6.2	-2.2	3.2	-3.6	0.9900	6.6	0.9411	7.5			64	6
6431	EOLICO I	0.6000	G1	60.0	-9.8	10.5	-10.5	1.0000	60.8	0.9870	152.3			63	6
6510	MAC0.69A	0.7000	G1	1.6	-0.1	0.9	-0.1	1.0032	1.6	0.9985	2.1			64	6
6511	MAC0.69B	0.7000	G2	1.6	-0.1	0.9	-0.1	1.0032	1.6	0.9985	2.1			64	6

6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9512	5.4	0.9216	6.2	6
6530	HCONC4.16	4.2000	G1	4.8	0.5	2.5	-2.5	1.0000	4.8	0.9954	5.6	64 6
6530	HCONC4.16	4.2000	G2	4.8	0.5	2.5	-2.5	1.0000	4.8	0.9954	5.6	64 6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9512	5.0	0.9058	4.9	64 6
6570	FRAILE13.8	13.800	G1	2.6	1.2	1.2	-1.2	0.9552	3.0	0.9122	3.0	63 6
6570	FRAILE13.8	13.800	G2	2.6	1.2	1.2	-1.2	0.9552	3.0	0.9122	3.0	63 6
6600	HUACA13.8	13.800	G1	4.8	2.2	2.2	-2.2	0.9551	5.5	0.9084	5.5	63 6
6621	PSUR4.16	4.2000	G1	4.8	0.8	2.5	-2.5	1.0000	4.8	0.9851	5.6	64 6
6621	PSUR4.16	4.2000	G2	4.8	0.8	2.5	-2.5	1.0000	4.8	0.9851	5.6	64 6
6623	PNORTE4.16	4.2000	G1	4.8	-0.4	2.5	-2.5	1.0000	4.8	0.9969	5.6	64 6
6623	PNORTE4.16	4.2000	G2	4.8	-0.4	2.5	-2.5	1.0000	4.8	0.9969	5.6	64 6
6631	COCHEA13.8	13.800	G1	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9975	8.4	64 6
6631	COCHEA13.8	13.800	G2	6.4	-0.5	3.7	-3.7	1.0000	6.4	0.9975	8.4	64 6
6641	MENDII13.8	13.800	G1	3.3	0.4	1.9	-1.9	1.0000	3.3	0.9935	4.1	64 6
6641	MENDII13.8	13.800	G2	3.3	0.4	1.9	-1.9	1.0000	3.3	0.9935	4.1	64 6
6651	BTOTUMA4.16	4.1600	G1	4.8	2.5	2.5	-2.5	0.9967	5.4	0.8851	5.6	64 6
6661	HCALD4.16	4.1600	G1	3.4	-2.0	2.0	-2.0	1.0220	3.8	0.8675	4.4	64 6
6671	RP-490 6.6A	6.6000	G1	6.8	0.7	2.3	-2.6	1.0000	6.8	0.9948	7.5	64 6
6672	RP-490 6.6B	6.6000	G2	6.8	0.7	2.3	-2.6	1.0000	6.8	0.9948	7.5	64 6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0000	27.8	0.9580	33.0	64 6
6682	BFRIO13B	13.800	G2	26.6	-8.0	8.0	-8.0	1.0000	27.8	0.9580	33.0	64 6
6692	ALTO13A	13.800	G1	21.3	9.9	9.9	-9.9	1.0066	23.3	0.9074	24.9	64 6
6693	ALTO13B	13.800	G2	21.3	0.8	9.9	-9.9	1.0000	21.3	0.9992	24.9	64 6
6696	PANDO13A	13.800	G1	15.8	3.0	12.8	-8.3	1.0000	16.1	0.9823	18.5	64 6
6697	PANDO13B	13.800	G2	15.8	3.0	12.8	-8.3	1.0000	16.1	0.9823	18.5	64 6
6699	MLIRIO13A	13.800	G1	15.8	3.9	12.8	-8.3	1.0000	16.3	0.9702	18.5	64 6
6700	MLIRIO13B	13.800	G2	15.8	3.9	12.8	-8.3	1.0000	16.3	0.9702	18.5	64 6
6711	TIZ4.16	4.2000	G1	4.4	2.3	2.3	-2.3	0.9963	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	0.9852	5.0	64 6
6731	SAND4.16	4.2000	G2	4.3	-0.7	2.2	-2.2	1.0000	4.3	0.9852	5.0	64 6
6741	RROJAS4.16	4.2000	G1	4.1	0.9	2.1	-2.1	1.0000	4.2	0.9758	4.8	64 6
6741	RROJAS4.16	4.2000	G2	4.1	0.9	2.1	-2.1	1.0000	4.2	0.9758	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
6763	BAR13.8	13.800	G1	7.2	4.0	4.0	-4.0	0.9954	8.2	0.8757	9.0	63 6
6763	BAR13.8	13.800	G2	7.2	4.0	4.0	-4.0	0.9954	8.2	0.8757	9.0	63 6
6765	CRU13.8	13.800	G1	4.6	2.3	2.6	-2.6	1.0000	5.2	0.8933	5.8	63 6
6765	CRU13.8	13.800	G2	4.6	2.3	2.6	-2.6	1.0000	5.2	0.8933	5.8	63 6
6767	LAG13.8	13.800	G1	4.7	1.8	2.6	-2.6	1.0000	5.0	0.9315	5.8	63 6
6767	LAG13.8	13.800	G2	4.7	1.8	2.6	-2.6	1.0000	5.0	0.9315	5.8	63 6
6769	ESTRECHO4.16	4.2000	G1	4.9	2.1	2.5	-2.5	1.0000	5.4	0.9175	5.6	63 6

6769	ESTRECHO4.16	4.2000	G2	4.9	2.1	2.5	-2.5	1.0000	5.4	0.9175	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.8	1.5	1.5	-1.5	0.9932	3.2	0.8885	3.3	63	6
6771	CAÑAZAS13.8	13.800	G2	2.8	1.5	1.5	-1.5	0.9932	3.2	0.8885	3.3	63	6
6781	OAGUA13.8	13.800	G1	3.1	1.6	1.6	-1.6	0.9811	3.5	0.8897	3.6	63	6
6781	OAGUA13.8	13.800	G2	3.1	1.6	1.6	-1.6	0.9811	3.5	0.8897	3.6	63	6
6791	SMA13A	13.800	G1	12.2	6.2	6.2	-6.2	0.9971	13.7	0.8894	14.2	63	6
6792	SMA13B	13.800	G2	12.2	6.2	6.2	-6.2	0.9971	13.7	0.8894	14.2	63	6
6810	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0442	287.3	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	1.3	1.8	-1.8	1.0000	3.8	0.9372	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9784	4.6	0.8892	4.7	64	6
6831	SLO13.8	13.800	G2	4.0	2.1	2.1	-2.1	0.9784	4.6	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	8.1	8.1	-8.1	0.9911	18.0	0.8892	18.5	64	6
6842	BUR13B	13.800	G2	15.8	8.1	8.1	-8.1	0.9911	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	0.9520	10.0	0.9059	10.1	64	6
6861	BBL13.8	13.800	G2	8.6	4.0	4.0	-3.0	0.9520	10.0	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9520	2.1	0.9058	2.1	64	6
6871	TABII13.8	13.800	G1	16.4	5.5	9.0	-9.0	1.0000	17.3	0.9485	20.5	64	6
6871	TABII13.8	13.800	G2	16.4	5.5	9.0	-9.0	1.0000	17.3	0.9485	20.5	64	6
6881	CHAIIG1 13.8	13.800	G1	101.7	12.6	52.3	-52.3	1.0100	101.4	0.9924	118.9	64	6
6900	SVC-LV	13.200	1	0.0	300.0	300.0	-225.0	1.0731	279.6	0.0000	300.0	61	6
6921	CB250A-1	13.800	C1	80.2	13.3	61.1	-61.1	1.0300	78.9	0.9864	138.9	62	6
6922	CB250A-2	13.800	C2	80.2	13.3	61.1	-61.1	1.0300	78.9	0.9864	138.9	62	6
6923	CB250B-1	13.800	C1	80.2	13.3	61.1	-61.1	1.0300	78.9	0.9864	138.9	62	6
6924	CB250B-2	13.800	C2	80.2	13.3	61.1	-61.1	1.0300	78.9	0.9864	138.9	62	6
SUBSYSTEM TOTALS				2165.8	876.2	1701.3	-1436.8				3461.4		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 23 2011 9:52
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - 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	1.7	8.0	0.0	1.0100	17.0	0.9951	27.7			65	7
6128	MIR13C	12.000	G3	20.9	8.9	11.0	0.0	1.0100	22.5	0.9202	29.4			65	7
6129	MIR13D	13.800	G4	28.0	10.8	15.0	0.0	1.0100	29.7	0.9326	44.1			65	7
6130	MIR13F	13.800	G5	17.1	2.5	8.0	0.0	1.0100	17.1	0.9895	27.7			65	7
6134	MAD6A	6.9000	G1	11.4	0.5	6.0	-6.0	1.0100	11.3	0.9991	13.0			65	7
6135	MAD6B	6.9000	G2	11.4	0.5	6.0	-6.0	1.0100	11.3	0.9990	13.0			65	7
6136	MAD6C	6.9000	G3	11.4	0.5	6.0	-6.0	1.0100	11.3	0.9990	13.0			65	7
6140	GAT6A	6.9000	G4	4.3	-3.0	3.0	-3.0	0.9941	5.3	0.8186	5.6			65	7

6140 GAT6A	6.9000	G5	4.3	-3.0	3.0	-3.0	0.9941	5.3	0.8186	6.2	0	7
SUBSYSTEM TOTALS			125.9	19.4	66.0	-24.0				179.8		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 23 2011 9:52
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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)
6000	FRONTER	230.00	6	1.0110	232.54	6014	PRO230	230.00	6	1.0091	232.10
6100	BAY230	230.00	6	1.0184	234.24	6103	COP23O	230.00	6	1.0005	230.10
6171	PAC230	230.00	6	1.0017	230.39	6260	CHA 230	230.00	6	1.0085	231.95
6263	ESP230	230.00	6	1.0075	231.73	6330	BAI230	230.00	6	1.0092	232.12
6366	EVA230	230.00	6	1.0026	230.60	6380	BOQIII 230	230.00	6	1.0006	230.13
6400	FRONTCHA	230.00	6	1.0093	232.14	6430	ANTON230	230.00	6	1.0008	230.18
6500	FRONTDOM	230.00	6	1.0208	234.77	6680	BFRIO230	230.00	6	1.0118	232.72
6690	DOM230	230.00	6	1.0215	234.95	6691	ALTO230	230.00	6	1.0245	235.64
6695	PANDO230	230.00	6	1.0234	235.38	6698	MLIRIO230	230.00	6	1.0229	235.27
6840	BUR230	230.00	6	1.0114	232.63	6880	CHAII230	230.00	6	1.0083	231.90
6920	STR230	230.00	6	1.0226	235.19						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)
6001	PAN230	230.00	6	0.9773	224.78	6003	PANII230	230.00	6	0.9968	229.26
6005	CHO230	230.00	6	0.9610	221.04	6008	LSA230	230.00	6	0.9867	226.95
6011	MDN230	230.00	6	0.9903	227.78	6096	FOR230	230.00	6	0.9945	228.73
6105	PAM230	230.00	6	0.9610	221.04	6178	EST230	230.00	6	0.9880	227.23
6179	GUA230	230.00	6	0.9880	227.24	6182	VEL230	230.00	6	0.9764	224.58
6240	LGU 230	230.00	6	0.9691	222.89	6340	CAN 230	230.00	6	0.9956	228.98
6360	GLA230	230.00	6	0.9934	228.48	6363	ZAM230	230.00	6	0.9994	229.86
6590	24DIC230	230.00	6	0.9987	229.69	6760	SBA230	230.00	6	0.9713	223.39
6790	SMA230	230.00	6	0.9885	227.34	6860	BBL230	230.00	6	0.9743	224.09

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 23 2011 9:52
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0153	116.76	6004	PANII115	115.00	6	1.0171	116.97
6015	PRO115	115.00	6	1.0054	115.62	6018	CAC115	115.00	6	1.0147	116.69
6019	CVI115A	115.00	6	1.0055	115.63	6024	CHI115	115.00	6	1.0102	116.17
6027	LOC115A	115.00	6	1.0022	115.26	6036	SMA115	115.00	6	1.0138	116.59
6047	CLA115	115.00	6	1.0096	116.10	6055	MOS115B	115.00	6	1.0117	116.35
6057	TOC115	115.00	6	1.0139	116.60	6059	LM1115	115.00	6	1.0168	116.93
6060	LM2115	115.00	6	1.0169	116.94	6066	FFIELD	115.00	6	1.0072	115.82
6074	LMDIST	115.00	6	1.0168	116.93	6087	CAL115	115.00	6	1.0075	115.86
6088	LES115	115.00	6	1.0107	116.23	6092	LVA115	115.00	6	1.0078	115.89
6123	MIR115	115.00	7	1.0257	117.95	6170	CPA115	115.00	6	1.0153	116.76
6173	STR115	115.00	6	1.0205	117.35	6174	PM115-1A	115.00	6	1.0191	117.20
6175	PM115-2A	115.00	6	1.0191	117.20	6210	TIN115	115.00	6	1.0102	116.17
6211	PM115-9	115.00	6	1.0109	116.26	6230	CBA115	115.00	6	1.0000	115.00
6261	CHA 115	115.00	6	1.0026	115.30	6270	CAT 115	115.00	6	1.0168	116.93
6280	GIR 115	115.00	6	1.0153	116.76	6290	CATII 11	115.00	6	1.0172	116.97
6332	BAM115	115.00	6	1.0019	115.22	6350	PM115-8	115.00	6	1.0066	115.76
6550	CHAZ115	115.00	6	1.0054	115.62	6580	LBO115	115.00	6	1.0047	115.54
6910	GON115	115.00	6	1.0136	116.57						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)
6006	CHO115	115.00	6	0.9387	107.95	6009	LSA115	115.00	6	0.9982	114.80
6012	MDN115	115.00	6	0.9999	114.99	6032	MAR115A	115.00	6	0.9981	114.78
6040	SFR115	115.00	6	0.9975	114.72	6331	BAI115	115.00	6	0.9978	114.74

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 23 2011 9:52
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020
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#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAFO1	WND 1	6	T1	48.1	50.0	96.2	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAFO2	WND 1	6	T3	96.2	100.0	96.2	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAFO2	WND 1	6	T2	48.1	50.0	96.2	--	--	--	--
6008	LSA230	230.00	6	6760	SBA230	230.00*	6	4A	373.9	314.0	119.1	450.0	83.1	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAFO1	WND 2	6	T1	57.5	60.0	95.8	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAFO2	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	TRAFO1	WND 1	6	T1	52.5	54.0	97.3	--	--	--	--
6100	BAY230	230.00	6	6101	BAYG1	13.800*	6	T1	104.0	96.0	108.3	--	--	--	--
6182	VEL230	230.00*	6	6760	SBA230	230.00	6	4B	326.6	314.0	104.0	450.0	72.6	--	--

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 23 2011 9:52
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020
OUTPUT FOR AREA 7 [ACANAL]
BRANCH LOADINGS ABOVE 95.0 % OF RATING (MVA FOR TRANSFORMERS, CURRENT FOR NON-TRANSFORMER BRANCHES):

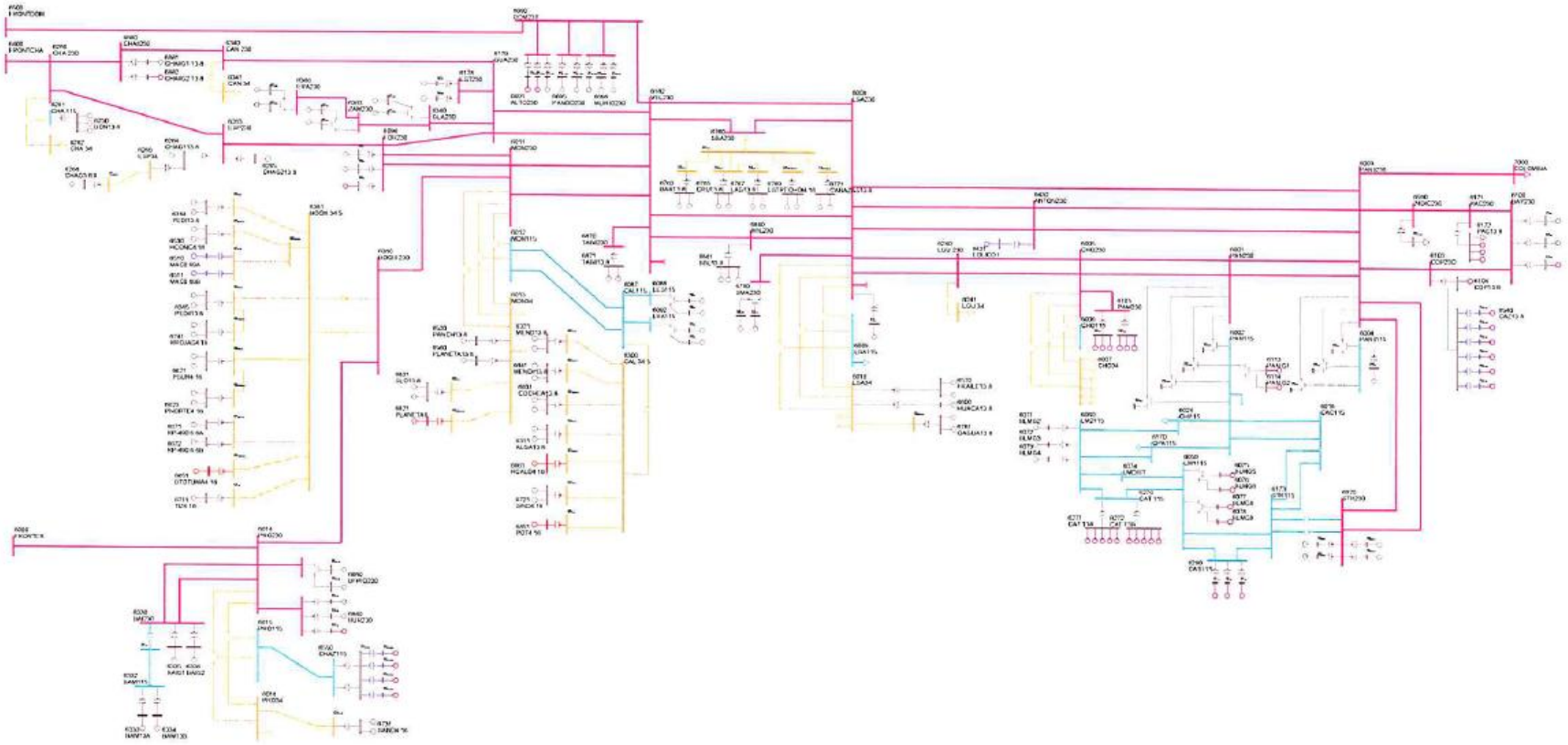
FROM BUS				TO BUS						RATING SET A		RATING SET B		RATING SET C	
BUS#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT

* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E MON, MAY 23 2011 9:55
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL AREA TOTALS
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - ÉPOCA HÚMEDA 2020 IN MW/MVAR

X-- AREA --X	FROM GENERATION	TO LOAD	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO NET INT	LOSSES	DESIRED NET INT
1	920.3	1179.4	0.0	0.0	0.0	-280.7	21.6	-280.7
GUATEMAL	222.3	340.6	220.5	0.0	604.8	19.4	246.6	
2	1142.7	1104.0	0.0	0.0	0.0	0.0	38.6	0.0
SALVADOR	301.9	367.1	-180.9	0.0	241.0	29.8	326.9	
3	1239.4	1205.2	0.0	0.0	0.0	0.0	34.2	0.0
HONDURAS	394.3	395.2	-20.4	0.0	468.6	31.8	456.3	
4	480.0	459.0	0.0	0.0	0.0	0.0	21.1	0.0
NICARAGU	-12.1	181.0	-12.7	0.0	287.5	-81.1	188.2	
5	1521.8	1489.7	0.0	0.0	0.0	-0.1	32.2	0.0
COSTA RI	276.1	558.4	-226.2	0.0	554.0	57.6	440.3	
6	2165.8	1911.3	0.0	0.0	0.0	116.7	137.8	116.4
PANAMA	876.2	334.8	-223.3	0.0	525.4	-79.0	1369.1	
7	125.9	62.1	0.0	0.0	0.0	59.8	3.9	60.0
ACANAL	19.4	10.9	-15.8	0.0	0.0	6.6	17.7	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEXICO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
11	0.0	-104.3	0.0	0.0	0.0	104.3	0.0	104.3
COLOMBIA	0.0	-14.9	0.0	0.0	0.0	14.9	0.0	
TOTALS	7595.9	7306.4	0.0	0.0	0.0	0.0	289.4	0.0
	2078.0	2173.2	-458.8	0.0	2681.3	0.0	3045.0	

Demanda Máxima de Verano



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:57
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	3.9	15.0	0.0	1.0200	37.4	0.9949	47.0			62	6
6072	BLMG3	13.800	V3	38.0	3.9	15.0	0.0	1.0200	37.4	0.9949	47.0			62	6
6073	BLMG4	13.800	V4	38.0	3.9	15.0	0.0	1.0200	37.4	0.9948	47.0			62	6
6090	LESG1	13.800	E1	21.2	3.5	12.0	-5.0	1.0000	21.5	0.9865	27.0			64	6
6091	LESG2	13.800	E2	21.2	3.5	12.0	-5.0	1.0000	21.5	0.9865	27.0			64	6
6094	LVAG1	13.800	L1	24.7	-3.1	12.0	-5.0	1.0000	24.9	0.9923	27.0			64	6
6095	LVAG2	13.800	L2	24.7	-3.1	12.0	-5.0	1.0000	24.9	0.9923	27.0			64	6
6097	FORG1	13.800	F1	65.0	5.7	50.0	-50.0	1.0100	64.6	0.9962	111.0			64	6
6098	FORG2	13.800	F2	65.0	5.7	50.0	-50.0	1.0100	64.6	0.9962	111.0			64	6
6101	BAYG1	13.800	B1	46.7	16.5	30.0	-25.0	1.0200	48.5	0.9429	94.0			61	6
6102	BAYG2	13.800	B2	46.7	16.5	30.0	-25.0	1.0200	48.5	0.9429	94.0			61	6
6176	ESTG1	13.800	E1	54.0	8.8	29.0	-29.0	1.0000	54.7	0.9868	69.0			64	6
6177	ESTG2	13.800	E2	54.0	8.8	29.0	-29.0	1.0000	54.7	0.9868	69.0			64	6
6264	CHAG113.8	13.800	G1	94.4	-5.9	52.4	-48.9	1.0000	94.5	0.9981	116.5			64	6
6265	CHAG213.8	13.800	G2	94.4	-2.3	52.4	-48.9	1.0000	94.4	0.9997	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	0.9758	5.7			64	6
6311	ALGA13.8	13.800	A2	4.3	1.0	2.3	-2.3	1.0000	4.4	0.9758	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	25.2	1.0	10.0	-10.0	1.0000	25.2	0.9991	30.0			64	6
6334	BAM13B	13.800	G2	25.2	1.0	10.0	-10.0	1.0000	25.2	0.9991	30.0			64	6
6335	BAIG1	13.800	G1	39.9	-9.4	14.0	-14.0	1.0000	41.0	0.9734	49.0			64	6
6336	BAIG2	13.800	G2	39.9	-9.4	14.0	-14.0	1.0000	41.0	0.9734	49.0			64	6
6361	GLA13A	13.800	G1	11.4	-4.3	7.8	-7.0	1.0000	12.2	0.9349	14.1			64	6
6362	GLA13B	13.800	G2	11.4	-4.3	7.8	-7.0	1.0000	12.2	0.9349	14.1			64	6
6364	LOR13A	13.800	G1	15.2	-7.0	7.8	-7.0	1.0007	16.7	0.9084	25.0			64	6
6365	LOR13B	13.800	G2	15.2	-7.0	7.8	-7.0	1.0007	16.7	0.9084	25.0			64	6
6367	PRU13A	13.800	G1	25.2	-8.0	8.0	-8.0	1.0014	26.4	0.9531	33.0			64	6
6368	PRU13B	13.800	G2	25.2	-8.0	8.0	-8.0	1.0014	26.4	0.9531	33.0			64	6
6384	PEDI13.8	13.800	G1	9.0	-0.2	4.9	-4.9	1.0000	9.0	0.9998	12.5			64	6
6384	PEDI13.8	13.800	G2	9.0	-0.2	4.9	-4.9	1.0000	9.0	0.9998	12.5			64	6
6385	PEDII13.8	13.800	G1	5.8	0.3	3.2	-3.6	1.0000	5.9	0.9991	7.5			64	6
6385	PEDII13.8	13.800	G2	5.8	0.3	3.2	-3.6	1.0000	5.9	0.9991	7.5			64	6
6431	EOLICO I	0.6000	G1	120.0	-21.0	21.0	-21.0	1.0194	119.5	0.9850	152.3			63	6
6510	MAC0.69A	0.7000	G1	1.5	-0.1	0.9	-0.1	1.0069	1.5	0.9983	2.1			64	6
6511	MAC0.69B	0.7000	G2	1.5	-0.1	0.9	-0.1	1.0069	1.5	0.9983	2.1			64	6

6520	PANCH13.8	13.800	P1	4.5	2.0	2.0	-2.0	0.9565	5.1	0.9138	6.2	6
6530	HCONC4.16	4.2000	G1	4.5	-0.9	2.5	-2.5	1.0000	4.6	0.9812	5.6	64 6
6530	HCONC4.16	4.2000	G2	4.5	-0.9	2.5	-2.5	1.0000	4.6	0.9812	5.6	64 6
6560	PLANETA13.8	13.800	G1	4.0	2.0	2.0	-2.0	0.9565	4.7	0.8966	4.9	64 6
6570	FRAILE13.8	13.800	G1	2.5	1.2	1.2	-1.2	0.9797	2.8	0.9036	3.0	63 6
6570	FRAILE13.8	13.800	G2	2.5	1.2	1.2	-1.2	0.9797	2.8	0.9036	3.0	63 6
6600	HUACA13.8	13.800	G1	4.5	2.2	2.2	-2.2	0.9796	5.2	0.8995	5.5	63 6
6621	PSUR4.16	4.2000	G1	4.5	-0.7	2.5	-2.5	1.0000	4.5	0.9894	5.6	64 6
6621	PSUR4.16	4.2000	G2	4.5	-0.7	2.5	-2.5	1.0000	4.5	0.9894	5.6	64 6
6623	PNORTE4.16	4.2000	G1	4.5	-1.4	2.5	-2.5	1.0000	4.7	0.9559	5.6	64 6
6623	PNORTE4.16	4.2000	G2	4.5	-1.4	2.5	-2.5	1.0000	4.7	0.9559	5.6	64 6
6631	COCHEA13.8	13.800	G1	6.4	-0.9	3.7	-3.7	1.0000	6.4	0.9893	8.4	64 6
6631	COCHEA13.8	13.800	G2	6.4	-0.9	3.7	-3.7	1.0000	6.4	0.9893	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	4.5	1.6	2.5	-2.5	1.0000	4.8	0.9443	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	6.4	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	1.0058	26.3	0.9531	33.0	64 6
6682	BFRIO13B	13.800	G2	25.2	-8.0	8.0	-8.0	1.0058	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
6696	PANDO13A	13.800	G1	15.0	-1.4	12.8	-8.3	1.0000	15.0	0.9957	18.5	64 6
6697	PANDO13B	13.800	G2	15.0	-1.4	12.8	-8.3	1.0000	15.0	0.9957	18.5	64 6
6699	MLIRIO13A	13.800	G1	15.0	-1.2	12.8	-8.3	1.0000	15.0	0.9967	18.5	64 6
6700	MLIRIO13B	13.800	G2	15.0	-1.2	12.8	-8.3	1.0000	15.0	0.9967	18.5	64 6
6701	MLIRIO13C	13.800	G3	15.0	-1.2	12.8	-8.3	1.0000	15.0	0.9967	18.5	64 6
6711	TIZ4.16	4.2000	G1	4.2	1.7	2.3	-2.3	1.0000	4.5	0.9287	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	4.0	-1.7	2.2	-2.2	1.0000	4.4	0.9225	5.0	64 6
6731	SAND4.16	4.2000	G2	4.0	-1.7	2.2	-2.2	1.0000	4.4	0.9225	5.0	64 6
6741	RROJAS4.16	4.2000	G1	3.9	-1.1	2.1	-2.1	1.0000	4.0	0.9591	4.8	64 6
6741	RROJAS4.16	4.2000	G2	3.9	-1.1	2.1	-2.1	1.0000	4.0	0.9591	4.8	64 6
6750	BON13.8	13.800	G1	9.4	-0.4	4.0	-4.0	1.0000	9.4	0.9989	35.3	64 6
6750	BON13.8	13.800	G2	9.4	-0.4	4.0	-4.0	1.0000	9.4	0.9989	35.3	64 6
6750	BON13.8	13.800	G3	9.4	-0.4	4.0	-4.0	1.0000	9.4	0.9989	35.3	64 6
6763	BAR13.8	13.800	G1	7.2	2.6	4.0	-4.0	1.0000	7.6	0.9406	9.0	63 6
6763	BAR13.8	13.800	G2	7.2	2.6	4.0	-4.0	1.0000	7.6	0.9406	9.0	63 6
6765	CRU13.8	13.800	G1	4.6	1.2	2.6	-2.6	1.0000	4.8	0.9673	5.8	63 6
6765	CRU13.8	13.800	G2	4.6	1.2	2.6	-2.6	1.0000	4.8	0.9673	5.8	63 6
6767	LAG13.8	13.800	G1	4.7	0.8	2.6	-2.6	1.0000	4.7	0.9851	5.8	63 6
6767	LAG13.8	13.800	G2	4.7	0.8	2.6	-2.6	1.0000	4.7	0.9851	5.8	63 6

6769	ESTRECHO4.164.2000	G1	4.9	1.1	2.5	-2.5	1.0000	5.1	0.9775	5.6	63	6
6769	ESTRECHO4.164.2000	G2	4.9	1.1	2.5	-2.5	1.0000	5.1	0.9775	5.6	63	6
6771	CAÑAZAS13.8	13.800 G1	2.8	0.9	1.5	-1.5	1.0000	2.9	0.9537	3.3	63	6
6771	CAÑAZAS13.8	13.800 G2	2.8	0.9	1.5	-1.5	1.0000	2.9	0.9537	3.3	63	6
6781	OAGUA13.8	13.800 G1	2.9	-1.6	1.6	-1.6	1.0007	3.3	0.8792	3.6	63	6
6781	OAGUA13.8	13.800 G2	2.9	-1.6	1.6	-1.6	1.0007	3.3	0.8792	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	299.5	300.0	-225.0	1.0757	278.4	0.0000	300.0	63	6
6821	PLANETAII	4.1600 G1	3.4	-1.8	1.8	-1.8	1.0022	3.8	0.8788	4.1	64	6
6831	SLO13.8	13.800 G1	3.8	2.1	2.1	-2.1	0.9838	4.4	0.8788	4.7	64	6
6831	SLO13.8	13.800 G2	3.8	2.1	2.1	-2.1	0.9838	4.4	0.8788	4.7	64	6
6841	BUR13A	13.800 G1	15.0	8.1	8.1	-8.1	0.9967	17.1	0.8787	18.5	64	6
6842	BUR13B	13.800 G2	15.0	8.1	8.1	-8.1	0.9967	17.1	0.8787	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	0.9834	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800 G2	8.6	4.0	4.0	-3.0	0.9834	9.7	0.9059	10.1	64	6
6861	BBL13.8	13.800 G3	1.8	0.8	0.8	-0.6	0.9834	2.0	0.9058	2.1	64	6
6871	TABII13.8	13.800 G1	14.7	-0.8	9.0	-9.0	1.0000	14.7	0.9984	20.5	64	6
6871	TABII13.8	13.800 G2	14.7	-0.8	9.0	-9.0	1.0000	14.7	0.9984	20.5	64	6
6881	CHAIIG1 13.81	3.800 G1	96.3	5.7	52.3	-52.3	1.0100	95.5	0.9982	118.9	64	6
6900	SVC-LV	13.200 1	0.0	247.4	300.0	-225.0	1.0629	232.8	0.0000	300.0	61	6
6921	CB250A-1	13.800 C1	74.4	5.2	61.1	-61.1	1.0200	73.1	0.9975	138.9	62	6
6922	CB250A-2	13.800 C2	74.4	5.2	61.1	-61.1	1.0200	73.1	0.9975	138.9	62	6
6923	CB250B-1	13.800 C1	74.4	5.2	61.1	-61.1	1.0200	73.1	0.9975	138.9	62	6
6924	CB250B-2	13.800 C2	74.4	5.2	61.1	-61.1	1.0200	73.1	0.9975	138.9	62	6
SUBSYSTEM TOTALS			1998.4	578.2	1718.7	-1449.8				3490.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:57
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	0.9902	27.7			65	7
6128	MIR13C	12.000	G3	20.4	9.5	11.0	0.0	1.0100	22.3	0.9057	29.4			65	7
6129	MIR13D	13.800	G4	29.1	11.5	15.0	0.0	1.0100	30.9	0.9301	44.1			65	7
6130	MIR13F	13.800	G5	17.1	3.4	8.0	0.0	1.0100	17.3	0.9813	27.7			65	7
6134	MAD6A	6.9000	G1	11.4	1.1	6.0	-6.0	1.0100	11.3	0.9958	13.0			65	7
6135	MAD6B	6.9000	G2	11.4	1.0	6.0	-6.0	1.0100	11.3	0.9964	13.0			65	7
6136	MAD6C	6.9000	G3	11.4	1.0	6.0	-6.0	1.0100	11.3	0.9964	13.0			65	7

6140 GAT6A	6.9000	G4	4.3	2.2	3.0	-3.0	0.9900	4.9	0.8881	5.6	7
6140 GAT6A	6.9000	G5	4.3	2.2	3.0	-3.0	0.9900	4.9	0.8881	6.2	7
SUBSYSTEM TOTALS			126.4	34.2	66.0	-24.0				179.8	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:57
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0167	233.83	6003	PANII230	230.00	6	1.0100	232.30
6008	LSA230	230.00	6	1.0200	234.60	6011	MDN230	230.00	6	1.0044	231.01
6014	PRO230	230.00	6	1.0150	233.45	6096	FOR230	230.00	6	1.0063	231.44
6100	BAY230	230.00	6	1.0261	236.00	6103	COP23O	230.00	6	1.0129	232.98
6171	PAC230	230.00	6	1.0135	233.11	6178	EST230	230.00	6	1.0018	230.41
6179	GUA230	230.00	6	1.0019	230.44	6182	VEL230	230.00	6	1.0054	231.25
6260	CHA 230	230.00	6	1.0168	233.86	6263	ESP230	230.00	6	1.0168	233.87
6330	BAI230	230.00	6	1.0141	233.25	6340	CAN 230	230.00	6	1.0071	231.63
6360	GLA230	230.00	6	1.0062	231.43	6363	ZAM230	230.00	6	1.0107	232.46
6366	EVA230	230.00	6	1.0132	233.04	6380	BOQIII 230	230.00	6	1.0098	232.25
6400	FRONTCHA	230.00	6	1.0172	233.95	6430	ANTON230	230.00	6	1.0219	235.03
6500	FRONTDOM	230.00	6	1.0247	235.69	6590	24DIC230	230.00	6	1.0112	232.58
6680	BFRIO230	230.00	6	1.0175	234.02	6690	DOM230	230.00	6	1.0253	235.83
6691	ALTO230	230.00	6	1.0269	236.19	6695	PANDO230	230.00	6	1.0258	235.93
6698	MLIRIO230	230.00	6	1.0257	235.91	6760	SBA230	230.00	6	1.0087	232.00
6790	SMA230	230.00	6	1.0209	234.81	6840	BUR230	230.00	6	1.0173	233.97
6860	BBL230	230.00	6	1.0065	231.48	6870	TABII230	230.00	6	1.0059	231.35
6880	CHAII230	230.00	6	1.0164	233.77	6920	STR230	230.00	6	1.0177	234.08

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)
6001	PAN230	230.00	6	0.9916	228.07	6005	CHO230	230.00	6	0.9808	225.57
6105	PAM230	230.00	6	0.9808	225.57	6240	LGU 230	230.00	6	0.9977	229.47

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:57
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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)
6002	PAN115	115.00	6	1.0158	116.82	6004	PANII115	115.00	6	1.0163	116.87
6009	LSA115	115.00	6	1.0302	118.47	6012	MDN115	115.00	6	1.0097	116.11
6015	PRO115	115.00	6	1.0099	116.14	6018	CAC115	115.00	6	1.0151	116.74
6019	CVI115A	115.00	6	1.0048	115.55	6024	CHI115	115.00	6	1.0096	116.10
6027	LOC115A	115.00	6	1.0023	115.27	6036	SMA115	115.00	6	1.0143	116.64
6047	CLA115	115.00	6	1.0088	116.02	6055	MOS115B	115.00	6	1.0122	116.40
6057	TOC115	115.00	6	1.0130	116.50	6059	LM1115	115.00	6	1.0150	116.72
6060	LM2115	115.00	6	1.0150	116.72	6066	FFIELD	115.00	6	1.0113	116.30
6074	LMDIST	115.00	6	1.0149	116.72	6087	CAL115	115.00	6	1.0132	116.51
6088	LES115	115.00	6	1.0157	116.81	6092	LVA115	115.00	6	1.0132	116.52
6123	MIR115	115.00	7	1.0256	117.95	6170	CPA115	115.00	6	1.0141	116.62
6173	STR115	115.00	6	1.0179	117.06	6174	PM115-1A	115.00	6	1.0179	117.06
6175	PM115-2A	115.00	6	1.0179	117.06	6210	TIN115	115.00	6	1.0106	116.22
6211	PM115-9	115.00	6	1.0114	116.31	6230	CBA115	115.00	6	1.0000	115.00
6261	CHA 115	115.00	6	1.0079	115.91	6270	CAT 115	115.00	6	1.0150	116.72
6280	GIR 115	115.00	6	1.0141	116.62	6290	CATII 11	115.00	6	1.0153	116.76
6331	BAI115	115.00	6	1.0024	115.28	6332	BAM115	115.00	6	1.0055	115.63
6350	PM115-8	115.00	6	1.0068	115.79	6550	CHAZ115	115.00	6	1.0099	116.14
6580	LBO115	115.00	6	1.0040	115.46	6910	GON115	115.00	6	1.0128	116.47

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6006	CHO115	115.00	6	0.9592	110.31	6032	MAR115A	115.00	6	0.9981	114.79
6040	SFR115	115.00	6	0.9973	114.70						

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:57
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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):

FROM BUS				TO BUS						RATING SET A		RATING SET B		RATING SET C	
BUS#	NAME	BASKV	AREA	BUS#	NAME	BASKV	AREA	CKT	LOADING	RATING	PERCENT	RATING	PERCENT	RATING	PERCENT
6005	CHO230	230.00*	6	3WNDTR	TRAFO1	WND 1	6	T1	48.3	50.0	96.6	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAFO2	WND 1	6	T3	96.6	100.0	96.6	--	--	--	--
6005	CHO230	230.00*	6	3WNDTR	TRAFO2	WND 1	6	T2	48.3	50.0	96.6	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAFO1	WND 2	6	T1	57.8	60.0	96.4	--	--	--	--
6009	LSA115	115.00*	6	3WNDTR	TRAFO2	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	96.1	--	--	--	--

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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:57
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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):

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

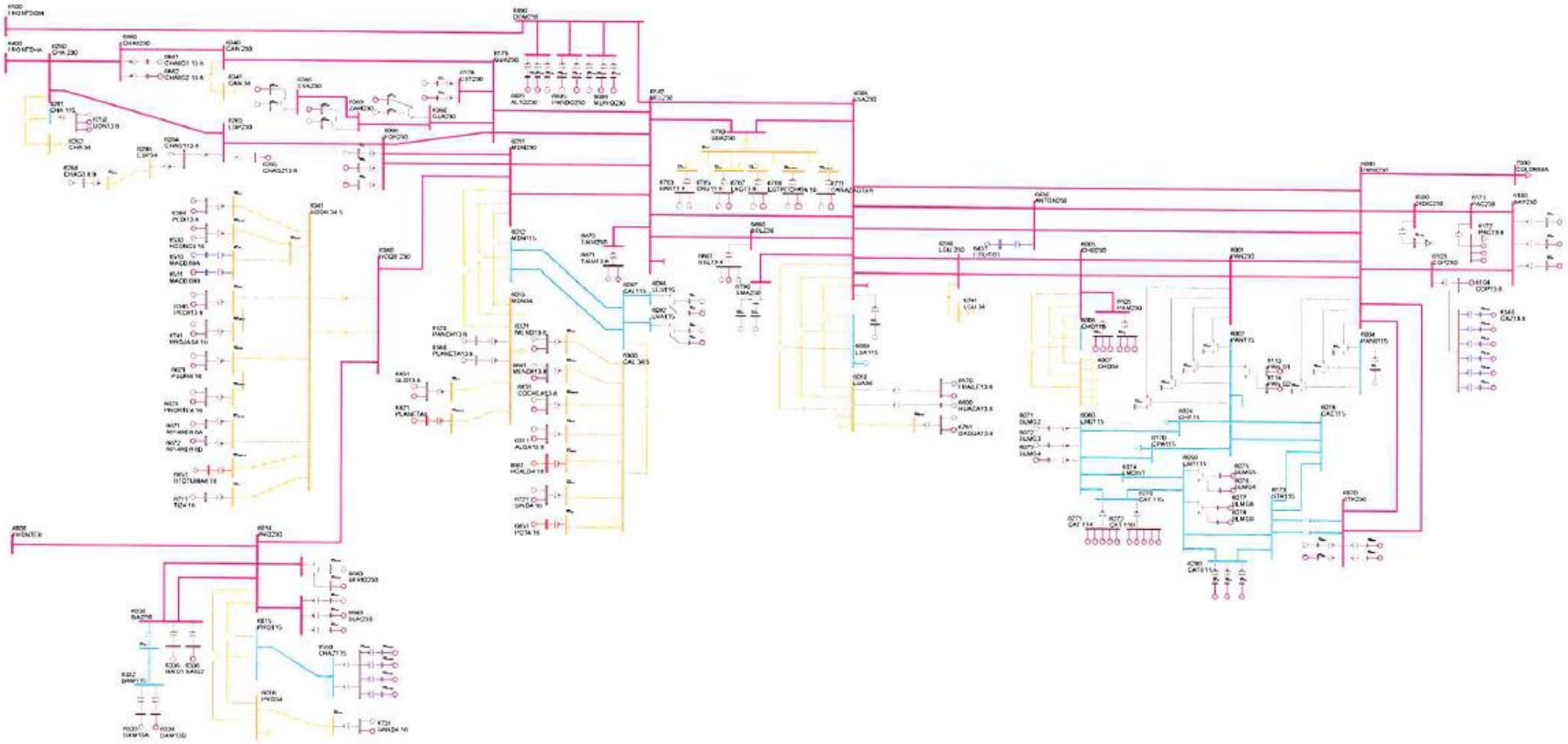
* NONE *

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:57
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÁXIMA - ÉPOCA SECA 2020

AREA TOTALS
IN MW/MVAR

X-- AREA --X	FROM GENE-RATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	967.2	1179.4	0.0	0.0	0.0	22.7	-234.9	-234.9	-234.9
GUATEMAL	215.9	340.6	219.9	0.0	604.2	253.9	5.7	5.7	
2	1139.8	1104.0	0.0	0.0	0.0	35.7	0.0	0.0	0.0
SALVADOR	285.8	367.1	-181.5	0.0	242.1	309.6	32.7	32.7	
3	1236.9	1205.2	0.0	0.0	0.0	31.7	0.0	0.0	0.0
HONDURAS	374.2	395.2	-20.4	0.0	472.0	437.3	34.0	34.0	
4	476.3	459.0	0.0	0.0	0.0	17.2	0.0	0.0	0.0
NICARAGU	-34.7	181.0	-12.9	0.0	291.5	161.4	-72.8	-72.8	
5	1519.0	1489.7	0.0	0.0	0.0	29.4	-0.1	-0.1	0.0
COSTA RI	243.8	558.4	-226.8	0.0	556.7	421.4	47.5	47.5	
6	1998.4	1923.1	0.0	0.0	0.0	104.4	-29.1	-29.1	-29.1
PANAMA	578.2	336.9	-221.3	0.0	566.2	1126.3	-97.5	-97.5	
7	126.4	62.5	0.0	0.0	0.0	3.9	60.0	60.0	60.0
ACANAL	34.2	10.9	-15.6	0.0	0.0	17.7	21.2	21.2	
10	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	
11	0.0	-204.0	0.0	0.0	0.0	0.0	204.0	204.0	204.0
COLOMBIA	0.0	-29.1	0.0	0.0	0.0	0.0	29.1	29.1	
COLUMN	7463.9	7218.9	0.0	0.0	0.0	245.0	0.0	0.0	0.0
TOTALS	1697.4	2161.1	-458.6	0.0	2732.8	2727.7	0.0	0.0	

Demanda Mínima de Invierno



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:59
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.2	15.0	0.0	1.0100	19.8	0.9982	47.0			62	6
6072	BLMG3	13.800	V3	20.0	1.2	15.0	0.0	1.0100	19.8	0.9982	47.0			62	6
6090	LESG1	13.800	E1	22.4	-1.8	12.0	-5.0	0.9900	22.7	0.9969	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	-2.8	50.0	-50.0	1.0100	94.1	0.9996	111.0			64	6
6101	BAYG1	13.800	B1	77.8	15.6	30.0	-25.0	1.0000	79.4	0.9806	94.0			61	6
6176	ESTG1	13.800	E1	57.0	7.4	29.0	-29.0	1.0000	57.5	0.9917	69.0			64	6
6264	CHAG113.8	13.800	G1	99.6	-12.3	52.4	-48.9	1.0000	100.4	0.9924	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	1.5	2.3	-2.3	1.0000	5.1	0.9546	5.7			64	6
6321	MEND13.8	13.800	M1	8.9	4.2	4.2	-4.2	0.9893	9.9	0.9060	10.4			64	6
6333	BAM13A	13.800	G1	26.6	-0.8	10.0	-10.0	1.0000	26.6	0.9995	30.0			64	6
6335	BAIG1	13.800	G1	42.1	-14.0	14.0	-14.0	1.0044	44.2	0.9490	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
6364	LOR13A	13.800	G1	16.1	-7.0	7.8	-7.0	1.0125	17.3	0.9167	25.0			64	6
6367	PRU13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0124	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	0.9874	12.5			64	6
6385	PEDII13.8	13.800	G1	6.2	-0.7	3.2	-3.6	1.0000	6.2	0.9939	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	1.0063	1.6	0.9985	2.1			64	6
6520	PANCH13.8	13.800	P1	4.8	2.0	2.0	-2.0	0.9701	5.3	0.9216	6.2			64	6
6530	HCONC4.16	4.2000	G2	4.8	-2.5	2.5	-2.5	1.0001	5.4	0.8851	5.6			64	6
6560	PLANETA13.8	13.800	G1	4.3	2.0	2.0	-2.0	0.9701	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	1.0001	5.4	0.8851	5.6			64	6
6623	PNORTE4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0003	5.4	0.8851	5.6			64	6
6631	COCHEA13.8	13.800	G1	7.1	-3.7	3.7	-3.7	1.0024	8.0	0.8877	8.4			64	6
6641	MENDII13.8	13.800	G1	3.7	-1.9	1.9	-1.9	1.0034	4.1	0.8915	4.1			64	6
6651	BTOTUMA4.16	4.1600	G1	4.8	-2.2	2.5	-2.5	1.0000	5.3	0.9042	5.6			64	6
6661	HCALD4.16	4.1600	G1	3.8	-2.0	2.0	-2.0	1.0285	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	0.9996	7.5			64	6
6681	BFRIO13A	13.800	G1	26.6	-8.0	8.0	-8.0	1.0169	27.3	0.9576	33.0			64	6
6692	ALTO13A	13.800	G1	21.3	0.7	9.9	-9.9	1.0100	21.1	0.9995	24.9			64	6
6696	PANDO13A	13.800	G1	15.8	-8.3	12.8	-8.3	1.0032	17.8	0.8855	18.5			64	6
6699	MLIRIO13A	13.800	G1	15.8	-8.3	12.8	-8.3	1.0034	17.8	0.8855	18.5			64	6
6711	TIZ4.16	4.2000	G1	4.4	-2.1	2.3	-2.3	1.0000	4.9	0.8996	5.2			64	6

6721	SIND4.16	4.2000	G1	4.8	-2.5	2.5	-2.5	1.0282	5.2	0.8851	5.6	64	6
6731	SAND4.16	4.2000	G1	4.3	-2.2	2.2	-2.2	1.0124	4.7	0.8892	5.0	64	6
6741	RROJAS4.16	4.2000	G1	4.1	-2.0	2.1	-2.1	1.0000	4.6	0.8967	4.8	64	6
6750	BON13.8	13.800	G1	9.9	-4.0	4.0	-4.0	1.0050	10.6	0.9273	35.3	64	6
6763	BAR13.8	13.800	G1	6.8	2.0	4.0	-4.0	1.0000	7.1	0.9589	9.0	63	6
6763	BAR13.8	13.800	G2	6.8	2.0	4.0	-4.0	1.0000	7.1	0.9589	9.0	63	6
6765	CRU13.8	13.800	G1	4.4	2.1	2.6	-2.6	1.0000	4.9	0.8995	5.8	63	6
6767	LAG13.8	13.800	G1	4.4	1.6	2.6	-2.6	1.0000	4.7	0.9372	5.8	63	6
6769	ESTRECHO4.16	4.2000	G1	4.7	1.9	2.5	-2.5	1.0000	5.1	0.9237	5.6	63	6
6771	CAÑAZAS13.8	13.800	G1	2.7	1.5	1.5	-1.5	0.9977	3.0	0.8780	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	-11.2	300.0	-225.0	0.9978	11.2	0.0000	300.0	63	6
6821	PLANETAII	4.1600	G1	3.5	-1.8	1.8	-1.8	1.0166	3.9	0.8892	4.1	64	6
6831	SLO13.8	13.800	G1	4.0	2.1	2.1	-2.1	0.9952	4.5	0.8892	4.7	64	6
6841	BUR13A	13.800	G1	15.8	-1.2	8.1	-8.1	1.0000	15.9	0.9971	18.5	64	6
6851	POT4.16	4.1600	G1	4.0	-2.0	2.0	-2.0	1.0285	4.3	0.8899	4.6	64	6
6861	BBL13.8	13.800	G1	8.6	4.0	4.0	-3.0	0.9899	9.6	0.9059	10.1	64	6
6861	BBL13.8	13.800	G3	1.8	0.8	0.8	-0.6	0.9899	2.0	0.9057	2.1	64	6
6871	TABII13.8	13.800	G1	16.4	-6.1	9.0	-9.0	1.0000	17.5	0.9380	20.5	64	6
6881	CHAIIG1 13.8	13.800	G1	96.3	-8.6	52.3	-52.3	1.0000	96.7	0.9960	118.9	64	6
6900	SVC-LV	13.200	1	0.0	80.1	300.0	-225.0	1.0142	79.0	0.0000	300.0	61	6
6921	CB250A-1	13.800	C1	100.0	-5.2	61.1	-61.1	1.0000	100.1	0.9987	138.9	62	6
SUBSYSTEM TOTALS				1112.9	-20.0	1149.9	-934.7				2100.9		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:59
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	0.9967	27.7			65	7
6128	MIR13C	12.000	G3	20.9	8.6	11.0	0.0	1.0100	22.4	0.9243	29.4			65	7
6129	MIR13D	13.800	G4	24.7	10.9	15.0	0.0	1.0100	26.7	0.9149	44.1			65	7
6134	MAD6A	6.9000	G1	11.7	2.6	6.0	-6.0	1.0100	11.9	0.9753	13.0			65	7
6140	GAT6A	6.9000	G4	4.3	0.4	3.0	-3.0	0.9900	4.3	0.9952	5.6			65	7
6140	GAT6A	6.9000	G5	4.3	0.4	3.0	-3.0	0.9900	4.3	0.9952	6.2			65	7
SUBSYSTEM TOTALS				82.9	24.4	46.0	-12.0				126.1				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:59
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0281	236.47	6011	MDN230	230.00	6	1.0168	233.86
6014	PRO230	230.00	6	1.0255	235.86	6096	FOR230	230.00	6	1.0183	234.22
6100	BAY230	230.00	6	1.0098	232.25	6103	COP23O	230.00	6	1.0020	230.45
6171	PAC230	230.00	6	1.0022	230.50	6178	EST230	230.00	6	1.0163	233.74
6179	GUA230	230.00	6	1.0164	233.76	6182	VEL230	230.00	6	1.0144	233.31
6260	CHA 230	230.00	6	1.0272	236.26	6263	ESP230	230.00	6	1.0265	236.09
6330	BAI230	230.00	6	1.0248	235.70	6340	CAN 230	230.00	6	1.0202	234.65
6360	GLA230	230.00	6	1.0186	234.28	6363	ZAM230	230.00	6	1.0210	234.83
6366	EVA230	230.00	6	1.0224	235.14	6380	BOQIII 230	230.00	6	1.0201	234.62
6400	FRONTCHA	230.00	6	1.0292	236.71	6430	ANTON230	230.00	6	1.0120	232.75
6500	FRONTDOM	230.00	6	1.0338	237.79	6590	24DIC230	230.00	6	1.0007	230.16
6680	BFRIO230	230.00	6	1.0268	236.17	6690	DOM230	230.00	6	1.0335	237.71
6691	ALTO230	230.00	6	1.0349	238.02	6695	PANDO230	230.00	6	1.0328	237.54
6698	MLIRIO230	230.00	6	1.0330	237.59	6760	SBA230	230.00	6	1.0112	232.57
6790	SMA230	230.00	6	1.0013	230.29	6840	BUR230	230.00	6	1.0257	235.91
6860	BBL230	230.00	6	1.0139	233.19	6870	TABII230	230.00	6	1.0141	233.25
6880	CHAII230	230.00	6	1.0255	235.87	6920	STR230	230.00	6	1.0058	231.34

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)
6001	PAN230	230.00	6	0.9891	227.48	6005	CHO230	230.00	6	0.9826	226.00
6105	PAM230	230.00	6	0.9826	226.00	6240	LGU 230	230.00	6	0.9909	227.91

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:59
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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)
6002	PAN115	115.00	6	1.0233	117.68	6009	LSA115	115.00	6	1.0109	116.25
6012	MDN115	115.00	6	1.0249	117.86	6015	PRO115	115.00	6	1.0211	117.43
6018	CAC115	115.00	6	1.0227	117.61	6024	CHI115	115.00	6	1.0072	115.83
6027	LOC115A	115.00	6	1.0138	116.59	6032	MAR115A	115.00	6	1.0125	116.44
6036	SMA115	115.00	6	1.0226	117.60	6040	SFR115	115.00	6	1.0085	115.98
6047	CLA115	115.00	6	1.0008	115.10	6055	MOS115B	115.00	6	1.0216	117.48
6059	LM1115	115.00	6	1.0083	115.95	6060	LM2115	115.00	6	1.0083	115.96
6066	FFIELD	115.00	6	1.0056	115.65	6074	LMDIST	115.00	6	1.0083	115.95
6087	CAL115	115.00	6	1.0227	117.61	6088	LES115	115.00	6	1.0229	117.64
6092	LVA115	115.00	6	1.0226	117.60	6123	MIR115	115.00	7	1.0323	118.71
6170	CPA115	115.00	6	1.0122	116.40	6173	STR115	115.00	6	1.0101	116.16
6174	PM115-1A	115.00	6	1.0165	116.90	6175	PM115-2A	115.00	6	1.0165	116.90
6210	TIN115	115.00	6	1.0203	117.33	6211	PM115-9	115.00	6	1.0209	117.41
6230	CBA115	115.00	6	1.0116	116.34	6261	CHA 115	115.00	6	1.0179	117.06
6270	CAT 115	115.00	6	1.0083	115.96	6280	GIR 115	115.00	6	1.0122	116.40
6290	CATII 11	115.00	6	1.0085	115.98	6331	BAI115	115.00	6	1.0179	117.06
6332	BAM115	115.00	6	1.0181	117.08	6350	PM115-8	115.00	6	1.0178	117.04
6550	CHAZ115	115.00	6	1.0211	117.43						

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME	--X BASKV	AREA	V(PU)	V(KV)
6004	PANII115	115.00	6	0.9984	114.81	6006	CHO115	115.00	6	0.9668	111.19
6019	CVI115A	115.00	6	0.9989	114.87	6057	TOC115	115.00	6	0.9962	114.56
6580	LBO115	115.00	6	0.9983	114.80	6910	GON115	115.00	6	0.9984	114.82

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     PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E      MON, MAY 23 2011   9:59
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 INTERCONEXIÓN COL-PAN - DEMANDA MÍNIMA - 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

                                  * NONE *

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     PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E      MON, MAY 23 2011   9:59
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 INTERCONEXIÓN COL-PAN - DEMANDA MÍNIMA - 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 *
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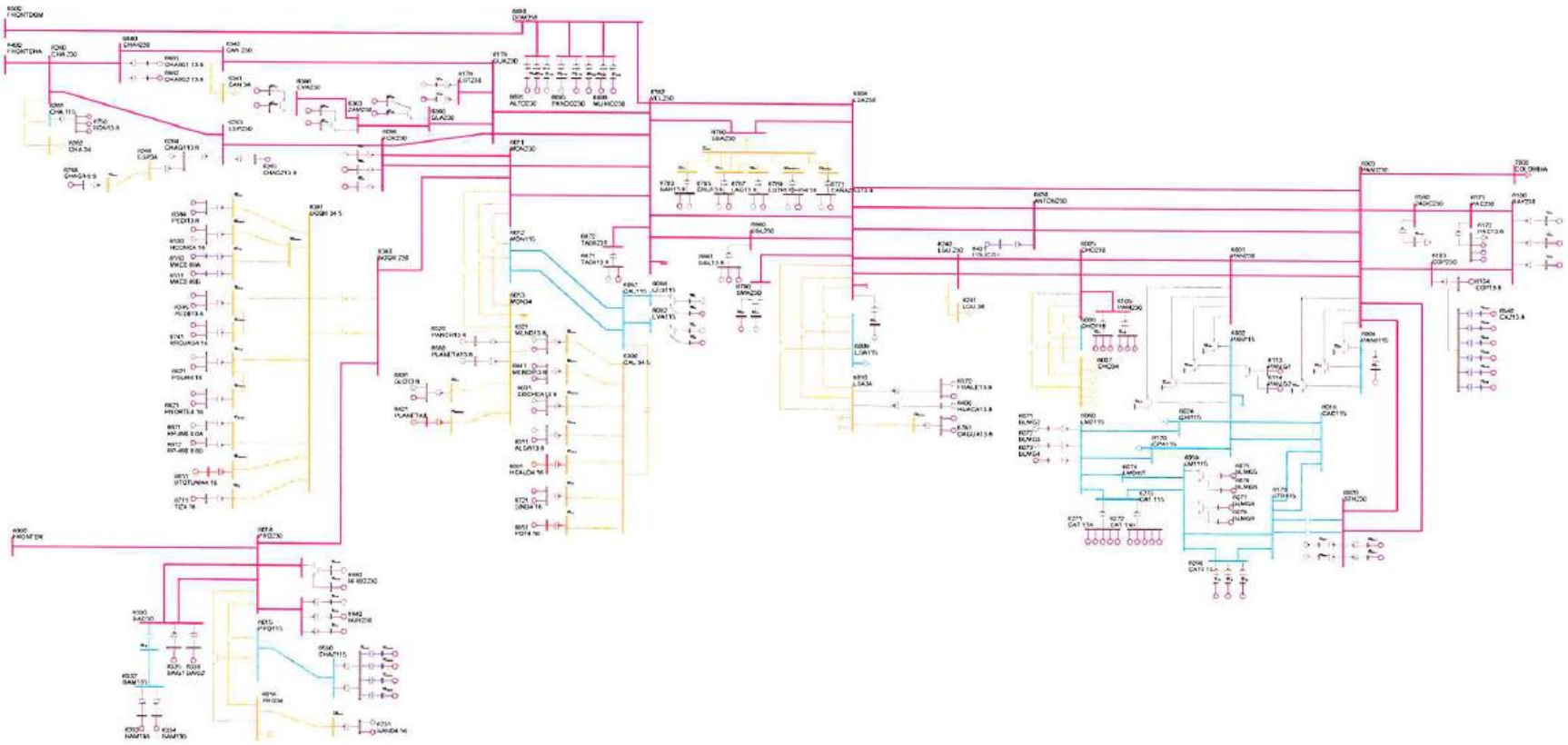
PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 9:59
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÍNIMA - ÉPOCA HÚMEDA 2020

AREA TOTALS
IN MW/MVAR

X-- AREA --X	FROM GENE-RATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	694.0	773.5	0.0	0.0	0.0	11.1	-90.6	-90.6	-90.6
GUATEMAL	-13.6	100.4	384.9	0.0	621.8	175.2	-52.3	-52.3	
2	522.5	512.7	0.0	0.0	0.0	9.8	0.0	0.0	0.0
SALVADOR	12.4	137.7	-22.6	0.0	254.8	99.5	52.5	52.5	
3	560.0	545.5	0.0	0.0	0.0	14.5	0.0	0.0	0.0
HONDURAS	-112.8	179.1	40.7	0.0	516.0	130.1	53.4	53.4	
4	304.1	298.5	0.0	0.0	0.0	5.6	0.0	0.0	0.0
NICARAGU	-144.2	118.2	51.7	0.0	316.3	64.0	-61.7	-61.7	
5	775.8	769.0	0.0	0.0	0.0	6.9	0.0	0.0	0.0
COSTA RI	-99.7	302.3	-13.9	0.0	594.0	134.7	71.2	71.2	
6	1112.9	1051.2	0.0	0.0	0.0	45.2	16.5	16.5	16.3
PANAMA	-20.0	381.5	-228.1	0.0	564.3	476.6	-85.8	-85.8	
7	82.9	34.2	0.0	0.0	0.0	1.9	46.9	46.9	47.0
ACANAL	24.4	12.4	-15.8	0.0	0.0	9.1	18.8	18.8	
10	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	
11	0.0	-27.3	0.0	0.0	0.0	0.0	27.3	27.3	27.3
COLOMBIA	0.0	-3.9	0.0	0.0	0.0	0.0	3.9	3.9	
COLUMN	4052.4	3957.3	0.0	0.0	0.0	95.1	0.0	0.0	0.0
TOTALS	-353.5	1227.6	196.9	0.0	2867.2	1089.2	0.0	0.0	

Demanda Mínima de Verano



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 10:06
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	3.7	15.0	0.0	1.0200	19.9	0.9829	47.0			62	6
6072	BLMG3	13.800	V3	20.0	3.7	15.0	0.0	1.0200	19.9	0.9829	47.0			62	6
6090	LESG1	13.800	E1	21.2	1.2	12.0	-5.0	1.0000	21.3	0.9985	27.0			64	6
6094	LVAG1	13.800	L1	24.7	-5.0	12.0	-5.0	1.0043	25.1	0.9801	27.0			64	6
6097	FORG1	13.800	F1	75.0	-16.3	50.0	-50.0	1.0000	76.8	0.9771	111.0			64	6
6101	BAYG1	13.800	B1	68.5	14.9	30.0	-25.0	1.0000	70.1	0.9773	94.0			61	6
6176	ESTG1	13.800	E1	54.0	5.4	29.0	-29.0	1.0000	54.3	0.9950	69.0			64	6
6264	CHAG113.8	13.800	G1	94.4	-15.6	52.4	-48.9	0.9900	96.6	0.9866	116.5			64	6
6311	ALGA13.8	13.800	A1	4.6	-0.4	2.3	-2.3	0.9850	4.7	0.9970	5.7			64	6
6321	MEND13.8	13.800	M1	8.4	1.1	4.2	-4.2	0.9900	8.6	0.9910	10.4			64	6
6431	EOLICO I	0.6000	G1	100.0	-17.5	17.5	-17.5	1.0045	101.1	0.9850	152.3			63	6
6520	PANCH13.8	13.800	P1	4.5	2.0	2.0	-2.0	0.9496	5.2	0.9138	6.2			64	6
6530	HCONC4.16	4.2000	G2	4.5	-2.5	2.5	-2.5	1.0142	5.1	0.8744	5.6			64	6
6560	PLANETA13.8	13.800	G1	4.1	2.0	2.0	-2.0	0.9496	4.8	0.8966	4.9			64	6
6570	FRAILE13.8	13.800	G1	2.5	1.2	1.2	-1.2	0.9511	2.9	0.9036	3.0			63	6
6600	HUACA13.8	13.800	G1	4.5	2.2	2.2	-2.2	0.9517	5.3	0.8995	5.5			63	6
6621	PSUR4.16	4.2000	G1	4.5	-2.5	2.5	-2.5	1.0138	5.1	0.8744	5.6			64	6
6631	COCHEA13.8	13.800	G1	6.8	-3.7	3.7	-3.7	1.0082	7.6	0.8771	8.4			64	6
6651	BTOTUMA4.16	4.1600	G1	4.5	-2.5	2.5	-2.5	1.0138	5.1	0.8744	5.6			64	6
6661	HCALD4.16	4.1600	G1	3.6	-2.0	2.0	-2.0	1.0345	4.0	0.8793	4.4			64	6
6671	RP-490 6.6A	6.6000	G1	6.4	-0.4	2.3	-2.6	1.0000	6.4	0.9976	7.5			64	6
6681	BFRIO13A	13.800	G1	25.2	-8.0	8.0	-8.0	1.0204	25.9	0.9531	33.0			64	6
6692	ALTO13A	13.800	G1	16.8	-9.9	9.9	-9.9	1.0022	19.5	0.8625	24.9			64	6
6696	PANDO13A	13.800	G1	15.0	-8.3	12.8	-8.3	1.0037	17.1	0.8748	18.5			64	6
6731	SAND4.16	4.2000	G1	4.1	-2.2	2.2	-2.2	1.0158	4.5	0.8787	5.0			64	6
6763	BAR13.8	13.800	G1	6.8	4.0	4.0	-4.0	1.0000	7.9	0.8644	9.0			63	6
6765	CRU13.8	13.800	G1	4.4	2.0	2.6	-2.6	1.0000	4.8	0.9088	5.8			63	6
6767	LAG13.8	13.800	G1	4.4	1.5	2.6	-2.6	1.0000	4.7	0.9443	5.8			63	6
6769	ESTRECHO4.16	4.2000	G1	4.7	1.8	2.5	-2.5	1.0000	5.0	0.9314	5.6			63	6
6771	CAÑAZAS13.8	13.800	G1	2.7	1.5	1.5	-1.5	0.9985	3.0	0.8780	3.3			63	6
6791	SMA13A	13.800	G1	11.5	6.2	6.2	-6.2	0.9982	13.1	0.8790	14.2			63	6
6810	SVC-LV	13.200	1	0.0	-154.5	300.0	-225.0	0.9577	161.3	0.0000	300.0			63	6
6821	PLANETAII	4.1600	G1	3.4	1.8	1.8	-1.8	0.9988	3.8	0.8788	4.1			64	6
6831	SLO13.8	13.800	G1	3.8	2.1	2.1	-2.1	0.9741	4.4	0.8788	4.7			64	6
6841	BUR13A	13.800	G1	15.0	-6.7	8.1	-8.1	1.0000	16.4	0.9137	18.5			64	6
6861	BBL13.8	13.800	G1	8.1	4.0	4.0	-3.0	0.9912	9.2	0.8967	10.1			64	6
6871	TABII13.8	13.800	G1	12.9	-6.9	9.0	-9.0	1.0000	14.7	0.8822	20.5			64	6

6881	CHAIIG1	13.813.800	G1	80.2	-10.4	52.3	-52.3	1.0000	80.9	0.9917	118.9		6
6900	SVC-LV	13.200	1	0.0	22.5	300.0	-225.0	1.0031	22.5	0.0000	300.0	62	6
6921	CB250A-1	13.800	C1	87.5	10.6	61.1	-61.1	1.0200	86.4	0.9928	138.9	62	6
6923	CB250B-1	13.800	C1	87.5	10.6	61.1	-61.1	1.0200	86.4	0.9928	138.9	62	6
SUBSYSTEM TOTALS				930.6	-169.2	1113.9	-906.2				1943.3		

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 10:06
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	3.5	8.0	0.0	1.0100	17.3	0.9793	27.7			65	7
6129	MIR13D	13.800	G4	28.4	12.7	15.0	0.0	1.0100	30.8	0.9126	44.1			65	7
6130	MIR13F	13.800	G5	17.1	4.7	8.0	0.0	1.0100	17.6	0.9642	27.7			65	7
6134	MAD6A	6.9000	G1	11.4	3.4	6.0	-6.0	1.0100	11.8	0.9576	13.0			65	7
6140	GAT6A	6.9000	G4	4.3	1.5	3.0	-3.0	0.9900	4.6	0.9437	5.6			65	7
6140	GAT6A	6.9000	G5	4.3	1.5	3.0	-3.0	0.9900	4.6	0.9437	6.2			65	7
SUBSYSTEM TOTALS				82.6	27.4	43.0	-12.0				124.4				

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 10:06
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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	1.0309	237.10	6011	MDN230	230.00	6	1.0195	234.49
6014	PRO230	230.00	6	1.0290	236.67	6096	FOR230	230.00	6	1.0213	234.90
6100	BAY230	230.00	6	1.0095	232.20	6103	COP23O	230.00	6	1.0019	230.45
6171	PAC230	230.00	6	1.0021	230.48	6178	EST230	230.00	6	1.0215	234.95
6179	GUA230	230.00	6	1.0217	234.98	6182	VEL230	230.00	6	1.0162	233.72
6260	CHA 230	230.00	6	1.0259	235.96	6263	ESP230	230.00	6	1.0249	235.72
6330	BAI230	230.00	6	1.0296	236.80	6340	CAN 230	230.00	6	1.0238	235.47
6360	GLA230	230.00	6	1.0217	234.99	6363	ZAM230	230.00	6	1.0217	235.00
6366	EVA230	230.00	6	1.0218	235.00	6380	BOQIII 230	230.00	6	1.0241	235.55
6400	FRONTCHA	230.00	6	1.0268	236.16	6430	ANTON230	230.00	6	1.0064	231.48
6500	FRONTDOM	230.00	6	1.0344	237.91	6590	24DIC230	230.00	6	1.0007	230.15
6680	BFRIO230	230.00	6	1.0303	236.96	6690	DOM230	230.00	6	1.0341	237.83
6691	ALTO230	230.00	6	1.0347	237.99	6695	PANDO230	230.00	6	1.0333	237.66
6698	MLIRIO230	230.00	6	1.0342	237.86	6760	SBA230	230.00	6	1.0110	232.52
6840	BUR230	230.00	6	1.0286	236.58	6860	BBL230	230.00	6	1.0153	233.52
6870	TABII230	230.00	6	1.0158	233.63	6880	CHAII230	230.00	6	1.0255	235.86
6920	STR230	230.00	6	1.0146	233.37						

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	0.9892	227.53	6005	CHO230	230.00	6	0.9828	226.04
6008	LSA230	230.00	6	0.9900	227.70	6105	PAM230	230.00	6	0.9828	226.04
6240	LGU 230	230.00	6	0.9875	227.12	6790	SMA230	230.00	6	0.9908	227.89

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 10:06
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - 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)
6002	PAN115	115.00	6	1.0163	116.87	6012	MDN115	115.00	6	1.0228	117.62
6015	PRO115	115.00	6	1.0246	117.83	6018	CAC115	115.00	6	1.0159	116.83
6024	CHI115	115.00	6	1.0056	115.65	6027	LOC115A	115.00	6	1.0073	115.84
6032	MAR115A	115.00	6	1.0057	115.65	6036	SMA115	115.00	6	1.0155	116.79
6040	SFR115	115.00	6	1.0027	115.31	6047	CLA115	115.00	6	1.0001	115.01
6055	MOS115B	115.00	6	1.0145	116.67	6059	LM1115	115.00	6	1.0128	116.47
6060	LM2115	115.00	6	1.0128	116.47	6066	FFIELD	115.00	6	1.0111	116.28
6074	LMDIST	115.00	6	1.0127	116.47	6087	CAL115	115.00	6	1.0227	117.60
6088	LES115	115.00	6	1.0235	117.70	6092	LVA115	115.00	6	1.0225	117.59
6123	MIR115	115.00	7	1.0256	117.95	6170	CPA115	115.00	6	1.0132	116.52
6173	STR115	115.00	6	1.0152	116.75	6174	PM115-1A	115.00	6	1.0166	116.90
6175	PM115-2A	115.00	6	1.0166	116.90	6210	TIN115	115.00	6	1.0132	116.52
6211	PM115-9	115.00	6	1.0139	116.59	6230	CBA115	115.00	6	1.0053	115.61
6261	CHA 115	115.00	6	1.0219	117.51	6270	CAT 115	115.00	6	1.0128	116.47
6280	GIR 115	115.00	6	1.0132	116.52	6290	CATII 11	115.00	6	1.0131	116.50
6331	BAI115	115.00	6	1.0311	118.57	6332	BAM115	115.00	6	1.0316	118.63
6350	PM115-8	115.00	6	1.0109	116.26	6550	CHAZ115	115.00	6	1.0246	117.83

BUSES WITH VOLTAGE LESS THAN 1.0000:

BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)	BUS#	X-- NAME --	X BASKV	AREA	V(PU)	V(KV)
6004	PANII115	115.00	6	0.9987	114.85	6006	CHO115	115.00	6	0.9669	111.19
6009	LSA115	115.00	6	0.9996	114.95	6019	CVI115A	115.00	6	0.9970	114.66
6057	TOC115	115.00	6	0.9965	114.60	6580	LBO115	115.00	6	0.9964	114.59
6910	GON115	115.00	6	0.9984	114.81						

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     PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E      MON, MAY 23 2011  10:06
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 INTERCONEXIÓN COL-PAN - DEMANDA MÍNIMA - 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

                                  * NONE *

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     PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E      MON, MAY 23 2011  10:06
 PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
 INTERCONEXIÓN COL-PAN - DEMANDA MÍNIMA - 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 *
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PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS®E MON, MAY 23 2011 10:06
PLAN DE EXPANSIÓN DEL SISTEMA INTERCONECTADO NACIONAL
INTERCONEXIÓN COL-PAN - DEMANDA MÍNIMA - ÉPOCA SECA 2020

AREA TOTALS
IN MW/MVAR

X-- AREA --X	FROM GENE-RATION	TO LOAD AT AREA BUSES	TO BUS SHUNT	TO LINE SHUNT	FROM CHARGING	TO LOSSES	-NET INTERCHANGE- TO TIE LINES	TO TIES + LOADS	DESIRED NET INT
1	642.8	758.5	0.0	0.0	0.0	11.0	-126.7	-126.7	-126.7
GUATEMAL	-12.9	99.0	382.6	0.0	622.6	166.3	-38.2	-38.2	
2	520.6	512.7	0.0	0.0	0.0	7.9	0.0	0.0	0.0
SALVADOR	22.0	137.7	0.0	0.0	253.1	91.1	46.3	46.3	
3	556.2	545.5	0.0	0.0	0.0	10.8	0.0	0.0	0.0
HONDURAS	-113.6	179.1	45.6	0.0	517.0	125.8	53.0	53.0	
4	312.5	304.3	0.0	0.0	0.0	8.2	0.0	0.0	0.0
NICARAGU	-115.4	120.4	51.9	0.0	313.4	81.6	-56.0	-56.0	
5	761.7	750.0	0.0	0.0	0.0	11.7	-0.1	-0.1	0.0
COSTA RI	-27.5	309.9	0.0	0.0	573.9	188.9	47.6	47.6	
6	930.6	1057.7	0.0	0.0	0.0	17.3	-144.4	-144.4	-145.0
PANAMA	-169.2	383.9	-152.7	0.0	562.4	268.5	-106.5	-106.5	
7	82.6	34.4	0.0	0.0	0.0	1.8	46.4	46.4	47.0
ACANAL	27.4	12.5	-15.6	0.0	0.0	8.8	21.7	21.7	
10	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	
11	0.0	-224.7	0.0	0.0	0.0	0.0	224.7	224.7	224.7
COLOMBIA	0.0	-32.0	0.0	0.0	0.0	0.0	32.0	32.0	
COLUMN	3807.1	3738.4	0.0	0.0	0.0	68.7	0.0	0.0	0.0
TOTALS	-389.1	1210.4	311.8	0.0	2842.3	931.0	0.0	0.0	